Public Employees' Retirement Association of Colorado

Actuarial Valuation and Review

As of December 31, 2021

Health Care Trust Fund
Denver Public Schools Health Care Trust Fund

This report has been prepared at the request of the Board of Trustees to assist in administering the Funds. The measurements shown in this actuarial valuation may not be applicable for other purposes.

Segal

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May 17, 2022

The Board of Trustees
Public Employees' Retirement Association of Colorado
1301 Pennsylvania St.
Denver, CO 80203-2386

Dear Trustees:

We certify that the information contained in this report is accurate and fairly presents the actuarial position of the Health Care Trust Funds of the Public Employees' Retirement Association of Colorado (PERA) as of December 31, 2021.

All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion the results presented also comply with Colorado Statutes, and, where applicable, the Internal Revenue Code, and ERISA. The undersigned are independent actuaries. All are Fellows or Associates of the Society of Actuaries and Members of the American Academy of Actuaries, and are experienced in performing valuations for large public retirement systems. All meet the Qualification Standards of the American Academy of Actuaries.

OPEB FUNDING ACTUARIAL VALUATION – HEALTH CARE TRUST FUNDS

The primary purposes of the valuation report are to determine the adequacy of the current employer contribution rates, to describe the current financial condition of PERA, and to analyze changes in PERA's financial condition. Valuations are prepared annually, as of December 31 of each year, the last day of PERA's plan and fiscal year.

OPEB FINANCING OBJECTIVES

PERA maintains two pre-funded defined benefit retiree health care subsidy plans [i.e., Health Care Trust Fund (HCTF) and the Denver Public Schools Health Care Trust Fund (DPS HCTF)], classified as other postemployment benefit (OPEB) plans. Each OPEB plan is funded through PERA-affiliated employer contributions, allocated purchase of service dollars, and the investment earnings resulting from those contributions. The fixed contribution rate at which each PERA-affiliated employer contributes is determined by the Colorado General Assembly and defined within the statutes governing PERA.

PERA's OPEB plan funding policy (OPEB funding policy), as developed and maintained by the Board of Trustees (Board), is used to gauge the adequacy of the employer contributions. The purposes of this OPEB funding policy are to state the overall funding goals and annual actuarial metrics and to guide the PERA Board of Trustees (Board) when considering whether to pursue or support proposed contribution and benefit legislation related to the Health Care Trust Funds. The policy also includes a brief list of governance responsibilities regarding the commissioning, collection, and review of actuarial information, as described in the Board's Governance Manual.

PERA maintains five pre-funded hybrid defined benefit pension plans (i.e., State Division Trust Fund, School Division Trust Fund, Local Government Division Trust Fund. Judicial Division Trust Fund, and Denver Public Schools Division Trust Fund). On November 16, 2018, the Board approved an amended defined benefit pension plan funding policy (pension funding policy) with regard to these plans. The results of the pension funding actuarial valuation are inclued in a separate report.

PERA's OPEB funding policy is provided in Section 4, Exhibit III.

PROGRESS TOWARD REALIZATION OF OPEB FINANCING OBJECTIVES

The results indicate that for both Health Care Trust Funds the allocated employer contribution rates are sufficient to fund the normal cost for all members and each Health Care Trust Fund's unfunded accrued liability. The resulting amortization periods for each fund as of December 31, 2021, are shown in the following table:

Trust Fund	Effective Amortization Period
Health Care Trust Fund	13 years
DPS Health Care Trust Fund	2 years

The Coronavirus (COVID-19) pandemic has had a significant impact on the US economy, including most retiree health plans. Our results do not include the impact of the following:

– Direct or indirect effects of COVID-19 on short-term health plan costs

– Changes in the market value of plan assets since December 31, 2021

– Changes in interest rates since December 31, 2021

– Short-term or long-term impacts on mortality of the covered population

– The potential for federal or state fiscal relief

Each of the above factors could significantly impact these results. Given the high level of uncertainty and fluidity of the current events, updated estimates might be required to monitor the plan's financial status.

REPORTING CONSEQUENCES

Pursuant to the Governmental Accounting Standards Board Statement No. 74 (GASB 74), PERA is required to disclose certain actuarial information in its Comprehensive Annual Financial Report (Annual Report), including the Net OPEB Liability (NOL), the sensitivity of the NOL to changes in the discount rate, a schedule of changes in NOL, and a comparison of actual contributions to the Actuarially Determined Contribution (ADC). PERA's affiliated employers are required to comply with GASB Statement No. 75 (GASB 75), which also requires disclosure of certain actuarial information in their financial statements. This information is provided in a separate report.

BENEFIT PROVISIONS

The HCTF and DPS HCTF provide a subsidy for PERACare, PERA's voluntary health benefits program. 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. Colorado State law provisions may be amended from time to time by the Colorado General Assembly. A summary of plan provisions is provided in Section 4, Exhibit II.

ASSUMPTIONS AND METHODS

The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation resulted from the *Public Employees' Retirement Association of Colorado Analysis of Actuarial Experience during the Period January 1, 2016 through December 31, 2019* and the *Public Employees' Retirement Association of Colorado – Health Care Trust Fund and Denver Public Schools Health Care Trust Fund Analysis of Actuarial Experience during the Period January 1, 2016 through December 31, 2019.* All recommended changes to the demographic and economic actuarial assumptions resulting from this study were reviewed and adopted by the Board at their November 20, 2020 meeting, to be effective for the December 31, 2020 actuarial valuation. As a result of the 2019 Asset Liability Study, concluded at the November 15, 2019 Board meeting, the Board reaffirmed the 7.25% assumed long-term rate of investment return effective as of January 1, 2020. This Board decision also was in alignment with the analysis provided in the 2020 Experience Analysis Study report.

In addition, effective January 19, 2018, the OPEB funding policy was adopted to recognize a 30-year period to achieve 100% funding in parallel with the pension funding policy adopted and amended by the Board. Therefore, the UAAL as of December 31, 2017 is the initial legacy liability and is amortized over 30 years from December 31, 2017 (i.e., 26 years remaining as of December 31, 2021). Pursuant to the Board's funding policy, any growth (or reduction) in unfunded liabilities resulting from the initial legacy UAAL, is amortized over the same closed period. Thus, the 2021 contribution excess is amortized over a 26 year period, but the 2021 actuarial experience gain or loss, recognized as a new layer of UAAL, is amortized over 30 years. A summary of the assumptions and methods applied in this valuation is provided in *Section 4, Exhibit I*.

DATA

Member data for retired, active, and inactive participants was supplied as of December 31, 2021, by PERA. We have not subjected this data to any auditing procedures, but have examined the data for reasonableness and consistency with the prior year's data. Asset information was also supplied by PERA. That assistance is gratefully acknowledged.

Sincerely,

Segal

By:

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Vice President and Retiree Health Actuary

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Section 1: Actuarial Valuation Summary

Purpose and Basis

This report was prepared by Segal to present a funding valuation of the Health Care Trust Funds of the Public Employees' Retirement Association of Colorado (PERA) as of December 31, 2021. The funding valuation was performed to determine whether the assets and contribution rates are sufficient to provide the prescribed benefits. The measurements shown in this actuarial valuation may not be applicable for other purposes. In particular, the measures herein are not necessarily appropriate for assessing the sufficiency of PERA's Health Care Trust Fund assets to cover the estimated cost of settling the coordinating benefit obligations of those trusts. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law.

Certain disclosure information required by GASB 74 and GASB 75 as of December 31, 2021 for PERA is provided in a separate report.

The contribution requirements presented in this report are based on:

- The health care premium subsidy provisions, as administered by the PERA Board of Trustees;
- The characteristics of covered active members, inactive members, retired members and survivors as of December 31, 2021, provided by PERA;
- The assets of PERA's Health Care Trust Funds as of December 31, 2021, provided by PERA;
- Economic and other actuarial assumptions regarding health care trend rates, future salary increases, investment earnings, employee terminations, retirement, death, etc., as updated and approved by the Board, as of the November 20, 2020 Board meeting, first effective for the December 31, 2020 actuarial valuation. See additional detail in the Actuarial Assumptions section of the report on page 60; and
- The OPEB funding policy adopted by the PERA Board of Trustees, effective January 19, 2018.

Valuation Highlights – Health Care Trust Fund

1. 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.
2. The employer statutory contribution rate for the plan year beginning January 1, 2023 is equal to 1.02% of salary for employers. After recognizing the net employer normal cost rate of 0.18% of salary, the remaining basic contribution amounts to 0.84% of salary. Contributions at this level will amortize the unfunded actuarial accrued liability of $834,327,406 over 13 years, assuming the aggregate payroll increases by 3.00% per year.
3. The actuarially determined contribution for the plan year beginning January 1, 2023 is equal to 0.73% of salary for employers. The Unfunded Actuarial Accrued Liability as of December 31, 2017 is the initial legacy liability and is amortized over a remaining period of 26 years. Pursuant to the Board's OPEB funding policy, any growth (or reduction) in unfunded liabilities resulting from the initial legacy UAAL, is amortized over the same closed period. Thus, the 2021 contribution excess also is amortized over a 26 year period, but the 2021 actuarial experience gain or loss, recognized as a new layer of UAAL, is amortized over 30 years.
4. Actual employer contributions made during the plan year ending December 31, 2021 were $97,974,004, which is 118% of the actuarially determined contribution. In the prior plan year, actual contributions were $94,634,186, which is 109% of the prior year actuarially determined contribution.
5. Actuarial assumptions were updated as shown in the Actuarial Assumptions section of the report on page 60. The updated assumptions decreased the accrued liability by $44.4 million.
6. The funded ratio based on the actuarial value of assets over the actuarial accrued liability as of December 31, 2021 is 38.0%, compared to 30.3% as of December 31, 2020. This ratio is a measure of funding status and its history is a measure of funded progress. These measurements are not necessarily appropriate for assessing the sufficiency of the Plan's assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.
7. For the year ended December 31, 2021, PERA's total fund annualized rate return on a market value basis was reported to be 16.1%. For the same period, Segal determined specifically for the HCTF, the asset return on a market value basis was 14.30%. After gradual recognition of investment gains and losses under the actuarial smoothing method, the actuarial rate of return was 11.64%. This represents an experience gain when compared to the assumed rate of 7.25%. As of December 31, 2021, the actuarial value of assets of $511.1 million represented 91.2% of the market value of $560.7 million.
8. The portion of deferred investment gains and losses recognized during the calculation of the December 31, 2021 actuarial value of assets contributed a gain of $19.5 million.

Valuation Highlights – Denver Public Schools Health Care Trust Fund

1. 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.
2. The employer statutory contribution rate for the plan year beginning January 1, 2023 is equal to 1.02% of salary for employers. After recognizing the net employer normal cost rate of 0.14% of salary, the remaining basic contribution amounts to 0.88% of salary. Contributions at this level will amortize the unfunded actuarial accrued liability of $12,341,730 over 2 years, assuming the aggregate payroll of the DPS Division increases by 3.00% per year.
3. The actuarially determined contribution for the plan year beginning January 1, 2023 is equal to 0.24% of salary for employers. The Unfunded Actuarial Accrued Liability as of December 31, 2017 is the initial legacy liability and is amortized over a remaining period of 26 years. Pursuant to the Board's OPEB funding policy, any growth (or reduction) in unfunded liabilities resulting from the initial legacy UAAL, is amortized over the same closed period. Thus, the 2021 contribution excess also is amortized over a 26 year period, but the 2021 actuarial experience gain or loss, recognized as a new layer of UAAL, is amortized over 30 years.
4. Actual employer contributions made during the plan year ending December 31, 2021 were $8,622,308, which is 238% of the actuarially determined contribution. In the prior plan year, actual contributions were $8,045,899, which is 205% of the prior year actuarially determined contribution.
5. Actuarial assumptions were updated as shown in the Actuarial Assumptions section of the report on page 60. The updated assumptions decreased the accrued liability by $2.5 million
6. The funded ratio based on the actuarial value of assets over the actuarial accrued liability as of December 31, 2021 is 80.1%, compared to 60.8% as of December 31, 2020. This ratio is a measure of funding status and its history is a measure of funded progress. These measurements are not necessarily appropriate for assessing the sufficiency of the Plan's assets to cover the estimated cost of settling the Plan's benefit obligation or the need for or the amount of future contributions.
7. For the year ended December 31, 2021, PERA's total fund annualized rate return on a market value basis was reported to be 16.1%. For the same period, Segal determined specifically for the DPS HCTF, the asset return on a market value basis was 15.25%. After gradual recognition of investment gains and losses under the actuarial smoothing method, the actuarial rate of return was 12.32%. This represents an experience gain when compared to the assumed rate of 7.25%. As of December 31, 2021, the actuarial value of assets of $49.7 million represented 90.5% of the market value of $55.0 million.
8. The portion of deferred investment gains and losses recognized during the calculation of the December 31, 2021 actuarial value of assets contributed a gain of $2.1 million.

Summary of Key Valuation Results for Health Care Trust Fund

		2021	2020
Demographic data for Plan year ending December 31:	• Number of retirees and survivors	56,178	56,273
	• Number of terminated vested members	30,766	29,959
	• Number of active members	191,574	186,165
	• Total payroll supplied by PERA	$9,337,899,213	$8,988,118,724
	• Average payroll supplied by PERA	$48,743	$48,280
Actuarial accrued liability as of December 31:	• Retirees and survivors	$935,401,084	$1,004,697,482
	• Terminated vested members	37,637,879	36,853,414
	• Active members	372,431,711	376,339,718
	• Total	$1,345,470,674	$1,417,890,614
Assets as of December 31:	• Market value of assets (MVA)	$560,748,947	$463,301,422
	• Actuarial value of assets (AVA)	511,143,268	430,256,242
	• Actuarial value of assets as a percentage of market value of assets	91.2%	92.9%
Funded status for plan year ending December 31:	• Unfunded/(overfunded) actuarial accrued liability on market value of assets	$784,721,727	$954,589,192
	• Funded percentage on MVA basis	41.7%	32.7%
	• Unfunded/(overfunded) actuarial accrued liability on actuarial value of assets	$834,327,406	$987,634,372
	• Funded percentage on AVA basis	38.0%	30.3%
	• Effective amortization on AVA basis	13 years	18 years
Gains/(losses):	• Financial experience (investments, contributions, administrative expenses)	$38,665,454	$29,969,852
	• Demographic experience	51,433,730	53,870,825
	• Plan changes	0	0
	• Assumption/method changes	44,390,742	20,044,472
	• Total gain/(loss)	$134,489,926	$103,885,149
Employer contributions for Plan year ending December 31:		**12/31/2023**	**12/31/2022**
	• Total normal cost rate	0.18%	0.19%
	• Less member contribution rate	0.00%	0.00%
	• Employer normal cost rate	0.18%	0.19%
	• Unfunded actuarial accrued liability rate	0.55%	0.65%
	• Actuarially determined contribution rate	0.73%	0.84%

Summary of Key Valuation Results for DPS Health Care Trust Fund

		2021	2020
Demographic data for Plan year ending December 31:	• Number of retirees and survivors	3,390	3,521
	• Number of terminated vested members	2,249	2,237
	• Number of active members	15,695	14,693
	• Total payroll supplied by PERA	$823,395,477	$771,347,604
	• Average payroll supplied by PERA	$52,462	$52,498
Actuarial accrued liability as of December 31:	• Retirees and survivors	$38,689,809	$43,318,302
	• Terminated vested members	1,953,041	1,988,093
	• Active members	21,417,159	20,251,723
	• Total	$62,060,009	$65,558,118
Assets as of December 31:	• Market value of assets (MVA)	$54,952,912	$43,321,068
	• Actuarial value of assets (AVA)	49,718,279	39,852,921
	• Actuarial value of assets as a percentage of market value of assets	90.5%	92.0%
Funded status for plan year ending December 31:	• Unfunded/(overfunded) actuarial accrued liability on market value of assets	$7,107,097	$22,237,050
	• Funded percentage on MVA basis	88.5%	66.1%
	• Unfunded/(overfunded) actuarial accrued liability on actuarial value of assets	$12,341,730	$25,705,197
	• Funded percentage on AVA basis	80.1%	60.8%
	• Effective amortization on AVA basis	2 years	4 years
Gains/(losses):	• Financial experience (investments, contributions, administrative expenses)	$7,235,205	$5,904,828
	• Demographic experience	(2,327,053)	(1,043,731)
	• Plan changes	0	0
	• Assumption/method changes	2,496,616	1,660,175
	• Total gain/(loss)	$7,404,768	$6,521,272
Employer contributions for Plan year ending December 31:		**12/31/2023**	**12/31/2022**
	• Total normal cost rate	0.14%	0.15%
	• Less member contribution rate	0.00%	0.00%
	• Employer normal cost rate	0.14%	0.15%
	• Unfunded actuarial accrued liability rate	0.10%	0.20%
	• Actuarially determined contribution rate	0.24%	0.35%

Important Information About Actuarial Valuations

An actuarial valuation is a budgeting tool with respect to the financing of future projected obligations of an OPEB plan. It is an estimated forecast – the actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.

In order to prepare a valuation, Segal relies on a number of input items. These include:

Plan of benefits	Plan provisions define the rules that will be used to determine benefit payments, and those rules, or the interpretation of them, may change over time. Even where they appear precise, outside factors may change how they operate. For example, a plan may provide health benefits to post-65 retirees that coordinates with Medicare. If so, changes in the Medicare law or administration may change the plan's costs without any change in the terms of the plan itself. It is important for PERA to keep Segal informed with respect to plan provisions and administrative procedures, and to review the plan summary included in our report to confirm that Segal has correctly interpreted the plan of benefits.
Member data	An actuarial valuation for a plan is based on data provided to the actuary by the plan. Segal does not audit such data for completeness or accuracy, other than reviewing it for obvious inconsistencies compared to prior data and other information that appears unreasonable. It is not necessary to have perfect data for an actuarial valuation: the valuation is an estimated forecast, not a prediction. The uncertainties in other factors are such that even perfect data does not produce a "perfect" result. Notwithstanding the above, it is important for Segal to receive the best possible data and to be informed about any known incomplete or inaccurate data.
Assets	The valuation is based on the fair value of assets as of the valuation date. The assets were based on financial statements as provided by PERA. Throughout this report, the term "fair value" is synonymous with the term "market value."
Models	Segal valuation results are based on proprietary actuarial modeling software. The actuarial valuation models generate a comprehensive set of liability and cost calculations that are presented to meet regulatory, legislative and client requirements. Our Actuarial Technology and Systems unit, comprised of both actuaries and programmers, is responsible for the initial development and maintenance of these models. The models have a modular structure that allows for a high degree of accuracy, flexibility and user control. The client team programs the assumptions and the plan provisions, validates the models, and reviews test lives and results, under the supervision of the responsible actuaries. The results are also based on models for cost projections developed by Segal actuaries and programmers. The client team customizes and validates the models, and reviews the results, under the supervision of the responsible actuary. Our claims costs assumptions are based on proprietary modeling software as well as models that were developed by others. These models generate per capita claims cost calculations that are used in our valuation software. Our Health Technical Services Unit, comprised of actuaries and programmers, is responsible for the initial development and maintenance of our health models. They are also responsible for testing models that we

	purchase from other vendors for reasonableness. The client team inputs the paid claims, enrollments, plan provisions and assumptions into these models and reviews the results for reasonableness, under the supervision of the responsible actuary.
Actuarial assumptions	In preparing an actuarial valuation, Segal starts by developing a forecast of the benefits to be paid to existing plan participants for the rest of their lives and the lives of their beneficiaries. To determine the future costs of benefits, Segal collects claims, premiums, and enrollment data in order to establish a baseline cost for the valuation measurement, and then develops short- and long-term health care cost trend rates to project increases in costs in future years. This forecast also requires actuarial assumptions as to the probability of death, disability, withdrawal, and retirement of each participant for each year, as well as forecasts of the plan's benefits for each of those events. The forecasted benefits are then discounted to a present value, typically based on an estimate of the rate of return that will be achieved on the plan's assets or, if there are no assets, a rate of return based on a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale). All of these factors are uncertain and unknowable. Thus, there will be a range of reasonable assumptions, and the results may vary materially based on which assumptions the actuary selects within that range. That is, there is no right answer (except with hindsight). It is important for any user of an actuarial valuation to understand and accept this constraint. The actuarial model necessarily uses approximations and estimates that may lead to significant changes in our results but will have no impact on the actual cost of the plan. In addition, the actuarial assumptions may change over time, and while this can have a significant impact on the reported results, it does not mean that the previous assumptions or results were unreasonable or wrong.

The user of Segal's actuarial valuation (or other actuarial calculations) should keep the following in mind:

The actuarial valuation is prepared for use by the PERA and PERA-affiliated employers of the HCTF and DPS HCTF. It includes information for compliance with accounting standards and for the plan's auditor. Segal is not responsible for the use or misuse of its report, particularly by any other party.
If the PERA is aware of any event or trend that was not considered in this valuation that may materially change the results of the valuation, Segal should be advised, so that we can evaluate it.
An actuarial valuation is a measurement at a specific date – it is not a prediction of a plan's future financial condition. Accordingly, Segal did not perform an analysis of the potential range of financial measurements, except where otherwise noted. The actual long-term cost of the plan will be determined by the actual benefits and expenses paid and the actual investment experience of the plan.
Sections of this report include actuarial results that are rounded, but that does not imply precision.
Critical events for a plan include, but are not limited to, decisions about changes in benefits and contributions. The basis for such decisions needs to consider many factors such as the risk of changes in plan enrollment, emerging claims experience, health care trend, and investment losses, not just the current valuation results.

Section 1: Actuarial Valuation Summary

Segal does not provide investment, legal, accounting, or tax advice. Segal's valuation is based on our understanding of applicable guidance in these areas and of the plan's provisions, but they may be subject to alternative interpretations. The PERA Board should look to their other advisors for expertise in these areas.
While Segal maintains extensive quality assurance procedures, an actuarial valuation involves complex computer models and numerous inputs. In the event that an inaccuracy is discovered after presentation of Segal's valuation, Segal may revise that valuation or make an appropriate adjustment in the next valuation.
Segal's report shall be deemed to be final and accepted by the PERA Board upon delivery and review. PERA Board should notify Segal immediately of any questions or concerns about the final content.

As Segal has no discretionary authority with respect to the management or assets of the Plan, it is not a fiduciary in its capacity as actuaries and consultants with respect to the Plan.

Section 2: Actuarial Valuation Results

Member Data

The Actuarial Valuation and Review considers the number and demographic characteristics of covered members, including active members, inactive members, retirees and beneficiaries.

This section presents a summary of significant statistical data on these member groups.

More detailed information for this valuation year and the preceding valuation can be found in *Section 3*.

Health Care Trust Fund
Member Population: 2012 – 2021

As of December 31	Active Members	Active Members Eligible for Medicare[1]	Terminated Vested Members	Retirees and Survivors	Total Membership	Ratio of Retirees and Survivors to Actives
2012	182,524	N/A	20,053	51,681	254,258	0.28
2013	185,367	N/A	21,068	53,041	259,476	0.29
2014	187,336	N/A	22,278	54,076	263,690	0.29
2015	188,040	N/A	23,777	55,092	266,909	0.29
2016	190,741	N/A	24,909	55,789	271,439	0.29
2017	191,778	8,284	25,977	56,474	274,229	0.29
2018	195,436	8,826	26,783	56,642	278,861	0.29
2019	197,615	9,035	27,796	56,452	281,863	0.29
2020	186,165	7,881	29,959	56,273	272,397	0.30
2021	191,574	8,595	30,766	56,178	278,518	0.29

[1] State and Local Government Division employees hired (or rehired) after March 31, 1986 are subject to mandatory Medicare coverage.

Member Data (continued)

DPS Health Care Trust Fund
Member Population: 2012 – 2021

As of December 31	Active Members	Active members Eligible for Medicare[1]	Terminated Vested Members	Retirees and Survivors	Total Membership	Ratio of Retirees and Survivors to Actives
2012	13,911	N/A	645	3,963	18,519	0.28
2013	14,816	N/A	759	3,995	19,570	0.27
2014	15,414	N/A	850	3,962	20,226	0.26
2015	15,929	N/A	1,109	3,930	20,968	0.25
2016	15,950	N/A	1,374	3,885	21,209	0.24
2017	15,991	498	1,596	3,816	21,403	0.24
2018	16,148	510	1,780	3,625	21,553	0.22
2019	15,679	518	1,988	3,620	21,287	0.23
2020	14,693	410	2,237	3,521	20,451	0.24
2021	15,695	472	2,249	3,390	21,334	0.22

[1] State and Local Government Division employees hired (or rehired) after March 31, 1986 are subject to mandatory Medicare coverage.

Historical Subsidy Analysis

The charts below demonstrate the health care costs and subsidy for the Health Care Trust Funds over the last 10 years.

Health Care Trust Fund
Subsidy Analysis: 2012 – 2021

	Costs			HCTF Subsidy	
As of December 31	Administrative Expenses	Claims and HMO Premiums	Total	Amount	Percentage
2012	$11,238,351	$320,746,116	$331,984,467	$109,059,949	33%
2013	11,432,638	331,655,337	343,087,975	104,492,638	30%
2014	15,039,802	282,839,340	297,879,142	110,208,226	37%
2015	17,427,167	299,491,591	316,918,758	123,969,209	39%
2016	17,191,422	308,638,003	325,829,425	122,832,804	38%
2017	16,764,561	322,724,014	339,488,575	119,429,766	35%
2018	17,932,145	287,325,519	305,257,664	79,708,653	26%
2019	6,823,546	252,853,124	259,676,670	65,044,662	25%
2020	8,528,157	250,383,726	258,911,883	61,551,488	24%
2021	10,602,427	261,282,083	271,884,510	74,495,628	27%

Historical Subsidy Analysis (continued)

DPS Health Care Trust Fund
Subsidy Analysis: 2012 – 2021

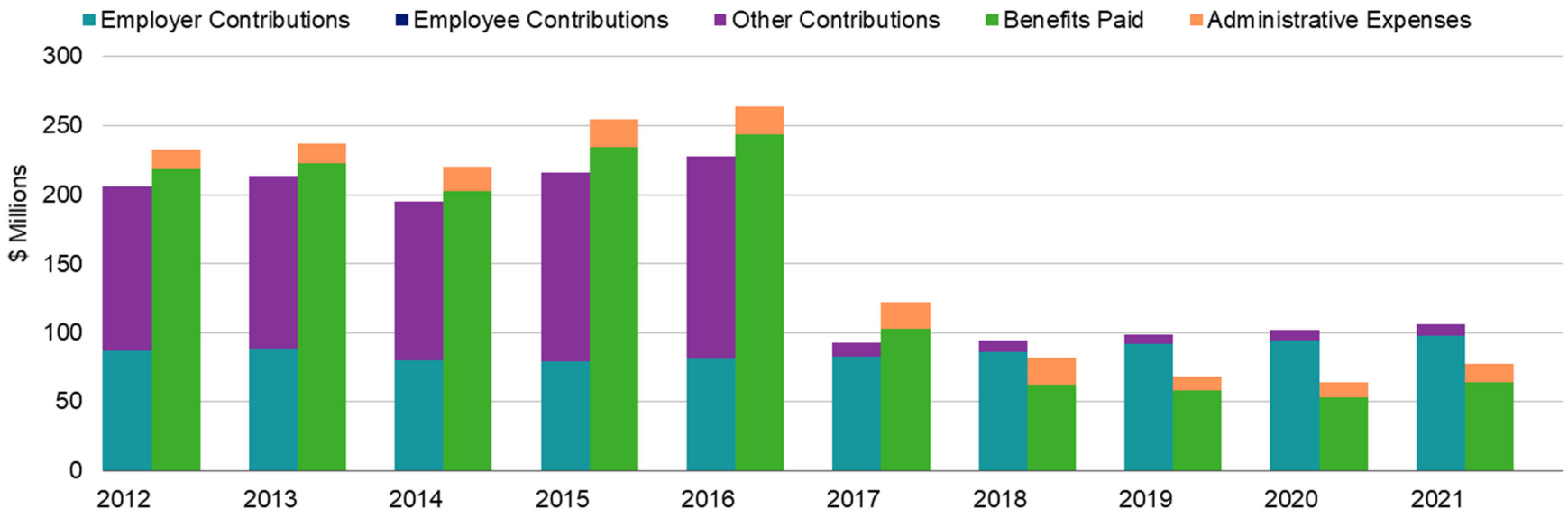
As of December 31	Costs			DPS HCTF Subsidy	
	Administrative Expenses	Claims and HMO Premiums	Total	Amount	Percentage
2012	$383,943	$22,993,959	$23,377,902	$6,652,676	28%
2013	397,301	23,483,334	23,880,635	6,366,156	27%
2014	535,270	18,568,484	19,103,754	6,524,980	34%
2015	664,771	18,913,393	19,578,164	6,831,344	35%
2016	674,716	19,188,078	19,862,794	6,684,449	34%
2017	654,368	19,115,690	19,770,058	6,348,388	32%
2018	690,619	18,063,713	18,754,332	4,849,158	26%
2019	325,479	15,604,973	15,930,452	3,969,740	25%
2020	369,100	14,804,093	15,173,193	3,455,124	23%
2021	502,872	14,536,705	15,039,577	4,018,839	27%

Financial Information

OPEB plan funding anticipates that, over the long term, both contributions (less administrative expenses) and investment earnings (less investment fees) will be needed to cover benefit payments. Plan assets change as a result of the net impact of these income and expense components.

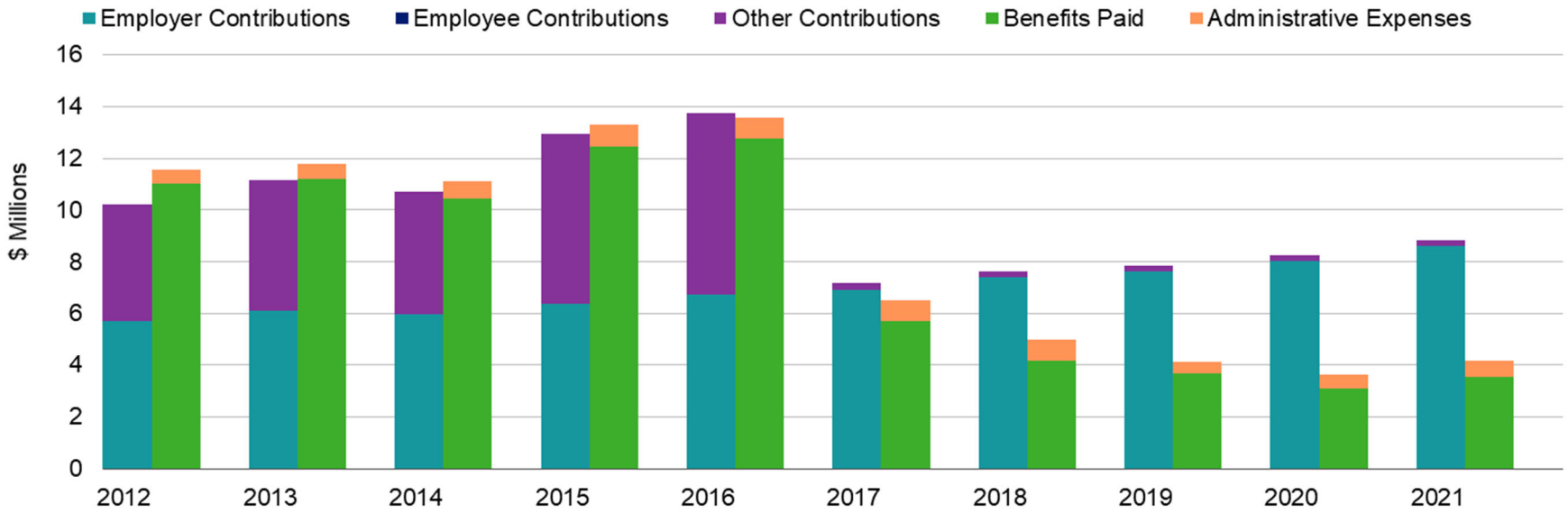
Additional financial information, including a summary of these transactions for the valuation year, is presented in *Section 3*.

Comparison of Contributions With Benefits Paid
For Years Ended December 31, 2012 – 2021
For Health Care Trust Fund



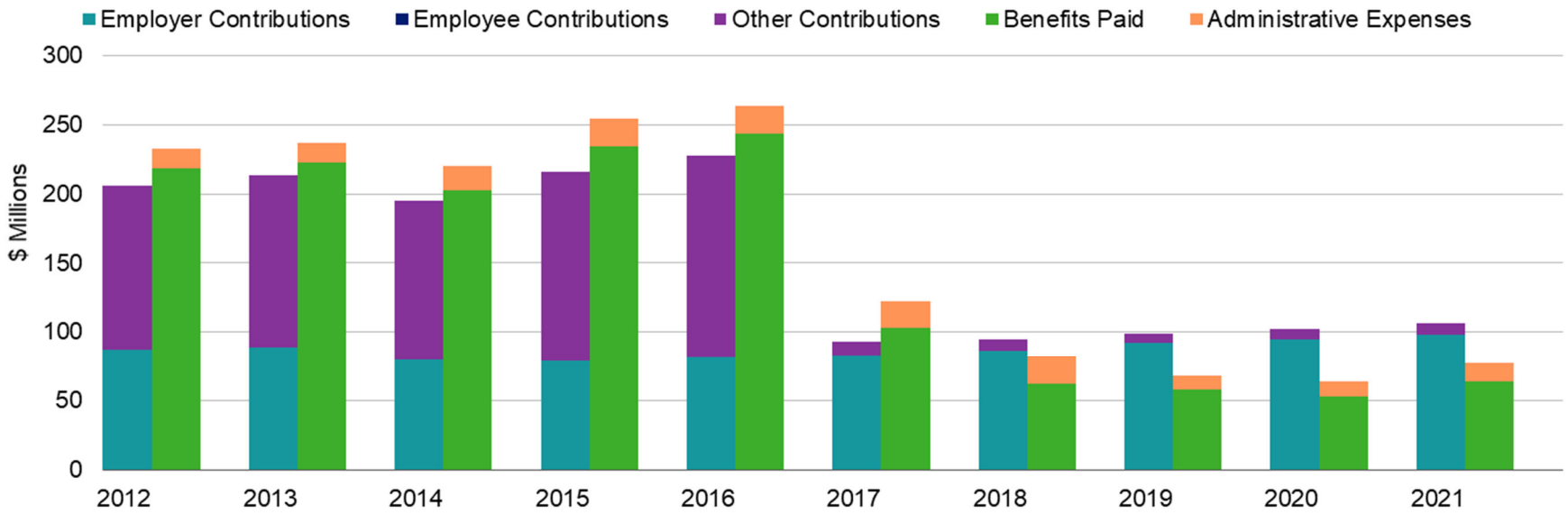
Financial Information (continued)

Comparison of Contributions With Benefits Paid
For Years Ended December 31, 2012 – 2021
For DPS Health Care Trust Fund



Financial Information (continued)

Comparison of Contributions With Benefits Paid
For Years Ended December 31, 2012 – 2021
Total For All Health Care Trust Funds



Financial Information (continued)

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable. The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

Health Care Trust Fund
Determination of Actuarial Value of Assets
For Year Ended December 31, 2021 And December 31, 2020

				2021		2020
1.	Market value of assets available for benefits			**$560,748,947**		**$463,301,422**
2.	Calculation of unrecognized return[1]	**Original Amount[2]**	**% Not Recognized**		**% Not Recognized**	
(a)	Year ended December 31, 2021	$33,674,037	75%	$25,255,528		
(b)	Year ended December 31, 2020	32,457,392	50%	16,228,696	75%	$24,343,044
(c)	Year ended December 31, 2019	32,485,818	25%	8,121,455	50%	16,242,909
(d)	Year ended December 31, 2018	(30,163,090)		0	25%	(7,540,773)
(e)	Total unrecognized return			$49,605,679		$33,045,180
3.	Actuarial value of assets: **(1) – (2e)**			**$511,143,268**		**$430,256,242**
4.	Acutarial value as a percent of market value: **(3) ÷ (1)**			91.2%		92.9%

[1] Recognition at 25% per year over four years.

[2] Total return minus expected return on a market value basis.

Financial Information (continued)

DPS Health Care Trust Fund
Determination of Actuarial Value of Assets
For Year Ended December 31, 2021 And December 31, 2020

				2021		2020
1.	Market value of assets available for benefits			**$54,952,912**		**$43,321,068**
2.	Calculation of unrecognized return[1]	**Original Amount[2]**	**% Not Recognized**		**% Not Recognized**	
(a)	Year ended December 31, 2021	$3,652,733	75%	$2,739,550		
(b)	Year ended December 31, 2020	3,482,088	50%	1,741,044	75%	$2,611,566
(c)	Year ended December 31, 2019	3,016,155	25%	754,039	50%	1,508,078
(d)	Year ended December 31, 2018	(2,605,986)		0	25%	(651,497)
(e)	Total unrecognized return			$5,234,633		$3,468,147
3.	Actuarial value of assets: **(1) – (2e)**			**$49,718,279**		**$39,852,921**
4.	Acutarial value as a percent of market value: **(3) ÷ (1)**			90.5%		92.0%

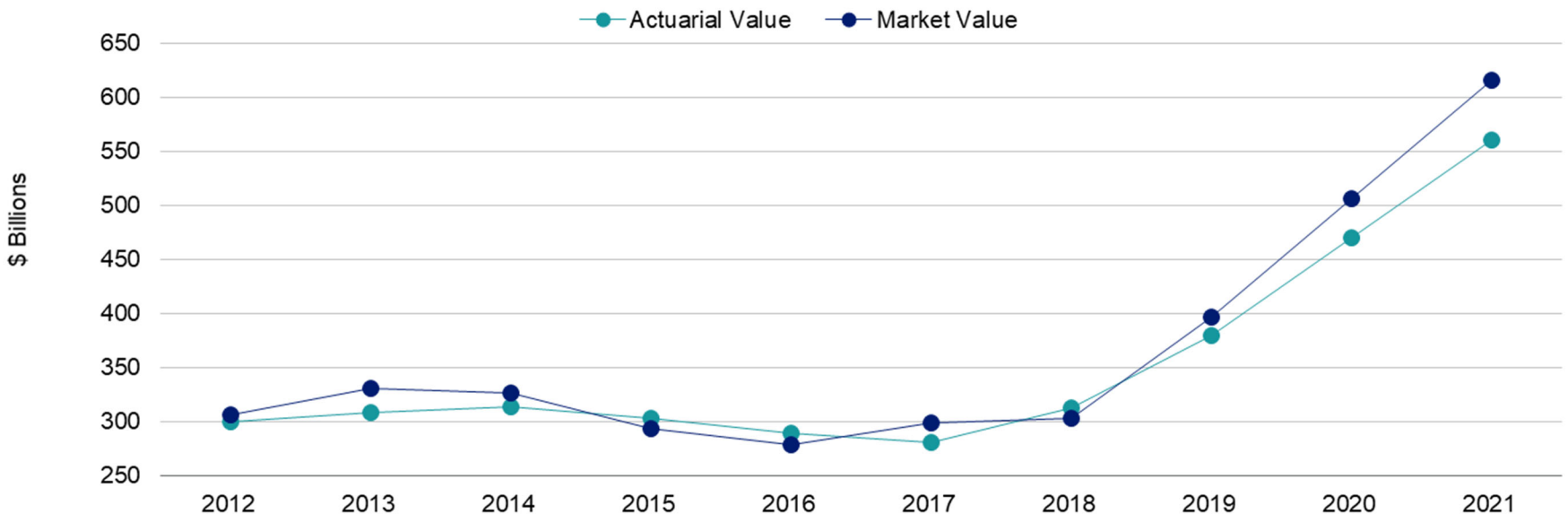
[1] Recognition at 25% per year over four years.

[2] Total return minus expected return on a market value basis.

Financial Information (continued)

Both the actuarial value and market value of assets, when compared to actuarial accrued liabilities, are representations of PERA's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Plan's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the actuarially determined contributions.

Total of All Health Care Trust Funds
Actuarial Value of Assets vs. Market Value of Assets
As of December 31, 2012 – 2021



Actuarial Experience

To calculate any actuarially determined contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), any contribution requirement will decrease from the previous year. On the other hand, any contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single years' experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total gain is $95.0 million, which includes a gain from investments of $21.6 million and net gains from all other sources of $73.4 million. The net experience variation from individual sources other than investments was 5.21% of the actuarial accrued liability. A discussion of the major components of the actuarial experience is on the following pages.

Actuarial Experience For Year Ended December 31, 2021

		Health Care Trust Fund	DPS Health Care Trust Fund
1.	Net gain/(loss) from investments[1]	$19,509,314	$2,137,688
2.	Net gain/(loss) from administrative expenses	(4,651,098)	(297,040)
3.	Net gain/(loss) from demographic and other experience	51,433,730	(2,327,053)
4.	Net gain/(loss) from contribution excess/(deficiency)	23,807,238	5,394,557
5.	Net experience gain/(loss): **1 + 2 + 3 + 4**	$90,099,184	$4,908,152

[1] Details on next page.

Investment Experience

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on PERA's investment policy. The market value annualized rate of return on a total fund basis was 16.1% with an 14.38% return calculated for the total Health Care Trust Fund assets for the year ended December 31, 2021.

For valuation purposes, the assumed rate of return on the actuarial value of assets is 7.25%. The actual rate of return on an actuarial basis for the 2021 plan year was 11.69%. Since the actuarial return for the year was greater than the assumed return, PERA experienced an actuarial gain during the year ended December 31, 2021 with regard to its investments.

Investment Experience – Total of Health Care Trust Funds

		Year Ended December 31, 2021		Year Ended December 31, 2020	
		Market Value	**Actuarial Value**	**Market Value**	**Actuarial Value**
1.	Value assets at the beginning of year	$506,622,490	$470,109,163	$397,146,028	$379,621,532
2.	Contributions during the plan year	114,910,503	114,910,503	110,812,946	110,812,946
3.	Contributions receivable	0	0	0	0
4.	Benefits and expense during the plan year	81,113,188	81,113,188	67,634,278	67,634,278
5.	Value of assets at end of year	615,701,859	560,861,547	506,622,490	470,109,163
6.	Net investment income: **5 – 1 – 2 + 4**	75,282,054	56,955,069	66,297,794	47,308,963
7.	Average value of assets: **1 + [2 – 4] x ½**	523,521,148	487,007,821	418,735,362	401,210,866
8.	Rate of return: **6 ÷ 7**	14.38%	11.69%	15.83%	11.79%
9.	Assumed rate of return	7.25%	7.25%	7.25%	7.25%
10.	Expected investment income: **7 x 9**	37,955,283	35,308,067	30,358,314	29,087,788
11.	Actuarial gain/(loss): **6 – 10**	$37,326,771	$21,647,002	$35,939,480	$18,221,175

Demographic Experience and Administrative Expenses

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- Retirement experience (earlier or later than projected),
- The number of disability retirements (more or fewer than projected),
- Mortality (more or fewer deaths than projected), and lapse (current retirees dropping coverage),
- The extent of turnover among participants,
- New members, and
- Administrative expenses.

The net gain from this experience for the year ended December 31, 2021 amounted to $44,158,539, which is 3.1% of the actuarial accrued liability.

Gains/(Losses) Due to Demographic Experience and Administrative Expenses For The Year Ended December 31, 2021 ($ In Millions)

	Health Care Trust Fund	DPS Health Care Trust Fund	Total
Age and service retirements	$16.8	$0.6	$17.4
Disability retirements	0.5	0.0	0.5
Deaths and lapses	20.0	0.4	20.4
Withdrawals	(1.7)	0.0	(1.7)
New members	(2.2)	(0.2)	(2.4)
Administrative expenses and other	13.4	(3.4)	10.0
Total gain/(loss)	**$46.8**	**$(2.6)**	**$44.2**

Demographic Experience and Administrative Expenses (continued)

An additional source of gain or loss that is sepearely identified and amortized over a period equal to the remaining years of the legacy UAAL amortization is the gain or loss due to contribution excess or deficiency.

Contribution Excess Or Deficiency
For The Year Ended December 31, 2021

		Health Care Trust Fund	DPS Health Care Trust Fund
1.	**Actuarially determined employer contribution rate for 2021:**		
(a)	Total normal cost rate	0.20%	0.17%
(b)	Less member contribution rate	0.00%	0.00%
(c)	Employer normal cost rate	0.20%	0.17%
(d)	UAAL contribution rate	0.69%	0.27%
(e)	Actuarially Determined Contribution rate: **1(c) + 1(d)**	0.89%	0.44%
2.	Covered payroll for 2021	$9,337,899,213	$823,395,477
3.	**Expected contribution for 2021:**		
(a)	Employer	$83,107,303	$3,622,940
(b)	Member	0	0
(c)	Total: **3(a) + 3(b)**	**$83,107,303**	**$3,622,940**
4.	**Actual contribution for 2021:**		
(a)	Employer	$97,974,004	$8,622,308
(b)	Member	8,107,714	206,477
(c)	Purchased service/disaffiliation payments	0	0
(d)	Total: **4(a) + 4(b) – 4(c)**	**$106,081,718**	**$8,828,785**
5.	**Contribution (excess)/deficiency, adjusted for interest: (3c – 4d) * 1.03625**	**($23,807,238)**	**($5,394,557)**

Changes in the Actuarial Accrued Liability

The total actuarial accrued liability for the HCTF and DPS HCTF as of December 31, 2021 is $1,407,530,683, a decrease of $75,918,049, or 5.1% decrease, from the actuarial accrued liability as of the prior valuation date. The change in liability is due to interest, accumulation and payment of benefits, assumption changes, and actuarial experience (as discussed in the previous subsection).

Actuarial Assumptions

The assumption changes reflected in this report are:

- Per capita health care costs in effect as of the December 31, 2021 valuation date for those PERACare enrollees under the PERA Benefit Structure who are expected to be age 65 and older and are not eligible for premium-free Medicare Part A benefits have been updated to reflect the costs for the 2022 plan year.
  - *The December 31, 2021 valuation utilizes premium information as of January 1, 2022 as the initial per capita healthcare cost. As of that date, PERACare health benefits administration is performed by United Health Care. In that transition, the costs for the Medicare Advantage Option #2 decreased to a level that is lower than the maximum possible service-related subsidy as described in the plan provisions (Section 4, Exhibit III). To better align our documentation with those benefit descriptions, the valuation components that drive the liability are now outlined in the plan provisions section and the assumptions that impact those components remain in the Actuarial Assumptions section. This is not a change in the actual plan provision; rather it is an updated valuation component as the amount is known rather than assumed.*
- The health care cost trend rates applicable to health plan premiums were revised to reflect the current expectation of future increases in those premiums. Medicare Part A premiums continued with the prior valuation trend pattern.
- The following table shows the change in the Unfunded Actuarial Accrued Liability (UAAL), the Actuarially Determined Contribution (ADC), and the amortization period as a result of the change in methods and assumptions described above:

Plan	Change in UAAL ($ in thousands)	Change in ADC	Change in Amortization Period
HCTF	(44,391)	(0.03%)	1 year
DPS HCTF	(2,497)	(0.02%)	None

- These changes decreased the total actuarial accrued liability by $46.9 million and decreased the total normal cost by $0.1 million.

Details on actuarial assumptions and methods are in *Section 4, Exhibit I.*

Plan Provisions

- There were no changes in plan provisions since the prior valuation.

  As noted above and described in plan provisions, the benefit provides a premium subsidy is that is equal to the minimum of the total plan premium or the service-based subsidy. The premium updates for Medicare Advantage Option #2 that are in effect for this valuation, are lower than that of the service-based subsidy and thus result in a lower plan provided subsidy and resulting liability. Due to the carrier change and lower premiums, the details of the plan provisions including total premiums used to determine the plan subsidy are now included as part of plan provisions and are subject to corresponding healthcare cost trend and morbidity assumptions for future years as applicable and to statutory maximum levels.

  Members who select Medicare Advantage Option #2 will have fully subsidized health premiums (medical and pharmacy only) while the premium is currently and/or projected to be lower than the service related subsidy calculation. Where plan premiums exceed the service related subsidy, members will pay the excess amounts.

  Members that do not qualify for premium-free Medicare Part A, continue to pay contributions in excess of the defined dollar subsidy at the same level as fully-eligible Medicare members and the plan is liable for the implicit "No Part A" subsidy based upon the excess costs of Part B only premium rates over the standard Medicare premium for the plan selected.

- A summary of plan provisions is in *Section 4, Exhibit II*.

Cash Flow

Cash flow is the difference between contributions and benefit payments, refunds, and expenses. Negative cash flow indicates that the payments made from the Plan exceed contributions made to the Plan.

Health Care Trust Fund
History of Cash Flow: 2012 – 2021

Year Ended December 31	Contributions and Other Additions[1]	Benefit Payments And Other Deductions	Administrative Expenses	Total Disbursements	Net Cash Flow for the Year[2]	Market Value of Assets	Net Cash Flow as Percent of Market Value
2012	$205,521,357	$(218,768,224)	$(13,513,572)	$(232,281,796)	$(26,760,439)	$291,737,156	(9.2%)
2013	213,400,379	(222,860,115)	(13,766,466)	(236,626,581)	(23,226,202)	314,609,446	(7.4%)
2014	194,896,210	(200,626,256)	(17,444,129)	(218,070,385)	(23,174,175)	309,637,855	(7.5%)
2015	216,327,880	(234,414,642)	(19,855,134)	(254,269,776)	(37,941,896)	276,504,907	(13.7%)
2016	228,021,437	(243,662,183)	(19,657,034)	(263,319,217)	(35,297,780)	260,228,470	(13.6%)
2017	92,931,952	(102,767,212)	(19,162,305)	(121,929,517)	(28,997,565)	276,221,671	(10.5%)
2018	94,932,491	(61,882,385)	(20,401,345)	(82,283,730)	12,648,761	279,191,931	4.5%
2019	98,995,127	(58,254,494)	(9,289,910)	(67,544,404)	31,450,723	364,509,976	8.6%
2020	102,543,225	(53,054,971)	(10,977,199)	(64,032,170)	38,511,055	463,301,422	8.3%
2021	106,081,718	(63,977,749)	(12,975,733)	(76,953,482)	29,128,236	560,748,947	5.2%

[1] Includes member and employer contributions as well as any purchased service credits during the year

[2] Equal to Contributions + Total Disbursements.

Cash Flow (continued)

DPS Health Care Trust Fund
History of Cash Flow: 2012 – 2021

Year Ended December 31	Contributions and Other Additions[1]	Benefit Payments And Other Deductions	Administrative Expenses	Total Disbursements	Net Cash Flow for the Year[2]	Market Value of Assets	Net Cash Flow as Percent of Market Value
2012	$10,242,208	$(11,026,749)	$(547,095)	$(11,573,844)	$(1,331,636)	$14,842,667	(9.0%)
2013	11,151,939	(11,222,022)	(561,483)	(11,783,505)	(631,566)	16,488,973	(3.8%)
2014	10,728,041	(10,432,420)	(699,257)	(11,131,677)	(403,636)	17,020,938	(2.4%)
2015	12,947,387	(12,441,823)	(844,687)	(13,286,510)	(339,123)	16,935,520	(2.0%)
2016	13,750,248	(12,748,161)	(835,712)	(13,583,873)	166,375	18,337,228	0.9%
2017	7,171,568	(5,697,814)	(808,296)	(6,506,110)	665,458	22,307,633	3.0%
2018	7,622,578	(4,162,411)	(845,134)	(5,007,545)	2,615,033	24,028,778	10.9%
2019	7,836,766	(3,645,385)	(476,995)	(4,122,380)	3,714,386	32,636,052	11.4%
2020	8,269,721	(3,087,113)	(514,995)	(3,602,108)	4,667,613	43,321,068	10.8%
2021	8,828,785	(3,519,657)	(640,049)	(4,159,706)	4,669,079	54,952,912	8.5%

[1] Includes member and employer contributions as well as any purchased service credits during the year.

[2] Equal to Contributions + Total Disbursements.

Development of Unfunded/(Overfunded) Actuarial Accrued Liability

Development of Unfunded/(Overfunded) Actuarial Accrued Liability for Year Ended December 31, 2021

		Health Care Trust Fund	DPS Health Care Trust Fund	Total
1.	Unfunded/(overfunded) actuarial accrued liability at January 1, 2021	$987,634,372	$25,705,197	$1,013,339,569
2.	Normal cost at beginning of year	18,188,017	1,236,832	19,424,849
3.	Total contributions	(106,081,718)	(8,828,785)	(114,910,503)
4.	Interest on:			
(a)	Unfunded actuarial accrued liability and normal cost	72,922,123	1,953,297	74,875,420
(b)	Total contributions	(3,845,462)	(320,043)	(4,165,505)
(c)	Total interest: 4a + 4b	69,076,661	1,633,254	70,709,915
5.	Expected unfunded/(overfunded) actuarial accrued liability: **1 + 2 + 3 + 4c**	968,817,332	19,746,498	988,563,830
6.	Changes due to:			
(a)	(Gain)/Loss	(90,099,184)	(4,908,152)	(95,007,336)
(b)	Assumptions	(44,390,742)	(2,496,616)	(46,887,358)
(c)	Funding method	0	0	0
(d)	Plan provisions	0	0	0
(e)	Total changes: **6a + 6b + 6c + 6d**	(134,489,926)	(7,404,768)	(141,894,694)
7.	Unfunded/(overfunded) actuarial accrued liability at end of year: **5 + 6e**	$834,327,406	$12,341,730	$846,669,136

Statutory Employer Contributions

The statutory employer contribution rates for each Health Care Trust Fund are shown in the following table:

Health Care Turst Fund	Employer Contribution Rate
Health Care Trust Fund	1.02%
DPS Health Care Trust Fund	1.02%

The tables on the following pages show the development of the normal cost rate, the UAAL payment, amortization period and the actuarially determined contribution rate for each Health Care Trust Fund based on the OPEB funding policy.

Actuarially Determined Contribution

For each Plan, the amount of the actuarially determined contribution is comprised of an employer normal cost payment and a payment on the unfunded/(overfunded) actuarial accrued liability. This total amount is divided by the projected payroll for active members to determine the actuarially determined contribution.

PERA's OPEB funding policy is included in Exhibit III. The methodology used to calculate the actuarially determined contributions for the OPEB plans is based on closed (layered) amortization periods of 30 years. The length of the amortization periods are as follows:

- The December 31, 2017 legacy UAAL is being amortized over a closed 30-year period (26 years remaining as of December 31, 2021).
- Contribution deficiencies/excesses are amortized over the remaining period of the legacy UAAL.
- Experience gains and losses are amortized over 30 years from the date of the valuation.
- Assumption changes are amortized over 30 years from the date of the valuation.
- Other changes in the UAAL are amortized over 30 years from the date of the valuation.
- Benefit changes are amortized over a period determined by the Board to represent the anticipated duration of the payment of the change, not to exceed 25 years.

The contribution requirements as of December 31, 2021 are based on the data previously described, the actuarial assumptions and Plan provisions described in *Section 4*, including all changes affecting future costs adopted at the time of the actuarial valuation, actuarial gains and losses, and changes in the actuarial assumptions.

Contribution rates for the year ending December 31, 2023 are derived from the results of the December 31, 2021, annual actuarial valuation.

Actuarially Determined Contribution (continued)

Schedule of Computed Employer Contribution Rates for the 2023 Plan Year
Based Upon the Results of the December 31, 2021 Actuarial Funding Valuation

Item	Health Care Trust Fund	DPS Health Care Trust Fund
Normal Cost		
Service retirement benefits	0.16%	0.12%
Disability retirement benefits	0.00%	0.00%
Survivor benefits	0.00%	0.00%
Termination withdrawals	0.02%	0.02%
Total normal cost	0.18%	0.14%
Member contributions	0.00%	0.00%
Employer normal cost	0.18%	0.14%
Percentage available to amortize unfunded actuarial accrued liabilities	0.84%	0.88%
Equivalent single amortization period	13 years	2 years
Total employer contribution rate for actuarially funded benefits	0.73%	0.24%

Actuarially Determined Contribution by Plan

Health Care Trust Fund
Actuarially Determined Contribution[1]

		12/31/2021 Valuation Date		12/31/2020 Valuation Date	
		Contribution for Plan Year 2023		Contribution for Plan Year 2022	
		Amount	% of Payroll	Amount	% of Payroll
1.	Total normal cost	$17,406,650	0.18%	$18,188,017	0.19%
2.	Expected member contributions	0	0.00%	0	0.00%
3.	Employer normal cost: **1 - 2**	$17,406,650	0.18%	$18,188,017	0.19%
4.	Actuarial accrued liability	$1,345,470,674		$1,417,890,614	
5.	Actuarial value of assets	511,143,268		430,256,242	
6.	Unfunded/(overfunded) actuarial accrued liability: **4 – 5**	$834,327,406		$987,634,372	
7.	Payment on unfunded actuarial accrued liability	$54,191,778	0.55%	$61,831,566	0.65%
8.	Actuarially determined contribution: **3 + 7**	$71,598,428	0.73%	$80,019,584	0.84%
9.	Projected payroll	$9,823,011,051		$9,448,330,145	

[1] The underlying calculations involve more precision than what is presented and the rounded numbers shown may not add as a result.

Actuarially Determined Contribution by Plan (continued)

Health Care Trust Fund
Unfunded Actuarially Accrued Amortization Schedule

Description	Original Balance	Outstanding Balance as of 12/31/2020	1/1/2021 Amortization Payment	Outstanding Balance as of 12/31/2021	1/1/2022 Amortization Payment	Amortization Period as of 12/31/2021
December 31, 2017 legacy UAAL	$1,320,934,540	$1,383,594,698	$82,527,593	$1,398,438,438	$85,188,851	26
December 31, 2017 disaffiliation charge	5,399	4,456	716	4,038	743	6
December 31, 2018 contribution excess	(885,312)	(913,286)	(54,475)	(923,084)	(56,232)	26
December 31, 2018 UAAL base	(150,544,519)	(155,640,743)	(9,101,329)	(157,499,217)	(9,394,392)	27
December 31, 2019 contribution excess	(967,066)	(981,669)	(58,554)	(992,201)	(60,442)	26
December 31, 2019 UAAL base	(109,261,759)	(111,154,073)	(6,379,650)	(112,605,877)	(6,584,800)	28
December 31, 2020 contribution excess	(15,915,218)	(15,915,218)	(949,299)	(16,085,962)	(979,911)	26
December 31, 2020 UAAL base (assumption changes)	(20,044,472)	(20,044,472)	(1,130,362)	(20,327,076)	(1,166,666)	29
December 31, 2020 UAAL base (non-assumption changes)	(91,315,321)	(91,315,321)	(5,149,517)	(92,602,761)	(5,314,904)	29
December 31, 2021 contribution excess	(23,807,238)	N/A	N/A	(23,807,238)	(1,450,269)	26
December 31, 2021 UAAL base (assumption changes)	(44,390,742)	N/A	N/A	(44,390,742)	(2,503,314)	30
December 31, 2021 UAAL base (non-assumption changes)	(94,880,912)	N/A	N/A	(94,880,912)	(5,350,590)	30
Total		**$987,634,372**	**$59,705,123**	**$834,327,406**	**$52,328,074**	
Total with interest to middle of the year			**$61,831,566**		**$54,191,778**	
Projected payroll			**$9,448,330,145**		**$9,823,011,051**	
Total as a percentage of projected payroll			**0.65%**		**0.55%**	

Actuarially Determined Contribution by Plan (continued)

DPS Health Care Trust Fund
Actuarially Determined Contribution[1]

		12/31/2021 Valuation Date		12/31/2020 Valuation Date	
		Contribution for Plan Year 2023		Contribution for Plan Year 2022	
		Amount	% of Payroll	Amount	% of Payroll
1.	Total normal cost	$1,243,871	0.14%	$1,236,832	0.15%
2.	Expected member contributions	0	0.00%	0	0.00%
3.	Employer normal cost: 1 - 2	$1,243,871	0.14%	$1,236,832	0.15%
4.	Actuarial accrued liability	$62,060,009		$65,558,118	
5.	Actuarial value of assets	49,718,279		39,852,921	
6.	Unfunded/(overfunded) actuarial accrued liability: 4 – 5	$12,341,730		$25,705,197	
7.	Payment on unfunded actuarial accrued liability	$859,537	0.10%	$1,626,561	0.20%
8.	Actuarially determined contribution: 3 + 7	$2,103,408	0.24%	$2,863,393	0.35%
9.	Projected payroll	$875,686,633		$816,451,931	

[1] The underlying calculations involve more precision than what is presented and the rounded numbers shown may not add as a result.

Actuarially Determined Contribution by Plan (continued)

DPS Health Care Trust Fund
Unfunded Actuarially Accrued Amortization Schedule

Description	Original Balance	Outstanding Balance as of 12/31/2020	1/1/2021 Amortization Payment	Outstanding Balance as of 12/31/2021	1/1/2022 Amortization Payment	Amortization Period as of 12/31/2021
December 31, 2017 legacy UAAL	$49,175,286	$51,507,976	$3,072,308	$52,060,574	$3,171,381	26
December 31, 2018 contribution excess	(2,885,863)	(2,977,049)	(177,573)	(3,008,988)	(183,299)	26
December 31, 2018 UAAL base	(2,610,701)	(2,699,078)	(157,833)	(2,731,307)	(162,915)	27
December 31, 2019 contribution excess	(3,543,128)	(3,596,631)	(214,529)	(3,635,217)	(221,447)	26
December 31, 2019 UAAL	(4,862,517)	(4,946,732)	(283,916)	(5,011,342)	(293,046)	28
December 31, 2020 contribution excess	(4,493,022)	(4,493,022)	(267,996)	(4,541,225)	(276,638)	26
December 31, 2020 UAAL base (assumption changes)	(1,660,175)	(1,660,175)	(93,622)	(1,683,581)	(96,629)	29
December 31, 2020 UAAL base (non-assumption changes)	(5,430,092)	(5,430,092)	(306,217)	(5,506,651)	(316,052)	29
December 31, 2021 contribution excess	(5,394,557)	N/A	N/A	(5,394,557)	(328,621)	26
December 31, 2021 UAAL base (assumption changes)	(2,496,616)	N/A	N/A	(2,496,616)	(140,791)	30
December 31, 2021 UAAL base (non-assumption changes)	(5,709,360)	N/A	N/A	(5,709,360)	(321,966)	30
Total		**$25,705,197**	**$1,570,622**	**$12,341,730**	**$829,977**	
Total with interest to middle of the year			**$1,626,561**		**$859,537**	
Projected payroll			**$816,451,931**		**$875,686,633**	
Total as a percentage of projected payroll			**0.20%**		**0.10%**	

Reconciliation of Actuarially Determined Contribution

The chart below details the changes in the actuarially determined contributions from the prior valuation to the current year's valuation

Reconciliation of Actuarially Determined Contribution

	Item	Health Care Trust Fund	DPS Health Care Trust Fund
1.	Prior valuation	0.84%	0.35%
2.	Increases/(decreases) due to:		
	• Effect of change in amortization period	0.00%	0.00%
	• Effect of change in payroll and normal cost	(0.02%)	(0.01%)
	• Effect of contributions (more)/less than actuarially determined contribution	(0.02%)	(0.04%)
	• Effect of gains and losses on accrued liability and administrative expenses	(0.03%)	(0.03%)
	• Effect of investment (gain)/loss	(0.01%)	(0.01%)
	• Effect of plan changes	0.00%	0.00%
	• Effect of change in actuarial assumptions and methods	(0.03%)	(0.02%)
	• Net effect of other changes	0.00%	0.00%
	Total change	(0.11%)	(0.11%)
3.	Current valuation: **1 + 2**	0.73%	0.24%
4.	Statutory employer contribution rate	1.02%	1.02%
5.	Margin available [contribution sufficiency/(deficiency)]: **4 – 3**	0.29%	0.78%

History of Employer Contributions

Critical information to assess the funding progress is the historical comparison of the actuarially determined contribution (annual required contribution prior to 2014) to the actual contributions. A history of the most recent years of contributions is shown below.

Health Care Trust Fund
History of Employer Contributions: 2012 – 2021

	Actuarially Determined Employer Contribution (ADC)		Actual Employer Contribution				
Plan Year Ended December 31	Amount	Percentage of Payroll	PERA Payroll Allocations	Retiree Drug Subsidy	Total	Percentage of Payroll	Percent Contributed
2012	$94,044,862	1.18%	$72,556,763	$14,197,649	$86,754,412	1.28%	92.2%
2013	102,314,788	1.24%	72,785,209	15,731,044	88,516,253	1.27%	86.5%
2014	95,189,820	1.32%	79,625,680	0	79,625,680	1.10%	83.6%
2015	86,083,768	1.15%	78,462,738	0	78,462,738	1.05%	91.1%
2016	84,114,123	1.09%	80,825,145	0	80,825,145	1.05%	96.1%
2017	85,614,624	1.08%	83,172,633	0	83,172,633	1.05%	97.1%
2018	94,078,152	1.12%	86,559,491	0	86,559,491	1.03%	92.0%
2019	98,061,896	1.11%	92,011,162	0	92,011,162	1.04%	93.8%
2020	87,184,752	0.97%	94,634,186	0	94,634,186	1.05%	108.5%
2021	83,107,303	0.89%	97,974,004	0	97,974,004	1.05%	117.9%

History of Employer Contributions (continued)

DPS Health Care Trust Fund
History of Employer Contributions: 2012 – 2021

Plan Year Ended December 31	Actuarially Determined Employer Contribution (ADC)		Actual Employer Contribution				
	Amount	Percentage of Payroll	PERA Payroll Allocations	Retiree Drug Subsidy	Total	Percentage of Payroll	Percent Contributed
2012	$5,188,076	0.92%	$5,243,219	$488,054	$5,731,273	1.12%	110.5%
2013	5,272,637	0.86%	5,557,244	562,761	6,120,005	1.12%	116.1%
2014	5,083,969	0.87%	6,003,241	394	6,003,635	1.03%	118.1%
2015	5,031,032	0.81%	6,370,903	0	6,370,903	1.03%	126.6%
2016	4,816,328	0.75%	6,722,556	0	6,722,556	1.05%	139.6%
2017	4,475,748	0.68%	6,930,014	0	6,930,014	1.05%	154.8%
2018	4,837,668	0.67%	7,417,114	0	7,417,114	1.03%	153.3%
2019	4,417,583	0.60%	7,648,553	0	7,648,553	1.04%	173.1%
2020	3,933,873	0.51%	8,045,899	0	8,045,899	1.04%	204.5%
2021	3,622,940	0.44%	8,622,308	0	8,622,308	1.05%	238.0%

Additional Information

The other critical piece of information regarding PERA's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of each Health Care Trust Fund. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors. The chart below shows the funded ratio calculated using the actuarial value of assets.

Health Care Trust Fund
Schedule of Funding Progress

As of December 31	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio	Annual Covered Payroll	UAAL as a % of Covered Payroll
2012	$285,096,629	$1,723,494,688	$1,438,398,059	16.5%	$6,766,713,013	21.3%
2013	293,556,476	1,557,405,815	1,263,849,339	18.8%	6,982,560,466	18.1%
2014	297,376,975	1,534,461,311	1,237,084,336	19.4%	7,211,350,491	17.2%
2015	285,588,114	1,556,268,985	1,270,680,871	18.4%	7,485,544,867	17.0%
2016	270,149,671	1,556,762,238	1,286,612,567	17.4%	7,716,892,488	16.7%
2017	260,281,736	1,581,221,675	1,320,939,939	16.5%	7,927,279,994	16.7%
2018	288,323,044	1,478,114,208	1,189,791,164	19.5%	8,399,834,705	14.2%
2019	348,432,447	1,447,169,421	1,098,736,974	24.1%	8,834,404,580	12.4%
2020	430,256,242	1,417,890,614	987,634,372	30.3%	8,988,118,724	11.0%
2021	511,143,268	1,345,470,674	834,327,406	38.0%	9,337,899,213	8.9%

Additional Information (continued)

DPS Health Care Trust Fund
Schedule of Funding Progress

As of December 31	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio	Annual Covered Payroll	UAAL as a % of Covered Payroll
2012	$14,442,582	$77,668,687	$63,226,105	18.6%	$510,872,366	12.4%
2013	15,481,663	76,636,310	61,154,647	20.2%	547,659,912	11.2%
2014	16,501,777	76,025,927	59,524,150	21.7%	584,319,269	10.2%
2015	17,557,168	74,896,817	57,339,649	23.4%	621,114,573	9.2%
2016	18,944,588	72,845,128	53,900,540	26.0%	642,177,158	8.4%
2017	21,117,173	70,292,459	49,175,286	30.0%	658,198,306	7.5%
2018	25,017,848	69,451,597	44,433,749	36.0%	722,040,073	6.2%
2019	31,189,085	67,936,510	36,747,425	45.9%	736,263,798	5.0%
2020	39,852,921	65,558,118	25,705,197	60.8%	771,347,604	3.3%
2021	49,718,279	62,060,009	12,341,730	80.1%	823,395,477	1.5%

Additional Information (continued)

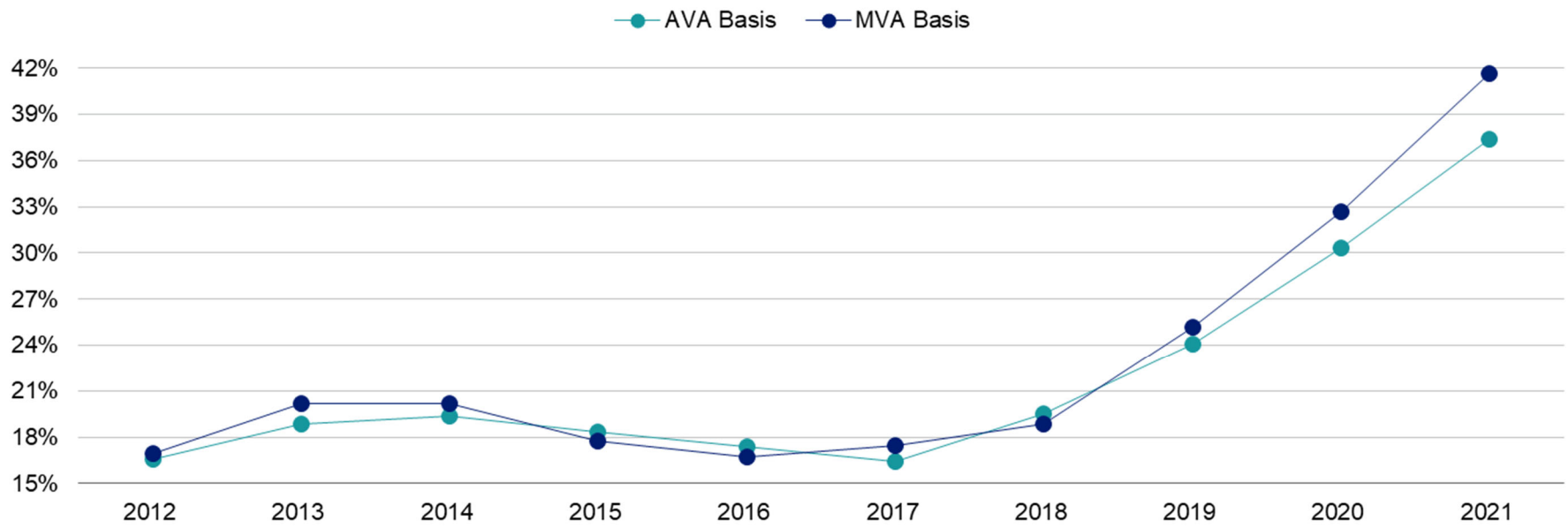
Total of Health Care Trust Funds
Schedule of Funding Progress

As of December 31	Actuarial Value of Assets (AVA)	Actuarial Accrued Liability (AAL)	Unfunded Actuarial Accrued Liability (UAAL)	Funded Ratio	Annual Covered Payroll	UAAL as a % of Covered Payroll
2012	$299,539,211	$1,801,163,375	$1,501,624,164	16.6%	$7,277,585,379	20.6%
2013	309,038,139	1,634,042,125	1,325,003,986	18.9%	7,530,220,378	17.6%
2014	313,878,752	1,610,487,238	1,296,608,486	19.5%	7,795,669,760	16.6%
2015	303,145,282	1,631,165,802	1,328,020,520	18.6%	8,106,659,440	16.4%
2016	289,094,259	1,629,607,366	1,340,513,107	17.7%	8,359,069,646	16.0%
2017	281,398,909	1,651,514,134	1,370,115,225	17.0%	8,585,478,300	16.0%
2018	313,340,892	1,547,565,805	1,234,224,913	20.2%	9,121,874,778	13.5%
2019	379,621,532	1,515,105,931	1,135,484,399	25.1%	9,570,668,378	11.9%
2020	470,109,163	1,483,448,732	1,013,339,569	31.7%	9,759,466,328	10.4%
2021	560,861,547	1,407,530,683	846,669,136	39.8%	10,161,294,690	8.3%

Additional Information (continued)

The chart below shows the funded ratio for the Health Care Trust Fund calculated using both the actuarial value of assets and the market value of assets.

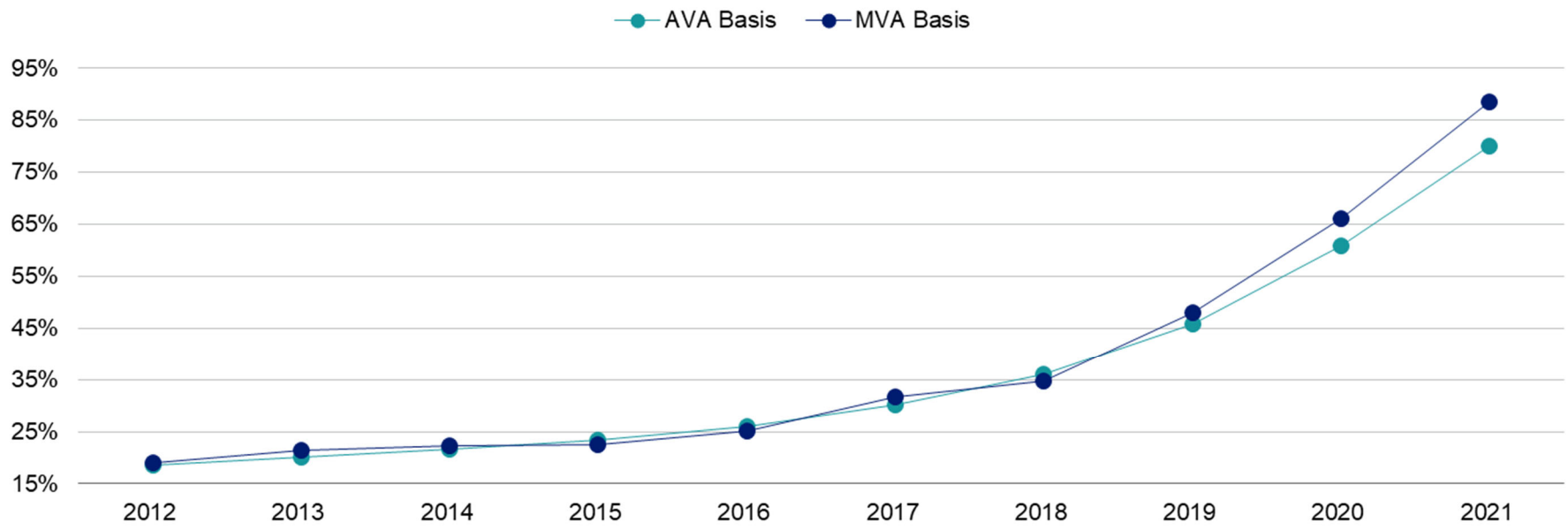
Health Care Trust Fund
Funded Ratio as of December 31



Additional Information (continued)

The chart below shows the funded ratio for the DPS Health Care Trust Fund calculated using both the actuarial value of assets and the market value of assets.

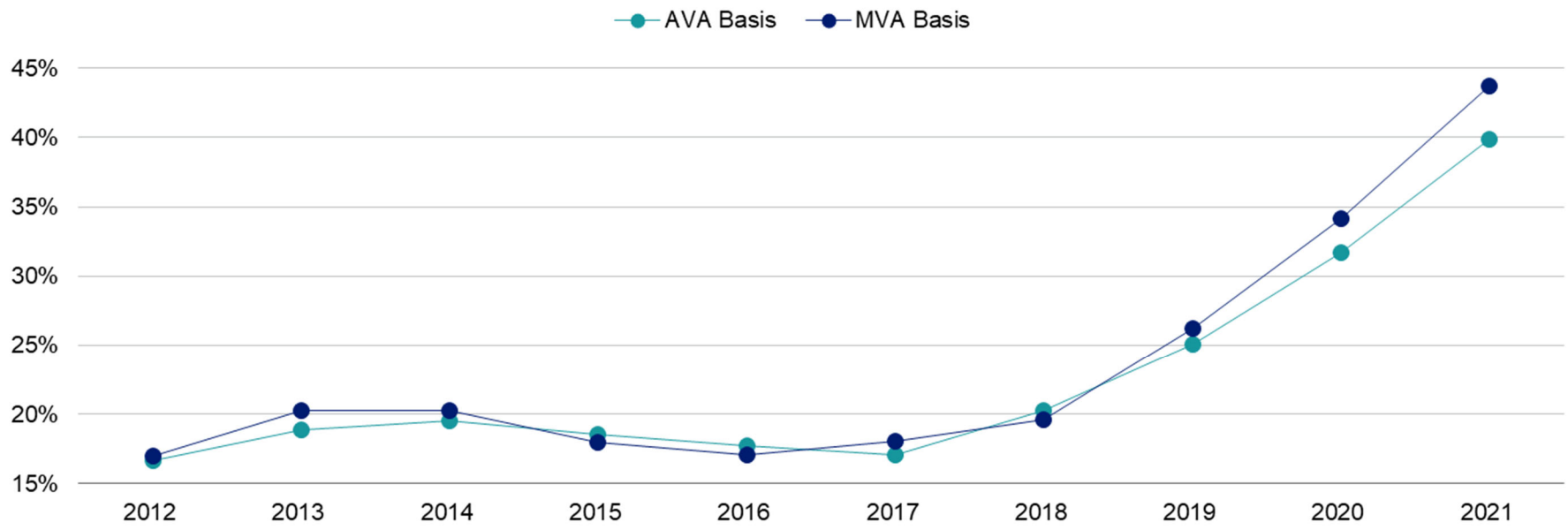
DPS Health Care Trust Fund
Funded Ratio as of December 31



Additional Information (continued)

The chart below shows the funded ratio for the total of the Health Care Trust Funds calculated using both the actuarial value of assets and the market value of assets.

Total of Health Care Trust Funds
Funded Ratio as of December 31



GFOA Solvency Test

The Actuarial Accrued Liability represents the present value of benefits earned, calculated using the Health Care Trust Funds' actuarial cost method. The Actuarial Value of Assets reflects the financial resources available to liquidate the liability. The portion of the liability covered by assets reflects the extent to which accumulated plan assets are sufficient to pay future benefits, and is shown for liabilities associated with member contributions, pensioner liabilities, and other liabilities. The Government Finance Officers Association (GFOA) recommends that the OPEB funding policy aim to achieve a funded ratio of 100 percent.

Health Care Trust Fund
Solvency Test as of December 31

	Aggregate Accrued Liabilities				Portion of Accrued Liabilities Covered by Plan Assets		
As of December 31	(1) Active Member Contributions	(2) Retirees, Beneficiaries, and Inactive Members	(3) Employer-Financed Portion of Active Members	Actuarial Value of Plan Assets	(1)	(2)	(3)
2012	N/A	$1,259,557,008	$463,937,680	$285,096,629	N/A	22.6%	0.0%
2013	N/A	1,092,437,982	464,967,833	293,556,476	N/A	26.9%	0.0%
2014	N/A	1,085,994,673	448,466,638	297,376,975	N/A	27.4%	0.0%
2015	N/A	1,099,044,657	457,224,328	285,588,114	N/A	26.0%	0.0%
2016	N/A	1,153,014,584	403,747,654	270,149,671	N/A	23.4%	0.0%
2017	N/A	1,178,159,704	403,061,971	260,281,736	N/A	22.1%	0.0%
2018	N/A	1,084,313,326	393,800,882	288,323,044	N/A	26.6%	0.0%
2019	N/A	1,048,219,247	398,950,174	348,432,447	N/A	33.2%	0.0%
2020	N/A	1,041,550,896	376,339,718	430,256,242	N/A	41.3%	0.0%
2021	N/A	973,038,963	372,431,711	511,143,268	N/A	52.5%	0.0%

GFOA Solvency Test (continued)

DPS Health Care Trust Fund
Solvency Test as of December 31

	Aggregate Accrued Liabilities				Portion of Accrued Liabilities Covered by Plan Assets		
As of December 31	(1) Active Member Contributions	(2) Retirees, Beneficiaries, and Inactive Members	(3) Employer-Financed Portion of Active Members	Actuarial Value of Plan Assets	(1)	(2)	(3)
2012	N/A	$54,727,369	$22,941,318	$14,442,582	N/A	26.4%	0.0%
2013	N/A	52,106,219	24,530,091	15,481,663	N/A	29.7%	0.0%
2014	N/A	50,997,742	25,028,185	16,501,777	N/A	32.4%	0.0%
2015	N/A	49,891,396	25,005,421	17,557,168	N/A	35.2%	0.0%
2016	N/A	51,357,020	21,488,108	18,944,588	N/A	36.9%	0.0%
2017	N/A	50,796,277	19,496,182	21,117,173	N/A	41.6%	0.0%
2018	N/A	48,267,920	21,183,677	25,017,848	N/A	51.8%	0.0%
2019	N/A	46,397,924	21,538,586	31,189,085	N/A	67.2%	0.0%
2020	N/A	45,306,395	20,251,723	39,852,921	N/A	88.0%	0.0%
2021	N/A	40,642,850	21,417,159	49,718,279	N/A	100.0%	42.4%

GFOA Solvency Test (continued)

Total of Health Care Trust Funds
Solvency Test as of December 31

	Aggregate Accrued Liabilities				Portion of Accrued Liabilities Covered by Plan Assets		
As of December 31	(1) Active Member Contributions	(2) Retirees, Beneficiaries, and Inactive Members	(3) Employer-Financed Portion of Active Members	Actuarial Value of Plan Assets	(1)	(2)	(3)
2012	N/A	$1,314,284,377	$486,878,998	$299,539,211	N/A	22.8%	0.0%
2013	N/A	1,144,544,201	489,497,924	309,038,139	N/A	27.0%	0.0%
2014	N/A	1,136,992,415	473,494,823	313,878,752	N/A	27.6%	0.0%
2015	N/A	1,148,936,053	482,229,749	303,145,282	N/A	26.4%	0.0%
2016	N/A	1,204,371,604	425,235,762	289,094,259	N/A	24.0%	0.0%
2017	N/A	1,228,955,981	422,558,153	281,398,909	N/A	22.9%	0.0%
2018	N/A	1,132,581,246	414,984,559	313,340,892	N/A	27.7%	0.0%
2019	N/A	1,094,617,171	420,488,760	379,621,532	N/A	34.7%	0.0%
2020	N/A	1,086,857,291	396,591,441	470,109,163	N/A	43.3%	0.0%
2021	N/A	1,013,681,813	393,848,870	560,861,547	N/A	55.3%	0.0%

Summary of Actuarial Valuation Results

Liabilities as of December 31, 2021

		Health Care Trust Fund	DPS Health Care Trust Fund	Total
1.	Present value of future benefits, active members			
	a. Retirement benefits	$446,816,571	$26,625,462	$473,442,033
	b. Disability benefits	6,020,989	361,639	6,382,628
	c. Death benefits	3,691,624	159,683	3,851,307
	d. Withdrawal benefits	28,126,588	2,834,405	30,960,993
	e. Total	$484,655,772	$29,981,189	$514,636,961
2.	Inactive vested members	37,637,879	1,953,041	39,590,920
3.	Retirees and beneficiaries	935,401,084	38,689,809	974,090,893
4.	Actuarial present value of projected benefits: **1(e) + 2 + 3**	$1,457,694,735	$70,624,039	$1,528,318,774
5.	Actuarial present value of future normal costs, active members			
	a. Retirement benefits	$93,321,446	$6,694,669	$100,016,115
	b. Disability benefits	2,401,908	153,742	2,555,650
	c. Death benefits	1,230,368	69,666	1,300,034
	d. Withdrawal benefits	15,270,339	1,645,953	16,916,292
	e. Total	$112,224,061	$8,564,030	$120,788,091
6.	**Actuarial accrued liability: 4 – 5e**	**$1,345,470,674**	**$62,060,009**	**$1,407,530,683**
7.	Actuarial value of assets	$511,143,268	$49,718,279	$560,861,547
8.	**Unfunded/(overfunded) actuarial accrued liability at end of year: 6 - 7**	**$834,327,406**	**$12,341,730**	**$846,669,136**

Actuarial Balance Sheet

An Actuarial Balance Sheet gives an overview of the Health Care Trust Funds' funding. First, the amount and timing of all future payments that will be made by the Health Care Trust Funds for current participants is determined. Then these payments are discounted at the valuation interest rate to the date of the valuation, thereby determining the present value, referred to as the "liability" of the Health Care Trust Funds.

Second, this liability is compared to the assets. The "assets" for this purpose include the net amount of assets already accumulated by the Health Care Trust Funds, the present value of future employer normal cost contributions, and the present value of future employer amortization payments for the unfunded actuarial accrued liability.

Actuarial Balance Sheet

	Health Care Trust Fund	DPS Health Care Trust Fund	Total
Liabilities:			
• Present value of benefits for retirees and beneficiaries	$935,401,084	$38,689,809	$974,090,893
• Present value of benefits for inactive members	37,637,879	1,953,041	39,590,920
• Present value of benefits for active members	484,655,772	29,981,189	514,636,961
Total liabilities	**$1,457,694,735**	**$70,624,039**	**$1,528,318,774**
Assets:			
• Total valuation value of assets	$511,143,268	$49,718,279	$560,861,547
• Present value of future contributions by members	0	0	0
• Present value of future employer contributions for:			
– Entry age normal costs	$112,224,061	$8,564,030	$120,788,091
– Unfunded actuarial accrued liability	834,327,406	12,341,730	846,669,136
Total of current and future assets	**$1,457,694,735**	**$70,624,039**	**$1,528,318,774**

Section 3: Supplemental Information

Exhibit A: Membership Data

Membership data was provided on electronic files sent by PERA staff. While not verifying the correctness of the data at the source, we performed various tests to ensure the internal consistency of the data and its overall reasonableness.

Health Care Trust Funds
Number of Members

	Item	Health Care Trust Fund	DPS Health Care Trust Fund	Total
1.	Retirees and survivors (includes deferred survivors)	56,178	3,390	59,568
2.	Terminated members entitled to future benefits	30,766	2,249	33,015
3.	Inactive members not eligible for benefits	N/A	N/A	N/A
4.	Active members	191,574	15,695	207,269
5.	Total: **1 + 2 + 3 + 4**	278,518	21,334	299,852

Exhibit B: Participation in the Health Care Plans for Retirees and Survivors Currently Receiving Retirement Benefits

Health Care Trust Funds
Participation in Health Care Plans

Item	Health Care Trust Fund	DPS Health Care Trust Fund	Total
Enrolled in PERACare:			
Under age 65	9,002	361	9,363
Age 65 and older	47,176	3,029	50,205
Subtotal	56,178	3,390	59,568[1]
Not Enrolled in PERACare:			
Under age 65	17,653	688	18,341
Age 65 and older	51,094	3,108	54,202
Subtotal	68,747	3,796	72,543
Total:	**124,925**	**7,186**	**132,111**

[1] The 59,568 count includes 2 beneficiaries enrolled in PERACare but without subsidy.

Exhibit C: Schedule of Retirees, Beneficiaries, and Survivors Added to and Removed from the Benefit Payroll

	Added to Payroll		Removed from Payroll		Payroll End of Year			
Trust Fund	No.	Annual Benefits	No.	Annual Benefit	No.	Annual Benefit	Average Annual Benefits	Increase in Average benefits
Health Care Trust Fund								
• 12/31/2017	3,352	$7,255,971	2,667	$7,153,713	56,474	$91,669,812	$1,623	(1.1%)
• 12/31/2018	3,337	$7,068,843	3,169	$5,498,610	56,642	$89,984,901	$1,589	(2.1%)
• 12/31/2019	3,265	$6,495,867	3,455	$6,074,346	56,452	$89,033,598	$1,577	(0.8%)
• 12/31/2020	2,743	$5,640,819	2,922	$6,801,192	56,273	$87,873,225	$1,562	(1.0%)
• 12/31/2021	2,969	$5,509,620	3,064	$5,562,987	56,178	$80,751,402	$1,437	(8.0%)
DPS Health Care Trust Fund								
• 12/31/2017	149	$325,128	218	$445,188	3,816	$5,583,894	$1,463	(0.3%)
• 12/31/2018	160	$346,794	351	$550,827	3,625	$5,905,296	$1,629	11.3%
• 12/31/2019	276	$468,441	281	$492,591	3,620	$5,805,591	$1,604	(1.5%)
• 12/31/2020	112	$218,592	213	$424,626	3,519	$5,599,557	$1,591	(0.8%)
• 12/31/2021	109	$188,670	240	$420,486	3,388	$4,851,156	$1,432	(10.0%)
Total of Health Care Trust Funds								
• 12/31/2017	3,501	$7,581,099	2,885	$7,598,901	60,290	$97,253,706	$1,613	(1.0%)
• 12/31/2018	3,497	$7,415,637	3,520	$6,049,437	60,267	$95,890,197	$1,591	(1.4%)
• 12/31/2019	3,541	$6,964,308	3,736	$6,566,937	60,072	$94,839,189	$1,579	(0.8%)
• 12/31/2020	2,855	$5,859,411	3,135	$7,225,818	59,792[1]	$93,472,782	$1,563	(1.0%)
• 12/31/2021	3,078	$5,698,290	3,304	$5,983,473	59,566[2]	$85,602,558	$1,437	(8.1%)

[1] The 59,792 count excludes 2 beneficiaries enrolled in PERACare but without subsidy.

[2] The 59,566 count excludes 2 beneficiaries enrolled in PERACare but without subsidy.

Exhibit D: Summary Statement of Income and Expenses on a Market Value Basis

Year Ending December 31, 2021	Health Care Trust Fund	DPS Health Care Trust Fund	Total
Net assets at market value at beginning of year	**$463,301,422**	**$43,321,068**	**$506,622,490**
• Employer contributions	$97,974,004	$8,622,308	$106,596,312
• Nonemployer contributions	0	0	0
• Other Additions (including purchased service)	8,107,714	206,477	8,314,191
• Employer disaffiliation	0	0	0
Total contributions	**$106,081,718**	**$8,828,785**	**$114,910,503**
• Net appreciation (depreciation)	$61,804,825	$6,299,053	$68,103,878
• Interest	1,715,991	174,830	1,890,821
• Dividends	3,903,393	397,689	4,301,082
• Other income	2,392,679	243,773	2,636,452
• Less investment expense	(1,497,599)	(152,580)	(1,650,179)
Net income from investing activities	**$68,319,289**	**$6,962,765**	**$75,282,054**
Total additions	**$174,401,007**	**$15,791,550**	**$190,192,557**
• Health care participants benefits	$63,893,201	$3,515,967	$67,409,168
Total benefits	**$63,893,201**	**$3,515,967**	**$67,409,168**
• Administrative expenses	$12,975,733	$640,049	$13,615,782
• Other deductions	84,548	3,690	88,238
Total deductions	**$76,953,482**	**$4,159,706**	**$81,113,188**
Net increase in assets	**$97,447,525**	**$11,631,844**	**$109,079,369**
Net assets at end of year	**$560,748,947**	**$54,952,912**	**$615,701,859**

Section 4: Actuarial Valuation Basis

Exhibit I: Actuarial Assumptions and Actuarial Cost Method

Rationale for Assumptions	The information and analysis used in selecting each assumption that has a significant effect on this actuarial valuation resulted from the *Public Employees' Retirement Association of Colorado – Health Care Trust Fund and Denver Public Schools Health Care Trust Fund Analysis of Actuarial Experience during the Period January 1, 2016, through December 31, 2019* dated November 4, 2020. The revised assumptions proposed in this report were adopted by the Board on November 20, 2020, effective beginning with the December 31, 2020, actuarial valuation and measurement date. Based on professional judgment, no assumption changes are warranted at this time. As a result of the 2019 Asset Liability Study, concluded at the November 15, 2019 Board meeting, the Board reaffirmed the 7.25% assumed long-term rate of investment return effective as of January 1, 2020.
Long-Term Rate of Return	7.25%, net of investment expenses
Price Inflation Assumption	2.30%
Wage Inflation Assumption	3.00%
Real Wage Inflation	0.70%
Actuarial Cost Method	Entry Age Actuarial Cost Method. Entry Age is the age at date of employment or, if date is unknown, current age minus years of service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary, with Normal Cost determined using the plan of benefits applicable to each member.
Asset Valuation Method	The actuarial value of assets is determined using the "four-year smoothed value" asset valuation method. Under this method, investment gains and losses are recognized in equal portions over a four-year period. Investment gains and losses are determined by comparing the actual return on market value for a given period to the anticipated earnings over the same period if the market value at the beginning of the period, contributions, benefit payments, and administrative expenses during the period earned the expected rate of return for the portion of the period that each was expected to be including in, or exclude from, plan assets. The expected rate of return for this purpose is equal to the investment rate of return assumption at the beginning of the period. The resulting actuarial value of assets is not constrained to fall within a corridor around the market value of assets.

Spouse Coverage

For current retirees under the PERA benefit structure with a Joint and Survivor pension based on data provided for each record, we have assumed that the surviving eligible beneficiary would continue to receive the explicit subsidy upon the retiree's death. For future retirees under the PERA benefit Structure, we have assumed that 60% of male retirees and 35% of female retirees with an explicit subsidy will have a surviving spouse who continues the benefit.

For current retirees, we have valued an implicit subsidy spouse liability based on data provided for each record. For future retirees with an implicit subsidy liability, we have assumed that 5% of employees of the State, School, Local Government, Judicial, and DPS Division employees (under the PERA benefit structure) have enrolled a spouse who also will have an implicit subsidy liability.

Withdrawal Assumption

For all but the Judicial Division, it is assumed that 35% of the vested members who terminate elect to withdraw their contributions and matching employer contributions while the remaining 65% elect to leave their contributions in the plan in order to be eligible for a benefit at their retirement date. For the Judicial Division, it is assumed that 100% of the vested members who terminate elect to leave their contributions in the plan in order to be eligible for a benefit at their retirement date. Current active members assumed to terminate service and leave their contributions in the plan in order to be eligible for a benefit at their retirement date are assumed to retire with a reduced benefit, if applicable, at an age based upon benefit structure and/or service as shown in the following table:

Assumed Age of Initial Benefit Receipt	Benefit Structure and/or Service
50	PERA Benefit Structure Members (excluding State Troopers) with 25 or More Years of Service
50	State Troopers with 20 or More Years of Service
55	PERA Benefit Structure Members (excluding State Troopers) with 20–25 Years of Service
60	PERA Benefit Structure Members with Less than 20 Years of Service
60	DPS Benefit Structure Members

Inactive Members

It is assumed that 100% of inactive members who terminated employment with less than five years of service elect to withdraw their contributions. Current inactive members in the PERA benefit structure who are assumed to leave their contributions in the plan in order to be eligible for a benefit at their retirement date are assumed to retire at age 62 with an unreduced pension benefit. Current inactive members in the DPS benefit structure who are assumed to leave their contributions in the plan in order to be eligible for a benefit at their retirement date are assumed to retire at age 65 with an unreduced pension benefit.

Section 4: Actuarial Valuation Basis

Death After Retirement	For State and Local Government Divisions (other than State Troopers), post-retirement non-disabled retiree mortality rates are based upon the PubG-2010 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, projected generationally 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. For State and Local Government Divisions (State Troopers), the post-retirement non-disabled retiree mortality table used is the unadjusted PubS-2010 Healthy Retiree table, with generational projection using scale MP-2019. For the School and DPS Divisions, the post-retirement non-disabled retiree mortality table used is the PubT-2010 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, projected generationally 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. For the Judicial Division, the port-retirement non-disabled retiree mortality table is the unadjusted PubG-2010(A) Above-Median Healthy Retiree table, with generational projection using scale MP-2019. For all Divisions, the post-retirement non-disabled beneficiary mortality table is the 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 rates for all ages, with generational projection using scale MP-2019. For all Divisions except State Troopers, the disabled mortality rates are based upon the PubNS-2010 Disabled Retiree table using 99% of rates for all ages with generational projection using Scale MP-2019. For State Troopers in the State and Local Government Divisions, the disabled mortality rates are based upon the unadjusted PubS-2010 Disabled Retiree table with generational projection using scale MP-2019. All mortality tables referred to above are the headcount-weighted tables.

Section 4: Actuarial Valuation Basis

Death Before Retirement	For State and Local Government Divisions (other than State Troopers), pre-retirement mortality rates are based upon the PubG-2010 Employee table with generational projection using scale MP-2019. For State and Local Government Divisions (State Troopers), pre-retirement mortality rates are based upon the PubS-2010 Employee table with generational projection using scale MP-2019. For School and DPS Divisions, pre-retirement mortality rates are based upon the PubT-2010 Employee table with generational projection using scale MP-2019. For the Judicial Division, pre-retirement mortality rates are based upon the PubG-2010(A) Above-Median Employee table with generational projection using scale MP-2019. All mortality tables referred to above are the headcount-weighted tables.

Section 4: Actuarial Valuation Basis

Salary Increases

Representative values of the assumed annual rates of future salary increases are shown in the following tables:

State Division (other than State Troopers)

	Rate (%)		
Age	Merit & Seniority	Inflation & Productivity	Total Increases
20	7.90	3.00	10.90
25	5.50	3.00	8.50
30	3.80	3.00	6.80
35	2.90	3.00	5.90
40	2.20	3.00	5.20
45	1.60	3.00	4.60
50	1.10	3.00	4.10
55	0.70	3.00	3.70
60	0.50	3.00	3.50
65	0.30	3.00	3.30
70	0.30	3.00	3.30

State and Local Government Divisions (State Troopers)

	Rate (%)		
Age	Merit & Seniority	Inflation & Productivity	Total Increases
20	9.40	3.00	12.40
25	5.90	3.00	8.90
30	3.80	3.00	6.80
35	2.90	3.00	5.90
40	2.20	3.00	5.20
45	1.70	3.00	4.70
50	1.30	3.00	4.30
55	0.90	3.00	3.90
60	0.60	3.00	3.60
65	0.30	3.00	3.30
70	0.20	3.00	3.20

Salary Increases (continued)

School Division

Age	Rate (%) Merit & Seniority	Inflation & Productivity	Total Increases
20	8.00	3.00	11.00
25	5.60	3.00	8.60
30	4.00	3.00	7.00
35	3.30	3.00	6.30
40	2.70	3.00	5.70
45	2.10	3.00	5.10
50	1.60	3.00	4.60
55	1.20	3.00	4.20
60	0.80	3.00	3.80
65	0.50	3.00	3.50
70	0.40	3.00	3.40

Local Government Division (other than State Troopers)

Age	Rate (%) Merit & Seniority	Inflation & Productivity	Total Increases
20	8.30	3.00	11.30
25	5.70	3.00	8.70
30	3.80	3.00	6.80
35	2.80	3.00	5.80
40	2.20	3.00	5.20
45	1.80	3.00	4.80
50	1.50	3.00	4.50
55	1.20	3.00	4.20
60	0.90	3.00	3.90
65	0.40	3.00	3.40
70	0.20	3.00	3.20

Section 4: Actuarial Valuation Basis

Salary Increases (continued)

Judicial Division

Service	Rate (%) Merit & Seniority	Inflation & Productivity	Total Increases
0	2.30	3.00	5.30
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
40	0.00	2.80	2.80

DPS Division

Age	Rate (%) Merit & Seniority	Inflation & Productivity	Total Increases
20	8.50	3.00	11.50
25	6.40	3.00	9.40
30	4.80	3.00	7.80
35	3.90	3.00	6.90
40	3.20	3.00	6.20
45	2.50	3.00	5.50
50	2.00	3.00	5.00
55	1.60	3.00	4.60
60	1.30	3.00	4.30
65	0.90	3.00	3.90
70	0.80	3.00	3.80

Separations From Active Service

Representative values of the assumed annual rates of termination, death, and disability are shown in the following tables:

State Division (other than State Troopers)

	Rate (%)					
	Ultimate Termination		Death[1]		Disability	
Age	Males	Females	Males	Females	Males	Females
20	30.00	16.45	0.041	0.016	0.008	0.008
25	13.60	12.30	0.042	0.016	0.008	0.008
30	7.10	9.50	0.063	0.026	0.008	0.008
35	5.90	7.30	0.086	0.038	0.024	0.024
40	4.75	5.75	0.103	0.051	0.039	0.039
45	3.95	4.95	0.122	0.064	0.076	0.076
50	3.66	4.60	0.165	0.093	0.156	0.156
55	3.54	4.50	0.254	0.148	0.203	0.203
60	3.50	4.50	0.391	0.224	0.236	0.236
65	3.50	4.50	0.548	0.316	0.236	0.236
70	3.50	4.50	0.760	0.476	0.236	0.236

(1) 2021 mortality rates of the PubG-2010 Employee table (headcount-weighted). The mortality rates are projected forward from 2010 with generational mortality improvement using scale MP-2019.

The select termination assumptions for members with less than five years of service are shown in the following table:

State Division (other than State Troopers)

	Rate (%)	
Service	Males	Females
0	34.00	34.00
1	21.00	21.00
2	16.00	16.00
3	12.00	12.00
4	10.00	10.00

Separations From Active Service (continued)

State and Local Government Divisions (State Troopers)

	Rate (%)					
	Termination[1]		Death[2]		Disability	
Age	Males	Females	Males	Females	Males	Females
20	7.30	7.30	0.046	0.018	0.01	0.01
25	5.15	5.15	0.052	0.025	0.02	0.02
30	3.65	3.65	0.068	0.038	0.04	0.04
35	2.98	2.98	0.079	0.053	0.06	0.06
40	2.62	2.62	0.085	0.064	0.10	0.10
45	2.50	2.50	0.095	0.074	0.25	0.25
50	2.50	2.50	0.124	0.099	0.30	0.30
55	2.50	2.50	0.190	0.149	0.30	0.30
60	2.50	2.50	0.312	0.211	0.30	0.30
65	2.50	2.50	0.485	0.264	0.30	0.30
70	2.50	2.50	0.821	0.480	0.30	0.30

(1) There are no select termination assumptions for State Troopers.
(2) 2021 mortality rates of the PubS-2010 Employee table (headcount-weighted). The mortality rates are projected forward from 2010 with generational mortality improvement using scale MP-2019.

Section 4: Actuarial Valuation Basis

Separations From Active Service (continued)

School Division (PERA Benefit Structure)

	Rate (%)					
	Ultimate Termination		Death[1]		Disability	
Age	Males	Females	Males	Females	Males	Females
20	20.00	17.00	0.038	0.014	0.008	0.008
25	11.26	11.56	0.027	0.012	0.008	0.008
30	6.54	7.34	0.039	0.020	0.008	0.008
35	4.60	5.51	0.051	0.030	0.016	0.016
40	3.64	4.34	0.061	0.040	0.033	0.033
45	3.34	4.00	0.078	0.053	0.050	0.050
50	3.24	4.00	0.118	0.077	0.078	0.078
55	3.20	4.00	0.188	0.122	0.126	0.126
60	3.20	4.00	0.305	0.190	0.180	0.180
65	3.20	4.00	0.489	0.285	0.180	0.180
70	3.20	4.00	0.743	0.455	0.180	0.180

(1) 2021 mortality rates of the PubT-2010 Employee table (headcount-weighted). The mortality rates are projected forward from 2010 with generational mortality improvement using scale MP-2019.

The select termination assumptions for members with less than five years of service are shown in the following table:

School Division (PERA Benefit Structure)

	Rate (%)	
Service	Males	Females
0	30.00	30.00
1	18.00	18.00
2	14.00	14.00
3	11.00	11.00
4	10.00	10.00

Separations From Active Service (continued)

DPS Division (PERA Benefit Structure)

	Rate (%)					
	Ultimate Termination		Death[1]		Disability	
Age	Males	Females	Males	Females	Males	Females
20	19.20	12.80	0.038	0.014	0.008	0.008
25	11.20	10.80	0.027	0.012	0.008	0.008
30	7.70	9.40	0.039	0.020	0.008	0.008
35	6.60	7.80	0.051	0.030	0.016	0.016
40	6.00	6.40	0.061	0.040	0.033	0.033
45	6.00	6.00	0.078	0.053	0.050	0.050
50	6.00	5.40	0.118	0.077	0.078	0.078
55	6.00	5.00	0.188	0.122	0.126	0.126
60	6.00	5.00	0.305	0.190	0.180	0.180
65	6.00	5.00	0.489	0.285	0.180	0.180
70	6.00	5.00	0.743	0.455	0.180	0.180

(1) 2021 mortality rates of the PubT-2010 Employee table (headcount-weighted). The mortality rates are projected forward from 2010 with generational mortality improvement using scale MP-2019.

The select termination assumptions for members with less than five years of service are shown in the following table:

DPS Division (PERA Benefit Structure)

	Rate (%)	
Service	Males	Females
0	26.00	26.00
1	19.00	19.00
2	14.00	14.00
3	12.00	12.00
4	10.00	10.00

Section 4: Actuarial Valuation Basis

Separations From Active Service (continued)

Local Government Division (other than State Troopers)

	Rate (%)					
	Ultimate Termination		Death[1]		Disability	
Age	Males	Females	Males	Females	Males	Females
20	30.00	16.45	0.041	0.016	0.008	0.008
25	13.60	12.30	0.042	0.016	0.008	0.008
30	7.10	9.50	0.063	0.026	0.008	0.008
35	5.90	7.30	0.086	0.038	0.024	0.024
40	4.75	5.75	0.103	0.051	0.039	0.039
45	3.95	4.95	0.122	0.064	0.076	0.076
50	3.66	4.60	0.165	0.093	0.156	0.156
55	3.54	4.50	0.254	0.148	0.203	0.203
60	3.50	4.50	0.391	0.224	0.236	0.236
65	3.50	4.50	0.548	0.316	0.236	0.236
70	3.50	4.50	0.760	0.476	0.236	0.236

(1) 2021 mortality rates of the PubG-2010 Employee table (headcount-weighted). The mortality rates are projected forward from 2010 with generational mortality improvement using scale MP-2019.

The select termination assumptions for members with less than five years of service are shown in the following table:

Local Government Division (other than State Troopers)

	Rate (%)	
Service	Males	Females
0	34.00	34.00
1	21.00	21.00
2	16.00	16.00
3	12.00	12.00
4	10.00	10.00

Section 4: Actuarial Valuation Basis

Separations From Active Service (continued)

Judicial Division

	Rate (%)					
	Termination[1]		Death[2]		Disability	
Age	Males	Females	Males	Females	Males	Females
30	1.50	1.50	0.049	0.022	0.008	0.008
35	1.50	1.50	0.067	0.033	0.016	0.016
40	1.50	1.50	0.080	0.042	0.033	0.033
45	1.50	1.50	0.094	0.054	0.050	0.050
50	1.50	1.50	0.128	0.079	0.078	0.078
55	1.50	1.50	0.197	0.125	0.126	0.126
60	1.50	1.50	0.303	0.189	0.180	0.180
65	1.50	1.50	0.425	0.266	0.180	0.180
70	1.50	1.50	0.590	0.401	0.180	0.180

(1) There are no select termination assumptions for Judicial Division members.
(2) 2021 mortality rates of the PubG-2010(A) Above-Median Employee table (headcount-weighted). The mortality rates are projected forward from 2010 with generational mortality improvement using scale MP-2019.

All Divisions (DPS Benefit Structure)

	Rate (%)					
	Termination[1]		Death[2]		Disability	
Age	Males	Females	Males	Females	Males	Females
20	8.00	10.00	0.038	0.014	0.008	0.008
25	7.40	8.80	0.027	0.012	0.008	0.008
30	6.85	7.70	0.039	0.020	0.008	0.008
35	6.60	7.20	0.051	0.030	0.016	0.016
40	5.45	5.95	0.061	0.040	0.033	0.033
45	4.69	4.41	0.078	0.053	0.050	0.050
50	4.50	3.85	0.118	0.077	0.078	0.078
55	4.31	3.85	0.188	0.122	0.126	0.126
60	4.25	3.85	0.305	0.190	0.180	0.180
65	4.25	3.85	0.489	0.285	0.180	0.180
70	4.25	3.85	0.734	0.455	0.180	0.180

(1) There are no select termination assumptions for members in the DPS Benefit Structure.
(2) 2021 mortality rates of the PubT-2010 Employee table (headcount-weighted). The mortality rates are projected forward from 2010 with generational mortality improvement using scale MP-2019.

Retirement

Representative values of the assumed annual rates of service retirement are shown in the following tables:

State Division (other than State Troopers)

	Rate (%)			
	Eligible for Reduced Benefits		Eligible for Unreduced Benefits[1]	
Age	Males	Females	Males	Females
50	9.5	9.0	56.0	48.0
51	11.0	8.0	43.0	35.0
52	11.0	8.0	38.0	34.0
53	12.0	9.0	34.0	28.0
54	12.0	12.0	33.0	30.0
55	12.0	15.0	26.0	25.0
56	9.5	11.0	19.0	20.0
57	15.0	12.0	18.0	19.0
58	15.0	15.0	17.0	18.0
59	35.0	35.0	20.0	18.0
60	7.5	8.0	20.0	21.0
61	7.5	8.0	19.0	18.0
62	7.5	9.0	23.0	20.0
63	7.5	9.0	20.0	18.0
64	7.5	9.0	22.0	21.0
65	0.0	0.0	27.0	27.0
66	0.0	0.0	29.0	27.0
67	0.0	0.0	28.0	25.0
68	0.0	0.0	24.0	24.0
69	0.0	0.0	24.0	24.0
70	0.0	0.0	24.0	24.0
71	0.0	0.0	24.0	24.0
72	0.0	0.0	24.0	24.0
73	0.0	0.0	24.0	24.0
74	0.0	0.0	24.0	24.0
75 & over	0.0	0.0	100.0	100.0

(1) Additional increase in rates during the first 5 years of unreduced retirement at ages 55-64 (in order from year 0 through year 4): Males – 30%, 13%, 13%, 13%, 13%; Females – 20%, 9%, 9%, 9%, 9%.

Section 4: Actuarial Valuation Basis

Retirement (continued)

State and Local Government Divisions (State Troopers)

	Rate (%)			
	Eligible for Reduced Benefits		Eligible for Unreduced Benefits[1]	
Age	Males	Females	Males	Females
50	10.0	10.0	40.0	40.0
51	10.0	10.0	28.0	28.0
52	10.0	10.0	28.0	28.0
53	10.0	10.0	28.0	28.0
54	10.0	10.0	28.0	28.0
55	5.0	5.0	28.0	28.0
56	5.0	5.0	28.0	28.0
57	5.0	5.0	28.0	28.0
58	5.0	5.0	28.0	28.0
59	5.0	5.0	28.0	28.0
60	10.0	10.0	28.0	28.0
61	10.0	10.0	28.0	28.0
62	10.0	10.0	28.0	28.0
63	10.0	10.0	28.0	28.0
64	10.0	10.0	28.0	28.0
65 & over	0.0	0.0	100.0	100.0

[1] Additional increase in rates during the first year of unreduced retirement at ages 55-64: 20%.

Retirement (continued)

School Division and DPS Division (PERA Benefit Structure)

	Rate (%)			
	Eligible for Reduced Benefits		Eligible for Unreduced Benefits[1]	
Age	Males	Females	Males	Females
50	8.0	7.0	52.0	55.0
51	8.0	7.0	43.0	45.0
52	9.0	8.0	41.0	41.0
53	9.0	10.0	39.0	37.0
54	12.0	14.0	37.0	34.0
55	9.0	12.0	27.0	28.0
56	9.0	12.0	22.0	24.0
57	9.0	12.0	21.0	23.0
58	12.0	16.0	19.0	22.0
59	24.0	34.0	21.0	22.0
60	8.0	9.0	25.0	24.0
61	9.0	9.0	24.0	23.0
62	10.0	10.0	22.0	26.0
63	10.0	10.0	22.0	24.0
64	10.0	10.0	26.0	24.0
65	0.0	0.0	28.0	31.0
66	0.0	0.0	31.0	29.0
67	0.0	0.0	25.0	26.0
68	0.0	0.0	26.0	25.0
69	0.0	0.0	26.0	25.0
70	0.0	0.0	24.0	28.0
71	0.0	0.0	24.0	23.0
72	0.0	0.0	24.0	23.0
73	0.0	0.0	24.0	23.0
74	0.0	0.0	24.0	23.0
75 & over	0.0	0.0	100.0	100.0

(1) Additional increase in rates during the first 5 years of unreduced retirement at ages 55-64 (in order from year 0 through year 4): Males – 28%, 4%, 4%, 4%, 4%; Females – 28%, 10%, 10%, 10%, 10%.

Section 4: Actuarial Valuation Basis

Retirement (continued)

Local Government Division (other than State Troopers)

	Rate (%)			
	Eligible for Reduced Benefits		Eligible for Unreduced Benefits[1]	
Age	Males	Females	Males	Females
50	9.5	9.0	56.0	48.0
51	11.0	8.0	43.0	35.0
52	11.0	8.0	38.0	34.0
53	12.0	9.0	34.0	28.0
54	12.0	12.0	33.0	30.0
55	12.0	15.0	26.0	25.0
56	9.5	11.0	19.0	20.0
57	15.0	12.0	18.0	19.0
58	15.0	15.0	17.0	18.0
59	35.0	35.0	20.0	18.0
60	7.5	8.0	20.0	21.0
61	7.5	8.0	19.0	18.0
62	7.5	9.0	23.0	20.0
63	7.5	9.0	20.0	18.0
64	7.5	9.0	22.0	21.0
65	0.0	0.0	27.0	27.0
66	0.0	0.0	29.0	27.0
67	0.0	0.0	28.0	25.0
68	0.0	0.0	24.0	24.0
69	0.0	0.0	24.0	24.0
70	0.0	0.0	24.0	24.0
71	0.0	0.0	24.0	24.0
72	0.0	0.0	24.0	24.0
73	0.0	0.0	24.0	24.0
74	0.0	0.0	24.0	24.0
75 & over	0.0	0.0	100.0	100.0

(1) Additional increase in rates during the first 5 years of unreduced retirement at ages 55-64 (in order from year 0 through year 4): Males – 30%, 13%, 13%, 13%, 13%; Females – 20%, 9%, 9%, 9%, 9%.

Section 4: Actuarial Valuation Basis

Retirement (continued)

Judicial Division

Age	Rate (%)			
	Eligible for Reduced Benefits		Eligible for Unreduced Benefits	
	Males	Females	Males	Females
50	6.0	6.0	6.0	6.0
51	6.0	6.0	6.0	6.0
52	6.0	6.0	6.0	6.0
53	6.0	6.0	6.0	6.0
54	10.0	10.0	10.0	10.0
55	10.0	10.0	10.0	10.0
56	10.0	10.0	10.0	10.0
57	10.0	10.0	10.0	10.0
58	8.0	8.0	8.0	8.0
59	8.0	8.0	8.0	8.0
60	10.0	10.0	10.0	10.0
61	10.0	10.0	10.0	10.0
62	10.0	10.0	10.0	10.0
63	10.0	10.0	10.0	10.0
64	8.0	8.0	8.0	8.0
65	0.0	0.0	20.0	20.0
66	0.0	0.0	20.0	20.0
67	0.0	0.0	20.0	20.0
68	0.0	0.0	20.0	20.0
69	0.0	0.0	20.0	20.0
70	0.0	0.0	40.0	40.0
71	0.0	0.0	40.0	40.0
72	0.0	0.0	40.0	40.0
73	0.0	0.0	40.0	40.0
74	0.0	0.0	40.0	40.0
75 & over	0.0	0.0	100.0	100.0

Section 4: Actuarial Valuation Basis

Retirement (continued)

All Divisions (DPS Benefit Structure)

Age	Rate (%)			
	Eligible for Reduced Benefits		Eligible for Unreduced Benefits	
	Males	Females	Males	Females
50	8.0	5.0	35.0	40.0
51	8.0	7.0	35.0	40.0
52	8.0	10.0	30.0	30.0
53	10.0	10.0	30.0	30.0
54	10.0	10.0	25.0	30.0
55	10.0	10.0	30.0	34.0
56	10.0	10.0	20.0	24.0
57	10.0	10.0	26.0	25.0
58	10.0	10.0	22.0	20.0
59	15.0	14.0	26.0	28.0
60	15.0	17.0	26.0	25.0
61	16.0	17.0	18.0	28.0
62	16.0	17.0	27.0	30.0
63	16.0	17.0	40.0	31.0
64	16.0	17.0	24.0	42.0
65	0.0	0.0	38.0	38.0
66	0.0	0.0	30.0	35.0
67	0.0	0.0	30.0	32.0
68	0.0	0.0	30.0	27.0
69	0.0	0.0	30.0	29.0
70	0.0	0.0	30.0	28.0
71	0.0	0.0	30.0	30.0
72	0.0	0.0	30.0	30.0
73	0.0	0.0	30.0	30.0
74	0.0	0.0	30.0	30.0
75 & over	0.0	0.0	100.0	100.0

Health Care Participation Rates (PERA Benefit Structure)

Current PERACare participants of the State, School, Local Government, and Judicial Divisions with a PERA benefit structure are assumed to maintain their current health care benefit elections in perpetuity. For active members retiring directly from the State, School, Local Government, and Judicial Divisions with a PERA benefit structure, the following participation rates are assumed:

Attained Age(s) at Retirement	Percent (%) Electing Health Care Coverages
15-48	20
49-50	25
51-52	35
53-57	40
58-71	45
72+	55

For eligible inactive members of the State, School, Local Government, or Judicial Divisions with a PERA benefit structure, 20% are assumed to elect health care coverage upon commencement of their monthly pension benefit.

For spousal participation, actual census data and current plan elections of current benefit recipients are used. For spouses of eligible inactive members and future retirees of the State, School, Local Government, or Judicial Divisions with a PERA benefit structure, 60% of males and 35% of females are assumed to elect coverage for their spouse. The age difference between female retirees and covered male spouses is assumed to be 1 year (male older) and the age difference between male retirees and female spouses is assumed to be 3 years (male older).

PERA Benefit Structure Assumptions Specific to the "No Part A" Subsidy

Under Colorado Revised Statute 24-51-1206(4), the premiums charged to a PERACare enrollee who is age sixty five or older and who is not eligible for premium-free benefits under Medicare Part A shall be no greater than the premium charged to a PERACare enrollee eligible for premium-free benefits under Medicare Part A with the same plan option, coverage level, and service credit. As a result, an additional, "No Part A" subsidy is paid under the PERA benefit structure on behalf of those PERACare enrollees who are age sixty-five or older and are not eligible for premium-free benefits under Medicare Part A.

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, 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, the following percentage of PERACare enrollees are assumed to not qualify for premium-free Medicare Part A benefits; thus qualifying for the "No Part A" subsidy from the PERA benefit structure:

Hire Age	Percent (%) Qualifying for "No Part A" Subsidy
0-24	17
25-29	11
30+	4

PERA Benefit Structure Assumptions Specific to the "No Part A" Subsidy (continued)

Of those PERACare enrollees assumed to not qualify for premium-free Medicare Part A benefits and receive the "No Part A" subsidy from the PERA benefit structure, 5% are assumed to cover a spouse.

The qualifying assumptions are based upon the experience of current, Medicare eligible, PERACare enrollees. Date of hire and hire age are estimated based upon service and date of retirement for current benefit recipients, or service and the valuation date for active members. As a result, those who are re-employed or transfer to another PERA employer may have accumulated the required quarters of Medicare-covered employment.

95% of PERACare enrollees receiving health care benefits as a result of disability retirement are assumed to qualify for premium-free Medicare Part A. 100% of eligible inactive 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.

Currently, the additional plan costs or premiums associated with those PERACare enrollees not eligible for premium-free Medicare Part A coverage are less, in aggregate, than the costs of PERA paying the Medicare Part A premium on their behalf. However, future increases in the additional costs or premiums associated with PERACare enrollees not eligible for premium-free Medicare Part A coverage may, in aggregate, exceed the Medicare Part A premium. As a result, it is assumed PERA will make the decision to pay the Medicare Part A premium when more cost-effective to do so. In making the decision to pay the Medicare Part A premium, it is assumed PERA's decision will be based upon the level of additional plan costs, include the premium penalties associated with late enrollment in Medicare Part A, and be made when the additional cost, averaged across all plans, for all PERACare enrollees, exceeds the Medicare Part A premium. This funding valuation assumes this will not occur.

PERA Benefit Structure Health Care Plan Election Rates

Medicare plan elections for future retirees as well as for current, Pre-Medicare retirees of the State, School, Local Government, Judicial, and Denver Public Schools Divisions with a PERA benefit structure who are not eligible for premium-free Medicare Part A, are assumed as follows:

Percent (%) Electing Medicare Plans	
Medicare Plans	**All Divisions**
UnitedHealthcare MAPD PPO	70
Kaiser Permanente Medicare Advantage HMO	30

For those PERACare enrollees of the State, School, Local Government, and Judicial Divisions with a PERA benefit structure, who are assumed to be ineligible for premium-free Medicare Part A and participate in the UnitedHealthcare MAPD PPO plans, 67% are assumed to elect MA#1 and 33% are assumed to elect MA#2.

Per Capita Cost Development	The change in Medicare Advantage plan carrier for PPO options and the transition to lower combined medical and pharmacy premiums required a change to per capita costs that are valued and where they are disclosed. We note the basis below as well as applicable assumptions for future increases. MA-PD PPO #2 premiums are lower than the maximum service based plan subsidy upon retirement. By statute, the maximum PERACare subsidy is the minimum of the plan premium and the calculated service based subsidy. To appropriately reflect this, the per capita costs are developed by plan option. This approach applies for all members and is adjusted accordingly for those not eligible for premium-free Medicare Part A. **MAPD PPO #1**: Based on January 1, 2022 premium rates for the UnitedHealthcare Medicare Advantage Prescription Drug (MAPD) PPO plan #1. Actuarial factors were then applied to estimate individual retiree and spouse costs by age and by gender and healthcare cost trend. **MAPD PPO #2:** Based on January 1, 2022 premium rates for the UnitedHealthcare Medicare Advantage Prescription Drug (MAPD) PPO plan #2. Actuarial factors were then applied to estimate individual retiree and spouse costs by age and by gender and healthcare cost trend. **MAPD HMO:** Based on January 1, 2022 premium rates for the Kaiser Permanente Medicare Advantage Prescription Drug (MAPD) HMO plan. Actuarial factors were then applied to estimate individual retiree and spouse costs by age and by gender and healthcare cost trend. Please see page 91 for actual premium rates by plan and Medicare Part A status.

PERA Benefit Structure Age Related Morbidity

For PERACare enrollees who are age sixty-five or older and who are either not eligible for premium-free Medicare Part A or where selected plan premium is lower than the service-based subsidy, per capita health care costs of the PERACare Medicare plans are adjusted to reflect expected health care cost changes related to age. The increase to the net incurred health care claims is assumed to be:

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	1.5	1.5
77	1.5	1.5
78	1.5	1.6
79	1.5	1.5
80	1.4	1.5
81 and Older	0.0	0.0

The Medicare Part A premium is not age adjusted, as Medicare is a pooled health plan in which premiums are neither age nor geography adjusted.
The service-based premium subsidy for health care does not result in annually increasing costs to the PERA benefit structure as a PERACare enrollee ages (except for the subsidy reduction at age 65, where selected plan premium is lower than the service-based subsidy or the costs associated with Medicare disability eligibility).

Section 4: Actuarial Valuation Basis

Per Capita Health Costs

Medical and prescription drug claims costs for the plan year beginning January 1, 2022 are shown in the table below for retirees at selected ages. These costs are net of deductibles and other benefit plan cost sharing provisions.

	MAPD PPO #1 With Medicare Part A				MAPD PPO #2 With Medicare Part A				MAPD HMO (Kaiser) With Medicare Part A			
	Retiree		Spouse		Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
65	$1,704	$1,450	$1,704	$1,450	$583	$496	$583	$496	$1,923	$1,634	$1,923	$1,634
70	$1,976	$1,561	$1,976	$1,561	$676	$534	$676	$534	$2,229	$1,761	$2,229	$1,761
75	$2,128	$1,681	$2,128	$1,681	$728	$575	$728	$575	$2,401	$1,896	$2,401	$1,896

	MAPD PPO #1 Without Medicare Part A				MAPD PPO #2 Without Medicare Part A				MAPD HMO (Kaiser) Without Medicare Part A			
	Retiree		Spouse		Retiree		Spouse		Retiree		Spouse	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
65	$6,514	$5,542	$6,514	$5,542	$4,227	$3,596	$4,227	$3,596	$6,752	$5,739	$6,752	$5,739
70	$7,553	$5,966	$7,553	$5,966	$4,901	$3,872	$4,901	$3,872	$7,826	$6,185	$7,826	$6,185
75	$8,134	$6,425	$8,134	$6,425	$5,278	$4,169	$5,278	$4,169	$8,433	$6,657	$8,433	$6,657

The 2022 Medicare Part A Premium is $499 per month.

Section 4: Actuarial Valuation Basis

PERA Benefit Structure Health Care Cost Trend Rates

Year	PERACare Medicare Plans (%) [1]	Medicare Part A Premiums (%)
2022	6.50	3.75
2023	6.25	4.00
2024	6.00	4.00
2025	5.75	4.00
2026	5.50	4.25
2027	5.25	4.25
2028	5.00	4.25
2029	4.75	4.50
2030+	4.50	4.50

[1] 0% for UnitedHealthcare MAPD PPO plans in 2022 and 2023.

The service-based premium subsidy is assumed to remain constant at its current level as of December 31, 2021; adjusted as appropriate to reflect statutory maximum levels where actual plan premium is lower.

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, we reference projected trends for the Federal Hospital Insurance Trust Fund (Medicare Part A premiums) provided by the Centers for Medicare & Medicaid Services. Effective December 31, 2021, the health care cost trend rates for Medicare Part A premiums were continued from the prior valuation and reflect the current expectation of future increases in rates of inflation applicable to Medicare Part A premiums.

HCTF Dual Status Members and Retirees

Some members and retirees may be represented under both the PERA benefit structure and the DPS benefit structure, and are considered as members or retirees in both benefit structures due to their dual status. In calculating the HCTF's liabilities for members with a liability under both the HCTF and the DPS HCTF, recognition is given to the choice of benefit structure, and the allocation of member contributions between the two HCTFs, as set forth in C.R.S. 24-51-1206.5. The choice of benefit structure is based upon what is assumed to be of the highest economic value to the benefit recipient. Current allocation percentages and member contribution account balances were provided by PERA for dual status members and retirees. For active members, member contribution account balances are projected assuming annual interest crediting of 3.00%, future salary increases of 3.00%, and member contributions of 10.50% of projected salary (increasing to 11.00% effective July 1, 2022, for all Divisions other than the Local Government and Judicial Divisions and State Troopers). For Local Government Division, member contributions are 8.50% of projected salary (increasing to 9.00% effective July 1, 2022). For the Judicial Division, member contributions are 15.50% of projected salary (for most Judicial members, decreasing to 11.00% effective July 1, 2022.) For State Troopers, member contributions are 12.50% of projected salary (increasing to 13.00% effective July 1, 2022).

Health Care Participation Rates – Applicable to the DPS Benefit Structure

Current PERACare enrollees of the State, School, Local Government, and Judicial Divisions with a DPS benefit structure are assumed to maintain their current health care benefit elections in perpetuity. For active members retiring directly from the State, School, Local Government, and Judicial Divisions with a DPS benefit structure, the following participation rates are assumed:

Attained Age(s) at Retirement	Percent Electing Health Care Coverage Rate (%)
15-48	20
49-50	25
51-52	35
53	40
54-60	50
61-64	60
65-71	55
72+	65

For deferred vested members of the State, School, Local Government, and Judicial Divisions with a DPS benefit structure, 20% are assumed to elect health care coverage upon commencement of their monthly benefit.

For spousal participation, actual census data and current plan elections of current benefit recipients are used. For spouses of eligible inactive members and future retirees of the State, School, Local Government, or Judicial Divisions with a PERA benefit structure, 60% of males and 35% of females are assumed to elect coverage for their spouse. The age difference between female retirees and covered male spouses is assumed to be 1 year (male older) and the age difference between male retirees and female spouses is assumed to be 3 years (male older).

DPS Benefit Structure Assumptions Specific to the "No Part A" Subsidy

For those retirees who are age 65 or older and are not eligible for premium-free benefits under Medicare Part A, an additional, "No Part A" premium subsidy is paid under the DPS benefit structure.

For those current retirees 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 retirees not yet age 65, 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, the following percentage of retirees are assumed to not qualify for premium-free Medicare Part A benefits; thus qualifying for the "No Part A" subsidy from the DPS benefit structure:

Hire Age	Percent (%) Qualifying for "No Part A" Subsidy
0-24	17
25-29	11
30+	4

The qualifying assumptions are based upon the experience of current, Medicare eligible, PERACare enrollees. Date of hire and hire age are estimated based upon service and date of retirement for current benefit recipients, or service and the valuation date for active members. As a result, those who are re-employed or transfer to another PERA employer may have accumulated the required quarters of Medicare-covered employment.

95% of members enrolled in PERACare as a result of disability retirement are assumed to qualify for premium-free Medicare Part A.

100% of deferred vested members receiving health care benefits 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.

DPS Benefit Structure Additional Premium Subsidy

In determining the additional liability for retirees who are age sixty-five or older and who are not eligible for premium free Medicare Part A, the following, additional monthly costs are assumed:

Years of Service	Subsidy for Members without premium-free Medicare Part A
20+	$115.00
19	109.25
18	103.50
17	97.75
16	92.00
15	86.25
14	80.50
13	74.75
12	69.00
11	63.25
10	57.50
9	51.75
8	46.00
7	40.25
6	34.50
5	28.75
4	23.00
3	17.25
2	11.50
1	5.75

The additional premium subsidy for retirees who are age sixty-five or older and who are not eligible for premium free Medicare Part A is assumed to remain constant at its current level.

Section 4: Actuarial Valuation Basis

DPS Benefit Structure Morbidity	The liabilities for medical and drug post-employment benefits are to be based, in most circumstances, on assumed claims costs that vary by age. This is generally accomplished using rates of morbidity, or, an aging curve, modeling the growth in assumed claims as a PERACare enrollee ages. Where the service-based premium subsidies for health care are less than the selected plan premiums, there are no annually increasing costs to the DPS benefit structure as a retiree ages; no morbidity assumptions are utilized in the determination of DPS benefit structure liabilities. Where the actual premiums for the selected plan are less than the service-based premium subsidy, the morbidity assumptions on page 82 are applied accordingly; i.e. the 2022 Medicare Advantage #2 is lower than the service based subsidy.
DPS HCTF Dual Status Members and Retirees	Some members and retirees may be represented under both the PERA benefit structure and the DPS benefit structure, and are considered as members or retirees in both structures due to their dual status. In calculating the DPS HCTF's liabilities for members with a liability under both the HCTF and the DPS HCTF, recognition is given to the choice of benefit structure, and the allocation of member contributions between the two HCTFs, as set forth in C.R.S. 24-51-1206.5. The choice of benefit structure is based upon what is assumed to be of the highest economic value to the benefit recipient. Current allocation percentages and member contribution account balances were provided by PERA for dual status members and retirees. For active members, member contribution account balances are projected assuming annual interest crediting of 3.00%, future salary increases of 3.00%, and member contributions of 10.50% of projected salary (increasing to 11.00% effective July 1, 2022, for all Divisions other than the Local Government and Judicial Divisions and State Troopers). For Local Government Division, member contributions are 8.50% of projected salary (increasing to 9.00% effective July 1, 2022). For the Judicial Division, member contributions are 15.50% of projected salary (for most Judicial members, decreasing to 11.00% effective July 1, 2022.) For State Troopers, member contributions are 12.50% of projected salary (increasing to 13.00% effective July 1, 2022).
Plan Provisions	Development of plan liabilities was based on the substantive plan of benefits in effect as described in Exhibit II. Costs of dental and vision coverage were not included in this valuation since retirees and dependents pay the full costs for these coverages.
Health Care Reform	This is a retiree-only plan, and most aspects of the Patient Protection and Affordable Care Act (PPACA) and the Health Care and Education Reconciliation Act (HCERA) of 2010 do not apply. Any future aspects that do apply are assumed to have a de minimis effect.
Retiree Contribution Increase Rate	Retiree and dependent contribution rates were assumed to increase at medical and prescription drug trend.

Exhibit II: Summary of Plan Provisions

This exhibit summarizes the major provisions of the Plan included in the valuation. It is not intended to be, nor should it be interpreted as, a complete statement of all plan provisions. Eligibility to participate in PERACare and receive health care subsidy benefits is contingent on eligibility to retire under PERA. The retirement eligibility provisions are summarized in Segal's final December 31, 2021 pension actuarial valuation report.

Effective Date	Health Care Trust Fund (HCTF): On July 1, 1985, employer contributions to the HCTF commenced. Plan coverage and premium subsidy payments began July 1, 1986. DPS Health Care Trust Fund (DPS HCTF): On January 1, 2010, as part of the merger, the liabilities and assets of the Denver Public Schools Retiree Health Benefit Trust were transferred into a newly created DPS Health Care Trust Fund and employer contributions from employers in the DPS Division commenced.
Affiliated Employers	State agencies and institutions of higher education, political subdivisions of the state, all school districts, courts, and any other public entities which affiliate with PERA.
Covered Members	Employees of Affiliated Employers who work in a position subject to membership and for whom contributions are made.
Employer Contributions	The employer contribution rates of the State, School, Local Government, and Judicial Divisions include the contribution of 1.02% of PERA covered payroll allocated to the Health Care Trust Fund. The employer contribution rate of the DPS Division includes the contribution of 1.02% of PERA covered payroll allocated to the DPS Health Care Trust Fund.
Eligibility for Health Care Coverage	The Health Care Trust Fund (HCTF) includes assets for the purpose of paying premium subsidies on behalf of PERA Benefit Structure benefit recipients and DPS Benefit Structure retirees who worked for an employer in the State, School, Local Government, and Judicial Divisions within PERA who enroll in PERACare. The DPS Health Care Trust Fund (DPS HCTF) includes assets for the purpose of paying premium subsidies on behalf of PERA Benefit Structure benefit recipients and DPS Benefit Structure retirees who worked for employers of the DPS Division and who enroll in PERACare. The following individuals are eligible to enroll in PERACare: • Anyone receiving a monthly PERA benefit (benefit recipient). If the benefit recipient is enrolled in PERACare, the following dependents may be enrolled: spouses (including civil union partners recognized under Colorado law), domestic partners, unmarried dependent children under age 26, certain mentally or physically incapacitated adult children, and dependent parents. • Guardians of children receiving PERA survivor benefits, if children are enrolled in PERACare. • PERA retirees temporarily not receiving PERA benefits. • Surviving spouses of deceased retirees who are not receiving PERA benefits but were enrolled in PERACare at the time when death occurred. • Divorced spouses of retirees who are not receiving PERA benefits, but were enrolled in PERACare when the divorce occurred.

Eligibility for Health Care Coverage (continued)	• Members while receiving short-term disability program payments. • Members whose employers have elected to provide coverage through PERACare and dependents of such members.
Enrollment	Enrollment in PERACare is voluntary, with eligibility within 30 days of initial pension benefit payment, upon the occurrence of certain life events, and during an annual open enrollment for coverage effective each January 1. If a surviving spouse or divorced spouse discontinues coverage, re-enrollment is not allowed.
Premium Subsidy	A monthly subsidy is allocated to each benefit recipient under the PERA Benefit Structure and each retiree under the DPS Benefit Structure electing health care coverage. Survivors of retirees under the PERA Benefit Structure are eligible to receive the subsidy. The following monthly amounts are based upon the benefit structure elected, date of retirement, Medicare eligibility, and/or credited service: DPS Benefit Structure Retirees Who Retired Prior to July 1, 1994: • $230 per month for retirees without Medicare Part A • $115 per month for retirees with Medicare Part A DPS Benefit Structure Retirees Who Retire On or After July 1, 1994: • $5.75 if age 65 or older and eligible for premium-free Medicare Part A. • $11.50 if not yet age 65, or if age 65 or older and not eligible for premium-free Medicare Part A. The monthly amounts above are allocated per year of credited service up to a maximum of 20 years of service, not to exceed the premium for the health care coverage elected. PERA Benefit Structure Benefit Recipients: • $5.75 if age 65 or older or eligible for Medicare Part B. • $11.50 if not yet age 65 or not eligible for Medicare Part B. The monthly amounts above are allocated per year of credited service up to a maximum of 20 years of service, not to exceed the premium for the health care coverage elected. Member contributions are the projected full cost of coverage less the premium subsidy. The full costs for claims, administration, premiums, etc., are allocated and paid by the HCTF and the DPS HCTF. For those benefit recipients under the PERA Benefit Structure who are age 65 or older, the full cost of coverage is considered to be based on the full cost of coverage assuming eligibility for premium-free Medicare Part A. This is independent of actual eligibility for premium-free Medicare Part A. Members not receiving a PERA monthly benefit do not qualify for this subsidy and bear the full cost of coverage. This premium subsidy is only available to those enrolled in PERACare and meeting the requirements defined by the benefit structure under which they retire. The premium subsidy cannot be applied to dental or vision premiums.

Premium Subsidy (continued)	**Special Note on Members not qualifying for Medicare Part A:** Under the PERA Benefit Structure, an implicit subsidy is paid for those members not eligible for premium-free Medicare Part A benefits. This amount is the difference in premiums charged for those without Medicare Part A and for those enrolled in Medicare Part A. The DPS Benefit Structure pays an explicit subsidy for those members eligible to receive the premium subsidy and who are not eligible for premium-free Medicare Part A coverage. For these members an additional subsidy of $5.75 per month for each year of credited service (up to a maximum of 20 years of service) is allocated. **Special Note on Premium Subsidy Funding for Members in both the HCTF and the DPS HCTF:** For members covered under both the HCTF and the DPS HCTF, the allocation of the subsidy amounts is done via an allocation method set forth in C.R.S. 24- 51-1206.5.

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Benefit Descriptions

Medicare: UnitedHealthcare MAPD PPO

Medical		
Annual Deductible	None	
Annual Out-of-Pocket Maximum	Option #1: $2,000 Option #2: $6,000	
Lifetime Maximum	Unlimited	
Prescription Drugs		
Copay	Retail	Mail
Preferred Generic	$15	$30
Preferred Brand	$45	$90
Non-Preferred Drug	$60	$120
Specialty	$75	

Medicare: Kaiser Permanent Senior Advantage HMO

Medical		
Annual Deductible	None	
Annual Out-of-Pocket Maximum	$4,700	
Lifetime Maximum	Unlimited	
Prescription Drugs		
Copay	Retail	Mail
Preferred Generic	$5	$10
Preferred Brand	$15	$30
Non-Preferred Drug	$40	$80
Specialty	$75	$150

Retiree Contributions

Monthly contribution rates in effect on January 1, 2022 are shown in the table below.

	Retiree Only	Retiree Plus Spouse
UnitedHealthcare MAPD #1	$152.00	$304.00
UnitedHealthcare MAPD #2	$52.00	$104.00
Kaiser HMO	$170.00	$340.00

Denver Public Schools Retirees Without Premium-Free Medicare Part A*.

	Retiree Only	Retiree Plus Spouse
UnitedHealthcare MAPD #1	$581.00	$1,162.00
UnitedHealthcare MAPD #2	$377.00	$754.00
Kaiser HMO	$597.00	$1,194.00

** Also used for PERA structure implicit subsidy for members without Premium-Free Medicare Part A*

Exhibit III: Colorado PERA Defined Benefit OPEB Plan Funding Policy

I. Introduction

The Colorado Public Employees' Retirement Association (PERA) maintains two pre-funded defined benefit retiree health care subsidy plans [i.e., Health Care Trust Fund and Denver Public Schools (DPS) Health Care Trust Fund], classified as other postemployment benefit (OPEB) plans. The primary benefit provided by both OPEB plans is an insurance premium subsidy to eligible PERA retirees and benefit recipients enrolled in PERACare. Each defined benefit OPEB plan is funded through PERA-affiliated employer contributions, a portion of purchased service contributions transferred at the time of retirement, and the investment earnings resulting from those contributions. The fixed contribution rate at which each division's employers contribute is determined by the Colorado General Assembly and defined within the statutes governing PERA.

The purposes of this funding policy are to state the overall funding goals and annual actuarial metrics and to guide the PERA Board of Trustees (Board) when considering whether to pursue or support proposed contribution and benefit legislation. The policy also includes a brief list of governance responsibilities regarding the commissioning, collection, and review of actuarial information, as described in the Board's Governance *Manual.*

PERA also maintains five pre-funded, hybrid defined benefit pension plans (i.e., State Division Trust Fund, School Division Trust Fund, Local Government Division Trust Fund, Judicial Division Trust Fund, and DPS Division Trust Fund). On March 20, 2015, the Board approved a separate pension funding policy with regard to these plans recognizing the adoption and implementation of the Governmental Accounting Standards Board (GASB) Statement No. 67, applicable to pension plans.

It is the intention of the Board that this funding policy be considered a working document, reviewed periodically and as necessary, altered in the future through formal action of the Board. The actual document contains their view and revision/adoption history pertaining to the funding policy of the PERA defined benefit OPEB plans.

II. Background

In response to the unfavorable investment market of 2008, and in addition to the funding policy adopted in November 2007, the Board set the following guiding principles in 2009 in the development of a comprehensive package to maintain long-term sustainability of the pension plans:

- Shared responsibility among members, retirees, and employers;
- Intergenerational equity;
- Preservation of the defined benefit plan;
- Preservation of portability through the maintenance of existing benefit structures for the different divisions; and
- Development of recommendations that would have little-to-no short-term impact on member behavior.

The combined funding policy regarding PERA's pension and OPEB plans, adopted by the Board in November 2007, was in force with regard to the OPEB plans through December 30, 2017. On January 19, 2018, the Board approved a separate OPEB funding policy with regard to these plans, which reflects the guiding principles listed above as applicable. This OPEB funding policy is effective with the

Section 4: Actuarial Valuation Basis

December 31, 2017 actuarial valuation, recognizes the adoption and implementation of the GASB Statement No. 74, applicable to OPEB, and reflects any updates adopted by the Board since January 19, 2018.

III. Funding Goals

- Preservation of the **defined benefit plan structure** of providing retirement health care premium subsidies and other benefits, as applicable to PERA retirees and benefit recipients.
- Demonstration of **transparency and accountability** through the continued maintenance of a defined benefit OPEB plan funding policy for the stakeholders of PERA.
- **Achievement of a combined OPEB plan actuarial funded ratio greater than or equal to 110%.** Once the 110% combined funded ratio is achieved, the Board will consider and/or support the following actions, as ordered, as long as the funded ratio, either combined or individual by fund, does not fall below 100% after consideration of the proposed change:
- Examination and possible action of de-risking the OPEB plans, in parallel with the pension plans
    - Reduction in the portion of the base contribution rate(s), designated for funding the OPEB plans
    - Adoption of a benefit enhancement.
- If the 110% combined funded ratio benchmark is attained through the assistance of certain funding arrangements where assets, outside of statutory contributions, are added to the plans, and results in additional tax-payer obligation, the payment method and duration of this debt should be considered prior to any supportive action taken regarding benefit enhancements.
- Dedication to the balance between:
- **Contribution rate** stability - keeping contributions relatively stable over time. and
    - **Intergenerational** equity - allocating costs over the employees' period of active service.
- Dedication to the systematic **reduction of the unfunded actuarial accrued liabilities** (UAAL).
- Recognition that within a multiple-employer cost-sharing defined benefit plan, such as the PERA HCTF, there are **beneficial elements of pooled risk,** both in the accrual of plan liabilities, recognizing actuarial gains and losses for the fund in total, rather than by each employer; and in the accumulation of plan assets through the engagement of an appropriate level of asset risk management.

IV. Annual Actuarial Metrics

Below is a list of actuarial metrics to be assessed on an annual basis as of the actuarial valuation date. The Board recognizes that a single year's results may not be indicative of long-term trends and projected results.

- Funded ratios - Calculate and review by fund:
- The actuarial funded ratio based on the actuarial value of plan assets divided by the defined benefit OPEB plan's actuarial accrued liability (AAL), and
- The market value funded ratio based on the market value of plan assets divided by the defined benefit OPEB plan's AAL.
- Funding period- To be determined for each fund with respect to the applicable contribution rates. A funding period is the amortization period required to pay off that fund's UAAL considering the resources available. Funding periods for each fund will be determined in the annual actuarial valuation in relationship to both
- Statutory contribution rates, and

- Actuarially determined contribution (ADC) rates.
- Contribution rate comparison-
  - Calculate and review by fund.
    - **Actuarial Projections-**
    - Perform and review, by fund,
      - Actuarial projections considering appropriate benefit provisions, salary and demographic data, actuarial assumptions, membership growth, and statutory contribution rates in order to determine the sustainability of each fund under their benefit provisions and statutory contribution rate structure.
      - Projection modeling that allows for the testing of projection results under various economic and demographic stress conditions.

V. Funding Valuation Elements

- Fund has a negative UAAL. The ADC shall be set equal to the Normal Cost until such time as the funded ratio equals or exceed 120%. At that time, the ADC shall be equal to the Normal Cost less an amount equal to 15 year amortization of the portion of the negative UAAL above the 120% funded ratio.
- The target amortization period noted above regarding new UAAL will be applied for funding benchmark and RSI reporting purposes. Alternative ADCs will be determined by fund, by applying the layered amortization methodology as described above, using 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 new UAAL. These comparatives are to appear in the Annual Financial Report (AFR) as a demonstration of the transparency and accountability funding goal delineated in Section III of this document.

In conjunction with the three major components discussed above, a number of actuarial assumptions are used to develop the annual actuarial metrics, as well as the ADC rates, and are described in detail in the annual actuarial valuation report. The actuarial assumptions are derived and proposed by the Board's actuary and adopted by the PERA Board of Trustees in conformity with the *Actuarial Standards of Practice* issued by the Actuarial Standards Board. The assumptions represent the Board's best estimate of anticipated experience under the benefit provisions of PERA and are intended to be long- term in nature. In the development of actuarial assumptions, the Board considers not only past experience but also trends, external economic forces, and future demographic and economic expectations.

- **Actuarial Assumptions-** Actuarial assumptions are generally grouped into two major categories:
  - **Demographic assumptions,** which include rates of termination, retirement, disability, and mortality, and benefit utilization and coverage elections, etc., and
  - **Economic assumptions,** which include investment return, salary increase, payroll growth, inflation, and health care cost trend and morbidity, etc.

Actuarial assumptions do not impact the total cost of the plan (benefit payments and expenses}, but rather the timing of prescribed contributions. To the extent that actuarial experience deviates from the assumptions, and actual contributions deviate from projected, experience gains and losses will occur. These gains (or losses) then serve to reduce (or increase) the projected future contributions

necessary to achieve or sustain a certain actuarial standard. It is in this vein that the ADC rates may help indicate if the statutory contribution rates are adequate to meet the future cost requirements of the plan, although the ADC calculated in valuation results has limitations due to changing costs over time. Considering the extended period until the entire plan population has Medicare Part A coverage under the Health Care Trust Fund, the results of the actuarial projections will be the best indication of the adequacy of the statutorily prescribed OPEB contribution schedule.

VI. Governance Policy/Processes

As delineated in the **PERA *Governance Manual,*** below is a list of specific actuarial and/or funding- related studies, the frequency at which they should be commissioned/requested by the Board, and additional responsibilities relating to the studies:

- **Actuarial Valuation** (perform annually)-The Board is responsible for reviewing PERA's annual actuarial valuation report; and submitting a summary report to the Legislative Audit Committee and the Joint Budget Committee of the General Assembly, together with any recommendations concerning such liabilities that have accrued. In addition, the Board, in consultation with its retained actuary, will provide recommendations to the Colorado General Assembly regarding any necessary adjustments to the statutory employer contribution rates.
- **Experience Analysis** (perform periodically, historically performed approximately every four years}- The Board is responsible for ensuring that an experience analysis is performed as prescribed, for reviewing the results of that study, and for approving the actuarial assumptions and methodologies to be used for all actuarial purposes relating to the defined benefit pension and OPEB plans.
- **Actuarial Audit** (perform every five years, or the appointment of a new actuarial firm will satisfy requirement)-The Board is responsible for ensuring that an actuarial audit is performed as prescribed and for reviewing the results of that audit.
- **Asset Liability Study** (perform at least every three to five years, or more frequently if necessary)- The Board is responsible for ensuring that a study of the relationship between the defined benefit trust assets and liabilities is performed as prescribed and for reviewing the results of that study.
- Review of the **Defined Benefit Pension Plan Funding Policy and the Defined Benefit OPEB Plan Funding Policy** (perform periodically)-The Board is responsible for the periodic review of the funding policies applicable to the defined benefit pension and OPEB plans, as is deemed necessary.

VII. Glossary of Funding Policy Terms

- Actuarial Accrued Liability (AAL): The AAL is the value at a particular point in time of all past normal costs. This is the amount of assets the plan would have today if the current plan provisions, actuarial assumptions, and participant data had always been in effect, contributions equal to the normal cost had been made, and all actuarial assumptions had been met. For each of the PERA defined benefit plans, the AAL includes the balance in the affiliated annual increase reserve.
- Actuarial Cost Method: The actuarial cost method allocates a portion of the total cost (present value of benefits) to each year of service, both past service and future service.
- **Asset Values: For each of the PERA defined benefit plans, the actuarial and market asset values include the balance in the affiliated AIR.**

  - **Actuarial Value of Assets (AVA):** The AVA is the market value of assets less the deferred investment gains or losses not yet recognized by the asset smoothing method.
  - **Market Value of Assets (MVA):** The MVA is the fair value of assets of the plan as reported in the plan's audited financial statements.
- **Entry Age Normal Actuarial Cost Method (EAN):** The EAN actuarial cost method is a funding method that calculates the normal cost as a level percentage of pay or level dollar amount over the working lifetime of the plan's members.
- **Funded Ratio:** The funded ratio is the ratio of the plan assets to the plan's actuarial accrued liabilities.
  - **Actuarial Value Funded Ratio:** is the ratio of the AVA to the AAL.
  - **Market Value Funded Ratio**: is the ratio of the MVA to the AAL.
- Normal Cost: The normal cost is the cost allocated under the actuarial cost method to each year of active member service.
- Present Value of Benefits **(PVB)** or Total Cost: The PVB is the value at a particular point in time of all projected future benefit payments for current plan members, plus the balance in the affiliated AIR. The future benefit payments and the value of those payments are determined using actuarial assumptions regarding future events. Examples of these assumptions are estimates of retirement and termination patterns, salary increases, investment returns, etc.
- **Surplus: A** surplus refers to the positive difference, if any, between the AVA and the AAL.
- **Unfunded Actuarial Accrued Liability (UAAL):** The UAAL is the portion of the AAL that is not currently covered by the AVA. It is the positive difference between the AAL and the AVA.

Valuation Date: The valuation date is the annual date upon which an actuarial valuation is performed; meaning that the trust assets and liabilities of the plan are valued as of that date. PERA's annual valuation date is December 31st.

Adopted: January 19, 2018

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