Public Employees' Retirement Association of Colorado – Health Care Trust Fund and Denver Public Schools Health Care Trust Fund

ACTUARIAL EXPERIENCE REVIEW

Analysis of Actuarial Experience during the Period January 1, 2016 through December 31, 2019

November 4, 2020 / Melissa A. Krumholz, FSA, MAAA /
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Segal

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Via Email

November 4, 2020

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

Re: Actuarial Experience Review for the Period January 1, 2016 through December 31, 2019

Dear Trustees:

This report presents the results of the actuarial experience review of the demographic and economic experience of the Public Employees' Retirement Association of Colorado (PERA) retiree health plans for the period January 1, 2016 to December 31, 2019.

All current health actuarial assumptions and methods were reviewed as part of this study. Certain assumptions for the valuation are updated annually and others rely upon pension plan assumptions and recommendations and we continue to do so for this study and future valuations. We note that reliance in each corresponding section. This study is the basis for our recommendation of the actuarial methods and assumptions to be used beginning with the December 31, 2020 actuarial valuation and forward for the PERA Health Care Trust Funds.

We relied upon data provided by PERA regarding the membership census data and financial information. While the scope of our engagement did not call for us to perform an audit or independent verification of this information, we have reviewed it for reasonableness. The accuracy of the results presented in this report is dependent upon the accuracy and completeness of the underlying information.

This review recommends long-term assumptions to be used in the future valuations to measure each of the PERA Health Care Trust Fund (HCTF) and Denver Public Schools Health Care Trust Fund (DPS HCTF). Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: retiree group benefits program experience differing from that anticipated by the assumptions; changes in assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in retiree group benefits program provisions or applicable law. Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and

estimates may lead to significant changes in actuarial measurements. This report does not include an analysis of the potential range of such future measurements.

Our analysis was conducted in accordance with generally accepted actuarial principles as prescribed by the Actuarial Standards Board (ASB) and the American Academy of Actuaries. Additionally, the development of all assumptions contained herein is in accordance with ASB Actuarial Standard of Practice (ASOP) No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations), ASOP No. 35 (Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations) and ASOP No. 6 (Measuring Retiree Group Benefits Obligations and Determining Retiree Group Benefits Program Periodic Costs or Actuarially Determined Contributions).

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 Coronavirus (COVID-19) pandemic is rapidly evolving and is having a significant impact on the US economy in 2020, including most other postemployment benefit (OPEB) plans, and will likely continue to have an impact in the future.

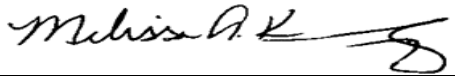
Our results do not include the impact of the following:

- Short-term increases in health plan costs related to the testing or treatment of COVID-19
- Changes in interest rates since the measurement date of December 31, 2019
- 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. The above factors are not expected to continue for the longer term. Given the high level of uncertainty and fluidity of the current events, Segal will address any estimated impact in annual valuations. We will keep you updated on emerging developments.

The undersigned are independent. They are Fellows or Associates of the Society of Actuaries, Enrolled Actuaries, and members of the American Academy of Actuaries and are experienced in performing experience studies for large public retirement systems. They meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein.

Respectively submitted,



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Public Employees' Retirement Association of Colorado Health Care Trust Funds

Experience Review for the Period January 1, 2016 through December 31, 2019

I. Executive Summary

A. Introduction

Actuarial valuations of the Public Employees' Retirement Association of Colorado (PERA) two Health Care Trust Funds (HCTF and DPS HCTF) are prepared annually to determine the actuarial contribution rate required to fund PERA on an actuarial reserve basis. Each actuarial valuation involves a projection of the benefits expected to be paid in the future to all members of PERA. The projection of expected future benefit payments is based on the characteristics of members as of the valuation date, the benefit provisions in effect on that date, and assumptions of future events and conditions.

The purpose of this report is to present the results of the actuarial methods and assumptions used in the actuarial valuation of the PERA HCTFs. With the Board's approval of the recommendations in this report, the revised assumptions and methods would be used beginning with the December 31, 2020 actuarial valuation.

The assumptions used in actuarial valuations can be grouped in two categories: (1) economic assumptions – health care cost trend, and (2) non-economic or demographic assumptions – the assumed rates of health care plan participation, Medicare Part A subsidy eligibility, health care network election and morbidity. Demographic assumptions are primarily selected on the basis of recent experience (although a change in plan design or the employment environment may suggest otherwise), while underlying economic assumptions rely more on a long-term perspective of expected future trends. Other economic and demographic assumptions used in the valuations for each of the HCTFs rely upon the same assumptions as the pension valuations (except as described in this report).

In order to determine the probability of an event occurring, we examine the "decrements" and "exposures" of that event. Using participation in the health plan from active employment, for example, we compare the number of employees who actually retire in a certain age and/or service category and elect retiree health care coverage (i.e., the number of "decrements") with those "who could have elected health coverage" (i.e., the number of "exposures"). For example, if there were 500 active employees in the 50-54 age group at the beginning of the year and 50 of them retire and elect health coverage during the year, we would say the probability of termination in that age group is 50 ÷ 500 or 10%.

When setting the demographic assumptions (other than mortality), we typically develop proposed assumption rates by beginning with the midpoint of the current assumption rate and the rate that the experience shows for that particular decrement. For example, if the probability of termination in the 20-24 age group is currently 8%, and the experience during the study period shows that 10% of eligible members actually terminated, we would propose adjusting the termination rate to 9%. We start with the midpoint and adjust with considerations for credibility in order to smooth any changes in actual experience in case the experience during the study period is an anomaly.

For the health care specific demographic assumptions, we have reviewed the experience during the study period on a headcount-weighted basis. The HCTFs' mortality assumptions are based upon corresponding head-count weighted versions of the published benefits-weighted tables recommended for the pension plans. As members must meet retirement eligibility and collect pension benefits to participate in PERACare, we relied upon the corresponding assumptions recommended for the pension benefits. That, and the primarily fixed level of plan benefits reduces the exposure pool in each cell so health plan election assumptions also consider the credibility of the exposure pool.

If actual experience exactly matches the expected experience, the actual annual cost of PERA will equal the annual cost determined by the actuarial valuation. However, this result is virtually never achieved, due to the long-term nature of the benefit projections and the numerous assumptions used in actuarial valuations. PERA recognizes actuarial gains or actuarial losses each year, reflecting the net difference between actual experience and anticipated experience. Determination of the funded status is updated in connection with each actuarial valuation to reflect the net gain or loss. A pattern of gains or losses with respect to one or more assumptions is the basis for recommended changes to the assumptions. Each valuation measures the effectiveness of each assumption and allows for the monitoring of the assumptions.

Actuarial experience studies are undertaken periodically and serve as the basis for recommended changes in actuarial assumptions and methods. A change in assumptions is recommended when it is demonstrated that the current assumptions do not accurately reflect the current trend determined from analysis of the data or anticipated future trends based upon reasonable expectations. The data analyzed include actual experience for demographic assumptions and economic forecasts for economic assumptions. The Actuarial Standards Board (ASB) provides actuaries with standards of practice that provide guidance and recommendations on acceptable methods and techniques to be used in developing both economic and demographic assumptions. Specifically, these are the ASB Actuarial Standard of Practice (ASOP) No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations) and ASOP No. 35 (Selection of Demographic and Other Non-Economic Assumptions for Measuring Pension Obligations) and ASOP No. 6 (Measuring Retiree Group Benefits Obligations and Determining Retiree Group Benefits Program Periodic Costs or Actuarially Determined Contributions).

This study reviews the actuarial experience of PERA HCTF and DPS HCTF for the four-year period beginning January 1, 2016 and ending December 31, 2019, compares this experience to the current actuarial assumptions, and recommends changes to the health plan specific assumptions as necessary. Economic assumption recommendations for the HCTFs are primarily related to health care cost trend and rely upon the pension plan assumptions for other broader assumptions. Health care cost trend and individual plan option election are evaluated and updated as appropriate at each annual valuation and were not included in this study. Health care specific demographic assumptions rely upon actual experience as compared to assumptions and historical patterns; all other demographic assumptions for the HCTFs align with those of the pension plans. Experience observed during this study indicated limited exposures for select assumptions which resulted in using broader group data in lieu of benefit structure / division specific or Medicare status breakouts.

Except as noted here, select assumptions for spouse and vested terminated members rely upon the pension plan assumptions.

A summary of the key points of our review and our recommendations follows.

B. Recommendations

The experience review provides an opportunity for the Board, staff, and actuary to consider how specific assumptions or methods affect the funding of PERA HCTFs, including the funded status and the adequacy of contributions made by members and employers (as compared to the actuarially determined contribution). We have reviewed both economic and demographic experience of the Health Care Trust Funds as it relates to the expected actuarial experience based on the current plan assumptions. Included are recommendations for changes in assumptions that we believe will more accurately reflect the future experience of PERA HCTFs.

The detailed analysis of each individual assumption is discussed later in this report. ASOP No. 6 (Measuring Retiree Group Benefits Obligations and Determining Retiree Group Benefits Program Periodic Costs or Actuarially Determined Contributions) provides guidance for selecting economic assumptions pertinent to measuring obligations for post-retirement benefit plans other than pensions.

Economic Assumptions

Economic assumptions include inflation, investment rate of return (or discount rate), rate of individual salary increases, and payroll growth. The valuations for the HCTF and DPS HCTF rely upon the same assumptions as the pension plan. Please refer to that study for the corresponding recommendations.

Health Care Cost Trend

Health care cost trends reflect the change in per capita costs over time and include such factors as unit cost, utilization of health care services, plan design, and technological improvements. Such factors impact overall cost (and thus retiree share after the fixed subsidy) as well as the costs for Medicare beneficiaries not eligible for “premium-free” Medicare Part A in the PERA benefit structure. Aging is not included in health care cost trend; that is a separate assumption. Segal applies a table of trend rates that reflect short term expectations in the initial rate and grade to an ultimate rate thereafter. Due to the frequent and sometimes significant events in the health care marketplace, Segal evaluates this assumption on an annual basis and adjusts accordingly. We did not update this assumption as part of a longer term assumption review; this will continue to be re-evaluated annually.

Demographic Assumptions

The demographic assumptions include mortality, retirement, termination, disability incidence, coverage for married and surviving spouses, and spouse age difference. Except where described here, the OPEB valuation for each of the HCTFs relies upon the recommendations for the pension plan. Health care specific assumptions are reflected in this report and include

morbidity, Medicare Part A eligibility, participation / medical network election and spousal coverage information. All recommended base mortality tables for OPEB reflect a headcount-weighted rate.

Mortality

The valuations for the HCTF and DPS HCTF rely upon the same assumptions as the pension plan except utilize the headcount-weighted versions of the base tables. Please refer to that study for the corresponding recommendations.

Morbidity

As noted in ASOP No. 6, the variation in health care costs by age for the benefits being modeled should be considered. The current morbidity assumption was updated for the December 31, 2018 valuation as part of the transition to Segal. Segal monitors and updates those factors as appropriate and at the time of this study those factors have not changed. Segal proposes to maintain this assumption and update upon availability of updated Segal morbidity tables. This assumption only applies where a Medicare-eligible member retired under the PERA benefit structure and did not qualify for "premium-free" Medicare Part A. This is a small, closed group (limited to a subset of members hired before April 1, 1986; about 8% of all PERA benefit structure retirees enrolled in a health plan) within the PERA census.

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 (excluding the subsidy reduction at age 65 or the costs associated with Medicare disability eligibility).

Health Care Plan Participation (PERA Benefit Structure)

Retirees in PERACare are eligible for a flat dollar subsidy based upon service at retirement and Medicare eligibility. As retirees are responsible for any excess premium cost over that subsidy, health coverage participation is generally less than 100%. Given the schedule of the subsidy and the cost of retiree health plans, actuaries should consider the impact of actual member participation rates.

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, assumptions based upon historical participation rates are used.

PERA Benefit Structure		
Attained Age(s) at Retirement	Current Assumption: Percent Electing Health Care Coverage	Proposed Assumption: Percent Electing Health Care Coverage
15-48	20%	20%
49-50	25%	25%
51-52	35%	35%
53-55	40%	40%
56-57	45%	40%
58-61	50%	45%
62-71	55%	45%
72+	60%	55%

For eligible inactive members of the State, School, Local Government, or Judicial divisions with a PERA benefit structure, 25% are currently assumed to elect health care coverage upon commencement of their monthly pension benefit. Segal recommends reducing this rate to 20% based upon historical experience.

Health Care Plan Participation (DPS Benefit Structure)

Current PERACare participants retired from 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:

DPS Benefit Structure		
Attained Age(s) at Retirement	Current Assumption: Percent Electing Health Care Coverage	Proposed Assumption: Percent Electing Health Care Coverage
15-48	20%	20%
49-50	25%	25%
51-52	35%	35%
53	40%	40%
54-57	50%	50%
58-60	55%	50%
61-64	60%	60%
65-71	60%	55%
72+	65%	65%

For deferred vested members of the State, School, Local Government, and Judicial Divisions with a DPS benefit structure, 25% are currently assumed to elect health care coverage upon commencement of their monthly benefit. Segal recommends reducing this rate to 20% based upon historical experience.

Medicare Part A Premium Subsidy:

PERA Benefit Structure

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 Premium-Free Medicare 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 Premium-Free Medicare Part A" subsidy from the PERA benefit structure:

PERA Benefit Structure		
Hire Age	Current Assumption: Percent Qualifying for "No Premium-Free Medicare Part A" Subsidy	Proposed Assumption: Percent Qualifying for "No Premium-Free Medicare Part A" Subsidy
0-24	17%	17%
25-29	11%	11%
30+	4%	4%

Of those PERACare enrollees assumed to not qualify for premium-free Medicare Part A benefits and receive the "No Premium-Free Medicare Part A" subsidy from the PERA benefit structure, 20% of retirees in other divisions and 15% of DPS Division retirees with Joint and Survivor pension, who enroll are currently assumed to cover a spouse. Segal recommends a reduction to 5% (regardless of Joint and Survivor election or division) assumed to cover a spouse based upon historical experience.

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.

Segal evaluates the cost to pay for Medicare Part A premiums in lieu of the subsidy on an annual basis; thus this was not reviewed for this study. The December 31, 2019 valuation assumed projected "No Premium-Free Medicare Part A" subsidies are low enough such that even with trend they are not expected to exceed projected Medicare Part A premiums.

Currently, 90% of PERACare enrollees receiving health care benefits as a result of disability retirement are assumed to qualify for premium-free Medicare Part A. Segal recommends updating this assumption to 95%; thus 5% of disability retirees are eligible for the subsidy. 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.

DPS Benefit Structure

A PERACare enrollee who is age sixty five or older and who is not eligible for premium-free benefits under Medicare Part A shall receive an additional service based flat-dollar subsidy under the DPS benefit structure

For those current PERACare enrollees (retirees only) 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 Premium-Free Medicare Part A” subsidy from the DPS benefit structure:

DPS Benefit Structure		
Hire Age	**Current Assumption: Percent Qualifying for “No Premium-Free Medicare Part A” Subsidy**	**Proposed Assumption: Percent Qualifying for “No Premium-Free Medicare Part A” Subsidy**
0-24	17%	17%
25-29	11%	11%
30+	4%	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.

Currently, 90% of retirees receiving health care benefits as a result of disability retirement are assumed to qualify for premium-free Medicare Part A. Segal recommends updating this assumption to 95%; thus 5% of disability retirees are eligible for the higher dollar subsidy. 100% of eligible deferred vested members enrolled in PERACare are assumed to obtain the 40 or more quarters of Medicare-covered employment required for premium-free Medicare Part A coverage as a result of their subsequent employment.

Health Care Network Option Elections:

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

Medicare Plan	PERA Benefit Structure – Current Assumptions Percent Electing Medicare Plan	
	Other Divisions	DPS Division
Medicare Advantage / Self-Funded Rx	60%	40%
Kaiser Permanente Medicare Advantage HMO	40%	60%

Segal recommends a change in the basis of this assumption due to low credibility in the DPS Division population. Segal referenced known patterns of Medicare enrollment for those eligible for a "No Premium-Free Medicare Part A" subsidy and recent experience. We propose to update this assumption as follows:

Medicare Plan	PERA Benefit Structure – Proposed Assumptions Percent Electing Medicare Plan	
	Other Divisions	DPS Division
Medicare Advantage / Self-Funded Rx	70%	70%
Kaiser Permanente Medicare Advantage HMO	30%	30%

Medicare plan elections for current, pre-Medicare retirees of the State, School, Local Government, Judicial, and DPS Divisions with a PERA benefit structure, who are not eligible for premium-free Medicare Part A, are currently assumed as follows:

Medicare Plan	PERA Benefit Structure – Current Assumptions Percent Electing Medicare Plan	
	Pre-Medicare Anthem Plans	Pre-Medicare Kaiser Plans
Medicare Advantage / Self-Funded Rx	88%	2%
Kaiser Permanente Medicare Advantage HMO	12%	98%

Segal recommends a change in the structure of this assumption due to low credibility in the pre-Medicare population. Segal referenced known patterns of Medicare enrollment for those eligible for a “No Premium-Free Medicare Part A” subsidy and recent experience to propose revised assumptions as follows:

Medicare Plan	PERA Benefit Structure – Proposed Assumptions Percent Electing Medicare Plan All Divisions
Medicare Advantage / Self-Funded Rx	70%
Kaiser Permanente Medicare Advantage HMO	30%

DPS Division and pre-Medicare members eligible for a “No Premium-Free Medicare Part A” subsidy under the PERA benefit structure are too low of an exposure to credibly account for separately; all potential eligible members were combined for purposes of estimating plan election within the "No Premium-Free Medicare Part A" subsidy.

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 Medicare Advantage / self-funded Rx plans, 80% are currently assumed to elect MA#1 and 20% are assumed to elect MA#2. This assumption was re-set as part of the transition to two fully-insured Medicare Advantage options from three self-insured Medicare Supplement (non-HMO) options effective January 1, 2019. Segal recommends this assumption be evaluated on an annual basis due to evolving health care market forces that create the potential for volatility in any one year.

Spouse Information

Spouse information assumptions affect the valuation and include the percentage of members married and the age difference of spouses. The current and proposed pension assumptions are:

- 100% of members are married (80% for members of the DPS Division Trust Fund)
- Male spouses are two years older than female spouses
- 100% of spouses are of the opposite gender

All optional forms of payment are actuarially equivalent (pension amounts are adjusted depending on form elected), so these assumptions do not have a material effect on the pension valuation results.

For retirees in the HCTFs under the PERA benefit structure with a Joint and Survivor pension based on data provided for each record, we currently assume 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 70% of retirees with an explicit subsidy will have a surviving spouse who continues the benefit. Further, the OPEB valuations currently assume that the age difference between female retirees and covered male spouses is assumed to be 1 year and the age difference between male retirees and covered female spouses is assumed to be 3 years. Segal recommends decreasing the proportion of retirees assumed to 60% of males and 35% of females with a surviving spouse and maintaining the current spouse age difference assumptions.

Summary of Actuarial Experience

For the four-year period under review, PERA HCTFs have experienced actuarial gains and actuarial losses. Investment returns on the market value of total fund assets has averaged 9.2% and 6.2% over the last 10 (both HCTF and DPS HCTF) and 20 (before establishment of DPS HCTF) years, respectively. Experience produced by all other assumptions has trended towards a series of gains on a year-by-year basis over the study period, for the HCTFs. A summary of the demographic historical gains and losses (dollars in millions) by HCTF is shown below.

PERA HCTF
Demographic Gains/ (Losses) 2016 to 2019

Decrement	Actuarial Valuation as of December 31			
	2019	2018	2017	2016
Age/Service Retirements	$8.3	$8.3	$(2.2)	$(1.5)
Disability Retirements	0.7	0.6	(0.2)	(0.3)
Deaths	0.3	15.6	0.1	(1.0)
Withdrawals	(1.2)	(0.1)	(3.0)	(2.7)
New Members	(1.9)	(1.7)	(2.3)	(2.3)
Pay Increases	0.0	0.0	0.0	0.0
Other*	54.0	18.1	13.9	6.5
Total	**60.2**	**40.8**	**6.3**	**(1.3)**
Actuarial Accrued Liability (AAL)	1,447.2	1,478.1	1,581.2	1,556.8
Total as a % of beginning of year AAL	**4.1%**	**2.6%**	**0.4%**	**(0.1)%**

DPS HCTF
Demographic Gains/ (Losses) 2016 to 2019

Decrement	Actuarial Valuation as of December 31			
	2019	2018	2017	2016
Age/Service Retirements	$1.3	$0.4	$(0.1)	$(0.1)
Disability Retirements	0.0	0.0	0.0	0.0
Deaths	0.0	0.1	0.1	0.0
Withdrawals	(0.1)	0.6	0.0	0.1
New Members	(0.2)	(0.2)	(0.2)	(0.2)
Pay Increases	0.0	0.0	0.0	0.0
Other*	(0.9)	(1.5)	4.0	0.8
Total	**0.1**	**(0.6)**	**3.8**	**0.6**
Actuarial Accrued Liability (AAL)	$67.9	$69.5	$70.3	$72.8
Total as a % of beginning of year AAL	**0.1%**	**-0.9%**	**5.2%**	**0.8%**

* Includes impact of gross premiums charged to retirees exceeding self-insured claims for each year

Impact of Assumption Changes on Valuation Results

The following tables detail the impact of recommended assumption changes, using the December 31, 2019 actuarial valuation results for illustrative purposes. When the proposed set of assumptions is used in the December 31, 2020 valuations, the relative incremental impact for each set of updated assumptions is expected to be similar to the results shown below (as a percentage of the actuarial accrued liability and normal cost). However, the actual impact may vary due to underlying changes that occur between valuation dates. The comparability may also be affected by the actual investment return experience during the year.

Change in Actuarial Accrued Liability
($ in Millions)

Trust Fund	Before Changes	After Demographic / Economic Changes Before Mortality	After All Demographic / Economic Changes	After Health Care Participation Changes	After all Health Care Specific Changes (Final)
HCTF	$1,447.2	$1,473.4	$1,475.2	$1,418.5	$1,408.2
$ Change		$26.2	$1.8	$(56.7)	$(10.3)
% Change		1.8%	0.1%	(3.8)%	(0.7)%
DPS	$67.9	$67.6	$68.0	$66.0	$66.4
$ Change		$(0.3)	$0.4	$(2.0)	$0.4
% Change		(0.4)%	0.6%	(2.9)%	0.6%

Change in Funded Ratio

Trust Fund	Before Changes	After Demographic / Economic Changes Before Mortality	After All Demographic / Economic Changes	After Health Care Participation Changes	After all Health Care Specific Changes (Final)
HCTF	24.1%	23.6%	23.6%	24.6%	24.7%
% Funded Change		(0.5)%	0.0%	1.0%	0.1%
DPS HCTF	45.9%	46.1%	45.9%	47.2%	47.0%
% Funded Change		0.2%	(0.2)%	1.3%	(0.2)%

Change in Actuarially Determined Contribution Rate ($ in Millions)

Trust Fund	Before Changes	After Demographic / Economic Changes Before Mortality	After All Demographic / Economic Changes	After Health Care Participation Changes	After all Health Care Specific Changes
HCTF	$81.56	$89.50	$89.70	$83.55	$82.55
$ Change		$7.94	$0.20	($6.15)	$(1.00)
% Change		9.7%	0.2%	(6.9)%	(1.2)%
DPS	$3.41	$3.60	$3.64	$3.37	$3.39
$ Change		$0.19	$0.04	$(0.27)	$0.2
% Change		5.6%	1.1%	(7.4)%	0.6%

Change in Valuation Amortization Period

Trust Fund	Before Changes	After Demographic/ Economic Changes Before Mortality	After All Demographic/ Economic Changes	After Health Care Participation Changes	After all Health Care Specific Changes
HCTF	20	23	23	20	20
Change in Years		3	0	(3)	0
DPS HCTF	6	6	6	6	6
Change in Years		0	0	0	0

Change in Expected Fully Funded Period (Projections)

Trust Fund	Before Changes	After all Changes
HCTF	17	18
DPS HCTF	6	6

II. Actuarial Methods

A. Actuarial Cost Method

PERA HCTF and DPS HCTF each use an actuarial cost method consistent with that of the pension plans. Segal recommends no change to this practice and references the pension plan experience study for detailed information regarding actuarial cost methods.

B. Asset Valuation Method

PERA HCTF and DPS HCTF each use an "actuarial" value of assets for purposes of establishing the actuarially determined employer contributions. The current method is consistent with that of the pension plans. Segal recommends no change to this practice and references the pension plan experience study for detailed information regarding actuarial cost methods.

C. Amortization of Unfunded Actuarial Accrued Liability

The current amortization method used by the Health Care Trust Funds is reasonable and we recommend it be retained. Please refer to the pension report for further details regarding this method.

D. Active Member Growth Assumption

The annual actuarial valuation provides a snapshot of PERA as of the valuation date. On an annual basis, actuarial projections are useful to assess trends and to generate expected actuarial metrics for each year in the projection period. The projection of PERA's funding over 50 years requires an assumption regarding future new entrants to PERA, as well as the actuarial assumptions that are used to estimate the timing of future events for current active members. As members are assumed to terminate service for any reason, they are replaced with a sufficient number of new entrants to increase the size of the active membership of each division in the future. PERA HCTF and DPS HCTF each use assumptions consistent with the pension plans and Segal recommends continuing to follow this practice. Please reference the pension experience study for this assumption.

III. Economic Assumptions

Economic assumptions include inflation, investment rate of return (or discount rate), rate of individual salary increases, and payroll growth. The valuations for the HCTF and DPS HCTF rely upon the same assumptions as the pension plan. Please refer to that study for the corresponding recommendations.

A. Health Care Cost Trend

Health care cost trends reflect the change in per capita costs over time and include such factors as unit cost, utilization of health care services, plan design, and technological improvements. Such factors impact overall cost (and thus retiree share after the fixed subsidy) as well as the costs for Medicare beneficiaries not eligible for "premium-free" Medicare Part A in the PERA benefit structure. Aging is not included in health care cost trend; it is a separate assumption. Segal applies a table of trend rates that reflect short term expectations in the initial rate and grade to an ultimate rate thereafter. Due to the frequent and sometimes significant events in the health care marketplace, Segal evaluates this assumption on an annual basis and adjusts accordingly. We did not update this assumption as part of a long term assumption review; this will continue to be evaluated annually and updated as appropriate.

IV. Demographic Assumptions

PERA HCTF and DPS HCTF each use assumptions consistent with the pension plans for select assumptions and Segal recommends continuing to follow this practice. Please reference the pension experience study for those assumptions as noted below.

The demographic assumptions used to value PERA HCTFs reflect the expected occurrences of various events among members of PERA. The assumptions should reflect specific characteristics of PERA HCTFs and produce reasonable results. A reasonable assumption is one that is expected to model the contingency being measured and not expected to produce significant gains and losses. The types of demographic assumptions used to measure postretirement health obligations include, but are not limited to the following:

- Mortality;
- Retirement;
- Termination;
- Disability incidence;
- Health care plan participation;
- Medicare eligibility; and
- Other assumptions such as morbidity, percent married and age difference between spouses

The Actuarial Standards Board (ASB) has adopted Actuarial Standard of Practice No. 35 (ASOP 35 – Selection of Demographic and Other Non-economic Assumptions for Measuring Pension Obligations) to provide actuaries guidance in developing demographic assumptions. The standard recommends the actuary follow a general process for selecting demographic assumptions. The first step of the general procedure is to identify the types of assumptions to use. The actuary should consider relevant plan provisions that will affect timing and value of any potential benefit payments, all contingencies that give rise to benefits or loss of benefits and the characteristics of the covered group. The next step is to identify the relevant assumption universe. The assumption universe may include prior experience studies or general studies of trends relevant to the type of demographic assumption in addition to plan experience to the extent that it is credible. The third step is to consider the assumption format. The format may include different tables for different segments of the covered population (i.e., different termination rate tables for males/females). The final step is to select the specific assumption and evaluate the reasonableness of each assumption. The specific experience of the Plan should be incorporated but not given undue weight to past experience if recent experience is attributable to a phenomenon that is unlikely to continue. For example, if recent rates of termination were due to a one-time reduction in workforce it may be unreasonable to assume that such rates will continue. ASOP No. 6 (Measuring Retiree Group Benefits Obligations and Determining Retiree Group Benefits Program Periodic Costs or Actuarially Determined Contributions) provides guidance for selecting assumptions pertinent to measuring obligations for post-retirement benefit plans other than pensions. This includes per capita cost development, age-specific adjustments and member enrollment in the health plan.

A. Mortality Rates

One of the most significant actuarial assumptions is the probability of death. The mortality assumption takes the form of a mortality table that contains for each age in the table a probability of a person dying between that age and the next. PERA HCTF and DPS HCTF each use assumptions consistent with the pension plans and Segal recommends continuing to follow this practice. Please reference the pension experience study for further details regarding this assumption.

We reviewed the experience of retirees electing the health plan and terminating due to mortality with that of the overall pension plan and deem the pension mortality to reasonably represent that of the HCTFs. The only difference for the HCTFs is the use of the headcount-weighted version of the benefits-weighted base tables referenced. OPEB benefits use headcount weighted mortality because the liability impact of a member's death is driven more by that member's ongoing health care plan participation than by the health care benefit amount.

B. Retirement Rates

PERA HCTF and DPS HCTF each use assumptions consistent with the pension plans and Segal recommends continuing to follow this practice. Please reference the pension experience study for further details regarding this assumption.

C. Termination

PERA HCTF and DPS HCTF each use assumptions consistent with the pension plans and Segal recommends continuing to follow this practice. Please reference the pension experience study for this assumption.

D. Disability Retirement

PERA HCTF and DPS HCTF each use assumptions consistent with the pension plans and Segal recommends continuing to follow this practice. Please reference the pension experience study for further details regarding this assumption.

E. Spouse Information

Spouse information assumptions that affect the retiree health care valuations include the percentage of members married, the proportion that elect to cover spouses, and the age difference of spouses. The general spouse assumptions for the pension plan are:

- 100% of active members (80% for DPS Division) are married
- Male spouses are two years older than female spouses
- 100% of spouses are of the opposite gender

All optional forms of payment are actuarially equivalent, so these assumptions do not have a material effect on the pension valuation results.

For retirees in the HCTFs under the PERA benefit structure with a Joint and Survivor pension based on data provided for each record, we currently assume 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 70% of retirees with an explicit subsidy will have a surviving spouse who continues the benefit after death of retiree. Further, the OPEB valuations currently assume that the age difference between female retirees and covered male spouses is assumed to be 1 year and the age difference between male retirees and covered female spouses is assumed to be 3 years. Segal recommends decreasing the proportion of retirees assumed to 60% of males and 35% of females with a surviving spouse and maintaining the current spouse age difference assumptions.

	PERA Benefit Structure						
	2016	**2017**	**2018**	**2019**	**2016-2019**	**Current Assumption**	**Proposed Assumption**
Proportion of male retirees with Surviving Spouse	52%	58%	54%	55%	55%	70%	60%
Proportion of female retirees with Surviving Spouse	29%	32%	30%	32%	31%	70%	35%
Age Difference: Male Retirees:	2.8 yrs. Older	2.8 yrs. Older	2.8 yrs. Older	2.8 yrs. Older	2.8 yrs. Older	3 yrs. Older	3 yrs. Older
Female Retirees:	0.6 yrs. younger	0.5 yrs. younger	0.5 yrs. younger	0.5 yrs. younger	0.5 yrs. younger	1 yr. younger	1 yr. younger

F. Health Care Participation

Retirees in PERACare are eligible for a flat dollar subsidy based upon service at retirement and Medicare eligibility. As retirees are responsible for any excess premium cost over that subsidy, coverage election is generally less than 100%. Given the schedule of the subsidy and the cost of retiree health plans, actuaries should consider the impact of actual member enrollment rates.

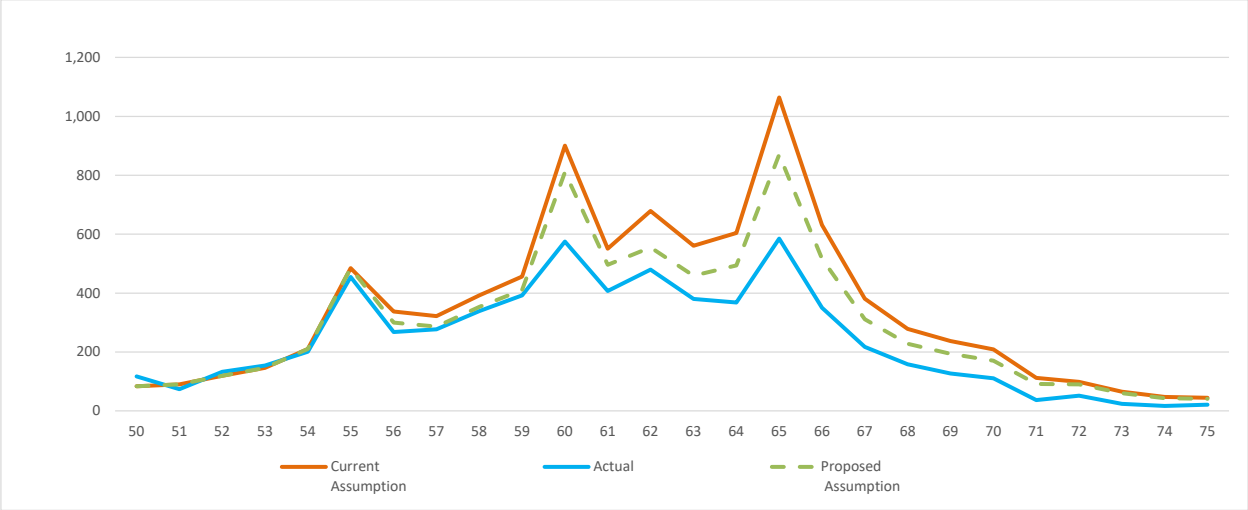
Segal evaluated the historical health plan participation patterns for new retirees during the study period and based upon the actual to expected ratios as well as considerations for credibility,

age-based health plan participation rates were adjusted accordingly. The experience indicates a generally lower participation rate than expected; particularly for higher ages (58 and older). While select ages indicate a large deviation the annual exposures are lower and result in lower credibility. The charts below outline the expected, actual and proposed health plan participation rates for each of the HCTFs.

HCTF Health Plan Participation

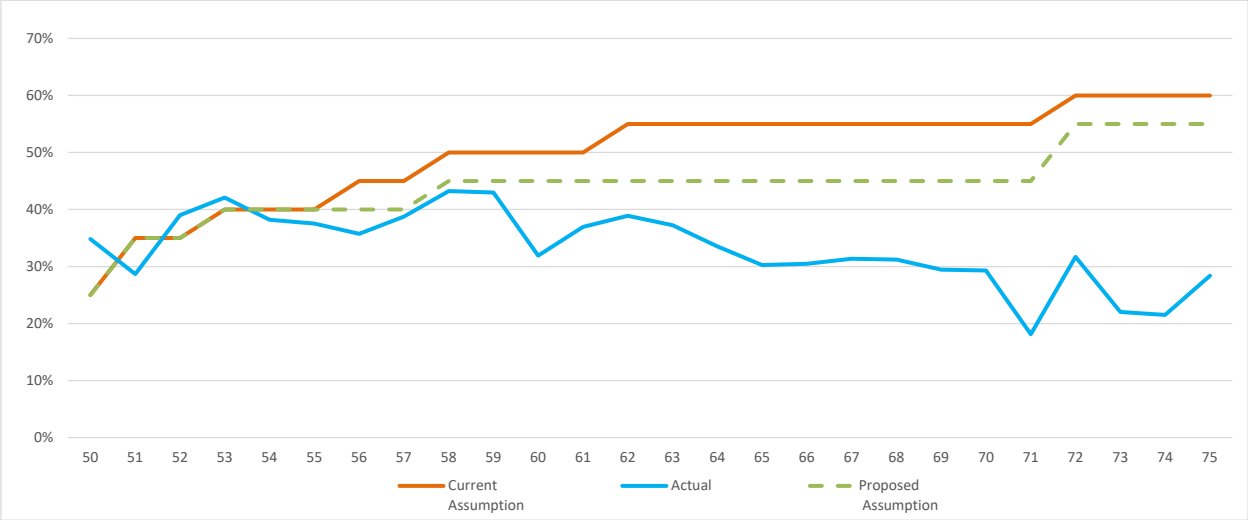
	Percent Electing Health Care Coverage						
Age at Retirement	2016	2017	2018	2019	2016 -2019	Current Participation Rate	Proposed Participation Rate
15-45	17%	0%	100%	0%	17%	20%	20%
46	0%	0%	33%	0%	6%	20%	20%
47	33%	43%	0%	50%	32%	20%	20%
48	0%	40%	0%	25%	18%	20%	20%
49	20%	0%	25%	20%	18%	25%	25%
50	33%	41%	44%	19%	35%	25%	25%
51	24%	29%	33%	29%	29%	35%	35%
52	43%	40%	36%	37%	39%	35%	35%
53	50%	41%	47%	28%	42%	40%	40%
54	36%	44%	38%	36%	38%	40%	40%
55	31%	41%	42%	38%	38%	40%	40%
56	40%	40%	34%	29%	36%	45%	40%
57	40%	42%	43%	31%	39%	45%	40%
58	39%	46%	51%	37%	43%	50%	45%
59	39%	48%	48%	37%	43%	50%	45%
60	26%	30%	40%	37%	32%	50%	45%
61	37%	37%	39%	35%	37%	50%	45%
62	36%	38%	43%	39%	39%	55%	45%
63	35%	37%	45%	32%	37%	55%	45%
64	33%	38%	29%	33%	34%	55%	45%
65	31%	29%	27%	36%	30%	55%	45%
66	32%	31%	30%	29%	30%	55%	45%
67	41%	27%	30%	29%	31%	55%	45%
68	33%	30%	22%	39%	31%	55%	45%
69	33%	27%	26%	31%	29%	55%	45%
70	33%	31%	23%	31%	29%	55%	45%
71	4%	24%	18%	30%	18%	55%	45%
72	21%	36%	49%	25%	32%	60%	55%
73	22%	23%	25%	18%	22%	60%	55%
74+	26%	18%	19%	27%	22%	60%	55%

Actual Versus Proposed Experience, HCTF Health Plan Participants
2016-2019 Enrollment by Age



The chart above illustrates estimated participants assumed under current assumptions (orange), actual participants over the study period (blue) and estimated participants under the proposed assumption (green dashes). Below is the corresponding illustration of the PERACare participation rates. Note that the higher ages have lower exposures and credibility, thus the proposed assumptions show less movement from current assumptions toward actual experience.

Actual Versus Proposed Experience, HCTF Health Plan Participation
2016-2019 Percent Electing PERACare by Age

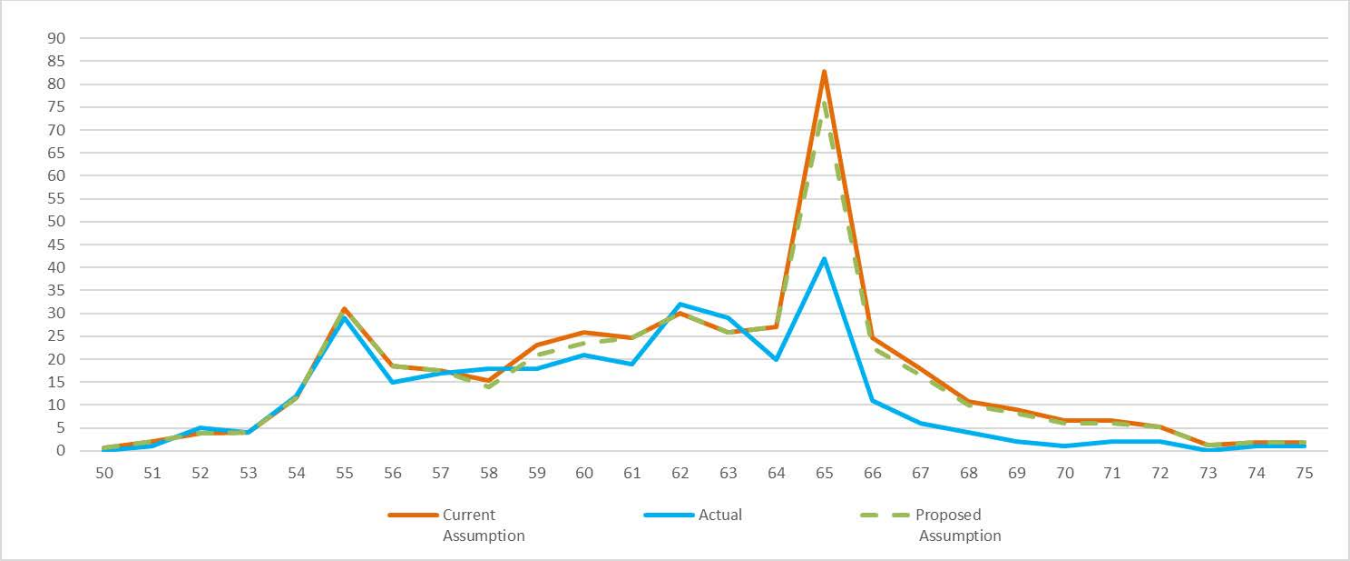


DPS HCTF Health Plan Participation

	Percent Electing Health Care Coverage						
Age at Retirement	2016	2017	2018	2019	2016 -2019	Current Participation Rate	Proposed Participation Rate
15-45	0%	0%	0%	0%	0%	20%	20%
46	0%	0%	0%	0%	0%	20%	20%
47	0%	0%	0%	0%	0%	20%	20%
48	0%	50%	0%	0%	20%	20%	20%
49	0%	0%	0%	0%	0%	25%	25%
50	0%	0%	0%	0%	0%	25%	25%
51	0%	100%	0%	0%	17%	35%	35%
52	0%	67%	67%	25%	45%	35%	35%
53	50%	0%	0%	50%	40%	40%	40%
54	67%	36%	50%	100%	52%	50%	50%
55	48%	44%	50%	43%	47%	50%	50%
56	44%	25%	50%	50%	41%	50%	50%
57	29%	57%	58%	0%	49%	50%	50%
58	40%	63%	80%	100%	64%	55%	50%
59	50%	60%	36%	14%	43%	55%	50%
60	44%	42%	43%	50%	45%	55%	50%
61	36%	50%	67%	38%	46%	60%	60%
62	59%	67%	67%	67%	64%	60%	60%
63	71%	58%	60%	86%	67%	60%	60%
64	27%	38%	73%	45%	44%	60%	60%
65	30%	31%	28%	40%	30%	60%	55%
66	33%	36%	17%	11%	27%	60%	55%
67	36%	17%	0%	0%	20%	60%	55%
68	0%	29%	0%	33%	22%	60%	55%
69	29%	0%	0%	0%	13%	60%	55%
70	20%	0%	0%	0%	9%	60%	55%
71	0%	0%	33%	100%	18%	60%	55%
72	0%	0%	0%	67%	25%	65%	65%
73	0%	0%	0%	0%	0%	65%	65%
74+	25%	0%	33%	17%	21%	65%	65%

Actual Versus Proposed Experience, DPS HCTF Health Plan Participants

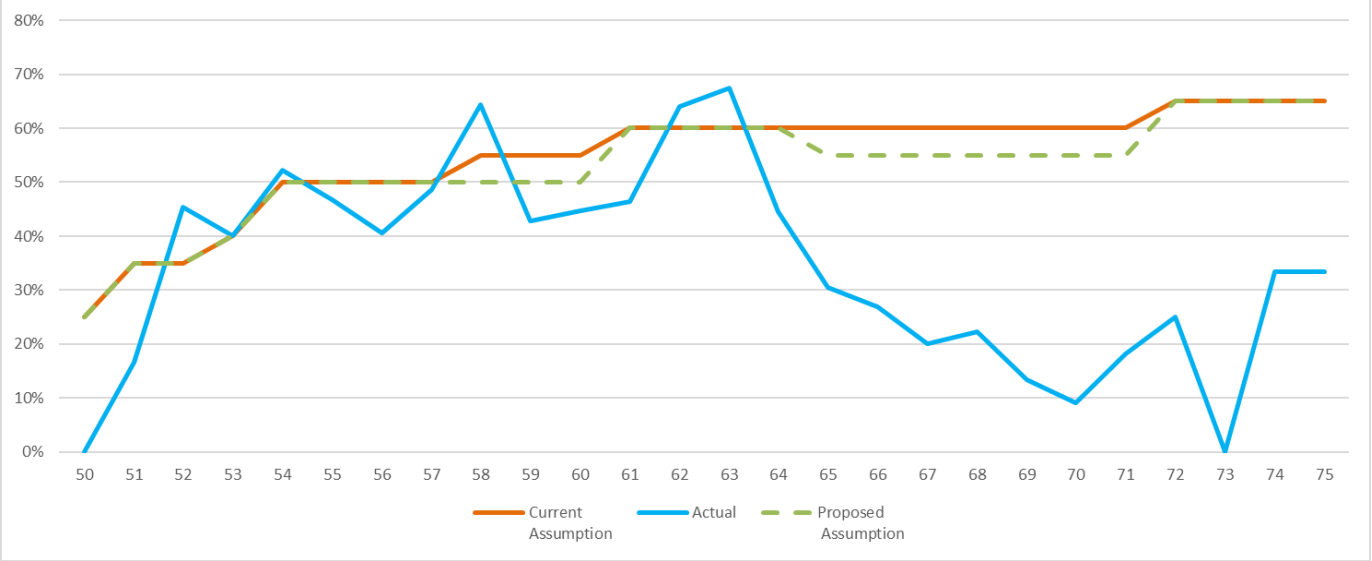
2016-2019 Enrollment by Age



The chart above illustrates estimated participants assumed under current assumptions (orange), actual participants over the study period (blue) and estimated participants under the proposed assumption (green dashes). Below is the corresponding illustration of the PERACare participation rates. Note that the higher ages have lower exposures and credibility, thus the proposed assumptions show less movement from current assumptions toward actual experience.

Actual Versus Proposed Experience, DPS HCTF Health Plan Participation

2016-2019 Percent Electing PERACare by Age



For eligible inactive (deferred vested under the DPS benefit structure) members of the State, School, Local Government, or Judicial Divisions with either the PERA or DPS benefit structure, 25% are currently assumed to elect health care coverage upon commencement of their monthly pension benefit. DPS-specific exposures are too low to be credible so we studied the combined experience. Segal recommends reducing this assumption to 20% based upon the historical participation rates.

Terminated Vested Members, Health Care Election Experience

	Percent Electing Health Care Coverage		
Year	Current Participation Rate	Assumed Participation Rate	Proposed Participation Rate
2016	14%	25%	20%
2017	15%	25%	20%
2018	11%	25%	20%
2019	10%	25%	20%
2016-2019	13%	25%	20%

For eligible inactive (deferred vested under the DPS benefit structure) members of the State, School, Local Government, or Judicial Divisions with either the PERA or DPS benefit structure the observed, assumed and proposed initial ages at benefit receipt were reviewed. Exposures for those with assumed initial ages of 50 were low and no changes are proposed for those categories. Proposed updates based upon experience and credibility are as follows:

Terminated Vested Members: Assumed Age of Initial Benefit Receipt

PERA Benefit Structure Members (excluding Troopers) with 25 or More Years of Service	Average Age Initial Benefit Receipt	Assumed Initial Benefit Age	Proposed Initial Benefit Age
2016	57	50	50
2017	57	50	50
2018	56	50	50
2019	53	50	50
2016-2019	55	50	50
PERA Benefit Structure Members (Troopers) with 20 or More Years of Service	**Average Age Initial Benefit Receipt**	**Assumed Initial Benefit Age**	**Proposed Initial Benefit Age**
2016	57	50	50
2017	57	50	50
2018	56	50	50
2019	53	50	50
2016-2019	55	50	50

PERA Benefit Structure Members (excluding Troopers) with 20-25 Years of Service	Average Age Initial Benefit Receipt	Assumed Initial Benefit Age	Proposed Initial Benefit Age
2016	56	55	55
2017	55	55	55
2018	57	55	55
2019	56	55	55
2016-2019	56	55	55
PERA Benefit Structure Members with less than 20 Years of Service	**Average Age Initial Benefit Receipt**	**Assumed Initial Benefit Age**	**Proposed Initial Benefit Age**
2016	60	60	60
2017	60	60	60
2018	60	60	60
2019	61	60	60
2016-2019	60	60	60
DPS Benefit Structure	**Average Age Initial Benefit Receipt**	**Assumed Initial Benefit Age**	**Proposed Initial Benefit Age**
2016	56	65	60
2017	59	65	60
2018	57	65	60
2019	60	65	60
2016-2019	58	65	60

G. Medicare Part A Subsidy Eligibility and Health Care Network Election

Medicare Part A Premium Subsidy – PERA Benefit Structure

Under Colorado Revised Statute 24-51-1206(4), the premiums charged to a PERACare enrollee with a PERA benefit structure 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 Premium-Free Medicare 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, we must make an assumption of PERACare enrollees that will not qualify for premium-free Medicare Part A benefits; thus qualifying for the "No Premium-Free Medicare Part A" subsidy from either benefit structure. Historical experience for the number of members over 65 in this category as ratio of retirees indicated as "No premium-free Medicare Part A" with hire dates prior to April 1, 1986 is still relatively consistent with assumptions (2018 seems anomalous) over the past four years and we recommend maintaining the current assumptions.

PERA Benefit Structure Service Retirees Qualifying for "No Premium-Free Medicare Part A" Subsidy

	PERA Benefit Structure: Estimated Date of Hire Prior to April 1, 1986						
Estimated Hire Age	Percent Covered and Qualifying for "No Premium-Free Medicare Part A" Subsidy*						
	2016	2017	2018	2019	2016-2019	Current	Proposed
0 - 24	17%	16%	10%	15%	14%	17%	17%
25 - 29	12%	11%	8%	10%	10%	11%	11%
30+	5%	4%	7%	4%	5%	4%	4%

** Based on those enrolled in PERACare and age 65 or older*

Of those PERACare enrollees assumed to not qualify for premium-free Medicare Part A benefits and receive the "No Premium-Free Medicare Part A" subsidy from the PERA benefit structure, 20% of retirees in other divisions and 15% of DPS Division retirees with Joint and Survivor pension, who enroll are currently assumed to cover a spouse. Segal recommends a reduction to 5% (regardless of Joint and Survivor election or division) assumed to cover a spouse based upon historical experience.

PERA Benefit Structure Service Retirees Qualifying for "No Premium-Free Medicare Part A" Subsidy with a Covered Spouse

	PERA Benefit Structure Spouse Coverage for Retirees that are pre-April 1, 1986 Hires with no Premium-Free Medicare Part A						
	2016	2017	2018	2019	2016-2019	Current	Proposed
Proportion Electing Spouse Coverage	3%	3%	3%	3%	3%	20% of Other Division / 15% of DPS Division Retirees with J&S	5% (Regardless of J&S or division)

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.

Segal evaluates the cost to pay for Medicare Part A premiums in lieu of the subsidy on an annual basis; thus this was not reviewed for this study. The December 31, 2019 valuation assumed projected "No Premium-Free Medicare Part A" subsidies are low enough such that even with trend they are not expected to exceed projected Medicare Part A premiums.

Currently, 90% of PERACare enrollees receiving health care benefits as a result of disability retirement are assumed to qualify for premium-free Medicare Part A. Segal reviewed historical experience of those qualifying for this subsidy. Segal recommends assuming 95% qualify for premium-free Medicare Part A and thus 5% qualify for the appropriate PERACare subsidy for those with no premium-free Medicare Part A; meaning an implicit subsidy for those with the PERA benefit structure and a fixed-dollar subsidy for those with a DPS benefit structure. While the member counts in all divisions are very low, they are not zero.

Combined (PERA and DPS) Benefit Structure Disability Retirees Qualifying for "No Premium-Free Medicare Part A" Subsidy

	Disability Retirees with No Premium-Free Medicare Part A						
Estimated Hire Age	**2016**	**2017**	**2018**	**2019**	**2016-2019**	**Current**	**Proposed**
Disabled Medicare Retirees	24	9	9	3	45		
Those Eligible for Subsidy	0	2	2	0	4		
Proportion Eligible	0%	22%	22%	0%	9%	10%	5%

100% of eligible inactive (deferred vested under the DPS benefit structure) 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. Segal recommends no change to this assumption.

Health Care Network Option Elections:

Medicare plan elections for future retirees of the State, School, Local Government, Judicial, and DPS Divisions with a PERA benefit structure who are not eligible for premium-free Medicare Part A, are assumed as noted below. Note that as part of the Medicare plan option changes effective January 1, 2019, this assumption was updated to reflect the split between historically self-funded Medicare Supplement and fully-insured HMO options. Segal recommends a change in the basis of this assumption due to low credibility in the DPS Division population. Segal referenced known patterns of Medicare enrollment for those eligible for a "No Premium-Free Medicare Part A" subsidy and recent experience to propose revised assumptions as follows:

Medicare Plans	PERA Benefit Structure	
	Current Assumption: Percent Electing Medicare Plan: Other Divisions / DPS Division	**Proposed Assumption: Percent Electing Medicare Plan: All Divisions**
Medicare Advantage / Self-Funded Rx	60% / 40%	70%
Kaiser Permanente Medicare Advantage HMOs	40% / 60%	30%

Medicare Plan	PERA Benefit Structure						
	Percent Electing Medicare Plan: Other Divisions / DPS Division						
	2016	2017	2018	2019	2016-2019	Current	Proposed
Proportion Electing Kaiser	27%	28%	29%	27%	28%	60% / 40%	30% / 30%

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

Medicare Plans	PERA Benefit Structure: Percent Electing Medicare Plan – Current Assumption	
	Pre-Medicare Anthem Plans	**Pre-Medicare Kaiser Plans**
Medicare Advantage / Self-Funded Rx	88%	2%
Kaiser Permanente Medicare Advantage HMO	12%	98%

Exposures for pre-Medicare and DPS Division members are too low to be credible, so experience was combined for all divisions and benefit structures to develop the future assumptions regarding network selection. Segal recommends a change in the structure of this assumption due to low credibility in the pre-Medicare population. We referenced known patterns of Medicare enrollment for those eligible for a "No Premium-Free Medicare Part A" subsidy and recent experience to propose revised assumptions as follows:

Medicare Plans	PERA Benefit Structure: Percent Electing Medicare Plan – Proposed Assumption
	All Divisions
Medicare Advantage / Self-Funded Rx	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 Medicare Advantage / self-funded Rx plans, 80% are assumed to elect MA#1 and 20% are assumed to elect MA#2. This assumption was updated with the December 31, 2018 valuation and evaluated for December 31, 2019. Due to the transition to fully-insured Medicare Advantage plans effective January 1, 2019 and the potential for volatility in the health care marketplace, Segal recommends that this assumption be evaluated on an annual basis.

Medicare Part A Premium Subsidy – DPS Benefit Structure

Retirees 65 or older who are not eligible for premium-free benefits under Medicare Part A are eligible for an additional, "No Premium-Free Medicare Part A" subsidy. This subsidy, under the DPS benefit structure, is equal to that of the under age 65 PERACare enrollees with a DPS benefit structure.

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, we must make an assumption of PERACare enrollees that will not qualify for premium-free Medicare Part A benefits; thus qualifying for the "No Premium-Free Medicare Part A " subsidy from the DPS benefit structure. Historical experience for the number of members over 65 in this category as ratio of retirees indicated as "No Premium-Free Medicare Part A" with hire dates prior to April 1, 1986 is still relatively consistent with assumptions over the past four years and we recommend maintaining the current assumptions.

DPS Benefit Structure Service Retirees Qualifying for "No Premium-Free Medicare Part A" Subsidy

Estimated Hire Age	Estimated Date of Hire Prior to April 1, 1986 – DPS Benefit Structure						
	Percent Covered and Qualifying for "No Premium-Free Medicare Part A" Subsidy*						
	2016	2017	2018	2019	2016-2019	Current	Proposed
0 - 24	18%	18%	17%	16%	17%	17%	17%
25 - 29	11%	11%	11%	11%	11%	11%	11%
30+	4%	4%	4%	4%	4%	4%	4%

** Based on those enrolled in PERACare and age 65 or older*

The DPS benefit structure does not provide any additional subsidy to covered or surviving spouses of the retiree. Therefore, we have not provided analysis for "No Premium-Free Medicare Part A" Subsidy with a Covered Spouse for DPS Benefit Structure.

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.

Currently, 90% of PERACare enrollees receiving health care benefits as a result of disability retirement are assumed to qualify for premium-free Medicare Part A. Segal reviewed historical experience of those qualifying for this higher subsidy Segal recommends assuming 95% qualify for premium-free Medicare Part A and thus 5% for the PERACare "No Premium-Free Medicare Part A" subsidy. While the member counts in all divisions are very low, they are not zero.

H. Morbidity

As noted in ASOP No. 6, the variation in health care costs by age for the benefits being modeled should be considered. The current morbidity assumption was updated for the December 31, 2018 valuation as part of the transition to Segal. Segal monitors and updates those factors as appropriate and at the time of this study those factors have not changed. Segal proposes to maintain this assumption and update upon availability of updated Segal morbidity tables. This assumption only applies where a Medicare-eligible member (or eligible spouse) retired under the PERA benefit structure and did not qualify for "premium-free" Medicare Part A. This is a small, closed group within the PERA census.

The current and proposed age-specific assumptions are as follows:

PERA Benefit Structure		
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+	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 (excluding the subsidy reduction at age 65 or the costs associated with Medicare disability eligibility).

IV. Appendix

Appendix A: Proposed PERA HCTF and DPS HCTF Health Plan Participation

Age	Current HCTF Participation Rate	Proposed HCTF Participation Rate
15-48	20%	20%
49	25%	25%
50	25%	25%
51	35%	35%
52	35%	35%
53	40%	40%
54	40%	40%
55	40%	40%
56	45%	40%
57	45%	40%
58	50%	45%
59	50%	45%
60	50%	45%
61	50%	45%
62	55%	45%
63	55%	45%
64	55%	45%
65	55%	45%
66	55%	45%
67	55%	45%
68	55%	45%
69	55%	45%
70	55%	45%
71	55%	45%
72	60%	55%
73	60%	55%
74	60%	55%
75+	60%	55%

Age	Current DPS HCTF Participation Rate	Proposed DPS HCTF Participation Rate
15-48	20%	20%
49	25%	25%
50	25%	25%
51	35%	35%
52	35%	35%
53	40%	40%
54	50%	50%
55	50%	50%
56	50%	50%
57	50%	50%
58	55%	50%
59	55%	50%
60	55%	50%
61	60%	60%
62	60%	60%
63	60%	60%
64	60%	60%
65	60%	55%
66	60%	55%
67	60%	55%
68	60%	55%
69	60%	55%
70	60%	55%
71	60%	55%
72	65%	65%
73	65%	65%
74	65%	65%
75+	65%	65%

Terminated Vested Members, Health Care Election Experience

Assumed Participation Rate	Proposed Participation Rate
25%	20%

Appendix B: No Premium-Free Medicare Part A Subsidy Eligible Assumptions

Service Retirees Qualifying for "No Premium-Free Medicare Part A" Subsidy

	PERA Benefit Structure		DPS Benefit Structure	
Estimated Age at Hire	Current	Proposed	Current	Proposed
0 - 24	17%	17%	17%	17%
25 - 29	11%	11%	11%	11%
30+	4%	4%	4%	4%

Retirees Qualifying for "No Premium-Free Medicare Part A" Subsidy – Spousal Coverage Assumptions

	Other Divisions with PERA Benefit Structure		DPS Division with PERA Benefit Structure	
	Current	Proposed	Current	Proposed
Spousal Coverage	20% of Retirees with J&S	5% (regardless of J&S)	15% of Retirees with J&S	5% (regardless of J&S)

Retirees Qualifying for "No Premium-Free Medicare Part A" Subsidy – Network Election Assumptions

	Other Divisions with PERA Benefit Structure		DPS Division with PERA Benefit Structure	
Estimated Age at Hire	Current	Proposed	Current	Proposed
Anthem / Self-Insured Rx	60%	70%	40%	70%
Kaiser Sr. Advantage	40%	30%	60%	30%

Disability Retirees Qualifying for "No Premium-Free Medicare Part A" Subsidy

	PERA Benefit Structure		DPS Benefit Structure	
	Current	Proposed	Current	Proposed
Disabled RT Eligible Rate	10%	5%	10%	5%

Appendix C: Other Assumptions

Terminated Vested Members: Assumed Age of Initial Benefit Receipt

Benefit Structure / Group	Assumed Initial Benefit Age	Proposed Initial Benefit Age
PERA Benefit Structure Members (excluding Troopers) with 25 or More Years of Service	50	50
PERA Benefit Structure Members (Troopers) with 20 or More Years of Service	50	50
PERA Benefit Structure Members (excluding Troopers) with 20-25 Years of Service	55	55
PERA Benefit Structure Members with less than 20 Years of Service	60	60
DPS Benefit Structure Members	65	60

Continuation of Surviving Spouse Coverage under PERA Benefit Structure

	Current Assumptions	Proposed Assumptions
Proportion of male retirees with Surviving Spouse	70%	60%
Proportion of female retirees with Surviving Spouse	70%	35%
Age Difference: Male Retirees:	3 yrs. Older	3 yrs. Older
Female Retirees:	1 yr. younger	1 yr. younger

END OF REPORT