

BUILDING ON A TRADITION OF SERVICE

Serving Colorado since 1931



Annual Comprehensive Financial Report

Public Employees' Retirement Association of Colorado

For the Year Ended December 31, 2021

2021 IN REVIEW

Facts and Figures as of December 31, 2021



ASSETS UNDER MANAGEMENT (FNP)

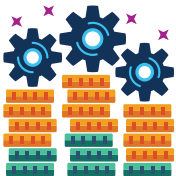
\$66 billion

(DIVISION TRUST FUNDS)



NET RATE OF RETURN

16.1%



**MEMBERS ACTIVELY
CONTRIBUTING TO PERA**

207,269



EMPLOYERS

409



**TOTAL COVERED PARTICIPANTS
(IN PERACARE HEALTH BENEFITS PROGRAM)**

59,568



FUNDED STATUS

67.8%



**RETIREES AND
BENEFIT RECIPIENTS**

132,111



**ANNUAL RETIREMENT
BENEFIT PAYMENTS**

\$5.0 billion



**INVESTED IN COLORADO-BASED
COMPANIES, PARTNERSHIPS,
AND ASSETS**

\$898.9 million



30-YEAR RATE OF RETURN

9.0%

(ANNUALIZED, GROSS-OF-FEES)

Annual Comprehensive Financial Report

For the Year Ended December 31, 2021

Public Employees' Retirement Association of Colorado

Prepared by Colorado PERA Staff





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INTRODUCTORY SECTION





LETTER OF TRANSMITTAL



June 17, 2022

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

This *Annual Comprehensive Financial Report (ACFR)* prepared by the Public Employees' Retirement Association of Colorado (PERA) details the plan's performance from January 1, 2021, through December 31, 2021.

In 2021, PERA marked its 90th year of providing retirement and other benefits to Colorado's public employees. When the Colorado General Assembly established PERA in 1931, the Association had fewer than 1,500 members and approximately \$63,000 in assets.

Today, PERA manages more than \$76.8 billion in assets on behalf of nearly 650,000 members and benefit recipients. As I reflect on where we've been and where we're headed, I'm proud of how PERA continues to build on its tradition of service to Colorado and those who serve our state.



Ron Baker
Executive Director

It's been more than two years since COVID-19 upended our lives, but we're still seeing the effects of the pandemic here in Colorado and beyond. While 2021 saw many people begin the transition back to in-person work and schooling, Colorado's public employees have faced unprecedented challenges brought on by additional waves of coronavirus and unforgiving economic conditions. We extend our appreciation to those who remain steadfast in their dedication to serving others through trying times.

Like many employers, PERA began welcoming staff back to the office in the second half of 2021. With a new hybrid work environment in place, PERA staff have continued to expand efforts that arose from 2020's sudden shift to remote work. These efforts center around providing more digital offerings that are convenient to members, retirees, and employers. We've produced more webinars and educational materials and made enhancements to our website to make important information more accessible. We'll continue to improve and expand on those member-focused initiatives to provide service to our members where, when, and how they need it.

Financially, 2021 was a strong year for the global markets, and PERA's portfolio benefited from that environment. The defined benefit funds ended the year with a time-weighted return of 16.1% net-of-fees.

The value of the long-term investment strategy set by PERA's Board of Trustees (Board) and implemented by PERA staff has been evident amid the high degree of economic uncertainty we've experienced over the past two years and is essential to PERA's core mission: to provide retirement security for our members while ensuring the sustainability of the fund.

While 2021 was a strong year financially, investment performance is just one factor among many that determine how much progress PERA is making toward its goal of full funding. Other factors, such as the economy, workforce changes, and demographics also play a major role, and it's vital that we continue to monitor and measure those factors and react to any changes to keep PERA on track to meet our goal.

When the Colorado General Assembly passed the package of PERA reforms known as Senate Bill 200 in 2018, the Legislature mandated that PERA reach full funding within 30 years — by the end of 2047. Included in those reforms was the automatic adjustment provision (AAP), which automatically adjusts member and employer contributions as well as the annual increase (AI) paid to eligible benefit recipients if PERA is off-track to meet that target.

The AAP calculation is made on an annual basis, to take effect the following year. Based on 2021's financial results, additional adjustments will not be necessary in 2023.

As we've seen over the past two years, PERA members are incredibly dedicated, and they have continued to serve their communities during difficult circumstances. Despite the challenges we have all faced, we will continue to build on our tradition of service and uphold our mission as we have for more than 90 years ensuring that PERA provides reliable benefits for generations.

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2021 Legislation

During the 2021 legislative session, four bills affecting PERA were introduced and two were signed into law.

Senate Bill 21-228: Public Employees' Retirement Association Cash Fund

Governor Jared Polis signed this bill into law on May 4, 2021. The bill created the PERA Payment Cash Fund in the State Treasury and appropriated \$380 million to the fund for the 2020-21 state fiscal year. The State Treasurer is required to pay the General Fund portion of the direct distribution payment due to PERA on July 1, 2022, from the fund and, subject to annual appropriation, money in the fund may be used by the state for any employer contribution or disbursement to PERA.

The PERA Board did not take a position on this bill.

House Bill 21-1136: Judicial Division Retirees Temporary Judicial Duties Compensation

Governor Jared Polis signed this bill into law on May 4, 2021. The bill adds additional contract periods of 10, 20, and 30 days per year that retired judges may perform temporary judicial duties after retirement and receive a benefit increase equal to a percentage of the current monthly salary of judges serving in the same position held by the retiree at the time of retirement. It also removes the requirement that a judge enters into such an agreement before retirement, or within five years after retirement, and adds certain conditions that would make those retired judges ineligible to enter into an agreement if met.

The PERA Board did not take a position on this bill.

House Bill 21-1213: Conversion of Pinnacol Assurance

This bill would have converted Pinnacol Assurance, which provides workers' compensation insurance in Colorado and is a political subdivision of the state, into a private company. This conversion required a disaffiliation of Pinnacol Assurance as an affiliated employer from the State Division Trust Fund of PERA and payment to cover the costs of disaffiliation.

The PERA Board holds that all disaffiliations should be treated the same and the methodology used to determine the cost for disaffiliation should align with the framework provided under the current statute.

This bill was postponed indefinitely.

House Bill 21-1246: Public Employees' Retirement Association Divestment from Fossil Fuel Companies

This bill would have required the PERA Board to create an exclusion list of all direct investments PERA has in fossil fuel companies and issue a determination whether divestment from the companies on the list complies with the Board's fiduciary obligations. If the Board determined that divestment from any company on the

exclusion list did comply with its fiduciary duties then the Board would have been required to divest from those companies.

The PERA Board opposes divestment efforts unless such opposition is inconsistent with its fiduciary duty and recommends the Legislature thoughtfully consider such proposals with caution and fiduciary care.

This bill was postponed indefinitely.

Economic Environment

The economic recovery of 2020 continued into 2021 with the S&P 500 closing at a record high 70 times during the year, trailing only the 77 record highs reached in 1995. Coronavirus vaccines became available to the general public in the first half of 2021 and a downward trend in new cases followed over this period as lockdowns eased in many places. Cases began to rise in the second half of the year with the Delta variant becoming the dominant virus and the Omicron variant emerging late in 2021. Despite rising coronavirus cases, the S&P 500 trended higher throughout 2021 and ended the year up 28.7%, marking the third straight year of positive returns with an annualized three-year total return of 26.1%.

A third round of stimulus checks began hitting bank accounts in the first quarter and many consumers were willing to spend on goods, as much of the service sector was still dealing with intermittent shutdowns. The increased demand for goods, along with pandemic-related labor constraints, created supply chain issues around the globe, causing inflation to exceed the Federal Reserve's (Fed) initial outlook. The Fed's target rate has been near zero since the beginning of the pandemic and yields on the U.S. 10-year Treasury note inched up from 0.9% at the beginning of the year to end at 1.5%. Mortgage rates spent much of 2021 below 3.0% and led to a pandemic-fueled boom in housing demand with single family home prices rising 18.8% nationally. This surge pushed the price for a single-family home high enough that the average homeowner earned more in appreciation on their home in 2021 than the median U.S. worker earned in annual income.

Economic growth reached levels not seen in recent history with real gross domestic product (GDP) increasing at a robust 5.7% after coming off a contraction of 3.5% in 2020. The unemployment rate continued its downward trend throughout 2021 and ended at 3.9% as the economy moved closer to full employment and neared the historic low of 3.5% reached just prior to the pandemic. While the unemployment rate has rebounded much more quickly than expected, the share of the population looking for work has been slower to recover, creating labor shortages across the economy that are especially pronounced in lower wage jobs. The labor force participation rate of 61.9% remained below the pre-pandemic level of 63.4%. A number of workers that were near retirement pre-pandemic chose to join the "Great Resignation" by capitalizing on a booming stock

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market and record property values, while others re-evaluated their careers or had confidence in finding higher paying jobs elsewhere. A shortage of workers, coupled with an elevated number of employees quitting, has led to the largest wage growth in decades as civilian workers realized a 4.5% increase in wages and salaries in 2021. Inflation has been stubbornly low for years with the Fed unable to consistently meet its target inflation rate of 2.0%, but ongoing supply chain issues and strong consumer demand for goods pushed inflation to a nearly 40-year high with the Consumer Price Index (CPI) for all items (headline inflation) up 7.0% in 2021 and CPI less food and energy (core inflation) up 5.5%. Energy and used vehicles were among the largest drivers in inflation, with the latter up nearly 40% as the semiconductor shortage continued to limit production of new vehicles.

The global economy rebounded sharply in 2021 with real global GDP increasing 5.5% as extraordinary levels of monetary stimulus flooded into markets across the globe to mitigate the ongoing effects of the coronavirus. Emerging market and developing economies experienced growth of 6.3% while advanced economies realized growth of 5.0%. Among advanced economies, the United States continued to outperform with real GDP growth of 5.7% compared to Euro area growth of 5.2% and growth in Japan of 1.7%. Inflation reached the highest levels seen in a generation and after years of near zero, or negative, interest rates, central banks began to roll back their expansionary monetary policies at the same time governments faced record levels of debt and deficits.

The ongoing effects from the coronavirus have resulted in more moderate growth in Colorado that persisted into 2021, although annual real GDP growth in Colorado of 5.8% still outperformed the U.S. average of 5.7%. The unemployment rate in Colorado has trended down from the double-digit highs of the prior year, but remains slightly above the U.S. average of 3.9%, at 4.2%. Colorado's labor force participation rate remains among the highest in the country, although this also has trended down from pre-pandemic levels and ended 2021 at 68.2%, well above the U.S. average of 61.9% and trailing only three other states. The rate of population growth in Colorado has slowed from previous decades. According to the 2020 census, the state population grew 14.8% from the 2010 census, placing it sixth in the nation for the rate of population growth, with 95% of the growth occurring along the Front Range. Colorado's diverse economy has been successful in attracting an educated workforce. Over the last 10 years, the percent of the population with at least a Bachelor's degree has increased from 36.4% to 42.7%, which places Colorado behind only one other state for educational attainment. The high population growth rate and in-migration of an educated workforce have continued to put upward pressure on home prices as more buyers compete for a shrinking number of homes. The median price of a

single-family home in Colorado reached \$530,000, rising in line with the U.S. average, while inventory declined 41.6% on top of last year's decline of 60.1%. This drop in inventory has pushed the number of statewide active single-family listings below 4,900 at the end of 2021 from more than 15,200 just two years prior, with even more pronounced inventory declines in the Denver metro region.

Investments

Investment portfolio income is a significant source of revenue to PERA. The Board's Investment Committee is responsible for assisting the Board in overseeing PERA's investment program.

In 2021, there was net investment income of \$10.2 billion compared with total member contributions of \$1.3 billion and employer contributions of \$2.1 billion.

For the year ended December 31, 2021, the defined benefit funds had a time-weighted rate of return of 16.1% net-of-fees. The annualized, net-of-fees, time-weighted, rates of return over the last three and five years were 17.9% and 13.3%, respectively, and over the last 10 years it was 10.9%. The 30-year annualized, gross-of-fees, time-weighted, rate of return was 9.0%.

Prudent funding and healthy investment returns are important to the financial soundness of PERA. More information on the composition of the portfolio is reflected in the Investment Summary on page 126.

An integral part of the overall investment policy is the strategic asset allocation. The strategic asset allocation is designed to provide appropriate diversification and balance expected total rates of return with the volatility of expected returns. 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 yearly Policy Benchmark weight and long-term asset allocation target, as well as the specified ranges for each asset class are presented on page 121. All of the asset classes were within their specified ranges at year-end with the exception of Fixed Income. Fixed Income was within the range when the calendar year ended, but the subsequent process of booking the private market investment valuations caused it to fall outside its lower range.

PERA's investment policy is summarized in the Report on Investment Activity on page 121.

Investment Stewardship

It is PERA's fiduciary duty to serve as stewards of capital for nearly 650,000 members, participants, and beneficiaries. Foundational to PERA's investment stewardship are cost-consciousness, integration of

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material factors in PERA's investment decisions, market advocacy, and the ongoing evaluation of our holdings. Collectively, these efforts are intended to strengthen PERA's investment stewardship across all asset classes in the portfolio as we continue to prioritize financial sustainability.

Within the Board's strategic objective to fortify the resilience of PERA's portfolio, the Investment Committee undertook an initiative to update *PERA's Proxy Voting Policy (Policy)* and solidify a position on environmental, social, and governance (ESG) matters. The Board approved updates to the *Policy* in January 2021, and staff implemented the updated *Policy* effective February 2021. Through careful deliberation, the Board continues to uphold its fiduciary duty in setting parameters for PERA's investment program.

PERA's participation in the Council of Institutional Investors (CII) demonstrates our commitment to advocating for robust capital markets and business practices that are accretive to long-term investment value. I was honored to be re-elected to the CII Board in March 2021, as well as being chosen to serve as the chair of the Policies Committee for 2021. My representation on the CII Board further supports PERA's commitment to investment stewardship.

Major Initiatives

Despite the ongoing challenges of the pandemic, 2021 was a pivotal year on the journey to modernize how PERA serves members and retirees as well as our own employees. Priorities were centered around three themes: Employer of Choice, Member Experience, and Fiduciary Opportunities.

Employer of Choice

The Employer of Choice initiative centered on creating the work environment and opportunities that retain current employees and help to attract new talent. A relevant and key component of this initiative is the purpose and work of the Diversity, Equity, and Inclusion (DE&I) team. Formed in 2020, the mission of this team is to create and foster a culture of diversity, equity, and inclusion to enhance the workplace with differences, experiences, and growth. Led by volunteer employees from across the organization, the DE&I team seeks to promote a workplace environment where differences matter and all employees feel welcome and comfortable being their authentic selves.

An additional Employer of Choice initiative was the development and implementation of a new program called LEAD (Leadership, Excellence, Accountability, and Development). Launched in August 2021, LEAD recognizes that the effectiveness of leaders at PERA directly impacts the entire organization. Through monthly training sessions on a variety of topics, this program helps leaders to refine existing skills and

gain new knowledge to then implement in their leadership positions.

Member Experience

The Member Experience focused on two initiatives with involvement across nearly the entire organization. The Digital-First approach was initially accelerated by the impacts of the ongoing pandemic, but in 2021 the focus shifted to how to better enhance individualized information in a customizable format. As a result, more members turned to PERA's online resources, which were bolstered by improvements made to the website and secure member dashboards to help access information more quickly and intuitively.

The most-anticipated member experience initiative in 2021 was the transition in December to Empower Retirement (Empower) as the recordkeeper for PERA's two defined contribution plans and the deferred compensation plan. Using Empower's tools and technology, members participating in these plans can experience a comprehensive financial wellness web experience with a focus on retirement outcomes and not solely asset accumulation. For employers, this transition comes with a streamlined approach for submitting all contributions and data directly to PERA for both the defined benefit and defined contribution plans increasing efficiency and eliminating complexities.

Fiduciary Opportunities

An additional component of the transition to Empower was the research, development, and ultimate offering of lifetime income options to participants in the defined contribution plans. Participants now have the opportunity to purchase annuities through the Stable Value Annuity offered through Great-West Life & Annuity Insurance Company (GWL&A) and Qualified Longevity Annuity Contracts through Blueprint Income. GWL&A provides retirement and investment management services, and is affiliated with Empower. These annuity options enable participating members and retirees to use a portion of their defined contribution plan accounts to convert some of their retirement savings to an annuity that will provide guaranteed income during their retirement years.

Also in 2021, a cross-departmental team began evaluating the process for unitizing the Fixed Income asset class in the defined benefit plan. Unitization allows for economies of scale, providing a compelling opportunity for defined contribution plan participants to gain access to PERA's low cost, institutional quality, internal asset management capabilities by investing alongside the defined benefit plan. The project is scheduled for completion during the summer of 2022 and will replace one of the managers in the PERAdvantage Fixed Income Fund with the unitized product. These fund participants will benefit from PERA's internal fixed income expertise and a reduction of the investment management fee. In the future,

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PERA may leverage its unitization capabilities for expansion to other asset classes and the entire defined benefit portfolio.

Actuarial Results

Actuarial valuations involve assumptions about the probability of events far into the future in order to estimate the financial and actuarial status of the defined benefit trust funds. Two types of actuarial valuations are required to be performed for PERA's five defined benefit pension and two other postemployment benefit (OPEB) trust funds: one for financial accounting and reporting purposes and the other for funding purposes. The results of both actuarial valuations are included in this report. The actuarial valuations performed for financial accounting and reporting purposes are prepared in accordance with Governmental Accounting Standards Board (GASB) requirements. Pension liabilities, OPEB liabilities, and other related amounts calculated in accordance with these standards emphasize the costs incurred by PERA-affiliated employers for providing benefits to their employees as part of the employment-exchange process. Assets are required to be stated at fair value and the liabilities are determined using a consistent, standardized methodology, which allows for transparency and the comparability of amounts calculated for financial accounting and reporting purposes across U.S. governmental defined benefit pension and OPEB systems.

The actuarial valuations for funding purposes are prepared in accordance with Actuarial Standards of Practice and the Board's pension and OPEB funding policies. Liabilities and other actuarial metrics are calculated for the purpose of determining a systematic approach to pre-funding costs of the five defined benefit pension and two OPEB trust funds, as well as to assess the adequacy of moneys that are available to pay post-employment benefits earned by the membership. Pre-funding future liabilities defrays the ultimate cost of providing benefits as dollars held in the trust funds generate investment returns. The amount of actuarial accrued liability (AAL) in excess of the actuarial value of assets is referred to as the unfunded actuarial accrued liability (UAAL). The ratio of assets to AAL represents the funded status of each plan.

For the year ended December 31, 2021, the UAAL calculated for purposes of systematically funding the five defined benefit pension trust funds was \$27.2 billion compared to the unfunded liabilities, referred to as the net pension liabilities calculated for accounting and financial reporting purposes of \$18.9 billion. Although some of the objectives and calculation methodologies of these valuations are similar, the liabilities calculated for financial reporting purposes and funding purposes can be notably different under certain circumstances. For the year ended, December 31, 2020, the UAAL calculated for purposes of systematically funding the five defined

benefit pension trust funds was \$31.0 billion compared to the net pension liabilities calculated for accounting and financial reporting purposes of \$25.6 billion.

The decrease in the unfunded liabilities calculated for accounting and financial reporting purposes is primarily due to favorable investment performance during 2021 and recognition of the reduced AI maximum, known as the AI cap, from 1.25% to 1.00%, per annum. In accordance with GASB 67 and GASB 74, the discount rate determination for 2021 required the use of the long-term expected rate of return of 7.25% for the five pension and two OPEB trust funds. When calculating the AAL for purposes of funding, the discount rate used is always equal to the long-term expected rate of return set by the Board.

Information on certain actuarial metrics that assess the moneys required to systematically fund the five defined benefit pension and two OPEB trust funds can be found in the Management's Discussion and Analysis (MD&A) on pages 35-38 of the Financial Section. A comprehensive discussion of the results of the actuarial valuation performed for financial accounting and reporting purposes can be found in the MD&A on pages 39-40, as well as in Notes 10 and 11 of the Notes to the Financial Statements in the Financial Section. A comprehensive discussion of the results of the actuarial valuations performed for funding purposes, as well as other analysis utilized by PERA can be found below and in the Actuarial Section.

Funding

On December 31, 2021, the funded ratio for PERA's five defined benefit pension trust funds was 67.8% compared to 62.8% on December 31, 2020. The actuarial value of plan assets as of December 31, 2021, was \$57.2 billion, an increase of approximately \$4.9 billion from the prior year, attributable mainly to favorable investment performance for 2021, 2020, and 2019, when compared to the long-term expected rate of return of 7.25%. The unfunded liability as of December 31, 2021, was \$27.2 billion, a decrease of approximately \$3.8 billion from the previous year, reflecting graded smoothing of the favorable investment returns over the last three years, as well as recognition of the reduction in the AI cap from 1.25% to 1.00%.

The development and ongoing review of a pension funding policy are responsibilities of the Board. PERA's current pension funding policy was initially adopted by the Board in March 2015, and last revised in November 2018, for the five defined benefit pension trust funds. The Board adopted a similarly structured OPEB funding policy in January 2018. Both policies focus on the determination of an actuarially determined contribution reflecting closed and layered 30-year amortization periods. The purpose of each policy is three-fold: (1) to define the overall funding benchmarks of the trust fund, (2) to assess the adequacy of the contribution rates set by

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the Colorado Legislature by comparing each trust fund's statutorily set contribution rate to an actuarially determined contribution benchmark, and (3) to define the annual actuarial metrics which will assist in assessing the sustainability of the plan. The results of these three items help guide the Board when considering whether to pursue or support proposed contribution and benefit legislation.

A goal of the Board's pension and OPEB funding policies is the achievement of a combined Division Trust Fund and a combined Health Care Trust Fund actuarial funded ratio equal to or greater than 110%.

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 page 177 for the Division Trust Funds and page 203 for the Health Care Trust Funds. Additional information on PERA's funded ratio, unfunded liabilities, and actuarial assumptions may be found in the Actuarial Section starting on page 149 for the Division Trust Funds and on page 188 for the Health Care Trust Funds.

Employer contributions are also a driver of the funded status. 2021 was the first year within the last 19 that the actual employer contributions received pursuant to statute for the five defined benefit pension trust funds were in excess, or \$216.6 million greater than the required actuarially determined contributions. However, one year of excess does not fully compensate for the prior 18 years of deficiency, which has accumulated over the 19-year period to \$5.6 billion as of December 31, 2021. See page 37 of the MD&A in the Financial Section for additional details.

Investment Rate of Return Sensitivity Effect on Projected Amortization Periods

In addition to the annual actuarial funding valuation, the Board's actuary performs actuarial projections for each Division Trust Fund. These projections are forward-looking and take into consideration the many tiers of PERA benefit provisions and the statutory contribution rate structures, including the effective date of each tier or contribution rate. The projections also reflect applicable salary, demographic, and economic actuarial assumptions, as well as anticipated member growth. Considering the various benefit tiers currently in effect within PERA, the Board believes the results of the actuarial projections provide the best insight into the long term impact of the pension reforms adopted in 2010 and 2018.

The main focus of these projections is to provide, by division, the amortization or funding period, stated more simply as the expected number of years until full funding status is achieved. The projected amortization periods reflect all actuarial assumptions and the benefit

and contribution provisions currently enacted, even if not yet effective.

The following table shows the projected amortization periods under two scenarios: (1) as of the December 31, 2021, actuarial valuation, reflecting the greater than expected 2021 investment return, other plan experience, and the 2022 AAP adjustments, and (2) as of the December 31, 2020, actuarial valuation, considering the anticipated 2022 AAP adjustments.

Division Trust Fund	Projected Amortization Periods (in years)	
	2021 Valuation Results Considering 2022 AAP Adjustments	2020 Valuation Results Considering 2022 AAP Adjustments
State	16	20
School	16	22
Local Government	2	8
Judicial	3	7
DPS	2	7

Since the projections are based on a wide variety of assumptions, it is important to understand the risks related to defined benefit plans, specifically the risks associated with the selection and application of the long-term expected rate of return on investments. Given the long-term funding horizon and anticipated ongoing aspect of such defined benefit plans, particularly those providing benefits in the public sector, it is generally understood that the existence of the plan, itself, is not tied to the financial performance of private enterprise, but rather to the ongoing nature of governmental services. Therefore, it is common practice for plan sponsors/administrators of governmental or public sector pension plans also to apply the expected long-term rate of return as the discount rate used to determine the liabilities of the plan.

In order to derive the long-term rate of return assumption, the Board looks to the expertise of its investment and actuarial consultants to perform a comprehensive asset/liability study on a periodic basis (generally every three to five years). In conjunction with this study, the Board reviews capital market data from numerous sources. PERA concluded the most recent asset/liability study in November 2019. As a result of that study, the Board updated and approved long-term asset allocations and target ranges effective January 1, 2020, and reaffirmed the current 7.25% long-term expected rate of return applicable to all five Division Trust Funds as well as the two Health Care Trust Funds.

The table on the next page illustrates the projected amortization periods, in years, of the School Division Trust Fund under the various return scenarios (used for both assumed investment return and to discount liabilities of the plan) which correspond to the confidence levels (probabilities of investment return) as indicated.

LETTER OF TRANSMITTAL

This table reflects the results and experience of the December 31, 2021, actuarial funding valuation and the effect of the revised actuarial assumptions adopted November 20, 2020, first effective for the December 31, 2020, actuarial valuations and measurement date. The projected funding periods below reflect 50-year probability outlooks (Monte Carlo simulations), provided by the Board's actuaries, and are based on 30-year capital market assumptions, employed in the most recent asset/liability study as described above, provided by the Board's investment consultants.

Projected Amortization Periods—School Division Trust Fund

Probability of Achieving at Least the Rate of Return Displayed (or Better), Per Annum	Long-Term Expected Investment Return & Discount Rate				
	4.35%	6.18%	7.25%	8.63%	10.47%
95th Percentile	Infinite				
75th Percentile		38			
53rd Percentile			16		
25th Percentile				5	
5th Percentile					1

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 Retirement (DC) Plans. All employees working for a PERA-affiliated employer may contribute to the PERAPlus 401(k) Plan. As of December 31, 2021, there were a total of 198 employers who recognized the value of offering more choices in savings by affiliating into the PERAPlus 457 Plan. The Roth option was added to the PERAPlus 401(k) and 457 Plans at the end of 2014. As of December 31, 2021, there were a total of 152 employers who have 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), PERAPlus 457, and DC Plans increased for the year ended December 31, 2021. The PERAPlus 401(k), PERAPlus 457, and DC Plans earned \$679.5 million, \$164.2 million, and \$51.2 million of investment income with a fiduciary net position of \$4.7 billion, \$1.3 billion, and \$387.3 million, respectively.

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. See Notes 1, 8, and 9 of

the Notes to the Financial Statements in the Financial Section for participant information and services provided by PERA.

Board Composition

PERA is governed by a 16-member Board of Trustees; 11 Trustees 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 January 2021, Taylor McLemore was appointed by Governor Polis to fill the vacancy of Trustee Roger P. Johnson. Trustee McLemore is a Managing Director with Techstars Workforce Accelerator. By law, Governor-appointed Trustees must have experience and competence in investment management, finance, banking, economics, accounting, pension administration, or actuarial analysis.

In March 2021, Trustee David Hall announced his departure from the Board due to his upcoming resignation from the Colorado State Patrol effective April 1, 2021.

In June 2021, as a result of the 2021 Board election, Trustees Marcus Pennell and Tina Mueh were re-elected to their respective School Division seats. In addition, Trustee Suzanne E. Kubec was elected to the State Division seat to which she was appointed to in March 2017 filling the seat vacated by Trustee Maryann Motza. Trustee Julie Friedemann was also elected to the Retiree seat to which she was appointed to in March 2017 filling the seat vacated by Trustee Carole Wright. Trustees Pennell, Mueh, Kubec, and Friedemann will all serve four-year terms beginning July 1, 2021.

Additionally, Ashley M. Smith was appointed to the State Division seat vacated by Trustee David Hall. Trustee Smith was the runner-up in the 2021 Board election and will serve until the next Board election.

Also in June 2021, in compliance with procedures established in PERA's Governance Manual, the Board nominated and elected Trustee Kubec as Vice Chair. She immediately assumed this position at the June 18, 2021, Board meeting.

In July 2021, Trustee Susan G. Murphy's term ended as a Governor-appointed Trustee. She was one of the original gubernatorial appointees first appointed in 2007 by Governor Ritter and subsequently reappointed in 2009, and then reappointed for two terms in 2013 and 2017 by Governor Hickenlooper.

In September 2021, Norman Franke was appointed to fill this vacancy by Governor Polis. Trustee Franke is a Regional President of Alpine Bank, a position he has held since 1990.

LETTER OF TRANSMITTAL

In November 2021, Trustee Cheryl Pattelli resigned from the Board since she left her position with the City of Boulder for a job not covered under PERA. An ad hoc search committee of the Board was formed in April 2022, and a replacement for this seat is pending.

In March 2022, Trustee Tina Mueh announced her upcoming retirement with Boulder Valley School District effective June 1, 2022. A replacement for this seat is pending the results of the 2022 Board election.

To outgoing Trustees Hall, Murphy, Pattelli, and Mueh, on behalf of the PERA executive team we will miss each one of you for your many individual contributions and dedication and service to the membership.

Management Changes

In September 2021, Philip Hill joined PERA as Director of Customer Service replacing Lisa Bishop who left PERA in August 2021 after eight years of service. Previously, Philip was Vice President of Customer Service at Public Consulting Group. As Director of Customer Service, Philip is responsible for the overall management and direction of PERA's contact center.

In October 2021, Phil Villa was promoted to Director of Facilities replacing Jack Dillman who left PERA in March 2021 after five years of service. Phil joined PERA in 2014 and was the Chief Building Engineer. In his new role, Phil directs and oversees the planning, design, construction, maintenance, and alteration of equipment, buildings, and machinery in all PERA facilities.

Also in October, Laura Lamb was promoted to Director of Operations Support replacing Aubre Castillo who left PERA in August 2021 after 19 years of service. Laura has worked at PERA since 2007 and previously was a Team Manager in the Operations Support Division. In her new role, Laura is responsible for providing leadership and management of the division which is primarily responsible for information storage and retrieval functions related to company records.

In March 2022, Adam Franklin, General Counsel, left PERA after 19 years and became General Counsel at the Fire and Police Pension Association. On behalf of the PERA executive team, we thank Adam for his many contributions and diligent work in protecting the fiduciary interests of PERA's membership.

In May 2022, Kevin Gallaway was promoted to General Counsel. Kevin joined PERA in 2016 as a Staff Attorney and was later promoted to a Senior Staff Attorney. He received his undergraduate degree from Rutgers University and his law degree from Seton Hall University School of Law. Prior to his employment at PERA, Kevin worked as an attorney in private practice with two Denver metro area law firms. As General Counsel, Kevin will lead the Legal Division and serve the Board as their counsel.

Also in May, Kevin Carpenter, Chief Administrative Officer, retired after 34 years of service. Kevin began his career in 1988 as a programmer analyst. He served as the Information Systems Manager from 1999 until his appointment as Director of Information Technology in 2007. Kevin was appointed to his current position in October 2018. Kevin has led PERA through the infancy of the internet, Y2K, the implementation of cyber security and other strategic initiatives, and most recently the almost-overnight transition to remote work for nearly all staff. On behalf of the PERA executive team, we thank Kevin for his countless contributions and dedication and service to PERA staff and its membership.

To fill this vacancy, Jeremy Hill was appointed Chief Administrative Officer in May 2022. Prior to joining PERA, Jeremy was the Deputy Executive Director of Administrative Solutions for the Colorado Department of Human Services. He has served in various positions at the Department of Human Services since April 2014 and prior to that was Assistant Attorney General with the Colorado Department of Law. Jeremy is a member of the Colorado Bar Association and holds a juris doctorate from the University of Denver Sturm College of Law. In his role as Chief Administrative Officer, Jeremy will oversee the administrative and shared service divisions of PERA, which include Accounting, Actuarial Services, Application Development, Communications, Human Resources, Information Technology, Operations Support, and Property Management.

In preparation for Kevin's retirement and the onboarding of a new chief officer, Amy C. McGarrity has expanded her responsibilities and became Chief Operating Officer in addition to Chief Investment Officer. In this capacity, Amy will provide leadership oversight to Jeremy Hill, Chief Administrative Officer, and Patrick Lane, Chief Benefits Officer.

Financial Information and Management Responsibility

Our *ACFR* must comply with the reporting requirements under Title 24, Article 51, Section 204(8) of the Colorado Revised Statutes.

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

Ultimate responsibility for the basic financial statements and *ACFR* rests with PERA management; the Board provides an oversight role over financial reporting. The Board is assisted in its responsibilities by the Audit

LETTER OF TRANSMITTAL

Committee, which consists of no fewer than five Board members and two independent outside members. The Audit Committee is responsible for overseeing the adequacy and effectiveness of PERA's system of internal control and the accounting and financial reporting systems. A more detailed description of the Audit Committee's role can be found in their report on pages 16-17.

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, 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 includes 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 the system of internal controls over financial reporting is effective, as of December 31, 2021.

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.

State law requires that the State Auditor conducts or causes to be conducted an annual audit of PERA. Pursuant to this requirement, under the direction of the State Auditor, CliftonLarsonAllen LLP audited PERA's 2021 basic financial statements in accordance with auditing standards generally accepted in the United States of America and Government Auditing Standards. CliftonLarsonAllen LLP issued an unmodified opinion on PERA's financial statements, which can be found in

the Independent Auditors' Report in the Financial Section on pages 25-28. Management has provided the auditors with full and unrestricted access to PERA's records and staff to discuss their audit and related findings to facilitate independent validation of the integrity of the plan's financial reporting and to consider the effectiveness of internal controls.

The Financial Section of the *ACFR* also contains the MD&A that serves as a narrative introduction, overview, and analysis of the basic financial statements. This Letter of Transmittal is designed to complement the MD&A and should be read in conjunction with it.

Recognition of Achievements

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to PERA for its *ACFR* for the year ended December 31, 2020. This was the 36th consecutive year that PERA has achieved this prestigious award. In order to be awarded a Certificate of Achievement, a government must publish an easily readable and efficiently organized *ACFR*. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

A Certificate of Achievement is valid for a period of one year only. We believe that our current *ACFR* continues to meet the Certificate of Achievement Program's 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, 2020. The Award for Outstanding Achievement in Popular Annual Financial Reporting is a prestigious national award recognizing conformance with the highest standards for preparation of state and local government popular reports.

In order to receive an Award for Outstanding Achievement in Popular Annual Financial Reporting, a government unit must publish a Popular Annual Financial Report, whose contents conform to program standards of creativity, presentation, understandability, and reader appeal.

An award for Outstanding Achievement in Popular Annual Financial Reporting is valid for a period of one year only. PERA has received a Popular Award for the last 19 consecutive years. We believe our current report continues to conform to the Popular Annual Financial Reporting requirements, and we are submitting it to the GFOA.

PPCC Standards Award Program

The Public Pension Coordinating Council (PPCC) presented PERA with a Public Pension Standards Award for Funding and Administration in 2021 for

LETTER OF TRANSMITTAL

meeting professional standards for funding and plan administration as set forth in the Public Pension Standards. This is the 19th consecutive year that PERA has received this annual award. 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 National Conference on Public Employee Retirement Systems. These three associations represent more than 500 of the largest pension plans in the U.S.

Acknowledgements

As we faced another year of the pandemic with its many challenges, I would like to thank our affiliated employers for their continued support and cooperation, which is vital to the success of PERA. I would also like to thank the PERA Board and staff for their diligent

efforts and many contributions on behalf of Colorado's public employees. Our focus remains on ensuring PERA is strong and sustainable now and into the future. We will continue to build on our legacy and tradition of service to meet the ever-changing needs of our members who serve Colorado.

An email with a link to this *ACFR* is provided to all PERA-affiliated employers and other interested parties; a summary (*Popular Annual Financial Report*) is distributed to members and benefit recipients. Electronic versions of both reports are available on the PERA website at www.copera.org. For questions concerning any of the information provided in this *ACFR*, please email questions@copera.org.

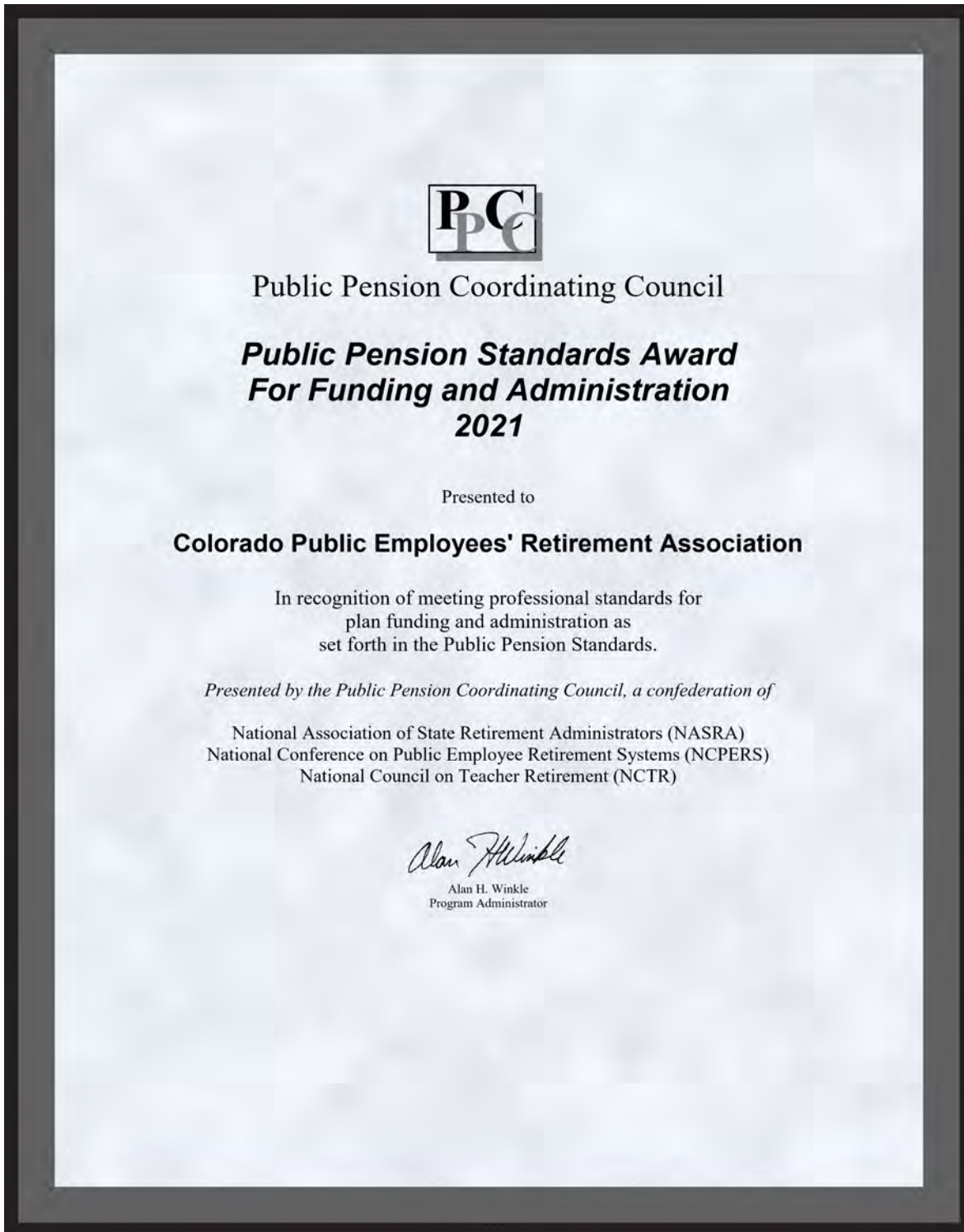
Respectfully submitted,

Ron Baker
Colorado PERA Executive Director

PROFESSIONAL AWARDS



PROFESSIONAL AWARDS



BOARD CHAIRMAN'S REPORT



Marcus Pennell
Board Chairman

June 17, 2022

Dear Colorado PERA Members, Benefit Recipients, and Employers:

As Chairman of the Board of Trustees (Board) of Colorado PERA, I am pleased to present this *Annual Comprehensive Financial Report* for the year ended December 31, 2021.

2021 was another challenging year for many, and the Board extends its sincere appreciation to all of Colorado's teachers and school staff, public health workers, and other public employees who have continued to serve our state through the ongoing pandemic. Your perseverance and dedication to service through turbulent times are admirable.

Like many, the PERA Board and staff adjusted to a mix of remote and in-person work in 2021. I'm proud of the flexibility and professionalism Trustees have demonstrated as we continued the important work with which we have been tasked: overseeing

the administration of retirement and other benefits for nearly 650,000 current and former public employees. I'd like to briefly summarize some of the work that took place and outline what's ahead for the Board.

An important part of the Board's role in overseeing PERA operations involves reviewing the third-party service providers PERA utilizes, and in 2021 we made several changes to better meet the needs of our membership. The PERACare team transitioned its Pre-Medicare and Medicare enrollees in Anthem plans to UnitedHealthcare during the fall enrollment period, and the PERAPlus 401(k), 457, and Defined Contribution plans transitioned from Voya Financial to Empower Retirement. Together, those changes bring more efficient and modern service to members at a lower cost, and PERA staff put in a significant amount of work to ensure both transitions went smoothly.

The Board is now in the final year of its current strategic plan, which outlines the organization's priorities and goals, and helps guide PERA staff in achieving those outcomes. That plan and the work of PERA leadership and staff have been instrumental in steering PERA toward a stronger future, from modernizing and streamlining internal processes to improving the ways we communicate with members and other stakeholders.

Soon, the Board will begin the process of drafting the next five-year plan. As we look to the future, the Board will seek out ways to make PERA financially stronger, more adaptable, and more accessible to the members and retirees who rely on us.

I want to take a moment to recognize my fellow Trustees and the care and attention they give to the important work we do. As stewards of the trust funds that pay retirement benefits for hundreds of thousands of public employees, we share a deep sense of commitment to the fiduciary duty we have to PERA's members and retirees. They remain at the center of the work we do.

I'd like to thank the Trustees who left the Board in 2021: David Hall, Susan Murphy, and Cheryl Pattelli. Your contributions during your time on the Board were greatly appreciated. With David Hall's departure, the Board elected Suzanne Kubec to fill the Vice Chair vacancy. Suzanne's expertise as an administrator of the State's 457 deferred compensation plan has been invaluable on the Board, and has made her a natural fit for the role of Vice Chair. I look forward to continuing to partner with Suzanne going forward.

I'd also like to welcome Taylor McLemore, Ashley Smith, and Norman Franke, who joined the Board in 2021. Everyone brings their own mix of skills and knowledge to the Board, and all three have already demonstrated the value they bring to the table.

Much has changed since the state Legislature established PERA 90 years ago, but one thing hasn't: the Board's commitment to making sure PERA is a reliable source of retirement income for Colorado's public employees. Through ups and downs in the markets, the pandemic, and other challenges, we'll continue to use our influence and authority to ensure PERA is there for Colorado's public workforce for decades to come.

Sincerely,

Marcus Pennell (He/Him)

Chairman, 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; PERA's system of 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. The Internal Audit Division is responsible for independently and objectively reviewing and evaluating the effectiveness and efficiency of PERA's system of internal control.

CliftonLarsonAllen LLP 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 State Auditor has ultimate authority and responsibility for selecting, evaluating, and, when appropriate, replacing PERA's Independent Auditor.

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 Director of Internal Audit 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 Auditor's expertise, and its knowledge of PERA and PERA's financial statements, have subsequent events been appropriately disclosed in the financial statements?
- Based on the Independent Auditor's experience, and its 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 Auditor's experience, and its 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 2021 that included the following items:

- Recommending the *Annual Comprehensive Financial Report* to the Board for its approval;
- Reviewing and approving the 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 independent audit of PERA's financial statements;

REPORT OF THE COLORADO PERA AUDIT COMMITTEE

- 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*;
- Meeting with the Independent Auditor separately, without management present;
- Meeting separately with the Executive Director, Director of Internal Audit, Director of Accounting/Controller, and General Counsel; and
- Meeting with the Director of Internal Audit and with management to discuss the effectiveness of PERA's system of internal control.

The Audit Committee has reviewed and discussed the audited financial statements for the year ended December 31, 2021, with management and the Independent Auditor. Management represented to the Audit Committee that PERA's audited financial statements were prepared in accordance with accounting principles generally accepted in the United States of America that apply to governmental accounting for fiduciary funds. The Independent Auditor 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 the Independent Auditor and the Director of Internal Audit, the Audit Committee has recommended to the Board, and the Board has approved PERA's *Annual Comprehensive Financial Report* for the year ended December 31, 2021.

Audit Committee as of June 17, 2022

Timothy M. O'Brien, Chairman

Ramon Alvarado

Thomas J. Barrett

Norman Franke

Julie Friedemann

Mary-Margaret Henke

Tammie Lowrie

Taylor McLemore

BOARD OF TRUSTEES

Serving from January 1, 2021, to June 17, 2022

By State law, authority over the public employees' retirement association 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 to serve on the Board for four-year terms.
- Three Trustees appointed by the Governor and confirmed by the State Senate to serve on the Board for four-year terms.
- The State Treasurer.
- One ex officio (non-voting) member or retiree elected by members and retirees of the Denver Public Schools (DPS) Division to serve on the Board for a four-year term.

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



Marcus Pennell
Chairman

Elected by School Members
Physics Teacher
Jefferson County School District
Current term expires June 30, 2025



Suzanne E. Kubec
Vice Chair

Elected by State Members
Liability Claims Manager
State Office of Risk Management
Current term expires June 30, 2025



Ramon Alvarado

Elected by State Members
Adjunct Faculty
Metropolitan State University of Denver
Current term expires June 30, 2026



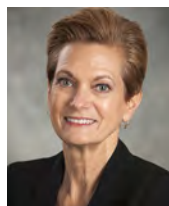
Norman Franke

Appointed by the Governor
Current term expires July 10, 2025



Thomas J. Barrett

Appointed by the Governor
Current term expires July 10, 2022



Honorable Rebecca R. Freyre

Appointed to Judicial Division seat
Judge
Colorado Court of Appeals
Current term expires June 30, 2023



Guillermo Barriga

Elected by School Members
Project Manager
Aurora Public Schools
Current term expires June 30, 2022



Julie Friedemann

Elected by Retirees
Retired Mathematics Teacher
Jefferson County School District
Current term expires June 30, 2025

BOARD OF TRUSTEES

Serving from January 1, 2021, to June 17, 2022



Nathan Geroche

Appointed to School Division seat
Science Teacher
Boulder Valley School District
Current term expires June 30, 2024



Timothy M. O'Brien

Elected by Retirees
Retired Colorado State Auditor
Office of the State Auditor
Current term expires June 30, 2023



Amy Grant

Non-voting, Ex officio member
Elected by DPS Division active members
and retirees
Former Chair of the Denver Public
Schools Retirement System Board
Retired Secretary
Current term expires June 30, 2024



Cheryl Pattelli

Appointed to Local Government
Division seat
Chief Financial Officer
City of Boulder
Resigned from the Board November 30, 2021



David Hall

Elected by State Members
Sergeant and Legislative Liaison
Colorado State Patrol
Resigned from the Board April 1, 2021



Eric Rothaus

Deputy State Treasurer
Delegated Substitute for the State
Treasurer
Continuous term effective January 2019



Taylor McLemore

Appointed by the Governor
Current term expires July 10, 2024



Ashley M. Smith

Appointed to State Division seat
Advanced Analytics Services Manager
Pinnacol Assurance
Current term expires June 30, 2022



Tina Mueh

Elected by School Members
Middle School Science Teacher
Boulder Valley School District
Resigned from the Board June 1, 2022



Honorable Dave Young

Ex officio member
State Treasurer
Continuous term effective January 2019



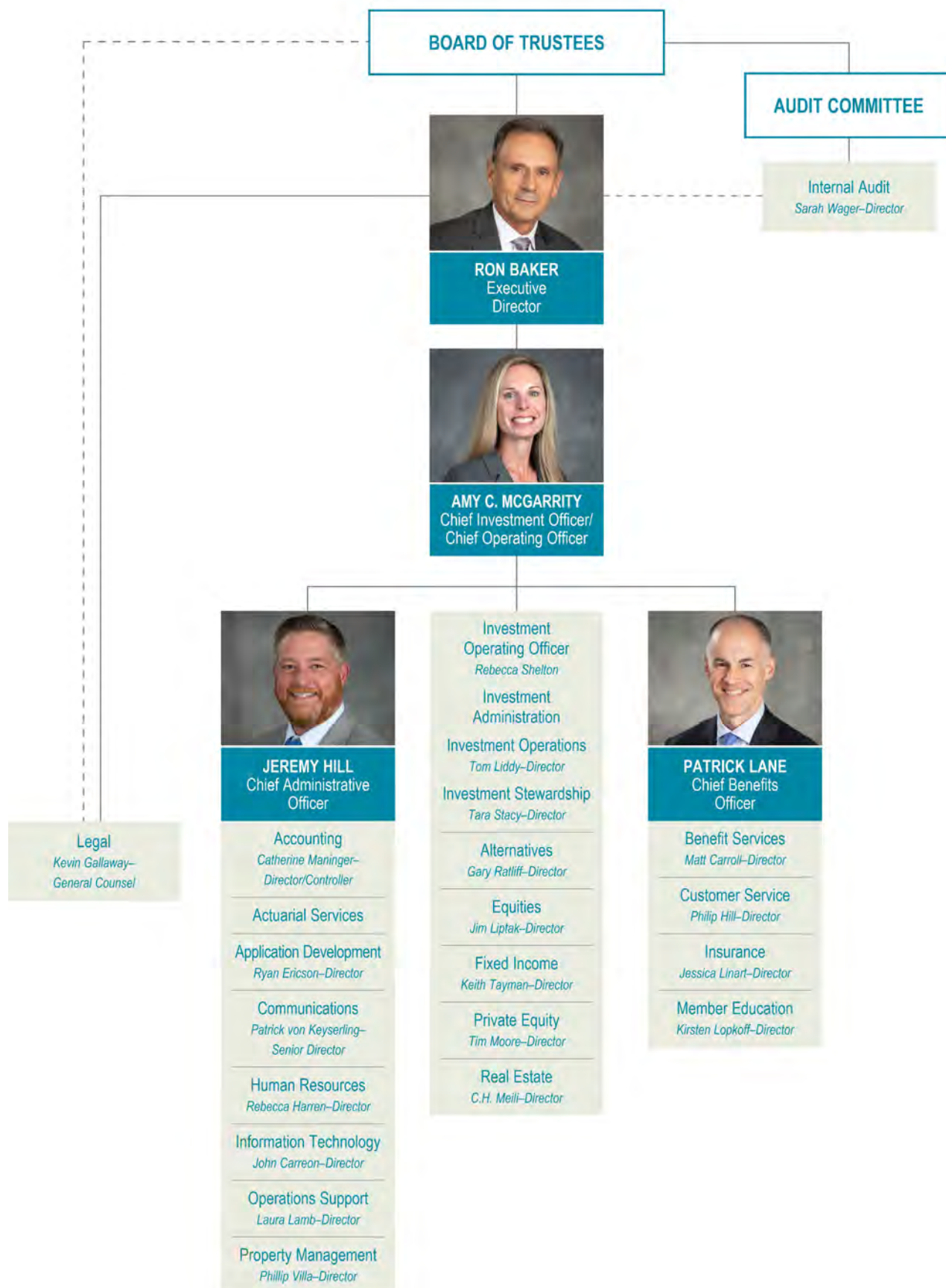
Susan G. Murphy

Appointed by the Governor
Term expired July 10, 2021

Additional detail about Trustees can be found in Board Composition on pages 9-10 in the Letter of Transmittal.

ADMINISTRATIVE ORGANIZATIONAL CHART AND EXECUTIVE MANAGEMENT

As of June 1, 2022



CONSULTANTS

As of December 31, 2021

Disability and Life Insurance Consultant

Milliman, Inc.
121 Middle Street
Suite 401
Portland, ME 04101

Fiduciary Counsel

Foley & Lardner, LLP
600 17th Street
Suite 2020S
Denver, CO 80202

Governance Consultant

Mosaic Governance Advisors, LLC
PO Box 350604
Westminster, CO 80035

Health Care Program Consultant

Segal
7951 East Maplewood Avenue
Suite 327
Greenwood Village, CO 80111

Independent Auditors

CliftonLarsonAllen, LLP
370 Interlocken Boulevard
Suite 500
Broomfield, CO 80021

Investment Performance Consultants

Aon Investments USA, Inc.
200 East Randolph Street
Suite 700
Chicago, IL 60601

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

Investments—Portfolio Consultant

Aon Investments USA, Inc.
200 East Randolph Street
Suite 700
Chicago, IL 60601

Master Custodian

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

Pension and Health Care Program Actuary

Segal
7951 East Maplewood Avenue
Suite 327
Greenwood Village, CO 80111

Pharmacy Benefits Consultant

Segal
7951 East Maplewood Avenue
Suite 327
Greenwood Village, CO 80111

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

Callan, LLC
1900 16th Street
Suite 1175
Denver, CO 80202

Voluntary Investment Program, Defined Contribution Retirement, and Deferred Compensation Plan Service Provider

Empower Retirement
8525 East Orchard Road
Greenwood Village, CO 80111

A list of PERA's Investment Brokers/Advisers, the Schedule of Commissions, and other information related to investment expenses can be found in the Investment Section on pages 123-125.



FINANCIAL SECTION





REPORT OF THE INDEPENDENT AUDITOR



CliftonLarsonAllen LLP
CLAAconnect.com

INDEPENDENT AUDITORS' REPORT

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

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

We have audited the accompanying financial statements of Public Employees' Retirement Association of Colorado (Colorado PERA), including the individual fund financial statements, as of and for the year ended December 31, 2021, and the related notes to the financial statements, which collectively comprise Colorado PERA's basic financial statements, as listed in the table of contents.

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, 2021, 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, 2021, 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.

Basis for Opinions

We conducted our audit in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Our responsibilities under those standards are further described in the Auditors' Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of Colorado PERA and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions.

Responsibilities of Management for the Financial Statements

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



CLiftonLarsonAllen LLP is a member of the Nexia International network of independent member firms affiliated with the International Network of Independent Member Firms (INMIF), a global organization of independent member firms affiliated with the International Network of Independent Member Firms (INMIF).

REPORT OF THE INDEPENDENT AUDITOR

Board of Trustees
Public Employees' Retirement Association of Colorado

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

Auditors' Responsibilities for the Audit of the Financial Statements

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

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of Colorado PERA's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about Colorado PERA's ability to continue as a going concern for a reasonable period of time.

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

Other Matters***Prior-Year Comparative Information***

We have previously audited Colorado PERA's 2020 financial statements, and we expressed unmodified opinions on the respective financial statements of Colorado PERA and of each individual fund as displayed in the basic financial statements in our report dated June 18, 2021. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31,

REPORT OF THE INDEPENDENT AUDITOR

Board of Trustees
Public Employees' Retirement Association of Colorado

2020, is consistent, in all material respects, with the audited financial statements from which it has been derived.

Required Supplementary Information

Accounting principles generally accepted in the United States of America require that the management's discussion and analysis, the division trust funds' schedules of changes in net pension liability and related ratios, employer and nonemployer contributions, and investment returns and related notes, and the health care trust funds' schedules of changes in net OPEB liability and related ratios, contributions from employers and other contributing entities, and investment returns and related notes, as listed in the table of contents, be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with GAAS, 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 Information

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise Colorado PERA's basic financial statements. The schedules of administrative expenses, other additions, other deductions, investment expenses, and payments to consultants (supplementary information) are presented for purposes of additional analysis and are not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. The 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 GAAS. In our opinion, the supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

Other Information

Management is responsible for the other information included in the annual report. The other information comprises the introductory, investment, actuarial and statistical sections but does not include the basic financial statements and our auditors' report thereon. Our opinions on the basic financial statements do not cover the other information, and we do not express an opinion or any form of assurance thereon.

In connection with our audit of the basic financial statements, our responsibility is to read the other information and consider whether a material inconsistency exists between the other information and the basic financial statements, or the other information otherwise appears to be materially misstated. If, based on the work performed, we conclude that an uncorrected material misstatement of the other information exists, we are required to describe it in our report.

REPORT OF THE INDEPENDENT AUDITOR

Board of Trustees
Public Employees' Retirement Association of Colorado

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated June 17, 2022, 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 solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of Colorado PERA's 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

Denver, Colorado
June 17, 2022

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 Public Employees' Retirement Association of Colorado (PERA) for the year ended December 31, 2021. Please consider the information presented here in conjunction with additional information in the Letter of Transmittal starting on page 3 of this *Annual Comprehensive Financial Report (ACFR)* and with the basic financial statements of PERA on pages 44-47.

In addition to historical information, this 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, legislative changes, as well as other factors.

Overview of the Association

PERA administers the following 11 fiduciary funds:

Plan Name

Defined Benefit Pension Plans (Division Trust Funds)

State Division Trust Fund
School Division Trust Fund
Local Government Division Trust Fund
Judicial Division Trust Fund
Denver Public Schools (DPS) Division Trust Fund

Defined Benefit Other Postemployment Benefit Plans (Health Care Trust Funds)

Health Care Trust Fund (HCTF)
Denver Public Schools Health Care Trust Fund (DPS HCTF)

Defined Contribution Plans

Voluntary Investment Program
Defined Contribution Retirement Plan

Deferred Compensation Plan

Deferred Compensation Plan

Private Purpose Trust Fund

Life Insurance Reserve

Additional information regarding the contribution and benefit provisions of the plans can be found in Notes 1, 4, 8, and 9 of the Notes to the Financial Statements.

Financial Statement Overview

PERA's financial statements are prepared in conformity with generally accepted accounting principles (GAAP) in the United States and all applicable Governmental Accounting Standards Board (GASB) pronouncements. The actuarial valuations that are reported in the Actuarial Section are prepared in accordance with the Actuarial Standards of Practice and the PERA Board's funding policy.

Basic Financial Statements

PERA's financial statements include the following components:

1. Basic Financial Statements
 - Statements of Fiduciary Net Position
 - Statements of Changes in Fiduciary Net Position
2. Notes to the Basic Financial Statements
3. Required Supplementary Information - Unaudited
4. Supplementary Schedules

The Statements of Fiduciary Net Position presents information on PERA's assets and liabilities, with the difference between the two reported as fiduciary net position (FNP). Over time, the increase or decrease in FNP serves as an indicator of PERA's financial condition and our ability to fund future benefits.

The Statements of Changes in Fiduciary Net Position reflect how PERA's FNP changed during the fiscal year, and include additions such as contributions and investment income and deductions such as benefit payments and administrative expenses.

Notes to the Financial Statements

The Notes to the Financial Statements provide essential information for understanding the basic financial statements.

Note 1—Plan Description: provides a general description of PERA, the funds administered by PERA, and a general overview of plan provisions for the defined benefit pension trust funds.

Note 2—Summary of Significant Accounting Policies: provides a summary of significant accounting policies, including the basis of accounting for PERA, and management's use of estimates.

Note 3—Interfund Transfers and Balances: provides information related to interfund activity and balances.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

Note 4—Contributions: provides information related to contribution requirements of the defined benefit pension trust funds and the authority for establishing or amending those requirements.

Note 5—Investments: provides information related to deposits and investments, required investment disclosures, and risks related to credit (including custodial credit and concentrations of credit risk), interest rate and foreign currency.

Note 6—Derivative Instruments: provides information on PERA's investment derivative instruments.

Note 7—Commitments and Contingencies: provides a summary of PERA's significant commitments and generally describes any potential contingencies of PERA.

Note 8—Voluntary Investment Program, Defined Contribution Retirement Plan, and Deferred Compensation Plan: identifies and describes the defined contribution plans and deferred compensation plan.

Note 9—Health Care Trust Funds: identifies and describes the types of defined benefit other postemployment benefit (OPEB) plans.

Note 10—Net Pension Liability (NPL) of the Division Trust Funds: provides a summary of the NPL or net pension asset (NPA) of employers and the nonemployer contributing entity (if applicable) in accordance with GASB Statement No. 67, *Financial Reporting for Pension Plans*.

Note 11—Net OPEB Liability (NOL) of the Health Care Trust Funds: provides a summary of the NOL of employers in accordance with GASB Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*.

Note 12—Subsequent Events: provides a summary of conditions that did not exist at the date of the Financial Statements but arose subsequent to that date.

Required Supplementary Information (RSI)

The following 10-year RSI is found after the notes to the basic financial statements:

Division Trust Funds	Health Care Trust Funds
Schedule of Changes in Net Pension Liability and Related Ratios	Schedule of Changes in Net OPEB Liability and Related Ratios
Schedule of Employer and Nonemployer Contributions	Schedule of Contributions from Employers and Other Contributing Entities
Schedule of Investment Returns	Schedule of Investment Returns

Supplementary Information (SI)

The SI section includes details on expenses of PERA and a breakdown of other additions and deductions. The schedules available in the SI section include:

- Schedule of Administrative Expenses
- Schedule of Other Additions
- Schedule of Other Deductions
- Schedule of Investment Expenses
- Schedule of Payments to Consultants

Financial Highlights

PERA's combined assets increased \$9,472,329, or 14.1%, from 2020 to \$76,826,544 at December 31, 2021.

Investments, at fair value increased \$8,587,812 and capital assets increased \$1,578.

PERA's combined liabilities increased from 2020 by \$1,264,482, or 43.4%, to \$4,178,474 at December 31, 2021, primarily due to higher pending settlements of fixed income investment purchases.

PERA's combined FNP increased \$8,207,847, or 12.7%, from 2020 to \$72,648,070 at December 31, 2021, primarily due to an increase in net investment income. Other events impacting the change in FNP include:

- The receipt of \$225 million (actual dollars) from the State as a nonemployer contributing entity which commenced in 2018, suspended in 2020 for one year, and resumed in 2021.
- A \$151 million (actual dollars) increase in refunds and distributions from 2020 due to an increase in the number of members refunding their accounts. This increase seems to follow the higher-than-normal resignations and retirements seen in Colorado and the US in 2021.

Additional information on additions and deductions can be found in the remainder of the MD&A.

Comparative Financial Statements

On the next page are the comparative condensed statements of Fiduciary Net Position and Changes in Fiduciary Net Position for five Division Trust Funds, two Health Care Trust Funds, and the Life Insurance Reserve. This information has been derived from PERA's audited financial statements. For the year ended December 31, 2021, the FNP for five Division Trust Funds, two Health Care Trust Funds, and the Life Insurance Reserve increased by \$7,322,061, \$109,080, and \$3,505 respectively. The increase was principally due to high investment income. While the annual changes in FNP can provide meaningful insight into the financial activities and financial status, long-term views and trend analysis is a critical factor in reporting and understanding the financial status of PERA.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

FIDUCIARY NET POSITION

As of December 31

	Division Trust Funds			Health Care Trust Funds			Life Insurance Reserve		
	2021	2020	% Chg	2021	2020	% Chg	2021	2020	% Chg
Assets									
Cash and short-term investments	\$2,122,587	\$1,632,363	30.0%	\$18,242	\$13,429	35.8%	\$959	\$755	27.0%
Securities lending collateral	1,159,005	920,067	26.0%	9,961	7,570	31.6%	524	426	23.0%
Receivables	1,733,360	1,601,893	8.2%	93,132	72,126	29.1%	707	667	6.0%
Investments, at fair value	64,535,447	56,817,417 ¹	13.6%	554,650	467,439 ¹	18.7%	29,162	26,293 ¹	10.9%
Capital assets, net of accumulated depreciation	15,831	14,253	11.1%	—	—	—%	—	—	—%
Total assets	69,566,230	60,985,993	14.1%	675,985	560,564	20.6%	31,352	28,141	11.4%
Liabilities									
Investment settlements and other liabilities	2,812,213	1,792,889 ¹	56.9%	50,324	46,374 ¹	8.5%	3,009	3,401 ¹	(11.5%)
Securities lending obligations	1,158,757	919,905	26.0%	9,959	7,568	31.6%	524	426	23.0%
Total liabilities	3,970,970	2,712,794	46.4%	60,283	53,942	11.8%	3,533	3,827	(7.7%)
Fiduciary net position	\$65,595,260	\$58,273,199	12.6%	\$615,702	\$506,622	21.5%	\$27,819	\$24,314	14.4%

¹ To conform with current year presentation, prior year amounts were restated. See Note 2 of the Notes to the Financial Statements for additional information.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

	Division Trust Funds			Health Care Trust Funds			Life Insurance Reserve		
	2021	2020	% Chg	2021	2020	% Chg	2021	2020	% Chg
Additions									
Employer contributions	\$1,949,423	\$1,851,687	5.3%	\$106,596	\$102,679	3.8%	\$—	\$—	—%
Nonemployer contributions	225,000	—	100.0%	—	—	—%	—	—	—%
Member contributions	1,062,408	938,121	13.2%	—	—	—%	—	—	—%
Purchased service	114,246	75,623	51.1%	—	—	—%	—	—	—%
Net investment income	9,190,026	8,653,529	6.2%	75,282	66,299	13.5%	4,125	3,909	5.5%
Other	11,642	12,095	(3.7%)	8,314	8,133	2.2%	—	—	—%
Total additions	12,552,745	11,531,055	8.9%	190,192	177,111	7.4%	4,125	3,909	5.5%
Deductions									
Benefit payments	4,984,779	4,825,842	3.3%	67,409	56,109	20.1%	—	—	—%
Refunds	184,072	148,014	24.4%	—	—	—%	—	—	—%
Disability and life insurance premiums	3,175	4,264	(25.5%)	—	—	—%	540	512	5.5%
Administrative expenses	40,739	39,377	3.5%	13,615	11,493	18.5%	80	224	(64.3%)
Other	17,919	18,241	(1.8%)	88	33	166.7%	—	—	—%
Total deductions	5,230,684	5,035,738	3.9%	81,112	67,635	19.9%	620	736	(15.8%)
Change in fiduciary net position	7,322,061	6,495,317	12.7%	109,080	109,476	(0.4%)	3,505	3,173	10.5%
Fiduciary net position									
Beginning of year	58,273,199	51,777,882	12.5%	506,622	397,146	27.6%	24,314	21,141	15.0%
End of year	\$65,595,260	\$58,273,199	12.6%	\$615,702	\$506,622	21.5%	\$27,819	\$24,314	14.4%

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

Additions to Net Position

Investments

INVESTMENT INCOME/(LOSS)

Trust Fund	Net Appreciation/ (Depreciation) in Fair Value	Interest and Dividends	Real Estate, Private Equity, and Alternatives Net Operating Inc	Investment Expenses	Net Securities Lending Income	Net Investment Income/(Loss)
State Division	\$2,539,089	\$230,619	\$96,346	(\$61,461)	\$1,849	\$2,806,442
School Division	4,385,954	398,372	166,429	(106,168)	3,194	4,847,781
Local Government Division	742,268	67,400	28,158	(17,963)	540	820,403
Judicial Division	59,732	5,433	2,270	(1,448)	43	66,030
DPS Division	587,506	53,365	22,293	(14,222)	428	649,370
HCTF	61,805	5,619	2,348	(1,498)	45	68,319
DPS HCTF	6,299	573	239	(153)	5	6,963
Life Insurance Reserve	3,731	340	142	(91)	3	4,125
2021 Total	\$8,386,384	\$761,721	\$318,225	(\$203,004)	\$6,107	\$9,269,433
2020 Total	\$7,878,679¹	\$760,772	\$258,171	(\$179,178)¹	\$5,293	\$8,723,737
2019 Total	\$8,015,889	\$860,464	\$271,053	(\$164,013)	\$7,200	\$8,990,593
2018 Total	(\$2,588,210)	\$860,594	\$271,362	(\$168,193)	\$9,178	(\$1,615,269)
2017 Total	\$6,749,932	\$836,085	\$272,097	(\$172,801)	\$8,950	\$7,694,263

¹ To conform with current year presentation, prior year amounts were restated. See Note 2 of the Notes to the Financial Statements for additional information.

The Division Trust Funds, the Health Care Trust Funds, and the Life Insurance Reserve pool their investments into a combined investment fund (CIF). CIF investments are the largest asset in PERA's defined benefit plans. Investment income generated by PERA ultimately defrays the cost of benefits that are provided to PERA's membership. For the year ended December 31, 2021, CIF generated \$9,269,433 in net investment income, an increase of \$545,696 from 2020.

PERA's target and actual investment allocation includes equity and fixed income investments in public markets and private equity, real estate and alternatives in private markets. A modest cash balance provides ongoing liquidity to meet PERA's cash needs. Additional information on limitations, an overview of the investment policy, the targeted investment asset allocation, as well as the permissible ranges of asset allocation for PERA's investment program can be found on page 121 of the Investment Section.

The global equity market, in which over 50% of the portfolio is invested, is the single greatest driver of PERA's annual return and returned 18.5% in 2021 (MSCI ACWI IMI). Global equity continued to reach record highs as pandemic lockdowns eased and economies reopened. Equity markets have recorded three consecutive years of positive returns aided by

ongoing accommodative monetary policy, fiscal stimulus, and resilient consumer demand. Gains were at times tempered by inflationary concerns and new coronavirus variants.

The fixed income market, in which over 18% of the portfolio is invested, had a negative 1.5% return in 2021 (Bloomberg U.S. Aggregate Bond Index). Interest rates remained low throughout the year with the Federal Reserve's target rate holding near zero. Inflationary expectations and the anticipation of rate increases resulted in headwinds for fixed income markets.

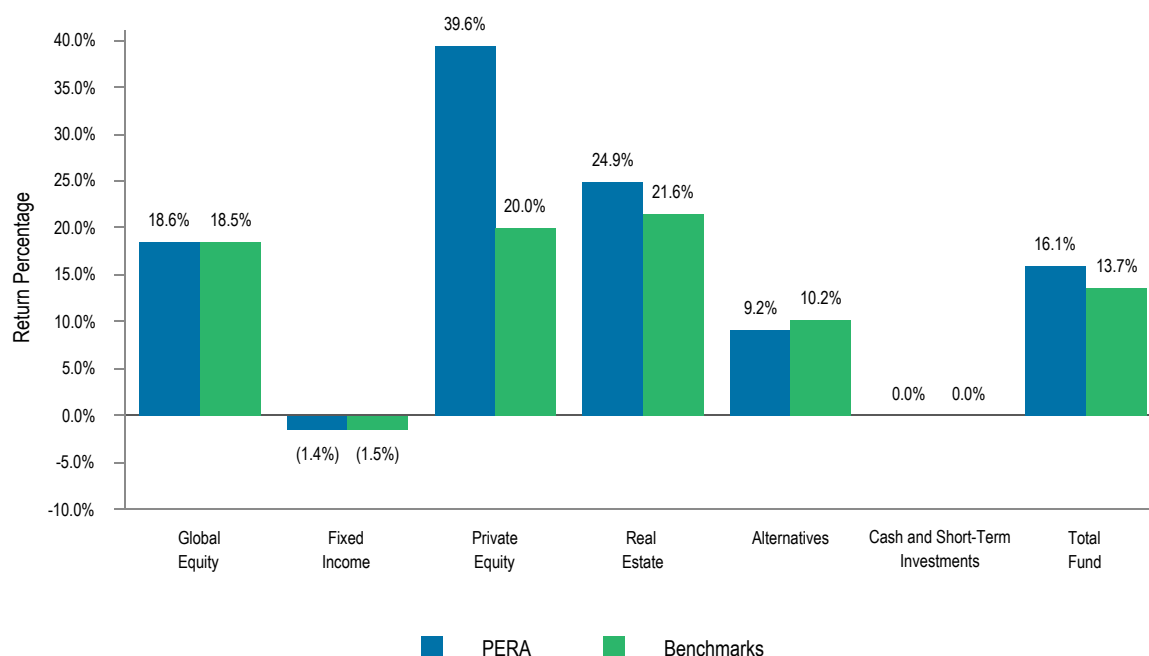
The private market asset classes (private equity, real estate, and alternatives) all experienced strong positive returns in 2021. Cash and Short-Term Investments ended the year flat with a 0.0% return.

PERA's actual net-of-fees, time-weighted rate of return was 16.1% for the year ended December 31, 2021. To assess investment performance, PERA closely monitors the performance of the Board's selected benchmarks to actual performance returns. For the year ended December 31, 2021, PERA's investments outperformed the total fund's policy benchmark by 240 basis points. The time-weighted rates of return of the various asset classes, the total fund, and the various benchmarks can be found on the next page.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

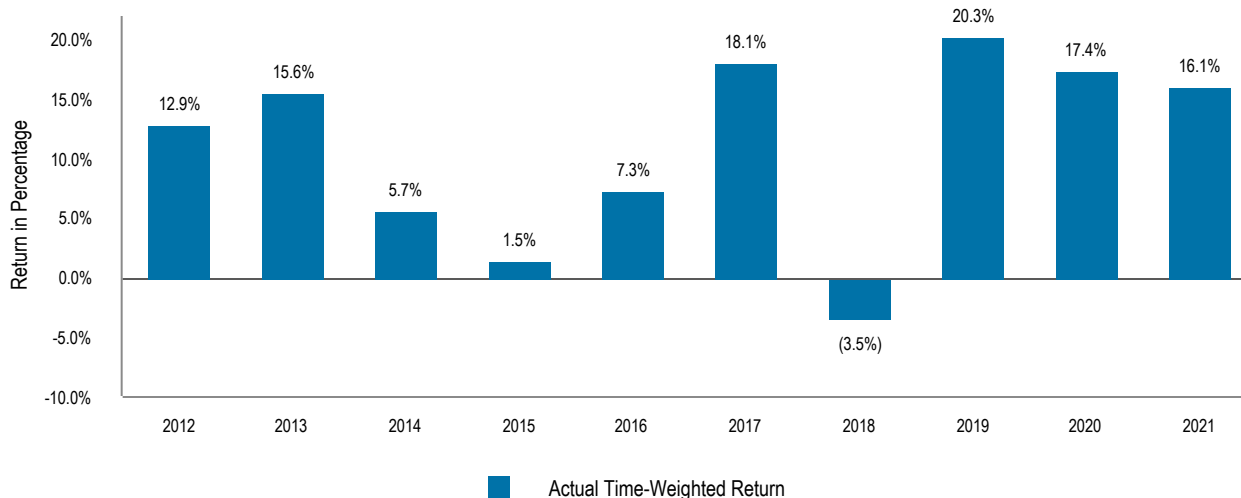
2021 Actual Time-Weighted Returns versus Benchmarks

**Long-Term Investment Returns**

While the annual investment returns can provide meaningful insight into the financial activities and financial status, long-term views and trend analysis are critical factors in understanding the financial status of PERA. The chart below shows the annual investment returns for the total fund for each of the past 10 years.

Additional information on longer-term investment returns for the investment program and benchmarks for the three-, five-, and 10-year periods for each investment asset class, as well as a comprehensive discussion of the 2021 performance evaluation can be found in the Investment Section.

Historical Time-Weighted Returns



MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

Contributions

TOTAL CONTRIBUTIONS FOR DIVISION AND HEALTH CARE TRUST FUNDS

Trust Fund	Employer Contributions ¹	Nonemployer Contributions ²	Member Contributions	Purchased Service	Employer Disaffiliation Payment	Other	Total Contributions and Other
State Division	\$664,304	\$76,706	\$329,652	\$39,514	\$—	\$6,038	\$1,116,214
School Division	1,113,636	127,781	574,948	55,901	—	130	1,872,396
Local Government Division	96,481	—	63,035	14,061	—	23	173,600
Judicial Division	9,787	1,360	8,589	800	—	5,436	25,972
DPS Division	65,215	19,153	86,184	3,970	—	15	174,537
HCTF	97,974	—	—	—	—	8,108	106,082
DPS HCTF	8,622	—	—	—	—	206	8,828
2021 Total	\$2,056,019	\$225,000	\$1,062,408	\$114,246	\$—	\$19,956	\$3,477,629
2020 Total	\$1,954,366	\$—³	\$938,121	\$75,623	\$—	\$20,228	\$2,988,338
2019 Total	\$1,854,288	\$225,000	\$817,241	\$66,453	\$—	\$17,299	\$2,980,281
2018 Total	\$1,726,701	\$225,000	\$737,781	\$61,956	\$—	\$26,258	\$2,777,696
2017 Total	\$1,625,673	\$—	\$706,499	\$67,454	\$1,159	\$32,231	\$2,433,016

¹ Employer contributions include the employer statutory rates, AED, and SAED, less an offset of 12.09% in 2021 for the DPS Division as required by C.R.S. § 24-51-412 *et seq.*

² Beginning in 2018, contributions from a nonemployer contributing entity are required by C.R.S. § 24-51-414 *et seq.*

³ HB 20-1379 suspended the 2020 contribution for the State's 2020-21 fiscal year.

Contribution rates are set in statute and are thus determined by the Colorado General Assembly. See pages 246-256 in the Statistical Section for the Schedule of Contribution Rate History.

Contributions	2021	2020
From members to the Division Trust Funds	\$1,062,408	\$938,121
From employers to the Division Trust Funds, HCTF, and DPS HCTF	2,056,019	1,954,366

Contributions increased due to increases in payroll and increases in member and employer contribution rates subject to C.R.S. § 24-51-413. The contribution of \$225 million (actual dollars) from the nonemployer contributing entity commenced in 2018 in accordance with C.R.S. § 24-51-414. At the end of 2021, PERA had benefit receivables in the amount of \$248,267 which primarily represents contributions owed by members and employers for service credit earned in December 2021 and anticipated health care subsidies. Over the past 30 years, member contributions and purchased service represent 15% of the inflows into the Division Trust Funds, and contributions from employer (including nonemployer contributing entities and disaffiliation payments) represent 21% of the inflows into the Division Trust Funds and Health Care Trust Funds.

C.R.S. § 24-51-412 *et seq.* provides for a unique offset to the employer contributions that otherwise would go toward financing the unfunded actuarial accrued liability (UAAL) of the DPS Division, allowing relief to

DPS Division employers by recognizing the dollars they contribute toward the pension certificates of participation (PCOPs). The statute states that as long as the funded status of the DPS Division exceeds that of the School Division, the Denver Public Schools is allowed this 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 PCOPs issued in 1997 and 2008, including subsequent refinancing by the Denver Public Schools at a fixed effective annual interest rate of 8.50%. At a minimum, the DPS Division employer contribution rate must be sufficient to fund the DPS HCTF (1.02%) and the Annual Increase Reserve (AIR) (1.00%) applicable to the DPS Division. The annual increase (AI) 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 12.09% for 2021.

C.R.S. § 24-51-401(1.7)(e) requires a periodic "true-up" calculation to be performed beginning in 2015 and every five years following, with the purpose of determining the total DPS Division employer contribution rate that would result in the 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. The 2020 calculation indicated that a reduction to the total DPS Division employer rate would be needed to equalize the defined ratio. It should be noted that the recently enacted automatic adjustment provision (AAP) compares the blended actual contribution rates to the

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

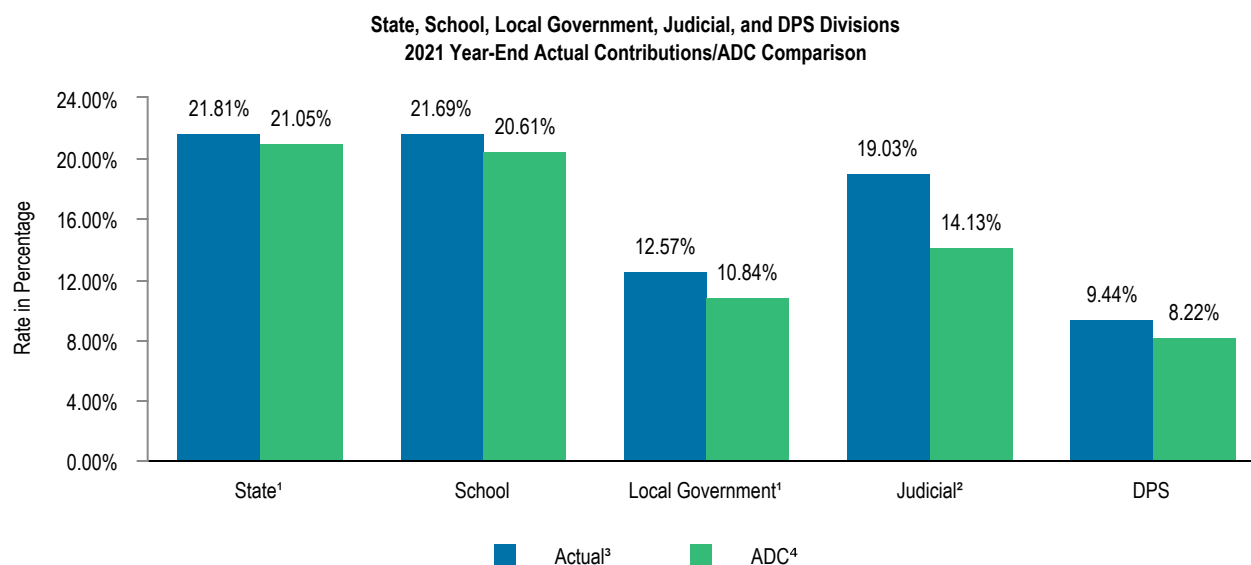
(Dollars in Thousands)

blended actuarially determined contribution rates, resulting in one ratio considering all five Division Trust Funds. Therefore, a reduction in an employer contribution rate for any one Division Trust Fund could potentially influence the outcome of the AAP assessment. A failed assessment would trigger additional employer and member contributions for all divisions, and a decrease in the AI cap, affecting all benefit recipients of the plan.

While the annual contribution amounts can provide meaningful insight into the financial activities and financial status of PERA, the assessment of the adequacy of contributions on an actuarial funding basis is a critical factor in reporting the financial status of PERA. In

accordance with the actuarial standards of practice and the Board's pension and OPEB funding policies, a plan-specific actuarially determined contribution (ADC) benchmark is developed against which to gauge the adequacy of PERA's statutory contribution rates for the five Division Trust Funds and two OPEB Funds. The ADC for each trust fund is developed annually and reported by management to be used as a benchmark for contributions two years in the future.

The two charts below and on the next page show the ADC and actual contributions as a percentage of covered payroll for each trust fund for 2021. Additional information on long-term trends can be found in the Actuarial Section.



¹ Actual rates are for members other than State Troopers and include the applicable defined contribution (DC) supplement pursuant to SB 18-200.

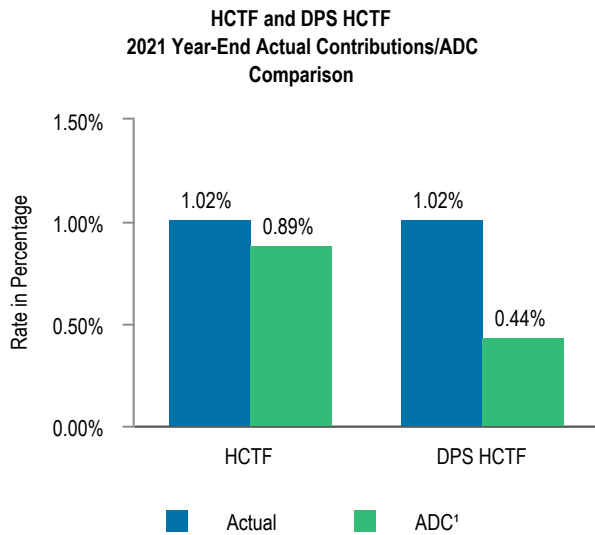
² Actual employer rate for the Judicial Division reflects the employer-member rate modifications pursuant to HB 20-1394.

³ Actual contributions include employer, AED and SAED, and nonemployer, as applicable, less the AIR and health care contributions.

⁴ ADC rates for 2021 are based on the 2019 actuarial valuations.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)



¹ ADC rates for 2021 are based on the 2019 actuarial valuations.

Contribution Deficiency/(Excess)

Governmental accounting standards require the disclosure of the amount of contributions recognized by the defined benefit plan, the ADC amount, and the difference between these two amounts as RSI. An annual contribution deficiency arises when actual contributions are less than the ADC and an annual contribution excess arises when the actual contributions are greater than the ADC. The ADC is calculated using the investment rate of return and discount rate assumptions according to the Board's funding policies. The ADC for 2021 was determined based on the results of the December 31, 2019, actuarial valuation. The 10-year schedules illustrating the annual contribution deficiency/(excess) can be found in the RSI on pages 97-99 and 107-108.

Contribution deficiency/(excess) on an actuarial funding basis is determined through a similar process.

Each year, the actuaries assess the increase or decrease to the expected unfunded liability by comparing the expected dollar inflows into each fund versus the actual dollar amounts recognized. This calculation for funding purposes is slightly different than the approach required by governmental accounting standards in that it considers additional contributions occurring during each year from all sources, as well as the timing of contributions made during the year. Taking these factors into consideration results in a total contribution excess of \$216.6 million for the Division Trust Funds in 2021. During the past 19 years, contribution experience for the Division Trust Funds has resulted in 18 years of deficiencies, one year of excess, and an accumulated shortfall of \$5.6 billion.

Due to recent legislative actions such as the implementation of the AAP, specifically designed to better align actual contributions with actuarially determined contributions, and the State's annual direct distribution, progress is being made to dampen and eventually eliminate contribution deficiencies. A chart with the breakdown of benefit structures by division and type can be found on page 227 in the Statistical Section.

SB 18-200 implemented the AAP, which annually assesses actual contributions compared to required contributions to ascertain if adjustments to certain plan provisions are required in accordance with State statute beginning July 1, 2020. Based on certain statutory parameters, the AAP requires, as necessary, adjustments to member contributions, employer contributions, the direct distribution from the State, and the AI cap. The AAP is designed to help mitigate future contribution deficiencies and to keep PERA on the path to full funding. Additional information on this AAP can be found in Note 4 of the Notes to the Financial Statements, the Actuarial Section, and C.R.S. § 24-51-413.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

CONTRIBUTION DEFICIENCY/(EXCESS)

(Dollars in Millions)

Trust Fund	2021	2020	2019	2018	2017	Cumulative Deficiency/(Excess) 2003-2021
State Division	(\$83.2) ¹	\$93.5	\$21.1 ¹	\$117.8 ¹	\$32.2	\$1,766.8
School Division	(102.0) ¹	155.9	94.2 ¹	261.2 ¹	133.0	2,821.4
State and School Division ²	N/A	N/A	N/A	N/A	N/A	685.5
Local Government Division	(15.1)	3.6	(6.3)	17.8	(7.1) ³	(206.2)
Judicial Division	(3.3) ¹	0.3	(0.1) ¹	4.4 ¹	(0.2)	20.9
DPS Division ⁴	(13.0) ¹	26.9	24.0 ¹	48.8 ¹	37.3	477.0
Total Division Trust Funds	(\$216.6)	\$280.2	\$132.9	\$450.0	\$195.2	\$5,565.4
HCTF	(\$23.8)	(\$15.9)	(\$1.0)	(\$0.9)	(\$5.0) ³	(\$129.7)
DPS HCTF ⁴	(5.4)	(4.5)	(3.5)	(2.9)	(2.6)	(27.5)
Total OPEB Trust Funds	(\$29.2)	(\$20.4)	(\$4.5)	(\$3.8)	(\$7.6)	(\$157.2)

¹ Includes contributions from a nonemployer contributing entity as required by C.R.S. § 24-51-412 *et seq.*² The State and School Divisions merged July 1, 1997, and separated on January 1, 2006.³ Includes the receipt of the disaffiliation payment for Cunningham Fire Protection District. See "2017 Changes in Plan Provisions Since 2016," in Note 1 of the Notes to the RSI—Division Trust Funds and Notes to the RSI—Health Care Trust Funds for more information.⁴ The DPS Division and DPS HCTF were established on January 1, 2010.**Amortization of Unfunded Actuarial Accrued Liabilities**

The table below shows the amortization periods for the Division Trust Funds and Health Care Trust Funds for the prior and current valuation year. The amortization periods determined as of the December 31, 2021, actuarial valuation consider the AAP adjustments effective July 1, 2022:

Trust Fund	Actuarial Funding Valuation Results	
	2021 Amortization Period Considering 2022 AAP Adjustments	2020 Amortization Period
State Division	23 Years	33 Years
School Division	26 Years	43 Years
Local Govt Division	12 Years	29 Years
Judicial Division	7 Years	13 Years
DPS Division ¹	9 Years	16 Years
HCTF	13 Years	18 Years
DPS HCTF	2 Years	4 Years

¹ Revised calculation considers declining PCOP offset rate as described in statute.

The amortization periods for the Judicial Division consider the future additional contributions of Amortization Equalization Disbursement (AED) and Supplemental Amortization Equalization Disbursement (SAED) which began in 2019 with continued increases scheduled through 2023. Beginning in 2020, the calculation of the amortization period for the DPS Division is revised to consider the declining PCOP offset rate as described in statute. In 2019 and prior, the PCOP offset was held at the current rate for purposes of this

calculation. The amortization periods for the five Division Trust Funds do not include the full effect of legislation enacted in 2006, 2010, and 2018. This legislation includes plan changes designed to lower the normal cost over time as new members are added to PERA's population, and to allow a greater proportion of the employers' contribution to be used to amortize the unfunded liability. The 2018 legislation also increases future contributions to the Division Trust Funds in order to further accelerate the amortization of the unfunded liability. The decrease in amortization periods from 2020 to 2021 is primarily due to favorable investment experience during 2021, and the reduced AI cap from 1.25% to 1.00%, per annum.

Unless otherwise temporarily altered by statute, the amortization periods shown in the table to the left consider ongoing employer, member, AED, and SAED contributions, including any future statutory increases, and the direct distribution, where applicable.

C.R.S. § 24-51-211 states that a maximum amortization period of 30 years shall be deemed actuarially sound.

As stated by Segal in the Certification Letter on pages 141-147 in the Actuarial Section:

"The results indicate that for all Division Trust Funds, the combined employer and member contribution rates, including the direct distribution from the State, as appropriate, are sufficient to fund the normal cost for all members, and each division's UAAL [unfunded actuarial accrued liability], with consideration of the

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

amounts allocated to finance the the Annual Increase Reserve (AIR) Funds, and provide additional contributions to help finance both Health Care Trust Funds. In addition, the employer contribution rate with anticipated service purchase transfers is sufficient to eventually finance benefits for the HCTFs."

"At the direction of PERA, Segal has prepared deterministic financial projections for all Division Trust Funds with the lower cost benefit structure for new members and using the following assumptions:

- All actuarial assumptions, including achieving 7.25% investment returns are realized

- Performed on an open-group basis with assumed active membership growth, as follows:
 - For School, Local Government and Denver Public Schools—1.00% each year
 - For State and Judicial—0.25% per year

These projections² indicate that the goal of funding 100% of the actuarial accrued liability under the PERA revised benefit structure created by SB 18-200 is achievable within a projection period of 16 years when including the anticipated adjustments to take effect July 1, 2022, resulting from the automatic adjustment provision (AAP) and including the impact of legislative changes pursuant to HB 22-1029."

Deductions from Net Position

Benefits

SUMMARY OF BENEFITS AND EXPENSES BY TRUST FUND

Trust Fund	Benefit Payments	Refunds	Disability and Life Insurance Premiums	Administrative Expenses	Other	Total Deductions
State Division	\$1,726,503	\$74,520	\$1,013	\$12,051	\$2,950	\$1,817,037
School Division	2,624,924	81,725	1,679	22,608	8,702	2,739,638
Local Government Division	322,106	16,034	235	3,065	3,084	344,524
Judicial Division	31,201	266	21	186	53	31,727
DPS Division	280,045	11,527	227	2,829	3,130	297,758
HCTF	63,893	—	—	12,976	84	76,953
DPS HCTF	3,516	—	—	639	4	4,159
Life Insurance Reserve	—	—	540	80	—	620
2021 Total	\$5,052,188	\$184,072	\$3,715	\$54,434	\$18,007	\$5,312,416
2020 Total	\$4,881,951	\$148,014	\$4,776	\$51,094	\$18,274	\$5,104,109
2019 Total	\$4,770,406	\$161,202	\$6,641	\$49,076	\$15,091	\$5,002,416
2018 Total	\$4,677,060	\$168,387	\$6,920	\$62,446	\$14,923	\$4,929,736
2017 Total	\$4,567,349	\$158,147	\$6,604	\$60,711	\$30,321	\$4,823,132

At the end of 2021, PERA was paying benefits to more than 131,000 retired public employees and their beneficiaries who received an average benefit of \$3,194 per month (actual dollars.) Historical information about benefit payments, average benefit payments, and the number of retirees receiving payments and earned service credit can be found in the Statistical Section.

There are many changes to plan provisions that have been enacted into law since 2000 that do not have an immediate effect on PERA's financial activities and

financial status, but have had an effect over time. On average, members are retiring with generally lower monthly benefit amounts than members who retired in prior years. This trend will continue and become more evident over time, as each year a larger portion of the retirement calculations will reflect the recent changes to benefit provisions (retirement eligibilities, determination of highest annual salary, etc.). The effect of these changes are tracked and monitored by PERA's management and reported as part of the overall governance structure of PERA.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

Other Changes: Division Trust Funds, Health Care Trust Funds, and Life Insurance Reserve

For the year ended December 31, 2021, PERA had cash and short-term investments of \$2,141,788, an increase of \$495,241 from 2020. The increase was primarily due to a greater need for liquidity to fund pending settlements of fixed income investment purchases.

For the year ended December 31, 2021, PERA had securities lending collateral of \$1,169,490 and securities lending obligations of \$1,169,240, an increase of \$241,427 and \$241,341, respectively, from 2020. The securities lending collateral and obligations increased primarily due to an increase in the securities on loan as a result of increased borrower demand.

For the year ended December 31, 2021, the PERA HCTF and DPS HCTF had total receivables of \$93,132, an increase of \$21,006 from 2020. The increase was primarily due to the amount of health care subsidy payments and prescription rebates owed to PERA at year-end.

For the year ended December 31, 2021, PERA had investment settlements and other liabilities of \$2,865,546, an increase of \$1,004,137 from 2020. The increase was primarily due to higher pending settlements of fixed income investment purchases.

There was a 51% increase in purchased service in 2021, due to more members reviewing and implementing their retirement plans including the need to complete service credit purchases before retiring or leaving a job covered under PERA.

For the year ended December 31, 2021, disability premiums for the Division Trust Funds decreased by \$1,089. The decrease was primarily due to a reduction in the premium rate calculated based on covered salary.

Administrative expenses of the Life Insurance Reserve decreased from \$224 in 2020 to \$80 in 2021. The decrease was primarily due to changes in the indirect allocation cost method.

Other deductions of the HCTF and DPS HCTF increased from \$33 in 2020 to \$88 in 2021. The increase was primarily due to vendor expenses for retiree services related to Medicare enrollment.

Actuarial Valuations: Accounting

Separate actuarial valuations are prepared for accounting and funding purposes for the Division Trust Funds and the Health Care Trust Funds. Calculations for purposes of financial reporting for the pension and OPEB plans are determined in accordance with GASB 67 and GASB 74, respectively.

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 liabilities across U.S. plans complying with GASB 67 and GASB 74. One of the key measurements in the accounting valuation which assesses the pension liabilities for financial reporting purposes is the NPL or NPA. The NPL or NPA is the difference between the FNP and the total pension liability (TPL). Similarly, one of the key measurements which assesses the OPEB liabilities for financial reporting purposes is the NOL. The NOL is the difference between the FNP and the total OPEB liability (TOL). The individual components which collectively comprise the FNP can be found in the Statements of Fiduciary Net Position on pages 44-45.

PERA-affiliated employers who comply with GASB 68 and GASB 75 are required to report their proportionate share of the collective NPL or NPA, collective NOL, and other related amounts for the plan(s) they participate in. GASB requires that employer contributions and nonemployer contributions (if applicable) be used as a basis for the proportion.

The schedules on the next page show the collective NPLs or NPAs and collective NOLs as of December 31, 2021, and December 31, 2020, as well as the breakdown of changes in the collective liabilities or assets for 2021. The decrease in NPLs for all five Division Trust Funds (resulting in a NPA for the Local Government Division) is primarily due to favorable investment performance during 2021 as well as recognition of the reduction in the annual increase cap from 1.25% to 1.00%, per annum. The decrease in NOLs for the HCTF and DPS HCTF is largely due to favorable investment performance during 2021 and demographic experience.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

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
2020 Net pension liability	\$9,484,793	\$15,117,983	\$521,127	\$61,960	\$432,182	\$25,618,045
Service cost	413,596	783,583	93,133	9,791	107,672	1,407,775
Interest	1,948,606	3,278,565	408,879	34,282	326,361	5,996,693
Changes of benefit terms	(547,823)	(964,344)	(118,435)	(9,135)	(89,028)	(1,728,765)
Differences between expected and actual experience	(16,478)	110,446	(2,587)	4,037	46,732	142,150
Changes of assumptions or other inputs	—	—	—	—	—	—
Contributions—employer	(664,304)	(1,113,636)	(96,481)	(9,787)	(65,215)	(1,949,423)
Contributions—nonemployer	(76,706)	(127,781)	—	(1,360)	(19,153)	(225,000)
Contributions—active member (includes purchased service)	(369,166)	(630,849)	(77,096)	(9,389)	(90,154)	(1,176,654)
Net investment gain	(2,806,442)	(4,847,781)	(820,403)	(66,030)	(649,370)	(9,190,026)
Administrative expense	12,051	22,608	3,065	186	2,829	40,739
Other	(3,088)	8,572	3,061	(5,383)	3,115	6,277
2021 Net pension liability (asset)	\$7,375,039	\$11,637,366	(\$85,737)	\$9,172	\$5,971	\$18,941,811

¹ 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.

SCHEDULE OF CHANGES IN NET OPEB LIABILITY

	Health Care Trust Fund	DPS Health Care Trust Fund	All Health Care Trust Funds ¹
2020 Net OPEB liability	\$950,225	\$22,892	\$973,117
Service cost	18,188	1,237	19,425
Interest	101,172	4,750	105,922
Changes of benefit terms	—	—	—
Differences between expected and actual experience	(52,850)	(2,855)	(55,705)
Changes of assumptions or other inputs	15,483	—	15,483
Contributions—employer	(97,974)	(8,622)	(106,596)
Purchased service transfers	(5,650)	(66)	(5,716)
Net investment gain	(68,319)	(6,963)	(75,282)
Administrative expense ²	4,404	283	4,687
Other	(2,374)	(137)	(2,511)
2021 Net OPEB liability	\$862,305	\$10,519	\$872,824

¹ 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.

² Excludes administrative and other health care claims processing fees.

Additional information regarding the NPL or NPA, NOL, assumptions used to determine total pension and OPEB liabilities, sensitivity analysis of pension liabilities based on different discount rates, sensitivity analysis of

OPEB liabilities based on different discount and health care trend rates, and development of the investment rate of return assumption can be found in Notes 10 and 11 of the Notes to the Financial Statements.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

Defined Contribution and Deferred Compensation Plans

Comparative Financial Statements

PERA administers two defined contribution plans and a deferred compensation plan. The following tables are the comparative condensed statements of Fiduciary Net Position and Changes in Fiduciary Net Position for the Voluntary Investment Program (PERAPlus 401(k) Plan), Defined Contribution Retirement Plan (DC Plan), and Deferred Compensation Plan (PERAPlus 457 Plan), collectively known as the Capital Accumulation Plans (CAPs). This information has been derived from PERA's audited financial statements. While the annual changes in FNP can provide meaningful insight into the financial activities and financial status of PERA, long-term views and trend analysis are critical factors in reporting and understanding the financial status of the plans.

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS FIDUCIARY NET POSITION

As of December 31

	2021	2020	% Chg
Assets			
Cash and short-term investments	\$68,506	\$59,683	14.8%
Securities lending collateral	89,517	92,999	(3.7%)
Receivables	99,284	110,867	(10.4%)
Investments, at fair value	6,295,670	5,515,968	14.1%
Total assets	6,552,977	5,779,517	13.4%
Liabilities			
Investment settlements and other liabilities	54,191	50,447	7.4%
Securities lending obligations	89,497	92,982	(3.7%)
Total liabilities	143,688	143,429	0.2%
Fiduciary net position	\$6,409,289	\$5,636,088	13.7%

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

	2021	2020	% Chg
Additions			
Employer contributions	\$24,254	\$22,737	6.7%
Member contributions	242,881	227,173	6.9%
Net investment income	894,888	737,823 ¹	21.3%
Other	6,212	2,971	109.1%
Total additions	1,168,235	990,704	17.9%
Deductions			
Distributions	388,714	273,919	41.9%
Administrative expenses	3,376	6,373 ¹	(47.0%)
Other	2,944	2,670	10.3%
Total deductions	395,034	282,962	39.6%
Change in fiduciary net position	773,201	707,742	9.2%
Fiduciary net position			
Beginning of year	5,636,088	4,928,346	14.4%
End of year	\$6,409,289	\$5,636,088	13.7%

¹ To conform with current year presentation, prior year amounts were restated. See Note 2 of the Notes to the Financial Statements for additional information.

Investments

Investments for the CAPs are managed in a single investment pool. Underlying investments are grouped into one of 17 white label PERAAdvantage funds which participants can choose to contribute to and/or make transfers from on a daily basis. In addition, participants can choose to select their own investments by transferring funds into a TD Ameritrade Self-Directed Brokerage Account. The PERAAdvantage funds provide diversification and cover a wide risk/return spectrum within each of the seven primary investment options and 10 target retirement date funds. The target retirement date funds are broadly diversified across global asset classes and automatically adjust the underlying asset allocation to become more conservative over time. By investing in a single target retirement date fund, participants may capture diversified investment opportunities without having to manage multiple funds. More information about investment options and results can be found in the Investment Section on pages 132-137.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

For the year ended December 31, 2021, the CAPs net investment income increased \$157,065. Investments at fair value increased by \$779,702 or 14.1% for the year ended December 31, 2021. The increase in investment income was primarily due to an increase in global equity investment returns. Additional information on longer-term performance and benchmarks for the three-, five-, and 10-year periods for each investment option can be found in the Investment Section.

The administrative fee for the PERAPlus 401(k) Plan and the PERA DC Plan consists of a flat \$1.00 per month per participant per plan and an asset-based fee of up to 0.03% on each underlying PERAdvantage fund. The administrative fee for the PERAPlus 457 Plan consists of a flat \$1.50 per month per participant per plan and an asset-based fee of up to 0.03% on each underlying PERAdvantage fund. The PERAPlus 457 Plan has lower participation and fewer assets than the PERAPlus 401(k) Plan and therefore the flat fee was increased at the end of 2021 to generate enough revenue to pay the PERAPlus 457 Plan's administrative expenses.

Participants also pay investment management fees. Investment management fees as of December 31, 2021, are shown in the table below.

Fund	2021	2020
PERAdvantage Capital Preservation Fund	0.21%	0.21%
PERAdvantage Fixed Income Fund	0.17%	0.18%
PERAdvantage Real Return Fund	0.17%	0.17%
PERAdvantage Socially Responsible Investment Fund	0.19%	0.19%
PERAdvantage U.S. Large Cap Stock Fund	0.05%	0.05%
PERAdvantage U.S. Small and Mid Cap Stock Fund	0.15%	0.15%
PERAdvantage International Stock Fund	0.26%	0.26%
PERAdvantage Target Retirement Date Funds	0.07%	0.07%

Note: Fees shown are investment management fees. Participants who have a Self-Directed Brokerage Account pay an annual \$50 (actual dollars) self-directed brokerage fee.

Plan Participants and Contributions

In 2021, overall participation in the CAPs increased by 233 participants from 2020. The following table shows the number of participants in each plan at the end of fiscal years 2021 and 2020.

Plan	2021	2020	Change
PERAPlus 401(k) Plan	67,887	68,647	(760)
DC Plan	7,673	7,264	409
PERAPlus 457 Plan	20,022	19,438	584
Total	95,582	95,349	233

The table below shows the breakdown of the number of accounts for the specified ranges in participant contributions recognized during 2021 within the PERAPlus 401(k) Plan and PERAPlus 457 Plan. See current annual contribution limits in Note 8 of the Notes to the Financial Statements on pages 74-75.

Annual contribution ranges (actual dollars)	PERAPlus 401(k) Plan		PERAPlus 457 Plan	
	2021	2020	2021	2020
\$0 - \$5,000	18,652	19,248	7,153	7,182
\$5,001 - \$10,000	3,455	3,513	1,379	1,206
\$10,001 - \$15,000	1,354	1,296	631	590
\$15,001 and above	2,493	2,346	2,032	1,785

Note: Includes all accounts with contribution activity.

Distributions

Participants can take normal distributions when they reach the minimum age designated by the plan. Participants can also take in-service withdrawals and can transfer funds after termination of employment. For the year ended December 31, 2021, the CAPs had distributions of \$388,714, an increase of \$114,795 from 2020. See Note 8 of the Notes to the Financial Statements for additional information about allowable in-service withdrawals in each plan.

Other Changes

For the year ended December 31, 2021, the CAPs had other additions of \$6,212, an increase of \$3,241 from 2020. The increase was primarily due to the recognition of additional loan interest as a result of different procedures for the new recordkeeper.

For the year ended December 31, 2021, the CAPs had administrative expenses of \$3,376, a decrease of \$2,997 from 2020. The decrease was primarily due to changes in the administrative expense allocation methodology in the Common Operating Fund (COF).

For the year ended December 31, 2021, due to changes in COF expense allocation, Investment Division related expenses charged to CAPs were reclassified from administrative expenses to investment expenses. See Note 2 of the Notes to the Financial Statements about prior year restatement related to this change.



STATEMENTS OF FIDUCIARY NET POSITION

As of December 31, 2021, with Comparative Combined Totals for 2020

(Dollars in Thousands)

	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
Assets						
Cash and short-term investments						
Cash and short-term investments	\$645,831	\$1,121,935	\$189,284	\$15,400	\$150,137	\$2,122,587
Securities lending collateral	352,646	612,615	103,355	8,409	81,980	1,159,005
Total cash and short-term investments	998,477	1,734,550	292,639	23,809	232,117	3,281,592
Receivables						
Benefit	79,614	70,819	9,656	2,403	6,091	168,583
Interfund	74	129	22	2	17	244
Investment settlements and income	476,034	826,965	139,519	11,351	110,664	1,564,533
Total receivables	555,722	897,913	149,197	13,756	116,772	1,733,360
Investments, at fair value						
Global equity	11,569,051	20,097,714	3,390,721	275,866	2,689,469	38,022,821
Fixed income	3,540,389	6,150,352	1,037,636	84,421	823,039	11,635,837
Private equity	1,824,208	3,169,008	534,649	43,498	424,076	5,995,439
Real estate	1,760,042	3,057,539	515,843	41,968	409,159	5,784,551
Alternatives	942,251	1,636,875	276,159	22,468	219,046	3,096,799
Multi-asset class funds	—	—	—	—	—	—
Self-directed brokerage	—	—	—	—	—	—
Total investments, at fair value	19,635,941	34,111,488	5,755,008	468,221	4,564,789	64,535,447
Capital assets, at cost, net of accumulated depreciation of \$29,733 and \$29,258 at December 31, 2021, and 2020, respectively	4,469	9,186	986	36	1,154	15,831
Total assets	21,194,609	36,753,137	6,197,830	505,822	4,914,832	69,566,230
Liabilities						
Investment settlements and other liabilities	856,472	1,485,929	250,380	20,289	199,143	2,812,213
Securities lending obligations	352,571	612,484	103,333	8,407	81,962	1,158,757
Interfund	—	—	—	—	—	—
Total liabilities	1,209,043	2,098,413	353,713	28,696	281,105	3,970,970
Commitments and contingencies (Note 7)						
Fiduciary net position restricted for pensions and other postemployment benefits, and held in trust for deferred compensation benefits and private purpose trust fund participants	\$19,985,566	\$34,654,724	\$5,844,117	\$477,126	\$4,633,727	\$65,595,260

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

STATEMENTS OF FIDUCIARY NET POSITION

As of December 31, 2021, with Comparative Combined Totals for 2020

(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	
						2021	2020
\$44,860	\$8,174	\$15,472	\$16,522	\$1,720	\$959	\$2,210,294	\$1,706,230
64,492	4,561	20,464	9,022	939	524	1,259,007	1,021,062
109,352	12,735	35,936	25,544	2,659	1,483	3,469,301	2,727,292
58,440	3,092	15,915	76,500	3,184	—	325,714	301,859
—	—	—	2	—	—	246	885
16,144	891	4,802	12,178	1,268	707	1,600,523	1,482,809
74,584	3,983	20,717	88,680	4,452	707	1,926,483	1,785,553
2,749,861	139,242	659,870	295,971	30,816	17,182	41,915,763	36,818,158
675,687	33,083	271,429	90,574	9,430	5,258	12,721,298	12,645,623
—	—	—	46,669	4,859	2,709	6,049,676	4,753,228
—	—	—	45,027	4,688	2,614	5,836,880	4,698,344
—	—	—	24,106	2,510	1,399	3,124,814	2,398,206
1,167,487	196,669	322,149	—	—	—	1,686,305	1,444,887
40,542	8,245	31,406	—	—	—	80,193	68,671
4,633,577	377,239	1,284,854	502,347	52,303	29,162	71,414,929	62,827,117
—	—	—	—	—	—	15,831	14,253
4,817,513	393,957	1,341,507	616,571	59,414	31,352	76,826,544	67,354,215
39,869	2,065	12,011	46,802	3,522	3,009	2,919,491	1,892,226
64,478	4,560	20,459	9,020	939	524	1,258,737	1,020,881
154	54	38	—	—	—	246	885
104,501	6,679	32,508	55,822	4,461	3,533	4,178,474	2,913,992
\$4,713,012	\$387,278	\$1,308,999	\$560,749	\$54,953	\$27,819	\$72,648,070	\$64,440,223

STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

For the Year ended December 31, 2021, with Comparative Combined Totals for 2020

(Dollars in Thousands)

	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
Additions						
Contributions						
Employers	\$664,304	\$1,113,636	\$96,481	\$9,787	\$65,215	\$1,949,423
Nonemployer	76,706	127,781	—	1,360	19,153	225,000
Members	329,652	574,948	63,035	8,589	86,184	1,062,408
Purchased service	39,514	55,901	14,061	800	3,970	114,246
Total contributions	1,110,176	1,872,266	173,577	20,536	174,522	3,351,077
Investment income						
Net appreciation in fair value of investments	2,539,089	4,385,954	742,268	59,732	587,506	8,314,549
Interest	70,424	121,651	20,582	1,659	16,296	230,612
Dividends	160,195	276,721	46,818	3,774	37,069	524,577
Real estate, private equity, and alternatives net operating income	96,346	166,429	28,158	2,270	22,293	315,496
Less investment expense	(61,461)	(106,168)	(17,963)	(1,448)	(14,222)	(201,262)
Net income from investing activities	2,804,593	4,844,587	819,863	65,987	648,942	9,183,972
Securities lending income	2,043	3,530	597	48	473	6,691
Less securities lending expense	(194)	(336)	(57)	(5)	(45)	(637)
Net income from securities lending	1,849	3,194	540	43	428	6,054
Net investment income	2,806,442	4,847,781	820,403	66,030	649,370	9,190,026
Other additions	6,038	130	23	5,436	15	11,642
Total additions	3,922,656	6,720,177	994,003	92,002	823,907	12,552,745
Deductions						
Benefits						
Benefits paid to retirees/cobeneficiaries	1,711,664	2,608,686	319,413	30,921	278,426	4,949,110
Benefits paid to survivors	14,839	16,238	2,693	280	1,619	35,669
Benefits paid on behalf of health care participants	—	—	—	—	—	—
Total benefits	1,726,503	2,624,924	322,106	31,201	280,045	4,984,779
Refunds and distributions	74,520	81,725	16,034	266	11,527	184,072
Disability and life insurance premiums	1,013	1,679	235	21	227	3,175
Administrative expenses	12,051	22,608	3,065	186	2,829	40,739
Other deductions	2,950	8,702	3,084	53	3,130	17,919
Total deductions	1,817,037	2,739,638	344,524	31,727	297,758	5,230,684
Net increase in fiduciary net position	2,105,619	3,980,539	649,479	60,275	526,149	7,322,061
Fiduciary net position restricted for pensions and other postemployment benefits, and held in trust for deferred compensation benefits and private purpose trust fund participants						
Beginning of year	17,879,947	30,674,185	5,194,638	416,851	4,107,578	58,273,199
End of year	\$19,985,566	\$34,654,724	\$5,844,117	\$477,126	\$4,633,727	\$65,595,260

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

STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

For the Year ended December 31, 2021, with Comparative Combined Totals for 2020

(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	
						2021	2020
\$6,170	\$18,046	\$38	\$97,974	\$8,622	\$—	\$2,080,273	\$1,977,103
—	—	—	—	—	—	225,000	—
145,612	18,720	78,549	—	—	—	1,305,289	1,165,294
—	—	—	—	—	—	114,246	75,623
151,782	36,766	78,587	97,974	8,622	—	3,724,808	3,218,020
637,519	49,024	151,770	61,805	6,299	3,731	9,224,697	8,557,723
8,499	395	3,658	1,716	175	104	245,159	305,509
36,831	2,105	9,788	3,903	398	236	577,838	517,822
—	—	—	2,348	239	142	318,225	258,171
(3,624)	(306)	(1,109)	(1,498)	(153)	(91)	(208,043)	(183,266)
679,225	51,218	164,107	68,274	6,958	4,122	10,157,876	9,455,959
266	18	91	50	5	3	7,124	6,236
(26)	(2)	(9)	(5)	—	—	(679)	(635)
240	16	82	45	5	3	6,445	5,601
679,465	51,234	164,189	68,319	6,963	4,125	10,164,321	9,461,560
5,484	50	678	8,108	206	—	26,168	23,199
836,731	88,050	243,454	174,401	15,791	4,125	13,915,297	12,702,779
—	—	—	—	—	—	4,949,110	4,790,894
—	—	—	—	—	—	35,669	34,948
—	—	—	63,893	3,516	—	67,409	56,109
—	—	—	63,893	3,516	—	5,052,188	4,881,951
287,582	23,798	77,334	—	—	—	572,786	421,933
—	—	—	—	—	540	3,715	4,776
2,034	753	589	12,976	639	80	57,810	57,467
1,933	165	846	84	4	—	20,951	20,944
291,549	24,716	78,769	76,953	4,159	620	5,707,450	5,387,071
545,182	63,334	164,685	97,448	11,632	3,505	8,207,847	7,315,708
4,167,830	323,944	1,144,314	463,301	43,321	24,314	64,440,223	57,124,515
\$4,713,012	\$387,278	\$1,308,999	\$560,749	\$54,953	\$27,819	\$72,648,070	\$64,440,223

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

Note 1—Plan Description

Organization

Public Employees' Retirement Association of Colorado (PERA) was established in 1931. The statute governing 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)	Single-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 to serve on the Board for four-year terms.
- Three Trustees appointed by the Governor and confirmed by the State Senate to serve on the Board for four-year terms.
- The State Treasurer.
- One ex officio (non-voting) member or retiree elected by members and retirees of the DPS Division to serve on the Board for a four-year term.

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.

Division	As of December 31, 2021 ¹
State	32
School	233
Local Government	141
Judicial	2
DPS	1
Total employers	409

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.

Pursuant to C.R.S. § 24-51-414, the State of Colorado (State) is required to make an annual nonemployer contribution to PERA on behalf of all divisions except the Local Government Division.

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, 2021, with comparative combined totals for 2020:

	State Division	School Division	Local Government Division	Judicial Division	DPS Division	2021	2020
Retirees and beneficiaries (includes deferred survivors)	43,049	72,852	8,590	434	7,186	132,111	128,133
Inactive members eligible but not yet receiving benefits	8,156	19,882	2,713	15	2,249	33,015	32,196
Inactive members not eligible for benefits	85,985	147,435	28,333	7	15,426	277,186	269,918
Active members							
Vested members other than State Troopers	30,040	70,132	6,359	270	8,432	115,233	113,940
Vested State Troopers	681	—	1	—	—	682	703
Non-vested members other than State Troopers	21,845	54,875	6,357	75	7,263	90,415	85,413
Non-vested State Troopers	911	—	28	—	—	939	802
Total active members	53,477	125,007	12,745	345	15,695	207,269	200,858
Total	190,667	365,176	52,381	801	40,556	649,581	631,105

Membership—Voluntary Investment Program, Defined Contribution Retirement Plan, and 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 enrolled in the PERA Defined Benefit Plan, 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 employees of the State or Local Government Divisions, classified employees at State colleges and universities, most community colleges, as well as the District Attorney within each Judicial District, and if authorized by the county and the District Attorney, the attorneys within that Judicial District. If an eligible employee does not make a choice of which plan to participate in within 60 days of the starting date of employment, the employee is automatically enrolled in the PERA Defined Benefit Plan. Between the second and fifth year of participation in their original plan, employees may make a one-time, irrevocable election to switch to the other plan. After the fifth year of participation, this option to switch plan participation no longer exists.

Some positions within 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 this Note as of December 31, 2021. Following the January 1, 2010, merger of the Denver Public Schools Retirement System (DPSRS) into PERA, the benefit provisions of existing PERA members and all new hires post-merger date are identified as the PERA benefit structure and the benefit provisions originating under DPSRS are referred to as the DPS benefit structure.

Member Accounts

During 2021, most members in the State, School, and DPS Divisions, and Denver County Court judges contributed 10.00% of their PERA-includable salary to their member accounts from January 1 to June 30 and contributed 10.50% from July 1 to December 31. State Troopers (as defined in the next paragraph) contributed 12.00% of their PERA-includable salary from January 1 to June 30 and contributed 12.50% from July 1 to December 31. Most members of the Local Government Division contributed 8.50% of their PERA-includable salary from January 1 to December 31. House Bill (HB) 20-1394 increased the member contribution rate for the Judicial Division (excluding judges employed by the Denver County Court) for the State's 2020-21 and 2021-22 fiscal years. These members contributed 15.00% of their PERA-includable salary from January 1 to June 30 and 15.50% from July 1 to December 31.

The term "State Troopers" for PERA purposes has an expanded definition under Colorado law and includes

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

several categories of employees: (1) employees of the Colorado State Patrol or Colorado Bureau of Investigation (CBI) vested with the powers of peace officers; (2) beginning July 1, 2020, new or existing employees of the Division of Fire Prevention and Control in the Department of Public Safety classified as firefighter I through firefighter VII; (3) new members hired on or after January 1, 2020, as a county sheriff, undersheriff, deputy sheriff, noncertified deputy sheriff, or detention officer by a Local Government Division employer; and (4) new members hired on or after January 1, 2020, as a corrections officer classified as I through IV by a State Division employer.

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%. Effective January 1, 2009, the annual rate was set at 3% 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 member 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 in the year following the year in which the member reaches age 72.
- 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.

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% match on eligible amounts. For members under the PERA benefit structure who withdraw their accounts before reaching retirement eligibility, all contributions received prior to January 1, 2011, are eligible for the 50% 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% 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% 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 reaching retirement eligibility who choose to take a retirement benefit are entitled to a minimum monthly benefit which incorporates the member's account plus a 100% match on eligible amounts, 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- or five- 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% 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, who have at least five years of service credit on December 31, 2019:* HAS is determined by the highest

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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% 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 and DPS benefit structures, except judges, regardless of hire date, who do not have at least five years of service credit on December 31, 2019:** HAS is determined by the highest annual salaries associated with six periods of 12 consecutive months of service credit. The six 12-month periods selected do not have to be consecutive nor do they have to include the last six years of membership. The lowest of the six periods becomes a base year used as a starting point for an 8% cap on annual salary increases for the next five periods used to determine the applicable HAS. This salary cap applies regardless of when the annual salaries used in the HAS calculation occurred.
- **For members of the Judicial Division Trust Fund (judges) who have at least five years of service credit on December 31, 2019:** HAS is one-twelfth of the highest annual salary associated with one period of 12 consecutive months of service credit.
- **For members of the Judicial Division Trust Fund (judges) who do not have at least five years of service credit on December 31, 2019, regardless of the date of hire:** 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% 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 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, and have at least five years of service credit on December 31, 2019:** 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% 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 for Members other than State Troopers—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 and on the next page.

Members 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.

Members 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.

Members 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.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

**Members 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.

**Members Hired on or After January 1, 2011,
But Before January 1, 2017, or Hired on or After January 1, 2017,
But Before January 1, 2020, Whose Most Recent 10
Years of Service are in the School or DPS Divisions**

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.

**Members Hired on or After January 1, 2017,
But Before January 1, 2020, Whose Most Recent 10
Years of Service are not in the School or DPS Divisions**

Age Requirement (in years)	Service Credit Requirement (in years)
Any Age	35
60	30
60	Age and Service = 90 or more
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.

Members Hired on or After January 1, 2020

Age Requirement (in years)	Service Credit Requirement (in years)
Any Age	35
64	30
64	Age and Service = 94 or more
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 Benefits for State Troopers—
PERA Benefit Structure**

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

State Troopers Hired Before January 1, 2020

Age Requirement (in years)	Service Credit Requirement (in years)
Any Age	30
50	25
55	20
60	Age and Service = 80 or more
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.

State Troopers Hired on or After January 1, 2020

Age Requirement (in years)	Service Credit Requirement (in years)
Any Age	35
55	25
55	Age and Service = 80 or more
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.

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% and then multiplied by years of service credit. The service retirement benefit is limited to 100% of HAS.

• Money Purchase Formula

Values the retiring member's account plus a 100% 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 cannot exceed the maximum benefit amount allowed by federal law.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

**Reduced Service Retirement Benefits—
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 applicable to members who were eligible to retire as of January 1, 2011, are specified in C.R.S. § 24-51-605.

Members and State Troopers Hired Before January 1, 2020

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

Members and State Troopers Hired on or After January 1, 2020

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

For members not eligible to retire as of January 1, 2011, the early retirement reduction factors used to determine the reduced service retirement benefit reflect an actuarial equivalent reduction.

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.

Members With Five Years of Service Credit on January 1, 2011

Age Requirement (in years)	Service Credit Requirement (in years)
50	30
55	25 ¹
65	5

¹ 15 years must be earned service credit

Member 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 ¹
55	Age and Service = 85 or more ¹
60	25
65	5

¹ 20 years must be earned service credit

**Reduced Service Retirement Benefits—
DPS Benefit Structure****Member With Five Years of Service Credit on January 1, 2011**

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

Member With Less Than Five Years of Service Credit on January 1, 2011

Age Requirement (in years)	Service Credit Requirement (in years)
50	25
55	20
60	5

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.

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

- HAS multiplied by 2.5% and then multiplied by years of service credit.
- \$15 (actual dollars) times the first 10 years of service credit plus \$20 (actual dollars) 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% of HAS and 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 made by UNUM, PERA's disability program administrator pursuant to C.R.S. § 24-51-703. 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% of their pre-disability earnings from any job, but who are not totally and permanently incapacitated

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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% 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:

- **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 reduced to be the actuarial equivalent of Option 1, to ensure equitable benefits are provided regardless of the payment option chosen.

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 reduced to be the actuarial equivalent of Option A, to ensure equitable benefits are provided regardless of the payment option chosen.

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 does not have any qualified survivors, the deceased's named beneficiary or the estate receives a lump-sum payment of the deceased member's account plus a 100% 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.

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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.

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 eligibility and amounts are determined by the date the retiree or deceased member began membership in PERA.

The AI provisions are explained as follows:

- 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 for 2021 is 1.25%. Each year, the AI is equal to the maximum AI or "AI cap," currently 1.25% per year, unless it is adjusted by the automatic adjustment provision (AAP). The AAP may raise or lower the AI cap by up to 0.25% if the AAP ratio of the Division Trust Funds is outside the parameters specified in C.R.S. § 24-51-413. 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, who already received the first AI on or before May 1, 2018, the benefit recipient has received benefit payments for the 12 months prior to the July in which the AI is to be paid.

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, who had not yet received the first AI on or before May 1, 2018, the benefit recipient has received benefit payments for 36 months total, including 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, but who already received the first AI on or before May 1, 2018: 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 immediately preceding 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.

For reduced service retirees who are not eligible to retire as of January 1, 2011, and who had not yet received the AI on or before May 1, 2018: A reduced service retiree is eligible to receive the AI in July of the year in which all of the following conditions are met: (1) the retiree has received benefit payments for 36 months total; (2) the retiree has received benefit payments for 12 months immediately preceding the July in which the AI is to be paid; and (3) 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 for 2021 is 1.25%. Each year, the AI is equal to the AI cap, currently 1.25% per year, unless it is adjusted by the AAP. The AAP may raise or lower the AI cap by up to 0.25% if the AAP ratio of the Division Trust Funds is outside the parameters specified in C.R.S. § 24-51-413.
- 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 who had already received an AI on or before May 1, 2018: The benefit recipient becomes eligible in July of the calendar year following the calendar year in which the benefit

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recipient has received 12 months of benefit payments. For full service retirees, disability retirees, and survivor benefit recipients who had not yet received an AI on or before May 1, 2018: The benefit recipient becomes eligible in July if the benefit recipient has received 36 months of benefit payments total including 12 months of benefit payments in the prior calendar year.

A reduced service retiree who had already received an AI on or before May 1, 2018, 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.

A reduced service retiree who had not yet received an AI on or before May 1, 2018, is eligible to receive the AI in July of the year in which all of the following conditions are met: (1) as of January 1 of the year the AI is to be paid, the retiree has received 36 months of benefit payments total; (2) the retiree received 12 months of benefit payments in the prior calendar year; and (3) 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 for 2021 is 1.20%. Each year, the AI is the lesser of the AI cap, currently 1.25% (unless adjusted by the AAP), or the average of the monthly Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) amounts for the prior calendar year. In no case can the present value of the year's AIs paid to a division's benefit recipients exceed 10% of the division's Annual Increase Reserve (AIR).

Changes to the AI Cap: If PERA's overall funded status (actuarial value of assets/actuarial accrued liability) is at or above 103%, the AI cap will increase by 0.25%. This adjustment will occur separately from any impact of the AAP.

Automatic Adjustment Provision

Adjustments may be made to the AI cap, member and employer contribution rates, and, under certain circumstances, the direct distribution from the State.

Based on the results of the AAP assessment which utilized the December 31, 2020, actuarial valuation performed for funding purposes, effective July 1, 2022, the AI cap will be lowered by 0.25%, from 1.25% to 1.00%.

Based on the results of the AAP assessment which utilized the December 31, 2021, actuarial valuation performed for funding purposes, effective July 1, 2023, no adjustment to the AI cap is required.

A summary of AAP provisions is provided in Note 4.

Indexing of Benefits

Inactive members, who meet the following conditions, have their benefit amounts increased by the applicable AI granted by PERA from their date of membership termination to their effective date of retirement.

- Covered by the plan as of December 31, 2006;
- Eligible to retire as of January 1, 2011;
- Have 25 or more years of service credit; and
- Have not started receiving monthly benefits.

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, as outlined on the next page, 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, DPS Division, and each Higher Education Institution assigned to the State Division

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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.

Without exception under the working after retirement provisions:

- Employer is required to provide full payment of PERA employer contributions, AED, SAED, and working retiree contributions on all salary earned.
- Retiree cannot work for any PERA employer during the month of the effective date of retirement.
- Retiree does not resume PERA membership or build an additional benefit.
- **“Critical Shortage” Exceptions to the Limits on Working After Retirement:** Certain retirees who have applicable experience, skills, or qualifications that meet one or more areas of the critical shortage positions may receive salary without a reduction in retirement benefits from employers who have declared a critical shortage of certain positions.
- **PERA Retirees Employed By Rural School Districts:** Pursuant to HB 17-1176, enacted June 6, 2017, to be repealed effective July 1, 2023, this exception is applicable to retirees who work for a rural school district that has determined it has a critical shortage of qualified teachers, school bus drivers, or school food services cooks. Provisions specific to this exception include:
 - Retiree cannot work under these provisions for more than six consecutive years.
 - If the retiree is a teacher who retired prior to full service retirement eligibility, a two-year waiting period is required before reemployment by the school district from which the teacher retired.
 - Retiree will not receive a PERA health care premium subsidy during reemployment.
- **PERA Retirees Employed By Board of Cooperative Educational Services (BOCES):** Pursuant to HB 20-1127, enacted July 13, 2020, to be repealed effective July 1, 2025, this exception is applicable to retirees who work as a special service provider for a BOCES that serves rural school districts and has determined it has a critical shortage of qualified service providers. Provisions specific to this exception include:
 - Employer is required to provide an additional 2.00% of the retiree’s salary paid while reemployed under these provisions.
 - Retiree provides services in two or more rural school districts served by the BOCES
 - Retiree cannot work under these provisions for more than five consecutive years.

- If the retiree retired prior to full service retirement eligibility, a two-year waiting period is required before reemployment by the BOCES from which the special service provider retired.
- The total number of special service providers is not to exceed 40 retirees hired by all BOCES.
- Retiree will not receive a PERA health care premium subsidy during reemployment

Benefit Provisions—Voluntary Investment Program, Defined Contribution Retirement Plan, and 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 investment income from the Life Insurance Reserve is 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; 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.

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.

NOTES TO THE FINANCIAL STATEMENTS

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The financial statements include summarized prior-year comparative information. Such information does not include all of the information required to constitute a presentation in accordance with accounting principles generally accepted in the United States of America. Accordingly, such information should be read in conjunction with the financial statements for the year ended December 31, 2020, from which such summarized information was derived.

To conform with current year presentation, a portion of the December 31, 2020, combined amounts for investment settlements and other liabilities on the Statements of Fiduciary Net Position related to fees based solely on the performance of the underlying real estate assets were restated to investments, at fair value, and a portion of the combined amounts for investment expense was restated to net appreciation in fair value of investments on the Statements of Changes in Fiduciary Net Position. The substance of these payments are similar to realized carried interest and the restatements have no effect on the individual funds' fiduciary net position (FNP).

To conform with current year presentation, a portion of the December 31, 2020, combined amounts for administrative expenses on the Statements of Changes in Fiduciary Net Position for the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan related to Investment division administrative expense allocation were restated to investment expense. The restatements have no effect on the individual funds' FNP.

Basis of Accounting

The accompanying financial statements for the defined benefit and defined contribution pension trust funds, the deferred compensation trust fund, the private purpose trust fund, the HCTF, and the DPS HCTF 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 defined benefit and defined contribution pension 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 Health Care Trust Funds, and the Life Insurance Reserve pool their investments into a combined investment fund (CIF). Investment value and earnings of the CIF are allocated among the funds based on each fund's percentage ownership. As of December 31, 2021, the ownership percentages of each fund are shown in the following table.

Trust Fund	Ownership Percentages
State Division	30.15%
School Division	52.38%
Local Government Division	8.84%
Judicial Division	0.72%
DPS Division	7.01%
HCTF	0.77%
DPS HCTF	0.08%
Life Insurance Reserve	0.05%
Total	100.00%

The administrative activities and operating assets and liabilities are pooled and recorded in a Common Operating Fund (COF). Expenses incurred and net operating assets are allocated from the COF 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 staff workload devoted to these funds and member participation in health plans. Expenses are allocated to the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan based on administrative staff workload, internally managed investment fees earned for Investment division expenses and the ratio of 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. See Note 5 for additional information.

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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 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, 2021, 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 ¹	\$31,513	\$30,201	\$6,057	\$5,437	\$7,811	\$—	\$—
Transfers out to other Funds for retirements ¹	(25,938)	(36,267)	(7,918)	(2)	(10,894)	—	—
Transfers in from other Funds for survivor benefits ¹	418	10	—	—	28	—	—
Transfers out to other Funds for survivor benefits ¹	(10)	(239)	(207)	—	—	—	—
Transfers out to Health Care Trust Funds for purchased service credit ²	(2,434)	(2,176)	(986)	(53)	(65)	—	—
Transfers in to Health Care Trust Funds for purchased service credit ³	—	—	—	—	—	5,649	65

¹ The interfund transfers at retirement line on the Schedule of Other Additions and Schedule of Other Deductions in the Supplementary Schedules show where the total for each division is included on the Statements of Changes in Fiduciary Net Position.

² Included in other deductions on the Statements of Changes in Fiduciary Net Position as shown on the Schedule of Other Deductions in the Supplementary Schedules.

³ Included in other additions on the Statements of Changes in Fiduciary Net Position as shown on the Schedule of Other Deductions in the Supplementary Schedules.

As of December 31, 2021, 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	\$74
School Division	129
Local Government Division	22
Judicial Division	2
DPS Division	17
Voluntary Investment Program	(154)
Defined Contribution Retirement Plan	(54)
Deferred Compensation Plan	(38)
HCTF	2
Total	\$—

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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 a percent of their PERA-includable salary as shown in the contribution rate table on the next page. 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 depending on division as shown on the next page.

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, including an additional 2.00% for retirees rehired pursuant to HB 20-1127, 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.

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 for the Judicial Division Trust Fund, as described in the table on page 62. 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%, a decrease in the AED and SAED is mandated and if it subsequently falls below a funded status of 90%, an increase in the AED and SAED is mandated. For the Local Government and Judicial Divisions, if the funded ratio reaches 90% and subsequently falls below 90%, an increase in the AED and SAED is mandated. AED and SAED rates cannot exceed the maximums listed in the table on page 62.

Effective January 1, 2021, and every year thereafter, C.R.S. § 24-51-415 adjusts employer contribution rates for the State and Local Government Divisions to include a defined contribution (DC) supplement. The DC supplement for these two divisions will be determined based on the employer contribution amounts paid on behalf of eligible employees who commence employment on or after January 1, 2019, to DC plan participant accounts that would have otherwise gone to the defined benefit trusts to pay down the unfunded liability. This calculation includes defined benefit investment earnings thereon, and is expressed as a percentage of salary on which employer contributions are made.

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 DPS at a fixed effective annual interest rate of 8.50%. 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 applicable to the DPS Division. The staff of Denver Public Schools provided the PCOP offset rate of 12.09% for 2021, which is reviewed and analyzed by PERA staff.

C.R.S. § 24-51-401(1.7)(e) requires a periodic "true-up" calculation to be performed beginning in 2015 and every five years following, with the purpose of determining the total DPS Division employer contribution rate that would result in the 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. The 2020 calculation indicated that a reduction to the total DPS Division employer rate would be needed to equalize the defined ratio. As of December 31, 2021, the ratio of UAAL over payroll is 294.3% for the School Division and 73.9% for the DPS Division. It should be noted that a reduction in an employer contribution rate for any one Division Trust Fund could potentially influence the outcome of the assessment of contributions (actual versus actuarially determined) considering all five Division Trust Funds, annually performed under the recently adopted AAP, enacted through SB 18-200, and described in greater detail on pages 62-63.

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PERA-affiliated employers forward the contributions to PERA for deposit. PERA transfers a portion of these contributions, equal to 1.02% of the reported salaries, into the HCTF or DPS HCTF for health care benefits. Beginning in 2007, the AIR, under C.R.S. § 24-51-1009, 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 1.00% of the salary reported for members in the PERA benefit structure hired on or after January 1, 2007. Beginning in 2022, post-retirement benefit increases for these members are limited to a maximum of 1.00% (unless further adjusted by the AAP) compounded annually, subject to the availability of assets in the AIR for each division. As of December 31, 2021, the value of the AIR was \$275,074 in the State Division, \$380,775 in the School Division, \$73,037 in the Local Government Division, \$3,497 in the Judicial Division, and \$66,087 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.

Effective July 1, 2021, the member contribution rates increased 0.50% for all divisions, with the exception for members other than State Troopers in the Local Government Division, which did not change.

Pursuant to HB 20-1394, codified in C.R.S. § 24-51-401(1.7)(g), effective for the State's 2020-21 and 2021-22 fiscal years, the employer contribution rate for the Judicial Division decreased by 5.00% and the member contribution rate for the Judicial Division increased by 5.00%. This contribution rate exchange does not apply to the employer or member contribution rates for judges employed by the Denver County Court.

The DC supplement provisions increased employer contribution rates effective January 1, 2021, by 0.05% and 0.02% for all employers in the State and Local Government Divisions, respectively.

The combined employer contribution rates for retirement and health care benefits along with the member contribution rates for 2021 are shown below.

CONTRIBUTION RATES

Trust Fund ¹	Employer Contribution Rate	AED	SAED	DC Supplement	PCOP Offset	Total Contribution Rate Paid by Employer	Member Contribution Rate
January 1, 2021 - June 30, 2021							
State Division (members other than State Troopers)	10.90%	5.00%	5.00%	0.05%	—%	20.95%	10.00%
State Division (State Troopers)	13.60%	5.00%	5.00%	0.05%	—%	23.65%	12.00%
School Division	10.90%	4.50%	5.50%	—%	—%	20.90%	10.00%
Local Government Division (members other than State Troopers)	10.50%	2.20%	1.50%	0.02%	—%	14.22%	8.50%
Local Government Division (State Troopers)	13.60%	2.20%	1.50%	0.02%	—%	17.32%	12.00%
Judicial Division (members other than Denver County Court Judges)	9.41%	4.20%	4.20%	—%	—%	17.81%	15.00%
Judicial Division (Denver County Court Judges)	14.41%	4.20%	4.20%	—%	—%	22.81%	10.00%
DPS Division	10.90%	4.50%	5.50%	—%	(12.09%)	8.81%	10.00%
July 1, 2021 - December 31, 2021							
State Division (members other than State Troopers)	10.90%	5.00%	5.00%	0.05%	—%	20.95%	10.50%
State Division (State Troopers)	13.60%	5.00%	5.00%	0.05%	—%	23.65%	12.50%
School Division	10.90%	4.50%	5.50%	—%	—%	20.90%	10.50%
Local Government Division (members other than State Troopers)	10.50%	2.20%	1.50%	0.02%	—%	14.22%	8.50%
Local Government Division (State Troopers)	13.60%	2.20%	1.50%	0.02%	—%	17.32%	12.50%
Judicial Division (members other than Denver County Court Judges)	9.41%	4.20%	4.20%	—%	—%	17.81%	15.50%
Judicial Division (Denver County Court Judges)	14.41%	4.20%	4.20%	—%	—%	22.81%	10.50%
DPS Division	10.90%	4.50%	5.50%	—%	(12.09%)	8.81%	10.50%

¹ See Note 1 for the definition of "State Troopers."

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FUTURE AED AND SAED RATES

Trust Fund	2022 Rates		Future Annual Increases in Rates Prescribed by Colorado Revised Statutes		Maximum Allowable Limitations	
	AED	SAED	AED	SAED	AED	SAED
State Division	5.00%	5.00%	N/A	N/A	5.00%	5.00%
School Division	4.50%	5.50%	N/A	N/A	4.50%	5.50%
Local Government Division	2.20%	1.50%	No	No	5.00%	5.00%
Judicial Division	4.60%	4.60%	Yes ¹	Yes ²	5.00%	5.00%
DPS Division ³	4.50%	5.50%	N/A	N/A	4.50%	5.50%

¹ C.R.S. § 24-51-411(4.5) increased the AED payment to 4.60% of PERA-includable salary for 2022 and requires the AED payment to increase by 0.40% at the start of 2023 at which time the AED payment will be 5.00% of PERA-includable salary.

² C.R.S. § 24-51-411(7.5) increased the SAED payment to 4.60% of PERA-includable salary for 2022 and requires the SAED payment to increase by 0.40% at the start 2023 at which time the SAED payment will be 5.00% of PERA-includable salary.

³ 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.*

Funding of the plan assumes statutory contributions 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.

Direct Distribution

Pursuant to C.R.S. § 24-51-414, PERA is to receive an annual direct distribution from the State, as a nonemployer contributing entity, in the amount of \$225 million (actual dollars). Beginning in 2018, the distribution will occur each July 1 until there are no unfunded actuarial accrued liabilities in the trust fund of any division that receives such distribution. PERA shall allocate the distribution to the trust funds as it would an employer contribution in a manner that is proportionate to the annual payroll of each division except there shall be no allocation to the Local Government Division.

The allocation for 2021 was as follows:

Trust Fund	Direct Distribution
State Division	\$76,706
School Division	127,781
Judicial Division	1,360
DPS Division	19,153
Total	\$225,000

HB 22-1029, enacted June 7, 2022, requires a restorative payment regarding the suspended 2020 direct distribution. See Note 12 for more information.

Automatic Adjustment Provision

The primary intent of the AAP is to gauge the adequacy of the contributions coming into the pension trust fund against the amount required, and if determined necessary, to initiate automatic changes to member and employer contribution rates, the AI cap, and, under certain circumstances, the direct distribution from the State. This assessment commenced with the December 31, 2018,

actuarial funding valuation and is performed annually, thereafter.

Pursuant to C.R.S. § 24-51-413, the AAP assessment involves the comparison of two blended rates, weighted across all five Division Trust Funds, defined as: the "Blended Total Contribution Amount" (employer contribution rates + member contribution rate + direct distribution as a rate of pay) divided by the "Blended Total Required Contribution" (actuarially determined contribution (ADC) rate + member contribution rate), determining a resulting ratio. If the resulting ratio falls within an acceptable corridor (98% to 119%), no adjustments are made. If the resulting ratio does not achieve a minimum benchmark (less than 98%), adjustments are applied in an equitable manner of impact resulting in increases in contributions and a decrease in the AI cap. If the resulting ratio exceeds the acceptable corridor (120% or greater), adjustments are applied in an equitable manner of impact resulting in decreases in contributions and an increase in the AI cap.

Per statute, the first adjustment required as a result of the AAP did not occur until July 1, 2020. The AAP defines the limited amounts of total adjustment available in each category, and also the increments of adjustments that can occur in any one year. Adjustments over multiple years arising from a single AAP are permitted, although they cannot exceed the ultimate limits as set forth in statute. An adjustment (increase or decrease) to each of the employer contribution rates and the member contribution rates cannot exceed 0.50% in any one year, and cannot exceed 2.00% above or fall below the contribution rates in effect prior to the enactment of SB 18-200. An adjustment to the direct distribution cannot exceed \$20 million (actual dollars) in any one year, and cannot exceed the initially legislated annual \$225 million (actual dollars) amount, but can be reduced to \$0.

Further, adjustments that are required because funding is below the 98% AAP ratio threshold will be made to an

NOTES TO THE FINANCIAL STATEMENTS

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extent that will bring the revised AAP ratio to 103% following the corrective efforts but in no event can the adjustments in one year be greater than the limits as described above. Similarly, adjustments that are required because funding has reached the 120% AAP ratio threshold must not cause the AAP ratio to fall below 103%.

Based on the results of the AAP assessment which utilized the December 31, 2020, actuarial valuation performed for funding purposes, effective July 1, 2022, each of the member and employer contribution rates will increase 0.50%, with no adjustment to the \$225 million (actual dollars) direct distribution.

Based on the results of the AAP assessment which utilized the December 31, 2021, actuarial valuation performed for funding purposes, effective July 1, 2023, no adjustments to member and employer contribution rates are required, with no adjustment to the \$225 million (actual dollars) direct distribution.

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. For 2021, this limit is set at \$230,000 (actual dollars) for retirees who are age 62 or older. This dollar amount is actuarially decreased for retirees younger than 62. 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 2021, employers under these agreements used current employer contributions to pay retirees \$3,412 in the State Division; \$1,000 in the School Division; \$1,737 in the Local Government Division; \$7 in the Judicial Division, and \$64 in the DPS Division. As of December 31, 2021, payroll, there were 171 accounts receiving a replacement benefit.

Contributions—Voluntary Investment Program, Defined Contribution Retirement Plan, and 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% 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% of the then book value of the fund.
- The fund cannot acquire more than 12% 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. § 24-54.8-201 *et seq.* imposes targeted divestment from companies that have economic prohibitions against Israel.

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:

- Recommend statements of investment policy and philosophy, and review the statements at least biennially.
- Recommend the strategic asset allocation and associated benchmarks.
- Review, at least annually, PERA’s compliance with the statement of investment policy.
- Review costs of the investment program.
- Review total fund, asset class, and investment manager performance and risk.
- Advise on any other investment matters and make recommendations for action when necessary.

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(Dollars in Thousands)

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 for the fund. This strategic asset allocation contains a long-term target allocation and specific ranges within which each asset class may operate. The yearly Policy Benchmark weight and long-term asset allocation target, as well as the specified ranges for each asset class are presented in the Investment Section on page 121.

The asset allocation policy is determined by an intensive asset/liability study which considers expected investment returns, risks, and correlations of returns. The characteristics of the fund's liabilities are 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 returns, while ensuring an appropriate level of risk is incurred.

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, and other important investment functions and issues.

See information on the most recent asset/liability study in the Investment Section on page 121.

Investment Performance

For the year ended December 31, 2021, the net-of-fees, money-weighted rate of return on the pooled investment assets was 16.1%.

A money-weighted rate of return 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.

Fair Value

Investments are measured at fair value in accordance with GASB Statement No. 72. Fair value is defined as the amount for which an investment could be sold in an orderly transaction between market participants at the measurement date in the principal or most advantageous market of the investment. This Statement establishes a three-tier, hierarchical disclosure framework which prioritizes and ranks the level of market price observability used in measuring fair value. The hierarchy is based on the valuation inputs used to measure the fair value of the investment and gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). Inputs refer broadly to the assumptions that market participants would use in pricing the asset or liability, including assumptions about risk, for example, the risk inherent in a particular valuation technique used to measure fair value (such as a pricing model) and/or the risk inherent in the inputs to the valuation technique. The categorization of investments within the hierarchy is based upon the pricing transparency of the instrument and should not be perceived as the particular investment's risk. The three-tier framework is summarized below:

- **Level 1**—Unadjusted quoted prices for identical instruments in active markets.
- **Level 2**—Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model-derived valuations in which all significant inputs are observable.
- **Level 3**—Valuations derived from valuation techniques in which significant inputs are unobservable.

Investments in certain entities that calculate a net asset value (NAV) per share (or its equivalent) sometimes do not have a readily determinable fair value. For these investments, governmental accounting standards permit establishment of fair value using a practical expedient based on the NAV per share (or its equivalent).

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The table below presents PERA's investments within the hierarchical framework, as well as investments where fair value is determined using the practical expedient, as of December 31, 2021.

INVESTMENTS MEASURED AT FAIR VALUE

		Fair Value Measurements Using:		
	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Global Equity				
Public market investments ¹				
Information technology	\$10,366,790	\$10,286,294	\$80,496	\$—
Health care	5,275,708	5,225,617	49,648	443
Consumer discretionary	5,178,710	5,106,008	66,785	5,917
Financials	5,020,393	4,936,267	84,001	125
Industrials	4,516,647	4,434,166	81,012	1,469
Communication services	3,097,339	3,070,628	26,698	13
Consumer staples	2,270,016	2,220,804	48,916	296
Materials	1,748,783	1,731,108	17,650	25
Energy	1,122,039	1,098,323	23,716	—
Real estate	1,115,534	1,107,891	7,481	162
Utilities	734,726	720,676	14,050	—
Non-public market investments and other	2,001	—	—	2,001
Total global equity investments	40,448,686	39,937,782	500,453	10,451
Fixed Income				
U.S. Treasuries	3,615,126	3,615,126	—	—
U.S. government mortgage-backed securities	3,490,270	589,984	2,899,950	336
U.S. corporate bonds	2,819,659	—	2,819,659	—
Non-U.S. government/agency bonds	843,422	—	843,422	—
Non-U.S. corporate bonds	548,775	—	548,213	562
Non-agency MBS/CMBS	409,669	—	409,484	185
U.S. municipal bonds	139,336	—	138,385	951
U.S. government agencies	137,686	—	137,686	—
Fixed income mutual funds	16,092	16,092	—	—
Total fixed income investments	12,020,035	4,221,202	7,796,799	2,034
Real estate	1,263,859	—	—	1,263,859
Self-directed brokerage	80,193	79,936	257	—
Total investments by fair value level	53,812,773	\$44,238,920	\$8,297,509	\$1,276,344
Investments Measured at the NAV				
Global equity	1,467,077			
Fixed income	239,569			
Private equity	6,049,676			
Real estate	4,573,021			
Alternatives	3,124,814			
Multi-asset class funds	1,686,305			
Total investments measured at the NAV	17,140,462			
Total investments measured at fair value	\$70,953,235			

¹ Public market investments of \$490,295 are classified in Level 2 due to the election of fair value pricing for international equity portfolios. This election employs the use of intra-day movements of the Russell 1000 index as a factor in pricing individual equity investments to ensure equitability between participants in the PERAdvantage International Stock Fund.

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RECONCILIATION OF INVESTMENT LEVELING DISCLOSURE TO THE STATEMENTS OF FIDUCIARY NET POSITION

	Investments by Fair Value Level	Investments Measured at the NAV	Stable Value Fund ¹	Fixed Income Classified as Short-Term Investments	Statements of Fiduciary Net Position Combined Total
Global equity	\$40,448,686	\$1,467,077	\$—	\$—	\$41,915,763
Fixed income	12,020,035	239,569	483,778	(22,084)	12,721,298
Private equity	—	6,049,676	—	—	6,049,676
Real estate	1,263,859	4,573,021	—	—	5,836,880
Alternatives	—	3,124,814	—	—	3,124,814
Multi-asset class funds	—	1,686,305	—	—	1,686,305
Self-directed brokerage	80,193	—	—	—	80,193
Total	\$53,812,773	\$17,140,462	\$483,778	(\$22,084)	\$71,414,929

¹ The Stable Value Fund is the underlying investment in the PERAdvantage Capital Preservation Fund which is available to participants in the two defined contribution plans and the deferred compensation plan. The value of the investment is based on the contract value, which approximates fair value. Contract value represents what is owed to the plan participants and at what price the shares of the stable value fund are being bought and sold.

Global equity investments classified in Level 1 of the hierarchical framework include securities which trade on a national or international exchange. These investments are primarily valued at the official closing price or last reported sales price of the instrument according to the rules of the exchange. Mutual funds classified in Level 1 of the hierarchical framework include instruments which trade on a national exchange and the fund's NAV is the basis for the fund's transactions. Fixed income securities classified as Level 1 include U.S. Treasuries and U.S. mortgage-backed securities purchased in the to-be-announced forward market. These securities are valued using the bid price, which is the price prospective buyer(s) are prepared to pay to purchase the security. Self-directed brokerage is an investment vehicle available to participants in the two defined contribution plans and the deferred compensation plan. Equity investments contained in the self-directed brokerage accounts trade on an exchange, and therefore are classified in Level 1 of the hierarchical framework.

Global equity investments classified in Level 2 of the hierarchical framework include securities valued using a theoretical price which utilizes a standardized formula to derive a price from a related security or from the intra-day movement of a market index. Fixed income investments classified as Level 2 typically do not trade on a national or international exchange and their fair value is based on

equivalent values of the same or comparable securities with similar yield and risk, otherwise known as matrix pricing. Fixed income investments contained in the self-directed brokerage are typically valued using a matrix pricing approach, and therefore are classified in Level 2 of the hierarchical framework.

Global equity public market investments classified in Level 3 of the hierarchical framework are valued using one or more unobservable inputs. This includes instruments that have been delisted from an exchange, instruments where trading has been suspended, and instruments that lack recent transaction information. Fixed income securities classified in Level 3 of the hierarchical framework include instruments that are in default and instruments whose values are estimated, out of necessity, using unobservable inputs due to lack of comparable securities in the market place. Real estate investments classified in Level 3 of the hierarchical framework were valued by an independent appraiser.

Typically, pricing information for public market investments is made available to PERA by independent, third-party pricing services and other third-party vendors.

The table on the next page presents PERA's unfunded commitments, the investment redemption frequency and redemption notice period as of December 31, 2021, for PERA investments measured at the NAV.

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INVESTMENTS MEASURED AT THE NET ASSET VALUE

	Investments Measured at the NAV	Unfunded Commitments	Redemption Frequency (If Currently Eligible)	Redemption Notice Period
Global equity commingled funds	\$1,467,077	\$—	Daily	1 - 3 days
Fixed income commingled funds	239,569	—	Daily	1 - 3 days
Private equity partnerships	6,049,676	2,555,333	N/A	N/A
Private real estate				
Directly held joint ventures	1,187,757	88,890	N/A	N/A
Real estate partnerships	1,427,551	277,398	Quarterly	90 days
Commingled open-end funds	1,957,713	—	Daily, Quarterly	30 - 90 days
Alternatives				
Alternatives partnerships	1,397,098	1,348,403	Quarterly, Quinquennial	65 - 180 days
Commingled open-end funds	1,727,716	394,845	Daily, Monthly, Quarterly, Annually, Biennial	0 - 180 days
Multi-asset class commingled funds	1,686,305	—	Daily	1 - 3 days
Total	\$17,140,462	\$4,664,869		

The fair value of the investments in global equity, fixed income, and multi-asset class commingled funds has been determined using NAV of the units held at December 31, 2021. Commingled funds are only offered to a limited group of investors, and the most significant element of the NAV is the fair value of the underlying investment holdings of the fund. Unit values are determined by dividing each fund's net assets by the number of units outstanding on the valuation date. Global equity commingled funds include seven funds which primarily consist of investments whose objective is to produce returns that either match or exceed the total rate of return of a particular benchmark. Fixed income commingled funds include three funds that seek results which correspond generally to the price and yield performance of a particular index or to produce returns in excess of the total rate of return of a particular benchmark. Multi-asset class commingled funds include 10 target date retirement funds which are broadly diversified across global asset classes, where asset allocations become more conservative over time with the objective of providing for retirement outcomes consistent with investor preferences throughout the savings and drawdown phase. Additionally, this asset class also includes one fund whose objective is to produce returns that exceed inflation.

Private equity partnerships include 159 private equity limited partnership funds, with various strategies including: buyout, venture capital, generalist debt, mezzanine debt, distressed debt, secondary funds, fund-of-funds, and energy-related strategies. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of PERA's ownership interest in partners' capital. The most significant element of NAV is the fair value of the investment holdings. The valuation techniques vary based on investment type and involve a certain degree of expert judgment. These holdings are valued by the general

partners in conjunction with management, investment advisers, and valuation specialists and are generally audited annually. These investments cannot be redeemed during the term of the partnership. Typically, private equity partnerships have an approximate life of 10 years, with the first four to six years deemed as the investment period when capital is deployed. The remaining years are typically the harvest period in which distributions are received through the liquidation of the underlying assets of the fund. The fair value for these investments could differ significantly if a ready market for these assets existed.

Private real estate includes 67 funds that invest primarily in U.S. institutional quality commercial real estate across a broad range of real estate asset types and locations. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of PERA's ownership interest in partners' capital. The most significant element of NAV is the fair value of the investment holdings. The valuation techniques vary based on investment type and involve a certain degree of expert judgment. These holdings are valued by the general partners in conjunction with management, investment advisers, and valuation specialists and are generally audited annually. There are 44 real estate closed-end limited partnership funds, which are considered illiquid as these investments cannot typically be redeemed during the term of the partnership. Distributions can be made periodically based on the sole discretion of the general partner. There are five majority owned joint venture investments which consist of industrial and multifamily assets in various locations throughout the U.S. These investments are considered illiquid. There are 18 real estate commingled open-ended funds which are considered liquid real estate funds by nature of the open-end structure of the fund. Open-end funds generally offer periodic distributions of net cash flow, which

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investors may elect to reinvest. Additionally, open-end funds generally offer quarterly redemption windows for requesting portions, or all, of PERA's investments. One of the open-ended funds contains a lock-out period with respect to redemptions. The fair value for these investments could differ significantly if a ready market for these assets existed.

Alternatives include 51 funds that invest in timber, real assets, tactical, credit, global macro, multi-strategy, and other opportunistic strategies. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of PERA's ownership interest in partners' capital. The most significant element of NAV is the fair value of the investment holdings. The valuation techniques vary based on investment type and involve a certain degree of expert judgment. These holdings are valued by the general partners in conjunction with management, investment advisers, and valuation specialists and are generally audited annually. There are 32 partnerships within Alternatives that are considered illiquid as the investments cannot be redeemed during the term of the partnership. Two open ended funds are also considered illiquid due to redemption restrictions. Illiquid funds represent approximately 36.8% of the value of alternatives. Four partnerships have redemption periods ranging from quarterly to every five years. There are 13 investments within alternatives that are considered liquid by nature of the open-end structure of the fund. Open-end funds generally offer periodic distributions of net cash flow, which investors may elect to reinvest. Additionally, open-end funds generally offer daily and monthly redemption windows for requesting portions, or all, of PERA's investments. Distributions from each fund will be received as the underlying investments of the funds are liquidated. It is expected that the underlying assets of the funds may be liquidated over the next two to 10 years. The fair value for these investments could differ significantly if a ready market for these assets existed.

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 as of December 31, 2021, in the Statements of Fiduciary Net Position includes short-term fixed income securities of \$22,084, pending foreign exchange contracts of (\$1), and deposit and short-term investment funds of \$2,188,211 for a total of \$2,210,294. PERA considers fixed income securities with a remaining maturity of 12 months or less to be short-term investments.

The table below presents the PERA combined total deposits and short-term investment funds as of December 31, 2021.

	Carrying Value
Deposits with banks (held in accounts insured by the FDIC)	\$21,026
Deposits held at bank (uncollateralized, held by PERA's agent in PERA's name)	13,915
Short-term investment funds held at bank (shares in commingled funds, held by PERA's agent in PERA's name)	2,153,270
Total deposits and short-term investment funds	\$2,188,211

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 2021, its custodian, The Northern Trust Company (Northern Trust) and Deutsche Bank AG, New York Branch (Deutsche Bank).

Northern Trust primarily lends international equity and fixed income securities for cash collateral. U.S. securities are loaned versus collateral valued at 102% of the fair value of the securities plus any accrued interest. Non-U.S. securities are loaned versus collateral valued at 105% of the fair value of the securities plus any accrued interest. Collateral is marked-to-market daily. PERA cannot pledge or sell the collateral securities unless the borrower defaults.

Northern Trust invests the cash collateral related to PERA's loaned securities in a separate account according to guidelines stipulated by PERA. Northern Trust's Senior Credit Committee sets borrower credit limits. As of December 31, 2021, the total fair value of securities on loan with Northern Trust cannot exceed \$600,000.

Deutsche Bank lends domestic and international equities for cash collateral. U.S. securities are loaned versus collateral valued at a minimum of 102% of the fair value of the securities. International securities are loaned versus collateral valued at a minimum of 105% of the fair value of the securities. Collateral is marked-to-market daily. PERA cannot pledge or sell the collateral securities unless the borrower defaults.

Deutsche Bank invests the cash collateral related to PERA's loaned securities in a separate account according to guidelines stipulated by PERA. Deutsche Bank's Global Credit Risk Department sets borrower credit limits. As of December 31, 2021, the total fair value of securities on loan with Deutsche Bank cannot exceed \$1,500,000.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

The table below details the balances relating to the securities lending transactions at December 31, 2021.

Securities Lent for Cash Collateral	Fair Value of Underlying Securities	Cash Collateral Received	Cash Collateral Investment Value
Cash and cash equivalents	\$—	\$—	\$1,124,258
Global equity	1,155,052	1,182,865	—
Fixed income	74,333	75,872	134,749
Total	\$1,229,385	\$1,258,737	\$1,259,007

PERA's income, including realized and unrealized gain/(loss), net of rebates and fees from securities lending, was \$6,445 for the year ended December 31, 2021. Included in net securities lending income for the year ended December 31, 2021, was \$150 from commingled funds.

As of December 31, 2021, 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, 2021. PERA has limited the total fair value of securities outstanding to one borrower to 25% of the total fair value of all borrowed securities in the Deutsche Bank lending program and \$50,000 per borrower in the Northern Trust lending program.

PERA or the borrower may terminate any security loan on demand. Though every loaned security may be sold and reclaimed at any time from the borrower, the weighted average loan life of overall loans outstanding at Northern Trust and Deutsche Bank was approximately 48 days and 137 days, respectively, as of December 31, 2021. At Northern Trust and Deutsche Bank, all loans were made on an overnight (one day) basis throughout 2021. The approximate weighted average maturity (to the next reset date) at Northern Trust was 1 day and at Deutsche Bank was 11 days as of December 31, 2021. Since all securities loans are made 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.

As of December 31, 2021, reinvested securities lending collateral of \$1,259,007 primarily consisted of investments totaling \$1,124,258 valued at par, and accordingly are not classified within the fair value hierarchical framework. At December 31, 2021, \$134,749 of the \$1,259,007 in reinvested securities lending collateral consisted of fixed income investments and were considered to be Level 2 investments in the fair value hierarchical framework. Fixed income investments classified as Level 2 typically do

not trade on a national or international exchange and their fair value is based on equivalent values of the same or comparable securities with similar yield and risk, otherwise known as matrix pricing.

Custodial Credit Risk

Governmental accounting standards limit the disclosure of custodial credit risk to investment securities that are uninsured, held in physical or book entry form, are not registered in PERA's name, and are held by either the counterparty or the counterparty's trust department or agent but not in PERA's name. Disclosure of custodial credit risk is also required when deposits are not covered by depository insurance and are uncollateralized, collateralized with securities held by the pledging financial institution, or collateralized with securities held by the pledging financial institution's trust department or agent but not in PERA's name.

To mitigate custodial credit risk, PERA's custodial credit risk policy has requirements governing how securities are held by the master custodian and for the effective management of cash balances. To further minimize custodial credit risk, periodic reviews are required to be completed on the master custodian's credit quality and capital levels. Additionally, assessments of counterparty risk are completed periodically using internal analysis and information obtained from third-party research and rating agency reports.

Northern Trust is the master custodian for the majority of PERA's securities. At December 31, 2021, there were no investments, or collateral securities subject to custodial credit risk. At December 31, 2021, there were \$13,915 of foreign currency deposits and \$49,799 of margin which were uninsured and uncollateralized and, therefore, exposed to custodial credit risk.

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% of the then book value of the fund, nor shall the fund acquire more than 12% of the outstanding stock or bonds of any single corporation. The 12% 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% of the then book value of the fund and no holdings greater than 12% of the outstanding stock or bonds of any single corporation at December 31, 2021.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

RECONCILIATION OF CREDIT AND INTEREST RATE RISK
DISCLOSURES TO FINANCIAL STATEMENTS

	As of December 31, 2021
Fixed income	\$12,721,298
Fixed income securities classified as short term	22,084
Total fixed income securities	\$12,743,382

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, 2021, PERA held investments across the credit ratings spectrum, with the majority invested in investment grade issuers defined as having a minimum rating of Baa3 issued by Moody's (or the equivalent by another nationally recognized statistical rating organization (NRSRO) which PERA does not have a license to publish).

PERA's fixed income credit risk provisions primarily include limitations on the fixed income portfolio, however, the policy also governs limitations on the total fund. For the defined benefit trust funds, the amount of below investment grade securities is limited to 3% of the fixed income portfolio, the exposure of a single company's securities is limited to 5%, and there are limits pertaining to holdings within the spectrum of credit rating categories. For the defined contribution and deferred compensation plans, there are limits pertaining to holdings within the spectrum of credit rating categories to limit below investment grade securities in accordance with individual investment manager mandates.

The table below provides Moody's credit quality ratings for PERA's fixed income holdings as of December 31, 2021.

CREDIT QUALITY RATING DISPERSION SCHEDULE

Quality Rating	Total	U.S. Govt Mortgage-Backed Securities	U.S. Corporate Bonds	Non-U.S. Govt/ Agency Bonds	Non-U.S. Corporate Bonds	Stable Value Fund	Non-Agency MBS/CMBS	U.S. Municipal Bonds	U.S. Govt Agencies ¹
Aaa	\$866,097	\$1,324	\$72,484	\$485,602	\$—	\$—	\$163,785	\$5,216	\$137,686
Aa1	76,135	—	8,690	54,695	—	—	1,787	10,963	—
Aa2	135,170	—	50,385	28,759	21,940	—	6,655	27,431	—
Aa3	201,990	—	85,852	48,191	10,801	—	8,209	48,937	—
A1	422,156	—	243,785	51,676	113,053	—	—	13,642	—
A2	592,237	—	532,308	2,006	48,769	—	1,903	7,251	—
A3	487,925	—	409,974	—	75,500	—	1,028	1,423	—
Baa1	398,389	—	219,237	67,799	111,022	—	—	331	—
Baa2	625,223	—	449,535	67,720	96,734	—	11,234	—	—
Baa3	633,398	—	523,923	23,769	70,394	—	—	15,312	—
Ba1	124,654	—	124,420	234	—	—	—	—	—
Ba2	25,657	—	25,657	—	—	—	—	—	—
B2	7,234	—	7,234	—	—	—	—	—	—
Not rated ²	3,674,709	2,887,325	66,175	12,971	562	483,778	215,068	8,830	—
Subtotal	8,270,974	\$2,888,649	\$2,819,659	\$843,422	\$548,775	\$483,778	\$409,669	\$139,336	\$137,686
U.S. Treasuries	3,615,126								
Explicit U.S. govt agencies ³	601,621								
Fixed income commingled funds ^{2,4}	239,569								
Fixed income mutual funds ²	16,092								
Total	\$12,743,382								

¹ Includes bonds issued by Federal Home Loan Bank, Federal Home Loan Mortgage Corporation, Federal National Mortgage Association, and other Government-sponsored enterprises.

² Not rated.

³ Bonds issued by the Government National Mortgage Association.

⁴ The fair value and average fund-level credit quality ratings as reported by the commingled fund managers are: \$13,172—Aaa; \$108,436—Aa2; \$117,961—A1.

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's fixed income holdings as of December 31, 2021, is shown in the table below:

INTEREST RATE RISK—EFFECTIVE DURATION

	Fair Value	Effective Weighted Duration in Years
U.S. Treasuries	\$3,615,126	8.02
U.S. government mortgage-backed securities	3,490,270	4.24
U.S. corporate bonds	2,819,659	8.78
Non-U.S. government/agency bonds	843,422	4.48
Non-U.S. corporate bonds	548,775	7.09
Stable value fund	483,778	3.40
Non-agency MBS/CMBS	409,669	6.13
Fixed income commingled funds	239,569	6.70
U.S. municipal bonds	139,336	10.50
U.S. government agencies	137,686	4.95
Fixed income mutual funds	16,092	6.54
Total	\$12,743,382	6.61

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. PERA invests in mortgage-backed securities for diversification and to enhance fixed income returns.

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. Mortgage-backed securities are subject to credit risk, the risk that the borrower will be unable to meet its obligations. 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, residential mortgage-backed securities are also subject to prepayment risk as the timing of principal and interest payments remains uncertain. A decline in interest rates can result in call risk as prepayments accelerate, which reduces the weighted average life of the security. Alternatively, an increase in interest rates can result in extension risk as prepayment rates decline, 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. CMBS are subject to credit risk, the risk that the borrower will be unable to meet its obligations. 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.

To reduce PERA's counterparty credit risk while trading residential mortgage-backed securities, PERA has entered into Master Securities Forward Transaction Agreements with a number of 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, 2021, the change in net value of all unsettled trades was above the agreed upon thresholds resulting in collateral of \$2,911 held by PERA.

As of December 31, 2021, the fair value of residential and commercial mortgage-backed securities was \$3,336,228 and \$563,711, respectively, which excludes the fair value of mortgage-backed securities held in commingled funds.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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 incorporate 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, 2021, PERA did not have a currency hedging program at the total fund level. However, at the manager level, hedging currency risk may be permitted which allows the manager to actively manage currency exposure at their discretion in accordance with their individual investment guidelines. PERA monitors currency risk at the total fund, asset class, and portfolio levels. PERA's exposure to foreign currency risk as of December 31, 2021, is shown in the following table.

FOREIGN CURRENCY RISK

Currency	Total	Global Equity	Fixed Income	Private Equity	Real Estate	Alternatives	Cash and Short-Term Investments	Income Receivable	Pending Trades	Pending Foreign Exchange Trades
Euro	\$3,741,847	\$3,098,587	\$—	\$487,649	\$106,800	\$20,509	\$5,359	\$27,954	\$311	(\$5,322)
Japanese yen	1,956,887	1,953,882	—	—	—	—	396	2,609	(236)	236
British pound sterling	1,725,555	1,704,852	—	16,182	—	—	1,309	3,212	—	—
Swiss franc	1,089,635	1,076,569	—	—	—	—	8	13,058	—	—
Hong Kong dollar	992,407	992,097	—	—	—	—	146	164	101	(101)
Canadian dollar	723,034	720,794	—	—	—	—	667	1,573	—	—
Swedish krona	621,349	619,467	—	—	—	—	269	1,613	—	—
New Taiwan dollar	501,731	501,007	—	—	—	—	1	723	—	—
Australian dollar	460,857	460,178	—	—	—	—	110	569	—	—
South Korean won	384,332	381,218	—	—	—	—	—	3,048	211	(145)
Danish krone	318,490	313,428	—	—	—	—	82	4,980	753	(753)
Indian rupee	304,476	304,279	—	—	—	—	77	120	—	—
Singapore dollar	157,966	157,798	—	—	—	—	48	117	3	—
Brazilian real	141,542	136,646	451	—	—	—	3,844	601	—	—
Chinese yuan renminbi (offshore)	132,076	131,983	—	—	—	—	93	—	—	—
Norwegian krone	86,607	86,566	—	—	—	—	41	—	—	—
Saudi riyal	80,822	79,695	—	—	—	—	1,127	—	—	—
Israeli shekel	57,036	56,989	—	—	—	—	24	23	—	—
Indonesian rupiah	48,216	48,131	—	—	—	—	11	74	—	—
Polish zloty	41,346	41,312	—	—	—	—	—	34	—	—
South African rand	29,150	29,136	—	—	—	—	14	—	—	—
New Zealand dollar	19,014	18,974	—	—	—	—	40	—	—	—
Mexican peso	16,227	16,093	—	—	—	—	134	—	—	—
United Arab Emirates dirham	15,670	15,657	—	—	—	—	13	—	—	—
Czech koruna	15,128	15,126	—	—	—	—	2	—	—	—
Qatari riyal	12,232	12,228	—	—	—	—	4	—	—	—
Hungarian forint	10,699	10,699	—	—	—	—	—	—	—	—
Thai baht	10,161	10,159	—	—	—	—	2	—	—	—
Malaysian ringgit	4,988	4,900	—	—	—	—	87	1	—	—
Turkish lira	3,403	3,403	—	—	—	—	—	—	—	—
Russian ruble	1,909	1,909	—	—	—	—	—	—	—	—
Chilean peso	790	790	—	—	—	—	—	—	—	—
Philippine peso	544	543	—	—	—	—	1	—	—	—
Peruvian sol	6	—	—	—	—	—	6	—	—	—
Total	\$13,706,132	\$13,005,095	\$451	\$503,831	\$106,800	\$20,509	\$13,915	\$60,473	\$1,143	(\$6,085)

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, 2021, that have been deemed significant by management. These instruments are recorded in investment receivables in the Statements of Fiduciary Net Position and the changes in fair value 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 PLANS

Changes in Fair Value		
Investment Derivatives	Classification	Amount
Equity futures	Investment income	\$65,017
Fixed income futures	Investment loss	(4,218)
Total		\$60,799
Fair Value at December 31, 2021		
	Classification	Amount
	Investment receivables	\$49,799
Total		\$49,799

Equity/Fixed Income Futures

Equity and fixed income futures represent contracts between two parties to purchase or sell securities or cash at a future date for a specified price. Futures contracts trade on organized exchanges. Recognition of investment income, with a corresponding change to the amount of investment receivables or liabilities, occurs on a daily basis according to the fluctuation of value of the futures contract. Payments are received or made to settle the fluctuation of the contract's value on a periodic basis.

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.

Investment in futures contracts exposes PERA to credit risk. No losses related to counterparty nonperformance occurred in 2021. Credit risk is minimized by central counterparty clearing, margin deposits, and periodic settlement payments. Investments in fixed income futures exposes PERA to interest rate risk.

At December 31, 2021, PERA's defined benefit plans had 4,120 outstanding futures contracts with a total notional market exposure of \$570,547 and total investment

receivables of \$49,799 reflecting counterparty margin deposits and fluctuation of the contract value since the last periodic settlement payment.

FUTURES CONTRACTS OUTSTANDING—DEFINED BENEFIT PLANS

As of December 31, 2021

Contract Type	Year of Maturity	Notional Amount (Market Exposure)
Equity	2022	\$436,190
Fixed income	2022	134,357
Total		\$570,547

Note 7—Commitments and Contingencies

As of December 31, 2021, PERA had commitments for future investments in Private Equity of \$2,555,333, Real Estate of \$366,288, and Alternatives of \$1,743,248.

Lawsuit Regarding Tri-County Health Department

On July 10, 2020, Douglas County first provided Tri-County Health Department (Tri-County Health), a PERA employer, with a Notice of Intent to withdraw. On September 24, 2021, PERA provided Tri-County Health with an actuarial report estimating the disaffiliation costs as \$50 million (actual dollars). By an Agreement dated September 28, 2021, Tri-County Health agreed that Douglas County had effectively withdrawn. Subsequently both Adams County and Arapahoe County provided Tri-County Health with Notices of Intent to withdraw, effective December 31, 2022. If Tri-County Health were to leave PERA and not fully pay the costs of the benefits earned by its current and former employees, other employers in the Local Government Division would see an increase in their respective liabilities to make up the shortfall. PERA's responsibility is to administer the plan as called for in statute and prevent one employer from shifting its pension costs to others, therefore, PERA filed a lawsuit on February 1, 2022 against Tri-County Health and Adams, Arapahoe, and Douglas counties to enforce payment of the disaffiliation costs. Prior to filing the lawsuit, PERA communicated with Tri-County Health and Adams, Arapahoe, and Douglas counties, but did not receive assurances that they would pay the disaffiliation costs.

Other 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.

Contribution Settlements

In the normal course of business, administrative errors can occur resulting in corrections to prior employer and member contribution remissions.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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

PERA administers the Voluntary Investment Program (PERAPlus 401(k) Plan), the Defined Contribution Retirement Plan (DC Plan), and the Deferred Compensation Plan (PERAPlus 457 Plan), collectively known as the Capital Accumulation Plans (CAPs). The PERAPlus 401(k) Plan and DC Plan are both defined contribution plans. The PERAPlus 457 Plan is a deferred compensation plan. The Board has the authority to establish and amend the CAPs pursuant to C.R.S. § 24-51-1401, C.R.S. § 24-51-1501, and C.R.S. § 24-51-1601, respectively. The provisions of the PERAPlus 401(k) Plan and the DC Plan are found in the law at C.R.S. § 24-51-1401 *et seq.*, C.R.S. § 24-51-1501, *et seq.*, PERA Rules, 8 CCR 1502-1, and *PERA's 401(k) and Defined Contribution Plan and Trust* document. The provisions of the PERAPlus 457 Plan are found in the law at C.R.S. § 24-51-1601 *et seq.*, PERA Rules, 8 CCR 1502-1, and *The PERA Deferred Compensation Plan* document.

All Plans

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

- 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 Socially Responsible Investment (SRI) Fund
 - PERAdvantage U.S. Large Cap Stock Fund
 - PERAdvantage U.S. Small and Mid-Cap Stock Fund
 - PERAdvantage International Stock Fund
 - PERAdvantage Income 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
 - PERAdvantage 2065 Fund
 - TD Ameritrade Self-Directed Brokerage Account
- The participant's account balances become 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.
- Empower Retirement administers the recordkeeping for all participant transactions. Northern Trust provides an

array of financial services in support of day to day operations of the CAPs, including custodial services.

- Cash balances represent both operating cash accounts and investment cash on deposit held by the custodians.
- Participants pay plan administration fees and investment management fees. Plan administrative fees cover fees for services such as recordkeeping, accounting, and plan maintenance. Investment management fees are charged by the fund managers for the CAPs' investment options to cover the costs of managing their respective funds.

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 409 employers eligible to participate in 2021 (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 2021, participants could contribute the lesser of \$19,500 (actual dollars) or 100% of compensation less PERA member contributions. Catch-up contributions up to \$6,500 (actual dollars) in 2021 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 \$58,000 (actual dollars) per participant in 2021.

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, 2021, was \$49,684 and was recorded as a benefit receivable on the Statements of Fiduciary Net Position. As of December 31, 2021, there were 67,887 participants with balances. During 2021, the PERAPlus 401(k) Plan had a total of 2,292 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

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

defined benefit plan. Participation is available to certain employees of the State or Local Government Divisions, classified employees at State colleges and universities, most community colleges, as well as the District Attorney within each Judicial District, and if authorized by the county and the District Attorney, the attorneys within that Judicial District (see Note 1 for additional details). The eligible employees have the option to choose the PERA defined benefit plan or the DC Plan. There were 164 employers eligible to participate in 2021. 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.

Between the second and fifth year 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 the second and fifth year of membership, to terminate membership in the PERA defined benefit plan and become a participant of the DC Plan. Either election is irrevocable.

2021 rates for employer and member contributions deposited to DC Plan participant accounts are shown in the table below.

Trust Fund	Employer Contribution Rate ^{1,2,3}	Member Contribution Rate
January 1, 2021 - June 30, 2021		
State Division (members other than State Troopers) ⁴	10.15%	10.00%
State Division (State Troopers) ⁴	12.85%	12.00%
Local Government Division (members other than State Troopers)	10.00%	8.50%
Local Government Division (State Troopers) ⁴	12.85%	12.00%
July 1, 2021 - December 31, 2021		
State Division (members other than State Troopers) ⁴	10.15%	10.50%
State Division (State Troopers) ⁴	12.85%	12.50%
Local Government Division (members other than State Troopers)	10.00%	8.50%
Local Government Division (State Troopers) ⁴	12.85%	12.50%

¹ Employers also contribute the AED and SAED to the respective Division Trust Fund. See Note 4 for additional details on AED and SAED.

² Additional 0.05% or 0.02% in employer DC supplement contributions beginning January 1, 2021, are deposited in the respective Division Trust Fund. See Note 4 for additional information on the DC supplement.

³ Additional 0.50% in employer AAP contributions are deposited in the respective Division Trust Fund. See Note 4 for additional information on AAP.

⁴ Additional 0.25% in statutory employer contribution increases are deposited in the respective Division Trust Fund.

Note: See Note 1 for the definition of "State Troopers."

DC Plan participants immediately vest in 50% of their employer contributions, together with accumulated investment earnings on the vested portion. For each full year of participation, vesting increases by 10%. Contribution requirements are established under C.R.S. § 24-51-1505.

Provisions of the DC Plan allow for the transfer of DC funds to the PERAPlus 401(k) Plan if a participant is still a PERA member but not active in the DC Plan. Additionally, the election to purchase service credit is available to those who are eligible and who are members of the PERA defined benefit plan with an existing DC Plan account. As of December 31, 2021, the DC Plan had 7,673 participants with balances. During the year, 399 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 2021, participants could defer the lesser of \$19,500 (actual dollars) or 100% of compensation less PERA member contributions. Catch-up deferrals, up to the greater of \$6,500 (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 2021, 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 credit. The balance of outstanding loans as of December 31, 2021, was \$10,427 and was recorded as a benefit receivable on the Statements of Fiduciary Net Position. As of December 31, 2021, there were 20,022 participants with balances. During the year, the PERAPlus 457 Plan had a total of 763 terminated participants take full distributions of their accounts.

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Note 9—Health Care Trust Funds—Defined Benefit Health Care Plans

PERA offers two defined benefit other postemployment benefit (OPEB) health care plans to benefit recipients and retirees. The HCTF and the DPS HCTF were created under C.R.S. § 24-51-1201(1) and (2), respectively. The HCTF is a cost-sharing multiple-employer plan and the DPS HCTF is a single-employer plan. These funds provide a health care premium subsidy to eligible 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 trust 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 health benefits program, including the administration of the premium subsidies. PERA contracts with a national insurance carrier to administer claims for the self-insured health care plans, with a national prescription benefit manager to administer a pharmacy benefit for the self-insured plans, and with health insurance companies to provide services with fully insured health care plans.

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 Eligibility

Enrollment in the PERACare health benefits 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 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% 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

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who are under 65 years of age and entitled to Medicare. 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% 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 plans was moved to Employer Group Waiver Plan (EGWP) Medicare Part D prescription drug coverage. The EGWP provides three types of 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 offsets claims expense when the subsidies are received from the EGWP.

The subsidies provided by the EGWP include the following:

- A monthly direct subsidy paid for each enrollee of the plan. This subsidy is based on a number of factors including the number of enrollees in the plan, a risk score based on the overall health of Medicare members, and the difference between the average premium for all Part D plans and the cost of Basic Part D coverage. Over time direct subsidies have decreased, and may even be negative for some plans, but the other two subsidies described here have increased.
- 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 2021:

Subsidy	HCTF	DPS HCTF
Monthly direct subsidy	(\$929)	(\$37)
Quarterly Coverage Gap Discount	23,606	944
Annual federal reinsurance	39,009	1,558
Total	\$61,686	\$2,465

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. PERA-affiliated employers must submit contributions for all PERA members equal to 1.02% of covered salaries. PERA-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.

Listed below is the number of active participating employers for the two Health Care Trust Funds. Guidance under GASB 74 classifies a primary government and its component units as one employer.

Trust Fund	As of December 31, 2021 ¹
HCTF	408
DPS HCTF	1
Total employers	409

¹ This employer count is presented for purposes of complying with GASB 74 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.

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

Plan Data

Benefit recipients and members of PERA consisted of the following as of December 31, 2021:

MEMBERSHIP—HEALTH CARE TRUST FUNDS¹

	HCTF	DPS HCTF	2021
Retirees and beneficiaries ²	124,925	7,186	132,111
Inactive members eligible but not yet receiving benefits ³	30,766	2,249	33,015
Active members ³	191,574	15,695	207,269
Total	347,265	25,130	372,395

¹ PERA's inactive members not eligible for benefits are not included in this membership count for Health Care Trust Funds.

² Currently receiving or eligible for OPEB benefits.

³ May be eligible for future OPEB benefits.

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PARTICIPATION IN PERACARE HEALTH PLANS FOR ELIGIBLE RETIREES AND BENEFICIARIES

	HCTF	DPS HCTF	Total
Enrolled in PERACare			
Under age 65	9,002	361	9,363
Age 65 and older	47,176	3,029	50,205
	56,178	3,390	59,568
Not enrolled in PERACare			
Under age 65	17,653	688	18,341
Age 65 and older	51,094	3,108	54,202
	68,747	3,796	72,543
Total eligible retirees and beneficiaries	124,925	7,186	132,111

Summary of HCTF and DPS HCTF

PERA offers two general types of health plans: fully insured plans offered through health care organizations and self-insured plans administered by third-party vendors. The plans offered include HMO, PPO, and Medicare Advantage plans.

Premiums collected and payments made are reported in two ways, depending on whether or not the funds bear any level of risk with regard to the health coverage. When there is no transfer of risk to the funds, 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.

When the health care plan bears risk, all claims paid are reported as benefit payments and premiums collected are reported as a reduction to benefit payments. The health care plan that involves risk to the funds is the self-insured plan administered by Anthem Blue Cross Blue Shield (Anthem). For this plan, the prescription claims and commercial medical claims are self-insured, while the Medicare portion of medical claims are fully insured. Due to PERA's premium structure, these Medicare premiums paid to Anthem are reported as an expense within the Anthem plan and included in benefit payments. 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 the EGWP could be different from the consultant's determination resulting in either a gain or a loss to the funds. In addition, other estimates and

assumptions are made for these funds. It is possible that actual results could significantly differ from these estimates.

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 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 claims paid for the self-insured dental and vision plans are recorded as benefit payments and the premiums collected are recorded as a reduction to benefit payments. PERA uses an outside consultant to determine the premiums required to cover anticipated claims. The risk to 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, 2021, there were 67,256 participants enrolled in the dental plans and 54,700 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 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, 2021, there were 14 employers in the program with 157 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, 2021, there were 228 participants enrolled in the dental plans and 266 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.

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Note 10—Net Pension Liability of the Division Trust Funds

The components of the net pension liability (NPL) or net pension asset (NPA) for participating employers for each Division Trust Fund as of December 31, 2021, are as follows:

	State Division	School Division	Local Government Division	Judicial Division	DPS Division
Total pension liability	\$27,360,605	\$46,292,090	\$5,758,380	\$486,298	\$4,639,698
Plan fiduciary net position	19,985,566	34,654,724	5,844,117	477,126	4,633,727
Net pension liability (asset)	\$7,375,039	\$11,637,366	(\$85,737)	\$9,172	\$5,971
Plan fiduciary net position as a percentage of the total pension liability	73.05%	74.86%	101.49%	98.11%	99.87%

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 Changes in Net Pension Liability and Related Ratios 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 the total pension liability (TPL) for each division. 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, 2020, and generally accepted actuarial techniques were applied to roll forward the TPL to December 31, 2021 (measurement date). The December 31, 2020, actuarial valuations used the following actuarial cost method and key actuarial assumptions and other inputs:

	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	2.30%	2.30%	2.30%	2.30%	2.30%
Real wage growth	0.70%	0.70%	0.70%	0.70%	0.70%
Wage inflation	3.00%	3.00%	3.00%	3.00%	3.00%
Salary increases, including wage inflation:					
Members other than State Troopers ¹	3.30%-10.90%	3.40%-11.00%	3.20%-11.30%	2.80%-5.30%	3.80%-11.50%
State Troopers ¹	3.20%-12.40%	N/A	3.20%-12.40%	N/A	N/A
Long-term investment rate of return, net of pension plan investment expenses, including price inflation	7.25%	7.25%	7.25%	7.25%	7.25%
Discount rate	7.25%	7.25%	7.25%	7.25%	7.25%
Post-retirement benefit increases:					
PERA benefit structure hired prior to 1/1/07 and DPS benefit structure (compounded annually)	1.00%	1.00%	1.00%	1.00%	1.00%
PERA benefit structure hired after 12/31/06 ²	Financed by the AIR	Financed by the AIR	Financed by the AIR	Financed by the AIR	Financed by the AIR

¹ See Note 1 for the definition of "State Troopers."

² 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.

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The TPL as of December 31, 2021, includes the anticipated adjustments to contribution rates and the AI cap, resulting from the 2020 AAP assessment, statutorily recognized July 1, 2021, and effective July 1, 2022.

The mortality tables described below are generational mortality tables developed on a benefit-weighted basis.

- Pre-retirement mortality assumptions for the State and Local Government Divisions (members other than State Troopers) were based upon the PubG-2010 Employee Table with generational projection using scale MP-2019.
- Pre-retirement mortality assumptions for State Troopers were based upon the PubS-2010 Employee Table with generational projection using scale MP-2019.
- The pre-retirement mortality assumptions for the School and DPS Divisions were based upon the PubT-2010 Employee Table with generational projection using scale MP-2019.
- Pre-retirement mortality assumptions for the Judicial Division were based upon the PubG-2010(A) Above-Median Employee Table with generational projection using scale MP-2019.
- Post-retirement non-disabled mortality assumptions for the State and Local Government Divisions (members other than State Troopers) were based upon the PubG-2010 Healthy Retiree Table, adjusted as follows:
 - **Males:** 94% of the rates prior to age 80 and 90% of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 87% of the rates prior to age 80 and 107% of the rates for ages 80 and older, with generational projection using scale MP-2019.
- Post-retirement non-disabled mortality assumptions for State Troopers were based upon the unadjusted PubS-2010 Healthy Retiree Table, with generational projection using scale MP-2019.
- Post-retirement non-disabled mortality assumptions for the School and DPS Divisions were based upon the PubT-2010 Healthy Retiree Table, adjusted as follows:
 - **Males:** 112% of the rates prior to age 80 and 94% of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 83% of the rates prior to age 80 and 106% of the rates for ages 80 and older, with generational projection using scale MP-2019.
- Post-retirement non-disabled mortality assumptions for the Judicial Division were based upon the unadjusted PubG-2010(A) Above-Median Healthy Retiree Table with generational projection using scale MP-2019.
- Post-retirement non-disabled beneficiary mortality assumptions for the Division Trust Funds were based upon the Pub-2010 Contingent Survivor Table, adjusted as follows:
 - **Males:** 97% of the rates for all ages, with generational projection using scale MP-2019.
 - **Females:** 105% of the rates for all ages, with generational projection using scale MP-2019.
- Disabled mortality assumptions for the Division Trust Funds (members other than State Troopers) were based upon the PubNS-2010 Disabled Retiree Table using 99% of the rates for all ages with generational projection using scale MP-2019.
- Disabled mortality assumptions for State Troopers were based upon the unadjusted PubS-2010 Disabled Retiree Table with generational projection using scale MP-2019.

The actuarial assumptions used in the December 31, 2020, valuations were based on the 2020 experience analysis, dated October 28, 2020, for the period January 1, 2016, through December 31, 2019. Revised economic and demographic assumptions were adopted by the Board on November 20, 2020.

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 the Experience Study report dated October 28, 2020.

Several factors are 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 percentages 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 future returns.

The Board first adopted the 7.25% long-term expected rate of return as of November 18, 2016. Following an asset/liability study, the Board reaffirmed the assumed rate of return at the Board's November 15, 2019, meeting, to be effective January 1, 2020. As of the most recent reaffirmation of the long-term rate of return, the target

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asset allocation and best estimates of geometric real rates of return for each major asset class are summarized in the table as follows:

Asset Class	Target Allocation	30-Year Expected Geometric Real Rate of Return
Global Equity	54.00%	5.60%
Fixed Income	23.00%	1.30%
Private Equity	8.50%	7.10%
Real Estate	8.50%	4.40%
Alternatives	6.00%	4.70%
Total	100.00%	

Note: In setting the long-term expected rate of return, projections employed to model future returns provide a range of expected long-term returns that, including expected inflation, ultimately support a long-term expected nominal rate of return assumption of 7.25%.

Discount Rate/Single Equivalent Interest Rate

The projection of cash flows used to determine the discount rate was performed in accordance with GASB 67. The basis for the projection of the liabilities and the FNP was an actuarial valuation performed as of December 31, 2020, and the financial status of the funds as of the prior measurement date (December 31, 2020). In addition to the actuarial cost method and assumptions 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 3.00%.
- Employee contributions were assumed to be made at the member contribution rates in effect for each year, including the scheduled increases in SB 18-200, required adjustments resulting from the 2018 AAP assessment, and the additional 0.50% for each of the five Division Trust Funds, resulting from the 2020 AAP assessment, statutorily recognized July 1, 2021, and effective July 1, 2022. 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 for each year, including the scheduled increase in SB 18-200, required adjustments resulting from the 2018 AAP assessment, and the additional 0.50% for each of the five Division Trust Funds, resulting from the 2020 AAP assessment, statutorily recognized July 1, 2021, and effective July 1, 2022. Employer contributions also include current and estimated future AED and SAED, until the actuarial value funding ratio

reaches 103%, at which point the AED and SAED will each drop 0.50% every year until they are zero.

Additionally, estimated employer contributions reflect 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 for the DPS Division Trust Fund 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.
- As specified in law, the State, as a nonemployer contributing entity, will provide an annual direct distribution of \$225 million (actual dollars), commencing July 1, 2018, that is proportioned between the State, School, Judicial, and DPS Division Trust Funds based upon the covered payroll of each Division. The annual direct distribution ceases when all Division Trust Funds are fully funded.
- Employer contributions and the amount of total service costs for future plan members were based upon a process to estimate future ADCs 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. AIR transfers to the FNP position and the subsequent AIR benefit payments were estimated and included in the projections.
- As required by HB 20-1394, 5.00% of the Judicial Division base employer contribution rate is to be paid by the members of the Judicial Division effective for the 2020-21 and 2021-22 fiscal years. This contribution rate modification does not apply to judges employed by the Denver County Court.
- The projected benefit payments reflect the lowered AI cap, from 1.25% to 1.00%, resulting from the 2020 AAP assessment, statutorily recognized July 1, 2021, and effective July 1, 2022.
- Benefit payments and contributions were assumed to be made at the middle of the year.

Based on those methods and assumptions and the GASB 67 projection test methodology, the FNP for all Division Trust Funds 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 plan investments was applied to all periods of projected benefit payments to determine the TPL for each fund. The discount rate determination did not use a

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municipal bond index rate, and therefore, the discount rate used to measure the TPL for these funds as of the measurement date (December 31, 2021) was 7.25%.

The results of the GASB 67 projection test methodology and development of the discount rate for each fund 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 tables present the NPL or NPA for participating employers for each fund using the current discount rate, as well the fund's NPL or NPA if calculated using a discount rate that is one percentage point lower or one percentage point higher than the current rate:

Trust Fund	1.0% Decrease in Discount Rate	Net Pension Liability
State Division	6.25%	\$10,402,228
School Division	6.25%	17,129,251
Local Government Division	6.25%	587,863
Judicial Division	6.25%	58,659
DPS Division	6.25%	575,701

Trust Fund	Current Discount Rate	Net Pension Liability (Asset)
State Division	7.25%	\$7,375,039
School Division	7.25%	11,637,366
Local Government Division	7.25%	(85,737)
Judicial Division	7.25%	9,172
DPS Division	7.25%	5,971

Trust Fund	1.0% Increase in Discount Rate	Net Pension Liability (Asset)
State Division	8.25%	\$4,830,152
School Division	8.25%	7,054,593
Local Government Division	8.25%	(649,174)
Judicial Division	8.25%	(33,268)
DPS Division	8.25%	(464,441)

As shown in the tables above, if there is a significant deviation, over a long period, in the actual rate of return compared to the assumed discount rate, the measurement of the NPL or NPA could be materially under- or over-reported as of December 31, 2021.

Note 11—Net OPEB Liability of the Health Care Trust Funds

The components of the net OPEB liability (NOL) for participating employers for each Health Care Trust Fund as of December 31, 2021, are as follows:

	HCTF	DPS HCTF
Total OPEB liability	\$1,423,054	\$65,472
Plan fiduciary net position	560,749	54,953
Net OPEB liability	\$862,305	\$10,519
Plan fiduciary net position as a percentage of the total OPEB liability	39.40%	83.93%

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 Changes in Net OPEB Liability and Related Ratios 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 the total OPEB liability (TOL) for each trust fund. Calculations are based on the benefits provided under the terms of the substantive plan in effect at the time of each actuarial valuation and on the pattern of sharing of costs between employers of each fund to that point. Actuarial calculations reflect a long-term perspective.

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The TOL for the Health Care Trust Funds was determined by actuarial valuations as of December 31, 2020, and generally accepted actuarial techniques were applied to roll forward the TOL to December 31, 2021 (measurement

date). The December 31, 2020, actuarial valuations used the following actuarial cost method and key actuarial assumptions and other inputs:

	HCTF				DPS HCTF
	State Division	School Division	Local Government Division	Judicial Division	DPS Division
Actuarial cost method			Entry age		Entry age
Price inflation			2.30%		2.30%
Real wage growth			0.70%		0.70%
Wage inflation			3.00%		3.00%
Salary increases, including wage inflation:					
Members other than State Troopers ¹	3.30%-10.90%	3.40%-11.00%	3.20%-11.30%	2.80%-5.30%	3.80%-11.50%
State Troopers ¹	3.20%-12.40%	N/A	3.20%-12.40%	N/A	N/A
Long-term investment rate of return, net of OPEB plan investment expenses, including price inflation			7.25%		7.25%
Discount rate at measurement date			7.25%		7.25%
Health care cost trend rates					
PERA benefit structure:					
Service-based premium subsidy			0.00%		0.00%
PERACare Medicare plans			4.50% in 2021, 6.00% in 2022 gradually decreasing to 4.50% in 2029		4.50% in 2021, 6.00% in 2022 gradually decreasing to 4.50% in 2029
Medicare Part A premiums			3.75% in 2021, gradually increasing to 4.50% in 2029		3.75% in 2021, gradually increasing to 4.50% in 2029
DPS benefit structure:					
Service-based premium subsidy			0.00%		0.00%
PERACare Medicare plans			N/A		N/A
Medicare Part A premiums			N/A		N/A

¹ See Note 1 for the definition of "State Troopers."

In determining the additional liability for PERACare enrollees who are age 65 or older and who are not eligible for premium-free Medicare Part A, the following monthly costs/premiums (in actual dollars) are assumed for 2021 for the PERA benefit structure:

Medicare Plan	Initial Costs for Members without Medicare Part A		
	Monthly Cost	Monthly Premium	Monthly Cost Adjusted to Age 65
Medicare Advantage/Self-Insured Rx	\$633	\$230	\$591
Kaiser Permanente Medicare Advantage HMO	596	199	562

The 2021 Medicare Part A premium is \$471 (actual dollars) per month.

All costs are subject to the health care cost trend rates, as discussed below.

Health care cost trend rates reflect the change in per capita health costs over time due to factors such as medical inflation, utilization, plan design, and technology improvements. For the PERA benefit structure, health care cost trend rates are needed to project the future costs associated with providing benefits to those PERACare enrollees not eligible for premium-free Medicare Part A.

Health care cost trend rates for the PERA benefit structure are based on published annual health care inflation surveys in conjunction with actual plan experience (if credible), building block models and industry methods developed by health plan actuaries and administrators. In addition, projected trends for the Federal Hospital Insurance Trust Fund (Medicare Part A premiums) provided by the Centers for Medicare & Medicaid Services

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

are referenced in the development of these rates. Effective December 31, 2020, the health care cost trend rates for Medicare Part A premiums were revised to reflect the current expectation of future increases in rates of inflation applicable to Medicare Part A premiums.

The PERA benefit structure health care cost trend rates used to measure the TOL are summarized in the table below:

Year	PERACare Medicare Plans	Medicare Part A Premiums
2021	4.50%	3.75%
2022	6.00%	3.75%
2023	5.80%	4.00%
2024	5.60%	4.00%
2025	5.40%	4.00%
2026	5.10%	4.25%
2027	4.90%	4.25%
2028	4.70%	4.25%
2029+	4.50%	4.50%

Mortality assumptions used in the December 31, 2020, valuation for the Division Trust Funds are shown in Note 10 on page 80, and were applied, as applicable, in the December 31, 2020, valuation for the HCTF and DPS HCTF but developed using a headcount-weighted basis. Affiliated employers of the State, School, Local Government, and Judicial Divisions participate in the HCTF. Affiliated employers of the DPS Division participate in the DPS HCTF.

The following health care costs assumptions were updated and used in roll forward calculation for the HCTF and DPS HCTF:

- Initial per capita health care costs for those PERACare enrollees under the PERA benefit structure who are expected to attain age 65 and older ages and are not eligible for premium-free Medicare Part A benefits were updated to reflect the change in costs for the 2021 plan year.
- The health care cost trend rates for Medicare Part A premiums were revised to reflect the then-current expectation of future increases in rates of inflation applicable to Medicare Part A premiums.

These actuarial assumptions pertaining to per capita health care costs and their related trend rates are analyzed and updated annually by the Board's actuary.

The actuarial assumptions used in the December 31, 2020, valuations were based on the 2020 experience analysis, dated October 28, 2020, and November 4, 2020, for the period January 1, 2016, through December 31, 2019. Revised economic and demographic assumptions were adopted by the Board on November 20, 2020.

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 the Experience Study report dated October 28, 2020.

Several factors are 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 percentages 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 OPEB 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 future returns.

The Board first adopted the 7.25% long-term expected rate of return as of November 18, 2016. Following an asset/liability study, the Board reaffirmed the assumed rate of return at the Board's November 15, 2019, meeting, to be effective January 1, 2020. As of the most recent reaffirmation of the long-term rate of return, the target asset allocation and best estimates of geometric real rates of return for each major asset class are summarized in the table in Note 10 on page 81.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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

The following table presents the NOL using the current health care cost trend rates applicable to the PERA benefit structure, as well as the fund's NOL if calculated using health care cost trend rates that are one percentage point lower or one percentage point higher than the current rates:

	1.0% Decrease in Trend Rates	Current Trend Rates	1.0% Increase in Trend Rates
Initial PERACare Medicare trend rate	3.50%	4.50%	5.50%
Ultimate PERACare Medicare trend rate	3.50%	4.50%	5.50%
Initial Medicare Part A trend rate	2.75%	3.75%	4.75%
Ultimate Medicare Part A trend rate	3.50%	4.50%	5.50%
Net OPEB liability			
HCTF	\$837,542	\$862,305	\$890,991
DPS HCTF	10,518	10,519	10,521

Discount Rate/Single Equivalent Interest Rate

The projection of cash flows used to determine the discount rate was performed in accordance with GASB 74. The basis for the projections of the liabilities and the FNP was an actuarial valuation performed as of December 31, 2020, and the financial status of the fund as of the prior measurement date (December 31, 2020). In addition to the actuarial cost method and assumptions presented earlier, the projection of cash flows applied the following methods and assumptions:

- Updated health care cost trend rates for Medicare Part A premiums as of the December 31, 2021, measurement date.
- 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 3.00%.
- Employer contributions were assumed to be made at rates equal to the fixed statutory rates specified in law and effective as of the measurement date.
- Employer contributions and the amount of total service costs for future plan members were based upon a process to estimate future ADCs assuming an analogous future plan member growth rate.

- Estimated transfers of dollars from the Division Trust Funds into the Health Care Trust Funds representing a portion of purchase service agreements intended to cover the costs associated with OPEB benefits.
- Benefit payments and contributions were assumed to be made at the middle of the year.

Based on those methods and assumptions and the GASB 74 projection test methodology, the FNP for the HCTF and DPS HCTF 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 plan investments was applied to all periods of projected benefit payments to determine the TOL for each fund. The discount rate determination did not use a municipal bond index rate, and therefore, the discount rate used to measure the TOL for these funds as of the measurement date (December 31, 2021) was 7.25%.

The results of the GASB 74 projection test methodology and development of the discount rate for each fund do not necessarily indicate the fund's ability to make benefit payments in the future.

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

The following tables present the NOL for participating employers for each fund using the current discount rate, as well as the fund's NOL if calculated using a discount rate that is one percentage point lower or one percentage point higher than the current rate:

	1.0% Decrease in Discount Rate	Net OPEB Liability
HCTF	6.25%	\$1,001,477
DPS HCTF	6.25%	16,842
	Current Discount Rate	Net OPEB Liability
HCTF	7.25%	\$862,305
DPS HCTF	7.25%	10,519
	1.0% Increase in Discount Rate	Net OPEB Liability
HCTF	8.25%	\$743,428
DPS HCTF	8.25%	5,127

As shown above, if there is a significant deviation, over a long period, in the actual rate of return compared to the assumed discount rate, the measurement of the NOL could be materially under- or over-reported as of December 31, 2021.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

Note 12—Subsequent Events

HB 22-1029, enacted June 7, 2022, and effective immediately, is intended to recompense PERA for the \$225 million (actual dollars) direct distribution originally scheduled for receipt July 1, 2020, but suspended due to the enactment of HB 20-1379. Pursuant to HB 22-1029, the State treasurer is to issue a warrant to PERA in the amount of \$380 million (actual dollars), upon enactment, with reductions to future direct distributions scheduled to occur July 1, 2023, and July 1, 2024. Based on this legislation and the known total fund investment return for 2021 of 16.1%, the July 1, 2023, direct distribution will be reduced by \$190 million (actual dollars), resulting in a payment of \$35 million (actual dollars), and the July 1, 2024, direct distribution will be reduced by an amount yet to be determined, but not greater than \$27.55 million (actual dollars), resulting in a payment of not less than \$197.45 million (actual dollars). The \$35 million (actual dollars) direct distribution scheduled to occur July 1, 2023, is considered in the 2021 AAP assessment, shown on page 174 of this ACFR.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS—STATE DIVISION¹

For the Years Ended December 31

	2021	2020	2019	2018	2017
Total pension liability					
Service cost	\$413,596	\$355,719	\$344,666	\$727,319	\$518,360
Interest	1,948,606	1,825,929	1,800,848	1,658,186	1,640,426
Changes of benefit terms	(547,823)	—	(501,768)	(1,967,940)	—
Difference between expected and actual experience	(16,478)	195,634	408,792	330,007	416,731
Changes of assumptions or other inputs	—	1,025,120	—	(8,968,282)	2,286,877
Benefit payments, refunds, and disability premiums	(1,802,036)	(1,734,329)	(1,700,965)	(1,675,880)	(1,615,021)
Net change in total pension liability	(4,135)	1,668,073	351,573	(9,896,590)	3,247,373
Total pension liability – beginning	27,364,740	25,696,667	25,345,094	35,241,684	31,994,311
Total pension liability – ending (a)	\$27,360,605	\$27,364,740	\$25,696,667	\$25,345,094	\$35,241,684
Plan fiduciary net position					
Contributions – employer	\$664,304	\$646,386	\$612,282	\$583,164	\$563,977
Contributions – nonemployer	76,706	—	77,088	78,489	—
Contributions – active member (includes purchased service)	369,166	326,786	287,297	261,540	256,420
Net investment income (loss)	2,806,442	2,652,870	2,764,719	(497,562)	2,391,683
Benefit payments, refunds, and disability premiums	(1,802,036)	(1,734,329)	(1,700,965)	(1,675,880)	(1,615,021)
Administrative expense	(12,051)	(11,385)	(11,294)	(11,903)	(11,745)
Other additions and deductions	3,088	6,756	(2,685)	4,871	12,208
Net change in plan fiduciary net position	2,105,619	1,887,084	2,026,442	(1,257,281)	1,597,522
Plan fiduciary net position – beginning	17,879,947	15,992,863	13,966,421	15,223,702	13,626,180
Plan fiduciary net position – ending (b)	\$19,985,566	\$17,879,947	\$15,992,863	\$13,966,421	\$15,223,702
Net pension liability – ending (a)-(b)	\$7,375,039	\$9,484,793	\$9,703,804	\$11,378,673	\$20,017,982
Plan fiduciary net position as a percentage of the total pension liability	73.05%	65.34%	62.24%	55.11%	43.20%
Covered payroll	\$3,092,509	\$3,089,161	\$2,995,453	\$2,898,827	\$2,774,207
Net pension liability as a percentage of covered payroll	238.48%	307.03%	323.95%	392.53%	721.57%

Please see next page for footnote references.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS—STATE DIVISION (CONTINUED)^{1,2}

For the Years Ended December 31

	2016	2015	2014	2013
Total pension liability				
Service cost	\$317,466	\$309,351	\$285,311	
Interest	1,741,390	1,700,903	1,663,542	
Changes of benefit terms	—	—	—	
Difference between expected and actual experience	176,889	237,147	(1,069)	
Changes of assumptions or other inputs	7,313,068	(192,776)	—	
Benefit payments, refunds, and disability premiums	(1,546,071)	(1,483,517)	(1,415,754)	
Net change in total pension liability	8,002,742	571,108	532,030	
Total pension liability – beginning	23,991,569	23,420,461	22,888,431	
Total pension liability – ending (a)	\$31,994,311	\$23,991,569	\$23,420,461	\$22,888,431
Plan fiduciary net position				
Contributions – employer	\$521,804	\$484,005	\$444,372	
Contributions – nonemployer	—	—	—	
Contributions – active member (includes purchased service)	247,533	244,926	234,056	
Net investment income	947,981	210,337	780,762	
Benefit payments, refunds, and disability premiums	(1,546,071)	(1,483,517)	(1,415,754)	
Administrative expense	(11,271)	(10,779)	(10,067)	
Other additions and deductions	5,668	1,617	118	
Net change in plan fiduciary net position	165,644	(553,411)	33,487	
Plan fiduciary net position – beginning	13,460,536	14,013,947	13,980,460	
Plan fiduciary net position – ending (b)	\$13,626,180	\$13,460,536	\$14,013,947	\$13,980,460
Net pension liability – ending (a)-(b)	\$18,368,131	\$10,531,033	\$9,406,514	\$8,907,971
Plan fiduciary net position as a percentage of the total pension liability	42.59%	56.11%	59.84%	61.08%
Covered payroll	\$2,710,651	\$2,641,867	\$2,564,670	\$2,474,965
Net pension liability as a percentage of covered payroll	677.63%	398.62%	366.77%	359.92%

¹ Information is not available prior to 2013. In future reports, additional years will be added until 10 years of historical data are presented.² Amounts for changes in net pension liability shaded in gray are not available for 2013.

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 AND RELATED RATIOS—SCHOOL DIVISION¹

For the Years Ended December 31

	2021	2020	2019	2018	2017
Total pension liability					
Service cost	\$783,583	\$663,873	\$618,937	\$1,270,011	\$954,368
Interest	3,278,565	3,006,736	2,938,492	2,759,146	2,690,433
Changes of benefit terms	(964,344)	—	(856,299)	(3,247,230)	—
Difference between expected and actual experience	110,446	595,867	770,676	443,651	564,155
Changes of assumptions or other inputs	—	2,020,180	—	(15,247,222)	3,547,294
Benefit payments, refunds, and disability premiums	(2,708,328)	(2,605,668)	(2,545,230)	(2,492,928)	(2,411,987)
Net change in total pension liability	499,922	3,680,988	926,576	(16,514,572)	5,344,263
Total pension liability – beginning	45,792,168	42,111,180	41,184,604	57,699,176	52,354,913
Total pension liability – ending (a)	\$46,292,090	\$45,792,168	\$42,111,180	\$41,184,604	\$57,699,176
Plan fiduciary net position					
Contributions – employer	\$1,113,636	\$1,048,992	\$1,002,760	\$923,910	\$857,740
Contributions – nonemployer	127,781	—	127,367	126,505	—
Contributions – active member (includes purchased service)	630,849	536,847	462,891	414,336	399,053
Net investment income (loss)	4,847,781	4,556,622	4,676,607	(838,899)	3,982,275
Benefit payments, refunds, and disability premiums	(2,708,328)	(2,605,668)	(2,545,230)	(2,492,928)	(2,411,987)
Administrative expense	(22,608)	(22,779)	(22,619)	(23,560)	(23,019)
Other additions and deductions	(8,572)	(11,226)	(7,929)	5,456	(22,378)
Net change in plan fiduciary net position	3,980,539	3,502,788	3,693,847	(1,885,180)	2,781,684
Plan fiduciary net position – beginning	30,674,185	27,171,397	23,477,550	25,362,730	22,581,046
Plan fiduciary net position – ending (b)	\$34,654,724	\$30,674,185	\$27,171,397	\$23,477,550	\$25,362,730
Net pension liability – ending (a)-(b)	\$11,637,366	\$15,117,983	\$14,939,783	\$17,707,054	\$32,336,446
Plan fiduciary net position as a percentage of the total pension liability	74.86%	66.99%	64.52%	57.01%	43.96%
Covered payroll	\$5,465,866	\$5,146,118	\$5,104,431	\$4,789,503	\$4,471,357
Net pension liability as a percentage of covered payroll	212.91%	293.77%	292.68%	369.71%	723.19%

Please see next page for footnote references.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS—SCHOOL DIVISION (CONTINUED)^{1,2}

For the Years Ended December 31

	2016	2015	2014	2013
Total pension liability				
Service cost	\$567,247	\$548,358	\$511,059	
Interest	2,722,256	2,652,731	2,582,865	
Changes of benefit terms	—	—	—	
Difference between expected and actual experience	346,658	278,464	(1,387)	
Changes of assumptions or other inputs	13,572,334	(298,005)	—	
Benefit payments, refunds, and disability premiums	(2,300,644)	(2,208,452)	(2,113,547)	
Net change in total pension liability	14,907,851	973,096	978,990	
Total pension liability – beginning	37,447,062	36,473,966	35,494,976	
Total pension liability – ending (a)	\$52,354,913	\$37,447,062	\$36,473,966	\$35,494,976
Plan fiduciary net position				
Contributions – employer	\$812,740	\$754,182	\$686,323	
Contributions – nonemployer	—	—	—	
Contributions – active member (includes purchased service)	386,481	372,378	356,520	
Net investment income	1,569,026	344,000	1,274,862	
Benefit payments, refunds, and disability premiums	(2,300,644)	(2,208,452)	(2,113,547)	
Administrative expense	(21,991)	(20,865)	(19,290)	
Other additions and deductions	(17,334)	(9,082)	(4,264)	
Net change in plan fiduciary net position	428,278	(767,839)	180,604	
Plan fiduciary net position – beginning	22,152,768	22,920,607	22,740,003	
Plan fiduciary net position – ending (b)	\$22,581,046	\$22,152,768	\$22,920,607	\$22,740,003
Net pension liability – ending (a)-(b)	\$29,773,867	\$15,294,294	\$13,553,359	\$12,754,973
Plan fiduciary net position as a percentage of the total pension liability	43.13%	59.16%	62.84%	64.07%
Covered payroll	\$4,349,320	\$4,235,290	\$4,063,236	\$3,938,650
Net pension liability as a percentage of covered payroll	684.56%	361.12%	333.56%	323.84%

¹ Information is not available prior to 2013. In future reports, additional years will be added until 10 years of historical data are presented.² Amounts for changes in net pension liability shaded in gray are not available for 2013.

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 AND RELATED RATIOS—LOCAL GOVERNMENT DIVISION¹
For the Years Ended December 31

	2021	2020	2019	2018	2017
Total pension liability					
Service cost	\$93,133	\$77,400	\$75,305	\$84,331	\$75,417
Interest	408,879	379,994	373,200	386,381	360,995
Changes of benefit terms	(118,435)	—	(105,812)	(412,930)	(110)
Difference between expected and actual experience	(2,587)	32,128	65,687	77,207	125,585
Changes of assumptions or other inputs	—	222,809	—	—	—
Benefit payments, refunds, and disability premiums	(338,375)	(320,919)	(312,629)	(302,903)	(289,218)
Net change in total pension liability	42,615	391,412	95,751	(167,914)	272,669
Total pension liability – beginning	5,715,765	5,324,353	5,228,602	5,396,516	5,123,847
Total pension liability – ending (a)	\$5,758,380	\$5,715,765	\$5,324,353	\$5,228,602	\$5,396,516
Plan fiduciary net position					
Contributions – employer	\$96,481	\$89,662	\$85,597	\$81,358	\$78,291
Contributions – employer disaffiliation	—	—	—	—	1,063
Contributions – active member (includes purchased service)	77,096	66,958	62,823	58,063	56,797
Net investment income (loss)	820,403	771,556	792,219	(142,476)	669,011
Benefit payments, refunds, and disability premiums	(338,375)	(320,919)	(312,629)	(302,903)	(289,218)
Administrative expense	(3,065)	(2,459)	(2,476)	(2,621)	(2,541)
Other additions and deductions	(3,061)	(3,122)	(3,961)	(3,118)	(3,823)
Net change in plan fiduciary net position	649,479	601,676	621,573	(311,697)	509,580
Plan fiduciary net position – beginning	5,194,638	4,592,962	3,971,389	4,283,086	3,773,506
Plan fiduciary net position – ending (b)	\$5,844,117	\$5,194,638	\$4,592,962	\$3,971,389	\$4,283,086
Net pension liability (asset) – ending (a)-(b)	(\$85,737)	\$521,127	\$731,391	\$1,257,213	\$1,113,430
Plan fiduciary net position as a percentage of the total pension liability	101.49%	90.88%	86.26%	75.96%	79.37%
Covered payroll	\$723,744	\$698,060	\$681,093	\$660,998	\$632,768
Net pension liability (asset) as a percentage of covered payroll	(11.85%)	74.65%	107.38%	190.20%	175.96%

Please see next page for footnote references.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS—LOCAL GOVERNMENT DIVISION (CONTINUED)^{1,2}
For the Years Ended December 31

	2016	2015	2014	2013
Total pension liability				
Service cost	\$65,250	\$63,005	\$58,676	
Interest	346,944	338,616	329,156	
Changes of benefit terms	—	—	—	
Difference between expected and actual experience	42,105	14,930	(322)	
Changes of assumptions or other inputs	179,802	(36,449)	—	
Benefit payments, refunds, and disability premiums	(272,344)	(265,789)	(256,972)	
Net change in total pension liability	361,757	114,313	130,538	
Total pension liability – beginning	4,762,090	4,647,777	4,517,239	
Total pension liability – ending (a)	\$5,123,847	\$4,762,090	\$4,647,777	\$4,517,239
Plan fiduciary net position				
Contributions – employer	\$75,132	\$70,415	\$68,719	
Contributions – employer disaffiliation	—	—	186,006	
Contributions – active member (includes purchased service)	52,451	51,986	49,290	
Net investment income	261,276	56,328	200,394	
Benefit payments, refunds, and disability premiums	(272,344)	(265,789)	(256,972)	
Administrative expense	(2,395)	(2,253)	(2,091)	
Other additions and deductions	(1,123)	(1,646)	(2,190)	
Net change in plan fiduciary net position	112,997	(90,959)	243,156	
Plan fiduciary net position – beginning	3,660,509	3,751,468	3,508,312	
Plan fiduciary net position – ending (b)	\$3,773,506	\$3,660,509	\$3,751,468	\$3,508,312
Net pension liability – ending (a)-(b)	\$1,350,341	\$1,101,581	\$896,309	\$1,008,927
Plan fiduciary net position as a percentage of the total pension liability	73.65%	76.87%	80.72%	77.66%
Covered payroll	\$608,223	\$561,518	\$540,468	\$529,003
Net pension liability as a percentage of covered payroll	222.01%	196.18%	165.84%	190.72%

¹ Information is not available prior to 2013. In future reports, additional years will be added until 10 years of historical data are presented.

² Amounts for changes in net pension liability shaded in gray are not available for 2013.

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 AND RELATED RATIOS—JUDICIAL DIVISION¹

For the Years Ended December 31

	2021	2020	2019	2018	2017
Total pension liability					
Service cost	\$9,791	\$9,106	\$8,774	\$13,516	\$14,364
Interest	34,282	32,590	32,105	30,417	27,480
Changes of benefit terms	(9,135)	105	(8,459)	(33,997)	—
Difference between expected and actual experience	4,037	10,421	2,732	3,122	16,644
Changes of assumptions or other inputs	—	915	—	(100,437)	(14,394)
Benefit payments, refunds, and disability premiums	(31,488)	(29,485)	(28,097)	(26,463)	(25,298)
Net change in total pension liability	7,487	23,652	7,055	(113,842)	18,796
Total pension liability – beginning	478,811	455,159	448,104	561,946	543,150
Total pension liability – ending (a)	\$486,298	\$478,811	\$455,159	\$448,104	\$561,946
Plan fiduciary net position					
Contributions – employer	\$9,787	\$10,402	\$10,649	\$8,299	\$8,080
Contributions – nonemployer	1,360	—	1,344	1,385	—
Contributions – active member (includes purchased service)	9,389	7,697	5,187	4,700	4,863
Net investment income (loss)	66,030	61,634	61,719	(11,006)	51,173
Benefit payments, refunds, and disability premiums	(31,488)	(29,485)	(28,097)	(26,463)	(25,298)
Administrative expense	(186)	(87)	(84)	(86)	(86)
Other additions and deductions	5,383	2,456	6,670	155	2,226
Net change in plan fiduciary net position	60,275	52,617	57,388	(23,016)	40,958
Plan fiduciary net position – beginning	416,851	364,234	306,846	329,862	288,904
Plan fiduciary net position – ending (b)	\$477,126	\$416,851	\$364,234	\$306,846	\$329,862
Net pension liability – ending (a)-(b)	\$9,172	\$61,960	\$90,925	\$141,258	\$232,084
Plan fiduciary net position as a percentage of the total pension liability	98.11%	87.06%	80.02%	68.48%	58.70%
Covered payroll	\$55,780	\$54,780	\$53,427	\$50,506	\$48,948
Net pension liability as a percentage of covered payroll	16.44%	113.11%	170.19%	279.69%	474.14%

Please see next page for footnote references.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS—JUDICIAL DIVISION (CONTINUED)^{1,2}

For the Years Ended December 31

	2016	2015	2014	2013
Total pension liability				
Service cost	\$12,639	\$10,813	\$9,024	
Interest	25,774	25,005	24,820	
Changes of benefit terms	—	—	—	
Difference between expected and actual experience	22,804	7,289	(5)	
Changes of assumptions or other inputs	43,576	21,485	21,294	
Benefit payments, refunds, and disability premiums	(22,888)	(21,200)	(19,903)	
Net change in total pension liability	81,905	43,392	35,230	
Total pension liability – beginning	461,245	417,853	382,623	
Total pension liability – ending (a)	\$543,150	\$461,245	\$417,853	\$382,623
Plan fiduciary net position				
Contributions – employer	\$8,024	\$7,702	\$7,070	
Contributions – nonemployer	—	—	—	
Contributions – active member (includes purchased service)	4,037	4,197	4,296	
Net investment income	19,783	4,149	15,299	
Benefit payments, refunds, and disability premiums	(22,888)	(21,200)	(19,903)	
Administrative expense	(81)	(77)	(72)	
Other additions and deductions	2,678	3,081	156	
Net change in plan fiduciary net position	11,553	(2,148)	6,846	
Plan fiduciary net position – beginning	277,351	279,499	272,653	
Plan fiduciary net position – ending (b)	\$288,904	\$277,351	\$279,499	\$272,653
Net pension liability – ending (a)-(b)	\$254,246	\$183,894	\$138,354	\$109,970
Plan fiduciary net position as a percentage of the total pension liability	53.19%	60.13%	66.89%	71.26%
Covered payroll	\$48,700	\$46,870	\$42,977	\$39,942
Net pension liability as a percentage of covered payroll	522.07%	392.35%	321.93%	275.32%

¹ Information is not available prior to 2013. In future reports, additional years will be added until 10 years of historical data are presented.

² Amounts for changes in net pension liability shaded in gray are not available for 2013.

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 AND RELATED RATIOS—DPS DIVISION¹

For the Years Ended December 31

	2021	2020	2019	2018	2017
Total pension liability					
Service cost	\$107,672	\$93,058	\$91,764	\$90,657	\$91,986
Interest	326,361	309,174	301,210	313,294	295,838
Changes of benefit terms	(89,028)	—	(82,064)	(318,480)	—
Difference between expected and actual experience	46,732	(15,298)	86,001	35,147	47,121
Changes of assumptions or other inputs	—	125,275	—	—	—
Benefit payments, refunds, and disability premiums	(291,799)	(287,719)	(288,984)	(287,825)	(281,844)
Net change in total pension liability	99,938	224,490	107,927	(167,207)	153,101
Total pension liability – beginning	4,539,760	4,315,270	4,207,343	4,374,550	4,221,449
Total pension liability – ending (a)	\$4,639,698	\$4,539,760	\$4,315,270	\$4,207,343	\$4,374,550
Plan fiduciary net position					
Contributions – employer	\$65,215	\$56,245	\$43,340	\$35,994	\$27,578
Contributions – nonemployer	19,153	—	19,201	18,621	—
Contributions – active member (includes purchased service)	90,154	75,456	65,496	61,098	56,820
Net investment income (loss)	649,370	610,847	632,669	(114,070)	548,585
Benefit payments, refunds, and disability premiums	(291,799)	(287,719)	(288,984)	(287,825)	(281,844)
Administrative expense	(2,829)	(2,667)	(2,713)	(2,919)	(2,857)
Other additions and deductions	(3,115)	(1,010)	2,975	(4,497)	3,781
Net change in plan fiduciary net position	526,149	451,152	471,984	(293,598)	352,063
Plan fiduciary net position – beginning	4,107,578	3,656,426	3,184,442	3,478,040	3,125,977
Plan fiduciary net position – ending (b)	\$4,633,727	\$4,107,578	\$3,656,426	\$3,184,442	\$3,478,040
Net pension liability – ending (a)-(b)	\$5,971	\$432,182	\$658,844	\$1,022,901	\$896,510
Plan fiduciary net position as a percentage of the total pension liability	99.87%	90.48%	84.73%	75.69%	79.51%
Covered payroll	\$823,396	\$771,347	\$736,264	\$722,040	\$658,198
Net pension liability as a percentage of covered payroll	0.73%	56.03%	89.48%	141.67%	136.21%

Please see next page for footnote references.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY AND RELATED RATIOS—DPS DIVISION (CONTINUED)^{1,2}

For the Years Ended December 31

	2016	2015	2014	2013
Total pension liability				
Service cost	\$85,988	\$82,079	\$76,564	
Interest	283,862	281,752	274,862	
Changes of benefit terms	—	—	—	
Difference between expected and actual experience	(2,839)	45,767	(174)	
Changes of assumptions or other inputs	205,645	(113,772)	—	
Benefit payments, refunds, and disability premiums	(272,071)	(263,323)	(255,434)	
Net change in total pension liability	300,585	32,503	95,818	
Total pension liability – beginning	3,920,864	3,888,361	3,792,543	
Total pension liability – ending (a)	\$4,221,449	\$3,920,864	\$3,888,361	\$3,792,543
Plan fiduciary net position				
Contributions – employer	\$17,071	\$8,494	\$18,478	
Contributions – nonemployer	—	—	—	
Contributions – active member (includes purchased service)	54,852	53,558	49,409	
Net investment income	218,415	49,172	182,823	
Benefit payments, refunds, and disability premiums	(272,071)	(263,323)	(255,434)	
Administrative expense	(2,754)	(2,599)	(2,377)	
Other additions and deductions	3,135	(1,764)	(1,547)	
Net change in plan fiduciary net position	18,648	(156,462)	(8,648)	
Plan fiduciary net position – beginning	3,107,329	3,263,791	3,272,439	
Plan fiduciary net position – ending (b)	\$3,125,977	\$3,107,329	\$3,263,791	\$3,272,439
Net pension liability – ending (a)-(b)	\$1,095,472	\$813,535	\$624,570	\$520,104
Plan fiduciary net position as a percentage of the total pension liability	74.05%	79.25%	83.94%	86.29%
Covered payroll	\$642,177	\$621,115	\$584,319	\$547,660
Net pension liability as a percentage of covered payroll	170.59%	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.

² Amounts for changes in net pension liability shaded in gray are not available for 2013.

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 AND NONEMPLOYER CONTRIBUTIONS

For the Years Ended December 31

State Division	2021	2020	2019	2018	2017
Actuarially determined contribution rate (a)	21.05%	23.69%	23.28%	26.30%	22.71%
Covered payroll (b)	\$3,092,509	\$3,089,161	\$2,995,453	\$2,898,827	\$2,774,207
Annual Increase Reserve contribution (c)	20,606	19,442	17,663	15,919	14,355
Actuarially determined contribution (a) x (b) + (c)	671,579	751,264	715,004	778,311	644,377
Contributions in relation to the actuarially determined contribution ^{1,2}	741,010	646,386	689,370	661,653	563,977
Annual contribution deficiency (excess)	(\$69,431)	\$104,878	\$25,634	\$116,658	\$80,400
Actual contributions as a percentage of covered payroll	23.96%	20.92%	23.01%	22.82%	20.33%
	2016	2015	2014	2013	2012
Actuarially determined contribution rate (a)	22.31%	22.35%	20.45%	20.01%	16.52%
Covered payroll (b)	\$2,710,651	\$2,641,867	\$2,564,670	\$2,474,965	\$2,384,934
Annual Increase Reserve contribution (c)	12,838	11,400	9,984	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	617,584	601,857	534,459	495,241	393,991
Contributions in relation to the actuarially determined contribution	521,804	484,005	444,372	393,218	328,055
Annual contribution deficiency	\$95,780	\$117,852	\$90,087	\$102,023	\$65,936
Actual contributions as a percentage of covered payroll	19.25%	18.32%	17.33%	15.89%	13.76%
School Division	2021	2020	2019	2018	2017
Actuarially determined contribution rate (a)	20.61%	23.37%	23.59%	26.80%	22.54%
Covered payroll (b)	\$5,465,866	\$5,146,118	\$5,104,431	\$4,789,503	\$4,471,357
Annual Increase Reserve contribution (c)	31,169	28,159	26,062	22,497	19,903
Actuarially determined contribution (a) x (b) + (c)	1,157,684	1,230,807	1,230,197	1,306,084	1,027,747
Contributions in relation to the actuarially determined contribution ^{1,2}	1,241,417	1,048,992	1,130,127	1,050,415	857,740
Annual contribution deficiency (excess)	(\$83,733)	\$181,815	\$100,070	\$255,669	\$170,007
Actual contributions as a percentage of covered payroll	22.71%	20.38%	22.14%	21.93%	19.18%
	2016	2015	2014	2013	2012
Actuarially determined contribution rate (a)	22.36%	21.94%	19.65%	19.79%	17.60%
Covered payroll (b)	\$4,349,320	\$4,235,290	\$4,063,236	\$3,938,650	\$3,819,066
Annual Increase Reserve contribution (c)	17,868	15,648	13,280	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	990,376	944,871	811,706	779,459	672,156
Contributions in relation to the actuarially determined contribution	812,740	754,182	686,323	613,738	564,444
Annual contribution deficiency	\$177,636	\$190,689	\$125,383	\$165,721	\$107,712
Actual contributions as a percentage of covered payroll	18.69%	17.81%	16.89%	15.58%	14.78%

¹ Includes an annual contribution from a nonemployer contributing entity required by C.R.S. § 24-51-414 *et seq.* starting on July 1, 2018.² House Bill 20-1379 suspended the July 2020 contribution from the nonemployer contributing entity for the State's 2020-21 fiscal year.

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 AND NONEMPLOYER CONTRIBUTIONS (CONTINUED)

For the Years Ended December 31

Local Government Division	2021	2020	2019	2018	2017
Actuarially determined contribution rate (a)	10.84%	13.01%	11.13%	14.27%	11.92%
Covered payroll (b)	\$723,744	\$698,060	\$681,093	\$660,998	\$632,768
Annual Increase Reserve contribution (c)	4,964	4,492	4,201	3,779	3,390
Actuarially determined contribution (a) x (b) + (c)	83,418	95,310	80,007	98,103	78,816
Contributions in relation to the actuarially determined contribution	96,481	89,662	85,597	81,358	78,291 ¹
Annual contribution deficiency (excess)	(\$13,063)	\$5,648	(\$5,590)	\$16,745	\$525
Actual contributions as a percentage of covered payroll	13.33%	12.84%	12.57%	12.31%	12.37%
	2016	2015	2014	2013	2012
Actuarially determined contribution rate (a)	11.98%	13.62%	11.78%	10.62%	9.79%
Covered payroll (b)	\$608,223	\$561,518	\$540,468	\$529,003	\$523,668
Annual Increase Reserve contribution (c)	2,969	2,522	2,180	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	75,834	79,001	65,847	56,180	51,267
Contributions in relation to the actuarially determined contribution	75,132	70,415	68,719 ²	65,329	83,816
Annual contribution deficiency (excess)	\$702	\$8,586	(\$2,872)	(\$9,149)	(\$32,549)
Actual contributions as a percentage of covered payroll	12.35%	12.54%	12.71%	12.35%	16.01%
Judicial Division	2021	2020	2019	2018	2017
Actuarially determined contribution rate (a)	14.13%	22.05%	21.90%	27.26%	22.54%
Covered payroll (b)	\$55,780	\$54,780	\$53,427	\$50,506	\$48,948
Annual Increase Reserve contribution (c)	314	289	251	207	191
Actuarially determined contribution (a) x (b) + (c)	8,196	12,368	11,952	13,975	11,224
Contributions in relation to the actuarially determined contribution ^{3,4}	11,147	10,402	11,993	9,684	8,080
Annual contribution deficiency (excess)	(\$2,951)	\$1,966	(\$41)	\$4,291	\$3,144
Actual contributions as a percentage of covered payroll	19.98%	18.99%	22.45%	19.17%	16.51%
	2016	2015	2014	2013	2012
Actuarially determined contribution rate (a)	22.07%	21.45%	20.07%	21.53%	18.28%
Covered payroll (b)	\$48,700	\$46,870	\$42,977	\$39,942	\$39,045
Annual Increase Reserve contribution (c)	164	141	116	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	10,912	10,195	8,741	8,599	7,137
Contributions in relation to the actuarially determined contribution	8,024	7,702	7,070	6,494	5,840
Annual contribution deficiency	\$2,888	\$2,493	\$1,671	\$2,105	\$1,297
Actual contributions as a percentage of covered payroll	16.48%	16.43%	16.45%	16.26%	14.96%

¹ Contributions do not include the disaffiliation payment of \$1,063 for Cunningham Fire Protection District.² Contributions do not include the disaffiliation payment of \$186,006 for Memorial Health System.³ Includes an annual contribution from a nonemployer contributing entity required by C.R.S. § 24-51-414 *et seq.* starting on July 1, 2018.⁴ House Bill 20-1379 suspended the July 2020 contribution from the nonemployer contributing entity for the State's 2020-21 fiscal year.

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 AND NONEMPLOYER CONTRIBUTIONS (CONTINUED)

For the Years Ended December 31

DPS Division	2021	2020	2019	2018	2017
Actuarially determined contribution rate (a)	8.22%	10.42%	11.14%	13.50%	10.28%
Covered payroll (b)	\$823,396	\$771,347	\$736,264	\$722,040	\$658,198
Annual Increase Reserve contribution (c)	5,905	5,357	4,989	4,624	4,100
Actuarially determined contribution (a) x (b) + (c)	73,588	85,731	87,009	102,099	71,763
Contributions in relation to the actuarially determined contribution ^{1,2}	84,368	56,245	62,541	54,615	27,578
Annual contribution deficiency (excess)	(\$10,780)	\$29,486	\$24,468	\$47,484	\$44,185
Actual contributions as a percentage of covered payroll	10.25%	7.29%	8.49%	7.56%	4.19%
	2016	2015	2014	2013	2012
Actuarially determined contribution rate (a)	10.46%	11.06%	9.67%	11.53%	9.60%
Covered payroll (b)	\$642,177	\$621,115	\$584,319	\$547,660	\$510,872
Annual Increase Reserve contribution (c)	3,685	3,186	2,633	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	70,857	71,881	59,137	63,145	49,044
Contributions in relation to the actuarially determined contribution	17,071	8,494	18,478	23,104	13,145
Annual contribution deficiency	\$53,786	\$63,387	\$40,659	\$40,041	\$35,899
Actual contributions as a percentage of covered payroll	2.66%	1.37%	3.16%	4.22%	2.57%

¹ Includes an annual contribution from a nonemployer contributing entity required by C.R.S. § 24-51-414 et seq. starting on July 1, 2018.² House Bill 20-1379 suspended the July 2020 contribution from the nonemployer contributing entity for the State's 2020-21 fiscal year.

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

SCHEDULE OF INVESTMENT RETURNS¹

For the Years Ended December 31

	2021	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expenses	16.1%	17.1%	20.4%	(3.3%)	18.1%	7.3%	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

2021 Changes in Plan Provisions Since 2020

- The following changes reflect the anticipated adjustments resulting from the 2020 automatic adjustment provision (AAP) assessment, statutorily recognized July 1, 2021, and effective July 1, 2022:
 - Member contribution rates increase by 0.50%.
 - Employer contribution rates increase by 0.50%.
 - Annual Increase (AI) cap is lowered from 1.25% per year to 1.00% per year.
- 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.

2020 Changes in Plan Provisions Since 2019

- House Bill (HB) 20-1379, enacted on June 29, 2020, suspended the \$225 million (actual dollars) direct distribution payable on July 1, 2020 for the State's 2020-21 fiscal year.
- HB 20-1394, enacted on June 29, 2020, requires 5.0% of the Judicial Division base employer contributions rate to be paid by the members of the Judicial Division for the State's 2020-21 and 2021-22 fiscal years. This does not apply to the employer or member contribution rates for judges employed by the Denver County Court.
- Senate Bill (SB) 18-200 and SB 20-057, enacted in 2018 and 2020, respectively expanded the definition of "State Troopers" under Colorado law as follows:
 - Beginning July 1, 2020, new or existing employees of the Division of Fire Prevention and Control in the Department of Public Safety classified as firefighter I through firefighter VII;
 - New members hired on or after January 1, 2020, as a county sheriff, undersheriff, deputy sheriff, noncertified deputy sheriff, or detention officer by a Local Government Division employer; and
 - New members hired on or after January 1, 2020, as a corrections officer classified as I through IV by a State Division employer.
- 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.

2019 Changes in Plan Provisions Since 2018

- SB 18-200 was enacted on June 4, 2018, which included the adoption of the AAP. The following changes reflect

the anticipated adjustments resulting from the 2018 AAP assessment, statutorily recognized July 1, 2019, and effective July 1, 2020:

- Member contribution rates increase by 0.50%.
- Employer contribution rates increase by 0.50%.
- AI cap is lowered from 1.50% per year to 1.25% per year.
- HB 19-1217, enacted May 20, 2019, repealed the member contribution increases scheduled for the Local Government Division pursuant to SB 18-200.
- 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.

2018 Changes in Plan Provisions Since 2017

- The following changes were made to the plan provisions as part of SB 18-200:
 - Member contribution rates increase by 0.75% effective July 1, 2019, an additional 0.75% effective July 1, 2020, and an additional 0.50% effective July 1, 2021.
 - Employer contribution rates increase by 0.25% effective July 1, 2019 for State, School, Judicial, and DPS Divisions.
 - An annual direct distribution of \$225 million (actual dollars) from the State of Colorado, recognized as a nonemployer contributing entity, is distributed between the State, School, Judicial, and DPS Divisions proportionally based on payroll.
 - AI cap is lowered from 2.00% per year to 1.50% per year.
 - Initial AI waiting period is extended from one year after retirement to three years after retirement.
 - AI payments are suspended for 2018 and 2019.
 - The number of years used in the Highest Average Salary calculation for non-vested members as of January 1, 2020, increases from three to five years for the State, School, Local Government, and DPS Divisions and increases from one to three years for the Judicial Division.
- 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.

2017 Changes in Plan Provisions Since 2016

- The Cunningham Fire Protection District (CFPD) disaffiliated from the Local Government Division on December 2, 2017. For the purpose of the December 31, 2017, measurement date, liabilities were

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)— DIVISION TRUST FUNDS

(Dollars in Thousands)

determined assuming no additional benefit accruals for the disaffiliated membership of the CFPD that had not refunded their PERA member contribution accounts. The total disaffiliation payment of \$1,159 was allocated to the Local Government Division Trust Fund and the Health Care Trust Fund (HCTF) in the amount of \$1,063 and \$96, respectively.

- Pursuant to HB 17-1265, the Amortization Equalization Disbursement (AED) and Supplemental Amortization Equalization Disbursement (SAED) contribution rates are adjusted for employers in the Judicial Division as follows:
 - For the calendar year beginning in 2019, C.R.S. § 24-51-411(4.5) increased the AED payment to 3.40% of PERA-includable salary and requires the AED payment to increase by 0.40% at the start of each of the following four calendar years through 2023 at which time the AED payment will be 5.00% of PERA-includable salary.
 - For the calendar year beginning in 2019, C.R.S. § 24-51-411(7.5) increased the SAED payment to 3.40% of PERA-includable salary and requires the SAED payment to increase by 0.40% at the start of each of the following four calendar years through 2023 at which time the SAED payment will be 5.00% of PERA-includable salary.
- 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.

2016 Changes in Plan Provisions Since 2015

- 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.

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 PCOPs issued in 1997 and 2008 and refinanced thereafter.
- As required under C.R.S. § 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 HB 15-1391, reducing the employer contribution rate of the DPS Division from 13.75% to 10.15%, 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 was ongoing litigation regarding the potential dollars owed to the Local Government Division Trust Fund due to the disaffiliation.
- Pursuant to 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% 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.

Note 2—Significant Changes in Assumptions or Other Inputs Affecting Trends in Actuarial Information

2021 Changes in Assumptions or Other Inputs Since 2020

- The assumption used to value the AI cap benefit provision was changed from 1.25% to 1.00%.

2020 Changes in Assumptions or Other Inputs Since 2019

- The price inflation assumption was lowered from 2.40% to 2.30%.
- The wage inflation assumption was lowered from 3.50% to 3.00%.
- The real rate of investment return assumption was increased to 4.95% per year, net of investment expenses from 4.85% per year, net of investment expenses.

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)— DIVISION TRUST FUNDS

(Dollars in Thousands)

- Salary scale assumptions were revised to align with revised economic assumptions and to more closely reflect actual experience.
 - Rates of termination/withdrawal, retirement, and disability were revised to more closely reflect actual experience.
 - The pre-retirement mortality assumption for the State and Local Government Divisions (members other than State Troopers) was changed to the PubG-2010 Employee Table with generational projection using scale MP-2019.
 - The pre-retirement mortality assumption for State Troopers was changed to the PubS-2010 Employee Table with generational projection using scale MP-2019.
 - The pre-retirement mortality assumption for the School and DPS Divisions was changed to the PubT-2010 Employee Table with generational projection using scale MP-2019.
 - The pre-retirement mortality assumption for the Judicial Division was changed to the PubG-2010(A) Above-Median Employee Table with generational projection using scale MP-2019.
 - The post-retirement non-disabled mortality assumption for the State and Local Government Divisions (members other than State Troopers) was changed to the PubG-2010 Healthy Retiree Table, adjusted as follows:
 - **Males:** 94% of the rates prior to age 80 and 90% of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 87% of the rates prior to age 80 and 107% of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - The post-retirement non-disabled mortality assumption for State Troopers was changed to the unadjusted PubS-2010 Healthy Retiree Table, with generational projection using scale MP-2019.
 - The post-retirement non-disabled mortality assumption for the School and DPS Divisions was changed to the PubT-2010 Healthy Retiree Table, adjusted as follows:
 - **Males:** 112% of the rates prior to age 80 and 94% of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 83% of the rates prior to age 80 and 106% of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - The post-retirement non-disabled mortality assumption for the Judicial Division was changed to the unadjusted PubG-2010(A) Above-Median Healthy Retiree Table with generational projection using scale MP-2019.
- post-retirement non-disabled beneficiary mortality assumption for the Division Trust Funds was changed to the Pub-2010 Contingent Survivor Table, adjusted as follows:
- **Males:** 97% of the rates for all ages, with generational projection using scale MP-2019.
 - **Females:** 105% of the rates for all ages, with generational projection using scale MP-2019.
- The disabled mortality assumption for the Division Trust Funds (members other than State Troopers) was changed to the PubNS-2010 Disabled Retiree Table using 99% of the rates for all ages with generational projection using scale MP-2019.
 - The disabled mortality assumption for State Troopers was changed to the unadjusted PubS-2010 Disabled Retiree Table with generational projection using scale MP-2019.
 - The mortality tables described above are generational mortality tables developed on a benefit-weighted basis.
- ### 2019 Changes in Assumptions or Other Inputs Since 2018
- The assumption used to value the AI cap benefit provision was changed from 1.50% to 1.25%.
- ### 2018 Changes in Assumptions or Other Inputs Since 2017
- The single equivalent interest rate (SEIR) for the State Division was increased from 4.72% to 7.25% to reflect the changes to the projection's valuation basis which no longer resulted in a projected year of depletion of the fiduciary net position (FNP), thereby eliminating the need to apply the municipal bond index rate.
 - The SEIR for the School Division was increased from 4.78% to 7.25% to reflect the changes to the projection's valuation basis which no longer resulted in a projected year of depletion of the FNP, thereby eliminating the need to apply the municipal bond index rate.
 - The SEIR for the Judicial Division was increased from 5.41% to 7.25% to reflect the changes to the projection's valuation basis which no longer resulted in a projected year of depletion of the FNP, thereby eliminating the need to apply the municipal bond index rate.
- ### 2017 Changes in Assumptions or Other Inputs Since 2016
- The SEIR for the State Division was lowered from 5.26% to 4.72% to reflect the changes to the projection's valuation basis, a projected year of depletion of the FNP, and the resulting application of the municipal bond index rate.
 - The SEIR for the School Division was lowered from 5.26% to 4.78% to reflect the changes to the projection's valuation basis, a projected year of depletion of the FNP,

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)— DIVISION TRUST FUNDS

(Dollars in Thousands)

and the resulting application of the municipal bond index rate.

- The SEIR for the Judicial Division was increased from 5.18% to 5.41% to reflect the changes to the projection's valuation basis, a projected year of depletion of the FNP, and the resulting application of the municipal bond index rate.
- The municipal bond index rate used in the determination of the SEIR for the State, School, and Judicial Divisions changed from 3.86% on the prior measurement date to 3.43% on the measurement date.

2016 Changes in Assumptions or Other Inputs Since 2015

- The investment return assumption was lowered from 7.50% to 7.25%.
- The price inflation assumption was lowered from 2.80% to 2.40%.
- The wage inflation assumption was lowered from 3.90% to 3.50%.
- The post-retirement mortality assumption for healthy lives for the State and Local Government Divisions was changed to the RP-2014 Healthy Annuitant Mortality Table with adjustments for credibility and gender adjustments of a 73% factor applied to ages below 80 and a 108% factor applied to age 80 and above, projected to 2018, for males, and a 78% factor applied to ages below 80 and a 109% factor applied to age 80 and above, projected to 2020, for females.
- The post-retirement mortality assumption for healthy lives for the School, Judicial, and DPS Divisions was changed to the RP-2014 White Collar Healthy Annuitant Mortality Table with adjustments for credibility and gender adjustments of a 93% factor applied to ages below 80 and a 113% factor applied to age 80 and above, projected to 2018, for males, and a 68% factor applied to ages below 80 and a 106% factor applied to age 80 and above, projected to 2020, for females.
- For disabled retirees, the mortality assumption was changed to reflect 90% of RP-2014 Disabled Retiree Mortality Table.
- The mortality assumption for active members was changed to RP-2014 White Collar Employee Mortality Table, a table specifically developed for actively working people. To allow for an appropriate margin of improved mortality prospectively, the mortality rates incorporate a 70% factor applied to male rates and a 55% factor applied to female rates.
- The rates of retirement, withdrawal, and disability were revised to reflect more closely actual experience.
- The estimated administrative expense as a percentage of covered payroll was increased from 0.35% to 0.40%.
- The SEIR for the State and School Divisions was lowered from 7.50% to 5.26% to reflect the changes to the projection's valuation basis, a projected year of depletion of the FNP, and the resulting application of the municipal bond index rate of 3.86% on the measurement date.
- The SEIR for the Local Government Division was lowered from 7.50% to 7.25%, reflecting the change in the long-term expected rate of return.
- The SEIR for the Judicial Division was lowered from 5.73% to 5.18% to reflect the changes to the projection's valuation basis, a projected year of depletion of the FNP, and the resulting application of the municipal bond index rate from 3.57% on the prior measurement date to 3.86% on the measurement date.
- The SEIR for the DPS Division was lowered from 7.50% to 7.25%, reflecting the change in the long-term expected rate of return.

2015 Changes in Assumptions or Other Inputs Since 2014

- The SEIR for the Judicial Division was lowered from 6.14% to 5.73% to reflect the changes to the projection's valuation basis, a projected year of depletion of the FNP, and the resulting application of the municipal bond index rate from 3.70% on the prior measurement date to 3.57% 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% 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.

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)— DIVISION TRUST FUNDS

(Dollars in Thousands)

2014 Changes in Assumptions or Other Inputs Since 2013

- The SEIR for the Judicial Division was lowered from 6.66% to 6.14% to reflect the changes to the projection's valuation basis, a projected year of depletion of the FNP, and the resulting application of the municipal bond index rate from 4.73% on the prior measurement date to 3.70% on the measurement date.
- In 2012, a lawsuit was initiated to determine the amount owed to PERA by 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 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 HCTF 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% to 7.50%.
- The price inflation assumption was lowered from 3.50% to 2.80%.
- The wage inflation assumption was lowered from 4.25% to 3.90%.

2012 Changes in Assumptions or Other Inputs Since 2011

- The price inflation assumption was lowered from 3.75% to 3.50%.
- The wage inflation assumption was lowered from 4.50% to 4.25%.
- 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% 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.

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 and Nonemployer 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, 2019, actuarial valuation were used to determine contribution rates reported in that schedule for the year ending December 31, 2021:

Actuarial cost method	Entry age
Amortization method	Level percentage of payroll
Amortization period	30 years, closed, layered ¹
Equivalent single amortization period	28 years (26 years for State Division Division)
Asset valuation method	4-year smoothed market
Price inflation	2.40%
Real wage growth	1.10%
Wage inflation	3.50%
Salary increases, including wage inflation	3.50% to 10.45% ²
Long-term investment rate of return, net of pension plan investment expense, including price inflation	7.25%
Future post-retirement benefit increases	
PERA benefit structure hired prior to 1/1/07 and DPS benefit structure	1.25% compounded annually
PERA benefit structure hired after 12/31/06	0.00%, as financed by the AIR

¹ Effective with the December 31, 2014, actuarial valuation, gains and losses are to be amortized over a closed period.

² Salary increases range by age and Division Trust Fund.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET OPEB LIABILITY AND RELATED RATIOS—HEALTH CARE TRUST FUND^{1,2}

For the Years Ended December 31

	2021	2020	2019	2018	2017	2016
Total OPEB liability						
Service cost	\$18,188	\$18,074	\$18,159	\$19,328	\$20,036	
Interest	101,172	106,997	117,840	112,849	108,625	
Changes of benefit terms	—	—	—	—	5	
Difference between expected and actual experience	(52,850)	(68,772)	(224,212)	(2,482)	7,354	
Changes of assumptions or other inputs	15,483	(69,759)	2,006	11,438	—	
Benefit payments and health care claims/ administrative processing fees	(72,465)	(61,522)	(65,019)	(77,221)	(116,960)	
Net change in total OPEB liability	9,528	(74,982)	(151,226)	63,912	19,060	
Total OPEB liability – beginning	1,413,526	1,488,508	1,639,734	1,575,822	1,556,762	
Total OPEB liability – ending (a)	\$1,423,054	\$1,413,526	\$1,488,508	\$1,639,734	\$1,575,822	\$1,556,762
Plan fiduciary net position						
Contributions – employer	\$97,974	\$94,634	\$92,011	\$86,559	\$83,077	
Contributions – employer disaffiliation	—	—	—	—	96	
Other additions (includes purchased service transfers)	8,108	7,909	6,984	8,373	9,760	
Net investment income (loss)	68,319	60,280	53,867	(9,678)	44,990	
Benefit payments	(63,893)	(53,023)	(58,221)	(61,777)	(102,665)	
Administrative expense	(12,976)	(10,977)	(9,290)	(20,401)	(19,162)	
Other deductions	(84)	(32)	(33)	(106)	(102)	
Net change in plan fiduciary net position	97,448	98,791	85,318	2,970	15,994	
Plan fiduciary net position – beginning	463,301	364,510	279,192	276,222	260,228	
Plan fiduciary net position – ending (b)	\$560,749	\$463,301	\$364,510	\$279,192	\$276,222	\$260,228
Net OPEB liability – ending (a)-(b)	\$862,305	\$950,225	\$1,123,998	\$1,360,542	\$1,299,600	\$1,296,534
Plan fiduciary net position as a percentage of the total OPEB liability	39.40%	32.78%	24.49%	17.03%	17.53%	16.72%
Covered payroll	\$9,337,899	\$8,988,119	\$8,834,404	\$8,399,835	\$7,927,280	\$7,716,894
Net OPEB liability as a percentage of covered payroll	9.23%	10.57%	12.72%	16.20%	16.39%	16.80%

¹ Information is not available prior to 2016. In future reports, additional years will be added until 10 years of historical data are presented.² Amounts for changes in net OPEB liability shaded in gray are not available for 2016.

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 CHANGES IN NET OPEB LIABILITY AND RELATED RATIOS—DPS HEALTH CARE TRUST FUND^{1,2}

For the Years Ended December 31

	2021	2020	2019	2018	2017	2016
Total OPEB liability						
Service cost	\$1,237	\$1,291	\$1,342	\$1,420	\$1,591	
Interest	4,750	5,005	4,970	5,245	5,057	
Changes of benefit terms	—	—	—	—	—	
Difference between expected and actual experience	(2,855)	(4,339)	(2,070)	(6,045)	(35)	
Changes of assumptions or other inputs	—	(1,764)	—	5	—	
Benefit payments and health care claims/ administrative processing fees	(3,873)	(3,453)	(3,968)	(4,693)	(6,191)	
Net change in total OPEB liability	(741)	(3,260)	274	(4,068)	422	
Total OPEB liability – beginning	66,213	69,473	69,199	73,267	72,845	
Total OPEB liability – ending (a)	\$65,472	\$66,213	\$69,473	\$69,199	\$73,267	\$72,845
Plan fiduciary net position						
Contributions – employer	\$8,622	\$8,045	\$7,649	\$7,417	\$6,930	
Other additions (includes purchased service transfers)	206	224	188	205	242	
Net investment income (loss)	6,963	6,019	4,892	(894)	3,305	
Benefit payments	(3,516)	(3,086)	(3,644)	(4,158)	(5,694)	
Administrative expense	(639)	(516)	(477)	(845)	(808)	
Other deductions	(4)	(1)	(1)	(4)	(4)	
Net change in plan fiduciary net position	11,632	10,685	8,607	1,721	3,971	
Plan fiduciary net position – beginning	43,321	32,636	24,029	22,308	18,337	
Plan fiduciary net position – ending (b)	\$54,953	\$43,321	\$32,636	\$24,029	\$22,308	\$18,337
Net OPEB liability – ending (a)-(b)	\$10,519	\$22,892	\$36,837	\$45,170	\$50,959	\$54,508
Plan fiduciary net position as a percentage of the total OPEB liability	83.93%	65.43%	46.98%	34.72%	30.45%	25.17%
Covered payroll	\$823,396	\$771,347	\$736,264	\$722,040	\$658,198	\$642,177
Net OPEB liability as a percentage of covered payroll	1.28%	2.97%	5.00%	6.26%	7.74%	8.49%

¹ Information is not available prior to 2016. In future reports, additional years will be added until 10 years of historical data are presented.² Amounts for changes in net OPEB liability shaded in gray are not available for 2016.

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	2021	2020	2019	2018	2017
Actuarially determined contribution rate (a)	0.89%	0.97%	1.11%	1.12%	1.08%
Covered payroll (b)	\$9,337,899	\$8,988,119	\$8,834,404	\$8,399,835	\$7,927,280
Actuarially determined contribution (a) x (b)	83,107	87,185	98,062	94,078	85,615
Contributions in relation to the actuarially determined contribution	97,974	94,634	92,011	86,559	83,077 ¹
Annual contribution deficiency (excess)	(\$14,867)	(\$7,449)	6,051	\$7,519	\$2,538
Actual contributions as a percentage of covered payroll	1.05%	1.05%	1.04%	1.03%	1.05%
	2016	2015	2014	2013	2012
Actuarially determined contribution rate (a)	1.09%	1.15%	1.32%	1.24%	1.18%
Covered payroll (b)	\$7,716,894	\$7,485,545	\$7,211,351	\$6,982,560	\$6,766,713
Retiree drug subsidy (c)	—	—	—	15,731	14,198
Actuarially determined contribution (a) x (b) + (c)	84,114	86,084	95,190	102,315	94,045
Contributions in relation to the actuarially determined contribution	80,825	78,463	75,631 ²	88,515	86,751
Annual contribution deficiency	\$3,289	\$7,621	\$19,559	\$13,800	\$7,294
Actual contributions as a percentage of covered payroll	1.05%	1.05%	1.05%	1.27%	1.28%

¹ Contributions do not include the disaffiliation payment of \$96 for Cunningham Fire Protection District.² Contributions do not include the disaffiliation payment of \$3,994 for Memorial Health System.

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 (CONTINUED)

For the Years Ended December 31

DPS Health Care Trust Fund	2021	2020	2019	2018	2017
Actuarially determined contribution rate (a)	0.44%	0.51%	0.60%	0.67%	0.68%
Covered payroll (b)	\$823,396	\$771,347	\$736,264	\$722,040	\$658,198
Actuarially determined contribution (a) x (b)	3,623	3,934	4,418	4,838	4,476
Contributions in relation to the actuarially determined contribution	8,622	8,045	7,649	7,417	6,930
Annual contribution excess	(\$4,999)	(\$4,111)	(\$3,231)	(\$2,579)	(\$2,454)
Actual contributions as a percentage of covered payroll	1.05%	1.04%	1.04%	1.03%	1.05%
	2016	2015	2014	2013	2012
Actuarially determined contribution rate (a)	0.75%	0.81%	0.87%	0.86%	0.92%
Covered payroll (b)	\$642,177	\$621,115	\$584,319	\$547,660	\$510,872
Retiree drug subsidy (c)	—	—	—	563	488
Actuarially determined contribution (a) x (b) + (c)	4,816	5,031	5,084	5,273	5,188
Contributions in relation to the actuarially determined contribution	6,723	6,371	6,003	6,121	5,731
Annual contribution excess	(\$1,907)	(\$1,340)	(\$919)	(\$848)	(\$543)
Actual contributions as a percentage of covered payroll	1.05%	1.03%	1.03%	1.12%	1.12%

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

SCHEDULE OF INVESTMENT RETURNS¹

For the Years Ended December 31

	2021	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expenses	16.1%	17.1%	20.4%	(3.3%)	18.1%	7.3%	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)— HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

Note 1—Significant Changes in Plan Provisions Affecting Trends in Actuarial Information

2021 Changes in Plan Provisions Since 2020

- There were no changes made to plan provisions.

2020 Changes in Plan Provisions Since 2019

- There were no changes made to plan provisions.

2019 Changes in Plan Provisions Since 2018

- There were no changes made to plan provisions.

2018 Changes in Plan Provisions Since 2017

- There were no changes made to plan provisions.

2017 Changes in Plan Provisions Since 2016

- The Cunningham Fire Protection District (CFPD) disaffiliated from the Local Government Division, thereby ending participation in the Health Care Trust Fund (HCTF) on December 2, 2017. For the purpose of disclosure as of the December 31, 2017, measurement date, liabilities were determined assuming no additional service accruals impacting possible future premium subsidies for the disaffiliated membership of the CFPD that had not refunded their PERA member contribution accounts. The total disaffiliation payment of \$1,159 was allocated to the Local Government Division Trust Fund and the HCTF in the amount of \$1,063 and \$96, respectively.

2016 Changes in Plan Provisions Since 2015

- There were no changes made to plan provisions.

2015 Changes in Plan Provisions Since 2014

- There were no changes made to plan provisions.

2014 Changes in Plan Provisions Since 2013

- There were no changes made to plan provisions.

2013 Changes in Plan Provisions Since 2012

- There were no changes made to plan provisions.

2012 Changes in Plan Provisions Since 2011

- The Memorial Health System (Memorial), disaffiliated from the Local Government Division, hence ending participation in the HCTF, on October 1, 2012. For the purpose of disclosure as of the December 31, 2012, measurement date, liabilities were determined assuming no additional service accruals impacting possible future premium subsidies 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 HCTF as of December 31, 2012, as there was ongoing litigation regarding the potential dollars owed to the Local

Government Division Trust Fund and the HCTF due to the disaffiliation.

Note 2—Significant Changes in Assumptions or Other Inputs Affecting Trends in Actuarial Information

2021 Changes in Assumptions or Other Inputs Since 2020

- There were no changes made to the actuarial methods or assumptions.

2020 Changes in Assumptions or Other Inputs Since 2019

- The price inflation assumption was lowered from 2.40% to 2.30%.
- The wage inflation assumption was lowered from 3.50% to 3.00%.
- The real rate of investment return assumption was increased to 4.95% per year, net of investment expenses from 4.85% per year, net of investment expenses.
- Rates of termination/withdrawal, retirement, and disability were revised to more closely reflect actual experience.
- The pre-retirement mortality assumption for the State and Local Government Divisions (members other than State Troopers) was changed to the PubG-2010 Employee Table with generational projection using scale MP-2019.
- The pre-retirement mortality assumption for State Troopers was changed to the PubS-2010 Employee Table with generational projection using scale MP-2019.
- The pre-retirement mortality assumption for the School and DPS Divisions was changed to the PubT-2010 Employee Table with generational projection using scale MP-2019.
- The pre-retirement mortality assumption for the Judicial Division was changed to the PubG-2010(A) Above-Median Employee Table with generational projection using scale MP-2019.
- The post-retirement non-disabled mortality assumption for the State and Local Government Divisions (members other than State Troopers) was changed to the PubG-2010 Healthy Retiree Table, adjusted as follows:
 - **Males:** 94% of the rates prior to age 80 and 90% of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 87% of the rates prior to age 80 and 107% of the rates for ages 80 and older, with generational projection using scale MP-2019.
- The post-retirement non-disabled mortality assumption for State Troopers was changed to the unadjusted

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)— HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

- PubS-2010 Healthy Retiree Table, with generational projection using scale MP-2019.
- The post-retirement non-disabled mortality assumption for the School and DPS Divisions was changed to the PubT-2010 Healthy Retiree Table, adjusted as follows:
 - **Males:** 112% of the rates prior to age 80 and 94% of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 83% of the rates prior to age 80 and 106% of the rates for ages 80 and older, with generational projection using scale MP-2019.
- The post-retirement non-disabled mortality assumption for the Judicial Division was changed to the unadjusted PubG-2010(A) Above-Median Healthy Retiree Table with generational projection using scale MP-2019.
- The post-retirement non-disabled beneficiary mortality assumption for the Division Trust Funds was changed to the Pub-2010 Contingent Survivor Table, adjusted as follows:
 - **Males:** 97% of the rates for all ages, with generational projection using scale MP-2019.
 - **Females:** 105% of the rates for all ages, with generational projection using scale MP-2019.
- The disabled mortality assumption for the Division Trust Funds (members other than State Troopers) was changed to the PubNS-2010 Disabled Retiree Table using 99% of the rates for all ages with generational projection using scale MP-2019.
- The disabled mortality assumption for State Troopers was changed to the unadjusted PubS-2010 Disabled Retiree Table with generational projection using scale MP-2019.
- The mortality tables described above are generational mortality tables developed on a head-count weighted basis.

2019 Changes in Assumptions or Other Inputs Since 2018

- There were no changes made to the actuarial methods or assumptions.

2018 Changes in Assumptions or Other Inputs Since 2017

- There were no changes made to the actuarial methods or assumptions.

2017 Changes in Assumptions or Other Inputs Since 2016

- There were no changes made to the actuarial methods or assumptions.

2016 Changes in Assumptions or Other Inputs Since 2015

- The following methodology change was made:
 - The Entry Age Normal actuarial cost method allocation basis has been changed from a level dollar amount to a level percentage of pay.
- The following changes were made to the actuarial assumptions:
 - The investment rate of return assumption decreased from 7.50% to 7.25%.
 - The price inflation assumption decreased from 2.80% to 2.40%.
 - The wage inflation assumption decreased from 3.90% to 3.50%.
 - The mortality assumption for active members was changed to RP-2014 White Collar Employee Mortality Table, a table specifically developed for actively working people. To allow for an appropriate margin of improved mortality prospectively, the mortality rates incorporate a 70% factor applied to male rates and a 55% factor applied to female rates.
 - The post-retirement mortality assumption for healthy lives for the State and Local Government Divisions was changed to the RP-2014 Healthy Annuitant Mortality Table with adjustments for credibility and gender adjustments of a 73% factor applied to ages below 80 and a 108% factor applied to age 80 and above, projected to 2018, for males, and a 78% factor applied to ages below 80 and a 109% factor applied to age 80 and above, projected to 2020, for females.
 - The post-retirement mortality assumption for healthy lives for the School, Judicial, and DPS Divisions was changed to the RP-2014 White Collar Healthy Annuitant Mortality Table with adjustments for credibility and gender adjustments of a 93% factor applied to ages below 80 and a 113% factor applied to age 80 and above, projected to 2018, for males, and a 68% factor applied to ages below 80 and a 106% factor applied to age 80 and above, projected to 2020, for females.
 - For disabled retirees, the mortality assumption was changed to reflect 90% of RP-2014 Disabled Retiree Mortality Table.
 - The assumed rates of withdrawal, retirement, and disability have been adjusted to more closely reflect experience.

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)— HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

- The assumed rates of PERACare participation have been revised to reflect more closely actual experience.
- Initial per capita health care costs for those PERACare enrollees under the PERA benefit structure who are expected to attain age 65 and older ages and are not eligible for premium-free Medicare Part A benefits have been updated to reflect the change in costs for the 2017 plan year.
- The percentage of PERACare enrollees who will attain age 65 and older ages and are assumed to not qualify for premium-free Medicare Part A coverage have been revised to reflect more closely actual experience.
- The percentage of disabled PERACare enrollees who are assumed to not qualify for premium-free Medicare Part A coverage has been revised to reflect more closely actual experience.
- The health care cost trend rates for Medicare Part A premiums have been revised to reflect the then-current expectation of future increases in rates of inflation applicable to Medicare Part A premiums.
- Assumed election rates for the PERACare coverage options that would be available to future PERACare enrollees who will qualify for the “No Part A Subsidy” when they retire have been revised to more closely reflect actual experience.
- Assumed election rates for the PERACare coverage options that will be available to those current PERACare enrollees, who qualify for the “No Part A Subsidy” but have not reached age 65, have been revised to more closely reflect actual experience.
- The rates of PERACare coverage election for spouses of eligible inactive members and future retirees was revised to reflect more closely actual experience.
- The assumed age differences between future retirees and their participating spouses have been revised to reflect more closely actual experience.

2015 Changes in Assumptions or Other Inputs Since 2014

- The following methodology changes were 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 have attained age 65 and older and are not eligible for premium-free Medicare Part A benefits.
 - Adjustments were made to the timing of the normal cost and unfunded actuarial accrued liability (UAAL) payment calculations to reflect contributions throughout the year.

- The following changes were made to the actuarial assumptions:
 - The percentage of PERACare enrollees who will attain age 65 and older ages 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 expected to attain age 65 and older ages 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 health care cost trend rates for Medicare Part A premiums have been revised to reflect the current expectation of future increases in rates of inflation applicable to Medicare Part A premiums.

2014 Changes in Assumptions or Other Inputs Since 2013

- The following change was made to the actuarial assumptions:
 - Initial per capita health care costs for those PERACare enrollees under the PERA benefit structure who are expected to attain age 65 and older ages and are not eligible for premium-free Medicare Part A benefits have been updated to reflect the change in costs for the 2015 plan year.
- The following other change was made:
 - In 2012, a lawsuit was initiated to determine the amount owed to PERA by Memorial and the City of Colorado Springs (City) for Memorial’s disaffiliation from PERA. In September 2014, PERA and the City agreed to resolve the lawsuit. The 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 HCTF in the amount of \$186,006 and \$3,994, respectively.

2013 Changes in Assumptions or Other Inputs Since 2012

- The following changes were made to the actuarial assumptions:
 - The investment rate of return assumption decreased from 8.00% to 7.50% per annum.
 - The price inflation assumption decreased from 3.50% to 2.80% per annum.
 - The wage inflation assumption decreased from 4.25% to 3.90% per annum.

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)— HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

- 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 per capita health care costs for those PERACare enrollees under the PERA benefit structure who are expected to attain age 65 and older ages and are not eligible for premium-free Medicare Part A benefits have been updated to reflect the change in costs for the 2014 plan year.
 - The health care cost trend rates for Medicare Part A premiums have been revised to reflect the current expectation of future increases in rates of inflation applicable to Medicare Part A premiums.
 - The utilization rates for the No Part A subsidy of both retirees and their spouses have been revised.
- 2012 Changes in Assumptions or Other Inputs Since 2011**
- The following changes were made to the actuarial assumptions:
 - The price inflation assumption decreased from 3.75% to 3.50%.
 - The wage inflation assumption decreased from 4.50% to 4.25%.
 - The post-retirement mortality assumption 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 active member mortality assumption was 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% for males and 40% for females.
 - 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 withdrawal were revised to more closely reflect actual experience.
 - The rates of early, reduced retirement for all divisions decreased and the rates for unreduced retirements increased to more closely reflect actual experience.
 - The rates of disability from active service decreased slightly to more closely reflect actual experience.
 - 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.
 - The rates of participation in PERACare for current and future participants of all divisions and DPS Division deferred vested members have been revised to more closely reflect actual experience.
 - The percentage of PERACare enrollees who will attain age 65 and older ages 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 those PERACare enrollees under the PERA benefit structure who are expected to attain age 65 and older ages and are 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 health care cost trend rates for Medicare Part A premiums and RDS payments have been revised to reflect the current expectation of future increases in rates of inflation applicable to Medicare Part A premiums.
 - 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.

NOTES TO THE REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)— HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

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 Contributions from Employers and Other Contributing Entities 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, 2019, actuarial valuation were used to determine contribution rates reported in that schedule for the year ending December 31, 2021:

Actuarial cost method	Entry age
Amortization method	Level percentage of payroll
Amortization period	30 years, closed, layered ¹
Asset valuation method	4-year smoothed market
Price inflation	2.40%
Real wage growth	1.10%
Wage inflation	3.50%
Salary increases, including wage inflation	3.50% in aggregate
Long-term investment rate of return, net of OPEB plan investment expense, including price inflation	7.25%
Health care inflation factors	
PERA benefit structure:	
Service-based premium subsidy	0.00%
Medicare Part A premiums ²	3.50% initial 4.50% ultimate
Carrier premiums ²	8.10% initial 4.50% ultimate
DPS benefit structure:	
Service-based premium subsidy	0.00%
Medicare Part A premiums	N/A
Carrier premiums	N/A

¹ Effective with the December 31, 2017, actuarial valuation, gains and losses are to be amortized over a closed period.

² The Medicare Part A and carrier premiums only apply to calculation of the implicit subsidy applicable to the PERA benefit structure.

SUPPLEMENTARY SCHEDULES

(Dollars in Thousands)

SCHEDULE OF ADMINISTRATIVE EXPENSES

For the Year Ended December 31

	2021
Personnel Services	
Salaries	\$43,249
Employee benefits	13,461
Total personnel services	56,710
Professional Services	
Actuarial contracts	678
Audits	377
Payroll services	97
Investment services	3,217
Legal and legislative counsel	1,812
Computer services and consulting	1,781
Management consulting	1,274
Health care consulting	414
Other	819
Total professional services	10,469
Miscellaneous	
Equipment rental and services	1,603
Memberships	273
Publications and subscriptions	56
Travel and local expense	120
Auto expense	3
Telephone	543
Postage	1,121
Insurance	323
Printing	396
Office supplies	651
Building rent, supplies, and utilities	889
Total miscellaneous	5,978
Direct Expense	
Health Care Trust Fund	8,579
DPS Health Care Trust Fund	357
Voluntary Investment Program	1,599
Defined Contribution Retirement Plan	160
Deferred Compensation Plan	467
Total direct expense	11,162
Depreciation expense	290
Tenant and other expense	1,046
Internal investment manager expense	(27,845)
Total administrative expense	\$57,810

SUPPLEMENTARY SCHEDULES

(Dollars in Thousands)

SCHEDULE OF ADMINISTRATIVE EXPENSES (CONTINUED)

For the Year Ended December 31

	2021
Allocation of Administrative Expenses	
State Division Trust Fund	\$12,051
School Division Trust Fund	22,608
Local Government Division Trust Fund	3,065
Judicial Division Trust Fund	186
DPS Division Trust Fund	2,829
Voluntary Investment Program	2,034
Defined Contribution Retirement Plan	753
Deferred Compensation Plan	589
Health Care Trust Fund	12,976
DPS Health Care Trust Fund	639
Life Insurance Reserve	80
Total administrative expense	\$57,810

Note: The 2021 ratio of administrative expenses to fiduciary net position is six basis points (0.06%) for the Division Trust Funds and is eight basis points (0.08%) for all funds.

See accompanying Independent Auditors' Report.

SUPPLEMENTARY SCHEDULES

(Dollars in Thousands)

SCHEDULE OF OTHER ADDITIONS

For the Year Ended December 31

	State Division Trust Fund	School Division Trust Fund	Local Government Division 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 2021
Administrative fee income	\$—	\$—	\$—	\$—	\$—	\$1	\$—	\$1	\$2,447	\$141	\$—	\$2,590
Revenue sharing	—	—	—	—	—	17	3	13	—	—	—	33
Participant loan interest	—	—	—	—	—	5,340	—	643	—	—	—	5,983
Interfund transfers at retirement	5,983	—	—	5,435	—	—	—	—	—	—	—	11,418
Purchase service transfer to health care	—	—	—	—	—	—	—	—	5,649	65	—	5,714
Settlement income	47	81	14	1	11	—	—	—	1	—	—	155
Miscellaneous	8	49	9	—	4	126	47	21	11	—	—	275
Total other additions	\$6,038	\$130	\$23	\$5,436	\$15	\$5,484	\$50	\$678	\$8,108	\$206	\$—	\$26,168

SCHEDULE OF OTHER DEDUCTIONS

For the Year Ended December 31

	State Division Trust Fund	School Division Trust Fund	Local Government Division 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 2021
Interfund transfers at retirement	\$—	\$6,295	\$2,068	\$—	\$3,055	\$—	\$—	\$—	\$—	\$—	\$—	\$11,418
Purchase service transfer to health care	2,434	2,176	986	53	65	—	—	—	—	—	—	5,714
Miscellaneous	516	231	30	—	10	1,933	165	846	84	4	—	3,819
Total other deductions	\$2,950	\$8,702	\$3,084	\$53	\$3,130	\$1,933	\$165	\$846	\$84	\$4	\$—	\$20,951

See accompanying Independent Auditors' Report.

SUPPLEMENTARY SCHEDULES

(Dollars in Thousands)

SCHEDULE OF INVESTMENT EXPENSES

For the Year Ended December 31

	2021
Division Trust Funds, Health Care Trust Funds, and Life Insurance Reserve	
External manager expenses	
Global equity	\$32,472
Fixed income	—
Private equity	62,522
Real estate	34,074
Alternatives	40,808
Cash and short-term investments	563
Total external manager expenses	170,439
Internal manager expenses	26,426
Other investment expenses and custody fees	6,139
Defined Contribution and Deferred Compensation Plans	
Internal manager expenses	1,419
Other investment expenses	3,620
Total investment expenses	\$208,043

SCHEDULE OF PAYMENTS TO CONSULTANTS

For the Year Ended December 31

	2021
Professional Contracts	
Actuarial	\$678
Audits	377
Payroll services	97
Legal and legislative counsel	1,812
Computer services and consulting	1,781
Management consulting	1,274
Health care consulting	414
Other	819
Total payments to consultants¹	\$7,252

¹ Excludes investment advisers.

The Schedule of Commissions and other information related to investment expenses can be found in the Investment Section on pages 123-125.

See accompanying Independent Auditors' Report.



INVESTMENT SECTION





DEFINED BENEFIT PLANS

INTRODUCTION

The Division Trust Funds, the Health Care Trust Funds, and the Life Insurance Reserve are included in the information discussed in this subsection on Colorado PERA's defined benefit plans.

REPORT ON INVESTMENT ACTIVITY

State Law

State law gives complete responsibility for the investment of 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% 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% of the then book value of the fund.
- The fund cannot acquire more than 12% 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.) § 24-54.8-201 *et seq.* imposes targeted divestment from companies that have economic prohibitions against Israel.

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 for the fund. This strategic asset allocation contains a long-term target allocation and specific ranges within which each asset class may operate. Because the long-term target allocation will be achieved over time, a yearly Policy Benchmark weight is also specified. The asset allocation targets and ranges in effect for 2021 are listed below.

ASSET ALLOCATION TARGETS AND RANGES¹

	2021 Policy Benchmark Weight	Long-Term Asset Allocation Target	Target Range
Global Equity	55.5%	54.0%	49.5% – 61.5%
Fixed Income	23.5%	23.0%	18.5% – 28.5%
Private Equity	8.5%	8.5%	4.0% – 13.0%
Real Estate	8.5%	8.5%	4.0% – 13.0%
Alternatives	4.0%	6.0% ²	0.0% – 12.0%
Cash and Short-Term Investments	0.0%	0.0%	0.0% – 3.0%

¹ See Note 5 of the Notes to the Financial Statements in the Financial Section for detailed disclosures about each asset class.

² Maximum allocation to Alternatives. The Policy Benchmark weight will be set yearly based on final 12/31 weights, rounded to the nearest 0.5%. Any uninvested allocation will be re-allocated to the Public Markets Benchmark.

The asset allocation policy is determined by an intensive asset/liability study which considers expected investment returns, risks, and correlations of returns. The characteristics of the fund's liabilities are 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, while ensuring an appropriate level of risk is incurred. The Board commissioned an asset/liability study during 2019, which was prepared by Aon Investment USA Inc. (Aon). The objective of the study was to determine the optimal strategic asset allocation that will ultimately allow PERA to meet its financial obligations, while also ensuring that PERA incurs appropriate levels of risk and liquidity. As a result of this study, the Board slightly modified the asset allocation ranges and targets effective January 1, 2020, while reaffirming the investment return assumption of 7.25%.

DEFINED BENEFIT PLANS

The asset allocation targets are adhered to through the implementation of portfolio rebalancing. 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, and other important investment functions and issues.

Basis of Presentation

Aon, 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.

Investment Stewardship

It is the fiduciary duty of the Board and Investment staff to manage plan assets with prudence and care in pursuit of long-term financial sustainability for the benefit of members and plan participants. PERA staff demonstrate stewardship of plan assets by: protecting members' interests through cost-conscious investments; integrating financially material factors into investment decisions; advocating for robust market practices that support long-term value; and evaluating portfolio exposures and performance on an ongoing basis.

Investment staff initiatives and philosophy supporting the pursuit of financial sustainability through stewardship are discussed in greater detail in PERA's *Investment Stewardship Report*. The report also expounds upon environmental, social, and governance (ESG) related investing themes. The *Investment Stewardship Report* is updated annually, and can be found on PERA's website at www.copera.org.

Proxy Voting

As part of investment stewardship, PERA promotes corporate governance and other business practices that are expected to contribute to financial sustainability through proxy voting. The Board views the right to vote as an asset of the plans to be managed under fiduciary duty, and has charged the Investment Committee with oversight in fulfilling that responsibility.

The Board and the Investment Committee have delegated to Investment Stewardship Division staff the authority to review and vote on proxy proposals in compliance with PERA's *Proxy Voting Policy (Policy)*. Accordingly, staff vote proxies for domestic and international equity shares held in public market portfolios.

The *Policy* sets forth guidance on a broad range of issues that may present risks and opportunities for the public companies in which PERA invests. The Board regularly updates the *Policy* in seeking alignment of corporate management interests with the interests of long-term shareholders, as relevant to PERA's investment thesis. The *Policy* and a link to disclosure of votes cast can be viewed on PERA's website at www.copera.org.

(The Report on Investment Activity was prepared by internal staff.)

DEFINED BENEFIT PLANS

(Dollars in Thousands)

INVESTMENT BROKERS/ADVISERS (INTERNALLY MANAGED ASSETS)

Amherst Pierpont Securities LLC	Liquidnet, Inc.
Baird (Robert W.) & Co., Incorporated	MarketAxess Corp.
Barclays Capital Inc.	Mizuho Securities USA, Inc.
BMO Capital Markets Corp.	Morgan Stanley & Co. Inc.
BNP Paribas Securities Corp.	MUFG Securities Americas Inc.
BofA Securities, Inc.	NatWest Markets Securities Inc.
Cantor Fitzgerald & Co.	Nomura Securities International, Inc.
Citadel Securities LLC	RBC Capital Markets, LLC
Citigroup Global Markets Inc.	State Street Global Markets LLC
Credit Agricole (USA) Inc.	Stifel, Nicolaus & Company Incorporated
Credit Suisse Securities (USA) LLC	Sumitomo Mitsui Banking Corp
DASH Financial Technologies LLC	TD Securities (USA) LLC
Deutsche Bank Securities Inc.	The Bank of New York Mellon Corp.
Federal National Mortgage Association (Fannie Mae)	The Northern Trust Company
Fifth Third Securities, Inc.	Themis Trading LLC
Goldman Sachs & Co. LLC	Tradeweb Markets Inc.
HSBC Securities (USA) Inc.	Truist Securities, Inc.
J.P. Morgan Securities, Inc.	U.S. Bancorp
Jefferies Group LLC	UBS Securities, LLC
Jones Trading Institutional Services LLC	Wells Fargo Securities, LLC
KeyBanc Capital Markets Inc.	

Note: A list of investment managers is available upon request.

SCHEDULE OF COMMISSIONS¹

As of December 31, 2021

Asset Class	Internally Managed Investments		Externally Managed Investments		Total Commissions
	Commissions	Percentage of Asset Class	Commissions	Percentage of Asset Class	
Global Equity	\$801	75.3%	\$1,370	24.7%	\$2,171
Fixed Income ²	5,461	100.0%	—	—	5,461
Total commissions	\$6,262		\$1,370		\$7,632

¹ Does not include commissions from commingled funds, futures trading, or Private Equity, Real Estate, and Alternatives.² Fixed Income commissions are estimated, with the exception of commissions on exchange-traded funds.

DEFINED BENEFIT PLANS

(Dollars in Thousands)

(In actual dollars for this paragraph only)

Total investment expenses for internal and external asset management of PERA's \$66.1 billion investment portfolio were \$203.0 million representing about 30.7 basis points (bps). PERA strives to manage the investment assets in a cost efficient manner. The driving factor in the low overall cost is PERA's use of internal management. PERA staff manages 62.3% of total fund assets in-house at a calculated cost for internal asset management of \$17.4 million (4.2 bps); outsourcing such management would cost an estimated \$110.3 million (26.8 bps). The remaining portion of the \$26.4 million internal manager expenses shown in the table below is for PERA staff oversight of externally-managed assets.

SCHEDULE OF INVESTMENT EXPENSES¹

As of December 31, 2021

	Investment Expense
Global Equity	\$32,472
Fixed Income	—
Private Equity	62,522
Real Estate	34,074
Alternatives	40,808
Cash and Short-Term Investments	563
Total external manager expenses	170,439
Internal manager expenses	26,426
Other investment expenses and custody fees	6,139
Total investment expenses	\$203,004

¹ See the Investment Summary on page 126 for information about fair value of investments.

The table below breaks out both the dollar amount and percentage of each asset class managed internally. It is important to note that all accounts, both internal and external, are held to the same high performance standards.

SCHEDULE OF INTERNAL AND EXTERNAL ASSET MANAGEMENT

As of December 31, 2021

Asset Class	Internal		External		Total Amount
	Amount	Percent	Amount	Percent	
Global Equity	\$29,012,988	75.3%	\$9,535,065	24.7%	\$38,548,053
Fixed Income	12,118,753	100.0%	—	—	12,118,753
Private Equity	—	—	6,049,957	100.0%	6,049,957
Real Estate	—	—	5,836,264	100.0%	5,836,264
Alternatives	—	—	3,124,814	100.0%	3,124,814
Cash and Short-Term Investments	—	—	395,000	100.0%	395,000
Total	\$41,131,741	62.3%	\$24,941,100	37.7%	\$66,072,841

DEFINED BENEFIT PLANS

(Dollars in Thousands)

SCHEDULE OF INVESTMENT INCOME AND EXPENSE BY ASSET CLASS

As of December 31, 2021

Asset Class	Net Appreciation/ (Depreciation) in Fair Value ¹	Interest and Dividends	Net Operating Income ²	Investment Expenses ³	Net Securities Lending Income	Net Investment Income/(Loss)
Global Equity	\$5,731,292	\$529,280	\$—	(\$51,119)	\$5,790	\$6,215,243
Fixed Income	(407,496)	231,864	—	(5,493)	232	(180,893)
Private Equity	1,794,442	1	40,196	(66,384)	—	1,768,255
Real Estate	1,003,864	—	184,475	(36,320)	—	1,152,019
Alternatives	203,445	—	93,554	(43,082)	—	253,917
Cash and Short-Term Investments	60,837	576	—	(606)	85 ⁴	60,892
Total	\$8,386,384	\$761,721	\$318,225	(\$203,004)	\$6,107	\$9,269,433

¹ Global Equity and Fixed Income include realized gain/(loss) recognized on securities sold during 2021, current year unrealized gain/(loss) and unrealized translation gain/(loss), and class action revenue. Private Equity, Real Estate, and Alternatives include current year realized and unrealized gain/(loss), paid carried interest, and adjustments to accrued carried interest as reported by the General Partner.

² Private Equity, Real Estate, and Alternatives include investment income and expenses as reported by the General Partner.

³ Includes external and internal investment management, custody, and other investment expenses.

⁴ Represents current year realized and unrealized loss on investments in the invested collateral pool.

SCHEDULE OF PRIVATE MARKET INVESTMENT CONTRIBUTIONS, DISTRIBUTIONS, AND PAID CARRIED INTEREST

As of December 31, 2021

Asset Class	Contributions ¹	Distributions ²	Paid Carried Interest ³
Private Equity	\$916,524	\$1,402,001 ⁴	\$161,820
Real Estate	608,452	624,350	5,349
Alternatives	825,454	355,038	25,688
Total	\$2,350,430	\$2,381,389	\$192,857

¹ Represents money sent to external entities for the purpose of funding private market investments and/or fees during the current fiscal year.

² Represents money or shares of companies received from external entities during the current fiscal year, generally due to PERA receiving its proportionate share of an investment's exited value.

³ Represents the share of profits paid to external entities due to investment returns surpassing agreed-upon thresholds. Amounts will vary, potentially significantly, from year to year depending on the timing of sales of the underlying investments and the magnitude of the gains. Amounts are based on best available information provided by external entities. Actual results could differ from those amounts.

⁴ Includes money received from the sale of PERA's partnership interests on the secondary market.

DEFINED BENEFIT PLANS

(Dollars in Thousands)

INVESTMENT SUMMARY

	Fair Value Per Financial Statements December 31, 2021	Reallocation of Investment Amounts ¹	Non- Investment Amounts ²	Fair Value Per Investment Portfolio December 31, 2021	2021 Policy Benchmark Weight ³	Actual Asset Allocation (% of Fair Value)		
						12/31/21	12/31/20	12/31/19
Global Equity	\$38,366,790	\$181,263	\$—	\$38,548,053	55.5%	58.3%	58.0%	56.9%
Fixed Income	11,741,099	377,654	—	12,118,753	23.5%	18.4%	20.8%	22.1%
Private Equity	6,049,676	281	—	6,049,957	8.5%	9.2%	8.1%	8.1%
Real Estate	5,836,880	(616)	—	5,836,264	8.5%	8.8%	8.0%	8.9%
Alternatives	3,124,814	—	—	3,124,814	4.0%	4.7%	4.1%	3.5%
Cash and Short-Term Investments								
Operating Cash	3,590	—	(3,590)	—				
Cash and Short-Term Investments	2,138,198	(1,743,198)	—	395,000	0.0%	0.6%	1.0%	0.5%
Net securities lending collateral and obligations	250	(250)	—	—				
Net investment settlements and income and other liabilities ⁴	(1,286,860)	1,184,866	101,994	—				
Benefit and interfund receivables and capital assets ⁵	264,344	—	(264,344)	—				
Total	\$66,238,781	\$—	(\$165,940)	\$66,072,841	100.0%	100.0%	100.0%	100.0%

¹ Investment receivables, payables, accruals, securities lending collateral, securities lending obligations, and cash and short-term investments are allocated back to the investment portfolios that hold them.

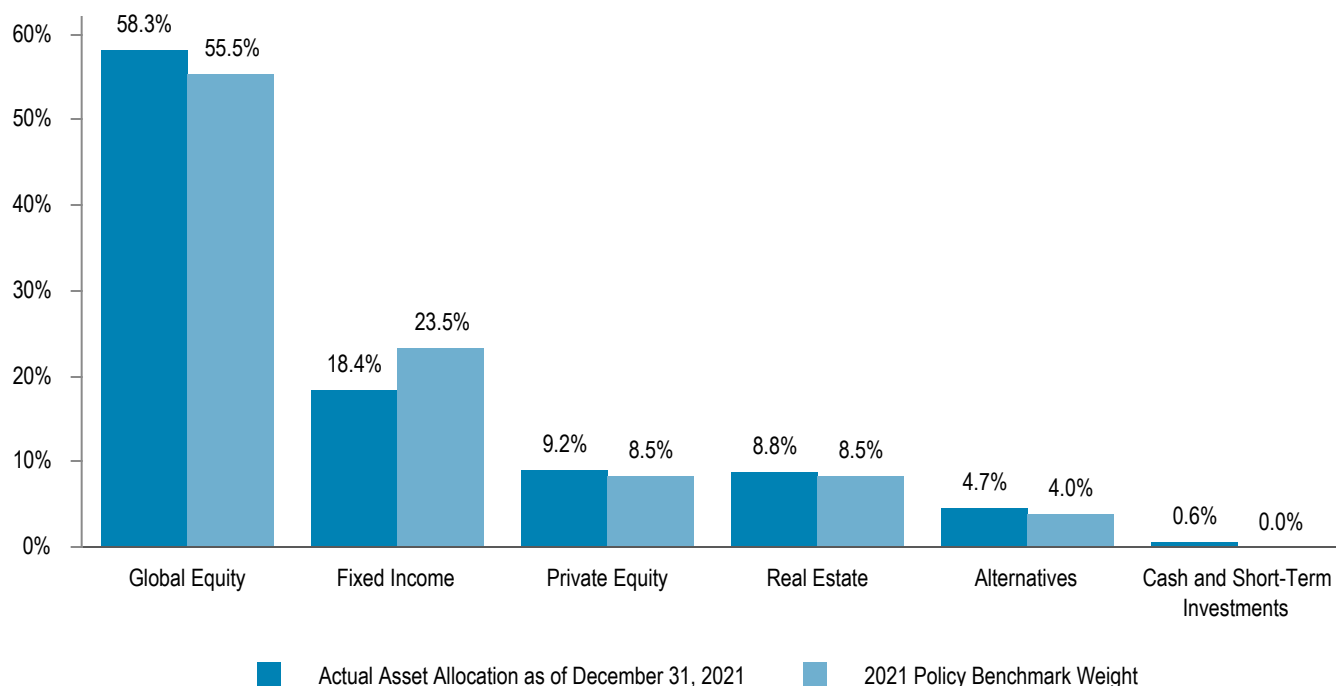
² Non-investment amounts are not included in the determination of actual investment asset allocation.

³ See page 121 for more information about the strategic asset allocation of the fund.

⁴ Includes non-investment payables of \$101,994.

⁵ Includes benefit receivables of \$248,267, interfund receivables of \$246, and capital assets of \$15,831.

Asset Allocation versus Target



DEFINED BENEFIT PLANS

Aon provides the investment returns for the fund based on data made available by Northern Trust. Listed below are the annualized one-, three-, five-, and 10-year net-of-fees time-weighted rates of return for each asset class and their respective benchmarks.

SCHEDULE OF INVESTMENT RESULTS

As of December 31, 2021

	2021	3-Year	5-Year	10-Year
PERA Total Portfolio	16.1%	17.9%	13.3%	10.9%
Total Fund Policy Benchmark ¹	13.7%	15.8%	11.7%	10.1%
Median Plan (BNY Mellon Performance & Risk Analytics in conjunction with Investment Metrics Median Public Fund Universe)	15.2%	14.7%	10.7%	9.6%
Global Equity	18.6%	23.4%	16.6%	13.3%
Global Equity Custom Benchmark ²	18.5%	20.5%	14.3%	12.0%
Fixed Income	(1.4%)	5.2%	3.9%	3.4%
Fixed Income Custom Benchmark ³	(1.5%)	4.8%	3.7%	3.2%
Private Equity	39.6%	24.0%	19.3%	15.3%
Private Equity Custom Benchmark ⁴	20.0%	22.0%	18.7%	17.6%
Real Estate	24.9%	12.5%	11.7%	12.4%
Real Estate Custom Benchmark ⁵	21.6%	8.8%	8.3%	10.0%
Alternatives	9.2%	7.8%	7.5%	5.1%
Alternatives Custom Benchmark ⁶	10.2%	10.5%	8.4%	6.0%
Cash and Short-Term Investments	0.0%	1.0%	1.2%	0.7%
ICE BofAML U.S. 3-Month Treasury Bill Index	0.0%	1.0%	1.1%	0.6%

Note: Performance calculations were prepared using net-of-fees time-weighted rates of return.

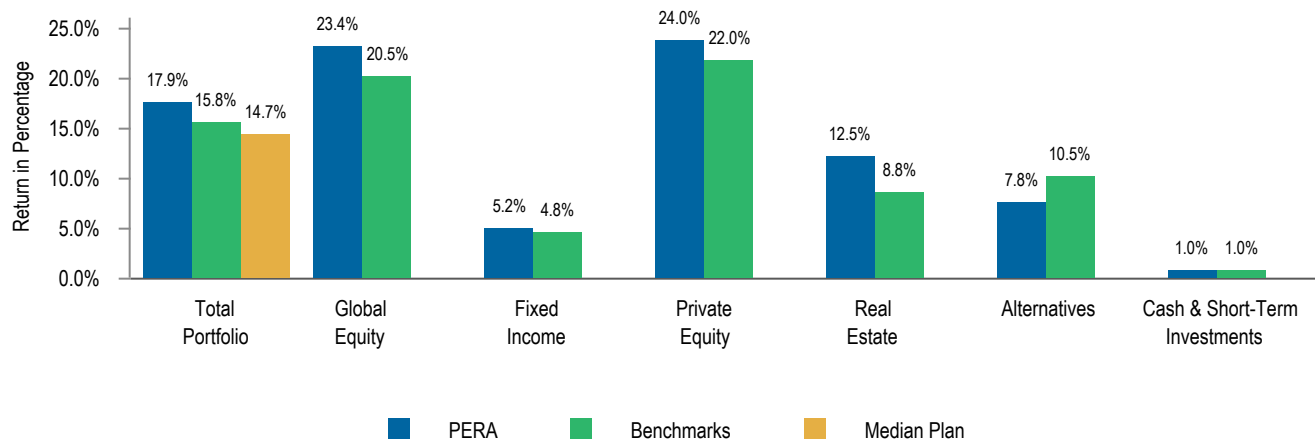
¹ The PERA Board adopted benchmarks beginning April 1, 2004, for each of the various asset classes. The adopted benchmarks have changed over time and, accordingly, the benchmark returns presented represent a blend, as follows:

- The Total Fund Policy Benchmark—A combination of 55.5% of the Global Equity Custom Benchmark, 23.5% of the Fixed Income Custom Benchmark, 8.5% of the Private Equity Custom Benchmark, 8.5% of the Real Estate Custom Benchmark, and 4% of the Alternatives Custom Benchmark. Prior to January 2021, 56.0% of the Global Equity Custom Benchmark; 23.5% of the Fixed Income Custom Benchmark; 8.5% of the Private Equity Custom Benchmark; 8.5% of the Real Estate Custom Benchmark; and 3.5% of the Alternatives Custom Benchmark. Prior to January 2020, a combination of 53.5% of the Global Equity Custom Benchmark; 23.5% of the Fixed Income Custom Benchmark; 8.5% of the Private Equity Custom Benchmark; 8.5% of the Real Estate Custom Benchmark; 5.0% of the Alternatives Custom Benchmark; and 1.0% of the ICE BofAML U.S. 3-Month Treasury Bill Index. Prior to July 2016, a combination of 55.0% of the Global Equity Custom Benchmark; 24.0% of the Fixed Income Custom Benchmark; 7.5% of the Real Estate Custom Benchmark; 7.5% of the Private Equity Custom Benchmark; 5.0% of the Alternatives Custom Benchmark; and 1.0% of the ICE BofAML U.S. 3-Month Treasury Bill Index. Prior to July 2015, a combination of 56.0% of the Global Equity Custom Benchmark; 25.0% of the Fixed Income Custom Benchmark; 7.0% of the Real Estate Custom Benchmark; 7.0% of the Private Equity Custom Benchmark; and 5.0% of the Alternatives Custom Benchmark.
- ² MSCI ACWI IMI (Net) with USA Gross. Prior to July 2018, MSCI ACWI IMI. Prior to February 2013, 52.0% DJ U.S. Total Stock Market Index and 48.0% MSCI ACWI ex-U.S. Index. Prior to October 2012, 58.0% DJ U.S. Total Stock Market Index and 42.0% MSCI ACWI ex-U.S. Index. Prior to April 2012, 64.0% DJ U.S. Total Stock Market Index and 36.0% MSCI ACWI ex-U.S. Index.
- ³ Bloomberg U.S. Aggregate Bond Index. Prior to August 2018, Bloomberg U.S. Universal Bond Index. Prior to July 2015, 98.0% of the Bloomberg Capital U.S. Universal Bond Index and 2.0% of the Bloomberg Capital U.S. Long Government/Credit Index.
- ⁴ MSCI ACWI IMI (Net) with USA Gross plus 150 basis points. Prior to January 2019, Burgiss Time Weighted Rate of Return Benchmark. Prior to January 2015, DJ U.S. Total Stock Market Index plus 250 basis points annually.
- ⁵ NCREIF Open End Diversified Core Equity Index (NFI-ODCE) plus 50 basis points annually.
- ⁶ Weighted average of each of the three objectives (Risk Mitigation: HFRI FOF Market Defensive Index, Real Assets: CPI plus 400 basis points, Opportunistic: PERA Public Markets plus 150 basis points). Prior to January 2019, weighted aggregate of the benchmarks of the individual strategies included in Alternatives.

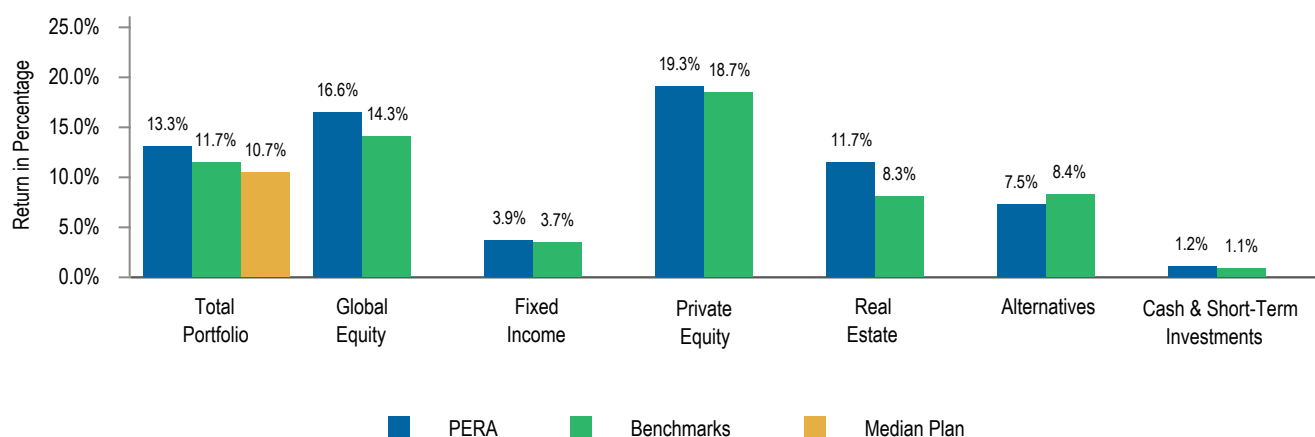
DEFINED BENEFIT PLANS

Listed below are the three-, five-, and 10-year net-of-fees time-weighted rates of return for the total fund and each asset class and their respective benchmarks.

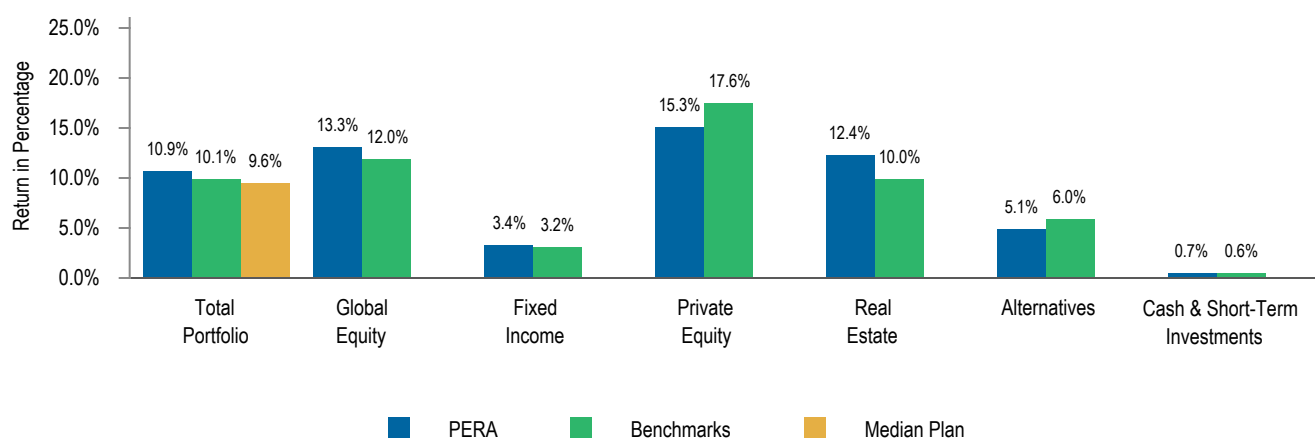
Three-Year Net-of-Fees Time-Weighted Rates of Return



Five-Year Net-of-Fees Time-Weighted Rates of Return



Ten-Year Net-of-Fees Time-Weighted Rates of Return



DEFINED BENEFIT PLANS

FUND PERFORMANCE EVALUATION

(Returns are net-of-fees unless otherwise indicated)

Total Portfolio Performance

For the year ended December 31, 2021, PERA's total fund returned 16.1%, outperforming the policy benchmark's return of 13.7%. PERA's policy benchmark is a passive representation of the asset allocation policy adopted by the Board. The total fund has outperformed the policy benchmark over the one-, three-, five-, and 10-year periods. Total investment expenses for internal and external asset management of PERA's \$66.1 billion investment portfolio were \$203.0 million representing about 30.7 basis points. The total fund return of 16.1% exceeded the BNY Mellon Performance & Risk Analytics in conjunction with Investment Metrics Median Public Fund Universe return of 15.2%. As of December 31, 2021, this universe was comprised of 123 public pension funds with assets of approximately \$2.7 trillion. The total fund has performed better than this universe over the one-, three-, five-, and 10-year periods.

The total fund return of 16.1% outperformed a hypothetical portfolio consisting of 60% global equities, based on the MSCI ACWI IMI, and 40% fixed income, based on the Bloomberg U.S. Aggregate Bond Index, which collectively returned 10.2%. In addition to the one-year outperformance, the total fund has performed better than this hypothetical portfolio over the three-, five-, and 10-year periods (17.9% versus 14.4%, 13.3% versus 10.6%, and 10.9% versus 7.6%, respectively).

Asset Class Performance

PERA's Global Equity portfolio returned 18.6%, outperforming its custom benchmark's return of 18.5%. The Global Equity portfolio has outperformed its custom benchmark over the one-, three-, five-, and 10-year periods.

For a third consecutive year, global stocks rallied for strong double-digit returns. Numerous key stock market indexes hit record highs, as much of the world bounced back from pandemic-era lockdowns. Strong corporate earnings, government stimulus, accommodative monetary policies, and pent-up consumer demand supported equity markets. Stock gains were at times moderated by concerns over rising inflation, higher interest rates, and the spread of coronavirus variants. Global supply chain disruptions contributed to the fastest inflation growth rate since the early 1980s.

PERA's Fixed Income portfolio returned negative 1.4%, outperforming its custom benchmark's return of negative 1.5%. The Fixed Income portfolio has outperformed its custom benchmark over the one-, three-, five-, and 10-year periods.

The U.S. economy posted strong post-pandemic growth in 2021, with real gross domestic product (GDP) increasing

5.7% year-over-year and the unemployment rate declining to 3.9% from 6.7% at the start of the year. Treasury rates increased due to rising inflationary expectations and anticipation of the Federal Reserve removing its financial accommodation. As a result, the Bloomberg U.S. Aggregate Bond Index return turned negative in 2021.

PERA's Private Equity portfolio returned 39.6%, compared with its custom benchmark's return of 20.0%. The Private Equity portfolio has outperformed its custom benchmark over the one-, three-, and five-year periods, and has underperformed its custom benchmark over the 10-year period. The ultimate goal of private equity is to outperform public equities over the long term. Over the past 10 years, the Private Equity Portfolio has outperformed the Global Equity Custom Benchmark by 3.3%. The portfolio's since inception internal rate of return as of December 31, 2021, was 11.1% compared to its custom benchmark's since inception internal rate of return of 6.3%.

After a modest dip in 2020, fundraising activity regained momentum in 2021 and posted the second largest annual fundraising dollar volume on record. Deal activity in the U.S. eclipsed \$1 trillion for the first time on record, setting several new high-water marks in terms of both dollar volume and deal count. Highly competitive bidding processes and a low interest rate environment helped drive deal prices to pre-pandemic levels. U.S. private equity exit activity eclipsed the previous yearly records both in terms of number of exits closed and total value.

PERA's Real Estate portfolio returned 24.9%, compared with its custom benchmark's return of 21.6%. The Real Estate portfolio has outperformed its custom benchmark over the one-, three-, five-, and 10-year periods.

The aggregate sales volume of all types of commercial real estate properties nearly doubled in 2021 year over year to its highest on record. Apartments led all other sectors, comprising 42% of all transaction activity in 2021. Overall, capitalization rates compressed across all property types except retail, which remained flat, and debt financing was widely available.

PERA's Alternatives portfolio returned 9.2%, compared with its custom benchmark's return of 10.2%. The Alternatives portfolio has underperformed its custom benchmark over the one-, three-, five-, and 10-year periods.

In 2021, Opportunistic funds took advantage of special situations, credit opportunities, and market dislocations to generate double-digit returns. Real Assets transaction activity increased across most strategies, which include agriculture, livestock, private infrastructure, shipping, and timber. Risk Mitigation suffered from poor returns from global macro funds, which offset strong returns from multi-strategy managers.

DEFINED BENEFIT PLANS

(Dollars in Thousands)

PROFILE OF INVESTMENTS IN COLORADO

As of December 31, 2021

	Fair Value
Public Equity¹	\$157,064
Fixed Income¹	16,170
Real Estate	
Portfolio investments ²	140,682
Future commitments to Colorado-based general partnerships or funds	109,318
Total Real Estate Fund	250,000
Private Equity	
Portfolio investments ²	220,061
Future commitments to Colorado-based general partnerships or funds	20,513
Total Private Equity	240,574
Alternatives	
Portfolio investments ²	145,410
Future commitments to Colorado-based general partnerships or funds	89,680
Total Alternatives	235,090
Total	\$898,898

¹ Companies headquartered in Colorado.

² Portfolio investments domiciled in Colorado.

DEFINED BENEFIT PLANS

(Dollars in Thousands)

LARGEST EQUITY HOLDINGS BY FAIR VALUE¹

As of December 31, 2021

	Shares	Fair Value
Apple Inc.	8,978,720	\$1,594,351
Microsoft Corp.	3,898,857	1,311,264
Amazon.com, Inc.	288,924	963,371
Alphabet Inc.	325,463	942,879
Meta Platforms, Inc.	1,497,162	503,570
Accenture Plc.	881,670	365,496
Costco Wholesale Corp.	591,063	335,546
Visa Inc.	1,395,920	302,510
Zoetis Inc.	1,200,994	293,079
UnitedHealth Group Inc.	532,868	267,574

¹ Does not include commingled funds.

Note: A complete list of holdings is available upon request.

LARGEST FIXED INCOME HOLDINGS BY FAIR VALUE¹

As of December 31, 2021

	Par Value	Income Rate	Maturity Date	Fair Value
US Treasury Notes	\$375,000	0.750%	11/15/24	\$372,979
US Treasury Bonds	287,000	2.500%	2/15/46	318,256
US Treasury Notes	270,000	0.625%	7/31/26	262,691
FNMA Pool #MA4548	250,000	2.500%	2/1/52	255,428
FNMA Pool #MA4547	230,000	2.000%	2/1/52	229,618
US Treasury Notes	200,000	0.750%	12/31/23	200,070
US Treasury Notes	200,100	1.375%	12/31/28	199,381
FNMA TBA	195,000	2.000%	1/15/51	194,497
US Treasury Bonds	180,000	1.875%	2/15/41	178,727
US Treasury Notes	175,000	1.250%	6/30/28	173,353

¹ Does not include commingled funds.

Note: A complete list of holdings is available upon request.

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

INTRODUCTION

The Voluntary Investment Program, Defined Contribution Retirement Plan, and the Deferred Compensation Plan are included in the information discussed in this subsection on Colorado PERA's defined contribution and deferred compensation plans.

These three Plans are known collectively as the Capital Accumulation Plans (CAPs). PERA publishes an Annual Report for the CAPs and distributes it to all plan participants.

REPORT ON INVESTMENT ACTIVITY

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 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.

YEAR END STATISTICS

(Dollars in Thousands)

	Fiduciary Net Position			Number of Accounts		
	2021	2020	% Chg	2021	2020	% Chg
PERAPlus 401(k) Plan	\$4,713,012	\$4,167,830	13.08%	67,887	68,647	(1.11%)
DC Plan	387,278	323,944	19.55%	7,673	7,264	5.63%
PERAPlus 457 Plan	1,308,999	1,144,314	14.39%	20,022	19,438	3.00%

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 CAPs. The objectives of selecting the investment options under each CAP 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.
- Achieve returns within reasonable and prudent levels of risk.
- Provide returns comparable to returns for similar investment options.
- Control administrative and investment management costs to the plan and participants.

The Defined Contribution Retirement Plan (DC Plan) was established on January 1, 2006, as an IRC § 401(a) governmental profit-sharing plan. The DC Plan offers a defined contribution alternative to the PERA defined benefit plan for certain employees of the State or Local Government Divisions, classified employees at State colleges and universities, most community colleges, as well as the District Attorney within each Judicial District, and if authorized by the county and the District Attorney, the attorneys within that Judicial District (see Note 1 of the Notes to the Financial Statements in the Financial Section for additional details).

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. 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.

Investment Stewardship

The CAPs adhere to the same principles of investment stewardship as the defined benefit plans. For more information, please refer to the Investment Stewardship section on page 122.

PERAdvantage Investment Options

The PERAdvantage funds provide diversification within each of the seven primary funds and 10 target retirement date funds. The white label structure of the PERAdvantage funds simplifies choices, increases diversification, and helps participants identify investments based on how the fund invests the money rather than name familiarity. In addition, the CAPs provide a self-directed brokerage account for participants to select their own investments.

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

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, low volatility fixed income securities to produce the income. Since the underlying fixed income investments fluctuate in fair value with changes in the market, the portfolio is paired with an insurance contract to provide a more stable return and to offer participants the ability to withdraw or transfer their funds subject to plan rules without any fair value risk or other penalty for premature withdrawal. The fund is managed by Great West Capital Management, LLC (100%).

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. This fund primarily invests in investment grade debt securities, but may invest a portion of its assets in high-yield securities. The fund may invest in derivative instruments or in mortgage- or asset-backed securities. The fund combines active and passive management. The fund is managed by BlackRock (25% Core Alpha and 25% Index) and Allspring (50% U.S. Core Fixed Income).

PERAdvantage Real Return Fund

The fund seeks to provide broad exposure to real assets and U.S. inflation protected bonds and to produce a return over a full market cycle that exceeds the rate of inflation. This fund invests in U.S. inflation-linked bonds, real estate investment trusts (REITs), commodities, and global natural resources and infrastructure stocks. The fund is managed by State Street Global Advisors (70% Real Assets Strategy and 30% U.S. Inflation Protected Index).

PERAdvantage Socially Responsible Investment (SRI) Fund

The fund seeks to invest in a portfolio of developed and emerging market stocks screened on environmental, social, and governance (ESG) factors, and fixed income securities across the investment grade spectrum that demonstrate ESG leadership. The equity portion seeks to replicate the return of the MSCI ACWI ESG Focus Index. The fixed income portion invests in U.S. dollar denominated securities and may invest a significant portion of its assets in corporate bonds or mortgage-backed securities. The fund is managed by BlackRock (60% ACWI ESG Focus Index) and TIAA-CREF (40% Core Impact Bond).

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. This fund invests in a wide array of U.S. stocks with market capitalizations similar to those found in the MSCI USA Large Cap Index. The fund combines active and passive management and is managed by PERA (60% Large Cap Index and 40% Large Cap Core).

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. This fund invests in a wide array of U.S. stocks with market capitalizations similar to those found in the MSCI USA SMID Cap Index. The fund is managed by Dimensional Fund Advisors (50% Mid Cap Core) and PERA (50% Small Cap Core).

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. This fund invests in a wide array of international stocks similar to those found in the MSCI All Country World Index (ACWI) ex-USA Index. The fund is managed by Schroder Investment Management (60% International Alpha) and PERA (40% International Multi-Factor).

Additional Investment Options

PERAdvantage Target Retirement Date Funds

There are 10 funds with varying asset mixes and risk levels based on expected retirement date. Each fund is comprised of the corresponding BlackRock LifePath Index Target Retirement Date Fund. These funds seek a combination of capital appreciation and income and will automatically adjust the underlying asset allocation to become more conservative as they reach their target retirement date, at which time the fund will be blended into the PERAdvantage Income Fund. The funds are passively managed by BlackRock (100%).

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.

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

2021 Changes

Wells Fargo Asset Management, a manager in the PERAdvantage Fixed Income Fund, was involved in a corporate restructuring during the fourth quarter of 2021 and is now called Allspring.

Effective December 3, 2021, the asset based administrative fee was removed from the net asset value (NAV) calculation.

Beginning in December 2021, two guaranteed income annuity choices became available to participants.

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 for the PERAPlus 401(k) Plan and the DC Plan consists of a flat \$1.00 per month per participant per plan and an asset-based fee of up to 0.03% on each underlying PERAdvantage fund. The administrative fee for the PERAPlus 457 Plan consists of a flat \$1.50 per month per participant per plan and an asset based fee of up to 0.03% on each underlying PERAdvantage fund. The PERAPlus 457 Plan has lower participation and fewer assets than the PERAPlus 401(k) Plan and therefore the flat fee was increased at the end of 2021 to generate enough revenue to pay the PERAPlus 457 Plan's administrative expenses.

(The Report on Investment Activity was prepared by internal staff.)

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

Callan provides the investment returns for the CAPs based on data made available by Empower. Listed below are the annualized one-, three-, five-, and 10-year net-of-fees time-weighted rates of return for each PERAdvantage fund and their respective benchmarks.

SCHEDULE OF INVESTMENT RESULTS

As of December 31, 2021

Fund/Benchmark	2021	3-Year	5-Year	10-Year
PERAdvantage Capital Preservation Fund	1.6%	2.0%	2.0%	2.0%
ICE BofAML U.S. 3-Month Treasury Bill Index ¹	0.1%	1.1%	1.5%	1.7%
PERAdvantage Fixed Income Fund	(1.7%)	5.2%	3.8%	3.4%
Bloomberg U.S. Aggregate Bond Index	(1.5%)	4.8%	3.6%	2.9%
PERAdvantage Real Return Fund	16.4%	11.4%	6.9%	3.5%
Real Return Custom Index ²	16.5%	11.3%	6.9%	3.6%
PERAdvantage SRI Fund	10.2%	14.9%	10.6%	8.8%
SRI Custom Index ³	10.1%	15.0%	10.5%	8.8%
PERAdvantage U.S. Large Cap Stock Fund	26.8%	27.2%	19.2%	16.7%
MSCI USA Large Cap Index ⁴	26.7%	26.1%	18.4%	16.5%
PERAdvantage U.S. Small and Mid Cap Stock Fund	23.9%	22.0%	13.0%	13.6%
MSCI USA SMID Cap Index ⁵	22.2%	23.3%	14.6%	14.5%
PERAdvantage International Stock Fund	10.9%	18.2%	12.0%	9.4%
MSCI ACWI ex USA Index	7.8%	13.2%	9.6%	7.3%
PERAdvantage Income Fund	6.9%	11.4%	8.0%	6.4%
BlackRock LifePath® Retirement Index	7.0%	11.4%	8.0%	6.5%
PERAdvantage 2025 Fund	9.0%	13.2%	9.4%	8.1%
BlackRock LifePath® 2025 Index	9.1%	13.1%	9.4%	8.2%
PERAdvantage 2030 Fund	11.4%	14.9%	10.6%	9.1%
BlackRock LifePath® 2030 Index	11.5%	14.9%	10.6%	9.2%
PERAdvantage 2035 Fund	13.8%	16.6%	11.8%	9.9%
BlackRock LifePath® 2035 Index	13.9%	16.6%	11.7%	10.0%
PERAdvantage 2040 Fund	15.9%	18.2%	12.8%	10.7%
BlackRock LifePath® 2040 Index	16.0%	18.1%	12.7%	10.8%
PERAdvantage 2045 Fund	17.7%	19.4%	13.5%	11.3%
BlackRock LifePath® 2045 Index	17.7%	19.3%	13.5%	11.4%
PERAdvantage 2050 Fund	18.7%	20.0%	13.9%	11.7%
BlackRock LifePath® 2050 Index	18.6%	20.0%	13.8%	11.8%
PERAdvantage 2055 Fund	18.8%	20.2%	14.0%	12.0%
BlackRock LifePath® 2055 Index	18.8%	20.1%	13.9%	12.0%
PERAdvantage 2060 Fund	18.8%	20.1%	14.0%	N/A
BlackRock LifePath® 2060 Index	18.8%	20.1%	13.9%	N/A
PERAdvantage 2065 Fund	18.8%	N/A	N/A	N/A
BlackRock LifePath® 2065 Index	18.8%	N/A	N/A	N/A

Note: Performance is net of administrative and management fees and calculated using time-weighted net asset values. Returns for periods greater than one year are annualized.

¹ ICE BofAML U.S. 3-Month Treasury Bill Index represents the Hueler Index through December 2019 and the ICE BofAML U.S. 3-Month Treasury Bill Index from January 2020 forward.

² 70% State Street Real Asset Strategy DC Index/30% Bloomberg U.S. TIPS Index.

³ 60% S&P 500/40% Bloomberg U.S. Aggregate Bond through December 2012, 60% MSCI World ESG Leaders/40% Bloomberg U.S. Gov't Bond through September 2019, 60% MSCI ACWI ESG Focus/40% Bloomberg U.S. Gov't Bond through December 2019, 60% MSCI ACWI ESG Focus/40% Bloomberg U.S. Aggregate thereafter.

⁴ MSCI USA Large Cap Index represents the Russell 1000 Index through December 2018 and the MSCI USA Large Cap Index from January 2019 forward.

⁵ MSCI USA SMID Cap Index represents the Russell 2500 Index through December 2018 and the MSCI USA SMID Cap Index from January 2019 forward.

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

(Dollars in Thousands)

INVESTMENT SUMMARY

Fund	Fair Value as of December 31, 2021		
	Voluntary Investment Program	Defined Contribution Retirement Plan	Deferred Compensation Plan
PERAdvantage Capital Preservation Fund ¹	\$306,878	\$14,188	\$162,712
PERAdvantage Fixed Income Fund	346,743	17,150	99,163
Fixed Income Funds	653,621	31,338	261,875
PERAdvantage Real Return Fund	29,566	2,329	13,979
PERAdvantage SRI Fund	27,001	2,163	11,412
Multi-Asset Funds	56,567	4,492	25,391
PERAdvantage U.S. Large Cap Stock Fund	2,100,537	73,796	366,897
PERAdvantage U.S. Small and Mid Cap Stock Fund	254,157	32,821	155,273
PERAdvantage International Stock Fund	388,949	32,134	134,225
Equity Funds	2,743,643	138,751	656,395
PERAdvantage Income Fund	263,668	14,827	62,989
PERAdvantage 2025 Fund	193,456	13,648	50,408
PERAdvantage 2030 Fund	180,214	17,060	46,325
PERAdvantage 2035 Fund	165,163	19,746	48,135
PERAdvantage 2040 Fund	125,425	24,215	39,694
PERAdvantage 2045 Fund	91,184	38,522	26,720
PERAdvantage 2050 Fund	65,252	33,195	18,477
PERAdvantage 2055 Fund	41,858	25,235	10,201
PERAdvantage 2060 Fund	16,549	7,823	7,201
PERAdvantage 2065 Fund	3,457	739	1,968
Target Retirement Date Funds	1,146,226	195,010	312,118
TD Ameritrade Insured Deposit Account	6,255	1,440	5,521
Short-Term Funds	6,255	1,440	5,521
TD Ameritrade Self-Directed Brokerage Account	40,541	8,245	31,406
Self-Directed Brokerage	40,541	8,245	31,406
Total	\$4,646,853	\$379,276	\$1,292,706

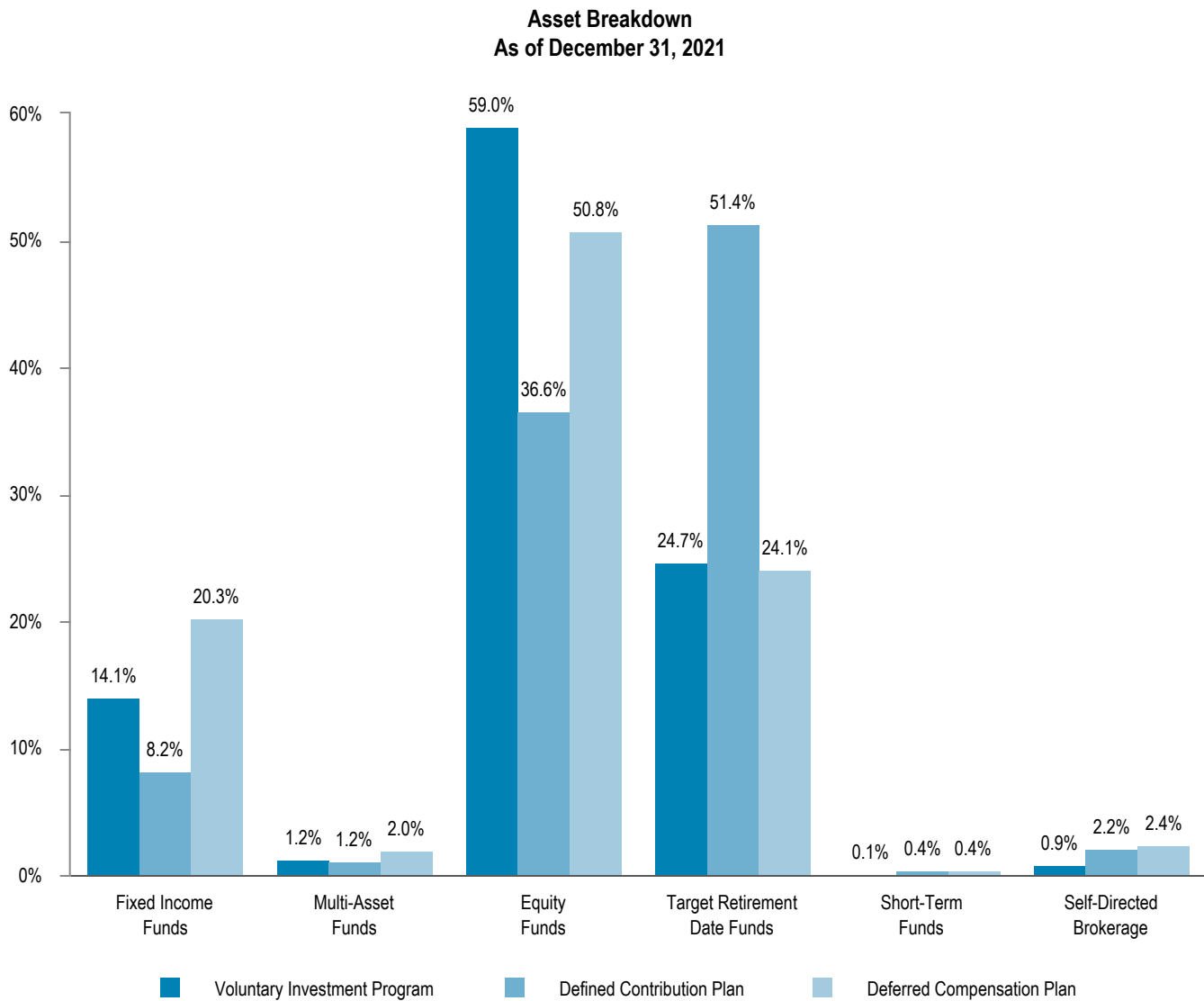
Reconciliation to fair value per financial statements²

Adjustments:

Cash and short term-investments	(33,113)	(3,057)	(13,630)
Net securities lending collateral and obligations	(14)	(1)	(5)
Net investment settlements and income and other liabilities	19,851	1,021	5,783
Fair value per financial statements	\$4,633,577	\$377,239	\$1,284,854

¹ The Stable Value Fund in the PERAdvantage Capital Preservation Fund is reported at contract value.² Investment receivables, payables, accruals, securities lending collateral, securities lending obligations, and cash and short-term investments are excluded from investments in the financial statements.

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS





ACTUARIAL SECTION





ACTUARY'S CERTIFICATION LETTER



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May 25, 2022

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 of Trustees on March 20, 2015, and most recently revised on November 16, 2018, and the "Colorado PERA Defined Benefit OPEB Plan Funding Policy", adopted by the Board of Trustees on January 19, 2018, the main funding objectives of the Public Employees' Retirement Association of Colorado (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 performed as a measure of the progress towards them. The most recent valuations are based on the plan provisions and actuarial assumptions and methods in effect on December 31, 2021. In completing the valuation of the five defined benefit pension plans, referred to as the Division Trust Funds, and the two defined benefit Other Post-employment Benefit (OPEB) plans, referred to as the Health Care Trust Funds (HCTFs), Segal relied on membership and financial data provided by Colorado 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 member 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.

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ACTUARY'S CERTIFICATION LETTER

Board of Trustees
May 25, 2022
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This valuation reflects the following changes from the prior valuation including:

Legislation, enacted in 2022, provides a repayment of the suspended 2020 direct distribution and impacts the return to work provisions for retirees. These bills are reflected, to the extent possible, in this actuarial valuation:

- HB 22-1029, enacted in 2022, and effective immediately, is intended to recompense PERA for the \$225 million direct distribution originally scheduled for receipt July 1, 2020, but suspended due to the enactment of HB 20-1379. Pursuant to HB 22-1029, the State treasurer is to issue a warrant to PERA in the amount of \$380 million, upon enactment, with reductions to future direct distributions scheduled to occur July 1, 2023, and July 1, 2024, based upon the actual investment return reported by PERA. Based on this legislation and the known total fund investment return for 2021 of 16.1%, the July 1, 2023, direct distribution will be reduced by \$190M, resulting in a payment of \$35 million, and the July 1, 2024, direct distribution will be reduced by an amount yet to be determined, but not greater than \$27.55 million, resulting in a payment of not less than \$197.45 million. The \$35 million direct distribution scheduled to occur July 1, 2023, is considered in the 2021 AAP assessment. The reduced 2023 direct distribution does not adversely impact the resulting AAP ratio to cause a triggering of additional contribution and AI cap adjustments.
- HB 22-1057, enacted and effective as of March 17, 2022, temporarily broadens the current working after retirement provisions by removing the limitation regarding the number of days that retired teachers can work as substitute teachers without any reduction in retirement benefits, applicable to any school district or charter school subject to critical substitute teacher shortages.
- HB 22-1101, enacted and effective as of March 17, 2022, makes permanent and broadens the Rural School District Critical Shortage program that removes limitations regarding the number of days that service retirees can work without any reduction in their retirement benefits, applicable to any rural school district, Board of Cooperative Services (BOCES), or charter school subject to critical shortage of certain positions.
- HB 22-1087, enacted and effective as of March 24, 2022, excludes district directors who begin service on or after July 1, 2022, from membership in PERA.

Other changes, include:

- The results of the 2020 AAP assessment increases employer and member contributions each by 0.50% of salary and reduces the AI cap, by 0.25%, beginning July 1, 2022.
- Annual assumption changes for the HCTFs resulting from updates to retiree health care cost and health care cost trend assumptions based upon a review of historical experience, Medicare plan option elections, health care cost trend survey data, and available retiree premium increases for 2022 and 2023.
 - These changes reduced the total actuarial accrued liability for the HCTFs by \$46.9 million and decreased the total normal cost by \$0.1 million.

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ACTUARY'S CERTIFICATION LETTER

Board of Trustees
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In our opinion, the assumptions are individually reasonable, taking into account the experience of the Division Trust Funds and the HCTFs and reasonable expectations, are internally consistent, and, in combination, offer our best estimate of anticipated experience affecting the Division Trust Funds and the HCTFs.

Future actuarial results may differ significantly from the current results due to such factors as the following:

- Plan experience differing from that anticipated by the economic or demographic assumptions;
- Changes in economic or demographic assumptions;
- Increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and
- Changes in plan provisions or applicable law.

Additionally, retiree group benefits models necessarily rely on the use of approximations and estimates and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. Since the potential impact of such factors is outside the scope of a normal annual actuarial valuation, an analysis of the range of results is not presented herein.

Segal provided the following information and/or schedules for the December 31, 2021, Annual Report:

Financial Section

- Prepared for the Division Trust Funds and HCTFs
 - Yearly Contribution Deficiency
 - Required Discount Rate Sensitivity Information providing the Net Pension Liability and the Net OPEB Liability at a discount rate that is one percentage point lower and one percentage point higher than the discount rate at Measurement Date
 - Membership Data
 - Notes to Required Supplementary Information
- Prepared for the Division Trust Funds Only
 - Average Monthly Benefit By Division – for 2021, considering entire retired population and those retiring in 2021
 - Required Supplementary Information
 - Schedule of Changes in Net Pension Liability
 - Schedule of the Net Pension Liability
 - Schedule of Employer Contributions

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ACTUARY'S CERTIFICATION LETTER

Board of Trustees
May 25, 2022
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- Prepared for the HCTFs Only
 - Required Health Care Cost Trend Rate Sensitivity Information at health care cost trend rates that are one percentage point lower and one percentage point higher than the health care cost trend rates applied at Measurement Date
 - Participation Data
 - Required Supplementary Information
 - Schedule of Changes in Net OPEB Liability
 - Schedule of the Net OPEB Liability
 - Schedule of Employer Contributions

Actuarial Section

- Prepared for the Division Trust Funds and HCTFs
 - Schedule of Retirees and Beneficiaries Added to and Removed from the Benefit Payroll
 - Solvency Test
 - Schedule of Funding Progress
 - Analysis of Financial Experience
 - Schedule of Gains and Losses in Accrued Liabilities and Reconciliation of Unfunded Actuarial Accrued Liabilities
 - Schedule of Computed Employer Contribution Rates for the 2023 Fiscal Year
 - Actuarial Statistics
 - Actuarially Determined Contributions (ADCs)
 - Alternative ADCs using 25-year, 20-year and 15-year amortization periods
 - Funded Ratios
 - Funded Ratio, Unfunded Actuarial Accrued Liability and Actuarially Determined Contributions using 6.25%, 7.25% and 8.25% investment return assumptions
 - Schedule of Active Member Actuarial Valuation Data
- Prepared for the Division Trust Funds Only
 - Member – Retiree Comparison

Statistical Section

- Prepared for the Division Trust Funds and HCTFs
 - Schedule of Average Benefit Payments
- Prepared for the Division Trust Funds Only
 - Member and Benefit Recipient Statistics
 - Breakdown of Membership by Tiers
 - PERA Benefit Payments
 - Benefit Payments by Benefit Range
 - Benefit Payments by Benefit Range including RBA amounts
 - Benefit Payments by Decile
 - Schedule of Average Retirement Benefits Payable by Year of Retirement
 - For all retirees
 - For members who retired during the year
 - Schedule of Retirees and Survivors by Types of Benefits

In aggregate, the Division Trust Funds have a funded ratio of 67.8% based on the Actuarial Value of Assets and 76.8% based on the Fair Value of Assets. For the HCTFs combined, the funded ratios are 39.8% on an Actuarial Value of Assets basis and 43.7% on a Fair Value of Assets basis.

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ACTUARY'S CERTIFICATION LETTER

Board of Trustees
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The results indicate that for all Division Trust Funds, the combined employer and member contribution rates, including the direct distribution from the State, as appropriate, are sufficient to fund the normal cost for all members, and each division's UAAL, with consideration of the amounts allocated to finance the Annual Increase Reserve (AIR) Funds, and provide additional contributions to help finance both Health Care Trust Funds. In addition, the employer contribution rate with anticipated service purchase transfers is sufficient to eventually finance benefits for the HCTFs.

Shown in the following tables are the resulting amortization periods for each division trust fund as of December 31, 2021, recognizing all current sources of income from employer contributions, member contributions, the direct distribution (as applicable), and any future increases to the base employer contributions, member contributions, Amortization Equalization Disbursement (AED), and Supplemental Amortization Equalization Disbursement (SAED):

Trust Fund	Amortization Period ¹
State Division	23 years
School Division	26 years
Local Government Division	12 years
Judicial Division	7 years
Denver Public Schools (DPS) Division	9 years
HCTF	13 years
DPS HCTF	2 years

¹ Calculations completed on an actuarial valuation basis with a closed population (i.e., based upon the membership, normal cost rate and UAAL as of December 31, 2021). For the DPS Division, the resulting amortization period assumes a declining Pension Certificates of Participation (PCOP) offset rate as described in statute.

At the direction of PERA, Segal has prepared deterministic financial projections for all Division Trust Funds with the lower cost benefit structure for new members and using the following assumptions:

- All actuarial assumptions, including assuming 7.25% investment returns are realized each year
- Performed on an open-group basis with assumed active membership growth, as follows:
 - For School, Local Government and Denver Public Schools – 1.00% per year
 - For State and Judicial – 0.25% each year

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ACTUARY'S CERTIFICATION LETTER

Board of Trustees
May 25, 2022
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These projections² indicate that the goal of funding 100% of the actuarial accrued liability under the PERA revised benefit structure created by SB 18-200 is achievable within a projection period of 16 years when including the anticipated adjustments to take effect July 1, 2022, resulting from the automatic adjustment provision (AAP) and including the impact of legislative changes pursuant to HB 22-1029. The projected number of years² until each trust fund is expected to be 100% funded is shown in the table below:

Trust Fund	Projected Years ² Until 100% Funded Including the 2022 AAP Adjustments
State Division	16 years
School Division	16 years
Local Government Division	2 years
Judicial Division	3 years
DPS Division	2 years
HCTF	12 years
DPS HCTF	1 year

² Calculations completed on a projected basis with an open, increasing population (i.e., active members expected to retire, terminate, or die are replaced by new members who will accrue pension benefits under a lower cost basis).

The AAP assessment, performed as of December 31, 2021, resulted in a ratio of 98.21%. Since this ratio falls between 98% and 120%, no additional modifications to contribution rates, the AI cap, or the direct distribution payments are required as of July 1, 2023.

Actuarial computations presented in the December 31, 2021, actuarial valuation reports are for purposes of determining the actuarially determined contribution rates and evaluating the funding of the Division Trust Funds and HCTFs. Determinations for purposes other than meeting these requirements may be significantly different from the results shown in the December 31, 2021, actuarial valuation reports.

We also prepared actuarial computations as of December 31, 2021, for purposes of fulfilling financial accounting requirements for PERA under Governmental Accounting Standards Board (GASB) Statement No. 67 and Statement No. 74. The actuarial assumptions used in the funding valuations were also used for GASB 67 and GASB 74 reporting except GASB 74 reporting reflects health care cost and trend assumptions effective as of December 31, 2020. In addition, the entry age actuarial cost method, which is required to be used under GASB 67 and GASB 74, is also used for purposes of the funding valuations. The actuarial assumptions used in the funding and the GASB 67 and GASB 74 accounting valuations, as detailed in Segal's reports, meet the parameters set by the 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.

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Board of Trustees
May 25, 2022
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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 yours,



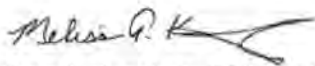
Matthew Strom FSA, MAAA, EA
Senior Vice President and Actuary



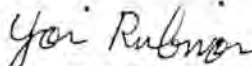
Brad Ramirez, FSA, MAAA, EA
Vice President and Actuary



Tanya Dybal, FSA, MAAA, EA
Vice President and Actuary



Melissa A. Krumholz, FSA, MAAA
Senior Health Consultant



Yori Robinson, FSA, MAAA
Vice President and Retiree Health Actuary

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DIVISION TRUST FUNDS—PENSION

Actuarial Topics

The standard promulgated by the Governmental Accounting Standards Board (GASB) Statement No. 67, results in the preparation of two actuarial valuations—one for funding purposes and one for accounting and financial reporting purposes. Unless otherwise noted, this Division Trust Funds subsection reports on the actuarial valuation performed for funding purposes, but also includes information on specific differences between the two actuarial valuations.

The plan provisions in effect on December 31, 2021, are summarized in Note 1 of the Notes to the Financial Statements in the Financial Section. Changes to plan provisions enacted into law after December 31, 2021, and included in the actuarial valuation are summarized under “Changes Since Last Actuarial Valuation” on page 156.

PERA BOARD GOVERNANCE - FIVE DEFINED BENEFIT PENSION PLANS	
PERA Defined Benefit Pension Plans	The five defined benefit pension plans of the Public Employees' Retirement Association of Colorado (PERA), include the State Division, School Division, Local Government Division, Judicial Division, and Denver Public Schools (DPS) Division Trust Funds. All but the DPS Division Trust Fund are cost-sharing multiple-employer plans and the DPS Division Trust Fund is a single-employer plan.
PERA Board Pension Funding Policy	The PERA Board of Trustees (Board) is responsible for maintaining a pension funding policy applicable to these plans. The current pension funding policy initially was adopted by the Board on March 20, 2015, effective for the December 31, 2014, funding actuarial valuation and last amended on November 16, 2018. The pension funding policy requires the calculation of an actuarially determined contribution (ADC) for each of the five Division Trust Funds for the purpose of assessing the adequacy of the statutory contribution rates of each division. The ADC is determined in accordance with the pension plan provisions in effect as of the date of the actuary's Letter of Certification and is expressed as a level percentage of assumed future covered payroll.
Actuarial Service Provider	The Board retains an external actuary, and effective November 1, 2018, Segal was retained to perform annual actuarial valuations and sustainability projections as well as periodic experience studies to review the actuarial assumptions versus actual plan experience.
Actuarial Service Provider Funding Method Statement	Per their actuarial valuation report, “Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and a portion of the principal balance. The pension funding policy adopted by PERA...meets this standard.”

ACTUARIAL METHODS	
Actuarial Methods	The Board is responsible for the actuarial methods and assumptions used in the actuarial valuations in accordance with C.R.S. § 24-51-204(5). Through formal action, the Board updates, replaces, or adopts new actuarial methods and assumptions as deemed necessary.

Actuarial Methods	Type	Description / Source / Basis	Adoption / Effective Date
Asset Valuation Method	Smoothed Actuarial Value of Assets	In 1992, the Board adopted a method for valuing assets that determines a smoothed market value of assets to help mitigate volatile investment market experience. Note, the term “market value” used in the Board's pension funding policy regarding the description of the determination of the asset valuation method applied for funding purposes, is synonymous with the term “fair value” used consistently throughout the Actuarial Section and all other sections of this <i>ACFR</i>. The smoothed fair 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 fair value of assets excludes the Annual Increase Reserve (AIR).	Initially Adopted: 1992; Effective: Dec 31, 1992; Reinitialized to Fair Value as of: Dec 31, 2004; Effective: Dec 31, 2005

DIVISION TRUST FUNDS—PENSION

Actuarial Methods	Type	Description / Source / Basis	Adoption / Effective Date
Actuarial Cost Method	Entry Age Actuarial Cost Method (EA)	The EA funding or cost method is designed to keep annual costs level as a percent of covered payroll and for this reason, was selected by the Board to be used in the actuarial valuations. Under the EA 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 plan cost allocated to the current year. Normal cost is determined only for active members currently accruing benefits. The actuarial accrued liability (AAL) for active members is the portion of the total plan cost 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 determined within each annual actuarial valuation. These differences produce actuarial gains or losses that result in an adjustment of the UAAL.	State, School, and Local Government (Municipal) Divisions - Effective: Jun 30, 1968; Judicial Division - Effective: Dec 31, 1980 DPS Division - Initially Adopted: June 30, 1950; Last Revised: Merger, Jan 1, 2010
Amortization Method	Defined, Closed, and Layered Periods	The 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. Each amortized item is tracked over the closed period defined for that category. The 30-year period used to amortize the legacy UAAL was initialized as of December 31, 2017. All gains, losses, and changes in actuarial methods and assumptions on and after January 1, 2018, are recognized each year and amortized separately over closed 30-year periods. 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%. 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% funded ratio.	Initially Adopted: Mar 20, 2015; Last Amended: Nov 16, 2018; Effective: Dec 31, 2018

DIVISION TRUST FUNDS—PENSION

ACTUARIAL ASSUMPTIONS

Actuarial Assumptions¹	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. Periodically, the Board participates in an actuarial assumptions workshop to ensure understanding and to provide for the retention or adoption of all economic and non-economic assumptions under the guidance provided by Actuarial Standards of Practice (ASOP) No. 27, <i>Selection of Economic Assumptions for Measuring Pension Obligations</i>, and ASOP No. 35, <i>Selection of Demographic and Other Noneconomic Assumptions for Measuring Pension Obligations</i>, as prescribed by the Actuarial Standards Board. The workshops typically include participation of the Board's actuarial service provider, their investment consultant, and other actuarial and investment experts who also may provide their market outlook. In addition, the Board reviews a variety of current and projected economic and financial information prior to these types of discussions. The most recent workshop was conducted in 2016.
Basis for Actuarial Assumptions Used	Unless otherwise noted, the basis of all selected economic and non-economic actuarial assumptions resulted from the 2020 experience analysis and related discussions that took place during the November 20, 2020, Board meeting. As a result of the 2019 Asset Liability Study, concluded at the November 15, 2019, Board meeting, the Board reaffirmed the 7.25% assumed long-term rate of investment return effective as of January 1, 2020, which was supported by the analysis provided by Segal in the 2020 Experience Analysis report.

¹ See Exhibits A through G for detailed assumption information.

Economic Assumptions	Value(s) / Type	Description / Source / Basis	Adoption / Effective Date
Rate of Investment Return	7.25%	Long-term assumed rate of investment return represented as a percent per year, compounded annually, net of investment expenses.	Assumed rate of investment return - Last Revised: Nov 18, 2016;
Real Rate of Investment Return	4.95%	Long-term assumed rate of real investment return (net of price inflation) represented as a percent per year, compounded annually, net of investment expenses.	Effective: Dec 31, 2016 All actuarial assumptions - Last Revised/Reaffirmed: Nov 20, 2020;
Price Inflation	2.30%	Long-term assumed rate of price inflation represented as a percent per year, compounded annually.	Effective: Dec 31, 2020
Wage Inflation	3.00%	Long-term assumed rate of wage inflation composed of the plan's assumed price inflation and the assumed real wage growth, represented as a percent per year, compounded annually.	
Pay Increases	Exhibit A	Sample pay increase assumptions for individual members as developed and recommended by the Board's retained actuary.	
Board Crediting Interest Rate	3.00%	Annually, the Board reviews the rate at which interest is credited to member accounts. On November 19, 2021, the Board voted to continue the annual interest rate at 3.00% for interest earned during 2022. Basis: Board Crediting Interest Rate Policy and Board annual discussion at the November 19, 2021, Board meeting.	Annual Review Policy initiated in 2006, slight revisions since. Last Adopted: Nov 19, 2021; Effective: Jan 1, 2022

DIVISION TRUST FUNDS—PENSION

Non-Economic Assumptions	Value(s) / Type	Description / Source / Basis	Adoption / Effective Date
Rates of Withdrawal	Select and Ultimate Withdrawal Rates - Exhibit B	Beginning in 1986, PERA uses a select and ultimate approach for all members (except members of the Judicial Division and those classified under the State Troopers and DPS benefit structures) in applying rates of withdrawal or termination when estimating the number of members who will leave service prior to retirement. The 2020 experience analysis indicated, in the aggregate, fewer active member terminations prior to retirement than expected, resulting in a reduction in withdrawal rates across all divisions except for members under the PERA benefit structure within the DPS Division.	Separation from active service assumptions— Last Revised: Nov 20, 2020; Effective: Dec 31, 2020
Rates of Disability	Exhibit C	The 2020 experience analysis indicated, in the aggregate, fewer active members retired with disability benefits than expected. This resulted in a 19% uniform reduction of disability rates across all divisions with no rate changes for members under the State Troopers benefit structure.	
Rates of Retirement	Reduced Early Retirement Rates - Exhibit E	The 2020 experience analysis indicated, in the aggregate, slightly more reduced early retirements than expected with certain groups experiencing fewer reduced early retirements than expected. Retirement experience was analyzed on a benefit-weighted basis separately for males and females, resulting in modifications to reduced early retirement rates at several ages across most divisions.	
	Unreduced Retirement Rates - Exhibit F	The 2020 experience analysis indicated, in the aggregate, fewer unreduced retirements than expected with certain groups experiencing more unreduced retirements than expected. Retirement experience was analyzed on a benefit-weighted basis separately for males and females, resulting in modifications to unreduced retirement rates at several ages across most divisions.	

DIVISION TRUST FUNDS—PENSION

Non-Economic Assumptions	Value(s) / Type	Description / Source / Basis	Adoption / Effective Date
Rates of Mortality	Healthy Pre-Retirement Mortality - Exhibit D	Healthy pre-retirement mortality is based on the Pub-2010 mortality tables, by category, as associated with each group with generational projection applied using scale MP-2019: --State and Local Government Divisions (other than State Troopers): PubG-2010 Employee Table; --State and Local Government Divisions (State Troopers): PubS-2010 Employee Table; --School and DPS Divisions: PubT-2010 Employee Table; --Judicial Division: PubG-2010(A) Above-Median Employee Table. The tables described above are benefit-weighted.	First implemented use of separate mortality tables for different groups / divisions Effective: Dec 31, 2016; Mortality—Last Revised: Nov 20, 2020; Effective: Dec 31, 2020 First implemented use of separate mortality table for beneficiaries Effective: Dec 31, 2020
	Healthy Post-Retirement Mortality - Exhibit G	The 2020 experience analysis employed a benefit-weighted approach and indicated, in the aggregate, generally fewer deaths than expected for all groups of retirees, with the exception of females age 80 and older. As a result, updated base tables to appropriate Pub-2010 mortality tables, with adjustments based on PERA-specific experience where credible data exists. To reflect future improvements in mortality, application of the MP-2019 mortality projection scale was recommended. Healthy post-retirement non-disability retiree mortality is based on the Pub-2010 mortality tables, by category, as associated with each group with generational projection applied using scale MP-2019: --State and Local Government Divisions (other than State Troopers): PubG-2010 Healthy Retiree Table with credibility adjustments by gender and age. For males, the adjustments are 94% of the rates prior to age 80 and 90% of the rates for ages 80 and older; for females, the adjustments are 87% of the rates prior to age 80 and 107% of the rates for ages 80 and older; --State and Local Government Divisions (State Troopers): Unadjusted PubS-2010 Healthy Retiree Table for males and females; --School and DPS Divisions: PubT-2010 Healthy Retiree Table with credibility adjustments by gender and age. For males, the adjustments are 112% of the rates prior to age 80 and 94% of the rates for ages 80 and older; for females, the adjustments are 83% of the rates prior to age 80 and 106% of the rates for ages 80 and older; --Judicial Division: Unadjusted PubG-2010(A) Above-Median Healthy Retiree Table for males and females. The tables described above are benefit-weighted.	
	Beneficiary Post-Retirement Mortality - Exhibit G	The 2020 experience analysis indicated more deaths than expected for beneficiaries. As a result, post-retirement non-disabled beneficiary mortality was updated to the Pub-2010 Contingent Survivor Table (benefit weighted) adjusted for credibility and gender with generational projection applied using scale MP-2019. For males, the adjustments are 97% of the rates for all ages; for females, the adjustments are 105% of the rates for all ages.	
	Disabled Post-Retirement Mortality	The 2020 experience analysis indicated disabled retiree deaths generally consistent with expectations. Disabled post-retirement mortality is based on the Pub-2010 mortality tables with generational projection applied using scale MP-2019: --All Divisions (other than State Troopers): PubNS-2010 Disabled Retiree Table using 99% of the rates for all ages; --State and Local Government Divisions (State Troopers): Unadjusted PubS-2010 Disabled Retiree Table for males and females. The tables described above are benefit-weighted.	

DIVISION TRUST FUNDS—PENSION

Non-Economic Assumptions	Value(s) / Type	Description / Source / Basis	Adoption / Effective Date
Rate of Vested Terminated Members to Refund Member Account	Non-Judicial - 35%	The 2020 experience analysis confirmed the current assumption that 35% of the vested members who terminate will elect to withdraw their accounts while the remaining 65% will elect to leave their accounts in the plan to be eligible for a benefit at retirement date.	Last Revised: 2009; Effective: Dec 31, 2009
	Judicial - 0%	The 2020 experience analysis confirmed the current assumption that none of the vested members who terminate will elect to withdraw their accounts while 100% will elect to leave their accounts in the plan to be eligible for a benefit at retirement date.	
Rate of Non-Vested Terminated Members to Refund Member Account	100%	The 2020 experience analysis confirmed the current assumption that 100% of the non-vested members who terminate will elect to withdraw their accounts.	Since inception of termination benefits, but only first mentioned in Dec 31, 2011 actuarial valuation report
Administrative Expense Load	0.40%	The element of the normal cost for each division, referred to as the administrative expense load, was first adopted by the Board as of November 5, 2012, effective for the December 31, 2012, actuarial valuation. The 2020 experience analysis confirmed that the current 0.40% administrative expense load continues to be appropriate for this purpose.	Initially adopted: Nov 5, 2012; Effective: Dec 31, 2012; Last Revised: Nov 18, 2016; Effective: Dec 31, 2016

Annual Increase (AI) Assumptions	Value(s)	Description / Source / Basis	Adoption / Effective Date
AI Rate Cap (Membership Prior to Jan 1, 2007 under the PERA Benefit Structure & Members under the DPS Benefit Structure)	1.00%	The AI cap that may be awarded by the Board in 2022 and thereafter is assumed to be 1.00% per year after payments begin and eligibility requirements for payment of the AI have been met. Basis: Adjusted pursuant to C.R.S. § 24-51-413, based on results of the 2018 and 2020 AAP assessments.	Effective: Dec 31, 2021
AI Rate Cap (Membership After Dec 31, 2006 under the PERA Benefit Structure)	0.00%	An AIR was established for each Division Trust Fund to provide AIs, to the extent affordable, once benefits become payable for these members. Therefore, the AI actuarial assumption applied to these members is 0.00%, since members in this category receive AIs through the affiliated AIR only to the extent affordable in accordance with C.R.S. § 24-51-1009. Basis: AI provisions Pursuant to SB 06-235, enacted May 25, 2006.	Enacted: May 25, 2006; Effective: Dec 31, 2006
AI Waiting Period	36 months	The waiting period to meet the eligibility for AI payments was extended from 12 months to 36 months. Basis: Pursuant to SB 18-200, enacted June 4, 2018	Enacted: Jun 4, 2018; Effective: Dec 31, 2017

DIVISION TRUST FUNDS—PENSION

ACTUARIAL STUDIES				
Governance Studies	Following their adopted governance procedures and practices, the Board performs periodic asset/liability modeling studies, actuarial audits, and actuarial experience analyses approximately every three to five years.			
Actuarial Studies	Description / Result	Last Conducted By	Completed	Next Scheduled
Asset Liability Modeling (ALM) Study	The Board commissioned an asset/liability study during 2019, which was prepared by Aon. The objective of the study was to determine the optimal strategic asset allocation that will ultimately allow PERA to meet its financial obligations, while also ensuring that PERA incurs appropriate levels of risk and cash liquidity. As a result of this study, the Board slightly modified the asset allocation ranges and targets effective January 1, 2020, while reaffirming the investment return assumption of 7.25%.	Aon	Nov 15, 2019	2022 - 2024
Actuarial Audit	The primary focus of an actuarial 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. The actuarial audit originally scheduled for 2019 was satisfied by a change in the actuarial service provider, as detailed in the Board's Governance Manual. In assuming responsibility for actuarial services, Segal's initial tasks included review of the current actuarial methods and assumptions, and replication of the most recent actuarial valuation results within a reasonable margin in accordance with the ASOPs. Within their letter detailing the transition of actuarial services they stated: "Segal determined that the data used by CMC [Cavanaugh Macdonald Consulting] 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 Actuarial Standards of Practice. Segal found no grounds on which to suggest a revision of the previous year's actuarial valuations."	Segal	Jun 13, 2019	2022
Experience Analysis	In October of 2020, Segal completed an experience analysis covering plan experience for the four-year period from 2016 through 2019, to provide the Board an updated view of all economic and demographic assumptions. In addition to the recommendations regarding revised assumptions, the Board's 2019 decision to reaffirm the assumed long-term rate of investment return of 7.25% was supported by the analysis provided in the 2020 report. Based on the results of the experience analysis, the presentation by Segal, and related discussion, the Board adopted the recommended revised economic and demographic assumptions, as proposed, during the November 20, 2020, Board meeting effective for the December 31, 2020, actuarial valuation.	Segal	Reports Delivered: Oct 28, 2020 & Nov 4, 2020; Revised Assumptions Adopted: Nov 20, 2020 Effective: Dec 31, 2020	2024

DIVISION TRUST FUNDS—PENSION

CHANGES SINCE LAST ACTUARIAL VALUATION	
Changes in Actuarial Methods	There are no changes in actuarial methods incorporated in the December 31, 2021, actuarial valuation, since the last actuarial valuation as of December 31, 2020.
Changes in Actuarial Assumptions	Except for the AI assumption described below, there are no changes in economic and demographic actuarial assumptions incorporated in the December 31, 2021, actuarial valuation, since the last actuarial valuation as of December 31, 2020. Due to the results of the 2020 AAP assessment, the assumed AI cap was decreased from 1.25% to 1.00%, applicable to PERA benefit structure members with a membership date prior to January 1, 2007, and DPS benefit structure members. Since this assumption used to value the AI cap is driven by the change in AI benefit provisions, the impact of the change in assumption from 1.25% to 1.00% is fully recognized as a "Change in Plan Provisions", as noted below.
Changes in Plan Provisions	Due to the results of the 2020 AAP assessment, the following are changes to contribution and AI provisions applicable to all five Division Trust Funds incorporated in the December 31, 2021, actuarial valuation since the last actuarial valuation of December 31, 2020. - The member contribution rate for all members increases by 0.50% of pay, effective July 1, 2022. - The employer contribution rate for all employers increases by 0.50% of pay, effective July 1, 2022. - The AI cap decreases from 1.25% to 1.00%, effective as of July 1, 2022. The following legislation, enacted in 2022, are reflected to the extent possible in the actuarial valuation as of December 31, 2021: - Pursuant to HB 22-1029, enacted June 7, 2022, the State treasurer is to issue a warrant to PERA in the amount of \$380 million, upon enactment, with reductions to future direct distributions scheduled to occur July 1, 2023, and July 1, 2024. Based on this legislation and the known total fund investment return for 2021 of 16.1%, the July 1, 2023, direct distribution will be reduced by \$190 million, resulting in a payment of \$35 million, and the July 1, 2024, direct distribution will be reduced by an amount yet to be determined, but not greater than \$27.55 million, resulting in a payment of not less than \$197.45 million. The \$35 million direct distribution scheduled to occur July 1, 2023, is considered in the 2021 AAP assessment. The reduced 2023 direct distribution does not cause a triggering of additional contribution and AI cap adjustments. - Pursuant to HB 22-1057, enacted and effective as of March 17, 2022, the working after retirement provisions are temporarily broadened by removing the limitation regarding the number of days that retired teachers can work as substitute teachers without any reduction in retirement benefits, applicable to any school district or charter school subject to critical substitute teacher shortages. - Pursuant to HB 22-1101, enacted and effective as of March 17, 2022, the Rural School District Critical Shortage program is made permanent and further broadened by removing limitations regarding the number of days that service retirees can work without any reduction in their retirement benefits, applicable to any rural school district, Board of Cooperative Services (BOCES), or charter school subject to critical shortage of certain positions. - Pursuant to HB 22-1087, enacted and effective as of March 24, 2022, special district directors who begin service on or after July 1, 2022, are excluded from membership in PERA.

SIGNIFICANT EVENTS

There were no significant events during 2021.

DIFFERENCES IN ACTUARIAL VALUATION METHODS AND ASSUMPTIONS

- The actuarial valuation for funding purposes was performed as of December 31, 2021. The actuarial valuation for accounting and financial reporting purposes was performed as of December 31, 2020, and the total pension liability (TPL) was rolled forward to the measurement date as of December 31, 2021.
- Census data used for the actuarial valuation for funding purposes reflects membership data as of December 31, 2021, and the census data used for the actuarial valuation for accounting and financial reporting purposes reflects membership data as of December 31, 2020. Therefore, all summaries and schedules, regarding actuarial valuation results for funding purposes, shown in the Actuarial Section, reflect census data as of December 31, 2021.
- The actuarial valuation for funding purposes applies an asset valuation method that recognizes a four-year smoothed fair 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 under 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.

DIVISION TRUST FUNDS—PENSION

Actuarial Assumptions: Exhibits A–G

Exhibit A: Individual Pay Increase Assumptions—All Divisions and Benefit Structures

AGE-BASED PAY INCREASE ASSUMPTIONS FOR AN INDIVIDUAL MEMBER—
STATE DIVISION, SCHOOL DIVISION, LOCAL GOVERNMENT DIVISION, STATE TROOPERS, AND DPS DIVISION

Sample Ages	Merit and Seniority					Inflation and Productivity All Divisions / Groups	Total Increase (Next Year)				
	State ¹	School ²	Local Government ¹	State Troopers ³	DPS ²		State ¹	School ²	Local Government ¹	State Troopers ³	DPS ²
20	7.90%	8.00%	8.30%	9.40%	8.50%	3.00%	10.90%	11.00%	11.30%	12.40%	11.50%
25	5.50%	5.60%	5.70%	5.90%	6.40%	3.00%	8.50%	8.60%	8.70%	8.90%	9.40%
30	3.80%	4.00%	3.80%	3.80%	4.80%	3.00%	6.80%	7.00%	6.80%	6.80%	7.80%
35	2.90%	3.30%	2.80%	2.90%	3.90%	3.00%	5.90%	6.30%	5.80%	5.90%	6.90%
40	2.20%	2.70%	2.20%	2.20%	3.20%	3.00%	5.20%	5.70%	5.20%	5.20%	6.20%
45	1.60%	2.10%	1.80%	1.70%	2.50%	3.00%	4.60%	5.10%	4.80%	4.70%	5.50%
50	1.10%	1.60%	1.50%	1.30%	2.00%	3.00%	4.10%	4.60%	4.50%	4.30%	5.00%
55	0.70%	1.20%	1.20%	0.90%	1.60%	3.00%	3.70%	4.20%	4.20%	3.90%	4.60%
60	0.50%	0.80%	0.90%	0.60%	1.30%	3.00%	3.50%	3.80%	3.90%	3.60%	4.30%
65	0.30%	0.50%	0.40%	0.30%	0.90%	3.00%	3.30%	3.50%	3.40%	3.30%	3.90%
70	0.30%	0.40%	0.20%	0.20%	0.80%	3.00%	3.30%	3.40%	3.20%	3.20%	3.80%

¹ Not applicable to members under the State Troopers benefit structure.

² Rates shown apply to the division indicated regardless of benefit structure.

³ Rates shown are for members under the State Troopers benefit structure in the State or Local Government Divisions.

SERVICE-BASED PAY INCREASE ASSUMPTIONS FOR AN
INDIVIDUAL MEMBER—JUDICIAL DIVISION

Sample Years of Service	Merit and Seniority	Inflation and Productivity	Total Increase (Next Year)
0	2.30%	3.00%	5.30%
1	2.30%	3.00%	5.30%
2	2.30%	3.00%	5.30%
3	2.20%	3.00%	5.20%
4	2.10%	3.00%	5.10%
5	2.00%	3.00%	5.00%
10	1.50%	3.00%	4.50%
15	1.20%	3.00%	4.20%
20	0.90%	3.00%	3.90%
25	0.70%	3.00%	3.70%
30	0.40%	3.00%	3.40%
35	0.20%	3.00%	3.20%
36	0.10%	3.00%	3.10%
37	0.10%	3.00%	3.10%
38	0.00%	3.00%	3.00%
39	0.00%	2.90%	2.90%
40	0.00%	2.80%	2.80%

DIVISION TRUST FUNDS—PENSION

Exhibit B: Withdrawal Assumptions—All Divisions and Benefit Structures**SELECT RATES OF WITHDRAWAL—PERCENT OF MEMBERS WITH LESS THAN FIVE YEARS OF SERVICE
WITHDRAWING FROM EMPLOYMENT WITHIN THE NEXT YEAR**

Completed Years of Service	State Division ¹		School Division ²		Local Government Division ¹		DPS Division ³	
	Male	Female	Male	Female	Male	Female	Male	Female
0	34.00%	34.00%	30.00%	30.00%	34.00%	34.00%	26.00%	26.00%
1	21.00%	21.00%	18.00%	18.00%	21.00%	21.00%	19.00%	19.00%
2	16.00%	16.00%	14.00%	14.00%	16.00%	16.00%	14.00%	14.00%
3	12.00%	12.00%	11.00%	11.00%	12.00%	12.00%	12.00%	12.00%
4	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%	10.00%

**ULTIMATE RATES OF WITHDRAWAL—PERCENT OF MEMBERS WITH FIVE OR MORE YEARS OF SERVICE
WITHDRAWING FROM EMPLOYMENT WITHIN THE NEXT YEAR**

Sample Ages	State Division ¹		School Division ²		Local Government Division ¹		State Troopers ⁴
	Male	Female	Male	Female	Male	Female	Unisex
20	30.00%	16.45%	20.00%	17.00%	30.00%	16.45%	7.30%
25	13.60%	12.30%	11.26%	11.56%	13.60%	12.30%	5.15%
30	7.10%	9.50%	6.54%	7.34%	7.10%	9.50%	3.65%
35	5.90%	7.30%	4.60%	5.51%	5.90%	7.30%	2.98%
40	4.75%	5.75%	3.64%	4.34%	4.75%	5.75%	2.62%
45	3.95%	4.95%	3.34%	4.00%	3.95%	4.95%	2.50%
50	3.66%	4.60%	3.24%	4.00%	3.66%	4.60%	2.50%
55	3.54%	4.50%	3.20%	4.00%	3.54%	4.50%	2.50%
60	3.50%	4.50%	3.20%	4.00%	3.50%	4.50%	2.50%
65	3.50%	4.50%	3.20%	4.00%	3.50%	4.50%	2.50%
70	3.50%	4.50%	3.20%	4.00%	3.50%	4.50%	2.50%

Sample Ages	Judicial Division	DPS Division ³		DPS Benefit Structure ⁵	
	Unisex	Male	Female	Male	Female
20	1.50%	19.20%	12.80%	8.00%	10.00%
25	1.50%	11.20%	10.80%	7.40%	8.80%
30	1.50%	7.70%	9.40%	6.85%	7.70%
35	1.50%	6.60%	7.80%	6.60%	7.20%
40	1.50%	6.00%	6.40%	5.45%	5.95%
45	1.50%	6.00%	6.00%	4.69%	4.41%
50	1.50%	6.00%	5.40%	4.50%	3.85%
55	1.50%	6.00%	5.00%	4.31%	3.85%
60	1.50%	6.00%	5.00%	4.25%	3.85%
65	1.50%	6.00%	5.00%	4.25%	3.85%
70	1.50%	6.00%	5.00%	4.25%	3.85%

¹ Not applicable to members under the State Troopers benefit structure.² Rates shown are for PERA benefit structure members in the School Division.³ Rates shown are for PERA benefit structure members in the DPS Division.⁴ Rates shown are for members under the State Troopers benefit structure in the State or Local Government Divisions.⁵ Rates shown are for DPS benefit structure members in any division.

DIVISION TRUST FUNDS—PENSION

Exhibit C: Disability Assumptions—All Divisions and Benefit Structures**RATES OF DISABILITY—PERCENT OF MEMBERS DISABLING FROM EMPLOYMENT WITHIN THE NEXT YEAR**

Sample Ages	State Division ¹	School and DPS Divisions ²	Local Government ¹	State Troopers ³	Judicial Division	DPS Benefit Structure ⁴
	Unisex	Unisex	Unisex	Unisex	Unisex	Unisex
20	0.008%	0.008%	0.008%	0.010%	0.008%	0.008%
25	0.008%	0.008%	0.008%	0.020%	0.008%	0.008%
30	0.008%	0.008%	0.008%	0.040%	0.008%	0.008%
35	0.024%	0.016%	0.024%	0.060%	0.016%	0.016%
40	0.039%	0.033%	0.039%	0.100%	0.033%	0.033%
45	0.076%	0.050%	0.076%	0.250%	0.050%	0.050%
50	0.156%	0.078%	0.156%	0.300%	0.078%	0.078%
55	0.203%	0.126%	0.203%	0.300%	0.126%	0.126%
60	0.236%	0.180%	0.236%	0.300%	0.180%	0.180%
65	0.236%	0.180%	0.236%	0.300%	0.180%	0.180%
70	0.236%	0.180%	0.236%	0.300%	0.180%	0.180%

¹ Not applicable to members under the State Troopers benefit structure.

² Rates shown are for PERA benefit structure members in the School or DPS Divisions.

³ Rates shown are for members under the State Troopers benefit structure in the State or Local Government Divisions.

⁴ Rates shown are for DPS benefit structure members in any division.

Exhibit D: Pre-Retirement Mortality Assumptions—All Divisions and Benefit Structures**2021 RATES OF PRE-RETIREMENT MORTALITY¹—PERCENT OF ACTIVE MEMBERS DECEASING WITHIN THE NEXT YEAR**

Sample Ages	State and Local Government Divisions ²		School and DPS Divisions ³		State Troopers ⁴		Judicial Division	
	Male	Female	Male	Female	Male	Female	Male	Female
20	0.039%	0.014%	0.036%	0.014%	0.043%	0.018%	0.038%	0.013%
25	0.034%	0.011%	0.019%	0.011%	0.045%	0.025%	0.029%	0.010%
30	0.051%	0.020%	0.031%	0.019%	0.058%	0.037%	0.044%	0.018%
35	0.069%	0.031%	0.044%	0.027%	0.069%	0.049%	0.060%	0.029%
40	0.084%	0.042%	0.054%	0.037%	0.075%	0.058%	0.073%	0.039%
45	0.101%	0.055%	0.069%	0.048%	0.084%	0.066%	0.088%	0.051%
50	0.139%	0.080%	0.104%	0.070%	0.112%	0.087%	0.121%	0.073%
55	0.213%	0.128%	0.167%	0.112%	0.170%	0.128%	0.185%	0.117%
60	0.331%	0.198%	0.274%	0.172%	0.274%	0.179%	0.287%	0.180%
65	0.473%	0.286%	0.439%	0.261%	0.414%	0.221%	0.409%	0.261%
70	0.656%	0.440%	0.662%	0.437%	0.715%	0.409%	0.568%	0.401%

¹ Assumptions shown above are used for pension plans, developed on a benefit-weighted basis, whereas those used for OPEB plans are headcount-weighted, using the same underlying mortality tables. For more detail, please see the mortality descriptions in the Pension and OPEB introduction subsections.

² Not applicable to members under the State Troopers benefit structure.

³ Rates shown are for all members in the School and DPS Divisions, regardless of benefit structure.

⁴ Rates shown are for members under the State Troopers benefit structure in the State or Local Government Divisions.

DIVISION TRUST FUNDS—PENSION

Exhibit E: Reduced Retirement Assumptions—All Divisions and Benefit Structures
RATES OF REDUCED RETIREMENT—PERCENT OF MEMBERS ELIGIBLE FOR REDUCED RETIREMENT BENEFITS RETIRING WITHIN THE NEXT YEAR

Retirement Ages	State Division ¹		School and DPS Divisions ²		Local Government Division ¹		State Troopers ³	Judicial Division	DPS Benefit Structure ⁴	
	Male	Female	Male	Female	Male	Female	Unisex	Unisex	Male	Female
50	9.5%	9.0%	8.0%	7.0%	9.5%	9.0%	10.0%	6.0%	8.0%	5.0%
51	11.0%	8.0%	8.0%	7.0%	11.0%	8.0%	10.0%	6.0%	8.0%	7.0%
52	11.0%	8.0%	9.0%	8.0%	11.0%	8.0%	10.0%	6.0%	8.0%	10.0%
53	12.0%	9.0%	9.0%	10.0%	12.0%	9.0%	10.0%	6.0%	10.0%	10.0%
54	12.0%	12.0%	12.0%	14.0%	12.0%	12.0%	10.0%	10.0%	10.0%	10.0%
55	12.0%	15.0%	9.0%	12.0%	12.0%	15.0%	5.0%	10.0%	10.0%	10.0%
56	9.5%	11.0%	9.0%	12.0%	9.5%	11.0%	5.0%	10.0%	10.0%	10.0%
57	15.0%	12.0%	9.0%	12.0%	15.0%	12.0%	5.0%	10.0%	10.0%	10.0%
58	15.0%	15.0%	12.0%	16.0%	15.0%	15.0%	5.0%	8.0%	10.0%	10.0%
59	35.0%	35.0%	24.0%	34.0%	35.0%	35.0%	5.0%	8.0%	15.0%	14.0%
60	7.5%	8.0%	8.0%	9.0%	7.5%	8.0%	10.0%	10.0%	15.0%	17.0%
61	7.5%	8.0%	9.0%	9.0%	7.5%	8.0%	10.0%	10.0%	16.0%	17.0%
62	7.5%	9.0%	10.0%	10.0%	7.5%	9.0%	10.0%	10.0%	16.0%	17.0%
63	7.5%	9.0%	10.0%	10.0%	7.5%	9.0%	10.0%	10.0%	16.0%	17.0%
64	7.5%	9.0%	10.0%	10.0%	7.5%	9.0%	10.0%	8.0%	16.0%	17.0%
65 and over	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

¹ Not applicable to members under the State Troopers benefit structure.

² Rates shown are for PERA benefit structure members in the School or DPS Divisions.

³ Rates shown are for members under the State Troopers benefit structure in the State or Local Government Divisions.

⁴ Rates shown are for DPS benefit structure members in any division.

DIVISION TRUST FUNDS—PENSION

Exhibit F: Unreduced Retirement Assumptions—All Divisions and Benefit Structures

ADDITIONAL INCREASE IN RATES DURING THE FIRST FIVE YEARS OF UNREDUCED RETIREMENT ELIGIBILITY FOR AGES 55 THROUGH 64

First Five Years of Unreduced Retirement Eligibility	State Division ¹		School and DPS Divisions ²		Local Government Division ¹		State Troopers ³
	Male	Female	Male	Female	Male	Female	Unisex
1	30%	20%	28%	28%	30%	20%	20%
2	13%	9%	4%	10%	13%	9%	0%
3	13%	9%	4%	10%	13%	9%	0%
4	13%	9%	4%	10%	13%	9%	0%
5	13%	9%	4%	10%	13%	9%	0%

RATES OF UNREDUCED RETIREMENT—PERCENT OF MEMBERS ELIGIBLE FOR UNREDUCED RETIREMENT BENEFITS RETIRING WITHIN THE NEXT YEAR

Retirement Ages	State Division ¹		School and DPS Divisions ²		Local Government Division ¹		State Troopers ³	Judicial Division	DPS Benefit Structure ⁴	
	Male	Female	Male	Female	Male	Female	Unisex	Unisex	Male	Female
50	56%	48%	52%	55%	56%	48%	40%	6%	35%	40%
51	43%	35%	43%	45%	43%	35%	28%	6%	35%	40%
52	38%	34%	41%	41%	38%	34%	28%	6%	30%	30%
53	34%	28%	39%	37%	34%	28%	28%	6%	30%	30%
54	33%	30%	37%	34%	33%	30%	28%	10%	25%	30%
55	26%	25%	27%	28%	26%	25%	28%	10%	30%	34%
56	19%	20%	22%	24%	19%	20%	28%	10%	20%	24%
57	18%	19%	21%	23%	18%	19%	28%	10%	26%	25%
58	17%	18%	19%	22%	17%	18%	28%	8%	22%	20%
59	20%	18%	21%	22%	20%	18%	28%	8%	26%	28%
60	20%	21%	25%	24%	20%	21%	28%	10%	26%	25%
61	19%	18%	24%	23%	19%	18%	28%	10%	18%	28%
62	23%	20%	22%	26%	23%	20%	28%	10%	27%	30%
63	20%	18%	22%	24%	20%	18%	28%	10%	40%	31%
64	22%	21%	26%	24%	22%	21%	28%	8%	24%	42%
65	27%	27%	28%	31%	27%	27%	100%	20%	38%	38%
66	29%	27%	31%	29%	29%	27%	100%	20%	30%	35%
67	28%	25%	25%	26%	28%	25%	100%	20%	30%	32%
68	24%	24%	26%	25%	24%	24%	100%	20%	30%	27%
69	24%	24%	26%	25%	24%	24%	100%	20%	30%	29%
70	24%	24%	24%	28%	24%	24%	100%	40%	30%	28%
71	24%	24%	24%	23%	24%	24%	100%	40%	30%	30%
72	24%	24%	24%	23%	24%	24%	100%	40%	30%	30%
73	24%	24%	24%	23%	24%	24%	100%	40%	30%	30%
74	24%	24%	24%	23%	24%	24%	100%	40%	30%	30%
75 and over	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

¹ Not applicable to members under the State Troopers benefit structure.

² Rates shown are for PERA benefit structure members in the School or DPS Divisions.

³ Rates shown are for members under the State Troopers benefit structure in the State or Local Government Divisions.

⁴ Rates shown are for DPS benefit structure members in any division.

DIVISION TRUST FUNDS—PENSION

**Exhibit G: Post-Retirement Mortality Assumptions and Single Life Retirement Values—
All Divisions and Benefit Structures****2021 RATES OF POST-RETIREMENT MORTALITY^{1,2} AND SINGLE LIFE RETIREMENT VALUES***(In Actual Dollars)*

Sample Attained Ages	Percent of Retirees Deceasing Within the Next Year		Present Value of \$1 Monthly for Life		Present Value of \$1 Monthly Increasing 1.00% Annually		Future Life Expectancy in Years	
	Male	Female	Male	Female	Male	Female	Male	Female
State and Local Government Divisions								
50	0.262%	0.185%	\$149.67	\$153.79	\$166.52	\$171.75	34.22	36.59
55	0.394%	0.260%	142.98	148.04	157.84	164.08	29.71	31.95
60	0.601%	0.356%	134.68	140.53	147.39	154.39	25.36	27.39
65	0.867%	0.516%	124.40	130.65	134.84	142.11	21.17	22.91
70	1.339%	0.833%	111.65	117.89	119.76	126.83	17.15	18.55
75	2.273%	1.484%	96.58	102.06	102.47	108.52	13.41	14.41
80	3.920%	3.361%	80.16	83.23	84.13	87.47	10.11	10.60
85	7.168%	6.326%	63.33	65.39	65.78	67.97	7.32	7.59
State Troopers								
45	0.126%	0.086%	\$155.46	\$157.21	\$173.99	\$176.41	38.28	40.21
50	0.179%	0.143%	149.81	151.97	166.45	169.35	33.53	35.40
55	0.298%	0.269%	142.40	145.19	156.91	160.55	28.88	30.71
60	0.528%	0.475%	133.05	136.82	145.27	149.98	24.38	26.20
65	0.890%	0.745%	121.69	126.55	131.54	137.39	20.11	21.89
70	1.463%	1.197%	108.02	113.90	115.50	122.38	16.09	17.78
75	2.558%	2.079%	92.10	99.00	97.38	105.22	12.39	13.96
80	4.655%	3.704%	74.88	82.67	78.31	86.91	9.15	10.58
85	8.469%	6.519%	58.04	66.11	60.08	68.79	6.51	7.74
School and DPS Divisions								
55	0.243%	0.167%	\$146.01	\$151.03	\$161.52	\$167.84	30.96	33.55
60	0.415%	0.254%	137.66	144.00	150.95	158.63	26.40	28.86
65	0.669%	0.358%	127.25	134.67	138.18	146.89	22.01	24.25
70	1.118%	0.576%	114.36	122.27	122.88	131.90	17.82	19.72
75	2.059%	1.098%	99.26	106.46	105.48	113.49	13.96	15.37
80	3.298%	2.793%	83.37	87.38	87.60	92.04	10.61	11.34
85	6.306%	5.440%	65.36	69.11	67.93	71.97	7.58	8.14
Judicial Division								
50	0.249%	0.203%	\$149.99	\$153.30	\$166.88	\$171.19	34.25	36.60
55	0.376%	0.287%	143.30	147.53	158.20	163.53	29.72	32.00
60	0.573%	0.395%	134.97	140.07	147.70	153.93	25.33	27.49
65	0.828%	0.576%	124.60	130.35	135.02	141.88	21.11	23.07
70	1.289%	0.929%	111.62	118.00	119.68	127.08	17.04	18.79
75	2.206%	1.655%	96.17	103.05	101.97	109.74	13.25	14.77
80	4.006%	3.048%	79.06	86.09	82.89	90.64	9.87	11.15
85	7.384%	5.735%	61.94	68.30	64.26	71.12	7.08	8.05

Please see next page for footnote references.

DIVISION TRUST FUNDS—PENSION

2021 RATES OF POST-RETIREMENT MORTALITY^{1,2} AND SINGLE LIFE RETIREMENT VALUES (CONTINUED)

(In Actual Dollars)

Sample Attained Ages	Percent of Retirees Deceasing Within the Next Year		Present Value of \$1 Monthly for Life		Present Value of \$1 Monthly Increasing 1.00% Annually		Future Life Expectancy in Years	
	Male	Female	Male	Female	Male	Female	Male	Female
Beneficiaries (All Divisions)								
40	0.679%	0.324%	\$151.15	\$157.38	\$169.44	\$177.32	39.12	43.33
45	0.548%	0.273%	148.02	154.07	165.01	172.63	35.28	38.95
50	0.635%	0.322%	142.87	149.14	158.24	166.03	31.22	34.48
55	0.777%	0.489%	136.35	142.85	149.90	157.87	27.22	30.10
60	1.020%	0.696%	128.23	135.34	139.80	148.33	23.31	25.89
65	1.356%	0.914%	118.28	126.03	127.79	136.85	19.54	21.82
70	1.927%	1.279%	106.16	114.18	113.56	122.71	15.92	17.85
75	2.970%	2.046%	92.11	99.73	97.52	106.02	12.55	14.08
80	4.743%	3.508%	76.79	83.30	80.45	87.58	9.54	10.65
85	7.862%	6.319%	61.12	66.06	63.40	68.71	6.98	7.70

¹ Rates are shown for healthy benefit recipients. Separate disability mortality tables are used for disabled retirees.

² Assumptions shown above are used for pension plans, developed on a benefit-weighted basis, whereas those used for OPEB plans are headcount-weighted, using the same underlying mortality tables. For more detail, please see the mortality descriptions in the Pension and OPEB introduction subsections.

Summary of Funding Progress

The PERA funding objective is 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 following schedules presented in this section provide an overview of funding progress:

- The solvency test shows the degree to which existing liabilities are funded, including prior history.
- A schedule of funding progress shows the UAAL as a percentage of annual covered payroll, including prior history.
- Schedules detailing actuarial gains and losses, by source, 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 based on the December 31, 2021, actuarial valuation for the period ending December 31, 2023.

Solvency Test

The solvency test compares the plan's actuarial value of assets 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.

The actuarial valuation of December 31, 2021, shows that plan assets fully cover liability A. In addition, the remainder of plan assets covers 100% of the liabilities for future benefits to persons who have retired or terminated service with the right to a future benefit (liability B) regarding the Local Government, Judicial and DPS Divisions and a significant portion of these liabilities for the State and School Division Trust Funds. Generally, if the system follows the discipline of level contribution rate financing, the funded portion of liability B and C is expected to increase over time.

DIVISION TRUST FUNDS—PENSION

SOLVENCY TEST

(Dollars in Thousands)

Valuation Date	Aggregate Accrued Liabilities			Actuarial Value of Plan Assets	Portion of Actuarial Accrued Liabilities Covered by Valuation Assets		
	Active Member Contributions (A) ¹	Retirees, Beneficiaries, and Inactive Members (B)	Employer-Financed Portion of Active Members (C)		Liability (A)	Liability (B)	Liability (C)
State Division							
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%
12/31/2016	2,678,312	17,933,227	5,058,377	14,026,332	100.0%	63.3%	0.0%
12/31/2017	2,668,406	17,395,423	4,718,256	14,256,410	100.0%	66.6%	0.0%
12/31/2018	2,682,956	18,095,951	4,730,945	14,303,726	100.0%	64.2%	0.0%
12/31/2019	2,737,022	18,157,929	4,822,697	14,922,050	100.0%	67.1%	0.0%
12/31/2020	2,820,780	18,876,016	5,420,009	16,039,287	100.0%	70.0%	0.0%
12/31/2021	2,881,533	19,079,270	5,199,043	17,379,516	100.0%	76.0%	0.0%
School Division							
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%
12/31/2016	4,108,961	27,922,423	9,321,584	23,263,344	100.0%	68.6%	0.0%
12/31/2017	4,212,088	26,937,539	8,896,588	23,780,045	100.0%	72.6%	0.0%
12/31/2018	4,344,574	27,922,414	9,331,412	24,094,442	100.0%	70.7%	0.0%
12/31/2019	4,551,132	28,014,055	9,859,874	25,412,014	100.0%	74.5%	0.0%
12/31/2020	4,748,885	29,376,412	11,406,778	27,581,088	100.0%	77.7%	0.0%
12/31/2021	5,019,414	29,763,775	11,553,599	30,253,176	100.0%	84.8%	0.0%
Local Government Division							
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%
12/31/2016	545,507	3,573,344	1,094,201	3,879,197	100.0%	93.3%	0.0%
12/31/2017	544,525	3,482,526	1,018,881	4,009,413	100.0%	99.5%	0.0%
12/31/2018	549,499	3,679,915	1,011,471	4,070,679	100.0%	95.7%	0.0%
12/31/2019	565,273	3,713,892	1,037,268	4,288,325	100.0%	100.0%	0.9%
12/31/2020	579,211	3,895,852	1,183,840	4,663,031	100.0%	100.0%	15.9%
12/31/2021	597,770	3,978,148	1,169,092	5,090,566	100.0%	100.0%	44.0%

Please see next page for footnote references.

DIVISION TRUST FUNDS—PENSION

SOLVENCY TEST (CONTINUED)

(Dollars in Thousands)

Valuation Date	Aggregate Accrued Liabilities				Portion of Actuarial Accrued Liabilities Covered by Valuation Assets		
	Active Member Contributions (A) ¹	Retirees, Beneficiaries, and Inactive Members (B)	Employer-Financed Portion of Active Members (C)	Actuarial Value of Plan Assets	Liability (A)	Liability (B)	Liability (C)
Judicial Division							
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%
12/31/2016	58,119	273,416	115,582	297,888	100.0%	87.7%	0.0%
12/31/2017	54,973	277,542	95,593	310,085	100.0%	91.9%	0.0%
12/31/2018	57,922	286,045	103,790	315,970	100.0%	90.2%	0.0%
12/31/2019	57,145	304,173	100,720	342,071	100.0%	93.7%	0.0%
12/31/2020	58,779	318,647	100,779	376,437	100.0%	99.7%	0.0%
12/31/2021	61,353	331,715	94,970	419,256	100.0%	100.0%	27.6%
DPS Division							
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%
12/31/2016	402,849	2,999,767	843,814	3,220,935	100.0%	93.9%	0.0%
12/31/2017	419,239	2,867,254	802,033	3,257,770	100.0%	99.0%	0.0%
12/31/2018	438,008	2,941,988	868,606	3,261,338	100.0%	96.0%	0.0%
12/31/2019	461,075	2,906,773	895,537	3,410,264	100.0%	100.0%	4.7%
12/31/2020	501,422	2,975,191	1,055,933	3,682,072	100.0%	100.0%	19.5%
12/31/2021	569,134	2,921,569	1,147,171	4,029,095	100.0%	100.0%	46.9%
All Division Trust Funds ²							
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%
12/31/2016	7,793,748	52,702,177	16,433,558	44,687,696	100.0%	70.0%	0.0%
12/31/2017	7,899,231	50,960,284	15,531,351	45,613,723	100.0%	74.0%	0.0%
12/31/2018	8,072,959	52,926,313	16,046,224	46,046,155	100.0%	71.7%	0.0%
12/31/2019	8,371,647	53,096,822	16,716,096	48,374,724	100.0%	75.3%	0.0%
12/31/2020	8,709,077	55,442,118	19,167,339	52,341,915	100.0%	78.7%	0.0%
12/31/2021	9,129,204	56,074,477	19,163,875	57,171,609	100.0%	85.7%	0.0%

¹ Includes accrued interest on member contributions.² 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

UAAL is the difference between actuarially calculated liability for service already rendered and the valuation assets of the retirement fund.

In 2020, the ratio of PERA's valuation assets to accrued liabilities was 62.8% and increased to 67.8% by the end of 2021.

Following are the most impactful factors resulting in higher liabilities (or losses) to PERA during 2021:

- Lower investment returns than assumed in 2018.
- Member pay increases were greater than expected.
- Of the members who terminated PERA-covered employment, fewer withdrew their accounts than expected.
- New PERA members had some service resulting in accrued liabilities.

Following are the most impactful factors resulting in lower liabilities (or gains) during 2021:

- Higher investment return than assumed in 2019, 2020 and 2021.
- Recognition of the reduction in the AI cap from 1.25% to 1.00%, per annum.
- Actual payroll contributions were greater than the determined ADC.
- Retirees experienced shorter lifespans than expected.

Between 2010 and 2016, PERA's funded status was negatively affected primarily by the recognition of adverse economic experience and by the adoption of more conservative economic and demographic assumptions to better reflect anticipated future behaviors, longevity, and economic conditions. In 2017, PERA's funded status improved due to a decrease in plan liabilities reflecting the adoption of SB 18-200 pension reforms along with better than expected investment performance. PERA's funded status was, again, negatively impacted in 2018, reflecting unfavorable demographic experience and lower than assumed investment performance. In 2019, PERA's funded status was positively impacted by better than expected investment performance and the reduced AI cap from 1.50% to 1.25%, and negatively impacted by demographic losses and, to a lesser extent, the enactment of HB 20-1394 modifying the Judicial Division's employer and member contribution rates for the State's 2020-21 and 2021-22 fiscal years. In 2020, PERA's funded status was positively impacted by better than expected investment performance and a small mortality gain and negatively impacted by the adoption of generally more conservative actuarial assumptions. The revised actuarial assumptions include the application of generational mortality. In 2021, PERA's funded status was positively impacted by better than expected investment performance and recognition of the reduction in the AI cap from 1.25% to 1.00% per annum.

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 covered payroll, as shown in the table on the next two pages, can provide a meaningful index. Opposite of the funded status ratio, the lower the ratio, the greater the strength of the system.

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 (UAAL) (C) – (B)	(E) Funded Ratio (B)/(C)	(F) Annual Covered Payroll	(G) UAAL As a Percentage of Covered Payroll (D)/(F)
State Division						
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%
12/31/2016	14,026,332	25,669,916	11,643,584	54.6%	2,710,651	429.5%
12/31/2017	14,256,410	24,782,085	10,525,675	57.5%	2,774,207	379.4%
12/31/2018	14,303,726	25,509,852	11,206,126	56.1%	2,898,827	386.6%
12/31/2019	14,922,050	25,717,648	10,795,598	58.0%	2,995,453	360.4%
12/31/2020	16,039,287	27,116,805	11,077,518	59.1%	3,089,161	358.6%
12/31/2021	17,379,516	27,159,846	9,780,330	64.0%	3,092,509	316.3%
School Division						
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%
12/31/2016	23,263,344	41,352,968	18,089,624	56.3%	4,349,320	415.9%
12/31/2017	23,780,045	40,046,215	16,266,170	59.4%	4,471,357	363.8%
12/31/2018	24,094,442	41,598,400	17,503,958	57.9%	4,789,503	365.5%
12/31/2019	25,412,014	42,425,061	17,013,047	59.9%	5,104,431	333.3%
12/31/2020	27,581,088	45,532,075	17,950,987	60.6%	5,146,118	348.8%
12/31/2021	30,253,176	46,336,788	16,083,612	65.3%	5,465,866	294.3%
Local Government Division						
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%
12/31/2016	3,879,197	5,213,052	1,333,855	74.4%	608,223	219.3%
12/31/2017	4,009,413	5,045,932	1,036,519	79.5%	632,768	163.8%
12/31/2018	4,070,679	5,240,885	1,170,206	77.7%	660,998	177.0%
12/31/2019	4,288,325	5,316,433	1,028,108	80.7%	681,093	150.9%
12/31/2020	4,663,031	5,658,903	995,872	82.4%	698,060	142.7%
12/31/2021	5,090,566	5,745,010	654,444	88.6%	723,744	90.4%
Judicial Division						
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%
12/31/2016	297,888	447,117	149,229	66.6%	48,700	306.4%
12/31/2017	310,085	428,108	118,023	72.4%	48,948	241.1%
12/31/2018	315,970	447,757	131,787	70.6%	50,506	260.9%
12/31/2019	342,071	462,038	119,967	74.0%	53,427	224.5%
12/31/2020	376,437	478,205	101,768	78.7%	54,780	185.8%
12/31/2021	419,256	488,038	68,782	85.9%	55,780	123.3%

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 (UAAL) (C) – (B)	(E) Funded Ratio (B)/(C)	(F) Annual Covered Payroll	(G) UAAL As a Percentage of Covered Payroll (D)/(F)
DPS Division						
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%
12/31/2016	3,220,935	4,246,430	1,025,495	75.9%	642,177	159.7%
12/31/2017	3,257,770	4,088,526	830,756	79.7%	658,198	126.2%
12/31/2018	3,261,338	4,248,602	987,264	76.8%	722,040	136.7%
12/31/2019	3,410,264	4,263,385	853,121	80.0%	736,264	115.9%
12/31/2020	3,682,072	4,532,546	850,474	81.2%	771,347	110.3%
12/31/2021	4,029,095	4,637,874	608,779	86.9%	823,396	73.9%
All Division Trust Funds¹						
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%
12/31/2016	44,687,696	76,929,483	32,241,787	58.1%	8,359,071	385.7%
12/31/2017	45,613,723	74,390,866	28,777,143	61.3%	8,585,478	335.2%
12/31/2018	46,046,155	77,045,496	30,999,341	59.8%	9,121,874	339.8%
12/31/2019	48,374,724	78,184,565	29,809,841	61.9%	9,570,668	311.5%
12/31/2020	52,341,915	83,318,534	30,976,619	62.8%	9,759,466	317.4%
12/31/2021	57,171,609	84,367,556	27,195,947	67.8%	10,161,295	267.6%

¹ 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: A history of contributions by Division Trust Fund, the ADC compared to the actual contributions paid, including the deficiency or (excess), for each of the last 10 years, is shown in the Schedule of Employer and Nonemployer Contributions, found on pages 97-99 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	\$6.1	\$25.1	\$4.7	\$3.2	\$5.8
Disability retirements ²	2.7	3.6	0.4	(0.1)	—
Deaths ³	(53.4)	(73.5)	7.5	(1.4)	(38.6)
Withdrawals ⁴	17.7	80.5	5.7	—	10.2
New members ⁵	77.2	116.4	22.4	5.3	44.9
Pay increases ⁶	(29.7)	236.1	(3.7)	(1.5)	6.0
Administrative expenses and other ⁷	1.6	18.9	5.3	0.6	21.3
Subtotal	22.2	407.1	42.3	6.1	49.6
From differences between assumed and actual experience on assets	(924.0)	(1,602.6)	(271.5)	(21.8)	(213.8)
From changes in plan assumptions and methods	—	—	—	—	—
From changes in plan provisions	(497.0)	(889.4)	(107.2)	(8.4)	(77.0)
Total actuarial (gains)/losses on 2021 activities	(\$1,398.8)	(\$2,084.9)	(\$336.4)	(\$24.1)	(\$241.2)
Total actuarial (gains)/losses on 2020 activities	\$119.7	\$612.5	(\$31.2)	(\$15.4)	(\$31.6)

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 Administrative expenses and other: Includes miscellaneous gains and losses resulting from valuation software updates and refinements, data adjustments, timing of financial transactions, etc.

DIVISION TRUST FUNDS—PENSION

The table below identifies the components that contributed to the change in the underfunded status of the Division Trust Funds for the period 2017 to 2021.

SCHEDULE OF GAINS AND LOSSES IN ACCRUED LIABILITIES AND RECONCILIATION OF UNFUNDED ACTUARIAL ACCRUED LIABILITIES

(Dollars in Millions)

Type of Activity	(Gain) or Loss for Years Ended December 31					2017 - 2021
	2017	2018	2019	2020	2021	
UAAL beginning of year	\$32,241.8	\$28,777.1	\$30,999.3	\$29,809.8	\$30,976.6	\$32,241.8
Experience (gains) and losses						
Age and service retirements	211.4	177.5	95.4	91.0	44.9	620.2
Disability retirements	22.9	13.3	9.5	4.2	6.6	56.5
Deaths	(21.0)	118.0	4.7	(164.3)	(159.4)	(222.0)
Withdrawal from employment	251.2	(5.2)	150.1	296.5	114.1	806.7
New members	238.3	231.4	213.4	176.5	266.2	1,125.8
Pay increases	(214.3)	162.0	391.6	(24.8)	207.2	521.7
Investment (income) loss	(175.5)	580.4	(1,176.7)	(2,754.3)	(3,033.7)	(6,559.8) ¹
Other	61.2	511.0 ²	47.5	(78.7)	47.7	588.7
Experience (gain) loss during year	374.2	1,788.4	(264.5)	(2,453.9)	(2,506.4)	(3,062.2)
Non-recurring items						
Change in plan assumptions and methods	—	—	—	3,107.9 ³	—	3,107.9
Change in plan provisions	(4,832.3) ⁴	(5.6)	(1,494.3) ⁵	—	(1,579.0) ⁶	(7,911.2)
Non-recurring items	(4,832.3)	(5.6)	(1,494.3)	3,107.9	(1,579.0)	(4,803.3)
Contribution deficiency	195.2	450.0	132.9	280.2	(216.6)	841.7 ⁷
Expected change in UAAL	798.2	(10.6)	436.4	232.6	521.3	1,977.9 ⁸
Total (gain)/loss for year	(3,464.7)	2,222.2	(1,189.5)	1,166.8	(3,780.7)	(5,045.9)
UAAL end of year	\$28,777.1	\$30,999.3	\$29,809.8	\$30,976.6	\$27,195.9	\$27,195.9

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:

¹ \$6.6 billion cumulative gain resulting from favorable investment experience for 2017, 2019, 2020 and 2021.

² \$0.5 billion loss in 2018, primarily due to the change in actuarial service provider and actuarial valuation software. Although the total present value of benefits matched closely as determined by the prior and current actuarial service provider, the loss shown represents the different methods of attribution applied to allocate costs between future normal costs and AAL for earned service.

³ \$3.1 billion loss, due to the recognition of revised actuarial assumptions, including the implementation of generational mortality, adopted November 20, 2020, effective December 31, 2020.

⁴ \$4.8 billion gain, in 2017, primarily due to the changes in pension plan provisions enacted pursuant to SB 18-200.

⁵ \$1.5 billion gain, in 2019, due to the reduction in the AI cap from 1.50% to 1.25%, effective July 1, 2020, as required by the 2018 AAP assessment.

⁶ \$1.6 billion gain, in 2021, due to the reduction in the AI cap from 1.25% to 1.00%, effective July 1, 2022, as required by the 2020 AAP assessment.

⁷ \$0.8 billion cumulative loss resulting from contribution deficiencies; occurring when actual contributions flowing into the plans are less than the determined ADC.

⁸ \$2.0 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.

DIVISION TRUST FUNDS—PENSION

Actuarial Valuation Results

Contribution rates for the year ending December 31, 2023, are derived from the results of the December 31, 2021, annual actuarial valuation and are determined in advance for purposes of budgeting, completing the required assessments related to the automatic adjustment provision (AAP) and consideration of any necessary legislative action.

SCHEDULE OF COMPUTED EMPLOYER CONTRIBUTION AND DIRECT DISTRIBUTION RATES FOR THE 2023 FISCAL YEAR

	Expressed as a Percentage of Covered Payroll				
	State Division	School Division	Local Government Division	Judicial Division	DPS Division
Contributions					
Service retirement benefits	8.09%	10.17%	8.20%	14.79%	8.74%
Disability retirement benefits	0.31%	0.21%	0.30%	0.39%	0.21%
Survivor benefits	0.25%	0.20%	0.27%	0.49%	0.18%
Termination withdrawals	2.84%	2.87%	2.66%	1.01%	3.37%
Refunds	0.87%	0.72%	0.88%	0.07% ¹	0.42%
Administrative expense load	0.40%	0.40%	0.40%	0.40%	0.40%
Total normal cost	12.76%	14.57%	12.71%	17.15%	13.32%
Less member contributions ²	(11.08%) ³	(11.00%)	(9.01%) ³	(11.00%)	(11.00%)
Employer normal cost	1.68%	3.57%	3.70%	6.15%	2.32%
Percentage available to amortize unfunded actuarial accrued liabilities	18.14%	16.23%	9.30%	17.18%	6.68%
Amortization period ⁴	23 Years	26 Years	12 Years	7 Years	9 Years
Total employer contribution rate for actuarially funded benefits ⁵	11.51% ³	11.40%	11.01% ³	14.91%	11.40%
Amortization Equalization Disbursement	5.00%	4.50%	2.20%	5.00%	4.50%
Supplemental Amortization Equalization Disbursement	5.00%	5.50%	1.50%	5.00%	5.50%
Less Health Care Trust Fund	(1.02%)	(1.02%)	(1.02%)	(1.02%)	(1.02%)
Less Annual Increase Reserve	(0.67%)	(0.58%)	(0.69%)	(0.56%)	(0.72%)
Less PCOP credit	N/A	N/A	N/A	N/A	(10.66%) ⁶
Employer contribution rate for defined benefit plan	19.82%	19.80%	13.00%	23.33%	9.00%
Direct distribution⁷	0.35%	0.35%	N/A	0.35%	0.35%
DC supplement rates⁸	0.17%	N/A	0.06%	N/A	N/A

¹ Assumes no judge will elect a refund of contributions made for the 17th through the 20th year of service.

² Includes 100% of the 0.50% additional member contribution effective July 1, 2022, due to the results of the 2020 AAP assessment.

³ Weighted average of more than one statutory rate.

⁴ The amortization periods shown consider ongoing employer, member, AED, and SAED contributions including any future increases, and the direct distribution, where and when applicable.

⁵ Includes 100% of the 0.50% additional employer contribution effective July 1, 2022 due to the results of the 2020 AAP assessment.

⁶ An offset to the DPS Division rate is provided for under C.R.S. § 24-51-412. See Note 4 of the Notes to the Financial Statements in the Financial Section.

⁷ Rates for the direct distribution have been estimated based on a \$35 million direct distribution for 2023, pursuant to HB 22-1029, and are shown as a percentage of 2023 projected covered payroll.

⁸ The DC supplement will be paid to the State and Local Government Divisions on behalf of all employees of these divisions, calculated pursuant to employees hired on or after January 1, 2019, who chose to participate in the PERAChoice DC Plan in lieu of participating in PERA's DB Plan. Designed to compensate for the employer contributions paid to the DC Plan participant accounts that otherwise would have been payment toward the UAAL, this supplement is determined separately for the State and Local Government Divisions as a rate of pay and is payable as of January 1, 2023, by all employers of the two divisions.

Note: The underlying calculations involve more precision than what is presented in the schedule above and the rounded numbers shown may not add as a result.

DIVISION TRUST FUNDS—PENSION

The AED and SAED are set to increase in future years for the Judicial Division, 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%, a decrease in the AED and SAED is mandated and if it subsequently falls below a funded status of 90%, an increase is mandated. For the Local Government and Judicial Divisions, if the funded ratio reaches 90% and subsequently falls below 90%, an increase in the AED and SAED is mandated. Increases cannot exceed the following maximum allowable limitations.

FUTURE AED AND SAED RATES

Trust Fund	2022 Rates		Future Annual Increases in Rates Prescribed by Colorado Revised Statutes		Maximum Allowable Limitations	
	AED	SAED	AED	SAED	AED	SAED
State Division	5.00%	5.00%	N/A	N/A	5.00%	5.00%
School Division	4.50%	5.50%	N/A	N/A	4.50%	5.50%
Local Government Division	2.20%	1.50%	No	No	5.00%	5.00%
Judicial Division	4.60%	4.60%	Yes ¹	Yes ²	5.00%	5.00%
DPS Division ³	4.50%	5.50%	N/A	N/A	4.50%	5.50%

¹ C.R.S. § 24-51-411(4.5) increased the AED payment to 4.60% of PERA-includable salary for 2022 and requires the AED payment to increase by 0.40% at the start of 2023 at which time the AED payment will be 5.00% of PERA-includable salary.

² C.R.S. § 24-51-411(7.5) increased the SAED payment to 4.60% of PERA-includable salary for 2022 and requires the SAED payment to increase by 0.40% at the start 2023 at which time the SAED payment will be 5.00% of PERA-includable salary.

³ 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: A history of contributions by Division Trust Fund, the ADC compared to the actual contributions paid, including the deficiency or (excess), for each of the last 10 years, is shown in the Schedule of Employer and Nonemployer Contributions, found on pages 97-99 in the RSI in the Financial Section.

DIVISION TRUST FUNDS—PENSION

Annual Actuarial Valuation Statistics

As of December 31, 2021, the Funded Ratio, the UAAL, the ADC for 2023 as a percentage of covered payroll, and the amortization period considering current funding and future increases prescribed by Colorado statute, 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 ²
State Division	64.0%	\$9,780,330	20.71%	23 Years
School Division	65.3%	16,083,612	21.13%	26 Years
Local Government Division	88.6%	654,444	9.20%	12 Years
Judicial Division	85.9%	68,782	13.83%	7 Years
DPS Division	86.9%	608,779	6.77%	9 Years
All Division Trust Funds³		\$27,195,947		

¹ Determined considering the 30-year target amortization period defined in the pension funding policy for purposes of funding benchmarks and RSI reporting as shown in the Financial Section.

² The determination of each amortization period considers future statutory increases in base employer and member contribution rates, increases in AED and SAED, and inclusion of the direct distribution, as applicable.

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.

Pursuant to the pension funding policy, 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, 2017, 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, 2018. The 2023 target and alternative ADCs, by division, are displayed below:

Trust Fund	Target ADC	Alternative ADCs		
	30-Year ¹	25-Year ²	20-Year ²	15-Year ²
State Division	20.71%	20.64%	20.54%	20.39%
School Division	21.13%	21.19%	21.28%	21.47%
Local Government Division	9.20%	9.04%	8.79%	8.37%
Judicial Division	13.83%	13.40%	12.74%	11.59%
DPS Division	6.77%	6.63%	6.43%	6.07%

¹ Refers to the amortization period used to amortize the legacy UAAL as of December 31, 2017, and any "new" UAAL recognized on and after January 1, 2018.

² Refers to the amortization period used to amortize any "new" UAAL recognized on and after January 1, 2018.

DIVISION TRUST FUNDS—PENSION

Automatic Adjustment Provision

The primary intent of the AAP is to gauge the adequacy of the contributions coming into the pension trust fund against the amount required, and if determined necessary, to initiate automatic changes to member and employer contribution rates, the AI cap, and, under certain circumstances, the direct distribution from the State of Colorado, to better insure achievement of the targeted 30-year funding goal, as delineated in SB 18-200. Pursuant to C.R.S. § 24-51-413, this assessment commenced with the December 31, 2018, actuarial valuation and is performed annually, thereafter.

The AAP assessment compares two blended rates, weighted across all five Division Trust Funds, defined as: the "Blended Total Contribution Amount" (employer contribution rate + member contribution rate + direct distribution as a rate of pay) divided by the "Blended Total Required Contribution" (ADC Rate + member contribution rate), determining a resulting ratio. If the resulting ratio falls within an acceptable corridor (98% to 119%), no adjustments are made. If the resulting ratio does not achieve a minimum benchmark (is less than 98%) or exceeds a maximum benchmark (is 120% or greater), adjustments are applied in an equitable manner of impact. The following table shows the results of the AAP assessment which was conducted to determine if adjustments are necessary as of July 1, 2023.

Elements of Test Ratio (Shown as a percentage of pay)	2023 Input Percentages	Resulting Ratio	Adjustments, if Necessary (Effective July 1, 2023)	Revised Resulting Ratio
2023 Blended Total Contribution Amount ^{1,2,3} (Divided by):	30.77% (Divided by):	(Equals) 98.21%	N/A	N/A
2023 Blended Total Required Contribution ^{1,2}	31.33%			

¹ The blended rate is weighted based on the UAAL of each Division Trust Fund and is not appropriate for any other use.

² Determined from rates shown on pages 171-172.

³ Pursuant to HB 22-1029, enacted June 7, 2022, the 2023 direct distribution was reduced from \$225 million to \$35 million, and is reflected in this 2021 AAP assessment.

Below is a summary of the AAP guidelines, found in C.R.S. § 24-51-413.

An automatic adjustment will occur under the following conditions:

- If the resulting ratio is less than 98%, there will be adjustments of equitable impact, increasing each of the employer and member contribution rates, decreasing the AI cap, and increasing the direct distribution (if permitted).
- If the resulting ratio is greater than or equal to 120%, there will be adjustments of equitable impact, decreasing each of the employer and member contribution rates, increasing the AI cap, and decreasing the direct distribution.

The AAP defines the limited amounts of total adjustment available in each category, and also the increments of adjustments that can occur in any one year. Multiple steps over multiple years are allowed for a required adjustment as necessary, but cannot exceed the ultimate limits as set forth in statute, as detailed below:

- Adjustment (increase or decrease) to each of the employer and member contribution rates cannot exceed 0.50% in any one year, and
 - Cannot exceed 2.00% above the contribution rates reflecting SB 18-200 statutory reforms.
 - Cannot fall below the contribution rates in effect immediately prior to the passage of SB 18-200.
- Adjustment (increase or decrease) to the AI rate cannot exceed 0.25% in any one year, and
 - Cannot exceed a 2.00% AI cap maximum.
 - Cannot fall below a 0.50% AI cap minimum.
- Adjustment to the direct distribution cannot exceed \$20 million in any one year, and
 - Cannot exceed the initial \$225 million amount.
 - Can be reduced to \$0.
- Adjustment that are required because:
 - Funding is below the 98% threshold, will be made to an extent that will bring the revised ratio to 103% following the corrective efforts but in no event can the adjustments in one year be greater than the limit described above.
 - Funding has reached the 120% threshold, must not cause the ratio to fall below 103%.

DIVISION TRUST FUNDS—PENSION

AAP ASSESSMENT HISTORY

Assessment	Information Based on Valuation Date	Compare Contribution Rates for Plan Year	Triggered Adjustments?	Adjustments to be Made	Effective Date for Adjustments
2018	December 31, 2018	2020	Yes	0.50% increase to member rate 0.50% increase to employer rate 0.25% decrease to AI cap No change to \$225M direct distribution ¹	July 1, 2020
2019	December 31, 2019	2021	No	N/A	N/A
2020	December 31, 2020	2022	Yes	0.50% increase to member rate 0.50% increase to employer rate 0.25% decrease to AI cap No change to \$225M direct distribution	July 1, 2022
2021	December 31, 2021	2023	No	N/A	N/A

¹ Pursuant to HB 20-1379, the direct distribution, payable July 1, 2020, was suspended.

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 fair 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, 2021, was \$57,171,609 compared to a fair value of assets of \$64,796,790, and to the AAL of \$84,367,556. 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	2017	2018	2019	2020	2021
State Division	57.5%	56.1%	58.0%	59.1%	64.0%
School Division	59.4%	57.9%	59.9%	60.6%	65.3%
Local Government Division	79.5%	77.7%	80.7%	82.4%	88.6%
Judicial Division	72.4%	70.6%	74.0%	78.7%	85.9%
DPS Division	79.7%	76.8%	80.0%	81.2%	86.9%
All Division Trust Funds¹	61.3%	59.8%	61.9%	62.8%	67.8%

¹ 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.

The Board's pension funding policy states that the targeted actuarial funded ratio is greater than or equal to 110% 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, 2021, approximately \$0.65 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.

DIVISION TRUST FUNDS—PENSION

At December 31, 2020, and December 31, 2021, PERA had the following funded status for the Division Trust Funds:

FUNDED STATUS FOR THE DIVISION TRUST FUNDS

(Dollars in Thousands)

	Fair Value of Assets		Actuarial Value of Assets ¹	
	12/31/2020	12/31/2021	12/31/2020	12/31/2021
State Division Trust Fund				
Actuarial accrued liability ²	\$27,116,805	\$27,159,846	\$27,116,805	\$27,159,846
Assets held to pay those liabilities	17,660,157	19,710,492	16,039,287	17,379,516
Unfunded actuarial accrued liability	\$9,456,648	\$7,449,354	\$11,077,518	\$9,780,330
Funded ratio	65.1%	72.6%	59.1%	64.0%
School Division Trust Fund				
Actuarial accrued liability ²	\$45,532,075	\$46,336,788	\$45,532,075	\$46,336,788
Assets held to pay those liabilities	30,372,888	34,273,949	27,581,088	30,253,176
Unfunded actuarial accrued liability	\$15,159,187	\$12,062,839	\$17,950,987	\$16,083,612
Funded ratio	66.7%	74.0%	60.6%	65.3%
Local Government Division Trust Fund				
Actuarial accrued liability ²	\$5,658,903	\$5,745,010	\$5,658,903	\$5,745,010
Assets held to pay those liabilities	5,135,807	5,771,080	4,663,031	5,090,566
Unfunded actuarial accrued liability	\$523,096	(\$26,070)	\$995,872	\$654,444
Funded ratio	90.8%	100.5%	82.4%	88.6%
Judicial Division Trust Fund				
Actuarial accrued liability ²	\$478,205	\$488,038	\$478,205	\$488,038
Assets held to pay those liabilities	414,098	473,629	376,437	419,256
Unfunded actuarial accrued liability	\$64,107	\$14,409	\$101,768	\$68,782
Funded ratio	86.6%	97.0%	78.7%	85.9%
DPS Division Trust Fund				
Actuarial accrued liability ²	\$4,532,546	\$4,637,874	\$4,532,546	\$4,637,874
Assets held to pay those liabilities	4,055,819	4,567,640	3,682,072	4,029,095
Unfunded actuarial accrued liability	\$476,727	\$70,234	\$850,474	\$608,779
Funded ratio	89.5%	98.5%	81.2%	86.9%
All Division Trust Funds³				
Actuarial accrued liability ²	\$83,318,534	\$84,367,556	\$83,318,534	\$84,367,556
Assets held to pay those liabilities ⁴	57,638,769	64,796,790	52,341,915	57,171,609
Unfunded actuarial accrued liability	\$25,679,765	\$19,570,766	\$30,976,619	\$27,195,947
Funded ratio	69.2%	76.8%	62.8%	67.8%

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 7.25% and an assumed rate of 7.25% to discount the liabilities to be paid in the future to a value as of December 31, 2020, and December 31, 2021.

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.

⁴ In aggregate, the fair value of the assets as of December 31, 2021, is \$7,625,181 greater 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 to be smoothed for 2019 are \$1,424,658, for 2020 are \$2,467,051, and for 2021 are \$3,733,472.

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 assumption, which is used to discount the actuarial liabilities of PERA, a 1% fluctuation in the assumed investment rate of return and discount rate would change the funded ratio, UAAL, and ADC (for contributions for the fiscal year ended December 31, 2023) as shown in the tables below:

INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 6.25%

(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
State Division	57.7%	\$12,752,693	26.90%	\$10,421,717
School Division	58.4%	21,534,224	28.26%	17,513,451
Local Government Division	79.4%	1,318,107	16.48%	637,593
Judicial Division	78.0%	118,495	21.33%	64,122
DPS Division	77.4%	1,174,917	13.27%	636,372
All Division Trust Funds¹		\$36,898,436		\$29,273,255

¹ 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.

CURRENT INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 7.25%

(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
State Division	64.0%	\$9,780,330	20.71%	\$7,449,354
School Division	65.3%	16,083,612	21.13%	12,062,839
Local Government Division	88.6%	654,444	9.20%	(26,070)
Judicial Division	85.9%	68,782	13.83%	14,409
DPS Division	86.9%	608,779	6.77%	70,234
All Division Trust Funds¹		\$27,195,947		\$19,570,766

¹ 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.

INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 8.25%

(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
State Division	70.5%	\$7,275,787	15.15%	\$4,944,811
School Division	72.4%	11,523,245	14.81%	7,502,471
Local Government Division	98.1%	97,809	2.51%	(582,705)
Judicial Division	94.1%	26,185	6.82%	(28,188)
DPS Division	96.7%	139,861	1.05%	(398,684)
All Division Trust Funds¹		\$19,062,887		\$11,437,705

¹ 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: The time-weighted, net-of-fees annualized rate of return for the pooled investment assets was 13.3% for the past five years and 10.9% for the past 10 years. The 30-year annualized gross-of-fees rate of return for the pooled investment assets was 9.0%.

DIVISION TRUST FUNDS—PENSION

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 Annual Benefits	Increase (Decrease) in Average Benefits
Valuation Date	No. ¹	Annual Benefits	No. ¹	Annual Benefits	No. ¹	Annual Benefits		
State Division ²								
12/31/2012					33,995	\$1,259,715,132	\$37,056	—
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%
12/31/2016	1,953	90,963,480	805	22,828,296	38,013	1,509,295,752	39,705	1.6%
12/31/2017	2,029	96,524,376	810	23,794,584	39,232	1,582,025,544	40,325	1.6%
12/31/2018	1,948	64,439,160	865	29,030,196	40,315	1,617,434,508	40,120	(0.5%)
12/31/2019	1,805	60,004,122	939	33,418,682	41,181	1,644,019,948	39,922	(0.5%)
12/31/2020	1,939	63,669,828	1,252	20,885,946	41,868	1,686,803,830	40,289	0.9%
12/31/2021	2,049	74,357,738	980	16,651,788	42,937	1,744,509,780	40,630	0.8%
School Division ²								
12/31/2012					53,777	\$1,876,340,508	\$34,891	—
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%
12/31/2016	3,023	123,292,224	1,027	25,461,636	61,940	2,271,171,660	36,667	1.1%
12/31/2017	3,249	130,564,260	1,026	26,635,332	64,163	2,375,100,588	37,017	1.0%
12/31/2018	3,319	90,191,556	1,106	32,160,792	66,376	2,433,131,352	36,657	(1.0%)
12/31/2019	3,149	84,865,404	1,163	39,402,271	68,362	2,478,594,485	36,257	(1.1%)
12/31/2020	3,506	98,641,497	1,629	15,175,838	70,239	2,562,060,144	36,476	0.6%
12/31/2021	3,834	115,785,385	1,383	16,732,525	72,690	2,661,113,004	36,609	0.4%
Local Government Division ²								
12/31/2012					5,878	\$209,260,764	\$35,601	—
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%
12/31/2016	388	15,843,636	100	2,491,764	7,045	263,129,268	37,350	1.0%
12/31/2017	420	18,329,400	114	2,916,156	7,351	278,542,512	37,892	1.5%
12/31/2018	421	14,336,628	128	3,227,280	7,644	289,651,860	37,893	0.0%
12/31/2019	426	13,283,210	137	4,898,210	7,933	298,036,860	37,569	(0.9%)
12/31/2020	418	13,867,438	171	544,659	8,180	311,359,639	38,064	1.3%
12/31/2021	500	16,208,420	110	(64,326)	8,570	327,632,385	38,230	0.4%

Please see next page 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			Increase (Decrease) in Average Benefits
Valuation Date	No. ¹	Annual Benefits	No. ¹	Annual Benefits	No. ¹	Annual Benefits	Average Annual Benefits	
Judicial Division ²								
12/31/2012					319	\$18,331,992	\$57,467	—
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%
12/31/2016	28	2,406,072	12	287,580	360	23,825,388	66,182	4.9%
12/31/2017	24	2,554,728	9	398,184	375	25,981,932	69,285	4.7%
12/31/2018	8	696,864	3	129,084	380	26,549,712	69,868	0.8%
12/31/2019	27	2,115,235	8	400,305	399	28,264,642	70,839	1.4%
12/31/2020	25	2,141,893	10	387,294	414	30,019,241	72,510	2.4%
12/31/2021	28	2,213,671	10	298,792	432	31,934,120	73,922	1.9%
DPS Division ²								
12/31/2012					6,402	\$232,858,044	\$36,373	—
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%
12/31/2016	322	14,412,348	190	5,854,992	6,935	267,677,112	38,598	1.3%
12/31/2017	283	13,847,400	181	6,388,008	7,037	275,136,504	39,099	1.3%
12/31/2018	297	9,717,816	184	6,345,060	7,150	278,509,260	38,952	(0.4%)
12/31/2019	234	6,854,297	241	9,248,121	7,143	276,115,436	38,655	(0.8%)
12/31/2020	256	7,957,106	271	5,910,106	7,128	278,162,436	39,024	1.0%
12/31/2021	281	8,318,920	230	5,665,898	7,179	280,815,458	39,116	0.2%
All Division Trust Funds ²								
12/31/2012					100,371	\$3,596,506,440	\$35,832	—
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%
12/31/2016	5,714	246,917,760	2,134	56,924,268	114,293	4,335,099,180	37,930	1.3%
12/31/2017	6,005	261,820,164	2,140	60,132,264	118,158	4,536,787,080	38,396	1.2%
12/31/2018	5,993	179,382,024	2,286	70,892,412	121,865	4,645,276,692	38,118	(0.7%)
12/31/2019	5,641	167,122,268	2,488	87,367,589	125,018	4,725,031,371	37,795	(0.8%)
12/31/2020	6,144	186,277,762	3,333	42,903,843	127,829	4,868,405,290	38,085	0.8%
12/31/2021	6,692	216,884,134	2,713	39,284,677	131,808	5,046,004,747	38,283	0.5%

¹ The number does not include deferred survivors.² Amounts derived on an accrual basis.

DIVISION TRUST FUNDS—PENSION

The number of persons receiving monthly retirement benefits has grown steadily in relation to membership. As shown in the table below, this trend has substantially stabilized over the last few years as PERA has reached a mature plan status. 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 FUNDS¹

(In Actual Dollars)

Year	Number of Retiree Accounts on 12/31	Number of Member Accounts on 12/31 ²	Retiree Accounts as a Percentage 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
2020	125,363	502,972	24.9%	4,825,842,185
2021	129,325	517,470	25.0%	4,984,778,874

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, 2021

(In Actual Dollars)

State Division

For State Division members (excluding State Troopers) the average age was 45.4 years, the average service was 9.0 years, and the average expected remaining service life was 9.1 years. For State Troopers the average age was 38.0 years, the average service was 7.3 years, and the average expected remaining service life was 14.2 years.

Attained Age	Years of Service to Valuation Date							Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Annual Valuation Payroll
Up to 20	136	—	—	—	—	—	—	136	\$2,234,560
20-24	1,948	14	—	—	—	—	—	1,962	62,313,933
25-29	4,047	563	9	—	—	—	—	4,619	206,784,658
30-34	3,936	1,857	321	11	—	—	—	6,125	320,064,977
35-39	3,073	2,094	1,164	315	27	—	—	6,673	385,343,356
40-44	2,350	1,735	1,239	954	345	10	—	6,633	410,787,429
45-49	2,720	1,545	1,115	978	868	311	21	7,558	474,129,354
50-54	1,719	1,361	1,070	1,006	971	671	167	6,965	457,202,869
55-59	1,320	1,072	965	912	779	453	252	5,753	365,727,357
60	205	167	167	169	134	79	47	968	60,331,672
61	198	173	168	163	125	78	69	974	60,509,571
62	150	162	138	148	115	67	59	839	51,466,229
63	173	150	152	137	105	58	49	824	49,437,636
64	136	146	133	118	102	48	42	725	43,267,959
65	122	121	106	81	63	41	39	573	33,447,268
66	93	82	84	85	52	31	30	457	26,827,087
67	82	71	59	54	42	20	24	352	18,639,384
68	60	66	52	51	43	18	17	307	15,992,520
69	58	49	42	34	25	13	10	231	11,560,203
70+	230	123	130	116	81	50	73	803	36,441,190
Total	22,756	11,551	7,114	5,332	3,877	1,948	899	53,477	\$3,092,509,212

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2021

(In Actual Dollars)

School Division

For School Division members the average age was 44.7 years, the average service was 8.8 years, and the average expected remaining service life was 9.8 years.

Attained Age	Years of Service to Valuation Date							Total	
	0–4	5–9	10–14	15–19	20–24	25–29	30+	No.	Annual Valuation Payroll
Up to 20	600	—	—	—	—	—	—	600	\$7,952,984
20–24	5,348	72	—	—	—	—	—	5,420	131,933,258
25–29	8,834	1,841	33	—	—	—	—	10,708	391,254,657
30–34	6,737	4,986	993	51	—	—	—	12,767	530,822,786
35–39	6,266	4,005	3,287	1,072	43	—	—	14,673	649,506,731
40–44	6,212	3,580	2,817	3,419	938	21	—	16,987	814,606,517
45–49	9,841	3,295	2,414	2,607	2,683	610	22	21,472	967,511,062
50–54	3,976	2,814	2,452	2,493	2,321	1,862	295	16,213	856,034,999
55–59	2,836	2,092	1,796	2,246	1,839	1,016	504	12,329	599,385,470
60	509	343	285	415	314	149	98	2,113	93,309,524
61	507	329	287	358	304	152	61	1,998	85,010,042
62	417	281	252	347	258	130	56	1,741	72,596,386
63	397	226	212	278	239	109	53	1,514	61,621,477
64	361	222	192	217	224	81	50	1,347	53,110,733
65	332	183	142	158	111	75	30	1,031	37,375,007
66	241	158	106	107	97	45	25	779	26,811,047
67	238	92	64	71	63	39	25	592	19,270,118
68	182	116	60	68	35	28	19	508	15,963,956
69	194	80	45	35	29	23	13	419	11,014,621
70+	847	364	227	157	90	54	57	1,796	40,774,689
Total	54,875	25,079	15,664	14,099	9,588	4,394	1,308	125,007	\$5,465,866,064

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2021

(In Actual Dollars)

Local Government Division

For Local Government Division members (excluding State Troopers) the average age was 45.0 years, the average service was 7.8 years, and the average expected remaining service life was 9.0 years. For State Troopers the average age was 37.0 years, the average service was 1.3 years, and the average expected remaining service life was 8.2 years.

Attained Age	Years of Service to Valuation Date							Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Annual Valuation Payroll
Up to 20	143	—	—	—	—	—	—	143	\$1,539,945
20-24	601	11	—	—	—	—	—	612	14,800,561
25-29	929	138	5	—	—	—	—	1,072	46,756,226
30-34	941	386	75	7	—	—	—	1,409	75,747,859
35-39	722	414	171	88	12	—	—	1,407	85,622,217
40-44	552	402	246	178	77	9	—	1,464	100,024,739
45-49	999	332	207	240	125	77	2	1,982	109,945,821
50-54	465	306	198	286	161	103	29	1,548	108,980,170
55-59	390	228	205	246	153	96	40	1,358	90,901,610
60	63	42	23	61	23	7	6	225	14,720,815
61	71	49	31	35	30	15	14	245	14,612,286
62	65	39	30	34	22	11	8	209	11,837,408
63	57	30	28	34	24	10	8	191	12,274,263
64	51	26	26	32	20	8	8	171	10,488,710
65	42	28	24	12	9	11	4	130	6,942,227
66	45	14	10	19	11	9	4	112	4,822,158
67	25	16	12	9	3	3	5	73	3,396,834
68	32	15	9	5	3	2	1	67	2,146,974
69	26	16	8	7	1	2	—	60	2,319,288
70+	166	35	34	15	9	4	4	267	5,863,992
Total	6,385	2,527	1,342	1,308	683	367	133	12,745	\$723,744,103

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2021

(In Actual Dollars)

Judicial Division

For Judicial Division members the average age was 54.1 years, the average service was 12.2 years, and the average expected remaining service life was 11.1 years.

Attained Age	Years of Service to Valuation Date							Total	
	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	1	3	—	—	—	—	—	4	385,769
35-39	6	9	3	—	—	—	—	18	2,416,010
40-44	13	10	10	3	—	—	—	36	5,705,624
45-49	18	13	9	7	2	—	—	49	8,139,088
50-54	24	11	15	16	4	4	—	74	12,165,915
55-59	8	15	18	15	10	2	4	72	11,419,114
60	1	2	2	4	2	2	—	13	2,234,019
61	—	2	4	—	2	—	2	10	1,737,058
62	—	3	4	—	3	—	2	12	2,070,001
63	1	1	—	5	—	—	1	8	1,379,287
64	—	1	1	1	3	1	—	7	1,219,893
65	—	4	2	2	2	1	—	11	1,866,581
66	1	—	1	1	—	—	—	3	497,913
67	1	—	1	2	1	2	1	8	1,313,200
68	—	—	—	1	1	—	2	4	709,852
69	—	—	1	2	—	3	1	7	1,066,546
70+	1	1	3	1	1	1	1	9	1,453,964
Total	75	75	74	60	31	16	14	345	\$55,779,834

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2021

(In Actual Dollars)

DPS Division

For DPS Division members the average age was 40.9 years, the average service was 7.2 years, and the average expected remaining service life was 9.8 years.

Attained Age	Years of Service to Valuation Date							Total	
	0-4	5-9	10-14	15-19	20-24	25-29	30+	No.	Annual Valuation Payroll
Up to 20	101	—	—	—	—	—	—	101	\$1,817,575
20-24	832	15	—	—	—	—	—	847	24,267,822
25-29	1,678	329	3	—	—	—	—	2,010	85,288,640
30-34	1,323	1,086	191	4	—	—	—	2,604	134,983,804
35-39	825	842	567	59	2	—	—	2,295	134,754,305
40-44	1,173	657	492	213	37	1	—	2,573	140,888,243
45-49	453	388	381	221	168	31	2	1,644	99,709,801
50-54	334	280	339	171	176	84	8	1,392	85,278,341
55-59	244	202	238	137	136	62	26	1,045	61,301,325
60	43	21	45	20	27	15	3	174	9,545,867
61	31	25	40	13	18	10	5	142	7,074,088
62	38	30	32	20	17	5	2	144	7,400,616
63	29	32	37	16	18	5	3	140	6,326,357
64	21	19	40	5	16	7	3	111	5,339,811
65	24	16	25	14	10	2	5	96	4,784,452
66	19	11	22	9	9	1	2	73	3,458,172
67	17	11	23	9	3	—	—	63	2,694,255
68	10	13	6	2	5	1	3	40	1,600,439
69	11	9	12	1	3	—	2	38	1,529,944
70+	57	35	47	5	9	5	5	163	5,351,620
Total	7,263	4,021	2,540	919	654	229	69	15,695	\$823,395,477

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF ACTIVE MEMBER ACTUARIAL VALUATION DATA

As of December 31

(In Actual Dollars)

Year	Number of Participating Employers ¹	Number of Active Members	Annual Payroll for Active Members	Average Annual Pay for Active Members	Percentage Increase (Decrease) in Average Annual Pay
State Division					
2012	70	54,804	\$2,384,933,961	\$43,518	—
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%
2016	32	55,725	2,710,650,565	48,643	1.80%
2017	32	55,686	2,774,207,203	49,819	2.42%
2018	32	55,511	2,898,827,271	52,221	4.82%
2019	32	55,252	2,995,452,821	54,214	3.82%
2020	32	53,643	3,089,161,069	57,587	6.22%
2021	32	53,477	3,092,509,212	57,829	0.42%
School Division					
2012	281 ²	115,294	\$3,819,065,598	\$33,125	—
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%
2016	229	121,945	4,349,319,783	35,666	1.25%
2017	234	122,990	4,471,356,847	36,355	1.93%
2018	234	126,333	4,789,503,451	37,912	4.28%
2019	235	128,938	5,104,430,888	39,588	4.42%
2020	234	119,421	5,146,117,910	43,092	8.85%
2021	233	125,007	5,465,866,064	43,724	1.47%
Local Government Division					
2012	143	12,097	\$523,668,446	\$43,289	—
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%
2016	141	12,736	608,222,609	47,756	3.55%
2017	140	12,770	632,768,337	49,551	3.76%
2018	141	13,260	660,998,127	49,849	0.60%
2019	141	13,086	681,093,520	52,047	4.41%
2020	141	12,757	698,059,659	54,720	5.14%
2021	141	12,745	723,744,103	56,787	3.78%
Judicial Division					
2012	6	329	\$39,045,008	\$118,678	—
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%
2016	2	335	48,699,531	145,372	3.59%
2017	2	332	48,947,607	147,433	1.42%
2018	2	332	50,505,856	152,126	3.18%
2019	2	339	53,427,351	157,603	3.60%
2020	2	344	54,780,086	159,244	1.04%
2021	2	345	55,779,834	161,681	1.53%

Please see next page for footnote references.

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF ACTIVE MEMBER ACTUARIAL VALUATION DATA (CONTINUED)

As of December 31

(In Actual Dollars)

Year	Number of Participating Employers ¹	Number of Active Members	Annual Payroll for Active Members	Average Annual Pay for Active Members	Percentage Increase (Decrease) in Average Annual Pay
DPS Division					
2012	29 ²	13,911	\$510,872,366	\$36,724	—
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%
2016	1	15,950	642,177,158	40,262	3.25%
2017	1	15,991	658,198,306	41,161	2.23%
2018	1	16,148	722,040,073	44,714	8.63%
2019	1	15,679	736,263,798	46,959	5.02%
2020	1	14,693	771,347,604	52,498	11.80%
2021	1	15,695	823,395,477	52,462	(0.07%)
All Division Trust Funds					
2012	529 ²	196,435	\$7,277,585,379	\$37,048	—
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%
2016	405	206,691	8,359,069,646	40,442	1.75%
2017	409	207,769	8,585,478,300	41,322	2.18%
2018	410	211,584	9,121,874,778	43,112	4.33%
2019	411	213,294	9,570,668,378	44,871	4.08%
2020	410	200,858	9,759,466,328	48,589	8.29%
2021	409	207,269	10,161,294,690	49,025	0.90%

¹ Prior to 2014, employer counts were based on separate units of government. Effective in 2014, 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.

HEALTH CARE TRUST FUNDS—OPEB

Actuarial Topics

The standard promulgated by the GASB Statement No. 74 results in the preparation of two actuarial valuations—one for funding purposes and one for accounting and financial reporting purposes. Unless otherwise noted, this Health Care Trust Funds subsection reports on the actuarial valuation performed for funding purposes, but also includes information on specific differences between the two actuarial valuations.

The other postemployment benefit (OPEB) plan provisions in effect on December 31, 2021, are summarized in Note 9 of the Notes to the Financial Statements in the Financial Section.

PERA BOARD GOVERNANCE - TWO DEFINED BENEFIT OPEB PLANS	
PERA Defined Benefit OPEB Plans	PERA's two defined benefit OPEB plans include the Health Care Trust Fund (HCTF), a cost-sharing multiple-employer plan, and the Denver Public Schools Health Care Trust Fund (DPS HCTF), a single-employer plan. The HCTF and the DPS HCTF provide a subsidy for 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 primarily pay for the costs. The HCTF was established as of July 1, 1985, and the DPS HCTF was established January 1, 2010, with the asset transfer from the Denver Public Schools Retiree Health Benefit Trust held by the DPS Board of Education. 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, as set forth in C.R.S. § 24-51-1206.5. 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.
PERA Board OPEB Funding Policy	The PERA Board is responsible for maintaining an OPEB funding policy applicable to these plans. The current OPEB funding policy initially was adopted by the Board on January 19, 2018, effective for the December 31, 2017, funding actuarial valuation. The OPEB funding policy requires the calculation of an ADC for each of the two Health Care Trust Funds for the purpose of assessing the adequacy of the statutory contribution rate of each fund. The ADC is determined in accordance with the OPEB plan provisions in effect as of the date of the actuary's Letter of Certification and is expressed as a level percentage of assumed future covered payroll.
Actuarial Service Provider & Other Responsibilities	The Board retains an external actuary, and effective November 1, 2018, Segal was retained to perform annual actuarial valuations and sustainability projections as well as periodic experience studies to review the actuarial assumptions versus actual plan experience. In addition, the Board has the authority 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.
Actuarial Service Provider Funding Method Statement	Per their actuarial valuation report, "Segal strongly recommends an actuarial funding method that targets 100% funding of the actuarial accrued liability. Generally, this implies payments that are ultimately at least enough to cover normal cost, interest on the unfunded actuarial accrued liability and a portion of the principal balance. The OPEB funding policy adopted by PERA meets this standard."

ACTUARIAL METHODS

Actuarial Methods	The Board is responsible for the actuarial methods and assumptions used in the actuarial valuations in accordance with C.R.S. § 24-51-204(5). Through formal action, the Board updates, replaces, or adopts new actuarial methods and assumptions as deemed necessary. Initial valuations were performed on an "open group" basis approximately once every two years. Annual valuations commenced with the December 31, 1998, actuarial valuation.
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HEALTH CARE TRUST FUNDS—OPEB

Actuarial Methods	Type	Description / Source / Basis	Adoption / Effective Date
Asset Valuation Method	Smoothed Actuarial Value of Assets	In 1992, the Board adopted a method for valuing assets that determines a smoothed fair value (synonymous with the term "market value," as is used in the Board's OPEB funding policy) of assets to help mitigate volatile investment market experience. The smoothed fair value of assets recognizes the differences between actual and expected investment experience for each year in equal amounts over a four-year period.	Initially Adopted: 1992; Effective: Jan 1, 1993; Reinitialized to Fair Value as of: Dec 31, 2004; Effective: Dec 31, 2005
Actuarial Cost Method	Entry Age Actuarial Cost Method (EA)	The EA funding or cost method is designed to keep annual costs level as a percent of covered payroll and for this reason, was selected by the Board to be used in the actuarial valuations. The method to determine normal cost, original based on credited service, is determined based on compensation as of the December 31, 2016, actuarial valuation. The effect of differences between the actuarial assumptions and the actual experience of the plan is determined within each annual actuarial valuation. These differences produce actuarial gains or losses that result in an adjustment of the UAAL.	EA Effective: Jan 1, 1991; Normal Cost basis changed from service to compensation - Effective: Dec 31, 2016
Amortization Method	Defined, Closed, and Layered Periods	The 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. Each amortized item is tracked over the closed period defined for that category. The 30-year period used to amortize the legacy UAAL was initialized as of December 31, 2017. All gains, losses, and changes in actuarial methods and assumptions on and after January 1, 2018, are recognized each year and amortized separately over closed 30-year periods. 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%. 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% funded ratio.	Initially Adopted: Jan 19, 2018; Effective: Dec 31, 2017

HEALTH CARE TRUST FUNDS—OPEB

ACTUARIAL ASSUMPTIONS		
Actuarial Assumptions ¹	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. All actuarial methods and assumptions necessary to assess OPEB liabilities, in addition to those already provided on previous pages, are described below. The actuary followed ASOP No. 6, <i>Measuring Retiree Group Benefit Obligations</i>, for purposes of recommending appropriate OPEB-specific assumptions.	
	Basis of Actuarial Assumptions Used	Unless otherwise noted, the basis of all selected economic and non-economic actuarial assumptions resulted from the 2020 experience analysis and related discussions that took place during the November 20, 2020, Board meeting. As a result of the 2019 Asset Liability Study, concluded at the November 15, 2019, Board meeting, the Board reaffirmed the 7.25% assumed long-term rate of investment return effective as of January 1, 2020, which was supported by the analysis provided by Segal in the 2020 Experience Analysis report.

¹ See Exhibits H through L for detailed assumption information.

Economic Assumptions	Value(s) / Type	Description / Source / Basis	Adoption / Effective Date
Initial Per Capita Health Care Costs	Exhibit H	Exhibit H contains the assumptions used in determining the additional liability for PERACare enrollees under the PERA benefit structure (and in certain circumstances, the DPS 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 2022, which are subject to the morbidity rates and health care cost trend rates. Basis: Reviewed and updated annually	Updated Effective: Dec 31, 2021
Age-Related Morbidity Rates	Exhibit H	These rates assist in anticipating the pace at which a defined population ages through an eligibility period and for PERA, apply only to Medicare-eligible members who retire under the PERA benefit structure (and in certain circumstances, the DPS benefit structure) and do not qualify for premium-free Medicare Part A. Basis: Updated for the December 31, 2018, valuation as part of the transition to Segal—annually monitored and updated as appropriate.	Initially Effective: Dec 31, 2015; Last Updated Effective: Dec 31, 2018
Health Care Cost Trend Rates	Exhibit H	Health care cost trends reflect the change in per capita costs over time and include such factors as unit cost, utilization of health care services, plan design, and technological improvements. These factors impact overall cost (and thus retiree share after the fixed subsidy) as well as the costs for Medicare beneficiaries not eligible for premium-free Medicare Part A under the PERA benefit structure (and in certain circumstances, the DPS benefit structure.) Basis: Reviewed and updated annually	Updated Effective: Dec 31, 2021
Additional Premium Subsidy Assumptions - DPS Benefit Structure	Exhibit I	Plan defined 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. Basis: Additional subsidy for DPS Benefit Structure in effect as of January 1, 2010	Subsidy amounts in effect as of Merger of the DPS Retirement System into PERA, Effective: Jan 1, 2010

HEALTH CARE TRUST FUNDS—OPEB

Non-Economic Assumptions	Value(s) / Type	Description / Source / Basis	Adoption / Effective Date
Health Care Participation Rate Assumptions	Exhibit J	Current PERACare participants are assumed to maintain their current health care benefit elections in perpetuity. For active members retiring directly from covered employment, Exhibit J 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 J. The 2020 experience analysis supported a reduction in anticipated participation for retiring active members at certain ages for all divisions.	Last Revised: Nov 20, 2020; Effective: Dec 31, 2020
Survivors of Retirees Choosing Joint & Survivor Payment Options	Portion of Male Retirees with Surviving Spouse: 60%; Portion of Female Retirees with Surviving Spouse: 35%	Survivors of retirees under the PERA benefit structure electing health care coverage are eligible to receive the subsidy. To anticipate future liabilities driven by these survivors, it is assumed that a percent of the current members assumed to elect PERACare coverage will choose a joint and survivor optional payment and thus, their survivors will qualify for the subsidy. The 2020 experience analysis supported separate assumptions for male and female retirees.	Last Revised: Nov 20, 2020; Effective: Dec 31, 2020
Age Differences	Male Retiree: Three Years Older; Female Retiree: One Year Older	The assumed average number of years a covered male spouse is older than a covered female spouse is three years for a male retiree and one year for a female retiree. These assumptions initially were determined from actual census data and were revised from the previous non-gender specific assumptions used in prior actuarial valuations. The 2020 experience analysis confirmed the current assumptions.	Last Revised: Nov 18, 2016; Effective: Dec 31, 2016
Health Care Participation Election Assumption for Inactive Members	Inactive Members: 20%	It is assumed that a certain percent of eligible inactive members will elect health care coverage upon commencement of their monthly benefit. The 2020 experience analysis supported a reduction in anticipated participation for inactive members.	Last Revised: Nov 20, 2020; Effective: Dec 31, 2020
Health Care Participation Spousal Election Assumption	5%	It is assumed that a certain percent of participating members, regardless of prior status, retirement benefit payment selection, or eligibility for premium-free Medicare Part A, will elect coverage for their spouses. The 2020 experience analysis supported consolidation of spousal election assumptions and a reduction in the resulting spousal election assumption.	Last Revised: Nov 20, 2020; Effective: Dec 31, 2020
Commencement Age Assumed for Inactive Members	Ranging From Age 50 to Age 60, depending on Inactive Member Group	For eligible inactive members, an average age at which health benefits are to begin must be assumed. Here, the assumed age of initial benefit receipt is determined using the same approach used for terminating active members who are assumed to leave their contributions in the plan in order to be eligible for a pension benefit at their retirement date. This assumption varies depending on benefit structure and years of service. The 2020 experience analysis confirmed the assumed initial benefit age for all inactive member groups except those under the DPS benefit structure, for whom the assumption was lowered.	Last Confirmed/ Revised: Nov 20, 2020; Effective: Dec 31, 2020
Medicare Health Care Plan Election Rate Assumptions	Exhibit K	Exhibit K shows the assumed plan elections for current and future Medicare-eligible retirees who are not eligible for premium-free Medicare Part A. The 2020 experience analysis supported consolidation and revision of the pre- and post-Medicare health care plan election rate assumptions.	Last Revised: Nov 20, 2020; Effective: Dec 31, 2020

HEALTH CARE TRUST FUNDS—OPEB

Non-Economic Assumptions	Value(s) / Type	Description / Source / Basis	Adoption / Effective Date
Percent Qualifying for “No Part A” Subsidy Assumptions	Exhibit L	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 L 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. The 2020 experience analysis confirmed the current assumptions for healthy PERACare enrollees, but supported revised assumptions for certain groups, as stated below. Of the PERACare enrollees under the PERA benefit structure assumed to qualify for the “No Part A” subsidy, 5% are assumed to cover a spouse. Of the disability retirees enrolled in PERACare 5% are assumed to qualify for the “No Part A” subsidy. Of the eligible inactive (or deferred vested) members enrolled in PERACare, 100% 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, therefore 0% are assumed to qualify for the “No Part A” subsidy.	Last Confirmed/Revised: Nov 20, 2020; Effective: Dec 31, 2020
Mortality	Exhibit D and Exhibit G	The revised pre- and post-retirement and disability retirement mortality assumptions described in the Division Trust Funds subsection of this Actuarial Section appropriately reflect PERA's recent and anticipated plan experience and are used to estimate the value of expected future subsidy payments. Exhibit D in the Division Trust Funds subsection of this Actuarial Section, lists the healthy pre-retirement mortality rates at sample ages and Exhibit G lists the healthy post-retirement mortality rates and values at sample ages. As a result of the 2020 experience analysis, a separate beneficiary mortality table was implemented to recognize differing mortality for beneficiaries versus retirees. All mortality tables for purpose of valuing the Health Care Trust Funds are headcount-weighted.	First implemented use of separate mortality tables for different groups / divisions Effective: Dec 31, 2016; Mortality—Last Revised: Nov 20, 2020; Effective: Dec 31, 2020 First implemented use of separate mortality table for beneficiaries Effective: Dec 31, 2020
AI Rate	N/A	As the service-based premium subsidy does not increase over time, there is no need for an assumption regarding increasing benefit amounts. Basis: N/A	N/A

ACTUARIAL STUDIES

Governance Studies	All actuarial studies described in the Division Trust Funds subsection of this Actuarial Section titled, Actuarial Studies, incorporated a review and analysis of actuarial methods and assumptions pertaining to the HCTF and the DPS HCTF.
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HEALTH CARE TRUST FUNDS—OPEB

CHANGES SINCE LAST ACTUARIAL VALUATION	
Changes in Actuarial Methods	There are no changes in actuarial methods incorporated in the December 31, 2021, actuarial valuation, since the last actuarial valuation as of December 31, 2020.
Changes in Actuarial Assumptions	Listed below are the actuarial assumption changes, specific to the HCTF and the DPS HCTF, incorporated into the December 31, 2021, actuarial valuation, since the last actuarial valuation as of December 31, 2020: Revisions were made to the following assumptions based on annual analysis: - Per capital health care costs in effect as of the December 31, 2021, valuation date for those PERACare enrollees under the PERA benefit structure who are expected to be age 65 and older and are not eligible for premium-free Medicare Part A benefits have been updated to reflect the costs for the 2022 plan year. - The December 31, 2021, valuation utilizes premium information as of January 1, 2022, as the initial per capita healthcare cost. As of that date, PERACare health benefits administration is performed by United Health Care. In that transition, the costs for the Medicare Advantage Option #2 decreased to a level that is lower than the maximum possible service-related subsidy as described in the plan provisions. - The health care cost trend rates applicable to health care premiums were revised to reflect the current expectation of future increases in those premiums. Medicare Part A premiums continued with the prior valuation trend pattern.
Changes in Plan Provisions	There are no changes in OPEB plan provisions incorporated in the December 31, 2021, actuarial valuation since the last actuarial valuation as of December 31, 2020.

SIGNIFICANT EVENTS
There were no significant events during 2021.

DIFFERENCES IN ACTUARIAL VALUATION METHODS AND ASSUMPTIONS
- The actuarial valuation for funding purposes was performed as of December 31, 2021. The actuarial valuation for accounting and financial reporting purposes was performed as of December 31, 2020, and the total OPEB liability was rolled forward to the measurement date as of December 31, 2021. - Census data used for the actuarial valuation for funding purposes reflects membership data as of December 31, 2021, and the census data used for the actuarial valuation for accounting and financial reporting purposes reflects membership data as of December 31, 2020. Therefore, all summaries and schedules, regarding actuarial valuation results for funding purposes, shown in the Actuarial Section, reflect census data as of December 31, 2021. - The actuarial valuation for funding purposes applies an asset valuation method that recognizes a four-year smoothed fair 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 OPEB liability. - The actuarial valuation for funding purposes reflects updated initial per capita health care costs and health care trend rates to 2022. The actuarial valuation for accounting and financial reporting purposes reflects updated initial per capita health care costs and health care trend rates to 2021.

HEALTH CARE TRUST FUNDS—OPEB

Actuarial Assumptions: Exhibits H–L

The following exhibits (Exhibits H through L) show the actuarial assumptions employed to determine the actuarial valuation results. The basic economic and demographic actuarial assumptions as detailed in Exhibits A through G, in the Division Trust Funds subsection of the Actuarial Section, also were applied, as applicable, for purposes of determining OPEB liabilities.

Exhibit H: Initial Health Care Costs, Age-Related Morbidity, and Trend Rate Assumptions—PERA Benefit Structure

PER CAPITA HEALTH CARE COST DEVELOPMENT

Beginning January 1, 2022, the per capita health care costs are developed by plan option. This approach applies for all members and is adjusted accordingly for those not eligible for premium-free Medicare Part A.

MAPD PPO #1:

Based on January 1, 2022, premium rates for the UnitedHealthcare Medicare Advantage Prescription Drug (MAPD) PPO plan #1. Actuarial factors were then applied to estimate individual retiree and spouse costs by age and by gender and healthcare cost trend.

MAPD PPO #2:

Based on January 1, 2022, premium rates for the UnitedHealthcare Medicare Advantage Prescription Drug (MAPD) PPO plan #2. Actuarial factors were then applied to estimate individual retiree and spouse costs by age and by gender and healthcare cost trend.

MAPD HMO:

Based on January 1, 2022, premium rates for the Kaiser Permanente Medicare Advantage Prescription Drug (MAPD) HMO plan. Actuarial factors were then applied to estimate individual retiree and spouse costs by age and by gender and healthcare cost trend.

AGE-RELATED MORBIDITY ASSUMPTIONS

Participant Age	Annual Increase (Male)	Annual Increase (Female)
65-69	3.0%	1.5%
70	2.9%	1.6%
71	1.6%	1.4%
72	1.4%	1.5%
73	1.5%	1.6%
74	1.5%	1.5%
75	1.5%	1.4%
76-77	1.5%	1.5%
78	1.5%	1.6%
79	1.5%	1.5%
80	1.4%	1.5%
81+	0.0%	0.0%

HEALTH CARE TRUST FUNDS—OPEB

PER CAPITA HEALTH CARE COSTS BEGINNING JANUARY 1, 2022

(In Actual Dollars)

MAPD PPO #1 With Medicare Part A					MAPD PPO #2 With Medicare Part A				MAPD HMO (Kaiser) With Medicare Part A			
Sample Age	Retiree		Spouse		Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
65	\$1,704	\$1,450	\$1,704	\$1,450	\$583	\$496	\$583	\$496	\$1,923	\$1,634	\$1,923	\$1,634
70	1,976	1,561	1,976	1,561	676	534	676	534	2,229	1,761	2,229	1,761
75	2,128	1,681	2,128	1,681	728	575	728	575	2,401	1,896	2,401	1,896

MAPD PPO #1 Without Medicare Part A					MAPD PPO #2 Without Medicare Part A				MAPD HMO (Kaiser) Without Medicare Part A			
Sample Age	Retiree		Spouse		Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
65	\$6,514	\$5,542	\$6,514	\$5,542	\$4,227	\$3,596	\$4,227	\$3,596	\$6,752	\$5,739	\$6,752	\$5,739
70	7,553	5,966	7,553	5,966	4,901	3,872	4,901	3,872	7,826	6,185	7,826	6,185
75	8,134	6,425	8,134	6,425	5,278	4,169	5,278	4,169	8,433	6,657	8,433	6,657

The 2022 Medicare Part A Premium is \$499 per month.

HEALTH CARE COST TREND RATE ASSUMPTIONS¹

Year	PERACare Medicare Plans ²	Medicare Part A Premiums
2022	6.50%	3.75%
2023	6.25%	4.00%
2024	6.00%	4.00%
2025	5.75%	4.00%
2026	5.50%	4.25%
2027	5.25%	4.25%
2028	5.00%	4.25%
2029	4.75%	4.50%
2030+	4.50%	4.50%

¹ Applies only to PERACare enrollees who are age 65 or older and who are not eligible for premium-free Medicare Part A.

² 0% for UnitedHealthcare MAPD PPO plans in 2022 and 2023.

Exhibit I: Additional Premium Subsidy Assumptions—DPS Benefit Structure¹

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 J: Health Care Participation Rate Assumptions

Attained Age(s)	Percent Electing Health Care Coverage		Attained Age(s)	Percent Electing Health Care Coverage	
	Other Divisions	DPS Division		Other Divisions	DPS Division
15 – 48	20%	20%	61	45%	60%
49	25%	25%	62	45%	60%
50	25%	25%	63	45%	60%
51	35%	35%	64	45%	60%
52	35%	35%	65	45%	55%
53	40%	40%	66	45%	55%
54	40%	50%	67	45%	55%
55	40%	50%	68	45%	55%
56	40%	50%	69	45%	55%
57	40%	50%	70	45%	55%
58	45%	50%	71	45%	55%
59	45%	50%	72+	55%	65%
60	45%	50%			

Exhibit K: Medicare Health Care Plan Election Rate Assumptions

Medicare and Pre-Medicare Plans ¹	Percent of Future Medicare Benefit Recipients Electing Medicare Plan
	All Divisions
Medicare Advantage / Self-Insured Prescription ²	70%
Kaiser Permanente Medicare Advantage HMO	30%

¹ These assumptions are applicable to members under the PERA benefit structure only.

² Of the PERACare enrollees participating in the self-insured plans, it is assumed that 67% elect MA #1 and 33% elect MA #2.

Exhibit L: Percent Qualifying for “No Part A” Subsidy Assumptions

Hire Age	HCTF ^{1,2}	DPS HCTF ²
15 – 24	17%	17%
25 – 29	11%	11%
30+	4%	4%

¹ Of the PERACare enrollees under the PERA benefit structure assumed to qualify for the “No Part A” subsidy, 5% are assumed to cover a spouse.

² Of the PERACare enrollees receiving health care benefits as a result of disability retirement, 5% are assumed to qualify for the “No Part A” subsidy. Of the eligible inactive (or deferred vested) members enrolled in PERACare, 100% 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 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 following schedules presented in this section provide an overview of funding progress:

- The solvency test shows the degree to which existing liabilities are funded, including prior history.
- A schedule of funding progress shows the UAAL as a percentage of annual covered payroll, including prior history.
- A schedule detailing actuarial gains and losses, by source, for the current year.
- The scheduled contribution requirements based on the December 31, 2021, actuarial valuation for the period ending December 31, 2023.

Solvency Test

The solvency test compares the plan's actuarial value of assets 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 funded only through employer contributions, there are no member contribution accounts (liability A). The table below and on the next page 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)

Valuation Date	Aggregate Accrued Liabilities			Actuarial Value of Plan Assets	Portion of Actuarial Accrued Liabilities Covered by Valuation Assets		
	Active Member Contributions (A)	Retirees, Beneficiaries, and Inactive Members (B)	Employer-Financed Portion of Active Members (C)		Liability (A)	Liability (B)	Liability (C)
HCTF							
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%
12/31/2016	N/A	1,153,015	403,747	270,150	N/A	23.4%	0.0%
12/31/2017	N/A	1,178,160	403,062	260,282	N/A	22.1%	0.0%
12/31/2018	N/A	1,084,313	393,801	288,323	N/A	26.6%	0.0%
12/31/2019	N/A	1,048,219	398,950	348,433	N/A	33.2%	0.0%
12/31/2020	N/A	1,041,551	376,340	430,256	N/A	41.3%	0.0%
12/31/2021	N/A	973,039	372,432	511,143	N/A	52.5%	0.0%
DPS HCTF							
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%
12/31/2016	N/A	51,357	21,488	18,945	N/A	36.9%	0.0%
12/31/2017	N/A	50,796	19,496	21,117	N/A	41.6%	0.0%
12/31/2018	N/A	48,268	21,184	25,018	N/A	51.8%	0.0%
12/31/2019	N/A	46,398	21,539	31,189	N/A	67.2%	0.0%
12/31/2020	N/A	45,306	20,252	39,853	N/A	88.0%	0.0%
12/31/2021	N/A	40,643	21,417	49,719	N/A	100.0%	42.4%

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)	Actuarial Value of Plan Assets	Liability (A)	Liability (B)	Liability (C)
Total of Health Care Trust Funds ¹							
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%
12/31/2016	N/A	1,204,372	425,235	289,095	N/A	24.0%	0.0%
12/31/2017	N/A	1,228,956	422,558	281,399	N/A	22.9%	0.0%
12/31/2018	N/A	1,132,581	414,985	313,341	N/A	27.7%	0.0%
12/31/2019	N/A	1,094,617	420,489	379,622	N/A	34.7%	0.0%
12/31/2020	N/A	1,086,857	396,592	470,109	N/A	43.3%	0.0%
12/31/2021	N/A	1,013,682	393,849	560,862	N/A	55.3%	0.0%

¹ 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.

Unfunded Actuarial Accrued Liability

UAAL is the difference between actuarially calculated liability for service already rendered and the valuation assets of the fund.

The following factors resulted in higher liabilities (or losses) during 2021:

- Lower investment returns than assumed in 2018.
- Of the members who terminated PERA-covered employment fewer withdrew their accounts than expected.
- New PERA members had some service resulting in accrued liabilities.

The following factors resulted in lower liabilities (or gains) during 2021:

- Higher investment return than assumed in 2019, 2020, and 2021.
- Favorable benefit utilization and claims experience after reflecting administrative expenses.
- Retirees experienced shorter lifespans than expected.
- Fewer members retired at earlier ages than expected.
- Fewer service and disability retirements were experienced than expected.
- Actual payroll contributions were greater than the determined ADC for the HCTF and the DPS HCTF.

HEALTH CARE TRUST FUNDS—OPEB

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 (UAAL) (C)–(B)	(E) Funded Ratio (B)/(C)	(F) Annual Covered Payroll	(G) UAAL As a Percentage of Covered Payroll (D)/(F)
HCTF						
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%
12/31/2016	270,150	1,556,762	1,286,612	17.4%	7,716,894	16.7%
12/31/2017	260,282	1,581,222	1,320,940	16.5%	7,927,280	16.7%
12/31/2018	288,323	1,478,114	1,189,791	19.5%	8,399,835	14.2%
12/31/2019	348,433	1,447,169	1,098,736	24.1%	8,834,404	12.4%
12/31/2020	430,256	1,417,891	987,635	30.3%	8,988,119	11.0%
12/31/2021	511,143	1,345,471	834,328	38.0%	9,337,899	8.9%
DPS HCTF						
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%
12/31/2016	18,945	72,845	53,900	26.0%	642,177	8.4%
12/31/2017	21,117	70,292	49,175	30.0%	658,198	7.5%
12/31/2018	25,018	69,452	44,434	36.0%	722,040	6.2%
12/31/2019	31,189	67,937	36,748	45.9%	736,264	5.0%
12/31/2020	39,853	65,558	25,705	60.8%	771,347	3.3%
12/31/2021	49,719	62,060	12,341	80.1%	823,396	1.5%
Total of Health Care Trust Funds¹						
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%
12/31/2016	289,095	1,629,607	1,340,512	17.7%	8,359,071	16.0%
12/31/2017	281,399	1,651,514	1,370,115	17.0%	8,585,478	16.0%
12/31/2018	313,341	1,547,566	1,234,225	20.2%	9,121,875	13.5%
12/31/2019	379,622	1,515,106	1,135,484	25.1%	9,570,668	11.9%
12/31/2020	470,109	1,483,449	1,013,340	31.7%	9,759,466	10.4%
12/31/2021	560,862	1,407,531	846,669	39.8%	10,161,295	8.3%

¹ 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: A history of contributions by Health Care Trust Fund, the ADC compared to the actual contributions paid, including the deficiency or (excess), for each of the last 10 years, is shown in the Schedule of Contributions from Employers and Other Contributing Entities, found on pages 107-108 in the RSI in the Financial Section.

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	(\$16.8)	(\$0.6)
Disability retirements ²	(0.5)	—
Deaths ³	(20.0)	(0.4)
Withdrawals ⁴	1.7	—
New members ⁵	2.2	0.2
Administrative expenses and other ⁶	(13.4)	3.4
Subtotal	(46.8)	2.6
From differences between assumed and actual experience on assets	(19.5)	(2.1)
From change in plan assumptions	(44.4)	(2.5)
From change in actuarial methods	—	—
From change in plan provisions	—	—
Total actuarial (gains)/losses on 2021 activities	(\$110.7)	(\$2.0)
Total actuarial (gains)/losses on 2020 activities	(\$87.9)	(\$2.1)

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 *Administrative expenses and other:* Includes miscellaneous gains and losses resulting from purchased service transfers, claims experience, benefit utilization, software updates and refinements, data adjustments, timing of financial transactions, etc.

Actuarial Valuation Results

Contribution rates for the year ending December 31, 2023, are derived from the results of the December 31, 2021, 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 2023 FISCAL YEAR

	Expressed as a Percentage of Member Payroll	
	HCTF	DPS HCTF
Contributions		
Service retirement benefits	0.16%	0.12%
Disability retirement benefits	0.00%	0.00%
Survivor benefits	0.00%	0.00%
Separation benefits	0.02%	0.02%
Total normal cost	0.18%	0.14%
Less member contributions	(0.00%)	(0.00%)
Employer normal cost	0.18%	0.14%
Percentage available to amortize unfunded actuarial accrued liabilities	0.84%	0.88%
Amortization period	13 Years	2 Years
Total employer contribution rate for actuarially funded benefits	0.73%	0.24%

HEALTH CARE TRUST FUNDS—OPEB

Annual Actuarial Valuation Statistics

As of December 31, 2021, the Funded Ratio, the UAAL, the ADC for 2023 as a percentage of covered payroll, and the amortization period are shown in the following table. The results in this table are based on the actuarial valuation for funding purposes.

ACTUARIAL STATISTICS

(Dollars in Thousands)

Trust Fund	Funded Ratio	UAAL	ADC ¹	Amortization Period
HCTF	38.0%	\$834,328	0.73%	13 Years
DPS HCTF	80.1%	12,341	0.24%	2 Years
Total of Health Care Trust Funds²		\$846,669		

¹ Determined considering the 30-year target amortization period defined in the OPEB funding policy for purposes of funding benchmarks and RSI reporting as shown in the Financial Section.

² 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.

Pursuant to the OPEB funding policy, 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, 2017, 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, 2018. The 2023 target and alternative ADCs, by division, are displayed below:

Trust Fund	Target ADC	Alternative ADCs		
	30-Year ¹	25-Year ²	20-Year ²	15-Year ²
HCTF	0.73%	0.69%	0.64%	0.53%
DPS HCTF	0.24%	0.22%	0.19%	0.14%

¹ Refers to the amortization period used to amortize the legacy UAAL as of December 31, 2017, and any "new" UAAL recognized on and after January 1, 2018.

² Refers to the amortization period used to amortize any "new" UAAL recognized on and after January 1, 2018.

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 fair 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, 2021, was \$560,862 compared to a fair value of assets of \$615,702, and to the AAL of \$1,407,531. 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	2017	2018	2019	2020	2021
HCTF	16.5%	19.5%	24.1%	30.3%	38.0%
DPS HCTF	30.0%	36.0%	45.9%	60.8%	80.1%
Total of Health Care Trust Funds¹	17.0%	20.2%	25.1%	31.7%	39.8%

¹ 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.

The Board's OPEB funding policy states that the targeted actuarial funded ratio is greater than or equal to 110% on a combined 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 HCTF as of December 31, 2021, approximately \$0.38 of assets are available for payment based on the actuarial value of assets. These benefits earned will be payable over a period dependent upon factors, such as, the life span of members after their retirement and participation in PERACare. Therefore, it is not imperative that the AAL equal the actuarial value of assets at any given moment in time.

HEALTH CARE TRUST FUNDS—OPEB

At December 31, 2020, and December 31, 2021, PERA had the following funded status for the Health Care Trust Funds:

FUNDED STATUS FOR THE HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

	Fair Value of Assets		Actuarial Value of Assets ¹	
	12/31/2020	12/31/2021	12/31/2020	12/31/2021
Health Care Trust Fund				
Actuarial accrued liability ²	\$1,417,891	\$1,345,471	\$1,417,891	\$1,345,471
Assets held to pay those liabilities	463,301	560,749	430,256	511,143
Unfunded actuarial accrued liability	\$954,590	\$784,722	\$987,635	\$834,328
Funded ratio	32.7%	41.7%	30.3%	38.0%
DPS Health Care Trust Fund				
Actuarial accrued liability ²	\$65,558	\$62,060	\$65,558	\$62,060
Assets held to pay those liabilities	43,321	54,953	39,853	49,719
Unfunded actuarial accrued liability	\$22,237	\$7,107	\$25,705	\$12,341
Funded ratio	66.1%	88.5%	60.8%	80.1%
Total of Health Care Trust Funds³				
Actuarial accrued liability ²	\$1,483,449	\$1,407,531	\$1,483,449	\$1,407,531
Assets held to pay those liabilities ⁴	506,622	615,702	470,109	560,862
Unfunded actuarial accrued liability	\$976,827	\$791,829	\$1,013,340	\$846,669
Funded ratio	34.2%	43.7%	31.7%	39.8%

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 7.25% and an assumed rate of 7.25% to discount the liabilities to be paid in the future to a value as of December 31, 2020, and December 31, 2021.

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.

⁴ In aggregate, the fair value of the assets as of December 31, 2021, is \$54,840 greater 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 to be smoothed for 2019 are \$8,875, for 2020 are \$17,970, and for 2021 are \$27,995.

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 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 1% 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, 2023) as shown in the tables below:

INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 6.25%
(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
HCTF	34.6%	\$967,671	0.79%	\$918,065
DPS HCTF	72.9%	18,522	0.31%	13,288
Total of Health Care Trust Funds¹		\$986,193		\$931,353

¹ 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.

CURRENT INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 7.25%
(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
HCTF	38.0%	\$834,328	0.73%	\$784,722
DPS HCTF	80.1%	12,341	0.24%	7,107
Total of Health Care Trust Funds¹		\$846,669		\$791,829

¹ 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.

INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 8.25%
(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
HCTF	41.5%	\$720,500	0.67%	\$670,894
DPS HCTF	87.5%	7,081	0.18%	1,847
Total of Health Care Trust Funds¹		\$727,581		\$672,741

¹ 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: The time-weighted, net-of-fees annualized rate of return for the pooled investment assets was 13.3% for the past five years and 10.9% for the past 10 years. The 30-year annualized gross-of-fees rate of return for the pooled investment assets was 9.0%.

HEALTH CARE TRUST FUNDS—OPEB

Plan Data

Except for the “Inactive members not eligible for benefits,” the PERA membership is potentially eligible for participation in OPEB benefits through receipt of a PERA-provided benefit and enrollment in PERACare. The table below represents all individuals included in the assessment of the AAL associated with the Health Care Trust Funds as of December 31, 2021:

MEMBERSHIP—HEALTH CARE TRUST FUNDS

	HCTF	DPS HCTF	2021
Retirees and beneficiaries ¹	124,925	7,186	132,111
Inactive members eligible but not yet receiving benefits ²	30,766	2,249	33,015
Inactive members not eligible for benefits	N/A	N/A	N/A
Active members ²	191,574	15,695	207,269
Total	347,265	25,130	372,395

¹ Currently receiving or eligible for OPEB benefits.

² May be eligible for future OPEB benefits.

PARTICIPATION IN PERACARE HEALTH PLANS FOR ELIGIBLE RETIREES AND BENEFICIARIES

As of December 31, 2021

	HCTF	DPS HCTF	Total
Enrolled in PERACare			
Under age 65	9,002	361	9,363
Age 65 and older	47,176	3,029	50,205
	56,178	3,390	59,568 ¹
Not enrolled in PERACare			
Under age 65	17,653	688	18,341
Age 65 and older	51,094	3,108	54,202
	68,747	3,796	72,543
Total eligible retirees and beneficiaries	124,925	7,186	132,111

¹ Includes two beneficiaries enrolled in PERACare who are not receiving a subsidy.

HEALTH CARE TRUST FUNDS—OPEB

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 Annual Benefits	Increase (Decrease) in Average Benefits
Valuation Date	No.	Annual Benefits	No.	Annual Benefits	No. ¹	Annual Benefits		
HCTF ²								
12/31/2012					51,666	\$90,123,660	\$1,744	—
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%)
12/31/2016	3,217	6,921,114	2,520	4,463,334	55,789	91,567,554	1,641	(1.3%)
12/31/2017	3,352	7,255,971	2,667	7,153,713	56,474	91,669,812	1,623	(1.1%)
12/31/2018	3,337	7,068,843	3,169	5,498,610	56,642	89,984,901	1,589	(2.1%)
12/31/2019	3,265	6,495,867	3,455	6,074,346	56,452	89,033,598	1,577	(0.8%)
12/31/2020	2,743	5,640,819	2,922	6,801,192	56,273	87,873,225	1,562	(1.0%)
12/31/2021	2,969	5,509,620	3,064	5,562,987	56,178	80,751,402	1,437	(8.0%)
DPS HCTF ²								
12/31/2012					3,961	\$6,086,352	\$1,537	—
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%)
12/31/2016	156	322,230	201	302,220	3,885	5,703,954	1,468	(1.0%)
12/31/2017	149	325,128	218	445,188	3,816	5,583,894	1,463	(0.3%)
12/31/2018	160	346,794	351	550,827	3,625	5,905,296	1,629	11.3%
12/31/2019	276	468,441	281	492,591	3,620	5,805,591	1,604	(1.5%)
12/31/2020	112	218,592	213	424,626	3,519	5,599,557	1,591	(0.8%)
12/31/2021	109	188,670	240	420,486	3,388	4,851,156	1,432	(10.0%)
Total of Health Care Trust Funds ²								
12/31/2012					55,627	\$96,210,012	\$1,730	—
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%)
12/31/2016	3,373	7,243,344	2,721	4,765,554	59,674	97,271,508	1,630	(1.2%)
12/31/2017	3,501	7,581,099	2,885	7,598,901	60,290	97,253,706	1,613	(1.0%)
12/31/2018	3,497	7,415,637	3,520	6,049,437	60,267	95,890,197	1,591	(1.4%)
12/31/2019	3,541	6,964,308	3,736	6,566,937	60,072	94,839,189	1,579	(0.8%)
12/31/2020	2,855	5,859,411	3,135	7,225,818	59,792 ³	93,472,782	1,563	(1.0%)
12/31/2021	3,078	5,698,290	3,304	5,983,473	59,566 ³	85,602,558	1,437	(8.1%)

¹ Enrolled in PERACare.² 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 Retiree Drug Subsidy (RDS) program subsidies prior to December 31, 2013.³ Excludes two beneficiaries enrolled in PERACare who are not receiving a subsidy.

HEALTH CARE TRUST FUNDS—OPEB

SCHEDULE OF ACTIVE MEMBER ACTUARIAL VALUATION DATA

As of December 31

(In Actual Dollars)

Year	Number of Participating Employers ^{1,2}	Total Number of Active Members	Medicare Eligible Active Members ³	Annual Payroll for Active Members	Average Annual Pay for Active Members	Percentage Increase (Decrease) in Average Annual Pay
HCTF						
2012	500	182,524		\$6,766,713,013	\$37,073	—
2013	516	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%
2016	542	190,741		7,716,892,488	40,457	1.63%
2017	408	191,778	8,284	7,927,279,994	41,336	2.17%
2018	409	195,436	8,826	8,399,834,705	42,980	3.98%
2019	410	197,615	9,035	8,834,404,580	44,705	4.01%
2020	409	186,165	7,881	8,988,118,724	48,280	8.00%
2021	408	191,574	8,595	9,337,899,213	48,743	0.96%
DPS HCTF						
2012	29	13,911		\$510,872,366	\$36,724	—
2013	31	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%
2016	42	15,950		642,177,158	40,262	3.25%
2017	1	15,991	498	658,198,306	41,161	2.23%
2018	1	16,148	510	722,040,073	44,714	8.63%
2019	1	15,679	518	736,263,798	46,959	5.02%
2020	1	14,693	410	771,347,604	52,498	11.80%
2021	1	15,695	472	823,395,477	52,462	(0.07%)
Total of Health Care Trust Funds						
2012	529	196,435		\$7,277,585,379	\$37,048	—
2013	547	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%
2016	584	206,691		8,359,069,646	40,442	1.75%
2017	409	207,769	8,782	8,585,478,300	41,322	2.18%
2018	410	211,584	9,336	9,121,874,778	43,112	4.33%
2019	411	213,294	9,553	9,570,668,378	44,871	4.08%
2020	410	200,858	8,291	9,759,466,328	48,589	8.29%
2021	409	207,269	9,067	10,161,294,690	49,025	0.90%

¹ Prior to 2017, employer counts were based on separate units of government. Beginning in 2017, new guidance under GASB 74 classifies a primary government and its component units as one employer. The 2017 employer count is presented for purposes of complying with GASB 74 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 Participating employer counts prior to 2017 include charter schools operating within the School and DPS Divisions.

³ Information prior to 2017 was not required.

STATISTICAL SECTION





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
- *Breakdown of Membership by Percentage*¹
- *Schedule of Average Retirement Benefits Payable—All Division Trust Funds*¹
- *Schedule of Average Retirement Benefits Payable*¹
- *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 Contribution Rate History*
- *Principal Participating Employers*
- *Schedule of Affiliated Employers*

¹ Data for schedules are provided by the consulting actuary, Segal

Note: Schedules and information are derived from PERA internal sources unless otherwise noted.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

State Division Trust Fund

	2021	2020	2019	2018	2017
Additions					
Employer contributions ¹	\$664,304	\$646,386	\$612,282	\$583,164	\$563,977
Nonemployer contributions ¹	76,706	—	77,088	78,489	—
Member contributions ¹	329,652	298,264	257,803	236,313	228,978
Purchased service	39,514	28,522	29,494	25,227	27,442
Net investment income (loss)	2,806,442	2,652,870	2,764,719	(497,562)	2,391,683
Other	6,038	9,390	22	7,888	15,860
Total additions	3,922,656	3,635,432	3,741,408	433,519	3,227,940
Deductions					
Benefit payments	1,726,503	1,675,048	1,637,168	1,608,534	1,554,290
Refunds	74,520	57,921	61,832	65,253	58,696
Disability insurance premiums	1,013	1,360	1,965	2,093	2,035
Administrative expenses	12,051	11,385	11,294	11,903	11,745
Other	2,950	2,634	2,707	3,017	3,652
Total deductions	1,817,037	1,748,348	1,714,966	1,690,800	1,630,418
Change in fiduciary net position	2,105,619	1,887,084	2,026,442	(1,257,281)	1,597,522
Fiduciary net position held at beginning of year	17,879,947	15,992,863	13,966,421	15,223,702	13,626,180
Fiduciary net position held at end of year	\$19,985,566	\$17,879,947	\$15,992,863	\$13,966,421	\$15,223,702
	2016	2015	2014	2013	2012
Additions					
Employer contributions ¹	\$521,804	\$484,005	\$444,372	\$401,658	\$335,073
Member contributions ¹	223,005	217,980	211,610	202,799	227,058
Purchased service	24,528	26,946	22,446	22,241	16,358
Net investment income	947,981	210,337	780,762	1,931,658	1,511,244
Other	8,708	5,023	3,289	4,869	150
Total additions	1,726,026	944,291	1,462,479	2,563,225	2,089,883
Deductions					
Benefit payments	1,483,828	1,417,862	1,352,293	1,295,780	1,231,922
Refunds	60,137	63,567	61,152	68,735	69,221
Disability insurance premiums	2,106	2,088	2,309	2,229	1,570
Administrative expenses	11,271	10,779	10,067	9,780	8,568
Other	3,040	3,406	3,171	3,593	3,911
Total deductions	1,560,382	1,497,702	1,428,992	1,380,117	1,315,192
Change in fiduciary net position	165,644	(553,411)	33,487	1,183,108	774,691
Fiduciary net position held at beginning of year	13,460,536	14,013,947	13,980,460	12,797,352	12,022,661
Fiduciary net position held at end of year	\$13,626,180	\$13,460,536	\$14,013,947	\$13,980,460	\$12,797,352

¹ Employer, nonemployer, and member contribution rate history is shown on pages 246-249.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

School Division Trust Fund

	2021	2020	2019	2018	2017
Additions					
Employer contributions ¹	\$1,113,636	\$1,048,992	\$1,002,760	\$923,910	\$857,740
Nonemployer contributions ¹	127,781	—	127,367	126,505	—
Member contributions ¹	574,948	501,214	436,899	386,811	368,740
Purchased service	55,901	35,633	25,992	27,525	30,313
Net investment income (loss)	4,847,781	4,556,622	4,676,607	(838,899)	3,982,275
Other	130	123	364	7,957	106
Total additions	6,720,177	6,142,584	6,269,989	633,809	5,239,174
Deductions					
Benefit payments	2,624,924	2,535,509	2,468,021	2,413,387	2,334,003
Refunds	81,725	67,873	73,871	76,035	74,637
Disability insurance premiums	1,679	2,286	3,338	3,506	3,347
Administrative expenses	22,608	22,779	22,619	23,560	23,019
Other	8,702	11,349	8,293	2,501	22,484
Total deductions	2,739,638	2,639,796	2,576,142	2,518,989	2,457,490
Change in fiduciary net position	3,980,539	3,502,788	3,693,847	(1,885,180)	2,781,684
Fiduciary net position held at beginning of year	30,674,185	27,171,397	23,477,550	25,362,730	22,581,046
Fiduciary net position held at end of year	\$34,654,724	\$30,674,185	\$27,171,397	\$23,477,550	\$25,362,730
	2016	2015	2014	2013	2012
Additions					
Employer contributions ¹	\$812,740	\$754,182	\$686,323	\$624,784	\$573,586
Member contributions ¹	359,059	348,537	334,585	322,217	313,923
Purchased service	27,422	23,841	21,935	19,285	17,406
Net investment income	1,569,026	344,000	1,274,862	3,136,269	2,434,176
Other	109	96	112	139	246
Total additions	2,768,356	1,470,656	2,317,817	4,102,694	3,339,337
Deductions					
Benefit payments	2,231,475	2,134,754	2,032,628	1,932,756	1,832,643
Refunds	65,715	70,298	77,171	76,980	77,154
Disability insurance premiums	3,454	3,400	3,748	3,655	2,522
Administrative expenses	21,991	20,865	19,290	18,523	16,086
Other	17,443	9,178	4,376	7,132	9,157
Total deductions	2,340,078	2,238,495	2,137,213	2,039,046	1,937,562
Change in fiduciary net position	428,278	(767,839)	180,604	2,063,648	1,401,775
Fiduciary net position held at beginning of year	22,152,768	22,920,607	22,740,003	20,676,355	19,274,580
Fiduciary net position held at end of year	\$22,581,046	\$22,152,768	\$22,920,607	\$22,740,003	\$20,676,355

¹ Employer, nonemployer, and member contribution rate history is shown on page 250.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Local Government Division Trust Fund

	2021	2020	2019	2018	2017
Additions					
Employer contributions ¹	\$96,481	\$89,662	\$85,597	\$81,358	\$78,291
Member contributions ¹	63,035	58,067	55,003	52,421	50,472
Purchased service	14,061	8,891	7,820	5,642	6,325
Employer disaffiliation	—	—	—	—	1,063
Net investment income (loss)	820,403	771,556	792,219	(142,476)	669,011
Other	23	24	14	840	14
Total additions	994,003	928,200	940,653	(2,215)	805,176
Deductions					
Benefit payments	322,106	307,795	297,447	286,745	274,258
Refunds	16,034	12,828	14,761	15,716	14,530
Disability insurance premiums	235	296	421	442	430
Administrative expenses	3,065	2,459	2,476	2,621	2,541
Other	3,084	3,146	3,975	3,958	3,837
Total deductions	344,524	326,524	319,080	309,482	295,596
Change in fiduciary net position	649,479	601,676	621,573	(311,697)	509,580
Fiduciary net position held at beginning of year	5,194,638	4,592,962	3,971,389	4,283,086	3,773,506
Fiduciary net position held at end of year	\$5,844,117	\$5,194,638	\$4,592,962	\$3,971,389	\$4,283,086
	2016	2015	2014	2013	2012
Additions					
Employer contributions ¹	\$75,132	\$70,415	\$68,719	\$67,197	\$86,113
Member contributions ¹	48,470	45,400	43,792	42,627	54,827
Purchased service	3,981	6,586	5,498	7,363	13,927
Employer disaffiliation	—	—	186,006	—	—
Net investment income	261,276	56,328	200,394	482,297	368,492
Other	17	15	14	14	2,663
Total additions	388,876	178,744	504,423	599,498	526,022
Deductions					
Benefit payments	258,967	244,948	232,055	217,875	195,945
Refunds	12,938	20,410	24,436	32,480	42,941
Disability insurance premiums	439	431	481	479	410
Administrative expenses	2,395	2,253	2,091	2,021	2,035
Other	1,140	1,661	2,204	4,463	2,072
Total deductions	275,879	269,703	261,267	257,318	243,403
Change in fiduciary net position	112,997	(90,959)	243,156	342,180	282,619
Fiduciary net position held at beginning of year	3,660,509	3,751,468	3,508,312	3,166,132	2,883,513
Fiduciary net position held at end of year	\$3,773,506	\$3,660,509	\$3,751,468	\$3,508,312	\$3,166,132

¹ Employer and member contribution rate history is shown on pages 251-252.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Judicial Division Trust Fund

	2021	2020	2019	2018	2017
Additions					
Employer contributions ¹	\$9,787	\$10,402	\$10,649	\$8,299	\$8,080
Nonemployer contributions ¹	1,360	—	1,344	1,385	—
Member contributions ¹	8,589	6,637	4,575	4,064	3,955
Purchased service	800	1,060	612	636	908
Net investment income (loss)	66,030	61,634	61,719	(11,006)	51,173
Other	5,436	2,546	6,697	225	2,379
Total additions	92,002	82,279	85,596	3,603	66,495
Deductions					
Benefit payments	31,201	29,409	28,056	26,236	25,250
Refunds	266	48	—	186	7
Disability insurance premiums	21	28	41	41	41
Administrative expenses	186	87	84	86	86
Other	53	90	27	70	153
Total deductions	31,727	29,662	28,208	26,619	25,537
Change in fiduciary net position	60,275	52,617	57,388	(23,016)	40,958
Fiduciary net position held at beginning of year	416,851	364,234	306,846	329,862	288,904
Fiduciary net position held at end of year	\$477,126	\$416,851	\$364,234	\$306,846	\$329,862
	2016	2015	2014	2013	2012
Additions					
Employer contributions ¹	\$8,024	\$7,702	\$7,070	\$6,587	\$5,922
Member contributions ¹	3,928	3,772	3,461	3,224	3,628
Purchased service	109	425	835	240	180
Net investment income	19,783	4,149	15,299	37,096	28,063
Other	2,800	3,247	256	1,451	2,556
Total additions	34,644	19,295	26,921	48,598	40,349
Deductions					
Benefit payments	22,734	21,158	19,800	18,616	17,606
Refunds	109	—	60	385	605
Disability insurance premiums	45	42	43	40	27
Administrative expenses	81	77	72	69	61
Other	122	166	100	52	22
Total deductions	23,091	21,443	20,075	19,162	18,321
Change in fiduciary net position	11,553	(2,148)	6,846	29,436	22,028
Fiduciary net position held at beginning of year	277,351	279,499	272,653	243,217	221,189
Fiduciary net position held at end of year	\$288,904	\$277,351	\$279,499	\$272,653	\$243,217

¹ Employer, nonemployer, and member contribution rate history is shown on page 253.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

DPS Division Trust Fund

	2021	2020	2019	2018	2017
Additions					
Employer contributions ¹	\$65,215	\$56,245	\$43,340	\$35,994	\$27,578
Nonemployer contributions ¹	19,153	—	19,201	18,621	—
Member contributions ¹	86,184	73,939	62,961	58,172	54,354
Purchased service	3,970	1,517	2,535	2,926	2,466
Net investment income (loss)	649,370	610,847	632,669	(114,070)	548,585
Other	15	12	3,030	770	3,870
Total additions	823,907	742,560	763,736	2,413	636,853
Deductions					
Benefit payments	280,045	278,081	277,849	276,223	271,189
Refunds	11,527	9,344	10,738	11,197	10,277
Disability insurance premiums	227	294	397	405	378
Administrative expenses	2,829	2,667	2,713	2,919	2,857
Other	3,130	1,022	55	5,267	89
Total deductions	297,758	291,408	291,752	296,011	284,790
Change in fiduciary net position	526,149	451,152	471,984	(293,598)	352,063
Fiduciary net position held at beginning of year	4,107,578	3,656,426	3,184,442	3,478,040	3,125,977
Fiduciary net position held at end of year	\$4,633,727	\$4,107,578	\$3,656,426	\$3,184,442	\$3,478,040
	2016	2015	2014	2013	2012
Additions					
Employer contributions ¹	\$17,071	\$8,494	\$18,478	\$25,157	\$14,703
Member contributions ¹	52,740	49,973	47,083	43,564	41,124
Purchased service	2,112	3,585	2,326	1,834	1,924
Net investment income	218,415	49,172	182,823	452,919	354,867
Other	3,264	11	13	269	146
Total additions	293,602	111,235	250,723	523,743	412,764
Deductions					
Benefit payments	263,152	255,068	247,005	237,921	228,742
Refunds	8,521	7,897	8,063	6,733	5,821
Disability insurance premiums	398	358	366	338	220
Administrative expenses	2,754	2,599	2,377	2,240	1,919
Other	129	1,775	1,560	150	55
Total deductions	274,954	267,697	259,371	247,382	236,757
Change in fiduciary net position	18,648	(156,462)	(8,648)	276,361	176,007
Fiduciary net position held at beginning of year	3,107,329	3,263,791	3,272,439	2,996,078	2,820,071
Fiduciary net position held at end of year	\$3,125,977	\$3,107,329	\$3,263,791	\$3,272,439	\$2,996,078

¹ Employer, nonemployer, and member contribution rate history is shown on page 254.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Voluntary Investment Program

	2021	2020	2019	2018	2017
Additions					
Employer contributions	\$6,170	\$5,917	\$5,701	\$5,409	\$5,072
Member contributions	145,612	140,656	140,519	132,189	135,303
Net investment income (loss)	679,465	558,980 ¹	700,274	(165,371)	469,233
Other	5,484	2,402	2,443	2,322	2,207
Total additions	836,731	707,955	848,937	(25,451)	611,815
Deductions					
Distributions	287,582	207,260	213,010	202,684	162,019
Administrative expenses	2,034	3,926 ¹	3,592	3,310	2,877
Other	1,933	1,746	1,656	1,598	1,411
Total deductions	291,549	212,932	218,258	207,592	166,307
Change in fiduciary net position	545,182	495,023	630,679	(233,043)	445,508
Fiduciary net position held at beginning of year	4,167,830	3,672,807	3,042,128	3,275,171	2,829,663
Fiduciary net position held at end of year	\$4,713,012	\$4,167,830	\$3,672,807	\$3,042,128	\$3,275,171
	2016	2015	2014	2013	2012
Additions					
Employer contributions	\$4,740	\$3,889	\$3,866	\$3,679	\$3,697
Member contributions	129,909	129,990	126,112	120,203	119,013
Net investment income (loss)	206,933	(11,773)	188,199	423,877	236,775
Other	2,170	2,237	2,291	2,141	2,075
Total additions	343,752	124,343	320,468	549,900	361,560
Deductions					
Distributions	154,202	158,215	144,329	142,064	144,171
Administrative expenses	2,814	3,010	3,050	3,137	2,827
Other	1,172	1,019	839	624	234
Total deductions	158,188	162,244	148,218	145,825	147,232
Change in fiduciary net position	185,564	(37,901)	172,250	404,075	214,328
Fiduciary net position held at beginning of year	2,644,099	2,682,000	2,509,750	2,105,675	1,891,347
Fiduciary net position held at end of year	\$2,829,663	\$2,644,099	\$2,682,000	\$2,509,750	\$2,105,675

¹ To conform with current year presentation, prior year amounts were restated. See Note 2 of the Notes to the Financial Statements in the Financial Section for additional information.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Defined Contribution Retirement Plan

	2021	2020	2019	2018	2017
Additions					
Employer contributions	\$18,046	\$16,780	\$15,184	\$13,201	\$14,309
Member contributions	18,720	15,753	12,967	10,573	11,411
Net investment income (loss)	51,234	41,820 ¹	48,559	(15,381)	29,372
Other	50	16	21	11	39
Total additions	88,050	74,369	76,731	8,404	55,131
Deductions					
Distributions	23,798	15,100	15,445	12,722	10,593
Administrative expenses	753	1,118 ¹	997	819	739
Other	165	147	135	166	116
Total deductions	24,716	16,365	16,577	13,707	11,448
Change in fiduciary net position	63,334	58,004	60,154	(5,303)	43,683
Fiduciary net position held at beginning of year	323,944	265,940	205,786	211,089	167,406
Fiduciary net position held at end of year	\$387,278	\$323,944	\$265,940	\$205,786	\$211,089
	2016	2015	2014	2013	2012
Additions					
Employer contributions	\$13,060	\$12,428	\$11,531	\$11,090	\$7,997
Member contributions	10,382	9,830	9,179	8,828	8,364
Net investment income (loss)	12,601	(2,466)	6,745	17,416	9,046
Other	92	9	8	6	2
Total additions	36,135	19,801	27,463	37,340	25,409
Deductions					
Distributions	8,932	9,419	8,690	6,314	4,869
Administrative expenses	726	774	738	744	848
Other	97	48	69	49	22
Total deductions	9,755	10,241	9,497	7,107	5,739
Change in fiduciary net position	26,380	9,560	17,966	30,233	19,670
Fiduciary net position held at beginning of year	141,026	131,466	113,500	83,267	63,597
Fiduciary net position held at end of year	\$167,406	\$141,026	\$131,466	\$113,500	\$83,267

¹ To conform with current year presentation, prior year amounts were restated. See Note 2 of the Notes to the Financial Statements in the Financial Section for additional information.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Deferred Compensation Plan

	2021	2020	2019	2018	2017
Additions					
Employer contributions	\$38	\$40	\$32	\$29	\$50
Member contributions	78,549	70,764	64,151	57,981	57,088
Net investment income (loss)	164,189	137,023 ¹	163,879	(47,542)	105,027
Other	678	553	578	574	510
Total additions	243,454	208,380	228,640	11,042	162,675
Deductions					
Distributions	77,334	51,559	55,317	56,568	47,067
Administrative expenses	589	1,329 ¹	1,188	1,094	993
Other	846	777	759	756	698
Total deductions	78,769	53,665	57,264	58,418	48,758
Change in fiduciary net position	164,685	154,715	171,376	(47,376)	113,917
Fiduciary net position held at beginning of year	1,144,314	989,599	818,223	865,599	751,682
Fiduciary net position held at end of year	\$1,308,999	\$1,144,314	\$989,599	\$818,223	\$865,599
	2016	2015	2014	2013	2012
Additions					
Employer contributions	\$26	\$27	\$43	\$20	\$14
Member contributions	51,601	49,719	50,370	44,449	39,851
Plan transfer	—	—	—	—	—
Net investment income (loss)	51,372	(6,427)	32,133	88,565	49,344
Other	496	484	478	428	354
Total additions	103,495	43,803	83,024	133,462	89,563
Deductions					
Distributions	41,922	39,945	35,584	32,854	27,627
Administrative expenses	963	1,071	1,074	1,094	1,105
Other	604	562	517	430	278
Total deductions	43,489	41,578	37,175	34,378	29,010
Change in fiduciary net position	60,006	2,225	45,849	99,084	60,553
Fiduciary net position held at beginning of year	691,676	689,451	643,602	544,518	483,965
Fiduciary net position held at end of year	\$751,682	\$691,676	\$689,451	\$643,602	\$544,518

¹ To conform with current year presentation, prior year amounts were restated. See Note 2 of the Notes to the Financial Statements in the Financial Section for additional information.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Health Care Trust Fund

	2021	2020	2019	2018	2017
Additions					
Employer contributions ¹	\$97,974	\$94,634	\$92,011	\$86,559	\$83,077
Employer disaffiliation	—	—	—	—	96
Net investment income (loss)	68,319	60,280	53,867	(9,678)	44,990
Other	8,108	7,909	6,984	8,373	9,760
Total additions	174,401	162,823	152,862	85,254	137,923
Deductions					
Benefit payments	63,893	53,023	58,221	61,777	102,665
Administrative expenses	12,976	10,977	9,290	20,401	19,162
Other	84	32	33	106	102
Total deductions	76,953	64,032	67,544	82,284	121,929
Change in fiduciary net position	97,448	98,791	85,318	2,970	15,994
Fiduciary net position held at beginning of year	463,301	364,510	279,192	276,222	260,228
Fiduciary net position held at end of year	\$560,749	\$463,301	\$364,510	\$279,192	\$276,222

	2016	2015	2014	2013	2012
Additions					
Employer contributions ¹	\$80,825	\$78,463	\$75,631	\$72,784	\$72,553
Retiree health care premiums	138,021	127,873	105,459	114,364	107,104
Federal health care subsidies	—	—	—	15,731	14,198
Employer disaffiliation	—	—	3,994	—	—
Net investment income	19,021	4,807	18,203	46,097	36,710
Other	9,175	9,993	9,813	10,522	11,668
Total additions	247,042	221,136	213,100	259,498	242,233
Deductions					
Benefit payments	243,662	234,414	200,627	222,860	218,768
Administrative expenses	19,166	19,261	16,612	13,766	13,514
Other	491	594	832	—	—
Total deductions	263,319	254,269	218,071	236,626	232,282
Change in fiduciary net position	(16,277)	(33,133)	(4,971)	22,872	9,951
Fiduciary net position held at beginning of year	276,505	309,638	314,609	291,737	281,786
Fiduciary net position held at end of year	\$260,228	\$276,505	\$309,638	\$314,609	\$291,737

¹ Employer contribution rate history is shown on page 255.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

DPS Health Care Trust Fund

	2021	2020	2019	2018	2017
Additions					
Employer contributions ¹	\$8,622	\$8,045	\$7,649	\$7,417	\$6,930
Net investment income (loss)	6,963	6,019	4,892	(894)	3,305
Other	206	224	188	205	242
Total additions	15,791	14,288	12,729	6,728	10,477
Deductions					
Benefit payments	3,516	3,086	3,644	4,158	5,694
Administrative expenses	639	516	477	845	808
Other	4	1	1	4	4
Total deductions	4,159	3,603	4,122	5,007	6,506
Change in fiduciary net position	11,632	10,685	8,607	1,721	3,971
Fiduciary net position held at beginning of year	43,321	32,636	24,029	22,308	18,337
Fiduciary net position held at end of year	\$54,953	\$43,321	\$32,636	\$24,029	\$22,308

	2016	2015	2014	2013	2012
Additions					
Employer contributions ¹	\$6,723	\$6,371	\$6,003	\$5,558	\$5,243
Retiree health care premiums	6,738	6,275	4,442	4,719	4,295
Federal health care subsidies	—	—	—	563	488
Net investment income	1,235	254	938	2,277	1,800
Other	289	301	281	312	216
Total additions	14,985	13,201	11,664	13,429	12,042
Deductions					
Benefit payments	12,748	12,442	10,432	11,222	11,027
Administrative expenses	818	822	668	561	547
Other	18	22	32	—	—
Total deductions	13,584	13,286	11,132	11,783	11,574
Change in fiduciary net position	1,401	(85)	532	1,646	468
Fiduciary net position held at beginning of year	16,936	17,021	16,489	14,843	14,375
Fiduciary net position held at end of year	\$18,337	\$16,936	\$17,021	\$16,489	\$14,843

¹ Employer contribution rate history is shown on page 255.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Life Insurance Reserve

	2021	2020	2019	2018	2017
Additions					
Net investment income (loss)	\$4,125	\$3,909	\$3,901	(\$684)	\$3,241
Other	—	—	—	4	—
Total additions	4,125	3,909	3,901	(680)	3,241
Deductions					
Life insurance premiums	540	512	479	433	373
Administrative expenses	80	224	123	111	493
Total deductions	620	736	602	544	866
Change in fiduciary net position	3,505	3,173	3,299	(1,224)	2,375
Fiduciary net position held at beginning of year	24,314	21,141	17,842	19,066	16,691
Fiduciary net position held at end of year	\$27,819	\$24,314	\$21,141	\$17,842	\$19,066
	2016	2015	2014	2013	2012
Additions					
Net investment income	\$1,289	\$302	\$1,068	\$2,630	\$2,020
Total additions	1,289	302	1,068	2,630	2,020
Deductions					
Life insurance premiums	306	250	196	131	62
Administrative expenses	1,032	805	871	871	510
Total deductions	1,338	1,055	1,067	1,002	572
Change in fiduciary net position	(49)	(753)	1	1,628	1,448
Fiduciary net position held at beginning of year	16,740	17,493	17,492	15,864	14,416
Fiduciary net position held at end of year	\$16,691	\$16,740	\$17,493	\$17,492	\$15,864

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

State Division Trust Fund

	2021	2020	2019	2018	2017
Type of Benefit					
Age and service benefits:					
Retirees	\$1,634,075	\$1,581,249	\$1,540,738	\$1,510,747	\$1,456,159
Disability	77,589	78,987	81,434	82,947	83,280
Survivors	14,839	14,812	14,996	14,840	14,851
Total benefits	\$1,726,503	\$1,675,048	\$1,637,168	\$1,608,534	\$1,554,290
Type of Refund					
Separation	\$67,128	\$50,097	\$55,782	\$59,508	\$52,079
Death	7,301	7,791	5,909	5,728	6,561
Purchased service	91	33	141	17	56
Total refunds	\$74,520	\$57,921	\$61,832	\$65,253	\$58,696
	2016	2015	2014	2013	2012
Type of Benefit					
Age and service benefits:					
Retirees	\$1,387,374	\$1,322,592	\$1,257,767	\$1,202,238	\$1,140,055
Disability	82,221	81,310	80,753	79,854	78,689
Survivors	14,233	13,960	13,773	13,688	13,178
Total benefits	\$1,483,828	\$1,417,862	\$1,352,293	\$1,295,780	\$1,231,922
Type of Refund					
Separation	\$54,606	\$58,274	\$57,895	\$64,072	\$65,627
Death	5,464	5,213	3,058	4,411	3,503
Purchased service	67	80	199	252	91
Total refunds	\$60,137	\$63,567	\$61,152	\$68,735	\$69,221

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

School Division Trust Fund

	2021	2020	2019	2018	2017
Type of Benefit					
Age and service benefits:					
Retirees	\$2,542,456	\$2,452,428	\$2,384,406	\$2,329,157	\$2,249,855
Disability	66,230	67,467	67,737	68,774	68,537
Survivors	16,238	15,614	15,878	15,456	15,611
Total benefits	\$2,624,924	\$2,535,509	\$2,468,021	\$2,413,387	\$2,334,003
Type of Refund					
Separation	\$74,409	\$61,755	\$70,200	\$70,227	\$68,265
Death	7,183	6,101	3,412	5,678	6,313
Purchased service	133	17	259	130	59
Total refunds	\$81,725	\$67,873	\$73,871	\$76,035	\$74,637
	2016	2015	2014	2013	2012
Type of Benefit					
Age and service benefits:					
Retirees	\$2,149,415	\$2,053,108	\$1,952,989	\$1,855,195	\$1,757,279
Disability	67,416	67,203	65,780	63,741	62,140
Survivors	14,644	14,443	13,859	13,820	13,224
Total benefits	\$2,231,475	\$2,134,754	\$2,032,628	\$1,932,756	\$1,832,643
Type of Refund					
Separation	\$60,873	\$66,494	\$73,522	\$73,215	\$73,075
Death	4,756	3,621	3,521	3,282	3,815
Purchased service	86	183	128	483	264
Total refunds	\$65,715	\$70,298	\$77,171	\$76,980	\$77,154

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

Local Government Division Trust Fund

	2021	2020	2019	2018	2017
Type of Benefit					
Age and service benefits:					
Retirees	\$303,545	\$288,944	\$278,543	\$267,669	\$255,105
Disability	15,868	16,215	16,315	16,582	16,775
Survivors	2,693	2,636	2,589	2,494	2,378
Total benefits	\$322,106	\$307,795	\$297,447	\$286,745	\$274,258
Type of Refund					
Separation	\$14,725	\$11,734	\$13,070	\$14,587	\$13,095
Death	1,279	1,053	1,691	1,128	1,434
Purchased service	30	41	—	1	1
Total refunds	\$16,034	\$12,828	\$14,761	\$15,716	\$14,530
	2016	2015	2014	2013	2012
Type of Benefit					
Age and service benefits:					
Retirees	\$240,432	\$226,400	\$213,962	\$199,821	\$178,845
Disability	16,274	16,327	16,045	16,022	15,096
Survivors	2,261	2,221	2,048	2,032	2,004
Total benefits	\$258,967	\$244,948	\$232,055	\$217,875	\$195,945
Type of Refund					
Separation	\$12,017	\$18,062	\$23,034	\$31,268	\$41,696
Death	921	2,317	1,401	1,201	1,154
Purchased service	—	31	1	11	91
Total refunds	\$12,938	\$20,410	\$24,436	\$32,480	\$42,941

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

Judicial Division Trust Fund

	2021	2020	2019	2018	2017
Type of Benefit					
Age and service benefits:					
Retirees	\$30,121	\$28,181	\$26,812	\$24,982	\$23,993
Disability	800	887	893	926	933
Survivors	280	341	351	328	324
Total benefits	\$31,201	\$29,409	\$28,056	\$26,236	\$25,250
Type of Refund					
Separation	\$266	\$48	\$—	\$50	\$7
Death	—	—	—	136	—
Total refunds	\$266	\$48	\$—	\$186	\$7
	2016	2015	2014	2013	2012
Type of Benefit					
Age and service benefits:					
Retirees	\$21,485	\$19,901	\$18,573	\$17,362	\$16,333
Disability	939	938	917	908	897
Survivors	310	319	310	346	376
Total benefits	\$22,734	\$21,158	\$19,800	\$18,616	\$17,606
Type of Refund					
Separation	\$109	\$—	\$60	\$385	\$250
Death	—	—	—	—	355
Total refunds	\$109	\$—	\$60	\$385	\$605

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

DPS Division Trust Fund

	2021	2020	2019	2018	2017
Type of Benefit					
Age and service benefits:					
Retirees	\$270,210	\$268,201	\$267,956	\$266,260	\$261,361
Disability	8,216	8,335	8,358	8,278	8,221
Survivors	1,619	1,545	1,535	1,685	1,607
Total benefits	\$280,045	\$278,081	\$277,849	\$276,223	\$271,189
Type of Refund					
Separation	\$10,851	\$8,913	\$10,486	\$10,652	\$9,873
Death	673	431	250	545	349
Purchased service	3	—	2	—	55
Total refunds	\$11,527	\$9,344	\$10,738	\$11,197	\$10,277
	2016	2015	2014	2013	2012
Type of Benefit					
Age and service benefits:					
Retirees	\$253,641	\$245,683	\$237,955	\$228,692	\$220,106
Disability	7,929	7,804	7,482	7,592	7,070
Survivors	1,582	1,581	1,568	1,637	1,566
Total benefits	\$263,152	\$255,068	\$247,005	\$237,921	\$228,742
Type of Refund					
Separation	\$7,894	\$7,685	\$7,424	\$6,558	\$5,602
Death	616	207	631	160	217
Purchased service	11	5	8	15	2
Total refunds	\$8,521	\$7,897	\$8,063	\$6,733	\$5,821

MEMBER AND BENEFIT RECIPIENT STATISTICS¹

(In Actual Dollars)

	State Division	School Division	Local Government Division	Judicial Division	DPS Division	Total
Active Members						
Active members as of 12/31/2021	53,477	125,007	12,745	345	15,695	207,269
Retirements during 2021						
Disability retirements	55	49	7	—	7	118
Service retirements	1,954	3,676	485	28	252	6,395
Total	2,009	3,725	492	28	259	6,513
Retirement Benefits						
Total receiving disability and service retirement benefits on 12/31/2020	40,903	69,062	8,003	403	6,992	125,363
Total retiring during 2021	2,009	3,725	492	28	259	6,513
Cobeneficiaries continuing after retiree's death	330	352	57	4	58	801
Returning to retirement rolls from suspension	2	20	2	—	17	41
Total	43,244	73,159	8,554	435	7,326	132,718
Retirees and cobeneficiaries deceased during year	1,246	1,658	161	11	282	3,358
Retirees suspending benefits to return to work	8	22	1	2	2	35
Total receiving retirement benefits on 12/31/2021	41,990	71,479	8,392	422	7,042	129,325²
Annual retirement benefits for retirees as of 12/31/2021	\$1,722,629,786	\$2,640,949,330	\$323,453,161	\$31,583,284	\$278,240,755	\$4,996,856,316
Average monthly benefit on 12/31/2021	\$3,419	\$3,079	\$3,212	\$6,237	\$3,293	\$3,220
Average monthly benefit for all members who retired during 2021	\$3,034	\$2,542	\$2,696	\$6,588	\$2,375	\$2,716
Survivor Benefits						
Total survivors being paid on 12/31/2021	947	1,211	178	10	137	2,483 ²
Annual benefits payable to survivors as of 12/31/2021	\$21,879,994	\$20,163,673	\$4,179,225	\$350,836	\$2,574,703	\$49,148,431
Future Benefits						
Future retirements	8,156	19,882	2,713	15	2,249	33,015
Total annual future benefits	\$100,616,305	\$175,456,455	\$36,309,848	\$533,573	\$26,499,536	\$339,415,717
Future survivor beneficiaries of inactive members	112	162	20	2	7	303 ²
Total annual future benefits	\$1,619,001	\$2,306,162	\$261,883	\$47,984	\$97,228	\$4,332,258

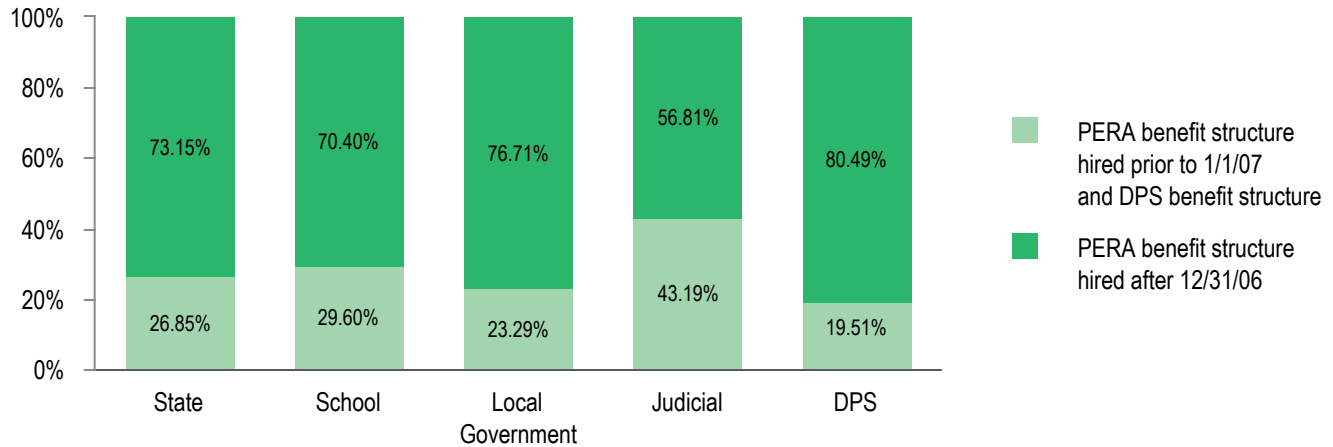
¹ In addition, as of December 31, 2021, there was a total of 277,186 non-vested inactive members due a refund of their contributions as follows: State Division—85,985; School Division—147,435; Local Government Division—28,333; Judicial Division—7; DPS Division—15,426.

² These line items make up the total for retirees and beneficiaries reported on page 49 in Note 1 of the Notes to the Financial Statements in the Financial Section.

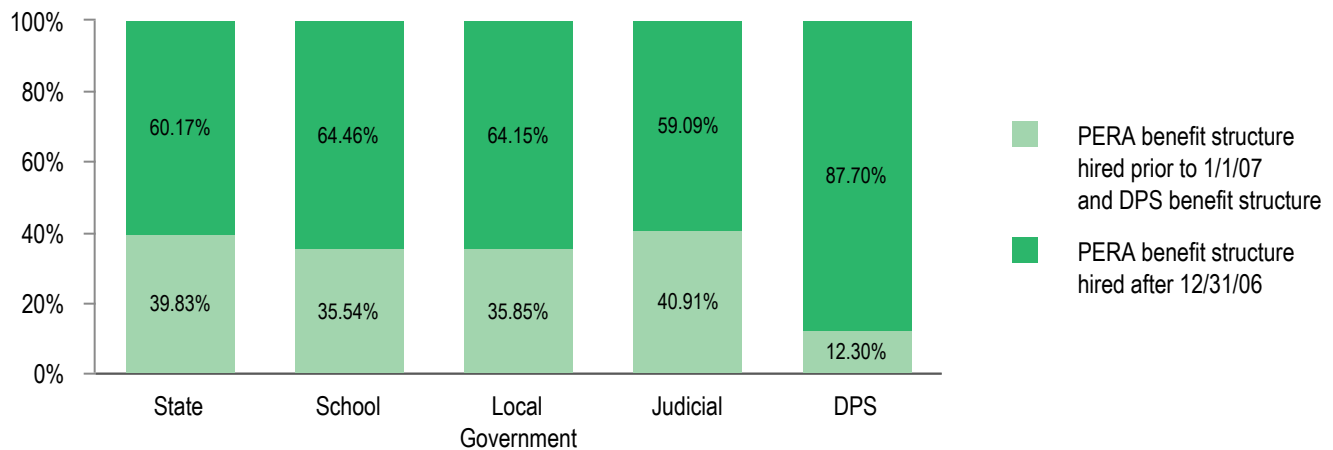
BREAKDOWN OF MEMBERSHIP BY PERCENTAGE

As of December 31, 2021

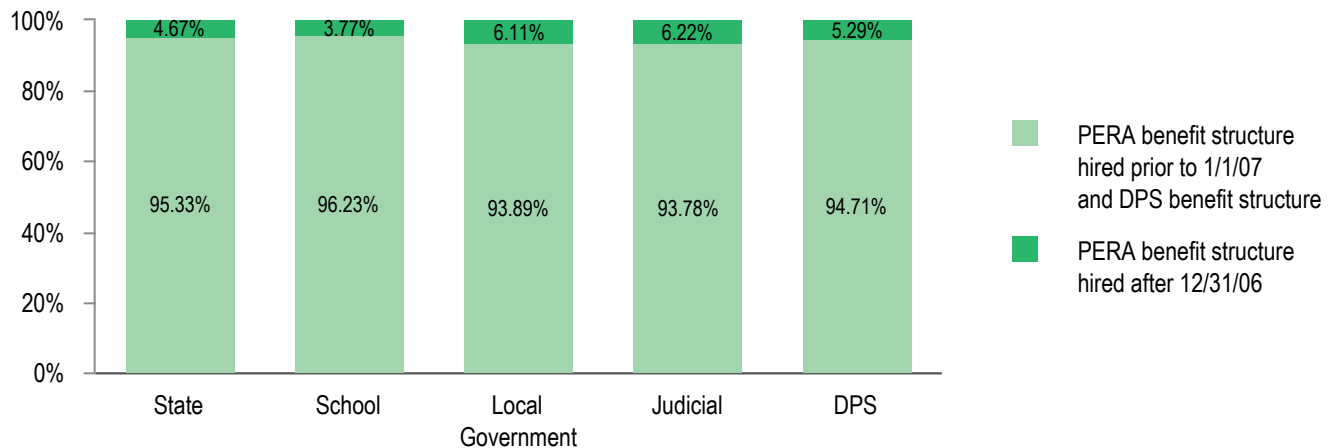
Active Members by Division



Inactive Members by Division (Vested and Non-Vested)



Retirees and Survivors by Division (Includes Deferred Survivors)



SCHEDULE OF AVERAGE RETIREMENT BENEFITS PAYABLE—ALL DIVISION TRUST FUNDS¹

(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
12/31/2021	\$3,220	59.0	72.5	22.7	83.0
12/31/2020	3,204	58.9	72.3	22.8	81.5
12/31/2019	3,179	58.8	72.0	22.9	82.3
12/31/2018	3,208	58.8	71.7	23.0	82.5
12/31/2017	3,232	58.6	71.5	23.1	82.5
12/31/2016	3,193	58.5	71.2	23.2	82.5
12/31/2015	3,153	58.4	70.9	23.3	82.2
12/31/2014	3,112	58.3	70.7	23.4	82.8
12/31/2013	3,068	58.2	70.4	23.5	82.0 ²
12/31/2012	3,020	58.2	70.0	23.5	N/A

¹ Includes disability retirements, but not survivor benefits.² Information is not available prior to December 31, 2013.SCHEDULE OF AVERAGE RETIREMENT BENEFITS PAYABLE¹

(In Actual Dollars)

	State Division	School Division	Local Government Division	Judicial Division	DPS Division
For All Retirees Year Ended 12/31/2021					
Average monthly benefit	\$3,419	\$3,079	\$3,212	\$6,237	\$3,293
Average age at retirement	58.8	59.1	58.9	62.5	59.6
Average age	72.6	72.4	70.8	75.2	75.0
Average years of service at retirement	22.5	22.9	21.0	23.2	23.5
Average age at death	82.7	83.1	79.8	85.4	85.8
For Members Who Retired During 2021					
Average monthly benefit	\$3,034	\$2,542	\$2,696	\$6,588	\$2,375
Average age	62.5	62.0	62.7	65.4	63.5
Average years of service	20.5	20.6	17.7	21.8	18.2
For All Retirees Year Ended 12/31/2020					
Average monthly benefit	\$3,393	\$3,067	\$3,201	\$6,123	\$3,284
Average age at retirement	58.7	59.0	58.8	62.3	59.5
Average age	72.4	72.2	70.4	74.9	74.8
Average years of service at retirement	22.6	23.0	21.2	23.2	23.8
Average age at death	81.0	81.7	79.0	87.9	83.6
For Members Who Retired During 2020					
Average monthly benefit	\$2,772	\$2,353	\$2,798	\$7,140	\$2,500
Average age	62.6	62.2	62.9	66.9	63.8
Average years of service	19.9	20.2	18.9	23.8	18.6

Please see page 230 for footnote references.

SCHEDULE OF AVERAGE RETIREMENT BENEFITS PAYABLE¹ (CONTINUED)

(In Actual Dollars)

	State Division	School Division	Local Government Division	Judicial Division	DPS Division
For All Retirees Year Ended 12/31/2019					
Average monthly benefit	\$3,360	\$3,050	\$3,160	\$5,984	\$3,252
Average age at retirement	58.6	58.9	58.6	62.0	59.4
Average age	72.1	71.9	70.0	74.8	74.6
Average years of service at retirement	22.7	23.1	21.3	23.1	24.0
Average age at death	82.4	82.1	79.2	86.2	84.9
For Members Who Retired During 2019					
Average monthly benefit	\$2,767	\$2,267	\$2,622	\$6,529	\$2,464
Average age	62.2	61.7	61.9	63.8	63.6
Average years of service	19.7	20.0	17.9	21.0	18.4
For All Retirees Year Ended 12/31/2018					
Average monthly benefit	\$3,379	\$3,085	\$3,187	\$5,915	\$3,278
Average age at retirement	58.6	58.8	58.6	62.0	59.4
Average age	71.9	71.6	69.7	75.0	74.3
Average years of service at retirement	22.8	23.2	21.4	23.3	24.2
Average age at death	82.7	82.4	79.8	83.2	84.6
For Members Who Retired During 2018					
Average monthly benefit	\$2,795	\$2,291	\$2,853	\$7,556	\$2,749
Average age	63.2	62.8	62.8	67.5	63.3
Average years of service	20.1	20.3	18.8	25.1	20.1
For All Retirees Year Ended 12/31/2017					
Average monthly benefit	\$3,397	\$3,115	\$3,188	\$5,864	\$3,290
Average age at retirement	58.4	58.7	58.4	61.8	59.3
Average age	71.7	71.3	69.3	74.3	74.2
Average years of service at retirement	22.9	23.3	21.5	23.2	24.4
Average age at death	82.1	82.8	78.2	82.9	85.2
For Members Who Retired During 2017					
Average monthly benefit	\$2,866	\$2,304	\$2,669	\$7,747	\$2,608
Average age	61.7	61.7	61.9	66.1	62.0
Average years of service	20.6	20.4	18.7	25.6	19.3
For All Retirees Year Ended 12/31/2016					
Average monthly benefit	\$3,345	\$3,086	\$3,145	\$5,624	\$3,248
Average age at retirement	58.3	58.6	58.2	61.6	59.2
Average age	71.4	71.0	69.0	74.2	74.0
Average years of service at retirement	22.9	23.4	21.7	23.0	24.7
Average age at death	82.4	82.7	80.1	84.2	83.3
For Members Who Retired During 2016					
Average monthly benefit	\$2,812	\$2,303	\$2,467	\$6,192	\$2,520
Average age	61.6	61.4	61.2	65.6	62.6
Average years of service	20.7	20.7	18.1	21.4	19.2

Please see page 230 for footnote references.

SCHEDULE OF AVERAGE RETIREMENT BENEFITS PAYABLE¹ (CONTINUED)

(In Actual Dollars)

	State Division	School Division	Local Government Division	Judicial Division	DPS Division
For All Retirees 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	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
For Members Who Retired During 2015					
Average monthly benefit	\$2,828	\$2,293	\$2,750	\$7,030	\$2,493
Average age	61.4	61.3	61.1	65.1	62.9
Average years of service	21.0	20.7	19.7	25.7	18.7
For All Retirees 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	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
For Members Who Retired During 2014					
Average monthly benefit	\$2,760	\$2,405	\$2,352	\$4,969	\$2,593
Average age	61.3	60.9	61.3	66.2	63.2
Average years of service	20.8	21.0	18.4	20.0	19.6
For All Retirees 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	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
For Members Who Retired During 2013					
Average monthly benefit	\$2,837	\$2,455	\$2,509	\$6,857	\$2,776
Average age	60.7	60.8	60.1	64.9	61.7
Average years of service	21.2	21.3	18.9	26.2	19.6
For All Retirees 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	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
For Members Who Retired During 2012					
Average monthly benefit	\$2,890	\$2,425	\$2,876	\$4,841	\$2,540
Average age	60.2	60.3	59.8	63.9	62.5
Average years of service	21.8	21.3	20.9	22.7	19.7

¹ Includes disability retirements, but not survivor benefits.² Information is not available prior to December 31, 2013.

BENEFIT PAYMENTS—ALL DIVISION TRUST FUNDS

As of December 31, 2021

(In Actual Dollars)

Benefit Payments^{1,2}

At the end of 2021, PERA was paying benefits to more than 131,000 retired public employees and their beneficiaries who received an average benefit of \$3,194 per month. For benefit recipients, this may be the primary source of retirement income as most PERA benefit recipients do not qualify for Social Security payments.

The PERA service retirement formula for calculating benefits, specified in State law as of December 31, 2021, is 2.5% multiplied by years of service multiplied by Highest Average Salary (HAS). HAS³ is 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%. All other members are subject to an 8% 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 68.3% (90,024) of recipients receive less than \$50,000 a year in PERA benefits, as the graph below demonstrates. Slightly less than 2.0% (2,614) 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.

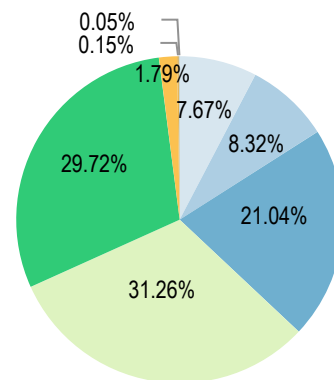
¹ Includes amounts paid under replacement benefit arrangements.

² Does not include deferred survivors and benefits that ended or were suspended in 2021.

³ Some members of the DPS benefit structure, members in the Judicial Division, and members who did not have five years of service credit on December 31, 2019, have different HAS calculations. Please see Note 1 of the Notes to the Financial Statements in the Financial Section for more information.

PERA BENEFIT PAYMENTS BY DOLLAR AMOUNT OF ANNUAL BENEFIT AND NUMBER OF BENEFIT RECIPIENTS

Benefit Range ¹	Number of Benefit Recipients ²
\$0 - \$4,999	10,113
\$5,000 - \$9,999	10,973
\$10,000 - \$24,999	27,739
\$25,000 - \$49,999	41,199
\$50,000 - \$99,999	39,170
\$100,000 - \$149,999	2,360
\$150,000 - \$199,999	193
\$200,000+	61
Total Benefit Recipients	131,808



¹ Includes amounts paid under replacement benefit arrangements.

² Does not include 303 deferred survivors.

BENEFIT PAYMENTS—ALL DIVISION TRUST FUNDS

As of December 31, 2021

(In Actual Dollars)

Benefit Payments by Decile

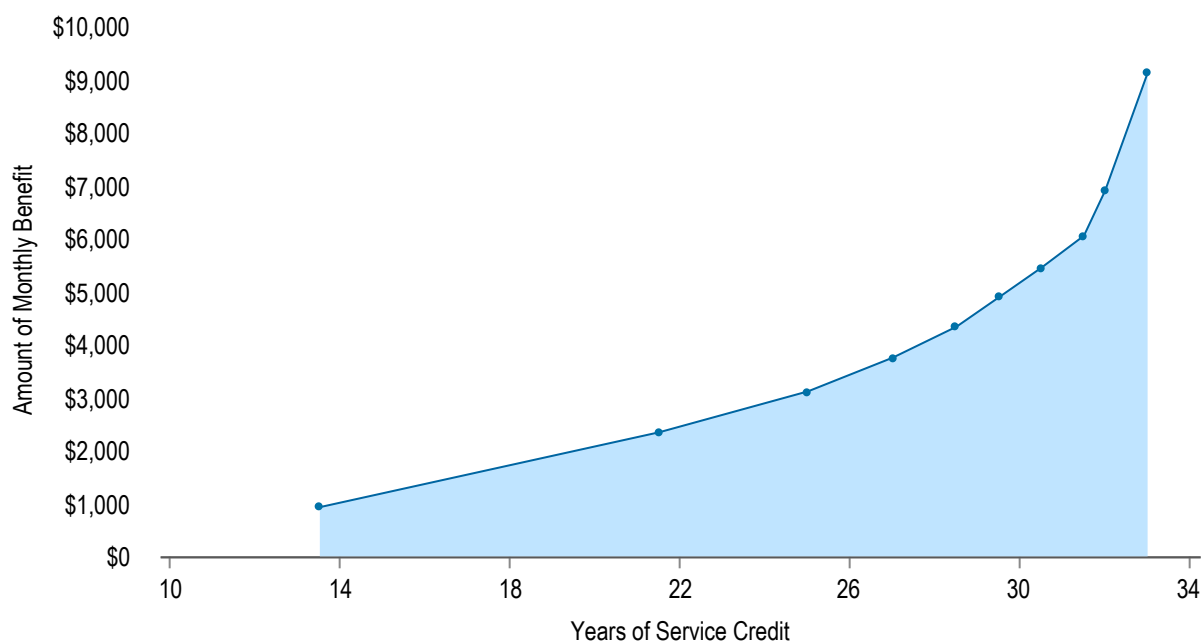
Another way to examine the data is to group benefit recipients and the benefits they receive into benefit payment ranges as a percentage of the total. The table below shows that, for the one-third of PERA benefit recipients (45,348) in the lowest decile, the average benefit is \$11,136 a year. This group retired at an average age of 61 with just over 13 years of service credit. For the top decile, on the other end of the scale, the average benefit is \$109,428 a year. However, this group, on average, had just 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 6,513 new retirees in 2021, the average monthly benefit is \$2,722. These members retired at an average age of 62 with 20.27 years of service credit.

Decile	Number of Benefit Recipients ¹	Percent of Benefit Recipients	Average Monthly Benefit ²	Average Age at Retirement	Average Service Credit
1%–10%	45,348	34.41%	\$928	61	13.47
11%–20%	17,973	13.64%	2,342	58	21.38
21%–30%	13,524	10.26%	3,113	58	24.59
31%–40%	11,229	8.52%	3,750	58	26.87
41%–50%	9,714	7.37%	4,334	57	28.49
51%–60%	8,611	6.53%	4,889	57	29.70
61%–70%	7,730	5.86%	5,447	57	30.60
71%–80%	6,959	5.28%	6,049	57	31.30
81%–90%	6,103	4.63%	6,900	57	32.19
91%–100%	4,617	3.50%	9,119	58	33.25
Total	131,808	100.00%	3,194	59	23.00

¹ Does not include 303 deferred survivors.

² Includes amounts paid under replacement benefit arrangements.

Average Monthly Benefit Payment by Years of Service Credit



SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2021

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

Amount of Monthly Benefit (In Actual Dollars)	Total (Columns 1–5)	Types of Benefits					
		1	2	3	4	5	6
\$1-\$1,000	6,371	5,798	238	24	250	61	5,180
\$1,001-\$2,000	7,312	5,670	1,254	47	299	42	2,117
\$2,001-\$3,000	7,802	6,440	1,200	36	121	5	587
\$3,001-\$4,000	6,869	6,449	332	29	57	2	173
\$4,001-\$5,000	5,225	5,101	87	16	20	1	49
\$5,001+	9,470	9,386	35	36	12	1	50
Total	43,049	38,844	3,146	188	759	112	8,156

Amount of Monthly Benefit ¹ (In Actual Dollars)	Option Selected				Surviving Cobeneficiary	Surviving Retiree
	1	2	3	4		
\$1-\$1,000	4,010	390	1,065	1	559	11
\$1,001-\$2,000	3,992	752	1,173	2	974	31
\$2,001-\$3,000	4,304	1,030	1,383	1	878	44
\$3,001-\$4,000	3,682	1,129	1,385	—	560	25
\$4,001-\$5,000	2,649	1,003	1,194	2	323	17
\$5,001+	4,541	1,999	2,417	3	443	18
Total	23,178	6,303	8,617	9	3,737	146

¹ For Types of Benefits 1 and 2 above.

SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2021

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

Amount of Monthly Benefit (In Actual Dollars)	Total (Columns 1–5)	Types of Benefits					
		1	2	3	4	5	6
\$1-\$1,000	16,263	14,854	721	51	547	90	15,535
\$1,001-\$2,000	11,907	10,431	1,110	43	276	47	3,369
\$2,001-\$3,000	10,392	9,528	687	20	142	15	696
\$3,001-\$4,000	9,868	9,461	324	19	59	5	190
\$4,001-\$5,000	9,300	9,143	127	9	19	2	60
\$5,001+	15,122	15,052	41	19	7	3	32
Total	72,852	68,469	3,010	161	1,050	162	19,882

Amount of Monthly Benefit ¹ (In Actual Dollars)	Option Selected				Surviving Cobeneficiary	Surviving Retiree
	1	2	3	4		
\$1-\$1,000	11,054	1,115	2,372	1	999	34
\$1,001-\$2,000	7,421	1,446	1,688	2	942	42
\$2,001-\$3,000	6,112	1,635	1,616	2	805	45
\$3,001-\$4,000	6,002	1,873	1,482	2	399	27
\$4,001-\$5,000	5,372	2,003	1,589	2	293	11
\$5,001+	9,449	3,191	2,090	5	347	11
Total	45,410	11,263	10,837	14	3,785	170

¹ For Types of Benefits 1 and 2 above.

SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2021

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

Amount of Monthly Benefit (In Actual Dollars)	Total (Columns 1–5)	Types of Benefits					
		1	2	3	4	5	6
\$1-\$1,000	1,581	1,475	51	5	42	8	1,639
\$1,001-\$2,000	1,656	1,327	252	9	57	11	700
\$2,001-\$3,000	1,460	1,190	236	10	24	—	249
\$3,001-\$4,000	1,212	1,125	72	3	11	1	77
\$4,001-\$5,000	941	915	16	7	3	—	30
\$5,001+	1,740	1,726	7	5	2	—	18
Total	8,590	7,758	634	39	139	20	2,713

Amount of Monthly Benefit ¹ (In Actual Dollars)	Option Selected				Surviving Cobeneficiary	Surviving Retiree
	1	2	3	4		
\$1-\$1,000	1,039	116	254	—	114	3
\$1,001-\$2,000	929	182	289	1	171	7
\$2,001-\$3,000	751	242	304	—	120	9
\$3,001-\$4,000	637	231	243	—	82	4
\$4,001-\$5,000	463	200	224	—	43	1
\$5,001+	732	430	506	—	65	—
Total	4,551	1,401	1,820	1	595	24

¹ For Types of Benefits 1 and 2 above.

SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2021

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

Amount of Monthly Benefit (In Actual Dollars)	Total (Columns 1–5)	Types of Benefits					
		1	2	3	4	5	6
\$1-\$1,000	22	19	1	—	—	2	1
\$1,001-\$2,000	28	24	1	—	3	—	3
\$2,001-\$3,000	31	29	—	—	2	—	4
\$3,001-\$4,000	35	30	2	—	3	—	4
\$4,001-\$5,000	37	31	5	—	1	—	2
\$5,001+	281	273	7	1	—	—	1
Total	434	406	16	1	9	2	15

Amount of Monthly Benefit ¹ (In Actual Dollars)	Option Selected				Surviving Cobeneficiary	Surviving Retiree
	1	2	3	4		
\$1-\$1,000	8	1	6	—	5	—
\$1,001-\$2,000	9	1	5	—	10	—
\$2,001-\$3,000	6	6	9	—	8	—
\$3,001-\$4,000	9	5	11	—	7	—
\$4,001-\$5,000	10	3	14	—	9	—
\$5,001+	86	68	100	—	26	—
Total	128	84	145	—	65	—

¹ For Types of Benefits 1 and 2 above.

SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2021

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

Amount of Monthly Benefit (In Actual Dollars)	Total (Columns 1–5)	Types of Benefits					
		1	2	3	4	5	6
\$1-\$1,000	1,036	897	72	2	60	5	1,433
\$1,001-\$2,000	1,171	1,043	100	1	26	1	628
\$2,001-\$3,000	1,118	992	94	12	20	—	137
\$3,001-\$4,000	1,227	1,175	42	8	2	—	37
\$4,001-\$5,000	1,268	1,242	20	2	3	1	7
\$5,001+	1,366	1,360	5	1	—	—	7
Total	7,186	6,709	333	26	111	7	2,249

Amount of Monthly Benefit ¹ (In Actual Dollars)	Option Selected ²				Surviving Cobeneficiary	Surviving Retiree	Cobeneficiaries Both Deceased
	1	2	3	4			
\$1-\$1,000	682	40	146	—	74	27	—
\$1,001-\$2,000	705	94	179	—	116	44	5
\$2,001-\$3,000	611	84	218	—	105	68	—
\$3,001-\$4,000	635	118	263	—	128	72	1
\$4,001-\$5,000	607	110	327	—	117	99	2
\$5,001+	686	143	343	—	116	76	1
Total	3,926	589	1,476	—	656	386	9

¹ For Types of Benefits 1 and 2 above.

² 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)

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

State Division

Year Retired	Years of Service Credit						
	0-5	5-10	10-15	15-20	20-25	25-30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$155	\$767	\$1,342	\$2,050	\$3,118	\$4,249	\$5,782
Average highest average salary	\$2,484	\$4,449	\$4,724	\$4,872	\$5,966	\$6,574	\$7,404
Number of service retirees	110	239	253	242	364	325	421
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$183	\$634	\$1,166	\$1,990	\$2,888	\$4,105	\$5,660
Average highest average salary	\$2,948	\$3,700	\$4,229	\$4,844	\$5,538	\$6,459	\$7,169
Number of service retirees	129	228	262	240	333	290	359
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$146	\$674	\$1,212	\$1,948	\$2,897	\$4,102	\$5,660
Average highest average salary	\$2,608	\$3,902	\$4,401	\$4,743	\$5,607	\$6,358	\$7,235
Number of service retirees	110	229	237	231	287	282	325
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$153	\$596	\$1,250	\$1,997	\$2,880	\$3,981	\$5,571
Average highest average salary	\$2,721	\$3,531	\$4,332	\$4,838	\$5,559	\$6,179	\$7,111
Number of service retirees	83	281	228	234	306	303	379
Period 1/1/2017 to 12/31/2017							
Average monthly benefit	\$233	\$704	\$1,287	\$2,102	\$3,025	\$4,355	\$5,618
Average highest average salary	\$3,134	\$3,869	\$4,312	\$4,860	\$5,532	\$6,465	\$7,162
Number of service retirees	102	238	253	271	338	357	322
Period 1/1/2016 to 12/31/2016							
Average monthly benefit	\$240	\$641	\$1,285	\$2,050	\$2,983	\$4,128	\$5,593
Average highest average salary	\$3,010	\$3,477	\$4,394	\$4,790	\$5,397	\$6,130	\$6,957
Number of service retirees	103	244	233	238	319	357	319
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

Note: HAS 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, members in the Judicial Division, and members who did not have five years of service credit on December 31, 2019, have different HAS calculations. Please see Note 1 of the Notes to the Financial Statements in the Financial Section for more information.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

School Division

Year Retired	Years of Service Credit						
	0-5	5-10	10-15	15-20	20-25	25-30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$121	\$434	\$839	\$1,536	\$2,489	\$3,730	\$5,225
Average highest average salary	\$1,915	\$2,600	\$3,038	\$3,757	\$4,751	\$5,730	\$6,741
Number of service retirees	151	476	426	477	799	640	707
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$85	\$416	\$821	\$1,504	\$2,266	\$3,579	\$5,046
Average highest average salary	\$1,447	\$2,522	\$2,957	\$3,604	\$4,349	\$5,440	\$6,460
Number of service retirees	167	379	464	485	702	564	608
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$138	\$396	\$786	\$1,440	\$2,321	\$3,503	\$4,911
Average highest average salary	\$1,981	\$2,339	\$2,854	\$3,519	\$4,428	\$5,374	\$6,356
Number of service retirees	141	366	440	377	635	509	512
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$124	\$436	\$805	\$1,440	\$2,254	\$3,580	\$4,833
Average highest average salary	\$1,951	\$2,574	\$2,917	\$3,535	\$4,296	\$5,435	\$6,175
Number of service retirees	122	365	451	474	640	551	541
Period 1/1/2017 to 12/31/2017							
Average monthly benefit	\$185	\$433	\$925	\$1,582	\$2,418	\$3,794	\$4,891
Average highest average salary	\$1,980	\$2,351	\$3,118	\$3,615	\$4,393	\$5,547	\$6,067
Number of service retirees	159	370	463	485	611	590	428
Period 1/1/2016 to 12/31/2016							
Average monthly benefit	\$127	\$430	\$879	\$1,684	\$2,304	\$3,727	\$4,695
Average highest average salary	\$1,796	\$2,325	\$2,924	\$3,799	\$4,156	\$5,388	\$5,851
Number of service retirees	118	384	388	408	565	589	422
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

Note: HAS 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, members in the Judicial Division, and members who did not have five years of service credit on December 31, 2019, have different HAS calculations. Please see Note 1 of the Notes to the Financial Statements in the Financial Section for more information.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

Local Government Division

Year Retired	Years of Service Credit						
	0–5	5–10	10–15	15–20	20–25	25–30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$211	\$798	\$1,535	\$2,388	\$3,233	\$4,747	\$6,020
Average highest average salary	\$3,890	\$4,900	\$5,714	\$5,572	\$6,306	\$7,384	\$7,580
Number of service retirees	40	99	68	71	77	65	65
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$175	\$785	\$1,443	\$2,156	\$3,169	\$4,339	\$5,914
Average highest average salary	\$2,982	\$5,165	\$5,315	\$5,477	\$6,390	\$6,877	\$7,724
Number of service retirees	26	75	50	58	68	60	67
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$204	\$737	\$1,336	\$2,127	\$3,042	\$4,447	\$5,849
Average highest average salary	\$3,752	\$4,816	\$5,056	\$5,270	\$6,155	\$7,081	\$7,701
Number of service retirees	26	66	71	62	64	62	54
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$224	\$600	\$1,496	\$2,232	\$3,054	\$4,745	\$6,276
Average highest average salary	\$3,698	\$3,820	\$5,655	\$5,428	\$5,865	\$7,485	\$8,237
Number of service retirees	19	63	82	43	76	60	61
Period 1/1/2017 to 12/31/2017							
Average monthly benefit	\$240	\$621	\$1,282	\$2,202	\$3,241	\$4,687	\$5,720
Average highest average salary	\$4,224	\$3,889	\$4,675	\$5,056	\$6,165	\$6,969	\$7,260
Number of service retirees	29	60	72	52	78	54	55
Period 1/1/2016 to 12/31/2016							
Average monthly benefit	\$323	\$686	\$1,401	\$2,195	\$2,761	\$4,569	\$5,378
Average highest average salary	\$4,580	\$4,031	\$5,104	\$5,506	\$5,255	\$6,796	\$6,648
Number of service retirees	15	73	77	49	55	52	46
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

Note: HAS 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, members in the Judicial Division, and members who did not have five years of service credit on December 31, 2019, have different HAS calculations. Please see Note 1 of the Notes to the Financial Statements in the Financial Section for more information.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

Judicial Division

Year Retired	Years of Service Credit						
	0-5	5-10	10-15	15-20	20-25	25-30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$230	\$2,878	\$3,366	\$5,796	\$6,473	\$8,659	\$9,838
Average highest average salary	\$2,704	\$15,526	\$12,689	\$14,582	\$12,528	\$13,876	\$13,822
Number of service retirees	1	1	7	3	4	3	9
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$—	\$1,655	\$3,737	\$2,485	\$7,289	\$7,859	\$11,031
Average highest average salary	\$—	\$9,117	\$13,912	\$6,658	\$14,385	\$12,619	\$14,277
Number of service retirees	—	2	2	3	6	5	7
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$—	\$505	\$3,822	\$5,548	\$6,389	\$9,190	\$11,134
Average highest average salary	\$—	\$4,208	\$13,596	\$13,969	\$13,267	\$13,950	\$13,458
Number of service retirees	—	2	4	7	3	7	3
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$—	\$2,763	\$—	\$5,841	\$6,403	\$8,926	\$11,277
Average highest average salary	\$—	\$13,617	\$—	\$13,351	\$13,378	\$13,548	\$15,287
Number of service retirees	—	1	—	1	2	1	2
Period 1/1/2017 to 12/31/2017							
Average monthly benefit	\$—	\$1,929	\$3,419	\$6,000	\$—	\$8,369	\$11,366
Average highest average salary	\$—	\$13,295	\$9,786	\$12,308	\$—	\$12,825	\$13,840
Number of service retirees	—	3	3	2	—	8	8
Period 1/1/2016 to 12/31/2016							
Average monthly benefit	\$679	\$1,868	\$3,471	\$5,044	\$5,641	\$8,291	\$10,086
Average highest average salary	\$6,905	\$12,839	\$12,526	\$12,043	\$11,450	\$13,030	\$13,340
Number of service retirees	2	2	1	6	3	7	5
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

Note: HAS 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, members in the Judicial Division, and members who did not have five years of service credit on December 31, 2019, have different HAS calculations. Please see Note 1 of the Notes to the Financial Statements in the Financial Section for more information.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

DPS Division

Year Retired	Years of Service Credit						
	0-5	5-10	10-15	15-20	20-25	25-30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$116	\$558	\$893	\$2,119	\$2,821	\$4,257	\$5,537
Average highest average salary	\$2,188	\$3,279	\$3,238	\$5,596	\$5,618	\$6,617	\$7,155
Number of service retirees	10	51	52	32	29	45	33
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$22	\$595	\$837	\$2,163	\$2,893	\$4,307	\$5,498
Average highest average salary	\$795	\$3,388	\$3,142	\$5,382	\$5,959	\$6,833	\$7,201
Number of service retirees	5	27	61	29	25	35	36
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$119	\$519	\$1,361	\$2,205	\$2,644	\$4,237	\$5,801
Average highest average salary	\$2,828	\$3,093	\$5,082	\$5,691	\$5,223	\$6,601	\$7,292
Number of service retirees	8	56	34	28	28	37	32
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$77	\$475	\$1,369	\$1,748	\$2,727	\$4,334	\$5,337
Average highest average salary	\$1,890	\$2,972	\$4,821	\$4,714	\$5,464	\$6,788	\$6,831
Number of service retirees	5	65	23	34	35	51	61
Period 1/1/2017 to 12/31/2017							
Average monthly benefit	\$176	\$555	\$1,305	\$2,089	\$3,242	\$4,544	\$5,416
Average highest average salary	\$2,466	\$2,926	\$4,325	\$5,263	\$5,682	\$6,625	\$6,835
Number of service retirees	8	59	21	38	52	58	20
Period 1/1/2016 to 12/31/2016							
Average monthly benefit	\$163	\$611	\$1,462	\$1,989	\$3,415	\$4,133	\$5,342
Average highest average salary	\$1,938	\$3,536	\$4,816	\$4,955	\$6,055	\$5,876	\$6,785
Number of service retirees	4	59	40	60	59	56	24
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

Note: HAS 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, members in the Judicial Division, and members who did not have five years of service credit on December 31, 2019, have different HAS calculations. Please see Note 1 of the Notes to the Financial Statements in the Financial Section for more information.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

All Division Trust Funds

Year Retired	Years of Service Credit						
	0–5	5–10	10–15	15–20	20–25	25–30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$145	\$578	\$1,081	\$1,798	\$2,734	\$3,983	\$5,499
Average highest average salary	\$2,380	\$3,428	\$3,890	\$4,351	\$5,237	\$6,144	\$7,074
Number of service retirees	312	866	806	825	1,273	1,078	1,235
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$130	\$595	\$837	\$2,163	\$2,893	\$4,307	\$5,498
Average highest average salary	\$2,151	\$3,230	\$3,534	\$4,177	\$4,909	\$5,929	\$6,851
Number of service retirees	327	711	839	815	1,134	954	1,077
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$147	\$526	\$1,005	\$1,738	\$2,549	\$3,831	\$5,280
Average highest average salary	\$2,408	\$3,128	\$3,670	\$4,264	\$4,919	\$5,919	\$6,798
Number of service retirees	285	719	786	705	1,017	897	926
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$142	\$514	\$1,023	\$1,668	\$2,516	\$3,824	\$5,227
Average highest average salary	\$2,373	\$3,070	\$3,671	\$4,090	\$4,829	\$5,876	\$6,691
Number of service retirees	229	775	784	786	1,059	966	1,044
Period 1/1/2017 to 12/31/2017							
Average monthly benefit	\$207	\$553	\$1,088	\$1,819	\$2,707	\$4,102	\$5,302
Average highest average salary	\$2,606	\$3,064	\$3,684	\$4,196	\$4,940	\$6,039	\$6,662
Number of service retirees	298	730	812	848	1,079	1,067	833
Period 1/1/2016 to 12/31/2016							
Average monthly benefit	\$192	\$540	\$1,096	\$1,882	\$2,621	\$3,955	\$5,137
Average highest average salary	\$2,530	\$2,979	\$3,730	\$4,375	\$4,746	\$5,783	\$6,402
Number of service retirees	242	762	739	761	1,001	1,061	816
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

Note: HAS 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, members in the Judicial Division, and members who did not have five years of service credit on December 31, 2019, have different HAS calculations. Please see Note 1 of the Notes to the Financial Statements in the Financial Section for more information.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

Health Care Trust Fund¹

Year Retired	Years of Service Credit						
	0–5	5–10	10–15	15–20	20–25	25–30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$16	\$55	\$89	\$132	\$190	\$197	\$196
Number of service retirees ²	21	62	130	152	334	286	412
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$14	\$60	\$101	\$148	\$189	\$197	\$203
Number of service retirees ²	18	56	106	187	346	325	459
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$15	\$57	\$102	\$147	\$195	\$203	\$205
Number of service retirees ²	19	57	120	184	316	319	416
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$20	\$62	\$110	\$154	\$201	\$201	\$209
Number of service retirees ²	7	56	131	177	394	365	482

¹ Information is not available prior to 2018. In future reports, additional years will be added until 10 years of historical data are presented.² Only includes those service retirees participating in PERACare.DPS Health Care Trust Fund¹

Year Retired	Years of Service Credit						
	0–5	5–10	10–15	15–20	20–25	25–30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$29	\$92	\$85	\$130	\$148	\$203	\$216
Number of service retirees ²	1	1	4	7	5	13	13
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$—	\$69	\$78	\$141	\$129	\$212	\$212
Number of service retirees ²	—	1	7	10	8	13	18
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$6	\$68	\$99	\$131	\$201	\$208	\$203
Number of service retirees ²	1	4	9	7	13	16	17
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$—	\$65	\$67	\$170	\$203	\$208	\$208
Number of service retirees ²	—	8	3	6	13	21	36

¹ Information is not available prior to 2018. In future reports, additional years will be added until 10 years of historical data are presented.² Only includes those service retirees participating in PERACare.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

All Health Care Trust Funds¹

Year Retired	Years of Service Credit						
	0-5	5-10	10-15	15-20	20-25	25-30	30+
Period 1/1/2021 to 12/31/2021							
Average monthly benefit	\$16	\$56	\$89	\$132	\$190	\$197	\$197
Number of service retirees ²	22	63	134	159	339	299	425
Period 1/1/2020 to 12/31/2020							
Average monthly benefit	\$14	\$60	\$100	\$148	\$187	\$198	\$203
Number of service retirees ²	18	57	113	197	354	338	477
Period 1/1/2019 to 12/31/2019							
Average monthly benefit	\$14	\$58	\$102	\$147	\$195	\$203	\$205
Number of service retirees ²	20	61	129	191	329	335	433
Period 1/1/2018 to 12/31/2018							
Average monthly benefit	\$20	\$62	\$109	\$154	\$201	\$201	\$209
Number of service retirees ²	7	64	134	183	407	386	518

¹ Information is not available prior to 2018. In future reports, additional years will be added until 10 years of historical data are presented.

² Only includes those service retirees participating in PERACare.

SCHEDULE OF CONTRIBUTION RATE HISTORY

State Division (Members other than State Troopers)¹

			Percent of Covered Payroll						
			Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Nonemployer Contribution Rate	Defined Contribution Supplement ³	Total Contribution Rate
Years									
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% ⁴	—	—	—	—	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% ⁵	7.65% ⁵	2.20%	1.50%	—	—	21.85%
1/1/2011	to	12/31/2011	10.50% ⁵	7.65% ⁵	2.60%	2.00%	—	—	22.75%
1/1/2012	to	6/30/2012	10.50% ⁵	7.65% ⁵	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%
1/1/2016	to	12/31/2016	8.00%	10.15%	4.60%	4.50%	—	—	27.25%
1/1/2017	to	12/31/2017	8.00%	10.15%	5.00%	5.00%	—	—	28.15%
1/1/2018	to	12/31/2018	8.00%	10.15%	5.00%	5.00%	2.71% ⁶	—	30.86%
1/1/2019	to	6/30/2019	8.00%	10.15%	5.00%	5.00%	2.57% ^{6,7}	—	30.72%
7/1/2019	to	12/31/2019	8.75%	10.40%	5.00%	5.00%	2.57% ^{6,7}	—	31.72%

Please see next page for footnote references.

SCHEDULE OF CONTRIBUTION RATE HISTORY

State Division (Members other than State Troopers) (continued)¹

			Percent of Covered Payroll						
Years			Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Nonemployer Contribution Rate	Defined Contribution Supplement ³	Total Contribution Rate
1/1/2020	to	6/30/2020	8.75%	10.40%	5.00%	5.00%	—	—	29.15%
7/1/2020	to	12/31/2020	10.00%	10.90%	5.00%	5.00%	— ⁸	—	30.90%
1/1/2021	to	6/30/2021	10.00%	10.90%	5.00%	5.00%	2.48% ^{6,7}	0.05%	33.43%
7/1/2021	to	12/31/2021	10.50%	10.90%	5.00%	5.00%	2.48% ^{6,7}	0.05%	33.93%

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 C.R.S. § 24-51-415 adjusts employer contribution rates for the State Division. See Note 4 of the Notes to the Financial Statements in the Financial Section for additional information.

⁴ Legislation created an annual reduction equal to 1.0% of salary retroactive to July 1, 1991, to be taken during May and June of 1992.

⁵ Senate Bills 10-146 and 11-076 required member contributions to increase by 2.50% and employer contributions to decrease by 2.50%.

⁶ Contributions from a nonemployer contributing entity are required by C.R.S. § 24-51-414 *et seq.* and are remitted to PERA as a single sum in July of each year. For purposes of this schedule, the amount allocated to the State Division is expressed as a percentage of annual covered payroll.

⁷ The amount allocated to the State Division is shown in both six-month segment contribution summaries. The rate presented in each segment is based on annual covered payroll for improved comparative analysis to the prior year.

⁸ House Bill 20-1379 suspended the July 2020 contribution from the nonemployer contributing entity for the State's 2020-21 fiscal year.

SCHEDULE OF CONTRIBUTION RATE HISTORY

State Division (State Troopers)¹

			Percent of Covered Payroll						
Years			Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Nonemployer Contribution Rate	Defined Contribution Supplement ³	Total Contribution Rate
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% ⁴	—	—	—	—	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% ⁵	10.35% ⁵	2.20%	1.50%	—	—	26.55%
1/1/2011	to	12/31/2011	12.50% ⁵	10.35% ⁵	2.60%	2.00%	—	—	27.45%
1/1/2012	to	6/30/2012	12.50% ⁵	10.35% ⁵	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%
1/1/2016	to	12/31/2016	10.00%	12.85%	4.60%	4.50%	—	—	31.95%
1/1/2017	to	12/31/2017	10.00%	12.85%	5.00%	5.00%	—	—	32.85%
1/1/2018	to	12/31/2018	10.00%	12.85%	5.00%	5.00%	2.71% ⁶	—	35.56%
1/1/2019	to	6/30/2019	10.00%	12.85%	5.00%	5.00%	2.57% ^{6,7}	—	35.42%
7/1/2019	to	12/31/2019	10.75%	13.10%	5.00%	5.00%	2.57% ^{6,7}	—	36.42%

Please see next page for footnote references.

SCHEDULE OF CONTRIBUTION RATE HISTORY

State Division (State Troopers) (continued)¹

			Percent of Covered Payroll						
			Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Nonemployer Contribution Rate	Defined Contribution Supplement ³	Total Contribution Rate
Years									
1/1/2020	to	6/30/2020	10.75%	13.10%	5.00%	5.00%	—	—	33.85%
7/1/2020	to	12/31/2020	12.00%	13.60%	5.00%	5.00%	— ⁸	—	35.60%
1/1/2021	to	6/30/2021	12.00%	13.60%	5.00%	5.00%	2.48% ^{6,7}	0.05%	38.13%
7/1/2021	to	12/31/2021	12.50%	13.60%	5.00%	5.00%	2.48% ^{6,7}	0.05%	38.63%

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 C.R.S. § 24-51-415 adjusts employer contribution rates for the State Division. See Note 4 of the Notes to the Financial Statements in the Financial Section for additional information.

⁴ Legislation created an annual reduction equal to 1.0% of salary retroactive to July 1, 1991, to be taken during May and June of 1992.

⁵ Senate Bills 10-146 and 11-076 required member contributions to increase by 2.50% and employer contributions to decrease by 2.50%.

⁶ Contributions from a nonemployer contributing entity are required by C.R.S. § 24-51-414 *et seq.* and are remitted to PERA as a single sum in July of each year. For purposes of this schedule, the amount allocated to the State Division is expressed as a percentage of annual covered payroll.

⁷ The amount allocated to the State Division is shown in both six-month segment contribution summaries. The rate presented in each segment is based on annual covered payroll for improved comparative analysis to the prior year.

⁸ House Bill 20-1379 suspended the July 2020 contribution from the nonemployer contributing entity for the State's 2020-21 fiscal year.

SCHEDULE OF CONTRIBUTION RATE HISTORY

School Division¹

		Percent of Covered Payroll					
Years		Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Nonemployer Contribution Rate	Total Contribution Rate
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%
1/1/2016	to 12/31/2016	8.00%	10.15%	4.50%	4.50%	—	27.15%
1/1/2017	to 12/31/2017	8.00%	10.15%	4.50%	5.00%	—	27.65%
1/1/2018	to 12/31/2018	8.00%	10.15%	4.50%	5.50%	2.64% ³	30.79%
1/1/2019	to 6/30/2019	8.00%	10.15%	4.50%	5.50%	2.50% ^{3,4}	30.65%
7/1/2019	to 12/31/2019	8.75%	10.40%	4.50%	5.50%	2.50% ^{3,4}	31.65%
1/1/2020	to 6/30/2020	8.75%	10.40%	4.50%	5.50%	— ⁵	29.15%
7/1/2020	to 12/31/2020	10.00%	10.90%	4.50%	5.50%	— ⁵	30.90%
1/1/2021	to 6/30/2021	10.00%	10.90%	4.50%	5.50%	2.34%^{3,4}	33.24%
7/1/2021	to 12/31/2021	10.50%	10.90%	4.50%	5.50%	2.34%^{3,4}	33.74%

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 Contributions from a nonemployer contributing entity are required by C.R.S. § 24-51-414 *et seq.* and are remitted to PERA as a single sum in July of each year. For purposes of this schedule, the amount allocated to the School Division is expressed as a percentage of annual covered payroll.

⁴ The amount allocated to the School Division is shown in both six-month segment contribution summaries. The rate presented in each segment is based on annual covered payroll for improved comparative analysis to the prior year.

⁵ House Bill 20-1379 suspended the July 2020 contribution from the nonemployer contributing entity for the State's 2020-21 fiscal year.

SCHEDULE OF CONTRIBUTION RATE HISTORY

State and School Division¹

			Percent of Covered Payroll	
Years			Member Contribution Rate	Employer Contribution Rate ²
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.

Local Government Division (Members other than State Troopers)¹

			Percent of Covered Payroll					
Years			Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Defined Contribution Supplement ³	Total Contribution Rate
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	6/30/2020	8.00%	10.00%	2.20%	1.50%	—	21.70%
7/1/2020	to	12/31/2020	8.50%	10.50%	2.20%	1.50%	—	22.70%
1/1/2021	to	12/31/2021	8.50%	10.50%	2.20%	1.50%	0.02%	22.72%

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.

³ C.R.S. § 24-51-415 adjusts employer contribution rates for the Local Government Division. See Note 4 of the Notes to the Financial Statements in the Financial Section for additional information.

SCHEDULE OF CONTRIBUTION RATE HISTORY

Local Government Division (State Troopers)¹

			Percent of Covered Payroll					
Years			Member Contribution Rate	Employer Contribution Rate	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Defined Contribution Supplement ²	Total Contribution Rate
1/1/2020	to	6/30/2020	10.75%	13.10%	2.20%	1.50%	—	27.55%
7/1/2020	to	12/31/2020	12.00%	13.60%	2.20%	1.50%	—	29.30%
1/1/2021	to	6/30/2021	12.00%	13.60%	2.20%	1.50%	0.02%	29.32%
7/1/2021	to	12/31/2021	12.50%	13.60%	2.20%	1.50%	0.02%	29.82%

¹ C.R.S. § 24-51-101 (46), as amended, expanded the definition of "State Troopers" to include certain employees within the Local Government Division. See Note 4 of the Notes to the Financial Statements in the Financial Section for more information.

² C.R.S. § 24-51-415 adjusts employer contribution rates for the Local Government Division. See Note 4 of the Notes to the Financial Statements in the Financial Section for additional information.

SCHEDULE OF CONTRIBUTION RATE HISTORY

Judicial Division

			Percent of Covered Payroll					
			Member Contribution Rate	Employer Contribution Rate ¹	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Nonemployer Contribution Rate	Total Contribution Rate
Years								
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	12/31/2017	8.00%	13.66%	2.20%	1.50%	—	25.36%
1/1/2018	to	12/31/2018	8.00%	13.66%	2.20%	1.50%	2.74% ³	28.10%
1/1/2019	to	6/30/2019	8.00%	13.66%	3.40%	3.40%	2.51% ^{3,4}	30.97%
7/1/2019	to	12/31/2019	8.75%	13.91%	3.40%	3.40%	2.51% ^{3,4}	31.97%
1/1/2020	to	6/30/2020	8.75%	13.91%	3.80%	3.80%	— ⁵	30.26%
7/1/2020	to	12/31/2020	15.00% ⁶ / 10.00% ⁷	9.41% ⁶ / 14.41% ⁷	3.80%	3.80%	— ⁵	32.01%
1/1/2021	to	6/30/2021	15.00% ⁶ / 10.00% ⁷	9.41% ⁶ / 14.41% ⁷	4.20%	4.20%	2.44% ^{3,4}	35.25%
7/1/2021	to	12/31/2021	15.50% ⁶ / 10.50% ⁷	9.41% ⁶ / 14.41% ⁷	4.20%	4.20%	2.44% ^{3,4}	35.75%

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% and employer contributions to decrease by 2.50%.

³ Contributions from a nonemployer contributing entity are required by C.R.S. § 24-51-414 *et seq.* and are remitted to PERA as a single sum in July of each year. For purposes of this schedule, the amount allocated to the Judicial Division is expressed as a percentage of annual covered payroll.

⁴ The amount allocated to the Judicial Division is shown in both six-month segment contribution summaries. The rate presented in each segment is based on annual covered payroll for improved comparative analysis to the prior year.

⁵ House Bill 20-1379 suspended the July 2020 contribution from the nonemployer contributing entity for the State's 2020-21 fiscal year.

⁶ House Bill 20-1394 required member contributions to increase by 5.00% and employer contributions to decrease by 5.00% for all members of the Judicial Division except those employed by the Denver County Court.

⁷ Contribution rates for members of the Judicial Division employed by the Denver County Court.

SCHEDULE OF CONTRIBUTION RATE HISTORY

DPS Division¹

		Percent of Covered Payroll						
Years		Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Employer Contribution PCOP Offset ³	Nonemployer Contribution Rate	Total Contribution Rate
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	4.20%	4.00%	(15.97%)	—	10.38%
1/1/2016	to 12/31/2016	8.00%	10.15%	4.50%	4.50%	(15.54%)	—	11.61%
1/1/2017	to 12/31/2017	8.00%	10.15%	4.50%	5.00%	(14.56%)	—	13.09%
1/1/2018	to 12/31/2018	8.00%	10.15%	4.50%	5.50%	(14.18%)	2.58% ⁵	16.55%
1/1/2019	to 6/30/2019	8.00%	10.15%	4.50%	5.50%	(13.35%) ⁶	2.61% ^{5,7}	17.41%
7/1/2019	to 12/31/2019	8.75%	10.40%	4.50%	5.50%	(13.60%) ⁶	2.61% ^{5,7}	18.16%
1/1/2020	to 6/30/2020	8.75%	10.40%	4.50%	5.50%	(12.25%) ⁶	— ⁸	16.90%
7/1/2020	to 12/31/2020	10.00%	10.90%	4.50%	5.50%	(12.75%) ⁶	— ⁸	18.15%
1/1/2021	to 6/30/2021	10.00%	10.90%	4.50%	5.50%	(12.09%)	2.33%^{5,7}	21.14%
7/1/2021	to 12/31/2021	10.50%	10.90%	4.50%	5.50%	(12.09%)	2.33%^{5,7}	21.64%

¹ The DPS Division Trust Fund was established on January 1, 2010, and received the net assets of the 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 of the Notes to the Financial Statements in the Financial Section.

⁴ On June 3, 2015, House Bill 15-1391 reduced the employer contribution rate with a retroactive effective date of January 1, 2015.

⁵ Contributions from a nonemployer contributing entity are required by C.R.S. § 24-51-414 *et seq.* and are remitted to PERA as a single sum in July of each year. For purposes of this schedule, the amount allocated to the DPS Division is expressed as a percentage of annual covered payroll.

⁶ To conform with this presentation of contribution rates, the annual PCOP offset for the calendar year has been adjusted based on the portion of the PCOP offset used to satisfy employer contribution requirements for each-six month segment.

⁷ The amount allocated to the DPS Division is shown in both six-month segment contribution summaries. The rate presented in each segment is based on annual covered payroll for improved comparative analysis to the prior year.

⁸ House Bill 20-1379 suspended the July 2020 contribution from the nonemployer contributing entity for the State's 2020-21 fiscal year.

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 Division¹		
7/1/1985	to 6/30/1997	0.80%
1/1/2006	to 12/31/2021	1.02%
School Division¹		
7/1/1985	to 6/30/1997	0.80%
1/1/2006	to 12/31/2021	1.02%
State and School Division¹		
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 Division²		
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 12/31/2021	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 12/31/2021	1.02%
DPS Division³		
1/1/2010	to 12/31/2021	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 Retiree Health Benefit Trust.

SCHEDULE OF CONTRIBUTION RATE HISTORY

Employer Contributions to MatchMaker¹

Division/Years		Percent of Covered Payroll Available from Employer Contribution for MatchMaker (Maximum Match)
State and School Division²		
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 Division³		
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}

Employer	2021			2014		
	Covered Active Members December 31	Rank	Percentage of Total System	Covered Active Members December 31	Rank	Percentage of Total System
State of Colorado	49,360	1	92.30%	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 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.

School Division Trust Fund^{1,2}

Employer	2021			2014		
	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	11,820	1	9.46%	12,184	1	10.19%
Douglas County School District Re 1	8,781	2	7.02%	8,345	2	6.98%
Cherry Creek School District 5	7,720	3	6.18%	7,670	3	6.41%
Adams-Arapahoe School District 28J	5,790	4	4.63%	5,453	4	4.56%
Adams 12 Five Star Schools	5,261	5	4.21%	5,261	5	4.40%
Boulder Valley School District RE2	4,689	6	3.75%	4,678	6	3.91%
Poudre School District R-1	4,582	7	3.67%	4,425	7	3.70%
St. Vrain Valley School District RE1J	4,496	8	3.60%	4,189	9	3.50%
Academy School District #20	4,003	9	3.20%	3,660	10	3.06%
Colorado Springs School District 11	3,939	10	3.15%	4,292	8	3.59%

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 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.

Local Government Division Trust Fund^{1,2}

Employer	2021			2014		
	Covered Active Members December 31	Rank	Percentage of Total System	Covered Active Members December 31	Rank	Percentage of Total System
City of Colorado Springs	3,436	1	26.96%	3,054	1	25.27%
Boulder County	2,120	2	16.63%	2,067	2	17.11%
City of Boulder	1,283	3	10.07%	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 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.

PRINCIPAL PARTICIPATING EMPLOYERS (CONTINUED)

Judicial Division Trust Fund^{1,2}

Employer	2021			2014		
	Covered Active Members December 31	Rank	Percentage of Total System	Covered Active Members December 31	Rank	Percentage of Total System
Judicial Department	334	1	96.81%	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 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.

DPS Division Trust Fund^{1,2}

Employer	2021			2014		
	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	15,695	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 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.

PRINCIPAL PARTICIPATING EMPLOYERS (CONTINUED)

Health Care Trust Fund^{1,2}

Employer	2021			2017		
	Covered Active Members December 31	Rank	Percentage of Total System	Covered Active Members December 31	Rank	Percentage of Total System
State of Colorado	49,360	1	25.77%	51,022	1	26.60%
Jefferson County School District R-1	11,820	2	6.17%	12,295	2	6.41%
Douglas County School District Re 1	8,781	3	4.58%	9,100	3	4.75%
Cherry Creek School District 5	7,720	4	4.03%	7,929	4	4.13%
Adams-Arapahoe School District 28J	5,790	5	3.02%	5,271	5	2.75%
Adams 12 Five Star Schools	5,261	6	2.75%	5,075	6	2.65%
Boulder Valley School District RE2	4,689	7	2.45%	4,763	7	2.48%
Poudre School District R-1	4,582	8	2.39%			
Colorado Springs School District 11				4,448	8	2.32%

¹ Guidance under GASB Statement No. 74 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 2017 is not available.

² This employer count is presented for purposes of complying with GASB 74 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.

DPS Health Care Trust Fund^{1,2}

Employer	2021			2017		
	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	15,695	1	100.00%	15,991	1	100.00%

¹ Guidance under GASB Statement No. 74 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 2017 is not available.

² This employer count is presented for purposes of complying with GASB 74 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.

SCHEDULE OF AFFILIATED EMPLOYERS

State Division

Agencies and Instrumentalities

CollegeInvest
 College Assist
 Colorado Association of School Boards
 Colorado Association of School Executives
 Colorado Community College System
 Colorado High School Activities Association
 Colorado House of Representatives
 Colorado Senate
 Colorado Water Resources & Power Development Authority
 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
 Joint Budget Committee
 Judicial Department
 Legislative Council
 Office of the District Attorneys
 Office of Economic Development and International Trade
 Office of the Governor
 Office of Information Technology
 Office of Legislative Legal Services
 Office of the Lieutenant Governor
 Office of the State Auditor
 Pinnacol Assurance
 Public Employees' Retirement Association of Colorado
 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 Division¹

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 Public Schools

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

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 Division¹ (continued)**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

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

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

Hayden School District Re 1
 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

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 Division¹ (continued)**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

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

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

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
 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 County School District RE-1
 Weld School District Re-8
 Windsor School District Re-4

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 Division¹ (continued)

Yuma County

Idalia School District RJ-3
Liberty School District J-4
Wray School District RD-2
Yuma School District 1

Vocational Schools

Technical College of the Rockies

Other

Colorado Consortium for Earth and Space Science Education

Boards of Cooperative Educational Services (BOCES)

Adams County BOCES
Centennial BOCES
Colorado River BOCES
East Central BOCES
Education reEnvisioned 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

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	Estes Valley Public Library District
Alamosa Housing Authority	Forest Lakes Metropolitan District
Arapahoe Park and Recreation District	Fremont Conservation District
Aurora Housing Authority	Fremont Sanitation District
Baca Grande Water & Sanitation District	Garfield County Housing Authority
Beulah Water Works District	Grand Junction Regional Airport Authority
Black Hawk-Central City Sanitation District	Grand Valley Fire Protection District
Blanca-Fort Garland Metropolitan District	Green Mountain Water and Sanitation District
Boulder County Government	GVR Metropolitan District
Boxelder Sanitation District	Housing Authority of Arriba
Brush Housing Authority	Housing Authority of the City of Boulder
Carbon Valley Park & Recreation District	Housing Authority of the City of Colorado Springs
Castle Pines Metropolitan District	Housing Authority of the County of Adams
Castle Pines North Metropolitan District	Housing Authority of the Town of Limon
Center Housing Authority	Lamar Housing Authority
Central Colorado Water Conservancy District	Lamar Utilities Board
Cheyenne Wells Housing Authority	Left Hand Water District
City of Alamosa	Longmont Housing Authority
City of Boulder	Longs Peak Water District
City of Castle Pines	Louisville Fire Protection District
City of Colorado Springs	Maiker Housing Partners
City of Fort Morgan	Meeker Cemetery District
City of Las Animas	Meeker Regional Library District
City of Lone Tree	Meeker Sanitation District
City of Manitou Springs	Montrose Fire Protection District
City of Pueblo	Montrose Recreation District
City of Wray	Monument Sanitation District
City of Yuma	Morgan Conservation District
Clearview Library District	Morgan County Quality Water District
Collbran Conservancy District	Mountain View Fire Protection District
Colorado District Attorneys' Council	Mountain Water and Sanitation District
Colorado First Conservation District	Niwot Sanitation District
Colorado Health Facilities Authority	North Carter Lake Water District
Colorado Housing and Finance Authority	North Chaffee County Regional Library
Colorado Library Consortium	North Front Range Water Quality Planning Association
Colorado River Fire Protection District	Northeast Colorado Health Department
Colorado School District Self Insurance Pool	Northeastern Colorado Association of Local Governments
Colorado Springs Utilities	Park Center Water District
Columbine Knolls-Grove Metropolitan Recreation District	Pikes Peak Regional Building Department
Costilla Housing Authority	Pine Drive Water District
County Technical Services, Inc.	Plum Creek Water Reclamation Authority
Cucharas Sanitation & Water District	Pueblo City-County Health Department
Douglas County Housing Partnership	Pueblo Library District
Douglas County Libraries	Pueblo Transit Authority
Durango Fire Protection District	Pueblo Urban Renewal Authority
East Cheyenne Groundwater Management District	Rampart Regional Library District
East Larimer County Water District	Rangely Regional Library District
Eastern Rio Blanco Metropolitan Recreation & Park District	Red Feather Mountain Library District
Eaton Housing Authority	Red, White & Blue Fire Protection District
Elbert County Library District	Republican River Water Conservation District
Elizabeth Park and Recreation District	Rio Blanco Fire Protection District
El Paso-Teller County Emergency Telephone Service Authority	Rio Blanco Water Conservancy District
Estes Park Housing Authority	Routt County Conservation District
Estes Park Local Marketing District	Sable-Altura Fire Protection District
Estes Valley Fire Protection District	San Luis Valley Development Resources Group
	San Luis Valley Water Conservancy District
	San Miguel County Public Library

SCHEDULE OF AFFILIATED EMPLOYERS

Local Government Division (continued)

San Miguel Regional and Telluride Housing Authority
 Scientific and Cultural Facilities District
 Sheridan Sanitation District #1
 Soldier Canyon Water Treatment Authority
 Southwest La Plata Library District
 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
 Authority
 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

DPS Division¹

Denver Public School District No. 1

¹ The list of employers in the DPS Division does not include charter schools operating within the Denver Public Schools school district.



COMMONLY USED ACRONYMS





AAL	Actuarial Accrued Liability	GAAP	Generally Accepted Accounting Principles
AAP	Automatic Adjustment Provision	GASB	Governmental Accounting Standards Board
ADC	Actuarially Determined Contribution	GDP	Gross Domestic Product
AED	Amortization Equalization Disbursement	HAS	Highest Average Salary
AI	Annual Increase	HB	House Bill
AIR	Annual Increase Reserve	HCTF	Health Care Trust Fund
ASOP	Actuarial Standards of Practice	IRC	Internal Revenue Code
BOCES	Boards of Cooperative Educational Services	MD&A	Management's Discussion and Analysis
CAPs	Capital Accumulation Plans	NAV	Net Asset Value
CIF	Combined Investment Fund	NOL	Net OPEB Liability
CMBS	Commercial Mortgage-Backed Securities	NPA	Net Pension Asset
CMS	Centers for Medicare & Medicaid Services	NPL	Net Pension Liability
COF	Common Operating Fund	OPEB	Other Postemployment Benefit
C.R.S.	Colorado Revised Statutes	PCOP	Pension Certificates of Participation
DB	Defined Benefit	RDS	Retiree Drug Subsidy
DC	Defined Contribution	RSI	Required Supplementary Information
DC Plan	Defined Contribution Retirement Plan	SAED	Supplemental Amortization Equalization Disbursement
DPS	Denver Public Schools	SB	Senate Bill
DPS HCTF . . .	Denver Public Schools Health Care Trust Fund	SEIR	Single Equivalent Interest Rate
DPSRS	Denver Public Schools Retirement System	SRI	Socially Responsible Investment
EA	Entry Age Actuarial Cost Method	TOL	Total OPEB Liability
EGWP	Employer Group Waiver Plan	TPL	Total Pension Liability
ESG	Environmental, Social, and Governance	UAAL	Unfunded Actuarial Accrued Liability
FNP	Fiduciary Net Position		







Public Employees' Retirement Association of Colorado

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