State of Alaska

Teachers’ Retirement System

Actuarial Valuation Report

As of June 30, 2019

May 2020

BUCK

May 7, 2020

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 Teachers' Retirement System (TRS) as of June 30, 2019 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, 2019. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under TRS 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 TRS as of June 30, 2019.

TRS 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 TRS is to pay required contributions that remain level as a percent of total TRS 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 TRS 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 25-year layered UAAL amortization method as described in Section 5.2. 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 TRS, including those hired after July 1, 2006 who are members of the Defined Contribution Retirement (DCR) Plan. This objective is currently 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 TRS. 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, 2019 to better reflect expected future healthcare experience. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Sections 5.2 and 5.3.

Governmental Accounting Standards Board (GASB) Statement No. 67 (GASB 67) was effective for TRS beginning with fiscal year ending June 30, 2014, and Statement No. 74 (GASB 74) was effective for TRS beginning with fiscal year ending June 30, 2017. Separate GASB 67 and GASB 74 reports as of June 30, 2019 have been prepared. We have also prepared the member data tables shown in Section 4 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.

Assessment of Risks

Actuarial Standard of Practice No. 51 ("ASOP 51") applies to actuaries performing funding calculations related to a pension plan. ASOP 51 does not apply to actuaries performing services in connection with other post-employment benefits, such as medical benefits. Accordingly, ASOP 51 does not apply to the retiree medical portion of TRS. See Section 6 of this report for further details regarding ASOP 51.

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,

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 herby affirms his qualification to render opinions in such matters in accordance with the Qualification Standards of the American Academy of Actuaries.

Scott Young, FSA, EA, MAAA
Director
Buck

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Executive Summary

Overview

The State of Alaska Teachers' Retirement System (TRS) provides pension and postemployment healthcare benefits to teachers and other 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 TRS as of the valuation date of June 30, 2019.

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 TRS 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 3). The future funded status and contribution patterns would be different than those shown in Section 3 if future experience does not match the actuarial assumptions used in the projections.

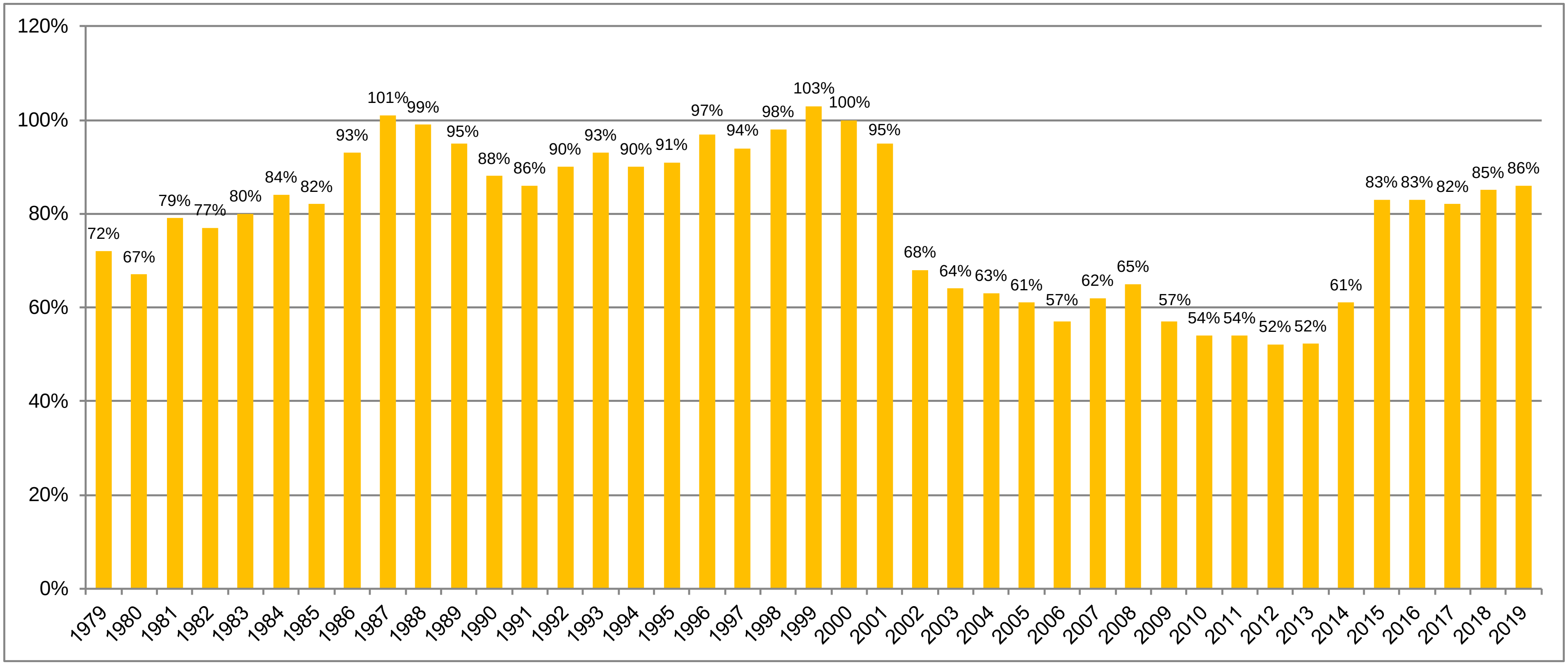
Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

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)		2018	2019
Pension			
a.	Actuarial Accrued Liability	$ 7,276,290	$ 7,388,020
b.	Valuation Assets	5,541,600	5,563,931
c.	Unfunded Actuarial Accrued Liability, (a) - (b)	$ 1,734,690	$ 1,824,089
d.	Funded Ratio based on Valuation Assets, (b) ÷ (a)	76.2%	75.3%
e.	Fair Value of Assets	$ 5,472,727	$ 5,511,929
f.	Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	75.2%	74.6%
Healthcare			
a.	Actuarial Accrued Liability	$ 2,684,150	$ 2,518,644
b.	Valuation Assets	2,898,709	2,947,562
c.	Unfunded Actuarial Accrued Liability, (a) - (b)	$ (214,559)	$ (428,918)
d.	Funded Ratio based on Valuation Assets, (b) ÷ (a)	108.0%	117.0%
e.	Fair Value of Assets	$ 2,870,134	$ 2,929,319
f.	Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	106.9%	116.3%
Total			
a.	Actuarial Accrued Liability	$ 9,960,440	$ 9,906,664
b.	Valuation Assets	8,440,309	8,511,493
c.	Unfunded Actuarial Accrued Liability, (a) - (b)	$ 1,520,131	$ 1,395,171
d.	Funded Ratio based on Valuation Assets, (b) ÷ (a)	84.7%	85.9%
e.	Fair Value of Assets	$ 8,342,861	$ 8,441,248
f.	Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	83.8%	85.2%

TRS Funded Ratio History (Based on Valuation Assets)



The key reasons for the change in funded status are explained below. 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.

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 FY19 investment return based on fair value of assets was approximately 5.9% compared to the expected investment return of 7.38% (net of investment expenses of approximately 0.04%). This resulted in a market asset loss of approximately $121 million. Due to the recognition of investment gains and losses over a 5-year period, the FY19 investment return based on actuarial value of assets was approximately 5.5%, which resulted in an actuarial asset loss of approximately $155 million.

2. Salary Increases

Salary increases for continuing active members during FY19 were less than expected based on the valuation assumptions, resulting in a liability gain of approximately $7 million.

3. Demographic Experience

Section 4 provides statistics on active and inactive participants. The number of active participants decreased 8.5% from 4,418 at June 30, 2018 to 4,044 at June 30, 2019 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 51.13 to 51.48 and average credited service increased from 18.62 to 19.21 years.

The number of benefit recipients increased 1.6% from 13,277 to 13,491, and their average age increased from 70.78 to 71.30. The number of vested terminated participants increased from 797 to 812. Their average age increased from 51.01 to 51.71.

The overall effect of the demographic experience during FY19 was an actuarial loss of approximately $8 million (pension) and an actuarial gain of approximately $14[1] million (healthcare).

4. COLA / PRPA Experience

The cost-of-living increases (COLA) for benefit recipients during FY19 were less than expected based on the valuation assumptions, resulting in a liability gain of approximately $5 million. The postretirement pension adjustments (PRPA) were more than expected, resulting in a liability loss of approximately $10 million.

5. Medical Claims Experience and Assumptions

As described in Section 5.2, recent medical claims experience and changes in healthcare enrollment data provided to us for the June 30, 2019 valuation generated a liability gain of approximately $246 million (this amount includes a $20 million gain due to the Cadillac Tax). Beginning January 1, 2019, Rx benefits were provided through a new contract with Optum. This change in vendors resulted in lower actual (and future expected) claims and higher rebates. Approximately $234 million of the $246 million gain in FY19 was attributable to Rx experience, the majority of which was due to the change in Rx vendors.

6. Changes in Methods Since the Prior Valuation

There were no changes in actuarial methods since the prior valuation.

[1] Includes the effect of changes in dependent coverage elections and Part B only experience.

7. Changes in Assumptions Since the Prior Valuation

Healthcare claim costs are updated annually as described in Section 5.2. Retired member contribution trend rates were updated to reflect the ongoing shift in population from pre-Medicare to Medicare-eligible and a projection of expected future retiree contributions reflecting the 10% decrease from 2019 to 2020. The Further Consolidated Appropriations Act, 2020 that was signed in December 2019 made several changes, including the repeal of the Cadillac Tax. The repeal of the Cadillac Tax reduced the plan's liabilities as of June 30, 2019 by approximately $14 million. The amounts included in the Normal Cost for administrative expenses were updated based on the most recent two years of actual administrative expenses paid from plan assets.

8. Changes in Benefit Provisions Since the Prior Valuation

There have been no changes in the TRS benefit provisions since the prior valuation.

Comparative Summary of Key Actuarial Valuation Results

Pension Employer/State Contribution Rates for Fiscal Year	2021	2022
a. Normal Cost Rate Net of Member Contributions	2.53%	2.40%
b. Past Service Rate	18.41%	19.08%
c. Total Employer/State Contribution Rate, (a) + (b), not less than (a)[1]	20.94%	21.48%
Healthcare Employer/State Contribution Rates for Fiscal Year	**2021**	**2022**
a. Normal Cost Rate	3.40%	2.98%
b. Past Service Rate	(1.43)%	(4.44)%
c. Total Employer/State Contribution Rate, (a) + (b), not less than (a)[1]	3.40%	2.98%
Total Employer/State Contribution Rates for Fiscal Year	**2021**	**2022**
a. Normal Cost Rate Net of Member Contributions	5.93%	5.38%
b. Past Service Rate	18.41%	19.08%
c. Total Employer/State Contribution Rate, (a) + (b)[1]	24.34%	24.46%
d. Board Adopted Total Employer/State Contribution Rate	24.34%	TBD
e. Defined Contribution Retirement (DCR) Rate Paid by Employers	6.13%	6.36%
f. Board Adopted Total Rate, Including DCR Rate Paid by Employers, (d) + (e)	30.47%	TBD

Contribution rates are based on total (DB and DCR) payroll. The contribution rates shown above for FY22 are estimated assuming no actuarial gains/losses during FY20 and FY21. Actual FY22 contribution rates will be adopted reflecting FY20 asset experience.

Contribution rates include Employer contribution rates as limited by Alaska state statutes and the Additional State Contribution required under SB 125.

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[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 5.2.

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, 2018 and June 30, 2019 based on DB and DCR payroll combined:

	Pension	Healthcare	Total
1. Total Employer/State contribution rate as of June 30, 2018	19.94%	4.05%	23.99%
2. Change due to:			
a. Health claims experience	N/A	(2.51)%	(2.51)%
b. Salary increases	(0.06)%	N/A	(0.06)%
c. Investment experience	0.93%	0.45%	1.38%
d. Demographic experience and miscellaneous [1]	0.75%	1.60%	2.35%
e. FY19 Contribution shortfall/(excess)	(0.15)%	(0.02)%	(0.17)%
f. Assumption changes	0.00%	0.00%	0.00%
g. Total change, (a) + (b) + (c) + (d) + (e) + (f)	1.47%	(0.48)%	0.99%
3. Total Employer/State contribution rate as of June 30, 2019, (1) + (2)(g)	21.41%	3.57%	24.98%

The following table shows the gain/(loss) on actuarial accrued liability as of June 30, 2019 ($'s in 000's):

	Pension	Healthcare	Total
Retirement Experience	$ 4,611	$ 3,344	$ 7,955
Termination Experience	(4,692)	(2,555)	(7,247)
Active Mortality Experience	(326)	(747)	(1,073)
Inactive Mortality Experience	(6,302)	(2,451)	(8,753)
Disability Experience	(1,732)	(19)	(1,751)
Rehires	2,148	1,710	3,858
Salary Increases	7,272	N/A	7,272
COLA	4,503	N/A	4,503
PRPA	(9,734)	N/A	(9,734)
Medical Claims Experience[2]	N/A	225,987	225,987
Cadillac Tax – Medical Claims Experience	N/A	20,145	20,145
Cadillac Tax – Repeal	N/A	14,283	14,283
Modified Part B Only Experience	N/A	1,594	1,594
Dependent Coverage Elections	N/A	15,195	15,195
FY20 contributions reduced by 10% and revised trend[3]	N/A	(6,711)	(6,711)
Programming Changes[4]	N/A	(17,140)	(17,140)
Miscellaneous[5]	(3,295)	9,764	6,469
Total	$ (7,547)	$ 262,399	$ 254,852

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

[2] Beginning January 1, 2019, Rx benefits were provided through a new contract with Optum. This change in vendors resulted in lower actual (and future expected) claims and higher rebates. Approximately 95% of the gain shown in this table was due to Rx experience, the majority of which was due to the change in Rx vendors.

[3] Based on a projection of future expected retiree contributions, trend was revised to be 0% for the next 3 years and 4% per year thereafter.

[4] Added Part D benefits for deferred retirees.

[5] 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.

The rehire gain/(loss) amount shown on the previous page is the difference between (i) the increase in Actuarial Accrued Liability at June 30, 2019 due to rehires during the most recent plan year, and (ii) the load that was added to the June 30, 2018 Normal Cost based on the rehire load assumption used in the June 30, 2018 valuation. The development of the FY19 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, 2019 due to Rehires	$ 5,733	$ 1,547	$ 7,280
2.	June 30, 2018 Normal Cost Rehire Load, with interest to June 30, 2019	$ 7,881	$ 3,257	$ 11,138
3.	Rehire Gain/(Loss), (2) - (1)	$ 2,148	$ 1,710	$ 3,858

Section 1: Actuarial Funding Results

Section 1.1: Actuarial Liabilities and Normal Cost ($'s in 000's)

As of June 30, 2019	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Retirement Benefits	$ 1,950,007	$ 1,760,572
Termination Benefits	35,603	12,407
Disability Benefits	2,468	(1,558)
Death Benefits	13,566	11,353
Return of Contributions	2,301	(38,368)
Medical and Prescription Drug Benefits	974,223	822,393
Medicare Part D Subsidy	(107,892)	(91,873)
Indebtedness	(28,389)	(28,389)
Subtotal	$ 2,841,887	$ 2,446,537
Inactive Members		
Not Vested	$ 39,118	$ 39,118
Vested Terminations		
- Retirement Benefits	141,283	141,283
- Medical and Prescription Drug Benefits	251,911	251,911
- Medicare Part D Subsidy	(28,050)	(28,050)
- Indebtedness	(4,305)	(4,305)
Retirees & Beneficiaries		
- Retirement Benefits	5,495,907	5,495,907
- Medical and Prescription Drug Benefits	1,843,354	1,843,354
- Medicare Part D Subsidy	(279,091)	(279,091)
Subtotal	$ 7,460,127	$ 7,460,127
Total	**$ 10,302,014**	**$ 9,906,664**
Total Pension	**$ 7,647,559**	**$ 7,388,020**
Total Medical, Net of Part D Subsidy	**$ 2,654,455**	**$ 2,518,644**
Total Medical, Gross of Part D Subsidy	**$ 3,069,488**	**$ 2,917,658**

As of June 30, 2019		Present Value of Projected Benefits		Actuarial Accrued (Past Service) Liability
By Tier				
Tier 1				
- Pension	$	4,631,408	$	4,619,626
- Medical, Net of Part D Subsidy		1,210,006		1,204,708
Tier 2				
- Pension		3,016,151		2,768,394
- Medical, Net of Part D Subsidy		1,444,449		1,313,936
Total	**$**	**10,302,014**	**$**	**9,906,664**

As of June 30, 2019		Normal Cost
Active Members		
Retirement Benefits	$	32,005
Termination Benefits		3,859
Disability Benefits		669
Death Benefits		396
Return of Contributions		6,901
Medical and Prescription Drug Benefits		24,474
Medicare Part D Subsidy		(2,642)
Rehire Assumption (Pension)		6,824
Rehire Assumption (Medical)		2,626
Administrative Expenses (Pension)		3,034
Administrative Expenses (Medical)		1,439
Total	**$**	**79,585**
Total Pension	**$**	**53,688**
Total Medical, Net of Part D Subsidy	**$**	**25,897**
Total Medical, Gross of Part D Subsidy	**$**	**28,539**
By Tier		
Tier 1		
- Pension	$	3,933
- Medical, Net of Part D Subsidy		1,637
Tier 2		
- Pension		49,755
- Medical, Net of Part D Subsidy		24,260
Total	**$**	**79,585**

Section 1.2: Actuarial Contributions as of June 30, 2019 ($'s in 000's)

Normal Cost Rate	Pension	Healthcare	Total
1. Total Normal Cost	$ 53,688	$ 25,897	$ 79,585
2. DB Rate Payroll Projected for FY20	366,037	366,037	366,037
3. DCR Rate Payroll Projected for FY20	359,622	359,622	359,622
4. Total Rate Payroll Projected for FY20	725,659	725,659	725,659
5. Normal Cost Rate			
a. Based on DB Rate Payroll, (1) ÷ (2)	14.67%	7.07%	21.74%
b. Based on Total Rate Payroll, (1) ÷ (4)	7.40%	3.57%	10.97%
6. Average Member Contribution Rate[1]	4.36%	0.00%	4.36%
7. Employer Normal Cost, (5)(b) - (6)	3.04%	3.57%	6.61%

Past Service Rate	Pension	Healthcare	Total
1. Actuarial Accrued Liability	$ 7,388,020	$ 2,518,644	$ 9,906,664
2. Valuation Assets	5,563,931	2,947,562	8,511,493
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ 1,824,089	$ (428,918)	$ 1,395,171
4. Funded Ratio, (2) ÷ (1)	75.3%	117.0%	85.9%
5. Past Service Cost Amortization Payment	133,293	(28,378)	104,915
6. Total Rate Payroll Projected for FY20	725,659	725,659	725,659
7. Past Service Rate, (5) ÷ (6)	18.37%	(3.91%)	14.46%
Total Employer / State Contribution Rate, not less than Normal Cost Rate	**21.41%**	**3.57%**	**24.98%**
Normal Cost Rate by Tier (Total Employer and Member)[2]			
Tier 1	15.17%	6.31%	21.48%
Tier 2	14.63%	7.13%	21.76%

[1] Assumes no member contributions from members in the DCR plan, 9.65% contributions for Tier 1 members who elected supplemental coverage, and 8.65% for the remaining members.

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

Schedule of Past Service Cost Amortizations - Pension ($'s in 000's)

Layer	Amortization Period		Balances		
	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	20	$ 1,720,344	$ 1,715,365	$ 126,251
Experience Study	6/30/2018	24	14,346	14,410	952
FY19 Loss	6/30/2019	25	94,314	94,314	6,090
Total				**$ 1,824,089**	**$ 133,293**

Schedule of Past Service Cost Amortizations - Healthcare ($'s in 000's)

Layer	Amortization Period		Balances		
	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	20	$ (48,285)	$ (48,145)	$ (3,543)
Experience Study and EGWP	6/30/2018	24	(166,274)	(167,016)	(11,032)
FY19 Gain	6/30/2019	25	(213,757)	(213,757)	(13,803)
Total				**$ (428,918)**	**$ (28,378)**

Schedule of Past Service Cost Amortizations - Total ($'s in 000's)

Layer	Amortization Period		Balances		
	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	20	$ 1,672,059	$ 1,667,220	$ 122,708
Experience Study and EGWP	6/30/2018	24	(151,928)	(152,606)	(10,080)
FY19 Gain	6/30/2019	25	(119,443)	(119,443)	(7,713)
Total				**$ 1,395,171**	**$ 104,915**

Section 1.3: Roll Forward Contribution Rate Calculation for FY22 ($'s in 000's)

	Pension	Healthcare	Total
1. Liability Roll Forward			
a. Actuarial Accrued Liability as of June 30, 2019	**$ 7,388,020**	**$ 2,518,644**	**$ 9,906,664**
b. Normal Cost	50,654	24,458	75,112
c. Interest on (a) and (b) at 7.38%	548,974	187,681	736,655
d. Estimated Benefit Payments	(500,100)	(130,343)	(630,443)
e. Interest on (d) at 7.38%, adjusted for timing	(19,665)	(4,724)	(24,389)
f. Expected Actuarial Accrued Liability as of June 30, 2020	**$ 7,467,883**	**$ 2,595,716**	**$ 10,063,599**
g. Projected Normal Cost	46,170	22,591	68,761
h. Interest on (f) and (g) at 7.38%	554,537	193,231	747,768
i. Estimated Benefit Payments	(518,726)	(137,282)	(656,008)
j. Interest on (i) at 7.38%, adjusted for timing	(20,397)	(4,976)	(25,373)
k. Expected Actuarial Accrued Liability as of June 30, 2021	**$ 7,529,467**	**$ 2,669,280**	**$ 10,198,747**
2. Asset Roll Forward			
a. Actuarial Value of Assets as of June 30, 2019	**$ 5,563,931**	**$ 2,947,562**	**$ 8,511,493**
b. Interest on (a) at 7.38%	410,618	217,530	628,148
c. Employee Contributions	35,027	0	35,027
d. Employer Contributions	32,727	15,965	48,692
e. State Assistance Contributions	141,129	0	141,129
f. Interest on (c) thru (e) at 7.38%, adjusted for timing*	12,871	579	13,450
g. Estimated Benefit Payments	(500,100)	(130,343)	(630,443)
h. Administrative Expenses	(3,034)	(1,439)	(4,473)
i. Interest on (g) and (h) at 7.38%, adjusted for timing	(19,775)	(4,776)	(24,551)
j. AVA Adjustments	(59,029)	(25,662)	(84,691)
k. Expected Actuarial Value of Assets as of June 30, 2020	**$ 5,614,365**	**$ 3,019,416**	**$ 8,633,781**
l. Interest on (k) at 7.38%	414,340	222,833	637,173
m. Employee Contributions	32,666	0	32,666
n. Employer Contributions	22,174	24,882	47,056
o. State Assistance Contributions**	134,976	0	134,976
p. Interest on (m) thru (o) at 7.38%, adjusted for timing*	11,949	902	12,851
q. Estimated Benefit Payments	(518,726)	(137,282)	(656,008)
r. Administrative Expenses	(2,784)	(1,336)	(4,120)
s. Interest on (q) and (r) at 7.38%, adjusted for timing	(20,498)	(5,024)	(25,522)
t. AVA Adjustments	33,722	19,921	53,643
u. Expected Actuarial Value of Assets as of June 30, 2021	**$ 5,722,184**	**$ 3,144,312**	**$ 8,866,496**
3. Expected Unfunded Actuarial Accrued Liability as of June 30, 2021, 1(k) - 2(u)	**$ 1,807,283**	**$ (475,032)**	**$ 1,332,251**

* Employee and Employer Contributions are paid throughout the year. State Assistance Contributions are assumed to be paid on July 1, 2019 for FY20, and July 1, 2020 for FY21.

** The FY21 State Assistance Contribution is expected to be contributed 100% to pension.

	Pension		Healthcare		Total	
4. Expected Annual Rate Payroll for FY22						
a. Defined Benefit Members					$	308,732
b. Defined Contribution Retirement Members						430,849
c. Total Rate Payroll					**$**	**739,581**
5. Expected FY22 Contribution Rate Calculation						
a. Projected Normal Cost for FY22	$	44,433	$	22,003	$	66,436
b. Projected Normal Cost Rate for FY22		6.01%		2.98%		8.99%
c. Expected Member Contribution Rate for FY22		(3.61%)		0.00%		(3.61%)
d. Expected Employer Normal Cost Rate for FY22		**2.40%**		**2.98%**		**5.38%**
e. Expected Unfunded Liability as of June 30, 2021	$	1,807,283	$	(475,032)	$	1,332,251
f. FY22 Layered Amortization of Expected Unfunded Liability		141,091		(32,824)		108,267
g. Expected Past Service Cost Contribution Rate for FY22		**19.08%**		**(4.44%)**		**19.08%**
h. Expected Total Contribution Rate for FY22, not less than Normal Cost Rate		**21.48%**		**2.98%**		**24.46%**

The components of the expected FY22 amortization amounts are shown below (totals may not add due to rounding):

Expected FY22 Schedule of Past Service Cost Amortizations - Pension ($'s in 000's)

	Amortization Period		Balances		
Layer	Date Created	Years Remaining as of June 30, 2021	Initial	Outstanding as of June 30, 2021	Beginning-of-Year Payment for FY22
Initial Amount	6/30/2018	18	$ 1,720,344	$ 1,693,026	$ 133,291
Experience Study	6/30/2018	22	14,346	14,467	1,005
FY19 Loss	6/30/2019	23	94,314	95,008	6,430
Expected (Gain)/Loss FY20	6/30/2020	24	37,941	38,110	2,517
Expected (Gain)/Loss FY21	6/30/2021	25	(33,328)	(33,328)	(2,152)
Total				**$ 1,807,283**	**$ 141,091**

Expected FY22 Schedule of Past Service Cost Amortizations - Healthcare ($'s in 000's)

	Amortization Period		Balances		
Layer	Date Created	Years Remaining as of June 30, 2021	Initial	Outstanding as of June 30, 2021	Beginning-of-Year Payment for FY22
Initial Amount	6/30/2018	18	$ (48,285)	$ (47,519)	$ (3,741)
Experience Study and EGWP	6/30/2018	22	(166,274)	(167,686)	(11,647)
FY19 Gain	6/30/2019	23	(213,757)	(215,328)	(14,572)
Expected (Gain)/Loss FY20	6/30/2020	24	6,400	6,429	425
Expected (Gain)/Loss FY21	6/30/2021	25	(50,928)	(50,928)	(3,289)
Total				**$ (475,032)**	**$ (32,824)**

Expected FY22 Schedule of Past Service Cost Amortizations - Total ($'s in 000's)

	Amortization Period		Balances		
Layer	Date Created	Years Remaining as of June 30, 2021	Initial	Outstanding as of June 30, 2021	Beginning-of-Year Payment for FY22
Initial Amount	6/30/2018	18	$ 1,672,059	$ 1,645,507	$ 129,550
Experience Study and EGWP	6/30/2018	22	(151,928)	(153,219)	(10,642)
FY19 Gain	6/30/2019	23	(119,443)	(120,320)	(8,142)
Expected (Gain)/Loss FY20	6/30/2020	24	44,341	44,539	2,942
Expected (Gain)/Loss FY21	6/30/2021	25	(84,256)	(84,256)	(5,441)
Total				**$ 1,332,251**	**$ 108,267**

Section 1.4: Actuarial Gain/(Loss) for FY19 ($'s in 000's)

	Pension	Healthcare	Total
1. Expected Actuarial Accrued Liability			
a. Actuarial Accrued Liability as of June 30, 2018	$ 7,276,290	$ 2,684,150	$ 9,960,440
b. Normal Cost	54,477	28,247	82,724
c. Interest on (a) and (b) at 7.38%	541,011	200,175	741,186
d. Medicare Part D Subsidy and EGWP	0	9,229	9,229
e. Benefit Payments	(470,414)	(136,158)	(606,572)
f. Refund of Contributions	(2,303)	0	(2,303)
g. Interest on (d) thru (f) at 7.38%, adjusted for timing	(18,588)	(4,600)	(23,188)
h. Assumptions/Methods Changes	0	0	0
i. Expected Actuarial Accrued Liability as of June 30, 2019 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h)	$ 7,380,473	$ 2,781,043	$ 10,161,516
2. Actual Actuarial Accrued Liability as of June 30, 2019	7,388,020	2,518,644	9,906,664
3. Liability Gain/(Loss), (1)(i) - (2)	**$ (7,547)**	**$ 262,399**	**$ 254,852**
4. Expected Actuarial Asset Value			
a. Actuarial Value of Assets as of June 30, 2018	$ 5,541,600	$ 2,898,709	$ 8,440,309
b. Interest on (a) at 7.38%	408,970	213,925	622,895
c. Employee Contributions	35,763	0	35,763
d. Employer Contributions	35,996	17,957	53,953
e. State Assistance Contributions	128,174	0	128,174
f. Medicare Part D Subsidy and EGWP	0	9,229	9,229
g. Interest on (c) thru (f) at 7.38%, adjusted for timing	12,060	985	13,045
h. Benefit Payments	(470,414)	(136,158)	(606,572)
i. Refund of Contributions	(2,303)	0	(2,303)
j. Administrative Expenses	(3,018)	(1,351)	(4,369)
k. Interest on (h) thru (j) at 7.38%, adjusted for timing	(18,698)	(4,984)	(23,682)
l. Expected Actuarial Asset Value as of June 30, 2019 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) + (i) + (j) + (k)	$ 5,668,130	$ 2,998,312	$ 8,666,442
5. Actual Actuarial Asset Value as of June 30, 2019	5,563,931	2,947,562	8,511,493
6. Actuarial Asset Value Gain/(Loss), (5) - (4)(l)	**$ (104,199)**	**$ (50,750)**	**$ (154,949)**
7. Total Actuarial Gain/(Loss), (3) + (6)	**$ (111,746)**	**$ 211,649**	**$ 99,903**
8. Contribution Gain/(Loss)	**$ 17,370**	**$ 1,734**	**$ 19,104**
9. Administrative Expense Gain/(Loss)	**$ 62**	**$ 374**	**$ 436**
10. FY19 Gain/(Loss), (7) + (8) + (9)	**$ (94,314)**	**$ 213,757**	**$ 119,443**

Section 1.5: Development of Change in Unfunded Liability During FY19 ($'s in 000's)

	Pension	Healthcare	Total
1. 2018 Unfunded Liability	$ 1,734,690	$ (214,559)	$ 1,520,131
a. Interest on Unfunded Liability at 7.38%	$ 128,020	$ (15,834)	$ 112,186
b. Normal Cost	54,477	28,247	82,724
c. Employee Contributions	(35,763)	0	(35,763)
d. Employer Contributions	(35,996)	(17,957)	(53,953)
e. State Assistance Contributions	(128,174)	0	(128,174)
f. Administrative Expenses	3,018	1,351	4,369
g. Interest on (b) thru (f) at 7.38%, adjusted for timing	(7,929)	1,483	(6,446)
h. Assumptions/Methods Changes	0	0	0
i. Expected Change in Unfunded Liability During FY19 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h)	$ (22,347)	$ (2,710)	$ (25,057)
2. Expected 2019 Unfunded Liability, (1) + (1)(i)	$ 1,712,343	$ (217,269)	$ 1,495,074
a. Liability (Gain)/Loss During FY19	$ 7,547	$ (262,399)	$ (254,852)
b. Actuarial Assets (Gain)/Loss During FY19	104,199	50,750	154,949
c. Total Actuarial (Gain)/Loss During FY19	$ 111,746	$ (211,649)	$ (99,903)
3. Actual 2019 Unfunded Liability, (2) + (2)(c)	$ 1,824,089	$ (428,918)	$ 1,395,171

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

	Change in Employer / State Contribution Rate During Fiscal Year				
	Pension				
Type of (Gain) or Loss	2015	2016	2017	2018	2019
1. Health Claims	N/A	N/A	N/A	N/A	N/A
2. Salary Experience	(0.34%)	(0.42%)	(0.39%)	(0.48%)	(0.07%)
3. Investment Experience	0.40%	1.36%	1.32%	1.10%	0.96%
4. Demographic Experience and Miscellaneous	(0.52%)	(0.98%)	(0.98%)	(0.94%)	(0.19%)
5. Contribution Shortfall	0.00%	0.00%	(0.09%)	(0.03%)	(0.16%)
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(0.46%)	(0.04%)	(0.14%)	(0.35%)	0.54%
7. Assumptions / Method Changes	0.00%	2.73%	0.00%	0.16%	0.00%
8. System Benefit Changes	0.00%	0.00%	0.00%	0.00%	0.00%
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	(0.46%)	2.69%	(0.14%)	(0.19%)	0.54%
10. Beginning Total Employer / State Contribution Rate	17.78%	19.16%	20.86%	20.71%	20.94%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	17.32%	21.85%	20.72%	20.52%	21.48%
12. Fiscal Year Rates					
a. Fiscal Year Employer / State Contribution Rate	19.16%	20.86%	20.71%	20.94%	21.48% *
b. Fiscal Year for which Rate Applies	FY18	FY19	FY20	FY21	FY22

* Expected rate. 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

	Change in Employer / State Contribution Rate During Fiscal Year				
	Healthcare				
Type of (Gain) or Loss	**2015**	**2016**	**2017**	**2018**	**2019**
1. Health Claims[1]	(4.07%)	(0.43%)	(2.75%)	(1.69%)	(2.58)%
2. Salary Experience	N/A	N/A	N/A	N/A	N/A
3. Investment Experience	0.22%	0.71%	0.67%	0.55%	0.47%
4. Demographic Experience and Miscellaneous	N/A	N/A	(0.53%)	2.29%	1.71%
5. Contribution Shortfall	0.00%	0.00%	(0.13%)	0.07%	(0.02%)
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(3.85%)	0.28%	(2.74%)	1.22%	(0.42%)
7. Assumptions / Method Changes	0.00%	0.46%	4.04%	(1.73%)	0.00%
8. System Benefit Changes	0.00%	0.00%	0.00%	0.00%	0.00%
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	(3.85%)	0.74%	1.30%	(0.51%)	(0.42%)
10. Beginning Total Employer / State Contribution Rate	5.62%	2.59%	2.70%	3.91%	3.40%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	1.77%	3.33%	4.00%	3.40%	2.98%
12. Fiscal Year Rates					
a. Fiscal Year Employer / State Contribution Rate	2.59%	2.70%	3.91%	3.40%	2.98% *
b. Fiscal Year for which Rate Applies	FY18	FY19	FY20	FY21	FY22

* Expected rate. 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

	Change in Employer / State Contribution Rate During Fiscal Year				
	Total				
Type of (Gain) or Loss	**2015**	**2016**	**2017**	**2018**	**2019**
1. Health Claims[1]	(4.07%)	(0.43%)	(2.75%)	(1.69%)	(2.58)%
2. Salary Experience	(0.34%)	(0.42%)	(0.39%)	(0.48%)	(0.07)%
3. Investment Experience	0.62%	2.07%	1.99%	1.65%	1.43%
4. Demographic Experience and Miscellaneous	(0.52%)	(0.98%)	(1.51%)	1.35%	1.52%
5. Contribution Shortfall	0.00%	0.00%	(0.22%)	0.04%	(0.18%)
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(4.31%)	0.24%	(2.88%)	0.87%	0.12%
7. Assumptions / Method Changes	0.00%	3.19%	4.04%	(1.57%)	0.00%
8. System Benefit Changes	0.00%	0.00%	0.00%	0.00%	0.00%
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	(4.31%)	3.43%	1.16%	(0.70%)	0.12%
10. Beginning Total Employer / State Contribution Rate	23.40%	21.75%	23.56%	24.62%	24.34%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	19.09%	25.18%	24.72%	23.92%	24.46%
12. Fiscal Year Rates					
a. Fiscal Year Employer / State Contribution Rate	21.75%	23.56%	24.62%	24.34%	24.46% *
b. Fiscal Year for which Rate Applies	FY18	FY19	FY20	FY21	FY22

* Expected rate. 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	$ 5,835,609	$ 3,752,285	64.3%	$ 2,083,324
June 30, 2004	6,123,600	3,845,370	62.8%	2,278,230
June 30, 2005	6,498,556	3,958,939	60.9%	2,539,617
June 30, 2006	7,229,851	4,141,700	57.3%	3,088,151
June 30, 2007	7,189,403	4,424,399	61.5%	2,765,004
June 30, 2008	7,619,178	4,936,976	64.8%	2,682,202
June 30, 2009	7,847,514	4,472,958	57.0%	3,374,556
June 30, 2010	8,847,788	4,739,128	53.6%	4,108,660
June 30, 2011	9,128,795	4,937,937	54.1%	4,190,858
June 30, 2012	9,346,444	4,869,154	52.1%	4,477,290
June 30, 2013	9,592,107	4,974,076	51.9%	4,618,031
June 30, 2014	9,841,032	6,019,274	61.2%	3,821,758
June 30, 2015	9,729,117	8,108,923	83.3%	1,620,194
June 30, 2016	9,907,624	8,200,391	82.8%	1,707,233
June 30, 2017	10,144,618	8,313,637	82.0%	1,830,981
June 30, 2018	9,960,440	8,440,309	84.7%	1,520,131
June 30, 2019	9,906,664	8,511,493	85.9%	1,395,171

Section 2: Plan Assets

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

As of June 30, 2019	Pension	Healthcare	Total	Allocation Percent
Cash and Short-Term Investments				
- Cash and Cash Equivalents	$ 112,603	$ 60,096	$ 172,699	2.0%
- Subtotal	$ 112,603	$ 60,096	$ 172,699	2.0%
Fixed Income Investments				
- Domestic Fixed Income Pool	$ 577,915	$ 308,702	$ 886,617	10.5%
- International Fixed Income Pool	0	0	0	0.0%
- Tactical Fixed Income Pool	149,443	79,827	229,270	2.7%
- High Yield Pool	0	0	0	0.0%
- Treasury Inflation Protection Pool	0	0	0	0.0%
- Emerging Debt Pool	0	0	0	0.0%
- Subtotal	$ 727,358	$ 388,529	$ 1,115,887	13.2%
Equity Investments				
- Domestic Equity Pool	$ 1,272,904	$ 679,940	$ 1,952,844	23.1%
- International Equity Pool	1,009,795	539,396	1,549,191	18.3%
- Private Equity Pool	579,978	309,804	889,782	10.5%
- Emerging Markets Equity Pool	198,729	106,154	304,883	3.6%
- Alternative Equity Strategies	386,212	206,301	592,513	7.0%
- Subtotal	$ 3,447,618	$ 1,841,595	$ 5,289,213	62.5%
Other Investments				
- Real Estate Pool	$ 373,191	$ 199,379	$ 572,570	6.8%
- Other Investments Pool	536,569	286,616	823,185	9.7%
- Absolute Return Pool	317,401	169,545	486,946	5.8%
- Other Assets	0	318	318	0.0%
- Subtotal	$ 1,227,161	$ 655,858	$ 1,883,019	22.3%
Total Cash and Investments	$ 5,514,740	$ 2,946,078	$ 8,460,818	100.0%
Net Accrued Receivables	(2,811)	(16,759)	(19,570)	
Net Assets	$ 5,511,929	$ 2,929,319	$ 8,441,248	

Section 2.2: Changes in Fair Value of Assets During FY19 ($'s in 000's)

Fiscal Year 2019	Pension	Healthcare	Total
1. Fair Value of Assets as of June 30, 2018	$ 5,472,727	$ 2,870,134	$ 8,342,861
2. Additions:			
a. Employee Contributions	$ 35,763	$ 0	$ 35,763
b. Employer Contributions	35,996	17,957	53,953
c. State Assistance Contributions	128,174	0	128,174
d. Interest and Dividend Income	100,638	52,997	153,635
e. Net Appreciation / Depreciation in Fair Value of Investments	216,649	117,363	0 334,012
f. Medicare Part D Subsidy	0	9,229	9,229
g. Other	32	324	356
h. Total Additions	$ 517,252	$ 197,870	$ 715,122
3. Deductions:			
a. Medical Benefits	$ 0	$ 136,158	$ 136,158
b. Retirement Benefits	470,414	0	470,414
c. Refund of Contributions	2,303	0	2,303
d. Investment Expenses	2,315	1,176	3,491
e. Administrative Expenses	3,018	1,351	4,369
f. Total Deductions	$ 478,050	$ 138,685	$ 616,735
4. Fair Value of Assets as of June 30, 2019	$ 5,511,929	$ 2,929,319	$ 8,441,248
Approximate Fair Value Investment Return Rate During FY19 Net of Investment Expenses	5.9%	6.0%	5.9%

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

The actuarial value of asset was set equal to the fair value as of 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 FY19			
a. Fair Value of Assets as of June 30, 2018	$ 5,472,727	$ 2,870,134	$ 8,342,861
b. Contributions	199,933	17,957	217,890
c. Medicare Part D Subsidy	0	9,229	9,229
d. Benefit Payments	472,717	136,158	608,875
e. Administrative Expenses	3,018	1,351	4,369
f. Actual Investment Return (net of investment expenses)	315,004	169,508	484,512
g. Expected Return Rate (net of investment expenses)	7.38%	7.38%	7.38%
h. Expected Return, Weighted for Timing	397,250	207,817	605,067
i. Investment Gain / (Loss) for the Year, (f) - (h)	(82,246)	(38,309)	(120,555)
2. Actuarial Value as of June 30, 2019			
a. Fair Value as of June 30, 2019	$ 5,511,929	$ 2,929,319	$ 8,441,248
b. Deferred Investment Gain / (Loss)	(52,002)	(18,243)	(70,245)
c. Actuarial Value as of June 30, 2019, (a) - (b)	5,563,931	2,947,562	8,511,493
3. Ratio of Actuarial Value of Assets to Fair Value of Assets	100.9%	100.6%	100.8%
4. Approximate Actuarial Value Investment Return Rate During FY19 Net of Investment Expenses	5.5%	5.6%	5.5%

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

Pension				
Plan Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2015	$ (219,620)	$ (175,696)	$ (43,924)	$ 0
June 30, 2016	(443,393)	(266,037)	(88,679)	(88,677)
June 30, 2017	236,679	94,672	47,336	94,671
June 30, 2018	13,001	2,600	2,600	7,801
June 30, 2019	(82,246)	0	(16,449)	(65,797)
Total	**$ (495,579)**	**$ (344,461)**	**$ (99,116)**	**$ (52,002)**

Healthcare				
Plan Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2015	$ (121,632)	$ (97,308)	$ (24,324)	$ 0
June 30, 2016	(218,931)	(131,358)	(43,786)	(43,787)
June 30, 2017	126,053	50,422	25,211	50,420
June 30, 2018	9,619	1,924	1,924	5,771
June 30, 2019	(38,309)	0	(7,662)	(30,647)
Total	**$ (243,200)**	**$ (176,320)**	**$ (48,637)**	**$ (18,243)**

Total				
Plan Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2015	$ (341,252)	$ (273,004)	$ (68,248)	$ 0
June 30, 2016	(662,324)	(397,395)	(132,465)	(132,464)
June 30, 2017	362,732	145,094	72,547	145,091
June 30, 2018	22,620	4,524	4,524	13,572
June 30, 2019	(120,555)	0	(24,111)	(96,444)
Total	**$ (738,779)**	**$ (520,781)**	**$ (147,753)**	**$ (70,245)**

Section 2.4: Historical Asset Rates of Return

	Actuarial Value		Fair Value	
Year Ending	**Annual**	**Cumulative***	**Annual**	**Cumulative***
June 30, 2005	9.1%	9.1%	8.5%	8.5%
June 30, 2006	9.6%	9.3%	11.4%	9.9%
June 30, 2007	11.9%	10.2%	18.5%	12.7%
June 30, 2008	10.2%	10.2%	(3.0%)	8.6%
June 30, 2009	(7.9%)	6.3%	(21.0%)	1.9%
June 30, 2010	8.1%	6.6%	10.6%	3.3%
June 30, 2011	6.9%	6.6%	20.5%	5.6%
June 30, 2012	0.7%	5.9%	0.2%	4.9%
June 30, 2013	3.7%	5.6%	12.2%	5.7%
June 30, 2014	22.7%	7.2%	18.2%	6.9%
June 30, 2015	7.2%	7.2%	3.2%	6.5%
June 30, 2016	5.1%	7.1%	(0.7%)	5.9%
June 30, 2017	5.6%	6.9%	12.9%	6.4%
June 30, 2018	6.2%	6.9%	8.2%	6.6%
June 30, 2019	5.5%	6.8%	5.9%	6.5%

* Cumulative since fiscal year ending June 30, 2005

Section 3: Projections

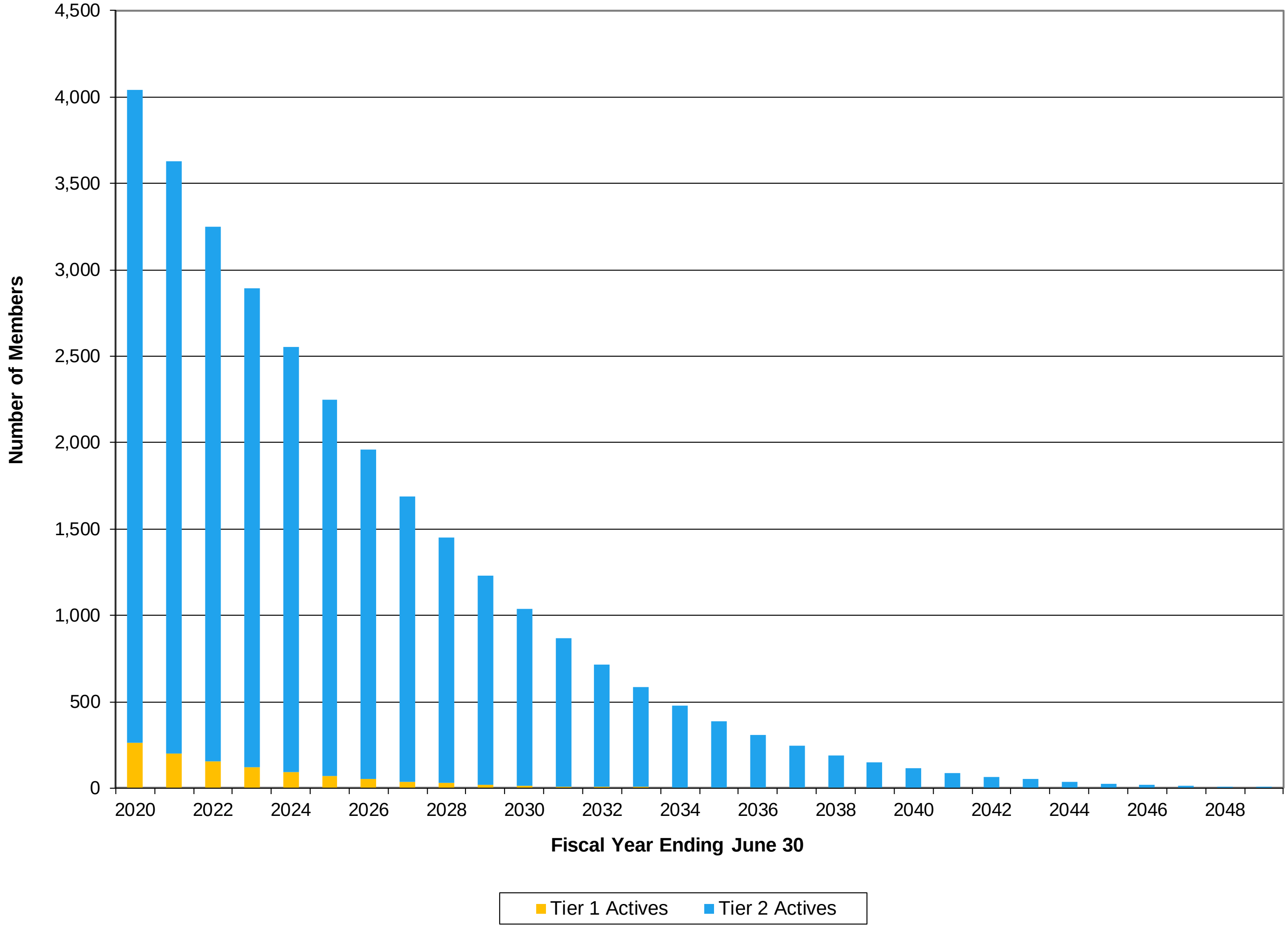
Section 3.1: Projection Assumptions and Methods

Key Assumptions

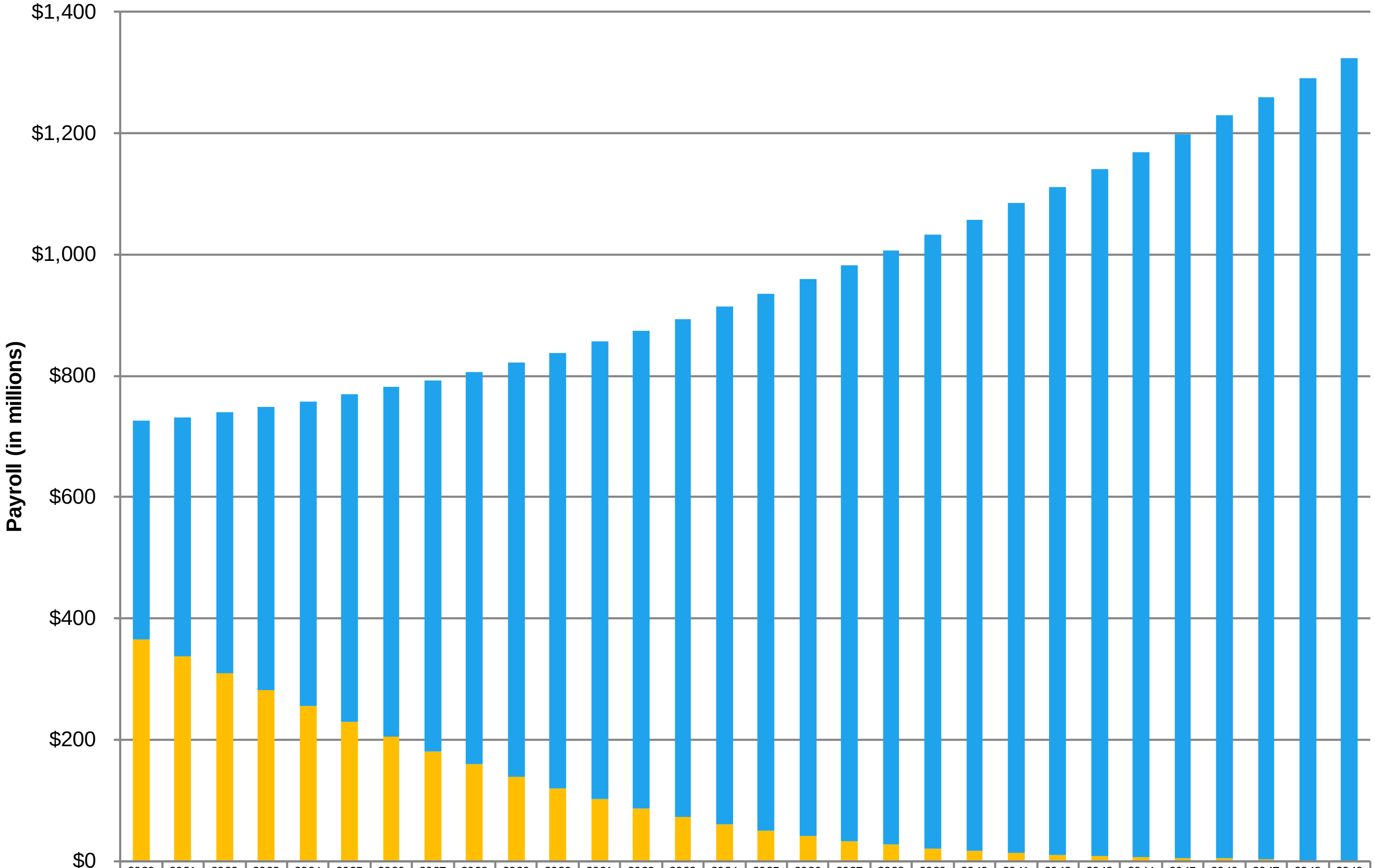
- 7.38% investment return (net of investment expenses) on the Fair Value of Assets in all future years.
- The Actuarial Value of Assets was re-initialized to Fair Value as of June 30, 2014. The Actuarial Value of Assets after June 30, 2014 reflects the deferred gains and losses generated by the smoothing method. The current deferred amount is recognized in the first four years of the projections.
- Actuarial assumptions and methods as described in Section 5. No actuarial gains/losses are assumed after June 30, 2019.
- 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, 2019 is assumed to remain constant in all future years.
- The active rehire assumption shown in Section 5 is assumed to grade to zero on a uniform basis over 20 years.

Section 3.2: Membership Projection

Projected Active Member Count



Projected DB and DCR Payroll



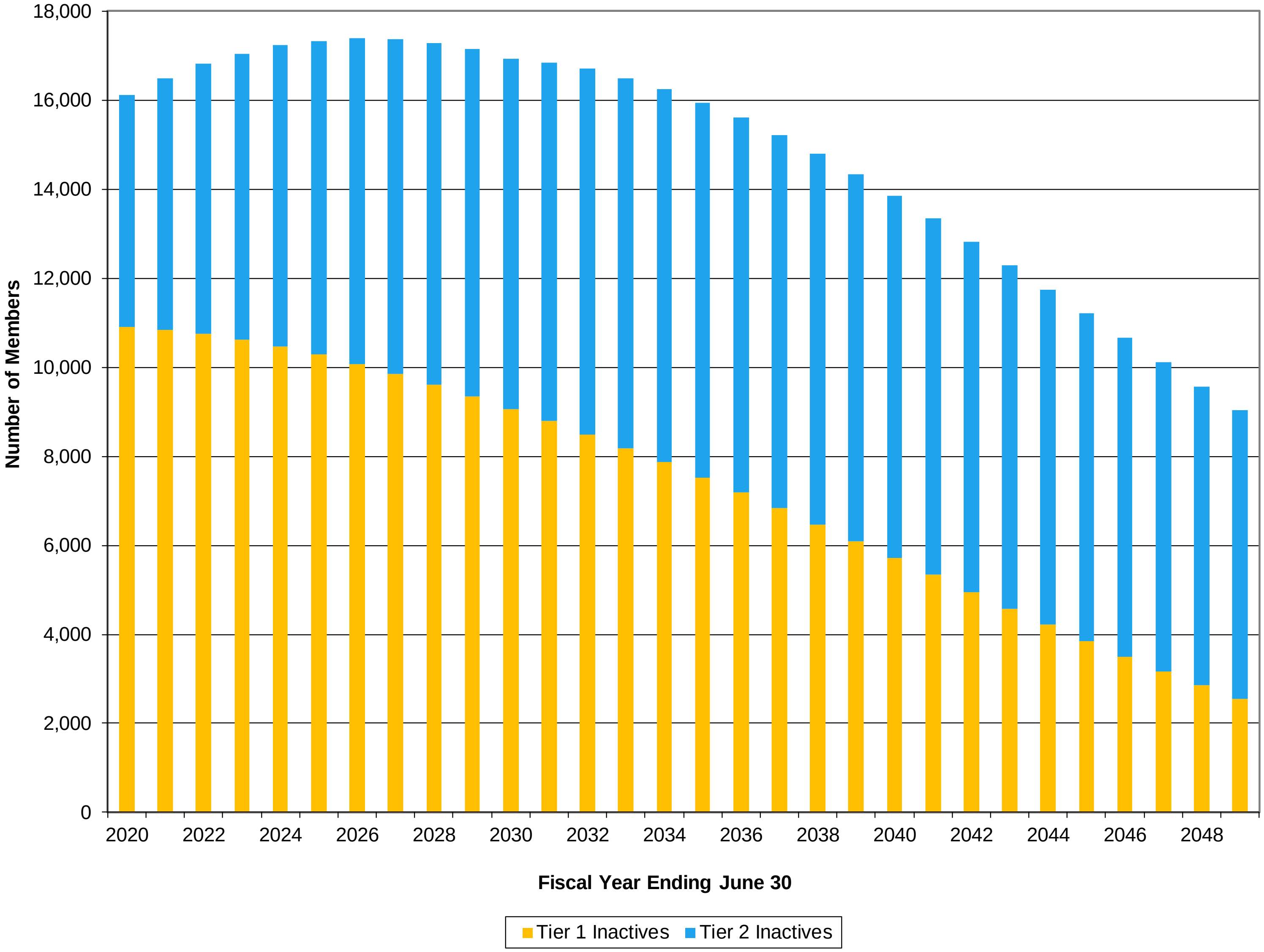
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
DCR Payroll	360	395	431	467	503	540	576	612	648	684	719	754	788	821	854
DB Payroll	366	337	309	282	255	230	205	181	159	138	119	102	87	73	61

	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
DCR Payroll	886	918	949	980	1,011	1,041	1,072	1,102	1,133	1,163	1,194	1,226	1,257	1,289	1,322
DB Payroll	50	41	33	27	21	17	13	10	8	6	5	4	3	2	1

Fiscal Year Ending June 30

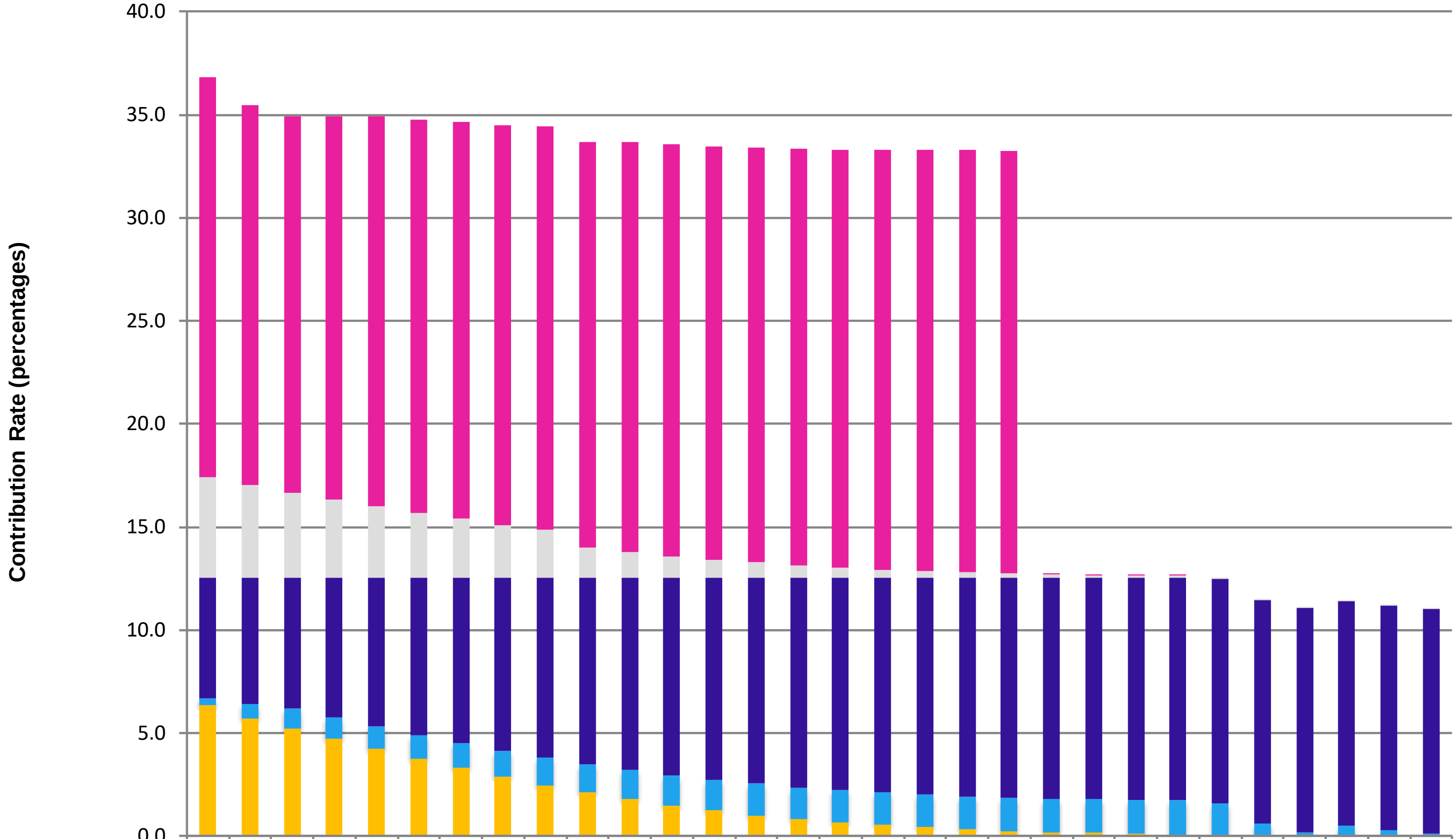
DB Payroll DCR Payroll

Projected Inactive Member Count



Section 3.3: Projected Employer/State Contribution Rates

Based on Total DB and DCR Payroll



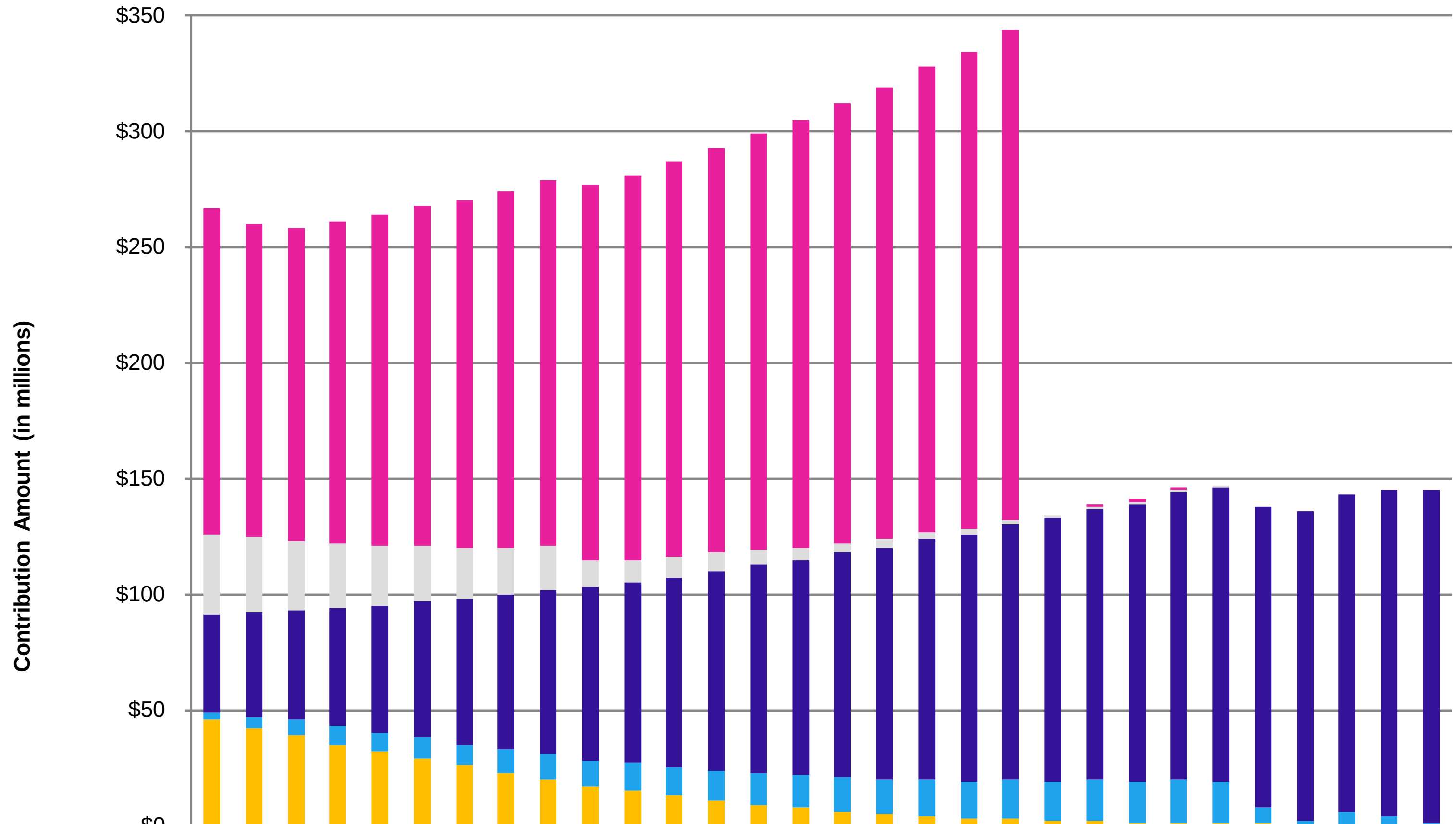
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
State Assistance	19.45	18.44	18.26	18.60	18.92	19.08	19.25	19.40	19.56	19.68	19.86	19.96	20.05	20.13	20.23
DB EE Contributions	4.83	4.46	4.11	3.77	3.44	3.13	2.84	2.55	2.30	1.46	1.23	1.03	0.86	0.71	0.57
DCR ER Contributions	5.85	6.13	6.36	6.81	7.24	7.65	8.05	8.42	8.76	9.07	9.36	9.61	9.83	10.02	10.19
DB ER Contributions on DCR Pay	0.37	0.72	0.96	1.03	1.10	1.16	1.21	1.27	1.33	1.38	1.41	1.45	1.48	1.52	1.54
DB ER Contributions on DB Pay	6.34	5.71	5.24	4.72	4.22	3.75	3.30	2.87	2.47	2.11	1.79	1.50	1.25	1.02	0.83

	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
State Assistance	20.29	20.35	20.42	20.48	20.52	0.04	0.05	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00
DB EE Contributions	0.46	0.37	0.29	0.23	0.18	0.14	0.11	0.08	0.06	0.05	0.03	0.03	0.02	0.01	0.01
DCR ER Contributions	10.33	10.44	10.54	10.62	10.68	10.73	10.78	10.81	10.83	10.85	10.87	10.88	10.89	10.89	10.90
DB ER Contributions on DCR Pay	1.56	1.58	1.59	1.60	1.62	1.63	1.62	1.63	1.64	1.54	0.56	0.16	0.50	0.28	0.11
DB ER Contributions on DB Pay	0.67	0.54	0.43	0.34	0.26	0.20	0.16	0.12	0.09	0.07	0.05	0.03	0.02	0.02	0.01

Fiscal Year Ending June 30

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

Section 3.4: Projected Employer/State Contribution Amounts



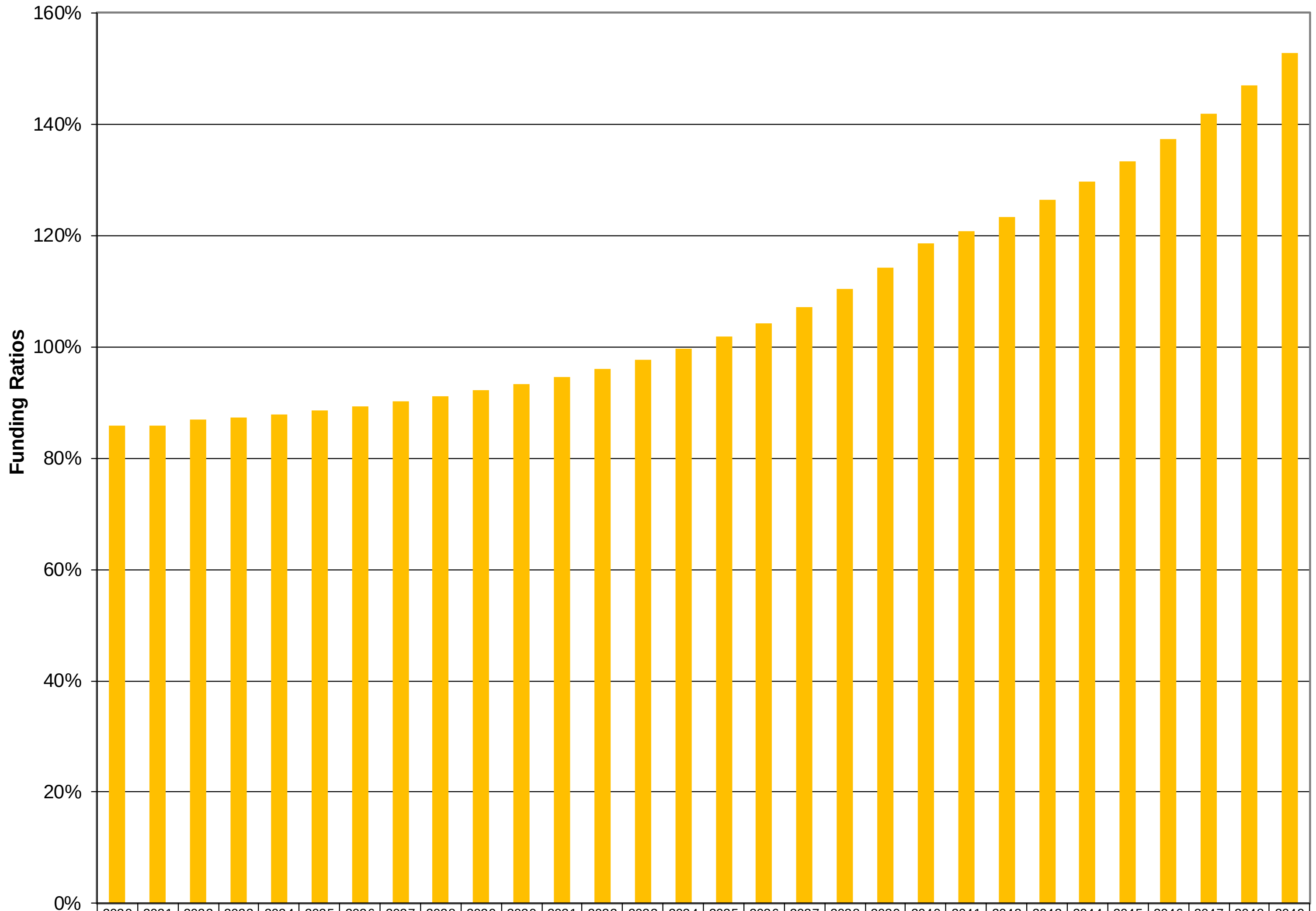
	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
State Assistance	141	135	135	139	143	147	150	154	158	162	166	171	175	180	185
DB EE Contributions	35	33	30	28	26	24	22	20	19	12	10	9	8	6	5
DCR ER Contributions	42	45	47	51	55	59	63	67	71	75	78	82	86	90	93
DB ER Contributions on DCR Pay	3	5	7	8	8	9	9	10	11	11	12	12	13	14	14
DB ER Contributions on DB Pay	46	42	39	35	32	29	26	23	20	17	15	13	11	9	8

	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
State Assistance	190	195	201	206	212	0	1	1	1	0	0	0	0	0	0
DB EE Contributions	4	4	3	2	2	1	1	1	1	1	0	0	0	0	0
DCR ER Contributions	97	100	104	107	110	114	117	120	124	127	130	134	137	141	144
DB ER Contributions on DCR Pay	15	15	16	16	17	17	18	18	19	18	7	2	6	4	1
DB ER Contributions on DB Pay	6	5	4	3	3	2	2	1	1	1	1	0	0	0	0

Fiscal Year Ending June 30

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

Section 3.5: Projection of Funded Ratios



	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Funding Ratios	86%	86%	87%	87%	88%	89%	89%	90%	91%	92%	93%	95%	96%	98%	100%

	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049
Funding Ratios	102%	104%	107%	110%	114%	119%	121%	123%	126%	130%	133%	137%	142%	147%	153%

Fiscal Year Ending June 30

Section 3.6: Table of Projected Actuarial Results

Financial Projections ($'s in 000's)
Based on 2019 Actuarial Valuation Results, 0% Population Growth for Payroll

	Valuation Amounts on July 1 (Beginning of Fiscal Year)				Flow Amounts During Following 12 Months											Deferred	Ending
									DB Contributions								
Fiscal Year End	Actuarial Assets	Accrued Liability	Funding Ratio	Surplus (Deficit)	Total Salaries	Er/State Ctb Rate	DCR Ctb Rate	Total Ctb Rate	Employer	State Assistance	Employee	Total	Benefit Payments	Net Contribs	Investment Earnings	Asset Gain/(Loss)	Actuarial Assets
--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------	--------
2020	$8,511,493	$9,906,664	85.9%	($1,395,171)	$725,659	26.16%	5.85%	32.01%	$48,692	$141,129	$35,027	$224,848	$630,443	($405,595)	$611,863	$9,261	$8,633,782
2021	8,633,782	10,063,599	85.8%	(1,429,818)	731,818	24.87%	6.13%	31.00%	47,056	134,976	32,666	214,698	656,008	(441,310)	625,185	(43,698)	8,866,496
2022	8,866,496	10,198,747	86.9%	(1,332,251)	739,581	24.46%	6.36%	30.82%	45,855	135,047	30,399	211,301	680,786	(469,485)	637,390	(24,111)	9,011,035
2023	9,011,035	10,315,497	87.4%	(1,304,462)	748,443	24.35%	6.81%	31.16%	43,035	139,211	28,190	210,436	705,158	(494,722)	648,704	0	9,137,459
2024	9,137,459	10,406,627	87.8%	(1,269,168)	758,261	24.24%	7.24%	31.48%	40,340	143,462	26,105	209,907	728,679	(518,772)	659,065	0	9,274,629
2025	9,274,629	10,474,524	88.5%	(1,199,895)	769,237	23.99%	7.65%	31.64%	37,770	146,770	24,068	208,608	751,756	(543,148)	668,393	0	9,397,058
2026	9,397,058	10,518,159	89.3%	(1,121,101)	780,909	23.76%	8.05%	31.81%	35,219	150,325	22,139	207,683	774,351	(566,668)	676,676	0	9,504,548
2027	9,504,548	10,536,422	90.2%	(1,031,874)	793,625	23.54%	8.42%	31.96%	32,856	153,963	20,244	207,063	795,150	(588,087)	683,939	0	9,598,175
2028	9,598,175	10,529,137	91.2%	(930,962)	807,278	23.36%	8.76%	32.12%	30,676	157,904	18,541	207,121	816,138	(609,017)	690,211	0	9,677,414
2029	9,677,414	10,495,378	92.2%	(817,964)	822,201	23.17%	9.07%	32.24%	28,695	161,809	12,004	202,508	836,323	(633,815)	695,284	0	9,737,180
2030	9,737,180	10,433,975	93.3%	(696,795)	838,346	23.06%	9.36%	32.42%	26,827	166,496	10,312	203,635	847,827	(644,192)	699,495	0	9,791,013
2031	9,791,013	10,346,916	94.6%	(555,903)	855,982	22.91%	9.61%	32.52%	25,251	170,855	8,817	204,923	863,135	(658,212)	703,112	0	9,834,653
2032	9,834,653	10,234,479	96.1%	(399,826)	874,558	22.78%	9.83%	32.61%	23,876	175,349	7,521	206,746	876,722	(669,976)	706,068	0	9,869,673
2033	9,869,673	10,096,664	97.8%	(226,991)	894,207	22.67%	10.02%	32.69%	22,713	180,003	6,349	209,065	888,114	(679,049)	708,496	0	9,898,219
2034	9,898,219	9,933,994	99.6%	(35,775)	914,881	22.60%	10.19%	32.79%	21,683	185,080	5,215	211,978	895,679	(683,701)	710,629	0	9,924,397
2035	9,924,397	9,748,955	101.8%	175,442	936,534	22.52%	10.33%	32.85%	20,884	190,023	4,308	215,215	899,170	(683,955)	712,746	0	9,952,568
2036	9,952,568	9,544,391	104.3%	408,177	959,162	22.47%	10.44%	32.91%	20,334	195,189	3,549	219,072	899,694	(680,622)	715,155	0	9,986,592
2037	9,986,592	9,322,282	107.1%	664,310	982,498	22.44%	10.54%	32.98%	19,846	200,626	2,849	223,321	898,009	(674,688)	718,106	0	10,029,597
2038	10,029,597	9,083,944	110.4%	945,653	1,006,868	22.42%	10.62%	33.04%	19,533	206,207	2,316	228,056	892,467	(664,411)	721,886	0	10,086,739
2039	10,086,739	8,832,425	114.2%	1,254,314	1,032,136	22.40%	10.68%	33.08%	19,404	211,794	1,858	233,056	885,035	(651,979)	726,794	0	10,161,287
2040	10,161,287	8,568,925	118.6%	1,592,362	1,058,222	1.87%	10.73%	12.60%	19,366	423	1,482	21,271	876,262	(854,991)	717,034	0	10,023,119
2041	10,023,119	8,294,158	120.8%	1,728,961	1,085,097	1.83%	10.78%	12.61%	19,315	543	1,194	21,052	862,915	(841,863)	707,357	0	9,888,445
2042	9,888,445	8,012,237	123.4%	1,876,208	1,112,575	1.80%	10.81%	12.61%	19,471	556	890	20,917	846,679	(825,762)	698,046	0	9,760,601
2043	9,760,601	7,725,761	126.3%	2,034,840	1,140,672	1.79%	10.83%	12.62%	19,733	685	684	21,102	826,020	(804,918)	689,420	0	9,645,003
2044	9,645,003	7,439,093	129.7%	2,205,910	1,169,487	1.61%	10.85%	12.46%	18,829	0	585	19,414	803,586	(784,172)	681,666	0	9,542,420
2045	9,542,420	7,154,171	133.4%	2,388,249	1,198,933	0.61%	10.87%	11.48%	7,314	0	360	7,674	778,857	(771,183)	674,621	0	9,445,798
2046	9,445,798	6,873,582	137.4%	2,572,216	1,229,078	0.19%	10.88%	11.07%	2,335	0	369	2,704	754,559	(751,855)	668,247	0	9,362,147
2047	9,362,147	6,597,282	141.9%	2,764,865	1,259,775	0.52%	10.89%	11.41%	6,551	0	252	6,803	730,249	(723,446)	663,162	0	9,301,830
2048	9,301,830	6,325,648	147.0%	2,976,182	1,291,205	0.30%	10.89%	11.19%	3,873	0	129	4,002	706,987	(702,985)	659,512	0	9,258,333
2049	9,258,333	6,057,988	152.8%	3,200,345	1,323,452	0.12%	10.90%	11.02%	1,588	0	132	1,720	683,659	(681,939)	657,126	0	9,233,503
								Totals	$728,919	$3,348,425	$308,554	$4,385,899					

The FY20 and FY21 Employer/State contribution rates shown above differ from those shown in Section 1.6 because they are adjusted for total salaries.

Section 3.6: Table of Projected Actuarial Results (continued)

Financial Projections ($'s in 000's)
Based on 2019 Actuarial Valuation Results, 0% Population Growth for Payroll

	Valuation Amounts on July 1 (Beginning of Fiscal Year)					
Fiscal Year End	Funding Ratio Pension	Funding Ratio Healthcare	Funding Ratio Total	Surplus (Deficit) Pension	Surplus (Deficit) Healthcare	Surplus (Deficit) Total
--------	--------	--------	--------	--------	--------	--------
2020	75.3%	117.0%	85.9%	($1,824,089)	$428,918	($1,395,171)
2021	75.2%	116.3%	85.8%	(1,853,518)	423,700	(1,429,818)
2022	76.0%	117.8%	86.9%	(1,807,283)	475,032	(1,332,251)
2023	76.1%	118.5%	87.4%	(1,810,579)	506,117	(1,304,462)
2024	76.3%	119.2%	87.8%	(1,805,293)	536,125	(1,269,168)
2025	76.7%	120.2%	88.5%	(1,776,348)	576,453	(1,199,895)
2026	77.1%	121.3%	89.3%	(1,740,759)	619,658	(1,121,101)
2027	77.6%	122.5%	90.2%	(1,698,000)	666,126	(1,031,874)
2028	78.1%	123.9%	91.2%	(1,647,428)	716,466	(930,962)
2029	78.7%	125.4%	92.2%	(1,588,141)	770,177	(817,964)
2030	79.3%	127.1%	93.3%	(1,524,804)	828,009	(696,795)
2031	80.1%	129.0%	94.6%	(1,446,113)	890,210	(555,903)
2032	81.1%	131.1%	96.1%	(1,356,145)	956,319	(399,826)
2033	82.2%	133.5%	97.8%	(1,253,927)	1,026,936	(226,991)
2034	83.5%	136.1%	99.6%	(1,138,515)	1,102,740	(35,775)
2035	85.0%	139.1%	101.8%	(1,008,618)	1,184,060	175,442
2036	86.8%	142.4%	104.3%	(863,158)	1,271,335	408,177
2037	89.0%	146.2%	107.1%	(700,838)	1,365,148	664,310
2038	91.6%	150.3%	110.4%	(520,172)	1,465,825	945,653
2039	94.6%	155.0%	114.2%	(319,552)	1,573,866	1,254,314
2040	98.3%	160.3%	118.6%	(97,569)	1,689,931	1,592,362
2041	98.5%	166.3%	120.8%	(85,665)	1,814,626	1,728,961
2042	98.6%	173.0%	123.4%	(72,284)	1,948,492	1,876,208
2043	98.9%	180.5%	126.3%	(57,313)	2,092,153	2,034,840
2044	99.2%	188.8%	129.7%	(40,590)	2,246,500	2,205,910
2045	99.5%	198.1%	133.4%	(24,029)	2,412,278	2,388,249
2046	99.6%	208.3%	137.4%	(18,081)	2,590,297	2,572,216
2047	99.6%	219.6%	141.9%	(16,565)	2,781,430	2,764,865
2048	99.7%	232.1%	147.0%	(10,434)	2,986,616	2,976,182
2049	99.8%	246.1%	152.8%	(6,660)	3,207,005	3,200,345

Section 4: Member Data

Section 4.1: Summary of Members Included

As of June 30	2015	2016	2017	2018[1]	2019
Active Members					
1. Number	5,502	5,123	4,772	4,418	4,044[2]
2. Average Age	50.09	50.50	50.86	51.13	51.48
3. Average Credited Service	16.94	17.53	18.12	18.62	19.21
4. Average Entry Age	33.15	32.97	32.74	32.51	32.27
5. Average Annual Earnings	$ 82,995	$ 84,954	$ 86,327	$ 87,734	$ 88,879
6. Number Vested	5,297	4,966	4,772	4,418	4,044
7. Percent Who Are Vested	96.3%	96.9%	100.0%	100.0%	100.0%
Retirees, Disabilitants, and Beneficiaries					
1. Number	12,418	12,726	12,983	13,277	13,491
2. Average Age	69.35	69.85	70.36	70.78	71.30
3. Average Years Since Retirement	13.50	13.78	14.13	14.40	14.74
4. Average Monthly Pension Benefit					
Base	$ 2,175	$ 2,204	$ 2,228	$ 2,273	$ 2,303
COLA[3]	129	128	128	128	126
PRPA[3]	550	529	506	489	518
Adjustment	0	0	0	0	0
Sick	58	60	62	64	67
Total	$ 2,912	$ 2,921	$ 2,924	$ 2,954	$ 3,014
Vested Terminations (vested at termination, not refunded contributions, or commenced benefit)					
1. Number	890	875	876	797	812
2. Average Age	50.09	50.25	50.82	51.01	51.71
3. Average Monthly Pension Benefit	$ 1,273	$ 1,352	$ 1,441	$ 1,350	$ 1,534
Non-Vested Terminations (not vested at termination, not refunded contributions)					
1. Number	2,218	2,103	1,994	1,900	1,810
2. Average Account Balance	$ 18,962	$ 19,728	$ 20,290	$ 20,872	$ 21,612
Total Number of Members	**21,028**	**20,827**	**20,625**	**20,392**	**20,157**

[1] 33 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] Includes 1,280 male active members and 2,764 female active members.
[3] 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

As of June 30, 2019	DB Tier 1	DB Tier 2	DB Total	DCR Tier 3	Grand Total
Active Members					
1. Number	262	3,782	4,044	4,998	9,042
2. Average Age	61.66	50.78	51.48	41.06	45.72
3. Average Credited Service	28.66	18.56	19.21	5.67	11.73
4. Average Entry Age	33.00	32.22	32.27	35.39	33.99
5. Annual Earnings					
a. Amount	$ 25,265,973	$ 334,159,655	$ 359,425,628	$ 347,956,827	$ 707,382,455
b. Average	$ 96,435	$ 88,355	$ 88,879	$ 69,619	$ 78,233

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

As of June 30, 2019	Tier 1	Tier 2	Total
Retirees, Disabilitants, and Beneficiaries			
1. Number	10,612	2,879	13,491
2. Average Age	72.84	65.62	71.30
3. Average Years Since Retirement	17.24	5.52	14.74
4. Average Monthly Pension Benefit			
Base	$ 2,344	$ 2,152	$ 2,303
COLA	146	51	126
PRPA	636	82	518
Adjustment	0	0	0
Sick	67	65	67
Total	$ 3,193	$ 2,350	$ 3,014

Summary of Members Included

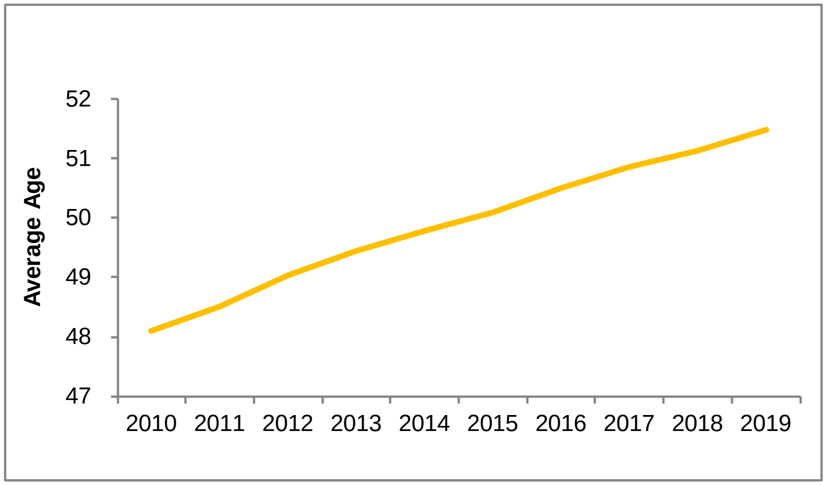
As of June 30, 2019	Active Members	Retirees	Covered Spouses	Covered Children / Dependents	Deferred	Total Inactive Members
Retiree Medical Participants						
1. Retiree Coverage Only	3,994	7,508	0	0	377	7,885
2. Retiree + Spouse	0	3,858	3,858	0	614	8,330
3. Retiree + Children / Other Dependent	0	194	0	184	0	378
4. Family	0	354	354	533	0	1,241
5. Total	3,994	11,914	4,212	717	991	17,834

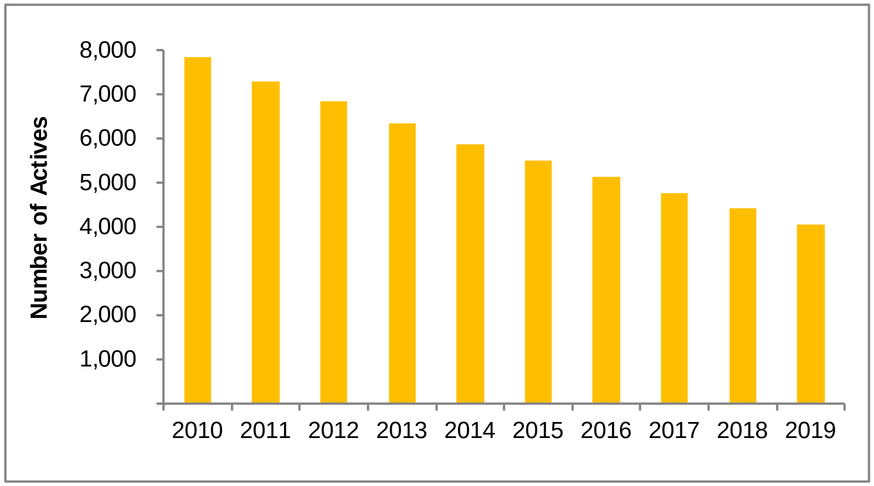
Retiree Medical Participants as of June 30, 2019					
	Retirees	Covered Spouses	Covered Children / Dependents	Deferred	Total Inactive Members
Pre-Medicare	2,554	1,435	717	976	5,682
Medicare Part A & B	9,151	2,751	0	15	11,917
Medicare Part B Only	209	26	0	0	235
Total	11,914	4,212	717	991	17,834

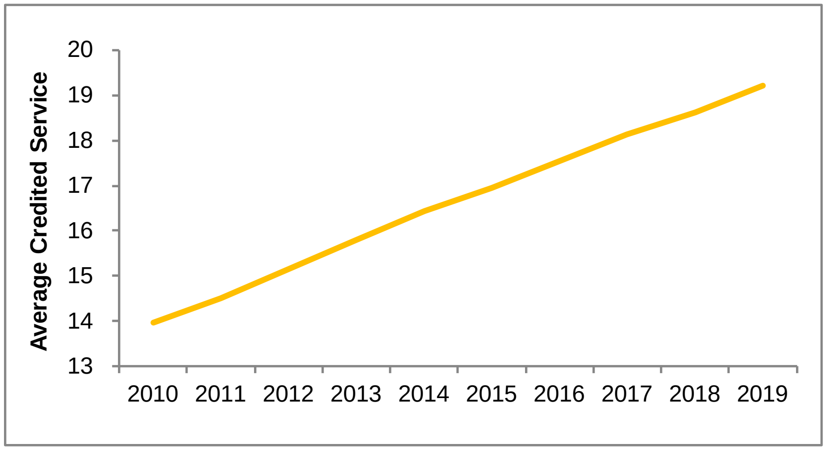
As of June 30, 2019	Retirees
Summary of Retiree Medical Data Received	
1. Retiree records on pension data	13,491
2. Remove duplicates on pension data	(394)
3. Records valued in a different retiree healthcare plan[1]	(784)
4. Records without medical coverage	(399)
5. Total	11,914

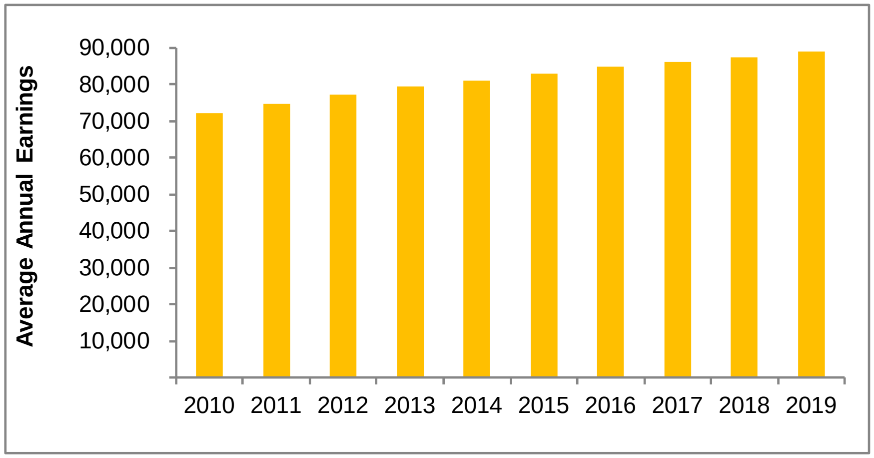
[1] Each member's retiree medical benefits are valued in the plan indicated in the data from Aetna

Summary of Members Included - Active Members at June 30









Total annual earnings are the annualized earnings for the fiscal year ending on the valuation date.

Section 4.2: Age and Service Distribution of Active Members

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	0	0	0
35 – 39	198	15,743,124	79,511
40 – 44	666	56,627,944	85,027
45 – 49	1,019	89,981,229	88,303
50 – 54	892	80,646,548	90,411
55 – 59	700	63,277,633	90,397
60 – 64	357	32,750,323	91,738
65 – 69	141	13,365,556	94,791
70 – 74	55	5,372,289	97,678
75+	16	1,660,983	103,811
Total	4,044	$ 359,425,629	$ 88,879

Annual Earnings by Credited Service

Years of Service	Number	Total Annual Earnings	Average Annual Earnings
0	0	$ 0	$ 0
1	1	63,331	63,331
2	4	236,834	59,209
3	7	443,788	63,398
4	18	1,161,334	64,519
0 – 4	30	$ 1,905,287	$ 63,510
5 – 9	126	9,418,094	74,747
10 – 14	658	53,848,725	81,837
15 – 19	1,459	127,538,047	87,415
20 – 24	1,183	109,067,092	92,195
25 – 29	439	42,422,416	96,634
30 – 34	109	10,839,794	99,448
35 – 39	24	2,514,127	104,755
40+	16	1,872,047	117,003
Total	4,044	$ 359,425,629	$ 88,879

Years of Credited Service by Age

	Years of Service									
Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
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	3	14	116	65	0	0	0	0	0	198
40 – 44	8	44	177	376	61	0	0	0	0	666
45 – 49	8	31	154	398	400	28	0	0	0	1,019
50 – 54	8	18	97	264	340	155	10	0	0	892
55 – 59	2	11	54	208	225	153	45	2	0	700
60 – 64	1	5	34	95	113	71	28	10	0	357
65 – 69	0	2	18	40	29	28	15	6	3	141
70 – 74	0	1	8	9	12	2	9	6	8	55
75+	0	0	0	4	3	2	2	0	5	16
Total	30	126	658	1,459	1,183	439	109	24	16	4,044

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

Section 4.3: Member Data Reconciliation

Pension

	Active Members	Inactive Members: Due a Refund	Inactive Members: Deferred Benefits	Inactive Members: Retired Members	Inactive Members: Disabled Members	Inactive Members: Bene-ficiaries	Total
As of June 30, 2018	**4,418**	**1,900**	**797**	**11,988**	**25**	**1,264**	**20,392**
Vested Terminations	(137)	(2)	139	0	0	0	0
Non-vested Terminations	(11)	11	0	0	0	0	0
Cash-outs	(1)	(65)	(8)	0	0	0	(74)
Disability Retirements	(3)	0	(2)	0	5	0	0
Age Retirements	(284)	(8)	(71)	367	(4)	0	0
Deaths With Beneficiary	0	(1)	(3)	(85)	0	89	0
Deaths Without Beneficiary	(3)	(2)	0	(121)	0	(40)	(166)
Data Corrections	0	(1)	(1)	2	0	(2)	(2)
Transfers Out	0	0	0	0	0	0	0
Rehires	65	(22)	(39)	(4)	0	0	0
Pick Ups*	0	0	0	0	0	7	7
Net Change	**(374)**	**(90)**	**15**	**159**	**1**	**54**	**(235)**
As of June 30, 2019	**4,044**	**1,810**	**812**	**12,147**	**26**	**1,318**	**20,157**

* Pickup beneficiaries are primarily new DROs.

Healthcare

		Inactive Members				
	Active Members	Retirees	Covered Spouses	Covered Children / Dependents	Deferred	Total Inactive Members
As of June 30, 2018	**4,371**	**11,714**	**4,240**	**798**	**985**	**17,737**
Vested Terminations	(109)	0	0	0	109	109
Non-vested Terminations	(9)	0	0	0	0	0
Cash-outs	0	0	0	0	0	0
Disability	(3)	3	2	0	0	5
Rehires	58	(1)	0	0	(39)	(40)
Retirement	(257)	257	130	54	0	441
Retired from deferred status	0	70	36	20	(70)	56
Retired without Medical Coverage	(46)	0	0	0	46	46
Deceased	(11)	(211)	(16)	0	(8)	(235)
New Beneficiaries	0	31	(31)	0	0	0
Added Dependent Coverage	N/A	0	31	24	0	55
Dropped Dependent Coverage	N/A	0	(194)	(106)	0	(300)
Added Retiree Medical Coverage	0	52	14	7	(33)	40
Dropped Retiree Medical Coverage	0	(8)	(1)	(80)	3	(86)
Transfer to/from another plan	0	7	1	0	(2)	6
Net Change	**(377)**	**200**	**(28)**	**(81)**	**6**	**97**
As of June 30, 2019	**3,994**	**11,914**	**4,212**	**717**	**991**	**17,834**

Section 4.4: Schedule of Active Member Data

Valuation Date	Number	Annual Earnings (000's)	Annual Average Earnings	Percent Increase/ (Decrease) in Average Earnings	Number of Participating Employers
June 30, 2019	4,044	$ 359,426	$ 88,879	1.7%	56
June 30, 2018	4,418	386,016	87,374	1.2%	56
June 30, 2017	4,772	411,951	86,327	1.6%	57
June 30, 2016	5,123	435,222	84,954	2.4%	57
June 30, 2015	5,502	456,636	82,995	2.4%	58
June 30, 2014	5,861	474,873	81,023	2.1%	58
June 30, 2013	6,352	504,260	79,386	2.6%	58
June 30, 2012	6,845	529,468	77,351	3.6%	58
June 30, 2011	7,303	545,155	74,648	3.5%	58
June 30, 2010	7,832	564,887	72,125	6.5%	58

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

Section 4.5: Active Member Payroll Reconciliation

	Payroll Field		Payroll Data (000's)
a)	DRB actual reported salaries FY19 – employer list	$	783,276
b)	DRB actual reported salaries FY19 – valuation data		695,990
c)	Annualized valuation data		707,382
d)	Valuation payroll as of June 30, 2019		734,030
e)	Rate payroll for FY20		725,659
f)	Rate payroll for FY22		739,581

a) Actual reported salaries from DRB employer listing showing all payroll paid during FY19, including those who were not active as of June 30, 2019

b) Payroll from valuation data for people who are in active status as of June 30, 2019

c) Payroll from (b) annualized for both new entrants and part-timers

d) Payroll from (c) with one year of salary scale applied to estimate salaries payable for the upcoming year

e) Payroll from (d) with the part-timer annualization removed

f) Payroll from (e) with two years of assumed decrements and salary scale, and 0% population growth

Section 4.6: Summary of New Pension Benefit Recipients

During the Year Ending June 30	2015	2016	2017	2018	2019
Service					
1. Number	791	422	376	465	367
2. Average Age at Commencement	59.87	60.32	59.77	59.98	59.87
3. Average Monthly Pension Benefit	$ 3,363	$ 3,190	$ 3,300	$ 3,527	$ 3,562
Survivor (including surviving spouse and DROs)					
1. Number	89	104	108	87	96
2. Average Age at Commencement	70.22	72.15	70.57	71.61	74.36
3. Average Monthly Pension Benefit	$ 1,715	$ 1,633	$ 1,643	$ 2,022	$ 1,795
Disability					
1. Number	8	4	3	3	5
2. Average Age at Commencement	53.62	50.48	43.30	49.92	51.51
3. Average Monthly Pension Benefit	$ 3,808	$ 3,616	$ 3,678	$ 3,625	$ 4,182
Total					
1. Number	888	530	487	555	468
2. Average Age at Commencement	60.85	62.56	62.06	61.75	62.75
3. Average Monthly Pension Benefit	$ 3,202	$ 2,888	$ 2,935	$ 3,292	$ 3,206

Summary of New Pension Benefit Recipients

Average Pension Benefit Payments

	Years of Credited Service						
	0 – 4	5 – 9	10 – 14	15 – 19	20 – 24	25 – 29	30+
Period 7/1/18 – 6/30/19:							
Average Monthly Pension Benefit	$ 334	$ 891	$ 1,540	$ 2,760	$ 3,567	$ 4,666	$ 6,777
Number of Recipients	4	23	39	87	93	85	41
Period 7/1/17 – 6/30/18:							
Average Monthly Pension Benefit	$ 204	$ 899	$ 1,583	$ 2,583	$ 3,422	$ 4,580	$ 6,083
Number of Recipients	5	21	61	85	109	130	57
Period 7/1/16 – 6/30/17:							
Average Monthly Pension Benefit	$ 426	$ 795	$ 1,626	$ 2,433	$ 3,549	$ 4,536	$ 6,351
Number of Recipients	10	22	60	75	100	64	48
Period 7/1/15 – 6/30/16:							
Average Monthly Pension Benefit	$ 245	$ 1,002	$ 1,535	$ 2,540	$ 3,445	$ 4,472	$ 6,168
Number of Recipients	11	31	82	69	105	74	54
Period 7/1/14 – 6/30/15:							
Average Monthly Pension Benefit	$ 349	$ 1,041	$ 1,342	$ 2,205	$ 3,267	$ 4,220	$ 5,900
Number of Recipients	11	33	70	67	137	125	94
Period 7/1/13 – 6/30/14:							
Average Monthly Pension Benefit	$ 235	$ 904	$ 1,435	$ 2,398	$ 3,016	$ 4,073	$ 7,485
Number of Recipients	8	31	31	28	22	18	12
Period 7/1/12 – 6/30/13:							
Average Monthly Pension Benefit	$ 253	$ 1,030	$ 1,496	$ 2,450	$ 3,281	$ 4,384	$ 6,052
Number of Recipients	10	57	67	90	101	79	64
Period 7/1/11 – 6/30/12:							
Average Monthly Pension Benefit	$ 353	$ 1,064	$ 1,512	$ 2,241	$ 3,276	$ 4,320	$ 5,739
Number of Recipients	11	43	62	61	118	81	58
Period 7/1/10 – 6/30/11:							
Average Monthly Pension Benefit	$ 146	$ 902	$ 1,432	$ 2,328	$ 3,131	$ 4,283	$ 5,496
Number of Recipients	5	68	63	77	118	104	67
Period 7/1/09 – 6/30/10:							
Average Monthly Pension Benefit	$ 482	$ 1,020	$ 1,343	$ 2,263	$ 2,992	$ 4,120	$ 6,263
Number of Recipients	14	50	63	85	109	79	49

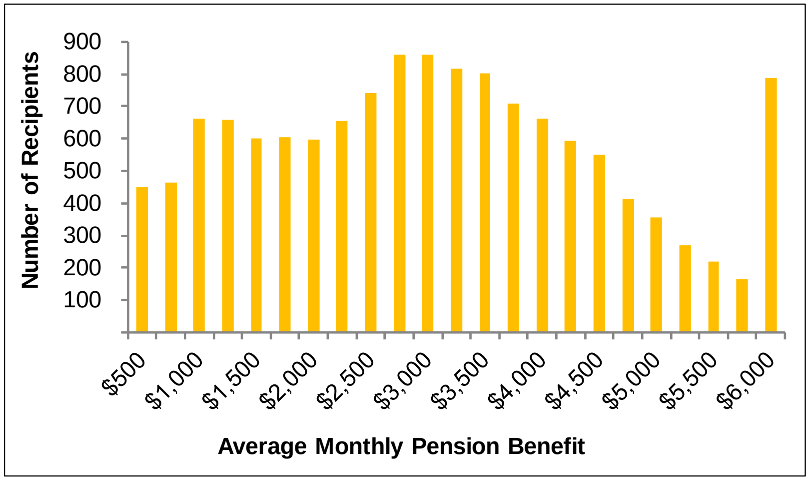
“Average Monthly Pension Benefit” includes postretirement pension adjustments and cost-of-living increases.

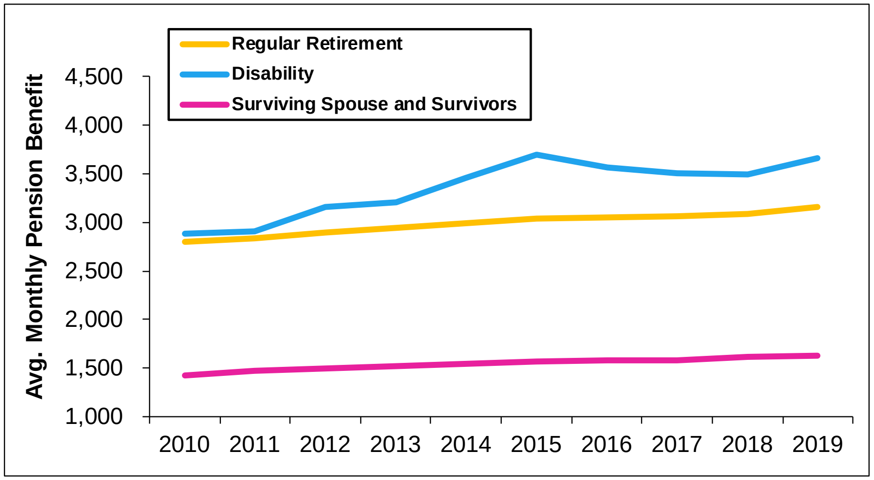
Beneficiaries are not included in the table above.

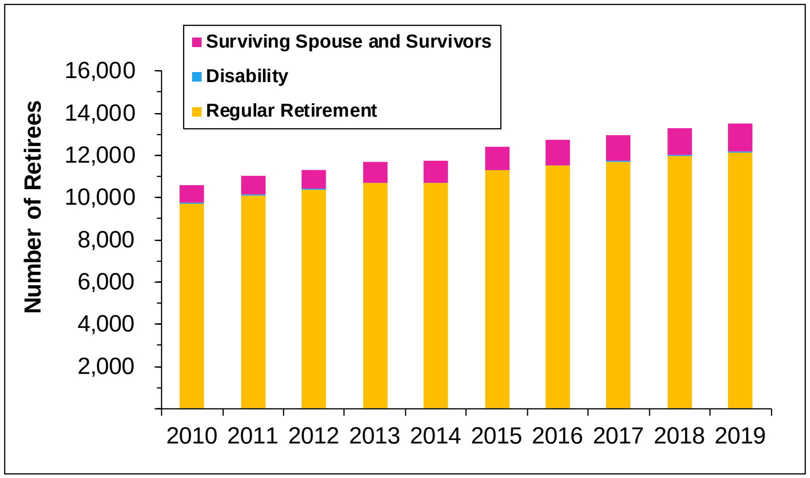
Section 4.7: Summary of All Pension Benefit Recipients

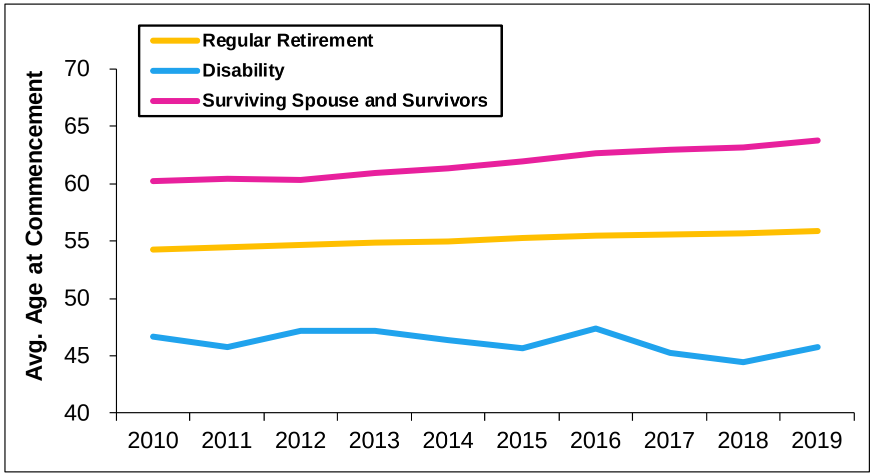
As of June 30	2015	2016	2017	2018	2019
Service					
1. Number, Fiscal Year Start	10,681	11,287	11,527	11,716	11,988
2. Net Change	606	240	189	272	159
3. Number, Fiscal Year End	11,287	11,527	11,716	11,988	12,147
4. Average Age at Commencement	55.28	55.43	55.55	55.70	55.82
5. Average Current Age	69.09	69.58	70.09	70.50	70.99
6. Average Monthly Pension Benefit	$ 3,040	$ 3,056	$ 3,064	$ 3,093	$ 3,161
Surviving Spouse (includes DROs)					
1. Number, Fiscal Year Start	1,034	1,096	1,168	1,237	1,261
2. Net Change	62	72	69	24	54
3. Number, Fiscal Year End	1,096	1,168	1,237	1,261	1,315
4. Average Age at Commencement	62.04	62.66	62.98	63.16	63.73
5. Average Current Age	72.54	73.07	73.42	73.90	74.65
6. Average Monthly Pension Benefit	$ 1,576	$ 1,580	$ 1,584	$ 1,618	$ 1,629
Survivor (other than spouse)					
1. Number, Fiscal Year Start	5	6	3	3	3
2. Net Change	1	(3)	0	0	0
3. Number, Fiscal Year End	6	3	3	3	3
4. Average Age at Commencement	49.91	52.81	52.81	53.85	53.85
5. Average Current Age	54.06	57.22	58.22	60.65	61.65
6. Average Monthly Pension Benefit	$ 1,128	$ 746	$ 746	$ 749	$ 765
Disability					
1. Number, Fiscal Year Start	30	29	28	27	25
2. Net Change	(1)	(1)	(1)	(2)	1
3. Number, Fiscal Year End	29	28	27	25	26
4. Average Age at Commencement	45.67	47.34	45.25	44.40	45.75
5. Average Current Age	49.16	51.56	50.34	50.02	51.08
6. Average Monthly Pension Benefit	$ 3,699	$ 3,568	$ 3,500	$ 3,494	$ 3,666
Total					
1. Number, Fiscal Year Start	11,750	12,418	12,726	12,983	13,277
2. Net Change	668	308	257	294	214
3. Number, Fiscal Year End	12,418	12,726	12,983	13,277	13,491
4. Average Age at Commencement	55.85	56.07	56.24	56.38	56.56
5. Average Current Age	69.35	69.86	70.36	70.78	71.30
6. Average Monthly Pension Benefit	$ 2,912	$ 2,921	$ 2,924	$ 2,954	$ 3,014

Summary of All Pension Benefit Recipients









Summary of All Pension Benefit Recipients

Distribution of Annual Pension Benefits for Benefit Recipients

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	0
30 – 34	0	0	0
35 – 39	0	0	0
40 – 44	15	543,005	36,200
45 – 49	46	1,441,585	31,339
50 – 54	284	12,009,895	42,288
55 – 59	740	29,984,537	40,520
60 – 64	1,919	66,806,946	34,813
65 – 69	3,098	105,932,078	34,194
70 – 74	3,130	109,484,756	34,979
75+	4,259	161,428,701	37,903
Total	13,491	$ 487,631,503	$ 36,145

Annual Pension Benefit by Years Since Commencement

Years Since Commencement	Number	Total Annual Pension Benefit	Average Annual Pension Benefit
0	438	$ 16,585,110	$ 37,866
1	493	19,964,703	40,496
2	494	18,315,592	37,076
3	490	17,953,204	36,639
4	557	21,259,308	38,168
0 – 4	2,472	$ 94,077,917	$ 38,057
5 – 9	2,466	89,382,717	36,246
10 – 14	2,049	64,965,247	31,706
15 – 19	2,062	64,730,198	31,392
20 – 24	2,318	87,240,981	37,636
25 – 29	1,076	42,910,444	39,880
30 – 34	733	32,520,593	44,366
35 – 39	232	9,177,619	39,559
40+	83	2,625,787	31,636
Total	13,491	$ 487,631,503	$ 36,145

Years Since Commencement by Age

	Years Since Commencement									
Age	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40+	Total
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	0	0	0	0	0	0	0	0	0	0
40 – 44	12	3	0	0	0	0	0	0	0	15
45 – 49	39	5	2	0	0	0	0	0	0	46
50 – 54	219	52	10	2	1	0	0	0	0	284
55 – 59	397	208	104	27	3	1	0	0	0	740
60 – 64	829	566	317	148	57	1	0	0	1	1,919
65 – 69	505	957	755	515	339	25	2	0	0	3,098
70 – 74	242	411	578	892	753	203	44	5	2	3,130
75+	229	264	283	478	1,165	846	687	227	80	4,259
Total	2,472	2,466	2,049	2,062	2,318	1,076	733	232	83	13,491

Section 4.8: Schedule of Pension Benefit Recipients by Type of Pension Benefit and Option Elected

Amount of Monthly Pension Benefit	Number of Recipients	Type of Pension Benefit			Option Selected			
		1	2	3	1	2	3	4
$ 1 – $ 300	225	156	69	0	137	44	37	7
301 – 600	390	278	112	0	206	76	85	23
601 – 900	658	505	153	0	358	134	130	36
901 – 1,200	837	667	170	0	480	166	156	35
1,201 – 1,500	726	566	160	0	391	167	145	23
1,501 – 1,800	715	559	156	0	396	154	142	23
1,801 – 2,100	748	614	134	0	375	165	179	29
2,101 – 2,400	819	712	107	0	363	199	227	30
2,401 – 2,700	985	901	83	1	433	238	284	30
2,701 – 3,000	1,050	989	59	2	424	261	333	32
3,001 – 3,300	964	921	37	6	381	217	339	27
3,301 – 3,600	933	900	29	4	379	189	337	28
3,601 – 3,900	832	814	14	4	305	181	319	27
3,901 – 4,200	733	718	11	4	277	163	271	22
4,200+	2,876	2,847	24	5	1,040	476	1,266	94
Total	13,491	12,147	1,318	26	5,945	2,830	4,250	466

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

Section 4.9: Pension Benefit Recipients Added to and Removed from Rolls

	Added to Rolls		Removed from Rolls		Rolls – End of Year		Percent Increase in Annual Pension Benefits	Average Annual Pension Benefit
Year Ended	No. [1]	Annual Pension Benefits[1]	No.[1]	Annual Pension Benefits[1]	No.	Annual Pension Benefits		
June 30, 2019	468	$ 18,004,896	254	$ 871,684	13,491	$ 487,631,503	3.64%	$ 36,145
June 30, 2018	555	21,924,986	261	6,926,129	13,277	470,498,291	3.29%	35,437
June 30, 2017	487	17,151,684	230	7,736,025	12,983	455,499,434	2.11%	35,084
June 30, 2016	530	18,364,581	222	6,144,109	12,726	446,083,775	2.82%	35,053
June 30, 2015	888	34,120,658	220	3,531,501	12,418	433,863,303	7.59%	34,938
June 30, 2014	226	5,964,256	181	(1,150,187)	11,750	403,274,146	1.80%	34,321
June 30, 2013	576	19,387,542	172	1,652,575	11,705	396,159,703	4.69%	33,845
June 30, 2012	473	17,104,564	188	(617,561)	11,301	378,424,736	4.91%	33,486
June 30, 2011	564	19,546,369	146	1,464,766	11,016	360,702,611	5.28%	32,744
June 30, 2010	533	16,980,817	190	5,495,399	10,598	342,621,008	3.47%	32,329

[1] Numbers are estimated, and include other internal transfers.

Section 5: Basis of the Actuarial Valuation

Section 5.1: Summary of Plan Provisions

Effective Date

July 1, 1955, with amendments through June 30, 2019. Chapter 97, 1990 Session Laws of Alaska, created a two-tier retirement system. Members who were first hired under TRS before July 1, 1990 (Tier 1) are eligible for different benefits than members hired after June 30, 1990 (Tier 2). 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 Teachers' 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 TRS funds.

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

Employers Included

Currently, there are 56 employers participating in TRS, including the State of Alaska, 52 school districts, and three other eligible organizations.

Membership

Membership in TRS is mandatory for the following employees hired before July 1, 2006:

- certificated full-time and part-time elementary and secondary teachers, certificated school nurses, and certificated employees in positions requiring teaching certificates;
- positions requiring a teaching certificate as a condition of employment in the Department of Education and Early Development and the Department of Labor and Workforce Development;
- University of Alaska full-time and part-time teachers, and full-time administrative employees in positions requiring academic standing if approved by the TRS administrator;
- certain full-time or part-time teachers of Alaska Native language or culture who have elected to be covered under TRS;
- members on approved sabbatical leave under AS 14.20.310;
- certain State legislators who have elected to be covered under TRS; and
- a teacher who has filed for worker's compensation benefits due to an on-the-job assault and who, as a result of the physical injury, is placed on leave without pay.

Employees participating in the University of Alaska's Optional Retirement Plan or other retirement plans funded by the State are not covered by TRS.

Employees who work half-time in TRS and Public Employees' Retirement System (PERS) simultaneously are eligible for half-time TRS and PERS 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

TRS members receive a year of membership credit if they work a minimum of 172 days during the school year (July 1 through June 30 of the following year). Fractional credit is determined based on the number of days worked. Part-time members who work at least 50% of full-time receive membership credit for each day in proportion to full-time service. Credit is granted for all Alaskan public school service.

Members may claim other types of service, including:

- Outside teaching service in out-of-state schools or Alaska private schools (not more than ten years may be claimed);
- Military service (not more than five years of military service or ten years of combined outside and military service may be claimed);
- Alaska Bureau of Indian Affairs (BIA) service;
- Retroactive Alaskan service that was not creditable at the time it occurred, but later became creditable because of legislative change;
- Unused sick leave credit after members retire; and
- Leave of absence without pay.

Except for retroactive Alaska service that occurred before July 1, 1955, and unused sick leave, contributions are required for all claimed service.

Members receiving TRS disability benefits continue to earn TRS credit while disabled.

Survivors who are receiving occupational death benefits continue to earn TRS service credit while occupational survivor benefits are being paid.

Employer Contributions

TRS 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.

Additional State Contributions

Pursuant to AS14.25.070 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 (12.56%) will be sufficient to pay the total contribution rate adopted by The State of Alaska Retirement Management Board.

Member Contributions

Mandatory Contributions: Members are required to contribute 8.65% of their base salaries. Members' contributions are deducted from gross salaries before federal income taxes are withheld.

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

1% Supplemental Contributions: Members who joined the system before July 1, 1982 and elected to participate in the supplemental contributions provision are required to contribute an additional 1% of their salaries. Supplemental contributions are deducted from gross salaries after federal income taxes are withheld. Under the supplemental provision, an eligible spouse or dependent child will receive a survivor's allowance or spouse's pension if the member dies (see below). Supplemental contributions are only refundable upon death (see below).

Interest: Members' contributions earn 4.5% interest, compounded annually on June 30.

Refund of Contributions: Terminated members may receive refunds of their member contribution accounts which includes their mandatory 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 TRS service may be reinstated upon reemployment in TRS 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, 1990 (Tier 1) and age 60 or early retirement at age 55 if they were hired on or after July 1, 1990 (Tier 2). Additionally, they must have at least:
   - (i) eight years of paid-up membership service;
   - (ii) 15 years of paid-up creditable service, the last five years of which are membership service, and they were first hired under TRS before July 1, 1975;
   - (iii) five years of paid-up membership service and three years of paid-up Alaska Bureau of Indian Affairs service;
   - (iv) 12 years of combined part-time and full-time paid-up membership service;
   - (v) two years of paid-up membership service if they are vested in PERS; or
   - (vi) one year of paid-up membership service if they are retired from PERS.

b. Members may retire at any age when they have:
   - (i) 25 years of paid-up creditable service, the last five years of which are membership service;
   - (ii) 20 years of paid-up membership service;
   - (iii) 20 years of combined paid-up membership and Alaska Bureau of Indian Affairs service, the last five years of which are membership service; or
   - (iv) 20 years of combined paid-up part-time and full-time membership 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 to retire at any age under (b) above. Members may receive early, actuarially reduced benefits when they reach early retirement age and complete the service required.

Members may select joint and survivor options and a last survivor option. Under those 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 base salary (ABS) times the total TRS service times the percentage multiplier. The ABS is determined by averaging the salaries earned during the three highest school years. Members must earn at least 115 days of credit in a school year to include it in the ABS calculation. TRS pays a minimum benefit of $25.00 per month for each year of service when the calculated benefit is less.

The percentage multipliers are 2% for the first 20 years and 2.5% for all remaining service. Service before July 1, 1990 is calculated at 2%.

Indebtedness

Members who terminate and refund their TRS contributions are not eligible to retire unless they return to TRS employment and pay back their refunds plus interest or accrue additional service which qualifies them for retirement. TRS refunds must be paid in full if the corresponding service is to count toward the minimum service requirements for retirement. Refunded TRS service is included in total service for the purpose of calculating retirement benefits. However, 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

Retirees who return to work in a permanent full-time or part-time TRS position after a Normal Retirement are eligible to return under the Standard Option.

Under the Standard Option, retirement and retiree healthcare benefits are suspended while retired members are reemployed under TRS. During reemployment, members earn additional TRS service and contributions are withheld from their wages.

Members retired under the RIP who return to employment under TRS, PERS, Judicial Retirement System (JRS) or the University of Alaska's Optional Retirement Plan will:

a. forfeit the three years of incentive credits that they received;
b. owe TRS 110% of the benefits that they received under the RIP, which may include costs for health insurance, excluding amounts that they paid to participate; 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

When pension benefits begin, major medical benefits are provided by TRS to (1) all employees first hired before July 1, 1990 (Tier 1) and their surviving spouses and (2) members and their surviving spouses who have twenty-five years of membership service, are disabled or age sixty or older, regardless of their initial hire dates. Employees first hired after June 30, 1990 (Tier 2) and their surviving spouses may receive major medical benefits prior to age sixty by paying premiums.

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. Participants in dental, vision, and audio coverage pay a full self-supporting rate and those benefits are not included in this valuation.

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 (Tier 2), 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. To be eligible, members must have at least five years of paid-up membership service.

Disability benefits are equal to 50% of the member’s base salary at the time of disability. The benefit is increased by 10% of the base salary for each minor child, up to a maximum of 40%. Members continue to earn TRS service until eligible for normal retirement.

Members are appointed to normal retirement on the first of the month after they become eligible.

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 supplemental contributions provision or occupational and non-occupational death provisions, the designated beneficiary receives the lump sum benefit described below.

Occupational Death

When an active member dies from occupational causes, a monthly survivor's pension may be paid to the spouse, unless benefits are payable under the supplemental contributions provision (below). The pension equals 40% of the member's base salary 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 average base salary on the date of death and service, including service accumulated from the date of the member's death to the normal retirement date.

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, unless benefits are payable under the supplemental contributions provision (below). The monthly benefit is calculated on the member's average base salary and TRS service accrued at the time of death.

Lump Sum Benefit

Upon the death of an active member who has less than one year of service or an inactive member who is not vested, the designated beneficiary receives the member's contribution account, which includes mandatory contributions, indebtedness payments, and interest earned. Any supplemental contributions will also be refunded. If the member has more than one year of TRS service or is vested, the beneficiary also receives $1,000 and $100 for each year of TRS service, up to a maximum of $3,000. An additional $500 may be payable if the member is survived by dependent children.

Supplemental Contributions Provision: Members are eligible for supplemental coverage if they joined TRS before July 1, 1982, elected to participate in the supplemental provision, and made the required contributions. A survivor's allowance or spouse's pension (below) may be payable if the member made supplemental contributions for at least one year and dies while in membership service or while disabled under TRS. In addition, the allowance and pension may be payable if the member dies while retired or in deferred vested status if supplemental contributions were made for at least five years.

a. **Survivor's Allowance:** If the member is survived by dependent children, the surviving spouse and dependent children are entitled to a survivor's allowance. The allowance for the spouse is equal to 35% of the member's base salary at the time of death or disability, plus 10% for each dependent child up to a maximum of 40%. The allowance terminates and a spouse's pension becomes payable when there is no longer an eligible dependent child.

b. **Spouse's Pension:** The spouse's pension is equal to 50% of the retirement benefit that the deceased member was receiving or the unreduced retirement benefit that the deceased member would have received if retired at the time of death. The spouse's pension begins on the first of the month after the member's death or termination of the survivor's allowance.

c. **Death After Retirement:** If a joint and survivor option was selected at retirement, the eligible spouse receives continuing, lifetime monthly benefits after the member dies. A survivor's allowance or spouse's pension may be payable if the member participated in the supplemental contributions provision. If a joint and survivor option was not selected and benefits are not payable under the supplemental contributions provision, the designated beneficiary receives the member's contribution account, less any benefits already paid and the member's last benefit check.

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 TRS 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 under age 60 if the recipient has been receiving benefits for at least eight years.

Ad hoc PRPAs, up to a maximum of 4%, may be granted to eligible recipients who were first hired before July 1, 1990 (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 (COLA)

Eligible benefit recipients who reside in Alaska receive an Alaska COLA equal to 10% of their base benefits. The following benefit recipients are eligible:

a. members who were first hired under TRS before July 1, 1990 (Tier 1) and their survivors;
b. members who were first hired under TRS after June 30, 1990 (Tier 2) and their survivors if they are at least age 65; and
c. all disabled members.

Changes in Benefit Provisions Valued Since the Prior Valuation

There were no changes in benefit provisions since the prior valuation.

Section 5.2: 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 2014[1]. 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 difference between actual and expected 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 Sections 1.2 and 1.3.

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

There have been no 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 TRS postemployment healthcare plan. Note that the methodology reflects the results of our annual experience rate update for the period from July 1, 2018 to June 30, 2019.

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 2017 through June 2019 (FY18 through FY19) were provided by the State of Alaska from reports extracted from their data warehouse, which separated claims by Medicare status. 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, 2019 of retirees and dependents that included a coverage level indicator. The monthly enrollment data includes double 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 double 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 FY20 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 FY18 through FY19.
   - 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 FY20).
   - 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 April 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, 2018, and July 1, 2019, Buck adjusted member counts used for duplicate records where participants have double 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 on actual pharmacy rebate information provided by Aetna for years through 2018 and Optum for January-June 2019, rebates were assumed to be 12% of prescription drug claims for FY18 and 17% of prescription drug claims for FY19.
2. Develop estimated EGWP reimbursements – Segal provided estimated 2019 EGWP subsidies, developed with the assistance of OptumRx. 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 FY20 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 June 30, 2017 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
FY18 to FY19	6.2% Pre-Medicare / 4.0% Medicare	8.0%	50%
FY19 to FY20	7.3% Pre-Medicare / 4.6% Medicare	1.2%	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.

6. Develop separate administration costs – no adjustments were made for internal administrative costs. Third party retiree plan administration fees for FY20 are based upon total fees projected to 2020 by Segal based on actual FY19 fees. The annual per participant per year administrative cost rate for medical and prescription benefits is $348.

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 Further Consolidated Appropriations Act, 2020 passed in December 2019 repealed several healthcare-related taxes, including the Cadillac Tax. The valuation results included in the report reflect the repeal of this tax. The removal of the Cadillac Tax reduced the plan's liabilities as of June 30, 2019 by approximately $14 million.

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 double 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 double 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 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 2020	1.140	1.088	1.093	1.093
7. Fiscal 2020 Incurred Cost Rate (5) x (6)	$ 11,883	$ 1,955	$ 2,870	$ 4,239
B. Fiscal 2019				
1. Incurred Claims	$ 230,731,518	$ 80,855,220	$ 63,846,605	$ 183,281,273
2. Adjustments for Rx Rebates	0	0	(10,853,923)	(31,157,816)
3. Net incurred claims	$ 230,731,518	$ 80,855,220	$ 52,992,682	$ 152,123,456
4. Average Enrollment	20,625	42,843	20,625	42,843
5. Claim Cost Rate (3) / (4)	11,187	1,887	2,569	3,551
6. Trend to Fiscal 2020	1.073	1.046	1.012	1.012
7. Fiscal 2020 Incurred Cost Rate (5) x (6)	$ 12,003	$ 1,974	$ 2,600	$ 3,593

	Medical		Prescription Drugs (Rx)	
	Pre-Medicare	Medicare	Pre-Medicare	Medicare
C. Incurred Cost Rate by Fiscal Year				
1. Fiscal 2018 A.(7)	11,883	1,955	2,870	4,239
2. Fiscal 2019 B.(7)	12,003	1,974	2,600	3,593
D. Weighting by Fiscal Year				
1. Fiscal 2018	50%	50%	50%	50%
2. Fiscal 2019	50%	50%	50%	50%
E. Fiscal 2020 Incurred Cost Rate				
1. Rate at Average Age C x D	$ 11,943	$ 1,964	$ 2,735	$ 3,916
2. Average Aging Factor	0.826	1.256	0.838	1.119
3. Rate at Age 65 (1) / (2)	$ 14,464	$ 1,564	$ 3,263	$ 3,501
F. Development of Part A&B and Part B Only Cost from Pooled Rate Above				
1. Part A&B Average Enrollment		42,469		
2. Part B Only Average Enrollment		374		
3. Total Medicare Average Enrollment B(4)		42,843		
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		1.019		
6. Medicare per capita cost for all participants: E(3)		$ 1,564		
7. Cost for those eligible for Parts A&B: (6) / (5)		$ 1,534		
8. Cost for those eligible for Part B only: (7) x (4)		$ 4,880		

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, 2019 through June 30, 2020

Age	Medical and Medicare Parts A & B	Medical and Medicare Part B Only	Prescription Drug	Medicare EGWP Subsidy
45	$ 8,827	$ 8,827	$ 1,993	$ 0
50	9,987	9,987	2,368	0
55	11,299	11,299	2,812	0
60	12,784	12,784	3,029	0
65	1,534	4,880	3,501	1,044
70	1,779	5,657	3,865	1,152
75	2,062	6,558	4,267	1,272
80	2,277	7,240	4,162	1,241

Section 5.3: Summary of Actuarial Assumptions

The demographic and economic assumptions used in the June 30, 2019 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-Commencement)

Mortality rates based upon the 2013-2017 actual experience.

100% of RP-2014 white-collar employee table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement.

Mortality (Post-Commencement)

Mortality rates based upon the 2013-2017 actual experience.

93% of male and 90% of female rates of RP-2014 white-collar healthy annuitant table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement.

Deaths are assumed to result from occupational causes 15% of the time.

Turnover

Based upon the 2013-2017 actual experience (see Table 2).

Disability

Incidence rates based upon the 2013-2017 actual experience (see Table 3).

Post-disability mortality in accordance with the RP-2014 disabled table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement. Deaths are assumed to be from non-occupational causes 85% of the time.

Retirement

Retirement rates based upon the 2013-2017 actual experience (see Table 4).

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

85% of male members and 75% of female members are assumed to be married at termination from active service.

Dependent Spouse Medical Coverage Election

Applies to members who do not have double medical coverage. 65% of male members and 60% female members are assumed to be married and cover a dependent spouse.

Dependent Children

- Pension: For the participants who are assumed to be married, those between ages 25 and 45 are assumed to have two dependent children.
- Healthcare: 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

0% 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: 15.57%
- Healthcare: 12.03%

Active Data Adjustment

No adjustment was made to reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date.

Alaska Cost-of-Living Adjustments (COLA)

Of those benefit recipients who are eligible for the Alaska COLA, 60% are assumed to remain in Alaska and receive the COLA.

Sick Leave

4.5 days of unused sick leave for each year of service are assumed to be available to be credited once the member is retired, terminates or dies.

Postretirement Pension Adjustment (PRPA)

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

Expenses

The investment return assumption is net of investment expenses. The Normal Cost as of June 30, 2019 was increased by the following amounts for administrative expenses (for projections, the percent increase was assumed to remain constant in future years):

- Pension: $3,034,000
- Healthcare: $1,439,000

Part-Time Status

Part-time employees are assumed to earn 0.75 years of credited service per year.

Re-Employment Option

All re-employed retirees are assumed to return to work under the Standard Option.

Service

Total credited service is provided by the State. This service is assumed to be the only service that should be used to calculate benefits. Additionally, the State provides claimed service (including Bureau of Indian Affairs Service). Claimed service is used for vesting and eligibility purposes as described in Section 5.1.

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 FY20 medical and prescription drugs are shown below:

	Medical	Prescription Drugs
Pre-Medicare	$ 14,464	$ 3,263
Medicare Parts A & B	$ 1,534	$ 3,501
Medicare Part B Only	$ 4,880	$ 3,501
Medicare Part D – EGWP	N/A	$ 1,044

Members are assumed to attain Medicare eligibility at age 65. All costs are for the 2020 fiscal year (July 1, 2019 – June 30, 2020).

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

$348 per person per year; assumed to increase at 4.5% per year.

Medicare Part B Only

We assume that 5% of actives hired before April 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, 7.0% is applied to the FY20 pre-Medicare medical claims costs to get the FY21 medical claims costs.

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

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 TRS members who are under age 60 and have less than 25 years of service. Eligible Tier 1 members are exempt from contribution requirements. Annual FY20 contributions based on monthly rates shown below for calendar 2020 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 who are assumed to retire prior to age 60 with less than 25 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 2020 Annual Contribution	Calendar 2020 Monthly Contribution	Calendar 2019 Monthly Contribution
Retiree Only	$ 8,892	$ 741	$ 823
Retiree and Spouse	$ 17,784	$ 1,482	$ 1,647
Retiree and Child(ren)	$ 12,564	$ 1,047	$ 1,163
Retiree and Family	$ 21,456	$ 1,788	$ 1,987
Composite	$ 13,212	$ 1,101	$ 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, 0.0% is applied to the FY20 retired member medical contributions to get the FY21 retired member medical contributions.

Trend Assumptions	
FY20	0.0%
FY21	0.0%
FY22	0.0%
FY23+	4.0%

Graded trend rates for retired member medical contributions were updated to the rates shown above for the June 30, 2019 valuation to reflect the ongoing shift in population from pre-Medicare to Medicare-eligible and a projection of expected future retiree contributions reflecting the 10% decrease from 2019 to 2020. Actual FY20 retired member medical contributions are reflected in the valuation.

Healthcare Participation

100% of system paid members and their spouses are assumed to elect 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

Healthcare claim costs are updated annually as described in Section 5.2. Retired member contribution trend rates were updated to reflect the ongoing shift in population from pre-Medicare to Medicare-eligible and a projection of expected future retiree contributions reflecting the 10% decrease from 2019 to 2020. The Further Consolidated Appropriations Act, 2020 that was signed in December 2019 made several changes, including the repeal of the Cadillac Tax. The repeal of the Cadillac Tax reduced the plan's liabilities as of June 30, 2019 by approximately $14 million. The amounts included in the Normal Cost for administrative expenses were changed to $3,034,000 for pension and $1,439,000 for healthcare (based on the most recent two years of actual administrative expenses paid from plan assets). No adjustment was made to reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date.

Table 1: Salary Scale

Years of Service	Percent 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%

Table 2: Turnover Rates

Select Rates during the First 8 Years of Employment

Years of Service	Male	Female
0	20.40%	17.00%
1	20.40%	17.00%
2	16.80%	14.00%
3	14.40%	12.00%
4	12.00%	10.00%
5	10.80%	9.00%
6	9.00%	7.50%
7	7.20%	6.00%

Ultimate Rates after the First 8 Years of Employment

Age	Male	Female	Age	Male	Female
22	2.62%	3.79%	39	2.57%	3.74%
23	2.62%	3.79%	40	2.26%	2.75%
24	2.61%	3.79%	41	2.26%	2.75%
25	2.61%	3.79%	42	2.25%	2.74%
26	2.61%	3.79%	43	2.24%	2.73%
27	2.60%	3.79%	44	2.23%	2.73%
28	2.60%	4.27%	45	2.22%	2.72%
29	2.60%	4.76%	46	2.21%	2.71%
30	2.60%	5.24%	47	2.20%	2.70%
31	2.60%	5.73%	48	2.18%	2.69%
32	2.59%	6.22%	49	2.16%	2.68%
33	2.59%	5.72%	50	3.43%	4.42%
34	2.59%	5.23%	51	3.39%	4.39%
35	2.59%	4.74%	52	3.35%	4.36%
36	2.58%	4.25%	53	3.30%	4.32%
37	2.58%	3.75%	54	3.00%	7.56%
38	2.58%	3.75%	55+	2.00%	5.00%

Table 3: Disability Rates

Age	Male	Female
< 31	0.0337%	0.0612%
31	0.0337%	0.0613%
32	0.0337%	0.0613%
33	0.0342%	0.0622%
34	0.0347%	0.0631%
35	0.0353%	0.0641%
36	0.0357%	0.0650%
37	0.0362%	0.0659%
38	0.0371%	0.0674%
39	0.0379%	0.0689%
40	0.0387%	0.0703%
41	0.0395%	0.0718%
42	0.0403%	0.0733%
43	0.0423%	0.0770%
44	0.0443%	0.0806%
45	0.0464%	0.0843%
46	0.0483%	0.0879%
47	0.0504%	0.0916%
48	0.0536%	0.0975%
49	0.0569%	0.1034%
50	0.0601%	0.1093%
51	0.0634%	0.1152%
52	0.0666%	0.1211%
53	0.0746%	0.1356%
54	0.0826%	0.1501%

Table 4: Retirement Rates

	Reduced		Unreduced	
Age	Male	Female	Male	Female
< 45	N/A	N/A	3.0%	3.0%
45	N/A	N/A	5.0%	5.0%
46	N/A	N/A	5.0%	8.0%
47	N/A	N/A	5.0%	8.0%
48	N/A	N/A	5.0%	8.0%
49	N/A	N/A	5.0%	8.0%
50	10.0%	10.0%	5.0%	14.0%
51	10.0%	10.0%	8.0%	13.0%
52	10.0%	10.0%	15.0%	13.0%
53	10.0%	12.0%	15.0%	14.0%
54	10.0%	12.0%	15.0%	15.0%
55	15.0%	8.0%	20.0%	17.0%
56	10.0%	8.0%	17.0%	17.0%
57	10.0%	8.0%	15.0%	17.0%
58	10.0%	8.0%	20.0%	17.0%
59	10.0%	8.0%	20.0%	23.0%
60	N/A	N/A	25.0%	23.0%
61	N/A	N/A	18.0%	23.0%
62	N/A	N/A	18.0%	21.0%
63	N/A	N/A	18.0%	21.0%
64	N/A	N/A	18.0%	26.0%
65	N/A	N/A	30.0%	21.0%
66	N/A	N/A	25.0%	21.0%
67	N/A	N/A	25.0%	21.0%
68	N/A	N/A	25.0%	26.0%
69	N/A	N/A	35.0%	26.0%
70	N/A	N/A	30.0%	26.0%
71	N/A	N/A	30.0%	37.0%
72	N/A	N/A	30.0%	37.0%
73	N/A	N/A	30.0%	37.0%
74	N/A	N/A	30.0%	37.0%
75 - 79	N/A	N/A	50.0%	50.0%
80+	N/A	N/A	100.0%	100.0%

Section 6: Actuarial Standard of Practice No. 51

Funding future retirement benefits prior to when those benefits become due involves assumptions regarding future economic and demographic experience. These assumptions are applied to calculate actuarial liabilities, current contribution requirements, and the funded status of the plan. However, to the extent future experience deviates from the assumptions used, variations will occur in these calculated values. These variations create risk to the plan. Understanding the risks to the funding of the plan is important.

A new Actuarial Standard of Practice (ASOP) has been adopted for measurements on or after November 1, 2018 - Actuarial Standard of Practice No. 51 ("ASOP 51")[1]. ASOP 51 requires certain disclosures of potential risks to the plan and provides useful information for intended users of actuarial reports that determine plan contributions or evaluate the adequacy of specified contribution levels to support benefit provisions.

Under ASOP 51, risk is defined as the potential of actual future measurements deviating from expected future measurements resulting from actual future experience deviating from actuarially assumed experience.

It is important to note that not all risk is negative, but all risk should be understood and accepted based on knowledge, judgement, and educated decisions. Future measurements may deviate in ways that produce positive or negative financial impacts to the plan.

In the actuary's professional judgment, the following risks may reasonably be anticipated to significantly affect the pension plan's future financial condition and contribution requirements.

- Investment Risk – potential that the investment return will be different than the 7.38% expected in the actuarial valuation
- Contribution Risk – potential that the contribution actually made will be different than the recommended contribution in the actuarial valuation
- Long-Term Return on Investment Risk – potential that changes in long-term capital market assumptions or the plan's asset allocation will create the need to update the long-term return on investment assumption
- Longevity Risk – potential that participants live longer than expected compared to the valuation mortality assumptions
- Salary Increase Risk – potential that future salaries will be different than expected in the actuarial valuation
- Inflation Risk – potential that the consumer price index (CPI) for urban wage earners and clerical workers for Anchorage is different than the 2.5% assumed in the valuation
- Other Demographic Risk – potential that other demographic experience will be different than expected

The following information is provided to comply with ASOP 51 and furnish beneficial information on potential risks to the plan. **This list is not all-inclusive**; it is an attempt to identify the more significant risks and how those risks might affect the results shown in this report.

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[1] ASOP 51 does not apply to the healthcare portion of the plan. Accordingly, all figures in this section relate to the pension portion.

Note that ASOP 51 does not require the actuary to evaluate the ability or willingness of the plan sponsor to make contributions to the plan when due, or to assess the likelihood or consequences of potential future changes in law. In addition, this valuation report is not intended to provide investment advice or to provide guidance on the management or reduction of risk.

Assessment of Risks

Investment Risk

Plan costs are very sensitive to the market return.

- Any return on assets lower than assumed will increase costs.
- The plan uses an actuarial value of assets that smooths gains and losses on market returns over a five-year period to help control some of the volatility in costs due to investment risk.
- Historical experience of actual returns is shown in Section 2.4 of this report. This historical experience illustrates how returns can vary over time.

Contribution Risk

There is a risk to the plan when the employer's and/or State's actual contribution amount and the recommended amount differ.

- If the actual contribution is lower than the recommended contribution, the plan may not be sustainable in the long term.
- Any underpayment of the contribution will increase future contribution amounts to help pay off the additional Unfunded Actuarial Accrued Liability associated with the underpayment(s).
- As long as the Board consistently adopts the actuarially determined contributions, this risk is mitigated due to Alaska statutes requiring the State to contribute additional funds necessary to pay the total contributions adopted by the Board.

Long-Term Return on Investment Risk

Inherent in the long-term return on investment assumption is the expectation that the current rate will be used until the last benefit payment of the plan is made. There is a risk that sustained changes in economic conditions, changes in long-term future capital market assumptions, or changes to the plan's asset allocation will necessitate an update to the long-term return on investment assumption used.

- Under a lower long-term return on investment assumption, less investment return is available to pay plan benefits. This may lead to a need for increased employer contributions.
- The liabilities will be higher at a lower assumed rate of return because future benefits will have a lower discount rate applied when calculating the present value.
- A 1% decrease in the long-term return on investment assumption will increase actuarial accrued liability by approximately 11%.
- This risk may be increased due to the plan being closed to new entrants. As the plan continues to mature, the magnitude of negative cash flow discussed in the Plan Maturity Measures later in this section will grow, thereby creating a need for more liquid assets that may not garner the same long-term return as currently assumed.

Longevity Risk

Plan costs will be increased as participants are expected to live longer.

- Benefits are paid over a longer lifetime when life expectancy is expected to increase. The longer duration of payments leads to higher liabilities.
- Health care has been improving, which affects the life expectancy of participants. As health care improves, leading to longer life expectancies, costs to the plan will increase.
- The mortality assumption for the plan mitigates this risk by assuming future improvement in mortality. However, any improvement in future mortality greater than that expected by the current mortality assumption would lead to increased costs for the plan.
- The Postretirement Pension Adjustments and Alaska Cost-of-Living Allowance increase longevity risk because members who live longer than expected will incur more benefit payment increases than expected and therefore increase costs.

Salary Increase Risk

Plan costs will be increased if actual salary increases are larger than expected.

- Higher than expected salary increases will produce higher benefits.
- The higher benefits may be partially offset by increased employee contributions due to higher salaries.
- If future payroll grows at a rate different than assumed, contributions as a percentage of payroll will be affected.

Inflation Risk

Plan costs will be increased if the actual CPI for Anchorage is greater than the 2.5% assumed in the valuation.

- Retirement benefits will be greater than expected if the CPI is greater than the assumed rate, which will increase costs.
- This risk is mitigated by the 75% and 50% of CPI provisions and the 9% and 6% maximums.
- This risk is also mitigated by the age and time in payment requirements to receive an increase.
- Inflation risk may be associated with the interaction of inflation with other assumptions, but this is not significant as a standalone assumption, and therefore is considered as part of the associated assumption risk instead of discussed here.

Other Demographic Risk

The plan is subject to risks associated with other demographic assumptions (e.g., retirement, termination, and retired members remaining in Alaska assumptions). Differences between actual and expected experience for these assumptions tend to have less impact on the overall costs of the plan. The demographic assumptions used in the valuation are re-evaluated regularly as part of the 4-year experience studies to ensure the assumptions are consistent with long-term expectations.

Historical Information

Monitoring certain information over time may help understand risks faced by the plan. Historical information is included throughout this report. Some examples are:

- Funded Ratio History shown on page 3 shows the plan's funded status (comparison of actuarial accrued liabilities to actuarial value of assets) over time.
- Section 1.6 shows historical analysis of financial experience including how contribution rates have changed over time.
- Section 2.4 shows the volatility of asset returns over time.
- Section 4 includes various historical information showing how member census data has changed over time.

Plan Maturity Measures

There are certain measures that may aid in understanding the significant risks to the plan.

Ratio of Retired Liability to Total Liability ($'s in $000's)	June 30, 2018	June 30, 2019
1. Retiree and Beneficiary Accrued Liability	$ 5,353,494	$ 5,495,907
2. Total Accrued Liability	$ 7,276,290	$ 7,388,020
3. Ratio, (1) ÷ (2)	73.6%	74.4%

A high percentage of liability concentrated on participants in pay status indicates a mature plan (often a ratio above 60% - 65%). Because the plan was closed to new entrants in 2006, we expect the percentage in #3 to continue to increase over time. An increasing percentage may indicate a need for a less risky asset allocation, which may lead to a lower long-term return on asset assumption and increased costs. Higher percentages may also indicate greater investment risk as benefit payments may be greater than contributions creating an increased reliance on investment returns. This ratio should be monitored each year in the future.

Ratio of Cash Flow to Assets ($'s in $000's)	FYE June 30, 2018	FYE June 30, 2019
1. Contributions	$ 189,267	$ 199,933
2. Benefit Payments	458,512	472,717
3. Cash Flow, (1) - (2)	$ (269,245)	$ (272,784)
4. Fair Value of Assets	$ 5,472,727	$ 5,511,929
5. Ratio, (3) ÷ (4)	(4.9%)	(4.9%)

When this cash flow ratio is negative, more cash is being paid out than deposited in the trust. Negative cash flow indicates the trust needs to rely on investment returns to cover benefit payments and / or may need to invest in more liquid assets to cover the benefit payments. More liquid assets may not garner the same returns as less liquid assets, which can increase the investment risk. Currently, the low magnitude of the ratio implies there may already be enough liquid assets to cover the benefit payments, less investment return is needed to cover the shortfall, or only a small portion of assets will need to be converted to cash. Therefore, the investment risk is likely not amplified at this time. However, due to the plan being closed, we expect this measure to become increasingly negative over time. This maturity measure should be monitored in the future.

Contribution Volatility ($'s in $000's)		June 30, 2018	June 30, 2019
1.	Fair Value of Assets	$ 5,472,727	$ 5,511,929
2.	DB/DCR Payroll	$ 738,653	$ 725,659
3.	Asset to Payroll Ratio, (1) ÷ (2)	740.9%	759.6%
4.	Accrued Liability	$ 7,276,290	$ 7,388,020
5.	Liability to Payroll Ratio, (4) ÷ (2)	985.1%	1,018.1%

Plans that have higher asset-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to investment return. For example, a plan with an asset-to-payroll ratio of 10% may experience twice the contribution volatility due to investment return volatility than a plan with an asset-to-payroll ratio of 5%. Plans that have higher liability-to-payroll ratios experience more volatile employer contributions (as a percentage of payroll) due to changes in liability. For example, if an assumption change increases the liability of two plans by the same percent, the plan with a liability-to-payroll ratio of 10% may experience twice the contribution volatility than a plan with a liability-to-payroll ratio of 5%.

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.

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.

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.