


State of Alaska

Public Employees' Retirement System



Actuarial Valuation
Report
As of June 30, 2018

August 2019

BUCK



August 9, 2019

State of Alaska
The Alaska Retirement Management Board
The Department of Revenue, Treasury Division
The Department of Administration, Division of Retirement and Benefits
P.O. Box 110203
Juneau, AK 99811-0203

Certification of Actuarial Valuation

Dear Members of The Alaska Retirement Management Board, The Department of Revenue and The Department of Administration:

This report summarizes the annual actuarial valuation results of the State of Alaska Public Employees' Retirement System (PERS) as of June 30, 2018 performed by Buck Global, LLC (Buck).

The actuarial valuation is based on financial information provided in the financial statements audited by KPMG LLP, member data provided by the Division of Retirement and Benefits, and medical enrollment data provided by the healthcare claims administrator (Aetna), as summarized in this report. The benefits considered are those delineated in Alaska statutes effective June 30, 2018. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under PERS were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Buck is solely responsible for the actuarial data and actuarial results presented in this report. This report fully and fairly discloses the actuarial position of PERS as of June 30, 2018.

PERS is funded by Employer, State, and Member Contributions in accordance with the funding policy adopted by the Alaska Retirement Management Board (Board) and as required by Alaska state statutes. The funding objective for PERS is to pay required contributions that remain level as a percent of total PERS compensation. The Board has also established a funding policy objective that the required contributions be sufficient to pay the Normal Costs of active plan members, plan expenses, and amortize the Unfunded Actuarial Accrued Liability (UAAL) as a level percentage of total PERS compensation over a closed 25-year period as required by Alaska state statutes. The closed 25-year period was originally established effective June 30, 2014. Effective June 30, 2018, the Board adopted a layered UAAL amortization method: Layer #1 equals the sum of (i) the UAAL at June 30, 2018 based on the 2017 valuation, plus (ii) the FY18 experience gain/loss. Layer #1 is amortized over the remainder of the 25-year closed period that was established in 2014¹. Layer #2 equals the change in UAAL at June 30, 2018 due to the experience study and EGWP implementation. Layer #2 is amortized over a separate closed 25-year period starting in 2018. Future layers will be created each year based on the change in UAAL occurring that year, and will be amortized over separate closed 25-year periods. The UAAL amortization continues to be on a level percent of pay basis. The compensation used to determine required contributions is the total compensation of all active members in PERS, including those hired after July 1, 2006 who are members of the Defined Contribution Retirement (DCR) Plan. This objective is currently

¹ Layer #1 is referred to as "initial amount" in Section 1.2.

being met and is projected to continue to be met. Absent future gains/losses, actuarially determined contributions are expected to remain level as a percent of pay and the overall funded status is expected to increase to 100% after 25 years.

The Board and staff of the State of Alaska may use this report for the review of the operations of PERS. Use of this report, for any other purpose or by anyone other than the Board or staff of the State of Alaska may not be appropriate and may result in mistaken conclusions because of failure to understand applicable assumptions, methods or inapplicability of the report for that purpose. Because of the risk of misinterpretation of actuarial results, you should ask Buck to review any statement you wish to make on the results contained in this report. Buck will not accept any liability for any such statement made without the review by Buck.

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and 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. In particular, 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. An analysis of the potential range of such future differences is beyond the scope of this valuation.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the plan. The actuary performs an analysis of plan experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. The last full experience analysis was performed for the period July 1, 2013 to June 30, 2017. Based on that experience study, the Board adopted new assumptions effective beginning with the June 30, 2018 valuation to better reflect expected future experience. Based on our annual analysis of recent claims experience, changes were made to the per capita claim cost rates effective June 30, 2018 to better reflect expected future healthcare experience. Based on recent experience, the healthcare cost trend assumptions were also updated. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Sections 6.2 and 6.3.

Governmental Accounting Standards Board (GASB) Statement No. 67 (GASB 67) was effective for PERS beginning with fiscal year ending June 30, 2014, and Statement No. 74 (GASB 74) was effective for PERS beginning with fiscal year ending June 30, 2017. Separate GASB 67 and GASB 74 reports as of June 30, 2018 have been prepared. Section 3 of this report contains accounting information previously disclosed under GASB 25 for fiscal years 2007 through 2013 and accounting information previously disclosed under GASB 43 for fiscal years 2007 through 2016. We have also prepared the member data tables shown in Section 5 of this report for the Statistical Section of the CAFR, and the summary of actuarial assumptions, solvency test, and analysis of financial experience for the Actuarial Section of the CAFR. Please see our separate GASB 67 and GASB 74 reports for other information needed for the CAFR.

This report was prepared under my supervision and in accordance with all applicable Actuarial Standards of Practice. I am a Fellow of the Society of Actuaries, an Enrolled Actuary, a Fellow of the Conference of Consulting Actuaries and a Member of the American Academy of Actuaries. I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

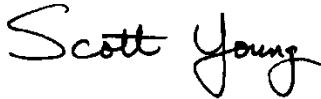
I am available to discuss this report with you at your convenience. I can be reached at 602-803-6174.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "D. J. Kershner".

David J. Kershner, FSA, EA, MAAA, FCA
Principal
Buck

The undersigned actuary is responsible for all assumptions related to the average annual per capita health claims cost and the health care cost trend rates, and hereby affirms his qualification to render opinions in such matters in accordance with the Qualification Standards of the American Academy of Actuaries.

A handwritten signature in black ink, appearing to read "Scott Young".

Scott Young, FSA, EA, MAAA
Director
Buck

Contents

Executive Summary.....	1
Section 1: Actuarial Funding Results	8
Section 1.1: Actuarial Liabilities and Normal Cost	8
Section 1.2: Actuarial Contributions as of June 30, 2018	14
Section 1.3: Roll Forward Contribution Rate Calculation for FY21	20
Section 1.4: Actuarial Gain/(Loss) for FY18	23
Section 1.5: Development of Change in Unfunded Liability During FY18	24
Section 1.6: Analysis of Financial Experience	25
Section 1.7: History of Unfunded Liability and Funded Ratio	28
Section 2: Plan Assets.....	29
Section 2.1: Summary of Fair Value of Assets	29
Section 2.2: Changes in Fair Value of Assets During FY18	30
Section 2.3: Development of Actuarial Value of Assets	31
Section 2.4: Historical Asset Rates of Return	33
Section 3: Accounting Information (GASB 25 and GASB 43)	34
Section 3.1: Historical Exhibits.....	34
Section 3.2: Postemployment Healthcare.....	36
Section 3.3: Solvency Test	38
Section 4: Projections	41
Section 4.1: Projection Assumptions and Methods	41
Section 4.2: Membership Projection	42
Section 4.3: Projected Employer/State Contribution Rates	45
Section 4.4: Projected Employer/State Contribution Amounts	46
Section 4.5: Projection of Funded Ratios	47
Section 4.6: Table of Projected Actuarial Results.....	48
Section 5: Member Data	49
Section 5.1: Summary of Members Included.....	49
Section 5.2: Age and Service Distribution of Active Members	54
Section 5.3: Member Data Reconciliation.....	56

Section 5.4:	Schedule of Active Member Data	58
Section 5.5:	Active Member Payroll Reconciliation	59
Section 5.6:	Summary of New Pension Benefit Recipients	60
Section 5.7:	Summary of All Pension Benefit Recipients	64
Section 5.8:	Schedule of Pension Benefit Recipients by Type of Pension Benefit and Option Elected	69
Section 5.9:	Pension Benefit Recipients Added to and Removed from Rolls	71
Section 6:	Basis of the Actuarial Valuation	73
Section 6.1:	Summary of Plan Provisions.....	73
Section 6.2:	Description of Actuarial Methods and Valuation Procedures	80
Section 6.3:	Summary of Actuarial Assumptions.....	88
Glossary of Terms		102

Executive Summary

Overview

The State of Alaska Public Employees' Retirement System (PERS) provides pension and postemployment healthcare benefits to eligible participants. The Commissioner of the Department of Administration is responsible for administering the plan. The Alaska Retirement Management Board has fiduciary responsibility over the assets of the plan. This report presents the results of the actuarial valuation of PERS as of the valuation date of June 30, 2018.

Purpose

An actuarial valuation is performed on the plan annually as of the end of the fiscal year. The main purposes of the actuarial valuation detailed in this report are:

1. To determine the Employer/State contribution necessary to meet the Board's funding policy for the plan;
2. To disclose the funding assets and liability measures as of the valuation date;
3. To review the current funded status of the plan and assess the funded status as an appropriate measure for determining future actuarially determined contributions;
4. To compare actual and expected experience under the plan during the last fiscal year; and
5. To report trends in contributions, assets, liabilities, and funded status over the last several years.

The actuarial valuation provides a "snapshot" of the funded position of PERS based on the plan provisions, membership data, assets, and actuarial methods and assumptions as of the valuation date.

Actuarial projections are also performed to provide a long-term view of the expected future funded status and contribution patterns (see Section 4).

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.

Funded Status

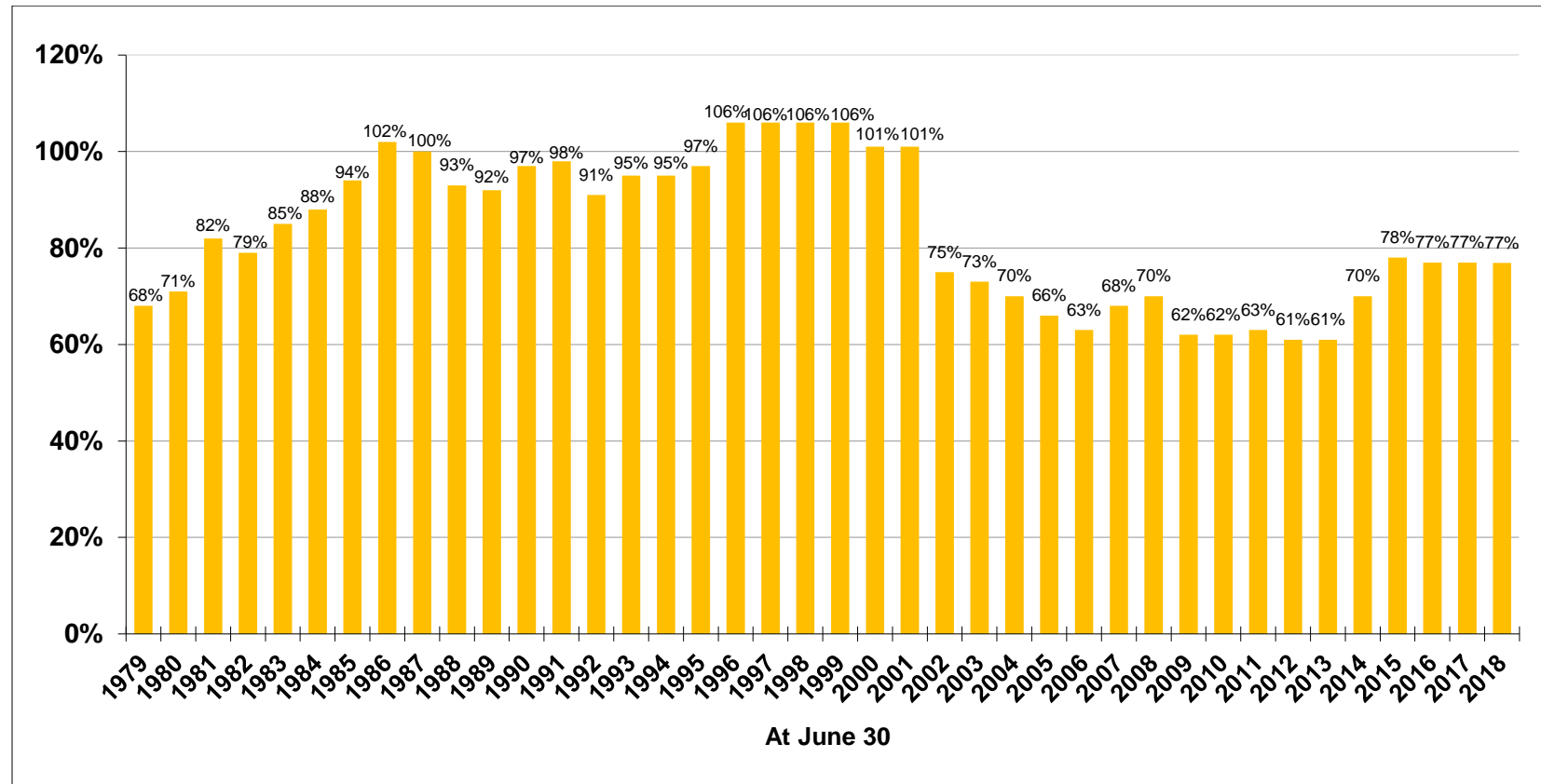
Where presented, references to “funded ratio” and “unfunded actuarial accrued liability” typically are measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

Funded Status as of June 30 (\$'s in 000's)		2017	2018
Pension			
a.	Actuarial Accrued Liability	\$ 13,832,130	\$ 14,606,033
b.	Valuation Assets	<u>9,229,703</u>	<u>9,430,192</u>
c.	Unfunded Actuarial Accrued Liability, (a) – (b)	\$ 4,602,427	\$ 5,175,841
d.	Funded Ratio based on Valuation Assets, (b) ÷ (a)	66.7%	64.6%
e.	Fair Value of Assets	\$ 8,943,127	\$ 9,306,675
f.	Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	64.7%	63.7%
Healthcare			
a.	Actuarial Accrued Liability	\$ 8,049,265	\$ 7,658,104
b.	Valuation Assets	<u>7,557,068</u>	<u>7,686,509</u>
c.	Unfunded Actuarial Accrued Liability, (a) – (b)	\$ 492,197	\$ (28,405)
d.	Funded Ratio based on Valuation Assets, (b) ÷ (a)	93.9%	100.4%
e.	Fair Value of Assets	\$ 7,338,952	\$ 7,612,001
f.	Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	91.2%	99.4%
Total			
a.	Actuarial Accrued Liability	\$ 21,881,395	\$ 22,264,137
b.	Valuation Assets	<u>16,786,771</u>	<u>17,116,701</u>
c.	Unfunded Actuarial Accrued Liability, (a) – (b)	\$ 5,094,624	\$ 5,147,436
d.	Funded Ratio based on Valuation Assets, (b) ÷ (a)	76.7%	76.9%
e.	Fair Value of Assets	\$ 16,282,079	\$ 16,918,676
f.	Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	74.4%	76.0%

The funded status of the plan (on an Actuarial Value of Assets basis) increased slightly from June 30, 2017 to June 30, 2018. This increase was the net impact of various items, as described in more detail on the following pages.

The funded status for healthcare benefits is not necessarily an appropriate measure to confirm that assets are sufficient to settle health plan obligations because there are no available financial instruments for purchase. Future experience is likely to vary from assumptions so there is a potential for future healthcare actuarial gains and losses.

PERS Funded Ratio History (Based on Valuation Assets)



1. Investment Experience

The actuarial asset value was reinitialized to equal fair value of assets as of June 30, 2014. Beginning in FY15, the asset valuation method recognizes 20% of the investment gain or loss each year, for a period of five years. The FY18 investment return based on fair value of assets was approximately 8.2% compared to the expected investment return of 8.00% (net of investment and administrative expenses of approximately 0.19%). This resulted in a market asset gain of approximately \$49 million. Due to the recognition of investment gains and losses over a 5-year period, the FY18 investment return based on actuarial value of assets was approximately 6.1%, which resulted in an actuarial asset loss of approximately \$298 million.

2. Salary Increases

Salary increases for continuing active members during FY18 were less than expected based on the valuation assumptions, resulting in a liability gain of approximately \$97 million.

3. Demographic Experience

Section 5 provides statistics on active participants. The number of active participants decreased 8.7%, from 14,719 at June 30, 2017 to 13,434 at June 30, 2018 due to active members exiting the plan during the year (due to retirement, termination, death and disability) and the closure of the plan to new entrants as of July 1, 2006. The average age of active participants increased from 52.10 to 52.52, and average credited service increased from 16.57 to 17.21 years.

The number of benefit recipients increased 3.2%, from 34,347 to 35,454 and their average age increased from 69.42 to 69.85. The number of vested terminated participants decreased 5.1%, from 5,962 to 5,660. Their average age increased from 52.45 to 52.56.

The overall effect of the demographic experience during FY18 was an actuarial loss of approximately \$24.9 million (pension) and an actuarial gain of approximately \$90.2¹ million (healthcare).

4. COLA/PRPA Experience

The cost-of-living increases and postretirement pension adjustments for benefit recipients during FY18 were less than expected based on the valuation assumptions, resulting in a liability gain of approximately \$108 million.

5. Medical Claims Experience and Assumptions

As described in Section 6.2, recent medical claims experience and changes in healthcare enrollment data provided to us for the June 30, 2018 valuation generated an actuarial gain of approximately \$412 million (net of the \$33 million loss due to the Cadillac Tax). The assumption regarding which participants will be eligible for Medicare Part B only was updated, which generated an actuarial gain of approximately \$235 million.

6. Changes in Methods Since the Prior Valuation

Effective June 30, 2018, the amortization of the UAAL was changed as described in Section 6.2. As part of the experience study (see item #7), the actuarial cost method for retiree healthcare benefits was changed from the Entry Age Level Dollar method to the Entry Age Level Percent of Pay method. There were no other changes in actuarial methods since the prior valuation.

7. Changes in Assumptions Since the Prior Valuation

Effective for the June 30, 2018 valuation, the Board adopted changes to the demographic and economic assumptions recommended by the actuary, based on the results of an experience analysis performed on the population experience from July 1, 2013 to June 30, 2017. The changes in

¹ Includes the effect of changes in dependent coverage elections.

assumptions/methods were adopted by the Board during the January 2019 Board meeting. The new assumptions/methods increased the Actuarial Accrued Liability as of June 30, 2018 by approximately \$555 million (pension) and \$761 million (healthcare). Healthcare claim costs are updated annually as described in Section 6.2.

8. Changes in Benefit Provisions Since the Prior Valuation

There have been no changes in the PERS benefit provisions since the prior valuation. However, an Employer Group Waiver Plan (EGWP) became effective as of January 1, 2019. This arrangement replaced the Retiree Drug Subsidy under Medicare Part D and resulted in larger projected subsidies to offset the cost of prescription drug coverage. This change, which is further described in Section 6.1, decreased the healthcare Actuarial Accrued Liability as of June 30, 2018 by approximately \$711 million.

Comparative Summary of Key Actuarial Valuation Results

Pension Employer/State Contribution Rates for Fiscal Year:	2020	2021
a. Normal Cost Rate Net of Member Contributions	3.29%	2.88%
b. Past Service Rate	<u>15.00%</u>	<u>17.50%</u>
c. Total Employer/State Contribution Rate, (a) + (b) ¹	18.29%	20.38%

Healthcare Employer/State Contribution Rates for Fiscal Year:	2020	2021
a. Normal Cost Rate	2.45%	3.82%
b. Past Service Rate	<u>2.44%</u>	<u>0.44%</u>
c. Total Employer/State Contribution Rate, (a) + (b) ¹	4.89%	4.26%

Total Employer/State Contribution Rates for Fiscal Year:	2020	2021
a. Normal Cost Rate Net of Member Contributions	5.74%	6.70%
b. Past Service Rate	<u>17.44%</u>	<u>17.94%</u>
c. Total Employer/State Contribution Rate (a) + (b) ¹	23.18%	24.64%
d. Board Adopted Total Employer/State Contribution Rate	23.18%	TBD
e. Defined Contribution Retirement (DCR) Rate Paid by Employers	<u>5.44%</u>	<u>5.92%</u>
f. Board Adopted Total Rate, Including DCR Rate Paid by Employers, (d) + (e)	28.62%	TBD

Contribution rates are based on total (DB and DCR) payroll. The contribution rates shown above for FY21 are estimated assuming no actuarial gains/losses during FY19 and FY20. Actual FY21 contribution rates will be adopted reflecting FY19 asset experience.

Contribution rates include Employer contribution rates as limited by state statute, and include the additional State contribution required under SB 125.

¹ Beginning with the June 30, 2014 valuation, contribution rates for FY17 and beyond are determined using new methodology in accordance with 2014 legislation under HB 385 and SB 119, 2014 Alaska Laws, which changed the amortization methodology to a closed 25-year period as a level percentage of pay, and eliminated the time lag on the contribution rate calculation by using a 2-year "roll-forward" approach assuming 0% population growth. Investment gains and losses are recognized over a 5-year period beginning in FY15. Beginning with the June 30, 2018 valuation, the UAAL amortization was changed as described in Section 6.2.

Summary of Actuarial Accrued Liability Gain/(Loss) and Other Changes During the Year

The following table summarizes the sources of change in the total Employer/State contribution rate as of June 30, 2017 and June 30, 2018 based on DB and DCR payroll combined:

	Pension	Healthcare	Total
1. Total Employer/State contribution rate as of June 30, 2017	17.58%	4.67%	22.25%
2. Change due to:			
a. Health claims experience	N/A	(1.51%)	(1.51%)
b. Salary increases	(0.30%)	N/A	(0.30%)
c. Investment experience	0.52%	0.40%	0.92%
d. Demographic experience and miscellaneous ¹	0.26%	(1.08%)	(0.82%)
e. FY18 Contribution shortfall/(excess)	0.14%	0.06%	0.20%
f. Assumption changes	1.65%	2.20%	3.85%
g. Total change, (a) + (b) + (c) + (d) + (e) + (f)	2.27%	0.07%	2.34%
3. Total Employer/State contribution rate as of June 30, 2018, (1) + (2g)	19.85%	4.74%	24.59%

The following table shows the gain/(loss) on actuarial accrued liability as of June 30, 2018 (\$'s in 000's):

	Pension	Healthcare	Total
Retirement Experience	\$ (10,403)	\$ 22,262	\$ 11,859
Termination Experience	(5,131)	(6,746)	(11,877)
Active Mortality Experience	5,654	2,602	8,256
Inactive Mortality Experience	33,977	2,192	36,169
Disability Experience	(3,631)	288	(3,343)
Rehires	7,141	5,948	13,089
Salary Increases	97,200	N/A	97,200
Alaska COLA	6,913	N/A	6,913
PRPA	101,314	N/A	101,314
Medical Claims Experience	N/A	445,366	445,366
Cadillac Tax	N/A	(33,123)	(33,123)
Modified Part B Only Assumption	N/A	235,258	235,258
Dependent Coverage Elections	N/A	69,614	69,614
Programming Changes ²	N/A	(11,030)	(11,030)
Miscellaneous ³	(7,923)	(8,637)	(16,560)
Total	\$ 225,111	\$ 723,994	\$ 949,105

¹ Includes the effects of census data changes between the two valuations.

² Contribution for pre-65 Tier 3 retirees with less than 10 years of service at retirement.

³ Includes the effects of various data changes that are typical when new census data is received for the annual valuation, the effects of the differences between expected and actual benefit payments, and other items that do not fit neatly into any of the other categories.

Other items that increased/(decreased) the actuarial accrued liability as of June 30, 2018 are shown below (\$'s in 000's):

	Pension	Healthcare	Total
EGWP Implementation	\$ n/a	\$ (710,657)	\$ (710,657)
Experience Study Assumptions/Methods	<u>555,442</u>	<u>760,506¹</u>	<u>1,315,948</u>
Total	\$ 555,442	\$ 49,849	\$ 605,291

The rehire gain/(loss) amount shown on the previous page is the difference between the increase in Actuarial Accrued Liability at June 30, 2018 due to rehires during the most recent plan year and the load that was added to the June 30, 2017 Normal Cost based on the rehire load assumption used in the June 30, 2017 valuation. The development of the FY18 rehire gain/(loss) amount is shown in the table below (\$'s in 000's):

	Pension	Healthcare	Total
1. Increase in Actuarial Accrued Liability at June 30, 2018 due to Rehires	\$ 15,840	\$ 5,728	\$ 21,568
2. June 30, 2017 Normal Cost Rehire Load, with interest to June 30, 2018	\$ 22,981	\$ 11,676	\$ 34,657
3. Rehire Gain/(Loss), (2) – (1)	\$ 7,141	\$ 5,948	\$ 13,089

¹ Includes increase of \$768.1M for new demographic/economic assumptions, increase of \$208.7M for updated trend rates, and decrease of \$216.3M for change in method from level dollar to level percent of pay.

Section 1: Actuarial Funding Results

Section 1.1: Actuarial Liabilities and Normal Cost

Peace Officer/Firefighter (\$'s in 000's)

As of June 30, 2018	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Retirement Benefits	\$ 901,396	\$ 777,909
Termination Benefits	17,046	6,496
Disability Benefits	2,323	(787)
Death Benefits	10,504	6,452
Return of Contributions	1,959	(5,312)
Medical and Prescription Drug Benefits	441,091	361,174
Medicare Part D Subsidy	(38,495)	(31,583)
Indebtedness	<u>(5,057)</u>	<u>(5,057)</u>
Subtotal	\$ 1,330,767	\$ 1,109,292
Inactive Members		
Not Vested	\$ 2,114	\$ 2,114
Vested Terminations		
- Retirement Benefits	35,099	35,099
- Medical and Prescription Drug Benefits	42,599	42,599
- Medicare Part D Subsidy	(4,279)	(4,279)
- Indebtedness	(806)	(806)
Retirees & Beneficiaries		
- Retirement Benefits	1,496,193	1,496,193
- Medical and Prescription Drug Benefits	629,495	629,495
- Medicare Part D Subsidy	<u>(71,278)</u>	<u>(71,278)</u>
Subtotal	\$ 2,129,137	\$ 2,129,137
Total	\$ 3,459,904	\$ 3,238,429
Total Pension	\$ 2,460,771	\$ 2,312,301
Total Medical, Net of Part D Subsidy	\$ 999,133	\$ 926,128
Total Medical, Gross of Part D Subsidy	\$ 1,113,185	\$ 1,033,268

As of June 30, 2018	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
By Tier		
Tier 1		
- Pension	\$ 1,058,806	\$ 1,057,071
- Medical, Net of Part D Subsidy	350,021	348,863
Tier 2		
- Pension	640,562	618,314
- Medical, Net of Part D Subsidy	278,626	268,727
Tier 3		
- Pension	761,403	636,916
- Medical, Net of Part D Subsidy	<u>370,486</u>	<u>308,538</u>
Total	\$ 3,459,904	\$ 3,238,429

As of June 30, 2018	Normal Cost
Active Members	
Retirement Benefits	\$ 20,313
Termination Benefits	1,785
Disability Benefits	526
Death Benefits	712
Return of Contributions	1,217
Medical and Prescription Drug Benefits	12,779
Medicare Part D Subsidy	(1,128)
Rehire Assumption (Pension)	4,608
Rehire Assumption (Medical)	1,991
Administrative Expenses (Pension)	1,339
Administrative Expenses (Medical)	<u>577</u>
Subtotal	\$ 44,719
Total	\$ 44,719
Total Pension	\$ 30,500
Total Medical, Net of Part D Subsidy	\$ 14,219
Total Medical, Gross of Part D Subsidy	\$ 15,347

By Tier	
Tier 1	
- Pension	\$ 689
- Medical, Net of Part D Subsidy	448
Tier 2	
- Pension	6,333
- Medical, Net of Part D Subsidy	2,678
Tier 3	
- Pension	23,478
- Medical, Net of Part D Subsidy	<u>11,093</u>
Total	\$ 44,719

Actuarial Liabilities and Normal Cost – Others (\$'s in 000's)

As of June 30, 2018	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Retirement Benefits	\$ 3,815,509	\$ 3,418,447
Termination Benefits	261,426	144,395
Disability Benefits	20,056	5,245
Death Benefits	54,293	41,395
Return of Contributions	17,335	(37,399)
Medical and Prescription Drug Benefits	2,545,813	2,035,328
Medicare Part D Subsidy	(308,888)	(253,312)
Indebtedness	<u>(46,569)</u>	<u>(46,569)</u>
Subtotal	\$ 6,358,975	\$ 5,307,530
Inactive Members		
Not Vested	\$ 71,280	\$ 71,280
Vested Terminations		
- Retirement Benefits	614,502	614,502
- Medical and Prescription Drug Benefits	966,588	966,588
- Medicare Part D Subsidy	(102,175)	(102,175)
- Indebtedness	(13,129)	(13,129)
Retirees & Beneficiaries		
- Retirement Benefits	8,095,565	8,095,565
- Medical and Prescription Drug Benefits	4,752,943	4,752,943
- Medicare Part D Subsidy	<u>(667,396)</u>	<u>(667,396)</u>
Subtotal	\$ 13,718,178	\$ 13,718,178
Total	\$ 20,077,153	\$ 19,025,708
Total Pension	\$ 12,890,268	\$ 12,293,732
Total Medical, Net of Part D Subsidy	\$ 7,186,885	\$ 6,731,976
Total Medical, Gross of Part D Subsidy	\$ 8,265,344	\$ 7,754,859

As of June 30, 2018	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
By Tier		
Tier 1		
- Pension	\$ 6,404,928	\$ 6,361,603
- Medical, Net of Part D Subsidy	2,982,605	2,936,887
Tier 2		
- Pension	3,519,788	3,379,335
- Medical, Net of Part D Subsidy	2,095,625	1,987,980
Tier 3		
- Pension	2,965,552	2,552,794
- Medical, Net of Part D Subsidy	<u>2,108,655</u>	<u>1,807,109</u>
Total	\$ 20,077,153	\$ 19,025,708

As of June 30, 2018	Normal Cost
Active Members	
Retirement Benefits	\$ 70,889
Termination Benefits	17,508
Disability Benefits	2,355
Death Benefits	2,241
Return of Contributions	8,727
Medical and Prescription Drug Benefits	85,902
Medicare Part D Subsidy	(9,409)
Rehire Assumption (Pension)	19,093
Rehire Assumption (Medical)	13,073
Administrative Expenses (Pension)	5,549
Administrative Expenses (Medical)	<u>3,788</u>
Subtotal	\$ 219,716
Total	\$ 219,716
Total Pension	\$ 126,362
Total Medical, Net of Part D Subsidy	\$ 93,354
Total Medical, Gross of Part D Subsidy	\$ 102,763

By Tier	
Tier 1	
- Pension	\$ 14,977
- Medical, Net of Part D Subsidy	15,295
Tier 2	
- Pension	33,581
- Medical, Net of Part D Subsidy	24,326
Tier 3	
- Pension	77,804
- Medical, Net of Part D Subsidy	<u>53,733</u>
Total	\$ 219,716

Actuarial Liabilities and Normal Cost – All Members (\$'s in 000's)

As of June 30, 2018	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Retirement Benefits	\$ 4,716,905	\$ 4,196,356
Termination Benefits	278,472	150,891
Disability Benefits	22,379	4,458
Death Benefits	64,797	47,847
Return of Contributions	19,294	(42,711)
Medical and Prescription Drug Benefits	2,986,904	2,396,502
Medicare Part D Subsidy	(347,383)	(284,895)
Indebtedness	<u>(51,626)</u>	<u>(51,626)</u>
Subtotal	\$ 7,689,742	\$ 6,416,822
Inactive Members		
Not Vested	\$ 73,394	\$ 73,394
Vested Terminations		
- Retirement Benefits	649,601	649,601
- Medical and Prescription Drug Benefits	1,009,187	1,009,187
- Medicare Part D Subsidy	(106,454)	(106,454)
- Indebtedness	(13,935)	(13,935)
Retirees & Beneficiaries		
- Retirement Benefits	9,591,758	9,591,758
- Medical and Prescription Drug Benefits	5,382,438	5,382,438
- Medicare Part D Subsidy	<u>(738,674)</u>	<u>(738,674)</u>
Subtotal	\$ 15,847,315	\$ 15,847,315
Total	\$ 23,537,057	\$ 22,264,137
Total Pension	\$ 15,351,039	\$ 14,606,033
Total Medical, Net of Part D Subsidy	\$ 8,186,018	\$ 7,658,104
Total Medical, Gross of Part D Subsidy	\$ 9,378,529	\$ 8,788,127

As of June 30, 2018	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
By Tier		
Tier 1		
- Pension	\$ 7,463,734	\$ 7,418,674
- Medical, Net of Part D Subsidy	3,332,626	3,285,750
Tier 2		
- Pension	4,160,350	3,997,649
- Medical, Net of Part D Subsidy	2,374,251	2,256,707
Tier 3		
- Pension	3,726,955	3,189,710
- Medical, Net of Part D Subsidy	<u>2,479,141</u>	<u>2,115,647</u>
Total	\$ 23,537,057	\$ 22,264,137

As of June 30, 2018	Normal Cost
Active Members	
Retirement Benefits	\$ 91,202
Termination Benefits	19,293
Disability Benefits	2,881
Death Benefits	2,953
Return of Contributions	9,944
Medical and Prescription Drug Benefits	98,681
Medicare Part D Subsidy	(10,537)
Rehire Assumption (Pension)	23,701
Rehire Assumption (Medical)	15,064
Administrative Expenses (Pension)	6,888
Administrative Expenses (Medical)	<u>4,365</u>
Subtotal	\$ 264,435
Total	\$ 264,435
Total Pension	\$ 156,862
Total Medical, Net of Part D Subsidy	\$ 107,573
Total Medical, Gross of Part D Subsidy	\$ 118,110

By Tier	
Tier 1	
- Pension	\$ 15,666
- Medical, Net of Part D Subsidy	15,743
Tier 2	
- Pension	39,914
- Medical, Net of Part D Subsidy	27,004
Tier 3	
- Pension	101,282
- Medical, Net of Part D Subsidy	<u>64,826</u>
Total	\$ 264,435

Section 1.2: Actuarial Contributions as of June 30, 2018

Actuarial Contributions as of June 30, 2018 – Peace Officer/Firefighter (\$'s in 000's)

Normal Cost Rate	Pension	Healthcare	Total
1. Total Normal Cost	\$ 30,500	\$ 14,219	\$ 44,719
2. DB Rate Payroll Projected for FY19	166,847	166,847	166,847
3. DCR Rate Payroll Projected for FY19	155,356	155,356	155,356
4. Total Rate Payroll Projected for FY19	322,203	322,203	322,203
5. Normal Cost Rate			
a. Based on DB Rate Payroll, (1) ÷ (2)	18.28%	8.52%	26.80%
b. Based on Total Rate Payroll, (1) ÷ (4)	9.47%	4.41%	13.88%
6. Average Member Contribution Rate	3.88%	0.00%	3.88%
7. Employer Normal Cost, (5)(b) – (6)	5.59%	4.41%	10.00%
Past Service Rate			
1. Actuarial Accrued Liability	\$ 2,312,301	\$ 926,128	\$ 3,238,429
2. Valuation Assets ¹	<u>1,492,907</u>	<u>929,563</u>	<u>2,422,470</u>
3. Unfunded Actuarial Accrued Liability, (1) – (2)	\$ 819,394	\$ (3,435)	\$ 815,959
4. Funded Ratio, (2) ÷ (1)	64.6%	100.4%	74.8%
5. Past Service Cost Amortization Payment	57,920	(435)	57,485
6. Total Rate Payroll Projected for FY19	322,203	322,203	322,203
7. Past Service Rate, (5) ÷ (6)	17.98%	(0.14%)	17.98%
Total Employer/State Contribution Rate, not less than Normal Cost Rate	23.57%	4.41%	27.98%
Normal Cost Rate by Tier (Total Employer and Member)²			
Tier 1	19.18%	12.47%	31.65%
Tier 2	18.07%	7.64%	25.71%
Tier 3	18.31%	8.65%	26.96%
Maturity Ratio	66.3%	64.4%	65.8%

¹ Allocated between Peace Officer/Firefighter and Others in proportion to actuarial accrued liability.

² Rates determined considering the payroll for members in each tier. DCR payroll is excluded from these calculations.

Schedule of Past Service Cost Amortizations – Peace Officer/Firefighter Pension (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ 731,232	\$ 731,232	\$ 52,227
Experience Study	06/30/2018	25	88,162	88,162	5,693
Total				\$ 819,394	\$ 57,920

Schedule of Past Service Cost Amortizations – Peace Officer/Firefighter Healthcare (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ (30,991)	\$ (30,991)	\$ (2,214)
Experience Study and EGWP	06/30/2018	25	27,556	27,556	1,779
Total				\$ (3,435)	\$ (435)

Schedule of Past Service Cost Amortizations – Peace Officer/Firefighter Total (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ 700,241	\$ 700,241	\$ 50,013
Experience Study and EGWP	06/30/2018	25	115,718	115,718	7,472
Total				\$ 815,959	\$ 57,485

Actuarial Contributions as of June 30, 2018 – Others (\$'s in 000's)

Normal Cost Rate	Pension	Healthcare	Total
1. Total Normal Cost	\$ 126,362	\$ 93,354	\$ 219,716
2. DB Rate Payroll Projected for FY19	882,305	882,305	882,305
3. DCR Rate Payroll Projected for FY19	1,062,830	1,062,830	1,062,830
4. Total Rate Payroll Projected for FY19	1,945,135	1,945,135	1,945,135
5. Normal Cost Rate			
a. Based on DB Rate Payroll, (1) ÷ (2)	14.32%	10.58%	24.90%
b. Based on Total Rate Payroll, (1) ÷ (4)	6.50%	4.80%	11.30%
6. Average Member Contribution Rate	3.09%	0.00%	3.09%
7. Employer/State Normal Cost Rate, (5)(b) – (6)	3.41%	4.80%	8.21%
Past Service Rate			
1. Actuarial Accrued Liability	\$ 12,293,732	\$ 6,731,976	\$ 19,025,708
2. Valuation Assets ¹	<u>7,937,285</u>	<u>6,756,946</u>	<u>14,694,231</u>
3. Unfunded Actuarial Accrued Liability, (1) – (2)	\$ 4,356,447	\$ (24,970)	\$ 4,331,477
4. Funded Ratio, (2) ÷ (1)	64.6%	100.4%	77.3%
5. Past Service Cost Amortization Payment	307,949	(1,935)	306,014
6. Total Rate Payroll Projected for FY19	1,945,135	1,945,135	1,945,135
7. Past Service Rate, (5) ÷ (6)	15.83%	(0.10%)	15.83%
Total Employer/State Contribution Rate, not less than Normal Cost Rate	19.24%	4.80%	24.04%
Normal Cost Rate by Tier (Total Employer and Member)²			
Tier 1	17.54%	17.91%	35.45%
Tier 2	13.21%	9.57%	22.78%
Tier 3	14.34%	9.90%	24.24%
Maturity Ratio	71.3%	73.5%	72.1%

¹ Allocated between Peace Officer/Firefighter and Others in proportion to actuarial accrued liability.

² Rates determined considering the payroll for members in each tier. DCR payroll is excluded from these calculations.

Schedule of Past Service Cost Amortizations – Others Pension (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ 3,889,167	\$ 3,889,167	\$ 277,776
Experience Study	06/30/2018	25	467,280	467,280	30,173
Total				\$ 4,356,447	\$ 307,949

Schedule of Past Service Cost Amortizations – Others Healthcare (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ (47,263)	\$ (47,263)	\$ (3,375)
Experience Study and EGWP	06/30/2018	25	22,293	22,293	1,440
Total				\$ (24,970)	\$ (1,935)

Schedule of Past Service Cost Amortizations – Others Total (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ 3,841,904	\$ 3,841,904	\$ 274,401
Experience Study and EGWP	06/30/2018	25	489,573	489,573	31,613
Total				\$ 4,331,477	\$ 306,014

Actuarial Contributions as of June 30, 2018 – All Members (\$'s in 000's)

Normal Cost Rate	Pension	Healthcare	Total
1. Total Normal Cost	\$ 156,862	\$ 107,573	\$ 264,435
2. DB Rate Payroll Projected for FY19	1,049,152	1,049,152	1,049,152
3. DCR Rate Payroll Projected for FY19	1,218,186	1,218,186	1,218,186
4. Total Rate Payroll Projected for FY19	2,267,338	2,267,338	2,267,338
5. Normal Cost Rate			
a. Based on DB Rate Payroll, (1) ÷ (2)	14.95%	10.25%	25.20%
b. Based on Total Rate Payroll, (1) ÷ (4)	6.92%	4.74%	11.66%
6. Average Member Contribution Rate ¹	3.21%	0.00%	3.21%
7. Employer Normal Cost Rate, (5)(b) – (6)	3.71%	4.74%	8.45%
Past Service Rate			
1. Actuarial Accrued Liability	\$ 14,606,033	\$ 7,658,104	\$ 22,264,137
2. Valuation Assets	<u>9,430,192</u>	<u>7,686,509</u>	<u>17,116,701</u>
3. Unfunded Actuarial Accrued Liability, (1) – (2)	\$ 5,175,841	\$ (28,405)	\$ 5,147,436
4. Funded Ratio, (2) ÷ (1)	64.6%	100.4%	76.9%
5. Past Service Cost Amortization Payment	365,869	(2,370)	363,499
6. Total Rate Payroll Projected for FY19	2,267,338	2,267,338	2,267,338
7. Past Service Rate, (5) ÷ (6)	16.14%	(0.10%)	16.14%
Total Employer/State Contribution Rate, not less than Normal Cost Rate	19.85%	4.74%	24.59%
Normal Cost Rate by Tier (Total Employer and Member)²			
Tier 1	17.61%	17.69%	35.30%
Tier 2	13.80%	9.34%	23.14%
Tier 3	15.10%	9.66%	24.76%
Maturity Ratio	70.5%	72.4%	71.2%

¹ 7.5% for Peace Officer/Firefighter and 6.82% weighted average for Others.

² Rates determined considering the DB payroll for members in each tier. DCR payroll is excluded from these calculations.

Schedule of Past Service Cost Amortizations – All Members Pension (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ 4,620,399 ¹	\$ 4,620,399	\$ 330,003
Experience Study	06/30/2018	25	555,442	555,442	35,866
Total				\$ 5,175,841	\$ 365,869

Schedule of Past Service Cost Amortizations – All Members Healthcare (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ (78,254) ²	\$ (78,254)	\$ (5,589)
Experience Study and EGWP	06/30/2018	25	49,849	49,849	3,219
Total				\$ (28,405)	\$ (2,370)

Schedule of Past Service Cost Amortizations – All Members Total (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Left	Initial	Outstanding	
Initial Amount	06/30/2018	21	\$ 4,542,145 ³	\$ 4,542,145	\$ 324,414
Experience Study and EGWP	06/30/2018	25	605,291	605,291	39,085
Total				\$ 5,147,436	\$ 363,499

¹ \$4,633,411 UAAL at 6/30/18 based on the 2017 valuation plus \$(13,012) FY18 gain.

² \$495,511 UAAL at 6/30/18 based on the 2017 valuation plus \$(573,765) FY18 gain.

³ \$5,128,922 UAAL at 6/30/18 based on the 2017 valuation plus \$(586,777) FY18 gain.

Section 1.3: Roll Forward Contribution Rate Calculation for FY21 (\$'s in 000's)

	Pension	Healthcare	Total
1. Liability Roll Forward			
a. Actuarial Accrued Liability as of June 30, 2018	\$ 14,606,033	\$ 7,658,104	\$ 22,264,137
b. Normal Cost	149,974	103,208	253,182
c. Interest on (a) and (b) at 7.38%	1,088,993	572,785	1,661,778
d. Estimated Benefit Payments	(856,889)	(403,403)	(1,260,292)
e. Interest on (d) at 7.38%, adjusted for timing	(33,695)	(15,863)	(49,558)
f. Expected Actuarial Accrued Liability as of June 30, 2019	\$ 14,954,416	\$ 7,914,831	\$ 22,869,247
g. Projected Normal Cost	135,478	93,332	228,810
h. Interest on (f) and (g) at 7.38%	1,113,634	591,002	1,704,636
i. Estimated Benefit Payments	(906,428)	(422,107)	(1,328,535)
j. Interest on (i) at 7.38%, adjusted for timing	(35,643)	(16,598)	(52,241)
k. Expected Actuarial Accrued Liability as of June 30, 2020	\$ 15,261,457	\$ 8,160,460	\$ 23,421,917
2. Asset Roll Forward			
a. Actuarial Value of Assets as of June 30, 2018	\$ 9,430,192	\$ 7,686,509	\$ 17,116,701
b. Interest on (a) at 7.38%	695,948	567,264	1,263,212
c. Employee Contributions	79,576	0	79,576
d. Employer Contributions	301,556	85,252	386,808
e. State Assistance Contributions	135,219	0	135,219
f. Interest on (c) – (e) at 7.38%, adjusted for timing*	22,934	3,090	26,024
g. Estimated Benefit payments	(856,889)	(403,403)	(1,260,292)
h. AVA Adjustments	(154,338)	(118,109)	(272,447)
i. Interest on (g) at 7.38%, adjusted for timing	(33,695)	(15,863)	(49,558)
j. Expected Actuarial Value of Assets as of June 30, 2019	\$ 9,620,503	\$ 7,804,740	\$ 17,425,243
k. Interest on (j) at 7.38%	709,993	575,990	1,285,983
l. Employee Contributions	73,935	0	73,935
m. Employer Contributions	287,417	90,331	377,748
n. State Assistance Contributions**	159,055	0	159,055
o. Interest on (l) – (n) at 7.38%, adjusted for timing*	24,835	3,274	28,109
p. Estimated Benefit payments	(906,428)	(422,107)	(1,328,535)
q. AVA Adjustments	(62,548)	(39,715)	(102,263)
r. Interest on (p) at 7.38%, adjusted for timing	(35,643)	(16,598)	(52,241)
s. Expected Actuarial Value of Assets as of June 30, 2020	\$ 9,871,119	\$ 7,995,915	\$ 17,867,034
3. Expected Unfunded Actuarial Accrued Liability as of June 30, 2020, 1(k)-2(s)	\$ 5,390,338	\$ 164,545	\$ 5,554,883

*Employee and Employer Contributions are paid throughout the year. State Assistance Contributions for FY19 were paid on August 1, 2018, and are assumed to be paid on July 1, 2019 for FY20.

**The FY20 State Assistance Contribution is expected to be contributed 100% to pension.

	Pension	Healthcare	Total
4. Expected Annual Rate Payroll for FY21			
a. Defined Benefit Members			\$ 885,213
b. Defined Contribution Retirement Members			1,415,185
c. Total Rate Payroll			\$ 2,300,398
5. Expected FY21 Contribution Rate Calculation			
a. Projected Normal Cost for FY21	\$ 127,679	\$ 87,776	\$ 215,455
b. Projected Normal Cost Rate for FY21	5.55%	3.82%	9.37%
c. Expected Member Contribution Rate for FY21	(2.67%)	0.00%	(2.67%)
d. Expected Employer Normal Cost Rate for FY21	2.88%	3.82%	6.70%
e. Expected Unfunded Liability as of June 30, 2020	\$ 5,390,338	\$ 164,545	\$ 5,554,883
f. FY21 Layered Amortization of Expected Unfunded Liability	402,526	10,097	412,623
g. Expected Past Service Cost Contribution Rate for FY21	17.50%	0.44%	17.94%
h. Expected Total Contribution Rate for FY21	20.38%	4.26%	24.64%

The components of the expected FY21 amortization amounts are shown below (totals may not add due to rounding):

Expected FY21 Schedule of Past Service Cost Amortizations – Pension (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment for FY21
	Date Created	Years Left at 6/30/2020	Initial	Outstanding at 6/30/2020	
Initial Amount	06/30/2018	19	\$ 4,620,399	\$ 4,582,924	\$ 348,403
Experience Study	06/30/2018	23	555,442	559,524	37,866
Expected (Gain)/Loss FY19	06/30/2019	24	168,964	169,718	11,210
Expected (Gain)/Loss FY20	06/30/2020	25	78,172	78,172	5,047
Total				\$ 5,390,338	\$ 402,526

Expected FY21 Schedule of Past Service Cost Amortizations – Healthcare (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment for FY21
	Date Created	Years Left at 6/30/2020	Initial	Outstanding at 6/30/2020	
Initial Amount	06/30/2018	19	\$ (78,254)	\$ (77,620)	\$ (5,901)
Experience Study and EGWP	06/30/2018	23	49,849	50,216	3,398
Expected (Gain)/Loss FY19	06/30/2019	24	138,046	138,662	9,159
Expected (Gain)/Loss FY20	06/30/2020	25	53,287	53,287	3,441
Total				\$ 164,545	\$ 10,097

Expected FY21 Schedule of Past Service Cost Amortizations – Total (\$'s in 000's)

Layer	Amortization Period		Balances		Beginning-of-Year Payment for FY21
	Date Created	Years Left at 6/30/2020	Initial	Outstanding at 6/30/2020	
Initial Amount	06/30/2018	19	\$ 4,542,145	\$ 4,505,304	\$ 342,502
Experience Study and EGWP	06/30/2018	23	605,291	609,740	41,264
Expected (Gain)/Loss FY19	06/30/2019	24	307,010	308,380	20,369
Expected (Gain)/Loss FY20	06/30/2020	25	131,459	131,459	8,488
Total				\$ 5,554,883	\$ 412,623

Section 1.4: Actuarial Gain/(Loss) for FY18 (\$'s in 000's)

	Pension	Healthcare	Total
1. Expected Actuarial Accrued Liability			
a. Actuarial Accrued Liability, June 30, 2017	\$ 13,832,130	\$ 8,049,265	\$ 21,881,395
b. Normal Cost	170,816	73,519	244,335
c. Interest on (a) and (b) at 8.00%	1,120,236	649,823	1,770,059
d. Benefit Payments	(801,155)	(422,378)	(1,223,533)
e. Refund of Contributions	(11,722)	0	(11,722)
f. Interest on (d) and (e) at 8.00%, adjusted for timing	(34,603)	(17,980)	(52,583)
g. Experience Study Assumptions/Methods and EGWP	<u>555,442</u>	<u>49,849</u>	<u>605,291</u>
h. Expected Actuarial Accrued Liability as of June 30, 2018, (a) + (b) + (c) + (d) + (e) + (f) + (g)	\$ 14,831,144	\$ 8,382,098	\$ 23,213,242
2. Actual Actuarial Accrued Liability, June 30, 2018	<u>14,606,033</u>	<u>7,658,104</u>	<u>22,264,137</u>
3. Liability Gain/(Loss), (1)(h) – (2)	\$ 225,111	\$ 723,994	\$ 949,105
4. Expected Actuarial Asset Value			
a. Actuarial Asset Value, June 30, 2017	\$ 9,229,703	\$ 7,557,068	\$ 16,786,771
b. Interest on (a) at 8.00%	738,376	604,565	1,342,941
c. Employee Contributions	84,956	0	84,956
d. Employer Contributions	299,664	85,731	385,395
e. State Assistance Contributions	72,719	0	72,719
f. Medicare Part D Subsidy	0	5,965	5,965
g. Interest on (c), (d), (e) and (f) at 8.00%, adjusted for timing	20,404	3,597	24,001
h. Benefit Payments	(801,155)	(422,378)	(1,223,533)
i. Refund of Contributions	(11,722)	0	(11,722)
j. Interest on (h) and (i) at 8.00%, adjusted for timing	<u>(34,603)</u>	<u>(17,980)</u>	<u>(52,583)</u>
k. Expected Actuarial Asset Value, June 30, 2018, (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) + (i) + (j)	\$ 9,598,342	\$ 7,816,568	\$ 17,414,910
5. Actuarial Asset Value, June 30, 2018	<u>9,430,192</u>	<u>7,686,509</u>	<u>17,116,701</u>
6. Actuarial Asset Gain/(Loss), (5) – (4)(k)	\$ (168,150)	\$ (130,059)	\$ (298,209)
7. Total Actuarial Gain/(Loss), (3) + (6)	\$ 56,961	\$ 593,935	\$ 650,896
8. Contribution Gain/(Loss)	\$ (43,949)	\$ (20,170)	\$ (64,119)
9. FY18 Gain/(Loss), (7) + (8)	\$ 13,012	\$ 573,765	\$ 586,777

Section 1.5: Development of Change in Unfunded Liability During FY18
(\$'s in 000's)

	Pension	Healthcare	Total
1. 2017 Unfunded Liability	\$ 4,602,427	\$ 492,197	\$ 5,094,624
a. Interest on Unfunded Liability at 8.00%	\$ 368,194	\$ 39,376	\$ 407,570
b. Normal Cost	170,816	73,519	244,335
c. Employee Contributions	(84,956)	0	(84,956)
d. Employer Contributions	(299,664)	(85,731)	(385,395)
e. State Assistance Contributions	(72,719)	0	(72,719)
f. Medicare Part D Subsidy	0	(5,965)	(5,965)
g. Interest on (b)-(f) at 8.00%, adjusted for timing	(6,738)	2,285	(4,453)
h. Experience Study Assumptions/Methods and EGWP	<u>555,442</u>	<u>49,849</u>	<u>605,291</u>
i. Expected change in Unfunded Liability during FY18	\$ 630,375	\$ 73,333	\$ 703,708
2. Expected 2018 Unfunded Liability, (1) + (1)(i)	\$ 5,232,802	\$ 565,530	\$ 5,798,332
a. Liability (gain)/loss during FY18	\$ (225,111)	\$ (723,994)	\$ (949,105)
b. Actuarial Assets (gain)/loss during FY18	<u>168,150</u>	<u>130,059</u>	<u>298,209</u>
c. Total actuarial (gain)/loss during FY18	\$ (56,961)	\$ (593,935)	\$ (650,896)
3. Actual 2018 Unfunded Liability, (2) + (2)(c)	\$ 5,175,841	\$ (28,405)	\$ 5,147,436

Section 1.6: Analysis of Financial Experience

Pension

Change in Employer/State Contribution Rate

Due to (Gains) and Losses in Actuarial Accrued Liabilities During the Last Five Fiscal Years
Resulting From Differences Between Assumed Experience and Actual Experience

Type of (Gain) or Loss	Change in Employer/State Contribution Rate During Fiscal Year				
	2014	2015	Pension 2016	2017	2018
1. Health Claims	N/A	N/A	N/A	N/A	N/A
2. Salary Experience	(0.19)%	(0.32)%	(0.35)%	(0.42)%	(0.37)%
3. Investment Experience	(2.40)%	0.24%	0.77%	0.75%	0.63%
4. Demographic Experience and Miscellaneous	(0.04)%	0.34%	0.13%	(1.01)%	(0.24)%
5. Contribution Shortfall	<u>0.63%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.18%</u>	<u>0.17%</u>
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(2.00)%	0.26%	0.55%	(0.50)%	0.19%
7. Assumptions/Method Changes	(6.86)%	0.00%	1.92%	0.00%	1.98%
8. System Benefit Changes	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	(8.86)%	0.26%	2.47%	(0.50)%	2.17%
10. Beginning Total Employer/State Contribution Rate	<u>24.84%</u>	<u>15.98%</u>	<u>16.24%</u>	<u>18.71%</u>	<u>18.21%</u>
11. Ending Valuation Year Employer/State Contribution Rate, (9) + (10)	15.98%	16.24%	18.71%	18.21%	20.38%
12. Fiscal Year Rates					
13. Fiscal Year Employer/State Contribution Rate	15.98%	17.27%	18.27%	18.29%	20.38%*
14. Fiscal Year for Which Rate Applies	FY17	FY18	FY19	FY20	FY21

*Expected. Actual rate to be determined.

Healthcare

Change in Employer/State Contribution Rate

Due to (Gains) and Losses in Actuarial Accrued Liabilities During the Last Five Fiscal Years

Resulting From Differences Between Assumed Experience and Actual Experience

Type of (Gain) or Loss	Change in Employer/State Contribution Rate During Fiscal Year				
	Healthcare				
	2014	2015	2016	2017	2018
1. Health Claims ¹	(0.85)%	(3.65)%	1.02%	(2.90)%	(1.75)%
2. Salary Experience	N/A	N/A	N/A	N/A	N/A
3. Investment Experience	(2.23)%	0.21%	0.63%	0.61%	0.49%
4. Demographic Experience and Miscellaneous	N/A	N/A	N/A	(0.96)%	(1.64)%
5. Contribution Shortfall	<u>0.04%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>(0.14)%</u>	<u>0.08%</u>
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(3.04)%	(3.44)%	1.65%	(3.39)%	(2.82)%
7. Assumptions/Method Changes and EGWP	(6.60)%	0.00%	0.93%	3.41%	2.12%
8. System Benefit Changes	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	(9.64)%	(3.44)%	2.58%	0.02%	(0.70)%
10. Beginning Total Employer/State Contribution Rate	<u>15.44%</u>	<u>5.80%</u>	<u>2.36%</u>	<u>4.94%</u>	<u>4.96%</u>
11. Ending Valuation Year Employer/State Contribution Rate, (9) + (10)	5.80%	2.36%	4.94%	4.96%	4.26%
12. Fiscal Year Rates					
a. Fiscal Year Employer/State Contribution Rate	5.80%	3.11%	4.37%	4.89%	4.26%*
b. Fiscal Year for Which Rate Applies	FY17	FY18	FY19	FY20	FY21

*Expected. Actual rate to be determined.

¹ Prior to 2017, the health claims percentages include the effects of healthcare demographic experience gains/losses.

**Total
Change in Employer/State Contribution Rate
Due to (Gains) and Losses in Actuarial Accrued Liabilities During the Last Five Fiscal Years
Resulting From Differences Between Assumed Experience and Actual Experience**

Type of (Gain) or Loss	Change in Employer/State Contribution Rate During Fiscal Year				
	2014	2015	Total 2016	2017	2018
1. Health Claims ¹	(0.85)%	(3.65)%	1.02%	(2.90)%	(1.75)%
2. Salary Experience	(0.19)%	(0.32)%	(0.35)%	(0.42)%	(0.37)%
3. Investment Experience	(4.63)%	0.45%	1.40%	1.36%	1.12%
4. Demographic Experience and Miscellaneous	(0.04)%	0.34%	0.13%	(1.97)%	(1.88)%
5. Contribution Shortfall	<u>0.67%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.04%</u>	<u>0.25%</u>
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(5.04)%	(3.18)%	2.20%	(3.89)%	(2.63)%
7. Assumptions/Method Changes and EGWP	(13.46)%	0.00%	2.85%	3.41%	4.10%
8. System Benefit Changes	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>	<u>0.00%</u>
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	(18.50)%	(3.18)%	5.05%	(0.48)%	1.47%
10. Beginning Total Employer/State Contribution Rate	<u>40.28%</u>	<u>21.78%</u>	<u>18.60%</u>	<u>23.65%</u>	<u>23.17%</u>
11. Ending Valuation Year Employer/State Contribution Rate, (9) + (10)	21.78%	18.60%	23.65%	23.17%	24.64%
12. Fiscal Year Rates					
a. Fiscal Year Employer/State Contribution Rate	21.78%	20.38%	22.64%	23.18%	24.64%*
b. Fiscal Year for Which Rate Applies	FY17	FY18	FY19	FY20	FY21

*Expected. Actual rate to be determined.

¹ Prior to 2017, the health claims percentages include the effects of healthcare demographic experience gains/losses.

Section 1.7: History of Unfunded Liability and Funded Ratio (\$'s in 000's)

Valuation Date	Total Actuarial Accrued Liability	Valuation Assets	Assets as a Percent of Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability (UAAL)
June 30, 2003	10,561,653	7,687,281	72.8%	2,874,372
June 30, 2004	11,443,916	8,030,414	70.2%	3,413,502
June 30, 2005	12,844,841	8,442,919	65.7%	4,401,922
June 30, 2006	14,388,413	9,040,908	62.8%	5,347,505
June 30, 2007	14,570,933	9,900,960	68.0%	4,669,973
June 30, 2008	15,888,141	11,040,106	69.5%	4,848,035
June 30, 2009	16,579,371	10,242,978	61.8%	6,336,393
June 30, 2010	18,132,492	11,157,464	61.5%	6,975,028
June 30, 2011	18,740,550	11,813,774	63.0%	6,926,776
June 30, 2012	19,292,361	11,832,030	61.3%	7,460,331
June 30, 2013	19,992,759	12,162,626	60.8%	7,830,133
June 30, 2014	20,897,372	14,644,598	70.1%	6,252,774
June 30, 2015	20,648,663	16,173,459	78.3%	4,475,204
June 30, 2016	21,369,490	16,467,992	77.1%	4,901,498
June 30, 2017	21,881,395	16,786,771	76.7%	5,094,624
June 30, 2018	22,264,137	17,116,701	76.9%	5,147,436

Section 2: Plan Assets

Section 2.1: Summary of Fair Value of Assets (\$'s in 000's)

As of June 30, 2018	Pension	Healthcare	Total Fair Value	Allocation Percent
Cash and Short-Term Investments				
- Cash and Cash Equivalents	\$ 90,865	\$ 66,572	\$ 157,437	0.9%
- Subtotal	\$ 90,865	\$ 66,572	\$ 157,437	0.9%
Fixed Income Investments				
- Domestic Fixed Income Pool	\$ 1,153,715	\$ 952,229	\$ 2,105,944	12.4%
- International Fixed Income Pool	0	0	0	0.0%
- Tactical Fixed Income Pool	119,819	98,842	218,661	1.3%
- High Yield Pool	109	90	199	nil
- Treasury Inflation Protection Pool	20,066	16,568	36,634	0.2%
- Emerging Debt Pool	<u>0</u>	<u>0</u>	<u>0</u>	<u>0.0%</u>
- Subtotal	\$ 1,293,709	\$ 1,067,729	\$ 2,361,438	13.9%
Equity Investments				
- Domestic Equity Pool	\$ 2,171,777	\$ 1,793,318	\$ 3,965,095	23.3%
- International Equity Pool	1,722,637	1,421,908	3,144,545	18.5%
- Private Equity Pool	856,856	707,495	1,564,351	9.2%
- Emerging Markets Equity Pool	268,481	222,127	490,608	2.9%
- Alternative Equity Strategies	<u>469,255</u>	<u>387,837</u>	<u>857,092</u>	<u>5.0%</u>
- Subtotal	\$ 5,489,006	\$ 4,532,685	\$ 10,021,691	58.9%
Other Investments				
- Real Estate Pool	\$ 657,449	\$ 542,889	\$ 1,200,338	7.1%
- Other Investments Pool	1,094,337	903,580	1,997,917	11.8%
- Absolute Return Pool	687,999	568,072	1,256,071	7.4%
- Other Assets	<u>15</u>	<u>967</u>	<u>982</u>	<u>nil</u>
- Subtotal	\$ 2,439,800	\$ 2,015,508	\$ 4,455,308	26.3%
Total Cash and Investments	\$ 9,313,380	\$ 7,682,494	\$ 16,995,874	100.0%
Net Accrued Receivables	<u>(6,705)</u>	<u>(70,493)</u>	<u>(77,198)</u>	
Net Assets	\$ 9,306,675	\$ 7,612,001	\$ 16,918,676	

Section 2.2: Changes in Fair Value of Assets During FY18 (\$'s in 000's)

Fiscal Year 2018	Pension	Healthcare	Total Fair Value
1. Fair Value of Assets, June 30, 2017	\$ 8,943,127	\$ 7,338,952	\$ 16,282,079
2. Additions:			
a. Employee Contributions	\$ 84,956	\$ 0	\$ 84,956
b. Employer Contributions	299,664	85,731	385,395
c. State Assistance Contributions	72,719	0	72,719
d. Interest and Dividend Income	156,244	129,555	285,799
e. Net Appreciation/(Depreciation) in Fair Value of Investments	574,033	472,891	1,046,924
f. Medicare Part D Subsidy	0	5,965	5,965
g. Other	<u>26</u>	<u>20,374</u>	<u>20,400</u>
h. Total Additions	\$ 1,187,642	\$ 714,516	\$ 1,902,158
3. Deductions:			
a. Medical Benefits	\$ 0	\$ 422,378	\$ 422,378
b. Retirement Benefits	801,155	0	801,155
c. Refunds of Contributions	11,722	0	11,722
d. Investment Expenses	4,967	4,104	9,071
e. Administrative Expenses	<u>6,250</u>	<u>14,985</u>	<u>21,235</u>
f. Total Deductions	\$ 824,094	\$ 441,467	\$ 1,265,561
4. Fair Value of Assets, June 30, 2018	\$ 9,306,675	\$ 7,612,001	\$ 16,918,676
Approximate Fair Value Investment Return Rate During FY18 Net of All Expenses	8.2%	8.1%	8.2%
Liquidity Factor	11.2	17.7	13.4

Section 2.3: Development of Actuarial Value of Assets (\$'s in 000's)

The actuarial value of assets was set equal to the fair value at June 30, 2014 and the 20% corridor was eliminated. Investment gains and losses after June 30, 2014 are recognized 20% per year over 5 years.

	Pension	Healthcare	Total
1. Deferral of Investment Gain/(Loss) for FY18			
a. Fair Value, June 30, 2017	\$ 8,943,127	\$ 7,338,952	\$ 16,282,079
b. Contributions	457,339	85,731	543,070
c. Medicare Part D Subsidy	0	5,965	5,965
d. Benefit Payments	812,877	422,378	1,235,255
e. Actual Investment Return (net of expenses)	719,086	603,731	1,322,817
f. Expected Return Rate	8.00%	8.00%	8.00%
g. Expected Return - Weighted for Timing	701,252	572,734	1,273,985
h. Investment Gain/(Loss) for the Year, (e) – (g)	17,834	30,997	48,832
2. Actuarial Value, June 30, 2018			
a. Fair Value, June 30, 2018	\$ 9,306,675	\$ 7,612,001	\$ 16,918,676
b. Deferred Investment Gain/(Loss)	(123,517)	(74,508)	(198,025)
c. Actuarial Value, June 30, 2018, (a) – (b)	\$ 9,430,192	\$ 7,686,509	\$ 17,116,701
3. Ratio of Actuarial Value of Assets to Fair Value of Assets	101.3%	101.0%	101.2%
4. Approximate Actuarial Value Investment Return Rate During FY18 Net of All Expenses	6.1%	5.9%	6.1%

The tables below show the development of gains/(losses) to be recognized in the current year (\$'s in 000's).

Pension				
Plan Year Ended	Asset Gain/(Loss)	Gain/(Loss) Recognized in Prior Years	Gain/(Loss) Recognized This Year	Gain/(Loss) Deferred to Future Years
6/30/2015	(405,373)	(243,225)	(81,075)	(81,073)
6/30/2016	(732,190)	(292,876)	(146,438)	(292,876)
6/30/2017	393,607	78,721	78,721	236,165
6/30/2018	<u>17,834</u>	<u>0</u>	<u>3,567</u>	<u>14,267</u>
Total	\$ (726,122)	\$ (457,380)	\$ (145,225)	\$ (123,517)

Healthcare				
Plan Year Ended	Asset Gain/(Loss)	Gain/(Loss) Recognized in Prior Years	Gain/(Loss) Recognized This Year	Gain/(Loss) Deferred to Future Years
6/30/2015	(350,420)	(210,252)	(70,084)	(70,084)
6/30/2016	(584,781)	(233,912)	(116,956)	(233,913)
6/30/2017	341,151	68,230	68,230	204,691
6/30/2018	<u>30,997</u>	<u>0</u>	<u>6,199</u>	<u>24,798</u>
Total	\$ (563,053)	\$ (375,934)	\$ (112,611)	\$ (74,508)

Total				
Plan Year Ended	Asset Gain/(Loss)	Gain/(Loss) Recognized in Prior Years	Gain/(Loss) Recognized This Year	Gain/(Loss) Deferred to Future Years
6/30/2015	(755,793)	(453,477)	(151,159)	(151,157)
6/30/2016	(1,316,971)	(526,788)	(263,394)	(526,789)
6/30/2017	734,758	146,951	146,951	440,856
6/30/2018	<u>48,831</u>	<u>0</u>	<u>9,766</u>	<u>39,065</u>
Total	\$ (1,289,175)	\$ (833,314)	\$ (257,836)	\$ (198,025)

Section 2.4: Historical Asset Rates of Return

Year Ending	Actuarial Value		Fair Value	
	Annual	Cumulative*	Annual	Cumulative*
June 30, 2005	8.7%	8.7%	8.5%	8.5%
June 30, 2006	9.3%	9.0%	11.4%	9.9%
June 30, 2007	11.6%	9.9%	18.5%	12.7%
June 30, 2008	10.0%	9.9%	(3.1)%	8.5%
June 30, 2009	(7.3)%	6.2%	(20.5)%	2.0%
June 30, 2010	7.2%	6.4%	10.2%	3.3%
June 30, 2011	7.2%	6.5%	20.4%	5.6%
June 30, 2012	1.2%	5.8%	0.2%	4.9%
June 30, 2013	4.0%	5.6%	12.1%	5.7%
June 30, 2014	21.9%	7.1%	18.2%	6.9%
June 30, 2015	7.0%	7.1%	2.9%	6.5%
June 30, 2016	5.0%	6.9%	(0.7)%	5.9%
June 30, 2017	5.4%	6.8%	12.8%	6.4%
June 30, 2018	6.1%	6.8%	8.2%	6.5%

*Cumulative since FYE June 30, 2005.

Section 3: Accounting Information (GASB 25 and GASB 43)¹

Section 3.1: Historical Exhibits (\$'s in 000's)

Schedule of Employer Contributions

This exhibit below shows pension disclosure under GASB No. 25 for fiscal years ending 2007 through 2013.

Fiscal Year Ended June 30	Total Annual Required Contribution	Percentage Contributed		
		By Employer	By State	Total
2013	\$ 382,889	47.0%	42.9%	89.9%
2012	351,674	52.0%	37.2%	89.2%
2011	220,419	63.1%	29.6%	92.7%
2010	217,080	65.5%	20.5%	86.0%
2009	166,016	68.1%	48.0%	116.1%
2008	140,729	71.2%	36.2%	107.4%
2007	268,742	73.2%	4.1%	77.3%

¹ Pension figures for fiscal years after 2013 are contained in separate GASB 67 reports and postemployment healthcare figures for fiscal years after 2016 are contained in separate GASB 74 reports.

Schedule of Funding Progress (\$' in 000's)

The exhibit below shows pension disclosure under GASB No. 25, prior to 2006.

Valuation Date	Total Actuarial Accrued Liability	Valuation Assets	Assets as a Percent of Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability (UAAL)	Annual Active Member Payroll	UAAL as a Percent of Annual Active Member Payroll
June 30, 2005	\$ 12,844,841	\$ 8,442,919	65.7%	\$ 4,401,922	\$ 1,513,117	290.9%
June 30, 2004 ^{2 3}	11,443,916	8,030,414	70.2%	3,413,502	1,472,987	231.7%
June 30, 2003	10,561,653	7,687,281	72.8%	2,874,372	1,460,783	196.8%
June 30, 2002 ^{1 2 3}	9,859,591	7,412,833	75.2%	2,446,758	1,402,687	174.4%
June 30, 2001	7,868,574	7,941,756	100.9%	N/A	1,360,401	N/A
June 30, 2000 ^{2 3}	7,376,912	7,454,758	101.1%	N/A	1,324,278	N/A
June 30, 1999	6,648,673	7,016,340	105.5%	N/A	1,279,359	N/A
June 30, 1998 ^{1 2 3}	6,203,991	6,571,562	105.9%	N/A	1,232,488	N/A
June 30, 1997	5,534,116	5,885,488	106.3%	N/A	1,227,795	N/A

¹ Change in Asset Valuation Method

² Change of Assumptions

³ Change in Methods

Section 3.2: Postemployment Healthcare (\$ in 000's)

The exhibit below shows postemployment healthcare disclosure without regard to the Medicare Part D subsidy under GASB No. 43 for fiscal years 2007 through 2016.

Valuation Date	Total Actuarial Accrued Liability	Valuation Assets	Assets as a Percent of Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability (UAAL)	Annual Active Member Payroll ¹	UAAL as a Percent of Annual Active Member Payroll
June 30, 2016 – 4.30%	\$ 13,527,347	\$ 7,411,330	54.8%	\$ 6,116,017	\$ 1,346,541	454.2%
June 30, 2015 – 4.55%	12,283,190	7,242,299	59.0%	5,040,891	1,420,479	354.9%
June 30, 2014 ² – 4.90%	12,758,985	6,913,160	54.2%	5,845,825	1,491,583	391.9%
June 30, 2013 – 5.41%	12,281,372	5,651,877	46.0%	6,629,495	1,534,665	432.0%
June 30, 2012 ² – 6.88%	9,812,274	5,301,609	54.0%	4,510,665	1,522,399	296.3%
June 30, 2011 – 7.43%	9,091,034	5,051,625	55.6%	4,039,409	1,559,938	258.9%
June 30, 2010 ² – 7.48%	9,304,504	4,687,632	50.4%	4,616,872	1,586,697	291.0%
June 30, 2009 – 4.70%	12,770,990	4,134,450	32.4%	8,636,540	1,585,490	544.7%
June 30, 2008 ² – 4.50%	13,013,450	3,829,334	29.4%	9,184,116	1,577,846	582.1%
June 30, 2007 – 4.50%	11,108,553	3,161,956	28.5%	7,946,597	1,605,819	494.9%

¹ Actual active member payroll has been based on information provided by KPMG, LLP.

² Change in assumptions

Schedule of Employer Contributions (\$'s in 000's)

This exhibit below shows postemployment healthcare disclosure without regard to the Medicare Part D subsidy under GASB No. 43 for fiscal years ending 2007 through 2016.

Fiscal Year Ended June 30	Total Annual Required Contribution	Percentage Contributed		
		By Employer	By State	Total
2016	\$ 790,824	19.7%	8.8%	28.5 %
2015	782,258	21.9%	6.0%	27.9%
2014	783,827	26.1%	19.5%	45.6%
2013	612,792	37.5%	25.1%	62.6%
2012	498,433	44.8%	28.8%	73.6%
2011	525,075	49.8%	21.6%	71.4%
2010*	790,793	31.6%	54.8%	86.4%
2009	391,321	68.1%	41.4%	109.5%
2008	370,456	71.2%	36.2%	107.4%
2007	189,495	73.2%	4.1%	77.3%

* The ARC and percentage contributed are based on Buck's calculation and do not match the CAFR. The percentage contributed in includes the legal settlement in FY10, net of fees, as well as the Medicare Part D subsidy contributed by the State to the Healthcare Fund.

The exhibit below shows the healthcare annual required contribution (ARC) as a percentage of pay for fiscal years 2008 through 2016.

Valuation Date	Fiscal Year	ARC (% of Pay)	
		Healthcare	Healthcare Discount Rate
June 30, 2005	FY08	53.96%	4.50%
June 30, 2006	FY09	55.87%	4.50%
June 30, 2007	FY10	49.98%	4.70%
June 30, 2008	FY11	33.66%	7.48%
June 30, 2009	FY12	32.74%	7.43%
June 30, 2010*	FY13	39.93%	6.88%
June 30, 2011	FY14	52.55%	5.41%
June 30, 2012	FY15	55.07%	4.90%
June 30, 2013	FY16	58.73%	4.55%

* Change in discount rate assumptions effective June 30, 2010

GASB 67 accounting is effective beginning in FY14 and GASB 74 accounting is effective beginning in FY17. They are provided in separate reports.

GASB 43 ARC is based on DB salary only and a level dollar basis to determine normal cost and amortization of the unfunded liability. These amounts are converted to percentage of pay. DB salary is the same salary used for determination of employer contribution rates.

See Section 3.3 of prior years' actuarial valuation reports for Notes to Trend Data.

Section 3.3: Solvency Test (\$'s in 000's)

The exhibit below shows the pension Solvency Test for valuation dates June 30, 2005 through June 30, 2016.

Valuation Date	Pension Actuarial Accrued Liability For:				Portion of Actuarial Accrued Liability Covered by Assets:		
	(1)	(2)	(3)	Pension Valuation Assets	(1)	(2)	(3)
	Active Member Contributions	Inactive Members	Active Members (Employer-Financed Portion)				
June 30, 2016	\$ 1,458,830	\$ 9,147,818	\$ 3,026,385	\$ 9,056,662	100.0%	83.1%	0.0%
June 30, 2015	1,475,852	8,762,863	3,099,214	8,931,160	100.0%	85.1%	0.0%
June 30, 2014 ^{1 2}	1,486,335	8,264,683	3,196,741	7,731,438	100.0%	75.6%	0.0%
June 30, 2013	1,479,538	7,514,255	2,952,088	6,510,749	100.0%	67.0%	0.0%
June 30, 2012	1,459,943	7,057,967	2,911,034	6,530,421	100.0%	71.8%	0.0%
June 30, 2011	1,421,967	6,657,517	2,839,563	6,762,149	100.0%	80.2%	0.0%
June 30, 2010 ¹	1,388,029	6,268,461	2,715,182	6,469,832	100.0%	81.1%	0.0%
June 30, 2009	1,315,924	5,914,959	2,471,203	6,108,528	100.0%	81.0%	0.0%
June 30, 2008	1,242,288	5,606,402	2,305,592	7,210,772	100.0%	100.0%	15.7%
June 30, 2007	1,203,007	5,282,132	2,177,185	6,739,004	100.0%	100.0%	11.7%
June 30, 2006 ^{1 2}	1,157,755	4,933,609	2,002,679	6,331,065	100.0%	100.0%	12.0%
June 30, 2005	1,104,821	4,627,467	1,354,903	6,016,713 ³	100.0%	100.0%	21.0%

¹ Change in Assumptions

² Change in Methods

³ The pension and postemployment healthcare valuation assets were allocated using a ratio of fair value of assets as of June 30, 2005.

The exhibit below shows the postemployment healthcare Solvency Test for valuation dates June 30, 2005 through June 30, 2016.

Valuation Date	Postemployment Healthcare Actuarial Accrued Liability For:			Postemployment Healthcare Valuation Assets	Portion of Actuarial Accrued Liability Covered by Assets:		
	(1) Active Member Contributions	(2) Inactive Members	(3) Active Members (Employer-Financed Portion)		(1)	(2)	(3)
June 30, 2016	\$ 0	\$ 5,393,537	\$ 2,342,920	\$ 7,411,330	100.0%	100.0%	86.1%
June 30, 2015	0	5,159,283	2,151,451	7,242,299	100.0%	100.0%	96.8%
June 30, 2014 ¹	0	5,455,114	2,494,499	6,913,160	100.0%	100.0%	58.5%
June 30, 2013 ¹	0	5,298,380	2,748,498	5,651,877	100.0%	100.0%	12.9%
June 30, 2012 ¹	0	5,026,080	2,837,337	5,301,609	100.0%	100.0%	9.7%
June 30, 2011	0	4,812,845	3,008,658	5,051,625	100.0%	100.0%	7.9%
June 30, 2010 ¹	0	4,581,806	3,179,014	4,687,632	100.0%	100.0%	3.3%
June 30, 2009	0	4,232,394	2,644,891	4,134,450	100.0%	97.7%	0.0%
June 30, 2008 ¹	0	4,166,270	2,567,589	3,829,334	100.0%	91.9%	0.0%
June 30, 2007	0	3,684,906	2,223,703	3,161,956	100.0%	85.8%	0.0%
June 30, 2006 ^{1 2}	0	3,990,202	2,304,168	2,709,843	100.0%	67.9%	0.0%
June 30, 2005	0	4,039,591	1,718,059	2,426,206 ³	100.0%	60.1%	0.0%

Healthcare liabilities are calculated using the funding assumptions (i.e., funding investment return and net of Medicare Part D subsidy).

¹ Change in Assumptions

² Change in Methods

³ The pension and postemployment healthcare valuation assets were allocated using a ratio of fair value of assets as of June 30, 2005.

The exhibit below shows the combined pension and postemployment healthcare Solvency Test for valuation dates June 30, 2010 and before.

Valuation Date	Actuarial Accrued Liability For:			Valuation Assets	Portion of Actuarial Accrued Liability Covered by Assets:		
	(1)	(2)	(3)		(1)	(2)	(3)
	Active Member Contributions	Inactive Members	Active Members (Employer-Financed Portion)				
June 30, 2010 ¹	\$ 1,388,029	\$ 10,850,267	\$ 5,894,196	\$ 11,157,464	100.0%	90.0%	0.0%
June 30, 2009	1,315,924	10,147,353	5,116,094	10,242,978	100.0%	88.0%	0.0%
June 30, 2008 ¹	1,242,288	9,772,672	4,873,181	11,040,106	100.0%	100.0%	0.5%
June 30, 2007	1,203,007	8,967,038	4,400,888	9,900,960	100.0%	97.0%	0.0%
June 30, 2006 ^{1 2}	1,157,755	8,923,811	4,306,847	9,040,908	100.0%	88.3%	0.0%
June 30, 2005	1,104,821	8,667,058	3,072,962	8,442,919	100.0%	84.7%	0.0%
June 30, 2004 ¹	1,070,268	7,650,156	2,723,492	8,030,414	100.0%	91.0%	0.0%
June 30, 2003	1,026,730	6,860,834	2,674,089	7,687,281	100.0%	97.1%	0.0%
June 30, 2002 ^{1 2 3}	967,045	6,301,095	2,591,451	7,412,833	100.0%	100.0%	5.6%
June 30, 2001	920,702	5,059,386	1,888,486	7,941,756	100.0%	100.0%	100.0%

Healthcare liabilities are calculated using the funding assumptions (i.e., funding investment return and net of Medicare Part D subsidy).

¹ Change in Assumptions

² Change in Methods

³ Change in Asset Valuation Method

Section 4: Projections

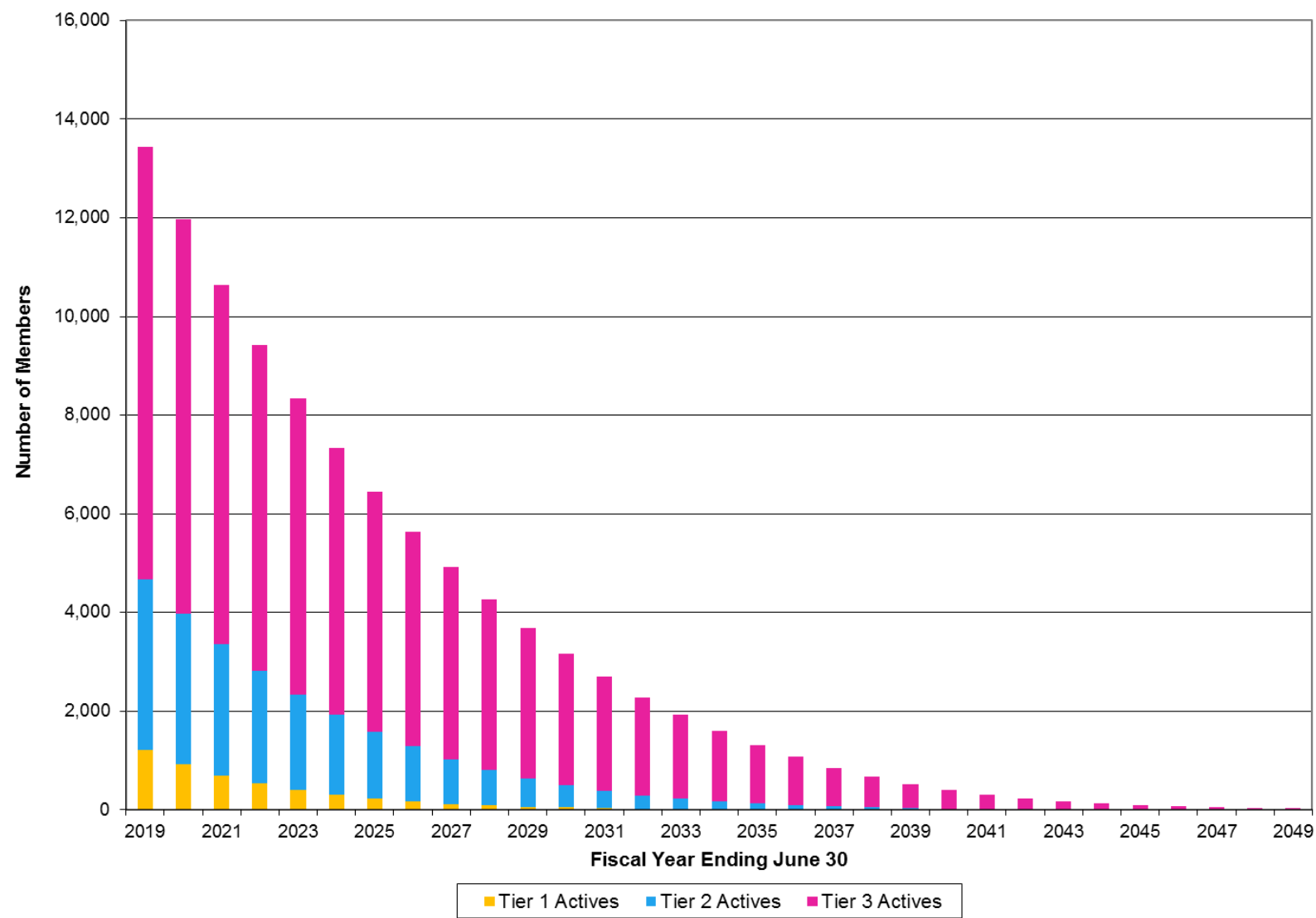
Section 4.1: Projection Assumptions and Methods

Key Assumptions

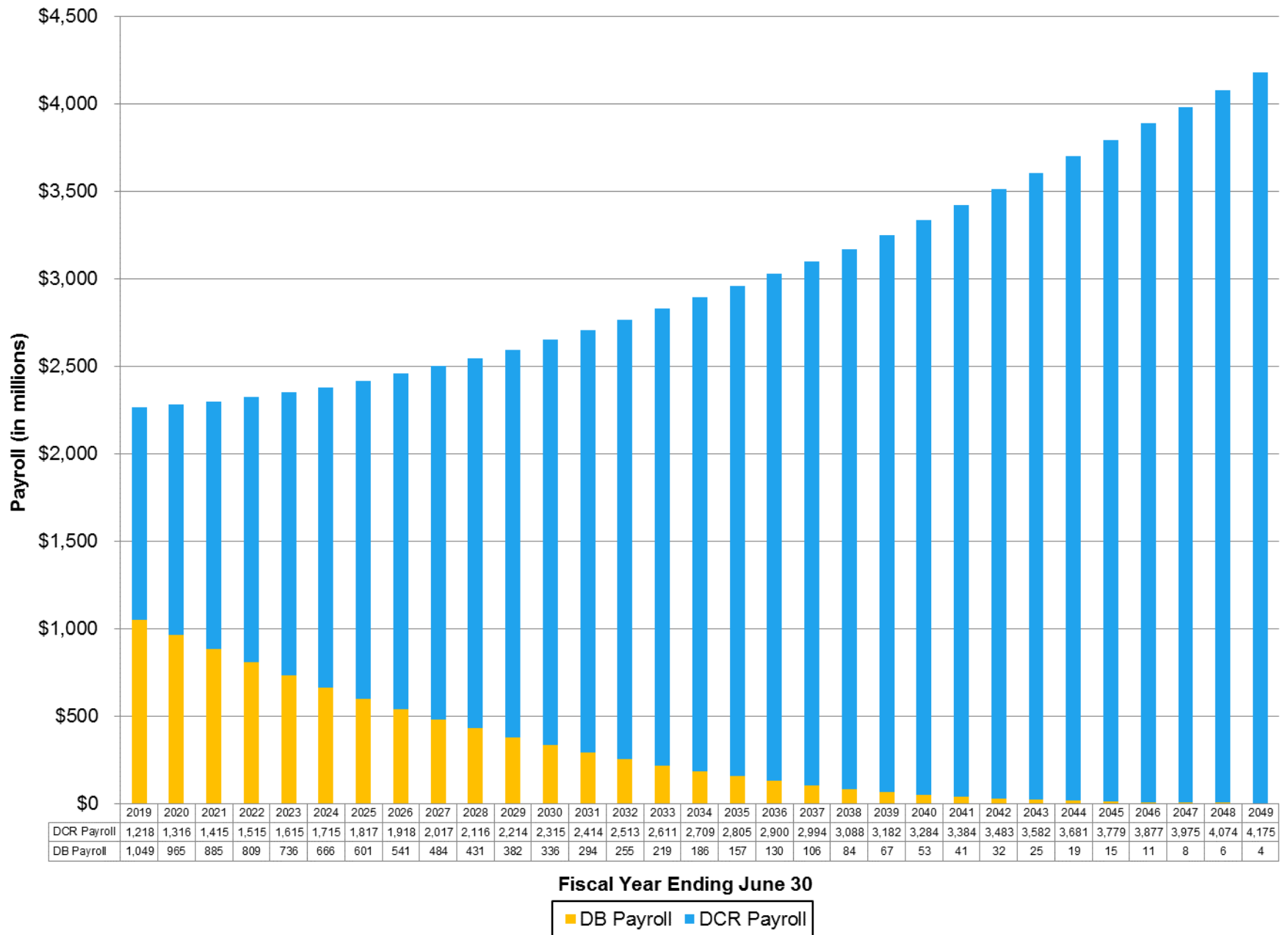
- 7.38% investment return (net of investment expenses) on the Fair Value of Assets in all future years.
- The Actuarial Value of Assets was re-initialized to Fair Value as of June 30, 2014. The Actuarial Value of Assets after June 30, 2014 reflects the deferred gains and losses generated by the smoothing method. The current deferred amount is recognized in the first four years of the projections.
- Actuarial assumptions and methods as described in Section 6. No actuarial gains/losses are assumed after June 30, 2018.
- The actuarially calculated contribution rate using a two-year roll-forward approach is adopted each year.
- Projections assume a 0% increase in the total active member population. All new members are expected to enter the DCR plan.
- Contribution rates are determined as a percent of total DB and DCR payroll, combined.
- The DCR contribution rate determined as of June 30, 2018 is assumed to remain constant in all future years.
- The active rehire assumption shown in Section 6 is assumed to grade to zero on a uniform basis over 20 years.

Section 4.2: Membership Projection

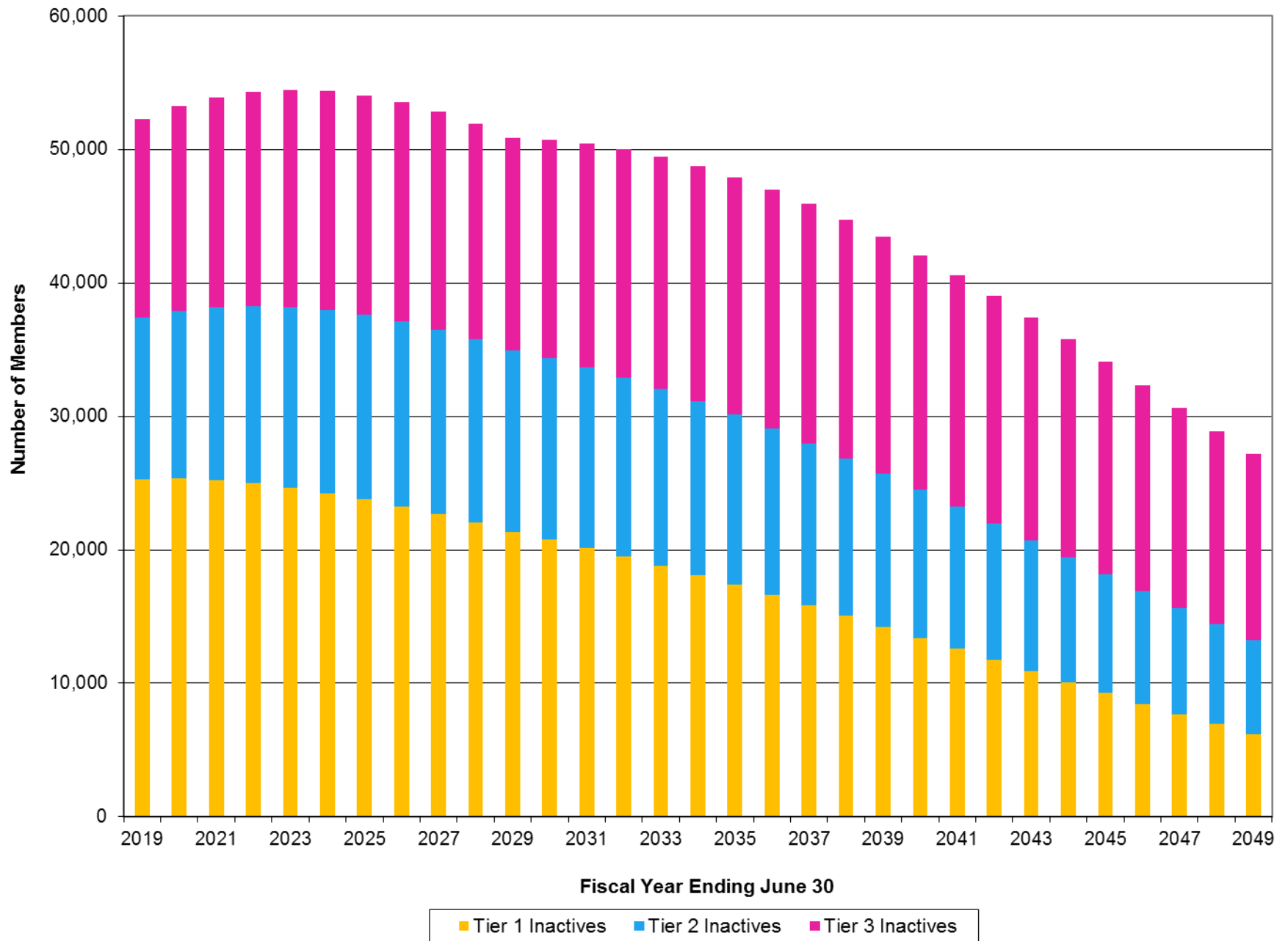
Projected Active Member Count



Projected DB and DCR Payroll

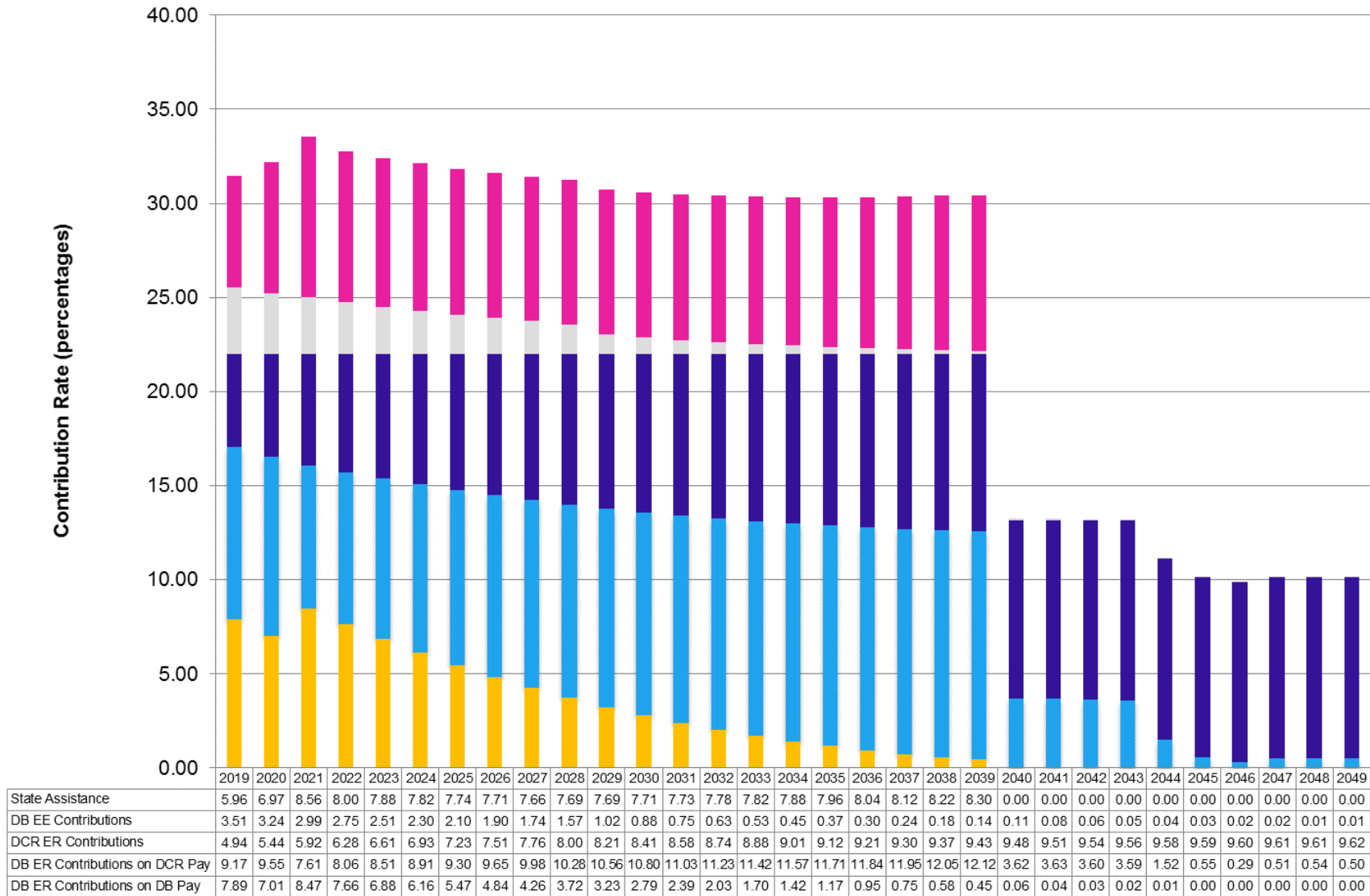


Projected Inactive Member Count



Section 4.3: Projected Employer/State Contribution Rates

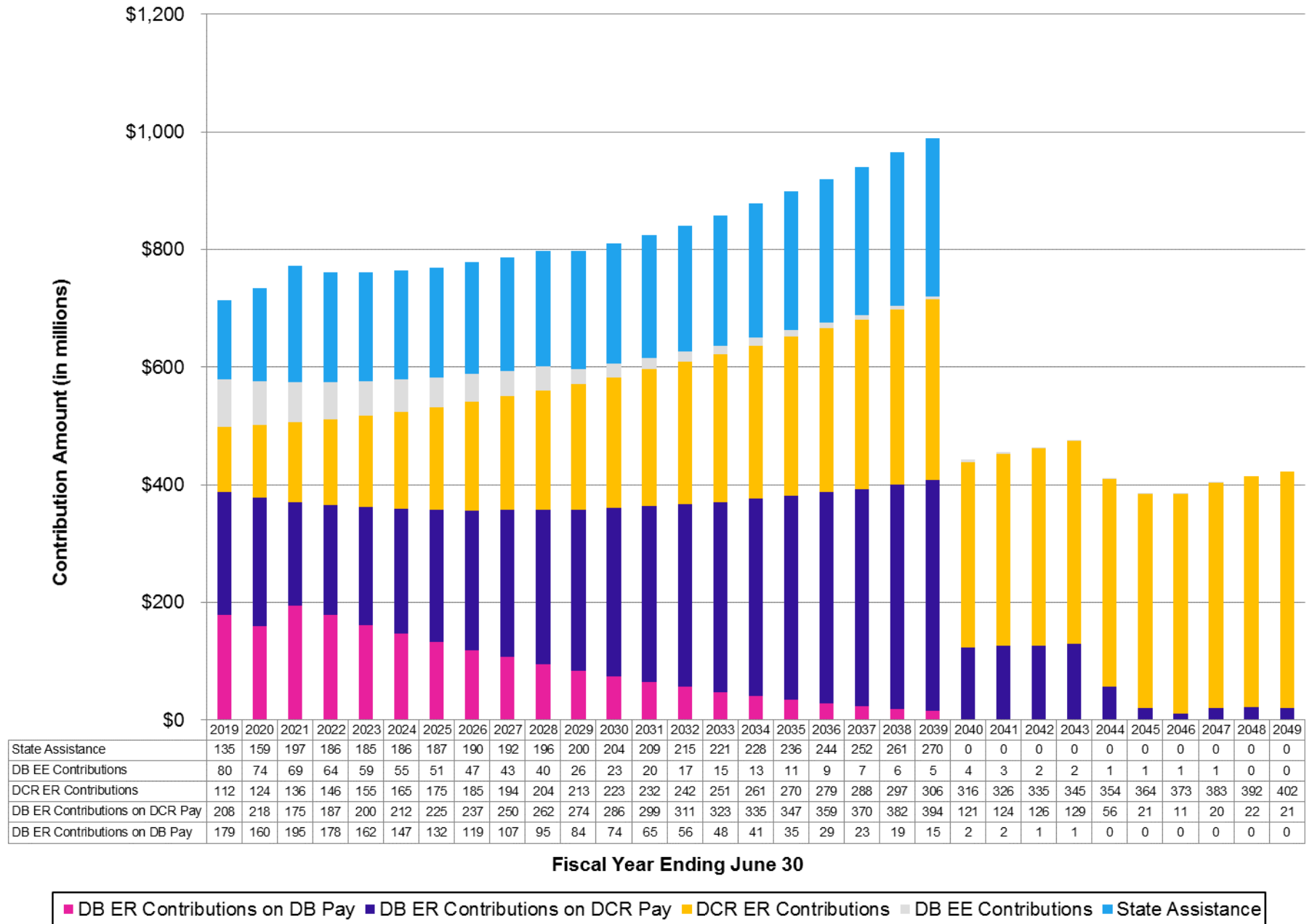
Based on Total DB and DCR Payroll



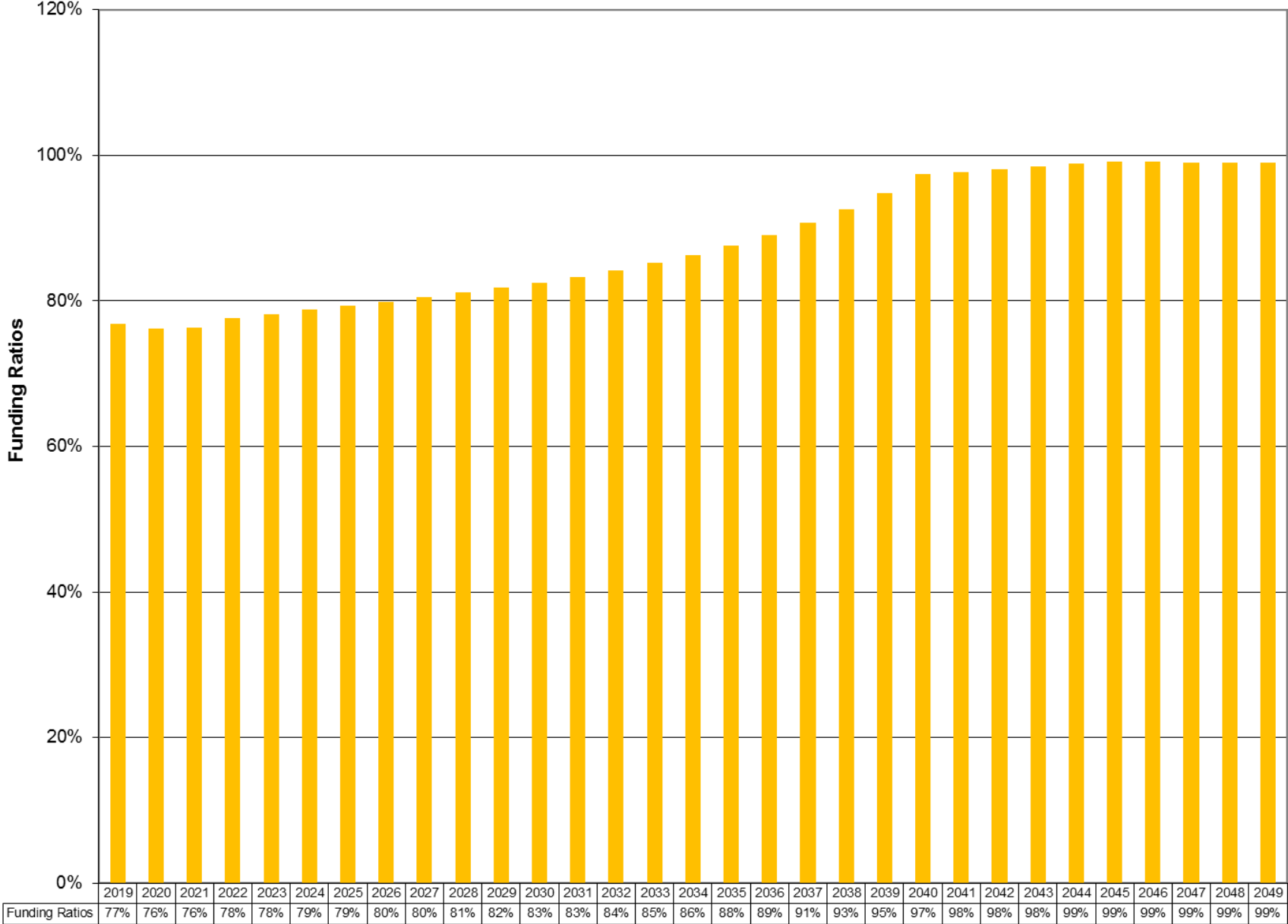
Fiscal Year Ending June 30

■ State Assistance ■ DB EE Contributions ■ DCR ER Contributions ■ DB ER Contributions on DCR Pay ■ DB ER Contributions on DB Pay

Section 4.4: Projected Employer/State Contribution Amounts



Section 4.5: Projection of Funded Ratios



Fiscal Year Ending June 30

Section 4.6: Table of Projected Actuarial Results

State of Alaska PERS Financial Projections (\$ in Thousands) Based on 2018 Actuarial Valuation Results, 0% Population Growth for Payroll Baseline

Fiscal Year End	Valuation Amounts on July 1 (Beginning of Fiscal Year)				Flow Amounts During Following 12 Months										Deferred Asset Gain/(Loss)	Ending Actuarial Assets	
	Actuarial Assets	Accrued Liability	Funding Ratio	Surplus (Deficit)	Total Salaries	Er/State Ctb Rate	DCR Ctb Rate	Total Ctb Rate	DB Contributions				Benefit Payments	Net Contribs			Investment Earnings
									Employer	State Assistance	Employee	Total					
2019	\$17,116,701	\$22,264,137	76.9%	(\$5,147,436)	\$2,267,338	23.02%	4.94%	27.96%	\$386,808	\$135,219	\$79,576	\$601,603	\$1,260,292	(\$658,689)	\$1,225,064	\$59,808	\$17,425,243
2020	17,425,243	22,869,247	76.2%	(5,444,003)	2,281,088	23.53%	5.44%	28.97%	377,748	159,055	73,935	610,738	1,328,535	(717,797)	1,266,265	166,484	17,867,035
2021	17,867,035	23,421,917	76.3%	(5,554,882)	2,300,398	24.64%	5.92%	30.56%	369,904	196,914	68,840	635,658	1,403,129	(767,471)	1,306,133	9,766	18,562,415
2022	18,562,415	23,931,842	77.6%	(5,369,427)	2,323,887	23.72%	6.28%	30.00%	365,315	185,911	63,991	615,217	1,474,510	(859,293)	1,341,926	0	19,054,814
2023	19,054,814	24,371,476	78.2%	(5,316,662)	2,350,945	23.27%	6.61%	29.88%	361,810	185,255	59,118	606,183	1,544,070	(937,887)	1,374,457	0	19,491,384
2024	19,491,384	24,750,591	78.8%	(5,259,207)	2,381,762	22.89%	6.93%	29.82%	358,931	186,254	54,672	599,857	1,611,164	(1,011,307)	1,403,846	0	19,883,923
2025	19,883,923	25,068,987	79.3%	(5,185,064)	2,418,766	22.51%	7.23%	29.74%	357,252	187,212	50,692	595,156	1,676,314	(1,081,158)	1,430,119	0	20,232,883
2026	20,232,883	25,325,754	79.9%	(5,092,871)	2,458,795	22.20%	7.51%	29.71%	356,279	189,573	46,619	592,471	1,737,804	(1,145,333)	1,453,445	0	20,540,996
2027	20,540,996	25,521,988	80.5%	(4,980,992)	2,501,796	21.90%	7.76%	29.66%	356,256	191,637	43,435	591,328	1,794,115	(1,202,787)	1,474,006	0	20,812,215
2028	20,812,215	25,659,421	81.1%	(4,847,206)	2,546,896	21.69%	8.00%	29.69%	356,565	195,856	39,895	592,316	1,847,452	(1,255,136)	1,492,119	0	21,049,197
2029	21,049,197	25,738,920	81.8%	(4,689,723)	2,595,383	21.48%	8.21%	29.69%	357,903	199,585	26,473	583,961	1,887,102	(1,303,141)	1,507,886	0	21,253,943
2030	21,253,943	25,760,069	82.5%	(4,506,126)	2,650,409	21.30%	8.41%	29.71%	360,191	204,346	23,324	587,861	1,936,478	(1,348,617)	1,521,375	0	21,426,701
2031	21,426,701	25,719,986	83.3%	(4,293,285)	2,708,028	21.15%	8.58%	29.73%	363,417	209,331	20,310	593,058	1,984,449	(1,391,391)	1,532,614	0	21,567,924
2032	21,567,924	25,616,606	84.2%	(4,048,682)	2,767,744	21.04%	8.74%	29.78%	367,003	215,330	17,437	599,770	2,030,863	(1,431,093)	1,541,680	0	21,678,510
2033	21,678,510	25,449,072	85.2%	(3,770,562)	2,830,205	20.94%	8.88%	29.82%	371,323	221,322	15,000	607,645	2,075,173	(1,467,528)	1,548,609	0	21,759,591
2034	21,759,591	25,215,068	86.3%	(3,455,477)	2,895,180	20.87%	9.01%	29.88%	376,084	228,140	13,028	617,252	2,112,665	(1,495,413)	1,553,723	0	21,817,901
2035	21,817,901	24,917,723	87.6%	(3,099,822)	2,961,985	20.84%	9.12%	29.96%	381,504	235,774	10,959	628,237	2,144,889	(1,516,652)	1,557,444	0	21,858,693
2036	21,858,693	24,558,496	89.0%	(2,699,803)	3,029,830	20.83%	9.21%	30.04%	387,515	243,599	9,089	640,203	2,171,942	(1,531,739)	1,560,118	0	21,887,072
2037	21,887,072	24,138,508	90.7%	(2,251,436)	3,099,655	20.82%	9.30%	30.12%	393,656	251,692	7,439	652,787	2,194,745	(1,541,958)	1,562,076	0	21,907,189
2038	21,907,189	23,660,156	92.6%	(1,752,967)	3,172,470	20.85%	9.37%	30.22%	400,683	260,777	5,710	667,170	2,207,184	(1,540,014)	1,563,934	0	21,931,109
2039	21,931,109	23,129,466	94.8%	(1,198,357)	3,248,778	20.87%	9.43%	30.30%	408,371	269,649	4,548	682,568	2,213,685	(1,531,117)	1,566,335	0	21,966,327
2040	21,966,327	22,549,528	97.4%	(583,201)	3,336,384	3.68%	9.48%	13.16%	122,779	0	3,670	126,449	2,209,364	(2,082,915)	1,538,821	0	21,422,233
2041	21,422,233	21,928,640	97.7%	(506,407)	3,425,185	3.67%	9.51%	13.18%	125,704	0	2,740	128,444	2,197,358	(2,068,914)	1,499,211	0	20,852,530
2042	20,852,530	21,272,133	98.0%	(419,603)	3,515,252	3.63%	9.54%	13.17%	127,604	0	2,109	129,713	2,176,248	(2,046,535)	1,458,043	0	20,264,038
2043	20,264,038	20,587,336	98.4%	(323,298)	3,606,823	3.61%	9.56%	13.17%	130,206	0	1,803	132,010	2,146,998	(2,014,988)	1,415,846	0	19,664,896
2044	19,664,896	19,880,955	98.9%	(216,059)	3,699,958	1.53%	9.58%	11.11%	56,609	0	1,480	58,090	2,105,586	(2,047,496)	1,370,579	0	18,987,979
2045	18,987,979	19,164,273	99.1%	(176,294)	3,793,672	0.55%	9.59%	10.14%	20,865	0	1,138	22,003	2,057,530	(2,035,527)	1,321,204	0	18,273,656
2046	18,273,656	18,443,671	99.1%	(170,015)	3,887,605	0.29%	9.60%	9.89%	11,274	0	778	12,053	2,002,500	(1,990,447)	1,270,290	0	17,553,499
2047	17,553,499	17,726,310	99.0%	(172,811)	3,983,059	0.51%	9.61%	10.12%	20,314	0	797	21,111	1,940,279	(1,919,168)	1,219,917	0	16,854,249
2048	16,854,249	17,020,055	99.0%	(165,806)	4,080,379	0.54%	9.61%	10.15%	22,034	0	408	22,442	1,875,008	(1,852,566)	1,170,928	0	16,172,610
Totals:									\$8,451,909	\$4,352,429	\$749,013	\$13,553,354					

Note: The FY19 and FY20 Employer/State contribution rates shown above differ from those shown in Section 1.6 because they are adjusted for total salaries.

Section 5: Member Data

Section 5.1: Summary of Members Included

As of June 30	2014	2015	2016	2017	2018 ¹
Active Members					
1. Number	19,297	17,660	16,105	14,719	13,434
2. Average Age	50.90	51.34	51.74	52.10	52.52
3. Average Credited Service	14.64	15.29	15.95	16.57	17.21
4. Average Entry Age	36.26	36.05	35.79	35.53	35.30
5. Average Annual Earnings	\$ 71,651	\$ 73,248	\$ 75,717	\$ 76,902	\$ 77,813
6. Number Vested	18,381	16,996	15,607	14,314	13,103
7. Percent Who Are Vested	95.3%	96.2%	96.9%	97.2%	97.5%
Retirees, Disabilitants and Beneficiaries					
1. Number	31,099	32,145	33,353	34,347	35,454
2. Average Age	68.15	68.60	69.02	69.42	69.85
3. Average Years Since Retirement	N/A	11.27	11.48	11.71	11.87
4. Average Monthly Pension Benefit					
Base	\$ 1,454	\$ 1,490	\$ 1,529	\$ 1,574	\$ 1,616
COLA ²	91	92	93	93	94
P.R.P.A. ²	255	258	245	230	222
Adjustment	0	1	1	1	1
Total	\$ 1,800	\$ 1,841	\$ 1,868	\$ 1,898	\$ 1,933
Vested Terminations (vested at time of termination, not refunded contributions or commenced benefits)					
1. Number	6,167	6,304	6,160	5,962	5,660
2. Average Age	51.15	51.80	52.08	52.45	52.56
3. Average Monthly Pension Benefit	\$ 897	\$ 991	\$ 1,042	\$ 1,080	\$ 1,087
Non-Vested Terminations With Account Balances (not vested at termination, not refunded contributions)					
1. Number	12,713	12,339	11,880	11,506	11,192
2. Average Account Balance	\$ 5,765	\$ 5,981	\$ 6,212	\$ 6,462	\$ 6,558
Total Number of Members	69,276	68,448	67,498	66,534	65,740

¹ 4 members who were terminated before the valuation date were subsequently rehired, per census data as of October 1, 2018. These members were valued as active as of the valuation date.

² Calculated by taking the average of the data field, as provided by the State of Alaska, for all participants in the group.

Summary of Members Included

Active Members

As of June 30, 2018	DB				DCR Tier 4	Grand Total
	Tier 1	Tier 2	Tier 3	Total		
1. Number	1,212	3,467	8,755	13,434	20,378	33,812
2. Average Age	61.05	55.32	50.22	52.52	40.80	45.46
3. Average Credited Service	22.05	21.92	14.68	17.21	4.15	9.34
4. Average Entry Age	39.00	33.40	35.54	35.31	36.65	36.12
5. Annual Earnings						
(a) Amount (000's)	\$ 89,021	\$ 287,708	\$ 668,618	\$ 1,045,347	\$ 1,209,152	\$ 2,254,499
(b) Average	\$ 73,450	\$ 82,985	\$ 76,370	\$ 77,813	\$ 59,336	\$ 66,677

Retirees, Disabilitants and Beneficiaries

As of June 30, 2018	Tier 1	Tier 2	Tier 3	Total
1. Number	23,814	7,812	3,828	35,454
2. Average Age	70.94	68.19	66.44	69.85
3. Average Years Since Retirement	14.40	7.75	4.57	11.87
4. Average Monthly Pension Benefit				
Base	\$ 1,696	\$ 1,597	\$ 1,157	\$ 1,616
COLA	117	50	38	94
P.R.P.A.	299	82	30	222
Adjustment	0	2	2	1
Total	2,112	1,731	1,227	1,933

Summary of Members Included

As of June 30, 2018	Active	Retiree	Covered Spouse	Covered Children / Dependent	Deferred	Total
Retiree Medical Participants						
1. Retiree Coverage Only	13,380	18,143	0	0	2,383	20,526
2. Retiree + Spouse	0	12,012	12,012	0	3,687	27,711
3. Retiree + Children / Other Dependent	0	373	0	472	0	845
4. Family	<u>0</u>	<u>868</u>	<u>868</u>	<u>1,173</u>	<u>0</u>	<u>2,909</u>
5. Total	13,380	31,396	12,880	1,645	6,070	51,991

Retiree Medical Participants as of June 30, 2018					
	Retiree	Covered Spouse	Covered Children / Dependent	Deferred	All Members
Pre-Medicare	8,863	5,426	1,645	5,881	21,815
Medicare Part A & B	22,379	7,421	0	189	29,989
Medicare Part B Only	<u>154</u>	<u>33</u>	<u>0</u>	<u>0</u>	<u>187</u>
Total	31,396	12,880	1,645	6,070	51,991

As of June 30, 2018	Retiree
Summary of Retiree Medical Data Received	
1. Retiree records on pension data	35,454
2. Records valued in a different retiree healthcare plan ¹	(1,990)
3. Records without medical coverage	(2,102)
4. Records with only medical coverage (no pension)	<u>34</u>
5. Total	31,396

¹ Each member's retiree medical benefits are valued in the plan they retired from where they receive the most pension benefits.

Summary of Members Included

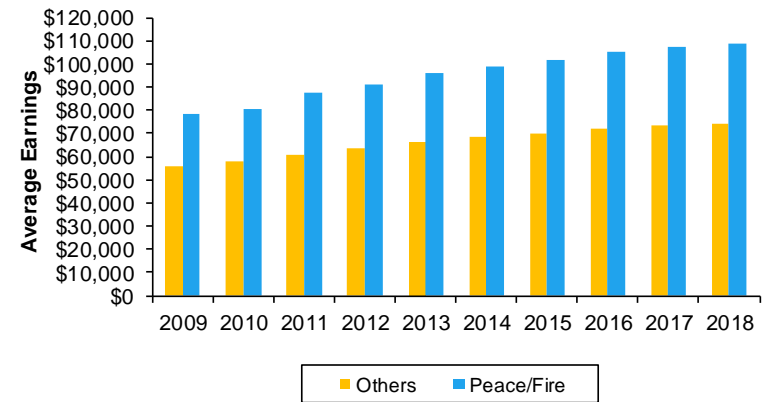
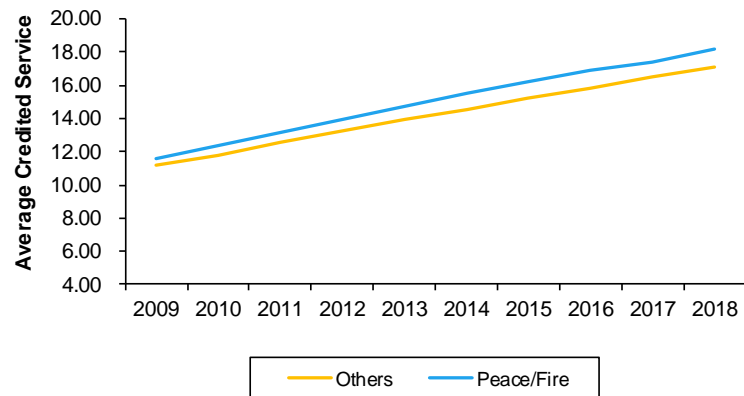
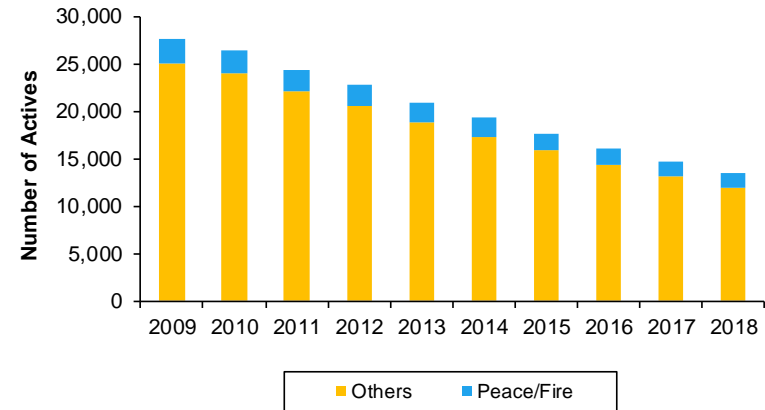
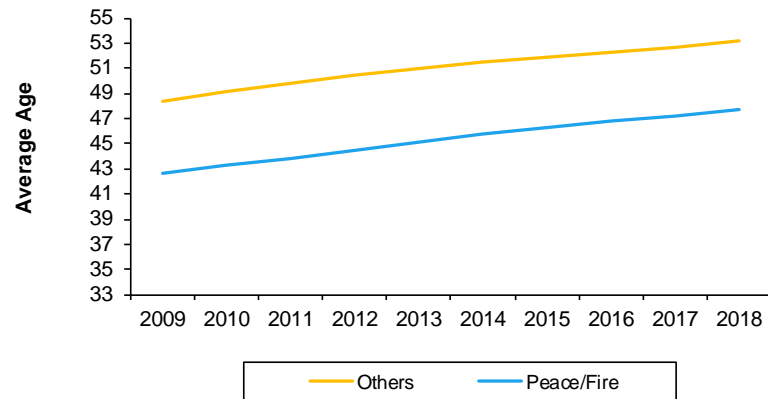
Active Members – DB Only

As of June 30	2014	2015	2016	2017	2018 ¹
Peace Officer/Firefighter					
1. Number	1,958	1,827	1,704	1,606	1,507
2. Average Age	45.74	46.26	46.80	47.22	47.75
3. Average Credited Service	15.55	16.23	16.87	17.41	18.15
4. Average Entry Age	30.19	30.03	29.93	29.81	29.60
5. Average Annual Earnings	\$ 98,946	\$ 101,450	\$ 105,317	\$ 106,987	\$ 108,580
6. Number Vested	1,934	1,817	1,695	1,599	1,500
7. Percent Who Are Vested	98.8%	99.5%	99.5%	99.6%	99.5%
Others					
1. Number	17,339	15,833	14,401	13,113	11,927
2. Average Age	51.48	51.93	52.32	52.70	53.12
3. Average Credited Service	14.54	15.18	15.84	16.47	17.09
4. Average Entry Age	36.94	36.75	36.48	36.23	36.03
5. Average Annual Earnings	\$ 68,569	\$ 69,994	\$ 72,214	\$ 73,218	\$ 73,926
6. Number Vested	16,447	15,179	13,912	12,715	11,603
7. Percent Who Are Vested	94.9%	95.9%	96.6%	97.0%	97.3%
Total					
1. Number	19,297	17,660	16,105	14,719	13,434
2. Average Age	50.90	51.34	51.74	52.10	52.52
3. Average Credited Service	14.64	15.29	15.95	16.57	17.21
4. Average Entry Age	36.26	36.05	35.79	35.53	35.30
5. Average Annual Earnings	\$ 71,651	\$ 73,248	\$ 75,717	\$ 76,902	\$ 77,813
6. Number Vested	18,381	16,996	15,607	14,314	13,103
7. Percent Who Are Vested	95.3%	96.2%	96.9%	97.3%	97.5%

Total and average annual earnings (“valuation pay”) are the annualized earnings for the fiscal year ending on the valuation date.

¹ 4 members who were terminated before the valuation date were subsequently rehired, per census data as of October 1, 2018. These members were valued as active as of the valuation date.

Summary of Members Included – Active Members as of June 30



Total and average annual earnings (“valuation pay”) are the annualized earnings for the fiscal year ending on the valuation date

Section 5.2: Age and Service Distribution of Active Members

Peace Officer/Firefighter

Annual Earnings by Age

Age	Number	Total Annual Earnings	Average Annual Earnings
0 – 19	0	\$ 0	\$ 0
20 – 24	0	0	0
25 – 29	0	0	0
30 – 34	31	3,063,284	98,816
35 – 39	180	19,705,134	109,473
40 – 44	337	37,160,254	110,268
45 – 49	423	47,157,574	111,484
50 – 54	292	30,986,547	106,118
55 – 59	171	18,589,866	108,713
60 – 64	56	5,361,084	95,734
65 – 69	15	1,452,661	96,844
70 – 74	2	153,775	76,888
75+	0	0	0
Total	1,507	\$ 163,630,179	\$ 108,580

Annual Earnings by Credited Service

Years of Service	Number	Total Annual Earnings	Average Annual Earnings
0	0	\$ 0	\$ 0
1	1	49,333	49,333
2	2	164,432	82,216
3	2	129,871	64,936
4	0	0	0
0 – 4	5	343,636	68,727
5 – 9	28	2,070,667	73,952
10 – 14	402	40,841,524	101,596
15 – 19	587	63,328,568	107,885
20 – 24	349	41,071,392	117,683
25 – 29	114	13,356,404	117,161
30 – 34	17	1,955,643	115,038
35 – 39	3	402,415	134,138
40+	2	259,930	129,965
Total	1,507	\$ 163,630,179	\$ 108,580

Years of Credited Service by Age

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
0 – 19	0	0	0	0	0	0	0	0	0	0
20 – 24	0	0	0	0	0	0	0	0	0	0
25 – 29	0	0	0	0	0	0	0	0	0	0
30 – 34	2	2	25	2	0	0	0	0	0	31
35 – 39	1	3	120	56	0	0	0	0	0	180
40 – 44	1	9	87	179	58	3	0	0	0	337
45 – 49	1	4	70	158	158	31	1	0	0	423
50 – 54	0	6	41	110	87	43	5	0	0	292
55 – 59	0	2	41	64	35	22	6	1	0	171
60 – 64	0	1	12	14	10	12	4	2	1	56
65 – 69	0	1	5	4	1	3	1	0	0	15
70 – 74	0	0	1	0	0	0	0	0	1	2
75+	0	0	0	0	0	0	0	0	0	0
Total	5	28	402	587	349	114	17	3	2	1,507

Total and average annual earnings (“valuation pay”) are the annualized earnings for the fiscal year ending on the valuation date.

Age and Service Distribution of Active Members

Others

Annual Earnings by Age

Age	Number	Total Annual Earnings	Average Annual Earnings
0 – 19	0	\$ 0	\$ 0
20 – 24	0	0	0
25 – 29	0	0	0
30 – 34	170	11,773,386	69,255
35 – 39	807	59,112,494	73,250
40 – 44	1,309	99,483,530	76,000
45 – 49	1,739	135,095,028	77,685
50 – 54	2,425	181,453,098	74,826
55 – 59	3,024	222,210,683	73,482
60 – 64	1,712	121,653,765	71,059
65 – 69	576	40,649,840	70,573
70 – 74	129	8,491,517	65,826
75+	36	1,792,982	49,805

Total 11,927 \$ 881,716,323 \$ 73,926

Annual Earnings by Credited Service

Years of Service	Number	Total Annual Earnings	Average Annual Earnings
0	23	\$ 912,446	\$ 39,672
1	39	2,101,567	53,886
2	50	2,545,631	50,913
3	76	4,270,960	56,197
4	114	6,284,430	55,127
0 – 4	302	16,115,034	53,361
5 – 9	977	55,806,360	57,120
10 – 14	3,687	252,026,817	68,356
15 – 19	3,538	267,968,181	75,740
20 – 24	1,856	149,886,400	80,758
25 – 29	1,194	105,397,417	88,273
30 – 34	290	26,792,344	92,387
35 – 39	67	6,464,839	96,490
40+	16	1,258,931	78,683

Total 11,927 \$ 881,716,323 \$ 73,926

Years of Credited Service by Age

Age	Years of Service									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
0 – 19	0	0	0	0	0	0	0	0	0	0
20 – 24	0	0	0	0	0	0	0	0	0	0
25 – 29	0	0	0	0	0	0	0	0	0	0
30 – 34	15	50	102	3	0	0	0	0	0	170
35 – 39	53	113	474	166	1	0	0	0	0	807
40 – 44	63	140	542	476	88	0	0	0	0	1,309
45 – 49	42	128	590	627	271	78	3	0	0	1,739
50 – 54	45	189	664	712	449	325	40	1	0	2,425
55 – 59	42	181	729	857	600	488	112	15	0	3,024
60 – 64	29	124	418	508	319	212	80	21	1	1,712
65 – 69	11	39	138	137	108	71	41	24	7	576
70 – 74	2	6	21	43	17	19	10	6	5	129
75+	0	7	9	9	3	1	4	0	3	36
Total	302	977	3,687	3,538	1,856	1,194	290	67	16	11,927

Total and average annual earnings (“valuation pay”) are the annualized earnings for the fiscal year ending on the valuation date.

Section 5.3: Member Data Reconciliation

Pension

	Inactive Members						
	Active Members	Due a Refund	With Deferred Benefits	Retired Members	Disabled Members	Beneficiaries	Total
As of June 30, 2017	14,719	11,506	5,962	30,351*	185	3,825	66,548
Vested Terminations	(499)	(2)	501	0	0	0	0
Non-vested Terminations	(58)	58	0	0	0	0	0
Cash-outs	(33)	(239)	(75)	0	(1)	0	(348)
Converted to DCR Plan	0	0	0	0	0	0	0
Disability Retirements	(18)	(2)	(12)	0	32	0	0
Age Retirements	(939)	(21)	(556)	1,543	(27)	N/A	0
Deaths With Beneficiary	(11)	(1)	(12)	(218)	0	242	0
Deaths Without Beneficiary	(16)	(21)	(11)	(435)	0	(52)	(535)
Expired Benefits	0	0	0	0	0	0	0
Data Corrections	0	0	0	4	0	(7)	(3)
Transfers Out	(15)	(1)	(5)	(1)	0	(1)	(23)
Rehires	279	(101)	(147)	(31)	0	0	0
Pick Ups***	25	16	15	5	0	55	116
Net Change	(1,285)	(314)	(302)	867	4	237	(793)
As of June 30, 2018	13,434	11,192	5,660	31,218**	189	4,062	65,755

* Includes 14 medical only retirees

** Includes 15 medical only retirees

*** Pickup beneficiaries are primarily new QDROs

Healthcare

	Active	Inactive Members				Total Inactive Members
		Inactive Individuals	Covered Spouses	Covered Children	Deferred	
As of June 30, 2017	14,654	30,698	13,218	1,793	6,087	51,796
Vested Terminations	(497)	0	0	0	497	497
Non-vested Terminations	(75)	0	0	0	0	0
Cash-outs	(30)	0	0	0	(66)	(66)
Disability	(15)	15	6	0	0	21
Rehires	300	(21)	(6)	(5)	(147)	(179)
Retirement	(848)	848	473	43	0	1,364
Retired from deferred status	0	259	156	36	(259)	192
Retired without medical coverage	(82)	0	0	0	0	0
Deceased	(27)	(631)	(109)	(6)	(42)	(788)
New Beneficiaries	0	114	(114)	0	0	0
Added Dependent Coverage	N/A	0	88	187	0	275
Dropped Dependent Coverage	N/A	0	(896)	(348)	0	(1,244)
Added Retiree Medical Coverage	0	209	68	16	0	293
Dropped Retiree Medical Coverage	0	(95)	(4)	(71)	0	(170)
Net Change	(1,274)	698	(338)	(148)	(17)	195
As of June 30, 2018	13,380	31,396	12,880	1,645	6,070	51,991

Section 5.4: Schedule of Active Member Data

Peace Officer/Firefighter

Valuation Date	Number	Annual Earnings (000's)	Annual Average Earnings	Percent Increase/ (Decrease) in Average Earnings	Number of Participating Employers
June 30, 2018	1,507	\$ 163,630	\$ 108,580	1.5%	155
June 30, 2017	1,606	\$ 171,821	\$ 106,987	1.6%	155
June 30, 2016	1,704	179,461	105,317	3.8%	155
June 30, 2015	1,827	185,350	101,450	2.5%	159
June 30, 2014	1,958	193,737	98,946	3.4%	159
June 30, 2013	2,065	197,534	95,658	4.8%	159
June 30, 2012	2,164	197,544	91,286	4.1%	160
June 30, 2011	2,275	199,537	87,709	8.6%	160
June 30, 2010	2,388	192,895	80,777	2.8%	160
June 30, 2009	2,476	194,519	78,562	5.0%	159
June 30, 2008	2,549	190,729	74,825	4.9%	160

Total and average earnings ("valuation pay") are the annualized earnings for the fiscal year ending on the valuation date.

Others

Valuation Date	Number	Annual Earnings (000's)	Annual Average Earnings	Percent Increase/ (Decrease) in Average Earnings	Number of Participating Employers
June 30, 2018	11,927	\$ 881,716	\$ 73,926	1.0%	155
June 30, 2017	13,113	960,106	73,218	1.4%	155
June 30, 2016	14,401	1,039,960	72,214	3.2%	155
June 30, 2015	15,833	1,108,218	69,994	2.1%	159
June 30, 2014	17,339	1,188,918	68,569	3.4%	159
June 30, 2013	18,890	1,252,786	66,320	4.5%	159
June 30, 2012	20,566	1,305,337	63,471	4.6%	160
June 30, 2011	22,118	1,342,122	60,680	4.7%	160
June 30, 2010	24,054	1,393,803	57,945	4.5%	160
June 30, 2009	25,089	1,390,971	55,441	5.1%	159
June 30, 2008	26,301	1,387,117	52,740	6.9%	160

Total and average earnings ("valuation pay") are the annualized earnings for the fiscal year ending on the valuation date.

Section 5.5: Active Member Payroll Reconciliation

Payroll Field	Payroll Data (000s)
a) DRB actual reported salaries FY18 – employer list	\$ 2,171,129
b) DRB actual reported salaries FY18 – valuation data	2,069,496
c) Include October data adjustment for rehires	2,069,791
d) Annualized valuation data	2,254,499
e) Valuation payroll as of June 30, 2018	2,366,223
f) Rate payroll for FY19	2,267,338
g) Rate payroll for FY21	2,300,398

- a) Actual reported salaries from DRB employer listing showing all payroll paid during FY18, including those who were not active as of June 30, 2018
- b) Payroll from valuation data for people who are in active status as of June 30, 2018
- c) Payroll from (b) including additional people added who were listed as active as of October 1, 2018 and were run as active in the valuation
- d) Payroll from (c) annualized for both new entrants and part-timers
- e) Payroll from (d) with one year of salary scale applied to estimate salaries payable for the upcoming year
- f) Payroll from (e) with the part-timer annualization removed
- g) Payroll from (f) with two years of assumed decrements and salary scale, and 0% population growth

Section 5.6: Summary of New Pension Benefit Recipients

Peace Officer/Firefighter

During the Year Ending June 30 Service	2014	2015	2016	2017	2018
1. Number	74	97	108	119	105
2. Average Age at Commencement	57.16	55.29	55.91	56.65	55.70
3. Average Monthly Pension Benefit	\$ 3,765	\$ 4,146	\$ 4,614	\$ 4,166	\$ 4,519
Survivor (including surviving spouse and DROs)					
1. Number	30	36	27	42	44
2. Average Age at Commencement	59.60	63.51	61.48	62.88	63.76
3. Average Monthly Pension Benefit	\$ 2,076	\$ 1,546	\$ 1,745	\$ 1,797	\$ 2,187
Disability Retirements					
1. Number	5	3	2	4	4
2. Average Age at Commencement	43.62	40.50	42.07	49.33	46.56
3. Average Monthly Pension Benefit	\$ 2,992	\$ 3,433	\$ 3,096	\$ 2,427	\$ 3,230
Total					
1. Number	109	136	137	165	153
2. Average Age at Commencement	57.21	57.14	56.81	58.06	57.78
3. Average Monthly Pension Benefit	\$ 3,265	\$ 3,442	\$ 4,026	\$ 3,521	\$ 3,814

Summary of New Pension Benefit Recipients

Average Pension Benefit Payments – Peace Officer/Firefighter

	Years of Credited Service						
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+
Period 7/1/17 - 6/30/18:							
Average Monthly Pension Benefit	\$ 0	\$ 1,063	\$ 2,133	\$ 3,747	\$ 4,847	\$ 6,024	\$ 7,717
Number of Recipients	0	4	18	19	35	30	3
Period 7/1/16 - 6/30/17:							
Average Monthly Pension Benefit	\$ 0	\$ 686	\$ 2,075	\$ 3,234	\$ 4,462	\$ 5,151	\$ 6,376
Number of Recipients	0	8	9	28	41	23	14
Period 7/1/15 - 6/30/16:							
Average Monthly Pension Benefit	\$ 0	\$ 958	\$ 1,742	\$ 3,347	\$ 4,622	\$ 5,778	\$ 7,221
Number of Recipients	0	6	11	19	30	28	16
Period 7/1/14 - 6/30/15:							
Average Monthly Pension Benefit	\$ 0	\$ 1,173	\$ 1,621	\$ 3,632	\$ 4,436	\$ 5,457	\$ 6,863
Number of Recipients	0	8	9	26	24	25	7
Period 7/1/13 - 6/30/14:							
Average Monthly Pension Benefit	\$ 290	\$ 1,423	\$ 2,002	\$ 2,902	\$ 4,014	\$ 5,464	\$ 6,299
Number of Recipients	1	9	10	14	22	16	7
Period 7/1/12 - 6/30/13:							
Average Monthly Pension Benefit	\$ 0	\$ 865	\$ 1,779	\$ 2,762	\$ 3,793	\$ 4,983	\$ 4,911
Number of Recipients	0	9	8	19	31	18	4
Period 7/1/11 - 6/30/12:							
Average Monthly Pension Benefit	\$ 0	\$ 1,159	\$ 1,161	\$ 3,142	\$ 3,504	\$ 4,673	\$ 5,079
Number of Recipients	0	13	13	12	20	17	7
Period 7/1/10 - 6/30/11:							
Average Monthly Pension Benefit	\$ 525	\$ 880	\$ 1,469	\$ 2,666	\$ 3,743	\$ 4,806	\$ 5,661
Number of Recipients	1	8	18	10	24	16	8
Period 7/1/09 - 6/30/10:							
Average Monthly Pension Benefit	\$ 1,902	\$ 1,242	\$ 1,459	\$ 2,284	\$ 3,179	\$ 4,527	\$ 4,695
Number of Recipients	4	7	16	14	28	14	7
Period 7/1/08 - 6/30/09:							
Average Monthly Pension Benefit	\$ 489	\$ 820	\$ 979	\$ 2,466	\$ 3,152	\$ 4,213	\$ 4,894
Number of Recipients	2	17	11	18	23	7	5

Average Monthly Pension Benefit" includes post-retirement pension adjustments and cost-of-living increases.

Summary of New Pension Benefit Recipients

Others

During the Year Ending June 30 Service	2014	2015	2016	2017	2018
1. Number	1,495	1,281	1,472	1,393	1,419
2. Average Age at Commencement	60.41	60.70	61.28	61.40	62.19
3. Average Monthly Pension Benefit	\$ 2,290	\$ 2,310	\$ 2,269	\$ 2,404	\$ 2,477
Survivor (including surviving spouse and DROs)					
1. Number	263	275	286	292	261
2. Average Age at Commencement	67.55	69.00	66.30	67.12	70.38
3. Average Monthly Pension Benefit	\$ 1,064	\$ 1,159	\$ 1,093	\$ 1,150	\$ 1,120
Disability Retirements					
1. Number	20	27	22	14	28
2. Average Age at Commencement	49.66	51.39	53.04	52.43	53.80
3. Average Monthly Pension Benefit	\$ 1,391	\$ 1,858	\$ 2,209	\$ 2,405	\$ 1,896
Total					
1. Number	1,778	1,583	1,780	1,699	1,708
2. Average Age at Commencement	61.35	61.98	61.98	62.31	63.31
3. Average Monthly Pension Benefit	\$ 2,101	\$ 2,103	\$ 2,079	\$ 2,189	\$ 2,260

Summary of New Pension Benefit Recipients

Average Pension Benefit Payments – Others

	Years of Credited Service						
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+
Period 7/1/17 - 6/30/18:							
Average Monthly Pension Benefit	\$ 414	\$ 607	\$ 1,299	\$ 1,982	\$ 3,034	\$ 4,475	\$ 6,085
Number of Recipients	26	221	351	280	223	214	127
Period 7/1/16 - 6/30/17:							
Average Monthly Pension Benefit	\$ 381	\$ 640	\$ 1,271	\$ 2,067	\$ 3,119	\$ 4,579	\$ 6,224
Number of Recipients	27	254	375	233	212	191	115
Period 7/1/15 - 6/30/16:							
Average Monthly Pension Benefit	\$ 434	\$ 660	\$ 1,240	\$ 2,017	\$ 3,059	\$ 4,158	\$ 6,583
Number of Recipients	30	323	387	266	192	161	135
Period 7/1/14 - 6/30/15:							
Average Monthly Pension Benefit	\$ 430	\$ 685	\$ 1,260	\$ 2,008	\$ 3,086	\$ 4,544	\$ 6,195
Number of Recipients	42	284	304	213	198	169	98
Period 7/1/13 - 6/30/14:							
Average Monthly Pension Benefit	\$ 503	\$ 700	\$ 1,189	\$ 2,065	\$ 3,021	\$ 4,439	\$ 5,490
Number of Recipients	48	347	319	241	214	224	121
Period 7/1/12 - 6/30/13:							
Average Monthly Pension Benefit	\$ 414	\$ 650	\$ 1,179	\$ 1,925	\$ 2,879	\$ 4,356	\$ 5,208
Number of Recipients	59	349	365	257	206	209	132
Period 7/1/11 - 6/30/12:							
Average Monthly Pension Benefit	\$ 407	\$ 610	\$ 1,147	\$ 1,931	\$ 2,805	\$ 4,214	\$ 5,076
Number of Recipients	67	351	314	204	208	188	106
Period 7/1/10 - 6/30/11:							
Average Monthly Pension Benefit	\$ 409	\$ 633	\$ 1,150	\$ 1,876	\$ 2,690	\$ 4,294	\$ 5,226
Number of Recipients	73	352	270	227	172	205	105
Period 7/1/09 - 6/30/10:							
Average Monthly Pension Benefit	\$ 485	\$ 579	\$ 1,116	\$ 1,763	\$ 2,674	\$ 4,008	\$ 5,039
Number of Recipients	93	367	273	217	218	200	74
Period 7/1/08 - 6/30/09:							
Average Monthly Pension Benefit	\$ 534	\$ 554	\$ 988	\$ 1,708	\$ 2,693	\$ 3,718	\$ 4,723
Number of Recipients	71	341	216	171	154	159	47

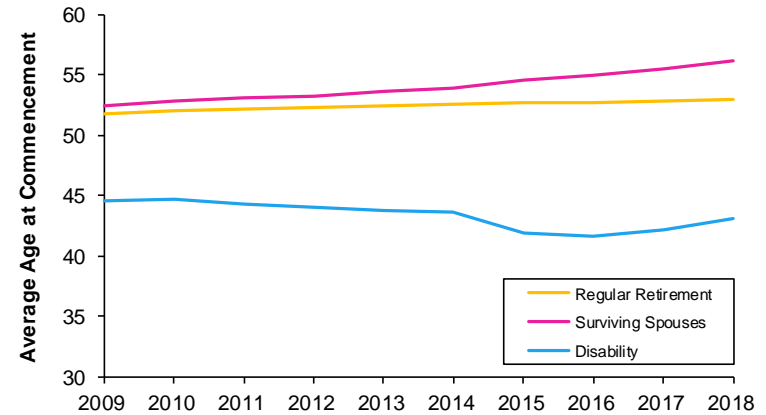
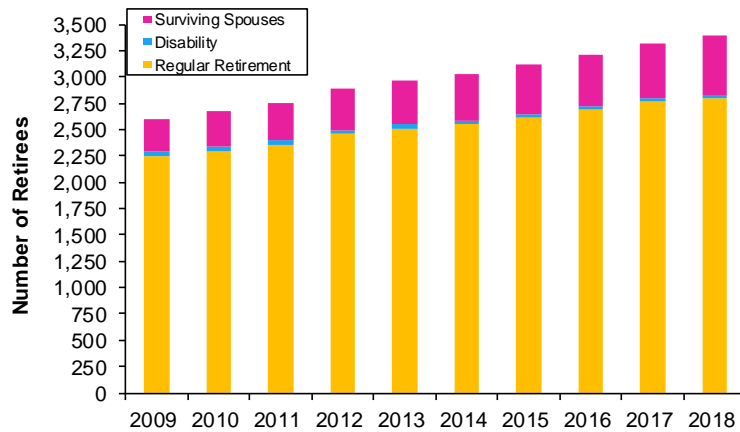
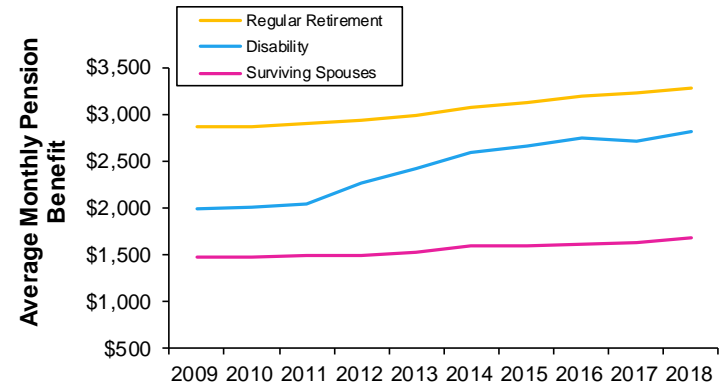
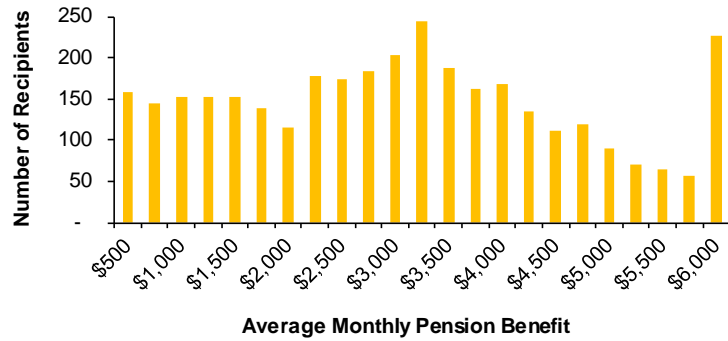
"Average Monthly Benefit" includes post-retirement pension adjustments and cost-of-living increases.

Section 5.7: Summary of All Pension Benefit Recipients

	Peace Officer/ Firefighter	Others
Service Retirements		
1. Number, June 30, 2017	2,763	27,574
2. Net Change During FY18	40	826
3. Number, June 30, 2018	2,803	28,400
4. Average Age At Commencement	52.93	58.06
5. Average Current Age	67.59	69.95
6. Average Monthly Pension Benefit	\$ 3,286	\$ 1,913
Survivors (including surviving spouses and DROs)		
1. Number, June 30, 2017	525	3,300
2. Net Change During FY18	34	203
3. Number, June 30, 2018	559	3,503
4. Average Age At Commencement	56.07	62.19
5. Average Current Age	67.11	72.11
6. Average Monthly Pension Benefit	\$ 1,671	\$ 1,053
Disability Retirements		
1. Number, June 30, 2017	27	158
2. Net Change During FY18	(2)	6
3. Number, June 30, 2018	25	164
4. Average Age At Commencement	43.01	47.15
5. Average Current Age	48.21	54.57
6. Average Monthly Pension Benefit	\$ 2,819	\$ 1,746
Total		
1. Number, June 30, 2017	3,315	31,032
2. Net Change During FY18	72	1,035
3. Number, June 30, 2018	3,387	32,067
4. Average Age At Commencement	53.37	58.46
5. Average Current Age	67.36	70.11
6. Average Monthly Pension Benefit	\$ 3,015	\$ 1,819

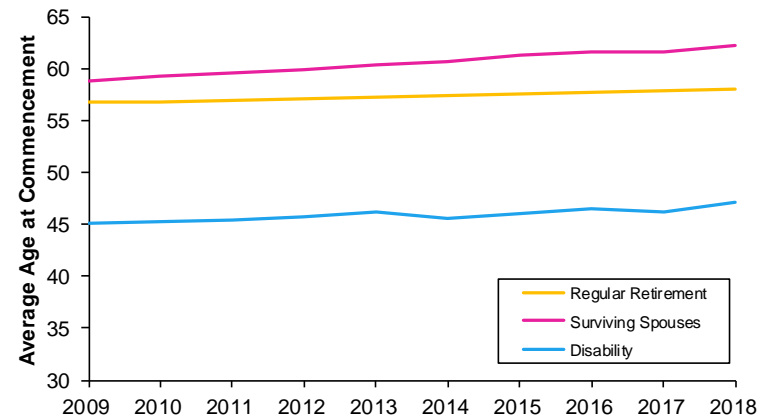
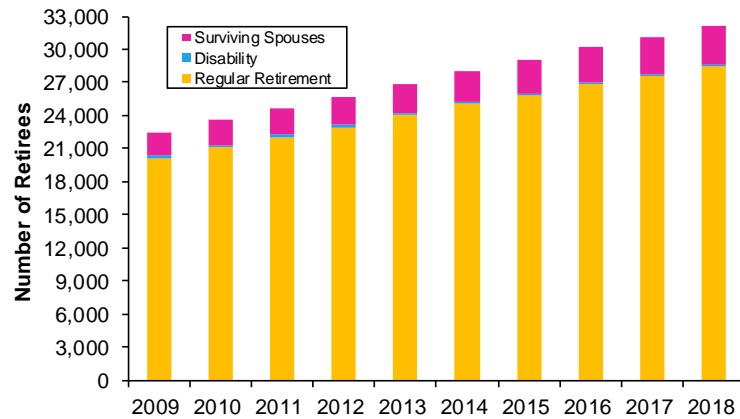
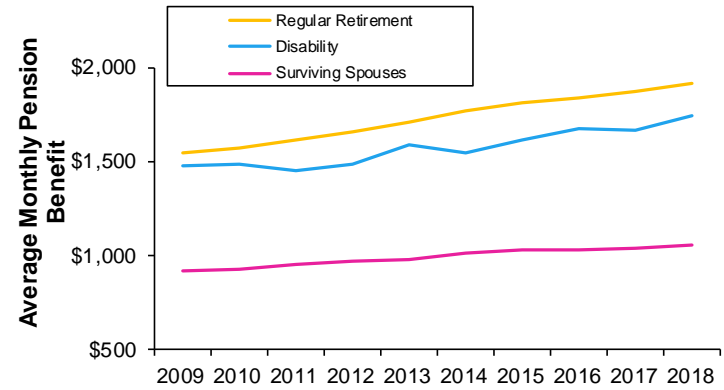
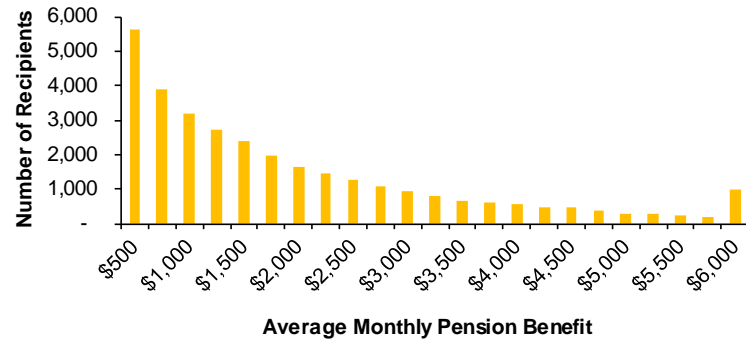
Summary of All Pension Benefit Recipients

Peace Officer/Firefighter



Summary of All Pension Benefit Recipients

Others



Summary of All Pension Benefit Recipients

Peace Officer/Firefighter

Annual Pension Benefit by Age

Age	Number	Total Annual Benefit	Average Annual Benefit
0 – 19	0	\$ 0	0
20 – 24	0	0	0
25 – 29	0	0	0
30 – 34	0	0	0
35 – 39	4	170,171	42,543
40 – 44	11	343,480	31,225
45 – 49	75	3,539,704	47,196
50 – 54	171	8,315,200	48,627
55 – 59	362	14,736,093	40,707
60 – 64	690	24,703,290	35,802
65 – 69	796	27,289,591	34,283
70 – 74	657	22,477,439	34,212
75+	621	20,964,915	33,760

Total 3,387 \$ 122,539,883 \$ 36,179

Annual Pension Benefit by Years Since Commencement

Years Since Commencement	Number	Total Annual Benefit	Average Annual Benefit
0	152	\$ 6,923,742	\$ 45,551
1	150	6,210,052	41,400
2	138	6,313,693	45,751
3	153	6,559,756	42,874
4	98	3,932,008	40,123
0 – 4	691	29,939,251	43,327
5 – 9	543	17,768,376	32,723
10 – 14	640	19,667,900	30,731
15 – 19	666	22,042,739	33,097
20 – 24	434	16,433,148	37,864
25 – 29	191	6,857,835	35,905
30 – 34	166	7,842,347	47,243
35 – 39	42	1,588,661	37,825
40+	14	399,626	28,545

Total 3,387 \$ 122,539,883 \$ 36,179

Years Since Benefit Commencement by Age

Age	Years Since Commencement									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
0 – 19	0	0	0	0	0	0	0	0	0	0
20 – 24	0	0	0	0	0	0	0	0	0	0
25 – 29	0	0	0	0	0	0	0	0	0	0
30 – 34	0	0	0	0	0	0	0	0	0	0
35 – 39	2	1	1	0	0	0	0	0	0	4
40 – 44	7	2	1	1	0	0	0	0	0	11
45 – 49	62	9	3	1	0	0	0	0	0	75
50 – 54	119	37	10	2	1	2	0	0	0	171
55 – 59	168	84	81	28	1	0	0	0	0	362
60 – 64	184	153	171	149	28	3	1	1	0	690
65 – 69	80	167	206	221	102	14	4	1	1	796
70 – 74	30	60	121	181	161	62	34	5	3	657
75+	39	30	46	83	141	110	127	35	10	621
Total	691	543	640	666	434	191	166	42	14	3,387

Summary of All Benefit Recipients

Others

Annual Pension Benefit by Age

Age	Number	Total Annual Pension Benefit	Average Annual Pension Benefit
0 – 19	0	\$ 0	\$ 0
20 – 24	0	0	0
25 – 29	0	0	
30 – 34	1	6,894	6,894
35 – 39	6	85,066	14,178
40 – 44	15	233,466	15,564
45 – 49	43	670,606	15,595
50 – 54	250	6,790,470	27,162
55 – 59	1,873	53,310,088	28,462
60 – 64	6,862	168,963,126	24,623
65 – 69	8,599	191,962,094	22,324
70 – 74	6,415	131,946,469	20,568
75+	8,003	145,793,304	18,217

Total 32,067 \$ 699,761,583 \$ 21,822

Annual Pension Benefit by Years Since Commencement

Years Since Commencement	Number	Total Annual Pension Benefit	Average Annual Pension Benefit
0	1,677	\$ 45,677,925	\$ 27,238
1	1,499	38,640,740	25,778
2	1,663	41,615,196	25,024
3	1,638	42,395,229	25,882
4	1,686	42,019,522	24,923
0 – 4	8,163	210,348,612	25,769
5 – 9	7,417	169,236,261	22,817
10 – 14	6,297	130,048,577	20,652
15 – 19	4,677	90,009,281	19,245
20 – 24	2,856	55,048,224	19,275
25 – 29	1,480	23,495,903	15,876
30 – 34	924	17,603,027	19,051
35 – 39	214	3,398,951	15,883
40+	39	572,747	14,686

Total 32,067 \$ 699,761,583 \$ 21,822

Age	Years Since Commencement									Total
	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	
0 – 19	0	0	0	0	0	0	0	0	0	0
20 – 24	0	0	0	0	0	0	0	0	0	0
25 – 29	0	0	0	0	0	0	0	0	0	0
30 – 34	1	0	0	0	0	0	0	0	0	1
35 – 39	3	2	1	0	0	0	0	0	0	6
40 – 44	9	3	3	0	0	0	0	0	0	15
45 – 49	18	15	8	2	0	0	0	0	0	43
50 – 54	172	36	25	13	3	1	0	0	0	250
55 – 59	1,312	459	62	23	11	5	1	0	0	1,873
60 – 64	3,563	2,434	785	49	16	12	1	2	0	6,862
65 – 69	1,898	2,782	2,812	1,018	69	11	7	2	0	8,599
70 – 74	661	1,101	1,720	2,135	747	34	12	4	1	6,415
75+	526	585	881	1,437	2,010	1,417	903	206	38	8,003
Total	8,163	7,417	6,297	4,677	2,856	1,480	924	214	39	32,067

Section 5.8: Schedule of Pension Benefit Recipients by Type of Pension Benefit and Option Elected

Peace Officer/Firefighter

Amount of Monthly Pension Benefit	Number of Recipients	Type of Pension Benefit			Option Selected				
		1	2	3	1	2	3	4	5
\$ 1 – \$ 300	58	23	35	0	39	8	0	2	9
301 – 600	171	103	68	0	92	36	23	8	12
601 – 900	169	100	68	1	98	42	8	11	10
901 – 1,200	182	107	75	0	110	36	18	9	9
1,201 – 1,500	179	124	54	1	100	37	25	7	10
1,501 – 1,800	151	114	36	1	78	41	21	8	3
1,801 – 2,100	173	127	45	1	73	51	35	7	7
2,101 – 2,400	207	153	51	3	91	67	26	13	10
2,401 – 2,700	214	184	26	4	79	75	35	16	9
2,701 – 3,000	246	219	25	2	72	109	41	14	10
3,001 – 3,300	285	257	24	4	91	116	49	15	14
3,301 – 3,600	213	188	21	4	72	93	29	14	5
3,601 – 3,900	200	188	9	3	62	92	29	11	6
3,901 – 4,200	176	172	4	0	43	87	29	14	3
Over \$4,200	763	744	18	1	188	393	113	57	12
Totals	3,387	2,803	559	25	1,288	1,283	481	206	129

Type of Pension Benefit

1. Regular retirement
2. Survivor payment
3. Disability

Option Selected

1. Whole Life Annuity
2. 75% Joint and Contingent Annuity
3. 50% Joint and Contingent Annuity
4. 66 2/3% Joint and Survivor Annuity
5. Level Income Option

Schedule of Pension Benefit Recipients by Type of Pension Benefit and Option Elected

Others

Amount of Monthly Pension Benefit	Number of Recipients	Type of Pension Benefit			Option Selected				
		1	2	3	1	2	3	4	5
\$ 1 – \$ 300	2,158	1,627	528	3	1,002	407	291	73	385
301 – 600	5,149	4,350	789	10	2,647	1,238	852	251	161
601 – 900	4,216	3,561	639	16	2,187	1,018	681	198	132
901 – 1,200	3,347	2,908	427	12	1,603	858	623	163	100
1,201 – 1,500	2,930	2,557	347	26	1,399	799	525	119	88
1,501 – 1,800	2,273	2,026	217	30	1,031	651	426	96	69
1,801 – 2,100	1,917	1,734	167	16	830	557	367	99	64
2,101 – 2,400	1,609	1,486	107	16	673	455	340	89	52
2,401 – 2,700	1,370	1,278	77	15	560	439	261	57	53
2,701 – 3,000	1,132	1,061	65	6	458	373	226	41	34
3,001 – 3,300	941	895	40	6	355	319	198	40	29
3,301 – 3,600	821	792	27	2	296	283	170	56	16
3,601 – 3,900	677	656	20	1	258	238	129	34	18
3,901 – 4,200	618	596	19	3	209	205	153	34	17
Over \$4,200	2,909	2,873	34	2	947	1,099	649	164	50
Totals	32,067	28,400	3,503	164	14,455	8,939	5,891	1,514	1,268

Type of Pension Benefit

1. Regular retirement
2. Survivor payment
3. Disability

Option Selected

1. Whole Life Annuity
2. 75% Joint and Contingent Annuity
3. 50% Joint and Contingent Annuity
4. 66 2/3% Joint and Survivor Annuity
5. Level Income Option

Section 5.9: Pension Benefit Recipients Added to and Removed from Rolls

Peace Officer/Firefighter

Year Ended	Added to Rolls		Removed from Rolls		Rolls – End of Year		Percent Increase in Annual Pension Benefits	Average Annual Pension Benefit
	No. ¹	Annual Pension Benefits ¹	No. ¹	Annual Pension Benefits ¹	No.	Annual Pension Benefits		
June 30, 2018	153	\$ 7,002,504	81	\$ 2,573,694	3,387	\$122,539,883	3.7%	\$ 36,179
June 30, 2017	166	6,971,580	54	2,132,027	3,315	118,111,073	4.3%	35,629
June 30, 2016	137	6,618,744	49	1,594,392	3,204	113,271,520	4.6%	35,353
June 30, 2015	136	5,617,344	46	633,048	3,116	108,247,168	4.8%	34,739
June 30, 2014	109	4,270,620	50	(145,771)	3,026	103,262,870	4.5%	34,125
June 30, 2013	113	4,162,920	42	240,775	2,967	98,846,479	4.1%	33,315
June 30, 2012	179	5,246,271	41	(177,568)	2,896	94,924,334	6.1%	32,778
June 30, 2011	114	3,772,720	33	116,090	2,758	89,500,495	4.3%	32,451
June 30, 2010	118	3,593,724	46	1,413,071	2,677	85,843,865	2.6%	32,067
June 30, 2009	108	2,759,299	39	(518,134)	2,605	83,663,212	4.1%	32,116
June 30, 2008	125	3,556,519	28	191,073	2,536	80,385,779	4.4%	31,698

¹ Numbers are estimated, and include other internal transfers.

Pension Benefit Recipients Added to and Removed from Rolls

Others

Year Ended	Added to Rolls		Removed from Rolls		Rolls – End of Year		Percent Increase in Annual Pension Benefits	Average Annual Pension Benefit
	No. ¹	Annual Pension Benefits ¹	No. ¹	Annual Pension Benefits ¹	No.	Annual Pension Benefits		
June 30, 2018	1,708	\$ 46,316,673	673	\$ 10,533,376	32,067	\$ 699,761,583	5.4%	\$ 21,822
June 30, 2017	1,699	44,619,382	816	14,610,212	31,032	663,978,286	4.7%	21,398
June 30, 2016	1,780	44,409,702	660	12,099,362	30,149	633,969,116	5.4%	21,028
June 30, 2014	1,583	39,939,292	627	7,232,812	29,029	601,658,776	5.7%	20,726
June 30, 2013	1,778	44,823,611	603	3,011,383	28,073	568,952,296	7.9%	20,267
June 30, 2012	1,808	43,247,667	554	4,861,626	26,898	527,140,068	7.9%	19,598
June 30, 2012	1,679	37,855,250	636	5,344,239	25,644	488,754,027	7.1%	19,059
June 30, 2011	1,595	37,100,217	554	6,897,899	24,601	456,243,016	7.1%	18,546
June 30, 2010	1,667	35,089,579	517	8,712,630	23,560	426,040,698	6.6%	18,083
June 30, 2009	1,340	25,402,811	476	28,773	22,410	399,663,749	6.8%	17,834
June 30, 2008	1,454	28,498,471	466	5,349,935	21,546	374,289,711	14.1%	17,372

¹ Numbers are estimated, and include other internal transfers.

Section 6: Basis of the Actuarial Valuation

Section 6.1: Summary of Plan Provisions

Effective Date

January 1, 1961, with amendments through June 30, 2017. Chapter 82, 1986 Session Laws of Alaska, created a two tier retirement system. Members who were first hired under PERS before July 1, 1986 (Tier 1) are eligible for different benefits than members hired after June 30, 1986 (Tier 2). Chapter 4, 1996 Session Laws of Alaska created a third tier for members who were first hired after June 30, 1996 (Tier 3). Chapter 9, 2005 Session Laws of Alaska, closed the plan to new members hired after June 30, 2006.

Administration of Plan

The Commissioner of Administration or the Commissioner's designee is the administrator of the system. The Attorney General of the state is the legal counsel for the system and shall advise the administrator and represent the system in legal proceedings.

Prior to June 30, 2005, the Public Employees' Retirement Board prescribed policies and adopted regulations and performed other activities necessary to carry out the provisions of the system. The Alaska State Pension Investment Board, Department of Revenue, Treasury Division was responsible for investing PERS funds.

On July 27, 2005, Senate Bill 141, enacted as Chapter 9, 2005 Session laws of Alaska, replaced the Public Employees' Retirement Board and the Alaska State Pension Investment Board with the Alaska Retirement Management Board.

Employers Included

Currently there are 155 employers participating in PERS, including the State of Alaska and 154 political subdivisions and public organizations. Two additional political subdivisions participate in PERS for healthcare benefits only.

Membership

PERS membership is mandatory for all permanent full-time and part-time employees of the State of Alaska and participating political subdivisions and public organizations, unless they are specifically excluded by Alaska Statute or employer participation agreements. Employees participating in the University of Alaska's Optional Retirement Plan or other retirement plans funded by the State are not covered by PERS. Elected officials may waive PERS membership.

Certain members of the Alaska Teachers' Retirement System (TRS) are eligible for PERS retirement benefits for their concurrent elected public official service with municipalities. In addition, employees who work half-time in PERS and TRS simultaneously are eligible for half-time PERS and TRS credit.

Senate Bill 141, signed into law on July 27, 2005, closes the Plan effective July 1, 2006, to new members first hired on or after July 1, 2006.

Credited Service

Permanent employees who work at least 30 hours a week earn full-time credit; part-time employees working between 15 and 30 hours a week earn partial credit based upon the number of hours worked. Members receiving PERS occupational disability benefits continue to earn PERS credit while disabled. Survivors who are receiving occupational death benefits continue to earn PERS service credit while occupational survivor benefits are being paid.

Members may claim other types of service, including:

- part-time State of Alaska service rendered after December 31, 1960, and before January 1, 1976;
- service with the State, former Territory of Alaska, or U.S. Government in Alaska before January 1, 1961;
- past Peace Officer, correctional officer, fire fighter, and special officer service after January 1, 1961;
- military service (not more than five years may be claimed);
- temporary service after December 31, 1960;
- elected official service before January 1, 1981;
- Alaska Bureau of Indian Affairs service;
- past service rendered by employees who worked half-time in PERS and TRS simultaneously;
- leave without pay service after June 13, 1987, while receiving Workers' Compensation;
- Village Public Safety Officer service; and
- service as a temporary employee of the legislature before July 1, 1979, but this service must have been claimed no later than July 1, 2003, or by the date of retirement, if sooner (not more than 10 years may be claimed).

Except for service before January 1, 1961, with the State, former Territory of Alaska, or U.S. Government in Alaska, contributions are required for all past service.

Past employment with participating political subdivisions that occurred before the employers joined PERS is creditable if the employers agree to pay the required contributions.

At the election of certain PERS members, certain service may be credited in the same fashion as members in TRS.

Members employed as dispatchers or within a state correctional facility may, at retirement, elect to convert their dispatcher or correctional facility service from "all other" service to Peace Officer/Firefighter service and retire under the 20 year retirement option. Members pay the full actuarial cost of conversion.

Employer Contributions

PERS employers contribute the amounts required, in addition to employees' contributions, to fund the benefits of the system.

The normal cost rate is a uniform rate for all participating employers (less the value of members' contributions).

The past service rate is a uniform rate for all participating employers to amortize the unfunded past service liability with payments that are a level percentage of payroll amount over a closed 25-year period starting June 30, 2014. Effective June 30, 2018, each future year's unfunded service liability is separately amortized on a level percent of pay basis over 25 years.

Employer rates cannot be less than the normal cost rate.

Pursuant to AS 39.35.255 effective July 1, 2008, each PERS employer will pay a simple uniform contribution rate of 22% of member payroll.

Additional State Contributions

Pursuant to AS 39.35.280 effective July 1, 2008, the State shall contribute an amount (in addition to the State contribution as an employer) that when combined with the employer contribution (22%) will be sufficient to pay the total contribution rate adopted by The Alaska Retirement Management Board.

Member Contributions

Mandatory Contributions: Peace Officer/Firefighter members are required to contribute 7.5% of their compensation; all Others contribute 6.75%. Those all Others who have elected to have their service calculated under TRS rules contribute 9.76% of their compensation. Members' contributions are deducted from gross wages before federal income taxes are withheld.

Contributions for Claimed Service: Member contributions are also required for most of the claimed service described above.

Voluntary Contributions: Members may voluntarily contribute up to 5% of their salary on an after-tax basis. Voluntary contributions are recorded in a separate account and are payable to the:

- a. member in lump sum payment upon termination of employment;
- b. member's beneficiary if the member dies; or
- c. member in a lump sum, life annuity, or payments over a designated period of time when the member retires.

Interest: Members' contributions earn 4.5% interest, compounded semiannually on June 30 and December 31.

Refund of Contributions: Terminated members may receive refunds of their member contribution accounts which includes their mandatory and voluntary contributions, indebtedness payments, and interest earned. Terminated members' accounts may be attached to satisfy claims under Alaska Statute 09.38.065, federal income tax levies, and valid Qualified Domestic Relations Orders.

Reinstatement of Contributions: Refunded accounts and the corresponding PERS service may be reinstated upon reemployment in PERS prior to July 1, 2010. Interest accrues on refunds until paid in full or members retire.

Retirement Benefits

Eligibility

- a. Members, including deferred vested members, are eligible for normal retirement at age 55 or early retirement at age 50 if they were hired before July 1, 1986 (Tier 1), and 60 or early retirement at age 55 if they were hired after July 1, 1986 (Tiers 2 & 3). Additionally, they must have at least:
 - (i) five years of paid-up PERS service;
 - (ii) 60 days of paid-up PERS service as employees of the legislature during each of five legislative sessions and they were first hired by the legislature before May 30, 1987;
 - (iii) 80 days of paid-up PERS service as employees of the legislature during each of five legislative sessions and they were first hired by the legislature after May 29, 1987;
 - (iv) two years of paid-up PERS service and they are vested in TRS; or
 - (v) two years of paid-up PERS service and a minimum three years of TRS service to qualify for a public service benefit.
- b. Members may retire at any age when they have:
 - (i) 20 paid-up years of PERS Peace Officer/Firefighter service; or
 - (ii) 30 paid-up years of PERS "all other" or "elected official" service.

Benefit Type

Lifetime benefits are paid to members. Eligible members may receive normal, unreduced benefits when they (1) reach normal retirement age and complete the service required; or (2) satisfy the

minimum service requirements under the "20 and out" or "30 and out" provisions. Members may receive early, actuarially reduced benefits when they reach early retirement age and complete the service required.

Members may elect an early retirement or a joint and survivor option. Members who entered PERS prior to July 1, 1996 may also select a 66-2/3 last survivor option and a level income option. Under these options and early retirement, benefits are actuarially adjusted so that members receive the actuarial equivalents of their normal benefit amounts.

Benefit Calculations

Retirement benefits are calculated by multiplying the average monthly compensation (AMC) times credited PERS service times the percentage multiplier. The AMC is determined by averaging the salaries earned during the five highest (three highest for Peace Officer/Firefighter members or members hired prior to July 1, 1996) consecutive payroll years. Members must earn at least 115 days of credit in the last year worked to include it in the AMC calculation. PERS pays a minimum benefit of \$25.00 per month for each year of service when the calculated benefit is less.

The percentage multipliers for Peace Officer/Firefighter members are 2% for the first ten years of service and 2.5% for all service over 10 years.

The percentage multipliers for all Others are 2% for the first ten years, 2.25% for the next ten years, and 2.5% for all remaining service earned on or after July 1, 1986. All service before that date is calculated at 2%.

Indebtedness

Members who terminate and refund their PERS contributions are not eligible to retire, unless they return to PERS employment and pay back their refunds plus interest or accrue additional service which qualifies them for retirement. PERS refunds must be paid in full if the corresponding service is to count toward the minimum service requirements for retirement. Refunded PERS service is included in total service for the purpose of calculating retirement benefits. However, if a member is otherwise eligible to retire, when refunds are not completely paid before retirement, benefits are actuarially reduced for life. Indebtedness balances may also be created when a member purchases qualified claimed service.

Reemployment of Retired Members

Retirement and retiree healthcare benefits are suspended while retired members are reemployed under e PERS. During reemployment, members earn additional PERS service and contributions are withheld from their wages. A member who retired with a normal retirement benefit can elect to waive payment of PERS contributions. The waiver allows the member to continue receiving the retirement benefit during the period of reemployment. Members who elect the waiver option do not earn additional PERS service. The Waiver Option first became effective July 1, 2005 and applies to reemployment periods after that date. The Waiver Option is not available to members who retired early or under the Retirement Incentive Programs (RIPs). The Waiver Option is no longer available after June 30, 2009.

Members retired under the Retirement Incentive Programs (RIPs) who return to employment under PERS, TRS, or the University of Alaska's Optional Retirement Plan will:

- a. forfeit the three years of incentive credits that they received;
- b. owe PERS 150% of the benefits that they received for state and political subdivision members, and 110% for school district employees, under the 1996-2000 RIP, which may include costs for health insurance, excluding amounts that they paid to participate for the 1986 and 1989 RIPs. Under prior RIPs, the penalty is 110% of the benefits received; and
- c. be charged 7% interest from the date that they are reemployed until their indebtedness is paid in full or they retire again. If the indebtedness is not completely paid, future benefits will be actuarially reduced for life.

Employers make contributions to the unfunded liability of the plan on behalf of rehired retired members at the rate the employer is making contributions to the unfunded liability of the plan for other members.

Postemployment Healthcare Benefits

Major medical benefits are provided to retirees and their surviving spouses by PERS for all employees hired before July 1, 1986 (Tier 1) and disabled retirees. Employees hired after June 30, 1986 (Tier 2) and their surviving spouses with five years of credited service (or ten years of credited service for those first hired after June 30, 1996 (Tier 3)) must pay the full monthly premium if they are under age sixty and will receive benefits paid by PERS if they are over age sixty. Tier 3 Members with between five and ten years of credited service must pay the full monthly premium regardless of their age. Tier 2 and Tier 3 Members with less than five years of credited service are not eligible for postemployment healthcare benefits. Tier 2 Members who are receiving a conditional benefit and are age eligible are eligible for postemployment healthcare benefits. In addition, Peace Officers and their surviving spouses with twenty-five years of Peace Officer membership service, Other employees and their surviving spouses with thirty years of membership service, and any disabled member receive benefits paid by PERS, regardless of their age or date of hire.

Medical, prescription drug, dental, vision and audio coverage is provided through the AlaskaCare Retiree Health Plan. Health plan provisions do not vary by retirement tier or age, except for Medicare coordination.

Surviving spouses continue coverage only if a pension payment form that provided survivor benefits was elected. Alternate payees (i.e. individuals who are the subject of a domestic relations order or DRO) are allowed to participate in the plan, but must pay the full cost.

Where premiums are required prior to age 60, the valuation bases this payment upon the age of the retiree.

Participants in the defined benefit plan are covered under the following benefit design:

Plan Feature	Amounts
Deductible (single/family)	\$150 / \$450
Coinsurance - most services	20%
Outpatient surgery/testing	0%
Maximum Out-of-Pocket (single/family, excl. deductible)	\$800 / \$2,400
Rx Copays (generic/ brand/mail-order), does not apply to OOP max	\$4 / \$8 / \$0
Lifetime Maximum	\$2,000,000

The plan coordinates with Medicare on a traditional Coordination of Benefits Method. Starting in 2019, the prescription drug coverage will be through a Medicare Part D EGWP arrangement.

Disability Benefits

Monthly disability benefits are paid to permanently disabled members until they die, recover or become eligible for normal retirement. Members are appointed to normal retirement on the first of the month after they become eligible.

Occupational Disability

Members are not required to satisfy age or service requirements to be eligible for occupational disability. Monthly benefits are equal to 40% of their gross monthly compensation on the date of their disability. Members on occupational disability continue to earn PERS service until they become eligible for normal retirement. Peace Officer/Firefighter members may elect to retain the disability benefit formula for the calculation of their normal retirement benefits.

Non-occupational Disability

Members must be vested (five paid up years of PERS service) to be eligible for non-occupational disability benefits. Monthly benefits are calculated based on the member's average monthly compensation and PERS service on the date of termination from employment because of disability. Members do not earn PERS service while on non-occupational disability.

Death Benefits

Monthly death benefits may be paid to a spouse or dependent children upon the death of a member. If monthly benefits are not payable under the occupational and non-occupational death provisions, the designated beneficiary receives the lump sum benefit described below.

Occupational Death

When an active member (vested or non-vested) dies from occupational causes, a monthly survivor's pension may be paid to the spouse. The pension equals 40% of the member's gross monthly compensation on the date of death or disability, if earlier. If there is no spouse, the pension may be paid to the member's dependent children. On the member's normal retirement date, the benefit converts to a normal retirement benefit. The normal benefit is based on the member's salary on the date of death and service, including service accumulated from the date of the member's death to the normal retirement date. Survivors of Peace Officer/Firefighter members receive the greater of 50% of the member's gross monthly compensation on the date of death or disability, or 75% of the member's monthly normal retirement benefit (including service projected to Normal Retirement). If the member is unmarried with no children, a refund of contributions is payable to the estate.

Death after Occupational Disability

When a member dies while occupationally disabled, benefits are paid as described above in Occupational Death.

Non-occupational Death

When a vested member dies from non-occupational causes, the surviving spouse may elect to receive a monthly 50% joint and survivor benefit or a lump sum benefit. The monthly benefit is calculated on the member's average monthly compensation and PERS service at the time of termination or death.

Lump Sum Non-occupational Death Benefit

Upon the death of a member who has less than one year of service, the designated beneficiary receives the member's contribution account, which includes mandatory and voluntary contributions, indebtedness payments, and interest earned. If the member has more than one year of PERS service or is vested, the beneficiary also receives \$1,000 and \$100 for each year of PERS service.

Death After Retirement

When a retired member dies, the designated beneficiary receives the member's contribution account, less any benefits already paid and the member's last benefit check. If the member selected a survivor option at retirement, the eligible spouse receives continuing, lifetime monthly benefits.

Postretirement Pension Adjustments

Postretirement pension adjustments (PRPAs) are granted annually to eligible benefit recipients when the consumer price index (CPI) for urban wage earners and clerical workers for Anchorage increases during the preceding calendar year. PRPAs are calculated by multiplying the recipient's base benefit, including past PRPAs, excluding the Alaska COLA, times:

- a. 75% of the CPI increase in the preceding calendar year or 9%, whichever is less, if the recipient is at least age 65 or on PERS disability; or

- b. 50% of the CPI increase in the preceding calendar year or 6%, whichever is less, if the recipient is at least age 60, or has been receiving benefits for at least five years.

Ad-hoc PRPAs, up to a maximum of 4%, may be granted to eligible recipients who first entered PERS before July 1, 1986 (Tier 1) if the CPI increases and the funded ratio is at least 105%.

In a year where an ad-hoc PRPA is granted, eligible recipients will receive the higher of the two calculations.

Alaska Cost of Living Allowance

Eligible benefit recipients who reside in Alaska receive an Alaska cost of living allowance (COLA) equal to 10% of their base benefits or \$50, whichever is more. The following benefit recipients are eligible:

- a. members who first entered PERS before July 1, 1986 (Tier 1) and their survivors;
- b. members who first entered PERS after June 30, 1986 (Tiers 2 & 3) and their survivors if they are at least age 65; and
- c. all disabled members.

Changes in Benefit Provisions Valued Since the Prior Valuation

The PERS medical benefit provisions were changed since the prior valuation to reflect the implementation of EGWP as of January 1, 2019.

Section 6.2: Description of Actuarial Methods and Valuation Procedures

The funding method used in this valuation was adopted by the Board in October 2006. Changes in methods were adopted by the Board in January 2019 based on the experience study for the period July 1, 2013 to June 30, 2017. The asset smoothing method used to determine valuation assets was changed effective June 30, 2014.

Benefits valued are those delineated in Alaska State statutes as of the valuation date. Changes in State statutes effective after the valuation date are not taken into consideration in setting the assumptions and methods.

Actuarial Method

Entry Age Normal Cost.

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method.

Effective June 30, 2018, the Board adopted a layered UAAL amortization method: Layer #1 equals the sum of (i) the UAAL at June 30, 2018 based on the 2017 valuation, plus (ii) the FY18 experience gain/loss. Layer #1 is amortized over the remainder of the 25-year closed period that was originally established in 2014¹. Layer #2 equals the change in UAAL at June 30, 2018 due to the experience study and EGWP implementation. Layer #2 is amortized over a separate closed 25-year period starting in 2018. Future layers will be created each year based on the change in UAAL occurring that year, and will be amortized over separate closed 25-year periods. The UAAL amortization continues to be on a level percent of pay basis. State statutes allow the contribution rate to be determined on payroll for all members, defined benefit and defined contribution member payroll combined.

Projected pension and postemployment healthcare benefits were determined for all active members. Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year from the assumed entry age to the assumed retirement age were applied to the projected benefits to determine the normal cost (the portion of the total cost of the plan allocated to the current year under the method). The normal cost is determined by summing intermediate results for active members and determining an average normal cost rate which is then related to the total payroll of active members. The actuarial accrued liability for active members (the portion of the total cost of the plan allocated to prior years under the method) was determined as the excess of the actuarial present value of projected benefits over the actuarial present value of future normal costs.

The actuarial accrued liability for retired members and their beneficiaries currently receiving benefits, terminated vested members and disabled members not yet receiving benefits was determined as the actuarial present value of the benefits expected to be paid. No future normal costs are payable for these members.

The actuarial accrued liability under this method at any point in time is the theoretical amount of the fund that would have been accumulated had annual contributions equal to the normal cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date). The unfunded actuarial accrued liability is the excess of the actuarial accrued liability over the actuarial value of plan assets measured on the valuation date.

Under this method, experience gains or losses, i.e., decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the unfunded actuarial accrued liability.

¹ Layer #1 is referred to as "initial amount" in Section 1.2.

Valuation of Assets

The actuarial asset value was reinitialized to equal Fair Value of Assets as of June 30, 2014. Beginning in FY15, the asset value method recognizes 20% of the gain or loss each year, for a period of 5 years. All assets are valued at fair value. Assets are accounted for on an accrued basis and are taken directly from financial statements audited by KPMG LLP.

Changes in Methods Since the Prior Valuation

Prior to the June 30, 2018 valuation: (i) the total UAAL was amortized over the remainder of the 25-year closed period that was established in 2014; and (ii) the actuarial cost method for the retiree healthcare plan was on a level dollar basis (it is now on a level percent of pay method). There were no other changes in the asset or valuation methods since the prior valuation.

Valuation of Retiree Medical and Prescription Drug Benefits

This section outlines the detailed methodology used to develop the initial per capita claims cost rates for the PERS postemployment healthcare plan. Note that the methodology reflects the results of our annual experience rate update for the period from July 1, 2017 to June 30, 2018. Healthcare cost trend and retiree contribution increase assumptions for the period after June 30, 2018 were updated since the prior valuation.

Base claims cost rates are incurred healthcare costs expressed as a rate per member per year. Ideally, claims cost rates should be derived for each significant component of cost that can be expected to require differing projection assumptions or methods (i.e., medical claims, prescription drug claims, administrative costs, etc). Separate analysis is limited by the availability and historical credibility of cost and enrollment data for each component of cost. This valuation reflects non-prescription claims separated by Medicare status, including eligibility for free Part A coverage. Prescription costs are analyzed separately as in prior valuations. Administrative costs are assumed in the final per capita claims cost rates used for valuation purposes, as described below. Analysis to date on Medicare Part A coverage is limited since Part A claim data is not available by individual, nor is this status incorporated into historical claim data.

Benefits

Medical, prescription drug, dental, vision and audio coverage is provided through the AlaskaCare Retiree Health Plan and is available to employees of the State and subdivisions who meet retirement criteria based on the retirement plan tier in effect at their date of hire. Health plan provisions do not vary by retirement tier or age, except for Medicare coordination for those Medicare-eligible. Dental, vision and audio claims (DVA) are excluded from data analyzed for this valuation because those are retiree-pay all benefits where rates are assumed to be self-supporting. Buck relies upon rates set by a third-party for the DVA benefits. Buck reviewed historical rate-setting information and views contribution rate adjustments made are not unreasonable.

Administration and Data Sources

The plan was administered by Wells Fargo Insurance Services (acquired by HealthSmart, in January 2012) from July 1, 2009 through December 31, 2013 and by Aetna effective January 1, 2014.

Claims incurred for the period from July 2016 through June 2018 (FY17 through FY18) were provided by the State of Alaska from reports extracted from their data warehouse, which separated claims by Medicare status. In reviewing the claims reports generated for this year's valuation, it was discovered that audio and vision claims were incorrectly included in the reports that were provided for the prior year valuation. These audio and vision claims accounted for approximately \$9.9M in claims during fiscal 2017 (which was less than 2% of the total gross claims for that fiscal year). The claims for fiscal 2017 used in this year's claims cost development exclude the audio and vision claims that were incorrectly included in last year's development. Monthly enrollment data for the same period was provided by Aetna.

Aetna also provided census information identifying Medicare Part B only participants. These participants are identified when hospital claims are denied by Medicare; Aetna then flags that participant as a Part B

only participant. Buck added newly identified participants to our list of Medicare Part B only participants. Buck assumes that once identified as Part B only, that participant remains in that status until we are notified otherwise.

Aetna provided a snapshot file as of July 1, 2018 of retirees and dependents that included a coverage level indicator. The monthly enrollment data includes dual coverage participants. These are participants whereby both the retiree and spouse are retirees from the State and both are reflected with Couple coverage in the enrollment. In this case, such a couple would show up as four members in the monthly enrollment (each would be both a retiree and a spouse). As a result, the snapshot census file was used to adjust the total member counts in the monthly enrollment reports to estimate that number of unique participants enrolled in coverage. Based on the snapshot files from the last two valuations, the total member count in the monthly enrollment reports needs to be reduced by approximately 13% to account for the number of participants with dual coverage.

Aetna does not provide separate experience by Medicare status in standard reporting so the special reports mentioned above from the data warehouse were used this year to obtain that information and incorporate it into the per capita rate development for each year of experience (with corresponding weights applied in the final per capita cost).

Methodology

Buck projected historical claim data to FY19 for retirees using the following summarized steps:

1. Develop historical annual incurred claim cost rates – an analysis of medical costs was completed based on claims information and enrollment data provided by the State of Alaska and Aetna for each year in the experience period of FY17 through FY18
 - Costs for medical services and prescriptions were analyzed separately, and separate trend rates were developed to project expected future medical and prescription costs for the valuation year (e.g. from the experience period up through FY19).
 - Because the reports provided this year reflected incurred claims, no additional adjustment was needed to determine incurred claims to be used in the valuation.
 - An offset for costs expected to be reimbursed by Medicare was incorporated beginning at age 65. Alaska retirees who do not have 40 quarters of Medicare-covered compensation do not qualify for Medicare Part A coverage free of charge. This is a relatively small and closed group. Medicare was applied to State employment for all employees hired after March 31, 1986. For the “no-Part A” individuals who are required to enroll in Medicare Part B, the State is the primary payer for hospital bills and other Part A services. Claim experience is not available separately for participants with both Medicare Parts A and B and those with Part B only. For Medicare Part B only participants, a lower average claims cost was applied to retirees covered by both Medicare Part A and B vs. retirees covered only by Medicare Part B based upon manual rate models that estimate the Medicare covered proportion of medical costs. To the extent that no-Part A claims can be isolated and applied strictly to the appropriate closed group, actuarial accrued liability will be more accurate.
 - Based on census data received from Aetna, less than 1% of the current retiree population was identified as having coverage only under Medicare Part B. We assume that 5% of actives hired before 4/1/1986 and current retirees who are not yet Medicare eligible will not be eligible for Medicare Part A.
 - Based upon a reconciliation of valuation census data to the snapshot eligibility files provided by Aetna as of July 1, 2017, and July 1, 2018, Buck adjusted member counts used for duplicate records where participants have dual coverage; i.e. primary coverage as a retiree and secondary coverage as the covered spouse of another retiree. This is to reflect the total cost per distinct individual/member which is then applied to distinct members in the valuation census.
 - Buck understands that pharmacy claims reported do not reflect rebates. Based upon reported rebates in proportion to incurred claims for State of Alaska retiree plans, Buck reduced reported pharmacy incurred claims by 12% to estimate the rebates for the retiree population. These estimates were based upon reported rebates for retirees from Aetna.

2. Develop estimated Retiree Drug Subsidy reimbursement - actual subsidy payments to the State were received for claims incurred during the 2009 through 2017 calendar years. Buck obtained this information based upon recorded and available information in the RDS Subsidy website and as provided by the State. The projected subsidy for FY19 was determined based on the historical ratio of subsidy received to claims incurred (adjusted for rebates), and then applied to the appropriate projection period. These amounts are applicable only to Medicare eligible participants.
3. Adjust for claim fluctuation, anomalous experience, etc. – explicit adjustments are often made for anticipated large claims or other anomalous experience. Due to group size and demographics, we did not make any large claim adjustments. We do blend both Alaska plan-specific and national trend factors as described below. Buck compared data utilized to lag reports and quarterly plan experience presentations provided by the State and Aetna to assess accuracy and reasonableness of data.
4. Trend all data points to the projection period – project prior years' experience forward to FY19 for retiree benefits on an incurred claim basis. Trend factors derived from historical Alaska-specific experience and national trend factors are shown in the table in item 5 below.
5. Apply credibility to prior experience – adjust prior year's data by assigning weight to recent periods, as shown at the right of the table below. The Board approved a change in the weighting of experience periods beginning with the prior valuation as outlined below. Note also that we averaged projected plan costs using Alaska-specific trend factors and national trend factors, assigning 75% weight to Alaska-specific trends and 25% to national trends:

Alaska-Specific and National Average Weighted Trend from Experience Period to Valuation Year			
Experience Period	Medical	Prescription	Weighting Factors
FY17 to FY18	7.0% Pre-Medicare / 4.5% Medicare	6.2%	50%
FY18 to FY19	6.2% Pre-Medicare / 4.0% Medicare	8.0%	50%

Trend assumptions used for rate development are assessed annually and as additional/improved reporting becomes available, we will incorporate into rate development as appropriate. Based upon recent experience trending up, particularly for prescription drugs, the Board has approved our recommendation to update to the valuation healthcare cost trend assumption.

6. Develop separate administration costs – no adjustments were made for internal administrative costs. Third party retiree plan administration fees for FY19 are based upon total fees projected to 2019 by Segal based on actual FY2018 fees. The annual per participant per year administrative cost rate for medical and prescription benefits is \$300.

Healthcare Reform

Healthcare Reform legislation passed on March 23, 2010 included several provisions with potential implications for the State of Alaska Retiree Health Plan liability. Buck evaluated the impact of the following provisions.

Because the State plan is retiree-only, and was in effect at the time the legislation was enacted, not all provisions of the health reform legislation apply to the State plan. Unlimited lifetime benefits and dependent coverage to age 26 are two of these provisions. We reviewed the impact of including these provisions, but there was no decision made to adopt them, and no requirement to do so.

Because Transitional Reinsurance fees are only in effect until 2016, we excluded these for valuation purposes.

The Plan will be subject to the high cost plan excise tax (Cadillac tax). Based upon guidance available at the valuation date, Buck estimated the tax based upon a blended test of pre and post-Medicare projected costs and enrollment projections.

- A blended test compares a weighted average per capita cost (based upon proportions of pre/post Medicare eligible enrollments) to the tax cost thresholds in each projection year. Projected enrollment was based upon the current enrollment data provided by Aetna, and valuation headcount projections for future years.
- We included administrative fees and applied Retiree Drug Subsidy / EGWP reimbursements to the Medicare rates.

We assumed claim costs would increase according to valuation trend assumptions from the June 30, 2018 valuation, and that the tax cost thresholds would increase at 2.25% (the CPI assumption of 2.50% less 0.25% to estimate the impact of using the chained CPI as required by the Tax Cut and Jobs Act passed in December 2017). The first year increased at 3.25% to reflect the additional 1.0% over inflation assumption.

We determined the impact to be approximately \$83.9 million of the projected June 30, 2018 healthcare actuarial accrued liability for the defined benefit plan.

The Tax Cuts and Jobs Act passed in December 2017 included the elimination of the individual mandate penalty and changed the inflation measure for purposes of determining the limits for the High Cost Excise Tax to use chained CPI. It is our understanding the law does not directly impact other provisions of the ACA. While the nullification of the ACA's individual mandate penalty does not directly impact employer group health plans, it could contribute to the destabilization of the individual market and increase the number of uninsured. Such destabilization could translate to increased costs for employers. We have considered this when setting our healthcare cost trend assumptions and will continue to monitor this issue.

We have not identified any other specific provision of health care reform or its potential repeal that would be expected to have a significant impact on the measured obligation. We will continue to monitor legislative activity.

Data

In accordance with actuarial standards, we note the following specific data sources and steps taken to value retiree medical benefits:

The Division of Retirement and Benefits provided pension valuation census data, which for people currently in receipt of healthcare benefits was supplemented by coverage data from the healthcare claims administrator (Aetna)

Certain adjustments and assumptions were made to prepare the data for valuation:

- Some records provided on the Aetna data were associated with a participant social security number not listed on the RIN-to-SSN translation file. We reconciled those participants with the pension valuation data as either a surviving spouse or a retiree in the appropriate plan based on account structure information in the Aetna data.
- All records provided with retiree medical coverage on the Aetna data were included in this valuation and we relied on the Aetna data as the source of medical coverage for current retirees and their dependents.
- Some records in the Aetna data were duplicates due to the dual coverage (i.e. coverage as a retiree and as a spouse of another retiree) allowed under the plan. Records were adjusted for these members so that each member was only valued once. Any additional value of the dual coverage (due to coordination of benefits) is small and reflected in the per capita costs.
- Covered children included in the Aetna data were valued until age 23, unless disabled. We assumed that those dependents over 23 were only eligible and valued due to being disabled.
- For individuals included in the pension data expecting a future pension, we valued health benefits starting at the same point that the pension benefit is assumed to start.

We are not aware of any other data issues that would be expected to have a material impact on the results and there are no unresolved matters related to the data.

The chart below shows the basis of setting the per capita claims cost assumption, which includes both PERS and TRS.

	Medical		Prescription Drugs (Rx)	
	Pre-Medicare	Medicare	Pre-Medicare	Medicare
A. Fiscal 2017				
1. Incurred Claims	\$ 230,671,216	\$ 66,265,130	\$ 64,442,324	\$ 160,756,912
2. Adjustments for Rx Rebates	0	0	(7,733,079)	(19,290,829)
3. Net incurred claims	\$ 230,671,216	\$ 66,265,130	\$ 56,709,245	\$ 141,466,082
4. Average Enrollment	23,342	38,502	23,342	38,502
5. Claim Cost Rate (3) / (4)	9,882	1,721	2,430	3,674
6. Trend to Fiscal 2019	1.136	1.087	1.147	1.147
7. Fiscal 2019 Incurred Cost Rate (5) x (6)	\$ 11,230	\$ 1,870	\$ 2,787	\$ 4,214
B. Fiscal 2018				
1. Incurred Claims	\$ 228,572,782	\$ 72,875,570	\$ 65,406,973	\$ 178,763,430
2. Adjustments for Rx Rebates	0	0	(7,848,837)	(21,451,612)
3. Net incurred claims	\$ 228,572,782	\$ 72,875,570	\$ 57,558,136	\$ 157,311,819
4. Average Enrollment	21,920	40,560	21,920	40,560
5. Claim Cost Rate (3) / (4)	10,428	1,797	2,626	3,878
6. Trend to Fiscal 2019	1.062	1.040	1.080	1.080
7. Fiscal 2019 Incurred Cost Rate (5) x (6)	\$ 11,074	\$ 1,869	\$ 2,836	\$ 4,189
	Medical		Prescription Drugs (Rx)	
	Pre-Medicare	Medicare	Pre-Medicare	Medicare
C. Incurred Cost Rate by Fiscal Year				
1. Fiscal 2017 A.(7)	11,230	1,870	2,787	4,214
2. Fiscal 2018 B.(7)	11,074	1,869	2,836	4,189
D. Weighting by Fiscal Year				
1. Fiscal 2017	50%	50%	50%	50%
2. Fiscal 2018	50%	50%	50%	50%
E. Fiscal 2019 Incurred Cost Rate				
1. Rate at Average Age C x D	\$ 11,152	\$ 1,870	\$ 2,811	\$ 4,201
2. Average Aging Factor	0.824	1.251	0.837	1.116
3. Rate at Age 65 (1) / (2)	\$ 13,535	\$ 1,494	\$ 3,360	\$ 3,764
F. Development of Part A&B and Part B Only Cost from Pooled Rate Above				
1. Part A&B Average Enrollment		40,223		
2. Part B Only Average Enrollment		338		
3. Total Medicare Average Enrollment B(4)		40,560		
4. Cost ratio for those with Part B only to those with Parts A&B		3.180		
5. Factor to determine cost for those with Parts A&B (2) / (3) x (4) + (1) / (3) x 1.00		1.018		
6. Medicare per capita cost for all participants: E(3)		\$ 1,494		
7. Cost for those eligible for Parts A&B: (6) / (5)		\$ 1,468		
8. Cost for those eligible for Part B only: (7) x (4)		\$ 4,667		

Following the development of total projected costs, a distribution of per capita claims cost was developed. This was accomplished by allocating total projected costs to the population census used in the valuation. The allocation was done separately for each of prescription drugs and medical costs for the Medicare eligible and pre-Medicare populations. The allocation weights were developed using participant counts by age and assumed morbidity and aging factors. Results were tested for reasonableness based on historical trend and external benchmarks for costs paid by Medicare.

Below are the results of this analysis:

**Distribution of Per Capita Claims Cost by Age
for the Period July 1, 2018 through June 30, 2019**

Age	Medical and Medicare Parts A & B	Medical and Medicare Part B Only	Prescription Drug	Medicare Retiree Drug Subsidy	Medicare EGWP Subsidy
45	\$ 8,260	\$ 8,260	\$ 2,053	\$ 0	\$ 0
50	9,346	9,346	2,438	0	0
55	10,574	10,574	2,896	0	0
60	11,963	11,963	3,119	0	0
65	1,468	4,667	3,764	527	1,039
70	1,701	5,410	4,155	582	1,147
75	1,972	6,272	4,588	642	1,266
80	2,178	6,925	4,474	626	1,235

Section 6.3: Summary of Actuarial Assumptions

The demographic and economic assumptions used in the June 30, 2018 valuation are described below. Unless noted otherwise, these assumptions were adopted by the Board in January 2019 based on the experience study for the period July 1, 2013 to June 30, 2017.

Investment Return

7.38% per year, net of investment expenses.

Salary Scale

Salary scale rates based upon the 2013-2017 actual experience. (See Table 1).

Inflation – 2.50% per year.

Productivity – 0.25% per year.

Payroll Growth

2.75% per year. (Inflation + Productivity)

Total Inflation

Total inflation as measured by the Consumer Price Index for urban and clerical workers for Anchorage is assumed to increase 2.50% annually.

Mortality (Pre-termination)

Mortality rates based upon the 2013-2017 actual experience.

100% (male and female) of RP-2014 healthy annuitant table with MP-2017 generational improvement.

Mortality (Post-termination)

Mortality rates based upon the 2013-2017 actual experience.

91% of male and 96% of female rates of RP-2014 healthy annuitant table with MP-2017 generational improvement.

Turnover

Based upon the 2013-2017 actual experience (See Tables 2 and 3).

Disability

Incidence rates based on 2013-2017 actual experience (See Table 4).

Post-disability mortality in accordance with the RP-2014 disabled table with MP-2017 generational improvement. Disabilities are assumed to be occupational 75% of the time for Peace Officer/Firefighters, 40% of the time for Others.

Retirement

Retirement rates based upon the 2013-2017 actual experience (See Tables 5 and 6).

Deferred vested members are assumed to retire at their earliest unreduced retirement date.

The modified cash refund annuity is valued as a three-year certain and life annuity.

Spouse Age Difference

Males are assumed to be three years older than their wives. Females are assumed to be two years younger than husbands.

Percent Married for Pension

For Others, 75% of male members and 70% female members are assumed to be married. For Peace Officer/Firefighters, 85% of male members and 60% of female members are assumed to be married.

Dependent Spouse Medical Coverage Election

Applies to members who do not have dual medical coverage. For Others, 65% of male members and 60% female members are assumed to be married and cover a dependent spouse. For Peace Officer/Firefighters, 75% of male members and 50% of female members are assumed to be married and cover a dependent spouse.

Dependent Children

Benefits for dependent children have been valued only for members currently covering their dependent children. These benefits are only valued through the dependent children's age 23 (unless the child is disabled).

Contribution Refunds

For Others, 5% of terminating members with vested benefits are assumed to have their contributions refunded.

For Peace Officers/Firefighters, 10% of terminating members with vested benefits are assumed to have their contributions refunded.

100% of those with non-vested benefits are assumed to have their contributions refunded.

Imputed Data

Data changes from the prior year which are deemed to have an immaterial impact on liabilities and contribution rates are assumed to be correct in the current year's client data. Non-vested terminations with appropriate refund dates are assumed to have received a full refund of contributions. Active members with missing salary and service are assumed to be terminated with status based on their vesting percentage.

Active Rehire Assumption

The Normal Cost used for determining contribution rates and in the projections includes a rehire assumption to account for anticipated rehires. The Normal Cost shown in the report includes the following % assumptions (which were developed based on the 5 years of rehire loss experience through June 30, 2017). For projections, these assumptions were assumed to grade to zero uniformly over a 20-year period.

- Pension: 18.77%
- Healthcare: 17.09%

Active Data Adjustment

To reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date, participants who are listed as terminated in the June 30 census data file but active in the October 1 census data file are updated to active status as of June 30.

COLA

Of those benefit recipients who are eligible for the COLA, 70% of Others and 65% of Peace Officers/Firefighters are assumed to remain in Alaska and receive the COLA.

Postretirement Pension Adjustment

50% and 75% of assumed inflation, or 1.25% and 1.875% respectively, is valued for the annual automatic Postretirement Pension Adjustment (PRPA) as specified in the statute.

Expenses

The investment return assumption is net of investment expenses. The Normal Cost as of June 30, 2018 was increased by the following amounts for administrative expenses (for projections, the % increase was assumed to remain constant in future years):

- Pension: \$6,888,000
- Healthcare: \$4,365,000

Part-Time Status

Part-time employees are assumed to earn 1.00 years of credited service per year for Peace Officer/Firefighter and 0.75 years of credited service per year for Other members.

Final Average Earnings

Final Average Earnings is provided on the data for active members. This amount is used as a minimum in the calculation of the average earnings in the future.

Per Capita Claims Cost

Sample claims cost rates adjusted to age 65 for FY19 medical and prescription drugs are shown below:

	Medical	Prescription Drugs
Pre-Medicare	\$ 13,535	\$ 3,360
Medicare Parts A & B	\$ 1,468	\$ 3,764
Medicare Part B Only	\$ 4,667	\$ 3,764
Medicare Part D – RDS	N/A	\$ 527
Medicare Part D – EGWP	N/A	\$ 1,039

Members are assumed to attain Medicare eligibility at age 65. The EGWP cost shown above is for calendar year 2019. All other costs are for the 2019 fiscal year (July 1, 2018 – June 30, 2019).

The EGWP subsidy is assumed to increase in future years by the trend rates shown on the following pages. No future legislative changes or other events are anticipated to impact the EGWP subsidy. If any legislative or other changes occur in the future that impact the EGWP subsidy (which could either increase or decrease the plan's Actuarial Accrued Liability), those changes will be evaluated and quantified when they occur.

Third Party Administrator Fees

\$300 per person per year; assumed to increase at 4.5% per year.

Medicare Part B Only

We assume that 5% of actives hired before 4/1/1986 and current retirees who are not yet Medicare eligible will not be eligible for Medicare Part A.

Healthcare Cost Trend

The table below shows the rate used to project the cost from the shown fiscal year to the next fiscal year. For example, 7.5% is applied to the FY19 pre-Medicare medical claims costs to get the FY20 medical claims costs.

	Medical Pre-65	Medical Post-65	Prescription Drugs / EGWP	RDS
FY19	7.5%	5.5%	8.5%	4.7%
FY20	7.0%	5.4%	8.0%	4.7%
FY21	6.5%	5.4%	7.5%	4.6%
FY22	6.3%	5.4%	7.1%	4.6%
FY23	6.1%	5.4%	6.8%	4.6%
FY24	5.9%	5.4%	6.4%	4.6%
FY25	5.8%	5.4%	6.1%	4.6%
FY26	5.6%	5.4%	5.7%	4.6%
FY27-FY40	5.4%	5.4%	5.4%	4.5%
FY41	5.3%	5.3%	5.3%	4.5%
FY42	5.2%	5.2%	5.2%	4.5%
FY43	5.1%	5.1%	5.1%	4.5%
FY44	5.1%	5.1%	5.1%	4.5%
FY45	5.0%	5.0%	5.0%	4.5%
FY46	4.9%	4.9%	4.9%	4.5%
FY47	4.8%	4.8%	4.8%	4.5%
FY48	4.7%	4.7%	4.7%	4.5%
FY49	4.6%	4.6%	4.6%	4.5%
FY50+	4.5%	4.5%	4.5%	4.5%

For the June 30, 2014 valuation and later, the updated Society of Actuaries' Healthcare Cost Trend Model is used to project medical and prescription drug costs. This model estimates trend amounts that are projected out for 80 years. The model has been populated with assumptions that are specific to the State of Alaska. The model was updated this year to use the newest version and incorporate recent trend survey information, which generated the updated trend rates shown above.

The table below shows the amount each trend rate shown on the previous page was increased by to account for the Cadillac Tax:

	Pre-65	Post-65		Pre-65	Post-65
FY18-FY30	0.00%	0.00%	FY70	0.21%	0.46%
FY31	0.00%	0.15%	FY71	0.21%	0.45%
FY32	0.00%	0.34%	FY72	0.20%	0.44%
FY33	0.00%	0.30%	FY73	0.20%	0.43%
FY34	0.00%	0.28%	FY74	0.20%	0.42%
FY35	0.00%	0.26%	FY75	0.19%	0.41%
FY36	0.00%	0.26%	FY76	0.19%	0.40%
FY37	0.00%	0.21%	FY77	0.18%	0.39%
FY38	0.10%	0.22%	FY78	0.18%	0.38%
FY39	0.09%	0.20%	FY79	0.17%	0.37%
FY40	0.08%	0.16%	FY80	0.17%	0.36%
FY41	0.07%	0.14%	FY81	0.17%	0.35%
FY42	0.06%	0.12%	FY82	0.16%	0.34%
FY43	0.04%	0.06%	FY83	0.16%	0.33%
FY44	0.04%	0.07%	FY84	0.15%	0.32%
FY45	0.04%	0.06%	FY85	0.15%	0.31%
FY46	0.03%	0.05%	FY86	0.15%	0.31%
FY47	0.04%	0.10%	FY87	0.14%	0.30%
FY48	0.04%	0.43%	FY88	0.14%	0.29%
FY49	0.05%	0.57%	FY89	0.14%	0.29%
FY50	0.05%	0.52%	FY90	0.13%	0.28%
FY51	0.06%	0.60%	FY91	0.13%	0.27%
FY52	0.06%	0.63%	FY92	0.13%	0.27%
FY53	0.07%	0.69%	FY93	0.13%	0.26%
FY54	0.10%	0.69%	FY94	0.12%	0.25%
FY55	0.30%	0.68%	FY95	0.12%	0.25%
FY56	0.30%	0.67%	FY96	0.12%	0.24%
FY57	0.29%	0.66%	FY97	0.11%	0.24%
FY58	0.29%	0.64%	FY98	0.11%	0.23%
FY59	0.28%	0.62%	FY99	0.11%	0.22%
FY60	0.27%	0.60%	FY00	0.11%	0.22%
FY61	0.27%	0.58%	FY01	0.10%	0.21%
FY62	0.26%	0.57%	FY02	0.10%	0.21%
FY63	0.25%	0.56%	FY03	0.10%	0.20%
FY64	0.25%	0.54%	FY04	0.10%	0.20%
FY65	0.24%	0.53%	FY05	0.10%	0.19%
FY66	0.24%	0.51%	FY06	0.09%	0.19%
FY67	0.23%	0.50%	FY07	0.09%	0.19%
FY68	0.23%	0.49%	FY08	0.09%	0.18%
FY69	0.22%	0.47%	FY09	0.09%	0.18%

Aging Factors

Age	Medical	Prescription Drugs
0-44	2.0%	4.5%
45-54	2.5%	3.5%
55-64	2.5%	1.5%
65-74	3.0%	2.0%
75-84	2.0%	-0.5%
85-94	0.3%	-2.5%
95+	0.0%	0.0%

Retired Member Contributions for Medical Benefits

Currently contributions are required for PERS members who are under age 60 and have less than 30 years of service (25 for Peace Officer/Firefighter). Eligible Tier 1 members are exempt from contribution requirements. Annual FY19 contributions based on monthly rates shown below for calendar 2018 and 2019 are assumed based on the coverage category for current retirees. The composite rate shown is used for current active and inactive members in Tier 2 or 3 who are assumed to retire prior to age 60 with less than 30 years of service and who are not disabled. For dependent children, we value 1/3 of the annual retiree contribution to estimate the per child rate based upon the assumed number of children in rates where children are covered.

Coverage Category	Calendar 2019 Annual Contribution	Calendar 2019 Monthly Contribution	Calendar 2018 Monthly Contribution
Retiree Only	\$ 9,876	\$ 823	\$ 823
Retiree and Spouse	\$ 19,764	\$ 1,647	\$ 1,647
Retiree and Child(ren)	\$ 13,956	\$ 1,163	\$ 1,163
Retiree and Family	\$ 23,844	\$ 1,987	\$ 1,987
Composite	\$ 14,676	\$ 1,223	\$ 1,223

Trend Rate for Retired Member Medical Contributions

The table below shows the rate used to project the retired member medical contributions from the shown fiscal year to the next fiscal year. For example, 7.6% is applied to the FY19 retired member medical contributions to get the FY20 retired member medical contributions.

Trend Assumptions	
FY19	7.6%
FY20	7.2%
FY21	6.8%
FY22	6.5%
FY23	6.3%
FY24	6.0%
FY25	5.9%
FY50	4.5%
FY100	4.5%

Graded trend rates for retired member medical contributions were updated to the rates shown above for the June 30, 2018 valuation to reflect the updated ultimate trend assumption of 4.5% used for gross cost components. Actual FY19 retired member medical contributions are reflected in the valuation.

Healthcare Participation

100% system paid of members and their spouses are assumed to elect the healthcare benefits as soon as they are eligible. 20% of non-system paid members and their spouses are assumed to elect healthcare benefits as soon as they are eligible.

Changes in Assumptions Since the Prior Valuation

Effective for the June 30, 2018 valuation, the Board adopted changes to the demographic and economic assumptions recommended by the actuary, based on the results of an experience analysis performed on the population experience from July 1, 2013 to June 30, 2017. The changes in assumptions were adopted by the Board during the January 2019 Board meeting.

Table 1: Alaska PERS Salary Scale

Peace Officer/Firefighter:

Years of Service	% Increase
0	7.75%
1	7.25%
2	6.75%
3	6.25%
4	5.75%
5	5.25%
6	4.75%
7	4.25%
8	3.75%
9	3.65%
10	3.55%
11	3.45%
12	3.35%
13	3.25%
14	3.15%
15	3.05%
16	2.95%
17	2.85%
18	2.75%
19	2.75%
20+	2.75%

Others:

Years of Service	% Increase
0	6.75%
1	6.25%
2	5.75%
3	5.25%
4	4.75%
5	4.25%
6	3.75%
7	3.65%
8	3.55%
9	3.45%
10	3.35%
11	3.25%
12	3.15%
13	3.05%
14	2.95%
15	2.85%
16	2.75%
17	2.75%
18	2.75%
19	2.75%
20+	2.75%

Table 2: Alaska PERS Turnover Assumptions

Peace Officer/Firefighter

Years of Service	Male (rounded)	Female (rounded)
0	0.15	0.15
1	0.12	0.08
2	0.07	0.06
3	0.06	0.06
4	0.06	0.07

Members with 5 or more years of service

Age	Male	Female	Age	Male	Female
20	0.047000	0.068000	45	0.018100	0.032800
21	0.047000	0.068000	46	0.018500	0.032500
22	0.047000	0.068000	47	0.019000	0.032300
23	0.044600	0.068000	48	0.022200	0.031900
24	0.042200	0.068000	49	0.025300	0.031500
25	0.039800	0.068000	50	0.031800	0.064200
26	0.037400	0.068000	51	0.042400	0.063200
27	0.035000	0.068000	52	0.042400	0.061900
28	0.033200	0.066300	53	0.042400	0.060400
29	0.031400	0.064600	54	0.042400	0.030000
30	0.029600	0.062900	55+	0.030000	0.020000
31	0.027900	0.061200			
32	0.026100	0.059500			
33	0.025000	0.053600			
34	0.023900	0.047700			
35	0.022800	0.041800			
36	0.021700	0.036000			
37	0.020600	0.030100			
38	0.020500	0.029900			
39	0.020400	0.029800			
40	0.016800	0.033900			
41	0.016700	0.033700			
42	0.016700	0.033600			
43	0.017100	0.033300			
44	0.017600	0.033100			

Table 3: Alaska PERS Turnover Assumptions

Others:

Service	Hire Age < 35		Hire Age > 35	
	Male (rounded)	Female (rounded)	Male	Female
0	0.29	0.29	0.20	0.20
1	0.16	0.20	0.12	0.15
2	0.13	0.16	0.10	0.13
3	0.10	0.13	0.09	0.10
4	0.08	0.10	0.09	0.09

Members with 5 or more years of service

Age	Male	Female	Age	Male	Female
20	0.114000	0.129900	45	0.043900	0.048000
21	0.114000	0.129900	46	0.043300	0.046000
22	0.114000	0.129900	47	0.042700	0.044100
23	0.108300	0.122100	48	0.042600	0.044000
24	0.102600	0.114300	49	0.042400	0.043900
25	0.096900	0.106500	50	0.036300	0.044500
26	0.091200	0.098700	51	0.036000	0.044300
27	0.085500	0.090900	52	0.035600	0.044000
28	0.083000	0.087200	53	0.035200	0.043700
29	0.080500	0.083400	54	0.041700	0.062000
30	0.078000	0.079700	55+	0.030000	0.050000
31	0.075400	0.076000			
32	0.072900	0.072300			
33	0.069900	0.068800			
34	0.066900	0.065300			
35	0.063900	0.061700			
36	0.061000	0.058200			
37	0.058000	0.054700			
38	0.056300	0.053500			
39	0.054700	0.052300			
40	0.048600	0.056500			
41	0.047100	0.055100			
42	0.045600	0.053800			
43	0.045000	0.051900			
44	0.044400	0.049900			

Table 4: Alaska PERS Disability Table

Peace Officer/ Firefighter:			Others:		
Age	Male	Female	Age	Male	Female
20	0.000179	0.000112	20	0.000327	0.000376
21	0.000179	0.000112	21	0.000327	0.000376
22	0.000179	0.000112	22	0.000327	0.000376
23	0.000244	0.000153	23	0.000360	0.000400
24	0.000310	0.000194	24	0.000392	0.000424
25	0.000374	0.000234	25	0.000425	0.000448
26	0.000440	0.000275	26	0.000456	0.000472
27	0.000505	0.000316	27	0.000489	0.000496
28	0.000526	0.000329	28	0.000501	0.000510
29	0.000548	0.000343	29	0.000513	0.000524
30	0.000570	0.000356	30	0.000524	0.000538
31	0.000591	0.000370	31	0.000536	0.000554
32	0.000612	0.000383	32	0.000548	0.000568
33	0.000634	0.000397	33	0.000566	0.000586
34	0.000657	0.000411	34	0.000584	0.000606
35	0.000679	0.000425	35	0.000602	0.000624
36	0.000702	0.000439	36	0.000620	0.000644
37	0.000724	0.000453	37	0.000638	0.000662
38	0.000757	0.000473	38	0.000669	0.000696
39	0.000789	0.000493	39	0.000701	0.000728
40	0.000822	0.000514	40	0.000734	0.000762
41	0.000854	0.000534	41	0.000765	0.000794
42	0.000887	0.000554	42	0.000797	0.000826
43	0.000977	0.000611	43	0.000879	0.000908
44	0.001066	0.000667	44	0.000962	0.000990
45	0.001157	0.000723	45	0.001043	0.001072
46	0.001247	0.000780	46	0.001125	0.001154
47	0.001337	0.000836	47	0.001208	0.001236
48	0.001462	0.000914	48	0.001329	0.001360
49	0.001588	0.000993	49	0.001451	0.001484
50	0.001714	0.001071	50	0.001572	0.001608
51	0.001839	0.001150	51	0.001694	0.001734
52	0.001965	0.001228	52	0.001815	0.001858
53	0.002294	0.001434	53	0.002132	0.002168
54	0.002624	0.001640	54	0.002450	0.002478

Table 5: Alaska PERS Peace Officer/Firefighter Retirement Table

Age at Retirement	Reduced Male	Reduced Female	Unreduced	
			Male	Female
<47	N/A	N/A	0.088000	0.060000
47	N/A	N/A	0.088000	0.150000
48	N/A	N/A	0.143000	0.150000
49	N/A	N/A	0.143000	0.150000
50	0.050000	0.050000	0.165000	0.150000
51	0.050000	0.070000	0.165000	0.150000
52	0.070000	0.070000	0.203500	0.150000
53	0.070000	0.070000	0.203500	0.150000
54	0.070000	0.350000	0.203500	0.250000
55	0.070000	0.080000	0.275000	0.200000
56	0.070000	0.080000	0.275000	0.150000
57	0.070000	0.080000	0.275000	0.150000
58	0.070000	0.080000	0.275000	0.150000
59	0.200000	0.200000	0.275000	0.150000
60	N/A	N/A	0.330000	0.250000
61	N/A	N/A	0.275000	0.200000
62	N/A	N/A	0.275000	0.300000
63	N/A	N/A	0.275000	0.500000
64	N/A	N/A	0.220000	0.500000
65	N/A	N/A	0.220000	0.500000
66	N/A	N/A	0.275000	0.500000
67	N/A	N/A	0.550000	0.500000
68	N/A	N/A	0.550000	0.500000
69	N/A	N/A	0.550000	0.500000
70	N/A	N/A	1.000000	1.000000
71	N/A	N/A	1.000000	1.000000
72	N/A	N/A	1.000000	1.000000
73	N/A	N/A	1.000000	1.000000
74	N/A	N/A	1.000000	1.000000
75	N/A	N/A	1.000000	1.000000

Table 6: Alaska PERS Others Retirement Table

Age at Retirement	Reduced		Unreduced	
	Male	Female	Male	Female
<50	N/A	N/A	0.1100	0.1100
50	0.0600	0.0800	0.3300	0.3850
51	0.0600	0.0800	0.3575	0.3850
52	0.0900	0.0800	0.3575	0.3850
53	0.0900	0.0800	0.3575	0.3850
54	0.2000	0.1500	0.3850	0.3850
55	0.0600	0.0600	0.3300	0.3300
56	0.0600	0.0600	0.2200	0.2200
57	0.0600	0.0600	0.2200	0.1980
58	0.0600	0.0600	0.2200	0.1980
59	0.1500	0.2000	0.2200	0.1980
60	N/A	N/A	0.2200	0.2310
61	N/A	N/A	0.2200	0.2200
62	N/A	N/A	0.2200	0.2200
63	N/A	N/A	0.2200	0.2200
64	N/A	N/A	0.2200	0.2200
65	N/A	N/A	0.2475	0.2860
66	N/A	N/A	0.2750	0.2860
67	N/A	N/A	0.2200	0.2420
68	N/A	N/A	0.2475	0.2420
69	N/A	N/A	0.2750	0.2420
70	N/A	N/A	0.2750	0.2420
71	N/A	N/A	0.2750	0.2420
72	N/A	N/A	0.2750	0.2750
73	N/A	N/A	0.2750	0.2750
74	N/A	N/A	0.2750	0.3850
75 – 79	N/A	N/A	0.5500	0.5500
80+	N/A	N/A	1.0000	1.0000

Glossary of Terms

Actuarial Accrued Liability

Total accumulated cost to fund pension or postemployment benefits arising from service in all prior years.

Actuarial Cost Method

Technique used to assign or allocate, in a systematic and consistent manner, the expected cost of a pension or postemployment plan for a group of plan members to the years of service that give rise to that cost.

Actuarial Present Value of Projected Benefits

Amount which, together with future interest, is expected to be sufficient to pay all future benefits.

Actuarial Valuation

Study of probable amounts of future pension or postemployment benefits and the necessary amount of contributions to fund those benefits.

Actuary

Person who performs mathematical calculations pertaining to pension and insurance benefits based on specific procedures and assumptions.

Annual Required Contribution (ARC)

Disclosure measure of annual pension or postretirement benefit cost under GASB 25, 27, 43 and 45.

GASB 25 and 27

Governmental Accounting Standards Board Statement Number 25, which specifies how the ARC was to have been calculated, and Number 27, which specifies Employer reporting of Pension Cost.

GASB 43 and 45

Governmental Accounting Standards Board Statement Number 43, which specifies how the ARC is to be calculated, and Number 45, which specifies Employer reporting of Other Postemployment Benefit (OPEB) Cost.

GASB 67 and 68

Governmental Accounting Standards Board Statement Number 67 amends Number 25 effective for the fiscal year beginning after June 15, 2013, and defines new financial reporting requirements for public pension plans.

Governmental Accounting Standards Board Statement Number 68 amends Number 27 effective for fiscal years beginning after June 15, 2014 and defines new accounting and financial reporting requirements for employers sponsoring public pension plans.

GASB 74 and 75

Governmental Accounting Standards Board Statement Number 74 amends Number 43 effective for the fiscal year beginning after June 15, 2016, and defines new financial reporting requirements for public postemployment benefit plans. Governmental Accounting Standards Board Statement Number 75 amends Number 45 effective for fiscal years beginning after June 15, 2017, and defines new accounting and financial reporting requirements for employers sponsoring public postemployment benefit plans.

Liquidity Factor

Is calculated as the average annual Fair Value of Assets divided by the total annual benefit payments. This measures the approximate number of years that assets will cover benefit payments without contributions or investment return. Trend shows solvency risk.

Maturity Ratio

The ratio of the actuarial accrued liability for members who are no longer active to the total actuarial accrued liability. A ratio of over 50% indicates a mature plan. The higher the maturity ratio, the more volatile the contribution rate will be from year to year given actuarial gains and losses.

Normal Cost

That portion of the actuarial present value of benefits assigned to a particular year in respect to an individual participant or the plan as a whole.

Rate Payroll

Members' earnings used to determine contribution rates.

Unfunded Actuarial Accrued Liability (UAAL)

The portion of the actuarial accrued liability not offset by plan assets.

Valuation Payroll

Members' earnings used to determine Normal Cost and Actuarial Accrued Liability.

Vested Benefits

Benefits which are unconditionally guaranteed regardless of employment.
