



COMPREHENSIVE ANNUAL FINANCIAL REPORT

Transforming to connect. Connecting to serve.

For the Year Ended December 31, 2020

PUBLIC EMPLOYEES' RETIREMENT ASSOCIATION OF COLORADO



2020 IN REVIEW

Facts and Figures as of December 31, 2020



ASSETS UNDER MANAGEMENT (FNP)

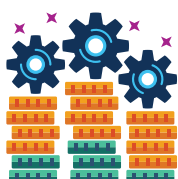
\$58 billion

(DIVISION TRUST FUNDS)



NET RATE OF RETURN

17.4%



MEMBERS ACTIVELY CONTRIBUTING TO PERA

200,858



EMPLOYERS

410



TOTAL COVERED PARTICIPANTS

(IN PERACARE HEALTH BENEFITS PROGRAM)

59,794



FUNDED STATUS

62.8%



RETIREES AND BENEFIT RECIPIENTS

128,133



ANNUAL RETIREMENT BENEFIT PAYMENTS

\$4.8 billion



INVESTED IN COLORADO-BASED COMPANIES, PARTNERSHIPS, AND ASSETS

\$808.4 million



30-YEAR RATE OF RETURN

9.1%

(ANNUALIZED, GROSS-OF-FEES)

COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR THE YEAR ENDED DECEMBER 31, 2020

Public Employees' Retirement Association of Colorado
Prepared by Colorado PERA Staff



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INTRODUCTORY SECTION



LETTER OF TRANSMITTAL



June 18, 2021

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

This *Comprehensive Annual Financial Report (Annual Report)* prepared by the Public Employees' Retirement Association of Colorado (PERA) details the plan's performance from January 1, 2020, through December 31, 2020.

In that sense the year 2020 is over, and so we are now able to look back and compile the information in the pages that follow. But in another sense, 2020 still seems present. More than a year after our lives were upended by COVID-19, we continue to understand, mourn, and adjust as we also show our appreciation for those who faced additional risks in order to serve others.

At PERA, we faced many of the same challenges others throughout the world have faced. I am proud of the way in which PERA staff responded.

On a variety of fronts, 2020 was an inflection point for the way PERA delivers services to members. We are using this time of change as an opportunity to position PERA for the future.

In 2020, we accelerated efforts already underway that transform the way we connect to others. In particular, we've expanded our digital capabilities so that members, retirees, and employers have more and better ways to interact with us.

These improvements are not temporary. As we look forward to working our way back to normalcy, we will continue building on these and other member-focused initiatives that deliver the assistance members want, when they want it, in the way they want it.

From a financial perspective, PERA experienced a positive year of investment returns in 2020. Led by the strong performance of the global equity market and assisted by all other asset classes having positive yearly returns, PERA's defined benefit funds had a time-weighted return of 17.4 percent 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 and is essential to PERA's core mission: to provide retirement security for our members while ensuring the sustainability of the fund.

Investment performance is one of many factors used to calculate a plan's funded status. A number of actuarial assumptions, which include estimates about inflation, employment, and longevity, also play a significant role.

In 2020, the Board reviewed PERA's actuarial assumptions through a process known as an Experience Study, which takes place every four years. The ultimate goal of the Experience Study is to provide the most accurate portrait of the future as possible.

While some actuarial assumptions remained the same, the Board updated the following:

- Lowering the inflation assumption from 2.40 percent to 2.30 percent.
- Lowering the payroll growth rate assumption from 3.50 percent to 3.00 percent.
- Lowering the active member growth assumption for each division. Current growth assumptions range from 1.00 percent to 1.25 percent. Newly adopted growth assumptions range from 0.25 percent to 1.00 percent.
- Changes to mortality assumptions and other demographic assumptions.

The net effect of these changes results in an increase in PERA's liabilities, which includes the value of current and future benefit payments. As a result of the changes in assumptions and the demographic experience in 2020, the automatic adjustment provision (AAP) goes into effect and will be implemented in July 2022.



Ron Baker
Executive Director

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The AAP was part of Senate Bill 18-200. This legislation laid out a path to full funding. It also created a formula used to determine whether the fund is on track to reach that goal by 2047. If the fund gets ahead of or falls behind this goal, the AAP can alter member and employer contributions, the retiree annual increase (AI), and the direct distribution from the State of Colorado. Limits are placed on how much these amounts can change in a single year and cumulatively.

To better understand the effect of the AAP on the scheduled contribution amounts for members and employers, as well as the scheduled AI cap for eligible retirees, effective July 1, 2022, please see the following table:

Division Trust Fund	Member	Employer ¹	AI
Before the Automatic Adjustment Provision			
State (members other than State Troopers ^{2,3})	10.50%	20.90%	1.25%
State (State Troopers ^{2,3})	12.50%	23.60%	1.25%
School ⁴	10.50%	20.90%	1.25%
Local Government (members other than State Troopers ^{2,3})	8.50%	14.20%	1.25%
Local Government (State Troopers ^{2,3})	12.50%	17.30%	1.25%
Judicial ⁵	10.50%	23.61%	1.25%
DPS ⁶	10.50%	20.90%	1.25%
After the Automatic Adjustment Provision			
State (members other than State Troopers ^{2,3})	11.00%	21.40%	1.00%
State (State Troopers ^{2,3})	13.00%	24.10%	1.00%
School ⁴	11.00%	21.40%	1.00%
Local Government (members other than State Troopers ^{2,3})	9.00%	14.70%	1.00%
Local Government (State Troopers ^{2,3})	13.00%	17.80%	1.00%
Judicial ⁵	11.00%	24.11%	1.00%
DPS ⁶	11.00%	21.40%	1.00%

¹ Includes employer contribution, amortization equalization disbursement, and supplemental amortization equalization disbursement rates.

² Does not include the defined contribution supplement.

³ Please see Note 1 of the Notes to the Financial Statements in the Financial Section for the definition of "State Troopers."

⁴ Does not include the additional 2.0 percent employer contributions required for retirees rehired pursuant to House Bill 20-1127.

⁵ Does not include the contribution rate exchange pursuant to House Bill 20-1394 for the State's 2021-2022 fiscal year.

⁶ Excludes the PCOP offset which reduces the total employer rate.

We understand these changes are difficult for our members, retirees, and employers. However, by acting quickly, the contribution changes and benefit modifications are important to keeping PERA on track to reaching full funding by 2047.

The following table demonstrates the effect the AAP has in reducing the projected years until PERA reaches full funding (considering 2020 experience).

Division Trust Fund	Before the Automatic Adjustment	After the Automatic Adjustment
State	23	20
School	26	22
Local Government	11	8
Judicial	8	7
DPS	8	7

2020 Legislation

During the 2020 legislative session, four bills affecting PERA were introduced and all were signed into law.

House Bill 20-1127: Extend Public Employees' Retirement Association Retiree Work After Retirement Limit

Governor Polis signed this bill into law on July 13, 2020, and it allows Boards of Cooperative Educational Services (BOCES) to hire PERA retirees to work in certain roles where there is a critical shortage of qualified providers without reductions to their PERA retirement benefits. The bill modifies the current PERA working after retirement provisions for certain retirees hired by a BOCES if:

- The BOCES hires a retiree to provide services in two or more rural school districts,
- The BOCES hires the service retiree to provide special services to students, and
- The BOCES determines that there is a critical shortage of special service providers and that the retiree has specific experience, skills, or qualifications that would benefit the districts that the BOCES serves.

A PERA retiree may not work under these modified rules for more than five consecutive years. All BOCES combined may hire no more than 40 people over five years. Both the BOCES and the working retiree must provide full payment of all contributions and disbursements to PERA during the time of employment, which includes an additional payment to PERA equal to 2.0 percent of the retiree's salary.

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

House Bill 20-1379: Suspend Direct Distribution To PERA Public Employees' Retirement Association For 2020-21 Fiscal Year

Governor Polis signed this bill into law on June 29, 2020. This bill suspended the annual direct distribution to PERA from the State for the 2020-21 fiscal year. As provided under SB 18-200, PERA receives an annual distribution from the State, which is currently set at \$225 million, until PERA is fully funded.

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The PERA Board, as fiduciaries and pursuant to their funding policy, opposes reductions in contributions to PERA while PERA has unfunded liabilities.

House Bill 20-1394: Public Employees' Retirement Association Judicial Division Contribution Rate Modification

Governor Polis signed this bill into law on June 29, 2020, and it decreases the employer contribution rate for the Judicial Division by 5.0 percent for the 2020-21 and 2021-22 State fiscal years. For those same fiscal years, the member contribution rate for the Judicial Division increases by 5.0 percent. The contribution rates for the Judicial Division will continue to be subject to the automatic adjustment provisions in PERA law.

The changes do not apply for employer or member contributions for judges employed by the Denver County Court. The bill does not change contribution rates for any other division of PERA.

The PERA Board, as fiduciaries and pursuant to their funding policy, opposes reductions in contributions to PERA while PERA has unfunded liabilities, and member contributions have refund provisions that do not apply to employer contributions.

Senate Bill 20-057: Fire Prevention & Control Employee Benefits

Governor Polis signed this bill into law on June 29, 2020, and it reclassifies wildfire firefighters employed by the State as "State Troopers," which adjusts their contribution rates and retirement benefits to match other Safety Officers (i.e., State Troopers, CBI Agents, certain corrections officers, and certain county sheriffs, undersheriffs, deputy sheriffs). These changes apply only to service credit earned after the bill goes into effect.

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

Economic Environment

The longest bull market in U.S. history briefly continued into 2020 before coming to an abrupt end in March on news that the World Health Organization officially declared COVID-19 a pandemic. As economies across the globe began implementing lockdown measures to contain the spread of the coronavirus, masses of workers moved to remote work environments with unprecedented levels of unemployment claims ensuing in the weeks to follow. Initial weekly unemployment claims numbered in the millions beginning in mid-March and were led by service and hospitality workers who saw their jobs vanish overnight. More than 20 million U.S. jobs were lost in the initial wave of pandemic related layoffs, with little more than half of those being recovered by the end of the year. The Federal Reserve (Fed) acted swiftly to mitigate the effects of the pandemic, lowering the Fed Funds rate to near zero with a 0.5 percent cut in early March followed

by a full percentage point cut less than two weeks later. By the end of 2020, the U.S. government spent \$4 trillion on aid for struggling businesses, extended unemployment benefits and direct cash payments to individuals, and implemented other measures to reduce the economic impact of the coronavirus. The S&P 500 set a record high in February before the quickest drawdown in U.S. history occurred. In a span of just one month between February and March, the S&P 500 lost a third of its value. However, extraordinary levels of monetary and fiscal stimulus led to the fastest rebound in decades as the S&P 500 fully recovered all of its losses within five months of its March low. By the end of the year, the S&P 500 was up 16.6 percent and back to a record high as COVID-19 vaccines began rolling out.

The second quarter of 2020 was marked by a widespread economic drop in activity with real gross domestic product (GDP) decreasing at a seasonally adjusted annual rate of 31.4 percent. Economic activity rebounded sharply in the third quarter with an increase in real GDP of 33.4 percent. Growth moderated in the fourth quarter and for the year real GDP contracted 3.5 percent from the prior year. The unemployment rate bounced off its historic low of 3.5 percent in March to end the month at 4.4 percent, the largest monthly increase in nearly 50 years. In April, the rate increased to an astounding 14.7 percent with the number of unemployed persons rising by more than 15 million. After peaking in April, the unemployment rate steadily decreased in the following months to end the year at 6.7 percent. Wage growth was essentially flat in 2020; however, personal income growth surged, boosted by government aid in the form of expanded unemployment benefits and stimulus checks. Extraordinary levels of monetary and fiscal stimulus raised inflation concerns, but headline and core inflation remained below the Fed's 2.0 percent target to end the year at 1.4 percent and 1.6 percent, respectively.

A global recession took hold in 2020 as countries implemented restrictions to control the spread of COVID-19. Global growth declined 4.3 percent with advanced economies leading the drop at negative 5.4 percent. Emerging market and developing economies managed a less severe downturn, declining 2.6 percent. The United States outperformed other advanced economies with the Euro area and Japan contracting 7.4 percent and 5.3 percent, respectively. Rising debt levels contributed to slower growth in prior years, but in 2020 new debt issued to stimulate the economy exploded in many countries and, in the short term, helped mitigate the economic impact of COVID-19. Monetary policy remains accommodative in the Euro area with rates remaining below zero.

Colorado's nine year run of job growth came to an end in 2020 as the impact of COVID-19 restrictions rippled through every sector of the economy. The state recorded nearly 350,000 job losses in March and April, with about

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two-thirds of these jobs recovered by the end of the year. The unemployment rate spiked to 8.4 percent to end the year, which was the second highest increase among all states from the prior year when Colorado recorded a record low unemployment rate of 2.5 percent. The labor force participation rate in Colorado dropped slightly from the prior year, but remains one of the highest in the nation at 68.5 percent relative to the U.S. average of 61.5 percent.

The housing market in Colorado took a breather in the early months of 2020 as sellers were hesitant to allow showings during a pandemic. The uncertainty of the depth of the recession gave buyers pause, but after this brief lull, the market again began setting new records. The sudden shift to remote learning and working led to a fever pitch for housing with space for a dedicated office or classroom. Mortgage rates below 3 percent added to the frenzy and pushed prices higher as buyers flooded into the market only to be met with record low inventories. This imbalance in supply and demand pushed the median single family home price in Colorado up 12.3 percent from the prior year, to just under \$450,000, with inventory down 60.1 percent across the state.

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 2020, there was a net investment income of \$9.5 billion compared with total member contributions of \$1.2 billion and employer contributions of \$2.0 billion.

For the year ended December 31, 2020, the defined benefit funds had a time-weighted rate of return of 17.4 percent net-of-fees. The annualized, net-of-fees, time-weighted, rates of return over the last three and five years were 10.9 percent and 11.6 percent, respectively, and over the last 10 years it was 9.4 percent. The 30-year annualized, gross-of-fees, time-weighted, rate of return was 9.1 percent.

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 134.

An integral part of the overall investment policy is the strategic asset allocation policy. 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 129. All of the asset classes were within their specified ranges at year end.

PERA's investment policy is summarized in the Report on Investment Activity on page 129.

Investment Stewardship

It is PERA's fiduciary duty to serve as stewards of capital for over 630,000 members, participants, and beneficiaries. Foundational to PERA's investment stewardship are cost-consciousness, integration of 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. Throughout 2020 the Board evaluated the existing *Policy* and emerging themes in ballot proposals, including material ESG matters. The Board approved updates to the *Policy* in January 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 2020, as well as being chosen to serve as the chair of the Policies Committee for 2020. My representation on the CII Board further supports PERA's commitment to investment stewardship.

Major Initiatives

Transition to Digital

The past year provided an unexpected and valuable opportunity to rethink how PERA engages and delivers services in a digital-first manner. The necessity to communicate, educate, and serve within a remote environment provided an extended proof of concept in our ability to deliver on our commitments without sacrificing quality or access. Looking ahead to 2021 and beyond, PERA's digital transformation means providing more individualized information when, where, and how members choose to consume it.

Selection of New Defined Contribution Recordkeeper

PERA will transition later this year to Empower Retirement as the new recordkeeper for PERA's two

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defined contribution plans and the deferred compensation plan. Empower offers powerful new tools to participants to make retirement planning more personalized, accessible, and easier to understand. Now more than ever, people rely on mobile devices to communicate, share information, and accomplish daily tasks. We are eager to roll out Empower's mobile-friendly web experience that provides resources focused on helping members achieve a secure retirement measured by income replacement rather than simply the accumulation of assets.

Enhancement of Capital Accumulation Plans

The primary objective of PERA's Investment team is the implementation of the Board's strategic asset allocation. In addition, there are opportunities to explore value-adds for members and retirees. This year we will be exploring potential enhancements to PERA's Capital Accumulation Plans, including a lifetime income offering, incorporating our established internally managed fixed income portfolios into an investment option, and looking into potentially "unitizing" PERA's defined benefit investment portfolio as a potential investment option.

Focus on Employee Engagement

PERA's digital workplace initiatives continue to enhance our capabilities to interact with fellow employees, business partners, and our membership. Leveraging opportunities presented by the pandemic, PERA has increased employee engagement, digitized additional processes, improved communication and collaboration tools, and created a flexible work environment to meet the hybrid work needs of the future. While these efforts continue, PERA will also build on that foundation by focusing on programs that support career development, employee communications, and digital transformation of internal services to mirror technology use in the private sector.

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. 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, 2020, the UAAL calculated for purposes of systematically funding the five defined benefit pension trust funds was \$31.0 billion compared to the unfunded liabilities, referred to as the net pension liabilities calculated for accounting and financial reporting purposes of \$25.6 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, 2019, the UAAL calculated for purposes of systematically funding the five defined benefit pension trust funds was \$29.8 billion compared to the net pension liabilities calculated for accounting and financial reporting purposes of \$26.1 billion.

The decrease in the unfunded liabilities calculated for accounting and financial reporting purposes is primarily due to favorable investment performance partially offset by changes in actuarial assumptions. In accordance with GASB 67, the discount rate determination for 2020 required the use of the long-term expected rate of return of 7.25 percent for the five defined benefit pension 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 37-40 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 42-43, as well as in Notes 10 and 11 of the Notes to the Financial Statements in the Financial Section.

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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, 2020, the funded ratio for PERA’s five defined benefit pension trust funds was 62.8 percent compared to 61.9 percent on December 31, 2019. The actuarial value of plan assets as of December 31, 2020, was \$52.3 billion, an increase of approximately \$4.0 billion from the prior year, attributable mainly to favorable investment performance for 2020 and 2019, when compared to the long-term expected rate of return of 7.25 percent. The unfunded liability as of December 31, 2020, was \$31.0 billion, an increase of approximately \$1.2 billion from the previous year, reflecting more conservative actuarial assumptions adopted and effective in 2020. Although the unfunded liability increased, the favorable investment performance was significant enough to offset the adverse effect of the revised actuarial assumptions, resulting in an increase in funded ratio in 2020.

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 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 percent.

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 185 for the Division Trust Funds and page 211 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 157 for the Division Trust Funds and on page 196 for the Health Care Trust Funds.

Employer contributions are also a driver of the funded status. In 2020, actual employer contributions received pursuant to statute for the five defined benefit pension trust funds were \$280.2 million less than the actuarially determined contributions required. During the past 18 years, this contribution deficiency totaled \$5.8 billion. See page 39 of Management’s Discussion and Analysis (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 the amortization period, or rather, the expected funding period, by division, of the estimated 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 three scenarios: (1) as of the December 31, 2019, actuarial valuation, (2) as of the December 31, 2020, actuarial valuation, reflecting the greater than expected 2020 investment return and other plan experience, and the revised actuarial assumptions, and (3) as of the December 31, 2020, actuarial valuation, reflecting plan experience, revised actuarial assumptions and the automatic adjustments effective July 1, 2022 resulting from the 2020 AAP assessment.

Division Trust Fund	Projected Amortization Periods (in years)		
	2020 Valuation Results Considering 2022 Automatic Adjustments	2020 Valuation Results	2019 Valuation Results
State	20	23	22
School	22	26	24
Local Government	8	11	14
Judicial	7	8	12
DPS	7	8	11

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

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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 percent long-term expected rate of return applicable to all five Division Trust Funds as well as the two Health Care Trust Funds.

The table below 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.

This table reflects the results and experience of the December 31, 2020, actuarial funding valuation and the effect of the revised actuarial assumptions adopted November 20, 2020, 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 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.

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		49			
53rd Percentile			22		
25th Percentile				9	
5th Percentile					2

Signal Light Methodology

Another way of understanding PERA’s financial condition was adopted by the Colorado General Assembly’s Legislative Audit Committee in 2015, and further enhanced by the Board in 2019 to incorporate stochastic rather than deterministic modeling. By definition, uncertain or variable factors are built into a stochastic model, whereas variable factors are external to a deterministic model. The stochastic model better reflects actual market activity including the effect of the timing and order of investment returns. This methodology also considers PERA’s portfolio, more precisely reflecting capital market assumptions, by investment category within PERA’s asset allocation.

Generally, the “signal light” methodology determines the funded position of each division on a projected basis. The results are categorized based on an expanded spectrum of signal light colors ranging from dark green, indicating a well-funded position, to dark red, indicating potential insolvency in the near future.

PERA updates the signal light indicators each year following the release of its *Annual Report*. Recognizing the plan experience as of the December 31, 2020, actuarial valuation, including the effect of revised actuarial assumptions, AAP adjustments, effective July 1, 2022, and path dependency, the signal light designation is dark green for the State, Local Government, Judicial and DPS Divisions and green for the School Division.

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

PERA offers members opportunities to save for retirement through the PERAPlus 401(k), PERAPlus 457, and Defined Contribution Retirement (DC) Plans. All employees working for a PERA-affiliated employer may contribute to the PERAPlus 401(k) Plan. As of December 31, 2020, there were a total of 189 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, 2020, there were a total of 132 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) Plan, PERAPlus 457, and DC Plans increased for the year ended December 31, 2020. The PERAPlus 401(k), PERAPlus 457, and DC Plans earned \$559.9 million, \$137.2 million, and \$41.9 million of investment income with a fiduciary net position of \$4.2 billion, \$1.1 billion, and \$323.9 million, respectively.

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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.

Employer Affiliation

PERA welcomes the Southwest La Plata Library District, which affiliated in the Local Government Division on September 1, 2020.

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.

Trustees starting new terms in July 2020 included: David Hall, State Division seat; Nathan Geroche, School Division seat; Amy Grant, DPS Division seat; and Cheryl Patelli, Local Government Division seat. Trustee Hall was re-elected to his seat as a result of the 2020 Board election, while Trustees Geroche, Grant, and Patelli were all appointed at the March 2020 Board meeting since each was the sole candidate for their respective seats.

July 2020 also marked the end of Roger P. Johnson's term as a Governor-appointed Trustee. He was first appointed by Governor Hickenlooper in June 2015, and prior to that served as an external member of the Board's Audit Committee from June 2012 until his gubernatorial appointment. On behalf of the PERA executive team, we are appreciative for Trustee Johnson's contributions and service to the PERA membership.

In November 2020, in compliance with procedures established in PERA's Governance Manual, Trustees elected Marcus Pennell as Chairman, and David Hall as Vice Chairman. Both of these positions are two-year terms and official duties were assumed at the January 2021 Board meeting.

In January 2021, Taylor McLemore was appointed by Governor Polis to fill the vacancy of Trustee Johnson. Trustee McLemore is a Managing Director with Techstars Workforce Accelerator as well as a member of the Colorado Banking Board. 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. A replacement for this seat is pending the results of the May 2021 Board election.

Management Changes

In March 2021, Jack Dillman, Director of Property Management, left PERA after five years of service. To date, this position remains open.

Financial Information and Management Responsibility

Our *Annual Report* 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 *Annual Report* 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 *Annual Report* rests with PERA management; the Board provides an oversight role over financial reporting. The Board is assisted in its responsibilities by the Audit Committee, which consists of seven 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 18-19.

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

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accepted accounting principles, and that receipts and expenditures are being made only in accordance with authorizations of management; and

- Provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of assets that could have a material effect on the financial statements.

Management has concluded that, as of December 31, 2020, the system of internal controls over financial reporting is effective.

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

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 2020 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 27-29. 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 *Annual Report* 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 *Annual Report* for the year

ended December 31, 2019. This was the 35th 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 *Annual Report*. 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 *Annual Report* 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, 2019. 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 18 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 its Recognition Award for Administration for meeting professional standards in 2020 for plan administration as set forth in the Public Pension Standards. This is the 18th consecutive year that PERA has received this annual award. In 2020, the PPCC presented PERA with its Recognition Award for Funding by demonstrating the funding adequacy of the pension system. 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.

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Acknowledgements

In a year filled with uncertainty, I would like to thank our affiliated employers for their cooperation and continued support, which is essential to the success of PERA. I would also like to thank the PERA Board and staff for their many efforts and contributions on behalf of Colorado's public employees. Our focus remains on our members and retirees and ensuring PERA is strong and sustainable well into the future.

In the face of obstacles caused by COVID-19, we found ways to strengthen and improve our connections with those who rely on PERA. We will continue to innovate and build on PERA's tradition of service in order to meet the changing needs of our diverse membership.

Copies of this *Annual Report* are provided to all PERA-affiliated employers and other interested parties; a summary (*Popular Annual Financial Report*) will be sent to members and benefit recipients. 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 *Annual Report*, please email askpera@copera.org.

Respectfully submitted,

Ron Baker
Colorado PERA Executive Director



Government Finance Officers Association

Certificate of
Achievement
for Excellence
in Financial
Reporting

Presented to

**Public Employees' Retirement Association
of Colorado**

For its Comprehensive Annual
Financial Report
For the Fiscal Year Ended

December 31, 2019

Christopher P. Morill

Executive Director/CEO



Public Pension Coordinating Council

***Public Pension Standards Award
For Funding and Administration
2020***

Presented to

Colorado Public Employees' Retirement System

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

Presented by the Public Pension Coordinating Council, a confederation of

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

A handwritten signature in cursive script that reads "Alan H. Winkle".

Alan H. Winkle
Program Administrator

BOARD CHAIRMAN'S REPORT



Marcus Pennell
Board Chairman

June 18, 2021

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 *Comprehensive Annual Financial Report* for the year ended December 31, 2020.

The Board began the year looking forward to an important slate of work. Just before our second meeting of 2020, the crises caused by the global pandemic quickly escalated, and the Board room went dark.

It has been a difficult year for so many of us. If you have lost a loved one, your health, or your job, you are not alone. While the strain of all that was unknown and uncertain after March 2020 hung over all of us, the PERA Board and staff carried out the commitment to serve the members with dedication and creativity.

Most of the staff transitioned to working remotely in a matter of days while maintaining high levels of service, data security, and commitment to our shared mission. Like so many, we ended up in virtual meetings, reminding each other to unmute. Board members and staff did a remarkable job maintaining and fostering the type of engagement that remote meetings can sometimes hinder. I'd like to share a few examples of the work done through our virtual meetings in 2020 on behalf of our membership.

PERA's investments generated a return of 17.4 percent for 2020. While the returns in investment markets vary from one year to the next, PERA's investment portfolio has consistently outperformed the benchmarks by which the performance of the fund is measured. 2020 was no different, as the fund returned 330 basis points above its benchmark. In the face of historic volatility and uncertainty, PERA demonstrated its skill and commitment while investing for the long term. My sincere thanks to the PERA staff; the value derived from their work is measurable and benefits PERA members and all Coloradans.

The Board plays a critical oversight role of PERA's investment program, including setting and regularly reviewing policies related to investment activities. Along these lines, the Board reviewed PERA's *Active Risk Policy*, which establishes a measurable limit on the amount of risk that exists in the portfolio. It's important to note that the goal is not to eliminate risk within the investments, as risk corresponds to potential investment returns. The key to this policy is budgeting for a level of risk that maximizes investment returns while limiting the potential for volatility. The Board affirmed the existing policy with minor changes as part of this standard review process. Rigorous review of important policies like the *Active Risk Policy* give me confidence as a PERA member that PERA's investment program is well positioned to continue to meet and exceed its goals.

2020 also brought an Experience Study to a conclusion. During the Experience Study, the existing actuarial assumptions were considered in the context of what has actually happened since the last Experience Study. This study ensures that the assumptions that underpin much of our work are as accurate as possible. Some examples of these assumptions include payroll growth, mortality projections, and the rate at which the workforce will grow. These assumptions are critical to many calculations, including PERA's funded status. In general, people are living longer, and the workforce is growing more slowly than previously expected.

At the recommendation from our actuaries, several assumptions were modified as a result of the Experience Study. When the Board modifies assumptions, we do so in order to better understand the future for which we are planning. To that end, the Board performed this study with integrity and transparency.

The goal of each Experience Study is to enhance the likelihood that the projections PERA makes will be closer to the actual events in the future, and I am confident that the goal has been achieved.

BOARD CHAIRMAN'S REPORT

As we turned our attention to 2021, it became clear that the automatic adjustment provision (AAP) would be implemented and will go into effect in July 2022. While neither the Board nor PERA staff chooses whether to trigger the AAP—that determination is laid out in state statute—it is our duty to implement this change and communicate it to our stakeholders. The AAP will increase member and employer contribution rates as well as reduce the annual increase (AI) that retirees receive. The AAP, which was part of Senate Bill 18-200, is difficult for these PERA stakeholders. The Board supports keeping the AI as high as possible and keeping contributions as low as they can be while maintaining a secure benefit over the long term. The “guardrail” that the AAP represents allows PERA to provide a more secure benefit for everyone while maintaining a path to full funding, which is good for all members.

I deeply appreciate the contributions of the Trustees with whom I serve. I’d like to express my thanks to Trustees who left the Board in 2020: William N. Parker and Roger P. Johnson. They each brought value to the organization and will be missed.

I’d also like to welcome Nathan Geroche and Taylor McLemore to the Board. Serving the members on this Board is simultaneously a big commitment and a fulfilling experience. I am excited for each of you in your new role.

In 2020, my fellow Board members elected me to serve as Board Chairman. I am humbled and honored by the trust they have placed in me, and I look forward to serving in this role. I aspire to continue the outstanding work of Tim O’Brien, who concluded four years of serving as Board Chairman, but who is thankfully still on the Board. His expertise and concise, thoughtful nature impacted all of us positively.

I want PERA members and retirees to know that they remain at the center of all the work we do. I would also like to note that I am continually amazed at the skill, care, and thoughtfulness of the Board members. There is a sense of pride and fellowship among all Trustees. We find common ground in our commitment to uphold the fiduciary duty to the members of this plan; it is on your behalf that we do this work.

As a Board, our job is to understand what is under our control and to do all we can to create the policies that will ensure PERA continues to do what it has been doing since 1931 – providing retirement security to Colorado’s public employees. I look forward to continuing this important work in 2021.

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 2020 that included the following items:

- Recommending the Comprehensive Annual 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;

REPORT OF THE COLORADO PERA AUDIT COMMITTEE

- Reviewing the scope, objectives, and timing of the annual independent audit of PERA's financial statements;
- 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, 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, 2020, 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 *Comprehensive Annual Financial Report* for the year ended December 31, 2020.

Audit Committee as of June 18, 2021

Timothy M. O'Brien, Chairman

Ramon Alvarado

Thomas J. Barrett

Honorable Rebecca R. Freyre

Julie Friedemann

A. Tom Hall

Tammie Lowrie

Susan G. Murphy

Cheryl Pattelli

BOARD OF TRUSTEES

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



Honorable Rebecca R. Freyre

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



Ramon Alvarado

Elected by State Members
Adjunct Faculty
Metropolitan State University of Denver
Current term expires June 30, 2022



Julie Friedemann

Appointed to Retiree seat
Retired Mathematics Teacher
Jefferson County School District
Current term expires June 30, 2025



Thomas J. Barrett

Appointed by the Governor
Current term expires July 10, 2022



Nathan Geroche

Appointed to School Division seat
Science Teacher
Jefferson County School District
Current term expires June 30, 2024



Guillermo Barriga

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



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

BOARD OF TRUSTEES



David Hall

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



Timothy M. O'Brien

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



Roger P. Johnson

Appointed by the Governor
Term expired July 10, 2020



William N. Parker

Elected by School Members
International Baccalaureate Coordinator
and Literacy Teacher
Brighton School District 27J
Term expired June 30, 2020



Suzanne E. Kubec

Appointed to State Division seat
Liability Claims Manager
State Office of Risk Management
Current term expires June 30, 2025



Cheryl Pattelli

Appointed to Local Government
Division seat
Chief Financial Officer
City of Boulder
Current term expires June 30, 2022



Taylor McLemore

Appointed by the Governor
Current term expires July 10, 2024



Eric Rothaus

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



Tina Mueh

Elected by School Members
Middle School Science Teacher
Boulder Valley School District
Current term expires June 30, 2025



Honorable Dave Young

Ex officio member
State Treasurer
Continuous term effective January 2019



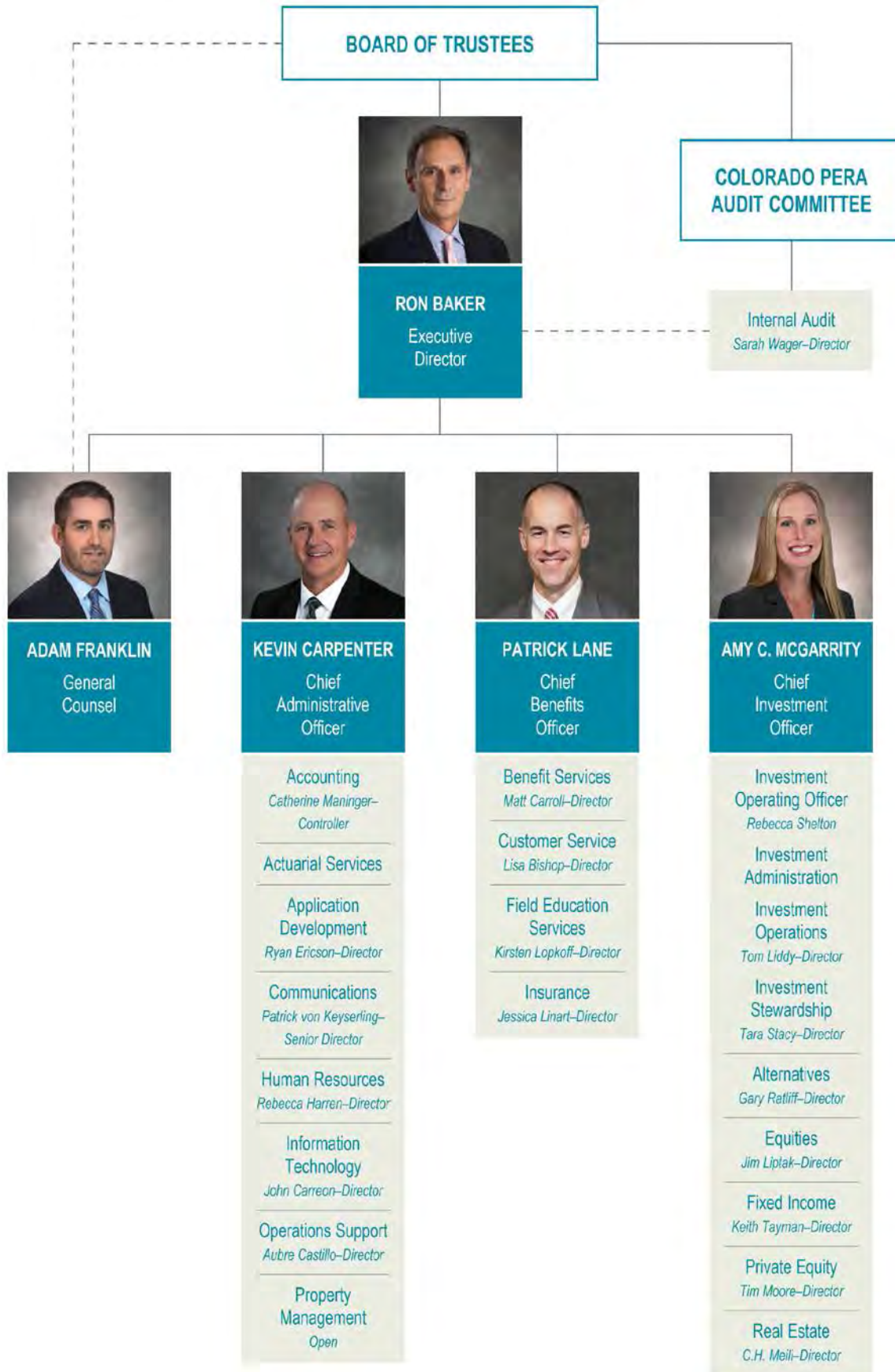
Susan G. Murphy

Appointed by the Governor
Current term expires July 10, 2021

Additional detail about Trustee activity can be found in Board Composition on page 10 in the Letter of Transmittal.

ADMINISTRATIVE ORGANIZATIONAL CHART AND EXECUTIVE MANAGEMENT

As of June 1, 2021



CONSULTANTS

As of December 31, 2020

Fiduciary Counsel

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

Governance Consultant

Cortex Applied Research, Inc.
2489 Bloor Street West
Suite 304
Toronto, ON M6S 1R6
Canada

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 1500
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 1500
Chicago, IL 60601

Investments—Real Estate Performance

Aon Investments USA, Inc.
200 East Randolph Street
Suite 1500
Chicago, IL 60601

Master Custodian

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

Pension and Health Care Program Actuary

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

Pharmacy Benefits Consultants

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

Voya Institutional Plan Services, LLC
30 Braintree Hill Office Park
Braintree, MA 02184

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 131-133.



**FINANCIAL
SECTION**

REPORT OF THE INDEPENDENT AUDITOR



CliftonLarsonAllen LLP
CLAconnect.com

INDEPENDENT AUDITORS' REPORT

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

Report on the Financial Statements

We have audited the accompanying financial statements of Public Employees' Retirement Association of Colorado (Colorado PERA), as of and for the year ended December 31, 2020, and the related notes to the financial statements, which collectively comprise Colorado PERA's basic financial statements, as listed in the table of contents. We have also audited the financial statements of each individual fund of Colorado PERA as of and for the year ended December 31, 2020 as displayed in Colorado PERA's basic financial statements.

Management's Responsibility for the Financial Statements

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

Auditors' Responsibility

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

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

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



REPORT OF THE INDEPENDENT AUDITOR

Board of Trustees
Public Employees' Retirement Association of Colorado

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the fiduciary net position of Colorado PERA as of December 31, 2020, 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, 2020, 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.

Other Matters

Prior-Year Comparative Information

We have previously audited Colorado PERA's 2019 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 30, 2020. In our opinion, the summarized comparative information presented herein as of and for the year ended December 31, 2019, 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, net pension liability, employer and nonemployer contributions, and investment returns and related notes, and the health care trust funds' schedules of changes in net OPEB liability, net OPEB liability, 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, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Supplementary and Other Information

Our audit was conducted for the purpose of forming an opinion on Colorado PERA's basic financial statements. The schedules of administrative expenses, other additions, other deductions, investment expenses, and payments to consultants (supplementary information) and the introductory, investment, actuarial and statistical sections, as listed in the table of contents, are presented for purposes of additional analysis and are not a required part of the basic financial statements.

The supplementary information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and certain additional procedures, including comparing and reconciling such

REPORT OF THE INDEPENDENT AUDITOR

Board of Trustees
Public Employees' Retirement Association of Colorado

information directly to the underlying accounting and other records used to prepare the basic financial statements or to the basic financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the supplementary information is fairly stated, in all material respects, in relation to the basic financial statements as a whole.

The introductory, investment, actuarial and statistical sections, as listed in the table of contents, have not been subjected to the auditing procedures applied in the audit of the basic financial statements, and accordingly, we do not express an opinion or provide any assurance on them.

We also previously audited, in accordance with auditing standards generally accepted in the United States of America, the financial statements of Colorado PERA as of and for the year ended December 31, 2019 (not presented herein), and have issued our report thereon dated June 30, 2020, which contained an unmodified opinion on the respective financial statements of each individual fund as displayed in the basic financial statements. The schedules of administrative expenses, other additions, other deductions, investment expenses, and payments to consultants (supplementary information) for the year ended December 31, 2019 are presented for purposes of additional analysis and are not required parts 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 2019 financial statements. The supplementary information has been subjected to the auditing procedures applied in the audit of the 2019 basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare those financial statements or to those financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the accompanying supplementary information is fairly stated in all material respects in relation to the financial statements as a whole for the year ended December 31, 2019.

Other Reporting Required by *Government Auditing Standards*

In accordance with *Government Auditing Standards*, we have also issued our report dated June 18, 2021 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 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 18, 2021

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, 2020. Please consider the information presented here in conjunction with additional information in the Letter of Transmittal starting on page 3 of this *Comprehensive Annual Financial Report (Annual Report)* and with the basic financial statements of PERA on pages 46-49.

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, 8, and 9 of the Notes to the Financial Statements.

Financial Statement Overview

PERA's financial statements are prepared in accordance with governmental accounting standards, and 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 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*.

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	Schedule of Changes in Net OPEB Liability
Schedule of Net Pension Liability	Schedule of Net OPEB Liability
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

The Fund's combined FNP increased by \$7.3 billion, or 13 percent, from \$57.1 billion at December 31, 2019, to \$64.4 billion at December 31, 2020. The main reason for the higher FNP was an increase in return on the investment portfolio. See additional information about investment income on page 34. Other events impacting the 2020 financial statements include:

- The enactment of House Bill (HB) 20-1379: *Suspend Direct Distribution to PERA Public Employees Retirement Association for 2020-21 Fiscal Year*, passed during the 2020 legislative session and signed by Governor Polis on June 29, 2020, suspended the July 1, 2020, \$225 million (actual dollars) direct distribution allocated to the State, School, Judicial, and DPS Divisions, as required under C.R.S. § 24-51-414.

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, 2020, the FNP for five Division Trust Funds, two Health Care Trust Funds, and the Life Insurance Reserve increased by \$6,495,317, \$109,476, and \$3,173, 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		
	2020	2019	% Chg	2020	2019	% Chg	2020	2019	% Chg
Assets									
Cash and short-term investments	\$1,632,363	\$679,525	140.2%	\$13,429	\$4,932	172.3%	\$755	\$312	142.0%
Securities lending collateral	920,067	1,302,451	(29.4%)	7,570	9,452	(19.9%)	426	600	(29.0%)
Receivables	1,601,893	443,179	261.5%	72,126	53,459	34.9%	667	131	409.2%
Investments, at fair value	56,836,001	50,908,381	11.6%	467,591	369,463	26.6%	26,302	23,403	12.4%
Capital assets, net of accumulated depreciation	14,253	14,315	(0.4%)	—	—	—%	—	—	—%
Total assets	61,004,577	53,347,851	14.4%	560,716	437,306	28.2%	28,150	24,446	15.2%
Liabilities									
Investment settlements and other liabilities	1,811,473	268,014	575.9%	46,526	30,711	51.5%	3,410	2,706	26.0%
Securities lending obligations	919,905	1,301,955	(29.3%)	7,568	9,449	(19.9%)	426	599	(28.9%)
Total liabilities	2,731,378	1,569,969	74.0%	54,094	40,160	34.7%	3,836	3,305	16.1%
Fiduciary net position	\$58,273,199	\$51,777,882	12.5%	\$506,622	\$397,146	27.6%	\$24,314	\$21,141	15.0%

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

	Division Trust Funds			Health Care Trust Funds			Life Insurance Reserve		
	2020	2019	% Chg	2020	2019	% Chg	2020	2019	% Chg
Additions									
Employer contributions	\$1,851,687	\$1,754,628	5.5%	\$102,679	\$99,660	3.0%	\$—	\$—	—%
Nonemployer contributions	—	225,000	(100.0%)	—	—	—%	—	—	—%
Member contributions	938,121	817,241	14.8%	—	—	—%	—	—	—%
Purchased service	75,623	66,453	13.8%	—	—	—%	—	—	—%
Net Investment income	8,653,529	8,927,933	(3.1%)	66,299	58,759	12.8%	3,909	3,901	0.2%
Other	12,095	10,127	19.4%	8,133	7,172	13.4%	—	—	—%
Total additions	11,531,055	11,801,382	(2.3%)	177,111	165,591	7.0%	3,909	3,901	0.2%
Deductions									
Benefit payments	4,825,842	4,708,541	2.5%	56,109	61,865	(9.3%)	—	—	—%
Refunds	148,014	161,202	(8.2%)	—	—	—%	—	—	—%
Disability and life insurance premiums	4,264	6,162	(30.8%)	—	—	—%	512	479	6.9%
Administrative expenses	39,377	39,186	0.5%	11,493	9,767	17.7%	224	123	82.1%
Other	18,241	15,057	21.1%	33	34	(2.9%)	—	—	—%
Total deductions	5,035,738	4,930,148	2.1%	67,635	71,666	(5.6%)	736	602	22.3%
Change in fiduciary net position	6,495,317	6,871,234	(5.5%)	109,476	93,925	16.6%	3,173	3,299	(3.8%)
Fiduciary net position									
Beginning of year	51,777,882	44,906,648	15.3%	397,146	303,221	31.0%	21,141	17,842	18.5%
End of year	\$58,273,199	\$51,777,882	12.5%	\$506,622	\$397,146	27.6%	\$24,314	\$21,141	15.0%

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	\$2,398,407	\$231,928	\$78,705	(\$57,784)	\$1,614	\$2,652,870
School Division	4,121,042	397,007	134,726	(98,914)	2,761	4,556,622
Local Government Division	697,775	67,246	22,820	(16,753)	468	771,556
Judicial Division	55,762	5,353	1,816	(1,334)	37	61,634
DPS Division	552,344	53,323	18,095	(13,286)	371	610,847
HCTF	54,709	5,078	1,723	(1,265)	35	60,280
DPS HCTF	5,469	500	171	(125)	4	6,019
Life Insurance Reserve	3,538	337	115	(84)	3	3,909
2020 Total	\$7,889,046	\$760,772	\$258,171	(\$189,545)	\$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
2016 Total	\$2,124,689	\$808,744	\$256,216	(\$161,800)	\$10,177	\$3,038,026

Investments, which are managed in a single investment pool, 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, 2020, PERA generated \$8,723,737 in net investment income, a decrease of \$266,856 from 2019.

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 129 of the Investment Section.

The global equity market, in which over 50 percent of the portfolio is invested, is the single greatest driver of PERA's annual return. Equity markets continued to reach new highs in the beginning months of 2020, but quickly reversed course as the coronavirus spread throughout the global economy. Unprecedented levels of stimulus helped the U.S. avoid a prolonged recession as economic activity began rebounding in the second

half of the year. After declining by more than a third, global equity markets finished with a 16.6 percent gain (MSCI ACWI IMI).

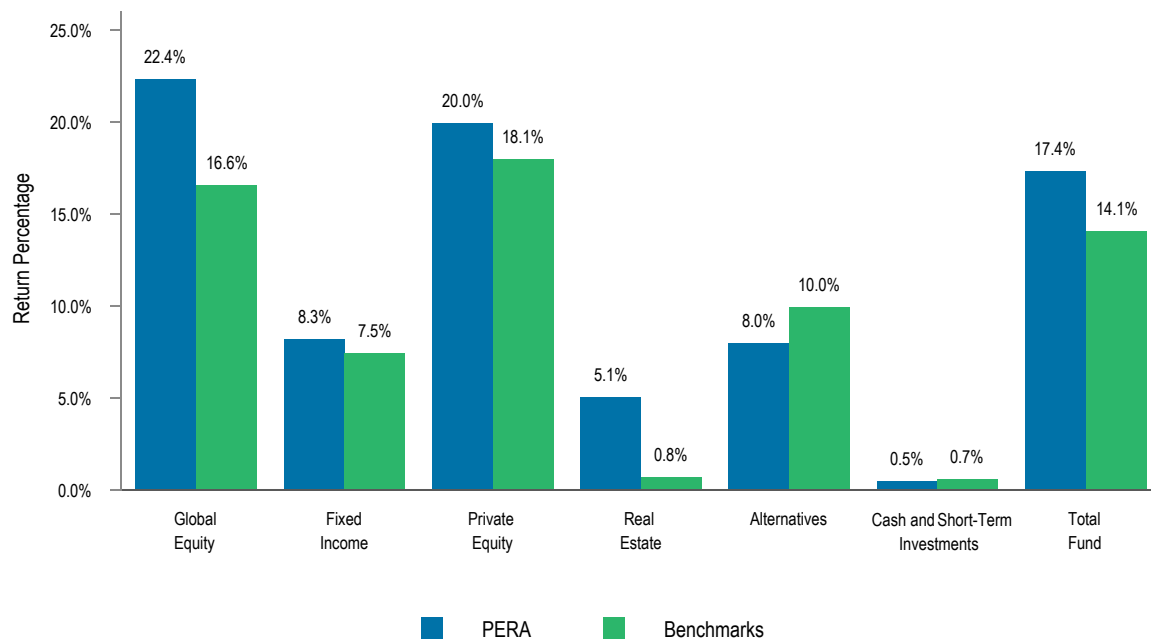
As worldwide interest rates declined, 2020 proved to be a strong year for fixed income investors. The Federal Reserve (Fed) intervened in March with two rate cuts that moved the Fed Funds rate to near zero. The fixed income market, in which over 20 percent of the portfolio is invested, returned 7.5 percent in 2020 (Bloomberg Barclays U.S. Aggregate Index). In addition to the growth in the global equity and fixed income markets, the private market asset classes (private equity, real estate, and alternatives) all experienced positive returns in 2020.

PERA's actual net-of-fees, time-weighted rate of return was 17.4 percent for the year ended December 31, 2020. 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, 2020, PERA's investments outperformed the total fund's policy benchmark by 330 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)

2020 Actual Time-Weighted Returns versus Benchmarks

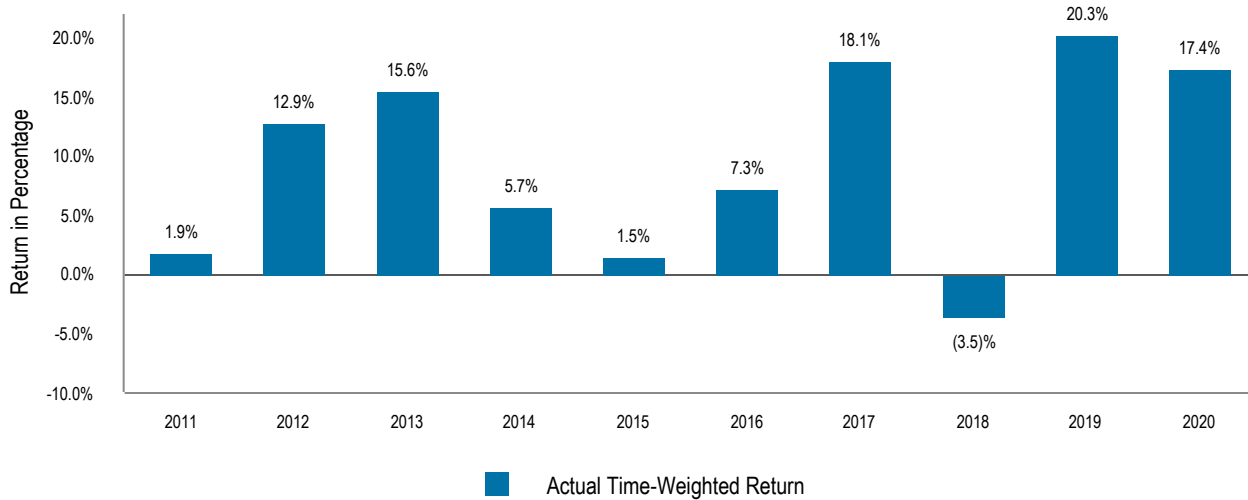


Long-Term Investment Returns

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 ten-year periods for each investment asset class, as well as a comprehensive discussion of the 2020 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	Retiree Health and Life Premiums	Employer Disaffiliation Payment	Other	Total Contributions and Other
State Division	\$646,386	\$—	\$298,264	\$28,522	\$—	\$—	\$9,390	\$982,562
School Division	1,048,992	—	501,214	35,633	—	—	123	1,585,962
Local Government Division	89,662	—	58,067	8,891	—	—	24	156,644
Judicial Division	10,402	—	6,637	1,060	—	—	2,546	20,645
DPS Division	56,245	—	73,939	1,517	—	—	12	131,713
HCTF	94,634	—	—	—	—	—	7,909	102,543
DPS HCTF	8,045	—	—	—	—	—	224	8,269
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
2016 Total	\$1,522,319	\$—	\$687,202	\$58,152	\$144,759	\$—	\$24,362	\$2,436,794

¹ Employer contributions include the employer statutory rates, AED, and SAED, less an offset of 12.50 percent in 2020 for the DPS Division as required by C.R.S. § 24-51-412 *et seq.*

² 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 253-260 in the Statistical Section for the Schedule of Contribution Rate History.

Contributions	2020	2019
From members to the Division Trust Funds	\$938,121	\$817,241
From employers to the Division Trust Funds, HCTF, and DPS HCTF	1,954,366	1,854,288

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. HB 20-1379 suspended the July 2020 contribution for the State's 2020-21 fiscal year. At the end of 2020, PERA had receivables in the amount of \$220,327 which primarily represents contributions owed by members and employers for service credit earned in December 2020 and anticipated health care subsidies. Over the past 30 years, member contributions represent 16 percent of the inflows into the Division Trust Funds, and contributions from employer and nonemployer contributing entities represent 21 percent 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 percent. At a minimum, the DPS Division employer contribution rate must be sufficient to fund the DPS HCTF (1.02 percent) and the Annual Increase Reserve (AIR) (1.00 percent) 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 12.50 percent for 2020.

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 unfunded actuarial accrued liability (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

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

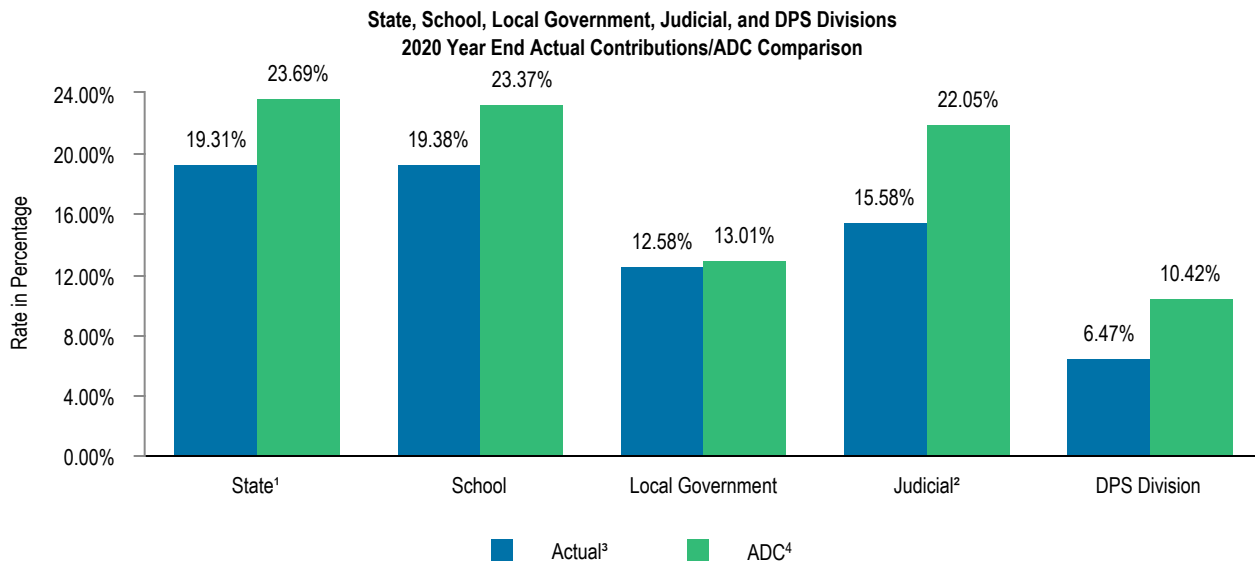
(Dollars in Thousands)

automatic adjustment provision (AAP) compares the blended actual contribution rates to the 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 2020. Additional information on long-term trends can be found in the Actuarial Section.



¹ Actual rates are for Members other than State Troopers.

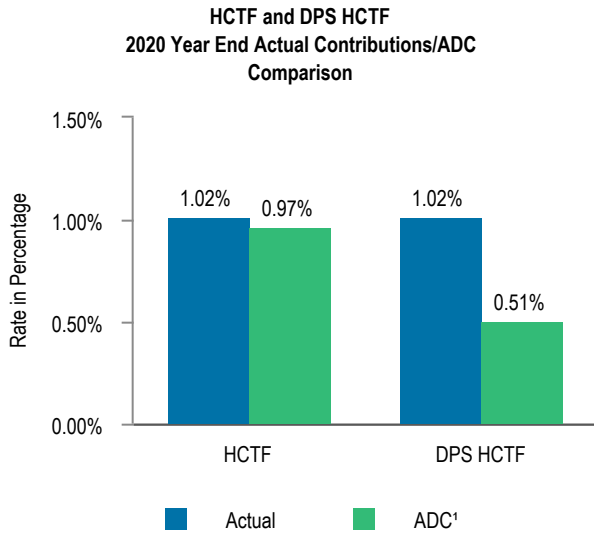
² Actual employer rate for the Judicial Division reflects the employer-member rate modifications pursuant to HB 20-1394.

³ Actual contributions include employer, AED and SAED, and nonemployer, as applicable, less the AIR and health care contributions and also reflects the suspension of the 2020 direct distribution, pursuant to HB 20-1379.

⁴ ADC rates for 2020 are based on the 2018 actuarial valuations.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)



¹ ADC rates for 2020 are based on the 2018 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. The ADC is calculated using the investment rate of return and discount rate assumptions according to the Board’s funding policies. The ADC for 2020 was determined based on the results of the December 31, 2018, actuarial valuation. The 10-year schedules illustrating the annual contribution deficiency/(excess) can be found in the RSI on pages 105-107 and 116-117.

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 deficiency of \$280.2 million for the Division Trust Funds in 2020. During the past 18 years, shortfalls in funding for the Division Trust Funds totaled \$5.8 billion.

Due to the timing of prior and future contribution increases versus the remaining portion of members with legacy (more expensive) benefit structures, contribution deficiencies are expected to continue in the near-term. However, with 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 235 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	2020	2019	2018	2017	2016	Cumulative Deficiency/(Excess) 2003–2020
State Division	\$93.5	\$21.1 ¹	\$117.8 ¹	\$32.2	\$59.9	\$1,850.0
School Division	155.9	94.2 ¹	261.2 ¹	133.0	144.4	2,923.4
State and School Division ²	N/A	N/A	N/A	N/A	N/A	685.5
Local Government Division	3.6	(6.3)	17.8	(7.1) ³	(3.3)	(191.1)
Judicial Division	0.3	(0.1) ¹	4.4 ¹	(0.2)	(0.1)	24.2
DPS Division ⁴	26.9	24.0 ¹	48.8 ¹	37.3	48.7	490.0
Total Division Trust Funds	\$280.2	\$132.9	\$450.0	\$195.2	\$249.6	\$5,782.0
HCTF	(\$15.9)	(\$1.0)	(\$0.9)	(\$5.0) ³	(\$3.6)	(\$105.9)
DPS HCTF ⁴	(4.5)	(3.5)	(2.9)	(2.6)	(2.2)	(22.1)
Total OPEB Trust Funds	(\$20.4)	(\$4.5)	(\$3.8)	(\$7.6)	(\$5.8)	(\$128.0)

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 Notes 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, 2020, actuarial valuation consider the revised actuarial assumptions adopted by the Board November 20, 2020, effective for the December 31, 2020, actuarial valuation and measurement date:

Trust Fund	Actuarial Funding Valuation Results	
	2020 Amortization Period After Consideration of Revised Assumptions	2019 Amortization Period
State Division	33 Years	27 Years
School Division	43 Years	28 Years
Local Govt Division	29 Years	22 Years
Judicial Division	13 Years	16 Years
DPS Division	16 Years ¹	25 Years
HCTF	18 Years	20 Years
DPS HCTF	4 Years	6 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 increase in amortization periods from 2019 to 2020 is primarily due to the revised actuarial assumptions adopted and effective for 2020.

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 149-156 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

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

actuarial accrued liability], with consideration of the 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 22 years when including the anticipated adjustments to take effect July 1, 2022, resulting from the automatic adjustment provisions (AAP).”

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	\$1,675,048	\$57,921	\$1,360	\$11,385	\$2,634	\$1,748,348
School Division	2,535,509	67,873	2,286	22,779	11,349	2,639,796
Local Government Division	307,795	12,828	296	2,459	3,146	326,524
Judicial Division	29,409	48	28	87	90	29,662
DPS Division	278,081	9,344	294	2,667	1,022	291,408
HCTF	53,023	—	—	10,977	32	64,032
DPS HCTF	3,086	—	—	516	1	3,603
Life Insurance Reserve	—	—	512	224	—	736
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
2016 Total	\$4,516,566	\$147,420	\$6,748	\$59,508	\$22,383	\$4,752,625

At the end of 2020, PERA was paying benefits to more than 127,000 retired public employees and their beneficiaries who received an average benefit of \$3,178 per month (actual dollars) compared to at the end of 2019, PERA was paying benefits to more than 125,000 retired public employees and their beneficiaries who received an average benefit of \$3,153 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. For benefit recipients, this may be the primary source of retirement

income as most PERA benefit recipients do not qualify for Social Security payments. At the end of 2020, approximately 68.7 percent (87,758) of recipients received less than \$50,000 (actual dollars) a year in PERA benefits compared to 69.3 percent (86,589) at the end of 2019, as the chart on the next page demonstrates. Slightly more than 1.8 percent of recipients received an annual benefit payment of \$100,000 or more (actual dollars), 2,344 at the end of 2020 compared to 2,120 at the end of 2019. Generally, these benefit recipients had high salaries and a significant number of years of service credit.

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

PERA BENEFIT PAYMENTS BY DOLLAR AMOUNT OF ANNUAL BENEFIT AND NUMBER OF BENEFIT RECIPIENTS

Benefit Range (in Actual Dollars) ¹	2020 Number of Benefit Recipients ²	Percent of Total Benefit Recipients	2019 Number of Benefit Recipients ³	Percent of Total Benefit Recipients
\$0 - \$4,999	9,585	7.50%	9,110	7.29%
\$5,000 - \$9,999	10,563	8.26%	10,294	8.24%
\$10,000 - \$24,999	27,095	21.20%	26,752	21.40%
\$25,000 - \$49,999	40,515	31.70%	40,433	32.34%
\$50,000 - \$99,999	37,727	29.51%	36,309	29.04%
\$100,000 - \$149,999	2,119	1.66%	1,915	1.53%
\$150,000 - \$199,999	168	0.13%	149	0.12%
\$200,000+	57	0.04%	56	0.04%
Total Benefit Recipients	127,829		125,018	

¹ Includes amounts paid under replacement benefit arrangements.

² Does not include 304 deferred survivors.

³ Does not include 310 deferred survivors.

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. The effect of these changes are tracked and monitored by PERA's management and reported as part of the overall governance structure of PERA. On the 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.) as illustrated in the chart below:

Average Benefits Payable Per Month (In Actual Dollars)



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, 2020, PERA had cash and short-term investments of \$1,646,547, an increase of \$961,778 from 2019. The increase was primarily due to a greater overall need for liquidity.

For the year ended December 31, 2020, PERA had securities lending collateral of \$928,063 and securities lending obligations of \$927,899, a decrease of \$384,440 and \$384,104, respectively, from 2019. The securities lending collateral and obligations decreased primarily due to a decrease in the securities on loan as a result of decreased borrower demand.

For the year ended December 31, 2020, PERA had total receivables of \$1,674,686, an increase of \$1,177,917 from 2019. The increase was primarily due to higher pending settlements of fixed income investment sales.

For the year ended December 31, 2020, PERA had investment settlements and other liabilities of \$1,861,409, an increase of \$1,559,978 from 2019. The increase was primarily due to higher pending settlements of fixed income investment purchases.

For the year ended December 31, 2020, other additions increased by \$1,968 and other deductions increased by \$3,184 for the Division Trust Funds. These changes are primarily due to recording interfund transfers at retirement as an addition for the State and Judicial Divisions and a deduction for the School, Local Government, and DPS Divisions. The amount of interfund transfers, and whether they are recorded as other additions or deductions, depends on the number of retirements where the member has earned service credit in more than one division.

For the year ended December 31, 2020, disability premiums for the Division Trust Funds decreased by \$1,898. The decrease was primarily due to a reduction in the premium rate calculated based on covered salary.

Administrative expenses of the Life Insurance Reserve increased from \$123 in 2019 to \$224 in 2020. The increase was primarily due to an increase in PERA's administrative expenses and a refinement of the administrative staff workload statistics used to allocate those expenses.

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. The NPL 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 46-47.

PERA-affiliated employers who comply with GASB 68 and GASB 75 are required to report their proportionate share of the collective NPL, 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 and NOLs as of December 31, 2020, and December 31, 2019, as well as the breakdown of changes in the collective NPLs and NOLs for 2020. The decrease in NPLs for the State, Local Government, Judicial, and DPS Division Trust Funds are primarily due to favorable investment performance offsetting the unfavorable impact of the changes in actuarial assumptions. The slight increase in NPL for the School Division Trust Fund was primarily due to the favorable investment performance not fully offsetting the unfavorable impact of the revised actuarial assumptions. The decrease in NOLs for the HCTF and DPS HCTF are largely due to favorable investment performance and demographic experience, as well as gains resulting from changes in actuarial assumptions. Changes to the actuarial assumptions generally resulted from the 2020 experience study which recommended revisions to a number of economic and demographic assumptions. These revisions were adopted by the Board on November 20, 2020, effective December 31, 2020. See Notes 10 and 11 of the Notes to the Financial Statements for additional information regarding changes to actuarial assumptions.

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
2019 Net pension liability	\$9,703,804	\$14,939,783	\$731,391	\$90,925	\$658,844	\$26,124,747
Service cost	355,719	663,873	77,400	9,106	93,058	1,199,156
Interest	1,825,929	3,006,736	379,994	32,590	309,174	5,554,423
Changes of benefit terms	—	—	—	105	—	105
Differences between expected and actual experience	195,634	595,867	32,128	10,421	(15,298)	818,752
Changes of assumptions or other inputs	1,025,120	2,020,180	222,809	915	125,275	3,394,299
Contributions—employer	(646,386)	(1,048,992)	(89,662)	(10,402)	(56,245)	(1,851,687)
Contributions—nonemployer	—	—	—	—	—	—
Contributions—active member (includes purchased service)	(326,786)	(536,847)	(66,958)	(7,697)	(75,456)	(1,013,744)
Net investment gain	(2,652,870)	(4,556,622)	(771,556)	(61,634)	(610,847)	(8,653,529)
Administrative expense	11,385	22,779	2,459	87	2,667	39,377
Other	(6,756)	11,226	3,122	(2,456)	1,010	6,146
2020 Net pension liability	\$9,484,793	\$15,117,983	\$521,127	\$61,960	\$432,182	\$25,618,045

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
2019 Net OPEB liability	\$1,123,998	\$36,837	\$1,160,835
Service cost	18,074	1,291	19,365
Interest	106,997	5,005	112,002
Changes of benefit terms	—	—	—
Differences between expected and actual experience	(68,772)	(4,339)	(73,111)
Changes of assumptions or other inputs	(69,759)	(1,764)	(71,523)
Contributions—employer	(94,634)	(8,045)	(102,679)
Purchased service transfers	(5,428)	(77)	(5,505)
Net investment gain	(60,280)	(6,019)	(66,299)
Administrative expense ²	2,478	149	2,627
Other	(2,449)	(146)	(2,595)
2020 Net OPEB liability	\$950,225	\$22,892	\$973,117

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 net pension liabilities and net OPEB liabilities, assumptions used to determine these 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.

Defined Contribution and Deferred Compensation Plans

Comparative Financial Statements

PERA administers two defined contribution plans and a deferred compensation plan. On the next page are the comparative condensed statements of fiduciary net position and changes in fiduciary net position for the

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

Voluntary Investment Program (PERAPlus 401(k) Plan), Defined Contribution Retirement Plan (DC Plan), and Deferred Compensation Plan (PERAPlus 457 Plan). 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

	2020	2019	% Chg
Assets			
Cash and short-term investments	\$59,683	\$38,047	56.9%
Securities lending collateral	92,999	111,317	(16.5%)
Receivables	110,867	101,728	9.0%
Investments, at fair value	5,515,968	4,813,786	14.6%
Total assets	5,779,517	5,064,878	14.1%
Liabilities			
Investment settlements and other liabilities	50,447	25,233	99.9%
Securities lending obligations	92,982	111,299	(16.5%)
Total liabilities	143,429	136,532	5.1%
Fiduciary net position	\$5,636,088	\$4,928,346	14.4%

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

	2020	2019	% Chg
Additions			
Employer contributions	\$22,737	\$20,917	8.7%
Member contributions	227,173	217,637	4.4%
Net Investment income	738,936	912,712	(19.0%)
Other	2,971	3,042	(2.3%)
Total additions	991,817	1,154,308	(14.1%)
Deductions			
Refunds	273,919	283,772	(3.5%)
Administrative expenses	7,486	5,777	29.6%
Other	2,670	2,550	4.7%
Total deductions	284,075	292,099	(2.7%)
Change in fiduciary net position	707,742	862,209	(17.9%)
Fiduciary net position			
Beginning of year	4,928,346	4,066,137	21.2%
End of year	\$5,636,088	\$4,928,346	14.4%

Investments

Investments for the two defined contribution plans and the deferred compensation plan are managed in a single investment pool. Underlying investments are grouped into one of 17 white label PERAdvantage 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 PERAdvantage investments provide diversification and cover a wide risk/return spectrum within each of the seven primary investment options and ten 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 141-146.

For the year ended December 31, 2020, the defined contribution and deferred compensation plans net investment income decreased \$173,776 in 2020. Investments at fair value increased by \$702,182 or 14.6 percent for the year ended December 31, 2020. The decrease in investment income was primarily due to a decrease in global equity investment returns. Additional information on longer-term performance and benchmarks for the three- and five-year periods for each investment class can be found in the Investment Section.

Plan Fees

Plan administrative fees consist of a flat \$1.00 (actual dollars) per month per plan for all participants and an asset-based fee of up to 0.03 percent. Participants also pay asset-based investment management fees which vary for each investment option.

Fund	2020	2019
PERAdvantage Capital Preservation Fund	0.24%	0.24%
PERAdvantage Fixed Income Fund	0.21%	0.21%
PERAdvantage Real Return Fund	0.20%	0.20%
PERAdvantage Socially Responsible Investment Fund	0.22%	0.23%
PERAdvantage U.S. Large Cap Stock Fund	0.08%	0.08%
PERAdvantage U.S. Small and Mid Cap Stock Fund	0.18%	0.18%
PERAdvantage International Stock Fund	0.29%	0.30%
PERAdvantage Target Retirement Funds	0.10%	0.10%

Note: Fees shown include both administrative fees and investment management fees. Participants who have a Self-Directed Brokerage Account pay an annual \$50 (actual dollars) self-directed brokerage fee, with no asset-based administrative fee (revenue sharing offsets administrative fees).

MANAGEMENT'S DISCUSSION AND ANALYSIS (UNAUDITED)

(Dollars in Thousands)

Plan Participants and Contributions

In 2020, overall participation in the PERAPlus 401(k) Plan, DC Plan, and PERAPlus 457 Plan increased by 571 participants from 2019. The following table shows number of participants in each plan at the end of fiscal years 2020 and 2019.

Plan	2020	2019	Change
PERAPlus 401(k) Plan	68,647	68,920	(273)
DC Plan	7,264	6,939	325
PERAPlus 457 Plan	19,438	18,919	519
Total	95,349	94,778	571

The table below shows the breakdown of the number of accounts for the specified ranges in participant contributions recognized during 2020 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 78-80.

Annual contribution ranges (actual dollars)	PERAPlus 401(k) Plan		PERAPlus 457 Plan	
	2020	2019	2020	2019
\$0 - \$5,000	19,248	20,307	7,182	7,237
\$5,001 - \$10,000	3,513	3,515	1,206	1,151
\$10,001 - \$15,000	1,296	1,320	590	530
\$15,001 and above	2,346	2,265	1,785	1,614

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, 2020, the defined contribution and deferred compensation plans had refunds of \$273,919. 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, 2020, the defined contribution and deferred compensation plans had cash and short-term investments of \$59,683, an increase of \$21,636 from 2019. The increase was primarily due to a greater overall need for liquidity.

For the year ended December 31, 2020, the defined contribution and deferred compensation plans had investment settlements and other liabilities of \$50,447, an increase of \$25,214 from 2019. The increase was primarily due to higher pending settlements of fixed income investment purchases.

Administrative expenses of the defined contribution and deferred compensation plans increased from \$5,777 in 2019 to \$7,486 in 2020. The increase was primarily due to an increase in PERA's administrative expenses and a refinement of the administrative staff workload statistics used to allocate those expenses.

STATEMENTS OF FIDUCIARY NET POSITION

As of December 31, 2020, with Comparative Combined Totals for 2019
(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	\$500,151	\$859,658	\$145,693	\$11,641	\$115,220	\$1,632,363
Securities lending collateral	281,906	484,539	82,119	6,560	64,943	920,067
Total cash and short-term investments	782,057	1,344,197	227,812	18,201	180,163	2,552,430
Receivables						
Benefit	74,762	69,988	7,538	2,384	5,392	160,064
Interfund	269	462	78	6	62	877
Investment settlements and income	441,503	758,855	128,608	10,276	101,710	1,440,952
Total receivables	516,534	829,305	136,224	12,666	107,164	1,601,893
Investments, at fair value						
Global equity	10,272,389	17,656,178	2,992,334	239,091	2,366,468	33,526,460
Fixed income	3,536,815	6,079,077	1,030,269	82,320	814,783	11,543,264
Private equity	1,443,825	2,481,647	420,585	33,605	332,617	4,712,279
Real estate	1,432,848	2,462,779	417,387	33,350	330,088	4,676,452
Alternatives	728,472	1,252,097	212,203	16,955	167,819	2,377,546
Multi-asset class funds	—	—	—	—	—	—
Self-directed brokerage	—	—	—	—	—	—
Total investments, at fair value	17,414,349	29,931,778	5,072,778	405,321	4,011,775	56,836,001
Capital assets, at cost, net of accumulated depreciation of \$29,258 and \$27,797 at December 31, 2020, and 2019, respectively						
	4,138	8,220	909	33	953	14,253
Total assets	18,717,078	32,113,500	5,437,723	436,221	4,300,055	61,004,577
Liabilities						
Investment settlements and other liabilities	555,275	954,862	160,981	12,810	127,545	1,811,473
Securities lending obligations	281,856	484,453	82,104	6,560	64,932	919,905
Interfund	—	—	—	—	—	—
Total liabilities	837,131	1,439,315	243,085	19,370	192,477	2,731,378
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						
	\$17,879,947	\$30,674,185	\$5,194,638	\$416,851	\$4,107,578	\$58,273,199

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

STATEMENTS OF FIDUCIARY NET POSITION

As of December 31, 2020, with Comparative Combined Totals for 2019

(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	
						2020	2019
\$39,008	\$6,542	\$14,133	\$12,239	\$1,190	\$755	\$1,706,230	\$722,816
63,032	5,558	24,409	6,899	671	426	1,021,062	1,423,820
102,040	12,100	38,542	19,138	1,861	1,181	2,727,292	2,146,636
62,116	2,885	16,531	57,727	2,536	—	301,859	292,315
—	—	—	7	1	—	885	729
21,822	1,131	6,382	10,804	1,051	667	1,482,809	305,453
83,938	4,016	22,913	68,538	3,588	667	1,785,553	598,497
2,336,445	115,251	548,665	251,380	24,443	15,514	36,818,158	32,011,933
695,287	32,214	274,548	86,551	8,416	5,343	12,645,623	12,121,968
—	—	—	35,332	3,436	2,181	4,753,228	4,219,261
—	—	—	35,064	3,409	2,164	4,717,089	4,632,826
—	—	—	17,827	1,733	1,100	2,398,206	1,829,571
1,014,749	161,284	268,854	—	—	—	1,444,887	1,243,329
35,974	6,644	26,053	—	—	—	68,671	56,145
4,082,455	315,393	1,118,120	426,154	41,437	26,302	62,845,862	56,115,033
—	—	—	—	—	—	14,253	14,315
4,268,433	331,509	1,179,575	513,830	46,886	28,150	67,372,960	58,874,481
36,981	1,904	10,677	43,632	2,894	3,410	1,910,971	325,935
63,021	5,556	24,405	6,897	671	426	1,020,881	1,423,302
601	105	179	—	—	—	885	729
100,603	7,565	35,261	50,529	3,565	3,836	2,932,737	1,749,966
\$4,167,830	\$323,944	\$1,144,314	\$463,301	\$43,321	\$24,314	\$64,440,223	\$57,124,515

STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

For the Year ended December 31, 2020, with Comparative Combined Totals for 2019

(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	\$646,386	\$1,048,992	\$89,662	\$10,402	\$56,245	\$1,851,687
Nonemployer	—	—	—	—	—	—
Members	298,264	501,214	58,067	6,637	73,939	938,121
Purchased service	28,522	35,633	8,891	1,060	1,517	75,623
Total contributions	973,172	1,585,839	156,620	18,099	131,701	2,865,431
Investment income						
Net appreciation in fair value of investments	2,398,407	4,121,042	697,775	55,762	552,344	7,825,330
Interest	88,169	150,925	25,564	2,035	20,271	286,964
Dividends	143,759	246,082	41,682	3,318	33,052	467,893
Real estate, private equity, and alternatives net operating income	78,705	134,726	22,820	1,816	18,095	256,162
Less investment expense	(57,784)	(98,914)	(16,753)	(1,334)	(13,286)	(188,071)
Net income from investing activities	2,651,256	4,553,861	771,088	61,597	610,476	8,648,278
Securities lending income	1,797	3,075	521	41	413	5,847
Less securities lending expense	(183)	(314)	(53)	(4)	(42)	(596)
Net income from securities lending	1,614	2,761	468	37	371	5,251
Net investment income	2,652,870	4,556,622	771,556	61,634	610,847	8,653,529
Other additions	9,390	123	24	2,546	12	12,095
Total additions	3,635,432	6,142,584	928,200	82,279	742,560	11,531,055
Deductions						
Benefits						
Benefits paid to retirees/cobeneficiaries	1,660,236	2,519,895	305,159	29,068	276,536	4,790,894
Benefits paid to survivors	14,812	15,614	2,636	341	1,545	34,948
Benefits paid on behalf of health care participants	—	—	—	—	—	—
Total benefits	1,675,048	2,535,509	307,795	29,409	278,081	4,825,842
Refunds of contribution accounts, including match and interest	57,921	67,873	12,828	48	9,344	148,014
Disability and life insurance premiums	1,360	2,286	296	28	294	4,264
Administrative expenses	11,385	22,779	2,459	87	2,667	39,377
Other deductions	2,634	11,349	3,146	90	1,022	18,241
Total deductions	1,748,348	2,639,796	326,524	29,662	291,408	5,035,738
Net increase in fiduciary net position	1,887,084	3,502,788	601,676	52,617	451,152	6,495,317
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	15,992,863	27,171,397	4,592,962	364,234	3,656,426	51,777,882
End of year	\$17,879,947	\$30,674,185	\$5,194,638	\$416,851	\$4,107,578	\$58,273,199

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

STATEMENTS OF CHANGES IN FIDUCIARY NET POSITION

For the Year ended December 31, 2020, with Comparative Combined Totals for 2019

(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	
						2020	2019
\$5,917	\$16,780	\$40	\$94,634	\$8,045	\$—	\$1,977,103	\$1,875,205
—	—	—	—	—	—	—	225,000
140,656	15,753	70,764	—	—	—	1,165,294	1,034,878
—	—	—	—	—	—	75,623	66,453
146,573	32,533	70,804	94,634	8,045	—	3,218,020	3,201,536
514,985	39,718	124,341	54,709	5,469	3,538	8,568,090	8,866,323
11,012	506	4,779	1,930	190	128	305,509	335,347
35,749	1,813	8,700	3,148	310	209	517,822	589,752
—	—	—	1,723	171	115	258,171	271,053
(2,103)	(193)	(679)	(1,265)	(125)	(84)	(192,520)	(166,878)
559,643	41,844	137,141	60,245	6,015	3,906	9,457,072	9,895,597
233	19	91	39	4	3	6,236	8,643
(25)	(2)	(8)	(4)	—	—	(635)	(935)
208	17	83	35	4	3	5,601	7,708
559,851	41,861	137,224	60,280	6,019	3,909	9,462,673	9,903,305
2,402	16	553	7,909	224	—	23,199	20,341
708,826	74,410	208,581	162,823	14,288	3,909	12,703,892	13,125,182
—	—	—	—	—	—	4,790,894	4,673,192
—	—	—	—	—	—	34,948	35,349
—	—	—	53,023	3,086	—	56,109	61,865
—	—	—	53,023	3,086	—	4,881,951	4,770,406
207,260	15,100	51,559	—	—	—	421,933	444,974
—	—	—	—	—	512	4,776	6,641
4,797	1,159	1,530	10,977	516	224	58,580	54,853
1,746	147	777	32	1	—	20,944	17,641
213,803	16,406	53,866	64,032	3,603	736	5,388,184	5,294,515
495,023	58,004	154,715	98,791	10,685	3,173	7,315,708	7,830,667
3,672,807	265,940	989,599	364,510	32,636	21,141	57,124,515	49,293,848
\$4,167,830	\$323,944	\$1,144,314	\$463,301	\$43,321	\$24,314	\$64,440,223	\$57,124,515

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, 2020 ¹
State	32
School	234
Local Government	141
Judicial	2
DPS	1
Total employers	410

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

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

Membership—Division Trust Funds-Defined Benefit Pension Plans

Benefit recipients and members of PERA consisted of the following as of December 31, 2020, with comparative combined totals for 2019:

	State Division	School Division	Local Government Division	Judicial Division	DPS Division	2020	2019
Retirees and beneficiaries	41,988	70,397	8,198	416	7,134	128,133	125,328
Inactive members eligible but not yet receiving benefits	7,802	19,413	2,730	14	2,237	32,196	29,784
Inactive members not eligible for benefits	83,941	144,066	27,245	5	14,661	269,918	253,647
Active members							
Vested members other than State Troopers	30,129	69,489	6,254	268	7,800	113,940	113,218
Vested State Troopers	702	—	1	—	—	703	672
Non-vested members other than State Troopers	22,023	49,932	6,489	76	6,893	85,413	99,204
Non-vested State Troopers	789	—	13	—	—	802	200
Total active members	53,643	119,421	12,757	344	14,693	200,858	213,294
Total	187,374	353,297	50,930	779	38,725	631,105	622,053

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.

The Colorado General Assembly passed significant pension reform through Senate Bill (SB) 18-200: *Concerning Modifications To the Public Employees' Retirement Association Hybrid Defined Benefit Plan Necessary To Eliminate with a High Probability the Unfunded Liability of the Plan Within the Next Thirty Years*. The bill was signed into law by Governor Hickenlooper on June 4, 2018. SB 18-200 makes changes to certain benefit provisions of the plans administered by PERA. Most of these changes were in effect at the end of 2020.

Plan Eligibility

All employees of PERA employers who work in a position eligible for PERA membership must be enrolled in the PERA Hybrid 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 new employees of State agencies and departments, most

community colleges, and the District Attorney within each Judicial District. If authorized by the county and the District Attorney, the attorneys within that Judicial District may also have access to PERAChoice. Pursuant to C.R.S. § 24-51-1501(4), effective January 1, 2019, PERAChoice was extended to certain new employees in the Local Government Division and certain new classified employees at State Colleges and Universities. 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, 2020. On January 1, 2010, the Denver Public Schools Retirement System (DPSRS) merged with PERA. On that date, all liabilities and assets of DPSRS transferred to and became liabilities and assets of the DPS Division of PERA. The benefit provisions of DPSRS were incorporated into PERA as the DPS benefit structure. The benefit provisions of existing members of PERA on the merger date and all new hires post-merger date are identified as the PERA benefit structure.

NOTES TO THE FINANCIAL STATEMENTS

*(Dollars in Thousands)***Member Accounts**

During 2020, most members in the State, School, and DPS Divisions, and Denver County Court judges contributed 8.75 percent of their PERA-includable salary to their member accounts from January 1 to June 30 and contributed 10.00 percent from July 1 to December 31. State Troopers (as defined in the next paragraph) contributed 10.75 percent of their PERA-includable salary from January 1 to June 30 and contributed 12.00 percent from July 1 to December 31. Most members of the Local Government Division contributed 8.00 percent of their PERA-includable salary from January 1 to June 30 and 8.50 percent from July 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 8.75 percent of their PERA-includable salary from January 1 to June 30 and 15.00 percent from July 1 to December 31.

The term "State Troopers" for PERA purposes has an expanded definition under Colorado law and includes 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; (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 percent. Effective January 1, 2009, the annual rate was set at 3 percent and has been reconfirmed each November since adoption.

Service Credit

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

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

Eligible members may purchase additional service credit based upon (1) other employment that is not covered by

PERA or another retirement program or (2) the service credit forfeited as the result of a withdrawn PERA member account. Such service credit purchases are subject to limits in State and federal law. The amounts used to purchase service credit are credited to the member's account and may include tax-paid funds and eligible rollovers of tax-deferred funds. Such amounts are eligible for an interest accrual, but no match if the 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 percent 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 percent match regardless of how much service credit the member has earned. However, contributions received after January 1, 2011, will not be eligible for the 50 percent match until the member earns five years of service credit.

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

Members 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 percent match on eligible amounts, annuitized into a monthly benefit using PERA's expected rate of return.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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 percent cap on annual salary increases for the next three periods used to determine the applicable HAS. This salary cap applies regardless of when the annual salaries used in the HAS calculation occurred.
- **For all members of the PERA benefit structure, except judges, who were not eligible to retire as of January 1, 2011, or members of the PERA benefit structure who are hired on or after January 1, 2007, who 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 percent cap on annual salary increases for the next three periods used to determine the applicable HAS. This salary cap applies regardless of when the annual salaries used in the HAS calculation occurred.
- **For all members of the PERA 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 percent 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 percent cap on annual salary increases for the next three periods used to determine the applicable HAS. This salary cap applies regardless of when the annual salaries used in the HAS calculation occurred.
- **For 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 percent cap on annual salary increases for the next three periods used to determine the applicable HAS. This salary cap applies regardless of when the annual salaries used in the HAS calculation occurred.

Service Retirement Benefits 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.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

**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.

**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.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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

• **Money Purchase Formula**

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

In all cases, a service retirement benefit cannot exceed the maximum benefit amount allowed by federal law.

Reduced Service Retirement—PERA Benefit Structure

Reduced service retirement benefits are calculated in the same manner as a service retirement benefit with a reduction for each month prior to the member’s first eligible date for a service retirement. The benefit calculation reduction factors 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

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(Dollars in Thousands)

**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 percent 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 percent 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 percent of their pre-disability earnings from any job, but who are not totally and permanently

incapacitated from regular and substantial gainful employment. PERA’s short-term disability program is an insurance product with PERA’s disability program administrator, and payments are made directly to the individual from PERA’s disability program administrator. The maximum income replacement is 60 percent of the member’s pre-disability PERA salary for up to 22 months.

- **Disability Retirement Benefits:** Disability applicants who are found to be totally and permanently mentally or physically incapacitated from regular and substantial gainful employment are eligible for disability retirement benefits. These benefits are paid by PERA for as long as the disability retiree remains disabled. The benefit is calculated as a percentage of the disabled member’s HAS using accrued, and in some cases, projected service credit.

Benefit Options

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

- *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.

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- *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 percent match on eligible amounts.

Survivor Benefits Program—DPS Benefit Structure

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

In the event of the covered member's death, the member's qualified survivors are eligible for survivor benefits as

long as the named beneficiary(ies) waive their right to receive a refund of the member's contributions. Qualified survivors generally include minor children, a surviving spouse, or dependent parents.

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

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 below and on the next page:

- 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 2020 is 1.25 percent. Each year, the AI is equal to the maximum AI or "AI cap," currently 1.25 percent 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 percent 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

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(Dollars in Thousands)

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 2020 is 1.25 percent. Each year, the AI is equal to the AI cap, currently 1.25 percent per year, unless it is adjusted by the AAP. The AAP may raise or lower the AI cap by up to 0.25 percent 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 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 2020 is 1.25 percent. Each year, the AI is the lesser of the AI cap, currently 1.25 percent (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 percent 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 percent, the AI cap will increase by 0.25 percent. 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 of Colorado (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 percent, from 1.25 percent to 1.00 percent.

A summary of AAP provisions is provided in Note 4.

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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, retirees may work up to 110 days/720 hours per calendar year for a PERA employer with no reduction in benefits. In addition, each employer assigned to the School Division Trust Fund, DPS Division Trust Fund, and each Higher Education Institution assigned to the State Division Trust Fund may designate on a calendar year basis, up to 10 service retirees who may work up to 30 additional days for a total of 140 days/916 hours in a calendar year. The employer contributions, AED, SAED, and working retiree contributions are due on all salary earned.
- **PERA Retirees Employed By Rural School Districts:** Pursuant to HB17-1176, enacted June 6, 2017, retirees as

identified below may receive salary without a reduction in retirement benefits. The following allowances and limitations apply until June 30, 2023.

- **Qualifying Employers:** Employers in the School Division that satisfy the criteria for “rural school district” status as determined by the Colorado Department of Education.
- **Participating School Districts:** Rural school districts determined to have a critical shortage of qualified teachers, school bus drivers, or school food services cooks. The employer is required to provide full payment of all PERA employer contributions, disbursements, and working retiree contributions.
- **Employment Criteria and Purpose:** Retiree has not worked for any PERA employer during the month of the effective date of retirement and is identified as having applicable experience, skills, or qualifications that meet one or more areas of the critical shortage positions and is rehired for the specific purpose of providing these services.
- **Limitations on the Rehired Retiree:** The retiree does not resume PERA membership, will not be eligible for a benefit recalculation or a revised HAS at the end of the reemployment period, will not receive a PERA health care premium subsidy during reemployment, and cannot be rehired under these provisions for more than six consecutive years. In addition, may not be employed by the school district from which he or she retired until two years after retirement if he or she retired without a full service retirement benefit.
- **PERA Retirees Employed By Board of Cooperative Educational Services (BOCES):** Pursuant to HB 20-1127, enacted July 13, 2020, retirees as identified below may receive salary without a reduction in retirement benefits, not to exceed 40 retirees for the total number hired by all BOCES. The following allowances and limitations apply until June 30, 2025.
 - **Qualifying Employers:** BOCES employers in the School Division that satisfy the criteria for “rural school district” as determined by the Colorado Department of Education.
 - **Participating School Districts:** Districts served by the BOCES determined to have a critical shortage of qualified special service providers. The employer is required to provide full payment of all PERA employer contributions, disbursements, working retiree contributions, and an additional 2 percent of the retiree’s salary paid while reemployed under these provisions.
 - **Employment Criteria and Purpose:** Retiree has not worked for any PERA employer during the month of the effective date of retirement and is identified as having applicable experience, skills, or qualifications

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that would benefit the students in two or more rural school districts served by the BOCES.

- **Limitations on the Rehired Retiree:** The retiree does not resume PERA membership, will not be eligible for a benefit recalculation or a revised HAS at the end of the reemployment period, will not receive a PERA health care premium subsidy during reemployment, and cannot be rehired under these provisions for more than five consecutive years. In addition, may not be employed by the BOCES from which he or she retired until two years after retirement if he or she retired without a full service retirement benefit.

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.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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.

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 HCTF, the DPS HCTF, and the Life Insurance Reserve pool their investments into a combined investment portfolio. Investment value and earnings of the investment pool are allocated among the funds based on each fund’s percentage ownership. As of December 31, 2020, the ownership percentages of each fund are shown in the following table.

Trust Fund	Ownership Percentages
State Division	30.37%
School Division	52.21%
Local Government Division	8.85%
Judicial Division	0.71%
DPS Division	7.00%
HCTF	0.74%
DPS HCTF	0.07%
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. Expenses incurred and net operating assets are allocated from the Common Operating Fund to the Division Trust Funds based on administrative staff workload devoted to these funds and the ratio of the number of active and retired members in each division to the total for all the Division Trust Funds. Expenses are allocated to the HCTF and DPS HCTF based on administrative fees charged to participants. Expenses are allocated to the Voluntary Investment Program, the Defined Contribution Retirement Plan, and the Deferred Compensation Plan based on administrative staff workload and the ratio of fiduciary net position (FNP) of each program or plan to the total for the program and plans. Expenses are allocated to the Life Insurance Reserve based on administrative staff workload.

Fair Value of Investments

Plan investments are presented at fair value in the Statements of Fiduciary Net Position. See Note 5 for additional information.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

Note 3—Interfund Transfers and Balances

Interfund transfers of assets take place on a regular basis between the Division Trust Funds. The transfers occur upon the initiation of a retirement or survivor benefit where the member earned or purchased service in another division 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, 2020, 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	\$25,382	\$21,078	\$5,147	\$2,545	\$6,895	\$—	\$—
Transfers out to other Funds for retirements	(16,180)	(29,743)	(7,293)	—	(7,831)	—	—
Transfers in from other Funds for survivor benefits	178	73	1	—	15	—	—
Transfers out to other Funds for survivor benefits	(52)	(194)	(19)	—	(2)	—	—
Transfers out to Health Care Trust Funds for purchased service credit	(2,070)	(2,316)	(951)	(90)	(77)	—	—
Transfers in to Health Care Trust Funds for purchased service credit	—	—	—	—	—	5,427	77

As of December 31, 2020, 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	\$269
School Division	462
Local Government Division	78
Judicial Division	6
DPS Division	62
Voluntary Investment Program	(601)
Defined Contribution Retirement Plan	(105)
Deferred Compensation Plan	(179)
HCTF	7
DPS HCTF	1
Total	\$—

NOTES TO THE FINANCIAL STATEMENTS

*(Dollars in Thousands)***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.

SB 18-200 made changes to contribution provisions of the defined benefit pension plans administered by PERA. Most of these changes to contribution provisions were in effect at the end of 2020.

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 2.0 percent 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 65. SB 10-001 provides for adjustment of the AED and SAED based on the year end funded status within a particular Division Trust Fund. If a particular Division Trust Fund reaches a funded status of 103 percent, a decrease in the AED and SAED is mandated and if it subsequently falls below a funded status of 90 percent, an increase in the AED and SAED is mandated. For the Local Government and Judicial Divisions, if the funded ratio reaches 90 percent and subsequently falls below 90 percent, an increase in the AED and SAED is mandated. AED and SAED rates cannot exceed the maximums listed in the table on page 65.

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 percent. At a minimum, the DPS Division employer rate, after applying the PCOP offset, must be sufficient to fund the DPS HCTF and the AIR contribution rates applicable to the DPS Division. The staff of Denver Public Schools provided the PCOP offset rate of 12.50 percent for 2020, 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, 2020, the ratio of UAAL over payroll is 348.8 percent for the School Division and 110.3 percent 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 65-66.

PERA-affiliated employers forward the contributions to PERA for deposit. PERA transfers a portion of these contributions, equal to 1.02 percent of the reported salaries, into the HCTF or DPS HCTF for health care benefits. Beginning in 2007, the AIR, under C.R.S. § 24-51-1009, was created within each division for the purpose of funding future benefit increases.

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Funding for this reserve comes from the employer contributions and is calculated at 1.0 percent of the salary reported for members in the PERA benefit structure hired on or after January 1, 2007. Beginning in 2020, post-retirement benefit increases for these members are limited to a maximum of 1.25 percent (unless adjusted by the AAP) compounded annually, subject to the availability of assets in the AIR for each division. As of December 31, 2020, the value of the AIR was \$219,790 in the State Division, \$301,297 in the School Division, \$58,831 in the Local Government Division, \$2,753 in the Judicial Division, and \$51,759 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, 2020, the employer contribution rates increased 0.50 percent and the member contribution rates increased 1.25 percent for all divisions, with the exception of the member contributions for members other than State Troopers in the Local Government Division, which increased 0.50 percent.

In addition to the increases effective July 1, 2020, 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 decreases by 5.0 percent and the member contribution rate for the Judicial Division increases by 5.0 percent. This contribution rate exchange does not apply to the employer or member contribution rates for judges employed by the Denver County Court.

The term “State Troopers” for PERA purposes has an expanded definition under Colorado law and includes several categories of employees: (1) employees of the Colorado State Patrol or 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; (4) new members hired on or after January 1, 2020, as a corrections officer classified as I through IV by a State Division employer.

The combined employer contribution rates for retirement and health care benefits along with the member contribution rates for 2020 are shown below.

CONTRIBUTION RATES

Trust Fund	Membership	Employer Contribution Rate	AED	SAED	PCOP Offset	Total Contribution Rate Paid by Employer	Member Contribution Rate
January 1, 2020 - June 30, 2020							
State Division	Members other than State Troopers	10.40%	5.00%	5.00%	—%	20.40%	8.75%
State Division	State Troopers	13.10%	5.00%	5.00%	—%	23.10%	10.75%
School Division	All members	10.40%	4.50%	5.50%	—%	20.40%	8.75%
Local Government Division	Members other than State Troopers	10.00%	2.20%	1.50%	—%	13.70%	8.00%
Local Government Division	State Troopers	13.10%	2.20%	1.50%	—%	16.80%	10.75%
Judicial Division	All members	13.91%	3.80%	3.80%	—%	21.51%	8.75%
DPS Division	All members	10.40%	4.50%	5.50%	(12.25%) ¹	8.15%	8.75%
July 1, 2020 - December 31, 2020							
State Division	Members other than State Troopers	10.90%	5.00%	5.00%	—%	20.90%	10.00%
State Division	State Troopers	13.60%	5.00%	5.00%	—%	23.60%	12.00%
School Division	All members	10.90%	4.50%	5.50%	—%	20.90%	10.00%
Local Government Division	Members other than State Troopers	10.50%	2.20%	1.50%	—%	14.20%	8.50%
Local Government Division	State Troopers	13.60%	2.20%	1.50%	—%	17.30%	12.00%
Judicial Division	Members other than Denver County Court Judges	9.41%	3.80%	3.80%	—%	17.01%	15.00%
Judicial Division	Denver County Court Judges	14.41%	3.80%	3.80%	—%	22.01%	10.00%
DPS Division	All members	10.90%	4.50%	5.50%	(12.75%) ¹	8.15%	10.00%

¹ To conform with this presentation of contribution rates, the annual PCOP offset of 12.50 percent for 2020 has been adjusted based on the portion of the PCOP offset used to satisfy employer contribution requirements.

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FUTURE AED AND SAED RATES

Trust Fund	2021 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	4.20%	4.20%	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 4.20 percent of PERA-includable salary for 2021 and requires the AED payment to increase by 0.40 percent at the start of each of the following two calendar years through 2023 at which time the AED payment will be 5.00 percent of PERA-includable salary.

² C.R.S. § 24-51-411(7.5) increased the SAED payment to 4.20 percent of PERA-includable salary for 2021 and requires the SAED payment to increase by 0.40 percent at the start of each of the following two calendar years through 2023 at which time the SAED payment will be 5.00 percent 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 in the amount of \$225 million (in 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.

HB 20-1379, signed by Governor Polis on June 29, 2020, suspended the July 1, 2020, direct distribution for the State’s 2020-21 fiscal year.

Future Contribution Changes

Subject to C.R.S. § 21-51-413, the member contribution rates will increase 0.50 percent on July 1, 2021, except that the member contribution rate for members other than State Troopers in the Local Government Division shall remain unchanged.

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 supplement. The defined contribution 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 defined contribution 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.

Pursuant to C.R.S. § 24-51-401(1.7)(g), effective at the end of the State’s 2021-2022 fiscal year the Judicial Division 5.0 percent contribution rate exchange, which impacts all judges except those employed by the Denver County Court, will end.

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 percent to 119 percent), no adjustments are made. If the resulting ratio does not achieve a minimum benchmark (less than 98 percent), 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 percent or greater), adjustments are applied

NOTES TO THE FINANCIAL STATEMENTS

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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 percent in any one year, and cannot exceed 2.00 percent 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 percent AAP ratio threshold will be made to an extent that will bring the revised AAP ratio to 103 percent 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 percent AAP ratio threshold must not cause the AAP ratio to fall below 103 percent.

Based on the results of the AAP assessment which utilized the December 31, 2019, actuarial valuation performed for funding purposes, effective July 1, 2021, no adjustments to member and employer contribution rates are required. While the AAP assessment did not result in an adjustment to the scheduled direct distribution payment of \$225 million (actual dollars) on July 1, 2020, HB 20-1379 suspends this payment for the State's 2020-2021 fiscal year.

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 percent, 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 2020, 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 2020, employers under these agreements used current employer contributions to pay retirees \$3,058 in the State Division; \$899 in the School Division; \$1,611 in the Local Government Division; \$0 in the Judicial Division, and \$0 in the DPS Division.

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

See Note 8.

Contributions—Health Care Trust Funds

See Note 9.

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Note 5—Investments

Investment Authority

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

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

Additionally, C.R.S. § 24-54.8-201 *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.

Overview of Investment Policy

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

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

The Board determines the strategic asset allocation policy for the fund. 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 129.

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 129.

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(Dollars in Thousands)

Investment Performance

For the year ended December 31, 2020, the net-of-fees, money-weighted rate of return on the pooled investment assets was 17.1 percent.

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 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).

The table on the next page 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, 2020.

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INVESTMENTS MEASURED AT FAIR VALUE

	Total	Fair Value Measurements Using:		
		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	\$8,564,318	\$8,504,921	\$59,293	\$104
Consumer discretionary	5,303,419	5,238,685	64,664	70
Health care	4,632,923	4,588,016	44,488	419
Financials	4,236,680	4,160,279	76,266	135
Industrials	3,799,395	3,725,379	72,418	1,598
Communication services	2,916,755	2,888,197	28,137	421
Consumer staples	2,249,810	2,209,792	39,687	331
Materials	1,375,336	1,357,232	17,759	345
Real estate	898,468	894,649	3,737	82
Energy	770,548	753,892	16,646	10
Utilities	681,684	666,247	15,437	—
Non-public market investments and other	2,015	—	—	2,015
Total global equity investments	35,431,351	34,987,289	438,532	5,530
Fixed Income				
U.S. government treasuries	4,013,545	4,013,545	—	—
U.S. government mortgage-backed securities	3,581,781	23,304	3,558,477	—
U.S. corporate bonds	2,892,911	—	2,892,911	—
Non-U.S. government/agency bonds	496,467	—	496,467	—
Non-U.S. corporate bonds	487,029	—	486,834	195
Non-agency MBS/CMBS	201,857	—	201,857	—
U.S. government agencies	125,195	—	125,195	—
U.S. municipal bonds	103,844	—	102,886	958
Fixed income mutual funds	13,128	13,128	—	—
Total fixed income investments	11,915,757	4,049,977	7,864,627	1,153
Real estate	1,148,390	—	—	1,148,390
Self-directed brokerage	68,671	68,410	260	1
Total investments by fair value level	48,564,169	\$39,105,676	\$8,303,419	\$1,155,074
Investments Measured at the NAV				
Global equity	1,386,807			
Fixed income	249,603			
Private equity	4,753,228			
Real estate	3,568,699			
Alternatives ²	2,398,206			
Multi-asset class funds	1,444,887			
Total investments measured at the NAV	13,801,430			
Total investments measured at fair value	\$62,365,599			

¹ Approximately \$429,000 of public market investments 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.

² The Opportunity Fund's name changed to Alternatives, effective January 1, 2020.

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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	\$35,431,351	\$1,386,807	\$—	\$—	\$36,818,158
Fixed income	11,915,757	249,603	500,389	(20,126)	12,645,623
Private equity	—	4,753,228	—	—	4,753,228
Real estate	1,148,390	3,568,699	—	—	4,717,089
Alternatives	—	2,398,206	—	—	2,398,206
Multi-asset class funds	—	1,444,887	—	—	1,444,887
Self-directed brokerage	68,671	—	—	—	68,671
Total	\$48,564,169	\$13,801,430	\$500,389	(\$20,126)	\$62,845,862

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, 2020, 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	\$1,386,807	\$—	Daily	1 - 3 days
Fixed income commingled funds	249,603	—	Daily	1 - 3 days
Private equity partnerships	4,753,228	2,237,415	N/A	N/A
Private real estate¹				
Directly held joint ventures	656,031	28,338	N/A	N/A
Real estate partnerships	1,146,697	306,878	Quarterly	90 days
Commingled open-end funds	1,765,971	48,225	Daily, Quarterly	30 - 90 days
Alternatives				
Alternatives partnerships	1,121,445	1,208,806	Quarterly, Biennial, Quinquennial	30 - 180 days
Commingled open-end funds	1,276,761	388,857	Daily, Monthly, Quarterly, Annually, Biennial	1 - 180 days
Multi-asset class commingled funds	1,444,887	—	Daily	1 - 3 days
Total	\$13,801,430	\$4,218,519		

¹ Excludes \$164,901 of unfunded commitments related to real estate presented in Level 3 of the hierarchical framework.

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, 2020. 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 ten 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 151 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 73 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 51 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 four 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

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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 investors may elect to reinvest. Additionally, open-end funds generally offer quarterly redemption windows for requesting portions, or all, of PERA's investments. Two of the open-ended funds contain 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 40 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 25 partnerships within alternatives that are considered illiquid as these investments cannot be redeemed during the term of the partnership. Illiquid funds represent approximately 34.3 percent of the value of alternatives. There are 12 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 at December 31, 2020, in the Statements of Fiduciary Net Position includes short-term fixed income securities of \$20,126, pending foreign exchange contracts of (\$3), and deposit and short-term investment funds of \$1,686,107 for a total of \$1,706,230. 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, 2020.

	Carrying Value
Deposits with banks (held in accounts insured by the FDIC)	\$19,702
Deposits held at bank (uncollateralized, held by PERA's agent in PERA's name)	12,301
Short-term investment funds held at bank (shares in commingled funds, held by PERA's agent in PERA's name)	1,654,104
Total deposits and short-term investment funds	\$1,686,107

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 2020, 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 percent of the fair value of the securities plus any accrued interest. Non-U.S. securities are loaned versus collateral valued at 105 percent of the fair value of the securities plus any accrued interest. Collateral is marked-to-market daily. 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, 2020, 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 percent of the fair value of the securities. International securities are loaned versus collateral valued at a minimum of 105 percent of the fair value of the securities. Collateral is marked-to-market daily. 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, 2020, 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, 2020.

Securities Lent for Cash Collateral	Fair Value of Underlying Securities	Cash Collateral Received	Cash Collateral Investment Value
Cash and cash equivalents	\$—	\$—	\$889,071
Global equity	974,734	997,861	—
Fixed income	22,537	23,020	131,991
Total	\$997,271	\$1,020,881	\$1,021,062

PERA's income, including realized and unrealized gain/(loss), net of rebates and fees from securities lending, was \$5,601 for the year ended December 31, 2020. Included in net securities lending income for the year ended December 31, 2020, was \$146 from commingled funds.

As of December 31, 2020, 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, 2020. PERA has limited the total fair value of securities outstanding to one borrower to 25 percent 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 45 days and 98 days, respectively, as of December 31, 2020. At Northern Trust and Deutsche Bank, all loans were made on an overnight (one day) basis throughout 2020. The approximate weighted average maturity (to the next reset date) at Northern Trust was 1 day and at Deutsche Bank was 13 days as of December 31, 2020. 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, 2020, reinvested securities lending collateral of \$1,021,062 primarily consisted of investments totaling \$889,071 valued at par, and accordingly are not classified within the fair value hierarchical framework. At December 31, 2020, \$131,991 of the \$1,021,062 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, 2020, there were no investments, or collateral securities subject to custodial credit risk. At December 31, 2020, there were \$12,301 of foreign currency deposits and \$85,421 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 percent of the then book value of the fund, nor shall the fund acquire more than 12 percent of the outstanding stock or bonds of any single corporation. The 12 percent requirement does not apply to governmental securities (U.S. Treasuries, sovereigns, etc.), Government Sponsored Enterprise securities (agencies including FNMA, FHLMC, etc.), mortgage-backed securities (agency or non-agency), commercial mortgage-backed securities (CMBS), asset-backed securities, or municipal securities. There is no single issuer exposure that comprises 5 percent of the then

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

book value of the fund and no holdings greater than 12 percent of the outstanding stock or bonds of any single corporation at December 31, 2020.

RECONCILIATION OF CREDIT AND INTEREST RATE RISK DISCLOSURES TO FINANCIAL STATEMENTS

	As of December 31, 2020
Fixed income	\$12,645,623
Fixed income securities classified as short term	20,126
Total fixed income securities	\$12,665,749

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, 2020, PERA held investments across the credit ratings spectrum, with the majority invested in investment grade issuers defined as having a minimum rating of Baa3/BBB-/BBB-

issued by Moody's, Standard and Poor's (S&P), and Fitch, respectively.

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 percent of the fixed income portfolio, the exposure of a single company's securities is limited to 5 percent, 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, 2020.

CREDIT QUALITY RATING DISPERSION SCHEDULE

Quality Rating Moody's	Total	U.S. Govt Mortgage- Backed Securities	U.S. Corporate Bonds	Stable Value Fund	Non-U.S. Govt/ Agency Bonds	Non-U.S. Corporate Bonds	Non- Agency MBS/CMBS	U.S. Govt Agencies ¹	U.S. Municipal Bonds
Aaa	\$501,232	\$3,710	\$61,839	\$—	\$183,236	\$454	\$116,012	\$125,195	\$10,786
Aa1	67,830	—	21,989	—	28,521	—	3,361	—	13,959
Aa2	215,815	—	113,322	—	48,603	22,757	1,309	—	29,824
Aa3	134,837	—	58,719	—	42,228	7,320	3,957	—	22,613
A1	253,268	—	121,889	—	50,156	73,837	—	—	7,386
A2	722,748	—	649,710	—	—	62,429	—	—	10,609
A3	591,275	—	503,883	—	12,449	73,608	—	—	1,335
Baa1	415,293	—	253,806	—	51,248	109,928	—	—	311
Baa2	650,632	—	515,726	—	43,229	79,528	12,149	—	—
Baa3	450,599	—	389,080	—	13,294	43,633	—	—	4,592
Ba1	97,921	—	97,158	—	407	356	—	—	—
Ba2	39,503	—	26,775	—	—	12,728	—	—	—
B2	7,990	—	7,990	—	—	—	—	—	—
Not rated ²	3,693,049	3,030,590	71,025	500,389	23,096	451	65,069	—	2,429
Subtotal	7,841,992	\$3,034,300	\$2,892,911	\$500,389	\$496,467	\$487,029	\$201,857	\$125,195	\$103,844
U.S. gov't treasuries	4,013,545								
Explicit U.S. gov't agencies ³	547,481								
Fixed income commingled funds ^{2,4}	249,603								
Fixed income mutual funds ²	13,128								
Total	\$12,665,749								

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

² Not rated by Moody's.

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: \$9,292—Aaa; \$119,899—Aa2; \$120,412—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, 2020, is shown in the table below:

INTEREST RATE RISK—EFFECTIVE DURATION

	Fair Value	Effective Weighted Duration in Years
U.S. government treasuries	\$4,013,545	7.88
U.S. government mortgage-backed securities	3,581,781	2.86
U.S. corporate bonds	2,892,911	9.18
Stable value fund	500,389	2.90
Non-U.S. government/agency bonds	496,467	5.39
Non-U.S. corporate bonds	487,029	6.90
Fixed income commingled funds	249,603	5.74
Non-agency MBS/CMBS	201,857	5.21
U.S. government agencies	125,195	5.11
U.S. municipal bonds	103,844	10.84
Fixed income mutual funds	13,128	6.18
Total	\$12,665,749	6.34

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, 2020, the change in net value of all unsettled trades was above the agreed upon thresholds resulting in collateral of \$754 held by PERA.

As of December 31, 2020, the fair value of residential and commercial mortgage-backed securities was \$3,534,321 and \$249,317, respectively, which excludes the fair value of mortgage-backed securities held in commingled funds.

Foreign Currency Risk

Foreign currency risk is the risk that changes in exchange rates will adversely impact the fair value of an investment or a deposit. PERA's currency risk exposure resides primarily within the Global Equity asset class. In

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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, 2020, 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, 2020, is shown in the following table.

FOREIGN CURRENCY RISK

Currency	Total	Global Equity	Private Equity	Real Estate	Income Receivable	Cash and Short-Term Investments	Corporate Bonds	Pending Trades	Pending Foreign Exchange Trades
Euro	\$3,274,991	\$2,768,905	\$408,728	\$73,375	\$23,194	\$558	\$—	(\$454)	\$685
Japanese yen	2,135,005	2,131,460	—	—	2,823	722	—	—	—
British pound sterling	1,476,191	1,445,972	26,926	—	2,608	685	—	(22)	22
Hong Kong dollar	1,094,003	1,091,039	—	—	41	1,477	—	4,493	(3,047)
Swiss franc	949,861	936,095	—	—	13,719	47	—	—	—
Canadian dollar	599,855	597,638	—	—	996	1,221	—	—	—
Swedish krona	528,827	527,809	—	—	807	211	—	—	—
Australian dollar	511,015	509,860	—	—	841	377	—	249	(312)
New Taiwan dollar	397,493	396,381	—	—	649	463	—	—	—
South Korean won	388,474	384,955	—	—	2,617	902	—	—	—
Indian rupee	302,021	301,626	—	—	—	395	—	—	—
Danish krone	271,189	266,505	—	—	4,562	122	—	—	—
Chinese yuan renminbi (offshore)	150,507	148,844	—	—	—	1,663	—	—	—
Singapore dollar	146,881	146,514	—	—	338	391	—	—	(362)
Brazilian real	135,339	134,052	—	—	557	628	102	—	—
Norwegian krone	63,109	63,042	—	—	—	67	—	—	—
Indonesian rupiah	45,699	45,121	—	—	—	578	—	—	—
Mexican peso	41,582	40,941	—	—	—	641	—	—	—
South African rand	37,664	36,969	—	—	20	675	—	—	—
Polish zloty	36,771	36,761	—	—	10	—	—	—	—
Israeli shekel	36,392	36,369	—	—	9	14	—	—	—
New Zealand dollar	26,800	26,785	—	—	—	15	—	—	—
Turkish lira	20,809	20,728	—	—	—	81	—	—	—
Malaysian ringgit	16,470	16,408	—	—	1	61	—	—	—
Hungarian forint	11,858	11,858	—	—	—	—	—	—	—
Thai baht	9,970	9,900	—	—	6	64	—	—	—
Czech koruna	9,591	9,591	—	—	—	—	—	—	—
Philippine peso	7,134	7,059	—	—	—	75	—	—	—
Saudi riyal	2,081	2,078	—	—	—	3	—	—	—
Russian ruble	2,034	2,026	—	—	5	3	—	—	—
Qatari riyal	1,910	1,910	—	—	—	—	—	—	—
United Arab Emirates dirham	287	131	—	—	—	156	—	—	—
Chilean peso	186	186	—	—	—	—	—	—	—
Egyptian pound	6	6	—	—	—	—	—	—	—
Peruvian sol	6	—	—	—	—	6	—	—	—
Total	\$12,732,011	\$12,155,524	\$435,654	\$73,375	\$53,803	\$12,301	\$102	\$4,266	(\$3,014)

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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, 2020, 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

Investment Derivatives	Changes in Fair Value	
	Classification	Amount
Equity Futures	Investment income	\$101,256
Fixed income futures	Investment income	11,867
Total		\$113,123

Fair Value at December 31, 2020	
Classification	Amount
Investment receivables	\$85,421
Total	\$85,421

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 2020. 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, 2020, PERA's defined benefit plans had 6,558 outstanding futures contracts with a total notional market exposure of \$822,105 and total investment receivables of \$85,421 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, 2020

Contract Type	Year of Maturity	Notional Amount (Market Exposure)
Equity	2021	\$628,940
Fixed income	2021	193,165
Total		\$822,105

Note 7—Commitments and Contingencies

As of December 31, 2020, PERA had commitments for future investments in Private Equity of \$2,237,415, Real Estate of \$548,342, and Alternatives of \$1,597,663.

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, the “Plans.” 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 Plans 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 Plans.

- Participants have the choice of contributing to 18 different investment options. In addition, participants may also make transfers, at any time, among the following listed investment options:
 - PERAdvantage Capital Preservation Fund
 - PERAdvantage Fixed Income Fund
 - PERAdvantage Real Return Fund
 - PERAdvantage 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.

- Voya Institutional Plan Services, LLC, administers the recordkeeping for all participant transactions. Northern Trust provides an array of financial services in support of day to day operations of the Plans, including custodial services.
- TD Ameritrade, Inc. provides brokerage services for the Self-Directed Brokerage Account. The TD Ameritrade Self-Directed Brokerage Account, which primarily consists of cash, equities, fixed income, and mutual funds, is presented at fair value.
- The Great-West Stable Value Fund is offered within PERAdvantage Capital Preservation Fund through a group fixed and variable deferred annuity contract issued by Great-West Life & Annuity Insurance Company. As of December 31, 2020, the value of the variable deferred annuity contract including interest receivable and pending trade payable was \$500,389. Fair value as of December 31, 2020, was \$518,446.
- Cash balances represent both operating cash accounts and investment cash on deposit held by the custodians.
- Plan administration expenses are paid through a monthly administrative fee charged to participant accounts and an asset-based fee paid directly from each PERAdvantage fund. In addition, the underlying investment portfolio managers within each PERAdvantage fund charge an investment management fee, which is paid directly from investment proceeds.

PERAPlus 401(k) Plan

The PERAPlus 401(k) Plan was established January 1, 1985, and is an IRC § 401(k) plan that allows for voluntary participation to provide additional benefits at retirement for PERA members. All employees working for a PERA-affiliated employer may contribute to the PERAPlus 401(k) Plan. There were 410 employers eligible to participate in 2020 (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 2020, participants could contribute the lesser of \$19,500 (actual dollars) or 100 percent of compensation less PERA member contributions. Catch-up contributions up to \$6,500 (actual dollars) in 2020 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

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

contributions limited to \$57,000 (actual dollars) per participant in 2020.

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. In 2020, eligible participants were also able to take coronavirus-related distributions pursuant to the terms of the plan. The balance of outstanding loans as of December 31, 2020, was \$54,999 and was recorded as a benefit receivable on the Statements of Fiduciary Net Position. As of December 31, 2020, there were 68,647 participants with balances. Of the participants with balances, 23,029 made contributions within the last three months of the year, including 614 retirees of the defined benefit plan. There were 14,616 terminated participants and 19,632 non-contributing retirees with balances. During 2020, the PERAPlus 401(k) Plan had a total of 2,053 terminated participants take full distributions of their accounts.

DC Plan

The DC Plan was established January 1, 2006, and is an IRC § 401(a) governmental profit-sharing plan. Its purpose is to offer a defined contribution alternative to the PERA defined benefit plan. Participation is available to certain new employees of State agencies and departments, most community college employees, and the District Attorney within each Judicial District, and if authorized by the county and the District Attorney, the attorneys within that Judicial District. Pursuant to C.R.S. § 24-51-1501(4), DC Plan eligibility was extended to certain new employees in the Local Government Division and certain new classified employees at State Colleges and Universities beginning on January 1, 2019 (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 2020. 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.

2020 rates for employer and member contributions deposited to DC Plan participant accounts are shown in the table below.

Trust Fund	Employer Contribution Rate ¹	Member Contribution Rate
January 1, 2020 - June 30, 2020		
State Division (Members other than State Troopers) ²	10.15%	8.75%
State Division (State Troopers) ²	12.85%	10.75%
Local Government Division (Members other than State Troopers)	10.00%	8.00%
Local Government Division (State Troopers) ²	12.85%	10.75%
July 1, 2020 - December 31, 2020		
State Division (Members other than State Troopers) ^{2,3}	10.15%	10.00%
State Division (State Troopers) ^{2,3}	12.85%	12.00%
Local Government Division (Members other than State Troopers) ³	10.00%	8.50%
Local Government Division (State Troopers) ^{2,3}	12.85%	12.00%

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 0.25 percent in statutory employer contribution increases are deposited in the respective Division Trust Fund.

³ Additional 0.50 percent in employer AAP contributions beginning July 1, 2020, are deposited in the respective Division Trust Fund. See Note 4 for additional information on AAP.

Note: See Note 4 for the definition of “State Troopers.”

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

Provisions of the DC Plan 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, 2020, the DC Plan had 7,264 participants with balances. Of the participants with balances, 2,628 made contributions within the last three months of the year, including five retirees of the defined benefit plan. There were 3,832 terminated participants and 31 non-contributing retirees with balances. During the year, 363 participants took full distributions of their accounts.

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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 2020, participants could defer the lesser of \$19,500 (actual dollars) or 100 percent 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 2020, 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. In 2020, eligible participants were also able to take coronavirus-related distributions pursuant to the terms of the plan. The balance of outstanding loans as of December 31, 2020, was \$11,579 and was recorded as a benefit receivable on the Statements of Fiduciary Net Position. As of December 31, 2020, there were 19,438 participants with balances. Of the participants with balances, 9,494 made contributions within the last three months of the year, including 242 retirees of the defined benefit plan. There were 3,166 terminated participants and 4,490 non-contributing retirees with balances. During the year, the PERAPlus 457 Plan had a total of 699 terminated participants take full distributions of their accounts.

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 fully insured health care plans providing services within Colorado.

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.

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- 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 percent reduction in the subsidy for each year less than 20. The benefit recipient pays the remaining portion of the premium to the extent the subsidy does not cover the entire amount.

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

DPS Benefit Structure

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

For retirees who have not participated in Social Security and who are not otherwise eligible for premium-free Medicare Part A for hospital-related services, the HCTF or the DPS HCTF pays an alternate service-based premium subsidy. Each individual retiree meeting these conditions receives the maximum \$230 (actual dollars) per month

subsidy reduced appropriately for service less than 20 years, as described above. Retirees who do not have Medicare Part A pay the difference between the total premium and the monthly subsidy.

Medicare Prescription Drugs

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 established prescription drug coverage for Medicare beneficiaries under Medicare Part D. Beginning January 1, 2014, PERACare's prescription drug coverage for the self-insured Medicare 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 2020:

Subsidy	HCTF	DPS HCTF
Monthly direct subsidy	\$122	\$5
Quarterly Coverage Gap Discount	21,739	916
Annual federal reinsurance	34,561	1,456
Total	\$56,422	\$2,377

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 percent of covered salaries. PERA-affiliated employers of the State Division, School Division, Local

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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, 2020 ¹
HCTF	409
DPS HCTF	1
Total employers	410

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, 2020:

MEMBERSHIP—HEALTH CARE TRUST FUNDS¹

	HCTF	DPS HCTF	2020
Retirees and beneficiaries ²	120,999	7,134	128,133
Inactive members eligible but not yet receiving benefits ³	29,959	2,237	32,196
Active members ³	186,165	14,693	200,858
Total	337,123	24,064	361,187

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.

PARTICIPATION IN PERACARE HEALTH PLANS FOR ELIGIBLE RETIREES AND BENEFICIARIES

	HCTF	DPS HCTF	Total
Enrolled in PERACare			
Under age 65	10,955	477	11,432
Age 65 and older	45,318	3,044	48,362
	56,273	3,521	59,794
Not enrolled in PERACare			
Under age 65	15,983	611	16,594
Age 65 and older	48,743	3,002	51,745
	64,726	3,613	68,339
Total eligible retirees and beneficiaries	120,999	7,134	128,133

Summary of HCTF and DPS HCTF

PERA offers two general types of health plans: fully insured plans offered through a health care organization and self-insured plans administered by third-party vendors. The 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

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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, 2020, there were 66,182 participants enrolled in the dental plans and 53,638 participants enrolled in the vision plans in both the HCTF and the DPS HCTF.

PERA-Affiliated Employer Program Participation

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

December 31, 2020, there were 15 employers in the program with 156 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, 2020, there were 234 participants enrolled in the dental plans and 264 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.

Note 10—Net Pension Liability of the Division Trust Funds

The components of the net pension liability (NPL) for participating employers for each Division Trust Fund as of December 31, 2020, are as follows:

	State Division	School Division	Local Government Division	Judicial Division	DPS Division
Total pension liability	\$27,364,740	\$45,792,168	\$5,715,765	\$478,811	\$4,539,760
Plan fiduciary net position	17,879,947	30,674,185	5,194,638	416,851	4,107,578
Net pension liability	\$9,484,793	\$15,117,983	\$521,127	\$61,960	\$432,182
Plan fiduciary net position as a percentage of the total pension liability	65.34%	66.99%	90.88%	87.06%	90.48%

Actuarial Methods and Assumptions

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

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

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The TPL for the Division Trust Funds was determined by actuarial valuations as of December 31, 2019, and generally accepted actuarial techniques were applied to roll forward the TPL to December 31, 2020 (measurement

date). The December 31, 2019, 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	2.40%	2.40%	2.40%	2.40%	2.40%
Real wage growth	1.10%	1.10%	1.10%	1.10%	1.10%
Wage inflation	3.50%	3.50%	3.50%	3.50%	3.50%
Salary increases, including wage inflation	3.50%–9.17%	3.50%–9.70%	3.50%–10.45%	4.00%–5.00%	3.50%–9.70%
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 at measurement date	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)	1.25%	1.25%	1.25%	1.25%	1.25%
PERA benefit structure hired after 12/31/06 ¹	Financed by the AIR	Financed by the AIR	Financed by the AIR	Financed by the AIR	Financed by the AIR

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

Healthy mortality assumptions for active members were based on the 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 percent factor applied to male rates and a 55 percent factor applied to female rates.

Post-retirement non-disabled mortality assumptions for the State and Local Government Divisions were based on the RP-2014 Healthy Annuitant Mortality Table, adjusted as follows:

- **Males:** Mortality improvement projected to 2018 using the MP-2015 projection scale, a 73 percent factor applied to rates for ages less than 80, a 108 percent factor applied to rates for ages 80 and above, and further adjustments for credibility.
- **Females:** Mortality improvement projected to 2020 using the MP-2015 projection scale, a 78 percent factor applied to rates for ages less than 80, a 109 percent factor applied to rates for ages 80 and above, and further adjustments for credibility.

Post-retirement non-disabled mortality assumptions for the School, Judicial, and DPS Divisions were based on the RP-2014 White Collar Healthy Annuitant Mortality Table, adjusted as follows:

- **Males:** Mortality improvement projected to 2018 using the MP-2015 projection scale, a 93 percent factor applied

to rates for ages less than 80, a 113 percent factor applied to rates for ages 80 and above, and further adjustments for credibility.

- **Females:** Mortality improvement projected to 2020 using the MP-2015 projection scale, a 68 percent factor applied to rates for ages less than 80, a 106 percent factor applied to rates for ages 80 and above, and further adjustments for credibility.

The mortality assumption for disabled retirees was based on 90 percent of the RP-2014 Disabled Retiree Mortality Table.

The actuarial assumptions used in the December 31, 2019, valuation were based on the results of the 2016 experience analysis for the period January 1, 2012, through December 31, 2015, as well as the October 28, 2016, actuarial assumptions workshop and were adopted by the Board during the November 18, 2016, Board meeting.

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, and were effective as of December 31, 2020. The assumptions shown on the next two pages were reflected in the roll forward calculation of the TPL from December 31, 2019, to December 31, 2020.

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	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)	1.25%	1.25%	1.25%	1.25%	1.25%
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 4 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.

- 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.
- 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 percent of the rates prior to age 80 and 90 percent of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 87 percent of the rates prior to age 80 and 107 percent of the rates for ages 80 and older, 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 percent of the rates prior to age 80 and 94 percent of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 83 percent of the rates prior to age 80 and 106 percent 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 percent of the rates for all ages, with generational projection using scale MP-2019.
 - **Females:** 105 percent of the rates for all ages, with generational projection using scale MP-2019.

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- Disabled mortality assumptions for the Division Trust Funds (Members other than State Troopers) were based upon the PubNS-2010 Disabled Retiree Table using 99 percent 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 mortality tables described above are generational mortality tables on a benefit-weighted basis.

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. As a result of the November 20, 2020, Board meeting, the following economic assumptions were changed, effective December 31, 2020:

- Price inflation assumption decreased from 2.40 percent per year to 2.30 percent per year.
- Real rate of investment return assumption increased from 4.85 percent per year, net of investment expenses to 4.95 percent per year, net of investment expenses.
- Wage inflation assumption decreased from 3.50 percent per year to 3.00 percent per year.

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 percent 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 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 ¹	6.00%	4.70%
Total	100.00%	

¹ The Opportunity Fund's name changed to Alternatives, effective January 1, 2020.

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 percent.

Discount Rate/Single Equivalent Interest Rate

The projection of cash flows used to determine the discount rate was performed in accordance with GASB 67. The basis for the projection of the liabilities and the FNP was an actuarial valuation performed as of December 31, 2019, and the financial status of the funds as of the prior measurement date (December 31, 2019). 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 percent.
- 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. 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. Employer contributions also include current and estimated future AED and SAED, until the actuarial value funding ratio reaches 103 percent, at which point the AED and SAED will each drop 0.50 percent every year until they are zero. Additionally, estimated employer contributions reflect reductions for the funding of the AIR and retiree health care benefits. For future plan members, employer contributions were

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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. HB 20-1379 suspended the \$225 million (actual dollars) direct distribution payable on July 1, 2020, for the State’s 2020-21 fiscal year.
- 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 percent 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.
- 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 municipal bond index rate, and therefore, the discount rate used to measure the TPL for these funds as of the measurement date (December 31, 2020) was 7.25 percent.

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 for participating employers for each fund using the current discount rate, as well the fund’s NPL or Net Pension Asset 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 Percent Decrease in Discount Rate	Net Pension Liability
State Division	6.25%	\$12,548,660
School Division	6.25%	20,622,167
Local Government Division	6.25%	1,200,469
Judicial Division	6.25%	111,151
DPS Division	6.25%	988,307

Trust Fund	Current Discount Rate	Net Pension Liability
State Division	7.25%	\$9,484,793
School Division	7.25%	15,117,983
Local Government Division	7.25%	521,127
Judicial Division	7.25%	61,960
DPS Division	7.25%	432,182

Trust Fund	1.0 Percent Increase in Discount Rate	Net Pension Liability (Net Pension Asset)
State Division	8.25%	\$6,912,250
School Division	8.25%	10,531,184
Local Government Division	8.25%	(46,035)
Judicial Division	8.25%	19,819
DPS Division	8.25%	(26,787)

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 NPL could be materially under- or over-reported as of December 31, 2020.

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, 2020, are as follows:

	HCTF	DPS HCTF
Total OPEB liability	\$1,413,526	\$66,213
Plan fiduciary net position	463,301	43,321
Net OPEB liability	\$950,225	\$22,892
Plan fiduciary net position as a percentage of the total OPEB liability	32.78%	65.43%

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

Actuarial Methods and Assumptions

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

The TOL for the Health Care Trust Funds was determined by actuarial valuations as of December 31, 2019, and generally accepted actuarial techniques were applied to roll forward the TOL to December 31, 2020 (measurement date). The December 31, 2019, actuarial valuations used the following actuarial cost method and key actuarial assumptions and other inputs:

	HCTF	DPS HCTF
Actuarial cost method	Entry age	Entry age
Price inflation	2.40%	2.40%
Real wage growth	1.10%	1.10%
Wage inflation	3.50%	3.50%
Salary increases, including wage inflation	3.50% in aggregate	3.50% in aggregate
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	8.10% in 2020, gradually decreasing to 4.50% in 2029	8.10% in 2020, gradually decreasing to 4.50% in 2029
Medicare Part A premiums	3.50% in 2020, gradually increasing to 4.50% in 2029	3.50% in 2020, 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

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 2020 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	\$588	\$227	\$550
Kaiser Permanente Medicare Advantage HMO	621	232	586

The 2020 Medicare Part A premium is \$458 (actual dollars) per month.

All costs are subject to the health care cost trend rates, as discussed in the paragraphs to the right.

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 are referenced in the development of these rates. Effective December 31, 2019, 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.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

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
2020	8.10%	3.50%
2021	6.40%	3.75%
2022	6.00%	3.75%
2023	5.70%	3.75%
2024	5.50%	4.00%
2025	5.30%	4.00%
2026	5.10%	4.00%
2027	4.90%	4.25%
2028	4.70%	4.25%
2029+	4.50%	4.50%

Mortality assumptions used in the December 31, 2019, valuation for the Division Trust Funds are shown in Note 10 on page 84, and were applied, as applicable, in the

December 31, 2019, valuation for the HCTF and DPS HCTF. 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 actuarial assumptions used in the December 31, 2019, valuation were based on the results of the 2016 experience analysis for the period January 1, 2012, through December 31, 2015, as well as the October 28, 2016, actuarial assumptions workshop and were adopted by the Board during the November 18, 2016, Board meeting.

Based on the 2020 experience analysis, dated October 28, 2020, and November 4, 2020, for the period January 1, 2016, to December 31, 2019, revised economic and demographic assumptions were adopted by the Board on November 20, 2020, and were effective as of December 31, 2020. The following assumptions were reflected in the roll forward calculation of the TOL from December 31, 2019, to December 31, 2020.

	HCTF				DPS HCTF
	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

¹ See Note 4 for the definition of "State Troopers."

- The long-term rate of return, net of OPEB plan investment expenses, including price inflation and discount rate assumptions were 7.25 percent.
- Rates of termination/withdrawal, retirement, and disability were revised to more closely reflect actual experience.

The mortality assumptions used in the roll forward calculations for the Division Trust Funds shown in Note 10 on pages 85-86, were applied in the roll forward calculations for the Health Care Trust Funds, using a headcount-weighted basis.

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 2020 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.

Actuarial assumptions pertaining to per capita health care costs and their related trend rates are analyzed and updated annually by the Board's actuary, as discussed above.

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. As a result of the November 20, 2020, Board meeting, the following economic assumptions were changed, effective December 31, 2020:

- Price inflation assumption decreased from 2.40 percent per year to 2.30 percent per year.
- Real rate of investment return assumption increased from 4.85 percent per year, net of investment expenses to 4.95 percent per year, net of investment expenses.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

- Wage inflation assumption decreased from 3.50 percent per year to 3.00 percent per year.

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 percent 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 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 ¹	6.00%	4.70%
Total	100.00%	

¹ The Opportunity Fund's name changed to Alternatives, effective January 1, 2020.

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 percent.

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 Percent Decrease in Trend Rates	Current Trend Rates	1.0 Percent Increase in Trend Rates
Initial PERACare Medicare trend rate	7.10%	8.10%	9.10%
Ultimate PERACare Medicare trend rate	3.50%	4.50%	5.50%
Initial Medicare Part A trend rate	2.50%	3.50%	4.50%
Ultimate Medicare Part A trend rate	3.50%	4.50%	5.50%
Net OPEB liability			
HCTF	\$925,665	\$950,225	\$978,816
DPS HCTF	22,891	22,892	22,894

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, 2019, and the financial status of the fund as of the prior measurement date (December 31, 2019). 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, 2020, 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 percent.
- 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.

NOTES TO THE FINANCIAL STATEMENTS

(Dollars in Thousands)

- 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, 2020) was 7.25 percent.

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 Percent Decrease in Discount Rate	Net OPEB Liability
HCTF	6.25%	\$1,088,500
DPS HCTF	6.25%	29,174

	Current Discount Rate	Net OPEB Liability
HCTF	7.25%	\$950,225
DPS HCTF	7.25%	22,892

	1.0 Percent Increase in Discount Rate	Net OPEB Liability
HCTF	8.25%	\$832,080
DPS HCTF	8.25%	17,526

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, 2020.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY—STATE DIVISION¹

For the Years Ended December 31

	2020	2019	2018	2017
Total pension liability				
Service cost	\$355,719	\$344,666	\$727,319	\$518,360
Interest	1,825,929	1,800,848	1,658,186	1,640,426
Changes of benefit terms	—	(501,768)	(1,967,940)	—
Difference between expected and actual experience	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	(1,734,329)	(1,700,965)	(1,675,880)	(1,615,021)
Net change in total pension liability	1,668,073	351,573	(9,896,590)	3,247,373
Total pension liability – beginning	25,696,667	25,345,094	35,241,684	31,994,311
Total pension liability – ending (a)	\$27,364,740	\$25,696,667	\$25,345,094	\$35,241,684
Plan fiduciary net position				
Contributions – employer	\$646,386	\$612,282	\$583,164	\$563,977
Contributions – nonemployer	—	77,088	78,489	—
Contributions – active member (includes purchased service)	326,786	287,297	261,540	256,420
Net investment income (loss)	2,652,870	2,764,719	(497,562)	2,391,683
Benefit payments, refunds, and disability premiums	(1,734,329)	(1,700,965)	(1,675,880)	(1,615,021)
Administrative expense	(11,385)	(11,294)	(11,903)	(11,745)
Other additions and deductions	6,756	(2,685)	4,871	12,208
Net change in plan fiduciary net position	1,887,084	2,026,442	(1,257,281)	1,597,522
Plan fiduciary net position – beginning	15,992,863	13,966,421	15,223,702	13,626,180
Plan fiduciary net position – ending (b)	\$17,879,947	\$15,992,863	\$13,966,421	\$15,223,702
Net pension liability – ending (a)-(b)	\$9,484,793	\$9,703,804	\$11,378,673	\$20,017,982

Please see next page for footnote reference(s).

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY—STATE DIVISION (CONTINUED)¹

For the Years Ended December 31

	2016	2015	2014
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
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
Net pension liability – ending (a)-(b)	\$18,368,131	\$10,531,033	\$9,406,514

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

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

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY—SCHOOL DIVISION¹

For the Years Ended December 31

	2020	2019	2018	2017
Total pension liability				
Service cost	\$663,873	\$618,937	\$1,270,011	\$954,368
Interest	3,006,736	2,938,492	2,759,146	2,690,433
Changes of benefit terms	—	(856,299)	(3,247,230)	—
Difference between expected and actual experience	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	(2,605,668)	(2,545,230)	(2,492,928)	(2,411,987)
Net change in total pension liability	3,680,988	926,576	(16,514,572)	5,344,263
Total pension liability – beginning	42,111,180	41,184,604	57,699,176	52,354,913
Total pension liability – ending (a)	\$45,792,168	\$42,111,180	\$41,184,604	\$57,699,176
Plan fiduciary net position				
Contributions – employer	\$1,048,992	\$1,002,760	\$923,910	\$857,740
Contributions – nonemployer	—	127,367	126,505	—
Contributions – active member (includes purchased service)	536,847	462,891	414,336	399,053
Net investment income (loss)	4,556,622	4,676,607	(838,899)	3,982,275
Benefit payments, refunds, and disability premiums	(2,605,668)	(2,545,230)	(2,492,928)	(2,411,987)
Administrative expense	(22,779)	(22,619)	(23,560)	(23,019)
Other additions and deductions	(11,226)	(7,929)	5,456	(22,378)
Net change in plan fiduciary net position	3,502,788	3,693,847	(1,885,180)	2,781,684
Plan fiduciary net position – beginning	27,171,397	23,477,550	25,362,730	22,581,046
Plan fiduciary net position – ending (b)	\$30,674,185	\$27,171,397	\$23,477,550	\$25,362,730
Net pension liability – ending (a)-(b)	\$15,117,983	\$14,939,783	\$17,707,054	\$32,336,446

Please see next page for footnote reference(s).

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY—SCHOOL DIVISION (CONTINUED)¹

For the Years Ended December 31

	2016	2015	2014
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
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
Net pension liability – ending (a)-(b)	\$29,773,867	\$15,294,294	\$13,553,359

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

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—LOCAL GOVERNMENT DIVISION¹

For the Years Ended December 31

	2020	2019	2018	2017
Total pension liability				
Service cost	\$77,400	\$75,305	\$84,331	\$75,417
Interest	379,994	373,200	386,381	360,995
Changes of benefit terms	—	(105,812)	(412,930)	(110)
Difference between expected and actual experience	32,128	65,687	77,207	125,585
Changes of assumptions or other inputs	222,809	—	—	—
Benefit payments, refunds, and disability premiums	(320,919)	(312,629)	(302,903)	(289,218)
Net change in total pension liability	391,412	95,751	(167,914)	272,669
Total pension liability – beginning	5,324,353	5,228,602	5,396,516	5,123,847
Total pension liability – ending (a)	\$5,715,765	\$5,324,353	\$5,228,602	\$5,396,516
Plan fiduciary net position				
Contributions – employer	\$89,662	\$85,597	\$81,358	\$78,291
Contributions – employer disaffiliation	—	—	—	1,063
Contributions – active member (includes purchased service)	66,958	62,823	58,063	56,797
Net investment income (loss)	771,556	792,219	(142,476)	669,011
Benefit payments, refunds, and disability premiums	(320,919)	(312,629)	(302,903)	(289,218)
Administrative expense	(2,459)	(2,476)	(2,621)	(2,541)
Other additions and deductions	(3,122)	(3,961)	(3,118)	(3,823)
Net change in plan fiduciary net position	601,676	621,573	(311,697)	509,580
Plan fiduciary net position – beginning	4,592,962	3,971,389	4,283,086	3,773,506
Plan fiduciary net position – ending (b)	\$5,194,638	\$4,592,962	\$3,971,389	\$4,283,086
Net pension liability – ending (a)-(b)	\$521,127	\$731,391	\$1,257,213	\$1,113,430

Please see next page for footnote reference(s).

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY—LOCAL GOVERNMENT DIVISION (CONTINUED)¹

For the Years Ended December 31

	2016	2015	2014
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
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
Net pension liability – ending (a)-(b)	\$1,350,341	\$1,101,581	\$896,309

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

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—JUDICIAL DIVISION¹

For the Years Ended December 31

	2020	2019	2018	2017
Total pension liability				
Service cost	\$9,106	\$8,774	\$13,516	\$14,364
Interest	32,590	32,105	30,417	27,480
Changes of benefit terms	105	(8,459)	(33,997)	—
Difference between expected and actual experience	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	(29,485)	(28,097)	(26,463)	(25,298)
Net change in total pension liability	23,652	7,055	(113,842)	18,796
Total pension liability – beginning	455,159	448,104	561,946	543,150
Total pension liability – ending (a)	\$478,811	\$455,159	\$448,104	\$561,946
Plan fiduciary net position				
Contributions – employer	\$10,402	\$10,649	\$8,299	\$8,080
Contributions – nonemployer	—	1,344	1,385	—
Contributions – active member (includes purchased service)	7,697	5,187	4,700	4,863
Net investment income (loss)	61,634	61,719	(11,006)	51,173
Benefit payments, refunds, and disability premiums	(29,485)	(28,097)	(26,463)	(25,298)
Administrative expense	(87)	(84)	(86)	(86)
Other additions and deductions	2,456	6,670	155	2,226
Net change in plan fiduciary net position	52,617	57,388	(23,016)	40,958
Plan fiduciary net position – beginning	364,234	306,846	329,862	288,904
Plan fiduciary net position – ending (b)	\$416,851	\$364,234	\$306,846	\$329,862
Net pension liability – ending (a)-(b)	\$61,960	\$90,925	\$141,258	\$232,084

Please see next page for footnote reference(s).

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY—JUDICIAL DIVISION (CONTINUED)¹

For the Years Ended December 31

	2016	2015	2014
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
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
Net pension liability – ending (a)-(b)	\$254,246	\$183,894	\$138,354

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

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—DPS DIVISION¹

For the Years Ended December 31

	2020	2019	2018	2017
Total pension liability				
Service cost	\$93,058	\$91,764	\$90,657	\$91,986
Interest	309,174	301,210	313,294	295,838
Changes of benefit terms	—	(82,064)	(318,480)	—
Difference between expected and actual experience	(15,298)	86,001	35,147	47,121
Changes of assumptions or other inputs	125,275	—	—	—
Benefit payments, refunds, and disability premiums	(287,719)	(288,984)	(287,825)	(281,844)
Net change in total pension liability	224,490	107,927	(167,207)	153,101
Total pension liability – beginning	4,315,270	4,207,343	4,374,550	4,221,449
Total pension liability – ending (a)	\$4,539,760	\$4,315,270	\$4,207,343	\$4,374,550
Plan fiduciary net position				
Contributions – employer	\$56,245	\$43,340	\$35,994	\$27,578
Contributions – nonemployer	—	19,201	18,621	—
Contributions – active member (includes purchased service)	75,456	65,496	61,098	56,820
Net investment income (loss)	610,847	632,669	(114,070)	548,585
Benefit payments, refunds, and disability premiums	(287,719)	(288,984)	(287,825)	(281,844)
Administrative expense	(2,667)	(2,713)	(2,919)	(2,857)
Other additions and deductions	(1,010)	2,975	(4,497)	3,781
Net change in plan fiduciary net position	451,152	471,984	(293,598)	352,063
Plan fiduciary net position – beginning	3,656,426	3,184,442	3,478,040	3,125,977
Plan fiduciary net position – ending (b)	\$4,107,578	\$3,656,426	\$3,184,442	\$3,478,040
Net pension liability – ending (a)-(b)	\$432,182	\$658,844	\$1,022,901	\$896,510

Please see next page for footnote reference(s).

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET PENSION LIABILITY—DPS DIVISION (CONTINUED)¹

For the Years Ended December 31

	2016	2015	2014
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
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
Net pension liability – ending (a)-(b)	\$1,095,472	\$813,535	\$624,570

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

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

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF NET PENSION LIABILITY¹

For the Years Ended December 31

State Division	2020	2019	2018	2017
Total pension liability	\$27,364,740	\$25,696,667	\$25,345,094	\$35,241,684
Plan fiduciary net position	17,879,947	15,992,863	13,966,421	15,223,702
Net pension liability	\$9,484,793	\$9,703,804	\$11,378,673	\$20,017,982
Plan fiduciary net position as a percentage of the total pension liability	65.34%	62.24%	55.11%	43.20%
Covered payroll	\$3,089,161	\$2,995,453	\$2,898,827	\$2,774,207
Net pension liability as a percentage of covered payroll	307.03%	323.95%	392.53%	721.57%
	2016	2015	2014	2013
Total pension liability	\$31,994,311	\$23,991,569	\$23,420,461	\$22,888,431
Plan fiduciary net position	13,626,180	13,460,536	14,013,947	13,980,460
Net pension liability	\$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%
	2020	2019	2018	2017
Total pension liability	\$45,792,168	\$42,111,180	\$41,184,604	\$57,699,176
Plan fiduciary net position	30,674,185	27,171,397	23,477,550	25,362,730
Net pension liability	\$15,117,983	\$14,939,783	\$17,707,054	\$32,336,446
Plan fiduciary net position as a percentage of the total pension liability	66.99%	64.52%	57.01%	43.96%
Covered payroll	\$5,146,118	\$5,104,431	\$4,789,503	\$4,471,357
Net pension liability as a percentage of covered payroll	293.77%	292.68%	369.71%	723.19%
	2016	2015	2014	2013
Total pension liability	\$52,354,913	\$37,447,062	\$36,473,966	\$35,494,976
Plan fiduciary net position	22,581,046	22,152,768	22,920,607	22,740,003
Net pension liability	\$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.

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

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF NET PENSION LIABILITY¹ (CONTINUED)

For the Years Ended December 31

Local Government Division	2020	2019	2018	2017
Total pension liability	\$5,715,765	\$5,324,353	\$5,228,602	\$5,396,516
Plan fiduciary net position	5,194,638	4,592,962	3,971,389	4,283,086
Net pension liability	\$521,127	\$731,391	\$1,257,213	\$1,113,430
Plan fiduciary net position as a percentage of the total pension liability	90.88%	86.26%	75.96%	79.37%
Covered payroll	\$698,060	\$681,093	\$660,998	\$632,768
Net pension liability as a percentage of covered payroll	74.65%	107.38%	190.20%	175.96%
	2016	2015	2014	2013
Total pension liability	\$5,123,847	\$4,762,090	\$4,647,777	\$4,517,239
Plan fiduciary net position	3,773,506	3,660,509	3,751,468	3,508,312
Net pension liability	\$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%
	2020	2019	2018	2017
Judicial Division				
Total pension liability	\$478,811	\$455,159	\$448,104	\$561,946
Plan fiduciary net position	416,851	364,234	306,846	329,862
Net pension liability	\$61,960	\$90,925	\$141,258	\$232,084
Plan fiduciary net position as a percentage of the total pension liability	87.06%	80.02%	68.48%	58.70%
Covered payroll	\$54,780	\$53,427	\$50,506	\$48,948
Net pension liability as a percentage of covered payroll	113.11%	170.19%	279.69%	474.14%
	2016	2015	2014	2013
Total pension liability	\$543,150	\$461,245	\$417,853	\$382,623
Plan fiduciary net position	288,904	277,351	279,499	272,653
Net pension liability	\$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%

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

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—DIVISION TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF NET PENSION LIABILITY¹ (CONTINUED)

For the Years Ended December 31

DPS Division	2020	2019	2018	2017
Total pension liability	\$4,539,760	\$4,315,270	\$4,207,343	\$4,374,550
Plan fiduciary net position	4,107,578	3,656,426	3,184,442	3,478,040
Net pension liability	\$432,182	\$658,844	\$1,022,901	\$896,510
Plan fiduciary net position as a percentage of the total pension liability	90.48%	84.73%	75.69%	79.51%
Covered payroll	\$771,347	\$736,264	\$722,040	\$658,198
Net pension liability as a percentage of covered payroll	56.03%	89.48%	141.67%	136.21%
	2016	2015	2014	2013
Total pension liability	\$4,221,449	\$3,920,864	\$3,888,361	\$3,792,543
Plan fiduciary net position	3,125,977	3,107,329	3,263,791	3,272,439
Net pension liability	\$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.

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	2020	2019	2018	2017	2016
Actuarially determined contribution rate (a)	23.69%	23.28%	26.30%	22.71%	22.31%
Covered payroll (b)	\$3,089,161	\$2,995,453	\$2,898,827	\$2,774,207	\$2,710,651
Annual Increase Reserve contribution (c)	19,442	17,663	15,919	14,355	12,838
Actuarially determined contribution (a) x (b) + (c)	751,264	715,004	778,311	644,377	617,584
Contributions in relation to the actuarially determined contribution ^{1,2}	646,386	689,370	661,653	563,977	521,804
Annual contribution deficiency	\$104,878	\$25,634	\$116,658	\$80,400	\$95,780
Actual contributions as a percentage of covered payroll	20.92%	23.01%	22.82%	20.33%	19.25%
	2015	2014	2013	2012	2011
Actuarially determined contribution rate (a)	22.35%	20.45%	20.01%	16.52%	13.63%
Covered payroll (b)	\$2,641,867	\$2,564,670	\$2,474,965	\$2,384,934	\$2,393,791
Annual Increase Reserve contribution (c)	11,400	9,984	N/A	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	601,857	534,459	495,241	393,991	326,274
Contributions in relation to the actuarially determined contribution	484,005	444,372	393,218	328,055	277,122
Annual contribution deficiency	\$117,852	\$90,087	\$102,023	\$65,936	\$49,152
Actual contributions as a percentage of covered payroll	18.32%	17.33%	15.89%	13.76%	11.58%
School Division	2020	2019	2018	2017	2016
Actuarially determined contribution rate (a)	23.37%	23.59%	26.80%	22.54%	22.36%
Covered payroll (b)	\$5,146,118	\$5,104,431	\$4,789,503	\$4,471,357	\$4,349,320
Annual Increase Reserve contribution (c)	28,159	26,062	22,497	19,903	17,868
Actuarially determined contribution (a) x (b) + (c)	1,230,807	1,230,197	1,306,084	1,027,747	990,376
Contributions in relation to the actuarially determined contribution ^{1,2}	1,048,992	1,130,127	1,050,415	857,740	812,740
Annual contribution deficiency	\$181,815	\$100,070	\$255,669	\$170,007	\$177,636
Actual contributions as a percentage of covered payroll	20.38%	22.14%	21.93%	19.18%	18.69%
	2015	2014	2013	2012	2011
Actuarially determined contribution rate (a)	21.94%	19.65%	19.79%	17.60%	15.73%
Covered payroll (b)	\$4,235,290	\$4,063,236	\$3,938,650	\$3,819,066	\$3,821,603
Annual Increase Reserve contribution (c)	15,648	13,280	N/A	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	944,871	811,706	779,459	672,156	601,138
Contributions in relation to the actuarially determined contribution	754,182	686,323	613,738	564,444	534,230
Annual contribution deficiency	\$190,689	\$125,383	\$165,721	\$107,712	\$66,908
Actual contributions as a percentage of covered payroll	17.81%	16.89%	15.58%	14.78%	13.98%

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	2020	2019	2018	2017	2016
Actuarially determined contribution rate (a)	13.01%	11.13%	14.27%	11.92%	11.98%
Covered payroll (b)	\$698,060	\$681,093	\$660,998	\$632,768	\$608,223
Annual Increase Reserve contribution (c)	4,492	4,201	3,779	3,390	2,969
Actuarially determined contribution (a) x (b) + (c)	95,310	80,007	98,103	78,816	75,834
Contributions in relation to the actuarially determined contribution	89,662	85,597	81,358	78,291 ¹	75,132
Annual contribution deficiency (excess)	\$5,648	(\$5,590)	\$16,745	\$525	\$702
Actual contributions as a percentage of covered payroll	12.84%	12.57%	12.31%	12.37%	12.35%
	2015	2014	2013	2012	2011
Actuarially determined contribution rate (a)	13.62%	11.78%	10.62%	9.79%	8.98%
Covered payroll (b)	\$561,518	\$540,468	\$529,003	\$523,668	\$718,169
Annual Increase Reserve contribution (c)	2,522	2,180	N/A	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	79,001	65,847	56,180	51,267	64,492
Contributions in relation to the actuarially determined contribution	70,415	68,719 ²	65,329	83,816	89,536
Annual contribution deficiency (excess)	\$8,586	(\$2,872)	(\$9,149)	(\$32,549)	(\$25,044)
Actual contributions as a percentage of covered payroll	12.54%	12.71%	12.35%	16.01%	12.47%
	2015	2014	2013	2012	2011
Actuarially determined contribution rate (a)	22.05%	21.90%	27.26%	22.54%	22.07%
Covered payroll (b)	\$54,780	\$53,427	\$50,506	\$48,948	\$48,700
Annual Increase Reserve contribution (c)	289	251	207	191	164
Actuarially determined contribution (a) x (b) + (c)	12,368	11,952	13,975	11,224	10,912
Contributions in relation to the actuarially determined contribution ^{3,4}	10,402	11,993	9,684	8,080	8,024
Annual contribution deficiency (excess)	\$1,966	(\$41)	\$4,291	\$3,144	\$2,888
Actual contributions as a percentage of covered payroll	18.99%	22.45%	19.17%	16.51%	16.48%
	2015	2014	2013	2012	2011
Actuarially determined contribution rate (a)	21.45%	20.07%	21.53%	18.28%	16.30%
Covered payroll (b)	\$46,870	\$42,977	\$39,942	\$39,045	\$39,033
Annual Increase Reserve contribution (c)	141	116	N/A	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	10,195	8,741	8,599	7,137	6,362
Contributions in relation to the actuarially determined contribution	7,702	7,070	6,494	5,840	5,356
Annual contribution deficiency	\$2,493	\$1,671	\$2,105	\$1,297	\$1,006
Actual contributions as a percentage of covered payroll	16.43%	16.45%	16.26%	14.96%	13.72%

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	2020	2019	2018	2017	2016
Actuarially determined contribution rate (a)	10.42%	11.14%	13.50%	10.28%	10.46%
Covered payroll (b)	\$771,347	\$736,264	\$722,040	\$658,198	\$642,177
Annual Increase Reserve contribution (c)	5,357	4,989	4,624	4,100	3,685
Actuarially determined contribution (a) x (b) + (c)	85,731	87,009	102,099	71,763	70,857
Contributions in relation to the actuarially determined contribution ^{1,2}	56,245	62,541	54,615	27,578	17,071
Annual contribution deficiency	\$29,486	\$24,468	\$47,484	\$44,185	\$53,786
Actual contributions as a percentage of covered payroll	7.29%	8.49%	7.56%	4.19%	2.66%
	2015	2014	2013	2012	2011
Actuarially determined contribution rate (a)	11.06%	9.67%	11.53%	9.60%	11.85%
Covered payroll (b)	\$621,115	\$584,319	\$547,660	\$510,872	\$491,646
Annual Increase Reserve contribution (c)	3,186	2,633	N/A	N/A	N/A
Actuarially determined contribution (a) x (b) + (c)	71,881	59,137	63,145	49,044	58,260
Contributions in relation to the actuarially determined contribution	8,494	18,478	23,104	13,145	11,722
Annual contribution deficiency	\$63,387	\$40,659	\$40,041	\$35,899	\$46,538
Actual contributions as a percentage of covered payroll	1.37%	3.16%	4.22%	2.57%	2.38%

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

	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expenses	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**

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 percent 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 pension certificates of participation (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 automatic adjustment provision (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 percent.
 - Employer contribution rates increase by 0.50 percent.
 - Annual Increase (AI) cap is lowered from 1.50 percent per year to 1.25 percent 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 percent effective July 1, 2019, an additional 0.75 percent effective July 1, 2020, and an additional 0.50 percent effective July 1, 2021.
 - Employer contribution rates increase by 0.25 percent 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 percent per year to 1.50 percent 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 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

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

(Dollars in Thousands)

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 percent of PERA-includable salary and requires the AED payment to increase by 0.40 percent at the start of each of the following four calendar years through 2023 at which time the AED payment will be 5.00 percent 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 percent of PERA-includable salary and requires the SAED payment to increase by 0.40 percent at the start of each of the following four calendar years through 2023 at which time the SAED payment will be 5.00 percent 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 percent to 10.15 percent, effective January 1, 2015.

2014 Changes in Plan Provisions Since 2013

- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008 and refinanced thereafter.

2013 Changes in Plan Provisions Since 2012

- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008 and refinanced thereafter.

2012 Changes in Plan Provisions Since 2011

- The valuation reflects the disaffiliation of Memorial Health System (Memorial), formerly the largest employer of the Local Government Division, as of October 1, 2012. For the purposes of the December 31, 2012, actuarial valuation, liabilities were determined assuming no additional benefit accruals for the disaffiliated membership of Memorial that had not refunded their PERA member contribution accounts. Additionally, no additional incoming dollars were assumed added to the Local Government Division Trust Fund, as there 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 percent of pensionable payroll and employer contributions were reduced by that amount.
- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008 and refinanced thereafter.

2011 Changes in Plan Provisions Since 2010

- Pursuant to SB 10-146, there was a short-term contribution "swap" between employers and active members in the State and Judicial Divisions covering the period July 1, 2010, through June 30, 2011. The enactment of SB 11-076 extended the contribution swap an additional year, from July 1, 2011, through June 30, 2012. Active member contributions for both periods were increased by 2.5 percent of pensionable payroll and employer contributions were reduced by that amount.
- Actual employer contributions to the DPS Division are reduced by an amount equal to the principal payments plus interest necessary each year to finance the PCOPs issued in 1997 and 2008 and refinanced thereafter.

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

2020 Changes in Assumptions or Other Inputs Since 2019

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

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

(Dollars in Thousands)

- expenses from 4.85 percent per year, net of investment expenses.
- 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 percent of the rates prior to age 80 and 90 percent of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 87 percent of the rates prior to age 80 and 107 percent 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 percent of the rates prior to age 80 and 94 percent of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 83 percent of the rates prior to age 80 and 106 percent 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 percent of the rates for all ages, with generational projection using scale MP-2019.
- **Females:** 105 percent 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 percent 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 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 percent to 1.25 percent.

2018 Changes in Assumptions or Other Inputs Since 2017

- The single equivalent interest rate (SEIR) for the State Division was increased from 4.72 percent to 7.25 percent 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 percent to 7.25 percent 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 percent to 7.25 percent 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 percent to 4.72 percent 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.

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

(Dollars in Thousands)

- The SEIR for the School Division was lowered from 5.26 percent to 4.78 percent 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 Judicial Division was increased from 5.18 percent to 5.41 percent 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 percent on the prior measurement date to 3.43 percent on the measurement date.

2016 Changes in Assumptions or Other Inputs Since 2015

- The investment return assumption was lowered from 7.50 percent to 7.25 percent.
- The price inflation assumption was lowered from 2.80 percent to 2.40 percent.
- The wage inflation assumption was lowered from 3.90 percent to 3.50 percent.
- 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 percent factor applied to ages below 80 and a 108 percent factor applied to age 80 and above, projected to 2018, for males, and a 78 percent factor applied to ages below 80 and a 109 percent 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 percent factor applied to ages below 80 and a 113 percent factor applied to age 80 and above, projected to 2018, for males, and a 68 percent factor applied to ages below 80 and a 106 percent factor applied to age 80 and above, projected to 2020, for females.
- For disabled retirees, the mortality assumption was changed to reflect 90 percent 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 percent factor applied to male rates and a 55 percent 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 percent to 0.40 percent.
- The SEIR for the State and School Divisions was lowered from 7.50 percent to 5.26 percent 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 percent on the measurement date.
- The SEIR for the Local Government Division was lowered from 7.50 percent to 7.25 percent, reflecting the change in the long-term expected rate of return.
- The SEIR for the Judicial Division was lowered from 5.73 percent to 5.18 percent 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 percent on the prior measurement date to 3.86 percent on the measurement date.
- The SEIR for the DPS Division was lowered from 7.50 percent to 7.25 percent, 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 percent to 5.73 percent 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 percent on the prior measurement date to 3.57 percent on the measurement date.
- The following programming changes were made:
 - Valuation of the full survivor benefit without any reduction for possible remarriage.
 - Reflection of the employer match on separation benefits for all eligible years.
 - Reflection of one year of service eligibility for survivor annuity benefit.
 - Refinement of the 18-month AI timing.
 - Refinements to directly value certain and life, modified cash refund and pop-up benefit forms.
- The following methodology changes were made:
 - Recognition of merit salary increases in the first projection year.

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

(Dollars in Thousands)

- Elimination of the assumption that 35 percent of future disabled members elect to receive a refund.
- Removal of the negative value adjustment for liabilities associated with refunds of future terminating members.
- Adjustments to the timing of the normal cost and UAAL payment calculations to reflect contributions throughout the year.

2014 Changes in Assumptions or Other Inputs Since 2013

- The SEIR for the Judicial Division was lowered from 6.66 percent to 6.14 percent 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 percent on the prior measurement date to 3.70 percent on the measurement date.
- In 2012, a lawsuit was initiated to determine the amount owed to PERA by Memorial 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 percent to 7.50 percent.
- The price inflation assumption was lowered from 3.50 percent to 2.80 percent.
- The wage inflation assumption was lowered from 4.25 percent to 3.90 percent.

2012 Changes in Assumptions or Other Inputs Since 2011

- The price inflation assumption was lowered from 3.75 percent to 3.50 percent.
- The wage inflation assumption was lowered from 4.50 percent to 4.25 percent.
- The rates of retirement, withdrawal, mortality and disability were revised to more closely reflect actual experience.
- The post-retirement mortality tables used were changed to the RP-2000 Combined Mortality tables projected with Scale AA to 2020, set back one year for males and two years for females.

- The investment return assumption was changed to be only net of investment expenses to better represent the investment consultant’s assumptions and predictions and also to better align with recent changes in GASB accounting and reporting requirements. An ongoing estimated administrative expense of 0.35 percent of pensionable payroll was added to the normal cost beginning with the December 31, 2012, actuarial valuation.
- To reflect the short-term contribution “swap” between employers and active members covering the period July 1, 2010, through June 30, 2012, the actuarially determined contribution (ADC) has been adjusted in the State and Judicial Divisions.

2011 Changes in Assumptions or Other Inputs Since 2010

- To reflect the short-term contribution “swap” between employers and active members covering the period July 1, 2010, through June 30, 2012, the ADC has been adjusted in the State and Judicial Division.

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, 2018, actuarial valuation were used to determine contribution rates reported in that schedule for the year ending December 31, 2020:

Actuarial cost method	Entry age
Amortization method	Level percentage of payroll
Amortization period	30 years, closed, layered ¹
	29 years (27 and 28 years for State Division and School Division, respectively)
Equivalent single amortization period	4-year smoothed market
Asset valuation method	2.40 percent
Price inflation	1.10 percent
Real wage growth	3.50 percent
Wage inflation	
Salary increases, including wage inflation	3.50 to 10.45 percent ²
Long-term investment rate of return, net of pension plan investment expense, including price inflation	7.25 percent
Future post-retirement benefit increases	
PERA benefit structure hired prior to 1/1/07 and DPS benefit structure	1.50 percent compounded annually
PERA benefit structure hired after 12/31/06	0.00 percent, 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 Division Trust Fund.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET OPEB LIABILITY—HEALTH CARE TRUST FUND¹

For the Years Ended December 31

	2020	2019	2018	2017
Total OPEB liability				
Service cost	\$18,074	\$18,159	\$19,328	\$20,036
Interest	106,997	117,840	112,849	108,625
Changes of benefit terms	—	—	—	5
Difference between expected and actual experience	(68,772)	(224,212)	(2,482)	7,354
Changes of assumptions or other inputs	(69,759)	2,006	11,438	—
Benefit payments and health care claims/ administrative processing fees	(61,522)	(65,019)	(77,221)	(116,960)
Net change in total OPEB liability	(74,982)	(151,226)	63,912	19,060
Total OPEB liability – beginning	1,488,508	1,639,734	1,575,822	1,556,762
Total OPEB liability – ending (a)	\$1,413,526	\$1,488,508	\$1,639,734	\$1,575,822
Plan fiduciary net position				
Contributions – employer	\$94,634	\$92,011	\$86,559	\$83,077
Contributions – employer disaffiliation	—	—	—	96
Other additions (includes purchased service transfers)	7,909	6,984	8,373	9,760
Net investment income (loss)	60,280	53,867	(9,678)	44,990
Benefit payments	(53,023)	(58,221)	(61,777)	(102,665)
Administrative expense	(10,977)	(9,290)	(20,401)	(19,162)
Other deductions	(32)	(33)	(106)	(102)
Net change in plan fiduciary net position	98,791	85,318	2,970	15,994
Plan fiduciary net position – beginning	364,510	279,192	276,222	260,228
Plan fiduciary net position – ending (b)	\$463,301	\$364,510	\$279,192	\$276,222
Net OPEB liability – ending (a)-(b)	\$950,225	\$1,123,998	\$1,360,542	\$1,299,600

¹ Information is not available prior to 2017. In future reports, additional years will be added until 10 years of historical data are presented.

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

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF CHANGES IN NET OPEB LIABILITY—DPS HEALTH CARE TRUST FUND¹

For the Years Ended December 31

	2020	2019	2018	2017
Total OPEB liability				
Service cost	\$1,291	\$1,342	\$1,420	\$1,591
Interest	5,005	4,970	5,245	5,057
Changes of benefit terms	—	—	—	—
Difference between expected and actual experience	(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	(3,453)	(3,968)	(4,693)	(6,191)
Net change in total OPEB liability	(3,260)	274	(4,068)	422
Total OPEB liability – beginning	69,473	69,199	73,267	72,845
Total OPEB liability – ending (a)	\$66,213	\$69,473	\$69,199	\$73,267
Plan fiduciary net position				
Contributions – employer	\$8,045	\$7,649	\$7,417	\$6,930
Other additions (includes purchased service transfers)	224	188	205	242
Net investment income (loss)	6,019	4,892	(894)	3,305
Benefit payments	(3,086)	(3,644)	(4,158)	(5,694)
Administrative expense	(516)	(477)	(845)	(808)
Other deductions	(1)	(1)	(4)	(4)
Net change in plan fiduciary net position	10,685	8,607	1,721	3,971
Plan fiduciary net position – beginning	32,636	24,029	22,308	18,337
Plan fiduciary net position – ending (b)	\$43,321	\$32,636	\$24,029	\$22,308
Net OPEB liability – ending (a)-(b)	\$22,892	\$36,837	\$45,170	\$50,959

¹ Information is not available prior to 2017. In future reports, additional years will be added until 10 years of historical data are presented. The accompanying notes are an integral part of the Required Supplementary Information.

REQUIRED SUPPLEMENTARY INFORMATION (UNAUDITED)—HEALTH CARE TRUST FUNDS

(Dollars in Thousands)

SCHEDULE OF NET OPEB LIABILITY¹

For the Years Ended December 31

Health Care Trust Fund	2020	2019	2018	2017	2016
Total OPEB liability	\$1,413,526	\$1,488,508	\$1,639,734	\$1,575,822	\$1,556,762
Plan fiduciary net position	463,301	364,510	279,192	276,222	260,228
Net OPEB liability	\$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	32.78%	24.49%	17.03%	17.53%	16.72%
Covered payroll	\$8,988,119	\$8,834,404	\$8,399,835	\$7,927,280	\$7,716,894
Net OPEB liability as a percentage of covered payroll	10.57%	12.72%	16.20%	16.39%	16.80%
DPS Health Care Trust Fund	2020	2019	2018	2017	2016
Total OPEB liability	\$66,213	\$69,473	\$69,199	\$73,267	\$72,845
Plan fiduciary net position	43,321	32,636	24,029	22,308	18,337
Net OPEB liability	\$22,892	\$36,837	\$45,170	\$50,959	\$54,508
Plan fiduciary net position as a percentage of the total OPEB liability	65.43%	46.98%	34.72%	30.45%	25.17%
Covered payroll	\$771,347	\$736,264	\$722,040	\$658,198	\$642,177
Net OPEB liability as a percentage of covered payroll	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.

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	2020	2019	2018	2017	2016
Actuarially determined contribution rate (a)	0.97%	1.11%	1.12%	1.08%	1.09%
Covered payroll (b)	\$8,988,119	\$8,834,404	\$8,399,835	\$7,927,280	\$7,716,894
Actuarially determined contribution (a) x (b)	87,185	98,062	94,078	85,615	84,114
Contributions in relation to the actuarially determined contribution	94,634	92,011	86,559	83,077 ¹	80,825
Annual contribution deficiency (excess)	(\$7,449)	\$6,051	\$7,519	\$2,538	\$3,289
Actual contributions as a percentage of covered payroll	1.05%	1.04%	1.03%	1.05%	1.05%
	2015	2014	2013	2012	2011
Actuarially determined contribution rate (a)	1.15%	1.32%	1.24%	1.18%	1.28%
Covered payroll (b)	\$7,485,545	\$7,211,351	\$6,982,560	\$6,766,713	\$6,972,596
Retiree drug subsidy (c)	—	—	15,731	14,198	14,151
Actuarially determined contribution (a) x (b) + (c)	86,084	95,190	102,315	94,045	103,400
Contributions in relation to the actuarially determined contribution	78,463	75,631 ²	88,515	86,751	87,600
Annual contribution deficiency	\$7,621	\$19,559	\$13,800	\$7,294	\$15,800
Actual contributions as a percentage of covered payroll	1.05%	1.05%	1.27%	1.28%	1.26%

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

For the Years Ended December 31

DPS Health Care Trust Fund	2020	2019	2018	2017	2016
Actuarially determined contribution rate (a)	0.51%	0.60%	0.67%	0.68%	0.75%
Covered payroll (b)	\$771,347	\$736,264	\$722,040	\$658,198	\$642,177
Actuarially determined contribution (a) x (b)	3,934	4,418	4,838	4,476	4,816
Contributions in relation to the actuarially determined contribution	8,045	7,649	7,417	6,930	6,723
Annual contribution excess	(\$4,111)	(\$3,231)	(\$2,579)	(\$2,454)	(\$1,907)
Actual contributions as a percentage of covered payroll	1.04%	1.04%	1.03%	1.05%	1.05%
	2015	2014	2013	2012	2011
Actuarially determined contribution rate (a)	0.81%	0.87%	0.86%	0.92%	0.92%
Covered payroll (b)	\$621,115	\$584,319	\$547,660	\$510,872	\$491,646
Retiree drug subsidy (c)	—	—	563	488	499
Actuarially determined contribution (a) x (b) + (c)	5,031	5,084	5,273	5,188	5,022
Contributions in relation to the actuarially determined contribution	6,371	6,003	6,121	5,731	5,528
Annual contribution excess	(\$1,340)	(\$919)	(\$848)	(\$543)	(\$506)
Actual contributions as a percentage of covered payroll	1.03%	1.03%	1.12%	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

	2020	2019	2018	2017	2016	2015	2014
Annual money-weighted rate of return, net of investment expenses	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

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.

2011 Changes in Plan Provisions Since 2010

- There were no changes made to plan provisions.

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

2020 Changes in Assumptions or Other Inputs Since 2019

- The price inflation assumption was lowered from 2.40 percent to 2.30 percent.
- The wage inflation assumption was lowered from 3.50 percent to 3.00 percent.
- The real rate of investment return assumption was increased to 4.95 percent per year, net of investment expenses from 4.85 percent 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 percent of the rates prior to age 80 and 90 percent of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 87 percent of the rates prior to age 80 and 107 percent 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.

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

(Dollars in Thousands)

- 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 percent of the rates prior to age 80 and 94 percent of the rates for ages 80 and older, with generational projection using scale MP-2019.
 - **Females:** 83 percent of the rates prior to age 80 and 106 percent 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 percent of the rates for all ages, with generational projection using scale MP-2019.
 - **Females:** 105 percent 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 percent 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 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 percent to 7.25 percent.
 - The price inflation assumption decreased from 2.80 percent to 2.40 percent.
 - The wage inflation assumption decreased from 3.90 percent to 3.50 percent.
 - 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 percent factor applied to male rates and a 55 percent 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 percent factor applied to ages below 80 and a 108 percent factor applied to age 80 and above, projected to 2018, for males, and a 78 percent factor applied to ages below 80 and a 109 percent 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 percent factor applied to ages below 80 and a 113 percent factor applied to age 80 and above, projected to 2018, for males, and a 68 percent factor applied to ages below 80 and a 106 percent factor applied to age 80 and above, projected to 2020, for females.
 - For disabled retirees, the mortality assumption was changed to reflect 90 percent of RP-2014 Disabled Retiree Mortality Table.
 - The assumed rates of withdrawal, retirement, and disability have been adjusted to more closely reflect experience.
 - 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

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

(Dollars in Thousands)

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 percent to 7.50 percent per annum.
 - The price inflation assumption decreased from 3.50 percent to 2.80 percent per annum.
 - The wage inflation assumption decreased from 4.25 percent to 3.90 percent per annum.
 - Effective January 1, 2014, PERACare no longer participates in the Centers for Medicare & Medicaid Services (CMS) Retiree Drug Subsidy (RDS) program. PERACare enrollees participating in the self-insured Medicare supplement plans and the Medicare HMO plan offered by Rocky Mountain Health Plans now receive their prescription drug benefits through a Medicare Prescription Drug Plan. The liability associated with the RDS has been eliminated.
 - Initial per capita health care costs for those PERACare enrollees under the PERA benefit structure who are

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

(Dollars in Thousands)

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 percent to 3.50 percent.
 - The wage inflation assumption decreased from 4.50 percent to 4.25 percent.
 - 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 percent for males and 40 percent 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.

2011 Changes in Assumptions or Other Inputs Since 2010

- The following changes were 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 2012 plan year.
 - The initial per capita payments estimated to be made by CMS under the RDS have been updated based upon the most recent attestation of actuarial equivalence.
 - The 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 2019.

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

(Dollars in Thousands)

- DPS HCTF was created on January 1, 2010, to provide health care subsidies for DPS retirees participating in PERACare.
- 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 2011 plan year.
- PERACare funding rates are used to determine the health care costs for participants enrolled in the self-insured plans who are expected to attain age 65 and older ages and not eligible for premium-free Medicare Part A.
- The starting per capita payments estimated to be made by the CMS under the RDS have been updated based upon the most recent attestation of actuarial equivalence.
- The 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 percentage of PERACare enrollees who are projected to be age 65 and older, and estimated to not be eligible for premium-free Medicare Part A has been revised to reflect plan experience.
- The last year in which the prescription drug benefit provided to those members eligible for Medicare Part D is deemed to be actuarially equivalent has been increased to 2018.
- Liabilities for those members represented under both the PERA benefit structure and the DPS benefit structure have been allocated based upon member contribution account balances.

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, 2018, actuarial valuation were used to determine contribution rates reported in that schedule for the year ending December 31, 2020:

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 percent
Real wage growth	1.10 percent
Wage inflation	3.50 percent
Salary increases, including wage inflation	3.50 percent in aggregate
Long-term investment rate of return, net of pension plan investment expense, including price inflation	7.25 percent
Health care inflation factors	
PERA benefit structure:	
Service-based premium subsidy	0.00 percent
Medicare Part A premiums	3.25 percent initial 5.00 percent ultimate
Carrier premiums	5.00 percent
DPS benefit structure:	
Service-based premium subsidy	0.00 percent
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.

SUPPLEMENTARY SCHEDULES

(Dollars in Thousands)

SCHEDULE OF ADMINISTRATIVE EXPENSES

For the Years Ended December 31

	2020	2019
Personnel Services		
Salaries	\$40,235	\$35,113
Employee benefits	13,262	9,431
Total personnel services	53,497	44,544
Professional Services		
Actuarial contracts	679	786
Audits	265	304
Payroll services	28	—
Investment services	3,283	3,100
Legal and legislative counsel	1,468	2,634
Computer services and consulting	1,892	1,599
Management consulting	1,458	1,305
Health care consulting	414	387
Other	818	1,454
Total professional services	10,305	11,569
Miscellaneous		
Equipment rental and services	1,856	2,055
Memberships	257	366
Publications and subscriptions	72	71
Travel and local expense	150	787
Auto expense	8	17
Telephone	514	366
Postage	1,373	1,481
Insurance	604	577
Printing	356	412
Office supplies	597	740
Building rent, supplies, and utilities	846	952
Total miscellaneous	6,633	7,824
Direct Expense		
Health Care Trust Fund	8,511	6,812
DPS Health Care Trust Fund	368	324
Voluntary Investment Program	1,268	1,365
Defined Contribution Retirement Plan	372	371
Deferred Compensation Plan	562	589
Total direct expense	11,081	9,461
Depreciation expense	251	307
Tenant and other expense	924	684
Internal investment manager expense	(24,111)	(19,536)
Total administrative expense	\$58,580	\$54,853

SUPPLEMENTARY SCHEDULES

(Dollars in Thousands)

SCHEDULE OF ADMINISTRATIVE EXPENSES (CONTINUED)

For the Years Ended December 31

	2020	2019
Allocation of Administrative Expenses		
State Division Trust Fund	\$11,385	\$11,294
School Division Trust Fund	22,779	22,619
Local Government Division Trust Fund	2,459	2,476
Judicial Division Trust Fund	87	84
DPS Division Trust Fund	2,667	2,713
Voluntary Investment Program	4,797	3,592
Defined Contribution Retirement Plan	1,159	997
Deferred Compensation Plan	1,530	1,188
Health Care Trust Fund	10,977	9,290
DPS Health Care Trust Fund	516	477
Life Insurance Reserve	224	123
Total administrative expense	\$58,580	\$54,853

Note: The ratio of administrative expenses to fiduciary net position for the Division Trust Funds is seven basis points (0.07 percent) for 2020 and eight basis points (0.08 percent) for 2019.

See accompanying Independent Auditors' Report.

SUPPLEMENTARY SCHEDULES

(Dollars in Thousands)

SCHEDULE OF OTHER ADDITIONS

For the Years Ended December 31

	State	School	Local	Judicial	DPS	Voluntary	Defined	Deferred	HCTF	DPS	Life	TOTAL	
	Division	Division	Govt	Division	Division		Contribution	Compensation		HCTF	Insurance	2020	2019
	Trust	Trust	Trust	Trust	Trust	Investment	Retirement	Plan			Reserve		
	Fund	Fund	Fund	Fund	Fund	Program	Plan						
Administrative fee income	\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$—	\$2,466	\$147	\$—	\$2,613	\$2,631
Revenue sharing	—	—	—	—	—	21	2	12	—	—	—	35	81
Participant loan interest	—	—	—	—	—	2,265	—	533	—	—	—	2,798	2,907
Interfund transfers at retirement	9,328	—	—	2,545	—	—	—	—	—	—	—	11,873	9,688
Purchase service transfer to health care	—	—	—	—	—	—	—	—	5,427	77	—	5,504	4,518
Settlement income	46	80	14	1	11	—	—	—	3	—	—	155	166
Miscellaneous	16	43	10	—	1	116	14	8	13	—	—	221	350
Total other additions	\$9,390	\$123	\$24	\$2,546	\$12	\$2,402	\$16	\$553	\$7,909	\$224	\$—	\$23,199	\$20,341

SCHEDULE OF OTHER DEDUCTIONS

For the Years Ended December 31

	State	School	Local	Judicial	DPS	Voluntary	Defined	Deferred	HCTF	DPS	Life	TOTAL	
	Division	Division	Govt	Division	Division		Contribution	Compensation		HCTF	Insurance	2020	2019
	Trust	Trust	Trust	Trust	Trust	Investment	Retirement	Plan			Reserve		
	Fund	Fund	Fund	Fund	Fund	Program	Plan						
Interfund transfers at retirement	\$—	\$8,786	\$2,164	\$—	\$923	\$—	\$—	\$—	\$—	\$—	\$—	\$11,873	\$9,688
Purchase service transfer to health care	2,070	2,316	951	90	77	—	—	—	—	—	—	5,504	4,518
Miscellaneous	564	247	31	—	22	1,746	147	777	32	1	—	3,567	3,435
Total other deductions	\$2,634	\$11,349	\$3,146	\$90	\$1,022	\$1,746	\$147	\$777	\$32	\$1	\$—	\$20,944	\$17,641

See accompanying Independent Auditors' Report.

SUPPLEMENTARY SCHEDULES

(Dollars in Thousands)

SCHEDULE OF INVESTMENT EXPENSES

For the Years Ended December 31

	2020	2019
External Manager Expenses		
Global equity	\$26,659	\$24,565
Fixed income	8	225
Private equity	61,422	55,558
Real estate	45,832	40,155
Alternatives	28,963	21,597
Cash and short-term investments	276	192
Total external manager expenses	163,160	142,292
Internal manager expenses	24,111	19,536
Other investment expenses and custody fees	2,274	2,185
Defined contribution and deferred compensation plan investment expenses	2,975	2,865
Total investment expenses	\$192,520	\$166,878

SCHEDULE OF PAYMENTS TO CONSULTANTS

For the Years Ended December 31

	2020	2019
Professional Contracts		
Actuarial	\$679	\$786
Audits	265	304
Payroll services	28	—
Legal and legislative counsel	1,468	2,634
Computer services and consulting	1,892	1,599
Management consulting	1,458	1,305
Health care consulting	414	387
Other	818	1,454
Total payments to consultants¹	\$7,022	\$8,469

¹ Excludes investment advisers.

The Schedule of Commissions and other information related to investment expenses can be found in the Investment Section on pages 131-133.

See accompanying Independent Auditors' Report.



INVESTMENT SECTION



	\$175.00	\$187.00	\$215.00	\$202.07	\$412.38	\$472.18
2	\$352.25	\$281.80	\$309.98	\$356.48	\$484.81	\$685.58
3	\$478.36	\$382.89	\$420.96	\$484.10	\$658.38	\$928.31
4	\$656.44	\$525.15	\$577.87	\$664.32	\$905.47	\$1 278.89
5	\$925.41	\$745.53	\$842.36	\$931.71	\$1 273.13	\$1 819.62
6	\$1 417.31	\$1 033.69	\$1 087.04	\$1 222.12	\$1 743.08	\$2 409.45
7	\$1 949.25	\$1 375.40	\$1 412.94	\$1 674.88	\$2 453.84	\$3 415.63
8	\$2 636.52	\$1 889.22	\$2 028.14	\$2 393.26	\$3 325.53	\$4 608.99
9	\$3 471.58	\$2 377.26	\$2 414.99	\$2 873.24	\$4 063.04	\$5 615.15
10	\$4 576.92	\$3 037.06	\$3 100.76	\$3 605.88	\$5 096.94	\$7 043.35
11	\$6 012.50	\$3 917.00	\$4 096.88	\$4 844.10	\$6 658.38	\$9 283.31
12	\$7 952.25	\$5 281.80	\$5 609.98	\$6 584.88	\$9 053.47	\$12 409.45
13	\$10 478.36	\$7 082.89	\$7 420.96	\$8 844.10	\$12 205.47	\$16 819.62
14	\$13 866.44	\$9 525.15	\$10 032.36	\$11 811.71	\$16 213.13	\$22 409.45
15	\$18 417.31	\$12 833.69	\$13 507.04	\$16 022.12	\$21 743.08	\$29 819.62
16	\$24 492.25	\$17 375.40	\$18 281.94	\$21 674.88	\$29 453.84	\$40 608.99
17	\$32 636.52	\$23 389.22	\$24 514.99	\$28 873.24	\$39 630.04	\$54 615.15
18	\$43 471.58	\$31 037.06	\$32 700.76	\$38 605.88	\$52 966.94	\$73 433.35
19	\$57 692.25	\$41 281.80	\$43 096.88	\$51 844.10	\$71 205.47	\$98 283.31
20	\$76 925.00	\$55 525.15	\$58 420.96	\$69 844.10	\$95 405.47	\$132 409.45
21	\$103 478.36	\$75 082.89	\$78 420.96	\$93 844.10	\$128 608.99	\$176 819.62



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 percent of the then book value of the fund.
- No investment of the fund in common or preferred stock, or both, of any single corporation can exceed 5 percent of the then book value of the fund.
- The fund cannot acquire more than 12 percent of the outstanding stock or bonds of any single corporation.
- The origination of mortgages or deeds of trust on real residential property is prohibited.

Additionally, Colorado Revised Statutes (C.R.S.) § 24-54.8-201 *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 policy 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 2020 are listed below.

ASSET ALLOCATION TARGETS AND RANGES¹

	2020 Policy Benchmark Weight	Long-Term Asset Allocation Target	Target Range
Global Equity	56.0%	54.0%	48.0% – 60.0%
Fixed Income	23.5%	23.0%	18.0% – 28.0%
Private Equity	8.5%	8.5%	4.0% – 13.0%
Real Estate	8.5%	8.5%	4.0% – 13.0%
Alternatives	3.5%	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 percent. 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 policy 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 percent.

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 stronger markets 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.)

Investment Section

DEFINED BENEFIT PLANS

(Dollars in Thousands)

INVESTMENT BROKERS/ADVISERS (INTERNALLY MANAGED ASSETS)

Amherst Pierpont Securities LLC
 Robert W. Baird & Co.
 BofA Securities, Inc.
 Barclays Capital Inc.
 BNP Paribas Securities Corp.
 Cantor Fitzgerald & Co.
 Citigroup Global Markets Inc.
 Credit Suisse Securities (USA) LLC
 DASH Financial Technologies LLC
 Deutsche Bank Securities Inc.
 Goldman Sachs & Co. LLC
 HSBC Securities (USA) Inc.
 J.P. Morgan Securities LLC
 Jefferies Group LLC
 Jones Institutional Trading Services
 Liquidnet, Inc.
 MarketAxess Corp.

MUFG Securities Americas Inc.
 Mizuho Securities USA LLC
 Morgan Stanley & Co. LLC
 Nomura Securities International, Inc.
 RBC Capital Markets, LLC
 RBS Securities, Inc.
 State Street Global Markets, LLC
 Stifel, Nicolaus & Company Incorporated
 Sumitomo Mitsui Banking Corp.
 Susquehanna Securities, LLC
 The Bank of New York Mellon Corp.
 The Northern Trust Company
 Truist Securities, Inc.
 U.S. Bancorp Investments, Inc.
 UBS Securities LLC
 Wells Fargo Securities, LLC

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

SCHEDULE OF COMMISSIONS¹

As of December 31, 2020

Asset Class	Internally Managed Investments		Externally Managed Investments		Total Commissions
	Commissions	Percentage of Asset Class	Commissions	Percentage of Asset Class	
Global Equity	\$1,050	73.4%	\$1,932	26.6%	\$2,982
Fixed Income ²	30,679	100.0%	—	—	30,679
Total commissions	\$31,729		\$1,932		\$33,661

¹ Does not include commissions from commingled funds, futures trading, or Private Equity, Real Estate, and Alternatives.

² Fixed Income commissions are estimated.

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 \$58.7 billion investment portfolio were \$189.5 million representing about 32.3 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 63.4 percent of total fund assets in-house at a calculated cost for internal asset management of \$15.3 million (4.1 bps); outsourcing such management would cost an estimated \$97.1 million (26.1 bps).

SCHEDULE OF INVESTMENT EXPENSES¹

As of December 31, 2020

	Investment Expense
Global Equity	\$26,659
Fixed Income	8
Private Equity	61,422
Real Estate	45,832
Alternatives	28,963
Cash and Short-Term Investments	276
Total External Manager Expenses	163,160
Internal Manager Expenses	24,111
Other Investment Expenses and Custody Fees	2,274
Total Investment Expenses	\$189,545

¹ See the Investment Summary on page 134 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, 2020

Asset Class	Internal		External		Total Amount
	Amount	Percent	Amount	Percent	
Global Equity	\$25,001,516	73.4%	\$9,041,198	26.6%	\$34,042,714
Fixed Income	12,213,495	100.0%	—	—	12,213,495
Private Equity	—	—	4,753,229	100.0%	4,753,229
Real Estate	—	—	4,697,627	100.0%	4,697,627
Alternatives	—	—	2,398,206	100.0%	2,398,206
Cash and Short-Term Investments	—	—	570,634	100.0%	570,634
Total	\$37,215,011	63.4%	\$21,460,894	36.6%	\$58,675,905

Investment Section

DEFINED BENEFIT PLANS

(Dollars in Thousands)

SCHEDULE OF INVESTMENT INCOME AND EXPENSE BY ASSET CLASS

As of December 31, 2020

Asset Class	Net Appreciation in Fair Value ¹	Interest and Dividends	Net Operating Income ²	Investment Expenses ³	Net Securities Lending Income	Net Investment Income
Global Equity	\$6,037,558	\$473,137	\$—	(\$39,985)	\$5,474	\$6,476,184
Fixed Income	613,142	285,908	—	(4,883)	154	894,321
Private Equity	888,357	3	8,408	(64,907)	—	831,861
Real Estate	99,403	—	177,286	(48,367)	—	228,322
Alternatives	132,935	1	72,477	(31,060)	—	174,353
Cash and Short-Term Investments	117,651	1,723	—	(343)	(335) ⁴	118,696
Total	\$7,889,046	\$760,772	\$258,171	(\$189,545)	\$5,293	\$8,723,737

¹ Global Equity and Fixed Income include realized gain/(loss) recognized on securities sold during 2020, 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, 2020

Asset Class	Contributions ¹	Distributions ²	Paid Carried Interest ³
Private Equity	\$641,804	\$941,812 ⁴	\$58,356
Real Estate	335,938	490,619	3,514
Alternatives	597,539	205,353	28,734
Total	\$1,575,281	\$1,637,784	\$90,604

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	Reallocation of Investment	Non-Investment	Fair Value Per Investment Portfolio	2020 Policy Benchmark	Actual Asset Allocation (Percent of Fair Value)		
	December 31, 2020	Amounts ¹	Amounts ²	December 31, 2020	Weight ³	12/31/20	12/31/19	12/31/18
Global Equity	\$33,817,797	\$224,917	\$—	\$34,042,714	56.0%	58.0%	56.9%	53.4%
Fixed Income	11,643,574	569,921	—	12,213,495	23.5%	20.8%	22.1%	24.0%
Private Equity	4,753,228	—	—	4,753,228	8.5%	8.1%	8.1%	8.8%
Real Estate	4,717,089	(19,462)	—	4,697,627	8.5%	8.0%	8.9%	9.6%
Alternatives	2,398,206	—	—	2,398,206	3.5%	4.1%	3.5%	3.6%
Cash and Short-Term Investments								
Operating Cash	6,088	—	(6,088)	—				
Cash and Short-Term Investments	1,640,459	(1,069,824)	—	570,635	0.0%	1.0%	0.5%	0.6%
Net securities lending collateral and obligations	164	(164)	—	—				
Net investment settlements and income and other liabilities ⁴	(407,935)	294,612	113,323	—				
Benefit and interfund receivables and capital assets ⁵	235,465	—	(235,465)	—				
Total	\$58,804,135	\$—	(\$128,230)	\$58,675,905	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.

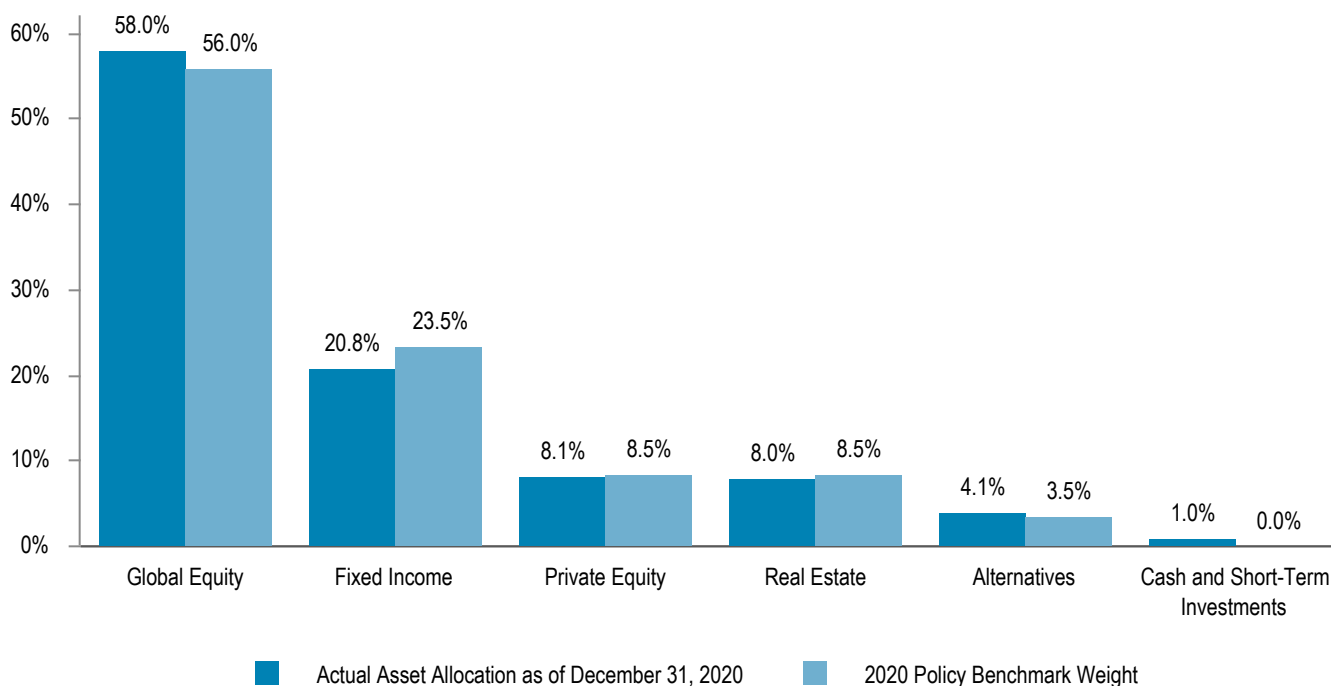
² Non-investment amounts are not included in the determination of actual investment asset allocation.

³ See page 129 for more information about the strategic asset allocation policy of the fund.

⁴ Includes non-investment payables of \$113,323.

⁵ Includes benefit receivables of \$220,327, interfund receivables of \$885, and capital assets of \$14,253.

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 ten-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, 2020

	2020	3-Year	5-Year	10-Year
PERA Total Portfolio	17.4%	10.9%	11.6%	9.4%
Total Fund Policy Benchmark ¹	14.1%	9.6%	10.4%	8.8%
Median Plan (BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe)	11.2%	7.8%	9.1%	7.9%
Global Equity	22.4%	12.9%	14.3%	11.1%
Global Equity Custom Benchmark ²	16.6%	10.0%	12.3%	9.7%
Fixed Income	8.3%	5.7%	5.0%	4.4%
Fixed Income Custom Benchmark ³	7.5%	5.4%	4.8%	4.2%
Private Equity	20.0%	13.7%	14.2%	12.1%
Private Equity Custom Benchmark ⁴	18.1%	18.7%	16.4%	15.9%
Real Estate	5.1%	8.1%	9.1%	11.5%
Real Estate Custom Benchmark ⁵	0.8%	4.5%	5.8%	9.5%
Alternatives	8.0%	6.7%	7.7%	3.9%
Alternatives Custom Benchmark ⁶	10.0%	7.7%	7.8%	5.0%
Cash and Short-Term Investments	0.5%	1.6%	1.3%	0.7%
ICE BofAML U.S. 3-Month Treasury Bill Index	0.7%	1.6%	1.2%	0.6%

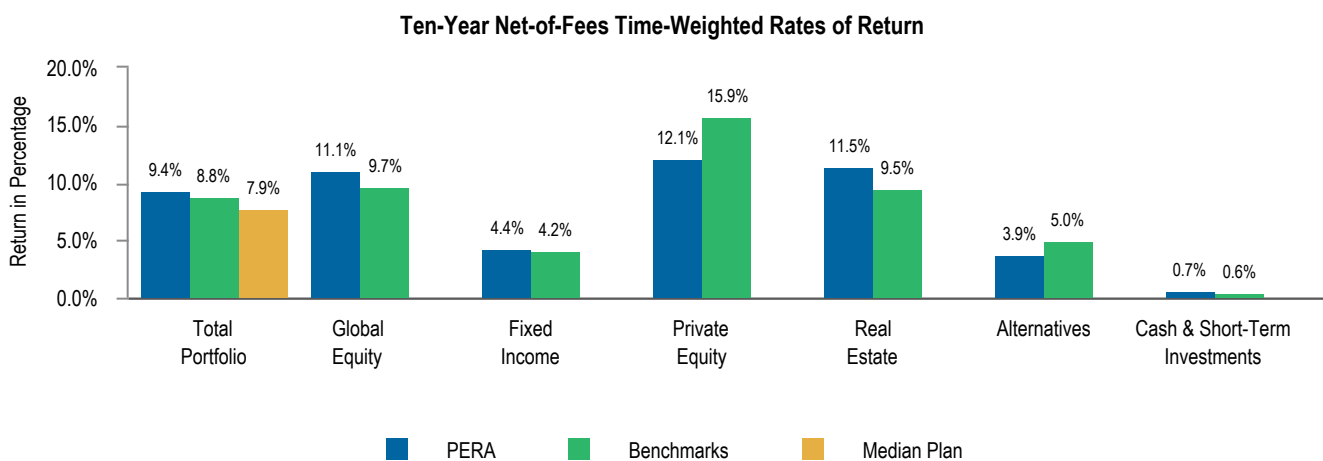
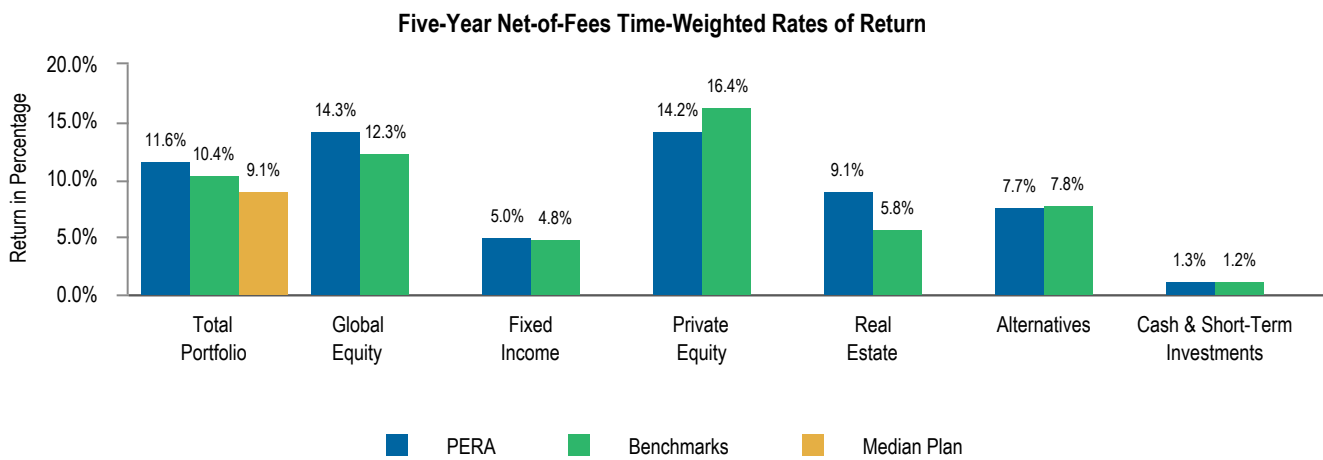
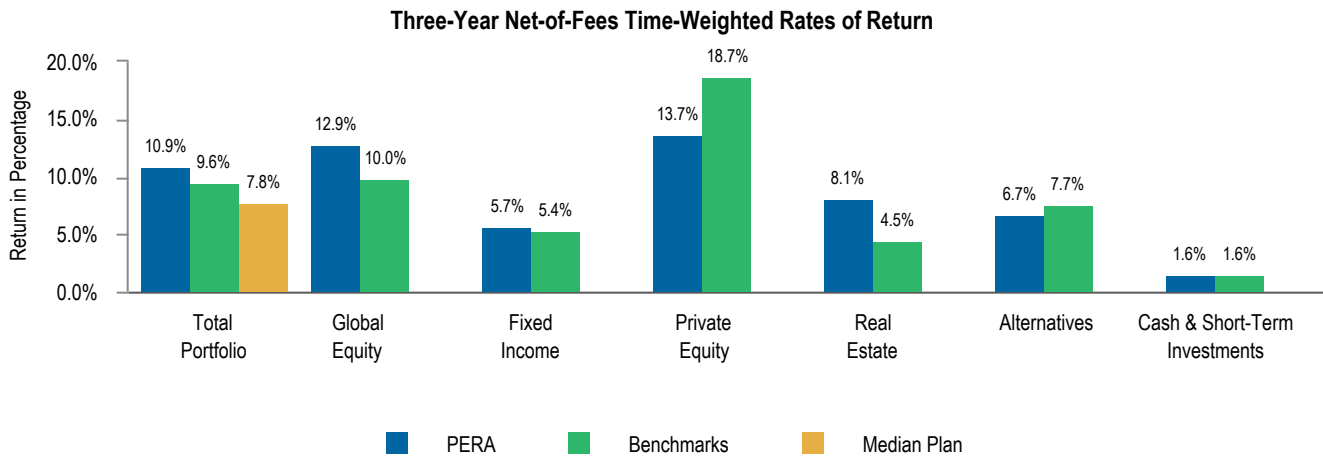
Note: Performance calculations were prepared using net-of-fees time-weighted rates of return.

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 56.0 percent of the Global Equity Custom Benchmark; 23.5 percent of the Fixed Income Custom Benchmark; 8.5 percent of the Private Equity Custom Benchmark; 8.5 percent of the Real Estate Custom Benchmark; and 3.5 percent of the Alternatives Custom Benchmark. Prior to January 2020, a combination of 53.5 percent of the Global Equity Custom Benchmark; 23.5 percent of the Fixed Income Custom Benchmark; 8.5 percent of the Private Equity Custom Benchmark; 8.5 percent of the Real Estate Custom Benchmark; 5.0 percent of the Alternatives Custom Benchmark; and 1.0 percent of the ICE BofAML U.S. 3-Month Treasury Bill Index. Prior to July 2016, a combination of 55.0 percent of the Global Equity Custom Benchmark; 24.0 percent of the Fixed Income Custom Benchmark; 7.5 percent of the Real Estate Custom Benchmark; 7.5 percent of the Private Equity Custom Benchmark; 5.0 percent of the Alternatives Custom Benchmark; and 1.0 percent of the ICE BofAML U.S. 3-Month Treasury Bill Index. Prior to July 2015, a combination of 56.0 percent of the Global Equity Custom Benchmark; 25.0 percent of the Fixed Income Custom Benchmark; 7.0 percent of the Real Estate Custom Benchmark; 7.0 percent of the Private Equity Custom Benchmark; and 5.0 percent 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 percent DJ U.S. Total Stock Market Index and 48.0 percent MSCI ACWI ex-U.S. Index. Prior to October 2012, 58.0 percent DJ U.S. Total Stock Market Index and 42.0 percent MSCI ACWI ex-U.S. Index. Prior to April 2012, 64.0 percent DJ U.S. Total Stock Market Index and 36.0 percent MSCI ACWI ex-U.S. Index. Prior to October 2011, 69.0 percent DJ U.S. Total Stock Market Index and 31.0 percent MSCI ACWI ex-U.S. Index. Prior to April 2011, 74.1 percent DJ U.S. Total Stock Market Index and 25.9 percent MSCI ACWI ex-U.S. Index.
- ³ Bloomberg Barclays U.S. Aggregate. Prior to August 2018, Bloomberg Barclays U.S. Universal Bond Index. Prior to July 2015, 98.0 percent of the Bloomberg Barclays Capital U.S. Universal Bond Index and 2.0 percent of the Bloomberg Barclays 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. Prior to January 2012, DJ U.S. Total Stock Market Index plus 300 basis points annually.
- ⁵ NCREIF Open End Diversified Core Equity Index (NFI-ODCE) plus 50 basis points annually. Prior to January 2012, NFI-ODCE plus 100 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. Prior to January 2012, a combination of 69.1 percent of the Global Equity Custom Benchmark and 30.9 percent of the Fixed Income Custom Benchmark.

DEFINED BENEFIT PLANS

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



DEFINED BENEFIT PLANS

FUND PERFORMANCE EVALUATION

(Performance returns are net-of-fees unless otherwise indicated)

Total Portfolio Results

For the year ended December 31, 2020, PERA's total fund returned 17.4 percent, outperforming the policy benchmark's return of 14.1 percent. 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 ten-year periods.

The total fund return of 17.4 percent exceeded the BNY Mellon Performance and Risk Analytics' and Investment Metrics' Median Public Fund Universe return of 11.2 percent. As of December 31, 2020, this universe was comprised of 116 public pension funds with assets of approximately \$3.1 trillion. The total fund has performed better than this universe over the one-, three-, five-, and ten-year periods.

The total fund returned 17.4 percent, compared to a hypothetical portfolio consisting of 60 percent global equities, based on the MSCI ACWI IMI, and 40 percent fixed income, based on the Bloomberg Barclays U.S. Aggregate Bond Index, which collectively returned 13.8 percent. The total fund has performed better than this hypothetical portfolio over the one-, three-, five- and ten-year periods (10.9 percent versus 8.6 percent, 11.6 percent versus 9.3 percent, and 9.4 percent versus 7.6 percent, for the three-, five-, and ten-year periods, respectively).

Global Equity

As 2020 began, the outlook for equities was positive, as the global economy was humming and the Chinese trade war tensions were subsiding. However, the COVID-19 pandemic suddenly triggered an unparalleled shutdown of economies across the world, with widespread restrictions on social activities and travel. This unprecedented economic environment led to some companies having near zero revenue, with limited visibility on future prospects. The global stock market (defined as the MSCI ACWI IMI) declined by more than 34 percent from mid-February through the third week of March.

The equity markets started a remarkable rebound in late March. The U.S. Federal Reserve (Fed), and other global central banks, made emergency cuts to interest rates. The Fed also propped up the corporate-bond market, action it had shied away from during the financial crisis of the last decade. Politicians in many countries employed fiscal stimulus to defend their economies. In the U.S., Congress passed a \$2.2 trillion stimulus bill, which directed cash payments to households and topped up unemployment benefits.

The global equity market rebound was led by some of the world's largest and most popular stocks, such as Facebook, Amazon, Apple, Netflix, Microsoft, and Alphabet (Google). These U.S. growth companies received an earnings boost from the stay-at-home orders and an expanded work-from-home environment. In addition, near-zero interest rates made the valuations of these growth stocks look reasonable, as the value of a dollar made in the future is nearly equivalent to the value of a dollar today.

In 2020, PERA's Global Equity portfolio returned 22.4 percent, outperforming its custom benchmark's return of 16.6 percent. The Global Equity portfolio has outperformed its custom benchmark over the one-, three-, five-, and ten-year periods.

Fixed Income

2020 was a strong year for fixed income investors as interest rates declined around the world. Economic growth was severely constrained by the COVID-19 pandemic. The U.S. saw its real gross domestic product (GDP) shrink 3.5 percent year-over-year, driven by lower consumer spending, business investment, and exports.

U.S. Treasury rates declined materially across the curve by way of an aggressive Fed response to the pandemic-induced recession. The Fed Funds rate was lowered to 0.0-0.25 percent in March and the Fed launched a vigorous asset purchase program that expanded its balance sheet by \$3.2 trillion over the course of the year. Securities purchased by the Fed were predominantly Treasuries, mortgage-backed securities, and to a lesser extent, corporate bonds. The yield on the 10-year Treasury note began the year at 1.92 percent, bottomed at 0.51 percent and finished the year at 0.91 percent. Record low interest rates were seen across the U.S. Treasury yield curve in 2020.

Spread related fixed income assets experienced heightened volatility in 2020. Option adjusted spread levels for the Bloomberg Barclays U.S. Aggregate Bond Index began the year at 39 bps and spiked to 126 bps in March, a level last seen during the 2008-2009 global financial crisis (GFC). Spreads recovered over the course of the year to 43 bps, aided by central bank support, economic recovery prospects, and robust investor inflows into the asset class. U.S. investment grade corporate bonds outperformed all other investment grade fixed income sectors, returning 9.9 percent.

In 2020, PERA's Fixed Income portfolio returned 8.3 percent, outperforming its custom benchmark's return of 7.5 percent. The Fixed Income portfolio has outperformed its custom benchmark over the one-, three-, five-, and ten-year periods.

Private Equity

Private equity activity remained resilient in 2020 despite the turmoil in March and April. A strong rebound in the

DEFINED BENEFIT PLANS

second half of the year, coupled with a prolific first quarter, led to the third most active year on record. Notably, however, 2020 represented the first dip in year-over-year private equity investment activity since the GFC. The COVID-19 pandemic boosted deal activity in the Technology and Healthcare sectors. Growth equity investment activity also posted a relatively strong 2020; however, mega deals (>\$1 billion value) were the lowest since 2015. Private equity exits rebounded nicely in the second half of the year. Robust Initial Public Offering (IPO) volume as well as the increasing emergence of Special Purpose Acquisition Companies (SPACs), alongside traditional sponsor- and strategic-driven merger and acquisition activity, helped drive strong exit activity.

Fundraising activity dipped in 2020 and fell to its lowest levels since 2015. This dip was likely caused by logistical challenges due to COVID-19 as well as many of the largest, most coveted funds completing fundraising in the prior year.

2020 was a record year by nearly all metrics for the venture industry. Venture investors recorded all-time highs in terms of total deal value, exit value, and capital raised. The Biotech and Pharma sectors saw a record year in terms of deal volume. Even with early-year pandemic concerns, 2020 turned out to be a banner year for venture-backed exit activity. The fourth quarter saw the two largest venture-backed IPOs of 2020 (Airbnb and DoorDash) as well as the largest venture-backed acquisition with Intuit's purchase of Credit Karma.

In 2020, PERA's Private Equity portfolio returned 20.0 percent, compared with its custom benchmark's return of 18.1 percent. The Private Equity portfolio has outperformed its custom benchmark over the one-year period, and has underperformed its custom benchmark over the three-, five-, and ten-year periods. The ultimate goal of private equity is to outperform public equities over the long term. Over the past ten years, the Private Equity Portfolio has outperformed the Global Equity Custom Benchmark by 2.4 percent. The portfolio's since inception net internal rate of return as of December 31, 2020, was 10.7 percent compared to its custom benchmark's since inception internal rate of return of 7.1 percent.

Real Estate

The aggregate number of real estate transactions declined sharply across all property types due to the COVID-19 pandemic. Every sector in the real estate industry was directly and uniquely impacted, but the long-term effects are yet to be seen. Favorable monetary and legislative policy stimulated the industry throughout the year. Due to the lack of transaction activity in 2020, overall capitalization rates remained consistent across all property types and debt financing was widely available. Late cycle dynamics, coupled with uncertainty surrounding the pandemic, pushed investors to be strategic in their investment selection by identifying properties in markets

with strong income and appreciation potential to drive returns.

Fundamentally, industrial property is still in the greatest demand by investors, yet remains difficult to accumulate due to small overall sizes. High buyer demand for industrial property has created portfolio premiums in the marketplace. Multifamily capitalization rates have plateaued for several quarters because of perceived excess supply in certain markets and slight weakening in investor demand. Long-term fundamentals suggest continued rent growth to this sector. Office sector demand remains on hold as corporations navigate short- and long-term work-from-home policies and rethink commitments to traditional office space amid renewed health and safety concerns for their employees. Retail property remains unfavorable as the sector continues to face the headwinds of e-commerce, restrictions on in-store shopping during the pandemic, evolving tenant formats, and uncertainty surrounding consumer preferences and disposable income levels.

In 2020, PERA's Real Estate portfolio returned 5.1 percent, compared with its custom benchmark's return of 0.8 percent. The Real Estate portfolio has outperformed its custom benchmark over the one-, three-, five-, and ten-year periods.

Alternatives

While 2020 was a challenging year for many reasons, Alternatives proved to be a resilient portfolio, incurring only a fraction of the drawdown experienced by most traditional investments. The Alternatives portfolio allocates across three sub-asset classes: opportunistic, real assets, and risk mitigation. Each sub-asset class experienced positive returns in 2020, with risk mitigation being the top performing of the three. Risk mitigation was boosted by pandemic-induced volatility, which caused return dispersions between sectors and geographies—a favorable environment for hedge fund investing. Real assets, such as timber, agriculture, and infrastructure, contributed to portfolio diversification due to the low correlation of their returns with more traditional financial instruments. The opportunistic sub-asset class experienced sharp declines in the first quarter of 2020. Normally, a severe economic contraction creates significant opportunities for distressed and tactical funds to acquire investments at depressed valuations and produce excess returns as markets recover. However, in 2020, the financial markets, supported by swift and necessary government intervention, underwent an extremely compressed buying window compared to past market cycles.

In 2020, PERA's Alternatives portfolio returned 8.0 percent, compared with its custom benchmark's return of 10.0 percent. The Alternatives portfolio has underperformed its custom benchmark over the one-, three-, five-, and ten-year periods.

Investment Section

DEFINED BENEFIT PLANS

(Dollars in Thousands)

PROFILE OF INVESTMENTS IN COLORADO

As of December 31, 2020

	Fair Value
Public Equity¹	\$170,282
Fixed Income¹	14,358
Real Estate	
Portfolio investments ²	148,999
Future commitments to Colorado-based general partnerships or funds	47,265
Total Real Estate Fund	<u>196,264</u>
Private Equity	
Portfolio investments ²	139,225
Future commitments to Colorado-based general partnerships or funds	38,096
Total Private Equity	<u>177,321</u>
Alternatives	
Portfolio investments ²	154,274
Future commitments to Colorado-based general partnerships or funds	95,885
Total Alternatives	<u>250,159</u>
Total	<u>\$808,384</u>

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, 2020

	Shares	Fair Value
Apple Inc.	9,751,331	\$1,293,904
Amazon.com, Inc.	311,229	1,013,651
Microsoft Corp.	4,416,736	982,370
Alphabet Inc.	355,375	622,844
Facebook Inc.	1,724,194	470,981
Visa Inc.	1,436,881	314,289
Costco Wholesale Corp.	673,590	253,795
Accenture Plc.	896,298	234,122
Blackrock Inc.	304,004	219,351
Nike Inc.	1,538,354	217,631

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, 2020

	Par Value	Income Rate	Maturity Date	Fair Value
FNMA Pool #MA4237	\$309,452	2.000%	1/1/51	\$321,484
FHLMC Pool #SD8122	246,931	2.500%	12/1/50	260,529
US Treasury Notes	175,000	2.250%	2/15/27	193,437
US Treasury Notes	188,800	0.875%	11/15/30	188,181
GNMA II Pool #MA6656	168,331	3.000%	5/20/50	176,131
US Treasury Notes	175,000	0.375%	3/31/22	175,554
FNMA Pool #MA4261	150,000	2.000%	2/1/36	156,896
US Treasury Notes	150,000	1.750%	5/15/23	155,707
US Treasury Notes	145,000	2.000%	6/30/24	154,068
US Treasury Notes	150,000	0.250%	10/31/25	149,355

¹ Does not include commingled funds.

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

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

(Dollars in Thousands)

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.

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 new employees of State agencies and departments, most community colleges, and the District Attorney within each Judicial District, and if authorized by the county and the District Attorney, the attorneys within each Judicial District. Pursuant to C.R.S. § 24-51-1501(4), DC Plan eligibility was extended to certain new employees in the Local Government Division

and certain new classified employees at State Colleges and Universities beginning on January 1, 2019 (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.

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.

YEAR END STATISTICS

	Fiduciary Net Position			Number of Accounts			Actively Contributing Participants ¹		
	2020	2019	% Chg	2020	2019	% Chg	2020	2019	% Chg
PERAPlus 401(k) Plan	\$4,167,830	\$3,672,807	13.48%	68,647	68,920	(0.40%)	23,029	24,540	(6.16%)
DC Plan	323,944	265,940	21.81%	7,264	6,939	4.68%	2,628	2,640	(0.45%)
PERAPlus 457 Plan	1,144,314	989,599	15.63%	19,438	18,919	2.74%	9,494	9,355	1.49%

¹ Defined as contributing within the last three months of the year.

Outline of Investment Policies

Objectives

The Board is responsible for approving an appropriate range of investments that addresses the needs of the participants in the Plans. The objectives of selecting the investment options under each Plan are to:

- Provide a wide range of investment opportunities in various asset classes so as to allow for diversification and to cover a wide risk/return spectrum.
- Maximize returns within reasonable and prudent levels of risk.
- Provide returns comparable to returns for similar investment options.
- Control administrative and investment management costs to the plan and participants.

Investment Stewardship

The Plans 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 130.

PERAdvantage Investment Options

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

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.

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 (targeted at 50 percent of the portfolio) and Wells Fargo Asset Management (targeted at 50 percent of the portfolio).

PERAdvantage Real Return Fund

The fund seeks to provide broad exposure to real assets and Treasury Inflation Protected Securities (TIPS) and to produce a return over a full market cycle that exceeds the rate of inflation. This fund invests in U.S. TIPS, Real Estate Investment Trusts, commodities, and global natural resources and infrastructure stocks. The fund is managed by State Street Global Advisors.

PERAdvantage Socially Responsible Investment (SRI) Fund

The fund seeks to invest in a portfolio of developed and emerging market stocks screened on 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 (targeted at 60 percent of the portfolio) and TIAA-CREF (targeted at 40 percent of the portfolio).

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.

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 (targeted at 50 percent of the portfolio) and PERA (targeted at 50 percent of the portfolio).

PERAdvantage International Stock Fund

The fund seeks to provide long-term capital appreciation and dividend income primarily by investing in the common stock of companies located outside the United States. 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 (targeted at 60 percent of the portfolio) and PERA (targeted at 40 percent of the portfolio).

Additional Investment Options

PERAdvantage Target Retirement Date Funds

There are ten funds with varying asset mixes and risk levels based on expected retirement date. Each of the funds is invested in the corresponding BlackRock LifePath® Index Target Retirement Date Fund. These funds use passive management strategies and become more conservative as the retirement date approaches. The funds are managed by BlackRock.

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

2020 Changes

The PERAdvantage 2065 Fund was added to the PERAdvantage Target Retirement Date Fund series.

Loans

Participants in the PERAPlus 401(k) and PERAPlus 457 Plans may access their funds through loans as allowed under plan policy and the Internal Revenue Service. The DC Plan prohibits participant loans.

Administrative Fees

Plan administrative fees pay for recordkeeping, custodial services, consulting, and internal PERA administrative expenses.

The administrative fee consists of a flat \$1.00 per month per participant per plan and an asset-based fee of up to 0.03 percent on each underlying PERAdvantage portfolio. Investments with revenue sharing reduce the asset-based administrative fee by the amount of such revenue sharing.

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

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

SCHEDULE OF INVESTMENT RESULTS

As of December 31, 2020

Fund/Benchmark	2020	3-Year	5-Year
PERAdvantage Capital Preservation Fund	2.2%	2.2%	2.0%
ICE BofAML U.S. 3-Month Treasury Bill Index ¹	0.7%	1.8%	1.8%
PERAdvantage Fixed Income Fund	8.7%	5.7%	4.7%
Bloomberg Barclays U.S. Aggregate Bond Index	7.5%	5.3%	4.4%
PERAdvantage Real Return Fund	6.1%	4.0%	5.9%
Real Return Custom Index ²	5.4%	3.8%	5.9%
PERAdvantage SRI Fund	15.1%	9.7%	9.5%
SRI Custom Index ³	14.8%	9.8%	9.5%
PERAdvantage U.S. Large Cap Stock Fund	21.6%	15.7%	15.9%
MSCI USA Large Cap Index ⁴	20.8%	14.6%	15.5%
PERAdvantage U.S. Small and Mid Cap Stock Fund	14.2%	8.7%	11.6%
MSCI USA SMID Cap Index ⁵	19.4%	11.4%	13.7%
PERAdvantage International Stock Fund	19.5%	7.6%	11.1%
MSCI ACWI ex USA Index	10.7%	4.9%	8.9%
PERAdvantage Income Fund	11.9%	7.7%	7.8%
BlackRock LifePath® Retirement Index	11.8%	7.7%	7.8%
PERAdvantage 2025 Fund	12.2%	8.1%	9.0%
BlackRock LifePath® 2025 Index	12.0%	8.1%	9.0%
PERAdvantage 2030 Fund	12.9%	8.7%	9.8%
BlackRock LifePath® 2030 Index	12.7%	8.6%	9.8%
PERAdvantage 2035 Fund	13.5%	9.2%	10.6%
BlackRock LifePath® 2035 Index	13.4%	9.2%	10.5%
PERAdvantage 2040 Fund	14.1%	9.7%	11.3%
BlackRock LifePath® 2040 Index	14.0%	9.6%	11.2%
PERAdvantage 2045 Fund	14.8%	10.1%	11.8%
BlackRock LifePath® 2045 Index	14.6%	9.9%	11.7%
PERAdvantage 2050 Fund	15.2%	10.2%	12.0%
BlackRock LifePath® 2050 Index	15.1%	10.1%	11.9%
PERAdvantage 2055 Fund	15.3%	10.3%	12.0%
BlackRock LifePath® 2055 Index	15.2%	10.2%	11.9%
PERAdvantage 2060 Fund	15.3%	10.3%	12.0%
BlackRock LifePath® 2060 Index	15.2%	10.2%	11.9%
PERAdvantage 2065 Fund⁶	N/A	N/A	N/A
BlackRock LifePath® 2065 Index ⁶	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. Performance prior to January 1, 2020, was calculated by RVK, Inc. and by Callan LLC thereafter, and begins the first full month after initial funding.

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 percent State Street Real Asset Strategy DC Index/30 percent Bloomberg Barclays U.S. TIPS Index.

³ 60 percent MSCI World ESG Leaders/40 percent Bloomberg Barclays U.S. Gov't Bond through September 2019, 60 percent MSCI ACWI ESG Focus/40 percent Bloomberg Barclays U.S. Gov't Bond through December 2019, 60 percent MSCI ACWI ESG Focus/40 percent Bloomberg Barclays 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.

⁶ Effective March 2020, the PERAdvantage 2065 Fund was added to the PERAdvantage Target Date Fund series.

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS

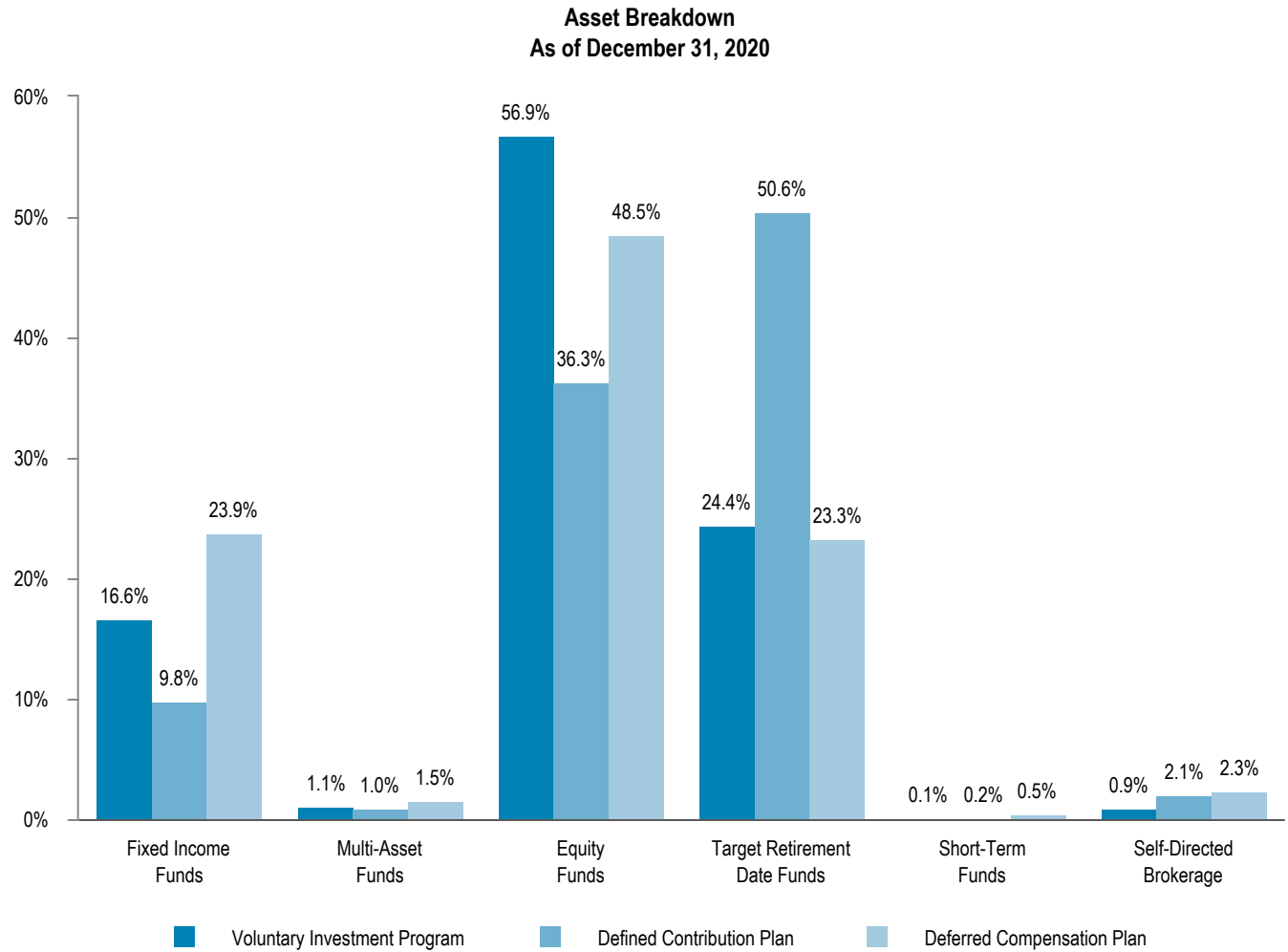
(Dollars in Thousands)

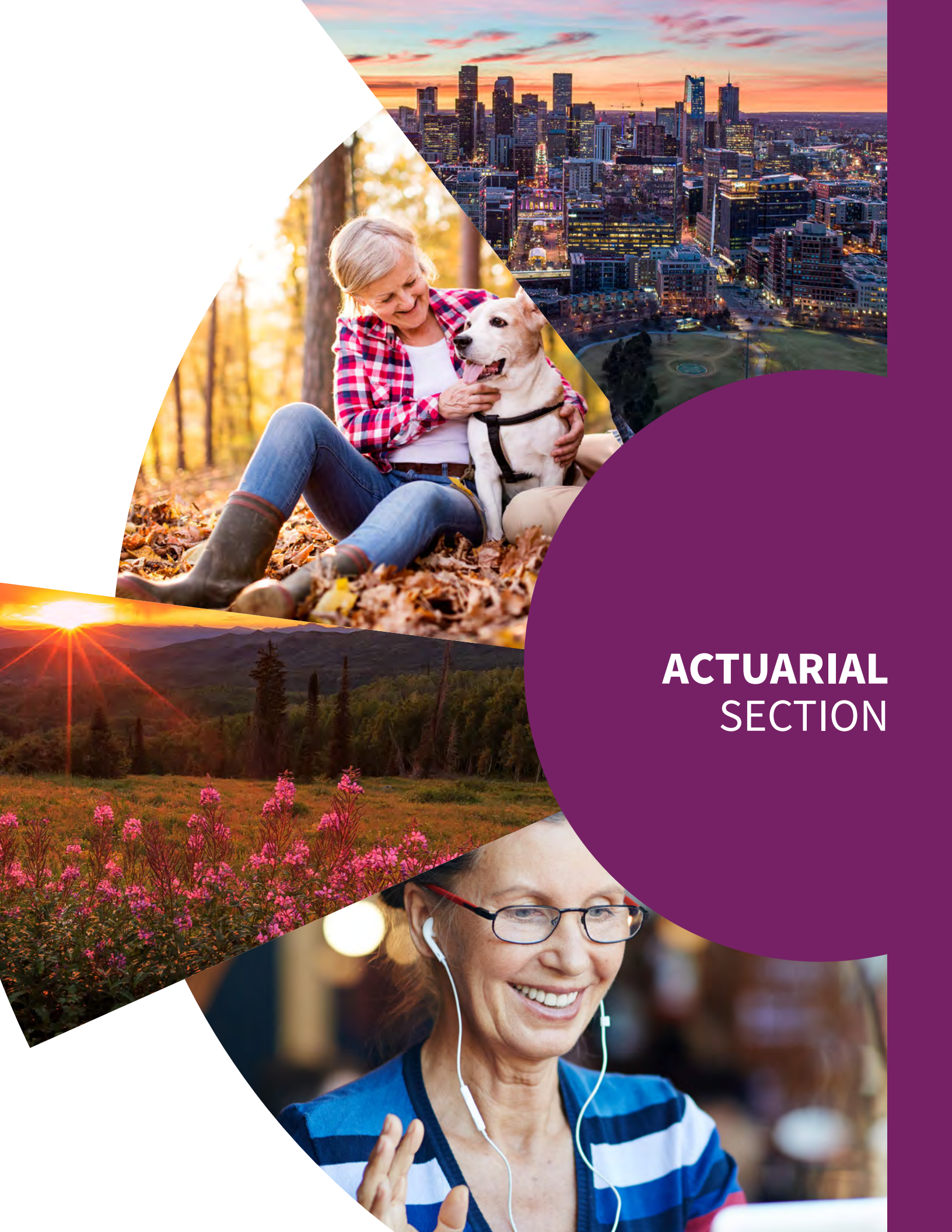
INVESTMENT SUMMARY

Fund	Fair Value as of December 31, 2020		
	Voluntary Investment Program	Defined Contribution Retirement Plan	Deferred Compensation Plan
PERAdvantage Capital Preservation Fund ¹	\$318,768	\$14,570	\$167,051
PERAdvantage Fixed Income Fund	362,339	16,598	101,736
Fixed Income Funds	681,107	31,168	268,787
PERAdvantage Real Return Fund	20,821	1,520	8,788
PERAdvantage SRI Fund	23,102	1,596	8,616
Multi-Asset Funds	43,923	3,116	17,404
PERAdvantage U.S. Large Cap Stock Fund	1,765,007	59,229	297,262
PERAdvantage U.S. Small and Mid Cap Stock Fund	208,928	26,835	129,279
PERAdvantage International Stock Fund	357,194	29,019	120,287
Equity Funds	2,331,129	115,083	546,828
PERAdvantage Income Fund	259,267	14,821	60,145
PERAdvantage 2025 Fund	182,411	12,739	48,383
PERAdvantage 2030 Fund	154,212	15,829	39,984
PERAdvantage 2035 Fund	137,193	15,661	38,718
PERAdvantage 2040 Fund	101,371	20,207	30,025
PERAdvantage 2045 Fund	71,746	31,185	20,370
PERAdvantage 2050 Fund	50,807	26,481	12,640
PERAdvantage 2055 Fund	31,409	18,180	6,275
PERAdvantage 2060 Fund	10,613	5,004	5,502
PERAdvantage 2065 Fund	977	89	609
Target Retirement Date Funds	1,000,006	160,196	262,651
TD Ameritrade Insured Deposit Account	6,017	697	5,495
Short-Term Funds	6,017	697	5,495
TD Ameritrade Self-Directed Brokerage Account	35,974	6,643	26,053
Self-Directed Brokerage	35,974	6,643	26,053
Total	\$4,098,156	\$316,903	\$1,127,218

¹ The Stable Value Fund in the PERAdvantage Capital Preservation Fund is reported at contract value.

DEFINED CONTRIBUTION AND DEFERRED COMPENSATION PLANS





**ACTUARIAL
SECTION**

ACTUARY'S CERTIFICATION LETTER



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June 4, 2021

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, 2020. 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 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
June 4, 2021
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This valuation reflects the following changes from the prior valuation including:

- SB 20-057, enacted June 29, 2020, and effective as of July 1, 2020, extends the "State Trooper" benefit structure to new and existing employees of the Division of Fire Prevention and Control in the Department of Public Safety, classified as firefighter I through firefighter VII, within the State Division membership.
- Recognition of members with the "State Trooper" benefit structure within the Local Government Division beginning January 1, 2020, based on plan provision changes enacted through SB 18-200.
- Changes to actuarial assumptions resulting from the 2020 Experience Analysis report, titled *Public Employees' Retirement Association of Colorado Analysis of Actuarial Experience during the Period January 1, 2016 through December 31, 2019*, dated October 28, 2020 and adopted by the Board at their November 20, 2020 meeting, to be effective for this December 31, 2020 actuarial valuation. The assumption changes are:
 - The inflation assumption was lowered from 2.40% to 2.30%.
 - The payroll growth assumption was updated from 3.50% to 3.00%.
 - The individual salary increase assumptions were updated to include increases to the merit and seniority (and productivity) portion of the individual salary increases based on age plus the revised inflation assumption. The salary increase assumptions for the Judicial Division are now based on service.
 - Separate termination rates were established for School and Denver Public Schools (DPS) Divisions (previously these groups used the same rates). The select termination rates were primarily decreased and updated to be applied on a unisex basis, while the current select period was retained. The ultimate termination rates were also primarily decreased; however, the ultimate termination rates are still sex-distinct.
 - The disability retirement rates were updated as follows:
 - State and Local Government Divisions (other than State Troopers) were combined to develop a new assumption and a uniform decrease of 19% was applied to the current composite disability retirement rates.
 - School, DPS, and Judicial Divisions were combined to develop a new assumption and a uniform decrease of 19% was applied to the current composite disability retirement rates.
 - The active retirement rates were modified at several ages throughout most divisions. Additionally, increased rates were added for the first five years of eligibility for unreduced retirement, for members whose first eligibility for unreduced retirement is between age 55 and 64.
 - The mortality assumptions were updated as follows:
 - Pre-Retirement:

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ACTUARY'S CERTIFICATION LETTER

Board of Trustees
 June 4, 2021
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- » State and Local Government Divisions (other than State Troopers): PubG-2010 General Employee table with generational projection using scale MP-2019.
- » State and Local Government Divisions (State Troopers): PubS-2010 Public Safety Employee table with generational projection using scale MP-2019.
- » School and DPS Divisions: PubT-2010 Teacher Employee table with generational projection using scale MP-2019.
- » Judicial Division: PubG-2010(A) Above-Median General Employee table with generational projection using scale MP-2019.
- Post-Retirement Non-Disabled – Retirees:
 - » State and Local Government Divisions (other than State Troopers): PubG-2010 General Healthy Retiree table with adjustments for credibility and gender. For males, the adjustments are 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. For females, the adjustments are 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.
 - » State and Local Government Divisions (State Troopers): PubS-2010 Public Safety Healthy Retiree table, with generational projection using scale MP-2019.
 - » School and DPS Divisions: PubT-2010 Teacher Healthy Retiree table with adjustments for credibility and gender. For males, the adjustments are 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. For females, the adjustments are 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.
 - » Judicial Division: PubG-2010(A) General Above-Median Healthy Retiree table, with generational projection using scale MP-2019.
- Post-Retirement Non-Disabled – Beneficiaries:
 - » All Divisions: Pub-2010 Contingent Survivor table with adjustments for credibility and gender. For males, the adjustments are 97% of the rates for all ages, with generational projection using scale MP-2019. For females, the adjustments are 105% of the female rates for all ages, with generational projection using scale MP-2019.
- Disabled Retirees:
 - » All Divisions except State Troopers: PubNS-2010 Non-Public Safety Disabled Retiree table using 99% of the rates for all ages with generational projection using scale MP-2019.
 - » State Troopers in the State and Local Government Divisions: PubS-2010 Public Safety Disabled Retiree table with generational projection using scale MP-2019.

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ACTUARY'S CERTIFICATION LETTER

Board of Trustees
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- For future benefit recipients, the mortality rates used to determine factors for money purchase benefits, reduced service benefits for members who were not eligible to retire as of January 1, 2011, and co-beneficiary payment options are based upon the collective experience of all PERA divisions. For members, the rates are based upon the gender-distinct PubG-2010 Juvenile, Employee, and Healthy Retiree mortality tables, projected to 2023 using the MP-2019 projection scale. For surviving spouses, the rates are based upon the gender-distinct PubG-2010 Juvenile, Employee, and Contingent Survivor mortality tables, projected to 2023 using scale MP-2019. Unisex factors are then developed using a male/female blend based upon factor type, benefit tier, and/or benefit structure.
 - All mortality tables described above are benefit-weighted.
 - These changes increased the total actuarial accrued liability by \$3.1 billion and increased the total normal cost by \$172.3 million.
- Changes for the HCTFs resulting from the 2020 Experience Analysis report, titled, *Public Employees' Retirement Association of Colorado – Health Care Trust Fund and DPS Health Care Trust Fund Analysis of Actuarial Experience during the Period January 1, 2016 through December 31, 2019*, dated November 4, 2020 and adopted by the Board at their November 20, 2020 meeting, are effective for this December 31, 2020 actuarial valuation. The HCTFs' assumption changes are applicable as follows:
- Decrement assumptions are consistent with the pension plan Division Trust funds for inflation, payroll growth, salary, termination, disability and retirement.
 - Mortality tables are also based upon consistent pension plan mortality tables, but reflect a headcount weighted base table.
 - Health Care Trust Fund specific assumptions for health care plan participation upon retirement/termination, surviving spouse subsidy eligibility and health plan participation, health care plan option elections, proportions of disabled members electing coverage for those not eligible for the premium-free Medicare subsidy and commencement ages for DPS HCTF terminated vested members.
 - Annual assumption changes for the HCTFs resulting from the updates to retiree health care cost and health care cost trend assumptions are based upon a review of historical experience, Medicare plan option elections, health care cost trend survey data, and available retiree premium increases for 2021 and 2022.
 - These changes reduced the total actuarial accrued liability for the HCTFs by \$21.7 million and decreased the total normal cost by \$0.3 million.

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.

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ACTUARY'S CERTIFICATION LETTER

Board of Trustees
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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, 2020 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 2020, considering entire retired population and those retiring in 2020
 - Required Supplementary Information
 - Schedule of Changes in Net Pension Liability
 - Schedule of the Net Pension Liability
 - Schedule of Employer Contributions
- 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

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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 2022 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 63% based on the Actuarial Value of Assets and 69% based on the Fair Value of Assets. For the HCTFs combined, the funded ratios are 32% on an Actuarial Value of Assets basis and 34% on a Fair Value of Assets basis.

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.

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Shown in the following tables are the resulting amortization periods for each division trust fund as of December 31, 2020, recognizing all current sources of income from employer contributions, member contributions, and 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	33 years
School Division	43 years
Local Government Division	29 years
Judicial Division	13 years
Denver Public Schools (DPS) Division	16 years
HCTF	18 years
DPS HCTF	4 years

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% per year
 - For State and Judicial – 0.25% each 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 22 years when including the anticipated adjustments to take effect July 1, 2022, resulting from the automatic adjustment provisions (AAP). The projected number of years until each trust fund is expected to be 100% funded is shown in the table below:

Trust Fund	Projected Years Until 100% Funded	Projected Years Until 100% Funded Including the Anticipated AAP
State Division	23 years	20 years
School Division	26 years	22 years
Local Government Division	11 years	8 years
Judicial Division	8 years	7 years
DPS Division	8 years	7 years
HCTF	16 years	16 years
DPS HCTF	4 years	4 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, 2020). For the DPS Division, the resulting amortization period assumes a declining PCOP offset rate as described in statute. Prior years' reports sustained the PCOP offset at the current rate for purposes of this calculation.

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).

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The AAP assessment, performed as of December 31, 2020, resulted in a ratio of 93%. Since this ratio is less than 98%, effective July 1, 2022, the employer and member contributions each will increase by 0.50% of salary and the AI cap will reduce by 0.25% (from 1.25% to 1.00%), with no adjustment to the scheduled 2022 \$225 million direct distribution.

Actuarial computations presented in the December 31, 2020 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, 2020 actuarial valuation reports.

We also prepared actuarial computations as of December 31, 2020 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, 2019. 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.

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.

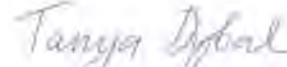
Sincerely yours,



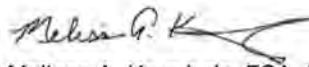
Matthew A. Strom, FSA, MAAA, EA
 Senior Vice President, Actuary



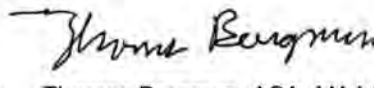
Brad Ramirez, FSA, MAAA, EA
 Vice President & Consulting Actuary



Tatsiana Dybal, FSA, MAAA, EA
 Senior Actuary



Melissa A. Krumholz, FSA, MAAA
 Sr. Consultant, Health Actuary



Thomas Bergman, ASA, MAAA
 Senior 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, 2020, 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, 2020, and included in the actuarial valuation are summarized under “Changes Since Last Actuarial Valuation” on page 164.

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>Annual Report</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)	<p>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.</p> <p>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.</p> <p>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).</p> <p>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.</p>	<p>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</p>
Amortization Method	Defined, Closed, and Layered Periods	<p>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.</p> <p>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.</p> <p>The impact of any changes in plan provisions will be recognized over a closed period relating to the demographics of the group affected and/or the duration of the enhancement provided, not to exceed 25 years. If any future actuarial valuation indicates a division has a negative UAAL, the ADC shall be set equal to the normal cost until such time as the funded ratio equals or exceeds 120 percent. At that time, the ADC shall be equal to the normal cost less an amount equal to 15-year amortization of the portion of the negative UAAL above the 120 percent funded ratio.</p>	<p>Initially Adopted: Mar 20, 2015; Last amended: Nov 16, 2018; Effective: Dec 31, 2018</p>

DIVISION TRUST FUNDS—PENSION

ACTUARIAL ASSUMPTIONS	
Actuarial Assumptions ¹	<p>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.</p> <p>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.</p>
Basis for Actuarial Assumptions Used	<p>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 percent 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.</p>

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
Price Inflation	2.30%	Long-term assumed rate of price inflation represented as a percent per year, compounded annually.	All actuarial assumptions - Last Revised/Reaffirmed: Nov 20, 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.	Effective: Dec 31, 2020
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%	<p>Annually, the Board reviews the rate at which interest is credited to member accounts. On November 20, 2020, the Board voted to continue the annual interest rate at 3.00 percent for interest earned during 2021.</p> <p>Basis: Board Crediting Interest Rate Policy and Board annual discussion at the November 20, 2020, Board meeting.</p>	Annual Review Policy initiated in 2006, slight revisions since. Last Adopted: Nov 20, 2020; Effective: Jan 1, 2021

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	<p>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.</p> <p>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.</p>	<p>Separation from active service assumptions— Last Revised: Nov 20, 2020; Effective: Dec 31, 2020</p>
Rates of Disability	Exhibit C	<p>The 2020 experience analysis indicated, in the aggregate, fewer active members retired with disability benefits than expected. This resulted in a 19 percent uniform reduction of disability rates across all divisions with no rate changes for members under the State Troopers benefit structure.</p>	
Rates of Retirement	Reduced Early Retirement Rates - Exhibit E	<p>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.</p>	
	Unreduced Retirement Rates - Exhibit F	<p>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.</p>	

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	<p>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:</p> <ul style="list-style-type: none"> --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. <p>The tables described above are benefit-weighted.</p>	<p>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</p>
	Healthy Post-Retirement Mortality - Exhibit G	<p>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.</p> <p>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:</p> <ul style="list-style-type: none"> --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 percent of the rates prior to age 80 and 90 percent of the rates for ages 80 and older; for females, the adjustments are 87 percent of the rates prior to age 80 and 107 percent 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 percent of the rates prior to age 80 and 94 percent of the rates for ages 80 and older; for females, the adjustments are 83 percent of the rates prior to age 80 and 106 percent of the rates for ages 80 and older; --Judicial Division: Unadjusted PubG-2010(A) Above-Median Healthy Retiree Table for males and females. <p>The tables described above are benefit-weighted.</p>	
	Beneficiary Post-Retirement Mortality - Exhibit G	<p>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 percent of the rates for all ages; for females, the adjustments are 105 percent of the rates for all ages.</p>	
	Disabled Post-Retirement Mortality - Exhibit G	<p>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:</p> <ul style="list-style-type: none"> --All Divisions (Other than State Troopers): PubNS-2010 Disabled Retiree Table using 99 percent of the rates for all ages; --State and Local Government Divisions (State Troopers): Unadjusted PubS-2010 Disabled Retiree Table for males and females. <p>The tables described above are benefit-weighted.</p>	

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 percent of the vested members who terminate will elect to withdraw their accounts while the remaining 65 percent will elect to leave their accounts in the plan to be eligible for a benefit at 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 percent 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 percent 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 percent 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 with PERA Benefit Structure & Members with DPS Benefit Structure)	1.25%	The AI cap that may be awarded by the Board in 2020 and thereafter is assumed to be 1.25 percent 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 AAP assessment.	Effective: Dec 31, 2019
AI Rate Cap (Membership After Dec 31, 2006 with 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 percent, 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 policy 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 percent.	Aon	Nov 15, 2019	2022 - 2024
Actuarial Audit	<p>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.</p> <p>Within their letter detailing the transition of actuarial services they state:</p> <p>"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."</p>	Segal	Jun 13, 2019	2022
Experience Analysis	<p>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 percent was supported by the analysis provided in the 2020 report.</p> <p>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.</p>	Segal	Reports Delivered: Oct 28, 2020 & Nov 4, 2020; Revised Assumptions Adopted: Nov 20, 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, 2020, actuarial valuation, since the last actuarial valuation as of December 31, 2019.
Changes in Actuarial Assumptions	<p>The following changes in economic and demographic actuarial assumptions are incorporated in the December 31, 2020, actuarial valuation, since the last actuarial valuation as of December 31, 2019.</p> <ul style="list-style-type: none"> • Revised economic assumptions <ul style="list-style-type: none"> • Price inflation assumption was lowered from 2.40 percent to 2.30 percent. • Wage inflation assumption was lowered from 3.50 percent to 3.00 percent. • Salary scale assumptions were altered to align with the revised economic assumptions and to better reflect actual experience. • Rates of termination / withdrawal, retirement, and disability were revised to more closely reflect actual experience. • Pre-retirement, post-retirement, and disability mortality assumptions for active and retired lives were changed from static mortality tables represented by the RP-2014 Mortality tables, with adjustments for credibility and gender, to generational mortality tables represented by various tables presented in the Pub-2010 Public Retirement Plans Mortality Tables Report, generationally projected using the MP-2019 projection scale, are benefit-weighted and adjusted for credibility and gender. In addition, a separate beneficiary mortality table was adopted, also generationally projected using the MP-2019 projection scale.
Changes in Plan Provisions	<p>The following plan provision change is incorporated in the December 31, 2020, actuarial valuation since the last actuarial valuation of December 31, 2019.</p> <ul style="list-style-type: none"> • Pursuant to SB 20-057, enacted June 29, 2020, and effective as of July 1, 2020, the “State Troopers” benefit structure is provided for 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, within the State Division membership. <p>The term “State Troopers” for PERA purposes has an expanded definition under Colorado law and includes several categories of employees, as follows: (1) employees of the Colorado State Patrol or Colorado Bureau of Investigation 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, within the State Division membership; (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. The “State Troopers” classification entails a separate contribution rate for both employers and members, and different retirement eligibilities from those applicable to the general employees of employers in the State and Local Government Divisions. Given these differences, application of a separate set of actuarial assumptions is necessary with respect to PERA members designated as “State Troopers.”</p>

SIGNIFICANT EVENTS
There were no significant events during 2020.

DIFFERENCES IN ACTUARIAL VALUATION METHODS AND ASSUMPTIONS
<ul style="list-style-type: none"> • The actuarial valuation for funding purposes was performed as of December 31, 2020. The actuarial valuation for accounting and financial reporting purposes was performed as of December 31, 2019, and the total pension liability (TPL) was rolled forward to the measurement date as of December 31, 2020. • Census data used for the actuarial valuation for funding purposes reflects membership data as of December 31, 2020, and the census data used for the actuarial valuation for accounting and financial reporting purposes reflects membership data as of December 31, 2019. Therefore, all summaries and schedules, regarding actuarial valuation results for funding purposes, shown in the Actuarial Section, reflect census data as of December 31, 2020. • 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 of the PERA benefit structure hired on or after January 1, 2007, in the determination of the AAL. Therefore, the ADC established by the funding valuation does not consider future increases for this member group and the assets attributable to the AIR are not included in the actuarial value of assets. A separate annual actuarial valuation is performed on the AIR to determine the applicable AI payable to eligible members after benefit commencement. AIR plan provisions are deemed substantively automatic, ad hoc cost-of-living adjustments. Liabilities associated with the AIR statutorily can never exceed available assets. As a result, the actuarial valuation for accounting and financial reporting purposes includes the balance of the AIR both in the plan assets, at fair value, and in the TPL of the applicable division.

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	Total Increase (Next Year)				
	State ¹	School ²	Local Government ¹	State Troopers ³	DPS ²	All Divisions / Groups	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 with a State Troopers benefit structure.

² Rates shown apply to the division indicated regardless of benefit structure.

³ Rates shown are for members with a 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 with a 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 with a 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 with a 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 with a 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

Rates of Pre-Retirement Mortality—Percent of Active Members Deceasing Within the Next Year

Sample Ages	State and Local Government Divisions ¹		School and DPS Divisions ²		State Troopers ³		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	0.033%	0.011%	0.019%	0.011%	0.044%	0.025%	0.029%	0.010%
30	0.050%	0.020%	0.030%	0.019%	0.057%	0.036%	0.043%	0.017%
35	0.067%	0.031%	0.043%	0.027%	0.067%	0.048%	0.058%	0.028%
40	0.082%	0.042%	0.052%	0.036%	0.073%	0.057%	0.071%	0.038%
45	0.100%	0.055%	0.068%	0.047%	0.083%	0.066%	0.086%	0.050%
50	0.139%	0.080%	0.104%	0.070%	0.112%	0.087%	0.121%	0.073%
55	0.214%	0.129%	0.168%	0.112%	0.171%	0.129%	0.186%	0.118%
60	0.333%	0.198%	0.275%	0.172%	0.275%	0.179%	0.288%	0.180%
65	0.473%	0.286%	0.440%	0.261%	0.414%	0.221%	0.409%	0.261%
70	0.658%	0.443%	0.663%	0.439%	0.717%	0.411%	0.570%	0.403%

¹ Not applicable to members with a State Troopers benefit structure.

² Rates shown are for all members in the School and DPS Divisions, regardless of benefit structure.

³ Rates shown are for members with a 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

Retirement Ages	Rates of Reduced Retirement—Percent of Members Eligible for Reduced Retirement Benefits Retiring Within the Next Year									
	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 with a 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 with a 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 with a 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 with a 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**

(In Actual Dollars)

RATES OF POST-RETIREMENT MORTALITY¹ AND SINGLE LIFE RETIREMENT VALUES

Sample Attained Ages	Percent of Retirees Deceasing Within the Next Year		Present Value of \$1 Monthly for Life		Present Value of \$1 Monthly Increasing 1.25% Annually		Future Life Expectancy in Years	
	Male	Female	Male	Female	Male	Female	Male	Female
State and Local Government Divisions								
50	0.262%	0.186%	\$149.62	\$153.74	\$171.15	\$176.72	34.17	36.55
55	0.396%	0.261%	142.90	147.99	161.86	168.45	29.66	31.91
60	0.603%	0.356%	134.59	140.46	150.76	158.10	25.31	27.35
65	0.867%	0.516%	124.29	130.54	137.52	145.08	21.12	22.86
70	1.342%	0.837%	111.48	117.74	121.73	129.05	17.10	18.51
75	2.288%	1.497%	96.37	101.89	103.79	110.04	13.36	14.37
80	3.951%	3.388%	79.95	83.06	84.93	88.38	10.07	10.57
85	7.220%	6.363%	63.13	65.24	66.20	68.47	7.29	7.56
State Troopers								
45	0.124%	0.086%	\$155.42	\$157.18	\$179.16	\$181.78	38.23	40.16
50	0.179%	0.143%	149.76	151.92	171.02	174.15	33.49	35.36
55	0.299%	0.271%	142.33	145.13	160.82	164.72	28.83	30.67
60	0.530%	0.475%	132.96	136.74	148.49	153.48	24.33	26.16
65	0.890%	0.745%	121.57	126.43	134.04	140.18	20.06	21.84
70	1.467%	1.203%	107.85	113.73	117.30	124.45	16.04	17.73
75	2.576%	2.097%	91.89	98.81	98.53	106.65	12.35	13.92
80	4.692%	3.733%	74.66	82.49	78.96	87.82	9.12	10.55
85	8.530%	6.557%	57.84	65.96	60.39	69.31	6.49	7.71
School and DPS Divisions								
55	0.244%	0.168%	\$145.95	\$150.99	\$165.73	\$172.45	30.92	33.51
60	0.417%	0.254%	137.58	143.93	154.49	162.58	26.35	28.83
65	0.670%	0.358%	127.14	134.57	141.00	150.10	21.96	24.21
70	1.121%	0.579%	114.20	122.14	124.97	134.33	17.78	19.68
75	2.073%	1.108%	99.06	106.31	106.90	115.17	13.91	15.33
80	3.324%	2.815%	83.16	87.22	88.48	93.07	10.57	11.31
85	6.351%	5.472%	65.17	68.96	68.39	72.55	7.55	8.11
Judicial Division								
50	0.250%	0.204%	\$149.93	\$153.25	\$171.52	\$176.15	34.20	36.56
55	0.379%	0.289%	143.23	147.47	162.23	167.89	29.67	31.96
60	0.575%	0.395%	134.89	139.99	151.07	157.64	25.29	27.45
65	0.829%	0.575%	124.48	130.24	137.69	144.87	21.06	23.02
70	1.292%	0.934%	111.46	117.84	121.63	129.34	16.99	18.75
75	2.221%	1.670%	95.97	102.87	103.26	111.32	13.20	14.73
80	4.038%	3.072%	78.85	85.92	83.66	91.65	9.84	11.11
85	7.437%	5.768%	61.75	68.15	64.65	71.69	7.05	8.02

¹ Rates are shown for healthy benefit recipients. Separate disability mortality tables are used for disabled retirees.

DIVISION TRUST FUNDS—PENSION

**Exhibit G: Post-Retirement Mortality Assumptions and Single Life Retirement Values—
All Divisions and Benefit Structures (Continued)**

(In Actual Dollars)

RATES OF POST-RETIREMENT MORTALITY¹ AND SINGLE LIFE RETIREMENT VALUES

Sample Attained Ages	Percent of Retirees Deceasing Within the Next Year		Present Value of \$1 Monthly for Life		Present Value of \$1 Monthly Increasing 1.25% Annually		Future Life Expectancy in Years	
	Male	Female	Male	Female	Male	Female	Male	Female
Beneficiaries (All Divisions)								
40	0.663%	0.319%	\$151.21	\$157.38	\$174.68	\$182.99	39.10	43.30
45	0.541%	0.271%	148.00	154.03	169.74	177.82	35.24	38.91
50	0.635%	0.323%	142.80	149.09	162.42	170.68	31.17	34.44
55	0.782%	0.491%	136.26	142.79	153.52	161.94	27.17	30.05
60	1.023%	0.696%	128.13	135.26	142.84	151.79	23.27	25.85
65	1.357%	0.913%	118.16	125.91	130.20	139.63	19.49	21.78
70	1.932%	1.286%	105.98	114.01	115.32	124.80	15.87	17.80
75	2.990%	2.064%	91.89	99.54	98.69	107.47	12.50	14.04
80	4.781%	3.535%	76.56	83.13	81.16	88.50	9.50	10.62
85	7.919%	6.356%	60.92	65.91	63.77	69.23	6.95	7.68

¹ Rates are shown for healthy benefit recipients. Separate disability mortality tables are used for disabled retirees.

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, 2020, actuarial valuation for the period ending December 31, 2022.

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, 2020, shows that plan assets fully cover liability A. In addition, the remainder of plan assets covers 100 percent 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 and DPS Divisions and a significant portion of these liabilities for the remaining three 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							
12/31/2011	\$2,629,640	\$13,710,393	\$4,486,510	\$12,010,045	100.0%	68.4%	0.0%
12/31/2012	2,668,942	14,191,469	4,331,084	12,538,675	100.0%	69.5%	0.0%
12/31/2013	2,675,469	15,296,368	4,871,888	13,129,460	100.0%	68.3%	0.0%
12/31/2014	2,688,514	15,846,200	4,873,607	13,523,488	100.0%	68.4%	0.0%
12/31/2015	2,685,014	16,470,370	4,930,287	13,882,820	100.0%	68.0%	0.0%
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%
School Division							
12/31/2011	\$3,783,336	\$20,666,021	\$7,536,842	\$19,266,110	100.0%	74.9%	0.0%
12/31/2012	3,823,348	21,466,078	7,329,607	20,266,574	100.0%	76.6%	0.0%
12/31/2013	3,881,145	23,301,641	8,254,526	21,369,380	100.0%	75.1%	0.0%
12/31/2014	3,915,705	24,247,868	8,222,959	22,143,356	100.0%	75.2%	0.0%
12/31/2015	4,003,251	25,133,168	8,540,734	22,871,661	100.0%	75.1%	0.0%
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%
Local Government Division							
12/31/2011	\$666,794	\$2,330,543	\$1,162,678	\$2,882,691	100.0%	95.1%	0.0%
12/31/2012	528,029	2,750,956	878,636	3,098,721	100.0%	93.4%	0.0%
12/31/2013	533,003	2,991,177	978,102	3,291,298	100.0%	92.2%	0.0%
12/31/2014	534,695	3,114,436	961,836	3,629,400	100.0%	99.4%	0.0%
12/31/2015	533,262	3,275,093	972,343	3,777,161	100.0%	99.0%	0.0%
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%

Please see page 173 for footnote references.

DIVISION TRUST FUNDS—PENSION

SOLVENCY TEST (CONTINUED)

(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)
Judicial Division							
12/31/2011	\$54,688	\$186,420	\$78,329	\$221,515	100.0%	89.5%	0.0%
12/31/2012	57,762	193,774	75,361	238,807	100.0%	93.4%	0.0%
12/31/2013	59,348	208,236	84,014	256,800	100.0%	94.8%	0.0%
12/31/2014	60,973	214,541	95,739	270,866	100.0%	97.8%	0.0%
12/31/2015	60,118	232,303	109,545	286,891	100.0%	97.6%	0.0%
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%
DPS Division							
12/31/2011	\$333,550	\$2,435,504	\$673,473	\$2,804,706	100.0%	100.0%	5.3%
12/31/2012	348,739	2,479,706	667,104	2,936,695	100.0%	100.0%	16.2%
12/31/2013	364,126	2,672,260	749,486	3,075,895	100.0%	100.0%	5.3%
12/31/2014	379,240	2,665,352	771,501	3,151,456	100.0%	100.0%	13.9%
12/31/2015	394,306	2,732,879	778,055	3,207,327	100.0%	100.0%	10.3%
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%
All Division Trust Funds²							
12/31/2011	\$7,468,008	\$39,328,881	\$13,937,832	\$37,185,067	100.0%	75.6%	0.0%
12/31/2012	7,426,820	41,081,983	13,281,792	39,079,472	100.0%	77.0%	0.0%
12/31/2013	7,513,091	44,469,682	14,938,016	41,122,833	100.0%	75.6%	0.0%
12/31/2014	7,579,127	46,088,397	14,925,642	42,718,566	100.0%	76.2%	0.0%
12/31/2015	7,675,951	47,843,813	15,330,964	44,025,860	100.0%	76.0%	0.0%
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%

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 2019, the ratio of PERA’s valuation assets to accrued liabilities was 61.9 percent and increased to 62.8 percent by the end of 2020.

Following are the most impactful factors resulting in higher liabilities (or losses) to PERA during 2020:

- Adoption of revised economic and demographic actuarial assumptions, including generational mortality.
- Lower investment returns than assumed in 2018.
- Of the members who terminated PERA-covered employment, fewer withdrew their accounts than expected.
- Actual payroll contributions were less than the determined ADC.
- New PERA members had some service resulting in accrued liabilities.

Following are the most impactful factors resulting in lower liabilities (or gains) during 2020:

- Higher investment return than assumed in 2017, 2019 and 2020.
- 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 percent to 1.25 percent, 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.

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 % of Covered Payroll (D)/(F)
State Division						
12/31/2011	\$12,010,045	\$20,826,543	\$8,816,498	57.7%	\$2,393,791	368.3%
12/31/2012	12,538,675	21,191,495	8,652,820	59.2%	2,384,934	362.8%
12/31/2013	13,129,460	22,843,725	9,714,265	57.5%	2,474,965	392.5%
12/31/2014	13,523,488	23,408,321	9,884,833	57.8%	2,564,670	385.4%
12/31/2015	13,882,820	24,085,671	10,202,851	57.6%	2,641,867	386.2%
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%
School Division						
12/31/2011	\$19,266,110	\$31,986,199	\$12,720,089	60.2%	\$3,821,603	332.8%
12/31/2012	20,266,574	32,619,033	12,352,459	62.1%	3,819,066	323.4%
12/31/2013	21,369,380	35,437,312	14,067,932	60.3%	3,938,650	357.2%
12/31/2014	22,143,356	36,386,532	14,243,176	60.9%	4,063,236	350.5%
12/31/2015	22,871,661	37,677,153	14,805,492	60.7%	4,235,290	349.6%
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%
Local Government Division						
12/31/2011	\$2,882,691	\$4,160,015	\$1,277,324	69.3%	\$718,169	177.9%
12/31/2012	3,098,721	4,157,621	1,058,900	74.5%	523,668	202.2%
12/31/2013	3,291,298	4,502,282	1,210,984	73.1%	529,003	228.9%
12/31/2014	3,629,400	4,610,967	981,567	78.7%	540,468	181.6%
12/31/2015	3,777,161	4,780,698	1,003,537	79.0%	561,518	178.7%
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%
Judicial Division						
12/31/2011	\$221,515	\$319,437	\$97,922	69.3%	\$39,033	250.9%
12/31/2012	238,807	326,897	88,090	73.1%	39,045	225.6%
12/31/2013	256,800	351,598	94,798	73.0%	39,942	237.3%
12/31/2014	270,866	371,253	100,387	73.0%	42,977	233.6%
12/31/2015	286,891	401,966	115,075	71.4%	46,870	245.5%
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%

Please see page 176 for footnote references.

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF FUNDING PROGRESS (CONTINUED)

(Dollars in Thousands)

(A) Valuation Date	(B) Actuarial Value of Plan Assets	(C) Actuarial Accrued Liabilities	(D) Unfunded Actuarial Accrued Liabilities (UAAL) (C) – (B)	(E) Funded Ratio (B)/(C)	(F) Annual Covered Payroll	(G) UAAL As a % of Covered Payroll (D)/(F)
DPS Division						
12/31/2011	\$2,804,706	\$3,442,527	\$637,821	81.5%	\$491,646	129.7%
12/31/2012	2,936,695	3,495,549	558,854	84.0%	510,872	109.4%
12/31/2013	3,075,895	3,785,872	709,977	81.2%	547,660	129.6%
12/31/2014	3,151,456	3,816,093	664,637	82.6%	584,319	113.7%
12/31/2015	3,207,327	3,905,240	697,913	82.1%	621,115	112.4%
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%
All Division Trust Funds¹						
12/31/2011	\$37,185,067	\$60,734,721	\$23,549,654	61.2%	\$7,464,242	315.5%
12/31/2012	39,079,472	61,790,595	22,711,123	63.2%	7,277,585	312.1%
12/31/2013	41,122,833	66,920,789	25,797,956	61.5%	7,530,220	342.6%
12/31/2014	42,718,566	68,593,166	25,874,600	62.3%	7,795,670	331.9%
12/31/2015	44,025,860	70,850,728	26,824,868	62.1%	8,106,660	330.9%
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%

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 105-107 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	\$26.1	\$47.8	\$5.8	\$3.4	\$7.9
Disability retirements ²	0.5	2.9	0.1	(0.1)	0.8
Deaths ³	(77.7)	(70.6)	(5.6)	(1.3)	(9.1)
Withdrawals ⁴	77.2	198.1	17.7	0.1	3.4
New members ⁵	63.6	70.1	14.1	4.0	24.7
Pay increases ⁶	(13.9)	(45.3)	(2.1)	(2.6)	39.1
Administrative expenses and other ⁷	(55.9)	17.5	(19.3)	(0.6)	(20.4)
Subtotal	19.9	220.5	10.7	2.9	46.4
From differences between assumed and actual experience on assets	(848.1)	(1,447.3)	(244.2)	(19.2)	(195.5)
From changes in plan assumptions and methods	947.9	1,839.3	202.3	0.9	117.5
From changes in plan provisions	—	—	—	—	—
Total actuarial (gains)/losses on 2020 activities	\$119.7	\$612.5	(\$31.2)	(\$15.4)	(\$31.6)
Total actuarial (gains)/losses on 2019 activities	(\$609.7)	(\$810.8)	(\$160.2)	(\$6.2)	(\$171.9)

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 2016 to 2020.

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					2016 - 2020
	2016	2017	2018	2019	2020	
UAAL beginning of year	\$26,824.9	\$32,241.8	\$28,777.1	\$30,999.3	\$29,809.8	\$26,824.9
Experience (gains) and losses						
Age and service retirements	139.0	211.4	177.5	95.4	91.0	714.3
Disability retirements	22.3	22.9	13.3	9.5	4.2	72.2
Deaths	79.9	(21.0)	118.0	4.7	(164.3)	17.3
Withdrawal from employment	205.9	251.2	(5.2)	150.1	296.5	898.5
New members	213.0	238.3	231.4	213.4	176.5	1,072.6
Pay increases	(275.0)	(214.3)	162.0	391.6	(24.8)	39.5
Investment (income) loss	236.3	(175.5)	580.4	(1,176.7)	(2,754.3)	(3,289.8) ¹
Other	68.2	61.2	511.0 ²	47.5	(78.7)	609.2
Experience (gain) loss during year	689.6	374.2	1,788.4	(264.5)	(2,453.9)	133.8
Non-recurring items						
Change in plan assumptions and methods	3,947.3 ³	—	—	—	3,107.9⁴	7,055.2
Change in plan provisions	—	(4,832.3) ⁵	(5.6)	(1,494.3) ⁶	—	(6,332.2)
Non-recurring items	3,947.3	(4,832.3)	(5.6)	(1,494.3)	3,107.9	723.0
Contribution deficiency	249.6	195.2	450.0	132.9	280.2	1,307.9 ⁷
Expected change in UAAL	530.4	798.2	(10.6)	436.4	232.6	1,987.0 ⁸
Total (gain)/loss for year	5,416.9	(3,464.7)	2,222.2	(1,189.5)	1,166.8	4,151.7
UAAL end of year	\$32,241.8	\$28,777.1	\$30,999.3	\$29,809.8	\$30,976.6	\$30,976.6

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 \$3.3 billion cumulative gain resulting from favorable investment experience for 2017, 2019 and 2020.
- 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 \$3.9 billion loss, in 2016, primarily due to the reduction of the long-term expected investment rate of return assumption from 7.50 percent to 7.25 percent and the adoption of revised mortality tables to recognize extended member longevity.
- ⁴ \$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.
- ⁵ \$4.8 billion gain, in 2017, primarily due to the changes in pension plan provisions enacted pursuant to SB 18-200.
- ⁶ \$1.5 billion gain, in 2019, due to the reduction in the AI cap from 1.50 percent to 1.25 percent, effective July 1, 2020, as required by the 2018 AAP assessment.
- ⁷ \$1.3 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, 2022, are derived from the results of the December 31, 2020, 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 2022 FISCAL YEAR

	Expressed as a percentage of Covered Payroll				
	State Division	School Division	Local Government Division	Judicial Division	DPS Division
Contributions					
Service retirement benefits	8.35%	10.35%	8.43%	14.98%	8.87%
Disability retirement benefits	0.33%	0.22%	0.31%	0.39%	0.21%
Survivor benefits	0.26%	0.20%	0.27%	0.50%	0.18%
Termination withdrawals	2.77%	2.83%	2.62%	1.01%	3.28%
Refunds	0.86%	0.70%	0.84%	0.07% ¹	0.39%
Administrative expense load	0.40%	0.40%	0.40%	0.40%	0.40%
Total normal cost	12.97%	14.70%	12.87%	17.35%	13.33%
Less member contributions	(10.58%) ^{2,3}	(10.50%) ²	(8.50%)	(12.85%) ^{2,3,4}	(10.50%) ²
Employer normal cost	2.39%	4.20%	4.37%	4.50%	2.83%
Percentage available to amortize unfunded actuarial accrued liabilities	16.95%	15.13%	8.15%	15.22%	4.86%
Amortization period ⁵	33 Years	43 Years	29 Years	13 Years	16 Years
Total employer contribution rate for actuarially funded benefits	11.00% ³	10.90%	10.50%	12.06% ^{3,4}	10.90%
Amortization Equalization Disbursement	5.00%	4.50%	2.20%	4.60%	4.50%
Supplemental Amortization Equalization Disbursement	5.00%	5.50%	1.50%	4.60%	5.50%
Less Health Care Trust Fund	(1.02%)	(1.02%)	(1.02%)	(1.02%)	(1.02%)
Less Annual Increase Reserve	(0.64%)	(0.55%)	(0.66%)	(0.52%)	(0.69%)
Less PCOP credit	N/A	N/A	N/A	N/A	(11.50%) ⁶
Employer contribution rate for defined benefit plan	19.34%	19.33%	12.52%	19.72%	7.69%
Direct distribution⁷	2.31%	2.37%	N/A	2.33%	2.28%
DC Supplement rates⁸	0.10%	N/A	0.03%	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 percent of the phased-in amount of 0.50 percent additional member contribution effective July 1, 2021.

³ Weighted average of more than one statutory rate.

⁴ HB 20-1394, requires that 5.0 percent of the Judicial Division base employer contribution rate be paid by the members of the Judicial Division for the State's 2020-21 and the 2021-22 fiscal years. This contribution rate modification does not apply to judges employed by the Denver County Court.

⁵ The amortization periods shown consider ongoing employer, member, AED, and SAED contributions including any future increases, and the direct distribution, where and when applicable.

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 and are shown as a percentage of 2022 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, 2022, 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 percent, a decrease in the AED and SAED is mandated and if it subsequently falls below a funded status of 90 percent, an increase is mandated. For the Local Government and Judicial Divisions, if the funded ratio reaches 90 percent and subsequently falls below 90 percent, an increase in the AED and SAED is mandated. Increases cannot exceed the following maximum allowable limitations.

FUTURE AED AND SAED RATES

Trust Fund	2021 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	4.20%	4.20%	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 4.20 percent of PERA-includable salary for 2021 and requires the AED payment to increase by 0.40 percent at the start of each of the following two calendar years through 2023 at which time the AED payment will be 5.00 percent of PERA-includable salary.

² C.R.S. § 24-51-411(7.5) increased the SAED payment to 4.20 percent of PERA-includable salary for 2021 and requires the SAED payment to increase by 0.40 percent at the start of each of the following two calendar years through 2023 at which time the SAED payment will be 5.00 percent 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 105-107, in the RSI in the Financial Section.

DIVISION TRUST FUNDS—PENSION

Annual Actuarial Valuation Statistics

As of December 31, 2020, the Funded Ratio, the UAAL, the ADC for 2022 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	59.1%	\$11,077,518	23.45%	33 Years
School Division	60.6%	17,950,987	24.54%	43 Years
Local Government Division	82.4%	995,872	12.72%	29 Years
Judicial Division	78.7%	101,768	15.56%	13 Years
DPS Division	81.2%	850,474	9.25%	16 Years
All Division Trust Funds³		\$30,976,619		

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 2022 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	23.45%	23.52%	23.65%	23.87%
School Division	24.54%	24.70%	24.95%	25.40%
Local Government Division	12.72%	12.73%	12.76%	12.82%
Judicial Division	15.56%	15.37%	15.09%	14.62%
DPS Division	9.25%	9.23%	9.19%	9.14%

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.

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 percent to 119 percent), no adjustments are made. If the resulting ratio does not achieve a minimum benchmark (is less than 98 percent) or exceeds a maximum benchmark (is 120 percent 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, 2022.

Elements of Test Ratio (Shown as a percentage of pay)	2022 Input Percentages	Resulting Ratio	Adjustments, if Necessary, Determined by the Board's Actuary (Effective July 1, 2022)	Revised Resulting Ratio
2022 Blended Total Contribution Amount ^{1,2}	31.43%		0.50% increase to Member Contribution Rate	
(Divided by):	(Divided by):	(Equals)	0.50% increase to Employer Contribution Rate	
2022 Blended Total Required Contribution ^{1,2}	33.79%	93.02% ³	0.25% decrease to AI cap ⁴	97%
			No Change to Direct Distribution	

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 179-181.

³ Calculation considers HB 20-1394, which had negligible impact.

⁴ Administrative actuarial factors applying the 1.00 percent AI cap will become effective as of July 1, 2021.

Below is a summary of the AAP guidelines. An automatic adjustment will occur under the following conditions:

- If the resulting ratio is less than 98 percent, there will be adjustments of equitable impact, increasing the employer contribution rate, increasing the member contribution rate, decreasing the AI cap, and increasing the direct distribution (if permitted).
- If the resulting ratio is greater than or equal to 120 percent, there will be adjustments of equitable impact, decreasing the employer contribution rate, decreasing the member contribution rate, 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:

- First adjustment cannot occur prior to July 1, 2020.
- Adjustment (increase or decrease) to each of the employer contribution rates and the member contribution rates cannot exceed 0.50 percent in any one year, and
 - Cannot exceed 2.00 percent 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 percent in any one year, and
 - Cannot exceed a 2.00 percent AI cap maximum.
 - Cannot fall below a 0.50 percent 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.

DIVISION TRUST FUNDS—PENSION

- Adjustments that are required because funding is below the 98 percent threshold will be made to an extent that will bring the revised ratio to 103 percent following the corrective efforts but in no event can the adjustments in one year be greater than the limit described above.
- Adjustments that are required because funding has reached the 120 percent threshold must not cause the ratio to fall below 103 percent.

Additional information on the AAP can be found in C.R.S. § 24-51-413.

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 ¹	July 1, 2022

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, 2020, was \$52,341,915 compared to a fair value of assets of \$57,638,769, and to the AAL of \$83,318,534. 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	2016	2017	2018	2019	2020
State Division	54.6%	57.5%	56.1%	58.0%	59.1%
School Division	56.3%	59.4%	57.9%	59.9%	60.6%
Local Government Division	74.4%	79.5%	77.7%	80.7%	82.4%
Judicial Division	66.6%	72.4%	70.6%	74.0%	78.7%
DPS Division	75.9%	79.7%	76.8%	80.0%	81.2%
All Division Trust Funds¹	58.1%	61.3%	59.8%	61.9%	62.8%

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 percent on a combined Division Trust Fund basis. The funded ratios listed above give an indication of progress made toward achieving the stated objective. A larger funded ratio indicates that a plan is better funded. As an example, for every \$1.00 of the actuarially determined benefits earned for the School Division Trust Fund as of December 31, 2020, approximately \$0.61 of assets are available for payment based on the actuarial value of assets. These benefits earned will be payable over the life span of members after their retirement and therefore, it is not imperative that the AAL equal the actuarial value of assets at any given moment in time.

DIVISION TRUST FUNDS—PENSION

At December 31, 2019, and December 31, 2020, 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	
	12/31/2019	12/31/2020	12/31/2019	12/31/2020
State Division Trust Fund				
Actuarial accrued liability ²	\$25,717,648	\$27,116,805	\$25,717,648	\$27,116,805
Assets held to pay those liabilities	15,819,843	17,660,157	14,922,050	16,039,287
Unfunded actuarial accrued liability	\$9,897,805	\$9,456,648	\$10,795,598	\$11,077,518
Funded ratio	61.5%	65.1%	58.0%	59.1%
School Division Trust Fund				
Actuarial accrued liability ²	\$42,425,061	\$45,532,075	\$42,425,061	\$45,532,075
Assets held to pay those liabilities	26,936,490	30,372,888	25,412,014	27,581,088
Unfunded actuarial accrued liability	\$15,488,571	\$15,159,187	\$17,013,047	\$17,950,987
Funded ratio	63.5%	66.7%	59.9%	60.6%
Local Government Division Trust Fund				
Actuarial accrued liability ²	\$5,316,433	\$5,658,903	\$5,316,433	\$5,658,903
Assets held to pay those liabilities	4,545,960	5,135,807	4,288,325	4,663,031
Unfunded actuarial accrued liability	\$770,473	\$523,096	\$1,028,108	\$995,872
Funded ratio	85.5%	90.8%	80.7%	82.4%
Judicial Division Trust Fund				
Actuarial accrued liability ²	\$462,038	\$478,205	\$462,038	\$478,205
Assets held to pay those liabilities	362,108	414,098	342,071	376,437
Unfunded actuarial accrued liability	\$99,930	\$64,107	\$119,967	\$101,768
Funded ratio	78.4%	86.6%	74.0%	78.7%
DPS Division Trust Fund				
Actuarial accrued liability ²	\$4,263,385	\$4,532,546	\$4,263,385	\$4,532,546
Assets held to pay those liabilities	3,616,649	4,055,819	3,410,264	3,682,072
Unfunded actuarial accrued liability	\$646,736	\$476,727	\$853,121	\$850,474
Funded ratio	84.8%	89.5%	80.0%	81.2%
All Division Trust Funds³				
Actuarial accrued liability ²	\$78,184,565	\$83,318,534	\$78,184,565	\$83,318,534
Assets held to pay those liabilities ⁴	51,281,050	57,638,769	48,374,724	52,341,915
Unfunded actuarial accrued liability	\$26,903,515	\$25,679,765	\$29,809,841	\$30,976,619
Funded ratio	65.6%	69.2%	61.9%	62.8%

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 percent and an assumed rate of 7.25 percent to discount the liabilities to be paid in the future to a value as of December 31, 2019, and December 31, 2020.

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, 2020, is \$5,296,854 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 and (losses) to be smoothed for 2018 are (\$1,253,038), for 2019 are \$2,849,316, and for 2020 are \$3,700,576.

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 percent 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, 2022) as shown in the tables below:

INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 6.25 PERCENT*(Dollars in Thousands)*

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
State Division	53.2%	\$14,095,386	30.08%	\$12,474,515
School Division	54.1%	23,387,097	32.31%	20,595,298
Local Government Division	73.7%	1,663,423	20.49%	1,190,647
Judicial Division	71.4%	151,055	23.30%	113,394
DPS Division	72.5%	1,398,401	16.08%	1,024,653
All Division Trust Funds¹		\$40,695,362		\$35,398,507

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 PERCENT*(Dollars in Thousands)*

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
State Division	59.1%	\$11,077,518	23.45%	\$9,456,648
School Division	60.6%	17,950,987	24.54%	15,159,187
Local Government Division	82.4%	995,872	12.72%	523,096
Judicial Division	78.7%	101,768	15.56%	64,107
DPS Division	81.2%	850,474	9.25%	476,727
All Division Trust Funds¹		\$30,976,619		\$25,679,765

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 PERCENT*(Dollars in Thousands)*

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
State Division	65.3%	\$8,538,262	17.60%	\$6,917,392
School Division	67.3%	13,411,123	17.76%	10,619,324
Local Government Division	91.4%	437,296	5.69%	(35,480)
Judicial Division	86.3%	59,547	8.44%	21,887
DPS Division	90.3%	396,221	3.31%	22,474
All Division Trust Funds¹		\$22,842,449		\$17,545,597

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 11.6 percent for the past five years and 9.4 percent for the past 10 years. The 30-year annualized gross-of-fees rate of return for the pooled investment assets was 9.1 percent.

DIVISION TRUST FUNDS—PENSION

Plan Data

SCHEDULE OF RETIREES, BENEFICIARIES, AND SURVIVORS ADDED TO AND REMOVED FROM THE BENEFIT PAYROLL

(In Actual Dollars)

Valuation Date	Added to Payroll		Removed from Payroll		Payroll—End of Year		Average Annual Benefits	Increase (Decrease) in Average Benefits
	No. ¹	Annual Benefits	No. ¹	Annual Benefits	No. ¹	Annual Benefits		
State Division²								
12/31/2011					33,077	\$1,198,047,252	\$36,220	—
12/31/2012	1,753	\$60,313,800	835	\$17,053,956	33,995	1,259,715,132	37,056	2.3%
12/31/2013	1,472	49,314,648	621	15,343,872	34,846	1,316,530,332	37,781	2.0%
12/31/2014	1,688	70,625,718	728	17,912,280	35,806	1,369,243,770	38,241	1.2%
12/31/2015	1,862	92,808,306	803	20,891,508	36,865	1,441,160,568	39,093	2.2%
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%
School Division²								
12/31/2011					51,718	\$1,776,539,052	\$34,350	—
12/31/2012	3,044	\$87,700,656	985	\$18,719,640	53,777	1,876,340,508	34,891	1.6%
12/31/2013	2,744	79,704,816	713	17,081,472	55,808	1,974,615,348	35,382	1.4%
12/31/2014	3,016	111,392,724	843	19,419,540	57,981	2,066,588,532	35,643	0.7%
12/31/2015	2,990	130,162,524	1,027	23,409,984	59,944	2,173,341,072	36,256	1.7%
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%
Local Government Division²								
12/31/2011					5,296	\$184,500,768	\$34,838	—
12/31/2012	687	\$23,576,376	105	\$1,892,688	5,878	209,260,764	35,601	2.2%
12/31/2013	345	10,330,380	76	1,456,248	6,147	221,838,300	36,089	1.4%
12/31/2014	392	13,412,585	93	2,018,928	6,446	233,231,957	36,182	0.3%
12/31/2015	408	18,760,927	97	2,215,488	6,757	249,777,396	36,966	2.2%
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%

Please see page 187 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)

Valuation Date	Added to Payroll		Removed from Payroll		Payroll—End of Year		Average Annual Benefits	Increase (Decrease) in Average Benefits
	No. ¹	Annual Benefits	No. ¹	Annual Benefits	No. ¹	Annual Benefits		
Judicial Division²								
12/31/2011					311	\$17,320,980	\$55,694	—
12/31/2012	19	\$1,089,288	11	\$337,308	319	18,331,992	57,467	3.2%
12/31/2013	9	740,508	6	156,468	322	19,219,128	59,687	3.9%
12/31/2014	16	1,068,823	8	368,520	330	19,919,431	60,362	1.1%
12/31/2015	20	2,111,405	6	323,940	344	21,706,896	63,101	4.5%
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%
DPS Division²								
12/31/2011					6,296	\$224,954,832	\$35,730	—
12/31/2012	274	\$8,333,292	168	\$3,949,860	6,402	232,858,044	36,373	1.8%
12/31/2013	284	9,255,936	135	3,704,628	6,551	242,733,072	37,053	1.9%
12/31/2014	306	12,537,532	171	5,065,860	6,686	250,204,744	37,422	1.0%
12/31/2015	295	14,799,992	178	5,884,980	6,803	259,119,756	38,089	1.8%
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%
All Division Trust Funds²								
12/31/2011					96,698	\$3,401,362,884	\$35,175	—
12/31/2012	5,777	\$181,013,412	2,104	\$41,953,452	100,371	3,596,506,440	35,832	1.9%
12/31/2013	4,854	149,346,288	1,551	37,742,688	103,674	3,774,936,180	36,412	1.6%
12/31/2014	5,418	209,037,382	1,843	44,785,128	107,249	3,939,188,434	36,729	0.9%
12/31/2015	5,575	258,643,154	2,111	52,725,900	110,713	4,145,105,688	37,440	1.9%
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%

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 % 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

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, 2020

(In Actual Dollars)

State Division

For State Division members (excluding State Troopers) the average age was 45.6 years, the average service was 9.1 years, and the average expected remaining service life was 9.1 years. For State Troopers the average age was 39.0 years, the average service was 7.8 years, and the average expected remaining service life was 13.7 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	156	—	—	—	—	—	—	156	\$2,532,450
20 - 24	1,727	11	—	—	—	—	—	1,738	54,667,906
25 - 29	3,973	553	3	—	—	—	—	4,529	203,491,660
30 - 34	3,890	1,808	353	11	—	—	—	6,062	315,015,104
35 - 39	3,100	2,044	1,182	279	18	—	—	6,623	377,938,368
40 - 44	2,293	1,616	1,279	957	312	16	—	6,473	396,364,424
45 - 49	3,211	1,570	1,183	1,055	885	304	20	8,228	506,963,112
50 - 54	1,731	1,291	1,082	977	938	667	175	6,861	448,597,781
55 - 59	1,241	1,024	1,059	918	779	482	281	5,784	365,774,953
60	228	178	200	167	134	88	65	1,060	65,392,296
61	183	161	179	153	129	74	64	943	57,453,195
62	202	159	166	164	109	67	64	931	56,762,291
63	162	140	156	132	110	61	54	815	49,624,512
64	140	146	143	108	87	60	54	738	44,080,358
65	90	113	125	112	59	56	28	583	35,567,960
66	81	96	82	72	59	26	35	451	24,994,497
67	77	71	67	62	51	29	22	379	20,593,950
68	68	57	59	39	30	16	16	285	14,800,299
69	53	37	37	32	25	14	15	213	10,927,710
70 +	206	134	131	118	73	52	77	791	37,618,243
Total	22,812	11,209	7,486	5,356	3,798	2,012	970	53,643	\$3,089,161,069

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2020

(In Actual Dollars)

School Division

For School Division members the average age was 44.7 years, the average service was 9.1 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	783	—	—	—	—	—	—	783	\$8,033,031
20 - 24	4,781	79	—	—	—	—	—	4,860	114,220,955
25 - 29	8,511	1,888	25	—	—	—	—	10,424	374,613,483
30 - 34	6,416	4,857	1,024	41	—	—	—	12,338	504,878,948
35 - 39	5,882	3,876	3,460	1,053	25	—	—	14,296	627,031,404
40 - 44	8,840	3,406	2,929	3,353	837	26	—	19,391	841,608,411
45 - 49	4,770	3,171	2,559	2,644	2,505	594	23	16,266	816,832,806
50 - 54	3,490	2,684	2,597	2,515	2,140	1,758	247	15,431	791,394,310
55 - 59	2,747	1,925	2,012	2,437	1,733	1,047	514	12,415	579,663,919
60	486	362	317	419	331	155	69	2,139	90,396,576
61	424	297	306	412	272	142	71	1,924	79,363,055
62	404	257	275	321	246	129	55	1,687	69,229,890
63	393	229	257	268	239	107	48	1,541	60,059,074
64	347	213	205	204	158	90	50	1,267	47,888,477
65	247	180	135	170	117	80	22	951	35,116,412
66	220	125	91	115	81	56	31	719	25,723,953
67	181	119	76	97	47	40	18	578	20,487,334
68	189	76	58	52	36	34	19	464	13,552,225
69	159	85	49	41	36	22	16	408	11,962,210
70 +	662	331	217	141	83	55	50	1,539	34,061,437
Total	49,932	24,160	16,592	14,283	8,886	4,335	1,233	119,421	\$5,146,117,910

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2020

(In Actual Dollars)

Local Government Division

For Local Government Division members (excluding State Troopers) the average age was 44.7 years, the average service was 7.7 years, and the average expected remaining service life was 8.9 years. For State Troopers the average age was 37.5 years, the average service was 1.2 years, and the average expected remaining service life was 8.0 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	446	—	—	—	—	—	—	446	\$3,247,090
20 - 24	596	15	—	—	—	—	—	611	13,613,750
25 - 29	943	125	4	—	—	—	—	1,072	44,355,688
30 - 34	919	360	67	5	—	—	—	1,351	71,389,129
35 - 39	693	392	175	96	13	—	—	1,369	81,170,943
40 - 44	757	377	232	180	74	8	—	1,628	100,457,484
45 - 49	527	297	226	260	133	58	2	1,503	100,376,053
50 - 54	457	267	211	274	160	104	23	1,496	102,851,246
55 - 59	420	225	208	269	147	88	51	1,408	90,777,031
60	83	42	34	42	31	18	19	269	16,261,545
61	81	43	40	35	20	16	9	244	13,261,593
62	68	26	38	33	22	15	7	209	12,737,053
63	50	28	31	37	20	8	10	184	11,468,682
64	52	39	24	21	16	11	4	167	9,130,576
65	54	20	22	26	13	11	4	150	7,067,772
66	44	22	14	13	7	6	4	110	5,149,581
67	38	19	12	10	5	2	2	88	3,144,477
68	41	18	7	11	5	2	1	85	3,298,077
69	35	8	13	6	4	3	3	72	2,733,689
70 +	198	35	29	22	6	3	2	295	5,568,200
Total	6,502	2,358	1,387	1,340	676	353	141	12,757	\$698,059,659

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2020

(In Actual Dollars)

Judicial Division

For Judicial Division members the average age was 54.6 years, the average service was 12.7 years, and the average expected remaining service life was 10.8 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	—	—	—	—	—	—	—	—	\$—
20 - 24	—	—	—	—	—	—	—	—	—
25 - 29	—	—	—	—	—	—	—	—	—
30 - 34	1	2	—	—	—	—	—	3	280,130
35 - 39	7	6	4	—	—	—	—	17	2,350,114
40 - 44	20	8	8	3	—	—	—	39	5,992,067
45 - 49	16	13	6	8	2	—	—	45	7,042,087
50 - 54	18	12	21	13	3	4	1	72	11,611,951
55 - 59	7	10	19	13	9	3	4	65	10,761,446
60	1	3	2	1	2	—	3	12	2,048,654
61	2	2	4	1	2	2	2	15	2,541,384
62	1	1	3	4	—	1	—	10	1,561,034
63	—	1	3	—	3	1	—	8	1,378,713
64	—	4	4	1	4	—	1	14	2,324,957
65	1	—	1	1	—	—	1	4	661,764
66	—	—	1	3	2	1	1	8	1,296,446
67	—	—	2	2	1	2	—	7	1,128,009
68	—	—	3	1	2	3	1	10	1,556,285
69	1	—	—	2	1	—	—	4	535,738
70 +	1	2	4	1	—	1	2	11	1,709,307
Total	76	64	85	54	31	18	16	344	\$54,780,086

DIVISION TRUST FUNDS—PENSION

SCHEDULE OF MEMBERS IN ACTUARIAL VALUATION

By Attained Age and Years of Service as of December 31, 2020

(In Actual Dollars)

DPS Division

For DPS Division members the average age was 41.0 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	78	—	—	—	—	—	—	78	\$1,229,735
20 - 24	664	5	—	—	—	—	—	669	17,502,701
25 - 29	1,588	314	2	—	—	—	—	1,904	82,291,570
30 - 34	1,313	995	181	2	—	—	—	2,491	130,949,162
35 - 39	824	783	529	41	3	—	—	2,180	127,343,456
40 - 44	1,233	579	437	210	37	1	—	2,497	134,197,745
45 - 49	426	359	322	216	158	17	1	1,499	91,251,428
50 - 54	291	261	299	176	161	59	12	1,259	76,943,070
55 - 59	214	202	238	130	127	74	25	1,010	58,390,634
60	25	30	36	20	17	11	5	144	7,276,260
61	44	26	34	20	19	3	2	148	7,557,636
62	31	37	34	17	19	5	3	146	6,726,449
63	18	26	42	9	18	7	3	123	5,879,281
64	26	20	35	19	7	6	4	117	5,684,167
65	21	17	20	13	10	2	2	85	4,131,072
66	18	15	25	12	4	—	1	75	3,453,915
67	16	8	8	8	7	2	2	51	2,281,474
68	10	14	9	2	3	1	2	41	1,794,005
69	14	8	11	2	6	—	1	42	1,750,596
70 +	39	41	34	3	8	5	4	134	4,713,248
Total	6,893	3,740	2,296	900	604	193	67	14,693	\$771,347,604

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	% Increase (Decrease) in Average Annual Pay
State Division					
2011	70	54,956	\$2,393,791,402	\$43,558	—
2012	70	54,804	2,384,933,961	43,518	(0.09%)
2013	70	55,354	2,474,965,482	44,712	2.74%
2014	32	55,300	2,564,669,718	46,377	3.72%
2015	32	55,291	2,641,866,650	47,781	3.03%
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%
School Division					
2011	275 ²	114,820	\$3,821,603,410	\$33,283	—
2012	281 ²	115,294	3,819,065,598	33,125	(0.47%)
2013	294 ²	117,727	3,938,649,818	33,456	1.00%
2014	224	119,618	4,063,235,757	33,968	1.53%
2015	227	120,239	4,235,290,282	35,224	3.70%
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%
Local Government Division					
2011	145	16,065	\$718,169,015	\$44,704	—
2012	143	12,097	523,668,446	43,289	(3.17%)
2013	146	11,954	529,003,436	44,253	2.23%
2014	141	12,084	540,468,037	44,726	1.07%
2015	140	12,176	561,518,205	46,117	3.11%
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%
Judicial Division					
2011	6	329	\$39,033,369	\$118,642	—
2012	6	329	39,045,008	118,678	0.03%
2013	6	332	39,941,730	120,306	1.37%
2014	2	334	42,976,979	128,674	6.96%
2015	2	334	46,869,730	140,329	9.06%
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%

Please see page 195 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	% Increase (Decrease) in Average Annual Pay
DPS Division					
2011	27 ²	13,571	\$491,646,251	\$36,228	—
2012	29 ²	13,911	510,872,366	36,724	1.37%
2013	31 ²	14,816	547,659,912	36,964	0.65%
2014	1	15,414	584,319,269	37,908	2.55%
2015	1	15,929	621,114,573	38,993	2.86%
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%
All Division Trust Funds					
2011	523 ²	199,741	\$7,464,243,447	\$37,370	—
2012	529 ²	196,435	7,277,585,379	37,048	(0.86%)
2013	547 ²	200,183	7,530,220,378	37,617	1.54%
2014	400	202,750	7,795,669,760	38,450	2.21%
2015	402	203,969	8,106,659,440	39,745	3.37%
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%

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, 2020, 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	<p>Colorado 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.</p> <p>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 pay for the costs.</p> <p>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.</p>
PERA Board OPEB Funding Policy	<p>The PERA Board is responsible for maintaining an OPEB funding policy applicable to these plans.</p> <p>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.</p>
Actuarial Service Provider & Other Responsibilities	<p>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.</p> <p>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.</p>
Actuarial Service Provider Funding Method Statement	<p>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."</p>

ACTUARIAL METHODS	
Actuarial Methods	<p>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.</p> <p>Initial valuations were performed on an "open group" basis approximately once every two years. Annual valuations commenced with the December 31, 1998, actuarial valuation.</p>

HEALTH CARE TRUST FUNDS—OPEB

Actuarial Methods	Type	Description/Source/Basis	Adoption / Effective Date
Asset Valuation Method	Smoothed Actuarial Value of Assets	<p>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.</p> <p>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.</p>	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)	<p>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.</p> <p>The method to determine normal cost, original based on credited service, is determined based on compensation as of the December 31, 2016, actuarial valuation.</p> <p>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.</p>	EA Effective: Jan 1, 1991; Normal Cost basis changed from service to compensation - Effective: Dec 31, 2016
Amortization Method	Defined, Closed, and Layered Periods	<p>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.</p> <p>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.</p> <p>The impact of any changes in plan provisions will be recognized over a closed period relating to the demographics of the group affected and/or the duration of the enhancement provided, not to exceed 25 years. If any future actuarial valuation indicates a division has a negative UAAL, the ADC shall be set equal to the normal cost until such time as the funded ratio equals or exceeds 120 percent. At that time, the ADC shall be equal to the normal cost less an amount equal to 15-year amortization of the portion of the negative UAAL above the 120 percent funded ratio.</p>	Initially Adopted: Jan 19, 2018; Effective: Dec 31, 2017

HEALTH CARE TRUST FUNDS—OPEB

ACTUARIAL ASSUMPTIONS

<p>Actuarial Assumptions¹</p>	<p>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.</p> <p>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.</p>
<p>Basis of Actuarial Assumptions Used</p>	<p>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 percent 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.</p>

¹ See Exhibits H through L for detailed assumption information.

Economic Assumptions	Value(s) / Type	Description/Source/Basis	Adoption / Effective Date
<p>Initial Per Capita Health Care Costs - PERA Benefit Structure</p>	<p>Exhibit H</p>	<p>Exhibit F contains the assumptions used in determining the additional liability for PERACare enrollees under the PERA benefit structure who are age 65 or older and who are not eligible for premium-free Medicare Part A. Shown are the monthly costs/premiums assumed for 2021, which are subject to the morbidity rates and health care cost trend rates.</p> <p>Basis: Reviewed and updated annually</p>	<p>Updated Effective: Dec 31, 2020</p>
<p>Age-Related Morbidity Rates - PERA Benefit Structure</p>	<p>Exhibit H</p>	<p>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 do not qualify for premium-free Medicare Part A.</p> <p>Basis: Updated for the December 31, 2018 valuation as part of the transition to Segal—annually monitored and updated as appropriate.</p>	<p>Initially Effective: Dec 31, 2015; Last Updated Effective: Dec 31, 2018</p>
<p>Health Care Cost Trend Rates - PERA Benefit Structure</p>	<p>Exhibit H</p>	<p>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 in the PERA benefit structure.</p> <p>Basis: Reviewed and updated annually</p>	<p>Updated Effective: Dec 31, 2020</p>
<p>Additional Premium Subsidy Assumptions - DPS Benefit Structure</p>	<p>Exhibit I</p>	<p>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.</p> <p>Basis: Additional subsidy for DPS Benefit Structure in effect as of January 1, 2010</p>	<p>Subsidy amounts in effect as of Merger of the DPS Retirement System into PERA, Effective: Jan 1, 2010</p>

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 I 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 with a 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	<p>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.</p> <p>The percentage of disability retirees enrolled in PERACare assumed to qualify for the “No Part A” subsidy is 5 percent.</p> <p>Regarding spousal coverage, of the PERACare enrollees assumed to receive the “No Part A” subsidy from the PERA benefit structure, 5 percent are assumed to cover a spouse.</p> <p>100 percent of eligible inactive (or deferred vested) members enrolled in PERACare are assumed to obtain the 40 or more quarters of Medicare-covered employment required for premium-free Medicare Part A coverage as a result of their subsequent employment, therefore 0 percent is assumed to qualify for the “No Part A” subsidy.</p>	<p>Last Confirmed/Revised: Nov 20, 2020; Effective: Dec 31, 2020</p>
Mortality	Exhibit D and Exhibit G	<p>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.</p>	<p>First implemented use of separate mortality tables for different / 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</p>
AI Rate	N/A	<p>As the service-based premium subsidy does not increase over time, there is no need for an assumption regarding increasing benefit amounts.</p> <p>Basis: N/A</p>	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.

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, 2020, actuarial valuation, since the last actuarial valuation as of December 31, 2019.
Changes in Actuarial Assumptions	<p>Based on the results of the 2020 experience analysis, the Board adopted revised economic and demographic actuarial assumptions as summarized in the Division Trust Funds subsection of this Actuarial Section. In addition, listed below are the actuarial assumption changes, specific to the HCTF and the DPS HCTF, incorporated into the December 31, 2020, actuarial valuation, since the last actuarial valuation as of December 31, 2019:</p> <ul style="list-style-type: none"> • Revisions were made to the following assumptions based on annual analysis: <ul style="list-style-type: none"> • 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 2021 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. • Revisions were made to the following assumptions to better reflect plan experience noted during the 2020 experience analysis study: <ul style="list-style-type: none"> • Rates of Health Care Participation • Percentage of Survivors of Retirees Choosing Joint & Survivor Payment Options • Election Rates of Health Care Participation for Inactive Members • Percentage of Health Care Participation Spousal Election • Commencement Age for Inactive Members • Election Rates Regarding Medicare Health Care Plans • Percent Qualifying for “No Part A” Subsidy • Mortality assumptions for the Health Care Trust Funds uses the same generational mortality tables, projection scale, and adjustments for credibility and gender, as applied to the division trust funds, except the tables are “headcount-weighted” for purposes of assessing the liability associated with the health care subsidies.
Changes in Plan Provisions	There are no changes in OPEB plan provisions incorporated in the December 31, 2020, actuarial valuation since the last actuarial valuation as of December 31, 2019.

SIGNIFICANT EVENTS
There were no significant events during 2020.

DIFFERENCES IN ACTUARIAL VALUATION METHODS AND ASSUMPTIONS
<ul style="list-style-type: none"> • The actuarial valuation for funding purposes was performed as of December 31, 2020. The actuarial valuation for accounting and financial reporting purposes was performed as of December 31, 2019, and the total OPEB liability was rolled forward to the measurement date as of December 31, 2020. • Census data used for the actuarial valuation for funding purposes reflects membership data as of December 31, 2020, and the census data used for the actuarial valuation for accounting and financial reporting purposes reflects membership data as of December 31, 2019. Therefore, all summaries and schedules, regarding actuarial valuation results for funding purposes, shown in the Actuarial Section, reflect census data as of December 31, 2020. • 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 2021. The actuarial valuation for accounting and financial reporting purposes reflects updated initial per capita health care costs and health care trend rates to 2020.

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

INITIAL HEALTH CARE COSTS

(In Actual Dollars)

Plan	Initial Costs for 2021 Members Without Medicare Part A		
	Monthly Cost	Monthly Premium	Monthly Cost Adjusted to Age 65
Medicare Advantage/Self-Insured Prescription	\$633	\$230	\$591
Kaiser Permanente Medicare Advantage HMO	596	199	562
2021 Medicare Part A Premium — \$471			

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 COST TREND RATE ASSUMPTIONS¹

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%

¹ Applies only to PERACare enrollees who are age 65 or older and who are not eligible for premium-free Medicare Part A.

HEALTH CARE TRUST FUNDS—OPEB

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.

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%			

HEALTH CARE TRUST FUNDS—OPEB

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 with a PERA benefit structure only.

² Sixty-seven (67) percent of those PERACare enrollees participating in the self-insured plans are assumed to elect MA #1 and 33 percent MA #2.

Exhibit L: Percent Qualifying for “No Part A” Subsidy Assumptions

Hire Age	Percent Qualifying for “No Part A” Subsidy	
	HCTF ^{1,2}	DPS HCTF ²
15 – 24	17%	17%
25 – 29	11%	11%
30+	4%	4%

¹ Five (5) percent of the PERACare enrollees assumed to qualify for the “No Part A” subsidy from the PERA benefit structure are assumed to cover a spouse.

² Five (5) percent of the PERACare enrollees receiving health care benefits as a result of disability retirement are assumed to qualify for the “No Part A” subsidy. One-hundred (100) percent of eligible inactive (or deferred vested) members enrolled in PERACare are assumed to obtain the 40 or more quarters of Medicare-covered employment required for premium-free Medicare Part A coverage as a result of their subsequent employment.

HEALTH CARE TRUST FUNDS—OPEB

Summary of Funding Progress

The PERA funding objective is to 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, 2020, actuarial valuation for the period ending December 31, 2022.

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). Each 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							
12/31/2011	N/A	\$1,251,579	\$459,211	\$282,228	N/A	22.5%	0.0%
12/31/2012	N/A	1,259,557	463,938	285,097	N/A	22.6%	0.0%
12/31/2013	N/A	1,092,438	464,968	293,556	N/A	26.9%	0.0%
12/31/2014	N/A	1,085,995	448,466	297,377	N/A	27.4%	0.0%
12/31/2015	N/A	1,099,045	457,224	285,588	N/A	26.0%	0.0%
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%
DPS HCTF							
12/31/2011	N/A	\$57,093	\$20,382	\$14,448	N/A	25.3%	0.0%
12/31/2012	N/A	54,727	22,942	14,443	N/A	26.4%	0.0%
12/31/2013	N/A	52,106	24,530	15,482	N/A	29.7%	0.0%
12/31/2014	N/A	50,998	25,028	16,502	N/A	32.4%	0.0%
12/31/2015	N/A	49,891	25,006	17,557	N/A	35.2%	0.0%
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%

HEALTH CARE TRUST FUNDS—OPEB

SOLVENCY TEST (CONTINUED)

(Dollars in Thousands)

Valuation Date	Aggregate Accrued Liabilities				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)	Actuarial Value of Plan Assets	Liability (A)	Liability (B)	Liability (C)
Total of Health Care Trust Funds¹							
12/31/2011	N/A	\$1,308,672	\$479,593	\$296,676	N/A	22.7%	0.0%
12/31/2012	N/A	1,314,284	486,880	299,540	N/A	22.8%	0.0%
12/31/2013	N/A	1,144,544	489,498	309,038	N/A	27.0%	0.0%
12/31/2014	N/A	1,136,993	473,494	313,879	N/A	27.6%	0.0%
12/31/2015	N/A	1,148,936	482,230	303,145	N/A	26.4%	0.0%
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%

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 lower liabilities (or gains) during 2020:

- Adoption of revised demographic actuarial assumptions.
- Higher investment return than assumed in 2017, 2019 and 2020.
- 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.

The following factors resulted in higher liabilities (or losses) during 2020:

- 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.
- Adoption of revised economic actuarial assumptions.

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 % of Covered Payroll (D)/(F)
HCTF						
12/31/2011	\$282,228	\$1,710,790	\$1,428,562	16.5%	\$6,972,596	20.5%
12/31/2012	285,097	1,723,495	1,438,398	16.5%	6,766,713	21.3%
12/31/2013	293,556	1,557,406	1,263,850	18.8%	6,982,560	18.1%
12/31/2014	297,377	1,534,461	1,237,084	19.4%	7,211,351	17.2%
12/31/2015	285,588	1,556,269	1,270,681	18.4%	7,485,545	17.0%
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%
DPS HCTF						
12/31/2011	\$14,448	\$77,475	\$63,027	18.6%	\$491,646	12.8%
12/31/2012	14,443	77,669	63,226	18.6%	510,872	12.4%
12/31/2013	15,482	76,636	61,154	20.2%	547,660	11.2%
12/31/2014	16,502	76,026	59,524	21.7%	584,319	10.2%
12/31/2015	17,557	74,897	57,340	23.4%	621,115	9.2%
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%
Total of Health Care Trust Funds¹						
12/31/2011	\$296,676	\$1,788,265	\$1,491,589	16.6%	\$7,464,242	20.0%
12/31/2012	299,540	1,801,164	1,501,624	16.6%	7,277,585	20.6%
12/31/2013	309,038	1,634,042	1,325,004	18.9%	7,530,220	17.6%
12/31/2014	313,879	1,610,487	1,296,608	19.5%	7,795,670	16.6%
12/31/2015	303,145	1,631,166	1,328,021	18.6%	8,106,660	16.4%
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%

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 116-117 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	(\$8.8)	(\$1.0)
Disability retirements ²	(0.4)	—
Deaths ³	(9.0)	0.1
Withdrawals ⁴	2.9	0.3
New members ⁵	1.6	0.1
Administrative expenses and other ⁶	(37.6)	1.7
Subtotal	(51.3)	1.2
From differences between assumed and actual experience on assets	(16.6)	(1.6)
From change in plan assumptions	(20.0)	(1.7)
From change in actuarial methods	—	—
From change in plan provisions	—	—
Total actuarial (gains)/losses on 2020 activities	(\$87.9)	(\$2.1)
Total actuarial (gains)/losses on 2019 activities	(\$93.2)	(\$0.6)

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 *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, 2022, are derived from the results of the December 31, 2020, 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 2022 FISCAL YEAR

	Expressed as a Percentage of Member Payroll	
	HCTF	DPS HCTF
Contributions		
Service retirement benefits	0.17%	0.13%
Disability retirement benefits	0.00%	0.00%
Survivor benefits	0.00%	0.00%
Separation benefits	0.02%	0.02%
Total normal cost	0.19%	0.15%
Less member contributions	(0.00%)	(0.00%)
Employer normal cost	0.19%	0.15%
Percentage available to amortize unfunded actuarial accrued liabilities	0.83%	0.87%
Amortization period	18 Years	4 Years
Total employer contribution rate for actuarially funded benefits	0.84%	0.35%

HEALTH CARE TRUST FUNDS—OPEB

Annual Actuarial Valuation Statistics

As of December 31, 2020, the Funded Ratio, the UAAL, the ADC for 2022 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	30.3%	\$987,635	0.84%	18 Years
DPS HCTF	60.8%	25,705	0.35%	4 Years
Total of Health Care Trust Funds²		\$1,013,340		

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 2022 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	0.84%	0.82%	0.78%	0.71%
DPS HCTF	0.35%	0.34%	0.32%	0.29%

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, 2020, was \$470,109 compared to a fair value of assets of \$506,622, and to the AAL of \$1,483,449. 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	2016	2017	2018	2019	2020
HCTF	17.4%	16.5%	19.5%	24.1%	30.3%
DPS HCTF	26.0%	30.0%	36.0%	45.9%	60.8%
Total of Health Care Trust Funds¹	17.7%	17.0%	20.2%	25.1%	31.7%

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 percent 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, 2020, approximately \$0.30 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, 2019, and December 31, 2020, 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	
	12/31/2019	12/31/2020	12/31/2019	12/31/2020
Health Care Trust Fund				
Actuarial accrued liability ²	\$1,447,169	\$1,417,891	\$1,447,169	\$1,417,891
Assets held to pay those liabilities	364,510	463,301	348,433	430,256
Unfunded actuarial accrued liability	\$1,082,659	\$954,590	\$1,098,736	\$987,635
Funded ratio	25.2%	32.7%	24.1%	30.3%
DPS Health Care Trust Fund				
Actuarial accrued liability ²	\$67,937	\$65,558	\$67,937	\$65,558
Assets held to pay those liabilities	32,636	43,321	31,189	39,853
Unfunded actuarial accrued liability	\$35,301	\$22,237	\$36,748	\$25,705
Funded ratio	48.0%	66.1%	45.9%	60.8%
Total of Health Care Trust Funds³				
Actuarial accrued liability ²	\$1,515,106	\$1,483,449	\$1,515,106	\$1,483,449
Assets held to pay those liabilities ⁴	397,146	506,622	379,622	470,109
Unfunded actuarial accrued liability	\$1,117,960	\$976,827	\$1,135,484	\$1,013,340
Funded ratio	26.2%	34.2%	25.1%	31.7%

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 percent and an assumed rate of 7.25 percent to discount the liabilities to be paid in the future to a value as of December 31, 2019, and December 31, 2020.

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, 2020, is \$36,513 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 and (losses) to be smoothed for 2018 are (\$8,192), for 2019 are \$17,751, and for 2020 are \$26,954.

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 one percent fluctuation in the investment rate of return and discount rate would change the funded ratio, UAAL, and ADC (for contributions for the fiscal year ended December 31, 2022) as shown in the tables below:

INVESTMENT RETURN ASSUMPTION (DISCOUNT RATE) EQUAL TO 6.25 PERCENT

(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
HCTF	27.6%	\$1,127,550	0.90%	\$1,094,505
DPS HCTF	55.5%	31,975	0.40%	28,506
Total of Health Care Trust Funds¹		\$1,159,525		\$1,123,011

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 PERCENT

(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
HCTF	30.3%	\$987,635	0.84%	\$954,590
DPS HCTF	60.8%	25,705	0.35%	22,237
Total of Health Care Trust Funds¹		\$1,013,340		\$976,827

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 PERCENT

(Dollars in Thousands)

Trust Fund	Actuarial Value of Assets			Fair Value of Assets
	Funded Ratio	UAAL	ADC	UAAL
HCTF	33.1%	\$868,226	0.79%	\$835,181
DPS HCTF	66.2%	20,354	0.30%	16,886
Total of Health Care Trust Funds¹		\$888,580		\$852,067

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 11.6 percent for the past five years and 9.4 percent for the past 10 years. The 30-year annualized gross-of-fees rate of return for the pooled investment assets was 9.1 percent.

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, 2020:

MEMBERSHIP—HEALTH CARE TRUST FUNDS

	HCTF	DPS HCTF	2020
Retirees and beneficiaries ¹	120,999	7,134	128,133
Inactive members eligible but not yet receiving benefits ²	29,959	2,237	32,196
Inactive members not eligible for benefits	N/A	N/A	N/A
Active members ²	186,165	14,693	200,858
Total	337,123	24,064	361,187

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, 2020

	HCTF	DPS HCTF	Total
Enrolled in PERACare			
Under age 65	10,955	477	11,432
Age 65 and older	45,318	3,044	48,362
	56,273	3,521	59,794 ¹
Not enrolled in PERACare			
Under age 65	15,983	611	16,594
Age 65 and older	48,743	3,002	51,745
	64,726	3,613	68,339
Total eligible retirees and beneficiaries	120,999	7,134	128,133

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)

Valuation Date	Added to Payroll		Removed from Payroll		Payroll—End of Year		Average Annual Benefits	Increase (Decrease) in Average Benefits
	No.	Annual Benefits	No.	Annual Benefits	No. ¹	Annual Benefits		
HCTF²								
12/31/2011					50,217	\$86,755,011	\$1,728	—
12/31/2012	3,489	\$7,844,610	2,040	\$3,548,532	51,666	90,123,660	1,744	0.9%
12/31/2013	3,256	7,098,720	1,881	3,383,139	53,041	91,009,965	1,716	(1.6%)
12/31/2014	3,231	6,954,234	2,196	3,945,282	54,076	91,222,002	1,687	(1.7%)
12/31/2015	3,271	6,998,325	2,255	3,920,028	55,092	91,545,543	1,662	(1.5%)
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%)
DPS HCTF²								
12/31/2011					3,958	\$6,296,871	\$1,591	—
12/31/2012	168	\$340,929	165	\$258,957	3,961	6,086,352	1,537	(3.4%)
12/31/2013	198	428,532	164	241,845	3,995	6,098,082	1,526	(0.7%)
12/31/2014	184	368,943	217	346,587	3,962	5,961,324	1,505	(1.4%)
12/31/2015	174	360,111	206	330,648	3,930	5,829,741	1,483	(1.5%)
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%)
Total of Health Care Trust Funds²								
12/31/2011					54,175	\$93,051,882	\$1,718	—
12/31/2012	3,657	\$8,185,539	2,205	\$3,807,489	55,627	96,210,012	1,730	0.7%
12/31/2013	3,454	7,527,252	2,045	3,624,984	57,036	97,108,047	1,703	(1.6%)
12/31/2014	3,415	7,323,177	2,413	4,291,869	58,038	97,183,326	1,674	(1.7%)
12/31/2015	3,445	7,358,436	2,461	4,250,676	59,022	97,375,284	1,650	(1.4%)
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	59,792³	93,472,782	1,563	(1.0%)

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	% Increase (Decrease) in Average Annual Pay
HCTF						
2011	496	186,170		\$6,972,597,196	\$37,453	—
2012	500	182,524		6,766,713,013	37,073	(1.01%)
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%
DPS HCTF						
2011	27	13,571		\$491,646,251	\$36,228	—
2012	29	13,911		510,872,366	36,724	1.37%
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%
Total of Health Care Trust Funds						
2011	523	199,741		\$7,464,243,447	\$37,370	—
2012	529	196,435		7,277,585,379	37,048	(0.86%)
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%

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

	2020	2019	2018	2017	2016
Additions					
Employer contributions ¹	\$646,386	\$612,282	\$583,164	\$563,977	\$521,804
Nonemployer contributions ¹	—	77,088	78,489	—	—
Member contributions ¹	298,264	257,803	236,313	228,978	223,005
Purchased service	28,522	29,494	25,227	27,442	24,528
Net investment income (loss)	2,652,870	2,764,719	(497,562)	2,391,683	947,981
Other	9,390	22	7,888	15,860	8,708
Total additions	3,635,432	3,741,408	433,519	3,227,940	1,726,026
Deductions					
Benefit payments	1,675,048	1,637,168	1,608,534	1,554,290	1,483,828
Refunds	57,921	61,832	65,253	58,696	60,137
Disability insurance premiums	1,360	1,965	2,093	2,035	2,106
Administrative expenses	11,385	11,294	11,903	11,745	11,271
Other	2,634	2,707	3,017	3,652	3,040
Total deductions	1,748,348	1,714,966	1,690,800	1,630,418	1,560,382
Change in fiduciary net position	1,887,084	2,026,442	(1,257,281)	1,597,522	165,644
Fiduciary net position held at beginning of year	15,992,863	13,966,421	15,223,702	13,626,180	13,460,536
Fiduciary net position held at end of year	\$17,879,947	\$15,992,863	\$13,966,421	\$15,223,702	\$13,626,180
	2015	2014	2013	2012	2011
Additions					
Employer contributions ¹	\$484,005	\$444,372	\$401,658	\$335,073	\$283,222
Member contributions ¹	217,980	211,610	202,799	227,058	258,678
Purchased service	26,946	22,446	22,241	16,358	11,277
Net investment income	210,337	780,762	1,931,658	1,511,244	232,669
Other	5,023	3,289	4,869	150	331
Total additions	944,291	1,462,479	2,563,225	2,089,883	786,177
Deductions					
Benefit payments	1,417,862	1,352,293	1,295,780	1,231,922	1,174,707
Refunds	63,567	61,152	68,735	69,221	70,090
Disability insurance premiums	2,088	2,309	2,229	1,570	1,685
Administrative expenses	10,779	10,067	9,780	8,568	8,685
Other	3,406	3,171	3,593	3,911	(4,546)
Total deductions	1,497,702	1,428,992	1,380,117	1,315,192	1,250,621
Change in fiduciary net position	(553,411)	33,487	1,183,108	774,691	(464,444)
Fiduciary net position held at beginning of year	14,013,947	13,980,460	12,797,352	12,022,661	12,487,105
Fiduciary net position held at end of year	\$13,460,536	\$14,013,947	\$13,980,460	\$12,797,352	\$12,022,661

¹ Employer, nonemployer, and member contribution rate history is shown on pages 253-254.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

School Division Trust Fund

	2020	2019	2018	2017	2016
Additions					
Employer contributions ¹	\$1,048,992	\$1,002,760	\$923,910	\$857,740	\$812,740
Nonemployer contributions ¹	—	127,367	126,505	—	—
Member contributions ¹	501,214	436,899	386,811	368,740	359,059
Purchased service	35,633	25,992	27,525	30,313	27,422
Net investment income (loss)	4,556,622	4,676,607	(838,899)	3,982,275	1,569,026
Other	123	364	7,957	106	109
Total additions	6,142,584	6,269,989	633,809	5,239,174	2,768,356
Deductions					
Benefit payments	2,535,509	2,468,021	2,413,387	2,334,003	2,231,475
Refunds	67,873	73,871	76,035	74,637	65,715
Disability insurance premiums	2,286	3,338	3,506	3,347	3,454
Administrative expenses	22,779	22,619	23,560	23,019	21,991
Other	11,349	8,293	2,501	22,484	17,443
Total deductions	2,639,796	2,576,142	2,518,989	2,457,490	2,340,078
Change in fiduciary net position	3,502,788	3,693,847	(1,885,180)	2,781,684	428,278
Fiduciary net position held at beginning of year	27,171,397	23,477,550	25,362,730	22,581,046	22,152,768
Fiduciary net position held at end of year	\$30,674,185	\$27,171,397	\$23,477,550	\$25,362,730	\$22,581,046
Additions					
Employer contributions ¹	\$754,182	\$686,323	\$624,784	\$573,586	\$541,962
Member contributions ¹	348,537	334,585	322,217	313,923	315,958
Purchased service	23,841	21,935	19,285	17,406	14,465
Net investment income	344,000	1,274,862	3,136,269	2,434,176	370,045
Other	96	112	139	246	544
Total additions	1,470,656	2,317,817	4,102,694	3,339,337	1,242,974
Deductions					
Benefit payments	2,134,754	2,032,628	1,932,756	1,832,643	1,731,348
Refunds	70,298	77,171	76,980	77,154	78,543
Disability insurance premiums	3,400	3,748	3,655	2,522	2,619
Administrative expenses	20,865	19,290	18,523	16,086	16,322
Other	9,178	4,376	7,132	9,157	9,839
Total deductions	2,238,495	2,137,213	2,039,046	1,937,562	1,838,671
Change in fiduciary net position	(767,839)	180,604	2,063,648	1,401,775	(595,697)
Fiduciary net position held at beginning of year	22,920,607	22,740,003	20,676,355	19,274,580	19,870,277
Fiduciary net position held at end of year	\$22,152,768	\$22,920,607	\$22,740,003	\$20,676,355	\$19,274,580

¹ Employer, nonemployer, and member contribution rate history is shown on page 255.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Local Government Division Trust Fund

	2020	2019	2018	2017	2016
Additions					
Employer contributions ¹	\$89,662	\$85,597	\$81,358	\$78,291	\$75,132
Member contributions ¹	58,067	55,003	52,421	50,472	48,470
Purchased service	8,891	7,820	5,642	6,325	3,981
Employer disaffiliation	—	—	—	1,063	—
Net investment income (loss)	771,556	792,219	(142,476)	669,011	261,276
Other	24	14	840	14	17
Total additions	928,200	940,653	(2,215)	805,176	388,876
Deductions					
Benefit payments	307,795	297,447	286,745	274,258	258,967
Refunds	12,828	14,761	15,716	14,530	12,938
Disability insurance premiums	296	421	442	430	439
Administrative expenses	2,459	2,476	2,621	2,541	2,395
Other	3,146	3,975	3,958	3,837	1,140
Total deductions	326,524	319,080	309,482	295,596	275,879
Change in fiduciary net position	601,676	621,573	(311,697)	509,580	112,997
Fiduciary net position held at beginning of year	4,592,962	3,971,389	4,283,086	3,773,506	3,660,509
Fiduciary net position held at end of year	\$5,194,638	\$4,592,962	\$3,971,389	\$4,283,086	\$3,773,506
	2015	2014	2013	2012	2011
Additions					
Employer contributions ¹	\$70,415	\$68,719	\$67,197	\$86,113	\$91,780
Member contributions ¹	45,400	43,792	42,627	54,827	58,590
Purchased service	6,586	5,498	7,363	13,927	3,902
Employer disaffiliation	—	186,006	—	—	—
Net investment income	56,328	200,394	482,297	368,492	53,130
Other	15	14	14	2,663	78
Total additions	178,744	504,423	599,498	526,022	207,480
Deductions					
Benefit payments	244,948	232,055	217,875	195,945	179,449
Refunds	20,410	24,436	32,480	42,941	22,686
Disability insurance premiums	431	481	479	410	442
Administrative expenses	2,253	2,091	2,021	2,035	2,157
Other	1,661	2,204	4,463	2,072	2,737
Total deductions	269,703	261,267	257,318	243,403	207,471
Change in fiduciary net position	(90,959)	243,156	342,180	282,619	9
Fiduciary net position held at beginning of year	3,751,468	3,508,312	3,166,132	2,883,513	2,883,504
Fiduciary net position held at end of year	\$3,660,509	\$3,751,468	\$3,508,312	\$3,166,132	\$2,883,513

¹ Employer and member contribution rate history is shown on pages 256-257.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Judicial Division Trust Fund

	2020	2019	2018	2017	2016
Additions					
Employer contributions ¹	\$10,402	\$10,649	\$8,299	\$8,080	\$8,024
Nonemployer contributions ¹	—	1,344	1,385	—	—
Member contributions ¹	6,637	4,575	4,064	3,955	3,928
Purchased service	1,060	612	636	908	109
Net investment income (loss)	61,634	61,719	(11,006)	51,173	19,783
Other	2,546	6,697	225	2,379	2,800
Total additions	82,279	85,596	3,603	66,495	34,644
Deductions					
Benefit payments	29,409	28,056	26,236	25,250	22,734
Refunds	48	—	186	7	109
Disability insurance premiums	28	41	41	41	45
Administrative expenses	87	84	86	86	81
Other	90	27	70	153	122
Total deductions	29,662	28,208	26,619	25,537	23,091
Change in fiduciary net position	52,617	57,388	(23,016)	40,958	11,553
Fiduciary net position held at beginning of year	364,234	306,846	329,862	288,904	277,351
Fiduciary net position held at end of year	\$416,851	\$364,234	\$306,846	\$329,862	\$288,904
	2015	2014	2013	2012	2011
Additions					
Employer contributions ¹	\$7,702	\$7,070	\$6,587	\$5,922	\$5,430
Member contributions ¹	3,772	3,461	3,224	3,628	4,120
Purchased service	425	835	240	180	5
Net investment income	4,149	15,299	37,096	28,063	4,105
Other	3,247	256	1,451	2,556	6
Total additions	19,295	26,921	48,598	40,349	13,666
Deductions					
Benefit payments	21,158	19,800	18,616	17,606	16,809
Refunds	—	60	385	605	513
Disability insurance premiums	42	43	40	27	26
Administrative expenses	77	72	69	61	61
Other	166	100	52	22	(1,043)
Total deductions	21,443	20,075	19,162	18,321	16,366
Change in fiduciary net position	(2,148)	6,846	29,436	22,028	(2,700)
Fiduciary net position held at beginning of year	279,499	272,653	243,217	221,189	223,889
Fiduciary net position held at end of year	\$277,351	\$279,499	\$272,653	\$243,217	\$221,189

¹ Employer, nonemployer, and member contribution rate history is shown on page 257.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

DPS Division Trust Fund

	2020	2019	2018	2017	2016
Additions					
Employer contributions ¹	\$56,245	\$43,340	\$35,994	\$27,578	\$17,071
Nonemployer contributions ¹	—	19,201	18,621	—	—
Member contributions ¹	73,939	62,961	58,172	54,354	52,740
Purchased service	1,517	2,535	2,926	2,466	2,112
Net investment income (loss)	610,847	632,669	(114,070)	548,585	218,415
Other	12	3,030	770	3,870	3,264
Total additions	742,560	763,736	2,413	636,853	293,602
Deductions					
Benefit payments	278,081	277,849	276,223	271,189	263,152
Refunds	9,344	10,738	11,197	10,277	8,521
Disability insurance premiums	294	397	405	378	398
Administrative expenses	2,667	2,713	2,919	2,857	2,754
Other	1,022	55	5,267	89	129
Total deductions	291,408	291,752	296,011	284,790	274,954
Change in fiduciary net position	451,152	471,984	(293,598)	352,063	18,648
Fiduciary net position held at beginning of year	3,656,426	3,184,442	3,478,040	3,125,977	3,107,329
Fiduciary net position held at end of year	\$4,107,578	\$3,656,426	\$3,184,442	\$3,478,040	\$3,125,977
	2015	2014	2013	2012	2011
Additions					
Employer contributions ¹	\$8,494	\$18,478	\$25,157	\$14,703	\$12,859
Member contributions ¹	49,973	47,083	43,564	41,124	39,422
Purchased service	3,585	2,326	1,834	1,924	1,792
Net investment income	49,172	182,823	452,919	354,867	55,081
Other	11	13	269	146	77
Total additions	111,235	250,723	523,743	412,764	109,231
Deductions					
Benefit payments	255,068	247,005	237,921	228,742	221,113
Refunds	7,897	8,063	6,733	5,821	4,412
Disability insurance premiums	358	366	338	220	238
Administrative expenses	2,599	2,377	2,240	1,919	1,914
Other	1,775	1,560	150	55	2,409
Total deductions	267,697	259,371	247,382	236,757	230,086
Change in fiduciary net position	(156,462)	(8,648)	276,361	176,007	(120,855)
Fiduciary net position held at beginning of year	3,263,791	3,272,439	2,996,078	2,820,071	2,940,926
Fiduciary net position held at end of year	\$3,107,329	\$3,263,791	\$3,272,439	\$2,996,078	\$2,820,071

¹ Employer, nonemployer, and member contribution rate history is shown on page 258.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Voluntary Investment Program

	2020	2019	2018	2017	2016
Additions					
Employer contributions	\$5,917	\$5,701	\$5,409	\$5,072	\$4,740
Member contributions	140,656	140,519	132,189	135,303	129,909
Net investment income (loss)	559,851	700,274	(165,371)	469,233	206,933
Other	2,402	2,443	2,322	2,207	2,170
Total additions	708,826	848,937	(25,451)	611,815	343,752
Deductions					
Refunds	207,260	213,010	202,684	162,019	154,202
Administrative expenses	4,797	3,592	3,310	2,877	2,814
Other	1,746	1,656	1,598	1,411	1,172
Total deductions	213,803	218,258	207,592	166,307	158,188
Change in fiduciary net position	495,023	630,679	(233,043)	445,508	185,564
Fiduciary net position held at beginning of year	3,672,807	3,042,128	3,275,171	2,829,663	2,644,099
Fiduciary net position held at end of year	\$4,167,830	\$3,672,807	\$3,042,128	\$3,275,171	\$2,829,663
	2015	2014	2013	2012	2011
Additions					
Employer contributions	\$3,889	\$3,866	\$3,679	\$3,697	\$3,610
Member contributions	129,990	126,112	120,203	119,013	126,331
Net investment income (loss)	(11,773)	188,199	423,877	236,775	(5,752)
Other	2,237	2,291	2,141	2,075	3,298
Total additions	124,343	320,468	549,900	361,560	127,487
Deductions					
Refunds	158,215	144,329	142,064	144,171	133,719
Administrative expenses	3,010	3,050	3,137	2,827	4,717
Other	1,019	839	624	234	29
Total deductions	162,244	148,218	145,825	147,232	138,465
Change in fiduciary net position	(37,901)	172,250	404,075	214,328	(10,978)
Fiduciary net position held at beginning of year	2,682,000	2,509,750	2,105,675	1,891,347	1,902,325
Fiduciary net position held at end of year	\$2,644,099	\$2,682,000	\$2,509,750	\$2,105,675	\$1,891,347

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Defined Contribution Retirement Plan

	2020	2019	2018	2017	2016
Additions					
Employer contributions	\$16,780	\$15,184	\$13,201	\$14,309	\$13,060
Member contributions	15,753	12,967	10,573	11,411	10,382
Net investment income (loss)	41,861	48,559	(15,381)	29,372	12,601
Other	16	21	11	39	92
Total additions	74,410	76,731	8,404	55,131	36,135
Deductions					
Refunds	15,100	15,445	12,722	10,593	8,932
Administrative expenses	1,159	997	819	739	726
Other	147	135	166	116	97
Total deductions	16,406	16,577	13,707	11,448	9,755
Change in fiduciary net position	58,004	60,154	(5,303)	43,683	26,380
Fiduciary net position held at beginning of year	265,940	205,786	211,089	167,406	141,026
Fiduciary net position held at end of year	\$323,944	\$265,940	\$205,786	\$211,089	\$167,406
	2015	2014	2013	2012	2011
Additions					
Employer contributions	\$12,428	\$11,531	\$11,090	\$7,997	\$7,034
Member contributions	9,830	9,179	8,828	8,364	9,732
Net investment income (loss)	(2,466)	6,745	17,416	9,046	(1,130)
Other	9	8	6	2	40
Total additions	19,801	27,463	37,340	25,409	15,676
Deductions					
Refunds	9,419	8,690	6,314	4,869	5,176
Administrative expenses	774	738	744	848	282
Other	48	69	49	22	5
Total deductions	10,241	9,497	7,107	5,739	5,463
Change in fiduciary net position	9,560	17,966	30,233	19,670	10,213
Fiduciary net position held at beginning of year	131,466	113,500	83,267	63,597	53,384
Fiduciary net position held at end of year	\$141,026	\$131,466	\$113,500	\$83,267	\$63,597

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Deferred Compensation Plan

	2020	2019	2018	2017	2016
Additions					
Employer contributions	\$40	\$32	\$29	\$50	\$26
Member contributions	70,764	64,151	57,981	57,088	51,601
Net investment income (loss)	137,224	163,879	(47,542)	105,027	51,372
Other	553	578	574	510	496
Total additions	208,581	228,640	11,042	162,675	103,495
Deductions					
Refunds	51,559	55,317	56,568	47,067	41,922
Administrative expenses	1,530	1,188	1,094	993	963
Other	777	759	756	698	604
Total deductions	53,866	57,264	58,418	48,758	43,489
Change in fiduciary net position	154,715	171,376	(47,376)	113,917	60,006
Fiduciary net position held at beginning of year	989,599	818,223	865,599	751,682	691,676
Fiduciary net position held at end of year	\$1,144,314	\$989,599	\$818,223	\$865,599	\$751,682
	2015	2014	2013	2012	2011
Additions					
Employer contributions	\$27	\$43	\$20	\$14	\$51
Member contributions	49,719	50,370	44,449	39,851	42,253
Plan transfer	—	—	—	—	4
Net investment income (loss)	(6,427)	32,133	88,565	49,344	10,335
Other	484	478	428	354	984
Total additions	43,803	83,024	133,462	89,563	53,627
Deductions					
Refunds	39,945	35,584	32,854	27,627	27,524
Administrative expenses	1,071	1,074	1,094	1,105	834
Other	562	517	430	278	185
Total deductions	41,578	37,175	34,378	29,010	28,543
Change in fiduciary net position	2,225	45,849	99,084	60,553	25,084
Fiduciary net position held at beginning of year	689,451	643,602	544,518	483,965	458,881
Fiduciary net position held at end of year	\$691,676	\$689,451	\$643,602	\$544,518	\$483,965

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Health Care Trust Fund

	2020	2019	2018	2017	2016
Additions					
Employer contributions ¹	\$94,634	\$92,011	\$86,559	\$83,077	\$80,825
Retiree health care premiums	—	—	—	—	138,021
Employer disaffiliation	—	—	—	96	—
Net investment income (loss)	60,280	53,867	(9,678)	44,990	19,021
Other	7,909	6,984	8,373	9,760	9,175
Total additions	162,823	152,862	85,254	137,923	247,042
Deductions					
Benefit payments	53,023	58,221	61,777	102,665	243,662
Administrative expenses	10,977	9,290	20,401	19,162	19,166
Other	32	33	106	102	491
Total deductions	64,032	67,544	82,284	121,929	263,319
Change in fiduciary net position	98,791	85,318	2,970	15,994	(16,277)
Fiduciary net position held at beginning of year	364,510	279,192	276,222	260,228	276,505
Fiduciary net position held at end of year	\$463,301	\$364,510	\$279,192	\$276,222	\$260,228

	2015	2014	2013	2012	2011
Additions					
Employer contributions ¹	\$78,463	\$75,631	\$72,784	\$72,553	\$73,449
Retiree health care premiums	127,873	105,459	114,364	107,104	108,689
Federal health care subsidies	—	—	15,731	14,198	14,151
Employer disaffiliation	—	3,994	—	—	—
Net investment income	4,807	18,203	46,097	36,710	5,153
Other	9,993	9,813	10,522	11,668	10,574
Total additions	221,136	213,100	259,498	242,233	212,016
Deductions					
Benefit payments	234,414	200,627	222,860	218,768	203,419
Administrative expenses	19,261	16,612	13,766	13,514	12,481
Other	594	832	—	—	—
Total deductions	254,269	218,071	236,626	232,282	215,900
Change in fiduciary net position	(33,133)	(4,971)	22,872	9,951	(3,884)
Fiduciary net position held at beginning of year	309,638	314,609	291,737	281,786	285,670
Fiduciary net position held at end of year	\$276,505	\$309,638	\$314,609	\$291,737	\$281,786

¹ Employer contribution rate history is shown on page 259.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

DPS Health Care Trust Fund

	2020	2019	2018	2017	2016
Additions					
Employer contributions ¹	\$8,045	\$7,649	\$7,417	\$6,930	\$6,723
Retiree health care premiums	—	—	—	—	6,738
Net investment income (loss)	6,019	4,892	(894)	3,305	1,235
Other	224	188	205	242	289
Total additions	14,288	12,729	6,728	10,477	14,985
Deductions					
Benefit payments	3,086	3,644	4,158	5,694	12,748
Administrative expenses	516	477	845	808	818
Other	1	1	4	4	18
Total deductions	3,603	4,122	5,007	6,506	13,584
Change in fiduciary net position	10,685	8,607	1,721	3,971	1,401
Fiduciary net position held at beginning of year	32,636	24,029	22,308	18,337	16,936
Fiduciary net position held at end of year	\$43,321	\$32,636	\$24,029	\$22,308	\$18,337
	2015	2014	2013	2012	2011
Additions					
Employer contributions ¹	\$6,371	\$6,003	\$5,558	\$5,243	\$5,029
Retiree health care premiums	6,275	4,442	4,719	4,295	4,529
Federal health care subsidies	—	—	563	488	499
Net investment income	254	938	2,277	1,800	424
Other	301	281	312	216	374
Total additions	13,201	11,664	13,429	12,042	10,855
Deductions					
Benefit payments	12,442	10,432	11,222	11,027	10,770
Administrative expenses	822	668	561	547	501
Other	22	32	—	—	—
Total deductions	13,286	11,132	11,783	11,574	11,271
Change in fiduciary net position	(85)	532	1,646	468	(416)
Fiduciary net position held at beginning of year	17,021	16,489	14,843	14,375	14,791
Fiduciary net position held at end of year	\$16,936	\$17,021	\$16,489	\$14,843	\$14,375

¹ Employer contribution rate history is shown on page 259.

CHANGES IN FIDUCIARY NET POSITION

For the Years Ended December 31

(Dollars in Thousands)

Life Insurance Reserve

	2020	2019	2018	2017	2016
Additions					
Net investment income (loss)	\$3,909	\$3,901	(\$684)	\$3,241	\$1,289
Other	—	—	4	—	—
Total additions	3,909	3,901	(680)	3,241	1,289
Deductions					
Life insurance premiums	512	479	433	373	306
Administrative expenses	224	123	111	493	1,032
Total deductions	736	602	544	866	1,338
Change in fiduciary net position	3,173	3,299	(1,224)	2,375	(49)
Fiduciary net position held at beginning of year	21,141	17,842	19,066	16,691	16,740
Fiduciary net position held at end of year	\$24,314	\$21,141	\$17,842	\$19,066	\$16,691
	2015	2014	2013	2012	2011
Additions					
Net investment income	302	1,068	2,630	2,020	503
Total additions	302	1,068	2,630	2,020	503
Deductions					
Life insurance premiums	250	196	131	62	547
Administrative expenses	805	871	871	510	573
Total deductions	1,055	1,067	1,002	572	1,120
Change in fiduciary net position	(753)	1	1,628	1,448	(617)
Fiduciary net position held at beginning of year	17,493	17,492	15,864	14,416	15,033
Fiduciary net position held at end of year	\$16,740	\$17,493	\$17,492	\$15,864	\$14,416

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

State Division Trust Fund

	2020	2019	2018	2017	2016
Type of Benefit					
Age and service benefits:					
Retirees	\$1,581,249	\$1,540,738	\$1,510,747	\$1,456,159	\$1,387,374
Disability	78,987	81,434	82,947	83,280	82,221
Survivors	14,812	14,996	14,840	14,851	14,233
Total benefits	\$1,675,048	\$1,637,168	\$1,608,534	\$1,554,290	\$1,483,828
Type of Refund					
Separation	\$50,097	\$55,782	\$59,508	\$52,079	\$54,606
Death	7,791	5,909	5,728	6,561	5,464
Purchased service	33	141	17	56	67
Total refunds	\$57,921	\$61,832	\$65,253	\$58,696	\$60,137
2015					
Type of Benefit					
Age and service benefits:					
Retirees	\$1,322,592	\$1,257,767	\$1,202,238	\$1,140,055	\$1,083,722
Disability	81,310	80,753	79,854	78,689	77,715
Survivors	13,960	13,773	13,688	13,178	13,270
Total benefits	\$1,417,862	\$1,352,293	\$1,295,780	\$1,231,922	\$1,174,707
Type of Refund					
Separation	\$58,274	\$57,895	\$64,072	\$65,627	\$65,525
Death	5,213	3,058	4,411	3,503	3,986
Purchased service	80	199	252	91	579
Total refunds	\$63,567	\$61,152	\$68,735	\$69,221	\$70,090

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

School Division Trust Fund

	2020	2019	2018	2017	2016
Type of Benefit					
Age and service benefits:					
Retirees	\$2,452,428	\$2,384,406	\$2,329,157	\$2,249,855	\$2,149,415
Disability	67,467	67,737	68,774	68,537	67,416
Survivors	15,614	15,878	15,456	15,611	14,644
Total benefits	\$2,535,509	\$2,468,021	\$2,413,387	\$2,334,003	\$2,231,475
Type of Refund					
Separation	\$61,755	\$70,200	\$70,227	\$68,265	\$60,873
Death	6,101	3,412	5,678	6,313	4,756
Purchased service	17	259	130	59	86
Total refunds	\$67,873	\$73,871	\$76,035	\$74,637	\$65,715
	2015	2014	2013	2012	2011
Type of Benefit					
Age and service benefits:					
Retirees	\$2,053,108	\$1,952,989	\$1,855,195	\$1,757,279	\$1,657,071
Disability	67,203	65,780	63,741	62,140	61,150
Survivors	14,443	13,859	13,820	13,224	13,127
Total benefits	\$2,134,754	\$2,032,628	\$1,932,756	\$1,832,643	\$1,731,348
Type of Refund					
Separation	\$66,494	\$73,522	\$73,215	\$73,075	\$74,446
Death	3,621	3,521	3,282	3,815	3,676
Purchased service	183	128	483	264	421
Total refunds	\$70,298	\$77,171	\$76,980	\$77,154	\$78,543

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

Local Government Division Trust Fund

	2020	2019	2018	2017	2016
Type of Benefit					
Age and service benefits:					
Retirees	\$288,944	\$278,543	\$267,669	\$255,105	\$240,432
Disability	16,215	16,315	16,582	16,775	16,274
Survivors	2,636	2,589	2,494	2,378	2,261
Total benefits	\$307,795	\$297,447	\$286,745	\$274,258	\$258,967
Type of Refund					
Separation	\$11,734	\$13,070	\$14,587	\$13,095	\$12,017
Death	1,053	1,691	1,128	1,434	921
Purchased service	41	—	1	1	—
Total refunds	\$12,828	\$14,761	\$15,716	\$14,530	\$12,938
<hr/>					
	2015	2014	2013	2012	2011
Type of Benefit					
Age and service benefits:					
Retirees	\$226,400	\$213,962	\$199,821	\$178,845	\$162,681
Disability	16,327	16,045	16,022	15,096	14,727
Survivors	2,221	2,048	2,032	2,004	2,041
Total benefits	\$244,948	\$232,055	\$217,875	\$195,945	\$179,449
Type of Refund					
Separation	\$18,062	\$23,034	\$31,268	\$41,696	\$21,316
Death	2,317	1,401	1,201	1,154	1,283
Purchased service	31	1	11	91	87
Total refunds	\$20,410	\$24,436	\$32,480	\$42,941	\$22,686

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

Judicial Division Trust Fund

	2020	2019	2018	2017	2016
Type of Benefit					
Age and service benefits:					
Retirees	\$28,181	\$26,812	\$24,982	\$23,993	\$21,485
Disability	887	893	926	933	939
Survivors	341	351	328	324	310
Total benefits	\$29,409	\$28,056	\$26,236	\$25,250	\$22,734
Type of Refund					
Separation	\$48	\$—	\$50	\$7	\$109
Death	—	—	136	—	—
Total refunds	\$48	\$—	\$186	\$7	\$109
	2015	2014	2013	2012	2011
Type of Benefit					
Age and service benefits:					
Retirees	\$19,901	\$18,573	\$17,362	\$16,333	\$15,563
Disability	938	917	908	897	889
Survivors	319	310	346	376	357
Total benefits	\$21,158	\$19,800	\$18,616	\$17,606	\$16,809
Type of Refund					
Separation	\$—	\$60	\$385	\$250	\$513
Death	—	—	—	355	—
Total refunds	\$—	\$60	\$385	\$605	\$513

BENEFITS AND REFUND DEDUCTIONS FROM FIDUCIARY NET POSITION BY TYPE

For the Years Ended December 31

(Dollars in Thousands)

DPS Division Trust Fund

	2020	2019	2018	2017	2016
Type of Benefit					
Age and service benefits:					
Retirees	\$268,201	\$267,956	\$266,260	\$261,361	\$253,641
Disability	8,335	8,358	8,278	8,221	7,929
Survivors	1,545	1,535	1,685	1,607	1,582
Total benefits	\$278,081	\$277,849	\$276,223	\$271,189	\$263,152
Type of Refund					
Separation	\$8,913	\$10,486	\$10,652	\$9,873	\$7,894
Death	431	250	545	349	616
Purchased service	—	2	—	55	11
Total refunds	\$9,344	\$10,738	\$11,197	\$10,277	\$8,521
	2015	2014	2013	2012	2011
Type of Benefit					
Age and service benefits:					
Retirees	\$245,683	\$237,955	\$228,692	\$220,106	\$212,524
Disability	7,804	7,482	7,592	7,070	7,078
Survivors	1,581	1,568	1,637	1,566	1,511
Total benefits	\$255,068	\$247,005	\$237,921	\$228,742	\$221,113
Type of Refund					
Separation	\$7,685	\$7,424	\$6,558	\$5,602	\$4,322
Death	207	631	160	217	82
Purchased service	5	8	15	2	8
Total refunds	\$7,897	\$8,063	\$6,733	\$5,821	\$4,412

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 12/31/2020	53,643	119,421	12,757	344	14,693	200,858
Retirements During 2020						
Disability retirements	37	60	5	—	11	113
Service retirements	1,841	3,369	404	25	218	5,857
Total	1,878	3,429	409	25	229	5,970
Retirement Benefits						
Total receiving disability and service retirement benefits on 12/31/2019	40,219	67,192	7,757	388	7,012	122,568
Total retiring during 2020	1,878	3,429	409	25	229	5,970
Cobeneficiaries continuing after retiree's death	309	367	47	4	54	781
Returning to retirement rolls from suspension	6	10	1	—	17	34
Total	42,412	70,998	8,214	417	7,312	129,353
Retirees and cobeneficiaries deceased during year	1,478	1,883	209	14	312	3,896
Retirees suspending benefits to return to work	31	53	2	—	8	94
Total receiving retirement benefits on 12/31/2020	40,903	69,062	8,003	403	6,992	125,363²
Annual retirement benefits for retirees as of 12/31/2020	\$1,665,216,403	\$2,541,899,596	\$307,401,987	\$29,610,555	\$275,579,598	\$4,819,708,139
Average monthly benefit on 12/31/2020	\$3,393	\$3,067	\$3,201	\$6,123	\$3,284	\$3,204
Average monthly benefit for all members who retired during 2020	\$2,772	\$2,353	\$2,798	\$7,140	\$2,500	\$2,541
Survivor Benefits						
Total survivors being paid on 12/31/2020	965	1,177	177	11	136	2,466 ²
Annual benefits payable to survivors as of 12/31/2020	\$21,587,427	\$20,160,548	\$3,957,652	\$408,686	\$2,582,838	\$48,697,151
Future Benefits						
Future retirements	7,802	19,413	2,730	14	2,237	32,196
Total annual future benefits	\$90,345,980	\$162,390,204	\$35,681,981	\$512,540	\$25,131,529	\$314,062,234
Future survivor beneficiaries of inactive members	120	158	18	2	6	304 ²
Total annual future benefits	\$1,603,044	\$2,366,177	\$226,513	\$47,984	\$143,521	\$4,387,239

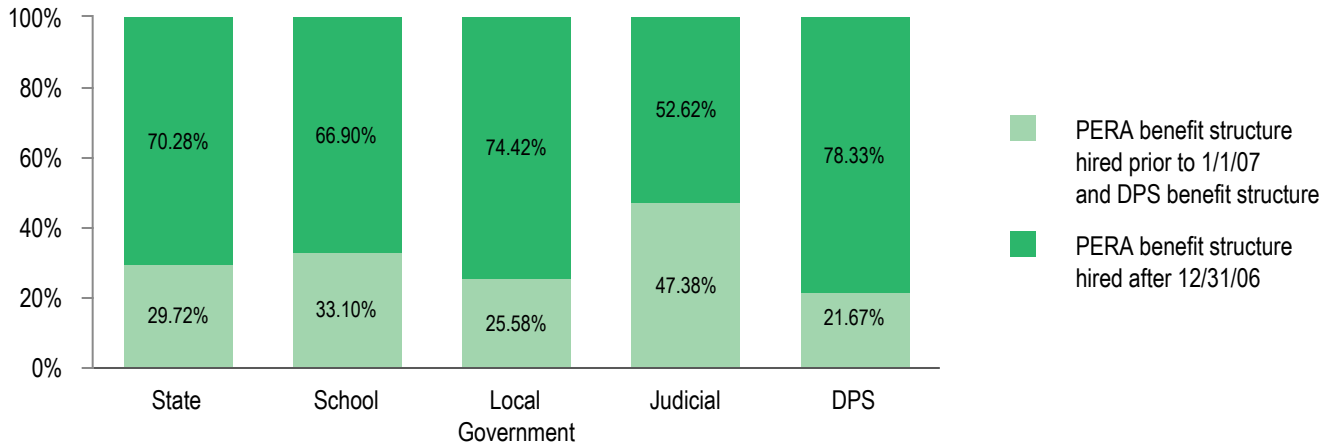
¹ In addition, as of December 31, 2020, there was a total of 269,918 non-vested inactive members due a refund of their contributions as follows: State Division—83,941; School Division—144,066; Local Government Division—27,245; Judicial Division—5; DPS Division—14,661.

² These line items make up the total for retirees and beneficiaries reported on page 51 in Note 1 of the Notes to the Financial Statements in the Financial Section.

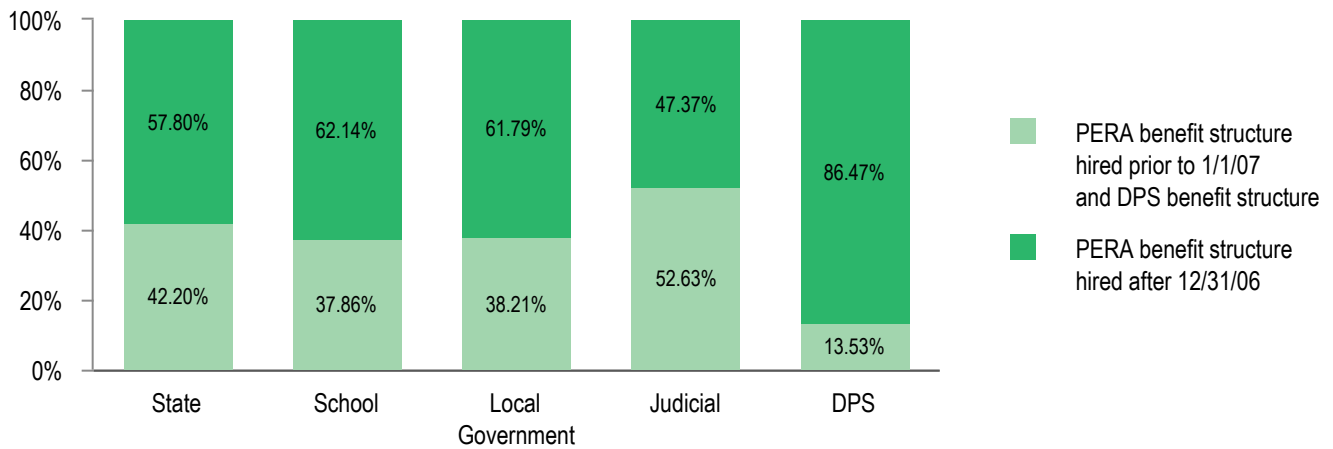
BREAKDOWN OF MEMBERSHIP BY PERCENTAGE

As of December 31, 2020

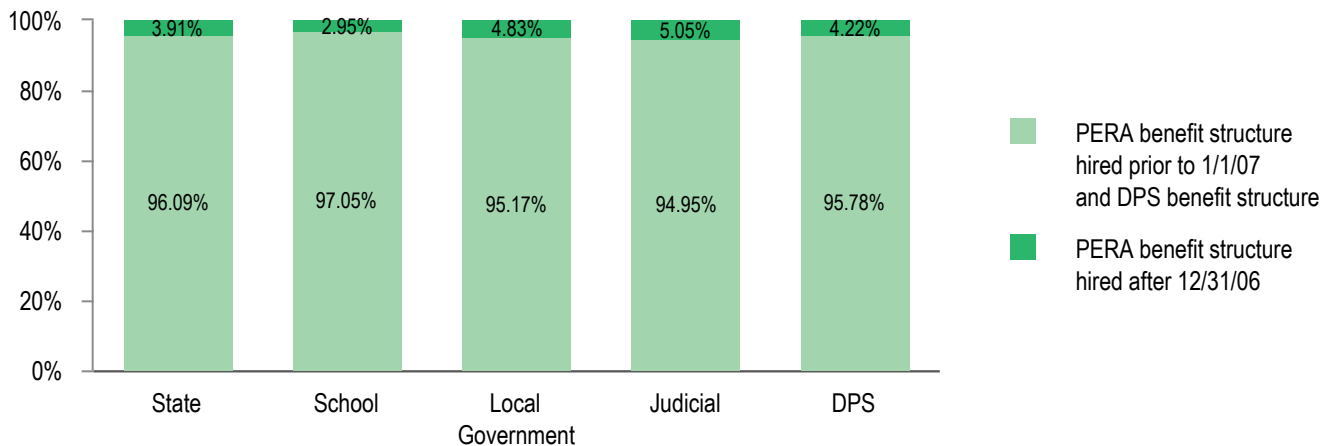
Active Members by Division



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
12/31/2020	\$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
12/31/2011	2,966	58.1	69.9	23.6	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 12/31/2020					
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
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

Please see page 238 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 12/31/2018					
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
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

Please see page 238 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 12/31/2014					
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
For All Retirees Year Ended 12/31/2011					
Average monthly benefit	\$3,056	\$2,895	\$2,948	\$4,739	\$3,009
Average age at retirement	58.0	58.2	57.5	61.0	58.7
Average age	70.3	69.5	67.8	73.7	73.2
Average years of service at retirement	23.0	23.8	22.3	22.4	26.0
For Members Who Retired During 2011					
Average monthly benefit	\$3,010	\$2,527	\$2,896	\$5,130	\$2,665
Average age	60.2	60.3	59.3	63.4	62.0
Average years of service	22.3	22.1	21.2	23.4	20.5

¹ Includes disability retirements, but not survivor benefits.

² Information not available prior to December 31, 2013.

BENEFIT PAYMENTS—ALL DIVISION TRUST FUNDS

As of December 31, 2020
(In Actual Dollars)

Benefit Payments^{1,2}

At the end of 2020, PERA was paying benefits to more than 127,000 retired public employees and their beneficiaries who received an average benefit of \$3,178 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, 2020, is 2.5 percent 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 percent. All other members are subject to an 8 percent year-to-year limit in their HAS calculation. This annual limit applied to salaries in the HAS years is designed to moderate salary “spiking.”

Approximately 68.7 percent (87,758) of recipients receive less than \$50,000 a year in PERA benefits, as the graph below demonstrates. Slightly more than 1.8 percent (2,344) 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.

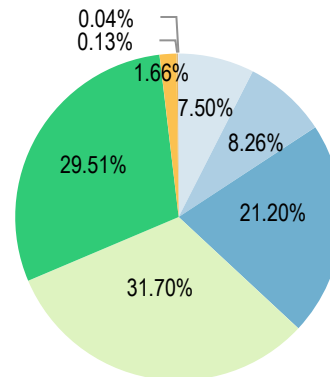
¹ Includes amounts paid under replacement benefit arrangements.

² Does not include deferred survivors and benefits that ended or were suspended in 2020.

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	9,585
\$5,000 - \$9,999	10,563
\$10,000 - \$24,999	27,095
\$25,000 - \$49,999	40,515
\$50,000 - \$99,999	37,727
\$100,000 - \$149,999	2,119
\$150,000 - \$199,999	168
\$200,000+	57
Total Benefit Recipients	127,829



¹ Includes amounts paid under replacement benefit arrangements.

² Does not include 304 deferred survivors.

BENEFIT PAYMENTS—ALL DIVISION TRUST FUNDS

As of December 31, 2020
 (In Actual Dollars)

Benefit Payments by Decile

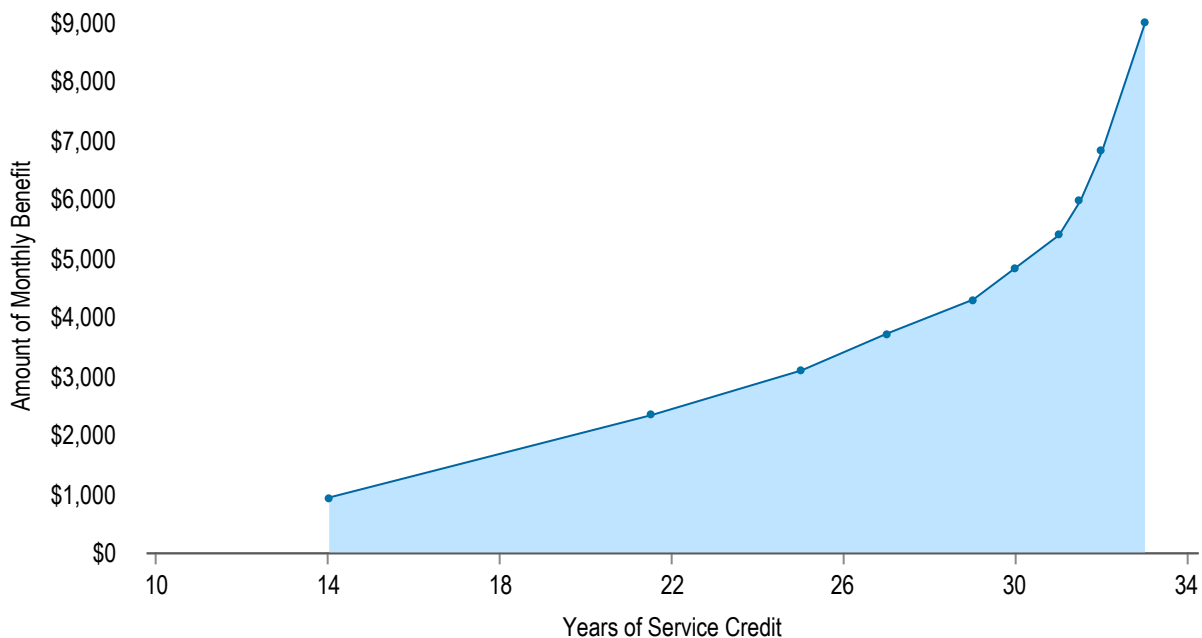
Another way to examine the data is to group benefit recipients and the benefits they receive into benefit payment ranges as a percentage of the total. The table below shows that, for the one-third of PERA benefit recipients (43,634) in the lowest decile, the average benefit is \$11,172 a year. This group retired at an average age of 61 with just under 14 years of service credit. For the top decile, on the other end of the scale, the average benefit is \$107,832 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 5,970 new retirees in 2020, the average monthly benefit is \$2,544. These members retired at an average age of 62 with 19.97 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%	43,634	34.13%	\$931	61	13.59
11%–20%	17,437	13.64%	2,329	58	21.44
21%–30%	13,147	10.28%	3,089	58	24.64
31%–40%	10,929	8.55%	3,717	58	26.90
41%–50%	9,465	7.40%	4,292	57	28.55
51%–60%	8,394	6.57%	4,839	57	29.73
61%–70%	7,540	5.90%	5,387	57	30.64
71%–80%	6,798	5.32%	5,974	57	31.33
81%–90%	5,965	4.67%	6,810	57	32.19
91%–100%	4,520	3.54%	8,986	58	33.25
Total	127,829	100.00%	3,178	59	22.61

¹ Does not include 304 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, 2020

Types of Benefits

- 1—Age and service retirement.
- 2—Disability retirement.
- 3—Survivor payment—Option 3.
- 4—Survivor payment—children, spouse, or dependent parent.
- 5—Surviving spouse with future benefit.
- 6—Former member with future benefit.

Option Selected

- Retirees select one of the following options at retirement:
- 1—Single-life benefit.
 - 2—Joint benefit with 1/2 to surviving cobeneficiary.
 - 3—Joint and survivor benefit.
 - 4—Joint benefit with 1/2 to either survivor. (No longer offered to members retiring.)

Surviving Cobeneficiary

Retiree has predeceased the cobeneficiary.

Surviving Retiree

Cobeneficiary has predeceased the retiree.

State Division

Types of Benefits

Amount of Monthly Benefit <i>(In Actual Dollars)</i>	Total (Columns 1–5)	1	2	3	4	5	6
\$1-\$1,000	6,176	5,578	235	25	271	67	5,139
\$1,001-\$2,000	7,227	5,581	1,255	46	301	44	1,927
\$2,001-\$3,000	7,686	6,343	1,182	34	122	5	519
\$3,001-\$4,000	6,753	6,356	309	30	56	2	149
\$4,001-\$5,000	5,122	5,000	84	16	21	1	40
\$5,001+	9,024	8,949	31	32	11	1	28
Total	41,988	37,807	3,096	183	782	120	7,802

Option Selected

Amount of Monthly Benefit¹ <i>(In Actual Dollars)</i>	1	2	3	4	Surviving Cobeneficiary	Surviving Retiree
\$1-\$1,000	3,883	392	979	2	544	13
\$1,001-\$2,000	3,898	764	1,164	2	973	35
\$2,001-\$3,000	4,216	1,021	1,386	1	848	53
\$3,001-\$4,000	3,576	1,129	1,384	1	547	28
\$4,001-\$5,000	2,596	998	1,166	2	303	19
\$5,001+	4,309	1,932	2,301	3	414	21
Total	22,478	6,236	8,380	11	3,629	169

¹ For Types of Benefits 1 and 2 above.

SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2020

Types of Benefits

- 1—Age and service retirement.
- 2—Disability retirement.
- 3—Survivor payment—Option 3.
- 4—Survivor payment—children, spouse, or dependent parent.
- 5—Surviving spouse with future benefit.
- 6—Former member with future benefit.

Option Selected

- Retirees select one of the following options at retirement:
- 1—Single-life benefit.
 - 2—Joint benefit with 1/2 to surviving cobeneficiary.
 - 3—Joint and survivor benefit.
 - 4—Joint benefit with 1/2 to either survivor. (No longer offered to members retiring.)

Surviving Cobeneficiary

Retiree has predeceased the cobeneficiary.

Surviving Retiree

Cobeneficiary has predeceased the retiree.

School Division

Types of Benefits

Amount of Monthly Benefit (In Actual Dollars)	Total (Columns 1–5)	1	2	3	4	5	6
\$1-\$1,000	15,588	14,203	722	51	525	87	15,468
\$1,001-\$2,000	11,492	10,031	1,097	39	276	49	3,124
\$2,001-\$3,000	10,179	9,334	674	21	136	14	605
\$3,001-\$4,000	9,670	9,279	314	16	56	5	150
\$4,001-\$5,000	9,133	8,982	121	10	19	1	48
\$5,001+	14,335	14,267	38	18	10	2	18
Total	70,397	66,096	2,966	155	1,022	158	19,413

Option Selected

Amount of Monthly Benefit ¹ (In Actual Dollars)	1	2	3	4	Surviving Cobeneficiary	Surviving Retiree
\$1-\$1,000	10,574	1,079	2,248	1	980	43
\$1,001-\$2,000	7,122	1,385	1,659	3	912	47
\$2,001-\$3,000	5,963	1,605	1,616	1	768	55
\$3,001-\$4,000	5,882	1,831	1,475	3	377	25
\$4,001-\$5,000	5,254	1,985	1,567	2	282	13
\$5,001+	8,981	3,017	1,974	5	317	11
Total	43,776	10,902	10,539	15	3,636	194

¹ For Types of Benefits 1 and 2 above.

SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2020

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 <i>(In Actual Dollars)</i>	Types of Benefits						
	Total (Columns 1–5)	1	2	3	4	5	6
\$1-\$1,000	1,495	1,388	50	5	44	8	1,667
\$1,001-\$2,000	1,587	1,252	261	10	55	9	688
\$2,001-\$3,000	1,411	1,148	226	10	27	—	264
\$3,001-\$4,000	1,170	1,088	69	4	8	1	67
\$4,001-\$5,000	897	874	15	6	2	—	34
\$5,001+	1,638	1,625	7	5	1	—	10
Total	8,198	7,375	628	40	137	18	2,730

Amount of Monthly Benefit ¹ <i>(In Actual Dollars)</i>	Option Selected					
	1	2	3	4	Surviving Cobeneficiary	Surviving Retiree
\$1-\$1,000	975	110	240	—	110	3
\$1,001-\$2,000	879	177	288	1	159	9
\$2,001-\$3,000	718	235	301	—	113	7
\$3,001-\$4,000	610	228	238	—	77	4
\$4,001-\$5,000	435	186	222	—	45	1
\$5,001+	697	400	478	—	57	—
Total	4,314	1,336	1,767	1	561	24

¹ For Types of Benefits 1 and 2 above.

SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2020

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)	Types of Benefits						
	Total (Columns 1–5)	1	2	3	4	5	6
\$1-\$1,000	20	18	1	—	—	1	1
\$1,001-\$2,000	29	25	1	—	3	—	2
\$2,001-\$3,000	30	28	—	—	2	—	4
\$3,001-\$4,000	34	28	2	—	3	1	4
\$4,001-\$5,000	39	32	6	—	1	—	2
\$5,001+	264	256	6	1	1	—	1
Total	416	387	16	1	10	2	14

Amount of Monthly Benefit ¹ (In Actual Dollars)	Option Selected						
	1	2	3	4	Surviving Cobeneficiary	Surviving Retiree	
\$1-\$1,000	8	1	4	—	6	—	
\$1,001-\$2,000	10	1	5	—	10	—	
\$2,001-\$3,000	5	5	8	—	10	—	
\$3,001-\$4,000	9	3	11	—	7	—	
\$4,001-\$5,000	10	3	13	—	12	—	
\$5,001+	82	66	93	—	21	—	
Total	124	79	134	—	66	—	

¹ For Types of Benefits 1 and 2 above.

SCHEDULE OF RETIREES AND SURVIVORS BY TYPES OF BENEFITS

As of December 31, 2020

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)	Types of Benefits						
	Total (Columns 1–5)	1	2	3	4	5	6
\$1-\$1,000	978	842	72	1	59	4	1,471
\$1,001-\$2,000	1,176	1,044	103	1	27	1	608
\$2,001-\$3,000	1,129	1,007	88	13	21	—	117
\$3,001-\$4,000	1,261	1,209	43	7	2	—	27
\$4,001-\$5,000	1,288	1,265	20	2	1	—	8
\$5,001+	1,302	1,295	4	1	1	1	6
Total	7,134	6,662	330	25	111	6	2,237

Amount of Monthly Benefit ² (In Actual Dollars)	Option Selected ¹						
	1	2	3	4	Surviving Cobeneficiary	Surviving Retiree	Cobeneficiaries Both Deceased
\$1-\$1,000	639	38	134	—	77	26	—
\$1,001-\$2,000	702	88	187	—	118	47	5
\$2,001-\$3,000	596	90	237	—	104	68	—
\$3,001-\$4,000	641	117	284	—	133	76	1
\$4,001-\$5,000	616	116	335	—	119	98	1
\$5,001+	648	132	343	—	109	66	1
Total	3,842	581	1,520	—	660	381	8

¹ Below are the equivalent DPS benefit structure options:
 PERA Option 1 = Options A, B, and D (D is discontinued)
 PERA Option 2 = Options P2 and E (E is discontinued)
 PERA Option 3 = Options P3 and C (C is discontinued)

² For Types of Benefits 1 and 2 above.

SCHEDULE OF AVERAGE BENEFIT PAYMENTS

(In Actual Dollars)

State Division

Year Retired	Years of Service Credit						
	0-5	5-10	10-15	15-20	20-25	25-30	30+
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
Period 1/1/2011 to 12/31/2011							
Average monthly benefit	\$160	\$690	\$1,214	\$1,956	\$2,863	\$4,096	\$5,307
Average highest average salary	\$2,254	\$3,425	\$4,027	\$4,413	\$5,181	\$6,002	\$6,661
Number of service retirees	53	184	130	143	237	331	305

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 1/1/2020 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
Period 1/1/2011 to 12/31/2011							
Average monthly benefit	\$214	\$462	\$806	\$1,625	\$2,430	\$3,617	\$4,632
Average highest average salary	\$1,980	\$2,563	\$2,683	\$3,526	\$4,344	\$5,235	\$5,804
Number of service retirees	71	336	273	334	506	651	497

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 1/1/2020 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
Period 1/1/2011 to 12/31/2011							
Average monthly benefit	\$338	\$665	\$1,011	\$1,985	\$2,908	\$4,093	\$5,337
Average highest average salary	\$5,959	\$3,988	\$3,469	\$4,616	\$5,333	\$6,070	\$6,712
Number of service retirees	13	48	33	32	42	78	60

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 1/1/2020 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
Period 1/1/2011 to 12/31/2011							
Average monthly benefit	\$—	\$962	\$2,332	\$3,156	\$5,642	\$4,768	\$7,974
Average highest average salary	\$—	\$8,192	\$10,487	\$8,704	\$10,430	\$7,818	\$9,925
Number of service retirees	—	1	2	3	5	3	5

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 1/1/2020 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
Period 1/1/2011 to 12/31/2011							
Average monthly benefit	\$1,297	\$996	\$1,479	\$2,060	\$3,373	\$4,188	\$4,290
Average highest average salary	\$2,751	\$4,789	\$4,956	\$4,948	\$5,910	\$6,046	\$5,198
Number of service retirees	8	30	35	38	57	38	26

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 1/1/2020 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
Period 1/1/2011 to 12/31/2011							
Average monthly benefit	\$265	\$576	\$989	\$1,770	\$2,657	\$3,817	\$4,919
Average highest average salary	\$2,480	\$3,063	\$2,941	\$3,605	\$4,371	\$5,351	\$6,012
Number of service retirees	145	599	473	550	847	1,101	893

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 1/1/2020 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 1/1/2020 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.

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 1/1/2020 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					
Years			Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Nonemployer Contribution Rate	Total Contribution Rate
8/1/1931	to	6/30/1938	3.50%	—	—	—	—	3.50%
7/1/1938	to	6/30/1949	3.50%	3.50%	—	—	—	7.00%
7/1/1949	to	6/30/1958	5.00%	5.00%	—	—	—	10.00%
7/1/1958	to	6/30/1969	6.00%	6.00%	—	—	—	12.00%
7/1/1969	to	6/30/1970	7.00%	7.00%	—	—	—	14.00%
7/1/1970	to	6/30/1971	7.00%	8.00%	—	—	—	15.00%
7/1/1971	to	6/30/1973	7.00%	8.50%	—	—	—	15.50%
7/1/1973	to	6/30/1974	7.75%	9.50%	—	—	—	17.25%
7/1/1974	to	6/30/1975	7.75%	10.50%	—	—	—	18.25%
7/1/1975	to	8/31/1980	7.75%	10.64%	—	—	—	18.39%
9/1/1980	to	12/31/1981	7.75%	12.20%	—	—	—	19.95%
1/1/1982	to	6/30/1987	8.00%	12.20%	—	—	—	20.20%
7/1/1987	to	6/30/1988	8.00%	10.20%	—	—	—	18.20%
7/1/1988	to	6/30/1991	8.00%	12.20%	—	—	—	20.20%
7/1/1991	to	4/30/1992	8.00%	11.60%	—	—	—	19.60%
5/1/1992	to	6/30/1992	8.00%	5.60% ³	—	—	—	13.60%
7/1/1992	to	6/30/1993	8.00%	10.60%	—	—	—	18.60%
7/1/1993	to	6/30/1997	8.00%	11.60%	—	—	—	19.60%
1/1/2006	to	12/31/2006	8.00%	10.15%	0.50%	—	—	18.65%
1/1/2007	to	12/31/2007	8.00%	10.15%	1.00%	—	—	19.15%
1/1/2008	to	12/31/2008	8.00%	10.15%	1.40%	0.50%	—	20.05%
1/1/2009	to	12/31/2009	8.00%	10.15%	1.80%	1.00%	—	20.95%
1/1/2010	to	6/30/2010	8.00%	10.15%	2.20%	1.50%	—	21.85%
7/1/2010	to	12/31/2010	10.50% ⁴	7.65% ⁴	2.20%	1.50%	—	21.85%
1/1/2011	to	12/31/2011	10.50% ⁴	7.65% ⁴	2.60%	2.00%	—	22.75%
1/1/2012	to	6/30/2012	10.50% ⁴	7.65% ⁴	3.00%	2.50%	—	23.65%
7/1/2012	to	12/31/2012	8.00%	10.15%	3.00%	2.50%	—	23.65%
1/1/2013	to	12/31/2013	8.00%	10.15%	3.40%	3.00%	—	24.55%
1/1/2014	to	12/31/2014	8.00%	10.15%	3.80%	3.50%	—	25.45%
1/1/2015	to	12/31/2015	8.00%	10.15%	4.20%	4.00%	—	26.35%
1/1/2016	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% ⁵	30.86%
1/1/2019	to	6/30/2019	8.00%	10.15%	5.00%	5.00%	2.57% ^{5,6}	30.72%
7/1/2019	to	12/31/2019	8.75%	10.40%	5.00%	5.00%	2.57% ^{5,6}	31.72%
1/1/2020	to	6/30/2020	8.75%	10.40%	5.00%	5.00%	—⁷	29.15%
7/1/2020	to	12/31/2020	10.00%	10.90%	5.00%	5.00%	—⁷	30.90%

¹ State and School Divisions merged July 1, 1997, and separated on January 1, 2006.

² All employer contribution rates shown since July 1, 1985, include the Health Care Trust Fund (HCTF) allocation.

³ Legislation created an annual reduction equal to 1.0 percent of salary retroactive to July 1, 1991, to be taken during May and June of 1992.

⁴ Senate Bills 10-146 and 11-076 required member contributions to increase by 2.50 percent and employer contributions to decrease by 2.50 percent.

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 State Division is expressed as a percentage of annual covered payroll.

⁶ 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.

⁷ 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	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% ³	—	—	—	19.50%
7/1/1992	to	6/30/1993	11.50%	12.20%	—	—	—	23.70%
7/1/1993	to	6/30/1997	11.50%	13.20%	—	—	—	24.70%
7/1/1997	to	6/30/1999	11.50%	13.10%	—	—	—	24.60%
7/1/1999	to	6/30/2001	10.00%	13.10%	—	—	—	23.10%
7/1/2001	to	6/30/2002	10.00%	12.60%	—	—	—	22.60%
7/1/2002	to	6/30/2003	10.00%	12.74%	—	—	—	22.74%
7/1/2003	to	12/31/2005	10.00%	12.85%	—	—	—	22.85%
1/1/2006	to	12/31/2006	10.00%	12.85%	0.50%	—	—	23.35%
1/1/2007	to	12/31/2007	10.00%	12.85%	1.00%	—	—	23.85%
1/1/2008	to	12/31/2008	10.00%	12.85%	1.40%	0.50%	—	24.75%
1/1/2009	to	12/31/2009	10.00%	12.85%	1.80%	1.00%	—	25.65%
1/1/2010	to	6/30/2010	10.00%	12.85%	2.20%	1.50%	—	26.55%
7/1/2010	to	12/31/2010	12.50% ⁴	10.35% ⁴	2.20%	1.50%	—	26.55%
1/1/2011	to	12/31/2011	12.50% ⁴	10.35% ⁴	2.60%	2.00%	—	27.45%
1/1/2012	to	6/30/2012	12.50% ⁴	10.35% ⁴	3.00%	2.50%	—	28.35%
7/1/2012	to	12/31/2012	10.00%	12.85%	3.00%	2.50%	—	28.35%
1/1/2013	to	12/31/2013	10.00%	12.85%	3.40%	3.00%	—	29.25%
1/1/2014	to	12/31/2014	10.00%	12.85%	3.80%	3.50%	—	30.15%
1/1/2015	to	12/31/2015	10.00%	12.85%	4.20%	4.00%	—	31.05%
1/1/2016	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% ⁵	35.56%
1/1/2019	to	6/30/2019	10.00%	12.85%	5.00%	5.00%	2.57% ^{5,6}	35.42%
7/1/2019	to	12/31/2019	10.75%	13.10%	5.00%	5.00%	2.57% ^{5,6}	36.42%
1/1/2020	to	6/30/2020	10.75%	13.10%	5.00%	5.00%	—⁷	33.85%
7/1/2020	to	12/31/2020	12.00%	13.60%	5.00%	5.00%	—⁷	35.60%

¹ State and School Divisions merged July 1, 1997, and separated on January 1, 2006.

² All employer contribution rates shown since July 1, 1985, include the HCTF allocation.

³ Legislation created an annual reduction equal to 1.0 percent of salary retroactive to July 1, 1991, to be taken during May and June of 1992.

⁴ Senate Bills 10-146 and 11-076 required member contributions to increase by 2.50 percent and employer contributions to decrease by 2.50 percent.

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 State Division is expressed as a percentage of annual covered payroll.

⁶ 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.

⁷ 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 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

Years	Percent of Covered Payroll	
	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

Years	Percent of Covered Payroll				
	Member Contribution Rate	Employer Contribution Rate ²	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	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 The Local Government Division Trust Fund was the Municipal Division Trust Fund prior to January 1, 2006.

² All employer contribution rates shown since July 1, 1985, include the HCTF allocation.

SCHEDULE OF CONTRIBUTION RATE HISTORY

Local Government Division (State Troopers)¹

		Percent of Covered Payroll				
Years		Member Contribution Rate	Employer Contribution Rate	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	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 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.

Judicial Division

		Percent of Covered Payroll					
Years		Member Contribution Rate	Employer Contribution Rate ¹	Amortization Equalization Disbursement	Supplemental Amortization Equalization Disbursement	Nonemployer Contribution Rate	Total Contribution Rate
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 All employer contribution rates shown since July 1, 1985, include the HCTF allocation.

² Senate Bills 10-146 and 11-076 required member contributions to increase by 2.50 percent and employer contributions to decrease by 2.50 percent.

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 5.0 percent and employer contributions to decrease by 5.0 percent for all members of the Judicial Division except those employed by the Denver County Court.

⁷ Contribution rates for members of the Judicial Division members 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 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 12/31/2020	1.02%
School Division¹		
7/1/1985	to 6/30/1997	0.80%
1/1/2006	to 12/31/2020	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 12/31/2020	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 12/31/2020	1.02%
DPS Division³		
1/1/2010	to 12/31/2020	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	2020			2014		
	Covered Active Members December 31	Rank	Percentage of Total System	Covered Active Members December 31	Rank	Percentage of Total System
State of Colorado	49,988	1	93.19%	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	2020			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	11,391	1	9.54%	12,184	1	10.19%
Douglas County School District Re 1	8,401	2	7.03%	8,345	2	6.98%
Cherry Creek School District 5	7,582	3	6.35%	7,670	3	6.41%
Adams-Arapahoe School District 28J	5,721	4	4.79%	5,453	4	4.56%
Adams 12 Five Star Schools	4,923	5	4.12%	5,261	5	4.40%
Boulder Valley School District RE2	4,269	6	3.57%	4,678	6	3.91%
St. Vrain Valley School District RE1J	4,216	7	3.53%	4,189	9	3.50%
Poudre School District R-1	4,181	8	3.50%	4,425	7	3.70%
Academy School District #20	3,815	9	3.19%	3,660	10	3.06%
Colorado Springs School District 11	3,678	10	3.08%	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	2020			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	3,341	1	26.19%	3,054	1	25.27%
Boulder County	2,138	2	16.76%	2,067	2	17.11%
City of Boulder	1,172	3	9.19%	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	2020			2014		
	Covered Active Members December 31	Rank	Percentage of Total System	Covered Active Members December 31	Rank	Percentage of Total System
Judicial Department	332	1	96.51%	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	2020			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	14,693	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	2020			2017		
	Covered Active Members December 31	Rank	Percentage of Total System	Covered Active Members December 31	Rank	Percentage of Total System
State of Colorado	49,988	1	26.85%	51,022	1	26.60%
Jefferson County School District R-1	11,391	2	6.12%	12,295	2	6.41%
Douglas County School District Re 1	8,401	3	4.51%	9,100	3	4.75%
Cherry Creek School District 5	7,582	4	4.07%	7,929	4	4.13%
Adams-Arapahoe School District 28J	5,721	5	3.07%	5,271	5	2.75%
Adams 12 Five Star Schools	4,923	6	2.64%	5,075	6	2.65%
Boulder Valley School District RE2	4,269	7	2.29%	4,763	7	2.48%
St. Vrain Valley School District RE1J	4,216	8	2.26%			
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	2020			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	14,693	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
Pinnacle 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
Center
Weld County Department of Public Health and Environment
West Greeley Conservation District
Western Rio Blanco Metropolitan Recreation and Park
District
White River Conservation District
Wray Housing Authority
Yuma Housing Authority

SCHEDULE OF AFFILIATED EMPLOYERS

Judicial Division

1st-22nd District Court
Adams County Court
Alamosa County Court
Arapahoe County Court
Archuleta County Court
Baca County Court
Bent County Court
Boulder County Court
Broomfield County Court
Chaffee County Court
Cheyenne County Court
Clear Creek County Court
Conejos County Court
Costilla County Court
Court of Appeals
Crowley County Court
Custer County Court
Delta County Court
Denver County Court
Denver Juvenile Court
Denver Probate Court
Dolores County Court
Douglas County Court
Eagle County Court
Elbert County Court
El Paso County Court
Fremont County Court
Garfield County Court
Gilpin County Court
Grand County Court
Gunnison County Court
Hinsdale County Court
Huerfano County Court
Jackson County Court
Jefferson County Court

Kiowa County Court
Kit Carson County Court
Lake County Court
La Plata County Court
Larimer County Court
Las Animas County Court
Lincoln County Court
Logan County Court
Mesa County Court
Mineral County Court
Moffat County Court
Montezuma County Court
Montrose County Court
Morgan County Court
Otero County Court
Ouray County Court
Park County Court
Phillips County Court
Pitkin County Court
Prowers County Court
Pueblo County Court
Rio Blanco County Court
Rio Grande County Court
Routt County Court
Saguache County Court
San Juan County Court
San Miguel County Court
Sedgwick County Court
Summit County Court
Supreme Court
Teller County Court
Washington County Court
Weld County Court
Yuma County Court

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**



Commonly Used Acronyms

AAL	Actuarial Accrued Liability	IRC	Internal Revenue Code
AAP	Automatic Adjustment Provision	MBS	Mortgage-Backed Securities
ADC	Actuarially Determined Contribution		Management's Discussion and
AED	Amortization Equalization	MD&A	Analysis
	Disbursement	NAV	Net Asset Value
AI	Annual Increase	NOL	Net OPEB Liability
AIR	Annual Increase Reserve	NPL	Net Pension Liability
ARC	Annual Required Contribution	OPEB	Other Postemployment Benefit
ASOPs	Actuarial Standards of Practice	PCOP	Pension Certificates of Participation
BOCES	Boards of Cooperative Educational	RDS	Retiree Drug Subsidy
	Services	RSI	Required Supplementary Information
CBI	Colorado Bureau of Investigation		Supplemental Amortization
CMBS	Commercial Mortgage-Backed	SAED	Equalization Disbursement
	Securities	SB	Senate Bill
CMC	Cavanaugh Macdonald Consulting,	SEIR	Single Equivalent Interest Rate
	LLC	SRI	Socially Responsible Investment
CMS	Centers for Medicare & Medicaid	TIPS	Treasury Inflation Protected Securities
	Services	TOL	Total OPEB Liability
CPI-W	Consumer Price Index for Urban Wage	TPL	Total Pension Liability
	Earners and Clerical Workers	UAAL	Unfunded Actuarial Accrued Liability
C.R.S.	Colorado Revised Statutes		
DB	Defined Benefit		
DC	Defined Contribution		
DC Plan	Defined Contribution Retirement Plan		
DPS	Denver Public Schools		
DPS HCTF	Denver Public Schools Health Care		
	Trust Fund		
DPSRS	Denver Public Schools Retirement		
	System		
EA	Entry Age Actuarial Cost Method		
EGWP	Employer Group Waiver Plan		
ESG	Environmental, Social, and		
	Governance		
FNP	Fiduciary Net Position		
GASB	Governmental Accounting Standards		
	Board		
GDP	Gross Domestic Product		
HAS	Highest Average Salary		
HB	House Bill		
HCTF	Health Care Trust Fund		



Public Employees' Retirement Association of Colorado

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