ALASKA RETIREMENT MANAGEMENT BOARD

ACTUARIAL COMMITTEE

June 15, 2022

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD

ACTUARIAL COMMITTEE MEETING

June 15, 2022 – 2:00 p.m.

Call In (Audio Only): 1-907-202-7104	**Code:** 877 382 593#

I. **Call to Order**

II. **Roll Call**

III. **Public Meeting Notice**

IV. **A. Approval of Agenda**
B. Approval of Minutes – March 16, 2022

V. **Public / Member Participation, Communications and Appearances**
(Three Minute Limit)

VI. **Actuarial Review/ Audit Findings List Update/ Certification and Acceptance of FY2021 Valuations and Audit Report**

A. Introduction
Allen Hippler, Chair

B. Actuarial Review
Paul Wood & Bill Detweiler, GRS

1. 2021 PERS & TRS Defined Benefit and PERS & TRS Defined Contribution System Valuations
2. 2021 JRS & NGNMRS System Valuations

C. Action Items
Allen Hippler, Chair

Action: Committee Recommendation for Board Acceptance of Review Actuary (GRS) Certification for FY2021 PERS, TRS, JRS, NGNMRS & DCR Plan Valuations

Action: Committee Recommendation for Board Acceptance of Primary Actuary (Buck) Valuations for FY2021 PERS, TRS, JRS, NGNMRS & DCR Plan Valuations

VII. **Replication Audit**
Paul Wood & Bill Detweiler, GRS

Action: Acceptance of Replication Audit Report

VIII. **Experience Analysis**
David Kershner, Buck

Action: Resolution 2022-01 Acceptance of Experience Analysis

IX. **Committee Performance - Self Assessment *(per Charter)***

X. **Review of Committee Charter** *(per Charter)*

XI. Future Meetings

- **A. Calendar Review**
  1. Approval of 2023 Actuarial Committee Meeting Calendar
- **B. Agenda Items**
- **C. Requests / Follow-Ups**

XII. Other Matters to Properly Come Before the Committee

XIII. Public / Members Comments

XIV. Adjournment

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
ACTUARIAL COMMITTEE MEETING

Videoconference

MINUTES OF
March 16, 2022

Wednesday, March 16, 2022

ATTENDANCE

Committee Present:	Allen Hippler, *Chair* Bob Williams Lorne Bretz Donald Krohn Commissioner Lucinda Mahoney Dennis Moen Sandra Ryan
Committee Absent:	Michael Williams Commissioner Paula Vrana

Department of Revenue Staff Present:
Zachary Hanna, Chief Investment Officer
Pamela Leary, Director, Treasury Division
Shane Carson, State Investment Officer
Scott Jones, Head of Investment Operations, Performance & Analytics
Ryan Kauzlarich, Assistant Comptroller
Alysia Jones, Board Liaison
Grant Ficek, Business Analyst

Department of Administration Staff Present:
Ajay Desai, Director, Division of Retirement and Benefits
Kevin Worley, Chief Financial Officer, Division of Retirement and Benefits
Roberto Aceveda, Counseling and Education Manager
Emily Ricci, Health Care Policy Administrator, Division of Retirement and Benefits

ARMB Legal Counsel Present:
Benjamin Hofmeister, Assistant Attorney General, Department of Law

Others Present:
Steve Center, Callan
Paul Erlendson, Callan

David Kershner, Buck
Scott Young, Buck
Brett Hunter, Buck
Jeffrey Walton, Buck
Tonya Manning, Buck
Caitlin Armour, Buck
Paul Wood, Gabriel Roeder Smith
Bill Detweiler, Gabriel Roeder Smith

I. CALL TO ORDER

CHAIR ALLEN HIPPLER called the meeting of the ARM Board Actuarial Committee to order at 1:00 p.m.

II. ROLL CALL

MR. KROHN, MR. BRETZ, COMMISSIONER MAHONEY, MR. MOEN, MS. RYAN, MR. WILLIAMS, and CHAIR HIPPLER were present at roll call.

III. PUBLIC MEETING NOTICE

ALYSIA JONES confirmed that public meeting notice requirements had been met.

IV. A. APPROVAL OF AGENDA

MR. WILLIAMS moved to approve the agenda. MR. KROHN seconded the motion. The agenda was approved without objection.

B. Approval of Minutes: December 1, 2021

MR. WILLAIMS moved to approve the minutes of the December 1, 2021, meeting. MR. KROHN seconded the motion. The minutes were approved without objection.

V. PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS & APPEARANCES – None.

VI. ACTUARIAL UPDATES

A. June 30, 2021, Valuation Results (PERS, TRS, PERS-DCR, TRS-DCR, JRS and NGNMRS)

MR. KERSHNER presented highlighted of the 2021 valuation results. He noted that the presentation was similar to what they had discussed in December. He said they had updated the results since December because the plans were better funded than they thought due to excess market return. He said that there were only a couple of minor changes. He then turned it over to MR. YOUNG to follow up on CHAIR HIPPLER's question from the previous meeting regarding the spike in prescription drug claims

B. Discussion of Increase in March 2020 and March 2021 Prescription Incurred Claims and Underlying Reasons

MR. YOUNG noted that the chart on slide 11 showed the monthly per member cost. He confirmed their suspicions that the prescription costs had risen in March of 2020 because the participants were getting three-month prescriptions due to concern that their monthly prescription may not always be available due to the pandemic. He said they had reviewed the Optum quarterly reports which supported their theory. He noted that another reason for the increase in prescription costs were from people refilling earlier than they otherwise would have, as well has an increase in the home delivery rate.

MR. KERSHNER then returned to the 2021 valuation results. He explained that slides 49 through 52 discussed the liability gains and losses by plan for PERS and TRS DCR plans, noting the largest source of gain on the pension side was the COLA and PRPA increases because the CPI for calendar 2020 was negative, so there was no CPI or no post-retirement pension adjustment granted. He noted the largest source of loss was salary increases that were larger than expected. He said for healthcare side the largest gains were due to the favorable claims experience.

MR. YOUNG explained that the plan changes were smaller than the gains for medical and were for pre-Medicare members and noted some preventative benefits had been added as of January 1, 2022 and would increase the cost slightly. He said the prior valuation estimated non-prescription drug claims would increase six-and-a-half percent but that the actual increase was two-and-a-half percent. He said the on the Medicare side there was a five percent decrease.

CHAIR HIPPLER asked if the gains realized from COLA/PRPA were from salary increases not being as high as projected. MR. KERSHNER responded affirmatively, saying that it was mostly due to no PRPA being given. He said the CPI for 2020 was zero, so there were no PRPA increases given. CHAIR HIPPLER stated that they know they'll have significant loss on this in 2023 based on the 2021 inflation, MR. KERSHNER said that was correct.

C. 2021 Valuation Projections (PERS/TRS)

MR. KERSHNER said the pension trust was projected to reach a hundred percent funding much sooner that projected due to the significant market performance in 2021. He said that due to the math, when full funding is reached, there will still be some outstanding amortization payments which would result in contribution rates because the amortization was a component of the contribution rate. He said for TRS FY 33 through FY39 were showing projected additional state contributions. He said they were suggesting that the ARM Board consider modifying the amortization method so when the plan reached full funding, they would eliminate all remaining amortization layers. He said that slide 55 illustrated that with two different alternatives.

COMMISSIONER MAHONEY asked if there was an option where instead of waiting till the end, if it could be amortized over the life of the contributions; MR. KERSHNER said that was possible, but the ARM Board adopted the 25-year layered amortization in 2018 because the statutes specified the amortization be over a closed 25-year period. He noted that it was possible to amortize over a shorter period, but that it may be in conflict with the statutes, and therefore more of a legal question.
MR. KERSHNER noted that slide 66 discussed the additional state contribution projections for TRS from FY23 through FY39 and briefly touched on what each colored line of the chart represented. He said that if there was a concern about funding the plan above one hundred percent, then they should make a change and what that change would be, depended on what happens to the asset returns.

COMMISSIONER MAHONEY asked if there was a timeframe for making the change; MR. KERSHNER said there was no requirement, that it was more informational as to why the pension trust was projected to be over one hundred percent funded and the alternatives to avoid that from occurring. COMMISSIONER MAHONEY requested that the board further examine this to get a better understanding of the numbers with the goal of getting to fully funded and avoiding an overfunded situation.

D. Sensitivity Analysis

MR. YOUNG explained what they had done in the past with sensitivity and showed slide 71 which illustrated what it would look like if the next two years was ten percent worse than expected and where the losses would be.

COMMISSIONER MAHONEY asked if they could provide alternative asset return scenarios; MR. KERSHNER said they could work with DRB to develop some alternative scenarios. He said that he would provide them at the next meeting.

E. Valuation Timeline

MR. KERSHNER noted that the valuation timeline was being provided for information purposes only. He added that they were on track and that the final valuation report would be provided at the June meeting.

F. Draft June 30, 2021, Valuation Reports

MR. KERSHNER said the draft valuation reports for PERS, TRS and the DCR Plans were in the packet starting on page 98.

G. Actuarial Education

1. **Explanation of the 25-year layered unfunded liability amortization methodology**
2. **Example showing the development of the FY 22 Additional State Contribution of TRS**

MR. KERSHNER noted that on page 419 of the pdf was a document titled State of Alaska 25-Year Layered Unfunded Liability Amortization Methodology that explained what the 25-year layered amortization was and explained that there were two types of amortization methods and discussed them briefly.

VII. REVIEW OF VALUATION RESULTS AND RECOMMENDATIONS

MR. WOOD introduced himself and his team to the new board members and explained what their role was. He then turned to page 3 (pdf page 430) that showed the items covered in their presentation: Claim and Enrollment Review, Assumption Review, and Test Life Review.

MR. WOOD noted a favorable claims experience, meaning the per capita claims costs (PCCC) did not increase as much as expected. He explained that Pre-Medicare costs had increased, and prescription drug costs had decreased during the year due to plan changes and would be monitored going forward to see if claims would swing back in the other direction.

MR. WOOD said that as shown on page 7, the new Medicare Part B assumption was causing consistent gains, and the return expectations were continuing a downward trend across the country.

MR. WOOD explained how they performed test life reviews stating that they track raw data to make sure the right inputs were going into the valuation system and reviewed the benefit amounts that were calculated and then replicate it for present value benefits for liability calculations. He said that sample lives tell them if the assumptions were being correctly employed and if the benefit provisions are being valued correctly.

MR. DETWIELER explained the five findings that related to PERS DB Peace Officer/Firefighters, TRS DB, and PERS PF DCR OD & D and what their recommendations were regarding the findings. He said the summary of their recommendations for the plan were on page 20.

CHAIR HIPPLER recessed the meeting from 2:27 p.m. until 2:34 p.m.

VIII. ASSUMPTION FOR EXPERIENCE STUDY
Updated Economic Assumptions
Demographic Assumptions

MR. KERSHNER said the slides started on page 450 of the pdf packet. He reviewed the background for the experience study located on pages 4 through 6 of the slide deck. He said the ARM Board requested the plan actuary conduct an experience analysis of the retirement system once every four years with the exception of healthcare costs and trend rate which are analyzed annually. He explained that the assumption used in the valuation should represent the actuary's best estimate of reasonable long-term expectations and that the Actuarial Standard of Practice No. 51 required the actuary to indemnify risks that may reasonably be anticipated to significantly affect the plan's future financial condition.

MR. KERSHNER then moved on to the different demographic assumptions listed on page 8 and briefly explained them noting the A/E (actual/expected) ratios were developed for each assumption that had credible experience and they wanted the A/E ratios to be as close to a hundred percent as possible. He said in some cases where statistically credible data does not exist, they proposed no changes to the current assumptions because of the lack of basis on which to make the changes.

MR. KERSHNER said experience was analyzed on a liability-weighted basis for mortality, retirement, and ultimate withdrawal experience. All other assumptions were analyzed on a headcount weighted basis. He then moved to page 12 and explained the mortality assumption. He noted that the mortality improvement scale currently used had been updated every year since 2017 but the assumptions set in 2018 were set without the updates, so they were proposing a slight change to the study and to also adopt the private sector tables, Pub-2010, the most current version of the tables. He then skipped to page 16 to discuss the graphs regarding Post-Commencement Mortality Experience - PERS/PERS DCR. He then moved to page 23 through 25 showing the current and proposed mortality assumption and explained the summary of their proposed assumption.

MR. KERSHNER then discussed the retirement assumption located on page 27 explaining the retirement assumption was used to predict ages at which people were expected to retire. He said slide 29 was an example of the retirement experience of unreduced retirement.

MR. KERSHNER then jumped ahead to page 36 and discussed the withdrawal assumption, explaining that it was used to predict patterns of termination of employment. He said page 39 was an example of the withdrawal experience for TRS. He noted that the appendix to the presentation had all the details by group, gender, death rate and all of the A/E ratios. He then moved to page 48 to discuss the rehire assumption for those who had left state employment, then returned, their benefit stops while employed. He noted they were not proposing a rehire assumption for the DCR plans as the trusts are all overfunded currently and better able to absorb any losses they get from rehires. He said they were proposing modified rehire assumptions for the DB plans.

MR YOUNG said page 51 showed the Medicare Part B only assumption, and that certain participants when they retire were not eligible for Medicare Part A. He then moved to page 53 noting that the proposed inflation rate was originally 2.0% but they felt that was too low and modified it to 2.25%. He said the updated proposed economic assumptions were shown on pages 54-57 which showed a summary of the nominal investment return assumptions – current and proposed. He then touched on pages 58 through 60 which showed cost effects of the proposed assumptions.

CHAIR HIPPLER asked, if on average, was it a higher increased rate or a lower increased rate than before; MR. KERSHNER said that it was dependent on which group, some groups were higher, and some were lower than the average. CHAIR HIPPLER asked about the healthcare trend rates and if he was reading it incorrectly; MR YOUNG noted that they left fiscal 2022 rates the same because they would not be used until the next valuation.

CHAIR HIPPLER noted that the next five years, the projection was a higher increase in healthcare costs than initially projected; MR. YOUNG said that was correct. CHAIR HIPPLER asked if they changed everything in line with the inflation rate of 2.5, would that impact the assets and liabilities, or would everything be impacted equally and net out at zero; MR. KERSHNER said that it would not affect the assets at all, only the liabilities.

MR. HANNA noted that Callan would be presenting on Friday on their capital market assumptions as well as inflation and he would discuss the time frame, inflation, and nominal return expectations.

CHAIR HIPPLER said that he would like to see in the presentation to the board, long-term inflation forecasts over the last couple of years for any possible trends.

MS. MANNING agreed with CHAIR HIPPLER about having comparisons on different inputs of the inflation assumption; she said that they would be sure to honor that request.

IX. UPDATE ON RFP FOR REVIEW ACTUARY CONTRACT

MS. LEARY reminded the committee that the actuary contract was expiring at the end of June. She said the RFP was put out the end of February and proposals were due April 20th. She said it would be an initial three-year contract with two optional two-year extensions. She explained they would have a meeting to review the proposals and thought they should determine who should be part of the committee to review the proposals.

MR. WILLIAMS said that he was discussing that with CHAIR HIPPLER, and it would be announced at the board meeting.

MR. BRETZ asked if there was a record of who served on the last evaluation committee. MS. LEARY responded that they did not have that information on hand but would be happy to follow up.

X. REIVEW COMMITTEE CHARTER – None

XI. FUTURE MEETINGS

A. Calendar Review - None

B. Agenda Items - None

C. Requests/Follow-ups - None

XII. PUBLIC/MEMBER COMMENTS – None.

XIII. ADJOURNMENT

MR. MOEN moved to adjourn the meeting. MR. KROHN seconded the motion. The motion passed without objection.

The meeting was adjourned at 3:51 p.m.

ATTEST:

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Corporate Secretary

Note: An outside contractor recorded the meeting and prepared the summary minutes. For in-depth discussion and more presentation details, please refer to the recording of the meeting and presentation materials on file at the ARMB office.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
PROPOSAL EVALUATION COMMITTEE MEETING
RFP#2022-0400-0015 ARMB Actuarial Review Services

Videoconference

MINUTES OF
May 2, 2022

Monday May 2, 2022

ATTENDANCE

Committee Present:	Sandra Ryan, *Chair* Lorne Bretz Bob Williams

Department of Revenue Staff Present:
Pamela Leary, Director, Treasury Division
Dorie Choquette, Administrative Operations Manager
Alysia Jones, Board Liaison

Others Present:
Graham Schmidt, Cheiron
Brad Ramirez, The Segal Group, Inc.

I. CALL TO ORDER
CHAIR BOB WILLIAMS called the meeting of the Proposal Evaluation Committee meeting for RFP #2022-0400-0015 meeting to order at 2:00 p.m.

II. DESIGNATION of MEETING CHAIR
CHAIR WILLIAMS designated SANDRA RYAN as meeting chair. There being no objection, MS. RYAN took over as chair.

III. ROLL CALL
MR. BRETZ, MR. WILLIAMS, and CHAIR RYAN were present.

IV. PUBLIC MEETING NOTICE
ALYSIA JONES confirmed that public meeting notice requirements had been met.

V. APPROVAL OF AGENDA
<u>MR. WILLIAMS moved to approve the agenda.</u> <u>MR. BRETZ seconded the motion.</u> The agenda was approved without objection.

VI. PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS & APPEARANCES – None.

VII. PROPOSAL EVALUATION

A. Review of Solicitation and Selection Process

MS. JONES reported that RFP #2022-0400-0015 ARMB Actuarial Review Services was issued on February 23, 2022 and public noticed per the ARMB's regulations (15 AAC 112.140) on the Alaska Online Public Notice System, ARMB's website, and in the American Academy of Actuaries' newsletter, *This Week.* She said a total of four proposals were received by the deadline and reviewed for responsiveness before sending to the committee members on April 22, 2022.

MS. JONES noted that instructions on how to evaluate and score proposals were provided to all committee members ahead of the meeting. She then reviewed the evaluation factors and explained the procedure for the committee review and scoring discussion.

B. EXECUTIVE SESSION

MR. WILLIAMS explained that under AS 36.30.230, proposals "are open for public inspection after the notice of intent to award a contract is issued under AS 36.30.365".

Since proposals are confidential by law, MR. WILLIAMS moved to go into executive session per AS 44.62.310(c)(3) to review proposals received in response to RFP#2022-0400-0015 ARMB Actuarial Review Services. MS. CHOQUETTE, MS. LEARY, and MS. JONES were invited to join the Executive Session. MR. BRETZ seconded the motion. The motion was approved without objection.

The committee went off record at 2:09 p.m. and was back on the record at 3:43 p.m. No action was taken.

VIII. OTHER MATTERS TO PROPERLY COME BEFORE THE BOARD - None

IX. PUBLIC/MEMBERS COMMENTS

CHAIR RYAN thanked the members of the committee for their time and effort in reviewing the proposals.

X. ADJOURNMENT

MR. WILLIAMS moved to adjourn the meeting. MR. BRETZ seconded the motion. The motion passed without objection.

The meeting was adjourned at 3:45 p.m.

ATTEST:

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Corporate Secretary

Note: The ARMB Liaison Officer recorded public portions of the meeting and prepared the summary minutes. For in-depth discussion and more details, please refer to the recording of the meeting on file at the ARMB office.

Actuarial Timeline

QUARTERLY AGENDA ITEMS	SEP	DEC	MAR	JUN
	• Review Contribution Rate Resolutions • Recommendation to Board - Contribution Rates **(A)**	• Status Report - Draft Valuation & 2nd Actuary Review Process	• Draft Review Actuary Report • Draft Valuation Reports* • Audit Findings List	• Final Review & Valuation Reports • Recommendation for Acceptance of Review & Valuation Reports **(A)** • Recommendation for action on Audit Findings List **(A)**
The following agenda items occur every four years				
	• Experience Analysis Results	• Experience Analysis - Economic Assumptions	• Experience Analysis - Demographic Assumptions	• Experience Analysis Results & Acceptance **(A)**
	• Preliminary results of Actuary Audit	• Actuary Audit Results *(to full Board)*		

JUL AUG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN

CONTRACT & REVIEW

ACTUARY CONTRACT (DRB)
Timeframe: 3 yrs w/ 1 optional 3-yr renewal and 2 2-yr renewals for a total of 10 yrs
Upcoming: Optional Renewal March 2023 for FY24
Future: Optional Renewal March 2026 for FY27
Optional Renewal March 2028 for FY29
RFP March 2030 for FY31

REVIEW ACTUARY CONTRACT (TRSY)
Timeframe: *3 yrs w/ 2 optional 2 yr renewals*
Current: Approved May 2022 for FY23 - FY25
Future: Optional Renewal March 2025 for FY26
Optional Renewal March 2027 for FY28

ACTUARIAL EXPERIENCE ANALYSIS
AS 37.10.220(a)(9)
Timeframe: *4 years*
Current: FY22 **Future:** FY26

ACTUARIAL AUDIT CONTRACT (TRSY)
AS 37.10.220(a)(10)
RFP in March/ Target Effective Date for Contract Jul 1st
Timeframe: *4 yrs*
Current: FY22 **Future:** FY26

KEY
(A) Action Item

*Additional meetings to review DRAFT Valuation Reports may be scheduled before or after the March meeting, as needed.

Updated: 5/31/2022

State of Alaska
Timeline for June 30, 2021 Valuations (PERS/TRS DB and DCR, JRS, NGNMRS, EPORS)

Item #	Task	Original Deadline	Revised Deadline	Date Completed	Team Responsible	Comments / Notes
1	Enrollment Data Request to Aetna	7/16/21		7/6/21	Buck	Send to Daniel Dudley at Aetna. Enrollment counts received 7/21.
2	Valuation Data Request to DRB	7/16/21		7/16/21	Buck	
3	Monthly Audit Discussion with GRS / Buck	7/21/21		not needed	GRS / Buck	
4	Preliminary 6/30/2021 Assets to Buck	8/6/21		8/10/21	DRB	These will be used only for the adoption of FY23 contribution rates.
5	Monthly Audit Discussion with GRS / Buck	8/18/21		not needed	GRS / Buck	
6	Valuation Data to Buck	9/3/21		9/3/21	DRB	
7	Monthly Audit Discussion with GRS / Buck	9/15/21		9/15/21	GRS / Buck	
8	Audit Data and Sample Lives Request to Buck	9/17/21		9/22/21	GRS	
9	**Actuarial Committee Meeting - FY23 Contribution Rates**	9/22/21		9/22/21	All	**Teleconference**. Deadline for meeting materials is 9/3.
10	Claims Data Request to Segal/DRB	9/24/21		9/13/21	Buck	Incurred claims through 6/30/21 that are paid through 8/31/21.
11	Data Questions to DRB	9/24/21		9/29/21	Buck	PERS data questions sent on 9/24. TRS data questions sent on 9/29.
12	Data Answers to Buck	10/8/21		10/7/21	DRB	
13	Final 6/30/2021 Assets to Buck	10/15/21		n/a	DRB	Use same assets as provided for 6/30/21 GASB reporting.
14	Monthly Audit Discussion with GRS / Buck	10/20/21		10/20/21	GRS / Buck	
15	TRS (and selected school districts in PERS) updated active listing at 10/1/21 to capture term/rehires since 6/30/21	10/22/21			DRB	Won't be reflected in 6/30/21 valuations, but DRB still wants Buck to track how many terms/rehires by plan.
16	Claims Data to Buck	10/22/21		10/8/21	Segal / DRB	Incurred claims through 6/30/21 that are paid through 8/31/21.
17	6/30/2021 Valuation Data and DRB Data Questions to GRS	10/29/21	11/15/21	11/15/21	Buck	
18	Sample Life Information to GRS	11/5/21	11/19/21	11/19/21	Buck	
19	Preliminary Valuation Results and PVB's by individual to GRS	11/15/21	11/23/21	11/23/21	Buck	PERS DCR provided on 12/8. TRS DCR provided on 12/9.
20	Monthly Audit Discussion with GRS / Buck	11/17/21		11/17/21	GRS / Buck	
21	**Actuarial Committee Meeting - 6/30/21 valuation results (preliminary), economic assumptions for experience study**	12/1/21		12/1/21	All	**Juneau**. Deadline for meeting materials is 11/12.
22	Monthly Audit Discussion with GRS / Buck	12/15/21		12/15/21	GRS / Buck	
23	Draft DCR Valuation Reports to GRS	1/7/22		1/7/22	Buck	
24	Monthly Audit Discussion with GRS / Buck	1/19/22	1/21/22	1/21/22	GRS / Buck	
25	Draft DB Valuation Reports to GRS	1/21/22		1/26/22	Buck	
26	Monthly Audit Discussion with GRS / Buck	2/16/22		2/16/22	GRS / Buck	
27	Draft Actuarial Review Report to Buck	2/28/22		3/9/22	GRS	
28	Monthly Audit Discussion with GRS / Buck	3/9/22		3/9/22	GRS / Buck	
29	**Actuarial Committee Meeting - 6/30/21 valuation results (full), projections, draft valuation reports, demographic assumptions for experience study**	3/16/22		3/16/22	All	**Juneau**. Deadline for meeting materials is 2/25. Also include updated economic assumptions.
30	Monthly Audit Discussion with GRS / Buck	4/20/22		not needed	GRS / Buck	
31	**ARMB Meeting - follow-up to March meeting (revisit economic assumptions)**	4/28/22	5/4/22	5/4/22	All	Teleconference.
32	Monthly Audit Discussion with GRS / Buck	5/18/22		5/18/22	GRS / Buck	
33	**Actuarial Committee Meeting - final valuation reports, follow-up discussion on assumptions for experience study**	6/15/22			All	**Anchorage**. Deadline for meeting materials is 5/27.

Note: All deadline and completion dates are specific to PERS/TRS.

Alaska Retirement Management Board

Actuarial Review of Pension and Postemployment Healthcare Plans for PERS and TRS

Actuarial Review of the Public employees' Tier IV and Teachers' Tier III Defined Contribution Retirement Plan - for Occupational Death and Disability and Retiree Medical Benefits

May 20, 2022

P: 720.274.7270 | www.grsconsulting.com

May 20, 2022

Mr. Zach Hanna
Chief Investment Officer
Department of Revenue, Treasury Division
Alaska Retirement Management Board
P.O. Box 110405
Juneau, AK 99811-0405

Subject: **Actuarial Review of June 30, 2021 valuations for the State of Alaska Public Employees' Retirement System Defined Benefit Retirement Plan (PERS DB) and Teachers' Retirement System Defined Benefit Retirement Plan (TRS DB)**

Actuarial Review of June 30, 2021 valuations for the State of Alaska Public Employees' Retirement System Defined Contribution Retirement Plan (PERS DCR) and Teachers' Retirement System Defined Contribution Retirement Plan (TRS DCR)

Dear Zach:

We have performed an actuarial review of the June 30, 2021 Actuarial Valuations for PERS DB, TRS DB, PERS DCR, and TRS DCR.

This report includes a review of:
- Pension Assumptions and Benefits
- Occupational Death and Disability Assumptions and Benefits
- Health Care Cost Assumptions
- Actuarial Valuation Methods and Procedures
- Contribution Rate Determination
- Actuarial Valuation Report
- Potential Areas for Future Review

A major part of the review is a thorough analysis of the test lives provided by Buck. The report includes exhibits that summarize the detailed analysis of these sample test cases, as well as a comparison of the results between Buck and GRS. We wish to thank the staff of the State of Alaska Treasury Division and Buck, without whose willing cooperation this review could not have been completed.

Sincerely,

Gabriel, Roeder, Smith & Company

Paul Wood, ASA, FCA, MAAA	Bill Detweiler, ASA, EA, FCA, MAAA
Senior Consultant	Consultant

cc: Ms. Pamela Leary
Ms. Alysia Jones

7900 East Union Avenue | Suite 650 | Denver, Colorado 80237-2746

Table of Contents

SECTION 1

EXECUTIVE SUMMARY

Executive Summary

Gabriel, Roeder, Smith & Co. was engaged by the Alaska Retirement Management Board (ARMB) to review the June 30, 2021 Actuarial Valuation of the State of Alaska Public Employees' Retirement System (PERS) and Teachers' Retirement System (TRS) including both the Defined Benefit Plans and the Defined Contribution Plans.

This report presents our findings in the following areas:

- General Approach
- Review of Assumptions
- Review of Actuarial Valuation Methods and Procedures (including the test lives review)
- Review of Contribution Rate Determination
- Review of Actuarial Valuation Report
- Potential Areas for Future Review
- Summary and Conclusions

In general, we found that the Buck's actuarial results and reports were reasonable and find the assumptions consistent with generally accepted actuarial practice

Monthly conference calls conducted between Buck and GRS were made this year and contributed greatly to resolving issues more quickly and thoroughly. Those issues, even if resolved, are highlighted in this report.

Key Findings From The Audit Of The June 30, 2021 Valuations

- We recommend Buck examine experience under the current assumptions in the upcoming experience study to determine if they are working as intended or need to be modified.
- We recommend Buck continues to track the medical claims experience closely, particularly any further impact from the plan changes or COVID-19 experience.
- We recommend Buck review with the Board whether to implement a new entrant/rehire assumption in the DCR plan.
- We recommend Buck continue to disclose the nature and impact of all programming changes included in the valuation.
- We recommend Buck generate a new gain/loss item that tracks the experience of the EGWP savings assumption.
- We recommend that Buck implement the changes to their valuation methods as detailed in Section 6 of this report.
- We recommend Buck make some small modifications to their valuation reports to improve communication and disclosures.

Buck's Implementation of Recommendations from Prior Review Report

As part of last year's actuarial review, we made several recommendations. These recommendations included the following:

- Changes to their valuation methods as detailed below.
  - **Timing of Alaska COLA for Disability** – The 10% Alaska COLA should be applied to all disabled members immediately, but it is not being applied until age 65 for members who have retired from disability. We recommend Buck update any calculations necessary so this COLA is applied immediately to all disabled members in both TRS and PERS.
  - **Retirement Benefit for PERS DB Peace Officer/Firefighter Occupational Disability** – When PERS Peace Officer/Firefighter members in both the DB plan and DCR plan retire from occupational disability, the benefit should be increased by the same accumulative PRPA percentage that was applied to the disability benefit. Buck is currently only applying this increase to the occupational disability benefit for Peace Officer/Firefighters in the PERS DCR plan. We recommend Buck update the occupational disability benefits in the PERS DB plan to also include this increase for Peace Officer/Firefighter members.
  - **Rate Used in Valuation Not Matching Rate Disclose in Report** – The ultimate rate of turnover for a male PERS DCR Peace Officer/Firefighter member at age 42 is shown to be 5.90% in the June 30, 2019 report, but a slightly different rate of 5.93% is being used in the calculations. We recommend not only clarifying this specific rate, but since we are unable to verify all rates with only a select number of test lives, make sure all of the decrement rates shown in the reports are consistent with those being used in the calculations.
  - **Actuarial Assumptions for TRS Early Retirement Factors** – Early retirement factors (ERFs) are based on actuarial equivalence for the TRS DB plan, but it is not clear, based on Buck's valuation report, what actuarial assumptions are being used for the ERFS. We recommend Buck clarify the actuarial assumptions being used and disclose them appropriately in the TRS DB report.
- We recommend Buck make some small modifications to their valuation reports to improve communication and make them more consistent.

We appreciate Buck considering these changes for the June 30, 2021 valuations. We confirmed most of them have been made to the valuations and have noted those that we believe still need consideration in this report.

Summary Of Test Life Review

We have included as a part of this report a detailed test life results summary.

- We matched the present value of benefits closely in total on all test lives submitted. We have included exhibits in Sections 6 and 7 of the report, which summarize the differences in calculations by decrement for the test lives analyzed. Differences between actuarial firms will always occur due to system differences and other nuances in the calculations.

- We identified the following five findings related to the valuation. While they may be viewed as immaterial, they should, at the very least, be updated in future valuations, subject to Actuarial Committee discretion.
    - Administration of Claimed Service
    - Retirement Benefit for PERS DB Peace Officer/Firefighter Occupational Disability
    - Occupational Death COLA Benefit for PERS DB Peace Officer/Firefighter
    - Service Eligibility for TRS DB
    - Occupational Disability Benefit for PERS PF DCR OD&D

SECTION 2

GENERAL APPROACH

General Approach

Gabriel, Roeder, Smith & Co. was charged with reviewing the actuarial assumptions of the pension and health care provisions of the actuarial valuations of PERS DB, TRS DB, PERS DCR, and TRS DCR.

We requested a number of items from Buck in order to perform the actuarial review and health cost assumption review:

1. In November and December of 2021, we received valuation data for pension and healthcare for both plans, we received the pension and healthcare test lives for PERS DB, TRS DB, PERS DCR and TRS DCR, and we received preliminary liabilities. In January of 2022, we received revised information for some of the plans.
2. We received draft reports in January 2022.
3. Monthly conference calls between Buck and GRS occurred, with the agenda items including timing of deliverables and the discussion of audit matters.

In performing our review, we:

4. Reviewed actuarial assumptions – We checked to see if they were consistent, comprehensive, and appeared reasonable.
5. Reviewed the actuarial valuation reports, as of June 30, 2021, for completeness and reviewed the financial determinations.
6. Reviewed, in detail, the sample members provided us – This provided us with a perspective on the actuarial process utilized by Buck with respect to the plan and allowed us to review the valuation methods and procedures.
7. Reviewed the health cost assumptions and trend.

KEY ACTUARIAL CONCEPTS

An actuarial valuation is a detailed statistical simulation of the future operation of a retirement system using the set of actuarial assumptions adopted by the Board. It is designed to simulate all of the dynamics of such a system for each current system member including:

1. Earning future service and making contributions,
2. Receiving changes in compensation,
3. Leaving the system through job change, disablement, death, or retirement, and
4. Determination of and payment of benefits from the System.

This simulated dynamic is applied to each active member of the System. It results in a set of expected future benefit payments to that member. Bringing those expected payments to present value, at the assumed rate of investment return, produces the Present Value (PV) of future Benefits for that member. In like manner, a PV of future salaries is determined.

The PV of future benefits and the PV of future salaries for the entire System are the total of these values across all members. The remainder of the actuarial valuation process depends upon these building blocks.

Once the basic results are derived, an actuarial method is applied in order to develop information on contribution levels and funding status. An actuarial method splits the PV of future benefits into two components:

1. PV of Future Normal Costs, and
2. Actuarial Accrued Liability ("AAL").

The actuarial method in use by the State of Alaska is known as the Entry Age Normal (EAN) method. Under EAN, the Normal Cost for a member is that portion of the PV of the increase in the value of that member's benefit for service during the upcoming year. The AAL is the difference between the total PVB and the PV of all future normal costs.

For TRS DB and PERS DB, the PV of future benefits applies to the following benefits:

- Retirement benefits
- Withdrawal benefits
- Disability benefits
- Death benefits
- Return of contributions
- Medical benefits
- Indebtedness (from contributions which might be redeposited)

For TRS DCR and PERS DCR plans, the actuarial present value of future benefits applies to the following benefits:

- Occupational Disability benefits
- Occupational Death benefits
- Retiree Medical benefits

The medical benefits are based on potential future health care benefits, while the others are a type of post-employment income replacement benefit, based on salary. For the medical benefits, estimates must be made of the future health care costs. This is done by determining current per capita health care claim costs by age of retiree, and projecting them into the future based on anticipated future health care inflation.

SECTION 3

REVIEW OF GAINS AND LOSSES

Review of Gains and Losses

As a part of the annual audit, we take a historical look at the gains and losses on the accrued liability. Gains and losses may measure "how closely" experience matches the actuarial assumption. Recurring gains or losses may indicate an assumption that is not meeting the actual experience for this population. In the tables below, we detail the historical gains and losses for each plan. In addition, we have shown the gain or loss as a percent of the beginning of year (BOY) accrued liability (AL).

TABLE 1-PERS DB PENSION GAINS AND (LOSSES) BY SOURCE (000'S)

Source	2021 Valuation	2020 Valuation	2019 Valuation	2018 Valuation	2017 Valuation
Retirement	$ (7,211)	$ (1,285)	$ (3,126)	$ (10,403)	$ 1,448
Termination	(7,963)	(4,857)	6,714	(5,131)	(9,254)
Mortality	12,825	(6,421)	12,459	39,631	3,856
Disability	6,650	(901)	(1,435)	(3,631)	(1,612)
Rehires	15,067	8,418	(13,297)	7,141	(6,403)
Other	3,449	5,835	(8,534)	(7,923)	25,341
Salary	(17,126)	11,228	(59,955)	97,200	121,046
COLA and PRPA	155,142	78,795	(8,371)	108,227	146,017
Total G/L	**$ 160,833**	**$ 90,812**	**$ (75,545)**	**$ 225,111**	**$ 280,439**
Total AL at BOY	**$ 15,279,525**	**$ 15,039,180**	**$ 14,606,033**	**$ 13,832,130**	**$ 13,633,033**
G/L as a % of AL	**1.05%**	**0.60%**	**-0.52%**	**1.63%**	**2.06%**

Note: 2017-2018 gains and losses are prior to the implementation of new assumptions.

The $161 million gain in the most recent valuation is predominantly made up of positive experience on the postretirement pension adjustments (PRPA). The adjustments that occurred in 2021 were less than those assumed in the actuarial valuation. This piece is based on inflation, which was low during calendar years 2019 and 2020. However, inflation significantly increased during calendar year 2021, so we are expecting large losses for this piece in the next valuation.

After a number of years with salary gains, the salary increase assumptions were lowered in the most recent experience study. There have now been three years of experience under the newly adopted assumptions and we have seen one year of gains and two years of losses. We expect this assumption to be carefully analyzed in the upcoming experience study to make sure the decreased rates in the last experience study continue to be appropriate.

The retirement category generated a loss for the fourth year in a row. There seems to be a pattern developing where more members are retiring than assumed. The retirement assumptions should be appropriately increased in the upcoming experience study to reflect this pattern.

The rehired category generated a gain. The liabilities for rehires were less than what was assumed with the normal cost rehire load. This was also an assumption that was updated in the last experience study and should be analyzed again in the upcoming experience study to make sure it was not set too high.

All of the other gains and losses will also need to be analyzed in the upcoming experience study to determine if the current assumptions are appropriate or if they need to be revised.

Table 2-PERS DB Healthcare Gains and (Losses) by Source (000's)

Source	2021 Valuation	2020 Valuation	2019 Valuation	2018 Valuation	2017 Valuation
Retirement	$ 7,125	$ 4,857	$ 1,098	$ 22,262	$ 23,360
Termination	(10,409)	(8,049)	(946)	(6,746)	(12,648)
Mortality	1,939	156	2,976	4,794	22,472
Disability	10,858	867	(981)	288	(1,155)
Rehires	14,045	15,996	10,708	5,948	1,089
Other	5,394	1,735	95,602	(19,667)	80,508
Medical Claims	272,205	278,796	642,081	412,243	830,620
Modified Part B Assumption	5,743	6,345	6,164	235,258	N/A
Dependent Coverage Election	15,017	23,400	18,580	69,614	N/A
COVID-19	-	25,856	-	-	-
Plan Changes	61,807	-	-		-
Methodology	-	-	-	-	(976,619)
Total	**$ 383,724**	**$ 349,959**	**$ 775,282**	**$ 723,994**	**$ (32,373)**
Total AL at BOY	**$ 7,036,550**	**$ 7,151,694**	**$ 7,658,104**	**$ 8,049,265**	**$ 7,736,457**
G/L as a % of AL	**5.45%**	**4.89%**	**10.12%**	**8.99%**	**-0.42%**

Note: 2017-2018 gains and losses are prior to the implementation of new assumptions.

Overall, there was a $384 million gain on the PERS DB Healthcare results. This is mostly due to positive experience on the medical claims. This is now the fifth year in a row there have been significant medical claims gains. The gains this year would have been even larger, but Buck added a 4% load to the medical claims due to account for COVID-19 experience. This will be discussed further in the next section.

This year there were also gains attributable to plan changes. These gains are primarily due to special medication prior authorization.

Based on our recommendation as part of our prior audits, Buck included separate gain loss items to detail gains and losses attributable to both the modified Part B assumption and dependent coverage elections. We are clearly seeing patterns that indicate fewer members are eligible for Part B than assumed and fewer dependents are electing coverage than assumed. Theses assumptions should be analyzed in the upcoming experience study and modified.

We are also seeing patterns develop for retirement, termination, mortality, and rehires. All of these assumptions appear to be biased and should also be revised accordingly in the upcoming experience study.

Table 3- TRS DB Pension Gains and (Losses) by Source (000's)

Source	2021 Valuation	2020 Valuation	2019 Valuation	2018 Valuation	2017 Valuation
Retirement	$ 4,502	$ 4,822	$ 4,611	$ 6,125	$ 9,201
Termination	(7,088)	(8,327)	(4,692)	(11,283)	(11,770)
Mortality	(4,778)	(11,161)	(6,628)	1,634	(282)
Disability	(103)	(337)	(1,732)	(543)	(1,010)
Rehires	3,085	(691)	2,148	3,114	5,142
Other	7,486	(3,258)	(3,295)	3,790	(10,367)
Salary	(29,192)	6,443	7,272	41,455	37,590
COLA and PRPA	81,655	43,389	(5,231)	80,819	92,877
Total	**$ 55,567**	**$ 30,880**	**$ (7,547)**	**$ 125,111**	**$ 121,381**
Total Al at BOY	**$ 7,447,036**	**$ 7,388,020**	**$ 7,276,290**	**$ 7,217,525**	**$ 7,159,788**
G/L as a % of AL	**0.75%**	**0.42%**	**-0.10%**	**1.73%**	**1.70%**

Note: 2017-2018 gains and losses are prior to the implementation of new assumptions.

TRS DB also saw an overall gain, again predominantly made up of positive experience on the PRPAs. These gains were partially offset by salary losses, as salaries increased more than expected.

There appear to be some patterns developing for all 4 decrements – retirement, termination, mortality, and disability. Again, we expect Buck to examine these more closely in the upcoming experience study and modify the assumptions appropriately.

Table 4-TRS DB Healthcare Gains and (Losses) by Source (000's)

Source	2021 Valuation	2020 Valuation	2019 Valuation	2018 Valuation	2017 Valuation
Retirement	$ (2,282)	$ 2,189	$ 3,344	$ 13,627	$ 17,174
Termination	(2,979)	(1,260)	(2,555)	(2,501)	(7,543)
Mortality	(2,440)	(2,276)	(3,198)	(812)	7,778
Disability	220	31	(19)	259	(666)
Rehires	3,476	5,506	1,710	(146)	(1,755)
Other	6,314	(4,433)	20,341	(6,683)	42,231
Medical Claims	96,861	96,760	225,987	146,354	257,626
Modified Part B Assumption	1,278	2,089	1,594	23,321	N/A
Dependent Coverage Election	9,126	7,435	15,195	18,765	N/A
COVID-19	-	17,345	-	-	-
Plan Changes	21,763	-	-	-	-
Methodology	-	-	-	-	(378,830)
Total	**$ 131,337**	**$ 123,386**	**$ 262,399**	**$ 192,184**	**$ (63,985)**
Total AL at BOY	**$ 2,489,675**	**$ 2,518,644**	**$ 2,684,150**	**$ 2,927,093**	**$ 2,747,836**
G/L as a % of AL	**5.28%**	**4.90%**	**9.78%**	**6.57%**	**-2.33%**

Note: 2017-2018 gains and losses are prior to the implementation of new assumptions.

The TRS DB healthcare plans experienced the same gains attributable to medical claims experience and COVID-19 experience. The discussion on PERS DB applies to TRS DB as well.

Table 5-PERS DCR Total Gains and (Losses) by Source (000's)

Source	2021 Valuation		2020 Valuation		2019 Valuation		2018 Valuation		2017 Valuation	
Mortality	$	2,415	$	2,018	$	1,197	$	1,566	$	883
Termination		2,579		867		1,579		3,519		1,417
Disability		3,687		2,850		1,696		1,955		2,228
New Entrants		(1,409)		(1,440)		(1,593)		(1,748)		(1,825)
Rehires		(3,115)		(3,363)		(2,671)		(2,795)		(1,393)
Other Demographic Experience		948		1,433		2,481		1,249		1,465
Salary Increases		(8)		(25)		(80)		40		131
Trend Rates/Cadillac Tax*		-		(7,485)		1,233		(1,605)		(24,441)
Plan Changes		2,029		-		-		-		-
Medical Claims Costs		7,066		7,863		15,366		759		908
Total	**$**	**14,192**	**$**	**2,718**	**$**	**19,208**	**$**	**2,940**	**$**	**(20,627)**
Total AL at BOY	**$**	**161,335**	**$**	**134,720**	**$**	**126,311**	**$**	**117,243**	**$**	**77,052**
G/L as a % of AL		**8.80%**		**2.02%**		**15.21%**		**2.51%**		**-26.77%**

**Trend rate gain/loss applicable to 2017 & 2020 and the Cadillac tax is applicable to 2018 & 2019.*

Note: 2017-2018 gains and losses are prior to the implementation of new assumptions.

The table above shows the combined gains and losses for the PERS DCR. Similar to the DB plans, there continues to be large gains coming from the medical claims costs. There continues to be gains from mortality, termination, and disability. Buck should revised these assumptions in the upcoming experience study to slow down or eliminate these trends.

As expected, there also continues to be losses to the plan due to the new entrants and rehired members. We recommend Buck review with the Board whether to implement an assumption in the DCR plans similar to the rehire assumption in the DB plans. We recommend these losses be paid for upfront through normal cost, rather than in the future through past service cost.

Table 6-PERS DCR Healthcare Only Gains and (Losses) by Source (000's)

Source	2021 Valuation		2020 Valuation		2019 Valuation		2018 Valuation		2017 Valuation	
Mortality	$	536	$	243	$	(387)	$	57	$	30
Termination		2,669		985		1,567		3,467		1,418
Disability		341		354		317		264		228
New Entrants		(1,320)		(1,301)		(1,476)		(1,587)		(1,666)
Rehires		(3,068)		(3,327)		(2,630)		(2,763)		(1,354)
Other Demographic Experience		1,196		860		2,401		1,380		1,116
Salary Increases		-		-		-		-		-
Trend Rates/Cadillac Tax*		-		(7,485)		1,233		(1,605)		(24,441)
Plan Changes		2,029		-		-		-		-
Medical Claims Costs		7,066		7,863		15,366		759		908
Total	**$**	**9,449**	**$**	**(1,808)**	**$**	**16,391**	**$**	**(28)**	**$**	**(23,761)**
Total AL at BOY	**$**	**150,701**	**$**	**124,946**	**$**	**118,598**	**$**	**109,703**	**$**	**70,289**
G/L as a % of AL		**6.27%**		**-1.45%**		**13.82%**		**-0.03%**		**-33.80%**

**Trend rate gain/loss applicable to 2017 & 2020 and the Cadillac tax is applicable to 2018 & 2019.*

Note: 2017-2018 gains and losses are prior to the implementation of new assumptions.

The table above isolates the gains and losses on the PERS DCR retiree healthcare plan only. Aside from disability and mortality, these numbers are very similar to the plan in total, showing that a large portion of the gains and losses for PERS DCR come from the healthcare plan.

Table 7-TRS DCR Total Gains and (Losses) by Source (000's)

Source	2021 Valuation	2020 Valuation	2019 Valuation	2018 Valuation	2017 Valuation
Mortality	$ 67	$ 60	$ 123	$ 36	$ 41
Termination	2,354	740	1,921	865	1,433
Disability	162	178	171	99	170
New Entrants	(581)	(495)	(808)	(724)	(600)
Rehires	(2,037)	(2,313)	(874)	(2,975)	(617)
Other Demographic Experience	669	98	(31)	(49)	94
Salary Increases	-	-	1	-	-
Trend Rates/Cadillac Tax*	-	(2,153)	389	(375)	(7,948)
Plan Changes	528	-	-	-	-
Medical Claims Costs	1,883	2,162	4,135	290	303
Total	**$ 3,045**	**$ (1,723)**	**$ 5,027**	**$ (2,833)**	**$ (7,124)**
Total AL at BOY	**$ 40,857**	**$ 33,221**	**$ 32,459**	**$ 33,707**	**$ 22,007**
G/L as a % of AL	**7.45%**	**-5.19%**	**15.49%**	**-8.40%**	**-32.37%**

**Trend rate gain/loss applicable to 2017 & 2020 and the Cadillac tax is applicable to 2018 & 2019.*

Note: 2017-2018 gains and losses are prior to the implementation of new assumptions.

The table above shows the combined gains and losses for the TRS DCR. Similar to the DB plans, there are gains are coming from the medical claims cost.

As expected, there continues to be losses to the plan due to the new entrants and rehired members. We recommend Buck review with the Board whether to implement an assumption in the DCR plans similar to the rehire assumption in the DB plans. We recommend these losses be paid for upfront through normal cost, rather than in the future through past service cost.

Table 8-TRS DCR Healthcare Only Gains and (Losses) by Source

Source	2021 Valuation	2020 Valuation	2019 Valuation	2018 Valuation	2017 Valuation
Mortality	$ (39)	$ (50)	$ 15	$ (37)	$ (22)
Termination	2,361	744	1,926	871	1,435
Disability	(57)	(21)	(20)	(108)	(21)
New Entrants	(581)	(495)	(600)	(724)	(600)
Rehires	(2,038)	(2,314)	(873)	(2,974)	(617)
Other Demographic Experience	644	89	(4)	(29)	94
Salary Increases	-	-	-	-	-
Trend Rates/Cadillac Tax*	-	(2,153)	389	(375)	(7,948)
Plan Changes	528	-	-	-	-
Medical Claims Costs	1,883	2,162	4,135	290	303
Total	**$ 2,701**	**$ (2,038)**	**$ 4,968**	**$ (3,086)**	**$ (7,376)**
Total AL at BOY	**$ 40,634**	**$ 32,981**	**$ 32,429**	**$ 33,681**	**$ 21,988**
G/L as a % of AL	**6.65%**	**-6.18%**	**15.32%**	**-9.16%**	**-33.55%**

**Trend rate gain/loss applicable to 2017 & 2020 and the Cadillac tax is applicable to 2018 & 2019.*

Note: 2017-2018 gains and losses are prior to the implementation of new assumptions.

The table above isolates the gains and losses on the TRS DCR retiree healthcare plan only. These numbers are very similar to the plan in total, showing that the majority of the gains and losses for TRS DCR come from the healthcare plan.

Summary of recommendations Resulting from a Review of Gains and Losses

Based on our review above, we recommend the following be considered by Buck:

- Examine experience under the current assumptions in the upcoming experience study to determine if they are working as intended or need to be modified.
- Continue to track the medical claims experience closely, particularly any further impact from plan changes or COVID-19 experience.
- Continue to disclose the nature and impact of all programming changes included in the valuation.
- Discuss with the Board whether to include a new entrant/rehire assumption for the DCR plans.

SECTION 4

REVIEW OF ASSUMPTIONS

Review of Pension Assumptions

Buck released an experience study in 2018 and the Board approved a new assumption set to be used beginning with the actuarial valuation as of June 30, 2018. Buck is currently completing a new experience that is expected to be completed in the spring/summer of 2022. New assumptions from this experience study are expected to be adopted and used with beginning with the actuarial valuation as of June 30, 2022. GRS will issue a supplemental report that reviews this new experience study. General expectations for the new assumptions are included in this report.

Although this audit examines many assumptions and methods, not all of them are equal in terms of their ultimate impact on contribution rates. It is not the intention of this audit to imply that all proposed changes would have a similar impact on the liabilities. For example, the investment return assumption may be the greatest lever in influencing contribution rates. Thus, where options exist for spending time and resources studying assumptions, we recommend studying those with the largest impact first.

Economic Assumptions

General

These assumptions simulate the impact of economic forces on the amounts and values of future benefits. Key economic assumptions are the assumed rate of investment return and assumed rates of future salary increase.

Economic assumptions are normally defined by an underlying inflation assumption. Buck has cited 2.50% as the current inflation assumption. In recent years, long-term inflation forecasts have been declining. We do find the assumption to be reasonable at this time, but expect Buck to determine if it should be lowered in the upcoming experience study.

Investment Return Assumption

The nominal investment return assumption is 7.38%. The assumption is net of all investment expenses. The rate is no longer net of administrative expenses. Combined with the 2.50% inflation assumption, this yields a 4.88% real net rate of return. While we find this assumption to still be reasonable, it should be noted that many other large state pension plans are continuing to decrease their return expectations as capital market assumptions are coming in lower. This assumption will need to be very carefully analyzed during the next experience analysis and serious consideration should be given to lowering it.

Member Pay Increase Assumption

In actuarial models, assumed rates of pay increase are often constructed as the total of several components:

Base salary increases -- base pay increases that include price inflation and general "standard of living" or productivity increases.

An allowance for Merit, Promotion, and Longevity – This portion of the assumption is not related to inflation. In the context of a typical pay grid, pay levels are set out for various employment grades with step increases for longevity:

The base salary increase assumption reflects overall growth in the entire grid, and the Merit, Promotion, and Longevity pay increase assumption reflects movement of members through the grid, both step increases and promotional increases.

Base Salary Increase Assumption

The Base Salary Increase Assumption (also known as the wage inflation assumption) is 2.75%. The 2.75% is comprised of 2.50% for general inflation and 0.25% for productivity increases.

Merit, Promotion, and Longevity Pay Increase Assumption

As described above, the Merit, Promotion, and Longevity pay increase assumption represents pay increases due to movement through the pay grid. This is based on longevity and job performance. In most models, it is recognized that step increases and promotions are very rare late in careers. Thus, this allowance should trail away from relatively high levels for young or short service members to virtually nothing late in careers. We would expect that, as members approach retirement, this component would fade away.

The pay increase assumption will need to be monitored to ensure that any developing patterns of gains or losses do not continue.

We would also offer that the manner in which pay changes over time for teachers in comparison to public employees tends to differ. Since most teachers have a specific skill set, the approach to their compensation tends to follow a more consistent trend. Public Employees however (except for Peace officers and Firefighters) tend to represent a multitude of different skills – from a more generalized, labor intensive capacity (e.g., custodial) to more specialized training (ex. Accounting).

COLA and PRPA

We find these assumptions to be reasonable. The inflation rate is a component of investment return, salary increase and the PRPA, so it has a ripple effect throughout all the economic assumptions.

Demographic Assumptions

Healthy mortality during active service and after termination

The RP-2014 tables with MP 2017 generational improvement (and with the various credibility adjustments) are reasonable. We expect Buck to examine the more recent PUB-2010 tables released by the SOA to determine if they may be more appropriate.

Disabled mortality

The RP 2014 disabled table with MP 2017 generational improvement (and with the various credibility adjustments) is reasonable. We expect Buck to examine the more recent PUB-2010 tables released by the SOA to determine if they may be more appropriate.

Withdrawal from service before retirement (termination)

The rates look reasonable based on the data presented in the most recent experience study report.

Retirement

The rates look reasonable based on the data presented in the most recent experience study report.

Disability
The rates look reasonable based on the data presented in the most recent experience study report.

Withdrawal of contributions at termination
The rates look reasonable based on the data presented in the most recent experience study report.

Payroll Growth

Contribution rates are based on a percent of total DB and DCR payroll. The assumption used in the valuation is that payroll will grow at a rate of 2.75 percent per year. In 2021, the total payroll, based on the annualized earnings for the fiscal year ending on the valuation date, grew by about 1%. The following table 9 shows the payroll growth over the past ten years.

Table 9-Historical Payroll Growth

Year	DB Plans Only	DCR Plans Only	Combined DB and DCR
2021	-7%	7%	1%
2020	-7%	8%	1%
2019	-5%	9%	2%
2018	-7%	8%	0%
2017	-7%	7%	0%
2016	-5%	10%	1%
2015	-6%	12%	1%
2014	-5%	14%	1%
2013	-4%	17%	2%
2012	-3%	20%	3%

Payroll growth is significant because the unfunded accrued liability (UAL) is amortized as a level percentage of pay. That is the same as expecting all future amortization payments to grow at the same rate as total payroll. When payroll does not grow as assumed then the UAL is not going to be paid off as assumed. In order for the UAL to be paid off according to the current amortization schedule, payroll must grow at the assumed payroll growth rate. If payroll does not grow at that rate, as has been the case for the last nine years, there will be upward pressure on the contribution rate because contributions that are less than anticipated are flowing in the plan. We expect Buck to examine this assumption in more detail during the upcoming experience study and consider lowering it.

Summary

Based on the last experience study, the assumptions and methods are reasonable. However, there are now several years of experience with the current assumptions and some biased patterns may be starting to develop. Furthermore, the economic environment has continued to evolve and change. We expect the upcoming experience study to further examine all of the assumptions and determine their effectiveness with regards to valuing plan costs.

Review of Health Care Cost Assumptions

GENERAL

Change in Data

Data was received from a data warehouse, and in the 2021 valuation report Buck has provided a reconciliation of the data provided. Buck still must estimate the number of members with dual coverage and the dependent's Medicare status.

Table 10 below shows the distribution of these counts by coverage and then by Medicare status.

Table 10-Summary of Retiree Medical Data Received

	PERS		TRS		Total	
	Total for 2020	Total for 2021	Total for 2020	Total for 2021	Total for 2020	Total for 2021
Retiree coverage only	21,341	21,574	7,963	8,048	29,304	29,622
Retiree and spouse	28,477	28,575	8,361	8,472	36,838	37,047
Retiree and children and other dependents	795	825	373	372	1,168	1,197
Family	2,651	2,658	1,163	1,144	3,814	3,802
Total by Coverage	**53,264**	**53,632**	**17,860**	**18,036**	**71,124**	**71,668**
Pre-Medicare	19,653	18,559	5,292	5,132	24,945	23,691
Medicare A & B	33,370	34,793	12,340	12,662	45,710	47,455
Medicare part B only	241	280	228	242	469	522
Total by Medicare Status	**53,264**	**53,632**	**17,860**	**18,036**	**71,124**	**71,668**

On page 84 of the PERS DB valuation report, the total incurred claims are spread over the eligible population. For Fiscal Year 2021, the average enrollment for the pre-Medicare group is 18,106 and for the Medicare group is 47,025. The total average enrollment for fiscal 2021 is the sum of these two groups, or 65,131. The counts in the table above include deferred members. When these counts are adjusted for deferred members, it demonstrates the claims are being spread over the appropriate eligible group.

Claims Cost and Medicare Offset

We analyzed the trend in the per capita claim costs over the last 14 years. Table 11(a) below shows the per capita claim costs since 2009. Table 11(b) shows the change year over year. A change in per capita claim costs also includes changes due to changes in the population as well as the method changes that have been used to estimate the eligible population. Thus, it is important not to read these results as strictly changes in the cost of health care since so much of the change is due to the changes in the population counts. Table 11(c) summarizes the overall changes in claim costs and the impact on the valuation results.

Table 11(a)-PERS and TRS Age 65 Per Capitas for Fiscal Year Ending														
Medicare Status:	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Medical: Pre-Medicare	7,670	7,503	8,606	9,497	9,856	11,125	12,362	11,724	14,380	13,682	13,535	14,464	15,360	15,926
Medical: Medicare A&B only	1,296	1,336	1,563	1,551	1,628	1,726	1,657	1,461	1,707	1,485	1,468	1,534	1,618	1,619
Medical: Medicare B only	3,384	4,754	6,654	6,936	6,219	6,676	7,920	6,700	8,562	4,722	4,667	4,880	5,340	5,341
Rx - Medicare	2,379	2,419	2,600	2,799	2,736	2,621	2,624	2,753	3,320	3,706	3,764	3,501	3,340	3,474

Table 11(b)-PERS and TRS Health Care Cost Trend Year over Year Changes														
Medicare Status:	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	Avg.
Medical: Pre-Medicare	-2.2%	14.7%	10.4%	3.8%	12.9%	11.1%	-5.2%	22.7%	-4.9%	-1.1%	6.9%	6.2%	3.7%	**6.3%**
Medical: Medicare A&B only	3.1%	17.0%	-0.8%	5.0%	6.0%	-4.0%	-11.8%	16.8%	-13.0%	-1.1%	4.5%	5.5%	0.1%	**1.9%**
Medical: Medicare B only	40.5%	40.0%	4.2%	-10.3%	7.3%	18.6%	-15.4%	27.8%	-44.8%	-1.2%	4.6%	9.4%	0.0%	**3.9%**
Rx - Medicare	1.7%	7.5%	7.7%	-2.3%	-4.2%	0.1%	4.9%	20.6%	11.6%	1.6%	-7.0%	-4.6%	4.0%	**3.2%**

Table 11(c)-PERS and TRS Health Care Cost Trend Actual to Assumed			
Medicare Status:	21-22 Actual	21-22 Assumed	Gain/ Loss
Medical: Pre-Medicare	3.7%	6.5%	Gain
Medical: Medicare A&B only	0.1%	5.4%	Gain
Medical: Medicare B only	0.0%	5.4%	Gain
Rx - Medicare	4.0%	7.5%	Gain

While all costs increased less than assumed, leading to gains, the largest decrease was to Medicare costs and is the primary reason for the very large gain seen in the previous section. Note that these per capita claims costs are after both adjustments for some plan changes, as well as the 4% load for COVID-19 experience, discussed further below. We recommend Buck continue to track the medical claims experience closely, particularly any further impact from the plan changes or COVID-19 experience.

Healthcare Trend Assumptions

The healthcare trend rates follow the Society of Actuaries' Healthcare Cost Trend model and the model has been populated with assumptions that are specific to the State of Alaska. The trend rates are reasonable.

EGWP assumption

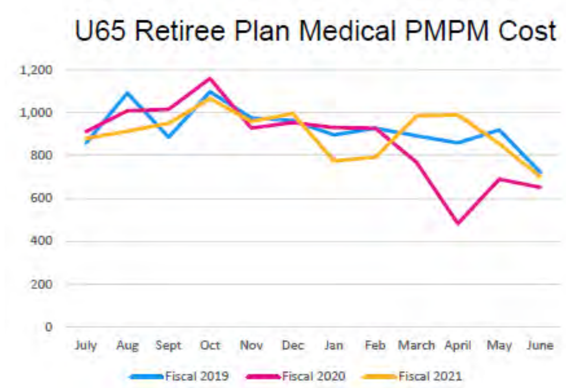
We understand Alaska has moved to an EGWP effective January 1, 2019. Buck obtained a savings estimate from the EGWP vendor and used that as the basis for the valuation. We concur with that approach. Buck is assuming the EGWP subsidy will last in perpetuity. While this is not an unreasonable approach, we would recommend that Buck detail the risk associated with this assumption, especially if EGWP subsidies wear away over time. Furthermore, we recommend that Buck monitor the estimated savings each year and determine if an update to their model is necessary.

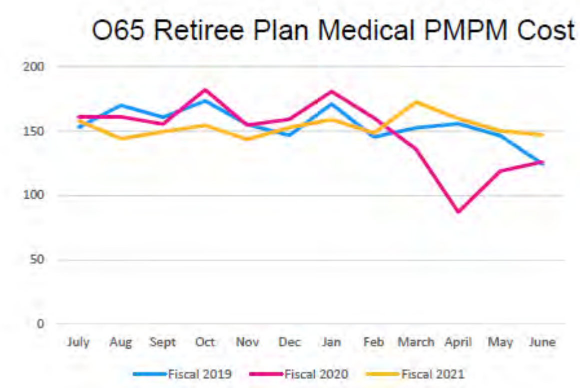
Medicare Part B Assumption

In 2018, Buck used a new methodology for determining the number of members eligible for Part B only, where 5% of pre-Medicare members are assumed to be eligible for Part B only. This change in assumption is reasonable, but created large gains in 2018 and we recommended that Buck explicitly track the experience of this assumption and provide a gain/loss item in the report each year, which they have done since then. The gains have continued each year, so we recommend this assumption be carefully examined in the upcoming experience study to see if it should be lowered.

COVID-19 Experience

The global pandemic caused by COVID-19 continues to impact healthcare plans, including PERS and TRS. The graphs below were put together by Buck and show medical claims in 2019 - 2022 for the under 65 and over 65 retiree health plans. As you can see, actual claims during 2021 are generally lower than they were in 2019 and 2020.





As vaccinations continue to be distributed and normal behavior returns when the pandemic ends, these decreases in claims are not expected to continue and do not represent future expectations. To account for this, Buck has adjusted the fiscal 2021 claims used in setting the claims cost assumption to be 4% higher. We agree that this is a reasonable and necessary adjustment to make.

It should also be noted that there was a small spike in prescription drug claims in March of 2020, as people were presumably stocking up on medications, but claims decreased back to expectations shortly thereafter that trend continued during fiscal 2021. Buck felt the overall prescription drug experience during fiscal 2021 did not require any COVID-19 adjustments for setting future expectations of those claims.

Buck will need to continue to analyze the claims experience in the next few years to determine if any further adjustments need to be made to account for behavior that may not be expected to continue in the future.

DCR Base Claims Cost Adjustments

These relative values for the DCR plans did not change from the June 30, 2020 valuation to the June 30, 2021 valuation. Relative value refers to the value of the DCR retiree medical benefits compared to those provided by the Defined Benefit retiree medical plan. Since the DCR plan does not yet have enough membership to create credible experience, they use the same claims costs developed under the DB plan, adjusted by the assumed relative value factors. Based on additional information provided by Buck last year, we find these relative value factors to be reasonable.

The basis for these relative value factors rests with higher initial copays, deductibles, out of pocket limits and member cost sharing compared to the DB medical plan. As experience emerges we recommend the discount from the DB plan to the DCR plan continue to be tested to ensure this assumption is supporting the liabilities of the plan. When the DCR plans have enough credible claims experience, they should have their own claim cost assumptions set.

SECTION 5

REVIEW OF ACTUARIAL VALUATION METHODS AND PROCEDURES

Review of Actuarial Valuation Methods and Procedures

I. *Background*

An actuarial valuation is a detailed statistical simulation of the future operation of a retirement system using the set of actuarial assumptions adopted by the Board.

The actuarial values generated from this process are based not only on these assumptions, but also on the additional assumptions built into each actuarial firm's pension valuation software.

Our scope for performing the review did not include a complete replication of the valuation results as determined by Buck at June 30, 2021. Rather, we reviewed a number of sample test lives from Buck in great detail, and made our determinations as to whether the methods and assumptions being employed were being done so properly. We also reviewed the report in order to examine the aggregate results and conclusions of this actuarial valuation.

Though this approach is not intended to meet the rigors of a full scale replication of results – it still serves as a strong indicator of the appropriateness of the assumptions and methods being used to value the liabilities and determine the costs for these plans.

II. *Process:*

Our review process can be summarized as follows:

Computation: Valuation Liabilities

We analyzed test cases to compare the Actuarial Liability under the EAN funding method for the test cases of the PERS and TRS Systems. As a starting point, we first replicate Buck test case liabilities by using their assumptions and methods to ensure that the computations were in sync with the descriptions listed in the valuation report.

When conducting an actuarial audit, and reviewing the testlives, we look at the projected benefits at each age for each decrement type. We also look at the component of the benefit (final average earnings and years of service). This is critical to understanding what the valuation system is actually valuing and making sure that the valuation is not "right for the wrong reasons", (meaning, errors could occur in two different directions making total liabilities approximate a correct value.)

We also review the construction of the commutation functions- the varying probabilities for each decrement and the discounting to the valuation date.

A more detailed analysis of the test lives we reviewed and our findings is shown in the next section.

Tying Test Lives to Total Liabilities

The basis of the audit is that the test lives reviewed tie directly to the liabilities being submitted in the valuation. As a result of learning of a discrepancy discovered a few years ago, we now request that Buck also supply a list of every member with their total liability. We check that the total liability on the test life matches that from the larger group, and the larger group matches the total in the valuation report. That way we can be certain that the test life we review is directly tied to the final liabilities.

Actuarial Method:

Findings:

An actuarial cost method is a mathematical process for allocating the dollar amount of the total present value of plan benefits (PVB) between future normal costs and actuarial accrued liability (AAL). The retained actuary uses the Entry Age Normal actuarial cost method (EAN Method), characterized by:

(1) Normal Cost – the level percent of payroll contribution, paid from each participant's date of hire to date of retirement, which will accumulate enough assets at retirement to fund the participant's projected benefits from retirement to death.

(2) Actuarial Accrued Liability – the assets which would have accumulated to date had contributions been made at the level of the normal cost since the date of the first benefit accrual, if all actuarial assumptions had been exactly realized, and there had been no benefit changes.

The EAN Method is the most prevalent funding method in the public sector. It is appropriate for the public sector because it produces costs that remain stable as a percentage of payroll over time, resulting in intergenerational equity for taxpayers and budget predictability. The recent Public Fund Survey included 199 retirement systems (mostly statewide). Over 82% of the plans reported using the EAN Method. Therefore, the retained actuary's stated funding methods for TRS and PERS are certainly in line with national trends.

Application of Cost Method

In order to determine the normal cost as a level percentage of pay, the valuation must first determine the future compensation that each individual member is expected to receive over the course of their career (which is also the compensation used to generate contributions). The projection of the future compensation should be based on the salary that the participant is expected to receive according to the timing of the expected departures from active service (or, decrements).

Conclusion:

The level percent of pay method for both amortization of the unfunded accrued liability and the normal cost are both appropriate as a funding policy, considering that the payroll is not closed (as promulgated under SB 123.)

SECTION 6

SAMPLE LIFE REVIEW – PERS DB AND TRS DB

Sample Life Review – PERS DB and TRS DB

Background

We reviewed sample test cases used for the June 30, 2021 valuation draft reports. In order to perform the review, we requested a number of sample cases from Buck. We combined this with our understanding of the plan provisions and reviewed the liability values produced by Buck for these sample cases only.

Note that the active test lives analyzed are not necessarily exposed to all of the possible benefits under the plans (i.e. already beyond the eligibility period for certain benefits, or not eligible for particular benefits). Therefore, findings may occur for these other benefits in future audits depending on the set of test lives chosen for review at that time. However, the vast majority of the liability for each plan is due to the retirement benefits (included for all active test lives), and retirement-related withdrawal benefits (one active test life included per plan), so any future findings are also expected to be de minimus. Also, the impact for any one test life may not be representative of the impact on the total plan.

When employing Buck's methods and assumptions, we matched the present value of benefits in total closely for the test cases submitted under the Pension plans for PERS and TRS, and present value of retirement benefits under the PERS and TRS Retiree Health plan. In addition, we have analyzed the calculations of the ancillary benefits and have provided a summary of this detailed analysis at the end of this section. These exhibits provide a comparison of the calculations by decrement provided to us from Buck against our replication of those benefits as we interpret them from the plan provisions and assumptions.

In matching the present value of benefits, it is being determined that all benefits are being valued, and that the valuation of the liability for those benefits is consistent with the stated assumptions and methods.

Findings

Generally speaking, the assumptions and methods were employed properly. The test lives chosen this year did have some unique characteristics. As a result, we identified the following four minor findings related to the valuation of certain ancillary benefits or members with unique service amounts:

1. **Administration of Claimed Service** – An active PERS DB Peace Officer/Firefighter member who has 5 years of claimed service has this amount being included in credited service and excluded from eligibility service. Additionally, the early retirement reduction factors (ERFs) being used for this member are based on the credited service with the claimed service included. We recommend Buck confirm this treatment is consistent with how the Alaska DRB is administrating the benefits for members that have claimed service.

2. **Retirement Benefit for PERS DB Peace Officer/Firefighter Occupational Disability** – Based on one of our agreed upon recommendations from last year, for DB PERS Peace Officer/Firefighter members, we expected to see an increase to the deferred retirement benefit for the occupational disability piece by the same accumulative PRPA percentage that was applied to the disability benefit. However, a DB PERS Peace Officer/Firefighter member is only having the benefit

increased until age 55, rather than their assumed retirement age of 57. We recommend Buck increase this benefit until the assumed retirement age for each member.

3. **Occupational Death COLA Benefit for PERS DB Peace Officer/Firefighter** – PERS DB Peace Officer/Firefighter members have a 10% Alaska COLA benefit amount (before applying any decrements, assumptions, or payment forms) for the deferred occupational married death benefit piece not equal to 10% of the regular benefit amount for this piece. We recommend Buck update this 10% Alaska COLA benefit component to be 10% of the regular benefit amount or provide an explanation as to why it is not.

4. **Service Eligibility for TRS DB** – A TRS DB member has different service amounts being used for death benefits eligibility. We recommend Buck confirm which of these service amounts the Alaska DRB uses for eligibility and use that service amount consistently across all benefits.

We provided these findings to Buck. For item 1, Buck confirmed that the ERFs should be based on eligibility service without the claimed service included and their calculations should be updated. Buck also agreed their calculations need updated as we recommended for items 2, 3, & 4.

We believe that while the impacts of these recommendation will be immaterial, they should, at the very least, be updated in future valuations, subject to Actuarial Committee discretion.

When performing the replication, we were able to match the total present value of future benefits all test cases (active and inactive, PERS and TRS, pension and healthcare) closely. This would be considered as an overall match for purposes of the valuation.

Actuarial Review - June 30, 2021
Comparison of Present Value of Benefits

Active Pension		GRS	Buck	% Diff
TRS	Active Test Case 1 - Tier 1	262,599	262,296	0.1%
TRS	Active Test Case 2 - Tier 2	76,667	76,554	0.1%
TRS	Active Test Case 3 - Tier 2	184,181	184,118	0.0%
PERS	Active Test Case 1 - P/F Tier 2	491,870	491,554	0.1%
PERS	Active Test Case 2 - Other Tier 3	86,229	86,237	0.0%
PERS	Active Test Case 3 - P/F Tier 3	220,264	220,290	0.0%
Inactive Pension		GRS	Buck	% Diff
TRS	TRS - Retiree - Female, Tier 1	443,684	443,684	0.0%
TRS	TRS - DV - Female, Tier 2	70,976	70,658	0.5%
TRS	TRS - Beneficiary - Female, Tier 2	199,134	199,067	0.0%
PERS	PERS Peace Officer/Firefighter - Retiree	558,060	558,060	0.0%
PERS	PERS Peace Officer/Firefighter - Beneficiary	463,295	463,061	0.1%
PERS	PERS Peace Officer/Firefighter - DV	78,936	78,522	0.5%
PERS	PERS Others - Retiree	692,135	692,135	0.0%
PERS	PERS Others - Beneficiary	82,712	82,712	0.0%
PERS	PERS Others - DV	57,846	57,499	0.6%
Active Healthcare		GRS	Buck	% Diff
TRS	Active Test Case 1 - Tier 1	120,615	120,609	0.0%
TRS	Active Test Case 2 - Tier 2	116,169	114,196	1.7%
PERS	Active Test Case 1 - P/F Tier 2	254,232	250,708	1.4%
PERS	Active Test Case 2 - Other Tier 3	44,029	44,007	0.1%
PERS	Active Test Case 3 - P/F Tier 3	139,542	136,164	2.5%
Inactive Healthcare		GRS	Buck	% Diff
TRS	TRS - Retiree - Female, Tier 1	180,702	180,677	0.0%
TRS	TRS - DV - Female, Tier 2	191,153	193,435	-1.2%
TRS	TRS - Beneficiary - Female, Tier 2	174,434	172,511	1.1%
PERS	PERS Peace Officer/Firefighter - Retiree	305,408	305,377	0.0%
PERS	PERS Peace Officer/Firefighter - Beneficiary	156,465	156,432	0.0%
PERS	PERS Peace Officer/Firefighter - DV	170,838	171,857	-0.6%
PERS	PERS Others - Retiree	87,500	87,486	0.0%
PERS	PERS Others - Beneficiary	92,909	92,894	0.0%
PERS	PERS Others - DV	225,975	230,674	-2.0%

NOTE

Ancillary or non-retirement benefits such as death and disability tend to be low probability events (and hence low liability) and they also tend to have many "bells and whistles" which can be valued in different ways by different actuaries. When looking at the test life results, it may be most informative to review the decrement (retirement, termination, disability, death) totals rather than each particular segment of the decrement (married non-occupational death, etc.). For all ancillary benefits comprising less than 0.1% of the total PVB for that individual, we checked the amounts for reasonableness, but did not always replicate.

ALASKA RETIREMENT MANAGEMENT BOARD

Actuarial Review of Pension and Health Plans - June 30, 2021

Comparison of Present Value of Benefits - **TRS Active Pension**

Active Test Case 1 - Tier 1

Basic Data:	Current Age	Credited Service	Gender
	69.0	12.6	Female

Present Value of Benefits (PVB)	**GRS**	**Buck**	**% Diff**
Retirement:			
Main Retirement Benefit	247,510	247,510	0.0%
AK COLA	12,877	12,877	0.0%
Total Retirement PVB	**260,387**	**260,387**	**0.0%**
Withdrawal:			
Non Vested Term	-	-	0.0%
Vested Term	-	-	0.0%
Vested Term AK COLA	-	-	0.0%
Vested Term (take LS)	-	-	0.0%
Vested Term (death during deferral)	-	-	0.0%
Vested Term (death during deferral AK COLA)	-	-	0.0%
Vested Term (death single)	-	-	0.0%
Total Withdrawal PVB	**-**	**-**	**0.0%**
Death:			
Non Vested LS Death	-	22	-100.0%
Non Vested Refund	-	696	-100.0%
NonOcc Single LS Dth	8	3	214.6%
NonOcc Dth Marr	1,207	408	195.9%
NonOcc Dth Marr AK COLA	64	22	193.0%
NonOcc Single Refund	287	112	155.3%
Occ Dth Marr (Pre-NR Conversion Benefit)	-	-	0.0%
Occ Dth Marr (Post-NR Conversion Benefit)	613	613	0.0%
Occ Dth Marr AK COLA (Post-NR)	32	32	0.0%
Total Death PVB	**2,212**	**1,908**	**15.9%**
Disability:			
Non-vested LS Ben	-	-	0.0%
NonOcc Dis	-	-	0.0%
NonOcc Dis AK COLA	-	-	0.0%
Occ Dis (Pre-NR Conversion Benefit)	-	-	0.0%
Occ Dis (Post-NR Conversion Benefit)	-	-	0.0%
Occ Dis AK COLA (Pre-NR)	-	-	0.0%
Occ Dis AK COLA (Post-NR)	-	-	0.0%
Dis Death Ben	-	-	0.0%
Dis Death Ben AK COLA	-	-	0.0%
Total Disability PVB	**-**	**-**	**0.0%**
GRAND TOTAL PVB	**262,599**	**262,296**	**0.1%**

Comparison of Present Value of Benefits - **TRS Active Pension**

Active Test Case 2 - Tier 2

Basic Data:	Current Age	Credited Service	Gender
	42.4	3.5	Female
Present Value of Benefits (PVB)	**GRS**	**Buck**	**% Diff**
Retirement:			
Main Retirement Benefit	50,304	50,304	0.0%
AK COLA	1,897	1,897	0.0%
Total Retirement PVB	**52,201**	**52,201**	**0.0%**
Withdrawal:			
Non Vested Term	10,660	10,660	0.0%
Vested Term	10,705	10,705	0.0%
Vested Term AK COLA	351	351	0.0%
Vested Term (take LS)	22	22	0.0%
Vested Term (death during deferral)	38	38	-0.3%
Vested Term (death during deferral AK COLA)	1	1	-1.2%
Total Withdrawal PVB	**21,778**	**21,778**	**0.0%**
Death:			
Non Vested LS Death	3	3	-0.2%
Non Vested Refund	61	61	0.0%
NonOcc Single LS Dth	2	2	0.4%
NonOcc Dth Marr	330	330	0.0%
NonOcc Dth Marr AK COLA	10	10	0.7%
NonOcc Single Refund	90	90	0.0%
Occ Dth Marr (Pre-NR Conversion Benefit)	137	137	0.0%
Occ Dth Marr (Post-NR Conversion Benefit)	198	175	13.5%
Occ Dth Marr AK COLA (Post-NR)	4	6	-33.9%
Total Death PVB	**835**	**814**	**2.6%**
Disability:			
Non-vested LS Ben	33	33	0.0%
Dis (Pre-NR Conversion Benefit)	1,138	1,138	0.0%
Dis (Post-NR Conversion Benefit)	574	488	17.6%
Dis AK COLA (Pre-NR)	63	63	0.0%
Dis AK COLA (Post-NR)	29	25	17.7%
Dis Death Ben	7	6	17.8%
Dis Death Ben AK COLA	0	0	20.3%
Dis Child Ben	8	8	0.0%
Dis Child Ben AK COLA	0	1	-0.4%
Total Disability PVB	**1,853**	**1,762**	**5.2%**
GRAND TOTAL PVB	**76,667**	**76,554**	**0.1%**

Comparison of Present Value of Benefits - **TRS Active Pension**
Active Test Case 3 - Tier 2

Basic Data:	Current Age	Credited Service	Gender
	47.8	7.0	Female

Present Value of Benefits (PVB)	**GRS**	**Buck**	**% Diff**
Retirement:			
Main Retirement Benefit	145,227	145,227	0.0%
AK COLA	5,556	5,556	0.0%
Total Retirement PVB	**150,782**	**150,782**	**0.0%**
Withdrawal:			
Non Vested Term	2,365	2,365	0.0%
Vested Term	25,573	25,573	0.0%
Vested Term AK COLA	841	841	0.0%
Vested Term (take LS)	45	45	0.0%
Vested Term (death during deferral)	92	92	-0.2%
Vested Term (death during deferral AK COLA)	3	3	-0.9%
Total Withdrawal PVB	**28,919**	**28,919**	**0.0%**
Death:			
Non Vested LS Death	1	1	-0.2%
Non Vested Refund	25	25	0.0%
NonOcc Single LS Dth	4	4	0.5%
NonOcc Dth Marr	906	906	0.0%
NonOcc Dth Marr AK COLA	27	27	-0.1%
NonOcc Single Refund	221	221	0.0%
Occ Dth Marr (Pre-NR Conversion Benefit)	175	175	-0.1%
Occ Dth Marr (Post-NR Conversion Benefit)	460	450	2.4%
Occ Dth Marr AK COLA (Post-NR)	17	16	2.2%
Total Death PVB	**1,836**	**1,825**	**0.6%**
Disability:			
Non-vested LS Ben	-	-	0.0%
Dis (Pre-NR Conversion Benefit)	1,479	1,481	-0.1%
Dis (Post-NR Conversion Benefit)	1,026	975	5.3%
Dis AK COLA (Pre-NR)	83	83	-0.1%
Dis AK COLA (Post-NR)	52	50	5.3%
Dis Death Ben	3	3	7.1%
Dis Death Ben AK COLA	0	0	13.2%
Dis Child Ben	-	-	0.0%
Dis Child Ben AK COLA	-	-	0.0%
Total Disability PVB	**2,644**	**2,591**	**2.0%**
GRAND TOTAL PVB	**184,181**	**184,118**	**0.0%**

Comparison of Present Value of Benefits - **PERS Active Pension**
Active Test Case 1 - P/F Tier 2

Basic Data:	Current Age	Credited Service	Gender
	57.6	15.5	Male
Present Value of Benefits (PVB)	**GRS**	**Buck**	**% Diff**
Retirement:			
Main Retirement Benefit	463,267	463,266	0.0%
AK COLA	18,880	18,880	0.0%
Total Retirement PVB	**482,147**	**482,146**	**0.0%**
Withdrawal:			
Non Vested Term	-	-	0.0%
Vested Term	-	-	0.0%
Vested Term AK COLA	-	-	0.0%
Vested Term (take LS)	-	-	0.0%
Vested Term (death during deferral)	-	-	0.0%
Vested Term (death during deferral AK COLA)	-	-	0.0%
Total Withdrawal PVB	**-**	**-**	**0.0%**
Death:			
Non Vested NonOcc <1 svc LS Dth	-	-	0.0%
Non Vested NonOcc 1<svc<5 LS Dth	-	-	0.0%
NonOcc Dth Marr	995	997	-0.2%
NonOcc Dth Marr AK COLA	41	41	0.3%
NonOcc Married LS Dth	76	76	0.1%
NonOcc Single LS Dth	134	134	0.0%
Occ Dth Marr (Pre-NR Conversion Benefit)	197	190	3.7%
Occ Dth Marr (Post-NR Conversion Benefit)	7,467	7,280	2.6%
Occ Dth Marr AK COLA (Post-NR)	411	286	43.6%
Occ Single LS Dth	403	403	-0.2%
Total Death PVB	**9,724**	**9,407**	**3.4%**
Disability:			
Non-vested LS Ben	-	-	0.0%
NonOcc Dis	-	-	0.0%
NonOcc Dis AK COLA	-	-	0.0%
Occ Dis (Pre-NR Conversion Benefit)	-	-	0.0%
Occ Dis (Post-NR Conversion Benefit)	-	-	0.0%
Occ Dis AK COLA (Pre-NR)	-	-	0.0%
Occ Dis AK COLA (Post-NR)	-	-	0.0%
Dis Death Ben	-	-	0.0%
Dis Death Ben AK COLA	-	-	0.0%
Total Disability PVB	**-**	**-**	**0.0%**
GRAND TOTAL PVB	**491,870**	**491,554**	**0.1%**

Comparison of Present Value of Benefits - **PERS Active Pension**
Active Test Case 2 - Other Tier 3

Basic Data:	Current Age	Credited Service	Gender
	67.3	6.7	Female
Present Value of Benefits (PVB)	**GRS**	**Buck**	**% Diff**
Retirement:			
Main Retirement Benefit	80,134	80,134	0.0%
AK COLA	4,839	4,839	0.0%
Total Retirement PVB	**84,972**	**84,972**	**0.0%**
Withdrawal:			
Non Vested Term	-	-	0.0%
Vested Term	-	-	0.0%
Vested Term AK COLA	-	-	0.0%
Vested Term (take LS)	-	-	0.0%
Vested Term (death during deferral)	-	-	0.0%
Vested Term (death during deferral AK COLA)	-	-	0.0%
Total Withdrawal PVB	**-**	**-**	**0.0%**
Death:			
Non Vested NonOcc <1 svc LS Dth	-	-	0.0%
Non Vested NonOcc 1<svc<5 LS Dth	-	-	0.0%
NonOcc Dth Marr	417	417	0.0%
NonOcc Dth Marr AK COLA	26	26	0.0%
NonOcc Married LS Dth	21	22	-2.0%
NonOcc Single LS Dth	183	187	-2.0%
Occ Dth Marr (Pre-NR Conversion Benefit)	-	-	0.0%
Occ Dth Marr (Post-NR Conversion Benefit)	459	459	0.0%
Occ Dth Marr AK COLA (Post-NR)	28	28	-0.5%
Occ Single LS Dth	122	125	-2.0%
Total Death PVB	**1,257**	**1,265**	**-0.6%**
Disability:			
Non-vested LS Ben	-	-	0.0%
NonOcc Dis	-	-	0.0%
NonOcc Dis AK COLA	-	-	0.0%
Occ Dis (Pre-NR Conversion Benefit)	-	-	0.0%
Occ Dis (Post-NR Conversion Benefit)	-	-	0.0%
Occ Dis AK COLA (Pre-NR)	-	-	0.0%
Occ Dis AK COLA (Post-NR)	-	-	0.0%
Dis Death Ben	-	-	0.0%
Dis Death Ben AK COLA	-	-	0.0%
Total Disability PVB	**-**	**-**	**0.0%**
GRAND TOTAL PVB	**86,229**	**86,237**	**0.0%**

Comparison of Present Value of Benefits - **PERS Active Pension**
Active Test Case 3 - P/F Tier 3

Basic Data:	Current Age	Credited Service	Gender
	42.2	5.2	Male

Present Value of Benefits (PVB)	**GRS**	**Buck**	**% Diff**
Retirement:			
Main Retirement Benefit	171,611	171,610	0.0%
AK COLA	5,880	5,880	0.0%
Total Retirement PVB	**177,490**	**177,490**	**0.0%**
Withdrawal:			
Non Vested Term	-	-	0.0%
Vested Term	27,646	27,646	0.0%
Vested Term AK COLA	969	969	0.0%
Vested Term (take LS)	1,715	1,715	0.0%
Vested Term (death during deferral)	244	245	-0.6%
Vested Term (death during deferral AK COLA)	9	8	3.9%
Total Withdrawal PVB	**30,583**	**30,584**	**0.0%**
Death:			
Non Vested NonOcc <1 svc LS Dth	-	-	0.0%
Non Vested NonOcc 1<svc<5 LS Dth	-	-	0.0%
NonOcc Dth Marr	578	578	0.0%
NonOcc Dth Marr AK COLA	15	14	6.9%
NonOcc Married LS Dth	37	37	0.1%
NonOcc Single LS Dth	65	65	0.0%
Occ Dth Marr (Pre-NR Conversion Benefit)	1,830	1,870	-2.1%
Occ Dth Marr (Post-NR Conversion Benefit)	4,104	4,102	0.1%
Occ Dth Marr AK COLA (Post-NR)	129	130	-0.8%
Occ Single LS Dth	196	196	0.1%
Total Death PVB	**6,955**	**6,994**	**-0.6%**
Disability:			
Non-vested LS Ben	-	-	0.0%
NonOcc Dis	794	794	0.0%
NonOcc Dis AK COLA	43	43	0.0%
Occ Dis (Pre-NR Conversion Benefit)	1,920	1,920	0.0%
Occ Dis (Post-NR Conversion Benefit)	2,179	2,178	0.0%
Occ Dis AK COLA (Pre-NR)	117	117	0.0%
Occ Dis AK COLA (Post-NR)	120	109	9.9%
Dis Death Ben	60	59	2.2%
Dis Death Ben AK COLA	3	3	3.0%
Total Disability PVB	**5,236**	**5,223**	**0.2%**
GRAND TOTAL PVB	**220,264**	**220,290**	**0.0%**

Actuarial Review of Pension and Health Plans Active Pension Test Case Legend	
Benefit	**Extended Description**
Retirement:	
Main Retirement Benefit	Early/Normal Retirement (base) Benefit
AK COLA	Alaska Cost of Living Allowance (10% of Ret base benefit)
Withdrawal:	
Non Vested Term	Refund of employee contributions upon termination of non-vested member
Vested Term	Deferred retirement (base) Benefit (deferred to early retirement eligibility)
Vested Term AK COLA	Alaska Cost of Living Allowance (10% of Term base benefit)
Vested Term (take LS)	Refund of employee contributions upon termination of (vested) member
Vested Term (death during deferral)	Death (base) Benefit payable upon death after withdrawal but before benefit commencement
Vested Term (death during deferral AK COLA)	Alaska Cost of Living Allowance (10% of DV Dth base benefit)
Vested Term (death, single)	Return of employee contributions upon death during deferral period for single members
Death:	
Non Vested NonOcc 1<svc<5 LS Dth	Refund of employee contributions upon death of non-vested member
NonOcc Dth Marr	Non-Occupational Death (base) benefit
NonOcc Dth Marr AK COLA	Alaska Cost of Living Allowance (10% of Non-Occupational Dth base benefit)
NonOcc Married LS Dth	Refund of employee contributions upon non-occupational death of married (vested) member
NonOcc Single LS Dth	Refund of employee contributions upon non-occupational death of single (vested) member
Occ Dth Marr (Pre-NR Conversion Benefit)	Occupational Death (base) benefit until normal retirement conversion
Occ Dth Marr (Post-NR Conversion Benefit)	Occupational Death (base) benefit after normal retirement conversion
Occ Dth Marr AK COLA (Pre-NR)	Alaska Cost of Living Allowance (10% of Occupational Dth base benefit pre-conversion)
Occ Dth Marr AK COLA (Post-NR)	Alaska Cost of Living Allowance (10% of Occupational Dth base benefit post-conversion)
Occ Single LS Dth	Refund of employee contributions upon occupational death of single (vested) member
Disability:	
Non-vested LS Ben	Refund of employee contributions payable upon disability before vested
Dis (Pre-NR Conversion Benefit)	Disability benefit prior to normal retirement conversion
Dis (Post-NR Conversion Benefit)	Disability benefit after normal retirement conversion
Dis AK COLA (Pre-NR)	Alaska Cost of Living Allowance (10% of pre-conversion disability benefit)
Dis AK COLA (Post-NR)	Alaska Cost of Living Allowance (10% of post-conversion disability benefit)
Dis Death Ben	Death (base) Benefit payable upon death after disability
Dis Death Ben AK COLA	Alaska Cost of Living Allowance (10% of Dis Dth base benefit)
Dis Child Ben	Disability (base) Child Benefit payable until eligible for normal retirement
Dis Child Ben AK COLA	Alaska Cost of Living Allowance (10% of Temp Dis Child base benefit)

Comparison of Present Value of Benefits - **TRS Retiree Health**

Actives	**Test Case 1 - Tier 1**			**Test Case 2 - Tier 2**			**Test Case 3 - Tier 2**		
Basic Data:									
Sex	Female			Female			Female		
Current Age	69.00			47.75			42.43		
Current Credited Service	12.60			7.00			3.50		
Present Value of Benefits (PVB)	**GRS**	**Buck**	**% Diff**	**GRS**	**Buck**	**% Diff**	**GRS**	**Buck**	**% Diff**
Retirement:									
Tier x <Member>	98,578	98,570	0.0%	90,701	90,683	0.0%	49,227	49,217	0.0%
Tier x <Spouse>	50,812	50,811	0.0%	45,053	43,094	4.5%	24,528	23,409	4.8%
Post 65 Part D Tier x <Member>	(19,010)	(19,009)	0.0%	(11,634)	(11,632)	0.0%	(6,257)	(6,256)	0.0%
Post 65 Part D Tier x <Spouse>	(9,764)	(9,764)	0.0%	(6,804)	(6,803)	0.0%	(3,680)	(3,680)	0.0%
Contrib <Member>	-	-	0.0%	(718)	(717)	0.0%	(366)	(366)	0.0%
Contrib <Spouse>	-	-	0.0%	(429)	(429)	0.0%	(219)	(219)	0.0%
Total Retirement PVB	**120,615**	**120,609**	**0.0%**	**116,169**	**114,196**	**1.7%**	**63,232**	**62,105**	**1.8%**

Inactives - PVB	**GRS**	**Buck**	**% Diff**
Retiree - Male	180,702	180,677	0.0%
Vested Termination -Male	191,153	193,435	-1.2%
Retiree - Male	174,434	172,511	1.1%

Benefits - Buck Valuation Terminology	**Description**
Retirement:	
Tier x <Member>	Base Benefit Paid to Employee
Tier x <Spouse>	Base Benefit Paid to Spouse
Contrib <Member>	Employee Pre-Retirement Contributions
Contrib <Spouse>	Spouse Pre-Retirement Contributions
Post 65 Part D <Member>	Employee Post-Age 65 Medicare Part D Reimbursement
Post 65 Part D <Spouse>	Spouse Post-Age 65 Medicare Part D Reimbursement

Actuarial Review of Pension and Health Plans - June 30, 2021

Comparison of Present Value of Benefits - **PERS Retiree Health**

Actives	**Test Case 1 - PF Tier 1**			**Test Case 2 - Other Tier 2**			**Test Case 3 - P/F Tier 3**		
Basic Data:									
Sex	Male			Female			Male		
Current Age	57.57			67.30			42.24		
Current Credited Service	20.47			6.74			5.19		
Present Value of Benefits (PVB)	**GRS***	**Buck**	**% Diff**	**GRS**	**Buck**	**% Diff**	**GRS**	**Buck**	**% Diff**
Retirement:									
Tier x <Member>	147,044	147,026	0.0%	35,847	35,845	0.0%	81,402	81,387	0.0%
Tier x <Spouse>	139,495	135,988	2.6%	18,673	18,651	0.1%	75,128	71,763	4.7%
Contrib Tier x <Member>	-	-	0.0%	-	-	0.0%	900	899	0.0%
Contrib Tier x <Spouse>	-	-	0.0%	-	-	0.0%	677	677	0.0%
Post 65 Part D Tier x <Member>	18,460	18,459	0.0%	6,915	6,914	0.0%	8,897	8,896	0.0%
Post 65 Part D Tier x <Spouse>	13,847	13,846	0.0%	3,576	3,576	0.0%	6,514	6,513	0.0%
Total Retirement PVB	**254,232**	**250,708**	**1.4%**	**44,029**	**44,007**	**0.1%**	**139,542**	**136,164**	**2.5%**

Inactives - PVB	**GRS**	**Buck**	**% Diff**
Retiree - P/F Tier 2 - Female	305,408	305,377	0.0%
Beneficiary - P/F Tier 2 - Female	156,465	156,432	0.0%
Vested Termination - P/F Tier 3 - Male	170,838	171,857	-0.6%
Retiree - Other Tier 2 - Female	87,500	87,486	0.0%
Beneficiary - Other Tier 1 - Male	92,909	92,894	0.0%
Vested Termination - Other Tier 1 - Male	225,975	230,674	-2.0%

Benefits - Buck Valuation Terminology	**Description**
Retirement:	
Tier x <Member>	Base Benefit Paid to Employee
Tier x <Spouse>	Base Benefit Paid to Spouse
Contrib <Member>	Employee Pre-Retirement Contributions
Contrib <Spouse>	Spouse Pre-Retirement Contributions
Post 65 Part D <Member>	Employee Post-age 65 Medicare Part D Reimbursement
Post 65 Part D <Spouse>	Spouse Post-age 65 Medicare Part D Reimbursement

SECTION 7

SAMPLE LIFE REVIEW – PERS DCR AND TRS DCR

Sample Life Review – PERS DCR and TRS DCR

We reviewed sample test cases used for the DCR June 30, 2021, valuation draft reports. In order to accomplish this, we requested a number of sample cases from Buck with intermediate statistics to assist us in analyzing the results.

We combined this with our understanding of the plan provisions in an attempt to analyze the liability values produced by Buck for these sample cases only.

Conclusion and Results:

The exhibits that follow provide a comparison of the calculations by decrement provided to us from Buck against our replication of those benefits as we interpret them from the plan provisions and assumptions. We completed this detail for three active test lives under the PERS and TRS DCR and for three disabled test lives.

FINDINGS

Generally speaking, the assumptions and methods were employed properly. We did identify one potential minor finding:

1. **Occupational Disability Benefit for PERS PF DCR OD&D** – A PERS DCR Peace Officer/Firefighter occupational disability member has their benefit being calculated assuming the service amount provided by the Alaska DRB is as of the date of disability. We recommend Buck confirm with the Alaska DRB that this service amount is as of the date of disability, and not as of the valuation date.

We provided this finding to Buck. They confirmed with the Alaska DRB that the service amount provided is as of the valuation date, so the benefit being calculated should be updated.

We believe that while the impact of this recommendations will be immaterial, it should, at the very least, be updated in future valuations, subject to Actuarial Committee discretion.

Comparison of Present Value of Benefits - **DCR PERS and TRS Pension**

Actives	**Test Case 1 - PERS Other**		
Basic Data:		*Basic Data:*	
Sex	Female	Tier	4
Current Age	56.139	Full time %	100%
Current Credited Service	6.66		
Present Value of Benefits (PVB)	**GRS***	**Buck**	**% Diff**
Disability:			
DCR	1,014	1,014	0.0%
DCR Death during Disability	33	34	-1.6%
Total Disability PVB	**1,048**	**1,048**	**-0.1%**
Death:			
DCR - married only	391	391	0.0%
Total Death PVB	**391**	**391**	**0.0%**
GRAND TOTAL PVB	**1,438**	**1,439**	**0.0%**

Actives	**Test Case 2 - PERS PF**		
Basic Data:		*Basic Data:*	
Sex	Male	Tier	4
Current Age	37.73	Full time %	100%
Current Credited Service	8.26		
Present Value of Benefits (PVB)	**GRS***	**Buck**	**% Diff**
Disability:			
DCR Deferred - single	718	718	0.0%
DCR Deferred - married	4,983	4,983	0.0%
DCR Immediate	2,056	2,056	0.0%
DCR Imm. Death during Disability	154	154	0.0%
Total Disability PVB	**7,911**	**7,911**	**0.0%**
Death:			
DCR - married only	1,885	1,885	0.0%
Total Death PVB	**1,885**	**1,885**	**0.0%**
GRAND TOTAL PVB	**9,796**	**9,796**	**0.0%**

Actives	**Test Case 3 - TRS**		
Basic Data:		*Basic Data:*	
Sex	Female	Tier	3
Current Age	49.33	Full time %	100%
Current Credited Service	10.00		
Present Value of Benefits (PVB)	**GRS***	**Buck**	**% Diff**
Disability:			
DCR	386	386	0.0%
DCR Death during Disability	18	18	0.0%
Total Disability PVB	**404**	**404**	**0.0%**
Death:			
DCR - married only	232	233	0.0%
Total Death PVB	**232**	**233**	**0.0%**
GRAND TOTAL PVB	**637**	**637**	**0.0%**

Benefits - Buck Valuation Terminology	
Disability:	
DCR Deferred Ben	Disability benefit payable upon eligibility for retirement (based on ret plan formula)
DCR Immed Ben	Disability benefit payable until eligible for normal retirement (based on ret plan formula)
DCR	Occupational base disability benefit based on percent of pay (40% of salary)
DCR Death during Disable	Death benefit payable upon death while on disability
Death:	
DCR - married only	Occupational death benefit payable as annuity to spouse

** GRS' audit of Buck's calculation includes review of the benefit amounts, annuity values, assumptions and other factors related to the PVB calculation at each projected age. Differences may exist due to different interpretations of the statutes, as well as additional items as discussed throughout this audit report.*

Comparison of Present Value of Benefits - **DCR PERS and TRS Retiree Health**

Actives	**Test Case 1 - PERS Other**		
Basic Data:		*Basic Data:*	
Sex	Female	Tier	4
Current Age	56.14	Full time %	100%
Current Credited Service	6.16		
Present Value of Benefits (PVB)	**GRS***	**Buck**	**% Diff**
Retirement:			
Post 65 DCR <Member>	23,695	23,736	-0.2%
Post 65 DCR <Spouse>	12,758	12,780	-0.2%
Contrib DCR <Member>	(5,591)	(5,599)	-0.1%
Contrib DCR <Spouse>	(3,012)	(3,017)	-0.1%
Post 65 Part D DCR <Member>	3,763	3,886	-3.2%
Post 65 Part D DCR <Spouse>	2,006	2,087	-3.9%
Total Retirement PVB	**33,619**	**33,874**	**-0.8%**

Actives	**Test Case 2 - PERS PF**		
Basic Data:		*Basic Data:*	
Sex	Male	Tier	4
Current Age	37.73	Full time %	100%
Current Credited Service	8.26		
Present Value of Benefits (PVB)	**GRS***	**Buck**	**% Diff**
Retirement:			
Post 65 DCR <Member>	12,727	12,587	1.1%
Post 65 DCR <Spouse>	12,974	12,813	1.3%
Contrib DCR <Member>	(1,501)	(1,314)	14.2%
Contrib DCR <Spouse>	(1,560)	(1,345)	16.0%
Post 65 Part D DCR <Member>	2,469	2,430	1.6%
Post 65 Part D DCR <Spouse>	1,900	1,872	1.5%
Total Retirement PVB	**27,010**	**27,042**	**-0.1%**

Actives	**Test Case 3 - TRS**		
Basic Data:		*Basic Data:*	
Sex	Female	Tier	3
Current Age	49.33	Full time %	100%
Part-Time Credited Service	10.00		
Present Value of Benefits (PVB)	**GRS***	**Buck**	**% Diff**
Retirement:			
Post 65 DCR <Member>	15,737	15,769	-0.2%
Post 65 DCR <Spouse>	8,459	8,477	-0.2%
Contrib DCR <Member>	(2,140)	(2,086)	2.6%
Contrib DCR <Spouse>	(1,152)	(1,123)	2.5%
Post 65 Part D DCR <Member>	2,911	2,929	-0.6%
Post 65 Part D DCR <Spouse>	1,563	1,573	-0.6%
Total Retirement PVB	**25,379**	**25,539**	**-0.6%**

Benefits - Buck Valuation Terminology	
Retirement:	
Post 65 DCR <Member>	Base benefit paid to employee while employee is at least 65
Post 65 DCR <Spouse>	Base benefit paid to spouse while employee is at least 65
Contrib DCR <Member>	Employee pre-retirement contributions
Contrib DCR <Spouse>	Spouse pre-retirement contributions
Post 65 Part D DCR <Member>	Employee post-age 65 Medicare Part D reimbursement
Post 65 Part D DCR <Spouse>	Spouse post-age 65 Medicare Part D reimbursement

** GRS' audit of Buck's calculation includes review of the benefit amounts, annuity values, assumptions and other factors related to the PVB calculation at each projected age. Differences may exist due to different interpretations of the statutes, as well as additional items as discussed throughout this audit report.*

Comparison of Present Value of Benefits - **DCR PERS Disability**

Retirees	**Test Case 4 - PERS Other**		
Basic Data:		*Basic Data:*	
Sex	Male	Tier	4
Current Age	55.186	Type	Disability
Annual Benefit	14,329.06	Stop date	4/30/2031
	GRS*	**Buck**	**% Diff**
PVB - Disability Benefit	104,971	105,056	-0.1%
PVB - Post-retirement Medical Benefits	72,971	75,240	-3.0%

Retirees	**Test Case 5 - PERS PF**		
Basic Data:		*Basic Data:*	
Sex	Male	Tier	4
Current Age	46.123	Type	Disability
Annual Benefit	48,746.33	Stop date	9/28/2036
	GRS*	**Buck**	**% Diff**
PVB - Disability Benefit	640,779	640,657	0.0%
PVB - Post-retirement Medical Benefits	67,965	69,620	-2.4%

Retirees	**Test Case 6 - TRS**		
Basic Data:		*Basic Data:*	
Sex	Male	Tier	3
Current Age	55.454	Type	Disability
Annual Benefit	24,286.44	Stop date	Occ Disabled
	GRS*	**Buck**	**% Diff**
PVB - Disability Benefit	184,263	176,511	4.4%
PVB - Post-retirement Medical Benefits	75,217	77,396	-2.8%

** GRS' audit of Buck's calculation includes review of the benefit amounts, annuity values, assumptions and other factors related to the PVB calculation at each projected age. Differences may exist due to different interpretations of the statutes, as well as additional items as discussed throughout this audit report.*

SECTION 8

REVIEW OF CONTRIBUTION RATE DETERMINATION

Review of Contribution Rate Determination

Beginning with the actuarial valuations as of June 30, 2014, in accordance with Senate Bill 119 and House Bill 385, a contribution calculation methodology was incorporated in order to recognize the timing lag and recognize expected changes in the unfunded liability during the two-year delay.

GRS analyzed the roll forward methodology for the FY2024 Contribution Rate Calculation and verified the contribution rate computation (as shown in pages 21 - 24 of the PERS valuation report and pages 13 - 16 of the TRS valuation report). We verified the calculation of the layered amortization amount for FY24.

As noted in the Buck report, the compensation used to develop the rates is a combination of both this plan's compensation, as well as the DCR compensation.

Finally, Buck has determined two different compensation amounts-the "valuation" compensation which is the compensation used to determine future plan benefits and the liabilities for those benefits. This compensation annualizes permanent-part timer pay. The "rate" payroll is the payroll upon which the contributions are expected to be made, and does not annualize permanent part timer pay.

FINDINGS:

The calculations were generally reasonable and consistent with actuarial practice.

SECTION 9

REVIEW OF ACTUARIAL VALUATION REPORT

Review of Actuarial Valuation Report

Valuation Report:

GRS reviewed the June 30, 2021 valuation report for scope as well as content to determine if actuarial statistics were being reflected fairly and if the details of the plan were being correctly communicated. GRS did not review GASB 67/68/74/75 Accounting Information.

We consider the scope and content of Buck's report to be effective in communicating the financial position and contribution requirements of PERS and TRS.

We recommend the following in order to better communicate the benefits for PERS and TRS:

- Based on one of our agreed upon recommendations from last year, for DB PERS Peace Officer/Firefighter members, the deferred retirement benefit for the occupational disability piece is increased by the same accumulative PRPA percentage that was applied to the disability benefit. We recommend Buck add language about this to the plan provision section of the PERS DB report, similar to how they have language about this in the PERS DCR report.
- In the plan provisions section of the PERS DB report, it states that members may receive "…early, actuarially reduced benefits when the reach early retirement age…", but the early retirement benefits for PERS are reduced by 6% per year, not by actuarial equivalence. We recommend Buck update the PERS DB report to correctly state how PERS early retirement benefits are reduced.

Alaska Retirement Management Board

Actuarial Review of the
National Guard and Naval Militia Retirement System
Pension Plan; and
Judicial Retirement System Pension and Health Plans
Roll-Forward Actuarial Valuations
May 20, 2022

P: 720.274.7270 | www.grsconsulting.com

May 20, 2022

Mr. Zach Hanna
Chief Investment Officer
Department of Revenue, Treasury Division
Alaska Retirement Management Board
P.O. Box 110405
Juneau, AK 99811-0405

Subject: **Actuarial Review of the Roll-Forward June 30, 2021 valuations for the State of Alaska National Guard and Naval Militia Retirement System (NGNMRS) and Judicial Retirement System (JRS)**

Dear Zach:

We have performed an actuarial review of the June 30, 2021 Roll-Forward Actuarial Valuation for NGNMRS and JRS.

This audit includes a review of the results of the roll forward calculations using actuarial methods, assumptions and procedures from the most recent actuarial valuation reports and the Buck letter dated January 6, 2022 (re: Judicial Retirement System and National Guard and Naval Militia Retirement System Roll-Forward Actuarial Valuations as of June 30, 2021). The steps of the process of our audit, including potential areas for future review, are as follows:

1. Reviewing the calculations shown in the Roll-Forward letter to confirm that the results shown as of June 30, 2020 in the Roll-Forward letter match Buck's June 30, 2020 actuarial valuation reports. We confirmed that the results do match.

2. Calculating the actuarial value of assets as of June 30, 2021 using the financial statements provided and the historical gains and losses shown in the June 30, 2020 report. We matched the results very closely.

3. Verifying Buck's June 30, 2021 Roll-Forward calculations using information from the most recent June 30, 2020 Buck actuarial valuations, the Roll Forward letter, and the financial statements for the fiscal year ending June 30, 2021. We completed this review by estimating these results using the appropriate methods, assumptions and procedure. Our audit results were very close for the NGNMRS and JRS Pension plans.

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4. Auditing the contribution rate calculations using the past service base and payment information, and estimating the FY21 Gain/Loss noted in Buck's Roll Forward letter. Overall, we found the results to be reasonable and were able to match them closely for the NGNMRS and JRS Pension plans.

5. Reviewing the Roll-Forward letter to determine if the details of the calculations were being communicated correctly and effectively. While we found that the most of the necessary information is reflected fairly, in order to improve communication and provide additional details on the calculations, we recommend the following for JRS:

   - Disclose the assumed benefit payments used in the roll forward calculation of the healthcare benefits.
   - Disclose the assumed timing of the state assistance contributions used for the expected return calculations in the development of the actuarial value of assets.
   - Break out the actuarial gains/(losses) between pension and healthcare.

In general, the roll forward procedures and results were reasonable.

We wish to thank the staff of the State of Alaska Treasury Division and Buck without whose willing cooperation this review could not have been completed.

Sincerely,

Gabriel, Roeder, Smith & Company

Paul Wood, ASA, FCA, MAAA
Senior Consultant

Bill Detweiler, ASA, EA, FCA, MAAA
Consultant

ALASKA RETIREMENT MANAGEMENT BOARD

Actuarial Committee

SUBJECT:	Certification of Actuarial Review	ACTION:	X
DATE:	June 15, 2022	INFORMATION:	

BACKGROUND:

AS 39.10.220 (a) (9) prescribes certain duties and reports that the Alaska Retirement Management Board is responsible for securing from a member of the American Academy of Actuaries. Additionally, it contains a requirement that "the results of all actuarial assumptions prepared under this paragraph shall be reviewed and certified by a second member of the American Academy of Actuaries before presentation to the board."

AS 37.10.220(a)(9) provides that "the results of all actuarial assumptions prepared under this paragraph shall be reviewed and certified by a second member of the American Academy of Actuaries before presentation to the Board."

STATUS:

Buck Global, LLC (Buck), the board's primary actuary, has completed valuation reports of the following two (2) defined benefit plans as of June 30, 2021:

- Public Employees' Retirement System (PERS)
- Teachers' Retirement System (TRS)

The following two (2) defined contribution plans as of June 30, 2021:

- PERS Tier IV for Occupational Death & Disability and Retiree Medical Benefits
- TRS Tier III for Occupational Death & Disability and Retiree Medical Benefits

And a roll-forward actuarial valuation (letter dated January 6, 2022) of the Judicial Retirement System (JRS) and National Guard and Naval Militia Retirement System (NGNMRS), as of June 30, 2021.

Gabriel Roeder Smith & Company (GRS), the board's review actuary, has reviewed the valuation reports prepared by Buck and provided a letter and report describing a review of the above listed valuation reports.

GRS compiled and reviewed an audit findings list (incorporated in the report referenced above) setting out recommendations and suggestions from the GRS review reports for further discussion or action.

RECOMMENDATION:

The Actuarial Committee recommends that the Alaska Retirement Management Board accept the review and certification of the FY 2021 actuarial reports by Gabriel Roeder Smith & Company.

ALASKA RETIREMENT MANAGEMENT BOARD

Actuarial Committee

SUBJECT:	Acceptance of Actuarial Valuation Reports PERS / TRS DB & DCR, JRS, NGNMRS	ACTION:	X
DATE:	June 15, 2022	INFORMATION:	

BACKGROUND:

AS 37.10.220(a)(8) prescribes that the Alaska Retirement Management Board (Board) "coordinate with the retirement system administrator to have an annual actuarial valuation of each retirement system prepared to determine system assets, accrued liabilities, and funding ratios and to certify to the appropriate budgetary authority of each employer in the system."

AS 37.10.220(a)(9) provides that "the results of all actuarial assumptions prepared under this paragraph shall be reviewed and certified by a second member of the American Academy of Actuaries before presentation to the Board."

STATUS:

Buck Global, LLC (Buck), the Department of Administration's and Plans' actuary, has completed and reviewed the following results and reports with the Board's Actuarial Committee on December 1, 2021, March 16, 2022, and June 15, 2022:

1) an actuarial valuation of the Public Employees' Retirement System as of June 30, 2021
2) an actuarial valuation of the Teachers' Retirement System as of June 30, 2021
3) an actuarial valuation of the Public Employees' Retirement System – Defined Contribution Retirement Plan (for Occupational Death and Disability and Retiree Medical Benefits) as of June 30, 2021
4) an actuarial valuation of the Teachers' Retirement System – Defined Contribution Retirement Plan (for Occupational Death and Disability and Retiree Medical Benefits) as of June 30, 2021
5) a roll-forward actuarial valuation (letter dated January 6, 2022) of the Judicial Retirement System (JRS) and the National Guard and Naval Militia Retirement System (NGNMRS) as of June 30, 2021

There are two assumption changes recommended and presented in the final reports:

1) Healthcare claim costs are updated annually and described in Section 5.2 for the PERS and TRS DB and Section 4.2 for the PERS DCR and TRS DCR actuarial valuation reports; and
2) The Normal Cost load for administrative expenses was updated based on the most recent two years of actual amounts paid from plan assets.

Gabriel Roeder Smith & Company (GRS), the Board's actuary, has reviewed the listed actuarial valuations and provided their reports and audit findings to the Actuarial Committee and the Board.

RECOMMENDATION:

The Actuarial Committee recommends that the Alaska Retirement Management Board accept the actuarial valuation reports prepared by Buck for the Public Employees', Teachers', Public Employees' Defined Contribution (for Occupational Death and Disability and Retiree Medical Benefits), Teachers' Defined Contribution (for Occupational Death and Disability and Retiree Medical Benefits), and the roll-forward actuarial valuation reports for the Judicial and National Guard and Naval Militia retirement systems as of June 30, 2021.

Alaska Retirement Management Board

Actuarial Audit of Pension and Postemployment Healthcare Plans

May 20, 2022

P: 720.274.7270 | www.grsconsulting.com

May 20, 2022

Alaska Retirement Management Board
P.O. Box 110405
Juneau, AK 99811-0405

Dear Retirement Board Members:

Gabriel, Roeder, Smith & Company (GRS) is pleased to present this report of an actuarial audit of the June 30, 2020 actuarial valuations of the State of Alaska retirement systems. The scope of our actuarial audit included the following plans:

- Public Employees' Retirement System (PERS) Defined Benefit (DB) Pension and Medical
- Teachers' Retirement System (TRS) DB Pension and Medical
- PERS Defined Contribution Retirement (DCR) - Occupational Death & Disability (OD&D) and Medical
- TRS DCR - OD&D and Medical
- Judicial Retirement System DB Pension and Medical
- National Guard & Naval Militia DB Pension

We are grateful to the Alaska staff and Buck, the retained actuary, for their cooperation throughout the actuarial audit process.

This actuarial audit involves an independent verification and analysis of the assumptions, procedures, methods, and conclusions used by the retained actuary for all of these plans, in the actuarial valuations as of June 30, 2020, to ensure that the conclusions are technically sound and conform to the appropriate Standards of Practice as promulgated by the Actuarial Standards Board.

GRS is pleased to report to the Board that, in our professional opinion, the June 30, 2020 actuarial valuations prepared by the retained actuary provide fair and reasonable assessments of the financial position of the plans and are reflectd in the required contribtuion rates.

In this report we have made some suggestions for ways to improve the work product. We hope that the retained actuary and the Board find these items helpful. Thank you for the opportunity to work on this assignment.

Mr. Wood and Mr. Detweiler are Associcates of the Society of Actuaries, and Members of the American Academy of Actuaries. They meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. They are both experienced in performing valuations for large public retirement systems.

Sincerely,

Gabriel, Roeder, Smith & Company

Paul T Wood

Paul Wood, ASA, FCA, MAAA
Senior Consultant

Bill Detweiler, ASA, EA, FCA, MAAA
Consultant

cc: Ms. Pamela Leary
Mr. Zach Hanna
Ms. Alysia Jones

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SECTION 1

EXECUTIVE SUMMARY

Executive Summary

Gabriel, Roeder, Smith & Co. was engaged by the Alaska Retirement Management Board (ARMB) for an actuarial audit of the June 30, 2020 Actuarial Valuations of the following State of Alaska retirement systems performed by the retained actuary:

- Public Employees' Retirement System (PERS) Defined Benefit (DB) Pension and Medical
- Teachers' Retirement System (TRS) DB Pension and Medical
- PERS Defined Contribution Retirement (DCR) - Occupational Death & Disability (OD&D) and Medical
- TRS DCR - OD&D and Medical
- Judicial Retirement System DB Pension and Medical
- National Guard & Naval Militia DB Pension

The scope of this actuarial audit includes the following:

1. Evaluation of the available data for the performance of such valuation
2. Evaluation of recommended economic and non-economic assumptions and all projections as presented in the Primary Actuary's FY2020 Valuation Reports
3. Perform valuation as of June 30, 2020 using the assumptions, methodologies and funding method used by the Primary Actuary in their performance of the June 30, 2020 valuation of the plans
4. Evaluation of the valuation results and reconciliation of any discrepancies between the findings, assumptions, methodology, rates, and or adjustments of the Contractor and Primary Actuary
5. Assessment of the conclusions of the valuation report for completeness and accuracy
6. Communication of the peer review audit valuation results and the reconciliation of any discrepancies between the findings, assumptions, methodology, rates, and/or adjustments to the Primary Actuary
7. Review format of the valuation report and offer recommendations
8. Provide a report of the work performed along with any opinions and recommendations for improvement, and present findings to the ARMB.

Please note that GRS is also currently the retained review actuary for the ARMB. Certain parts of this scope, such as an analysis of the assumptions and methods, are similar to the annual review completed by GRS. Other parts of this scope, such as a full replication of the liabilities, offer a much more in-depth review of the valuations. GRS was able to use some of the information received as the review actuary for a more complete and accurate audit of the valuations.

Summary of Findings

Based on our review of the census data, experience study documents, liability replication, liability calculations for a sample of members, and the actuarial valuation reports, we believe the June 30, 2020 actuarial valuations for State of Alaska retirement systems are reasonable, are based on appropriate assumptions and methods, and the reports generally comply with the Actuarial Standards of Practice.

We offer the following recommendations based on the valuation methods and assumptions used by the retained actuary in the June 30, 2020 actuarial valuations.

Key Findings From The Audit Of The June 30, 2020 Valuations

- We recommend Buck consider lowering certain economic assumptions in the next experience study, such as inflation, the assumed investment rate of return, and the total payroll growth assumption.
- We recommend Buck consider the new public sector specific mortality tables, and a more recent generational improvement table in the next experience study.
- We recommend Buck review with the Board whether to implement a new entrant/rehire assumption in the DCR plans and in JRS.
- We recommend that Buck implement the changes to their valuation methods, as detailed in Section 5 of this report.
- We recommend Buck make some small modifications to their valuation reports to improve communication and disclosures, as detailed in Section 6 of this report.

SECTION 2

GENERAL ACTUARIAL AUDIT PROCEDURE

General Actuarial Audit Procedure

GRS received the following information in order to thoroughly review the work product of the retained actuary:

- Actuarial valuation reports for all of the retirement systems as of June 30, 2020,
- Actuarial Experience Study for the period July 1, 2013 to June 30, 2017,
- A preliminary set of census data for all plan participants and beneficiaries as of June 30, 2020 originally provided by Alaska to the retained actuary for the actuarial valuations,
- A final set of census data for all plan participants and beneficiaries as of June 30, 2020 used by the retained actuary for the actuarial valuations,
- Individual present value of benefits for all plan participants and beneficiaries calculated as of June 30, 2020 by the retained actuary for the actuarial valuations,
- Detailed liability calculations from the retained actuary for a sampling of participants in the various retirement systems as of June 30, 2020, and
- Additional information on the most recent claims cost development and other assumptions used for the retiree medical plans as of June 30, 2020

In performing our review, we:

- Reviewed member handbooks and applicable statutes to understand the benefits provided by the Alaska retirement systems,
- Reviewed the appropriateness of the actuarial assumptions and methods,
- Reviewed the actuarial valuation reports,
- Replicated the calculation of the actuarial accrued liabilities in our actuarial valuation software,
- Replicated the contribution requirements, and
- Reviewed the detailed liability calculation of the sample lives, to ensure that the calculations were consistent with the stated plan provisions, actuarial methods and assumptions.

KEY ACTUARIAL CONCEPTS

An actuarial valuation is a detailed statistical simulation of the future operation of a retirement system using the set of actuarial assumptions adopted by the Board. It is designed to simulate all of the dynamics of such a system for each current system member including:

1. Earning future service and making contributions,
2. Receiving changes in compensation,
3. Leaving the system through job change, disablement, death, or retirement, and
4. Determination of and payment of benefits from the System.

This simulated dynamic is applied to each active member of the system. It results in a set of expected future benefit payments to that member. Bringing those expected payments to present value, at the assumed rate of investment return, produces the Present Value (PV) of future Benefits for that member. In like manner, a PV of future salaries is determined.

The PV of future benefits and the PV of future salaries for the entire systems are the total of these values across all members. The remainder of the actuarial valuation process depends upon these building blocks.

Once the basic results are derived, an actuarial method is applied in order to develop information on contribution levels and funding status. An actuarial method splits the PV of future benefits into two components:

1. PV of Future Normal Costs, and
2. Actuarial Accrued Liability ("AAL").

The actuarial method in use by the State of Alaska retirement systems is known as the Entry Age Normal (EAN) method. Under EAN, the Normal Cost for a member is that portion of the PV of the increase in the value of that member's benefit for service during the upcoming year. The AAL is the difference between the total PVB and the PV of all future normal costs.

For the DB plans, the PV of future benefits applies to the following benefits:

- Retirement benefits
- Withdrawal benefits
- Disability benefits
- Death benefits
- Return of contributions
- Medical benefits
- Indebtedness (from contributions which might be redeposited)

For the DCR plans, the actuarial present value of future benefits applies to the following benefits:

- Occupational Disability benefits
- Occupational Death benefits
- Retiree Medical benefits

The medical benefits are based on potential future health care benefits, while the others are a type of post-employment income replacement benefit, based on salary. For the medical benefits, estimates must be made of the future health care costs. This is done by determining current per capita health care claim costs by age of retiree, and projecting them into the future based on anticipated future health care inflation.

Actuarial Qualifications

The June 30, 2020 actuarial valuations were signed by Mr. David J. Kershner, FSA, EA, MAAA, FCA and Mr. Scott Young, FSA, EA, MAAA, FCA. Both Mr. Kershner and Mr. Young have attained the actuarial credentials noted on the signature line of the actuarial valuation reports and are compliant with Society of Actuaries Continuing Professional Development requirement.

In all cases, the actuarial valuation reports indicate that the signing actuaries meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in the actuarial valuation reports.

SECTION 3

ACTUARIAL ASSUMPTIONS

Actuarial Assumptions

Buck released an experience study in 2018 and the Board approved a new assumption set to be used beginning with the actuarial valuation as of June 30, 2018. Experience studies are performed on a reasonable schedule, which ensures none of the assumptions will become outdated. Additionally, some healthcare assumptions are reviewed on an annual basis, as they tend to be more volatile.

Although this audit examines many assumptions and methods, not all of them are equal in terms of their ultimate impact on contribution rates. It is not the intention of this audit to imply that all proposed changes would have a similar impact on the liabilities. For example, the investment return assumption may be the greatest lever in influencing contribution rates. Thus, where options exist for spending time and resources studying assumptions, we recommend studying those with the largest impact first.

Economic Assumptions

General

These assumptions simulate the impact of economic forces on the amounts and values of future benefits. Key economic assumptions are the assumed rate of investment return and assumed rates of future salary increase.

Economic assumptions are normally defined by an underlying inflation assumption. Buck has cited 2.50% as the current inflation assumption. In recent years, long-term inflation forecasts have been declining, but we have seen a very recent spike in inflation leading some investment consultants to increase their long-term expectations. We do find the assumption to be reasonable at this time, but expect Buck to study it in the next experience study.

Investment Return Assumption

The nominal investment return assumption for PERS, TRS, & JRS is 7.38%. The assumption is net of all investment expenses. The rate is no longer net of administrative expenses. Combined with the 2.50% inflation assumption, this yields a 4.88% real net rate of return. While we find this assumption to still be reasonable, it should be noted that many other large state pension plans are continuing to decrease their return expectations as capital market assumptions are coming in lower. This assumption should be carefully analyzed during the next experience study and serious consideration should be given to lowering it.

The nominal investment return assumption for NGNMRS is 7.00%. We also find this assumption to be reasonable, due to a different asset allocation than the other systems.

Member Pay Increase Assumption

In actuarial models, assumed rates of pay increase are often constructed as the total of several components:

> Base salary increases -- base pay increases that include price inflation and general “standard of living” or productivity increases.

An allowance for Merit, Promotion, and Longevity – This portion of the assumption is not related to inflation. In the context of a typical pay grid, pay levels are set out for various employment grades with step increases for longevity:

The base salary increase assumption reflects overall growth in the entire grid, and the Merit, Promotion, and Longevity pay increase assumption reflects movement of members through the grid, both step increases and promotional increases.

Base Salary Increase Assumption

The Base Salary Increase Assumption (also known as the wage inflation assumption) is 2.75% for PERS and TRS. The 2.75% is comprised of 2.50% for general inflation and 0.25% for productivity increases. For JRS, the pay increase assumption is 3.62% and was not studied or updated during the last experience study, due to a lack of credible data.

Merit, Promotion, and Longevity Pay Increase Assumption

As described above, the Merit, Promotion, and Longevity pay increase assumption represents pay increases due to movement through the pay grid. This is based on longevity and job performance. In most models, it is recognized that step increases and promotions are very rare late in careers. Thus, this allowance should trail away from relatively high levels for young or short service members to virtually nothing late in careers. We would expect that, as members approach retirement, this component would fade away.

The pay increase assumption will need to be monitored to ensure that any developing patterns of gains or losses do not continue.

We would also offer that the manner in which pay changes over time for teachers in comparison to public employees tends to differ. Since most teachers have a specific skill set, the approach to their compensation tends to follow a more consistent trend. Public Employees however (except for Peace officers and Firefighters) tend to represent a multitude of different skills – from a more generalized, labor intensive capacity (e.g., custodial) to more specialized training (ex. Accounting).

COLA and PRPA

We find these assumptions to be reasonable. The inflation rate is a component of investment return, salary increase and the PRPA, so it has a ripple effect throughout all the economic assumptions.

Demographic Assumptions

Healthy mortality during active service and after termination

The RP-2014 tables with MP 2017 generational improvement (and with the various credibility adjustments) are reasonable. Since the last experience study, the Society of Actuaries has released new public sector specific mortality tables. We would expect Buck to consider the use of these new tables in the next experience study. We would also expect Buck to consider updating the generational improvement table to a more recent version.

Disabled mortality

The RP 2014 disabled table with MP 2017 generational improvement (and with the various credibility adjustments) is reasonable. Since the last experience study, the Society of Actuaries has released new public sector specific mortality tables. We would expect Buck to consider the use of these new tables in the next experience study. We would also expect Buck to consider updating the generational improvement table to a more recent version.

Withdrawal from service before retirement (termination)

The rates look reasonable based on the data presented in the most recent experience study report.

Retirement

The rates look reasonable based on the data presented in the most recent experience study report.

Disability

The rates look reasonable based on the data presented in the most recent experience study report.

Withdrawal of contributions at termination

The rates look reasonable based on the data presented in the most recent experience study report.

Payroll Growth

Contribution rates are based on a percent of total DB and DCR payroll. The assumption used in the valuation is that payroll will grow at a rate of 2.75 percent per year. In 2020, the total payroll, based on the annualized earnings for the fiscal year ending on the valuation date, grew by about 1%. The following table shows the payroll growth over the past ten years.

Historical Payroll Growth			
Year	DB Plans Only	DCR Plans Only	Combined DB and DCR
2020	-7%	8%	1%
2019	-5%	9%	2%
2018	-7%	8%	0%
2017	-7%	7%	0%
2016	-5%	10%	1%
2015	-6%	12%	1%
2014	-5%	14%	1%
2013	-4%	17%	2%
2012	-3%	20%	3%
2011	-3%	25%	3%

Payroll growth is significant because the unfunded accrued liability (UAL) is amortized as a level percentage of pay. That is the same as expecting all future amortization payments to grow at the same rate as total payroll. When payroll does not grow as assumed then the UAL is not going to be paid off as assumed. In order for the UAL to be paid off according to the current amortization schedule, payroll must grow at the assumed payroll growth rate. If payroll does not grow at that rate, as has been the case for the last eight years, there will be upward pressure on the contribution rate because contributions that are less than anticipated are flowing in the plan. We recommend Buck review this assumption in the next experience study and consider lowering it.

Active Rehire Assumption

The assumed increases in normal cost to account for anticipated rehires in the PERS and TRS DB plans are reasonable. No such assumptions exist in the DCR plans or JRS, even though there will always be both rehires and new entrants for these plans. Currently, the entire liability for new entrants and rehires in these plans is being counted as a loss. When these costs are incorporated into the actuarial valuation through an actuarial loss, the liability is added to the existing unfunded actuarial accrues liability and funded over the current amortization period.

It is important to note that the liability associated with the new entrant or rehire normal cost will ultimately be included in the actuarial valuation. However, we believe that the most appropriate approach is to incorporate these costs into the calculation of the normal cost rate for the upcoming year, like they currently are for the PERS and TRS DB plans. This approach allocates those costs to the period where they provided services to taxpayers, prevents the deferral of costs, and keeps the contribution rates more stable. We recommend Buck review with the Board whether to implement a new entrant/rehire assumption in the DCR plans and in JRS.

Medical Claims Cost

Buck provided additional information on their development of the per capita claims costs and we find their approach to be reasonable. We also agree that this assumption should be reviewed each year due to the volatile nature of these costs, as evidenced by the very large gains seen over the last couple years.

Healthcare Trend Assumptions

The healthcare trend rates follow the Society of Actuaries' Healthcare Cost Trend model and the model has been populated with assumptions that are specific to the State of Alaska. The trend rates are reasonable.

EGWP assumption

Alaska moved to an EGWP effective January 1, 2019. Buck obtained a savings estimate from the EGWP vendor and used that as the basis for the valuation. We concur with that approach. Buck is assuming the EGWP subsidy will last in perpetuity. While this is a reasonable approach, we would recommend that Buck detail the risk associated with this assumption, especially if EGWP subsidies wear away over time. Furthermore, we recommend that Buck monitor the estimated savings each year and determine if an update to their model is necessary.

Medicare Part B Assumption

Buck assumes 5% of pre-Medicare members are assumed to be eligible for Part B only. This assumption is reasonable, but we noticed that it is producing gains to the liabilities. We recommend Buck revisit this assumption in the next experience study.

COVID-19 Experience

Like many other retirement systems, the global pandemic caused by COVID-19 caused a noticeable drop in claims during the final quarter of fiscal year 2020. To account for the fact that these decreases in claims are not expected to continue and do not represent future expectations, Buck adjusted the fiscal 2020 claims used in setting the claims cost assumption to more closely resemble claims experience before the pandemic. We agree that this is a reasonable and necessary adjustment to make.

It should also be noted that there was a small spike in prescription drug claims in March of 2020, as people were presumably stocking up on medications, but claims decreased back to expectations shortly thereafter. Buck felt the overall prescription drug experience during fiscal 2020 did not require any COVID-19 adjustments for setting future expectations of those claims.

Buck will need to continue to analyze the claims experience in the next few years to determine if any further adjustments need to be made to account for behavior that may not be expected to continue in the future.

DCR Base Claims Cost Adjustments

Relative value refers to the value of the DCR retiree medical benefits compared to those provided by the Defined Benefit retiree medical plan. Since the DCR plan does not yet have enough membership to create credible experience, they use the same claims costs developed under the DB plan, adjusted by the assumed relative value factors. Based on additional information provided by Buck, we find these relative value factors to be reasonable.

The basis for these relative value factors rests with higher initial copays, deductibles, out of pocket limits and member cost sharing compared to the DB medical plan. As experience emerges we recommend the discount from the DB plan to the DCR plan continue to be tested to ensure this assumption is supporting the liabilities of the plan. When the DCR plans have enough credible claims experience, they should have their own claim cost assumptions set.

SUMMARY

Based on the last experience study and an annual review of the retiree medical claims, the assumptions being used in the June 30, 2020 actuarial valuations are reasonable. However, the economic environment has continued to evolve and change since then. We expect Buck to examine certain assumptions impacted by this, such as inflation, the assumed investment rate of return, and the payroll growth assumption. We also expect Buck to consider the new public sector specific mortality tables, as well as a more recent generational improvement table. Finally, we recommend Buck review with the Board whether to implement a new entrant/rehire assumption in the DCR plans and in JRS, as we believe that would allocate the contributions to the most appropriate period of time and keep the contribution rates more stable.

SECTION 4

ACTUARIAL METHODS

Actuarial Methods

The ultimate cost of the Alaska retirement programs is equal to the benefits paid plus the expenses related to operating the plans. This cost is funded through contributions to the programs plus the investment return on accumulated contributions which are not immediately needed to pay benefits or expenses. The projected level and timing of the contributions needed to fund the ultimate cost are determined by the actuarial assumptions, plan provisions, participant characteristics, investment experience, and the actuarial cost method.

Actuarial Cost Method

An actuarial cost method is a mathematical process for allocating the dollar amount of the total present value of plan benefits (PVB) between future normal costs and actuarial accrued liability (AAL). The retained actuary uses the Entry Age Normal actuarial cost method (EAN Method), characterized by:

(1) Normal Cost – the level percent of payroll contribution, paid from each participant's date of hire to date of retirement, which will accumulate enough assets at retirement to fund the participant's projected benefits from retirement to death.

(2) Actuarial Accrued Liability – the assets which would have accumulated to date had contributions been made at the level of the normal cost since the date of the first benefit accrual, if all actuarial assumptions had been exactly realized, and there had been no benefit changes.

The EAN Method is the most prevalent funding method in the public sector. It is appropriate for the public sector because it produces costs that remain stable as a percentage of payroll over time, resulting in intergenerational equity for taxpayers and budget predictability. The recent Public Fund Survey included 199 retirement systems (mostly statewide). Over 82% of the plans reported using the EAN Method. Therefore, the retained actuary's stated funding methods for TRS and PERS are certainly in line with national trends.

In order to determine the normal cost as a level percentage of pay, the valuation must first determine the future compensation that each individual member is expected to receive over the course of their career (which is also the compensation used to generate contributions). The projection of the future compensation should be based on the salary that the participant is expected to receive according to the timing of the expected departures from active service (or, decrements).

The level percent of pay method for both amortization of the unfunded accrued liability and the normal cost are both appropriate as a funding policy, considering that the payroll is not closed (as promulgated under SB 123.)

Asset Valuation Method

The market value of assets can experience significant short-term swings, which can cause large fluctuations in the development of the actuarially determined contributions required to fund the retirement systems. Thus, many retirement systems use an asset valuation method which dampens these short-term volatilities to achieve more stability in the employer contribution. A good asset valuation method places values on a retirement plan's assets which are related to the current market value, but which will also produce a smoother pattern of costs.

ASOP No. 44, Selection and Use of Asset Valuation Methods for Pension Valuations, provides a framework for the determination of the actuarial value of assets (AVA), emphasizing that the method should: (1) bear a reasonable relationship to the market value of assets (MVA), (2) recognize investment gains and losses over an appropriate time period, and (3) avoid systematic bias that would overstate or understate the AVA in comparison to MVA.

The actuarial valuations of the State of Alaska retirement systems currently uses a smoothed asset valuation method that immediately recognizes income equal to the expected return on market value of assets, based on the assumed valuation interest rate (7.38%). Differences between the assumed investment return and the actual market investment return are recognized over a five-year period. The AVA is not constrained to be within a "corridor" around the MVA.

We believe that that the asset valuation method for the State of Alaska retirement systems comply with ASOP No. 44. Additionally, the method is reasonable and appropriately applied for the valuation.

SUMMARY

We believe that the actuarial methods are reasonable and appropriately applied. As a result, we have no recommendations regarding the application of actuarial methods.

SECTION 5

ACTUARIAL VALUATION RESULTS

Actuarial Valuation Results

Benefits

Every employer is different and every employer's retirement plan is different. Each employer has a set of workforce and financial needs that dictate the type of retirement benefit that is most appropriate for their employees. Additionally, the amount of resources available to allocate to the retirement plan will dictate the level of benefits provided by the retirement plan. Regardless of the reasons for the benefit design, the employer must understand the liability and contribution requirements associated with the benefits promised. As a result, the actuarial valuation and the resulting funding policy contribution must properly reflect the benefit structure of the retirement plan.

In general, the benefits promised by the State of Alaska through the retirement systems were reasonably incorporated in the actuarial valuations of these programs.

Data

As part of our actuarial audit, we received a preliminary set of census data for plan participants and beneficiaries as of June 30, 2020 originally provided by the State of Alaska to the retained actuary for the actuarial valuations. Additionally, we received a final set of census data for plan participants and beneficiaries as of June 30, 2020 used by the retained actuary for the actuarial valuations. Finally, we received a copy of the data questions from the retained actuary with responses.

We used this data, along with the census summaries included in the valuation reports, to review the valuation data process. In total, we believe that the final valuation data used by the retained actuary is reasonable and valid for its purpose.

Actuarial Valuation Results

To verify the accuracy of the retained actuary's valuation results, GRS performed independent valuations, as of June 30, 2020, of the following plans:

- Public Employees' Retirement System (PERS) Defined Benefit (DB) Pension and Medical
- Teachers' Retirement System (TRS) DB Pension and Medical
- PERS Defined Contribution Retirement (DCR) - Occupational Death & Disability (OD&D) and Medical
- TRS DCR - OD&D and Medical
- Judicial Retirement System DB Pension and Medical
- National Guard & Naval Militia DB Pension

The replication valuations were based on the final valuation data provided by the retained actuary. The replication uses the same methods and procedures that were used by the retained actuary. The results show that the retained actuary's numerical results are reproducible within acceptable tolerance ranges.

Generally accepted actuarial standards and practices provide actuaries with the basic mathematics and frameworks for calculating the actuarial results. When it comes to applying those actuarial standards to complex calculations, differences may exist due to individual opinion on the best way to make those complex calculations. This may lead to differences in the calculated results, but these differences should not be material. Generally, differences in actuarial liabilities of 5% or less are considered within acceptable tolerance ranges.

As the following table shows, our replications of the retained actuary's valuation results are generally well less than 5%, and very often within 1%. As a result, we believe that the actuarial accrued liabilities presented in the retained actuary's valuation reports provide a reasonable representation of the actuarial accrued liability based on the stated assumptions, methods and procedures.

Comparison of Actuarial Valuation Liabilities as of June 30, 2020 ($ in thousands)

	Buck	GRS	Difference		Buck	GRS	Difference
Public Employees' Retirement System - DB				*Teachers' Retirement System - DB*			
PVB - Pension	$ 15,904,744	$ 15,900,178	-0.03%	PVB - Pension	$ 7,688,262	$ 7,685,168	-0.04%
PVB - Medical	7,432,011	7,450,198	0.24%	PVB - Medical	2,614,021	2,620,668	0.25%
PVB - Total	23,336,755	23,350,376	0.06%	PVB - Total	10,302,283	10,305,836	0.03%
AAL	$ 22,316,075	$ 22,313,731	-0.01%	AAL	$ 9,936,711	$ 9,931,364	-0.05%
AVA	17,703,068	17,703,068	0.00%	AVA	8,608,347	8,608,347	0.00%
UAAL	4,613,007	4,610,663		UAAL	1,328,364	1,323,017	
Funded Ratio	79.3%	79.3%		Funded Ratio	86.6%	86.7%	
Normal Cost	$ 222,640	$ 226,015	1.52%	Normal Cost	$ 75,823	$ 77,579	2.32%
Public Employees' Retirement System - DCR				*Teachers' Retirement System - DCR*			
PVB - OD&D	$ 43,975	$ 43,702	-0.62%	PVB - OD&D	$ 2,297	$ 2,297	-0.01%
PVB - Medical	247,650	250,528	1.16%	PVB - Medical	63,321	64,039	1.13%
PVB - Total	291,625	294,230	0.89%	PVB - Total	65,618	66,335	1.09%
AAL	$ 161,335	$ 160,631	-0.44%	AAL	$ 40,857	$ 41,092	0.57%
AVA	187,776	187,776	0.00%	AVA	54,487	54,487	0.00%
UAAL	(26,441)	(27,145)		UAAL	(13,630)	(13,395)	
Funded Ratio	116.4%	116.9%		Funded Ratio	133.4%	132.6%	
Normal Cost	$ 20,316	$ 20,457	0.70%	Normal Cost	$ 3,708	$ 3,751	1.17%
Judicial Retirement System				*National Guard and Naval Militia Retirement System*			
PVB - Pension	$ 249,945,586	$ 248,823,194	-0.45%				
PVB - Medical	22,457,366	22,456,334	0.00%				
PVB - Total	272,402,952	271,279,528	-0.41%	PVB	$ 25,110,009	$ 25,202,489	0.37%
AAL	$ 228,505,813	$ 224,338,789	-1.82%	AAL	$ 22,417,247	$ 23,202,753	3.50%
AVA	229,593,682	229,593,682	0.00%	AVA	43,020,393	43,020,393	0.00%
UAAL	(1,087,869)	(5,254,893)		UAAL	(20,603,146)	(19,817,640)	
Funded Ratio	100.5%	102.3%		Funded Ratio	191.9%	185.4%	
Normal Cost	$ 6,787,853	$ 7,041,874	3.74%	Normal Cost	$ 759,140	$ 623,872	-17.82%

PVB = Present Value of Benefits
AAL = Actuarial Accrued Liability
AVA = Actuarial Value of Assets
UAAL = Unfunded Actuarial Accrued Liability
OD&D = Occupational Death & Disability

As part of our replication valuation, GRS examined sample participant calculations received from the retained actuary to ensure that the retained actuary valued the correct benefit levels, used the correct assumptions, and calculated the liabilities correctly on an individual basis. The requested sample participants included active and inactive members from the various retirement systems.

There are a few findings that were discovered during the replication process and subsequent review of the sample participants:

1. **415(b) Limit** – Benefits are currently being limited by the 415(b) limit. We recommend Buck confirm with Alaska staff if benefits in excess of the 415(b) limit are being paid (potentially through an excess benefit account), and if so, how.

2. **Rate Used in Valuation Not Matching Rate Disclosed in Report** – The ultimate termination rate being used for a male in the PERS DCR retiree medical valuation appears to be using the age 64 rate instead of the age 65 rate shown in the report. We recommend Buck verify all decrement rates shown in the reports are consistent with those being used in the calculations.

3. **Retirement Rates Not Being Applied at All Eligible Ages** – A PERS DCR Peace Officer/Firefighter member is eligible to retire at age 44, but retirement rates do not appear to start until age 45, so no retirement rate or termination rate is being used for this member at age 44. We recommend Buck apply retirement rates at all eligible ages.

4. **Spouse Age Assumption** – Benefits for a TRS DCR Occupational Death & Disability member appear to be assuming that male spouses are 3 years older. We recommend Buck update this assumption to be consistent with the most recently adopted assumption that male spouse are 2 years older.

5. **Contribution Refunds Assumption** – Death benefits for a TRS retiree medical non-occupational member appear to include a 95% assumption. We recommend Buck update this assumption to be consistent with the most recently adopted assumption that 0% of terminating members with vested benefits are assumed to have their contributions refunded.

6. **Retiree Medical Children Premiums** – Retiree medical benefits for children in the PERS and TRS DB plans appear to be assuming that premiums will be paid after the retired member turns 60 years old. We recommend Buck update all DB spouse and children retiree medical benefit so that premiums are no longer paid when the retired member turns 60 years old.

We provided these findings to Buck. They are still investigating item 1 with Alaska staff. For item 4, Buck indicated that the age difference is being applied correctly for active members, but will need to be updated for future inactive members, which we agree with. For items 2, 3, 5, & 6, Buck agreed their calculations should be updated as we recommended.

We believe that while the impacts of these recommendations will be immaterial, they should, at the very least, be updated in future valuations, subject to Actuarial Committee discretion.

Contribution Requirements

Beginning with the actuarial valuations as of June 30, 2014, in accordance with Senate Bill 119 and House Bill 385, a contribution calculation methodology was incorporated in order to recognize the timing lag and recognize expected changes in the unfunded liability during the two-year delay.

We replicated the roll forward methodology for the FY2023 Contribution Rate Calculation and verified the contribution rate computation. As the following table shows, our replications of the retained actuary's contributions, both in total dollars and as a percentage of pay, are very close. The minor differences are due to the differences in actuarial accrued liability and normal cost amounts shown in the table above. As noted in the Buck reports, the compensation used to develop the rates for PERS and TRS is a combination of both the DB and DCR compensations.

FY23 Actuarially Determined Employer Contributions ($ in thousands)

	Buck	GRS	Difference
PERS - DB $	$ 442,053	$ 443,256	0.27%
PERS - DB %	18.38%	18.43%	
PERS - DCR $	$ 154,165	$ 154,646	0.31%
PERS - DCR %	6.41%	6.43%	
TRS - DB $	$ 135,109	$ 134,656	-0.34%
TRS - DB %	17.90%	17.84%	
TRS - DCR $	$ 50,723	$ 50,798	0.15%
TRS - DCR %	6.72%	6.73%	
JRS - DB $	$ 9,220,546	$ 9,367,906	1.60%
JRS - DB %	70.08%	71.20%	
NGNMRS - DB $	$ 0	$ 0	0.00%

As a result, we believe that the required contribution rates in the retained actuary's valuation reports accurately reflect the amounts needed to appropriately fund the Alaska retirement systems.

Summary

We believe that the actuarial valuation results were developed in a reasonable manner. In the next actuarial valuation, we recommend that the retained actuary incorporate the findings noted above.

SECTION 6

CONTENT OF THE VALUATION REPORT

Content of the Valuation Report

ASOP No. 4, Measuring Pension Obligations and Determining Pension Plan Costs, provides guidance for performing actuarial valuations of pension plans, and ASOP No. 41, Actuarial Communications, provides guidance for communicating the results. These Standards of Practice list specific elements to be included, either directly or by references to prior communication, in pension actuarial communications. The pertinent items that should be included in an actuarial valuation report on a pension plan should include:

- The name of the person or firm retaining the actuary and the purposes that the communication is intended to serve.
- A statement as to the effective date of the calculations, the date as of which the participant and financial information were compiled, and the sources and adequacy of such information.
- An outline of the benefits being discussed or valued and of any significant benefits not included in the actuarial determinations.
- A summary of the participant information, separated into significant categories such as active, retired, and terminated with future benefits payable. Actuaries are encouraged to include a detailed display of the characteristics of each category and reconciliation with prior reported data.
- A description of the actuarial assumptions, the cost method and the asset valuation method used. Changes in assumptions and methods from those used in previous communications should be stated and their effects noted. If the actuary expects that the long-term trend of costs resulting from the continued use of present assumptions and methods would result in a significantly increased or decreased cost basis, this should also be communicated.
- A summary of asset information and derivation of the actuarial value of assets. Actuaries are encouraged to include an asset summary by category of investment and reconciliation with prior reported assets showing total contributions, benefits, investment return, and any other reconciliation items.
- A statement of the findings, conclusions, or recommendations necessary to satisfy the purpose of the communication and a summary of the actuarial determinations upon which these are based. The communication should include applicable actuarial information regarding financial reporting. Actuaries are encouraged to include derivation of the items underlying these actuarial determinations.
- A disclosure of any facts which, if not disclosed, might reasonably be expected to lead to an incomplete understanding of the communication.
- Cautions about any risk or uncertainty in the results of the actuarial valuation.

Our review of actuarial valuation reports includes the June 30, 2020 valuation reports for the State of Alaska retirement systems. The actuarial valuation reports complied with the applicable Actuarial Standards of Practice and thoroughly communicated the assumptions, methods and plan provisions incorporated into the June 30, 2020 actuarial valuations. The communication of the actuarial valuation results was well organized and provided stakeholders sufficient information to understand how the contribution rates were calculated.

We have noted a few modifications to the actuarial valuation reports that would allow the report to better comply with ASOP Nos. 4 and 41 as well as to more clearly communicate the components of the actuarial valuation.

- We recommend Buck add language to their reports clarifying how they are limiting salaries and benefits according to the 401(a)(17) limit and the 415(b) limit.
- In the assumption section of the PERS and TRS DB reports, its states that the composite retiree medical member contribution amount is being used for a specific group of current active and inactive members, but it appears the retiree only is being valued for all members and covered spouses. We recommend Buck clarify the language in both reports to more accurately reflect how the liabilities are being calculated.
- In the assumption section of the PERS and TRS DCR reports, the retiree medical participation rates show rates for 'Decrement Due to Disability', but these rates appear to be for decrements due to both disability and death. We recommend Buck update this language to clarify what decrements these rates are used for.
- In the PERS and TRS DB & DCR reports, the disability rates are only shown to age 54. We recommend Buck show the disability rates for all ages in their reports.
- Disability rates appear to be applied still after retirement eligibility for the DCR plans, but not the DB plans. We recommend Buck update the language in the reports to clarify whether or not disability rates are still being applied after retirement eligibility.

Summary

In general, the actuarial valuation reports complied with the applicable Actuarial Standards of Practice and thoroughly communicated the assumptions, methods and plan provisions incorporated into the June 30, 2020 actuarial valuations. In order to improve the overall ability of the reports to communicate these items, we recommend that the retained actuary incorporate the noted enhancements above into future actuarial valuation reports.

ALASKA RETIREMENT MANAGEMENT BOARD

Actuarial Committee

SUBJECT: Acceptance of Actuarial Audit ACTION: X

DATE: June 15, 2022 INFORMATION:

BACKGROUND:

AS 39.10.220 (a) (10) provides that the Alaska Retirement Management Board (the Board) shall contract for an independent audit of the state's actuary not less than once every four years. Upon research and discussion with former legal counsel, it was determined that the statute did not preclude the review actuary, currently Gabriel Roeder Smith & Company (GRS) from performing the independent audit of the state's actuary.

In accordance with 15 AAC 112.160, the Board directed staff to pursue a sole source procurement contract with GRS and concurrently manage an expression of interest process for an independent audit of the state's actuary, focused solely on recent valuation reports.

RFI 04-001-21 was issued February 12, 2021 and closed March 1, 2021. Staff reviewed both RFI submissions received and determined that a sole source procurement contract with GRS was in the best interest of the beneficiaries of the pension and benefits funds due to their longstanding experience with the plans and low-cost proposal.

STATUS:

GRS conducted an actuarial audit of the June 30, 2020 actuarial valuations of the State of Alaska retirement systems, which includes:

- Public Employees' Retirement System (PERS) Defined Benefit (DB) Pension and Medical
- Teachers' Retirement System (TRS) DB Pension and Medical
- PERS Defined Contribution Retirement (DCR) - Occupational Death & Disability (OD&D) and Medical
- TRS DCR - OD&D and Medical
- Judicial Retirement System DB Pension and Medical
- National Guard & Naval Militia DB Pension

GRS presented updates on the actuarial audit and findings at the December 2021 and March 2022 Board of Trustee meetings.

RECOMMENDATION:

The Actuarial Committee recommends that the Alaska Retirement Management Board accept the *Actuarial Audit of Pension and Postemployment Healthcare Plans*, dated May 20, 2022 by Gabriel Roeder Smith & Company.

State of Alaska Retirement Systems

Presentation to the Alaska Retirement Management Board (ARMB) Actuarial Committee

Experience Study Recap

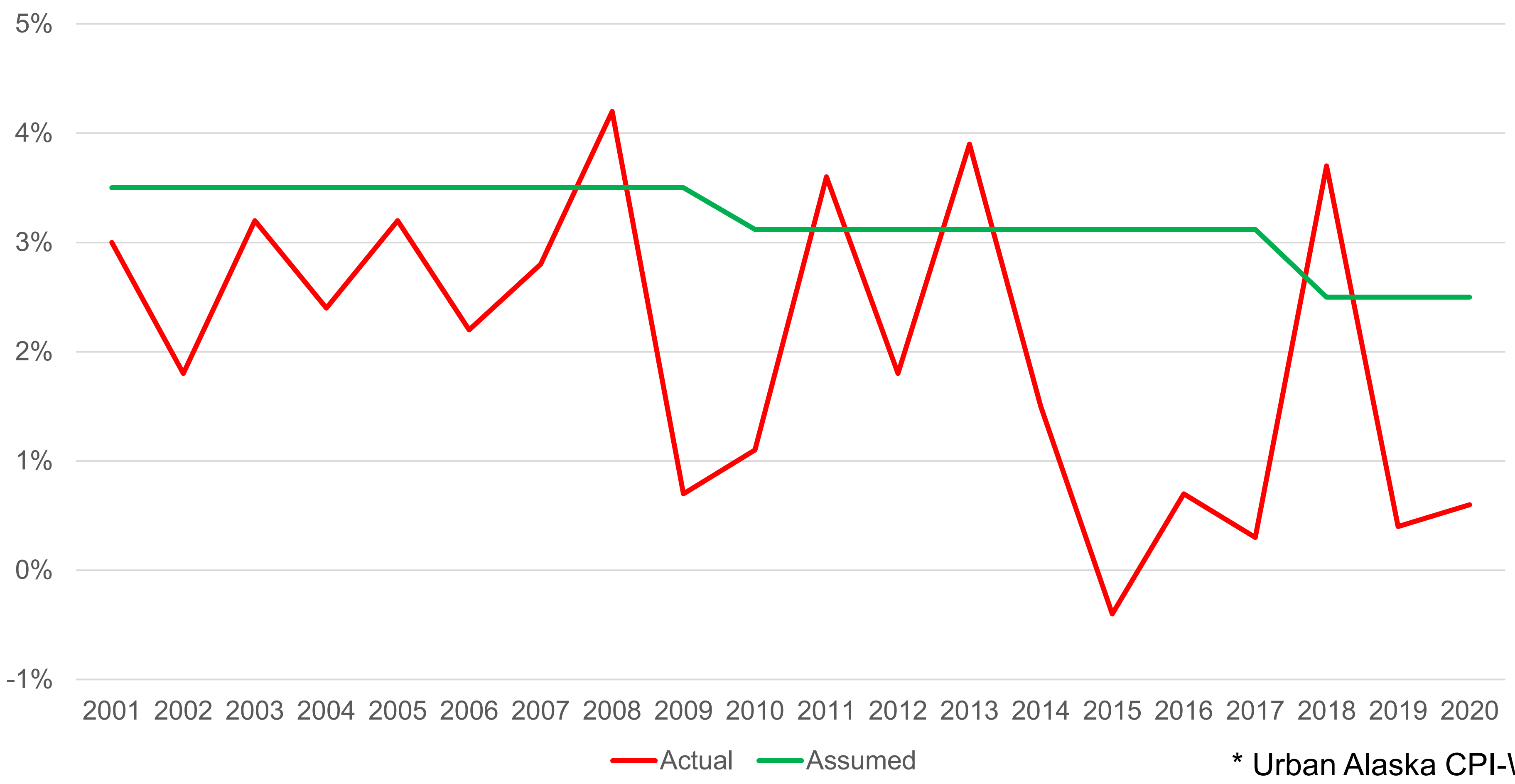
June 15, 2022

Contents

*Asset returns for fiscal years prior to 2005 are based on figures in Mercer's valuation reports stored on the DRB website.

20-Year Historical Data
(2001-2020)

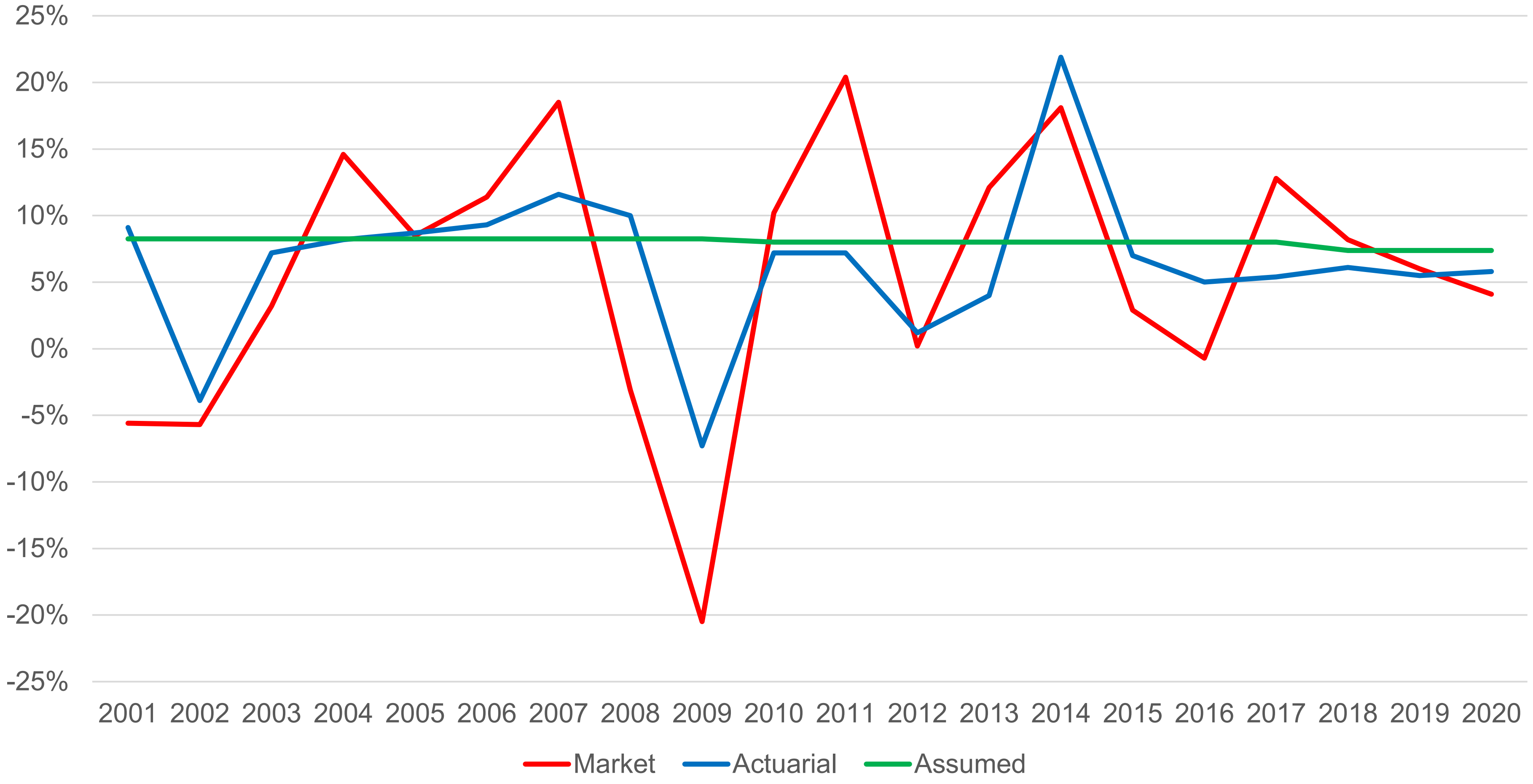
20-Year Historical Data: Inflation*



- Assumed Inflation
  - 2001-2009: 3.50%
  - 2010-2017: 3.12%
  - 2018-2020: 2.50%
- 20-year compound average
  - actual: 2.0%
  - assumed: 3.2%
- Actual was greater than assumed in only 4 of past 20 years

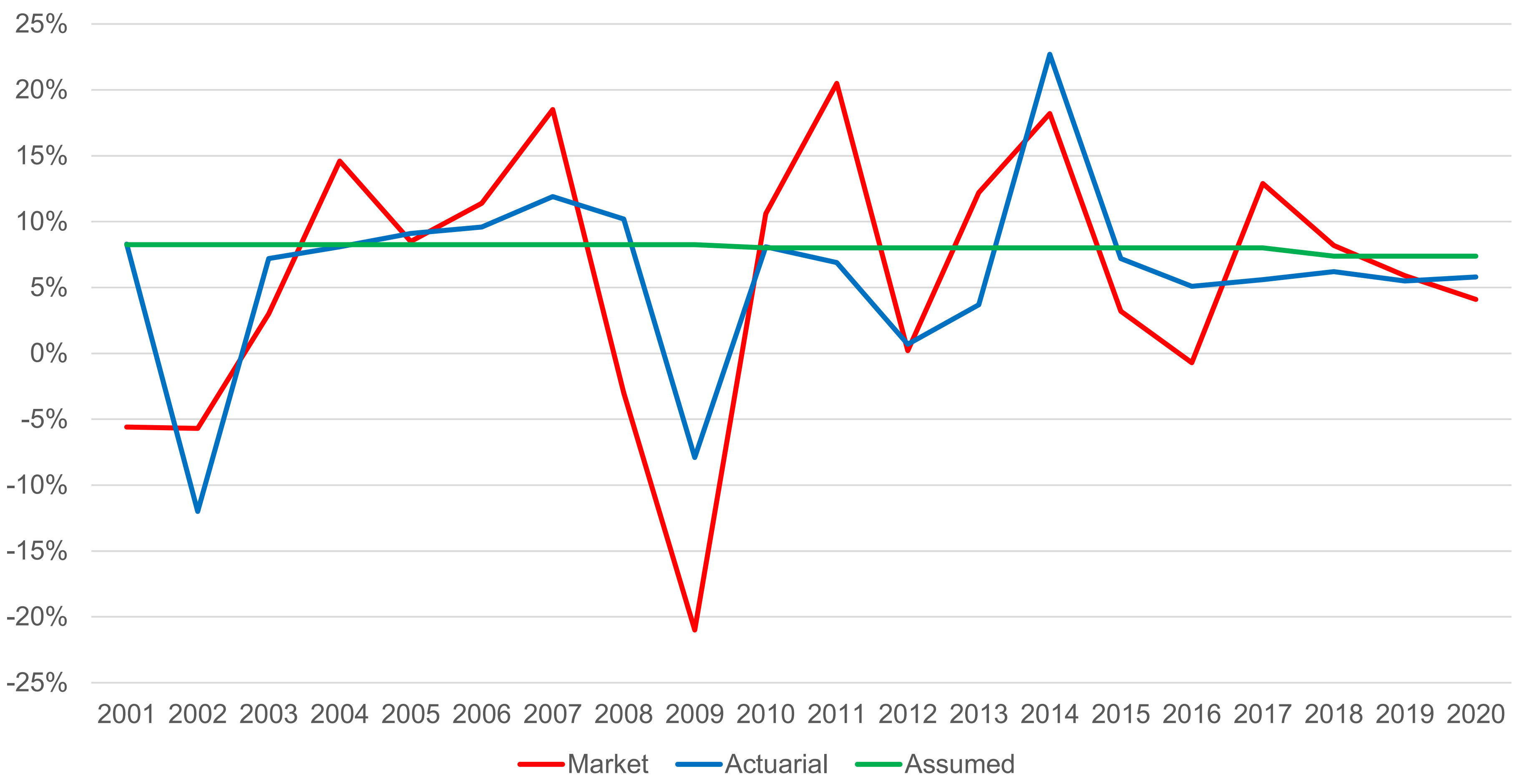
* Urban Alaska CPI-W (1982-1984 = 100)

20-Year Historical Data: Asset Returns – PERS



- Assumed Return
    - 2001-2009: 8.25%
    - 2010-2017: 8.00%
    - 2018-2020: 7.38%
- 20-year compound average
    - market: 5.3%
    - actuarial: 6.3%
    - assumed: 8.0%

20-Year Historical Data: Asset Returns – TRS



- Assumed Return
  - 2001-2009: 8.25%
  - 2010-2017: 8.00%
  - 2018-2020: 7.38%
- 20-year compound average
  - market: 5.3%
  - actuarial: 5.9%
  - assumed: 8.0%

Proposed Assumption Scenarios and Key Metrics

Experience Study – What Have We Done So Far?

- Current study is based on 4 years of experience – 7/1/17 to 6/30/21
- New assumptions adopted by the ARMB will be used beginning with the 2022 valuations
- Economic assumptions were discussed at the December 2021 and March 2022 meetings, and the May 2022 teleconference
- Demographic assumptions were discussed at the March 2022 meeting
- Slides 9 (PERS) and 10 (TRS) summarize the two scenarios (Proposed #1 and Proposed #2) that were discussed in May 2022; Proposed #3 has been added as requested by DOR
- The Appendix contains a summary of the current and proposed economic and demographic assumptions

Summary of Proposed Assumptions and Key Metrics - PERS

	Current	Proposed #1	Proposed #2	Proposed #3
Inflation Rate	2.50%	2.25%	2.50%	2.50%
Nominal Return on Assets	7.38%	7.00%	7.25%	7.00%
Real Rate of Return	4.88%	4.75%	4.75%	4.50%
Payroll Growth Rate	2.75%	2.50%	2.75%	2.75%
Salary Increase Rates	See Appendix	See Appendix	See Appendix	Same as Proposed #2
Healthcare Trend Rates	See Appendix	See Appendix	See Appendix	Same as Proposed #2
Demographic Assumptions	See Appendix	See Appendix	Same as Proposed #1	Same as Proposed #1
Unfunded Actuarial Accrued Liability 6/30/20				
• Pension	5,566	5,954	5,808	6,224
• Healthcare	(953)	(955)	(1,050)	(856)
• Total	4,613	4,999	4,757	5,368
Funded Ratio 6/30/20				
• Pension	63.6%	62.0%	62.6%	60.9%
• Healthcare	113.5%	113.6%	115.1%	112.0%
• Total	79.3%	78.0%	78.8%	76.7%
State/Employer Contribution Rate 6/30/20*	24.11%	25.17%	24.56%	25.87%

*as a percentage of projected DB/DCR pay

Notes:

1. Unfunded Actuarial Accrued Liability is in $M's.
2. Funded Ratio is Actuarial Value of Assets divided by Actuarial Accrued Liability.
3. Figures may not add due to rounding.

Summary of Proposed Assumptions and Key Metrics - TRS

	Current	Proposed #1	Proposed #2	Proposed #3
Inflation Rate	2.50%	2.25%	2.50%	2.50%
Nominal Return on Assets	7.38%	7.00%	7.25%	7.00%
Real Rate of Return	4.88%	4.75%	4.75%	4.50%
Payroll Growth Rate	2.75%	2.50%	2.75%	2.75%
Salary Increase Rates	See Appendix	See Appendix	See Appendix	Same as Proposed #2
Healthcare Trend Rates	See Appendix	See Appendix	See Appendix	Same as Proposed #2
Demographic Assumptions	See Appendix	See Appendix	Same as Proposed #1	Same as Proposed #1
Unfunded Actuarial Accrued Liability 6/30/20				
• Pension	1,860	2,084	2,017	2,214
• Healthcare	(532)	(483)	(518)	(445)
• Total	1,328	1,601	1,498	1,769
Funded Ratio 6/30/20				
• Pension	75.0%	72.8%	73.5%	71.6%
• Healthcare	121.4%	119.0%	120.7%	117.3%
• Total	86.6%	84.3%	85.2%	83.0%
State/Employer Contribution Rate 6/30/20*	25.03%	27.21%	26.42%	28.32%

*as a percentage of projected DB/DCR pay

Notes:

1. Unfunded Actuarial Accrued Liability is in $M's.
2. Funded Ratio is Actuarial Value of Assets divided by Actuarial Accrued Liability.
3. Figures may not add due to rounding.

Appendix

Current vs Proposed Assumptions – Economic

PERS/TRS/JRS

	Current	Proposed #1	Proposed #2
Nominal Return, net of investment expenses	7.38%	7.00%	7.25%
Inflation Rate	2.50%	2.25%	2.50%
Real Rate of Return (nominal return less inflation)	4.88%	4.75%	4.75%
Payroll Growth Rate (inflation plus 25 bp)	2.75%	2.50%	2.75%

NGNMRS

	Current	Proposed #1	Proposed #2
Nominal Return, net of investment expenses	7.00%	5.75%	5.75%
Inflation Rate	2.50%	2.25%	2.50%
Real Rate of Return (nominal return less inflation)	4.50%	3.50%	3.25%

Current vs Proposed Assumptions – Economic (cont'd)

Salary Increase Rates

PERS/PERS DCR – Peace/Fire

Service	Current	Proposed #1 / #2
0	7.75%	8.25% / 8.50%
1	7.25%	7.50% / 7.75%
2	6.75%	7.00% / 7.25%
3	6.25%	6.75% / 7.00%
4	5.75%	6.50% / 6.75%
5	5.25%	6.00% / 6.25%
6	4.75%	5.50% / 5.75%
7	4.25%	5.25% / 5.50%
8	3.75%	5.00% / 5.25%
9	3.65%	4.80% / 5.05%

Service	Current	Proposed #1 / #2
10	3.55%	4.70% / 4.95%
11	3.45%	4.60% / 4.85%
12	3.35%	4.50% / 4.75%
13	3.25%	4.40% / 4.65%
14	3.15%	4.30% / 4.55%
15	3.05%	4.20% / 4.45%
16	2.95%	4.10% / 4.35%
17	2.85%	4.00% / 4.25%
18	2.75%	3.80% / 4.05%
19	2.75%	3.80% / 4.05%
20+	2.75%	3.60% / 3.85%

PERS/PERS DCR - Others

Service	Current	Proposed #1 / #2
0	6.75%	6.50% / 6.75%
1	6.25%	5.75% / 6.00%
2	5.75%	5.25% / 5.50%
3	5.25%	4.75% / 5.00%
4	4.75%	4.50% / 4.75%
5	4.25%	4.00% / 4.25%
6	3.75%	3.80% / 4.05%
7	3.65%	3.70% / 3.95%
8	3.55%	3.50% / 3.75%
9	3.45%	3.30% / 3.55%

Service	Current	Proposed #1 / #2
10	3.35%	3.20% / 3.45%
11	3.25%	3.00% / 3.25%
12	3.15%	2.85% / 3.10%
13	3.05%	2.80% / 3.05%
14	2.95%	2.75% / 3.00%
15	2.85%	2.70% / 2.95%
16	2.75%	2.65% / 2.90%
17+	2.75%	2.60% / 2.85%

Current vs Proposed Assumptions – Economic (cont'd)

Salary Increase Rates (cont'd)

TRS

Service	Current	Proposed #1 / #2
0	6.75%	6.75% / 7.00%
1	6.25%	6.25% / 6.50%
2	5.75%	5.75% / 6.00%
3	5.25%	5.50% / 5.75%
4	4.75%	5.25% / 5.50%
5	4.25%	5.00% / 5.25%
6	3.75%	4.75% / 5.00%
7	3.65%	4.50% / 4.75%
8	3.55%	4.25% / 4.50%
9	3.45%	4.00% / 4.25%
10	3.35%	3.75% / 4.00%

Service	Current	Proposed #1 / #2
11	3.25%	3.50% / 3.75%
12	3.15%	3.25% / 3.50%
13	3.05%	3.20% / 3.45%
14	2.95%	3.10% / 3.35%
15	2.85%	3.00% / 3.25%
16	2.75%	2.90% / 3.15%
17	2.75%	2.80% / 3.05%
18	2.75%	2.75% / 3.00%
19	2.75%	2.70% / 2.95%
20+	2.75%	2.60% / 2.85%

TRS DCR

Service	Current	Proposed #1 / #2
0	6.75%	7.00% / 7.25%
1	6.25%	6.50% / 6.75%
2	5.75%	6.00% / 6.25%
3	5.25%	5.50% / 5.75%
4	4.75%	5.00% / 5.25%
5	4.25%	4.75% / 5.00%
6	3.75%	4.50% / 4.75%
7	3.65%	4.25% / 4.50%
8	3.55%	4.00% / 4.25%
9	3.45%	3.75% / 4.00%
10	3.35%	3.50% / 3.75%

Service	Current	Proposed #1 / #2
11	3.25%	3.25% / 3.50%
12	3.15%	3.00% / 3.25%
13	3.05%	2.80% / 3.05%
14	2.95%	2.75% / 3.00%
15	2.85%	2.70% / 2.95%
16	2.75%	2.65% / 2.90%
17	2.75%	2.60% / 2.85%
18+	2.75%	2.60% / 2.85%

JRS

Current: 0% per year through FY24, 3.62% per year thereafter
Proposed #1: 0% per year through FY24, 2.75% per year thereafter
Proposed #2: 0% per year through FY24, 3.00% per year thereafter

Current vs Proposed Assumptions – Economic (cont'd)

Healthcare Trend Rates

Current

Fiscal Year	Medical Pre-65	Medical Post-65	Prescription Drugs / EGWP
2022	6.30%	5.40%	7.10%
2023	6.10%	5.40%	6.80%
2024	5.90%	5.40%	6.40%
2025	5.80%	5.40%	6.10%
2026	5.60%	5.40%	5.70%
2027-2040	5.40%	5.40%	5.40%
2041	5.30%	5.30%	5.30%
2042	5.20%	5.20%	5.20%
2043	5.10%	5.10%	5.10%
2044	5.10%	5.10%	5.10%
2045	5.00%	5.00%	5.00%
2046	4.90%	4.90%	4.90%
2047	4.80%	4.80%	4.80%
2048	4.70%	4.70%	4.70%
2049	4.60%	4.60%	4.60%
2050+	4.50%	4.50%	4.50%

Current vs Proposed Assumptions – Economic (cont'd)

Healthcare Trend Rates

Proposed #1

Fiscal Year	Medical Pre-65	Medical Post-65	Prescription Drugs / EGWP
2022	6.30%	5.40%	7.10%
2023	7.00%	5.50%	7.50%
2024	6.70%	5.50%	7.20%
2025	6.40%	5.40%	6.90%
2026	6.15%	5.35%	6.60%
2027	5.95%	5.30%	6.30%
2028	5.70%	5.20%	5.95%
2029	5.50%	5.15%	5.65%
2030	5.25%	5.10%	5.35%
2031-2038	5.05%	5.05%	5.05%
2039	5.00%	5.00%	5.00%
2040	4.95%	4.95%	4.95%
2041	4.85%	4.85%	4.85%
2042	4.80%	4.80%	4.80%
2043	4.70%	4.70%	4.70%
2044	4.65%	4.65%	4.65%
2045	4.55%	4.55%	4.55%
2046	4.50%	4.50%	4.50%
2047	4.45%	4.45%	4.45%
2048	4.35%	4.35%	4.35%
2049	4.30%	4.30%	4.30%
2050+	4.25%	4.25%	4.25%

Proposed #2

Fiscal Year	Medical Pre-65	Medical Post-65	Prescription Drugs / EGWP
2022	6.30%	5.40%	7.10%
2023	7.00%	5.50%	7.50%
2024	6.70%	5.50%	7.20%
2025	6.40%	5.40%	6.90%
2026	6.20%	5.40%	6.65%
2027	6.05%	5.35%	6.35%
2028	5.85%	5.35%	6.10%
2029	5.65%	5.30%	5.80%
2030	5.45%	5.30%	5.55%
2031-2038	5.30%	5.30%	5.30%
2039	5.25%	5.25%	5.25%
2040	5.20%	5.20%	5.20%
2041	5.10%	5.10%	5.10%
2042	5.05%	5.05%	5.05%
2043	4.95%	4.95%	4.95%
2044	4.90%	4.90%	4.90%
2045	4.80%	4.80%	4.80%
2046	4.75%	4.75%	4.75%
2047	4.70%	4.70%	4.70%
2048	4.60%	4.60%	4.60%
2049	4.55%	4.55%	4.55%
2050+	4.50%	4.50%	4.50%

The trend rates for the 6/30/21 valuations are not being changed.

The proposed assumptions illustrate the trend rates reflecting ultimate rates of either 4.25% (Proposed #1) or 4.50% (Proposed #2). Short-term trend rates were also adjusted based on market survey data and recent experience.

Current vs Proposed Assumptions – Demographic

Pre-Commencement Mortality

Plan	Current Assumption		Proposed Assumption	
	Base Table	Mortality Improvement	Base Table[1]	Mortality Improvement
PERS and PERS DCR				
- Peace/Fire	RP-2014	MP-2017	Pub-2010 Safety	MP-2021[2]
- Others	RP-2014	MP-2017	Pub-2010 General	MP-2021[2]
TRS and TRS DCR	RP-2014 White Collar	MP-2017	Pub-2010 Teachers	MP-2021[2]
JRS	RP-2014 White Collar	MP-2017	Pub-2010 General Above-Median[3]	MP-2021[2]
NGNMRS	RP-2014	MP-2017	Pub-2010 Safety	MP-2021[2]

1. Amount-weighted version for pension, headcount-weighted version for healthcare.
2. We propose annually updating the mortality improvement scale to the most recently-published scale as of the valuation date. The MP-2021 scale was published in October 2021.
3. Above-Median Income table based on salary of the active participant.

Current vs Proposed Assumptions – Demographic (cont'd)

Post-Commencement Mortality (Pension)

Plan	Current Assumption		Proposed Assumption - Pension	
	Base Table	Mortality Improvement	Base Table[1]	Mortality Improvement
PERS and PERS DCR				
- Peace/Fire	RP-2014 (91% male, 96% female)	MP-2017	Pub-2010 Safety (100% male, 100% female)	MP-2021[2]
- Others	RP-2014 (91% male, 96% female)	MP-2017	Pub-2010 General (98% male, 106% female)	MP-2021[2]
TRS and TRS DCR	RP-2014 White Collar (93% male, 90% female)	MP-2017	Pub-2010 Teachers (97% male, 97% female)	MP-2021[2]
JRS	RP-2014 White Collar (93% male, 90% female)	MP-2017	Pub-2010 General Above-Median[3]	MP-2021[2]
NGNMRS	RP-2014 (91% male, 96% female)	MP-2017	Pub-2010 Safety (100% male, 100% female)	MP-2021[2]

1. Amount-weighted version. For beneficiaries, Contingent Annuitant table will be used with adjusted rates (not shown here) based on experience and partial credibility.
2. We propose annually updating the mortality improvement scale to the most recently-published scale as of the valuation date. The MP-2021 scale was published in October 2021.
3. Above-Median Income table based on benefit of the retired participant.

Current vs Proposed Assumptions – Demographic (cont'd)

Post-Commencement Mortality (Healthcare)

Plan	Current Assumption		Proposed Assumption - Healthcare	
	Base Table	Mortality Improvement	Base Table[1]	Mortality Improvement
PERS and PERS DCR				
- Peace/Fire	RP-2014 (91% male, 96% female)	MP-2017	Pub-2010 Safety (100% male, 100% female)	MP-2021[2]
- Others	RP-2014 (91% male, 96% female)	MP-2017	Pub-2010 General (101% male, 110% female)	MP-2021[2]
TRS and TRS DCR	RP-2014 White Collar (93% male, 90% female)	MP-2017	Pub-2010 Teachers (98% male, 100% female)	MP-2021[2]
JRS	RP-2014 White Collar (93% male, 90% female)	MP-2017	Pub-2010 General Above-Median[3]	MP-2021[2]

1. Headcount-weighted version. For beneficiaries, Contingent Annuitant table will be used with adjusted rates (not shown here) based on experience and partial credibility.
2. We propose annually updating the mortality improvement scale to the most recently-published scale as of the valuation date. The MP-2021 scale was published in October 2021.
3. Above-Median Income table based on benefit of the retired participant.

Current vs Proposed Assumptions – Demographic (cont'd)

Retirement – PERS Peace/Fire

Current

	Reduced		Unreduced	
Age	Male	Female	Male	Female
< 47	N/A	N/A	8.80%	6.00%
47	N/A	N/A	8.80%	15.00%
48	N/A	N/A	14.30%	15.00%
49	N/A	N/A	14.30%	15.00%
50	5.00%	5.00%	16.50%	15.00%
51	5.00%	7.00%	16.50%	15.00%
52	7.00%	7.00%	20.35%	15.00%
53	7.00%	7.00%	20.35%	15.00%
54	7.00%	35.00%	20.35%	25.00%
55	7.00%	8.00%	27.50%	20.00%
56	7.00%	8.00%	27.50%	15.00%
57	7.00%	8.00%	27.50%	15.00%
58	7.00%	8.00%	27.50%	15.00%
59	20.00%	20.00%	27.50%	15.00%
60	N/A	N/A	33.00%	25.00%
61	N/A	N/A	27.50%	20.00%
62	N/A	N/A	27.50%	30.00%
63	N/A	N/A	27.50%	50.00%
64	N/A	N/A	22.00%	50.00%
65	N/A	N/A	22.00%	50.00%
66	N/A	N/A	27.50%	50.00%
67	N/A	N/A	55.00%	50.00%
68	N/A	N/A	55.00%	50.00%
69	N/A	N/A	55.00%	50.00%
70+	N/A	N/A	100.00%	100.00%

Proposed

	Reduced		Unreduced	
Age	Male	Female	Male	Female
< 47	N/A	N/A	9.00%	7.50%
47	N/A	N/A	13.00%	18.50%
48	N/A	N/A	13.00%	18.50%
49	N/A	N/A	13.00%	18.50%
50	5.00%	5.00%	20.00%	21.00%
51	5.00%	5.00%	20.00%	21.00%
52	7.00%	7.00%	20.00%	21.00%
53	7.00%	7.00%	20.00%	21.00%
54	7.00%	7.00%	20.00%	21.00%
55	7.50%	7.50%	29.00%	20.00%
56	7.50%	7.50%	29.00%	20.00%
57	7.50%	7.50%	29.00%	20.00%
58	7.50%	7.50%	29.00%	20.00%
59	20.00%	20.00%	29.00%	20.00%
60	N/A	N/A	29.00%	31.50%
61	N/A	N/A	29.00%	31.50%
62	N/A	N/A	29.00%	31.50%
63	N/A	N/A	29.00%	31.50%
64	N/A	N/A	29.00%	31.50%
65	N/A	N/A	45.00%	45.00%
66	N/A	N/A	45.00%	45.00%
67	N/A	N/A	45.00%	45.00%
68	N/A	N/A	45.00%	45.00%
69	N/A	N/A	45.00%	45.00%
70+	N/A	N/A	100.00%	100.00%

Current vs Proposed Assumptions – Demographic (cont'd)

Retirement – PERS Others

Current

Age	Reduced		Unreduced	
	Male	Female	Male	Female
< 50	N/A	N/A	11.00%	11.00%
50	6.00%	8.00%	33.00%	38.50%
51	6.00%	8.00%	35.75%	38.50%
52	9.00%	8.00%	35.75%	38.50%
53	6.00%	8.00%	35.75%	38.50%
54	20.00%	15.00%	38.50%	38.50%
55	6.00%	6.00%	33.00%	33.00%
56	6.00%	6.00%	22.00%	22.00%
57	6.00%	6.00%	22.00%	19.80%
58	6.00%	6.00%	22.00%	19.80%
59	15.00%	20.00%	22.00%	19.80%
60	N/A	N/A	22.00%	23.10%
61	N/A	N/A	22.00%	22.00%
62	N/A	N/A	22.00%	22.00%
63	N/A	N/A	22.00%	22.00%
64	N/A	N/A	22.00%	22.00%
65	N/A	N/A	24.75%	28.60%
66	N/A	N/A	27.50%	28.60%
67	N/A	N/A	22.00%	24.20%
68	N/A	N/A	24.75%	24.20%
69	N/A	N/A	27.50%	24.20%
70	N/A	N/A	27.50%	24.20%
71	N/A	N/A	27.50%	24.20%
72	N/A	N/A	27.50%	27.50%
73	N/A	N/A	27.50%	27.50%
74	N/A	N/A	27.50%	38.50%
75	N/A	N/A	55.00%	55.00%
76	N/A	N/A	55.00%	55.00%
77	N/A	N/A	55.00%	55.00%
78	N/A	N/A	55.00%	55.00%
79	N/A	N/A	55.00%	55.00%
80+	N/A	N/A	100.00%	100.00%

Proposed

Age	Reduced		Unreduced	
	Male	Female	Male	Female
< 50	N/A	N/A	11.50%	11.50%
50	7.00%	8.50%	37.50%	40.50%
51	7.00%	8.50%	37.50%	40.50%
52	11.00%	8.50%	37.50%	40.50%
53	11.00%	8.50%	37.50%	40.50%
54	24.00%	16.50%	37.50%	40.50%
55	7.00%	6.50%	25.50%	24.00%
56	7.00%	6.50%	25.50%	24.00%
57	7.00%	6.50%	25.50%	24.00%
58	7.00%	6.50%	25.50%	24.00%
59	18.00%	22.00%	25.50%	24.00%
60	N/A	N/A	26.50%	24.50%
61	N/A	N/A	26.50%	24.50%
62	N/A	N/A	26.50%	24.50%
63	N/A	N/A	26.50%	24.50%
64	N/A	N/A	26.50%	24.50%
65	N/A	N/A	30.50%	28.50%
66	N/A	N/A	30.50%	28.50%
67	N/A	N/A	30.50%	28.50%
68	N/A	N/A	30.50%	28.50%
69	N/A	N/A	30.50%	28.50%
70	N/A	N/A	27.50%	27.50%
71	N/A	N/A	27.50%	27.50%
72	N/A	N/A	27.50%	27.50%
73	N/A	N/A	27.50%	27.50%
74	N/A	N/A	27.50%	27.50%
75	N/A	N/A	50.00%	50.00%
76	N/A	N/A	50.00%	50.00%
77	N/A	N/A	50.00%	50.00%
78	N/A	N/A	50.00%	50.00%
79	N/A	N/A	50.00%	50.00%
80+	N/A	N/A	100.00%	100.00%

Current vs Proposed Assumptions – Demographic (cont'd)

Retirement – TRS

Current

	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%

Proposed

	Reduced		Unreduced	
Age	Male	Female	Male	Female
< 45	N/A	N/A	3.00%	3.00%
45	N/A	N/A	5.50%	7.00%
46	N/A	N/A	5.50%	7.00%
47	N/A	N/A	5.50%	7.00%
48	N/A	N/A	5.50%	7.00%
49	N/A	N/A	5.50%	7.00%
50	5.00%	5.00%	12.50%	13.00%
51	5.00%	5.00%	12.50%	13.00%
52	5.00%	10.00%	12.50%	13.00%
53	5.00%	5.00%	12.50%	13.00%
54	10.00%	5.00%	12.50%	13.00%
55	14.50%	11.00%	20.00%	17.50%
56	9.50%	11.00%	20.00%	17.50%
57	9.50%	11.00%	20.00%	17.50%
58	9.50%	11.00%	20.00%	17.50%
59	9.50%	11.00%	20.00%	17.50%
60	N/A	N/A	19.50%	23.50%
61	N/A	N/A	19.50%	23.50%
62	N/A	N/A	19.50%	23.50%
63	N/A	N/A	19.50%	23.50%
64	N/A	N/A	19.50%	23.50%
65	N/A	N/A	28.00%	23.50%
66	N/A	N/A	28.00%	23.50%
67	N/A	N/A	28.00%	23.50%
68	N/A	N/A	28.00%	23.50%
69	N/A	N/A	28.00%	23.50%
70	N/A	N/A	30.00%	36.00%
71	N/A	N/A	30.00%	36.00%
72	N/A	N/A	30.00%	36.00%
73	N/A	N/A	30.00%	36.00%
74	N/A	N/A	30.00%	36.00%
75 - 79	N/A	N/A	50.00%	50.00%
80+	N/A	N/A	100.00%	100.00%

Current vs Proposed Assumptions – Demographic (cont'd)

Retirement – PERS DCR

Current

Age	Rate
< 55	2.0%
55	3.0%
56	3.0%
57	3.0%
58	3.0%
59	3.0%
60	5.0%
61	5.0%
62	10.0%
63	5.0%
64	5.0%
65	25.0%
66	25.0%
67	25.0%
68	20.0%
69	20.0%
70+	100.0%

Proposed

Age	Rate
< 55	2.0%
55	3.0%
56	3.0%
57	3.0%
58	3.0%
59	3.0%
60	5.0%
61	5.0%
62	10.0%
63	5.0%
64	5.0%
65	25.0%
66	25.0%
67	25.0%
68	20.0%
69	20.0%
70+	100.0%

Retirement – TRS DCR

Current

Age	Rate
< 55	2.0%
55	3.0%
56	3.0%
57	3.0%
58	3.0%
59	3.0%
60	5.0%
61	5.0%
62	10.0%
63	5.0%
64	5.0%
65	25.0%
66	25.0%
67	25.0%
68	20.0%
69	20.0%
70+	100.0%

Proposed

Age	Rate
< 55	2.0%
55	3.0%
56	3.0%
57	3.0%
58	3.0%
59	3.0%
60	5.0%
61	5.0%
62	10.0%
63	5.0%
64	5.0%
65	25.0%
66	25.0%
67	25.0%
68	20.0%
69	20.0%
70+	100.0%

Current vs Proposed Assumptions – Demographic (cont’d)

Retirement – NGNMRS

Current

Age	Male	Female
< 51	13.00%	13.00%
51	13.00%	13.00%
52	13.00%	13.00%
53	15.00%	15.00%
54	20.00%	20.00%
55	25.00%	25.00%
56	35.00%	35.00%
57	40.00%	40.00%
58	45.00%	45.00%
59	50.00%	50.00%
60	55.00%	55.00%
61	60.00%	60.00%
62	60.00%	60.00%
63	60.00%	60.00%
64	60.00%	60.00%
65+	100.00%	100.00%

Proposed

Age	Male	Female
< 51	15.34%	18.20%
51	15.34%	18.20%
52	15.34%	18.20%
53	17.70%	21.00%
54	23.60%	28.00%
55	18.50%	16.25%
56	25.90%	22.75%
57	29.60%	26.00%
58	33.30%	29.25%
59	37.00%	32.50%
60	40.70%	35.75%
61	44.40%	35.75%
62	44.40%	35.75%
63	44.40%	35.75%
64	44.40%	35.75%
65+	100.00%	100.00%

Retirement – JRS

Current

Age	Rate
< 59	3%
59	10%
60	20%
61	20%
62	10%
63	10%
64	10%
65	20%
66	20%
67	10%
68	10%
69	10%
70+	100%

Proposed

Age	Rate
< 59	3%
59	10%
60	20%
61	20%
62	10%
63	10%
64	10%
65	20%
66	20%
67	10%
68	10%
69	10%
70+	100%

Current vs Proposed Assumptions – Demographic (cont'd)

Withdrawal – PERS Peace/Fire

Current

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	15.00%	15.00%
1	12.00%	8.00%
2	7.20%	6.40%
3	5.67%	5.60%
4	6.48%	7.20%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	4.70%	6.80%	39	2.04%	2.98%
23	4.46%	6.80%	40	1.68%	3.39%
24	4.22%	6.80%	41	1.67%	3.37%
25	3.98%	6.80%	42	1.67%	3.36%
26	3.74%	6.80%	43	1.71%	3.33%
27	3.50%	6.80%	44	1.76%	3.31%
28	3.32%	6.63%	45	1.81%	3.28%
29	3.14%	6.46%	46	1.85%	3.25%
30	2.96%	6.29%	47	1.90%	3.23%
31	2.79%	6.12%	48	2.22%	3.19%
32	2.61%	5.95%	49	2.53%	3.15%
33	2.50%	5.36%	50	3.18%	6.42%
34	2.39%	4.77%	51	4.24%	6.32%
35	2.28%	4.18%	52	4.24%	6.19%
36	2.17%	3.60%	53	4.24%	6.04%
37	2.06%	3.01%	54	4.24%	3.00%
38	2.05%	2.99%	55+	3.00%	2.00%

Proposed

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	15.00%	15.00%
1	12.00%	8.00%
2	7.20%	6.40%
3	5.67%	5.60%
4	6.48%	7.20%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	2.40%	5.80%	39	1.60%	3.00%
23	2.40%	5.80%	40	1.30%	3.00%
24	2.40%	5.80%	41	1.30%	3.00%
25	2.40%	5.80%	42	1.30%	3.00%
26	2.40%	5.80%	43	1.30%	3.00%
27	2.40%	5.80%	44	1.30%	3.00%
28	2.40%	5.80%	45	1.50%	2.90%
29	2.40%	5.80%	46	1.50%	2.90%
30	2.00%	5.10%	47	1.50%	2.90%
31	2.00%	5.10%	48	1.50%	2.90%
32	2.00%	5.10%	49	1.50%	2.90%
33	2.00%	5.10%	50	3.00%	5.00%
34	2.00%	5.10%	51	3.00%	5.00%
35	1.60%	3.00%	52	3.00%	5.00%
36	1.60%	3.00%	53	3.00%	5.00%
37	1.60%	3.00%	54	3.00%	5.00%
38	1.60%	3.00%	55+	2.25%	1.80%

Current vs Proposed Assumptions – Demographic (cont'd)

Withdrawal – PERS Others

Current

Select Rates during the First 5 Years of Employment

Hire Age Under 35			Hire Age Over 35		
Years of Service	Male	Female	Years of Service	Male	Female
0	29.00%	29.00%	0	20.00%	20.00%
1	16.25%	20.00%	1	12.00%	15.00%
2	13.00%	16.00%	2	10.00%	12.50%
3	10.40%	12.80%	3	8.50%	10.00%
4	8.45%	10.40%	4	8.50%	9.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	11.40%	12.99%	39	5.47%	5.23%
23	10.83%	12.21%	40	4.86%	5.65%
24	10.26%	11.43%	41	4.71%	5.51%
25	9.69%	10.65%	42	4.56%	5.38%
26	9.12%	9.87%	43	4.50%	5.19%
27	8.55%	9.09%	44	4.44%	4.99%
28	8.30%	8.72%	45	4.39%	4.80%
29	8.05%	8.34%	46	4.33%	4.60%
30	7.80%	7.97%	47	4.27%	4.41%
31	7.54%	7.60%	48	4.26%	4.40%
32	7.29%	7.23%	49	4.24%	4.39%
33	6.99%	6.88%	50	3.63%	4.45%
34	6.69%	6.53%	51	3.60%	4.43%
35	6.39%	6.17%	52	3.56%	4.40%
36	6.10%	5.82%	53	3.52%	4.37%
37	5.80%	5.47%	54	4.17%	6.20%
38	5.63%	5.35%	55+	3.00%	5.00%

Proposed

Select Rates during the First 5 Years of Employment

Hire Age Under 35			Hire Age Over 35		
Years of Service	Male	Female	Years of Service	Male	Female
0	29.00%	29.00%	0	20.00%	20.00%
1	16.25%	20.00%	1	12.00%	15.00%
2	13.00%	16.00%	2	10.00%	12.50%
3	10.40%	12.80%	3	8.50%	10.00%
4	8.45%	10.40%	4	8.50%	9.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	7.80%	8.20%	39	5.70%	5.50%
23	7.80%	8.20%	40	4.50%	5.20%
24	7.80%	8.20%	41	4.50%	5.20%
25	7.80%	8.20%	42	4.50%	5.20%
26	7.80%	8.20%	43	4.50%	5.20%
27	7.80%	8.20%	44	4.50%	5.20%
28	7.80%	8.20%	45	4.20%	4.40%
29	7.80%	8.20%	46	4.20%	4.40%
30	7.00%	7.10%	47	4.20%	4.40%
31	7.00%	7.10%	48	4.20%	4.40%
32	7.00%	7.10%	49	4.20%	4.40%
33	7.00%	7.10%	50	3.60%	4.70%
34	7.00%	7.10%	51	3.60%	4.70%
35	5.70%	5.50%	52	3.60%	4.70%
36	5.70%	5.50%	53	3.60%	4.70%
37	5.70%	5.50%	54	3.60%	4.70%
38	5.70%	5.50%	55+	2.90%	4.90%

Current vs Proposed Assumptions – Demographic (cont'd)

Withdrawal – TRS

Current

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%

Proposed

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	3.60%	4.60%	39	3.60%	3.90%
23	3.60%	4.60%	40	3.10%	2.60%
24	3.60%	4.60%	41	3.10%	2.60%
25	3.60%	4.60%	42	3.10%	2.60%
26	3.60%	4.60%	43	3.10%	2.60%
27	3.60%	4.60%	44	3.10%	2.60%
28	3.60%	4.60%	45	3.10%	2.60%
29	3.60%	4.60%	46	3.10%	2.60%
30	3.60%	5.40%	47	3.10%	2.60%
31	3.60%	5.40%	48	3.10%	2.60%
32	3.60%	5.40%	49	3.10%	2.60%
33	3.60%	5.40%	50	4.60%	4.80%
34	3.60%	5.40%	51	4.60%	4.80%
35	3.60%	3.90%	52	4.60%	4.80%
36	3.60%	3.90%	53	4.60%	4.80%
37	3.60%	3.90%	54	4.60%	4.80%
38	3.60%	3.90%	55+	2.80%	4.80%

Current vs Proposed Assumptions – Demographic (cont'd)

Withdrawal – PERS DCR Peace/Fire

Current

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	18.90%	20.63%
1	14.18%	16.50%
2	10.50%	13.75%
3	9.45%	12.38%
4	8.40%	11.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	5.52%	11.97%	44	5.78%	11.09%
23	5.65%	11.97%	45	5.71%	11.03%
24	5.78%	11.97%	46	5.64%	10.98%
25	5.91%	11.97%	47	5.57%	10.92%
26	6.04%	11.97%	48	6.01%	10.84%
27	6.16%	11.97%	49	6.45%	10.75%
28	6.16%	11.94%	50	6.89%	10.67%
29	6.15%	11.91%	51	7.32%	10.58%
30	6.14%	11.88%	52	7.76%	10.50%
31	6.14%	11.84%	53	7.97%	10.66%
32	6.12%	11.81%	54	8.18%	10.82%
33	6.11%	11.79%	55	8.38%	10.98%
34	6.09%	11.77%	56	8.59%	11.15%
35	6.08%	11.75%	57	8.80%	11.31%
36	6.07%	11.72%	58	9.03%	11.47%
37	6.05%	11.70%	59	9.25%	11.63%
38	6.03%	11.60%	60	9.48%	11.79%
39	6.00%	11.50%	61	9.71%	11.95%
40	5.98%	11.40%	62	9.94%	12.12%
41	5.95%	11.30%	63	12.37%	12.28%
42	5.93%	11.20%	64	14.81%	12.44%
43	5.85%	11.14%	65+	17.25%	12.60%

Proposed

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	17.00%	27.00%
1	12.00%	21.00%
2	11.00%	15.00%
3	11.00%	13.00%
4	10.00%	9.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	6.60%	10.20%	44	6.50%	9.50%
23	6.60%	10.20%	45	6.50%	9.30%
24	6.60%	10.20%	46	6.50%	9.30%
25	6.60%	10.20%	47	6.50%	9.30%
26	6.60%	10.20%	48	6.50%	9.30%
27	6.60%	10.20%	49	6.50%	9.30%
28	6.60%	10.20%	50	8.50%	9.10%
29	6.60%	10.20%	51	8.50%	9.10%
30	6.80%	10.00%	52	8.50%	9.10%
31	6.80%	10.00%	53	8.50%	9.10%
32	6.80%	10.00%	54	8.50%	9.10%
33	6.80%	10.00%	55	9.80%	9.60%
34	6.80%	10.00%	56	9.80%	9.60%
35	6.70%	9.90%	57	9.80%	9.60%
36	6.70%	9.90%	58	9.80%	9.60%
37	6.70%	9.90%	59	9.80%	9.60%
38	6.70%	9.90%	60	12.50%	10.30%
39	6.70%	9.90%	61	12.50%	10.30%
40	6.50%	9.50%	62	12.50%	10.30%
41	6.50%	9.50%	63	12.50%	10.30%
42	6.50%	9.50%	64	12.50%	10.30%
43	6.50%	9.50%	65+	19.20%	10.70%

Current vs Proposed Assumptions – Demographic (cont'd)

Withdrawal – PERS DCR Others

Current

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	24.36%	27.98%
1	21.00%	22.31%
2	16.80%	17.85%
3	13.44%	14.28%
4	9.45%	12.34%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	13.71%	16.50%	44	7.83%	8.22%
23	13.71%	16.51%	45	7.72%	7.90%
24	13.71%	16.51%	46	7.60%	7.58%
25	13.71%	16.52%	47	7.48%	7.26%
26	13.71%	16.53%	48	7.68%	7.23%
27	13.71%	16.54%	49	7.87%	7.20%
28	13.41%	15.94%	50	8.07%	7.17%
29	13.21%	15.34%	51	8.26%	7.14%
30	12.82%	17.75%	52	8.46%	7.11%
31	12.52%	14.15%	53	8.46%	7.26%
32	12.22%	13.55%	54	8.47%	7.42%
33	11.65%	12.90%	55	8.48%	7.57%
34	11.09%	12.24%	56	8.48%	7.72%
35	10.52%	11.58%	57	8.49%	7.88%
36	9.95%	10.92%	58	8.77%	8.15%
37	9.39%	10.26%	59	9.08%	8.42%
38	9.12%	9.98%	60	9.32%	8.69%
39	8.86%	9.70%	61	9.60%	8.96%
40	8.60%	9.42%	62	9.88%	9.24%
41	8.32%	9.14%	63	10.28%	10.51%
42	8.07%	8.86%	64	10.68%	11.78%
43	7.95%	8.54%	65+	11.08%	13.05%

Proposed

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	28.00%	29.00%
1	20.00%	24.00%
2	16.00%	19.00%
3	14.00%	16.00%
4	12.00%	14.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	13.70%	15.80%	44	8.50%	10.60%
23	13.70%	15.80%	45	8.90%	8.90%
24	13.70%	15.80%	46	8.90%	8.90%
25	13.70%	15.80%	47	8.90%	8.90%
26	13.70%	15.80%	48	8.90%	8.90%
27	13.70%	15.80%	49	8.90%	8.90%
28	13.70%	15.80%	50	8.40%	8.70%
29	13.70%	15.80%	51	8.40%	8.70%
30	12.20%	11.20%	52	8.40%	8.70%
31	12.20%	11.20%	53	8.40%	8.70%
32	12.20%	11.20%	54	8.40%	8.70%
33	12.20%	11.20%	55	8.70%	9.50%
34	12.20%	11.20%	56	8.70%	9.50%
35	9.70%	10.20%	57	8.70%	9.50%
36	9.70%	10.20%	58	8.70%	9.50%
37	9.70%	10.20%	59	8.70%	9.50%
38	9.70%	10.20%	60	10.10%	11.80%
39	9.70%	10.20%	61	10.10%	11.80%
40	8.50%	10.60%	62	10.10%	11.80%
41	8.50%	10.60%	63	10.10%	11.80%
42	8.50%	10.60%	64	10.10%	11.80%
43	8.50%	10.60%	65+	11.20%	15.70%

Current vs Proposed Assumptions – Demographic (cont'd)

Withdrawal – TRS DCR

Current

Select Rates during the First 6 Years of Employment

Years of Service	Male	Female
0	20.70%	21.80%
1	19.55%	18.70%
2	16.10%	15.40%
3	13.80%	13.20%
4	11.50%	11.00%
5	7.32%	8.05%

Ultimate Rates after the First 6 Years of Employment

Age	Male	Female	Age	Male	Female
< 26	9.41%	8.31%	45	9.05%	8.09%
26	9.41%	8.32%	46	8.99%	8.07%
27	9.40%	8.33%	47	8.94%	8.04%
28	9.39%	8.32%	48	8.86%	8.00%
29	9.39%	8.32%	49	8.78%	7.95%
30	9.38%	8.31%	50	8.70%	7.91%
31	9.37%	8.31%	51	8.62%	7.86%
32	9.36%	8.30%	52	8.54%	7.82%
33	9.35%	8.29%	53	8.37%	7.73%
34	9.35%	8.28%	54	8.20%	7.64%
35	9.34%	8.27%	55	8.03%	7.55%
36	9.34%	8.26%	56	7.86%	7.46%
37	9.33%	8.25%	57	7.69%	7.36%
38	9.31%	8.24%	58	7.76%	7.50%
39	9.29%	8.22%	59	7.82%	7.64%
40	9.26%	8.21%	60	7.89%	7.78%
41	9.24%	8.19%	61	7.95%	7.92%
42	9.22%	8.17%	62	8.02%	8.05%
43	9.16%	8.15%	63	8.59%	8.29%
44	9.11%	8.12%	64	9.17%	8.52%
			65+	9.75%	8.75%

Proposed

Select Rates during the First 6 Years of Employment

Years of Service	Male	Female
0	28.00%	31.00%
1	28.00%	21.00%
2	19.00%	18.00%
3	17.00%	13.00%
4	13.00%	13.00%
5	13.00%	10.00%

Ultimate Rates after the First 6 Years of Employment

Age	Male	Female	Age	Male	Female
< 26	10.50%	8.70%	45	10.00%	8.40%
26	10.50%	8.70%	46	10.00%	8.40%
27	10.50%	8.70%	47	10.00%	8.40%
28	10.50%	8.70%	48	10.00%	8.40%
29	10.50%	8.70%	49	10.00%	8.40%
30	10.50%	8.70%	50	9.50%	8.10%
31	10.50%	8.70%	51	9.50%	8.10%
32	10.50%	8.70%	52	9.50%	8.10%
33	10.50%	8.70%	53	9.50%	8.10%
34	10.50%	8.70%	54	9.50%	8.10%
35	10.40%	8.60%	55	8.80%	7.90%
36	10.40%	8.60%	56	8.80%	7.90%
37	10.40%	8.60%	57	8.80%	7.90%
38	10.40%	8.60%	58	8.80%	7.90%
39	10.40%	8.60%	59	8.80%	7.90%
40	10.30%	8.60%	60	9.30%	8.70%
41	10.30%	8.60%	61	9.30%	8.70%
42	10.30%	8.60%	62	9.30%	8.70%
43	10.30%	8.60%	63	9.30%	8.70%
44	10.30%	8.60%	64	9.30%	8.70%
			65+	10.90%	7.40%

Current vs Proposed Assumptions – Demographic (cont'd)

Withdrawal – JRS

Current

Years of Service	Rate
0	3%
1	3%
2	3%
3	3%
4	3%
5	3%
6	3%
7	3%
8	3%
9	3%
10+	1%

Proposed

Years of Service	Rate
0	3%
1	3%
2	3%
3	3%
4	3%
5	3%
6	3%
7	3%
8	3%
9	3%
10+	1%

Current vs Proposed Assumptions – Demographic (cont'd)

Withdrawal – NGNMRS

Current

Select Rates during the First 5 Years of Employment

Years of Service	Unisex
0	20.00%
1	10.00%
2	10.00%
3	10.00%
4	10.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
20	14.94%	18.92%	40	9.09%	11.52%
21	14.13%	17.90%	41	8.87%	11.24%
22	13.44%	17.03%	42	8.68%	11.00%
23	12.86%	16.29%	43	8.51%	10.78%
24	12.40%	15.70%	44	8.31%	10.53%
25	12.03%	15.24%	45	8.04%	10.18%
26	11.74%	14.87%	46	7.66%	9.70%
27	11.52%	14.59%	47	7.13%	9.03%
28	11.35%	14.37%	48	6.46%	8.19%
29	11.21%	14.20%	49	5.67%	7.18%
30	11.09%	14.05%	50	4.89%	6.19%
31	10.98%	13.91%	51	4.27%	5.42%
32	10.86%	13.76%	52	3.83%	4.85%
33	10.73%	13.59%	53	3.51%	4.45%
34	10.57%	13.39%	54	3.27%	4.15%
35	10.37%	13.14%	55	3.10%	3.93%
36	10.15%	12.85%	56	3.02%	3.82%
37	9.89%	12.53%	57	3.03%	3.84%
38	9.62%	12.18%	58	3.11%	3.94%
39	9.35%	11.84%	59	3.27%	4.14%
			60	3.38%	4.29%

Proposed

Select Rates during the First 5 Years of Employment

Years of Service	Unisex
0	20.00%
1	10.00%
2	10.00%
3	10.00%
4	10.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
20	9.53%	9.94%	40	7.73%	8.06%
21	9.53%	9.94%	41	7.54%	7.87%
22	9.53%	9.94%	42	7.38%	7.70%
23	9.53%	9.94%	43	7.23%	7.55%
24	9.53%	9.94%	44	7.06%	7.37%
25	9.53%	9.94%	45	6.83%	7.13%
26	9.53%	9.94%	46	6.51%	6.79%
27	9.53%	9.94%	47	6.06%	6.32%
28	9.53%	9.94%	48	5.49%	5.73%
29	9.53%	9.94%	49	4.82%	5.03%
30	9.43%	9.84%	50	4.16%	4.33%
31	9.33%	9.74%	51	3.63%	3.79%
32	9.23%	9.63%	52	3.26%	3.40%
33	9.12%	9.51%	53	2.98%	3.12%
34	8.98%	9.37%	54	2.78%	2.91%
35	8.81%	9.20%	55	2.64%	2.75%
36	8.63%	9.00%	56	2.57%	2.67%
37	8.41%	8.77%	57	2.58%	2.69%
38	8.18%	8.53%	58	2.64%	2.76%
39	7.95%	8.29%	59	2.78%	2.90%
			60	2.88%	3.00%

Current vs Proposed Assumptions – Demographic (cont'd)

- **Disability**
  - o Insufficient disability experience, so we propose no changes to the current disability rates
- **Occupational-related death and disability**

	Current	Actual	Proposed
PERS – P/F	75%	72%	70%
PERS – Others	40%	36%	35%
TRS	15%	n/a	15%

- **Withdrawal of contributions upon termination**

	Current	Actual	Proposed
PERS – P/F	10%	5%	5%
PERS - Others	5%	4%	5%
TRS	0%	1%	0%

- **Rehires (percentage load to Normal Cost)**

	Current	Actual	Proposed
PERS – pension	18.77%	15.33%	15.30%
PERS – healthcare	17.09%	2.36%	2.40%
TRS – pension	15.57%	11.98%	12.00%
TRS - healthcare	12.03%	0.20%	0.20%

Comments regarding the rehire assumption:

- The current rehire loads for the DB plans, which were developed based on the 5 years of experience ending in 2017, were too high based on the most recent 4 years of rehire experience. The actual liabilities from rehires during the last 4 years were compared to the current rehire loads, and adjustments were made to the current rehire loads to better match recent experience.
- With lower proposed rehire loads for healthcare, a greater portion of the fixed employer contributions (22% for PERS and 12.56% for TRS) will be deposited to the DB pension trusts rather than the DB healthcare trusts. Based on the comparative funded ratios of the DB pension and DB healthcare trusts, we believe it is more prudent to deposit more contributions to the DB pension trusts.
- There have been recent suggestions to implement rehire loads for the DCR plans. Doing so would increase the portion of the fixed employer contributions being deposited to the DCR trusts. Because the DCR trusts are so well funded, they are able to absorb any reasonable losses due to rehires. Therefore, we believe it is more prudent to deposit more contributions to the DB trusts. Accordingly, we are proposing no rehire loads for the DCR plans at this time.

Current vs Proposed Assumptions – Demographic (cont'd)

- **Unused sick days (TRS)**
  - Current: 4.5 days
  - Actual: 5.30 days
  - Proposed: 5.25 days
- **Population growth rate**
  - Current: 0%
  - Actual: -0.05% (PERS); -1.48% (TRS)
  - Proposed: 0%
- **Alaska residency for COLA**

	Current	Actual	Proposed
PERS – P/F	65%	60%	60%
PERS – Others	70%	65%	65%
TRS	60%	59%	60%

- **Part-time service (years)**

	Current	Actual	Proposed
PERS – P/F	1.00	n/a	1.00
PERS – Others	0.75	0.68	0.75
TRS	0.75	0.76	0.75

Current vs Proposed Assumptions – Demographic (cont'd)

- **Percent electing lump sums (NGNMRS)**

	Current	Actual	Proposed
Active	70%	49%	50%
Terminated Vested	70%	52%	50%

- **Healthcare dependent assumptions**
  - **Dependent spouse medical coverage election**

	Current		Actual		Proposed	
	Male	Female	Male	Female	Male	Female
PERS - P/F	75%	50%	72%	45%	75%	50%
PERS - Others	65%	60%	57%	46%	60%	50%
TRS	65%	60%	56%	47%	60%	50%
JRS	90%	70%	69%	17%	80%	60%

  - **Spouse age difference**

	Current		Actual		Proposed	
	Male	Female	Male	Female	Male	Female
PERS – P/F	3	-2	2.7	-2.6	3	-2
PERS – Others	3	-2	3.5	-1.8	3	-2
TRS	3	-2	3.4	-1.7	3	-2
JRS	4	-4	2.5	4.4	4	-4

Current vs Proposed Assumptions – Demographic (cont'd)

- **Healthcare participation**

	Current		Actual		Proposed	
	System paid	Non-System paid	System paid	Non-System paid	System paid	Non-System paid
PERS – P/F	100%	20%	96%	21%	100%	20%
PERS – Others	100%	20%	98%	28%	100%	25%
TRS	100%	20%	94%	22%	100%	20%

- **Medicare Part B only**
  - Current: 5%
  - Actual: 2%
  - Proposed: 2%
- **Healthcare morbidity**

Age	Current		Proposed	
	Medical	Rx	Medical	Rx
0-44	2.0%	4.5%	2.0%	4.5%
45-54	2.5%	3.5%	2.5%	3.5%
55-64	2.5%	1.5%	2.5%	1.0%
65-74	3.0%	2.0%	2.0%	2.1%
75-84	2.0%	-0.5%	2.2%	-0.3%
85-94	0.3%	-2.5%	0.5%	-2.5%
95+	0.0%	0.0%	0.0%	0.0%

Actuarial Certification

Actuarial Certification

The purpose of this presentation is to provide the ARMB with a recap of the experience study analyses that were provided at the December 2021, March 2022, and May 2022 meetings. Use of this presentation, for any other purpose or by anyone other than the ARMB 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 presentation for that purpose. Because of the risk of misinterpretation of results, you should ask Buck to review any statement you wish to make on the results contained in this presentation. Buck will not accept any liability for any such statement made without the review by Buck.

The Unfunded Actuarial Accrued Liability and Funded Ratio are based on the June 30, 2020 valuations, and are meant to show the estimated impact of the assumption changes. They are not to be used for determining actual funding contributions.

Please see the June 30, 2021 actuarial valuation reports for a detailed description of risk factors related to future funding of the plans (ASOP 51) and the models used in our analysis (ASOP 56).

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.

The results shown in this presentation were prepared under the overall direction of David Kershner, who meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. These results have been prepared in accordance with all applicable Actuarial Standards of Practice.

David Kershner
FSA, EA, MAAA, FCA
Principal, Retirement

ALASKA RETIREMENT MANAGEMENT BOARD

Actuarial Committee

SUBJECT: Acceptance of Experience Analysis — ACTION: X

DATE: June 15, 2022 — INFORMATION:

BACKGROUND:

AS 37.10.220(a)(9) prescribes that the Alaska Retirement Management Board (Board) "review actuarial assumptions prepared and certified by a member of the American Academy of Actuaries and conduct experience analyses of the retirement systems not less than once every four years".

In addition, under AS 37.10.220(a)(9), "the results of all actuarial assumptions prepared under this paragraph shall be reviewed and certified by a second member of the American Academy of Actuaries before presentation to the board".

STATUS:

Buck Global, LLC (Buck), the Department of Administration's and Plans' actuary, has completed the following experience analyses and the results have been presented to the Board and the Actuarial Committee on December 1, 2021, March 16, 2022, May 4, 2022, and June 15, 2022:

(1) an experience analysis of the Public Employees' Retirement System and Teachers' Retirement System Defined Benefit Retirement Plans for the period July 1, 2017 to June 30, 2021;
(2) an experience analysis of the Public Employees' Retirement System and Teachers' Retirement System Defined Contribution Retirement Plans for the period July 1, 2017 to June 30, 2021;
(3) an experience analysis of the Judicial Retirement System for the period July 1, 2017 to June 30, 2021; and
(4) an experience analysis of the National Guard and Naval Militia Retirement System for the period July 1, 2017 to June 30, 2021.

Gabriel Roeder Smith & Company (GRS), the Board's actuary, has reviewed these experience analyses and has provided their report to the Board.

RECOMMENDATION:

The Actuarial Committee recommends that the Alaska Retirement Management Board approve Resolution 2022-01, accepting the experience analysis prepared by Buck, as well as the assumption and methods changes recommended therein as [__________].

NOTE: The final experience study report for the period July 1, 2017 to June 30, 2021 will be issued by Buck once the assumptions have been adopted by the Board.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the actuarial experience analysis for the Public Employees' Retirement System, Teachers' Retirement System, Judicial Retirement System, and Alaska National Guard and Naval Militia Retirement System

Resolution 2022-01

WHEREAS, the Alaska Retirement Management Board (Board) was established by law to serve as trustee to the assets of the State's retirement systems; and

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for the funds of the Public Employees' Retirement System, Teachers' Retirement System, Judicial Retirement System, and Alaska National Guard and Naval Militia Retirement System; and

WHEREAS, AS 37.10.071 and AS 37.10.210-220 require the Board to apply the prudent investor rule and exercise the fiduciary duty in the sole financial best interest of the funds entrusted to it and treat beneficiaries thereof with impartiality; and

WHEREAS, AS 37.10.220(a)(8) requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios, and to certify to the appropriate budgetary authority of each employer in the system an appropriate contribution rate for normal costs and an appropriate contribution rate for liquidating any past service liability;

WHEREAS, AS 37.10.220(a)(9) requires the Board to conduct an experience analysis of the retirement systems not less than once every four years, except for health cost assumptions which shall be reviewed annually, and that the results of all actuarial assumptions prepared under this paragraph shall be reviewed and certified by a second actuary before presentation to the board;

NOW THEREFORE BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Public Employees' Retirement System's, Teachers' Retirement System's, Judicial Retirement System's, and Alaska National Guard and Naval Militia Retirement System's Actuarial Experience Analysis as of June 30, 2021, as well as the assumption and method changes recommended therein, and attached as [____________], prepared by Buck be approved.

DATED at Anchorage, Alaska this 16th day of June, 2022.

____
Chair

ATTEST:

____
Secretary

Alaska Retirement Management Board

COMMITTEE SELF-ASSESSMENT

Actuarial Committee

Self-assessment within the meaning of the committee's charter may be achieved by discussion, at least twice a year, of the following questions:

	YES	NO
1. Are discussions at the committee level meaningful and, if not, what can be done about it?		
2. Is the committee touching on key issues; what key issuesare being missed?		
3. Is the committee giving appropriate time to key issues?		
4. Does the work of the Actuarial Committee appropriately meet the needs of the Board by reducing necessary Board meeting time spent on the matters that come before the Actuarial Committee?		

Alaska Retirement Management Board

CHARTER OF THE ACTUARIAL COMMITTEE

I. Actuarial Committee Purpose.

The Actuarial Committee (Committee) assists the Alaska Retirement Management Board (Board) in fulfilling the Board's function of independent oversight of the integrity of the Alaska Retirement Management Board' s (Board) retirement systems ' actuarial valuations, experience analyses, and other requested reports and analysis, including compliance with legal, accounting., and regulatory requirements. It also serves as a conduit of communication between the Actuary, the Review Actuary, the Audit Actuary, Department of Administration (DOA) and Department of Revenue (DOR) staff, and the Board.

The Committee has the authority to conduct any review appropriate to fulfilling its responsibilities and it has direct access to the independent actuaries, as well as DOR and DOA management and staff, and legal counsel. The Committee may recommend that the Board retain, at Board expense and consistent with applicable procurement requirements, special legal, accounting, or other consultants or experts it considers necessary in the performance of its duties.

II. Actuarial Committee Responsibilities and Duties.

A. The Committee shall assist the Board in carrying out the following responsibilities:

1. Coordinate with the retirement system administrator to have an annual actuarial valuation of each retirement system prepared to determine system assets, accrued liabilities, and funding ratios and to certify to the appropriate budgetary author it y of each employer in the system (A) an appropriate contribution rate for normal costs; (B) an appropriate contribution rate for liquidating any past service liability; in this subparagraph, the appropriate contribution rate for liquidating the past service liability of the defined benefit retirement plan under AS 14.25.009 - 14.25.220 or the past service liability of the defined benefit retirement plan under AS 39.35.095 - 39.35.680 must be determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years;

2. Review actuarial assumptions prepared and certified by a member of the American Academy of Actuaries and conduct experience analyses of the retirement systems not less than once every four years, except for health cost assumptions, which shall be reviewed annually; the results of all actuarial assumptions prepared under this paragraph shall be reviewed and certified by a second member of the American Academy of Actuaries before presentation to the board.

3. Review the annual actuarial valuations and any actuarial experience analysis prepared by the Actuary and the report prepared by the Review Actuary prior to presentation or distribution of any report.

4. Coordinate with staff to conduct an independent audit of the state's actuary not less than once every four years and review any audit report prepared by the Audit Actuary prior to presentation or distribution to the Board.

5. In consultation with management and the independent actuaries, consider the integrity of the actuarial reporting processes and controls, including the process for "closure" on the audit findings.

6. Review any significant changes to applicable actuarial principles and any items required to be communicated by the independent actuaries.

7. Review the independence and performance of the actuaries and periodically recommend to the Board the appointment of the independent actuaries or recommend approval of any discharge of actuaries when circumstances warrant.

8. Review, discuss and recommend for Board consideration any strategic issues related to the actuarial work.

9. Review and assess the adequacy of this Charter at least annually and submit recommended changes to it to the Board for approval.

10. Review and periodically perform self-assessment of the Committee's performance.

B. The Committee shall have the following responsibilities with respect to the ARMB's independent actuaries:

1. Schedule an annual pre-valuation entrance conference with the Actuary that includes DOA and DOR staff and the Review Actuary to discuss scope, staffing, locations, timeline , reliance upon management, and general approach to the annual valuation conducted for the retirement systems; and in the year that an actuarial experience analysis is conducted, schedule a similar entrance conference.

2. Discuss with management and the independent actuaries the actuarial principles and provide input as to the underlying assumptions and methods used in the preparation of the retirement systems' valuation reports and experience analyses to ensure the integrity of actuarial number s used in preparation of accounting reports, compliance with GASB or other regulatory bodies, consistency with the actuarial policies of the plan, and alignment with the purpose of the reporting.

3. Review the Actuary's draft valuation and the Review Actuary's draft report (and the experience analysis and review when conducted); discuss the contents with the actuaries and monitor the follow-up on significant observations, findings, and recommendations.

4. Discuss with the independent actuaries the clarity and format of the presentations in appearances before the committee and the Board.

5. Meet with the actuaries, in the absence of management, to review findings, recommendations or other pertinent subjects.

6. Review Audit Actuary report (conducted every four years); discuss any significant findings with Actuary and management.

C. In addition to the foregoing, the Committee shall:

1. Perform such other activities consistent with this Charter, and governing law as the Committee considers necessary or appropriate or as the Board may otherwise request.

2. Maintain minutes of Committee meetings and periodically report to the Board on significant results of the Committee's activities.

Alaska Retirement Management Board
Actuarial Committee
Schedule of Remaining 2022 Meetings

<u>September 14, 2022 (Anchorage/Videoconference)</u>

1. Review contribution rate resolutions/action memos for recommendation to Board
2. Status/Follow-up from previous meetings
3. Education Topic:

<u>November 30, 2022 (Anchorage/Videoconference)</u>

1. Status Report/Discussion on Draft Actuarial Valuation and Second Actuary Review Process
2. Discussion of new trends and findings in actuarial matters
3. Committee Performance – Self Assessment
4. Education topic:

<u>Periodic and As Needed Meeting Topics</u>

1. Updates by DOA on actuary procurement.
2. Actuarial Committee training.

Alaska Retirement Management Board
Actuarial Committee
Schedule of 2023 Meetings

<u>March 15, 2023 (Juneau/ Videoconference)</u>

1. Discuss Draft Review Actuary Report;
2. Review Draft Valuation Reports; requests or recommendations for edits or corrections
3. Review Audit Findings List; proposed resolution and recommendations
4. Optional Renewal for Actuary Contract (Buck) for FY24
4. Education Topic:

<u>April TBD, 2023 (Videoconference)</u>

1. *If necessary* – scheduled to follow up on discussion/findings/questions from March meeting

<u>June 14, 2023 (Anchorage/ Videoconference)</u>

1. Review and discussion of final review reports and valuations, including any items brought forward from March meeting
2. Action: Recommendations from committee to board for acceptance of review reports and valuations
3. Recommendation from committee to board for action on Audit Findings List
4. FY2023 valuation discussion
   a. Valuation Timeline
   b. Actuarial principles and underlying assumptions; any proposed new assumptions
   c. Outstanding audit issues (Audit Findings List)
5. Committee Performance – Self Assessment
6. Education Topic:

<u>September 13, 2023 (Anchorage/ Videoconference)</u>

1. Review contribution rate resolutions/action memos for recommendation to Board
2. Status/Follow-up from previous meetings
3. Education Topic:

<u>December 6, 2023 (Anchorage/ Videoconference)</u>

1. Status Report/Discussion on Draft Actuarial Valuation and Second Actuary Review Process
2. Discussion of new trends and findings in actuarial matters
3. Committee Performance – Self Assessment
4. Education topic:

<u>Periodic and As Needed Meeting Topics</u>

1. Updates by DOA on actuary procurement.
2. Actuarial Committee training.

APPENDIX

BUCK

State of Alaska

Summary of Changes From Draft June 30, 2021 Actuarial Valuation Reports

PERS

- Added wording regarding reduction for early retirement in Section 5.1.
- Added “Salaries are subject to compensation limits under IRC 401(a)(17) for members first hired on or after July 1, 1996. Retirement benefit amounts are subject to IRC 415(b) limits regardless of hire date.” in Section 5.1.
- Added wording regarding increases for Peace/Fire retirement benefits after occupational disability in Section 5.1.
- Added “Disability rates cease once a member is eligible for retirement.” in Section 5.3.
- Modified language for Retired Member Contributions for Medical Benefits in Section 5.3.
- Added the disability decrement rates after age 54 in Section 5.3.

TRS

- Added “Salaries are subject to compensation limits under IRC 401(a)(17) for members first hired on or after July 1, 1996. Retirement benefit amounts are subject to IRC 415(b) limits regardless of hire date.” in Section 5.1.
- Added “Disability rates cease once a member is eligible for retirement.” in Section 5.3.
- Modified language for Retired Member Contributions for Medical Benefits in Section 5.3.
- Added the disability decrement rates after age 54 in Section 5.3.

PERS DCR and TRS DCR

- Removed investment expense percentage in Executive Summary.
- Added “For retiree medical benefits, the disability rates cease once a member is eligible for retirement. However, the disability rates continue after retirement eligibility for occupational death & disability benefits.” in Section 4.3.
- Modified Retiree Medical Participation table headers in Section 4.3.
- Added the disability decrement rates after age 54 in Section 4.3.

State of Alaska

Public Employees' Retirement System

Actuarial Valuation Report
As of June 30, 2021

May 2022

BUCK

May 12, 2022

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

Certification of Actuarial Valuation

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

This report summarizes the annual actuarial valuation results of the State of Alaska Public Employees' Retirement System (PERS) as of June 30, 2021 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, 2021. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under PERS were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Buck is solely responsible for the actuarial data and actuarial results presented in this report. This report fully and fairly discloses the actuarial position of PERS as of June 30, 2021.

PERS is funded by Employer, State, and Member Contributions in accordance with the funding policy adopted by the Alaska Retirement Management Board (Board) and as required by Alaska state statutes. The funding objective for PERS is to pay required contributions that remain level as a percent of total PERS compensation. The Board has also established a funding policy objective that the required contributions be sufficient to pay the Normal Costs of active plan members, plan expenses, and amortize the Unfunded Actuarial Accrued Liability (UAAL) as a level percentage of total PERS compensation over a closed 25-year period as required by Alaska state statutes. The closed 25-year period was originally established effective June 30, 2014. Effective June 30, 2018, the Board adopted a 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 PERS, 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 (on a combined pension/healthcare basis) is expected to increase to 100% in FY26 (the funded status of the pension trust is expected to increase to 100% in FY38).

SB 55 was effective July 1, 2021. Under SB 55:

- The State-as-an-Employer contributes the full actuarial contribution rate based on the DB/DCR payroll of its employees (which is approximately 50% of the total PERS DB/DCR payroll).
- Non-State employers continue to contribute 22% of their DB/DCR payroll.
- The Additional State Contributions are based on the excess of the DB actuarial contribution rate and the DB contributions made by non-State employers.

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

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the actuarial assumptions, changes 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, 2021 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. We certify that the assumptions and methods described in Sections 5.2 and 5.3 of this report meet the requirements of all applicable Actuarial Standards of Practice.

Governmental Accounting Standards Board (GASB) Statement No. 67 (GASB 67) was effective for PERS beginning with fiscal year ending June 30, 2014, and Statement No. 74 (GASB 74) was effective for PERS beginning with fiscal year ending June 30, 2017. Separate GASB 67 and GASB 74 reports as of June 30, 2021 have been prepared. We have also prepared the member data tables shown in Section 4 of this report for the Statistical Section of the ACFR, as well as the summary of actuarial assumptions and analysis of financial experience for the Actuarial Section of the ACFR. Please see our separate GASB 67 and GASB 74 reports for other information needed for the ACFR.

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 healthcare portion of PERS. See Section 6 of this report for further details regarding ASOP 51.

Use of Models

Actuarial Standard of Practice No. 56 (ASOP 56) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Buck uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the plan using data and assumptions as of the measurement date under the funding methods specified in this report. The output from the third-party vendor software is used as input to internally developed models that apply applicable funding methods and policies to the derived liabilities and other inputs, such as plan assets and contributions, to generate many of the exhibits found in this report. Buck has an extensive review process in which the results of the liability calculations are checked using detailed sample life output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other funding outputs and the internal models are similarly reviewed in detail and at a higher level for accuracy, reasonability, and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software. This review is performed by experts within Buck who are familiar with applicable funding methods, as well as the manner in which the model generates its output. If significant changes are made to the internal models, extra checking and review are completed. Significant changes to the internal models that are applicable to multiple clients are generally developed, checked, and reviewed by multiple experts within Buck who are familiar with the details of the required changes.

Additional models used in valuing health benefits are described later in the report.

COVID-19

The potential impact of the ongoing COVID-19 pandemic on costs and liabilities was considered and an adjustment was made in setting the medical per capita claims cost assumption. FY20 medical claims were adjusted for a COVID-19 related decline in claims during the last four months (March – June) of FY20. FY21 medical claims were adjusted for a COVID-19 related decline in those claims during the fiscal year. A more detailed explanation on these adjustments is shown in Section 5.2.

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

Scott Young

Scott Young, FSA, EA, MAAA, FCA
Director
Buck

Contents

Executive Summary

Overview

The State of Alaska Public Employees' Retirement System (PERS) provides pension and postemployment healthcare benefits to eligible participants. The Commissioner of the Department of Administration is responsible for administering the plan. The Alaska Retirement Management Board has fiduciary responsibility over the assets of the plan. This report presents the results of the actuarial valuation of PERS as of the valuation date of June 30, 2021.

Purpose

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

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

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

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

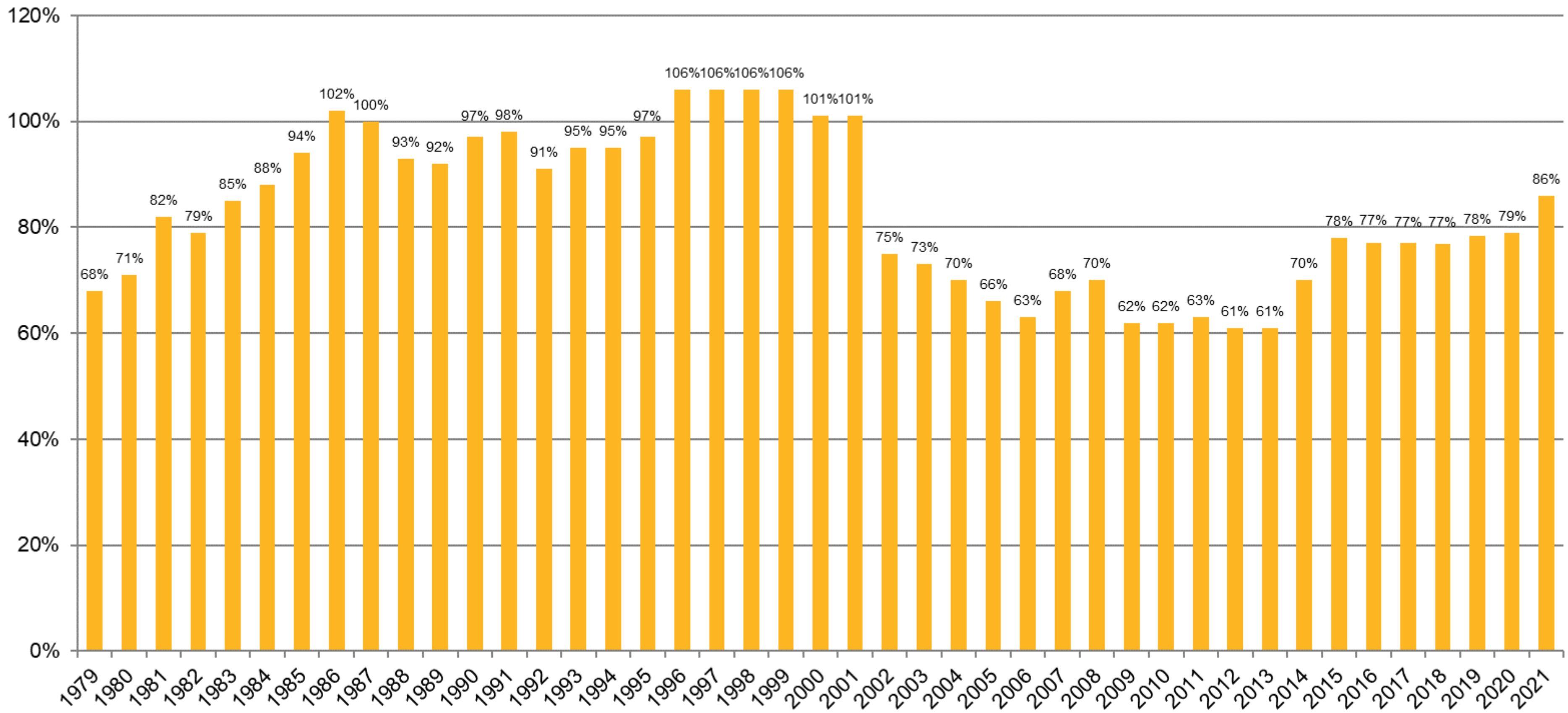
Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

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)	2020	2021
Pension		
a. Actuarial Accrued Liability	$ 15,279,525	$ 15,419,975
b. Valuation Assets	9,713,710	10,466,709
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ 5,565,815	$ 4,953,266
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	63.6%	67.9%
e. Fair Value of Assets	$ 9,469,161	$ 11,912,309
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	62.0%	77.3%
Healthcare		
a. Actuarial Accrued Liability	$ 7,036,550	$ 6,856,170
b. Valuation Assets	7,989,358	8,581,155
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ (952,808)	$ (1,724,985)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	113.5%	125.2%
e. Fair Value of Assets	$ 7,813,511	$ 9,784,141
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	111.0%	142.7%
Total		
a. Actuarial Accrued Liability	$ 22,316,075	$ 22,276,145
b. Valuation Assets	17,703,068	19,047,864
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ 4,613,007	$ 3,228,281
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	79.3%	85.5%
e. Fair Value of Assets	$ 17,282,672	$ 21,696,450
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	77.4%	97.4%

Funded Ratio History (Based on Valuation Assets)



The key reasons for the change in the 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 as there are no available financial instruments for purchase. Future experience is likely to vary from assumptions, so there is potential for actuarial gains or 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 FY21 investment return based on fair value of assets was approximately 30.0% compared to the expected investment return of 7.38% (net of investment expenses). This resulted in a market asset gain of approximately $3,834 million. Due to the recognition of investment gains and losses over a 5-year period, the FY21 investment return based on actuarial value of assets was approximately 11.6%, which resulted in an actuarial asset gain of approximately $734 million.

2. Salary Increases

Salary increases for continuing active members during FY21 were higher than expected based on the valuation assumptions, resulting in a liability loss of approximately $17 million.

3. Demographic Experience

Section 4 provides statistics on active and inactive participants. The number of active participants decreased 10.4% from 11,033 at June 30, 2020 to 9,888 at June 30, 2021 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 53.21 to 53.51 and average credited service increased from 18.38 to 18.96 years.

The number of benefit recipients increased 1.6% from 37,106 to 37,717 and their average age increased from 70.77 to 71.17. The number of vested terminated participants decreased 3.6% from 5,327 to 5,135. Their average age increased from 53.52 to 53.92.

The overall effect of the demographic experience during FY21 was a liability gain of approximately $4.3 million (pension) and a liability gain of approximately $30.3[1] million (healthcare).

4. COLA / PRPA Experience

The cost-of-living increases (COLA) for benefit recipients during FY21 were less than expected based on the valuation assumptions, resulting in a liability gain of approximately $6 million. The postretirement pension adjustments (PRPA) were also less than expected, resulting in a liability gain of approximately $149 million.

5. Retiree Medical Claims Experience

As described in Section 5.2, recent medical claims experience and changes in healthcare enrollment data provided to us for the June 30, 2021 valuation generated a liability gain of approximately $272 million. Reduced claims during FY21, largely attributable to medical claims impacted by COVID-19, generated a liability gain of approximately $21 million.

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

6. Changes in Methods Since the Prior Valuation

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

7. Changes in Assumptions Since the Prior Valuation

Healthcare claim costs are updated annually as described in Section 5.2. The amounts included in the Normal Cost for administrative expenses were updated based on the last two years of actual administrative expenses paid from plan assets. There were no other changes in actuarial assumptions since the prior valuation.

8. Changes in Benefit Provisions Since the Prior Valuation

Starting in 2022, prior authorization will be required for certain specialty medications for all participants, and certain preventive benefits for pre-Medicare participants will now be covered by the plan. These changes created an actuarial gain of approximately $62 million.

Under SB 55 that was effective July 1, 2021: (i) The State-as-an-Employer contributes the full actuarial contribution rate based on the DB/DCR payroll of its employees (which is approximately 50% of the total PERS DB/DCR payroll); (ii) Non-State employers continue to contribute 22% of their DB/DCR payroll; (iii) the Additional State Contributions are based on the excess of the DB actuarial contribution rate and the DB contributions made by non-State employers.

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

Projections

Absent future asset (and/or liability) losses, changes in plan provisions or actuarial assumptions, the $3,834 million FY21 market asset gain has a significant impact on the projections shown in Section 3. For example, the pension trust is currently projected to reach a funded status of 100% in FY38. Based on the 2020 valuation projections, the funded status of the pension trust was projected to be only 85% in FY38.

Once the pension trust is projected to reach of funded status of 100%, it may be reasonable to assume that all remaining pension unfunded liability layered amortization amounts should be reduced to zero. Since the healthcare trust is currently more than 100% funded, the healthcare unfunded liability amortization amounts would also be reduced to zero if the Board decides to implement this change (this does not impact the projections shown in Section 3.6 since the healthcare Normal Cost is assumed to be contributed as a minimum in all years after FY23 per Alaska state statutes).

We have shown the table of projected figures in Section 3.6 two ways:

a) Section 3.6A – No changes to the pension unfunded liability layered amortization amounts. In this case, Additional State Contributions totaling approximately $59 million are projected for FY38-FY39, even though the pension trust is projected to be 100% funded in FY38.
b) Section 3.6B – Eliminate the pension unfunded liability layered amortization amounts when the pension trust is projected to be 100% funded. In this case, the Additional State Contributions are projected to be zero after FY37.

The pros and cons of these two methods can be discussed further upon request.

In both cases, the pension Normal Cost is assumed to be contributed as a minimum based on Alaska state statutes. (The healthcare trust is currently over 100% funded, so the healthcare Normal Cost is also assumed to be contributed as a minimum based on Alaska state statutes.)

Sections 3.3 through 3.5 are based on the projections shown in Section 3.6A.

Comparative Summary of Contribution Rates

Pension		Actual FY 2023	Estimated FY 2024
a.	Normal Cost Rate Net of Member Contributions	2.37%	2.14%
b.	Past Service Cost Rate	16.01%	14.38%
c.	Total Employer/State Contribution Rate, (a) + (b), not less than (a)[1]	18.38%	16.52%

Healthcare		Actual FY 2023	Estimated FY 2024
a.	Normal Cost Rate	2.84%	2.50%
b.	Past Service Cost Rate	(4.94%)	(7.45%)
c.	Total Employer/State Contribution Rate, (a) + (b), not less than (a)[1]	2.84%	2.50%

Total		Actual FY 2023	Estimated FY 2024
a.	Normal Cost Rate Net of Member Contributions	5.21%	4.64%
b.	Past Service Cost Rate	16.01%	14.38%
c.	Total Employer/State Contribution Rate, (a) + (b)[1]	21.22%	19.02%
d.	Board Adopted Total Employer/State Contribution Rate	18.38%[2]	TBD
e.	Defined Contribution Retirement (DCR) Rate Paid by Employers	6.41%	6.63%
f.	Board Adopted Total Rate, Including DCR Rate Paid by Employers, (d) + (e)	24.79%	TBD

Contribution rates are based on total (DB and DCR) payroll. The contribution rates shown above for FY24 are estimated assuming no actuarial gains/losses during FY22 and FY23. Actual FY24 contribution rates will be adopted by the Board in September 2022 reflecting FY22 asset experience.

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

1 Beginning with the June 30, 2014 valuation, contribution rates for FY17 and beyond are determined using new methodology in accordance with 2014 legislation under HB 385 and SB 119, 2014 Alaska Laws, which changed the amortization methodology to a closed 25-year period as a level percentage of pay, and eliminated the time lag on the contribution rate calculation by using a 2-year "roll-forward" approach assuming 0% population growth. Investment gains and losses are recognized over a 5-year period beginning in FY15. Beginning with the June 30, 2018 valuation, the UAAL amortization was changed as described in Section 5.2.

2 The FY23 contribution rates adopted by the Board in October 2021 were 18.38% for Pension and 0.00% for Healthcare.

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, 2020 and June 30, 2021 based on DB and DCR payroll combined:

	Pension	Healthcare	Total
1. Total Employer/State Contribution Rate as of June 30, 2020	20.54%	3.57%	24.11%
2. Change due to:			
a. Health Claims Experience	N/A	(0.12)%	(0.12)%
b. Salary Increases	0.05%	N/A	0.05%
c. Investment Experience	(1.06)%	0.00%	(1.06)%
d. Demographic Experience and Miscellaneous [1]	(0.54)%	(0.26)%	(0.80)%
e. Actual vs Expected Contributions	(0.06)%	0.00%	(0.06)%
f. Assumption/Method Changes	0.00%	0.00%	0.00%
g. Plan Changes	0.00%	(0.03)%	(0.03)%
h. Total Change, (a) + (b) + (c) + (d) + (e) + (f) + (g)	(1.61)%	(0.41)%	(2.02)%
3. Total Employer/State Contribution Rate as of June 30, 2021, (1) + (2)(h)	18.93%	3.16%	22.09%

The following table shows the FY21 gain/(loss) on actuarial accrued liability as of June 30, 2021 ($'s in 000's):

	Pension	Healthcare	Total
Retirement Experience	$ (7,211)	$ 7,125	$ (86)
Termination Experience	(7,963)	(10,409)	(18,372)
Disability Experience	6,650	10,858	17,508
Active Mortality Experience	14,401	(745)	13,656
Inactive Mortality Experience	(1,576)	2,684	1,108
Salary Increases	(17,126)	N/A	(17,126)
Rehires (Net of Rehire Load)	15,067	14,045	29,112
Transfers between Peace/Fire and Others	(1,706)	(161)	(1,867)
COLA Increases	5,956	N/A	5,956
PRPA Increases	149,186	N/A	149,186
Benefit Payments Different than Expected	19,147	21,107	40,254
Per Capita Claims Cost	N/A	272,205	272,205
Medical and Prescription Drug Plan Changes	N/A	61,807	61,807
Medicare Part B Only Experience	N/A	5,743	5,743
Changes in Dependent Coverage Elections	N/A	15,017	15,017
Programming Changes[2]	(512)	N/A	(512)
Miscellaneous[3]	(13,480)	(15,552)	(29,032)
Total	$ 160,833	$ 383,724	$ 544,557

[1] Includes the effects of census data changes between the two valuations.
[2] Includes adjustments to (a) the 10% COLA to apply immediately for all disabled members, and (b) the PRPA increases for Peace Officer/Firefighters who retire from occupational disability.
[3] Includes the effects of various data changes that are typical when new census data is received for the annual valuation, as well as other items that do not fit neatly into any of the other categories. The pension amount includes a loss of $10,900 for unexpected beneficiaries and QDRO's based on last year's data, and the healthcare amount includes a loss of $10,592 for changes in spouses' dates of birth in the data.

The rehire gain/(loss) amount shown on the previous page is the difference between (i) the increase in Actuarial Accrued Liability at June 30, 2021 due to rehires during the most recent plan year, and (ii) the load that was added to the June 30, 2020 Normal Cost based on the rehire load assumption used in the June 30, 2020 valuation. The development of the FY21 rehire gain/(loss) amount is shown in the table below ($'s in 000's):

		Pension	Healthcare	Total
1.	Increase/(Decrease) in Actuarial Accrued Liability at June 30, 2021 due to Rehires	$ 7,095	$ (1,523)	$ 5,572
2.	June 30, 2020 Normal Cost Rehire Load, with interest to June 30, 2021	$ 22,162	$ 12,522	$ 34,684
3.	Rehire Gain/(Loss), (2) - (1)	$ 15,067	$ 14,045	$ 29,112

Section 1: Actuarial Funding Results

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

Peace Officer / Firefighter

As of June 30, 2021	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Retirement Benefits	$ 877,332	$ 783,315
Termination Benefits	9,109	1,315
Disability Benefits	1,259	(1,287)
Death Benefits	9,057	5,989
Return of Contributions	1,243	(4,141)
Medical and Prescription Drug Benefits	356,026	305,813
Medicare Part D Subsidy	(30,079)	(25,883)
Indebtedness	(4,797)	(4,797)
Subtotal	$ 1,219,150	$ 1,060,324
Inactive Members		
Not Vested	$ 2,487	$ 2,487
Vested Terminations		
- Retirement Benefits	35,573	35,573
- Medical and Prescription Drug Benefits	95,523	95,523
- Medicare Part D Subsidy	(9,689)	(9,689)
- Indebtedness	(475)	(475)
Retirees & Beneficiaries		
- Retirement Benefits	1,730,944	1,730,944
- Medical and Prescription Drug Benefits	590,605	590,605
- Medicare Part D Subsidy	(79,219)	(79,219)
Subtotal	$ 2,365,749	$ 2,365,749
Total	**$ 3,584,899**	**$ 3,426,073**
Total Pension	**$ 2,661,732**	**$ 2,548,923**
Total Medical, Net of Part D Subsidy	**$ 923,167**	**$ 877,150**
Total Medical, Gross of Part D Subsidy	**$ 1,042,154**	**$ 991,941**

Peace Officer / Firefighter

As of June 30, 2021		Present Value of Projected Benefits		Actuarial Accrued (Past Service) Liability
By Tier				
Tier 1				
- Pension	$	989,348	$	988,683
- Medical, Net of Part D Subsidy		272,846		272,432
Tier 2				
- Pension		694,313		683,185
- Medical, Net of Part D Subsidy		265,750		261,524
Tier 3				
- Pension		978,071		877,055
- Medical, Net of Part D Subsidy		384,571		343,194
Total	**$**	**3,584,899**	**$**	**3,426,073**

As of June 30, 2021		Normal Cost
Active Members		
Retirement Benefits	$	17,624
Termination Benefits		1,528
Disability Benefits		495
Death Benefits		612
Return of Contributions		1,029
Medical and Prescription Drug Benefits		9,196
Medicare Part D Subsidy		(788)
Rehire Assumption (Pension)		3,996
Rehire Assumption (Medical)		1,437
Administrative Expenses (Pension)		1,615
Administrative Expenses (Medical)		773
Total	**$**	**37,517**
Total Pension	**$**	**26,899**
Total Medical, Net of Part D Subsidy	**$**	**10,618**
Total Medical, Gross of Part D Subsidy	**$**	**11,406**
By Tier		
Tier 1		
- Pension	$	310
- Medical, Net of Part D Subsidy		204
Tier 2		
- Pension		3,601
- Medical, Net of Part D Subsidy		1,332
Tier 3		
- Pension		22,988
- Medical, Net of Part D Subsidy		9,082
Total	**$**	**37,517**

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

Others

As of June 30, 2021	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Retirement Benefits	$ 3,314,325	$ 3,021,247
Termination Benefits	213,325	120,766
Disability Benefits	16,937	5,047
Death Benefits	45,609	36,004
Return of Contributions	14,215	(28,530)
Medical and Prescription Drug Benefits	1,848,190	1,513,162
Medicare Part D Subsidy	(234,865)	(197,726)
Indebtedness	(39,283)	(39,283)
Subtotal	$ 5,178,453	$ 4,430,687
Inactive Members		
Not Vested	$ 73,923	$ 73,923
Vested Terminations		
- Retirement Benefits	651,624	651,624
- Medical and Prescription Drug Benefits	930,456	930,456
- Medicare Part D Subsidy	(102,384)	(102,384)
- Indebtedness	(12,942)	(12,942)
Retirees & Beneficiaries		
- Retirement Benefits	9,043,196	9,043,196
- Medical and Prescription Drug Benefits	4,572,277	4,572,277
- Medicare Part D Subsidy	(736,765)	(736,765)
Subtotal	$ 14,419,385	$ 14,419,385
Total	**$ 19,597,838**	**$ 18,850,072**
Total Pension	**$ 13,320,929**	**$ 12,871,052**
Total Medical, Net of Part D Subsidy	**$ 6,276,909**	**$ 5,979,020**
Total Medical, Gross of Part D Subsidy	**$ 7,350,923**	**$ 7,015,895**

Others

As of June 30, 2021	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
By Tier		
Tier 1		
- Pension	$ 6,024,842	$ 6,001,018
- Medical, Net of Part D Subsidy	2,358,156	2,335,845
Tier 2		
- Pension	3,811,976	3,721,454
- Medical, Net of Part D Subsidy	1,873,154	1,810,864
Tier 3		
- Pension	3,484,111	3,148,580
- Medical, Net of Part D Subsidy	2,045,599	1,832,311
Total	**$ 19,597,838**	**$ 18,850,072**

As of June 30, 2021	Normal Cost
Active Members	
Retirement Benefits	$ 53,983
Termination Benefits	14,497
Disability Benefits	1,969
Death Benefits	1,742
Return of Contributions	7,031
Medical and Prescription Drug Benefits	58,336
Medicare Part D Subsidy	(6,562)
Rehire Assumption (Pension)	14,870
Rehire Assumption (Medical)	8,848
Administrative Expenses (Pension)	6,010
Administrative Expenses (Medical)	4,758
Total	**$ 165,482**
Total Pension	**$ 100,102**
Total Medical, Net of Part D Subsidy	**$ 65,380**
Total Medical, Gross of Part D Subsidy	**$ 71,942**
By Tier	
Tier 1	
- Pension	$ 8,729
- Medical, Net of Part D Subsidy	8,011
Tier 2	
- Pension	23,906
- Medical, Net of Part D Subsidy	15,939
Tier 3	
- Pension	67,467
- Medical, Net of Part D Subsidy	41,430
Total	**$ 165,482**

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

All Members

As of June 30, 2021	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Retirement Benefits	$ 4,191,657	$ 3,804,562
Termination Benefits	222,434	122,081
Disability Benefits	18,196	3,760
Death Benefits	54,666	41,993
Return of Contributions	15,458	(32,671)
Medical and Prescription Drug Benefits	2,204,216	1,818,975
Medicare Part D Subsidy	(264,944)	(223,609)
Indebtedness	(44,080)	(44,080)
Subtotal	$ 6,397,603	$ 5,491,011
Inactive Members		
Not Vested	$ 76,410	$ 76,410
Vested Terminations		
- Retirement Benefits	687,197	687,197
- Medical and Prescription Drug Benefits	1,025,979	1,025,979
- Medicare Part D Subsidy	(112,073)	(112,073)
- Indebtedness	(13,417)	(13,417)
Retirees & Beneficiaries		
- Retirement Benefits	10,774,140	10,774,140
- Medical and Prescription Drug Benefits	5,162,882	5,162,882
- Medicare Part D Subsidy	(815,984)	(815,984)
Subtotal	$ 16,785,134	$ 16,785,134
Total	**$ 23,182,737**	**$ 22,276,145**
Total Pension	**$ 15,982,661**	**$ 15,419,975**
Total Medical, Net of Part D Subsidy	**$ 7,200,076**	**$ 6,856,170**
Total Medical, Gross of Part D Subsidy	**$ 8,393,077**	**$ 8,007,836**

All Members

As of June 30, 2021		Present Value of Projected Benefits		Actuarial Accrued (Past Service) Liability
By Tier				
Tier 1				
- Pension	$	7,014,190	$	6,989,701
- Medical, Net of Part D Subsidy		2,631,002		2,608,277
Tier 2				
- Pension		4,506,289		4,404,639
- Medical, Net of Part D Subsidy		2,138,904		2,072,388
Tier 3				
- Pension		4,462,182		4,025,635
- Medical, Net of Part D Subsidy		2,430,170		2,175,505
Total	**$**	**23,182,737**	**$**	**22,276,145**

As of June 30, 2021		Normal Cost
Active Members		
Retirement Benefits	$	71,607
Termination Benefits		16,025
Disability Benefits		2,464
Death Benefits		2,354
Return of Contributions		8,060
Medical and Prescription Drug Benefits		67,532
Medicare Part D Subsidy		(7,350)
Rehire Assumption (Pension)		18,866
Rehire Assumption (Medical)		10,285
Administrative Expenses (Pension)		7,625
Administrative Expenses (Medical)		5,531
Total	**$**	**202,999**
Total Pension	**$**	**127,001**
Total Medical, Net of Part D Subsidy	**$**	**75,998**
Total Medical, Gross of Part D Subsidy	**$**	**83,348**
By Tier		
Tier 1		
- Pension	$	9,039
- Medical, Net of Part D Subsidy		8,215
Tier 2		
- Pension		27,507
- Medical, Net of Part D Subsidy		17,271
Tier 3		
- Pension		90,455
- Medical, Net of Part D Subsidy		50,512
Total	**$**	**202,999**

Section 1.2: Actuarial Contributions as of June 30, 2021 ($'s in 000's)

Peace Officer / Firefighter

Normal Cost Rate	Pension	Healthcare	Total
1. Total Normal Cost	$ 26,899	$ 10,618	$ 37,517
2. DB Rate Payroll Projected for FY22	147,739	147,739	147,739
3. DCR Rate Payroll Projected for FY22	220,974	220,974	220,974
4. Total Rate Payroll Projected for FY22	368,713	368,713	368,713
5. Normal Cost Rate			
a. Based on DB Rate Payroll, (1) ÷ (2)	18.21%	7.19%	25.39%
b. Based on Total Rate Payroll, (1) ÷ (4)	7.30%	2.88%	10.18%
6. Average Member Contribution Rate	3.01%	0.00%	3.01%
7. Employer Normal Cost, (5)(b) - (6)	4.29%	2.88%	7.17%

Past Service Rate	Pension	Healthcare	Total
1. Actuarial Accrued Liability	$ 2,548,923	$ 877,150	$ 3,426,073
2. Valuation Assets[1]	1,730,148	1,097,837	2,827,985
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ 818,775	$ (220,687)	$ 598,088
4. Funded Ratio, (2) ÷ (1)	67.9%	125.2%	82.5%
5. Past Service Cost Amortization Payment	63,731	(14,845)	48,886
6. Total Rate Payroll Projected for FY22	368,713	368,713	368,713
7. Past Service Rate, (5) ÷ (6)	17.28%	(4.03%)	17.28%
Total Employer / State Contribution Rate, not less than Normal Cost Rate	**21.57%**	**2.88%**	**24.45%**
Normal Cost Rate by Tier (Total Employer and Member)[2]			
Tier 1	20.67%	13.60%	34.27%
Tier 2	17.94%	6.64%	24.58%
Tier 3	18.22%	7.20%	25.42%

[1] Allocated between Peace Officer / Firefighter and Others in proportion to Actuarial Accrued Liability.

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

Peace Officer / Firefighter

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ 731,232	$ 719,620	$ 56,655
Change in Assumptions	6/30/2018	22	88,162	88,911	6,175
FY19 Loss	6/30/2019	23	61,980	62,436	4,225
FY20 Loss	6/30/2020	24	31,158	31,297	2,067
FY21 Gain	6/30/2021	25	(83,489)	(83,489)	(5,391)
Total				**$ 818,775**	**$ 63,731**

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ (30,991)	$ (30,499)	$ (2,401)
Change in Assumptions/Methods/EGWP	6/30/2018	22	27,556	27,790	1,930
FY19 Gain	6/30/2019	23	(77,575)	(78,145)	(5,288)
FY20 Gain	6/30/2020	24	(38,036)	(38,206)	(2,524)
Medical and Prescription Drug Plan Chang	6/30/2021	25	(7,361)	(7,361)	(475)
FY21 Gain	6/30/2021	25	(94,266)	(94,266)	(6,087)
Total				**$ (220,687)**	**$ (14,845)**

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ 700,241	$ 689,121	$ 54,254
Change in Assumptions/Methods/EGWP	6/30/2018	22	115,718	116,701	8,105
FY19 Gain	6/30/2019	23	(15,595)	(15,709)	(1,063)
FY20 Gain	6/30/2020	24	(6,878)	(6,909)	(457)
Medical and Prescription Drug Plan Chang	6/30/2021	25	(7,361)	(7,361)	(475)
FY21 Gain	6/30/2021	25	(177,755)	(177,755)	(11,478)
Total				**$ 598,088**	**$ 48,886**

Section 1.2: Actuarial Contributions as of June 30, 2021 ($'s in 000's)

Others

Normal Cost Rate	Pension	Healthcare	Total
1. Total Normal Cost	$ 100,102	$ 65,380	$ 165,482
2. DB Rate Payroll Projected for FY22	710,902	710,902	710,902
3. DCR Rate Payroll Projected for FY22	1,327,142	1,327,142	1,327,142
4. Total Rate Payroll Projected for FY22	2,038,044	2,038,044	2,038,044
5. Normal Cost Rate			
a. Based on DB Rate Payroll, (1) ÷ (2)	14.08%	9.20%	23.28%
b. Based on Total Rate Payroll, (1) ÷ (4)	4.91%	3.21%	8.12%
6. Average Member Contribution Rate	2.38%	0.00%	2.38%
7. Employer Normal Cost, (5)(b) - (6)	2.53%	3.21%	5.74%

Past Service Rate	Pension	Healthcare	Total
1. Actuarial Accrued Liability	$ 12,871,052	$ 5,979,020	$ 18,850,072
2. Valuation Assets[1]	8,736,561	7,483,318	16,219,879
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ 4,134,491	$ (1,504,298)	$ 2,630,193
4. Funded Ratio, (2) ÷ (1)	67.9%	125.2%	86.0%
5. Past Service Cost Amortization Payment	324,336	(99,791)	224,545
6. Total Rate Payroll Projected for FY22	2,038,044	2,038,044	2,038,044
7. Past Service Rate, (5) ÷ (6)	15.91%	(4.90%)	15.91%
Total Employer / State Contribution Rate, not less than Normal Cost Rate	**18.44%**	**3.21%**	**21.65%**
Normal Cost Rate by Tier (Total Employer and Member)[2]			
Tier 1	18.20%	16.71%	34.91%
Tier 2	13.31%	8.87%	22.18%
Tier 3	13.96%	8.57%	22.53%

[1] Allocated between Peace Officer / Firefighter and Others in proportion to Actuarial Accrued Liability.

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

Others

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ 3,889,167	$ 3,827,409	$ 301,329
Change in Assumptions	6/30/2018	22	467,280	471,245	32,732
FY19 Loss	6/30/2019	23	235,559	237,288	16,059
FY20 Loss	6/30/2020	24	93,343	93,760	6,193
FY21 Gain	6/30/2021	25	(495,211)	(495,211)	(31,977)
Total				**$ 4,134,491**	**$ 324,336**

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ (47,263)	$ (46,513)	$ (3,662)
Change in Assumptions/Methods/EGWP	6/30/2018	22	22,293	22,482	1,562
FY19 Gain	6/30/2019	23	(553,265)	(557,331)	(37,718)
FY20 Gain	6/30/2020	24	(253,711)	(254,843)	(16,833)
Medical and Prescription Drug Plan Chang	6/30/2021	25	(54,446)	(54,446)	(3,516)
FY21 Gain	6/30/2021	25	(613,647)	(613,647)	(39,624)
Total				**$ (1,504,298)**	**$ (99,791)**

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ 3,841,904	$ 3,780,896	$ 297,667
Change in Assumptions/Methods/EGWP	6/30/2018	22	489,573	493,727	34,294
FY19 Gain	6/30/2019	23	(317,706)	(320,043)	(21,659)
FY20 Gain	6/30/2020	24	(160,368)	(161,083)	(10,640)
Medical and Prescription Drug Plan Chang	6/30/2021	25	(54,446)	(54,446)	(3,516)
FY21 Gain	6/30/2021	25	(1,108,858)	(1,108,858)	(71,601)
Total				**$ 2,630,193**	**$ 224,545**

Section 1.2: Actuarial Contributions as of June 30, 2021 ($'s in 000's)

All Members

Normal Cost Rate	Pension	Healthcare	Total
1. Total Normal Cost	$ 127,001	$ 75,998	$ 202,999
2. DB Rate Payroll Projected for FY22	858,641	858,641	858,641
3. DCR Rate Payroll Projected for FY22	1,548,116	1,548,116	1,548,116
4. Total Rate Payroll Projected for FY22	2,406,757	2,406,757	2,406,757
5. Normal Cost Rate			
a. Based on DB Rate Payroll, (1) ÷ (2)	14.79%	8.85%	23.64%
b. Based on Total Rate Payroll, (1) ÷ (4)	5.28%	3.16%	8.44%
6. Average Member Contribution Rate[1]	2.47%	0.00%	2.47%
7. Employer Normal Cost, (5)(b) - (6)	2.81%	3.16%	5.97%

Past Service Rate	Pension	Healthcare	Total
1. Actuarial Accrued Liability	$ 15,419,975	$ 6,856,170	$ 22,276,145
2. Valuation Assets	10,466,709	8,581,155	19,047,864
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ 4,953,266	$ (1,724,985)	$ 3,228,281
4. Funded Ratio, (2) ÷ (1)	67.9%	125.2%	85.5%
5. Past Service Cost Amortization Payment	388,067	(114,636)	273,431
6. Total Rate Payroll Projected for FY22	2,406,757	2,406,757	2,406,757
7. Past Service Rate, (5) ÷ (6)	16.12%	(4.76%)	16.12%
Total Employer / State Contribution Rate, not less than Normal Cost Rate	**18.93%**	**3.16%**	**22.09%**
Normal Cost Rate by Tier (Total Employer and Member)[2]			
Tier 1	18.28%	16.61%	34.89%
Tier 2	13.78%	8.65%	22.43%
Tier 3	14.84%	8.29%	23.13%

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

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

All Members

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ 4,620,399	$ 4,547,029	$ 357,984
Change in Assumptions	6/30/2018	22	555,442	560,156	38,907
FY19 Loss	6/30/2019	23	297,539	299,724	20,284
FY20 Loss	6/30/2020	24	124,501	125,057	8,260
FY21 Gain	6/30/2021	25	(578,700)	(578,700)	(37,368)
Total				**$ 4,953,266**	**$ 388,067**

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ (78,254)	$ (77,012)	$ (6,063)
Change in Assumptions/Methods/EGWP	6/30/2018	22	49,849	50,272	3,492
FY19 Gain	6/30/2019	23	(630,840)	(635,476)	(43,006)
FY20 Gain	6/30/2020	24	(291,747)	(293,049)	(19,357)
Medical and Prescription Drug Plan Chang	6/30/2021	25	(61,807)	(61,807)	(3,991)
FY21 Gain	6/30/2021	25	(707,913)	(707,913)	(45,711)
Total				**$ (1,724,985)**	**$ (114,636)**

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ 4,542,145	$ 4,470,017	$ 351,921
Change in Assumptions/Methods/EGWP	6/30/2018	22	605,291	610,428	42,399
FY19 Gain	6/30/2019	23	(333,301)	(335,752)	(22,722)
FY20 Gain	6/30/2020	24	(167,246)	(167,992)	(11,097)
Medical and Prescription Drug Plan Chang	6/30/2021	25	(61,807)	(61,807)	(3,991)
FY21 Gain	6/30/2021	25	(1,286,613)	(1,286,613)	(83,079)
Total				**$ 3,228,281**	**$ 273,431**

Section 1.3: Roll-Forward Contribution Rate Calculation for FY24 ($'s in 000's)

	Pension	Healthcare	Total
1. Liability Roll Forward			
a. Actuarial Accrued Liability as of June 30, 2021	**$ 15,419,975**	**$ 6,856,170**	**$ 22,276,145**
b. Normal Cost	119,376	70,467	189,843
c. Interest on (a) and (b) at 7.38%	1,146,804	511,186	1,657,990
d. Estimated Benefit Payments	(974,479)	(410,194)	(1,384,673)
e. Interest on (d) at 7.38%, adjusted for timing	(38,319)	(14,867)	(53,186)
f. Expected Actuarial Accrued Liability as of June 30, 2022	**$ 15,673,357**	**$ 7,012,762**	**$ 22,686,119**
g. Projected Normal Cost	106,811	63,186	169,997
h. Interest on (f) and (g) at 7.38%	1,164,576	522,205	1,686,781
i. Estimated Benefit Payments	(1,023,259)	(429,353)	(1,452,612)
j. Interest on (i) at 7.38%, adjusted for timing	(40,237)	(15,561)	(55,798)
k. Expected Actuarial Accrued Liability as of June 30, 2023	**$ 15,881,248**	**$ 7,153,239**	**$ 23,034,487**
2. Asset Roll Forward			
a. Actuarial Value of Assets as of June 30, 2021	**$ 10,466,709**	**$ 8,581,155**	**$ 19,047,864**
b. Interest on (a) at 7.38%	772,443	633,289	1,405,732
c. Employee Contributions	65,405	0	65,405
d. Employer Contributions	404,768	75,091	479,859
e. State Assistance Contributions	97,700	0	97,700
f. Interest on (c) thru (e) at 7.38%, adjusted for timing*	24,251	2,722	26,973
g. Estimated Benefit Payments	(974,479)	(410,194)	(1,384,673)
h. Administrative Expenses	(7,625)	(5,531)	(13,156)
i. Interest on (g) and (h) at 7.38%, adjusted for timing	(38,595)	(15,067)	(53,662)
j. AVA Adjustments	441,594	371,829	813,423
k. Expected Actuarial Value of Assets as of June 30, 2022	**$ 11,252,171**	**$ 9,233,294**	**$ 20,485,465**
l. Interest on (k) at 7.38%	830,410	681,417	1,511,827
m. Employee Contributions	60,574	0	60,574
n. Employer Contributions	410,773	0	410,773
o. State Assistance Contributions**	33,933	0	33,933
p. Interest on (m) thru (o) at 7.38%, adjusted for timing*	19,587	0	19,587
q. Estimated Benefit Payments	(1,023,259)	(429,353)	(1,452,612)
r. Administrative Expenses	(6,877)	(4,996)	(11,873)
s. Interest on (q) and (r) at 7.38%, adjusted for timing	(40,486)	(15,742)	(56,228)
t. AVA Adjustments	413,313	344,736	758,049
u. Expected Actuarial Value of Assets as of June 30, 2023	**$ 11,950,139**	**$ 9,809,356**	**$ 21,759,495**
3. Expected Unfunded Actuarial Accrued Liability as of June 30, 2023, 1(k) - 2(u)	**$ 3,931,109**	**$ (2,656,117)**	**$ 1,274,992**

* Employee and Employer Contributions are paid throughout the year. State Assistance Contributions are assumed to be paid on July 1, 2021 for FY22, and July 1, 2022 for FY23.

** The FY23 State Assistance Contribution is expected to be contributed 100% to pension.

	Pension	Healthcare	Total
4. Expected Annual Rate Payroll for FY24			
a. Defined Benefit Members			$ 711,617
b. Defined Contribution Retirement Members			1,726,002
c. Total Rate Payroll			**$ 2,437,619**
5. Expected FY24 Contribution Rate Calculation			
a. Projected Normal Cost for FY24	$ 101,319	$ 60,964	$ 162,283
b. Projected Normal Cost Rate for FY24	4.16%	2.50%	6.66%
c. Expected Member Contribution Rate for FY24	(2.02%)	0.00%	(2.02%)
d. Expected Employer Normal Cost Rate for FY24	**2.14%**	**2.50%**	**4.64%**
e. Expected Unfunded Liability as of June 30, 2023	$ 3,931,109	$ (2,656,117)	$ 1,274,992
f. FY24 Layered Amortization of Expected Unfunded Liability	350,577	(181,538)	169,039
g. Expected Past Service Cost Contribution Rate for FY24	**14.38%**	**(7.45%)**	**14.38%**
h. Expected Total Contribution Rate for FY24, not less than Normal Cost Rate	**16.52%**	**2.50%**	**19.02%**

The components of the expected FY24 amortization amounts are shown below (totals may not add due to rounding):

Expected FY24 Schedule of Past Service Cost Amortizations - Pension ($'s in 000's)

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining at 6/30/23	Balances: Initial	Balances: Outstanding at 6/30/23	Beginning-of-Year Payment for FY24
Initial Amount	6/30/2018	16	$ 4,620,399	$ 4,435,190	$ 377,944
Change in Assumptions	6/30/2018	20	555,442	558,096	41,076
FY19 Loss	6/30/2019	21	297,539	299,829	21,415
FY20 Loss	6/30/2020	22	124,501	125,558	8,721
FY21 Gain	6/30/2021	23	(578,700)	(582,952)	(39,451)
Expected FY22 Gain	6/30/2022	24	(480,925)	(483,071)	(31,908)
Expected FY23 Gain	6/30/2023	25	(421,541)	(421,541)	(27,220)
Total				**$ 3,931,109**	**$ 350,577**

Expected FY24 Schedule of Past Service Cost Amortizations - Healthcare ($'s in 000's)

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining at 6/30/23	Balances: Initial	Balances: Outstanding at 6/30/23	Beginning-of-Year Payment for FY24
Initial Amount	6/30/2018	16	$ (78,254)	$ (75,118)	$ (6,401)
Change in Assumptions/Methods/EGWP	6/30/2018	20	49,849	50,086	3,686
FY19 Gain	6/30/2019	21	(630,840)	(635,696)	(45,403)
FY20 Gain	6/30/2020	22	(291,747)	(294,222)	(20,436)
Medical and Prescription Drug Plan Chang	6/30/2021	23	(61,807)	(62,261)	(4,213)
FY21 Gain	6/30/2021	23	(707,913)	(713,116)	(48,260)
Expected FY22 Gain	6/30/2022	24	(491,339)	(493,531)	(32,599)
Expected FY23 Gain	6/30/2023	25	(432,259)	(432,259)	(27,912)
Total				**$ (2,656,117)**	**$ (181,538)**

The components of the expected FY24 amortization amounts are shown below (totals may not add due to rounding):

Expected FY24 Schedule of Past Service Cost Amortizations - Total ($'s in 000's)

Layer	Amortization Period		Balances		
	Date Created	Years Remaining at 6/30/23	Initial	Outstanding at 6/30/23	Beginning-of-Year Payment for FY24
Initial Amount	6/30/2018	16	$ 4,542,145	$ 4,360,072	$ 371,543
Change in Assumptions/Methods/EGWP	6/30/2018	20	605,291	608,182	44,762
FY19 Gain	6/30/2019	21	(333,301)	(335,867)	(23,988)
FY20 Gain	6/30/2020	22	(167,246)	(168,664)	(11,715)
Medical and Prescription Drug Plan Chang	6/30/2021	23	(61,807)	(62,261)	(4,213)
FY21 Gain	6/30/2021	23	(1,286,613)	(1,296,068)	(87,711)
Expected FY22 Gain	6/30/2022	24	(972,264)	(976,602)	(64,507)
Expected FY23 Gain	6/30/2023	25	(853,800)	(853,800)	(55,132)
Total				**$ 1,274,992**	**$ 169,039**

Section 1.4: Actuarial Gain/(Loss) for FY21 ($'s in 000's)

	Pension	Healthcare	Total
1. Expected Actuarial Accrued Liability			
a. Actuarial Accrued Liability as of June 30, 2020	$ 15,279,525	$ 7,036,550	$ 22,316,075
b. Normal Cost	130,592	79,891	210,483
c. Interest on (a) and (b) at 7.38%	1,137,267	525,193	1,662,460
d. Employer Group Waiver Plan	0	52,545	52,545
e. Benefit Payments	(921,899)	(440,234)	(1,362,133)
f. Refund of Contributions	(8,107)	0	(8,107)
g. Interest on (d) thru (f) at 7.38%, adjusted for timing	(36,570)	(14,051)	(50,621)
h. Assumptions/Methods Changes	0	0	0
i. Expected Actuarial Accrued Liability as of June 30, 2021 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h)	$ 15,580,808	$ 7,239,894	$ 22,820,702
2. Actual Actuarial Accrued Liability as of June 30, 2021	15,419,975	6,856,170	22,276,145
3. Liability Gain/(Loss), (1)(i) - (2)	**$ 160,833**	**$ 383,724**	**$ 544,557**
4. Expected Actuarial Asset Value			
a. Actuarial Value of Assets as of June 30, 2020	$ 9,713,710	$ 7,989,358	$ 17,703,068
b. Interest on (a) at 7.38%	716,872	589,615	1,306,487
c. Employee Contributions	70,614	0	70,614
d. Employer Contributions	312,538	68,191	380,729
e. State Assistance Contributions	203,585	0	203,585
f. Employer Group Waiver Plan	0	52,545	52,545
g. Interest on (c) thru (f) at 7.38%, adjusted for timing	28,911	4,376	33,287
h. Benefit Payments	(921,899)	(440,234)	(1,362,133)
i. Refund of Contributions	(8,107)	0	(8,107)
j. Administrative Expenses	(8,232)	(4,859)	(13,091)
k. Interest on (h) thru (j) at 7.38%, adjusted for timing	(36,868)	(16,132)	(53,000)
l. Expected Actuarial Asset Value as of June 30, 2021 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) + (i) + (j) + (k)	$ 10,071,124	$ 8,242,860	$ 18,313,984
5. Actual Actuarial Asset Value as of June 30, 2021	10,466,709	8,581,155	19,047,864
6. Actuarial Asset Value Gain/(Loss), (5) - (4)(l)	**$ 395,585**	**$ 338,295**	**$ 733,880**
7. Total Actuarial Gain/(Loss), (3) + (6)	**$ 556,418**	**$ 722,019**	**$ 1,278,437**
8. Contribution Gain/(Loss)	**$ 23,056**	**$ 47,438**	**$ 70,494**
9. Administrative Expense Gain/(Loss)	**$ (774)**	**$ 263**	**$ (511)**
10. FY21 Gain/(Loss), (7) + (8) + (9)	**$ 578,700**	**$ 769,720**	**$ 1,348,420**

Section 1.5: Development of Change in Unfunded Liability During FY21 ($'s in 000's)

	Pension	Healthcare	Total
1. 2020 Unfunded Liability	$ 5,565,815	$ (952,808)	$ 4,613,007
a. Interest on Unfunded Liability at 7.38%	$ 410,757	$ (70,317)	$ 340,440
b. Normal Cost	130,592	79,891	210,483
c. Employee Contributions	(70,614)	0	(70,614)
d. Employer Contributions	(312,538)	(68,191)	(380,729)
e. State Assistance Contributions	(203,585)	0	(203,585)
f. Administrative Expenses	8,232	4,859	13,091
g. Interest on (b) thru (f) at 7.38%, adjusted for timing	(18,975)	3,600	(15,375)
h. Assumptions/Methods Changes	0	0	0
i. Expected Change in Unfunded Liability During FY21 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h)	$ (56,131)	$ (50,158)	$ (106,289)
2. Expected 2021 Unfunded Liability, (1) + (1)(i)	$ 5,509,684	$ (1,002,966)	$ 4,506,718
a. Liability (Gain)/Loss During FY21	$ (160,833)	$ (383,724)	$ (544,557)
b. Actuarial Assets (Gain)/Loss During FY21	(395,585)	(338,295)	(733,880)
c. Total Actuarial (Gain)/Loss During FY21	$ (556,418)	$ (722,019)	$ (1,278,437)
3. Actual 2021 Unfunded Liability, (2) + (2)(c)	$ 4,953,266	$ (1,724,985)	$ 3,228,281

Section 1.6: Analysis of Financial Experience

Pension
Change in Employer / State Contribution Rate as of Valuation Date
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	**2017**	**2018**	**2019**	**2020**	**2021**
1. Health Claims	N/A	N/A	N/A	N/A	N/A
2. Salary Experience	(0.36%)	(0.30%)	0.16%	(0.03%)	0.05%
3. Investment Experience	0.64%	0.52%	0.50%	0.44%	(1.06%)
4. Demographic Experience and Miscellaneous	(0.19%)	0.26%	(0.45%)	(0.19%)	(0.54%)
5. Actual vs Expected Contributions	0.15%	0.14%	0.11%	0.15%	(0.06%)
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	0.24%	0.62%	0.32%	0.37%	(1.61%)
7. Assumptions / Method Changes	0.00%	1.65%	0.00%	0.00%	0.00%
8. Plan Changes	0.00%	0.00%	0.00%	0.00%	0.00%
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	0.24%	2.27%	0.32%	0.37%	(1.61%)
10. Beginning Total Employer / State Contribution Rate	17.34%	17.58%	19.85%	20.17%	20.54%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	17.58%	19.85%	20.17%	20.54%	18.93%
12. Fiscal Year Rates Adopted by ARMB					
a. Fiscal Year Employer / State Contribution Rate	18.29%	20.66%	20.89%	18.38%	16.52% *
b. Fiscal Year for which Rate Applies	FY20	FY21	FY22	FY23	FY24

* Expected rate. Actual rate to be determined

Healthcare
Change in Employer / State Contribution Rate as of Valuation Date
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	**2017**	**2018**	**2019**	**2020**	**2021**
1. Health Claims	(2.46%)	(1.51%)	(2.39%)	(0.87%)	(0.12%)
2. Salary Experience	N/A	N/A	N/A	N/A	N/A
3. Investment Experience	0.51%	0.40%	0.38%	0.31%	0.00%
4. Demographic Experience and Miscellaneous	(0.48%)	(1.08%)	1.16%	0.38%	(0.26%)
5. Actual vs Expected Contributions	(0.12%)	0.06%	0.02%	(0.16%)	0.00%
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(2.55%)	(2.13%)	(0.83%)	(0.34%)	(0.38%)
7. Assumptions / Method Changes	2.89%	2.20%	0.00%	0.00%	0.00%
8. Plan Changes	0.00%	0.00%	0.00%	0.00%	(0.03%)
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	0.34%	0.07%	(0.83%)	(0.34%)	(0.41%)
10. Beginning Total Employer / State Contribution Rate	4.33%	4.67%	4.74%	3.91%	3.57%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	4.67%	4.74%	3.91%	3.57%	3.16%
12. Fiscal Year Rates Adopted by ARMB					
a. Fiscal Year Employer / State Contribution Rate	4.89%	4.27%	3.12%	0.00%	2.50% *
b. Fiscal Year for which Rate Applies	FY20	FY21	FY22	FY23	FY24

* Expected rate. Actual rate to be determined

Total
Change in Employer / State Contribution Rate as of Valuation Date
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	**2017**	**2018**	**2019**	**2020**	**2021**
1. Health Claims	(2.46%)	(1.51%)	(2.39%)	(0.87%)	(0.12%)
2. Salary Experience	(0.36%)	(0.30%)	0.16%	(0.03%)	0.05%
3. Investment Experience	1.15%	0.92%	0.88%	0.75%	(1.06%)
4. Demographic Experience and Miscellaneous	(0.67%)	(0.82%)	0.71%	0.19%	(0.80%)
5. Actual vs Expected Contributions	0.03%	0.20%	0.13%	(0.01%)	(0.06%)
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(2.31%)	(1.51%)	(0.51%)	0.03%	(1.99%)
7. Assumptions / Method Changes	2.89%	3.85%	0.00%	0.00%	0.00%
8. Plan Changes	0.00%	0.00%	0.00%	0.00%	(0.03%)
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	0.58%	2.34%	(0.51%)	0.03%	(2.02%)
10. Beginning Total Employer / State Contribution Rate	21.67%	22.25%	24.59%	24.08%	24.11%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	22.25%	24.59%	24.08%	24.11%	22.09%
12. Fiscal Year Rates Adopted by ARMB					
a. Fiscal Year Employer / State Contribution Rate	23.18%	24.93%	24.01%	18.38%	19.02% *
b. Fiscal Year for which Rate Applies	FY20	FY21	FY22	FY23	FY24

* Expected rate. Actual rate to be determined

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

Valuation Date	Total Actuarial Accrued Liability	Valuation Assets	Assets as a Percent of Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability (UAAL)
June 30, 2003	$ 10,561,653	$ 7,687,281	72.8%	$ 2,874,372
June 30, 2004	11,443,916	8,030,414	70.2%	3,413,502
June 30, 2005	12,844,841	8,442,919	65.7%	4,401,922
June 30, 2006	14,388,413	9,040,908	62.8%	5,347,505
June 30, 2007	14,570,933	9,900,960	68.0%	4,669,973
June 30, 2008	15,888,141	11,040,106	69.5%	4,848,035
June 30, 2009	16,579,371	10,242,978	61.8%	6,336,393
June 30, 2010	18,132,492	11,157,464	61.5%	6,975,028
June 30, 2011	18,740,550	11,813,774	63.0%	6,926,776
June 30, 2012	19,292,361	11,832,030	61.3%	7,460,331
June 30, 2013	19,992,759	12,162,626	60.8%	7,830,133
June 30, 2014	20,897,372	14,644,598	70.1%	6,252,774
June 30, 2015	20,648,663	16,173,459	78.3%	4,475,204
June 30, 2016	21,369,490	16,467,992	77.1%	4,901,498
June 30, 2017	21,881,395	16,786,771	76.7%	5,094,624
June 30, 2018	22,264,137	17,116,701	76.9%	5,147,436
June 30, 2019	22,190,874	17,387,184	78.4%	4,803,690
June 30, 2020	22,316,075	17,703,068	79.3%	4,613,007
June 30, 2021	22,276,145	19,047,864	85.5%	3,228,281

Section 2: Plan Assets

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

As of June 30, 2021	Pension	Healthcare	Total	Allocation Percent
Cash and Short-Term Investments				
- Cash and Cash Equivalents	$ 136,182	$ 99,250	$ 235,432	1.2%
- Subtotal	$ 136,182	$ 99,250	$ 235,432	1.2%
Fixed Income Investments				
- Domestic Fixed Income Pool	$ 2,413,353	$ 1,994,752	$ 4,408,105	20.2%
- International Fixed Income Pool	0	0	0	0.0%
- Tactical Fixed Income Pool	0	0	0	0.0%
- 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	$ 2,413,353	$ 1,994,752	$ 4,408,105	20.2%
Equity Investments				
- Domestic Equity Pool	$ 3,265,330	$ 2,698,953	$ 5,964,283	27.4%
- International Equity Pool	1,799,583	1,487,442	3,287,025	15.1%
- Private Equity Pool	1,770,792	1,463,644	3,234,436	14.9%
- Emerging Markets Equity Pool	382,294	315,985	698,279	3.2%
- Alternative Equity Strategies	695,474	574,842	1,270,316	5.8%
- Subtotal	$ 7,913,473	$ 6,540,866	$ 14,454,339	66.4%
Other Investments				
- Real Estate Pool	$ 732,171	$ 606,137	$ 1,338,308	6.1%
- Other Investments Pool	731,828	604,892	1,336,720	6.1%
- Absolute Return Pool	0	0	0	0.0%
- Other Assets	17	967	984	0.0%
- Subtotal	$ 1,464,016	$ 1,211,996	$ 2,676,012	12.2%
Total Cash and Investments	$ 11,927,024	$ 9,846,864	$ 21,773,888	100.0%
Net Accrued Receivables	(14,715)	(62,723)	(77,438)	
Net Assets	$ 11,912,309	$ 9,784,141	$ 21,696,450	

Section 2.2: Changes in Fair Value of Assets During FY21 ($'s in 000's)

Fiscal Year 2021	Pension	Healthcare	Total
1. Fair Value of Assets as of June 30, 2020	$ 9,469,161	$ 7,813,511	$ 17,282,672
2. Additions:			
a. Employee Contributions	$ 70,614	$ 0	$ 70,614
b. Employer Contributions	312,538	68,191	380,729
c. State Assistance Contributions	203,585	0	203,585
d. Interest and Dividend Income	132,757	109,764	242,521
e. Net Appreciation / Depreciation in Fair Value of Investments	2,688,309	2,206,395	4,894,704
f. Employer Group Waiver Plan	0	52,545	52,545
g. Other	537	596	1,133
h. Total Additions	$ 3,408,340	$ 2,437,491	$ 5,845,831
3. Deductions:			
a. Medical Benefits	$ 0	$ 440,234	$ 440,234
b. Retirement Benefits	921,899	0	921,899
c. Refund of Contributions	8,107	0	8,107
d. Investment Expenses	26,954	21,768	48,722
e. Administrative Expenses	8,232	4,859	13,091
f. Total Deductions	$ 965,192	$ 466,861	$ 1,432,053
4. Fair Value of Assets as of June 30, 2021	$ 11,912,309	$ 9,784,141	$ 21,696,450
5. Approximate Fair Value Investment Return Rate during FY21 Net of Investment Expenses	30.1%	30.0%	30.0%

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 FY21			
a. Fair Value of Assets as of June 30, 2020	$ 9,469,161	$ 7,813,511	$ 17,282,672
b. Contributions	586,737	68,191	654,928
c. Employer Group Waiver Plan	0	52,545	52,545
d. Benefit Payments	930,006	440,234	1,370,240
e. Administrative Expenses	8,232	4,859	13,091
f. Actual Investment Return (net of investment expenses)	2,794,649	2,294,987	5,089,636
g. Expected Return Rate (net of investment expenses)	7.38%	7.38%	7.38%
h. Expected Return, Weighted for Timing	690,867	564,881	1,255,748
i. Investment Gain / (Loss) for the Year, (f) - (h)	2,103,782	1,730,106	3,833,888
2. Actuarial Value as of June 30, 2021			
a. Fair Value as of June 30, 2021	$ 11,912,309	$ 9,784,141	$ 21,696,450
b. Deferred Investment Gain / (Loss)	1,445,600	1,202,986	2,648,586
c. Actuarial Value as of June 30, 2021, (a) - (b)	10,466,709	8,581,155	19,047,864
3. Ratio of Actuarial Value of Assets to Fair Value of Assets	87.9%	87.7%	87.8%
4. Approximate Actuarial Value Investment Return Rate during FY21 Net of Investment Expenses	11.6%	11.7%	11.6%

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

Pension				
Fiscal Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2017	$ 393,607	$ 314,884	$ 78,723	$ 0
June 30, 2018	17,834	10,701	3,567	3,566
June 30, 2019	(136,242)	(54,496)	(27,248)	(54,498)
June 30, 2020	(310,824)	(62,165)	(62,165)	(186,494)
June 30, 2021	2,103,782	0	420,756	1,683,026
Total	**$ 2,068,157**	**$ 208,924**	**$ 413,633**	**$ 1,445,600**

Healthcare				
Fiscal Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2017	$ 341,151	$ 272,920	$ 68,231	$ 0
June 30, 2018	30,997	18,597	6,199	6,201
June 30, 2019	(101,128)	(40,452)	(20,226)	(40,450)
June 30, 2020	(244,753)	(48,952)	(48,951)	(146,850)
June 30, 2021	1,730,106	0	346,021	1,384,085
Total	**$ 1,756,373**	**$ 202,113**	**$ 351,274**	**$ 1,202,986**

Total				
Fiscal Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2017	$ 734,758	$ 587,804	$ 146,954	$ 0
June 30, 2018	48,831	29,298	9,766	9,767
June 30, 2019	(237,370)	(94,948)	(47,474)	(94,948)
June 30, 2020	(555,577)	(111,117)	(111,116)	(333,344)
June 30, 2021	3,833,888	0	766,777	3,067,111
Total	**$ 3,824,530**	**$ 411,037**	**$ 764,907**	**$ 2,648,586**

Section 2.4: Historical Asset Rates of Return

	Actuarial Value		Fair Value	
Year Ending	**Annual**	**Cumulative***	**Annual**	**Cumulative***
June 30, 2005	8.7%	8.7%	8.5%	8.5%
June 30, 2006	9.3%	9.0%	11.4%	9.9%
June 30, 2007	11.6%	9.9%	18.5%	12.7%
June 30, 2008	10.0%	9.9%	(3.1%)	8.5%
June 30, 2009	(7.3%)	6.2%	(20.5%)	2.0%
June 30, 2010	7.2%	6.4%	10.2%	3.3%
June 30, 2011	7.2%	6.5%	20.4%	5.6%
June 30, 2012	1.2%	5.8%	0.2%	4.9%
June 30, 2013	4.0%	5.6%	12.1%	5.7%
June 30, 2014	21.9%	7.1%	18.1%	6.9%
June 30, 2015	7.0%	7.1%	2.9%	6.5%
June 30, 2016	5.0%	6.9%	(0.7%)	5.9%
June 30, 2017	5.4%	6.8%	12.8%	6.4%
June 30, 2018	6.1%	6.8%	8.2%	6.5%
June 30, 2019	5.5%	6.7%	6.0%	6.5%
June 30, 2020	5.8%	6.6%	4.1%	6.3%
June 30, 2021	11.6%	6.9%	30.0%	7.6%

* Cumulative since fiscal year ending June 30, 2005

Section 3: Projections

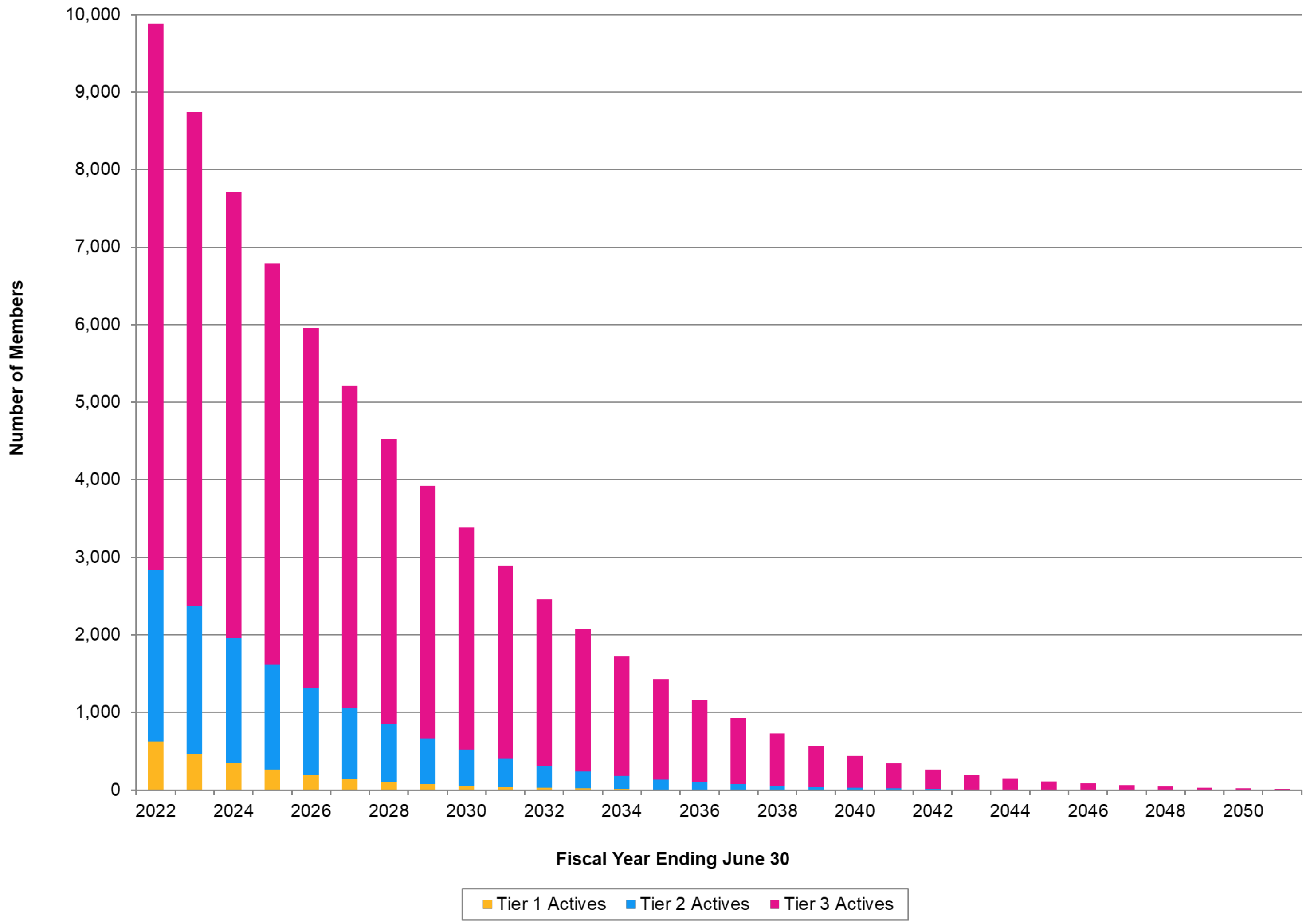
Section 3.1: Projection Assumptions and Methods

Key Assumptions

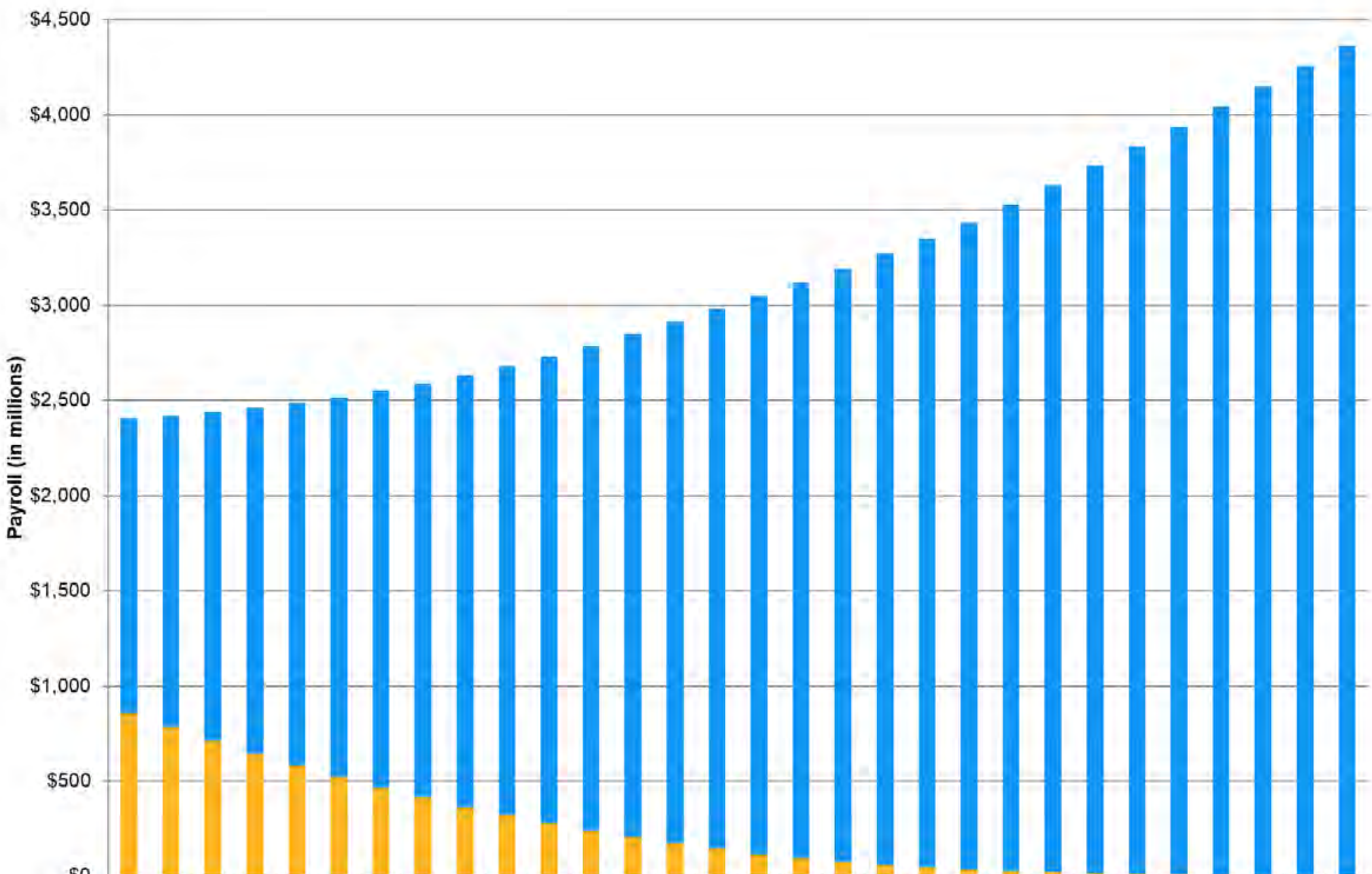
- 7.38% investment return (net of investment expenses) on the Fair Value of Assets in all future years.
- The Actuarial Value of Assets was re-initialized to Fair Value as of June 30, 2014. The Actuarial Value of Assets after June 30, 2014 reflects the deferred gains and losses generated by the smoothing 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, 2021.
- 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.
- The DCR contribution rate determined as of June 30, 2021 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.
- The Normal Cost is increased by the administrative expenses shown in Section 5. For future years, the percent increase is assumed to remain constant.
- The % of total DB/DCR payroll represented by the State's employees based on the June 30, 2021 data was assumed to remain constant in all future years.
- In Section 3.6B, we assumed all remaining pension unfunded liability layered amortization amounts would be zero after the pension trust is projected to reach a funded status of 100%.

Section 3.2: Membership Projection

Projected Active Member Count



Projected DB and DCR Payroll



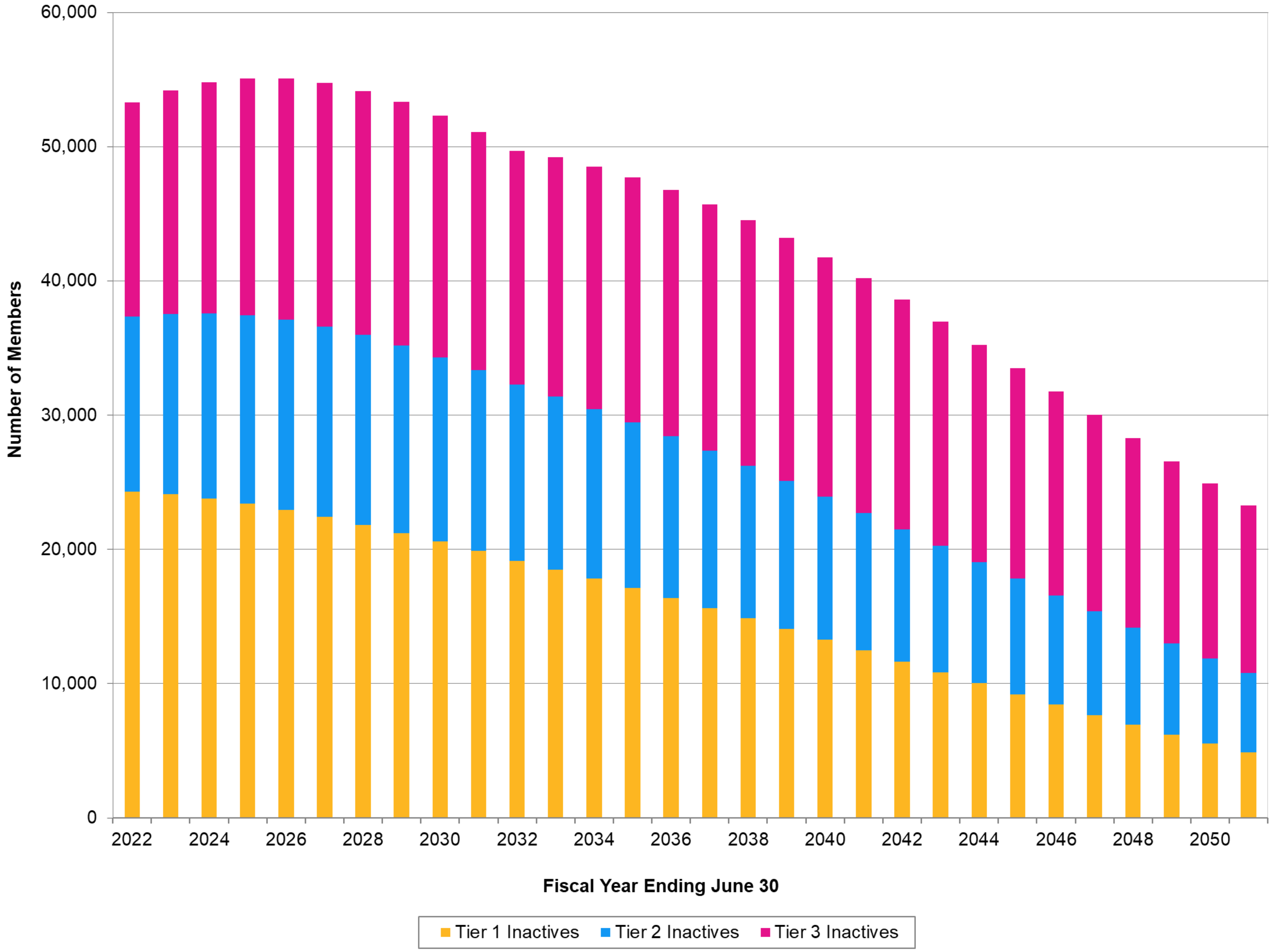
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
DCR Payroll	1,548	1,636	1,726	1,816	1,905	1,994	2,085	2,177	2,269	2,360	2,451	2,548	2,645	2,741	2,837
DB Payroll	859	783	712	644	582	522	466	414	365	320	278	240	205	173	144

	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
DCR Payroll	2,931	3,026	3,118	3,211	3,302	3,395	3,502	3,609	3,716	3,823	3,930	4,037	4,144	4,253	4,362
DB Payroll	117	94	75	59	47	36	28	22	17	13	9	7	5	4	3

Fiscal Year Ending June 30

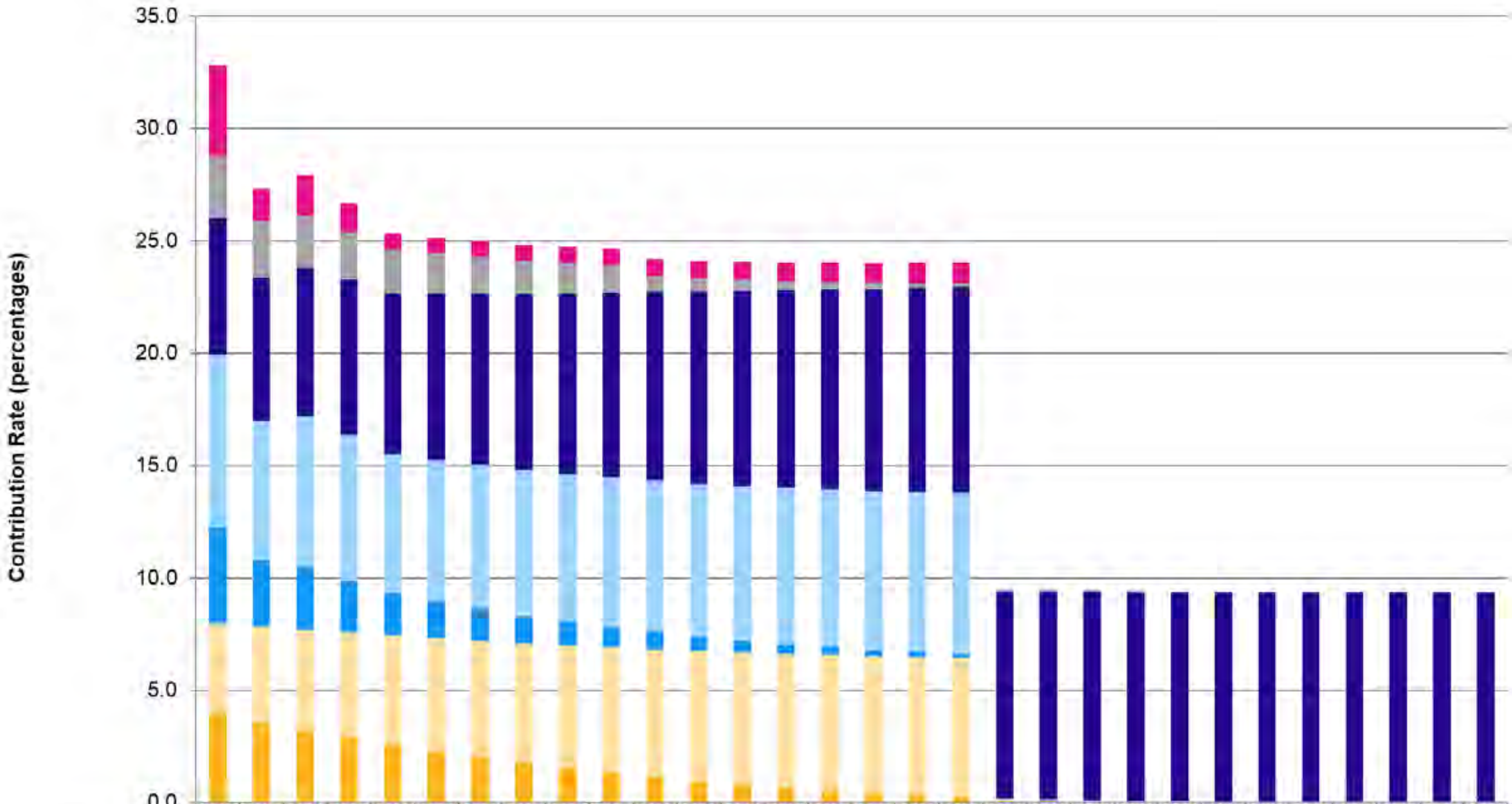
DB Payroll DCR Payroll

Projected Inactive Member Count



Section 3.3: Projected Employer/State Contribution Rates

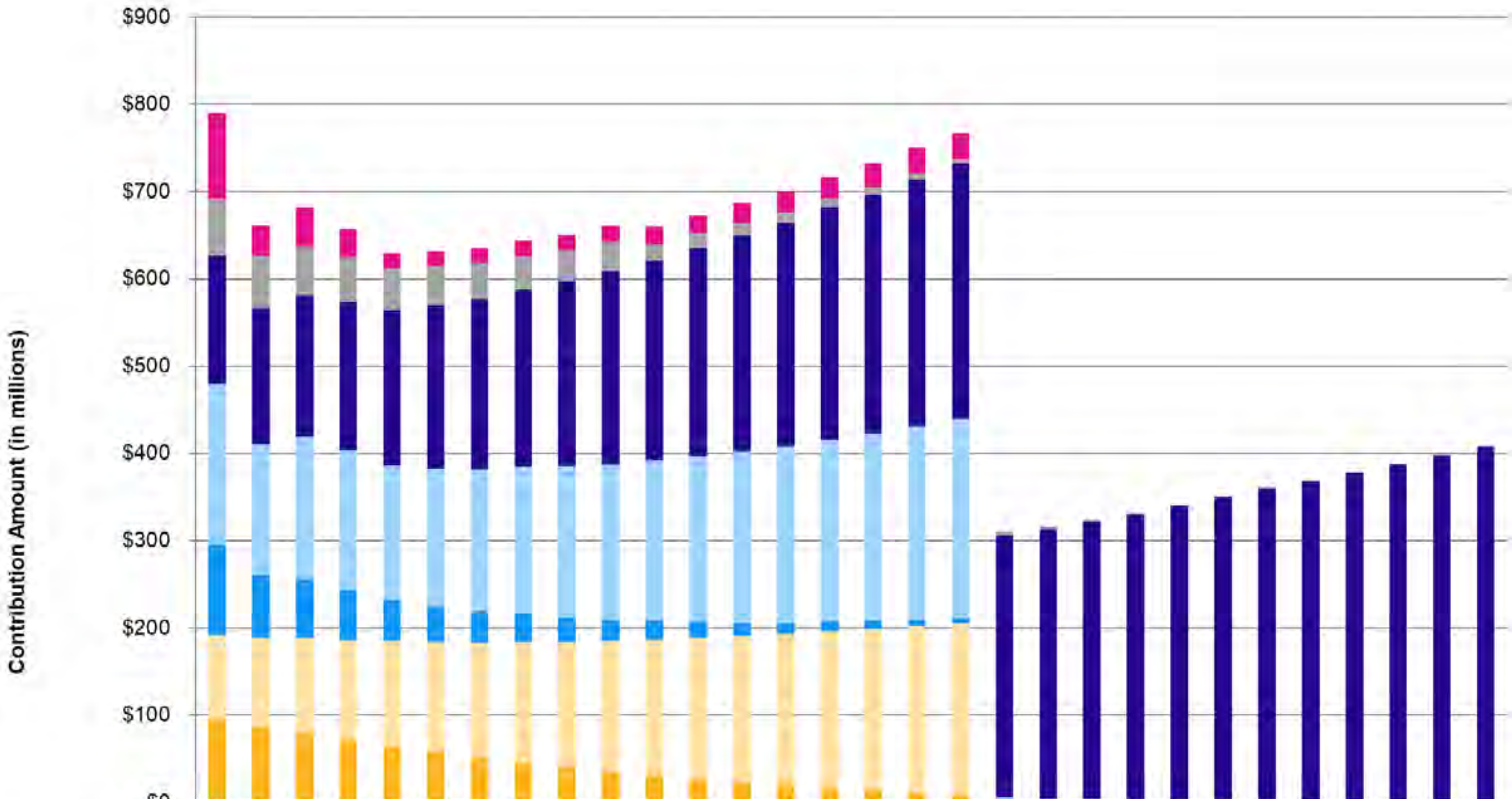
Based on Total DB and DCR Payroll



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
State Assistance	4.07	1.40	1.83	1.29	0.69	0.69	0.68	0.68	0.70	0.72	0.74	0.76	0.79	0.82	0.85
DB EE Contributions	2.72	2.50	2.30	2.11	1.94	1.77	1.62	1.48	1.35	1.24	0.71	0.60	0.50	0.41	0.33
DCR ER Contributions	6.10	6.41	6.63	6.91	7.17	7.42	7.65	7.86	8.06	8.24	8.40	8.55	8.69	8.80	8.91
State as ER on DCR Pay	7.69	6.19	6.71	6.49	6.18	6.29	6.39	6.48	6.57	6.66	6.74	6.81	6.88	6.95	7.01
State as ER on DB Pay	4.26	2.96	2.76	2.30	1.89	1.65	1.43	1.23	1.06	0.90	0.77	0.64	0.53	0.44	0.36
DB ER Contributions on DCR Pay	4.04	4.25	4.49	4.68	4.86	5.03	5.19	5.33	5.47	5.59	5.70	5.80	5.89	5.97	6.04
DB ER Contributions on DB Pay	3.94	3.58	3.22	2.89	2.58	2.29	2.02	1.76	1.53	1.32	1.13	0.95	0.79	0.65	0.53

	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
State Assistance	0.88	0.91	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DB EE Contributions	0.27	0.21	0.16	0.13	0.10	0.07	0.06	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.00
DCR ER Contributions	9.00	9.08	9.14	9.19	9.23	9.26	9.28	9.30	9.32	9.33	9.34	9.34	9.35	9.35	9.35
State as ER on DCR Pay	7.06	7.12	7.17	0.09	0.07	0.06	0.04	0.03	0.02	0.01	0.01	0.01	0.00	0.00	0.00
State as ER on DB Pay	0.28	0.22	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DB ER Contributions on DCR Pay	6.10	6.16	6.20	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DB ER Contributions on DB Pay	0.42	0.33	0.26	0.09	0.07	0.05	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.00

Section 3.4: Projected Employer/State Contribution Amounts



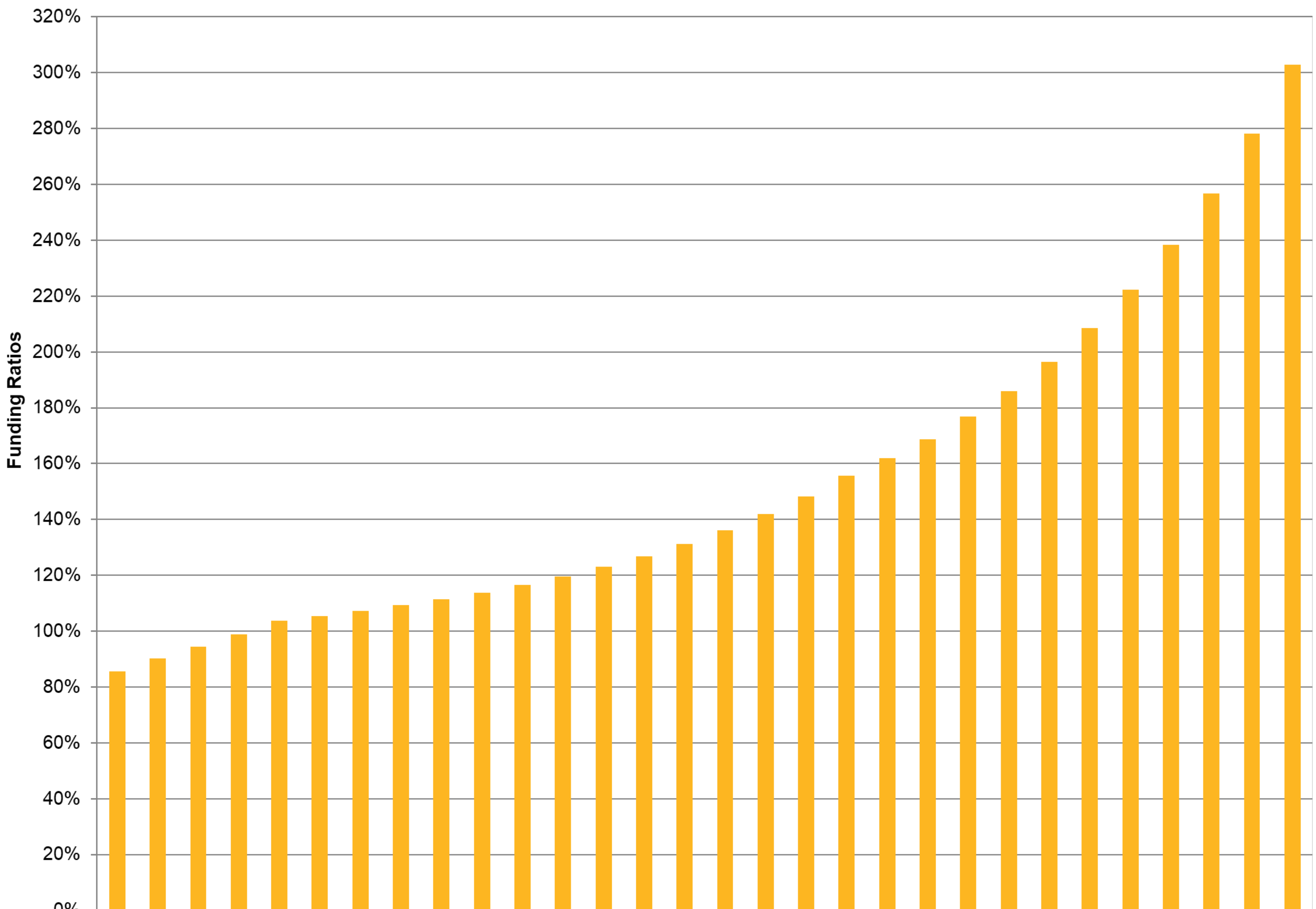
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
State Assistance	98	34	45	32	17	17	17	18	18	19	20	21	23	24	25
DB EE Contributions	65	61	56	52	48	45	41	38	36	33	19	17	14	12	10
DCR ER Contributions	147	155	162	170	178	187	195	204	212	221	229	238	248	256	266
State as ER on DCR Pay	185	150	163	160	154	158	163	168	173	179	184	190	196	202	209
State as ER on DB Pay	103	72	67	57	47	41	36	32	28	24	21	18	15	13	11
DB ER Contributions on DCR Pay	97	103	110	115	121	126	132	138	144	150	156	162	168	174	180
DB ER Contributions on DB Pay	95	86	79	71	64	58	51	46	40	35	31	27	23	19	16

	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
State Assistance	27	29	30	0	0	0	0	0	0	0	0	0	0	0	0
DB EE Contributions	8	7	5	4	3	2	2	1	1	1	1	0	0	0	0
DCR ER Contributions	274	283	292	300	309	318	328	338	348	358	368	378	388	398	408
State as ER on DCR Pay	215	222	229	3	2	2	1	1	1	1	0	0	0	0	0
State as ER on DB Pay	9	7	5	0	0	0	0	0	0	0	0	0	0	0	0
DB ER Contributions on DCR Pay	186	192	198	0	0	0	0	0	0	0	0	0	0	0	0
DB ER Contributions on DB Pay	13	10	8	3	2	2	1	1	1	1	0	0	0	0	0

Fiscal Year Ending June 30

DB ER Contributions on DB Pay · DB ER Contributions on DCR Pay · State as ER on DB Pay · State as ER on DCR Pay · DCR ER Contributions · DB EE Contributions · State Assistance

Section 3.5: Projection of Funded Ratios



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Funding Ratios	86%	90%	94%	99%	104%	105%	107%	109%	111%	114%	117%	120%	123%	127%	131%

	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
Funding Ratios	136%	142%	148%	156%	162%	169%	177%	186%	196%	208%	222%	238%	257%	278%	303%

Fiscal Year Ending June 30

Section 3.6A: Table of Projected Actuarial Results ($'s in 000's)

Fiscal Year End	Valuation Amounts on July 1 (Beginning of FY): Actuarial Assets	Accrued Liability	Funding Ratio	Unfunded Liability / (Surplus)	Cash Flow Amounts during Following 12 Months: Total Salaries	Actuarial Contrib. Rates: DB	DCR	Total	DB Contributions: Non-State Employers	State as an Employer	State Assistance	Employee	Total	Benefit Payments	Deferred Asset Gain / (Loss)
2022	$ 19,047,864	$ 22,276,145	85.5%	$ 3,228,281	$ 2,406,757	24.01%	6.10%	30.11%	$ 192,141	$ 287,718	$ 97,700	$ 65,405	$ 642,964	$ 1,384,673	$ 2,030,628
2023	20,485,465	22,686,119	90.3%	2,200,654	2,419,276	18.38%	6.41%	24.79%	189,375	221,398	33,933	60,574	505,280	1,452,612	1,422,440
2024	21,759,495	23,034,487	94.5%	1,274,992	2,437,619	19.02%	6.63%	25.65%	188,118	230,844	44,673	56,077	519,712	1,519,487	766,777
2025	23,077,297	23,325,864	98.9%	248,567	2,459,924	17.66%	6.91%	24.57%	186,380	216,299	31,743	51,849	486,271	1,581,069	0
2026	24,457,146	23,553,712	103.8%	(903,434)	2,486,407	16.20%	7.17%	23.37%	185,141	200,553	17,103	48,126	450,923	1,639,102	0
2027	25,019,087	23,722,456	105.5%	(1,296,631)	2,515,962	15.95%	7.42%	23.37%	184,183	199,805	17,307	44,634	445,929	1,691,307	0
2028	25,564,111	23,834,711	107.3%	(1,729,400)	2,551,387	15.70%	7.65%	23.35%	183,830	199,443	17,294	41,406	441,973	1,743,410	0
2029	26,092,076	23,888,351	109.2%	(2,203,725)	2,591,246	15.49%	7.86%	23.35%	183,971	199,848	17,564	38,407	439,790	1,792,657	0
2030	26,606,454	23,882,931	111.4%	(2,723,523)	2,634,091	15.33%	8.06%	23.39%	184,367	201,056	18,384	35,618	439,425	1,841,559	0
2031	27,108,439	23,815,895	113.8%	(3,292,544)	2,680,313	15.20%	8.24%	23.44%	185,180	202,848	19,379	33,314	440,721	1,888,399	0
2032	27,600,920	23,686,165	116.5%	(3,914,755)	2,729,431	15.08%	8.40%	23.48%	186,380	204,935	20,283	19,379	430,977	1,921,262	0
2033	28,086,220	23,492,795	119.6%	(4,593,425)	2,788,219	14.97%	8.55%	23.52%	188,295	207,822	21,279	16,729	434,125	1,962,656	0
2034	28,568,243	23,233,706	123.0%	(5,334,537)	2,849,691	14.89%	8.69%	23.58%	190,443	211,269	22,607	14,248	438,567	1,997,145	0
2035	29,055,213	22,912,291	126.8%	(6,142,922)	2,913,742	14.83%	8.80%	23.63%	193,114	215,146	23,847	11,946	444,053	2,027,268	0
2036	29,553,053	22,529,016	131.2%	(7,024,037)	2,980,267	14.79%	8.91%	23.70%	195,878	219,465	25,439	9,835	450,617	2,052,266	0
2037	30,068,967	22,085,105	136.2%	(7,983,862)	3,048,570	14.75%	9.00%	23.75%	198,989	223,888	26,787	8,231	457,895	2,073,075	0
2038	30,609,336	21,582,882	141.8%	(9,026,454)	3,119,617	14.74%	9.08%	23.82%	202,374	228,950	28,508	6,551	466,383	2,084,652	0
2039	31,186,769	21,027,265	148.3%	(10,159,504)	3,192,990	14.75%	9.14%	23.89%	206,171	234,494	30,300	5,109	476,074	2,090,235	0
2040	31,811,419	20,421,271	155.8%	(11,390,148)	3,269,593	0.19%	9.19%	9.38%	3,119	3,093	0	4,250	10,462	2,085,624	0
2041	32,003,567	19,772,369	161.9%	(12,231,198)	3,349,104	0.15%	9.23%	9.38%	2,523	2,502	0	3,349	8,374	2,073,472	0
2042	32,220,543	19,085,708	168.8%	(13,134,835)	3,431,102	0.12%	9.26%	9.38%	2,067	2,050	0	2,402	6,519	2,052,889	0
2043	32,473,140	18,370,562	176.8%	(14,102,578)	3,530,182	0.08%	9.28%	9.36%	1,419	1,407	0	2,118	4,944	2,025,256	0
2044	32,771,570	17,627,087	185.9%	(15,144,483)	3,630,726	0.06%	9.30%	9.36%	1,094	1,085	0	1,452	3,631	1,985,697	0
2045	33,131,835	16,868,565	196.4%	(16,263,270)	3,732,491	0.05%	9.32%	9.37%	937	930	0	1,120	2,987	1,940,818	0
2046	33,564,699	16,099,675	208.5%	(17,465,024)	3,835,282	0.03%	9.33%	9.36%	578	573	0	767	1,918	1,889,001	0
2047	34,082,265	15,327,056	222.4%	(18,755,209)	3,939,244	0.02%	9.34%	9.36%	396	392	0	788	1,576	1,830,189	0
2048	34,698,782	14,557,874	238.4%	(20,140,908)	4,044,148	0.02%	9.34%	9.36%	406	402	0	404	1,212	1,769,122	0
2049	35,423,864	13,794,868	256.8%	(21,628,996)	4,149,573	0.01%	9.35%	9.36%	208	207	0	415	830	1,704,173	0
2050	36,269,528	13,042,643	278.1%	(23,226,885)	4,256,510	0.01%	9.35%	9.36%	214	212	0	426	852	1,639,176	0
2051	37,245,140	12,302,143	302.8%	(24,942,997)	4,365,118	0.01%	9.35%	9.36%	219	217	0	0	436	1,571,836	0
								Total	**$ 3,437,510**	**$ 3,918,851**	**$ 514,130**	**$ 584,929**			

Pension unfunded liability layered amortization amounts are maintained after the pension trust is projected to be 100% funded.

Section 3.6A: Table of Projected Actuarial Results ($'s in 000's) (continued)

Fiscal Year End	Valuation Amounts on July 1 (Beginning of FY)					
	Funding Ratio			Unfunded Liability / (Surplus)		
	Pension	Healthcare	Total	Pension	Healthcare	Total
2022	67.9%	125.2%	85.5%	$ 4,953,266	$ (1,724,985)	$ 3,228,281
2023	71.8%	131.7%	90.3%	4,421,186	(2,220,532)	2,200,654
2024	75.2%	137.1%	94.5%	3,931,109	(2,656,117)	1,274,992
2025	78.5%	144.0%	98.9%	3,447,316	(3,198,749)	248,567
2026	82.1%	151.6%	103.8%	2,902,436	(3,805,870)	(903,434)
2027	82.8%	154.7%	105.5%	2,789,764	(4,086,395)	(1,296,631)
2028	83.7%	158.2%	107.3%	2,658,891	(4,388,291)	(1,729,400)
2029	84.6%	161.9%	109.2%	2,508,543	(4,712,268)	(2,203,725)
2030	85.6%	166.1%	111.4%	2,337,173	(5,060,696)	(2,723,523)
2031	86.7%	170.7%	113.8%	2,142,666	(5,435,210)	(3,292,544)
2032	88.0%	175.8%	116.5%	1,922,957	(5,837,712)	(3,914,755)
2033	89.4%	181.5%	119.6%	1,675,797	(6,269,222)	(4,593,425)
2034	91.0%	187.9%	123.0%	1,398,102	(6,732,639)	(5,334,537)
2035	92.9%	195.1%	126.8%	1,087,337	(7,230,259)	(6,142,922)
2036	95.1%	203.1%	131.2%	741,041	(7,765,078)	(7,024,037)
2037	97.6%	212.2%	136.2%	355,919	(8,339,781)	(7,983,862)
2038	100.5%	222.5%	141.8%	(70,737)	(8,955,717)	(9,026,454)
2039	103.9%	234.2%	148.3%	(542,888)	(9,616,616)	(10,159,504)
2040	107.9%	247.4%	155.8%	(1,064,015)	(10,326,133)	(11,390,148)
2041	108.8%	262.5%	161.9%	(1,143,242)	(11,087,956)	(12,231,198)
2042	109.9%	279.6%	168.8%	(1,228,723)	(11,906,112)	(13,134,835)
2043	111.0%	299.1%	176.8%	(1,320,548)	(12,782,030)	(14,102,578)
2044	112.4%	321.5%	185.9%	(1,419,202)	(13,725,281)	(15,144,483)
2045	114.0%	347.0%	196.4%	(1,525,307)	(14,737,963)	(16,263,270)
2046	115.8%	376.0%	208.5%	(1,639,585)	(15,825,439)	(17,465,024)
2047	117.9%	409.0%	222.4%	(1,762,076)	(16,993,133)	(18,755,209)
2048	120.4%	446.5%	238.4%	(1,893,634)	(18,247,274)	(20,140,908)
2049	123.2%	489.1%	256.8%	(2,035,226)	(19,593,770)	(21,628,996)
2050	126.6%	537.5%	278.1%	(2,187,088)	(21,039,797)	(23,226,885)
2051	130.5%	592.8%	302.8%	(2,350,329)	(22,592,668)	(24,942,997)

Pension unfunded liability layered amortization amounts are maintained after the pension trust is projected to be 100% funded.

Section 3.6B: Table of Projected Actuarial Results ($'s in 000's)

Fiscal Year End	Valuation Amounts on July 1 (Beginning of FY)				Cash Flow Amounts during Following 12 Months										Deferred Asset Gain / (Loss)
						Actuarial Contrib. Rates			DB Contributions						
	Actuarial Assets	Accrued Liability	Funding Ratio	Unfunded Liability / (Surplus)	Total Salaries	DB	DCR	Total	Non-State Employers	State as an Employer	State Assistance	Employee	Total	Benefit Payments	
2022	$ 19,047,864	$ 22,276,145	85.5%	$ 3,228,281	$ 2,406,757	24.01%	6.10%	30.11%	$ 192,141	$ 287,718	$ 97,700	$ 65,405	$ 642,964	$ 1,384,673	$ 2,030,628
2023	20,485,465	22,686,119	90.3%	2,200,654	2,419,276	18.38%	6.41%	24.79%	189,375	221,398	33,933	60,574	505,280	1,452,612	1,422,440
2024	21,759,495	23,034,487	94.5%	1,274,992	2,437,619	19.02%	6.63%	25.65%	188,118	230,844	44,673	56,077	519,712	1,519,487	766,777
2025	23,077,297	23,325,864	98.9%	248,567	2,459,924	17.66%	6.91%	24.57%	186,380	216,299	31,743	51,849	486,271	1,581,069	0
2026	24,457,146	23,553,712	103.8%	(903,434)	2,486,407	16.20%	7.17%	23.37%	185,141	200,553	17,103	48,126	450,923	1,639,102	0
2027	25,019,087	23,722,456	105.5%	(1,296,631)	2,515,962	15.95%	7.42%	23.37%	184,183	199,805	17,307	44,634	445,929	1,691,307	0
2028	25,564,111	23,834,711	107.3%	(1,729,400)	2,551,387	15.70%	7.65%	23.35%	183,830	199,443	17,294	41,406	441,973	1,743,410	0
2029	26,092,076	23,888,351	109.2%	(2,203,725)	2,591,246	15.49%	7.86%	23.35%	183,971	199,848	17,564	38,407	439,790	1,792,657	0
2030	26,606,454	23,882,931	111.4%	(2,723,523)	2,634,091	15.33%	8.06%	23.39%	184,367	201,056	18,384	35,618	439,425	1,841,559	0
2031	27,108,439	23,815,895	113.8%	(3,292,544)	2,680,313	15.20%	8.24%	23.44%	185,180	202,848	19,379	33,314	440,721	1,888,399	0
2032	27,600,920	23,686,165	116.5%	(3,914,755)	2,729,431	15.08%	8.40%	23.48%	186,380	204,935	20,283	19,379	430,977	1,921,262	0
2033	28,086,220	23,492,795	119.6%	(4,593,425)	2,788,219	14.97%	8.55%	23.52%	188,295	207,822	21,279	16,729	434,125	1,962,656	0
2034	28,568,243	23,233,706	123.0%	(5,334,537)	2,849,691	14.89%	8.69%	23.58%	190,443	211,269	22,607	14,248	438,567	1,997,145	0
2035	29,055,213	22,912,291	126.8%	(6,142,922)	2,913,742	14.83%	8.80%	23.63%	193,114	215,146	23,847	11,946	444,053	2,027,268	0
2036	29,553,053	22,529,016	131.2%	(7,024,037)	2,980,267	14.79%	8.91%	23.70%	195,878	219,465	25,439	9,835	450,617	2,052,266	0
2037	30,068,967	22,085,105	136.2%	(7,983,862)	3,048,570	14.75%	9.00%	23.75%	198,989	223,888	26,787	8,231	457,895	2,073,075	0
2038	30,609,336	21,582,882	141.8%	(9,026,454)	3,119,617	0.34%	9.08%	9.42%	5,326	5,281	0	6,551	17,158	2,084,652	0
2039	30,720,192	21,027,265	146.1%	(9,692,927)	3,192,990	0.26%	9.14%	9.40%	4,168	4,134	0	5,109	13,411	2,090,235	0
2040	30,829,839	20,421,271	151.0%	(10,408,568)	3,269,593	0.19%	9.19%	9.38%	3,119	3,093	0	4,250	10,462	2,085,624	0
2041	30,949,547	19,772,369	156.5%	(11,177,178)	3,349,104	0.15%	9.23%	9.38%	2,523	2,502	0	3,349	8,374	2,073,472	0
2042	31,088,736	19,085,708	162.9%	(12,003,028)	3,431,102	0.12%	9.26%	9.38%	2,067	2,050	0	2,402	6,519	2,052,889	0
2043	31,257,806	18,370,562	170.2%	(12,887,244)	3,530,182	0.08%	9.28%	9.36%	1,419	1,407	0	2,118	4,944	2,025,256	0
2044	31,466,545	17,627,087	178.5%	(13,839,458)	3,630,726	0.06%	9.30%	9.36%	1,094	1,085	0	1,452	3,631	1,985,697	0
2045	31,730,499	16,868,565	188.1%	(14,861,934)	3,732,491	0.05%	9.32%	9.37%	937	930	0	1,120	2,987	1,940,818	0
2046	32,059,944	16,099,675	199.1%	(15,960,269)	3,835,282	0.03%	9.33%	9.36%	578	573	0	767	1,918	1,889,001	0
2047	32,466,459	15,327,056	211.8%	(17,139,403)	3,939,244	0.02%	9.34%	9.36%	396	392	0	788	1,576	1,830,189	0
2048	32,963,730	14,557,874	226.4%	(18,405,856)	4,044,148	0.02%	9.34%	9.36%	406	402	0	404	1,212	1,769,122	0
2049	33,560,765	13,794,868	243.3%	(19,765,897)	4,149,573	0.01%	9.35%	9.36%	208	207	0	415	830	1,704,173	0
2050	34,268,932	13,042,643	262.7%	(21,226,289)	4,256,510	0.01%	9.35%	9.36%	214	212	0	426	852	1,639,176	0
2051	35,096,900	12,302,143	285.3%	(22,794,757)	4,365,118	0.01%	9.35%	9.36%	219	217	0	0	436	1,571,836	0
								Total	**$ 3,038,459**	**$ 3,464,822**	**$ 455,322**	**$ 584,929**			

Pension unfunded liability layered amortization amounts are reduced to zero when the pension trust is projected to be 100% funded. The healthcare unfunded liability amortization amounts would also be reduced to zero since the healthcare trust is currently more than 100% funded.

Section 3.6B: Table of Projected Actuarial Results ($'s in 000's) (continued)

Fiscal Year End	Valuation Amounts on July 1 (Beginning of FY)					
	Funding Ratio			Unfunded Liability / (Surplus)		
	Pension	Healthcare	Total	Pension	Healthcare	Total
2022	67.9%	125.2%	85.5%	$ 4,953,266	$ (1,724,985)	$ 3,228,281
2023	71.8%	131.7%	90.3%	4,421,186	(2,220,532)	2,200,654
2024	75.2%	137.1%	94.5%	3,931,109	(2,656,117)	1,274,992
2025	78.5%	144.0%	98.9%	3,447,316	(3,198,749)	248,567
2026	82.1%	151.6%	103.8%	2,902,436	(3,805,870)	(903,434)
2027	82.8%	154.7%	105.5%	2,789,764	(4,086,395)	(1,296,631)
2028	83.7%	158.2%	107.3%	2,658,891	(4,388,291)	(1,729,400)
2029	84.6%	161.9%	109.2%	2,508,543	(4,712,268)	(2,203,725)
2030	85.6%	166.1%	111.4%	2,337,173	(5,060,696)	(2,723,523)
2031	86.7%	170.7%	113.8%	2,142,666	(5,435,210)	(3,292,544)
2032	88.0%	175.8%	116.5%	1,922,957	(5,837,712)	(3,914,755)
2033	89.4%	181.5%	119.6%	1,675,797	(6,269,222)	(4,593,425)
2034	91.0%	187.9%	123.0%	1,398,102	(6,732,639)	(5,334,537)
2035	92.9%	195.1%	126.8%	1,087,337	(7,230,259)	(6,142,922)
2036	95.1%	203.1%	131.2%	741,041	(7,765,078)	(7,024,037)
2037	97.6%	212.2%	136.2%	355,919	(8,339,781)	(7,983,862)
2038	100.5%	222.5%	141.8%	(70,737)	(8,955,717)	(9,026,454)
2039	100.6%	234.2%	146.1%	(76,311)	(9,616,616)	(9,692,927)
2040	100.6%	247.4%	151.0%	(82,435)	(10,326,133)	(10,408,568)
2041	100.7%	262.5%	156.5%	(89,222)	(11,087,956)	(11,177,178)
2042	100.8%	279.6%	162.9%	(96,916)	(11,906,112)	(12,003,028)
2043	100.9%	299.1%	170.2%	(105,214)	(12,782,030)	(12,887,244)
2044	101.0%	321.5%	178.5%	(114,177)	(13,725,281)	(13,839,458)
2045	101.1%	347.0%	188.1%	(123,971)	(14,737,963)	(14,861,934)
2046	101.3%	376.0%	199.1%	(134,830)	(15,825,439)	(15,960,269)
2047	101.5%	409.0%	211.8%	(146,270)	(16,993,133)	(17,139,403)
2048	101.7%	446.5%	226.4%	(158,582)	(18,247,274)	(18,405,856)
2049	102.0%	489.1%	243.3%	(172,127)	(19,593,770)	(19,765,897)
2050	102.3%	537.5%	262.7%	(186,492)	(21,039,797)	(21,226,289)
2051	102.6%	592.8%	285.3%	(202,089)	(22,592,668)	(22,794,757)

Pension unfunded liability layered amortization amounts are reduced to zero when the pension trust is projected to be 100% funded. The healthcare unfunded liability amortization amounts would also be reduced to zero since the healthcare trust is currently more than 100% funded.

Section 3.7: Projected Pension Benefit Recipients and Amounts ($'s in 000's)

Fiscal Year End	Pension Recipient Counts	Pension Benefit Amounts	Fiscal Year End	Pension Recipient Counts	Pension Benefit Amounts
2022	37,717	$ 974,479	2064	4,967	$ 433,043
2023	39,219	1,023,259	2065	4,396	395,909
2024	40,483	1,070,386	2066	3,878	360,533
2025	41,478	1,114,086	2067	3,411	326,935
2026	42,213	1,154,914	2068	2,989	295,126
2027	42,715	1,194,307	2069	2,609	265,117
2028	42,995	1,232,455	2070	2,268	236,912
2029	43,078	1,267,441	2071	1,962	210,515
2030	43,000	1,300,547	2072	1,690	185,925
2031	42,776	1,330,695	2073	1,447	163,136
2032	42,387	1,345,678	2074	1,232	142,139
2033	41,884	1,368,593	2075	1,042	122,918
2034	41,242	1,387,229	2076	876	105,446
2035	40,483	1,401,876	2077	731	89,683
2036	39,591	1,413,159	2078	604	75,579
2037	38,627	1,420,047	2079	496	63,070
2038	37,549	1,421,411	2080	403	52,079
2039	36,347	1,417,753	2081	325	42,522
2040	35,040	1,407,945	2082	259	34,303
2041	33,642	1,393,880	2083	204	27,322
2042	32,180	1,374,647	2084	159	21,469
2043	30,677	1,350,546	2085	122	16,633
2044	29,118	1,322,273	2086	93	12,693
2045	27,551	1,289,338	2087	70	9,539
2046	25,964	1,252,998	2088	52	7,052
2047	24,386	1,213,386	2089	38	5,130
2048	22,812	1,171,109	2090	28	3,669
2049	21,266	1,126,517	2091	20	2,583
2050	19,762	1,080,001	2092	14	1,789
2051	18,303	1,032,106	2093	11	1,222
2052	16,890	983,276	2094	7	826
2053	15,533	933,864	2095	5	553
2054	14,234	884,229	2096	4	370
2055	12,998	834,705	2097	3	249
2056	11,828	785,605	2098	2	170
2057	10,728	737,196	2099	2	118
2058	9,699	689,711	2100	1	85
2059	8,741	643,344	2101	1	62
2060	7,853	598,258	2102	1	48
2061	7,035	554,586	2103	1	38
2062	6,283	512,440	2104	0	0
2063	5,594	471,903	2105	0	0

Counts include retirees, disabilitants, and beneficiaries.

Section 4: Member Data

Section 4.1: Summary of Members Included

As of June 30	2017	2018	2019	2020	2021
Active Members					
1. Number	14,719	13,434	12,152	11,033	9,888[1]
2. Average Age	52.10	52.52	52.84	53.21	53.51
3. Average Credited Service	16.57	17.21	17.80	18.38	18.96
4. Average Entry Age	35.53	35.30	35.04	34.83	34.55
5. Average Annual Earnings	$ 76,902	$ 77,813	$ 82,192	$ 83,757	$ 86,316
6. Number Vested	14,314	13,103	11,868	10,791	9,675
7. Percent Who Are Vested	97.2%	97.5%	97.7%	97.8%	97.8%
Retirees, Disabilitants, and Beneficiaries					
1. Number	34,347	35,454	36,310	37,106	37,717
2. Average Age	69.42	69.85	70.29	70.77	71.17
3. Average Years Since Retirement	11.71	11.87	12.14	12.45	12.66
4. Average Monthly Pension Benefit					
a. Base	$ 1,574	$ 1,616	$ 1,660	$ 1,704	$ 1,752
b. COLA[2]	93	94	92	93	94
c. PRPA[2]	230	222	241	244	230
d. Adjustment	1	1	1	0	0
e. Total	$ 1,898	$ 1,933	$ 1,994	$ 2,041	$ 2,076
Vested Terminations (vested at termination, not refunded contributions, or commenced benefit)					
1. Number	5,962	5,660	5,499	5,327	5,135
2. Average Age	52.45	52.56	53.06	53.52	53.92
3. Average Monthly Pension Benefit	$ 1,080	$ 1,087	$ 1,123	$ 1,158	$ 1,205
Non-Vested Terminations (not vested at termination, not refunded contributions)					
1. Number	11,506	11,192	10,921	10,642	10,432
2. Average Account Balance	$ 6,462	$ 6,558	$ 6,923	$ 7,060	$ 7,325
Total Number of Members	**66,534**	**65,740**	**64,882**	**64,108**	**63,172**

[1] Includes 4,643 male active members and 5,245 female active members.

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

Summary of Members Included

As of June 30, 2021	DB Tier 1	DB Tier 2	DB Tier 3	DB Total	DCR Tier 4	Grand Total
Active Members						
1. Number	622	2,219	7,047	9,888	23,933	33,821
2. Average Age	63.38	56.77	51.61	53.51	41.26	44.84
3. Average Credited Service	23.72	23.30	17.17	18.96	4.93	9.03
4. Average Entry Age	39.66	33.47	34.44	34.55	36.33	35.81
5. Annual Earnings						
a. Total (000's)	$ 49,598	$ 198,403	$ 605,488	$ 853,489	$ 1,530,905	$ 2,384,394
b. Average	$ 79,740	$ 89,411	$ 85,921	$ 86,316	$ 63,966	$ 70,500

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

As of June 30, 2021	Tier 1	Tier 2	Tier 3	Total
Retirees, Disabilitants, and Beneficiaries				
1. Number	23,077	9,340	5,300	37,717
2. Average Age	72.84	69.13	67.42	71.17
3. Average Years Since Retirement	15.90	8.64	5.59	12.66
4. Average Monthly Pension Benefit				
a. Base	$ 1,766	$ 1,913	$ 1,405	$ 1,752
b. COLA	119	59	46	94
c. PRPA	325	100	43	230
d. Adjustment	0	1	1	0
e. Total	$ 2,210	$ 2,073	$ 1,495	$ 2,076

Summary of Members Included

As of June 30, 2021	Active Members	Inactive Members: Retirees	Covered Spouses	Covered Children / Dependents	Deferred	Total Inactive Members
Retiree Medical Participants						
1. Retiree Coverage Only	9,817	19,421	0	0	2,153	21,574
2. Retiree + Spouse	0	12,647	12,647	0	3,281	28,575
3. Retiree + Children / Dependents	0	413	0	412	0	825
4. Family	0	773	773	1,112	0	2,658
5. Total	9,817	33,254	13,420	1,524	5,434	53,632

As of June 30, 2021	Retirees	Covered Spouses	Covered Children / Dependents	Deferred	Total Inactive Members
Retiree Medical Participants					
1. Pre-Medicare	7,134	4,641	1,524	5,260	18,559
2. Medicare Part A & B	25,889	8,730	0	174	34,793
3. Medicare Part B Only	231	49	0	0	280
4. Total	33,254	13,420	1,524	5,434	53,632

As of June 30, 2021	Retirees
Summary of Retiree Medical Data Received	
1. Retiree records on pension data	37,717
2. Remove duplicates on pension data	(1,163)
3. Valued in a different retiree healthcare plan[1]	(1,146)
4. Records without medical coverage	(2,305)
5. Medical only retirees	151
6. Total	33,254

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

Summary of Members Included

Active Members – DB Only

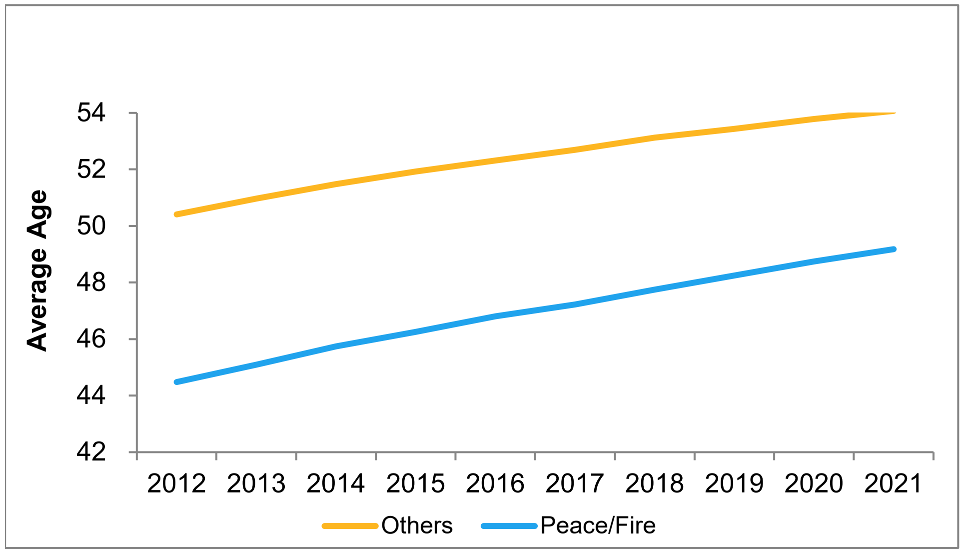
As of June 30	2017	2018	2019	2020	2021
Peace Officer / Firefighter					
1. Number	1,606	1,507	1,382	1,266	1,137 [1]
2. Average Age	47.22	47.75	48.25	48.74	49.18
3. Average Credited Service	17.41	18.15	18.90	19.45	20.15
4. Average Entry Age	29.81	29.60	29.35	29.29	29.03
5. Average Annual Earnings	$ 106,987	$ 108,580	$ 120,089	$ 123,436	$ 127,327
6. Number Vested	1,599	1,500	1,374	1,260	1,134
7. Percent Who Are Vested	99.6%	99.5%	99.4%	99.5%	99.7%
Others					
1. Number	13,113	11,927	10,770	9,767	8,751 [2]
2. Average Age	52.70	53.12	53.43	53.79	54.07
3. Average Credited Service	16.47	17.09	17.66	18.24	18.80
4. Average Entry Age	36.23	36.03	35.77	35.55	35.27
5. Average Annual Earnings	$ 73,218	$ 73,926	$ 77,329	$ 78,613	$ 80,987
6. Number Vested	12,715	11,603	10,494	9,531	8,541
7. Percent Who Are Vested	97.0%	97.3%	97.4%	97.6%	97.6%
Total					
1. Number	14,719	13,434	12,152	11,033	9,888
2. Average Age	52.10	52.52	52.84	53.21	53.51
3. Average Credited Service	16.57	17.21	17.80	18.38	18.96
4. Average Entry Age	35.53	35.30	35.04	34.83	34.55
5. Average Annual Earnings	$ 76,902	$ 77,813	$ 82,192	$ 83,757	$ 86,316
6. Number Vested	14,314	13,103	11,868	10,791	9,675
7. Percent Who Are Vested	97.2%	97.5%	97.7%	97.8%	97.8%

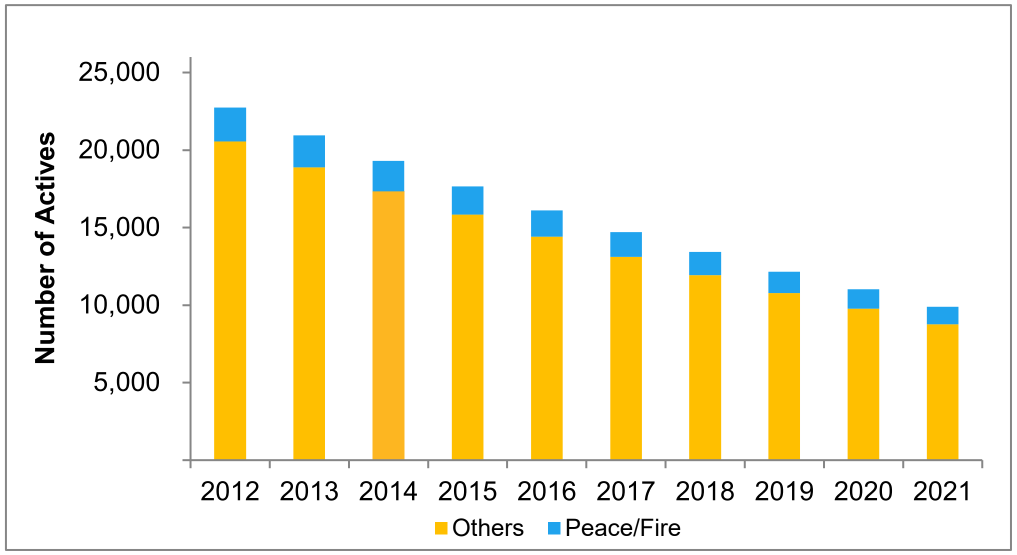
Average annual earnings (“valuation pay”) are the annualized earnings for the fiscal year ending on the valuation date.

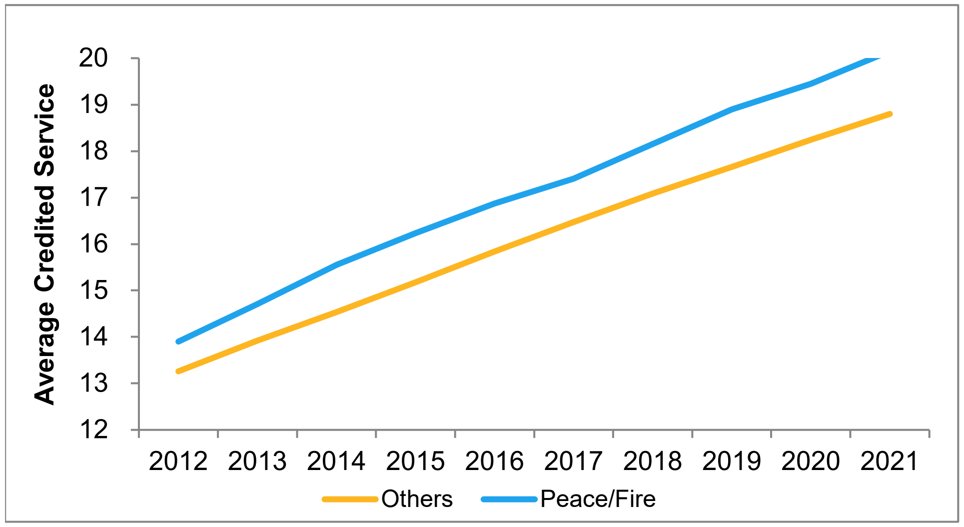
[1] Includes 975 male active members and 162 female active members.

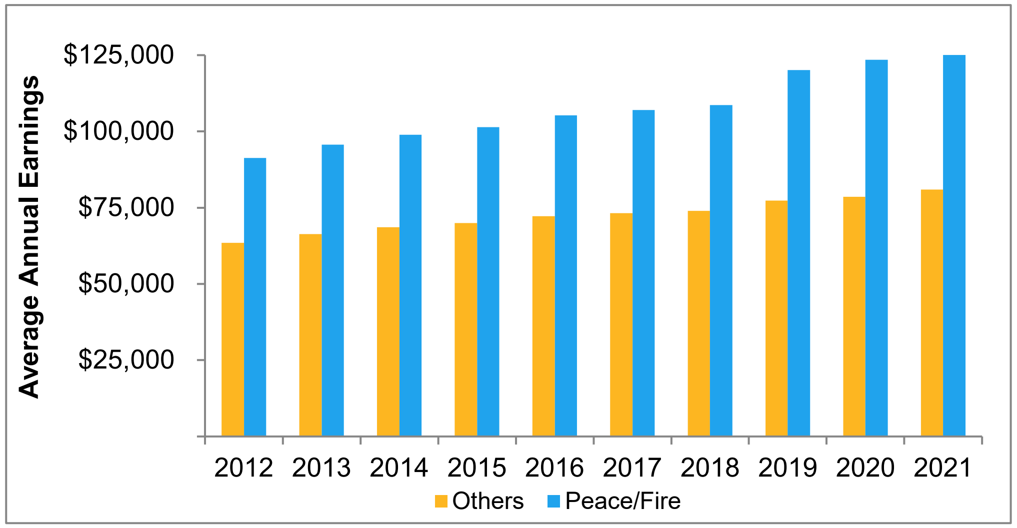
[2] Includes 3,668 male active members and 5,083 female active members.

Summary of Members Included - Active Members at June 30









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

Section 4.2: Age and Service Distribution of Active Members

Peace Officer / Firefighter

Annual Earnings by Age

Age	Number	Total Annual Earnings	Average Annual Earnings
0 - 19	0	$ 0	$ 0
20 - 24	0	0	0
25 - 29	0	0	0
30 - 34	1	149,735	149,735
35 - 39	82	10,000,382	121,956
40 - 44	211	27,523,104	130,441
45 - 49	342	44,289,542	129,502
50 - 54	298	38,709,607	129,898
55 - 59	154	18,406,191	119,521
60 - 64	39	4,580,412	117,446
65 - 69	9	1,003,897	111,544
70 - 74	0	0	0
75+	1	108,235	108,235
Total	**1,137**	**$ 144,771,105**	**$ 127,327**

Annual Earnings by Credited Service

Years of Service	Number	Total Annual Earnings	Average Annual Earnings
0	0	$ 0	$ 0
1	0	0	0
2	2	112,128	56,064
3	0	0	0
4	1	72,120	72,120
0 - 4	**3**	**$ 184,248**	**$ 61,416**
5 - 9	14	1,250,847	89,346
10 - 14	64	6,186,036	96,657
15 - 19	520	64,179,398	123,422
20 - 24	372	50,328,887	135,293
25 - 29	137	19,319,401	141,018
30 - 34	24	2,885,555	120,231
35 - 39	1	201,624	201,624
40+	2	235,109	117,555
Total	**1,137**	**$ 144,771,105**	**$ 127,327**

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	1	0	0	0	0	0	1
35 - 39	0	6	10	65	1	0	0	0	0	82
40 - 44	1	3	11	143	52	1	0	0	0	211
45 - 49	1	1	12	145	143	40	0	0	0	342
50 - 54	0	2	15	87	124	64	6	0	0	298
55 - 59	1	2	11	64	44	23	9	0	0	154
60 - 64	0	0	4	12	7	8	7	0	1	39
65 - 69	0	0	1	3	1	1	2	1	0	9
70 - 74	0	0	0	0	0	0	0	0	0	0
75+	0	0	0	0	0	0	0	0	1	1
Total	**3**	**14**	**64**	**520**	**372**	**137**	**24**	**1**	**2**	**1,137**

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

Age and Service Distribution of Active Members

Others

Annual Earnings by Age

Age	Number	Total Annual Earnings	Average Annual Earnings
0 - 19	0	$ 0	$ 0
20 - 24	0	0	0
25 - 29	0	0	0
30 - 34	21	1,707,881	81,328
35 - 39	381	29,552,174	77,565
40 - 44	946	78,062,108	82,518
45 - 49	1,375	116,242,301	84,540
50 - 54	1,770	149,031,703	84,199
55 - 59	2,222	178,695,225	80,421
60 - 64	1,345	103,071,893	76,633
65 - 69	513	39,229,659	76,471
70 - 74	143	10,647,337	74,457
75+	35	2,477,974	70,799
Total	**8,751**	**$ 708,718,255**	**$ 80,987**

Annual Earnings by Credited Service

Years of Service	Number	Total Annual Earnings	Average Annual Earnings
0	14	$ 610,926	$ 43,638
1	21	950,377	45,256
2	51	2,731,908	53,567
3	51	2,643,493	51,833
4	55	3,225,895	58,653
0 - 4	**192**	**$ 10,162,599**	**$ 52,930**
5 - 9	478	29,009,387	60,689
10 - 14	1,287	86,078,633	66,883
15 - 19	3,388	273,611,478	80,759
20 - 24	2,024	179,443,910	88,658
25 - 29	982	92,070,037	93,758
30 - 34	310	29,705,129	95,823
35 - 39	69	6,757,881	97,940
40+	21	1,879,201	89,486
Total	**8,751**	**$ 708,718,255**	**$ 80,987**

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	1	6	11	3	0	0	0	0	0	21
35 - 39	26	45	114	193	3	0	0	0	0	381
40 - 44	34	74	191	532	114	1	0	0	0	946
45 - 49	33	86	201	611	377	66	1	0	0	1,375
50 - 54	36	96	227	642	500	225	44	0	0	1,770
55 - 59	28	83	293	722	565	401	118	12	0	2,222
60 - 64	21	55	175	467	323	186	89	27	2	1,345
65 - 69	11	21	55	167	111	83	44	15	6	513
70 - 74	2	11	16	38	23	18	13	11	11	143
75+	0	1	4	13	8	2	1	4	2	35
Total	**192**	**478**	**1,287**	**3,388**	**2,024**	**982**	**310**	**69**	**21**	**8,751**

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	Deferred Benefits	Retired Members		Disabled Members	Bene-ficiaries	Total
As of June 30, 2020	**11,033**	**10,642**	**5,327**	**32,536**	*	**149**	**4,436**	**64,123**
Vested Terminations	(366)	(8)	376	0		(2)	0	0
Non-Vested Terminations	(37)	37	0	0		0	0	0
Refund of Contributions	(10)	(152)	(31)	0		0	(6)	(199)
Disability Retirements	(12)	0	(6)	0		18	0	0
Age Retirements	(873)	(17)	(406)	1,316		(20)	0	0
Deaths With Beneficiary	(15)	1	(10)	(357)		(3)	384	0
Deaths Without Beneficiary	(13)	(26)	(7)	(469)		(3)	(266)	(784)
Expired Benefits	(2)	0	0	0		0	(3)	(5)
Data Corrections	0	(7)	(5)	1		0	(18)	(29)
Converted To DCR Plan	0	0	0	0		0	0	0
Transfers In/Out	2	0	(2)	(3)		0	(1)	(4)
Rehires	177	(62)	(102)	(12)		0	0	1
Pick Ups***	4	24	1	3		0	52	84
Net Change	**(1,145)**	**(210)**	**(192)**	**479**		**(10)**	**142**	**(936)**
As of June 30, 2021	**9,888**	**10,432**	**5,135**	**33,015**	**	**139**	**4,578**	**63,187**

* Includes 15 medical only retirees
** Includes 15 medical only retirees
*** Pickup beneficiaries are primarily new DROs.

Member Data Reconciliation

Healthcare

		Inactive Members				
	Active Members	Retirees	Covered Spouses	Covered Children / Dependents	Deferred	Total Inactive Members
As of June 30, 2020	**10,908**	**32,857**	**13,323**	**1,493**	**5,591**	**53,264**
Vested Terminations	(340)	0	0	0	340	340
Non-Vested Terminations	(36)	0	0	0	0	0
Refund of Contributions	(10)	0	0	0	(27)	(27)
Disability Retirements	(12)	12	8	1	0	21
Age Retirements	(757)	757	386	118	0	1,261
Deferred Retirements	0	286	143	32	(286)	175
Retired without Medical Coverage	(86)	0	0	0	86	86
Deceased	(25)	(913)	(91)	(13)	(27)	(1,044)
New Beneficiaries	0	153	(153)	0	0	0
Added Retiree Medical Coverage	0	113	46	5	(113)	51
Added Dependent Coverage	0	0	110	83	0	193
Dropped Retiree Medical Coverage	0	(12)	(4)	(4)	12	(8)
Dropped Dependent Coverage	0	0	(345)	(190)	0	(535)
Rehires	177	(12)	(3)	(2)	(142)	(159)
Transfers In/Out	(2)	13	0	1	0	14
Net Change	**(1,091)**	**397**	**97**	**31**	**(157)**	**368**
As of June 30, 2021	**9,817**	**33,254**	**13,420**	**1,524**	**5,434**	**53,632**

Section 4.4: Schedule of Active Member Data

Peace Officer / Firefighter

Valuation Date	Number	Annual Earnings (000's)	Annual Average Earnings	Percent Increase in Average Earnings	Number of Participating Employers
June 30, 2021	1,137	$ 144,771	$ 127,327	3.2%	151
June 30, 2020	1,266	156,271	123,436	2.8%	153
June 30, 2019	1,382	165,963	120,089	10.6%	155
June 30, 2018	1,507	163,630	108,580	1.5%	155
June 30, 2017	1,606	171,821	106,987	1.6%	155
June 30, 2016	1,704	179,461	105,317	3.8%	155
June 30, 2015	1,827	185,350	101,450	2.5%	159
June 30, 2014	1,958	193,737	98,946	3.4%	159
June 30, 2013	2,065	197,534	95,658	4.8%	159
June 30, 2012	2,164	197,544	91,287	4.1%	160

Others

Valuation Date	Number	Annual Earnings (000's)	Annual Average Earnings	Percent Increase in Average Earnings	Number of Participating Employers
June 30, 2021	8,751	$ 708,718	$ 80,987	3.0%	151
June 30, 2020	9,767	767,817	78,613	1.7%	153
June 30, 2019	10,770	832,832	77,329	4.6%	155
June 30, 2018	11,927	881,716	73,926	1.0%	155
June 30, 2017	13,113	960,106	73,218	1.4%	155
June 30, 2016	14,401	1,039,960	72,214	3.2%	155
June 30, 2015	15,833	1,108,218	69,994	2.1%	159
June 30, 2014	17,339	1,188,918	68,569	3.4%	159
June 30, 2013	18,890	1,252,786	66,320	4.5%	159
June 30, 2012	20,566	1,305,337	63,471	4.6%	160

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 FY21 in employer list	$ 2,242,794
b) DRB actual reported salaries FY21 in valuation data	2,186,265
c) Annualized valuation data	2,384,394
d) Valuation payroll as of June 30, 2021	2,480,990
e) Rate payroll for FY22	2,406,757
f) Rate payroll for FY24	2,437,619

a) Actual reported salaries from DRB employer listing showing all payroll paid during FY21, including those who were not active as of June 30, 2021
b) Payroll from valuation data for people who are in active status as of June 30, 2021
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

Peace Officer / Firefighter

During the Year Ending June 30	2017	2018	2019	2020	2021
Service					
1. Number	119	105	109	118	129
2. Average Age at Commencement	56.65	55.70	55.61	55.52	55.30
3. Average Monthly Pension Benefit	$ 4,166	$ 4,519	$ 4,412	$ 5,199	$ 5,248
Survivor (including surviving spouse and DROs)					
1. Number	42	44	36	43	58
2. Average Age at Commencement	62.88	63.76	68.19	67.92	64.58
3. Average Monthly Pension Benefit	$ 1,797	$ 2,187	$ 1,842	$ 1,785	$ 1,971
Disability					
1. Number	4	4	4	3	4
2. Average Age at Commencement	49.33	46.56	50.44	51.72	52.10
3. Average Monthly Pension Benefit	$ 2,427	$ 3,230	$ 3,071	$ 5,276	$ 2,890
Total					
1. Number	165	153	149	164	191
2. Average Age at Commencement	58.06	57.78	58.51	58.70	58.05
3. Average Monthly Pension Benefit	$ 3,521	$ 3,814	$ 3,755	$ 4,305	$ 4,204

Summary of New Pension Benefit Recipients

Peace Officer / Firefighter

	Years of Credited Service						
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+
Period 7/1/2020 – 6/30/2021:							
Average Monthly Pension	$ 2,612	$ 767	$ 1,619	$ 3,711	$ 5,196	$ 6,960	$ 7,970
Number of Recipients	2	5	9	26	42	40	9
Period 7/1/2019 – 6/30/2020:							
Average Monthly Pension	$ 0	$ 694	$ 2,212	$ 3,626	$ 5,531	$ 6,829	$ 8,636
Number of Recipients	0	6	11	23	40	32	9
Period 7/1/2018 – 6/30/2019:							
Average Monthly Pension	$ 0	$ 651	$ 1,933	$ 3,362	$ 4,786	$ 6,196	$ 5,688
Number of Recipients	0	5	11	25	38	26	6
Period 7/1/2017 – 6/30/2018:							
Average Monthly Pension	$ 0	$ 1,063	$ 2,133	$ 3,747	$ 4,847	$ 6,024	$ 7,717
Number of Recipients	0	4	18	19	35	30	3
Period 7/1/2016 – 6/30/2017:							
Average Monthly Pension	$ 0	$ 686	$ 2,075	$ 3,234	$ 4,462	$ 5,151	$ 6,376
Number of Recipients	0	8	9	28	41	23	14
Period 7/1/2015 – 6/30/2016:							
Average Monthly Pension	$ 0	$ 958	$ 1,742	$ 3,347	$ 4,622	$ 5,778	$ 7,221
Number of Recipients	0	6	11	19	30	28	16
Period 7/1/2014 – 6/30/2015:							
Average Monthly Pension	$ 0	$ 1,173	$ 1,621	$ 3,632	$ 4,436	$ 5,457	$ 6,863
Number of Recipients	0	8	9	26	24	25	7
Period 7/1/2013 – 6/30/2014:							
Average Monthly Pension	$ 290	$ 1,423	$ 2,002	$ 2,902	$ 4,014	$ 5,464	$ 6,299
Number of Recipients	1	9	10	14	22	16	7
Period 7/1/2012 – 6/30/2013:							
Average Monthly Pension	$ 0	$ 865	$ 1,779	$ 2,762	$ 3,793	$ 4,983	$ 4,911
Number of Recipients	0	9	8	19	31	18	4
Period 7/1/2011 – 6/30/2012:							
Average Monthly Pension	$ 0	$ 1,159	$ 1,161	$ 3,142	$ 3,504	$ 4,673	$ 5,079
Number of Recipients	0	13	13	12	20	17	7

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

Beneficiaries are not included in the table above.

Summary of New Pension Benefit Recipients

Others

During the Year Ending June 30	2017	2018	2019	2020	2021
Service					
1. Number	1,393	1,419	1,288	1,166	1,171
2. Average Age at Commencement	61.40	62.19	61.38	61.70	62.03
3. Average Monthly Pension Benefit	$ 2,404	$ 2,477	$ 2,540	$ 2,701	$ 2,693
Survivor (including surviving spouse and DROs)					
1. Number	292	261	238	297	391
2. Average Age at Commencement	67.12	70.38	69.25	72.09	72.34
3. Average Monthly Pension Benefit	$ 1,150	$ 1,120	$ 1,249	$ 1,204	$ 1,265
Disability					
1. Number	14	28	17	9	14
2. Average Age at Commencement	52.43	53.80	52.95	54.21	53.39
3. Average Monthly Pension Benefit	$ 2,405	$ 1,896	$ 2,313	$ 2,422	$ 2,587
Total					
1. Number	1,699	1,708	1,543	1,472	1,576
2. Average Age at Commencement	62.31	63.31	62.50	63.75	64.51
3. Average Monthly Pension Benefit	$ 2,189	$ 2,260	$ 2,339	$ 2,397	$ 2,338

Summary of New Pension Benefit Recipients

Others

	Years of Credited Service						
	0 - 4	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30+
Period 7/1/2020 – 6/30/2021:							
Average Monthly Pension	$ 553	$ 628	$ 1,317	$ 2,213	$ 3,091	$ 4,607	$ 6,054
Number of Recipients	17	163	228	281	194	188	114
Period 7/1/2019 – 6/30/2020:							
Average Monthly Pension	$ 492	$ 601	$ 1,311	$ 2,065	$ 3,040	$ 4,686	$ 6,213
Number of Recipients	32	165	218	258	183	197	122
Period 7/1/2018 – 6/30/2019:							
Average Monthly Pension	$ 652	$ 646	$ 1,301	$ 2,071	$ 3,058	$ 4,596	$ 5,685
Number of Recipients	21	190	266	289	222	205	105
Period 7/1/2017 – 6/30/2018:							
Average Monthly Pension	$ 414	$ 607	$ 1,299	$ 1,982	$ 3,034	$ 4,475	$ 6,085
Number of Recipients	26	221	351	280	223	214	127
Period 7/1/2016 – 6/30/2017:							
Average Monthly Pension	$ 381	$ 640	$ 1,271	$ 2,067	$ 3,119	$ 4,579	$ 6,224
Number of Recipients	27	254	375	233	212	191	115
Period 7/1/2015 – 6/30/2016:							
Average Monthly Pension	$ 434	$ 660	$ 1,240	$ 2,017	$ 3,059	$ 4,158	$ 6,583
Number of Recipients	30	323	387	266	192	161	135
Period 7/1/2014 – 6/30/2015:							
Average Monthly Pension	$ 430	$ 685	$ 1,260	$ 2,008	$ 3,086	$ 4,544	$ 6,195
Number of Recipients	42	284	304	213	198	169	98
Period 7/1/2013 – 6/30/2014:							
Average Monthly Pension	$ 503	$ 700	$ 1,189	$ 2,065	$ 3,021	$ 4,439	$ 5,490
Number of Recipients	48	347	319	241	214	224	121
Period 7/1/2012 – 6/30/2013:							
Average Monthly Pension	$ 414	$ 650	$ 1,179	$ 1,925	$ 2,879	$ 4,356	$ 5,208
Number of Recipients	59	349	365	257	206	209	132
Period 7/1/2011 – 6/30/2012:							
Average Monthly Pension	$ 407	$ 610	$ 1,147	$ 1,931	$ 2,805	$ 4,214	$ 5,076
Number of Recipients	67	351	314	204	208	188	106

"Average Monthly Pension" includes postretirement pension adjustments and cost-of-living increases.

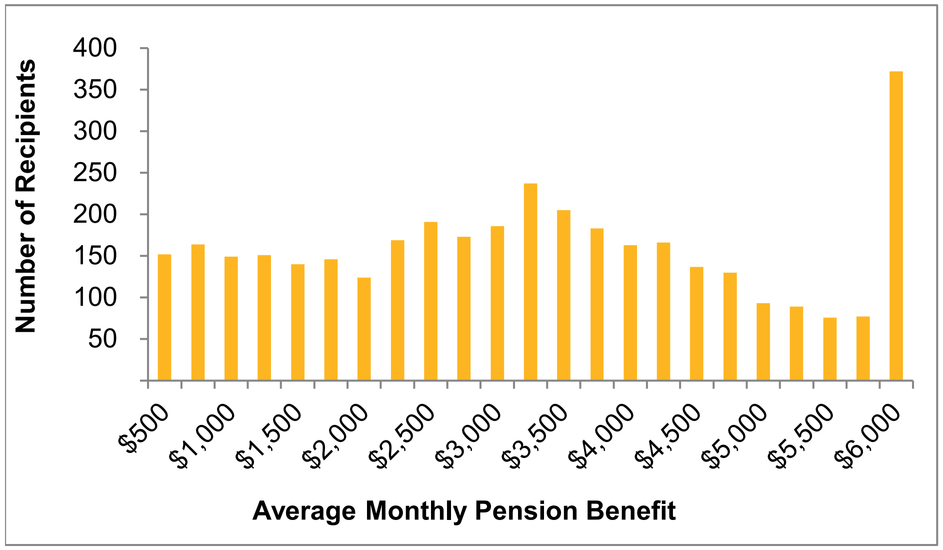
Beneficiaries are not included in the table above.

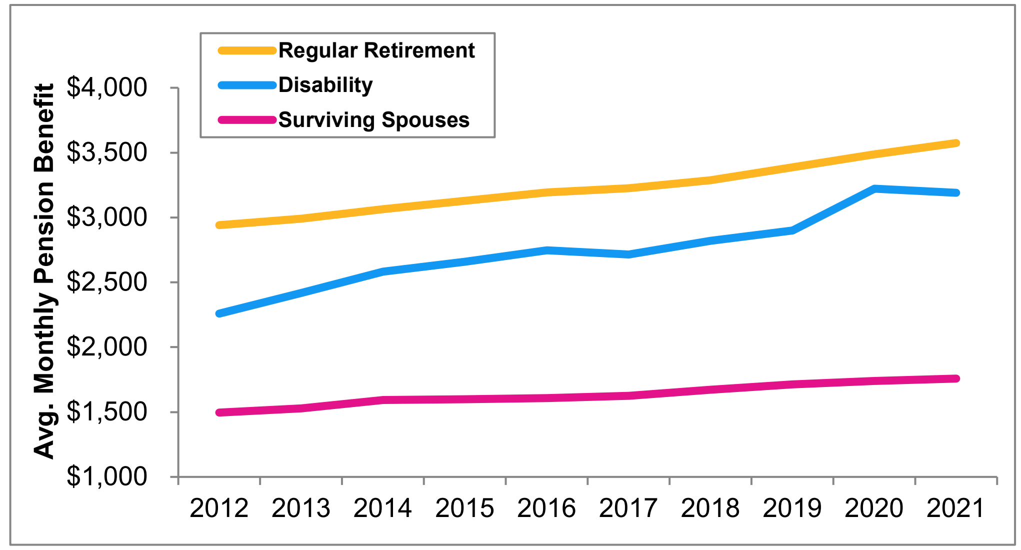
Section 4.7: Summary of All Pension Benefit Recipients

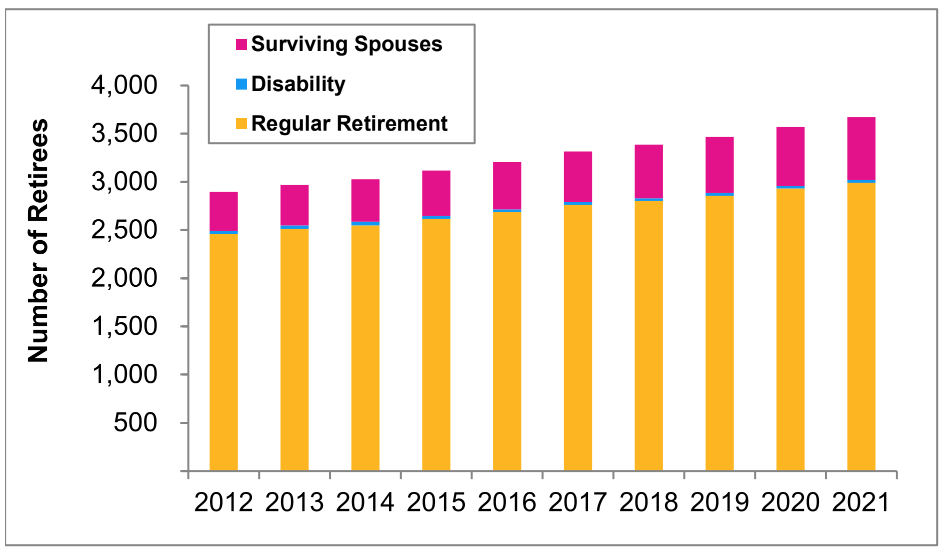
	Peace Officer / Firefighter	Others
Service		
1. Number as of June 30, 2020	2,931	29,590
2. Net Change During FY21	60	419
3. Number as of June 30, 2021	2,991	30,009
4. Average Age at Commencement	53.21	58.45
5. Average Current Age	68.46	71.24
6. Average Monthly Pension Benefit	$ 3,574	$ 2,057
Survivors (including surviving spouses and DROs)		
1. Number as of June 30, 2020	611	3,825
2. Net Change During FY21	45	97
3. Number as of June 30, 2021	656	3,922
4. Average Age at Commencement	57.93	63.52
5. Average Current Age	69.52	73.48
6. Average Monthly Pension Benefit	$ 1,758	$ 1,120
Disability		
1. Number as of June 30, 2020	26	123
2. Net Change During FY21	0	(10)
3. Number as of June 30, 2021	26	113
4. Average Age at Commencement	46.32	46.10
5. Average Current Age	51.35	55.06
6. Average Monthly Pension Benefit	$ 3,189	$ 1,970
Total		
1. Number as of June 30, 2020	3,568	33,538
2. Net Change During FY21	105	506
3. Number as of June 30, 2021	3,673	34,044
4. Average Age at Commencement	54.00	58.99
5. Average Current Age	68.53	71.44
6. Average Monthly Pension Benefit	$ 3,247	$ 1,949

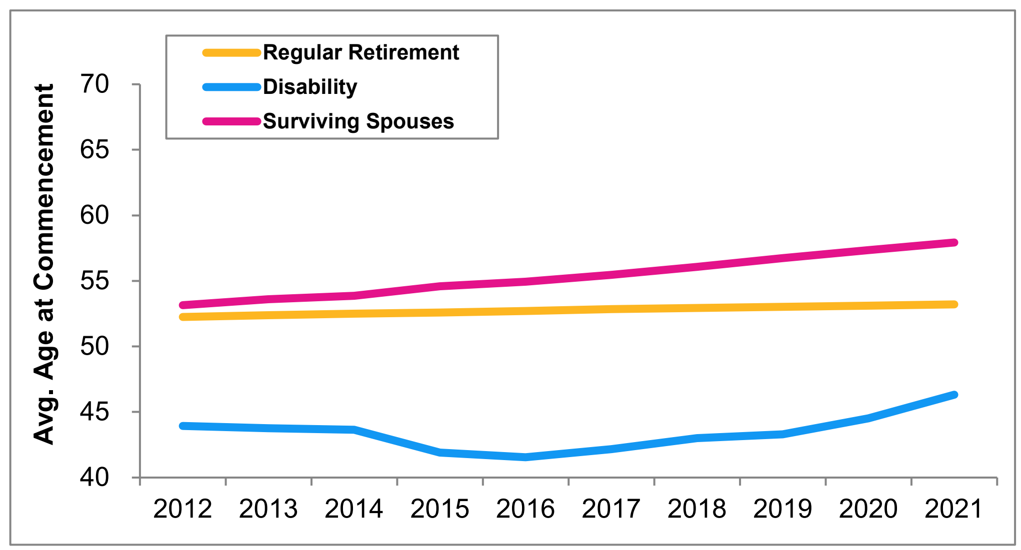
Summary of All Pension Benefit Recipients

Peace Officer / Firefighter



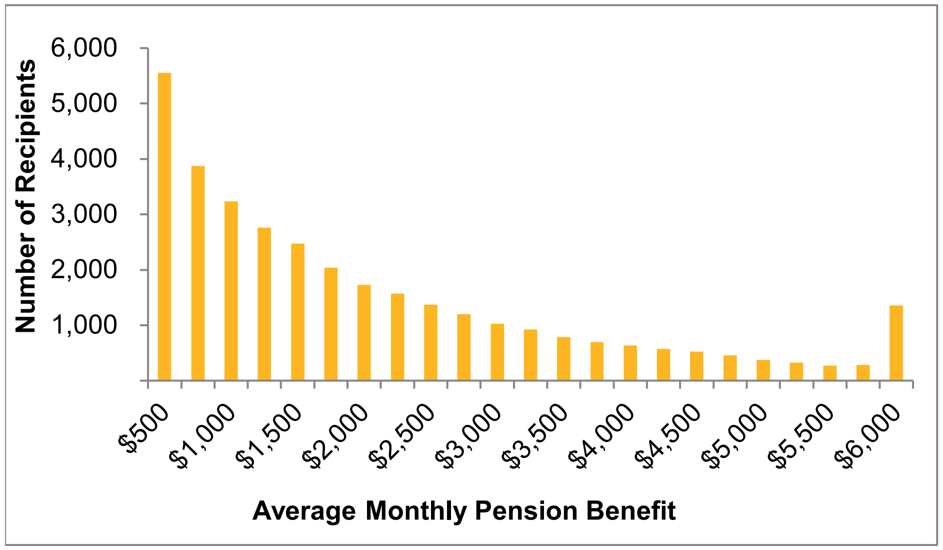


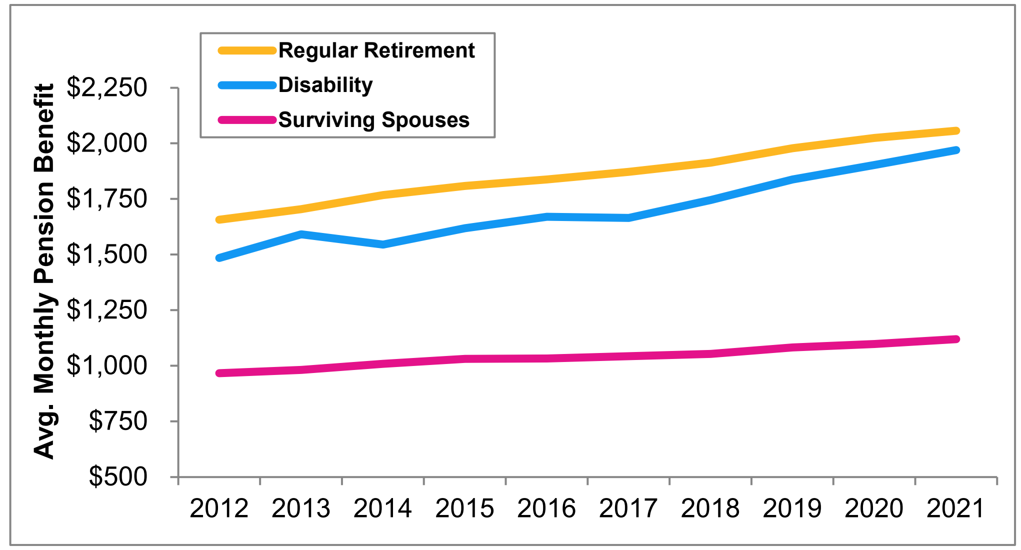


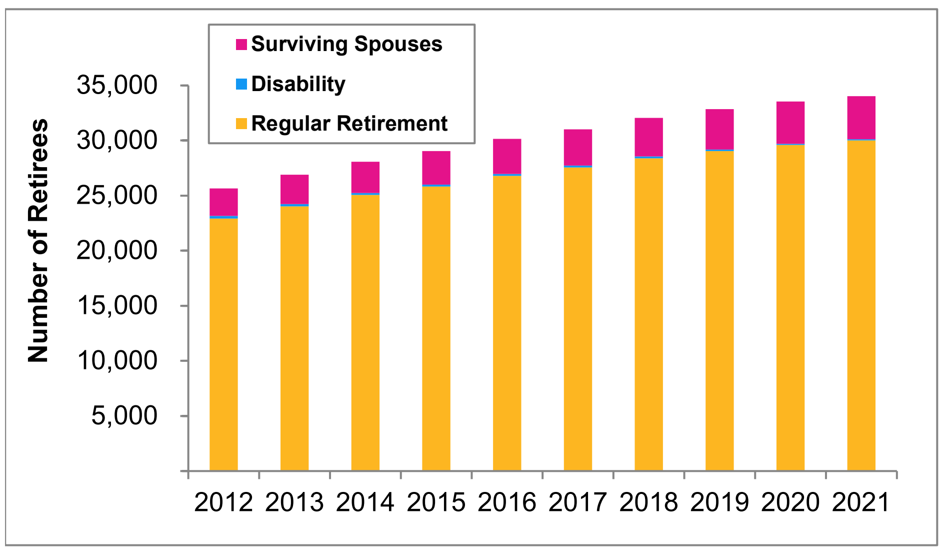


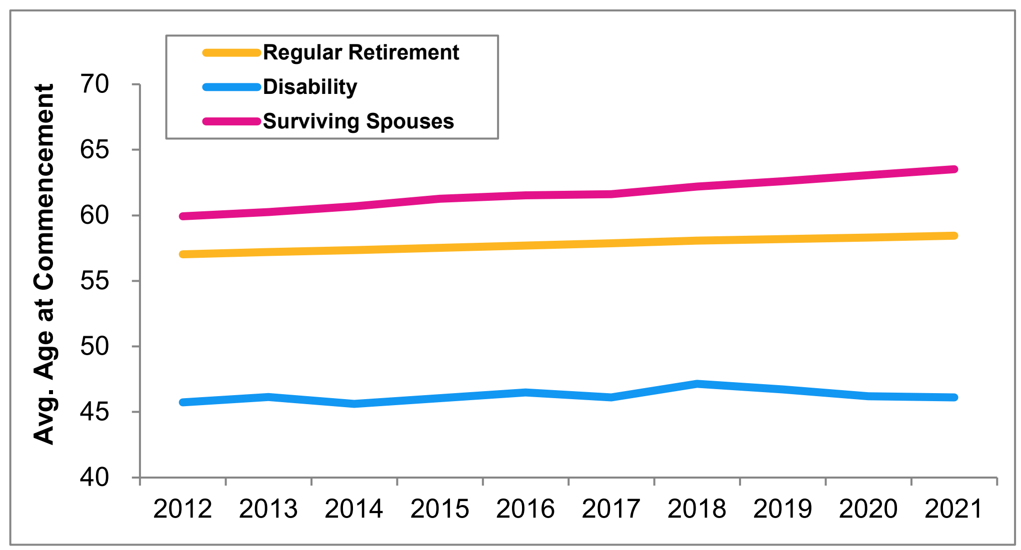
Summary of All Pension Benefit Recipients

Others









Summary of All Pension Benefit Recipients

Peace Officer / Firefighter

Annual Pension Benefit by Age

Age	Number	Total Annual 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	1	57,465	57,465
40 - 44	13	583,451	44,881
45 - 49	78	4,380,328	56,158
50 - 54	215	12,336,820	57,381
55 - 59	324	16,323,478	50,381
60 - 64	607	23,982,868	39,510
65 - 69	777	27,706,706	35,659
70 - 74	803	28,357,790	35,315
75+	855	29,388,739	34,373
Total	**3,673**	**$ 143,117,645**	**$ 38,965**

Annual Pension Benefit by Years Since Commenced

Years Since Comm.	Number	Total Annual Pension Benefit	Average Annual Pension Benefit
0	200	$ 10,277,339	$ 51,387
1	155	8,093,071	52,213
2	152	6,797,168	44,718
3	133	6,097,594	45,847
4	169	7,165,651	42,400
0 - 4	**809**	**$ 38,430,823**	**$ 47,504**
5 - 9	581	23,847,931	41,046
10 - 14	545	16,936,288	31,076
15 - 19	630	20,887,127	33,154
20 - 24	621	22,321,128	35,944
25 - 29	203	7,853,908	38,689
30 - 34	212	9,808,110	46,265
35 - 39	45	2,108,485	46,855
40+	27	923,845	34,216
Total	**3,673**	**$ 143,117,645**	**$ 38,965**

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	1	0	0	0	0	0	0	0	0	1
40 - 44	10	1	2	0	0	0	0	0	0	13
45 - 49	63	14	1	0	0	0	0	0	0	78
50 - 54	153	49	11	0	2	0	0	0	0	215
55 - 59	180	87	39	14	2	2	0	0	0	324
60 - 64	195	148	112	122	30	0	0	0	0	607
65 - 69	92	168	162	200	135	15	2	2	1	777
70 - 74	52	66	162	193	215	74	31	5	5	803
75+	63	48	56	101	237	112	179	38	21	855
Total	**809**	**581**	**545**	**630**	**621**	**203**	**212**	**45**	**27**	**3,673**

Summary of All Pension Benefit Recipients

Others

Annual Pension Benefit by Age

Age	Number	Total Annual Pension Benefit	Average Annual Pension Benefit
0 - 19	0	$ 0	$ 0
20 - 24	0	0	0
25 - 29	0	0	0
30 - 34	2	70,193	35,097
35 - 39	5	75,774	15,155
40 - 44	9	130,847	14,539
45 - 49	34	450,340	13,245
50 - 54	158	4,979,060	31,513
55 - 59	1,196	38,955,221	32,571
60 - 64	5,770	162,252,318	28,120
65 - 69	8,778	215,609,089	24,562
70 - 74	8,228	183,341,302	22,283
75+	9,864	190,225,443	19,285
Total	**34,044**	**$ 796,089,587**	**$ 23,384**

Annual Pension Benefit by Years Since Commenced

Years Since Comm.	Number	Total Annual Pension Benefit	Average Annual Pension Benefit
0	1,681	$ 47,044,071	$ 27,986
1	1,416	41,473,469	29,289
2	1,516	42,241,297	27,864
3	1,469	40,628,509	27,657
4	1,617	43,823,763	27,102
0 - 4	**7,699**	**$ 215,211,109**	**$ 27,953**
5 - 9	7,894	200,110,996	25,350
10 - 14	6,483	144,288,042	22,256
15 - 19	5,276	109,883,248	20,827
20 - 24	3,850	76,656,753	19,911
25 - 29	1,381	24,178,292	17,508
30 - 34	1,155	21,111,290	18,278
35 - 39	249	3,779,040	15,177
40+	57	870,817	15,277
Total	**34,044**	**$ 796,089,587**	**$ 23,384**

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	1	1	0	0	0	0	0	0	0	2
35 - 39	1	4	0	0	0	0	0	0	0	5
40 - 44	4	3	2	0	0	0	0	0	0	9
45 - 49	17	10	5	2	0	0	0	0	0	34
50 - 54	108	25	15	7	2	1	1	0	0	159
55 - 59	869	248	47	13	14	3	1	0	0	1,195
60 - 64	3,342	1,780	569	51	11	12	4	0	1	5,770
65 - 69	1,924	3,385	2,545	849	55	12	6	2	0	8,778
70 - 74	759	1,671	2,176	2,580	1,005	17	13	5	2	8,228
75+	674	767	1,124	1,774	2,763	1,336	1,130	242	54	9,864
Total	**7,699**	**7,894**	**6,483**	**5,276**	**3,850**	**1,381**	**1,155**	**249**	**57**	**34,044**

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

Peace Officer / Firefighter

Amount of Monthly Pension Benefit	Number of Recipients	Type of Pension Benefit			Option Selected				
		1	2	3	1	2	3	4	5
$ 1 – 300	55	16	39	0	42	4	0	2	7
301 – 600	175	110	65	0	97	37	22	7	12
601 – 900	182	100	81	1	109	43	11	12	7
901 – 1,200	167	89	78	0	108	30	16	6	7
1,201 – 1,500	178	111	66	1	105	39	19	6	9
1,501 – 1,800	172	124	48	0	93	45	22	8	4
1,801 – 2,100	156	106	49	1	70	41	33	7	5
2,101 – 2,400	240	177	60	3	113	70	32	12	13
2,401 – 2,700	193	163	26	4	74	63	38	13	5
2,701 – 3,000	228	199	27	2	78	97	34	11	8
3,001 – 3,300	283	249	31	3	98	107	57	12	9
3,301 – 3,600	231	199	29	3	84	92	32	13	10
3,601 – 3,900	206	184	19	3	75	87	30	10	4
3,901 – 4,200	202	191	9	2	64	87	35	12	4
4,200+	1,005	972	30	3	271	479	179	67	9
Total	3,673	2,990	657	26	1,481	1,321	560	198	113

Type of Pension Benefit
1. Regular Retirement
2. Survivor Payment
3. Disability

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

Pension Benefit Recipients by Type of Benefit and Option Elected

Others

Amount of Monthly Pension Benefit	Number of Recipients	Type of Pension Benefit			Option Selected				
		1	2	3	1	2	3	4	5
$ 1 – 300	2,112	1,553	558	1	1,038	386	282	62	344
301 – 600	5,102	4,260	836	6	2,709	1,170	814	256	153
601 – 900	4,240	3,530	700	10	2,238	1,030	675	181	116
901 – 1,200	3,491	3,004	480	7	1,738	843	669	160	81
1,201 – 1,500	2,972	2,587	368	17	1,480	750	563	109	70
1,501 – 1,800	2,378	2,113	254	11	1,103	672	462	84	57
1,801 – 2,100	2,049	1,836	197	16	951	550	396	93	59
2,101 – 2,400	1,759	1,599	149	11	781	504	348	81	45
2,401 – 2,700	1,475	1,357	101	17	648	415	307	57	48
2,701 – 3,000	1,270	1,181	86	3	552	392	254	41	31
3,001 – 3,300	1,084	1,026	56	2	429	352	233	42	28
3,301 – 3,600	918	877	38	3	365	288	202	45	18
3,601 – 3,900	791	762	27	2	313	273	156	34	15
3,901 – 4,200	717	690	27	0	284	229	158	30	16
4,200+	3,686	3,634	45	7	1,269	1,296	865	207	49
Total	34,044	30,009	3,922	113	15,898	9,150	6,384	1,482	1,130

Type of Pension Benefit
1. Regular Retirement
2. Survivor Payment
3. Disability

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

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

Peace Officer / Firefighter

Year Ended	Added to Rolls		Removed from Rolls		Rolls at End of Year		Percent Increase in Annual Pension Benefits	Average Annual Pension Benefit
	No.[1]	Annual Pension Benefits[1]	No.[1]	Annual Pension Benefits[1]	No.	Annual Pension Benefits		
June 30, 2021	191	$ 9,635,568	86	$ 2,931,719	3,673	$ 143,117,645	4.9%	$ 38,965
June 30, 2020	164	8,472,240	61	1,078,932	3,568	136,413,796	5.7%	38,233
June 30, 2019	149	6,713,940	71	233,335	3,465	129,020,488	5.3%	37,235
June 30, 2018	153	7,002,504	81	2,573,694	3,387	122,539,883	3.7%	36,179
June 30, 2017	165	6,971,580	54	2,132,027	3,315	118,111,073	4.3%	35,629
June 30, 2016	137	6,618,744	49	1,594,394	3,204	113,271,520	4.6%	35,353
June 30, 2015	136	5,617,344	46	633,046	3,116	108,247,168	4.8%	34,739
June 30, 2014	109	4,270,620	50	(145,771)	3,026	103,262,870	4.5%	34,125
June 30, 2013	113	4,162,920	42	240,775	2,967	98,846,479	4.1%	33,315
June 30, 2012	179	5,246,271	41	(177,568)	2,896	94,924,334	6.1%	32,778

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

Pension Benefit Recipients Added to and Removed from Rolls

Others

Year Ended	Added to Rolls		Removed from Rolls		Rolls at End of Year		Percent Increase in Annual Pension Benefits	Average Annual Pension Benefit
	No.[1]	Annual Pension Benefits[1]	No.[1]	Annual Pension Benefits[1]	No.	Annual Pension Benefits		
June 30, 2021	1,576	$ 44,216,256	1,070	$ 20,522,550	34,044	$ 796,089,587	3.1%	$ 23,384
June 30, 2020	1,472	42,340,608	779	9,911,423	33,538	772,395,881	4.4%	23,030
June 30, 2019	1,543	43,301,707	765	3,096,594	32,845	739,966,696	5.7%	22,529
June 30, 2018	1,708	46,316,673	673	10,533,376	32,067	699,761,583	5.4%	21,823
June 30, 2017	1,699	44,619,382	816	14,610,212	31,032	663,978,286	4.7%	21,397
June 30, 2016	1,780	44,409,702	660	12,099,362	30,149	633,969,116	5.4%	21,028
June 30, 2015	1,583	39,939,292	627	7,232,812	29,029	601,658,776	5.7%	20,726
June 30, 2014	1,778	44,823,611	603	3,011,383	28,073	568,952,296	7.9%	20,267
June 30, 2013	1,808	43,247,667	554	4,861,626	26,898	527,140,068	7.9%	19,598
June 30, 2012	1,679	37,855,250	636	5,344,239	25,644	488,754,027	7.1%	19,059

[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

January 1, 1961, with amendments through June 30, 2021. Chapter 82, 1986 Session Laws of Alaska, created a two-tier retirement system. Members who were first hired under PERS before July 1, 1986 (Tier 1) are eligible for different benefits than members hired after June 30, 1986 (Tier 2). Chapter 4, 1996 Session Laws of Alaska created a third tier for members who were first hired after June 30, 1996 (Tier 3). Chapter 9, 2005 Session Laws of Alaska, closed the plan to new members hired after June 30, 2006.

Administration of Plan

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

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

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

Employers Included

Currently there are 151 employers participating in PERS, including the State of Alaska and 150 political subdivisions and public organizations. Two additional political subdivisions participate in PERS for healthcare benefits only.

Membership

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

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

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

Credited Service

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

Members may claim other types of service, including:

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

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

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

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

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

Employer Contributions

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

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

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

Employer rates cannot be less than the normal cost rate.

Pursuant to AS 39.35.255 effective July 1, 2008 and subsequently amended on July 1, 2021, each non-state PERS employer will pay a simple uniform contribution rate of 22% of non-state member payroll and the State as an employer will pay the total contribution rate, adopted by the Board, of State member payroll.

Additional State Contributions

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

Member Contributions

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

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

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

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

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

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

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

Retirement Benefits

Eligibility

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

b. Members may retire at any age when they have:
   (i) 20 paid-up years of PERS Peace Officer/Firefighter service; or
   (ii) 30 paid-up years of PERS "all other" or "elected official" service.

Benefit Type

Lifetime benefits are paid to members. Eligible members may receive normal, unreduced benefits when they (1) reach normal retirement age and complete the service required; or (2) satisfy the minimum service requirements under the "20 and out" or "30 and out" provisions. Members may receive early, reduced benefits when they reach early retirement age and complete the service required. Benefits are reduced by 6% per year prior to a member’s normal retirement date.

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

Benefit Calculations

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

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

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

Salaries are subject to compensation limits under IRC 401(a)(17) for members first hired on or after July 1, 1996. Retirement benefit amounts are subject to IRC 415(b) limits regardless of hire date.

Indebtedness

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

Reemployment of Retired Members

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

Members retired under the Retirement Incentive Programs (RIPs) who return to employment will:

a. forfeit the three years of incentive credits that they received;

b. owe PERS 150% of the benefits that they received for state and political subdivision members, and 110% for school district employees, under the 1996-2000 RIP, which may include costs for health insurance, excluding amounts that they paid to participate for the 1986 and 1989 RIPs. Under prior RIPs, the penalty is 110% of the benefits received; and

c. be charged 7% interest from the date that they are reemployed until their indebtedness is paid in full or they retire again. If the indebtedness is not completely paid, future benefits will be actuarially reduced for life.

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

Postemployment Healthcare Benefits

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

Medical, prescription drug, dental, vision and audio coverage is provided through the AlaskaCare Retiree Health Plan. Health plan provisions do not vary by retirement tier or age, except for Medicare coordination. Participants in dental, vision, and audio coverage pay a full self-supporting rate and those benefits are not included in this valuation.

Starting in 2022, prior authorization will be required for certain specialty medications for all participants. There is no change to the medications that are covered by the plan.

Starting in 2022, certain preventive benefits for pre-Medicare participants will now be covered by the plan.

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

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

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

Plan Feature	Amounts
Deductible (single/family)	$150 / $450
Coinsurance (most services)	20%
Outpatient surgery/testing	0%
Maximum Out-of-Pocket (single/family, excluding 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 is through a Medicare Part D EGWP arrangement.

Disability Benefits

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

Occupational Disability

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

At the time a disabled Peace Officer/Firefighter member retires, the retirement benefit will be increased by a percentage equal to the total cumulative percentage that has been applied to the disability benefit.

Non-occupational Disability

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

Death Benefits

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

Occupational Death

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

Death after Occupational Disability

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

Non-Occupational Death

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

Lump Sum Non-Occupational Death Benefit

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

Death After Retirement

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

Postretirement Pension Adjustments

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

a. The lesser of 75% of the CPI increase in the preceding calendar year or 9%, if the recipient is at least age 65 or on PERS disability; or
b. The lesser of 50% of the CPI increase in the preceding calendar year or 6%, if the recipient is at least age 60, or under age 60 if the recipient has been receiving benefits for at least five years.

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

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

Alaska Cost-of-Living Allowance (COLA)

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

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

Changes in Benefit Provisions Valued Since the Prior Valuation

Starting in 2022, prior authorization will be required for certain specialty medications for all participants, and certain preventive benefits for pre-Medicare participants will now be covered by the plan.

Under SB 55 that was effective July 1, 2021: (i) The State-as-an-Employer contributes the full actuarial contribution rate based on the DB/DCR payroll of its employees (which is approximately 50% of the total PERS DB/DCR payroll); (ii) Non-State employers continue to contribute 22% of their DB/DCR payroll; (iii) the Additional State Contributions are based on the excess of the DB actuarial contribution rate and the DB contributions made by non-State employers.

There were no other 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 Cost Method

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method, level percent of pay.

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.

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[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 valuation method recognizes 20% of the gain or loss each year, for a period of five 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 were 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 in the internal model developed by Buck to calculate the initial per capita claims cost rates for the PERS postemployment healthcare plan. Note that the methodology reflects the results of our annual experience rate update for the period from July 1, 2020 to June 30, 2021.

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.

<u>Benefits</u>

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.

<u>Administration and Data Sources</u>

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 2019 through June 2021 (FY20 through FY21) 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, 2021 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 the 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 FY22 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 FY20 through FY21.
   - 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 FY22).
   - Because the reports provided 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, 2020, and July 1, 2021, 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 Optum, rebates were assumed to be 19.5% of prescription drug claims for FY20, 16.2% of pre-Medicare, and 14.3% of Medicare prescription drug claims for FY21.
2. Develop estimated EGWP reimbursements – Segal provided estimated 2022 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. FY19 and FY20 experience were compared to assess the impact of COVID-19 and whether an adjustment to FY20 claims was indicated for use in the June 30, 2020 valuation. A material decrease in medical claims during March 2020 to June 2020 was experienced due to COVID-19. Therefore, an adjustment was made for those months to adjust for the decrease that is not expected to continue in future years. There was an observed spike in prescription drug claims in March 2020; however, the FY20 prescription drug experience appears reasonable to use without adjustment for COVID-19. To adjust for the decrease in medical claims due to COVID-19 during the last 4 months of FY20, the per capita cost during the first 8 months was used as the basis for estimating claims that would have occurred in the absence of COVID-19. FY21 experience was also thoroughly reviewed to assess the impact of COVID-19 and whether an adjustment to FY21 claims was appropriate for use in the June 30, 2021 valuation. FY21 medical per capita claims were noticeably lower than expected, so a 4% load was added to the FY21 medical claims used in the per capita claims cost development to better reflect future expected long-term costs of the plan. Total prescription drug claims experience for FY21 was reasonable and consistent with FY19 and FY20 experience. Therefore no adjustment was made to FY21 prescription drug claims. Due to group size and demographics, we did not make any additional 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 FY22 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 for FY20 to FY21 medical and both years of prescription drugs 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. For FY21 to FY22 medical we applied 100% weight to national trends because the Alaska-specific trends were impacted by COVID-19:

Alaska-Specific and National Average Weighted Trend from Experience Period to Valuation Year			
Experience Period	**Medical**	**Prescription**	**Weighting Factors**
FY20 to FY21	6.3% Pre-Medicare / 5.2% Medicare	7.6%	50%
FY21 to FY22	8.1% Pre-Medicare / 4.8% Medicare	8.0%	50%

Trend assumptions used for rate development are assessed annually and as additional/improved reporting becomes available, we will incorporate into rate development as appropriate.

6. Starting in 2022, prior authorization will be required for certain specialty medications. There is no change to the medications that are covered by the plan. Segal provided an estimate of the impact of this change to the DB retiree health plan cost for calendar year 2022. The DB base claims costs for pre-Medicare prescription drug, Medicare prescription drug, and EGWP were adjusted to reflect this change. Additionally, starting in 2022, certain preventive benefits for pre-Medicare participants will now be covered by the plan. Segal provided an estimate of the impact of this change to the DB retiree health plan cost for calendar year 2022. The DB base claims cost for pre-Medicare medical was adjusted to reflect this change.
7. Develop separate administration costs – no adjustments were made for internal administrative costs. Third party retiree plan administration fees for FY22 are based upon total fees projected to 2022 by Segal based on actual FY21 fees. The annual per participant per year administrative cost rate for medical and prescription benefits is $493.

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 due to these 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 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 provisions of healthcare 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:

- 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 2020				
1. Incurred Claims	$ 229,531,664	$ 89,497,345	$ 64,442,660	$ 188,022,328
2. Adjustments for Rx Rebates	0	0	(12,566,319)	(36,664,354)
3. Net incurred claims	$ 229,531,664	$ 89,497,345	$ 51,876,341	$ 151,357,974
4. Average Enrollment	19,354	44,965	19,354	44,965
5. Claim Cost Rate (3) / (4)	11,860	1,990	2,680	3,366
6. Trend to Fiscal 2022	1.149	1.103	1.162	1.162
7. Fiscal 2022 Incurred Cost Rate (5) x (6)	$ 13,630	$ 2,195	$ 3,116	$ 3,912
B. Fiscal 2021				
1. Incurred Claims	$ 196,566,470	$ 86,512,435	$ 60,691,609	$ 207,822,858
2. Adjustments for Rx Rebates and COVID (Medical only)	7,862,659	3,460,497	(9,832,041)	(29,718,669)
3. Net incurred claims	$ 204,429,129	$ 89,972,933	$ 50,859,568	$ 178,104,189
4. Average Enrollment	18,106	47,025	18,106	47,025
5. Claim Cost Rate (3) / (4)	11,291	1,913	2,809	3,787
6. Trend to Fiscal 2022	1.081	1.048	1.080	1.080
7. Fiscal 2022 Incurred Cost Rate (5) x (6)	$ 12,205	$ 2,005	$ 3,034	$ 4,090

	Medical		Prescription Drugs (Rx)	
	Pre-Medicare	Medicare	Pre-Medicare	Medicare
C. Incurred Cost Rate by Fiscal Year				
1. Fiscal 2020 A.(7)	13,630	2,195	3,116	3,912
2. Fiscal 2021 B.(7)	12,205	2,005	3,034	4,090
D. Weighting by Fiscal Year				
1. Fiscal 2020	50%	50%	50%	50%
2. Fiscal 2021	50%	50%	50%	50%
E. Fiscal 2022 Incurred Cost Rate				
1. Rate at Average Age C x D	$ 12,918	$ 2,100	$ 3,075	$ 4,001
2. Average Aging Factor	0.822	1.271	0.832	1.124
3. Rate at Age 65 (1) / (2)	$ 15,708	$ 1,652	$ 3,695	$ 3,560
F. Development of Part A&B and Part B Only Cost from Pooled Rate Above				
1. Part A&B Average Enrollment		46,602		
2. Part B Only Average Enrollment		423		
3. Total Medicare Average Enrollment B(4)		47,025		
4. Cost ratio for those with Part B only to those with Parts A&B		3.300		
5. Factor to determine cost for those with Parts A&B (2) / (3) x (4) + (1) / (3) x 1.00		1.021		
6. Medicare per capita cost for all participants: E(3)		$ 1,652		
7. Cost for those eligible for Parts A&B: (6) / (5)		$ 1,619		
8. Cost for those eligible for Part B only: (7) x (4)		$ 5,341		

	Medical		Prescription Drugs (Rx)	
	Pre-Medicare	Medicare	Pre-Medicare	Medicare
1. Rate at Age 65	$ 15,708	$ 1,619	$ 3,695	$ 3,560
2. Adjustment factor for plan changes	1.39%	0.00%	-8.67%	-2.41%
3. Adjusted Rate at Age 65 (1) x [1 + (2)]	$ 15,926	$ 1,619	$ 3,375	$ 3,474

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, 2021 through June 30, 2022

Age	Medical and Medicare Parts A & B	Medical and Medicare Part B Only	Prescription Drug	Medicare EGWP Subsidy
45	$ 9,719	$ 9,719	$ 2,062	$ 0
50	10,996	10,996	2,449	0
55	12,441	12,441	2,908	0
60	14,076	14,076	3,133	0
65	1,619	5,341	3,474	1,131
70	1,877	6,192	3,836	1,249
75	2,176	7,178	4,235	1,379
80	2,402	7,925	4,130	1,345

Section 5.3: Summary of Actuarial Assumptions

The demographic and economic assumptions used in the June 30, 2021 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.

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

Deaths are assumed to result from occupational causes 75% of the time for Peace Officer/Firefighters, and 40% of the time for Others.

Mortality (Post-Commencement)

Mortality rates based upon the 2013-2017 actual experience.

91% of male and 96% of female rates of RP-2014 healthy annuitant table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement.

Turnover

Select and ultimate rates based upon the 2013-2017 actual experience (see Tables 2a and 2b).

Disability

Incidence rates based upon the 2013-2017 actual experience (see Tables 3a and 3b). Disability rates cease once a member is eligible for retirement.

Post-disability mortality in accordance with the RP-2014 disabled table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement. Disabilities are assumed to be occupational 75% of the time for Peace Officer/Firefighters, and 40% of the time for Others.

Retirement

Retirement rates based upon the 2013-2017 actual experience (see Tables 4a and 4b).

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

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

Spouse Age Difference

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

Percent Married for Pension

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

Dependent Spouse Medical Coverage Election

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

Dependent Children

- Pension: None
- 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

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

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

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

Imputed Data

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

Active Rehire Assumption

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

- Pension: 18.77%
- Healthcare: 17.09%

Re-Employment Option

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

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, 70% of Others and 65% of Peace Officers/Firefighters are assumed to remain in Alaska and receive the COLA.

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, 2021 was increased by the following amounts for administrative expenses (for projections, the percent increase was assumed to remain constant in future years):

- Pension: $7,625,000
- Healthcare: $5,531,000

Part-Time Status

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

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 FY22 medical and prescription drugs are shown below. The prescription drug costs reflect the plan change to require prior authorization for certain specialty medications. The pre-Medicare medical cost reflects the coverage of additional preventive benefits.

	Medical	Prescription Drugs
Pre-Medicare	$ 15,926	$ 3,375
Medicare Parts A & B	$ 1,619	$ 3,474
Medicare Part B Only	$ 5,341	$ 3,474
Medicare Part D – EGWP	N/A	$ 1,131

Members are assumed to attain Medicare eligibility at age 65. All costs are for the 2022 fiscal year (July 1, 2021 – June 30, 2022).

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

$493 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, 6.3% is applied to the FY22 pre-Medicare medical claims costs to get the FY23 medical claims costs.

	Medical Pre-65	Medical Post-65	Prescription Drugs / EGWP
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 PERS members who are under age 60 and have less than 30 years of service (25 for Peace Officer/Firefighter). Eligible Tier 1 members are exempt from contribution requirements. Annual FY22 contributions based on monthly rates shown below for calendar 2022 are assumed based on the coverage category for current retirees. The retiree only rate shown is used for current active and inactive members and spouses in Tier 2 or 3 who are assumed to retire prior to age 60 with less than 30 years of service and who are not disabled. For dependent children, we value 1/3 of the annual retiree contribution to estimate the per child rate based upon the assumed number of children in rates where children are covered.

Coverage Category	Calendar 2022 Annual Contribution	Calendar 2022 Monthly Contribution	Calendar 2021 Monthly Contribution
Retiree Only	$ 8,448	$ 704	$ 704
Retiree and Spouse	$ 16,896	$ 1,408	$ 1,408
Retiree and Child(ren)	$ 11,940	$ 995	$ 995
Retiree and Family	$ 20,388	$ 1,699	$ 1,699
Composite	$ 12,552	$ 1,046	$ 1,046

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 FY22 retired member medical contributions to get the FY23 retired member medical contributions.

Trend Assumptions	
FY22	0.0%
FY23+	4.0%

Graded trend rates for retired member medical contributions are consistent with the rates used for the June 30, 2020 valuation. Actual FY22 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. The amounts included in the Normal Cost for administrative expenses were changed from $7,223,000 to $7,625,000 for pension, and from $4,934,000 to $5,531,000 for healthcare (based on the most recent two years of actual administrative expenses paid from plan assets).

Table 1: Salary Scales

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

Table 2a: Turnover Rates for Peace Officer / Firefighter

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	15.00%	15.00%
1	12.00%	8.00%
2	7.20%	6.40%
3	5.67%	5.60%
4	6.48%	7.20%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	4.70%	6.80%	39	2.04%	2.98%
23	4.46%	6.80%	40	1.68%	3.39%
24	4.22%	6.80%	41	1.67%	3.37%
25	3.98%	6.80%	42	1.67%	3.36%
26	3.74%	6.80%	43	1.71%	3.33%
27	3.50%	6.80%	44	1.76%	3.31%
28	3.32%	6.63%	45	1.81%	3.28%
29	3.14%	6.46%	46	1.85%	3.25%
30	2.96%	6.29%	47	1.90%	3.23%
31	2.79%	6.12%	48	2.22%	3.19%
32	2.61%	5.95%	49	2.53%	3.15%
33	2.50%	5.36%	50	3.18%	6.42%
34	2.39%	4.77%	51	4.24%	6.32%
35	2.28%	4.18%	52	4.24%	6.19%
36	2.17%	3.60%	53	4.24%	6.04%
37	2.06%	3.01%	54	4.24%	3.00%
38	2.05%	2.99%	55+	3.00%	2.00%

Table 2b: Turnover Rates for Others

Select Rates during the First 5 Years of Employment

Hire Age Under 35			Hire Age Over 35		
Years of Service	Male	Female	Years of Service	Male	Female
0	29.00%	29.00%	0	20.00%	20.00%
1	16.25%	20.00%	1	12.00%	15.00%
2	13.00%	16.00%	2	10.00%	12.50%
3	10.40%	12.80%	3	8.50%	10.00%
4	8.45%	10.40%	4	8.50%	9.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	11.40%	12.99%	39	5.47%	5.23%
23	10.83%	12.21%	40	4.86%	5.65%
24	10.26%	11.43%	41	4.71%	5.51%
25	9.69%	10.65%	42	4.56%	5.38%
26	9.12%	9.87%	43	4.50%	5.19%
27	8.55%	9.09%	44	4.44%	4.99%
28	8.30%	8.72%	45	4.39%	4.80%
29	8.05%	8.34%	46	4.33%	4.60%
30	7.80%	7.97%	47	4.27%	4.41%
31	7.54%	7.60%	48	4.26%	4.40%
32	7.29%	7.23%	49	4.24%	4.39%
33	6.99%	6.88%	50	3.63%	4.45%
34	6.69%	6.53%	51	3.60%	4.43%
35	6.39%	6.17%	52	3.56%	4.40%
36	6.10%	5.82%	53	3.52%	4.37%
37	5.80%	5.47%	54	4.17%	6.20%
38	5.63%	5.35%	55+	3.00%	5.00%

Table 3a: Disability Rates for Peace Officer / Firefighter

Age	Male	Female
< 23	0.0179%	0.0112%
23	0.0244%	0.0153%
24	0.0310%	0.0194%
25	0.0374%	0.0234%
26	0.0440%	0.0275%
27	0.0505%	0.0316%
28	0.0526%	0.0329%
29	0.0548%	0.0343%
30	0.0570%	0.0356%
31	0.0591%	0.0370%
32	0.0612%	0.0383%
33	0.0634%	0.0397%
34	0.0657%	0.0411%
35	0.0679%	0.0425%
36	0.0702%	0.0439%
37	0.0724%	0.0453%
38	0.0757%	0.0473%
39	0.0789%	0.0493%
40	0.0822%	0.0514%
41	0.0854%	0.0534%
42	0.0886%	0.0554%
43	0.0977%	0.0611%
44	0.1066%	0.0667%
45	0.1157%	0.0723%
46	0.1247%	0.0780%
47	0.1337%	0.0836%
48	0.1462%	0.0914%
49	0.1588%	0.0993%
50	0.1714%	0.1071%
51	0.1839%	0.1150%
52	0.1965%	0.1228%
53	0.2294%	0.1434%
54	0.2624%	0.1640%
55	0.2954%	0.1846%
56	0.3283%	0.2052%
57	0.3613%	0.2258%
58	0.4112%	0.2570%
59	0.4611%	0.2882%
60	0.5110%	0.3194%
61	0.5610%	0.3506%
62	0.6109%	0.3818%
63	0.6109%	0.3818%
64	0.6109%	0.3818%
65	0.6109%	0.3818%
66	0.6109%	0.3818%
67	0.6109%	0.3818%
68	0.4073%	0.2546%
69	0.2036%	0.1273%
70+	0.2036%	0.1273%

Table 3b: Disability Rates for Others

Age	Male	Female	Age	Male	Female
< 23	0.0327%	0.0376%	46	0.1125%	0.1154%
23	0.0360%	0.0400%	47	0.1208%	0.1236%
24	0.0392%	0.0424%	48	0.1329%	0.1360%
25	0.0425%	0.0448%	49	0.1451%	0.1484%
26	0.0456%	0.0472%	50	0.1572%	0.1608%
27	0.0489%	0.0496%	51	0.1694%	0.1734%
28	0.0501%	0.0510%	52	0.1815%	0.1858%
29	0.0513%	0.0524%	53	0.2132%	0.2168%
30	0.0524%	0.0538%	54	0.2450%	0.2478%
31	0.0536%	0.0554%	55	0.2766%	0.2788%
32	0.0548%	0.0568%	56	0.3084%	0.3098%
33	0.0566%	0.0586%	57	0.3401%	0.3408%
34	0.0584%	0.0606%	58	0.4068%	0.4096%
35	0.0602%	0.0624%	59	0.4736%	0.4784%
36	0.0620%	0.0644%	60	0.5405%	0.5470%
37	0.0638%	0.0662%	61	0.6072%	0.6158%
38	0.0669%	0.0696%	62	0.6740%	0.6844%
39	0.0701%	0.0728%	63	0.8526%	0.8450%
40	0.0734%	0.0762%	64	1.0314%	1.0054%
41	0.0765%	0.0794%	65	1.2101%	1.1660%
42	0.0797%	0.0826%	66	1.3889%	1.3264%
43	0.0879%	0.0908%	67	1.5675%	1.4870%
44	0.0962%	0.0990%	68	1.0451%	0.9914%
45	0.1043%	0.1072%	69	0.5225%	0.4956%
			70+	0.5225%	0.4956%

Table 4a: Retirement Rates for Peace Officer / Firefighter

	Reduced		Unreduced	
Age	Male	Female	Male	Female
< 47	N/A	N/A	8.80%	6.00%
47	N/A	N/A	8.80%	15.00%
48	N/A	N/A	14.30%	15.00%
49	N/A	N/A	14.30%	15.00%
50	5.00%	5.00%	16.50%	15.00%
51	5.00%	7.00%	16.50%	15.00%
52	7.00%	7.00%	20.35%	15.00%
53	7.00%	7.00%	20.35%	15.00%
54	7.00%	35.00%	20.35%	25.00%
55	7.00%	8.00%	27.50%	20.00%
56	7.00%	8.00%	27.50%	15.00%
57	7.00%	8.00%	27.50%	15.00%
58	7.00%	8.00%	27.50%	15.00%
59	20.00%	20.00%	27.50%	15.00%
60	N/A	N/A	33.00%	25.00%
61	N/A	N/A	27.50%	20.00%
62	N/A	N/A	27.50%	30.00%
63	N/A	N/A	27.50%	50.00%
64	N/A	N/A	22.00%	50.00%
65	N/A	N/A	22.00%	50.00%
66	N/A	N/A	27.50%	50.00%
67	N/A	N/A	55.00%	50.00%
68	N/A	N/A	55.00%	50.00%
69	N/A	N/A	55.00%	50.00%
70+	N/A	N/A	100.00%	100.00%

Table 4b: Retirement Rates for Others

	Reduced		Unreduced	
Age	Male	Female	Male	Female
< 50	N/A	N/A	11.00%	11.00%
50	6.00%	8.00%	33.00%	38.50%
51	6.00%	8.00%	35.75%	38.50%
52	9.00%	8.00%	35.75%	38.50%
53	6.00%	8.00%	35.75%	38.50%
54	20.00%	15.00%	38.50%	38.50%
55	6.00%	6.00%	33.00%	33.00%
56	6.00%	6.00%	22.00%	22.00%
57	6.00%	6.00%	22.00%	19.80%
58	6.00%	6.00%	22.00%	19.80%
59	15.00%	20.00%	22.00%	19.80%
60	N/A	N/A	22.00%	23.10%
61	N/A	N/A	22.00%	22.00%
62	N/A	N/A	22.00%	22.00%
63	N/A	N/A	22.00%	22.00%
64	N/A	N/A	22.00%	22.00%
65	N/A	N/A	24.75%	28.60%
66	N/A	N/A	27.50%	28.60%
67	N/A	N/A	22.00%	24.20%
68	N/A	N/A	24.75%	24.20%
69	N/A	N/A	27.50%	24.20%
70	N/A	N/A	27.50%	24.20%
71	N/A	N/A	27.50%	24.20%
72	N/A	N/A	27.50%	27.50%
73	N/A	N/A	27.50%	27.50%
74	N/A	N/A	27.50%	38.50%
75	N/A	N/A	55.00%	55.00%
76	N/A	N/A	55.00%	55.00%
77	N/A	N/A	55.00%	55.00%
78	N/A	N/A	55.00%	55.00%
79	N/A	N/A	55.00%	55.00%
80+	N/A	N/A	100.00%	100.00%

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.

Actuarial Standard of Practice No. 51 (ASOP 51)[1] 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 actuarially determined contribution
- 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.

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.

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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.

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 actuarially determined contribution differ.

- If the actual contribution is lower than the actuarially determined 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 could 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 being 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 four-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 in the Executive Summary illustrates how the plan’s funded status (comparison of actuarial accrued liabilities to actuarial value of assets) has changed 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, 2020	June 30, 2021
1. Retiree and Beneficiary Accrued Liability	$ 10,472,466	$ 10,774,140
2. Total Accrued Liability	$ 15,279,525	$ 15,419,975
3. Ratio, (1) ÷ (2)	68.5%	69.9%

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 item #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, 2020	FYE June 30, 2021
1. Contributions	$ 504,029	$ 586,737
2. Benefit Payments	895,523	930,006
3. Cash Flow, (1) - (2)	$ (391,494)	$ (343,269)
4. Fair Value of Assets	$ 9,469,161	$ 11,912,309
5. Ratio, (3) ÷ (4)	(4.1%)	(2.9%)

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 generate 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, 2020	June 30, 2021
1. Fair Value of Assets	$ 9,469,161	$ 11,912,309
2. DB/DCR Payroll	$ 2,373,078	$ 2,406,757
3. Asset to Payroll Ratio, (1) ÷ (2)	399.0%	495.0%
4. Accrued Liability	$ 15,279,525	$ 15,419,975
5. Liability to Payroll Ratio, (4) ÷ (2)	643.9%	640.7%

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.

BUCK

State of Alaska

Public Employees' Retirement System Defined Contribution Retirement Plan

For Occupational Death & Disability and Retiree Medical Benefits

Actuarial Valuation Report

As of June 30, 2021

May 2022

May 12, 2022

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

Certification of Actuarial Valuation

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

This report summarizes the annual actuarial valuation results of the State of Alaska Public Employees' Retirement System Defined Contribution Retirement (PERS DCR) Plan as of June 30, 2021 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, 2021. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under PERS DCR were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Buck is solely responsible for the actuarial data and actuarial results presented in this report. This report fully and fairly discloses the actuarial position of PERS DCR as of June 30, 2021.

PERS DCR is funded by Employer Contributions in accordance with the funding policy adopted by the Alaska Retirement Management Board (Board). The funding objective for PERS DCR is to pay required contributions that remain level as a percent of PERS DCR 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 as a level percent of PERS DCR compensation over closed layered 25-year periods. This objective is currently being met and is projected to continue to be met as required by the Alaska State statutes. 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 remain at or above 100%.

The Board and staff of the State of Alaska may use this report for the review of the operations of PERS DCR. 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 actuarial assumptions, changes 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 claims cost rates effective June 30, 2021 to better reflect expected future healthcare experience. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Sections 4.2 and 4.3. We certify that the assumptions and methods described in Sections 4.2 and 4.3 of this report meet the requirements of all applicable Actuarial Standards of Practice.

Governmental Accounting Standards Board (GASB) Statement No. 74 (GASB 74) was effective for PERS DCR beginning with fiscal year ending June 30, 2017, and GASB 75 was effective beginning with fiscal year ending June 30, 2018. Separate GASB 74 and GASB 75 reports have been prepared.

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 PERS DCR. We also believe ASOP 51 does not apply to the occupational death & disability portion of PERS DCR. Therefore, information related to ASOP 51 is not included in this report. However, it may be beneficial to review the ASOP 51 information provided in the PERS valuation report for information on risks that may also relate to the occupational death & disability benefits provided by this plan.

Use of Models

Actuarial Standard of Practice No. 56 (ASOP 56) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Buck uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the plan using data and assumptions as of the measurement date under the funding methods specified in this report. The output from the third-party vendor software is used as input to an internally developed model that applies applicable funding methods and policies to the derived liabilities and other inputs, such as plan assets and contributions, to generate many of the exhibits found in this report. Buck has an extensive review process in which the results of the liability calculations are checked using detailed sample life output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other funding outputs and the internal model are similarly reviewed in detail and at a higher level for accuracy, reasonability, and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software. This review is performed by experts within Buck who are familiar with applicable funding methods, as well as the manner in which the model generates its output. If significant changes are made to the internal model, extra checking and review are completed. Significant changes to the internal model that are applicable to multiple clients are generally developed, checked, and reviewed by multiple experts within Buck who are familiar with the details of the required changes.

Buck used manual rate models to determine relative plan values for the defined benefit (DB) retiree medical plan and the DCR retiree medical plan, and to reflect the different Medicare coordination methods between the two plans. The manual rate models are intended to provide benchmark data and pricing capabilities, calculate per capita costs, and calculate actuarial values of different commercial health plans. Buck relied on the models, which were developed using industry data by actuaries and consultants at OptumInsight.

COVID-19

The potential impact of the ongoing COVID-19 pandemic on costs and liabilities was considered and an adjustment was made in setting the medical per capita claims cost assumption. FY20 medical claims were adjusted for a COVID-19 related decline in claims during the last four months (March – June) of FY20. FY21 medical claims were adjusted for a COVID-19 related decline in those claims during the fiscal year. A more detailed explanation on these adjustments is shown in Sections 4.2 and 4.3 and in the valuation report for the DB plan.

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 hereby 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, FCA
Director
Buck

Contents

Executive Summary

Overview

The State of Alaska Public Employees' Retirement System Defined Contribution Retirement (PERS DCR) Plan provides occupational death & disability and retiree medical benefits to eligible members hired after June 30, 2006 or who have elected participation in this plan. The Commissioner of the Department of Administration is responsible for administering the plan. The Alaska Retirement Management Board has fiduciary responsibility over the assets of the plan. This report presents the results of the actuarial valuation of PERS DCR as of the valuation date of June 30, 2021.

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 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 actuarially determined contributions;
4. To compare actual and expected experience under the plan during the last fiscal year; and
5. To report trends in contributions, assets, liabilities, and funded status over the last several years.

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

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)		2020	2021
Occupational Death & Disability			
a.	Actuarial Accrued Liability	$ 10,634	$ 11,740
b.	Valuation Assets	43,029	53,075
c.	Unfunded Actuarial Accrued Liability, (a) - (b)	$ (32,395)	$ (41,335)
d.	Funded Ratio based on Valuation Assets, (b) ÷ (a)	404.6%	452.1%
e.	Fair Value of Assets	$ 42,091	$ 60,145
f.	Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	395.8%	512.3%

Funded Status as of June 30 ($'s in 000's)	2020	2021
Retiree Medical		
a. Actuarial Accrued Liability	$ 150,701	$ 168,472
b. Valuation Assets	144,747	180,536
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ 5,954	$ (12,064)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	96.0%	107.2%
e. Fair Value of Assets	$ 141,569	$ 204,555
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	93.9%	121.4%
Total		
a. Actuarial Accrued Liability	$ 161,335	$ 180,212
b. Valuation Assets	187,776	233,611
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ (26,441)	$ (53,399)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	116.4%	129.6%
e. Fair Value of Assets	$ 183,660	$ 264,700
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	113.8%	146.9%

The key reasons for the change in the 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 as there are no available financial instruments for purchase. Future experience is likely to vary from assumptions so there is potential for actuarial gains or losses.

1. Investment Experience

The approximate FY21 investment return based on fair value of assets was 29.6% compared to the expected investment return of 7.38% (net of investment expenses). This resulted in a gain of approximately $43,414,000 to the plan from investment experience. The asset valuation method recognizes 20% of this gain ($8,683,000) this year and an additional 20% in each of the next 4 years. In addition, 20% of the FY17 investment gain, 20% of the FY18 investment loss, 20% of the FY19 investment loss, and 20% of the FY20 investment loss were recognized this year. The approximate FY21 asset return based on actuarial value of assets was 11.3% compared to the expected asset return of 7.38% (net of investment expenses).

2. Salary Increases

Salary increases for continuing active members during FY21 were higher than anticipated based on the valuation assumptions, resulting in a liability loss of approximately $8,000.

3. Demographic Experience

The number of active members increased 4.4% from 22,923 at June 30, 2020 to 23,933 at June 30, 2021. The average age of active members increased from 41.21 to 41.26 and average credited service increased from 4.66 to 4.93 years.

The demographic experience gains/losses are shown on page 4.

4. Retiree Medical Claims Experience

Please refer to the State of Alaska Public Employees' Retirement System (PERS) Defined Benefit Plan Actuarial Valuation Report as of June 30, 2021 for a full description of the assumptions and costs of the retiree medical plan. Adjustments to these costs and assumptions are described in this report.

The recent claims experience described in Section 4.2 of this report (Section 5.2 of the PERS report) created an actuarial gain of approximately $7,066,000.

5. **Changes in Methods Since the Prior Valuation**

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

6. **Changes in Assumptions Since the Prior Valuation**

   Healthcare claim costs are updated annually as described in Section 4.2. The amounts included in Normal Cost for administrative expenses were updated based on the last two years of actual administrative expenses paid from plan assets. There were no other changes in actuarial assumptions since the prior valuation.

7. **Changes in Benefit Provisions Since the Prior Valuation**

   Starting in 2022, prior authorization will be required for certain specialty medications. This change created an actuarial gain of approximately $2,029,000. There have been no other changes in benefit provisions valued since the prior valuation.

Comparative Summary of Contribution Rates

Occupational Death & Disability	FY 2023	FY 2024
Peace Officer/Firefighter		
a. Employer Normal Cost Rate	0.68%	0.68%
b. Past Service Cost Rate	(0.19)%	(0.24)%
c. Total Employer Contribution Rate, (a) + (b), not less than (a)	0.68%	0.68%
Others		
a. Employer Normal Cost Rate	0.30%	0.30%
b. Past Service Cost Rate	(0.16)%	(0.19)%
c. Total Employer Contribution Rate, (a) + (b), not less than (a)	0.30%	0.30%

Retiree Medical	FY 2023	FY 2024
a. Employer Normal Cost Rate	1.05%	1.01%
b. Past Service Cost Rate	0.05%	(0.02)%
c. Total Employer Contribution Rate, (a) + (b), not less than (a)	1.10%	1.01%

Total	FY 2023	FY 2024
Peace Officer/Firefighter		
a. Employer Normal Cost Rate	1.73%	1.69%
b. Past Service Cost Rate	0.05%	(0.02)%
c. Total Employer Contribution Rate, (a) + (b), not less than (a)	1.78%	1.69%
Others		
a. Employer Normal Cost Rate	1.35%	1.31%
b. Past Service Cost Rate	0.05%	(0.02)%
c. Total Employer Contribution Rate, (a) + (b), not less than (a)	1.40%	1.31%

The exhibit below shows the historical Board-adopted employer contribution rates for PERS DCR.

		Total Employer Contribution Rate		
Valuation Date	Fiscal Year	Occupational Death & Disability (PF / Others)	Retiree Medical	Total (PF / Others)
June 30, 2008	FY11	1.18% / 0.31%	0.55%	1.73% / 0.86%
June 30, 2009	FY12	0.97% / 0.11%	0.51%	1.48% / 0.62%
June 30, 2010	FY13	0.99% / 0.14%	0.48%	1.47% / 0.62%
June 30, 2011	FY14	1.14% / 0.20%	0.48%	1.62% / 0.68%
June 30, 2012	FY15	1.06% / 0.22%	1.66%	2.72% / 1.88%
June 30, 2013	FY16	1.05% / 0.22%	1.68%	2.73% / 1.90%
June 30, 2014	FY17	0.49% / 0.17%	1.18%	1.67% / 1.35%
June 30, 2015	FY18	0.43% / 0.16%	1.03%	1.46% / 1.19%
June 30, 2016	FY19	0.76% / 0.26%	0.94%	1.70% / 1.20%
June 30, 2017	FY20	0.72% / 0.26%	1.32%	2.04% / 1.58%
June 30, 2018	FY21	0.70% / 0.31%	1.27%	1.97% / 1.58%
June 30, 2019	FY22	0.68% / 0.31%	1.07%	1.75% / 1.38%
June 30, 2020	FY23	0.68% / 0.30%	1.10%	1.78% / 1.40%
June 30, 2021	FY24	TBD	TBD	TBD

Summary of Actuarial Accrued Liability Gain/(Loss)

The following table shows the FY21 gain/(loss) on actuarial accrued liability as of June 30, 2021 ($'s in 000's):

	Occupational Death & Disability	Retiree Medical	Total
Retirement Experience	$ 0	$ (521)	$ (521)
Termination Experience	(90)	2,669	2,579
Disability Experience	3,346	341	3,687
Active Mortality Experience	1,900	104	2,004
Inactive Mortality Experience	(21)	432	411
Salary Increases	(8)	N/A	(8)
New Entrants	(89)	(1,320)	(1,409)
Rehires	(47)	(3,068)	(3,115)
Transfers Between P/F and Others	(31)	(52)	(83)
Benefit Payments Different than Expected	145	209	354
Per Capita Claims Costs	N/A	7,066	7,066
Prescription Drug Plan Changes	N/A	2,029	2,029
Miscellaneous[1]	(362)	1,560	1,198
Total	$ 4,743	$ 9,449	$ 14,192

[1] Includes the effects of various data changes that are typical when new census data is received for the annual valuation, as well as other items that do not fit neatly into any of the other categories.

Section 1: Actuarial Funding Results

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

Peace Officer / Firefighter

As of June 30, 2021	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Occupational Death Benefits	$ 3,705	$ (12)
Occupational Disability Benefits	12,254	3,750
Medical and Prescription Drug Benefits	43,037	22,460
Medicare Part D Subsidy	(8,159)	(4,294)
Subtotal	$ 50,837	$ 21,904
Benefit Recipients		
Survivor Benefits	$ 323	$ 323
Disability Benefits	4,865	4,865
Medical and Prescription Drug Benefits	788	788
Medicare Part D Subsidy	(138)	(138)
Subtotal	$ 5,838	$ 5,838
Total	**$ 56,675**	**$ 27,742**
Total Occupational Death & Disability	**$ 21,147**	**$ 8,926**
Total Retiree Medical, Net of Part D Subsidy	**$ 35,528**	**$ 18,816**
Total Retiree Medical, Gross of Part D Subsidy	**$ 43,825**	**$ 23,248**

As of June 30, 2021	Normal Cost
Active Members	
Occupational Death Benefits	$ 485
Occupational Disability Benefits	1,019
Medical and Prescription Drug Benefits	2,300
Medicare Part D Subsidy	(434)
Subtotal	$ 3,370
Administrative Expense Load	
Occupational Death & Disability	$ 4
Retiree Medical	7
Subtotal	$ 11
Total	**$ 3,381**
Total Occupational Death & Disability	**$ 1,508**
Total Retiree Medical, Net of Part D Subsidy	**$ 1,873**
Total Retiree Medical, Gross of Part D Subsidy	**$ 2,307**

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

Others

As of June 30, 2021	Present Value of Projected Benefits		Actuarial Accrued (Past Service) Liability	
Active Members				
Occupational Death Benefits	$	9,151	$	641
Occupational Disability Benefits		16,372		1,618
Medical and Prescription Drug Benefits		286,967		182,893
Medicare Part D Subsidy		(59,007)		(37,778)
Subtotal	$	253,483	$	147,374
Benefit Recipients				
Survivor Benefits	$	0	$	0
Disability Benefits		555		555
Medical and Prescription Drug Benefits		5,746		5,746
Medicare Part D Subsidy		(1,205)		(1,205)
Subtotal	$	5,096	$	5,096
Total	**$**	**258,579**	**$**	**152,470**
Total Occupational Death & Disability	**$**	**26,078**	**$**	**2,814**
Total Retiree Medical, Net of Part D Subsidy	**$**	**232,501**	**$**	**149,656**
Total Retiree Medical, Gross of Part D Subsidy	**$**	**292,713**	**$**	**188,639**

As of June 30, 2021	Normal Cost	
Active Members		
Occupational Death Benefits	$	1,449
Occupational Disability Benefits		2,503
Medical and Prescription Drug Benefits		17,248
Medicare Part D Subsidy		(3,527)
Subtotal	$	17,673
Administrative Expense Load		
Occupational Death & Disability	$	12
Retiree Medical		17
Subtotal	$	29
Total	**$**	**17,702**
Total Occupational Death & Disability	**$**	**3,964**
Total Retiree Medical, Net of Part D Subsidy	**$**	**13,738**
Total Retiree Medical, Gross of Part D Subsidy	**$**	**17,265**

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

All Members

As of June 30, 2021	Present Value of Projected Benefits		Actuarial Accrued (Past Service) Liability	
Active Members				
Occupational Death Benefits	$	12,856	$	629
Occupational Disability Benefits		28,626		5,368
Medical and Prescription Drug Benefits		330,004		205,353
Medicare Part D Subsidy		(67,166)		(42,072)
Subtotal	$	304,320	$	169,278
Benefit Recipients				
Survivor Benefits	$	323	$	323
Disability Benefits		5,420		5,420
Medical and Prescription Drug Benefits		6,534		6,534
Medicare Part D Subsidy		(1,343)		(1,343)
Subtotal	$	10,934	$	10,934
Total	**$**	**315,254**	**$**	**180,212**
Total Occupational Death & Disability	**$**	**47,225**	**$**	**11,740**
Total Retiree Medical, Net of Part D Subsidy	**$**	**268,029**	**$**	**168,472**
Total Retiree Medical, Gross of Part D Subsidy	**$**	**336,538**	**$**	**211,887**

As of June 30, 2021	Normal Cost	
Active Members		
Occupational Death Benefits	$	1,934
Occupational Disability Benefits		3,522
Medical and Prescription Drug Benefits		19,548
Medicare Part D Subsidy		(3,961)
Subtotal	$	21,043
Administrative Expense Load		
Occupational Death & Disability	$	16
Retiree Medical		24
Subtotal	$	40
Total	**$**	**21,083**
Total Occupational Death & Disability	**$**	**5,472**
Total Retiree Medical, Net of Part D Subsidy	**$**	**15,611**
Total Retiree Medical, Gross of Part D Subsidy	**$**	**19,572**

Section 1.2: Actuarial Contributions as of June 30, 2021 for FY24 ($’s in 000’s)

Peace Officer / Firefighter

Normal Cost Rate		Occupational Death & Disability		Retiree Medical		Total
1. Total Normal Cost	$	1,508	$	1,873	$	3,381
2. DCR Plan Rate Payroll Projected for FY22		220,974		220,974		220,974
3. Employer Normal Cost Rate, (1) ÷ (2)		0.68%		0.85%		1.53%

Past Service Rate						
1. Actuarial Accrued Liability	$	8,926	$	18,816	$	27,742
2. Valuation Assets		15,959		20,163		36,122
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$	(7,033)	$	(1,347)	$	(8,380)
4. Funded Ratio based on Valuation Assets		178.8%		107.2%		130.2%
5. Past Service Cost Amortization Payment		(522)		(47)		(569)
6. DCR Plan Rate Payroll Projected for FY22		220,974		220,974		220,974
7. Past Service Cost Rate, (5) ÷ (6)		(0.24%)		(0.02%)		(0.26%)
Total Employer Contribution Rate, not less than Normal Cost Rate		**0.68%**		**0.85%**		**1.53%**

The table below shows the total employer contribution rate based on total DB and DCR Plan payroll for informational purposes.

Total Employer Contribution Rate as Percent of Total Payroll		Occupational Death & Disability		Retiree Medical		Total
1. Total Normal Cost	$	1,508	$	1,873	$	3,381
2. Total DB and DCR Plan Rate Payroll Projected for FY22		368,713		368,713		368,713
3. Employer Normal Cost Rate, (1) ÷ (2)		0.41%		0.51%		0.92%
4. Past Service Cost Amortization Payment		(522)		(47)		(569)
5. Past Service Cost Rate, (4) ÷ (2)		(0.14%)		(0.01%)		(0.15%)
Total Employer Contribution Rate, not less than Normal Cost Rate		**0.41%**		**0.51%**		**0.92%**

Peace Officer / Firefighter

Schedule of Past Service Cost Amortizations - Occupational Death & Disability ($'s in 000's)

	Amortization Period		Balances		
Layer	**Date Created**	**Years Remaining**	**Initial**	**Outstanding**	**Beginning-of-Year Payment**
Initial Unfunded Liability	06/30/2007	11	$ (100)	$ (93)	$ (10)
FY08 Gain	06/30/2008	12	(586)	(555)	(58)
Change in Assumptions	06/30/2009	13	(104)	(101)	(10)
FY09 Loss	06/30/2009	13	446	433	43
Change in Assumptions	06/30/2010	14	79	77	7
FY10 Gain	06/30/2010	14	(282)	(280)	(26)
FY11 Loss	06/30/2011	15	73	70	6
FY12 Gain	06/30/2012	16	(349)	(354)	(30)
FY13 Gain	06/30/2013	17	(204)	(207)	(17)
Change in Assumptions	06/30/2014	18	(1,274)	(1,303)	(103)
PRPA Modification	06/30/2014	18	(91)	(92)	(7)
FY14 Gain	06/30/2014	18	(95)	(98)	(8)
FY15 Gain	06/30/2015	19	(664)	(679)	(52)
FY16 Loss	06/30/2016	20	4	4	0
FY17 Gain	06/30/2017	21	(525)	(534)	(38)
FY18 Gain	06/30/2018	22	(262)	(264)	(18)
Change in Assumptions	06/30/2018	22	(633)	(639)	(44)
FY19 Loss	06/30/2019	23	219	220	15
FY20 Gain	06/30/2020	24	(792)	(796)	(53)
FY21 Gain	06/30/2021	25	(1,842)	(1,842)	(119)
Total				**$ (7,033)**	**$ (522)**

Peace Officer / Firefighter

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

Layer	Amortization Period		Balances		Beginning-of-Year Payment
	Date Created	Years Remaining	Initial	Outstanding	
Initial Unfunded Liability	06/30/2007	11	$ (21)	$ (23)	$ (3)
Change in Assumptions	06/30/2008	12	17	15	2
FY08 Gain	06/30/2008	12	(62)	(59)	(6)
Change in Assumptions	06/30/2009	13	(8)	(8)	(1)
FY09 Gain	06/30/2009	13	(38)	(38)	(4)
Change in Assumptions	06/30/2010	14	41	40	4
FY10 Gain	06/30/2010	14	(46)	(42)	(4)
FY11 Loss	06/30/2011	15	70	68	6
Change in Assumptions	06/30/2012	16	3,085	3,122	266
FY12 Gain	06/30/2012	16	(273)	(275)	(23)
FY13 Loss	06/30/2013	17	880	897	73
Change in Assumptions	06/30/2014	18	(3,034)	(3,100)	(244)
FY14 Loss	06/30/2014	18	1,213	1,240	98
FY15 Gain	06/30/2015	19	(712)	(727)	(55)
EGWP Gain	06/30/2016	20	(1,675)	(1,711)	(126)
FY16 Loss	06/30/2016	20	1,116	1,140	84
Change in Assumptions	06/30/2017	21	2,244	2,280	163
FY17 Gain	06/30/2017	21	(50)	(52)	(4)
FY18 Gain	06/30/2018	22	(231)	(233)	(16)
Change in Assumptions/Methods	06/30/2018	22	(649)	(654)	(45)
FY19 Gain	06/30/2019	23	(1,291)	(1,300)	(88)
Change in Assumptions	06/30/2020	24	1,116	1,121	74
FY20 Gain	06/30/2020	24	(1,082)	(1,087)	(72)
Prescription Drug Plan Changes	06/30/2021	25	(235)	(235)	(15)
FY21 Gain	06/30/2021	25	(1,726)	(1,726)	(111)
Total				**$ (1,347)**	**$ (47)**

Peace Officer / Firefighter

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (121)	$ (116)	$ (13)
Change in Assumptions	06/30/2008	12	17	15	2
FY08 Gain	06/30/2008	12	(648)	(614)	(64)
Change in Assumptions	06/30/2009	13	(112)	(109)	(11)
FY09 Loss	06/30/2009	13	408	395	39
Change in Assumptions	06/30/2010	14	120	117	11
FY10 Gain	06/30/2010	14	(328)	(322)	(30)
FY11 Loss	06/30/2011	15	143	138	12
Change in Assumptions	06/30/2012	16	3,085	3,122	266
FY12 Gain	06/30/2012	16	(622)	(629)	(53)
FY13 Loss	06/30/2013	17	676	690	56
Change in Assumptions	06/30/2014	18	(4,308)	(4,403)	(347)
PRPA Modification	06/30/2014	18	(91)	(92)	(7)
FY14 Loss	06/30/2014	18	1,118	1,142	90
FY15 Gain	06/30/2015	19	(1,376)	(1,406)	(107)
EGWP Gain	06/30/2016	20	(1,675)	(1,711)	(126)
FY16 Loss	06/30/2016	20	1,120	1,144	84
Change in Assumptions	06/30/2017	21	2,244	2,280	163
FY17 Gain	06/30/2017	21	(575)	(586)	(42)
FY18 Gain	06/30/2018	22	(493)	(497)	(34)
Change in Assumptions/Methods	06/30/2018	22	(1,282)	(1,293)	(89)
FY19 Gain	06/30/2019	23	(1,072)	(1,080)	(73)
Change in Assumptions	06/30/2020	24	1,116	1,121	74
FY20 Gain	06/30/2020	24	(1,874)	(1,883)	(125)
Prescription Drug Plan Changes	06/30/2021	25	(235)	(235)	(15)
FY21 Gain	06/30/2021	25	(3,568)	(3,568)	(230)
Total				**$ (8,380)**	**$ (569)**

Section 1.2: Actuarial Contributions as of June 30, 2021 for FY24 ($'s in 000's)

Others

Normal Cost Rate	Occupational Death & Disability	Retiree Medical	Total
1. Total Normal Cost	$ 3,964	$ 13,738	$ 17,702
2. DCR Plan Rate Payroll Projected for FY22	1,327,142	1,327,142	1,327,142
3. Employer Normal Cost Rate, (1) ÷ (2)	0.30%	1.03%	1.33%

Past Service Rate			
1. Actuarial Accrued Liability	$ 2,814	$ 149,656	$ 152,470
2. Valuation Assets	37,116	160,373	197,489
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ (34,302)	$ (10,717)	$ (45,019)
4. Funded Ratio based on Valuation Assets	1,319.0%	107.2%	129.5%
5. Past Service Cost Amortization Payment	(2,515)	(323)	(2,838)
6. DCR Plan Rate Payroll Projected for FY22	1,327,142	1,327,142	1,327,142
7. Past Service Cost Rate, (5) ÷ (6)	(0.19%)	(0.02%)	(0.21%)
Total Employer Contribution Rate, not less than Normal Cost Rate	**0.30%**	**1.03%**	**1.33%**

The table below shows the total employer contribution rate based on total DB and DCR Plan payroll for informational purposes.

Total Employer Contribution Rate as Percent of Total Payroll	Occupational Death & Disability	Retiree Medical	Total
1. Total Normal Cost	$ 3,964	$ 13,738	$ 17,702
2. Total DB and DCR Plan Rate Payroll Projected for FY22	2,038,044	2,038,044	2,038,044
3. Employer Normal Cost Rate, (1) ÷ (2)	0.19%	0.68%	0.87%
4. Past Service Cost Amortization Payment	(2,515)	(323)	(2,838)
5. Past Service Cost Rate, (4) ÷ (2)	(0.12%)	(0.02%)	(0.14%)
Total Employer Contribution Rate, not less than Normal Cost Rate	**0.19%**	**0.68%**	**0.87%**

Others

Schedule of Past Service Cost Amortizations - Occupational Death & Disability ($'s in 000's)

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (40)	$ (38)	$ (5)
FY08 Gain	06/30/2008	12	(318)	(303)	(32)
Change in Assumptions	06/30/2009	13	(92)	(89)	(9)
FY09 Gain	06/30/2009	13	(1,924)	(1,865)	(185)
Change in Assumptions	06/30/2010	14	24	25	3
FY10 Gain	06/30/2010	14	(994)	(982)	(92)
FY11 Gain	06/30/2011	15	(1,184)	(1,182)	(105)
FY12 Gain	06/30/2012	16	(1,233)	(1,246)	(106)
FY13 Gain	06/30/2013	17	(779)	(794)	(65)
Change in Assumptions	06/30/2014	18	(51)	(51)	(4)
PRPA Modification	06/30/2014	18	(27)	(28)	(2)
FY14 Gain	06/30/2014	18	(2,003)	(2,044)	(161)
FY15 Gain	06/30/2015	19	(1,850)	(1,890)	(143)
FY16 Gain	06/30/2016	20	(2,361)	(2,409)	(177)
FY17 Gain	06/30/2017	21	(2,377)	(2,413)	(172)
FY18 Gain	06/30/2018	22	(2,590)	(2,613)	(182)
Change in Assumptions	06/30/2018	22	(272)	(275)	(19)
FY19 Gain	06/30/2019	23	(3,984)	(4,013)	(272)
FY20 Gain	06/30/2020	24	(4,803)	(4,824)	(318)
FY21 Gain	06/30/2021	25	(7,268)	(7,268)	(469)
Total				**$ (34,302)**	**$ (2,515)**

Others

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (335)	$ (308)	$ (34)
Change in Assumptions	06/30/2008	12	165	157	16
FY08 Gain	06/30/2008	12	(702)	(664)	(70)
Change in Assumptions	06/30/2009	13	(122)	(118)	(11)
FY09 Gain	06/30/2009	13	(438)	(425)	(42)
Change in Assumptions	06/30/2010	14	(572)	(564)	(53)
FY10 Loss	06/30/2010	14	579	567	53
FY11 Loss	06/30/2011	15	820	823	73
Change in Assumptions	06/30/2012	16	25,180	25,475	2,171
FY12 Loss	06/30/2012	16	1,451	1,466	124
FY13 Loss	06/30/2013	17	9,974	10,159	831
Change in Assumptions	06/30/2014	18	(21,822)	(22,303)	(1,756)
FY14 Loss	06/30/2014	18	7,002	7,157	563
FY15 Gain	06/30/2015	19	(8,726)	(8,923)	(679)
EGWP Gain	06/30/2016	20	(17,884)	(18,239)	(1,342)
FY16 Loss	06/30/2016	20	10,367	10,573	778
Change in Assumptions	06/30/2017	21	21,288	21,613	1,544
FY17 Gain	06/30/2017	21	(1,658)	(1,682)	(120)
FY18 Loss	06/30/2018	22	118	119	8
Change in Assumptions/Methods	06/30/2018	22	(8,993)	(9,070)	(630)
FY19 Gain	06/30/2019	23	(10,841)	(10,922)	(739)
Change in Assumptions	06/30/2020	24	6,369	6,398	423
FY20 Gain	06/30/2020	24	(6,288)	(6,316)	(417)
Prescription Drug Plan Changes	06/30/2021	25	(1,794)	(1,794)	(116)
FY21 Gain	06/30/2021	25	(13,896)	(13,896)	(898)
Total				**$ (10,717)**	**$ (323)**

Others

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (375)	$ (346)	$ (39)
Change in Assumptions	06/30/2008	12	165	157	16
FY08 Gain	06/30/2008	12	(1,020)	(967)	(102)
Change in Assumptions	06/30/2009	13	(214)	(207)	(20)
FY09 Gain	06/30/2009	13	(2,362)	(2,290)	(227)
Change in Assumptions	06/30/2010	14	(548)	(539)	(50)
FY10 Gain	06/30/2010	14	(415)	(415)	(39)
FY11 Gain	06/30/2011	15	(364)	(359)	(32)
Change in Assumptions	06/30/2012	16	25,180	25,475	2,171
FY12 Loss	06/30/2012	16	218	220	18
FY13 Loss	06/30/2013	17	9,195	9,365	766
Change in Assumptions	06/30/2014	18	(21,873)	(22,354)	(1,760)
PRPA Modification	06/30/2014	18	(27)	(28)	(2)
FY14 Loss	06/30/2014	18	4,999	5,113	402
FY15 Gain	06/30/2015	19	(10,576)	(10,813)	(822)
EGWP Gain	06/30/2016	20	(17,884)	(18,239)	(1,342)
FY16 Loss	06/30/2016	20	8,006	8,164	601
Change in Assumptions	06/30/2017	21	21,288	21,613	1,544
FY17 Gain	06/30/2017	21	(4,035)	(4,095)	(292)
FY18 Gain	06/30/2018	22	(2,472)	(2,494)	(174)
Change in Assumptions/Methods	06/30/2018	22	(9,265)	(9,345)	(649)
FY19 Gain	06/30/2019	23	(14,825)	(14,935)	(1,011)
Change in Assumptions	06/30/2020	24	6,369	6,398	423
FY20 Gain	06/30/2020	24	(11,091)	(11,140)	(735)
Prescription Drug Plan Changes	06/30/2021	25	(1,794)	(1,794)	(116)
FY21 Gain	06/30/2021	25	(21,164)	(21,164)	(1,367)
Total				**$ (45,019)**	**$ (2,838)**

Section 1.2: Actuarial Contributions as of June 30, 2021 for FY24 ($'s in 000's)

All Members

Normal Cost Rate	Occupational Death & Disability	Retiree Medical	Total
1. Total Normal Cost	$ 5,472	$ 15,611	$ 21,083
2. DCR Plan Rate Payroll Projected for FY22	1,548,116	1,548,116	1,548,116
3. Employer Normal Cost Rate, (1) ÷ (2)	0.35%	1.01%	1.36%

Past Service Rate	Occupational Death & Disability	Retiree Medical	Total
1. Actuarial Accrued Liability	$ 11,740	$ 168,472	$ 180,212
2. Valuation Assets	53,075	180,536	233,611
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ (41,335)	$ (12,064)	$ (53,399)
4. Funded Ratio based on Valuation Assets	452.1%	107.2%	129.6%
5. Past Service Cost Amortization Payment	(3,037)	(370)	(3,407)
6. DCR Plan Rate Payroll Projected for FY22	1,548,116	1,548,116	1,548,116
7. Past Service Cost Rate, (5) ÷ (6)	(0.20%)	(0.02%)	(0.22%)
Total Employer Contribution Rate, not less than Normal Cost Rate	**0.35%**	**1.01%**	**1.36%**

The table below shows the total employer contribution rate based on total DB and DCR Plan payroll for informational purposes.

Total Employer Contribution Rate as Percent of Total Payroll	Occupational Death & Disability	Retiree Medical	Total
1. Total Normal Cost	$ 5,472	$ 15,611	$ 21,083
2. Total DB and DCR Plan Rate Payroll Projected for FY22	2,406,757	2,406,757	2,406,757
3. Employer Normal Cost Rate, (1) ÷ (2)	0.23%	0.65%	0.88%
4. Past Service Cost Amortization Payment	(3,037)	(370)	(3,407)
5. Past Service Cost Rate, (4) ÷ (2)	(0.13%)	(0.01%)	(0.14%)
Total Employer Contribution Rate, not less than Normal Cost Rate	**0.23%**	**0.65%**	**0.88%**

All Members

Schedule of Past Service Cost Amortizations - Occupational Death & Disability ($'s in 000's)

	Amortization Period		Balances		
Layer	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (140)	$ (131)	$ (15)
FY08 Gain	06/30/2008	12	(904)	(858)	(90)
Change in Assumptions	06/30/2009	13	(196)	(190)	(19)
FY09 Gain	06/30/2009	13	(1,478)	(1,432)	(142)
Change in Assumptions	06/30/2010	14	103	102	10
FY10 Gain	06/30/2010	14	(1,276)	(1,262)	(118)
FY11 Gain	06/30/2011	15	(1,111)	(1,112)	(99)
FY12 Gain	06/30/2012	16	(1,582)	(1,600)	(136)
FY13 Gain	06/30/2013	17	(983)	(1,001)	(82)
Change in Assumptions	06/30/2014	18	(1,325)	(1,354)	(107)
PRPA Modification	06/30/2014	18	(118)	(120)	(9)
FY14 Gain	06/30/2014	18	(2,098)	(2,142)	(169)
FY15 Gain	06/30/2015	19	(2,514)	(2,569)	(195)
FY16 Gain	06/30/2016	20	(2,357)	(2,405)	(177)
FY17 Gain	06/30/2017	21	(2,902)	(2,947)	(210)
FY18 Gain	06/30/2018	22	(2,852)	(2,877)	(200)
Change in Assumptions	06/30/2018	22	(905)	(914)	(63)
FY19 Gain	06/30/2019	23	(3,765)	(3,793)	(257)
FY20 Gain	06/30/2020	24	(5,595)	(5,620)	(371)
FY21 Gain	06/30/2021	25	(9,110)	(9,110)	(588)
Total				**$ (41,335)**	**$ (3,037)**

All Members

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

	Amortization Period		Balances		
Layer	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (356)	$ (331)	$ (37)
Change in Assumptions	06/30/2008	12	182	172	18
FY08 Gain	06/30/2008	12	(764)	(723)	(76)
Change in Assumptions	06/30/2009	13	(130)	(126)	(12)
FY09 Gain	06/30/2009	13	(476)	(463)	(46)
Change in Assumptions	06/30/2010	14	(531)	(524)	(49)
FY10 Loss	06/30/2010	14	533	525	49
FY11 Loss	06/30/2011	15	890	891	79
Change in Assumptions	06/30/2012	16	28,265	28,597	2,437
FY12 Loss	06/30/2012	16	1,178	1,191	101
FY13 Loss	06/30/2013	17	10,854	11,056	904
Change in Assumptions	06/30/2014	18	(24,856)	(25,403)	(2,000)
FY14 Loss	06/30/2014	18	8,215	8,397	661
FY15 Gain	06/30/2015	19	(9,438)	(9,650)	(734)
EGWP Gain	06/30/2016	20	(19,559)	(19,950)	(1,468)
FY16 Loss	06/30/2016	20	11,483	11,713	862
Change in Assumptions	06/30/2017	21	23,532	23,893	1,707
FY17 Gain	06/30/2017	21	(1,708)	(1,734)	(124)
FY18 Gain	06/30/2018	22	(113)	(114)	(8)
Change in Assumptions/Methods	06/30/2018	22	(9,642)	(9,724)	(675)
FY19 Gain	06/30/2019	23	(12,132)	(12,222)	(827)
Change in Assumptions	06/30/2020	24	7,485	7,519	497
FY20 Gain	06/30/2020	24	(7,370)	(7,403)	(489)
Prescription Drug Plan Changes	06/30/2021	25	(2,029)	(2,029)	(131)
FY21 Gain	06/30/2021	25	(15,622)	(15,622)	(1,009)
Total				**$ (12,064)**	**$ (370)**

All Members

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (496)	$ (462)	$ (52)
Change in Assumptions	06/30/2008	12	182	172	18
FY08 Gain	06/30/2008	12	(1,668)	(1,581)	(166)
Change in Assumptions	06/30/2009	13	(326)	(316)	(31)
FY09 Gain	06/30/2009	13	(1,954)	(1,895)	(188)
Change in Assumptions	06/30/2010	14	(428)	(422)	(39)
FY10 Gain	06/30/2010	14	(743)	(737)	(69)
FY11 Gain	06/30/2011	15	(221)	(221)	(20)
Change in Assumptions	06/30/2012	16	28,265	28,597	2,437
FY12 Gain	06/30/2012	16	(404)	(409)	(35)
FY13 Loss	06/30/2013	17	9,871	10,055	822
Change in Assumptions	06/30/2014	18	(26,181)	(26,757)	(2,107)
PRPA Modification	06/30/2014	18	(118)	(120)	(9)
FY14 Loss	06/30/2014	18	6,117	6,255	492
FY15 Gain	06/30/2015	19	(11,952)	(12,219)	(929)
EGWP Gain	06/30/2016	20	(19,559)	(19,950)	(1,468)
FY16 Loss	06/30/2016	20	9,126	9,308	685
Change in Assumptions	06/30/2017	21	23,532	23,893	1,707
FY17 Gain	06/30/2017	21	(4,610)	(4,681)	(334)
FY18 Gain	06/30/2018	22	(2,965)	(2,991)	(208)
Change in Assumptions/Methods	06/30/2018	22	(10,547)	(10,638)	(738)
FY19 Gain	06/30/2019	23	(15,897)	(16,015)	(1,084)
Change in Assumptions	06/30/2020	24	7,485	7,519	497
FY20 Gain	06/30/2020	24	(12,965)	(13,023)	(860)
Prescription Drug Plan Changes	06/30/2021	25	(2,029)	(2,029)	(131)
FY21 Gain	06/30/2021	25	(24,732)	(24,732)	(1,597)
Total				**$ (53,399)**	**$ (3,407)**

Section 1.3: Actuarial Gain/(Loss) for FY21 ($'s in 000's)

	Occupational Death & Disability	Retiree Medical	Total
1. Expected Actuarial Accrued Liability			
a. Actuarial Accrued Liability as of June 30, 2020	$ 10,634	$ 150,701	$ 161,335
b. Normal Cost	5,133	15,162	20,295
c. Interest on (a) and (b) at 7.38%	1,164	12,241	13,405
d. Employer Group Waiver Plan	0	60	60
e. Benefit Payments	(431)	(237)	(668)
f. Interest on (d) and (e) at 7.38%, adjusted for timing	(17)	(6)	(23)
g. Assumption/Method Changes	0	0	0
h. Expected Actuarial Accrued Liability as of June 30, 2021 (a) + (b) + (c) + (d) + (e) + (f) + (g)	$ 16,483	$ 177,921	$ 194,404
2. Actual Actuarial Accrued Liability as of June 30, 2021	11,740	168,472	180,212
3. Liability Gain/(Loss), (1)(h) - (2)	**$ 4,743**	**$ 9,449**	**$ 14,192**
4. Expected Actuarial Asset Value			
a. Actuarial Asset Value as of June 30, 2020	$ 43,029	$ 144,747	$ 187,776
b. Interest on (a) at 7.38%	3,176	10,682	13,858
c. Employer Contributions	5,334	18,559	23,893
d. Employer Group Waiver Plan	0	60	60
e. Interest on (c) and (d) at 7.38%, adjusted for timing	193	675	868
f. Benefit Payments	(431)	(237)	(668)
g. Administrative Expenses	(32)	(22)	(54)
h. Interest on (f) and (g) at 7.38%, adjusted for timing	(18)	(9)	(27)
i. Expected Actuarial Asset Value as of June 30, 2021 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h)	$ 51,251	$ 174,455	$ 225,706
5. Actuarial Asset Value as of June 30, 2021	53,075	180,536	233,611
6. Actuarial Asset Gain/(Loss), (5) - (4)(i)	**$ 1,824**	**$ 6,081**	**$ 7,905**
7. Total Actuarial Gain/(Loss), (3) + (6)	**$ 6,567**	**$ 15,530**	**$ 22,097**
8. Contribution Gain/(Loss)	**$ 2,575**	**$ 2,122**	**$ 4,697**
9. Administrative Expense Gain/(Loss)	**$ (32)**	**$ (1)**	**$ (33)**
10. FY21 Gain/(Loss), (7) + (8) + (9)	**$ 9,110**	**$ 17,651**	**$ 26,761**

Section 1.4: 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, 2007	$ 759	$ 1,255	165.3%	$ (496)
June 30, 2008	2,018	4,007	198.6%	(1,989)
June 30, 2009	4,316	8,613	199.6%	(4,297)
June 30, 2010	8,038	13,568	168.8%	(5,530)
June 30, 2011	13,251	19,058	143.8%	(5,807)
June 30, 2012	46,921	24,915	53.1%	22,006
June 30, 2013	63,885	31,709	49.6%	32,176
June 30, 2014	53,844	41,461	77.0%	12,383
June 30, 2015	63,732	63,202	99.2%	530
June 30, 2016	77,052	87,027	112.9%	(9,975)
June 30, 2017	117,243	108,503	92.5%	8,740
June 30, 2018	126,311	131,058	103.8%	(4,747)
June 30, 2019	134,720	155,484	115.4%	(20,764)
June 30, 2020	161,335	187,776	116.4%	(26,441)
June 30, 2021	180,212	233,611	129.6%	(53,399)

Section 2: Plan Assets

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

As of June 30, 2021	Occupational Death & Disability	Retiree Medical	Total	Allocation Percent
Cash and Short-Term Investments				
- Cash and Cash Equivalents	$ 772	$ 2,614	$ 3,386	1.3%
- Subtotal	$ 772	$ 2,614	$ 3,386	1.3%
Fixed Income Investments				
- Domestic Fixed Income Pool	$ 12,129	$ 41,250	$ 53,379	20.2%
- International Fixed Income Pool	0	0	0	0.0%
- Tactical Fixed Income Pool	0	0	0	0.0%
- 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	$ 12,129	$ 41,250	$ 53,379	20.2%
Equity Investments				
- Domestic Equity Pool	$ 16,411	$ 55,812	$ 72,223	27.3%
- International Equity Pool	9,045	30,759	39,804	15.1%
- Private Equity Pool	8,900	30,267	39,167	14.8%
- Emerging Markets Equity Pool	1,921	6,534	8,455	3.3%
- Alternative Equity Strategies	3,495	11,886	15,381	5.8%
- Subtotal	$ 39,772	$ 135,258	$ 175,030	66.3%
Other Investments				
- Real Estate Pool	$ 3,686	$ 12,534	$ 16,220	6.1%
- Other Investments Pool	3,679	12,508	16,187	6.1%
- Absolute Return Pool	0	0	0	0.0%
- Other Assets	0	0	0	0.0%
- Subtotal	$ 7,365	$ 25,042	$ 32,407	12.2%
Total Cash and Investments	$ 60,038	$ 204,164	$ 264,202	100.0%
Net Accrued Receivables	107	391	498	
Net Assets	$ 60,145	$ 204,555	$ 264,700	
Peace Officer / Firefighter	$ 18,085	N/A	N/A	
Others	42,060	N/A	N/A	
All Members	$ 60,145	$ 204,555	$ 264,700	

Section 2.2: Changes in Fair Value of Assets During FY21 ($'s in 000's)

Fiscal Year 2021	Occupational Death & Disability	Retiree Medical	Total
1. Fair Value of Assets as of June 30, 2020	$ 42,091	$ 141,569	$ 183,660
2. Additions:			
a. Member Contributions	$ 0	$ 0	$ 0
b. Employer Contributions	5,334	18,559	23,893
c. Interest and Dividend Income	626	2,120	2,746
d. Net Appreciation/(Depreciation) in Fair Value of Investments	12,678	42,913	55,591
e. Employer Group Waiver Plan	0	60	60
f. Other	2	7	9
g. Total Additions	$ 18,640	$ 63,659	$ 82,299
3. Deductions:			
a. Medical Benefits	$ 0	$ 237	$ 237
b. Death & Disability Benefits	431	0	431
c. Investment Expenses	123	414	537
d. Administrative Expenses	32	22	54
e. Total Deductions	$ 586	$ 673	$ 1,259
4. Fair Value of Assets as of June 30, 2021	$ 60,145	$ 204,555	$ 264,700
5. Approximate Fair Value Investment Return Rate during FY21 Net of Investment Expenses	29.6%	29.6%	29.6%

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

The actuarial value of assets and the fair value were $0 at June 30, 2006. Investment gains and losses are recognized 20% per year over 5 years. In no event may valuation assets be less than 80% or more than 120% of fair value as of the current valuation date.

	Occupational Death & Disability	Retiree Medical	Total
1. Investment Gain/(Loss) for FY21			
a. Fair Value as of June 30, 2020	$ 42,091	$ 141,569	$ 183,660
b. Contributions	5,334	18,559	23,893
c. Employer Group Waiver Plan	0	60	60
d. Benefit Payments	431	237	668
e. Administrative Expenses	32	22	54
f. Actual Investment Return (net of investment expenses)	13,183	44,626	57,809
g. Expected Return Rate (net of investment expenses)	7.38%	7.38%	7.38%
h. Expected Return	3,282	11,113	14,395
i. Investment Gain/(Loss) for the Year (f) - (h)	9,901	33,513	43,414
2. Actuarial Value as of June 30, 2021			
a. Fair Value as of June 30, 2021	$ 60,145	$ 204,555	$ 264,700
b. Deferred Investment Gain/(Loss)	7,070	24,019	31,089
c. Preliminary Actuarial Value as of June 30, 2021, (a) - (b)	53,075	180,536	233,611
d. Upper Limit: 120% of Fair Value as of June 30, 2021	72,174	245,466	317,640
e. Lower Limit: 80% of Fair Value as of June 30, 2021	48,116	163,644	211,760
f. Actuarial Value at June 30, 2021, (c) limited by (d) and (e)	53,075	180,536	233,611
3. Ratio of Actuarial Value of Assets to Fair Value of Assets	88.2%	88.3%	88.3%
4. Approximate Actuarial Value Investment Return Rate during FY21 Net of Investment Expenses	11.4%	11.3%	11.3%
5. Actuarial Value Allocation[1]			
a. Peace Officer / Firefighter	$ 15,959	$ 20,163	$ 36,122
b. Others	37,116	160,373	197,489
c. All Members	$ 53,075	$ 180,536	$ 233,611

[1] Occupational death & disability allocated using fair value of assets. Retiree medical allocated based on retiree medical actuarial accrued liability.

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

Occupational Death & Disability				
Fiscal Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2017	$ 1,090	$ 872	$ 218	$ 0
June 30, 2018	23	15	5	3
June 30, 2019	(370)	(148)	(74)	(148)
June 30, 2020	(1,178)	(236)	(236)	(706)
June 30, 2021	9,901	0	1,980	7,921
Total	**$ 9,466**	**$ 503**	**$ 1,893**	**$ 7,070**

Retiree Medical				
Fiscal Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2017	$ 3,156	$ 2,524	$ 632	$ 0
June 30, 2018	(58)	(36)	(12)	(10)
June 30, 2019	(1,212)	(484)	(242)	(486)
June 30, 2020	(3,825)	(765)	(765)	(2,295)
June 30, 2021	33,513	0	6,703	26,810
Total	**$ 31,574**	**$ 1,239**	**$ 6,316**	**$ 24,019**

Total				
Fiscal Year Ending	**Asset Gain / (Loss)**	**Gain / (Loss) Recognized in Prior Years**	**Gain / (Loss) Recognized This Year**	**Gain / (Loss) Deferred to Future Years**
June 30, 2017	$ 4,246	$ 3,396	$ 850	$ 0
June 30, 2018	(35)	(21)	(7)	(7)
June 30, 2019	(1,582)	(632)	(316)	(634)
June 30, 2020	(5,003)	(1,001)	(1,001)	(3,001)
June 30, 2021	43,414	0	8,683	34,731
Total	**$ 41,040**	**$ 1,742**	**$ 8,209**	**$ 31,089**

Section 2.4: Historical Asset Rates of Return

Year Ending	Actuarial Value Annual	Actuarial Value Cumulative*	Fair Value Annual	Fair Value Cumulative*
June 30, 2008	5.0%	5.0%	(7.1%)	(7.1%)
June 30, 2009	2.4%	3.7%	(13.0%)	(10.1%)
June 30, 2010	3.9%	3.8%	6.6%	(4.8%)
June 30, 2011	7.3%	4.6%	19.2%	0.7%
June 30, 2012	6.9%	5.1%	2.0%	0.9%
June 30, 2013	7.9%	5.5%	11.8%	2.7%
June 30, 2014	10.9%	6.3%	18.0%	4.7%
June 30, 2015	9.5%	6.7%	3.3%	4.6%
June 30, 2016	6.7%	6.7%	0.2%	4.1%
June 30, 2017	7.8%	6.8%	12.6%	4.9%
June 30, 2018	7.9%	6.9%	7.9%	5.2%
June 30, 2019	6.6%	6.9%	6.2%	5.2%
June 30, 2020	6.4%	6.8%	4.3%	5.2%
June 30, 2021	11.3%	7.2%	29.6%	6.7%

* Cumulative since fiscal year ending June 30, 2008

Section 3: Member Data

Section 3.1: Summary of Members Included

As of June 30	2017	2018	2019	2020	2021
Active Members - Peace Officer / Firefighter					
1. Number	1,701	1,905	2,038	2,228	2,350[1]
2. Average Age	35.59	35.63	35.76	35.92	36.40
3. Average Credited Service	4.65	4.83	5.09	5.36	5.71
4. Average Entry Age	30.94	30.80	30.67	30.56	30.69
5. Average Annual Earnings	$ 77,800	$ 78,603	$ 84,593	$ 87,365	$ 90,022
Active Members - Others					
1. Number	17,470	18,473	19,864	20,695	21,583[2]
2. Average Age	41.22	41.34	41.49	41.78	41.79
3. Average Credited Service	3.83	4.08	4.25	4.59	4.84
4. Average Entry Age	37.39	37.26	37.24	37.19	36.95
5. Average Annual Earnings	$ 56,100	$ 57,349	$ 58,223	$ 59,603	$ 61,129
Active Members - Total					
1. Number	19,171	20,378	21,902	22,923	23,933[3]
2. Average Age	40.72	40.80	40.96	41.21	41.26
3. Average Credited Service	3.90	4.15	4.33	4.66	4.93
4. Average Entry Age	36.82	36.65	36.63	36.55	36.33
5. Average Annual Earnings	$ 58,025	$ 59,336	$ 60,676	$ 62,302	$ 63,966
Disabilitants and Beneficiaries (Occupational Death & Disability)					
1. Number	14	15	16	15	14
2. Average Age	42.37	43.66	42.28	44.66	47.27
3. Average Monthly Death & Disability Benefit	$ 2,199	$ 2,285	$ 2,404	$ 2,698	$ 2,601
Retirees, Surviving Spouses, and Dependent Spouses (Retiree Medical)					
1. Number	9	23	43	66	93
2. Average Age	70.76	69.97	69.72	68.85	69.75
Total Number of Members	**19,194**	**20,416**	**21,961**	**23,004**	**24,040**

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

[1] Includes 1,966 male active members and 384 female active members.
[2] Includes 9,309 male active members and 12,274 female active members.
[3] Includes 11,275 male active members and 12,658 female active members.

Section 3.2: Age and Service Distribution of Active Members

Annual Earnings by Age

Age	Number	Total Annual Earnings	Average Annual Earnings
0 - 19	118	$ 4,365,252	$ 36,994
20 - 24	1,300	59,848,610	46,037
25 - 29	3,113	178,588,359	57,369
30 - 34	3,947	253,180,514	64,145
35 - 39	3,912	268,741,119	68,697
40 - 44	3,031	206,711,466	68,199
45 - 49	2,518	165,069,623	65,556
50 - 54	2,178	143,486,833	65,880
55 - 59	1,845	121,517,531	65,863
60 - 64	1,361	89,532,606	65,784
65 - 69	457	30,885,212	67,583
70 - 74	118	7,109,810	60,253
75+	35	1,868,090	53,374
Total	**23,933**	**$1,530,905,025**	**$ 63,966**

Annual Earnings by Credited Service

Years of Service	Number	Total Annual Earnings	Average Annual Earnings
0	4,026	$ 200,461,317	$ 49,792
1	3,075	165,422,602	53,796
2	2,898	169,417,994	58,460
3	2,274	138,590,119	60,946
4	1,768	113,814,667	64,375
0 - 4	**14,041**	**$ 787,706,699**	**$ 56,100**
5 - 9	6,695	478,308,411	71,443
10 - 14	3,192	264,443,776	82,846
15 - 19	5	446,141	89,228
20 - 24	0	0	0
25 - 29	0	0	0
30 - 34	0	0	0
35 - 39	0	0	0
40+	0	0	0
Total	**23,933**	**$1,530,905,027**	**$ 63,966**

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	118	0	0	0	0	0	0	0	0	118
20 - 24	1,293	7	0	0	0	0	0	0	0	1,300
25 - 29	2,673	435	5	0	0	0	0	0	0	3,113
30 - 34	2,528	1,190	229	0	0	0	0	0	0	3,947
35 - 39	2,029	1,244	639	0	0	0	0	0	0	3,912
40 - 44	1,511	924	594	2	0	0	0	0	0	3,031
45 - 49	1,248	793	476	1	0	0	0	0	0	2,518
50 - 54	1,038	738	402	0	0	0	0	0	0	2,178
55 - 59	777	652	416	0	0	0	0	0	0	1,845
60 - 64	596	483	282	0	0	0	0	0	0	1,361
65 - 69	168	171	116	2	0	0	0	0	0	457
70 - 74	49	41	28	0	0	0	0	0	0	118
75+	13	17	5	0	0	0	0	0	0	35
Total	**14,041**	**6,695**	**3,192**	**5**	**0**	**0**	**0**	**0**	**0**	**23,933**

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

Section 3.3: Member Data Reconciliation

	Actives	Retirees and Surviving Spouses	Dependent Spouses	OD&D Disabilitants	OD&D Beneficiaries	Total
As of June 30, 2020 [1]	**22,923**	**50**	**16**	**13**	**2**	**23,004**
New Entrants	3,809	0	0	0	0	3,809
Rehires	635	0	0	0	0	635
Vested Terminations	(633)	0	0	0	0	(633)
Non-Vested Terminations	(2,174)	0	0	0	0	(2,174)
Refund of Contributions	(590)	0	0	0	0	(590)
Disability Retirements	0	0	0	0	0	0
Age Retirements	(24)	24	10	0	0	10
Deaths With Beneficiary	(29)	(1)	0	0	0	(30)
Deaths Without Beneficiary	0	(1)	0	0	0	(1)
Converted To/From DB Plan	0	0	0	0	0	0
Added Dependent Coverage	0	0	1	0	0	1
Dropped Dependent Coverage	0	0	0	0	0	0
Transfers In/Out	16	(5)	0	0	0	11
Data Corrections	0	0	(1)	0	(1)	(2)
Net Change	**1,010**	**17**	**10**	**0**	**(1)**	**1,036**
As of June 30, 2021 [2]	**23,933**	**67**	**26**	**13**	**1**	**24,040**

[1] 114 participants are expected to receive retiree medical benefits in a different plan and are included for OD&D benefits only.

[2] 89 participants are expected to receive retiree medical benefits in a different plan and are included for OD&D benefits only.

Section 3.4: Schedule of Active Member Data

Valuation Date	Number	Annual Earnings (000's)	Annual Average Earnings	Percent Increase in Average Earnings	Number of Participating Employers
June 30, 2021	23,933	$ 1,530,905	$ 63,966	2.7%	151
June 30, 2020	22,923	1,428,140	62,302	2.7%	153
June 30, 2019	21,902	1,328,934	60,676	2.3%	155
June 30, 2018	20,378	1,209,152	59,336	2.3%	155
June 30, 2017	19,171	1,112,398	58,025	1.5%	157
June 30, 2016	18,215	1,041,437	57,175	3.4%	157
June 30, 2015	17,098	945,496	55,299	1.9%	159
June 30, 2014	15,800	857,150	54,250	3.7%	159
June 30, 2013	14,316	748,658	52,295	4.7%	159
June 30, 2012	12,597	629,128	49,943	4.5%	160

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

Section 3.5: Active Member Payroll Reconciliation

Payroll Field	Payroll Data (000's)
a) DRB actual reported salaries FY21 in employer list	$ 1,427,348
b) DRB actual reported salaries FY21 in valuation data	1,357,501
c) Annualized valuation data	1,530,905
d) Valuation payroll as of June 30, 2021	1,603,885
e) Rate payroll for FY22	1,548,116

a) Actual reported salaries from DRB employer listing showing all payroll paid during FY21, including those who were not active as of June 30, 2021
b) Payroll from valuation data for people who are in active status as of June 30, 2021
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

Section 4: Basis of the Actuarial Valuation

Section 4.1: Summary of Plan Provisions

Effective Date

July 1, 2006, with amendments through June 30, 2021.

Administration of Plan

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

The Alaska Retirement Management Board prescribes policies, adopts regulations, invests the funds, and performs other activities necessary to carry out the provisions of the Plan.

Employers Included

Currently there are 151 employers participating in PERS DCR, including the State of Alaska, and 150 political subdivisions and public organizations.

Membership

An employee of a participating employer who first enters service on or after July 1, 2006, or a member of the defined benefit plan who works for an employer who began participation on or after July 1, 2006, and meets the following criteria is a member in the Plan:

- Permanent full-time or part-time employees of the State of Alaska, participating political subdivisions or public organizations. An employee must be regularly scheduled to work 30 or more hours per week to be considered full-time by the PERS. An employee must be regularly scheduled to work 15 or more hours per week but less than 30 hours to be considered a part-time employee for PERS purposes.
- Elected state officials.
- Elected municipal officials who are compensated and receive at least $2,001.00 per month.

Members can convert to PERS DCR if they are an eligible non-vested member of the PERS defined benefit plan whose employer consents to transfers to the defined contribution plan and they elect to transfer his or her account balance to PERS DCR.

Member Contributions

Other than the member-paid premiums discussed later in this section, there are no member contributions for the occupational death & disability and retiree medical benefits.

Retiree Medical Benefits

- Member must retire directly from the plan to be eligible for retiree medical coverage. Normal retirement eligibility is the earlier of a) 25 years of service as a peace officer or firefighter and 30 years of service for any other employee or b) Medicare eligible and 10 years of service.
- No subsidized retiree medical benefits are provided until normal retirement eligibility. The member's and any covered dependent's premium is 100% until the member is Medicare eligible. Upon the member's Medicare-eligibility, the required contribution will follow the service-based schedule shown below.
- Coverage cannot be denied except for failure to pay premium.
- Members who are receiving disability benefits or survivors who are receiving monthly survivor benefits are not eligible until the member meets, or would have met if he/she had lived, the normal retirement eligibility requirements.
- The following is a summary of the medical benefit design adopted in July 2016. The plan description below is used for valuation purposes and indicates participant cost-sharing. Please refer to the benefit handbook for more details.

Plan Design Feature	In-Network[1]	Out-of-Network[1 2]
Deductible (single / family)	$300 / $600	
Medical services (participant share)	20%	40%
Emergency Room Copay (non-emergent use)	$100	$100
Medical Out-of-Pocket Maximum (single / family, including deductible)	$1,500 / $3,000	$3,000 / $6,000
Medicare Coordination	Exclusion	Exclusion
Pharmacy	No Deductible	No Deductible
Retail Generic (per 30-day fill)	20% $10 min / $50 max	
Retail Non-Formulary Brand (per 30-day fill)	25% $25 min / $75 max	40%
Retail Formulary Brand (per 30-day fill)	35% $80 min / $150 max	
Mail-Order Generic	$20 copay	
Mail-Order Non-Formulary Brand	$50 copay	40%
Mail-Order Formulary Brand	$100 copay	
Pharmacy Out-of-Pocket Max (single / family)	$1,000 / $2,000	
Medicare Pharmacy Arrangement	Retiree Drug Subsidy / Employer Group Waiver Plan effective 1/1/2019	
Wellness / Preventative	100% covered, not subject to deductible	20%, after deductible

1 Section 1.1 of the AlaskaCare Defined Contribution Retiree Benefit Plan states that this health plan shall be updated from time to time to reflect changes in benefits, including annual adjustments to the premium, deductible, coinsurance, medical out-of-pocket limit, and prescription drug out-of-pocket limit.

2 OON applies only to non-Medicare eligible participants.

- Buck used manual rate models to determine relative plan values for the defined benefit (DB) retiree medical plan and the DCR retiree medical plan outlined above. We applied the ratio of the DCR retiree medical plan value to the DB retiree medical plan value to the per capita costs determined for each of pre/post-Medicare medical and pharmacy benefits to estimate corresponding values for the DCR retiree medical plan design. These factors are noted in Section 4.3. We further adjusted the Medicare medical manual rate to reflect the Medicare coordination method adopted. The estimated 2022 reimbursements under EGWP were provided by Segal Consulting (who worked with the EGWP administrator, Optum, to develop those estimates). We reflect estimated discounts and pharmacy rebates in the defined benefit medical cost so no further adjustment was needed for the DCR retiree medical plan. The medical network differential is reflected in the relative plan value adjustments.
- Starting in 2022, prior authorization will be required for certain specialty medications. There is no change to the medications that are covered by the plan.
- The retiree medical plan's coverage is supplemental to Medicare. Medicare coordination is described in the DCR Plan Handbook, referred to in the industry as exclusion coordination: Medicare payment is deducted from the Medicare allowable expense and plan parameters are applied to the remaining amount. Starting in 2019, the prescription drug coverage is through a Medicare Part D EGWP arrangement.
- The premium for Medicare-eligible retirees will be based on the member's years of service. The percentage of premium paid by the member is as follows:

Years of Service	Percent of Premium Paid by Member
< 15	30%
15 – 19	25%
20 – 24	20%
25 – 29	15%
30+	10%

- The premium for dependents who are not eligible for Medicare aligns with the member's subsidy. While a member is not Medicare-eligible, premiums are 100% of the estimated cost.
- Members have a separate defined contribution Health Reimbursement Arrangement account, which is not reflected in this valuation, that can be used to pay for premiums or other medical expenses.
- For valuation purposes, retiree premiums were assumed to equal the percentages outlined in the table above times the age-related plan costs. Future premiums calculated and charged to DCR participants will need to be determined reflecting any appropriate adjustments to the defined benefit (DB) plan data because current DB premiums were determined using information based upon enrollment with members who have double coverage.
- Coverage will continue for surviving spouses of covered retired members.

Occupational Disability Benefits

- Benefit is 40% of salary at date of disability.
- For Peace Officer and Firefighters there is a Disability Benefit Adjustment such that:
  - The disability benefit is increased by 75% of the cost of living increase in the preceding calendar year or 9%, whichever is less.
  - At the time the disabled member retires, the retirement benefit will be increased by a percentage equal to the total cumulative percentage that has been applied to the disability benefit. Monthly annuity payments are made from the member's contribution balance until the fund is exhausted, at which the plan pays all remaining payments.
- For Others, there is no increase in the occupational disability benefit after commencement.
- Member earns service while on occupational disability.
- Benefits cease when the member becomes eligible for normal retirement at Medicare-eligible age and 10 years of service, or at any age with 30 years of service for Others members or 25 years of service for Peace Officer/Firefighter members.
- Peace Officer/Firefighter members may select the defined contribution account or the monthly benefit payable as if they were retiring under Tier 3 (service continues during disability, final average salary is as of date of disability), but with payments first made from the member's DC account until it's exhausted.
- No subsidized retiree medical benefits are provided until normal retirement eligibility. The member's premium is 100% of the estimated cost until they are Medicare eligible. Medicare-eligible premiums follow the service-based schedule above.

Occupational Death Benefits

- Benefit is 40% of salary for Others members and 50% of salary for Peace Officer/Firefighter members.
- Survivor's Pension Adjustment: A survivor's pension is increased by 50% of the cost of living increase in the preceding calendar year or 6%, whichever is less, if the recipient is at least age 60 on July 1, or under age 60 if the recipient has been receiving PERS benefits for at least 5 years as of July 1.
- Benefits cease when the member would have become eligible for normal retirement.
- The period during which the survivor is receiving benefits is counted as service credit toward retiree medical benefits.
- No subsidized retiree medical benefits are provided until the member would have been eligible for normal retirement. The surviving spouse's premium is 100% of the estimated cost until the member would have been Medicare eligible. Medicare-eligible premiums follow the service-based schedule above.

Changes Since the Prior Valuation

Starting in 2022, prior authorization will be required for certain specialty medications. There have been no other changes in PERS DCR benefit provisions valued since the prior valuation.

Section 4.2: Description of Actuarial Methods and Valuation Procedures

The funding method used in this valuation was adopted by the Board in October 2006, and was modified as part of the experience study for the period July 1, 2013 to June 30, 2017. The asset smoothing method used to determine valuation assets was implemented effective June 30, 2006.

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 Cost Method

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method, level percent of pay. Each year's difference between actual and expected unfunded actuarial accrued liability is amortized over 25 years as a level percentage of expected payroll.

Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year for death & disability benefits and retiree medical benefits, from the assumed entry age to the last age with a future benefit 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 DCR Plan 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 beneficiaries and disabled members currently receiving benefits (if any) 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.

Valuation of Assets

Effective June 30, 2006, the asset valuation method recognizes 20% of the investment gain or loss in each of the current and preceding four years. This method was phased in over five years. Fair Value of Assets was $0 as of June 30, 2006. 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. Valuation assets are constrained to a range of 80% to 120% of the fair value of assets.

Changes in Methods Since the Prior Valuation

There were no changes in the asset or valuation methods since the prior valuation.

Valuation of Retiree Medical and Prescription Drug Benefits

The methodology used for the valuation of the retiree medical benefits is described in Section 5.2 of the State of Alaska Public Employees' Retirement System Defined Benefit Plan Actuarial Valuation Report as of June 30, 2021.

Starting in 2022, prior authorization will be required for certain specialty medications. There is no change to the medications that are covered by the plan. Segal provided an estimate of the impact of this change to the DB retiree health plan cost for calendar year 2022. The DB base claims costs for pre-Medicare prescription drug, Medicare prescription drug, and EGWP were adjusted to reflect this change. Those base claims costs were used for the DCR valuation with further adjustments as noted below. Additionally, starting in 2022, certain common preventive benefits will be covered for the DB plan. However, preventive benefits are already covered under the DCR plan so no adjustment is needed for that change. Therefore, the base claims cost for the DB plan prior to reflecting the addition of preventive benefits was used for the DCR valuation with further adjustments as noted below.

Due to the lack of experience for the DCR retiree medical plan, base claims costs are based on those described in the actuarial valuation as of June 30, 2021 for the Defined Benefit (DB) retiree medical plan covering TRS and PERS. The DB rates were used with some adjustments. The claims costs were adjusted to reflect the differences between the DCR medical plan and the DB medical plan. These differences include network steerage, different coverage levels, different Medicare coordination for medical benefits, and an indexing of the retiree out-of-pocket dollar amounts. To account for higher initial copays, deductibles and out-of-pocket limits, projected FY22 claims costs were reduced 3.1% for medical claims, and 8.9% for prescription drugs. In addition, to account for the difference in Medicare coordination, projected FY22 medical claims costs for Medicare eligible retirees were further reduced 29.5%.

To adjust for the decrease in medical claims due to COVID-19 during the last 4 months of FY20, the per capita cost during the first 8 months was used as the basis for estimating claims that would have occurred in the absence of COVID-19. FY21 experience was also thoroughly reviewed to assess the impact of COVID-19 and whether an adjustment to FY21 claims was appropriate for use in the June 30, 2021 valuation. FY21 medical per capita claims were noticeably lower than expected, so a 4% load was added to the FY21 medical claims used in the per capita claims cost development to better reflect future expected long-term costs of the plan.

No implicit subsidies are assumed. Employees projected to retire with 30 years of service (25 years of service for Peace/Fire) prior to Medicare are valued with commencement deferred to Medicare eligibility because those members will be required to pay the full plan premium prior to Medicare. Explicit subsidies for disabled and normal retirement are determined using the plan-defined percentages of age-related total projected plan costs, again with no implicit subsidy assumed.

The State transitioned to an Employer Group Waiver Program (EGWP) for DCR participants effective January 1, 2019. The estimated 2022 reimbursements under EGWP were provided by Segal Consulting (who worked with the EGWP administrator, Optum, to develop those estimates).

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 due to these provisions.

Because the State plan is retiree-only, not all provisions are required. Unlimited lifetime benefits and dependent coverage to age 26 are two of these provisions. The adopted DCR plan does not place lifetime limits on benefits, but does restrict dependent child coverage.

The Further Consolidated Appropriations Act, 2020 passed in December 2019 repealed several healthcare-related taxes, including the Cadillac Tax.

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 provisions of healthcare 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.

Section 4.3: Summary of Actuarial Assumptions

The demographic and economic assumptions used in the June 30, 2021 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% (male and female) of RP-2014 employee table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement.

Deaths are assumed to result from occupational causes 75% of the time for Peace Officer/Firefighters, and 40% of the time for Others.

Mortality (Post-Commencement)

Mortality rates based upon the 2013-2017 actual experience.

91% of male and 96% of female rates of RP-2014 healthy annuitant table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement.

Turnover

Select and ultimate rates based upon the 2013-2017 actual experience (see Tables 2a and 2b).

Disability

Incidence rates based upon the 2013-2017 actual experience (see Tables 3a and 3b). For retiree medical benefits, the disability rates cease once a member is eligible for retirement. However, the disability rates continue after retirement eligibility for occupational death & disability benefits.

Disabilities are assumed to be occupational 75% of the time for Peace Officer/Firefighters, and 40% of the time for Others. For Peace Officer/Firefighters, members are assumed to take the monthly annuity 100% of the time.

Post-disability mortality in accordance with the RP-2014 disabled table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement.

Retirement

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

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 Occupational Death & Disability

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

Dependent Spouse Medical Coverage Election

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

Part-Time Status

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

Peace Officer / Firefighter Occupational Disability Retirement Benefit Commencement

The occupational disability retirement benefit is assumed to be first payable from the member's DC account and the retirement benefit payable from the occupational death & disability trust will commence five years later.

Per Capita Claims Cost

Sample claims cost rates (before base claims cost adjustments described below) adjusted to age 65 for FY22 medical and prescription drugs are shown below. The prescription drug costs reflect the plan change to require prior authorization for certain specialty medications.

	Medical	Prescription Drugs
Pre-Medicare	$ 15,708	$ 3,375
Medicare Parts A & B	$ 1,619	$ 3,474
Medicare Part D – EGWP	N/A	$ 1,131

Members are assumed to attain Medicare eligibility at age 65. All costs are for the 2022 fiscal year (July 1, 2021 – June 30, 2022).

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

$493 per person per year; assumed to increase at 4.5% per year.

Base Claims Cost Adjustments

Due to higher initial copays, deductibles, out-of-pocket limits and member cost sharing compared to the DB medical plan, the following cost adjustments are applied to the per capita claims cost rates above:

- 0.969 for the pre-Medicare plan.
- 0.674 for both the Medicare medical plan and Medicare coordination method (3.1% reduction for the medical plan and 29.5% reduction for the coordination method).
- 0.911 for the prescription drug plan.

Administrative Expenses

Beginning with the June 30, 2018 valuation, the Normal Cost is increased for administrative expenses expected to be paid from plan assets during the year. The amounts included in the June 30, 2021 Normal Cost, which are based on the average of actual administrative expenses during the last two fiscal years, are $16,000 for occupational death & disability and $24,000 for retiree medical.

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, 6.3% is applied to the FY22 pre-Medicare medical claims costs to get the FY23 medical claims costs.

	Medical Pre-65	Medical Post-65	Prescription Drugs / EGWP
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%

Retiree Medical Participation

Death / Disability Decrement		Retirement Decrement		
Age	Percent Participation	Age	Percent Participation*	
< 56	75.0%	55	50.0%	
56	77.5%	56	55.0%	
57	80.0%	57	60.0%	
58	82.5%	58	65.0%	
59	85.0%	59	70.0%	
60	87.5%	60	75.0%	
61	90.0%	61	80.0%	
62	92.5%	62	85.0%	
63	95.0%	63	90.0%	
64	97.5%	64	95.0%	
65+	100.0%	65+	**Years of Service**	
			< 15	75.0%
			15 – 19	80.0%
			20 – 24	85.0%
			25 – 29	90.0%
			30+	95.0%

* Participation assumption is a combination of (i) the service-based rates for retirement from employment at age 65+ and (ii) the age-based rates for retirement from employment before age 65. These rates reflect the expected plan election rate that varies by reason for decrement, duration that a member may pay full cost prior to Medicare eligibility, and availability of alternative and/or lower cost options, particularly in the Medicare market. This assumption is based on observed trends in participation from a range of other plans.

Imputed Data

Data changes from the prior year which are deemed to have 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.

Changes in Assumptions Since the Prior Valuation

The amounts included in the Normal Cost for administrative expenses were changed from $1,000 to $16,000 for occupational death & disability, and from $20,000 to $24,000 for retiree medical (based on the most recent two years of actual administrative expenses paid from plan assets). The per capita claims cost assumption is updated annually.

Table 1: Salary Scales

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

Table 2a: Turnover Rates for Peace Officer / Firefighter

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	18.90%	20.63%
1	14.18%	16.50%
2	10.50%	13.75%
3	9.45%	12.38%
4	8.40%	11.00%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	5.52%	11.97%	44	5.78%	11.09%
23	5.65%	11.97%	45	5.71%	11.03%
24	5.78%	11.97%	46	5.64%	10.98%
25	5.91%	11.97%	47	5.57%	10.92%
26	6.04%	11.97%	48	6.01%	10.84%
27	6.16%	11.97%	49	6.45%	10.75%
28	6.16%	11.94%	50	6.89%	10.67%
29	6.15%	11.91%	51	7.32%	10.58%
30	6.14%	11.88%	52	7.76%	10.50%
31	6.14%	11.84%	53	7.97%	10.66%
32	6.12%	11.81%	54	8.18%	10.82%
33	6.11%	11.79%	55	8.38%	10.98%
34	6.09%	11.77%	56	8.59%	11.15%
35	6.08%	11.75%	57	8.80%	11.31%
36	6.07%	11.72%	58	9.03%	11.47%
37	6.05%	11.70%	59	9.25%	11.63%
38	6.03%	11.60%	60	9.48%	11.79%
39	6.00%	11.50%	61	9.71%	11.95%
40	5.98%	11.40%	62	9.94%	12.12%
41	5.95%	11.30%	63	12.37%	12.28%
42	5.93%	11.20%	64	14.81%	12.44%
43	5.85%	11.14%	65+	17.25%	12.60%

Table 2b: Turnover Rates for Others

Select Rates during the First 5 Years of Employment

Years of Service	Male	Female
0	24.36%	27.98%
1	21.00%	22.31%
2	16.80%	17.85%
3	13.44%	14.28%
4	9.45%	12.34%

Ultimate Rates after the First 5 Years of Employment

Age	Male	Female	Age	Male	Female
< 23	13.71%	16.50%	44	7.83%	8.22%
23	13.71%	16.51%	45	7.72%	7.90%
24	13.71%	16.51%	46	7.60%	7.58%
25	13.71%	16.52%	47	7.48%	7.26%
26	13.71%	16.53%	48	7.68%	7.23%
27	13.71%	16.54%	49	7.87%	7.20%
28	13.41%	15.94%	50	8.07%	7.17%
29	13.21%	15.34%	51	8.26%	7.14%
30	12.82%	17.75%	52	8.46%	7.11%
31	12.52%	14.15%	53	8.46%	7.26%
32	12.22%	13.55%	54	8.47%	7.42%
33	11.65%	12.90%	55	8.48%	7.57%
34	11.09%	12.24%	56	8.48%	7.72%
35	10.52%	11.58%	57	8.49%	7.88%
36	9.95%	10.92%	58	8.77%	8.15%
37	9.39%	10.26%	59	9.08%	8.42%
38	9.12%	9.98%	60	9.32%	8.69%
39	8.86%	9.70%	61	9.60%	8.96%
40	8.60%	9.42%	62	9.88%	9.24%
41	8.32%	9.14%	63	10.28%	10.51%
42	8.07%	8.86%	64	10.68%	11.78%
43	7.95%	8.54%	65+	11.08%	13.05%

Table 3a: Disability Rates for Peace Officer / Firefighter

Age	Male	Female	Age	Male	Female
< 23	0.0179%	0.0112%	46	0.1247%	0.0780%
23	0.0244%	0.0153%	47	0.1337%	0.0836%
24	0.0310%	0.0194%	48	0.1462%	0.0914%
25	0.0374%	0.0234%	49	0.1588%	0.0993%
26	0.0440%	0.0275%	50	0.1714%	0.1071%
27	0.0505%	0.0316%	51	0.1839%	0.1150%
28	0.0526%	0.0329%	52	0.1965%	0.1228%
29	0.0548%	0.0343%	53	0.2294%	0.1434%
30	0.0570%	0.0356%	54	0.2624%	0.1640%
31	0.0591%	0.0370%	55	0.2954%	0.1846%
32	0.0612%	0.0383%	56	0.3283%	0.2052%
33	0.0634%	0.0397%	57	0.3613%	0.2258%
34	0.0657%	0.0411%	58	0.4112%	0.2570%
35	0.0679%	0.0425%	59	0.4611%	0.2882%
36	0.0702%	0.0439%	60	0.5110%	0.3194%
37	0.0724%	0.0453%	61	0.5610%	0.3506%
38	0.0757%	0.0473%	62	0.6109%	0.3818%
39	0.0789%	0.0493%	63	0.6109%	0.3818%
40	0.0822%	0.0514%	64	0.6109%	0.3818%
41	0.0854%	0.0534%	65	0.6109%	0.3818%
42	0.0886%	0.0554%	66	0.6109%	0.3818%
43	0.0977%	0.0611%	67	0.6109%	0.3818%
44	0.1066%	0.0667%	68	0.4073%	0.2546%
45	0.1157%	0.0723%	69	0.2036%	0.1273%
			70+	0.2036%	0.1273%

Table 3b: Disability Rates for Others

Age	Male	Female	Age	Male	Female
< 23	0.0327%	0.0376%	46	0.1125%	0.1154%
23	0.0360%	0.0400%	47	0.1208%	0.1236%
24	0.0392%	0.0424%	48	0.1329%	0.1360%
25	0.0425%	0.0448%	49	0.1451%	0.1484%
26	0.0456%	0.0472%	50	0.1572%	0.1608%
27	0.0489%	0.0496%	51	0.1694%	0.1734%
28	0.0501%	0.0510%	52	0.1815%	0.1858%
29	0.0513%	0.0524%	53	0.2132%	0.2168%
30	0.0524%	0.0538%	54	0.2450%	0.2478%
31	0.0536%	0.0554%	55	0.2766%	0.2788%
32	0.0548%	0.0568%	56	0.3084%	0.3098%
33	0.0566%	0.0586%	57	0.3401%	0.3408%
34	0.0584%	0.0606%	58	0.4068%	0.4096%
35	0.0602%	0.0624%	59	0.4736%	0.4784%
36	0.0620%	0.0644%	60	0.5405%	0.5470%
37	0.0638%	0.0662%	61	0.6072%	0.6158%
38	0.0669%	0.0696%	62	0.6740%	0.6844%
39	0.0701%	0.0728%	63	0.8526%	0.8450%
40	0.0734%	0.0762%	64	1.0314%	1.0054%
41	0.0765%	0.0794%	65	1.2101%	1.1660%
42	0.0797%	0.0826%	66	1.3889%	1.3264%
43	0.0879%	0.0908%	67	1.5675%	1.4870%
44	0.0962%	0.0990%	68	1.0451%	0.9914%
45	0.1043%	0.1072%	69	0.5225%	0.4956%
			70+	0.5225%	0.4956%

Table 4: Retirement Rates

Age	Rate
< 55	2.0%
55	3.0%
56	3.0%
57	3.0%
58	3.0%
59	3.0%
60	5.0%
61	5.0%
62	10.0%
63	5.0%
64	5.0%
65	25.0%
66	25.0%
67	25.0%
68	20.0%
69	20.0%
70+	100.0%

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 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.

State of Alaska

Teachers' Retirement System

Actuarial Valuation Report
As of June 30, 2021

May 2022

BUCK

May 12, 2022

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, 2021 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, 2021. 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, 2021.

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 (on a combined pension/healthcare basis) is expected to increase to 100% in FY24 (the funded status of the pension trust is expected to increase to 100% in FY33).

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 actuarial assumptions, changes 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, 2021 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. We certify that the assumptions and methods described in Sections 5.2 and 5.3 of this report meet the requirements of all applicable Actuarial Standards of Practice.

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, 2021 have been prepared. We have also prepared the member data tables shown in Section 4 of this report for the Statistical Section of the ACFR, as well as the summary of actuarial assumptions and analysis of financial experience for the Actuarial Section of the ACFR. Please see our separate GASB 67 and GASB 74 reports for other information needed for the ACFR.

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 healthcare portion of TRS. See Section 6 of this report for further details regarding ASOP 51.

Use of Models

Actuarial Standard of Practice No. 56 (ASOP 56) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Buck uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the plan using data and assumptions as of the measurement date under the funding methods specified in this report. The output from the third-party vendor software is used as input to internally developed models that apply applicable funding methods and policies to the derived liabilities and other inputs, such as plan assets and contributions, to generate many of the exhibits found in this report. Buck has an extensive review process in which the results of the liability calculations are checked using detailed sample life output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other funding outputs and the internal models are similarly reviewed in detail and at a higher level for accuracy, reasonability, and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software. This review is performed by experts within Buck who are familiar with applicable funding methods, as well as the manner in which the model generates its output. If significant changes are made to the internal models, extra checking and review are completed. Significant changes to the internal models that are applicable to multiple clients are generally developed, checked, and reviewed by multiple experts within Buck who are familiar with the details of the required changes.

Additional models used in valuing health benefits are described later in the report.

COVID-19

The potential impact of the ongoing COVID-19 pandemic on costs and liabilities was considered and an adjustment was made in setting the medical per capita claims cost assumption. FY20 medical claims were adjusted for a COVID-19 related decline in claims during the last four months (March – June) of FY20. FY21 medical claims were adjusted for a COVID-19 related decline in those claims during the fiscal year. A more detailed explanation on these adjustments is shown in Section 5.2.

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 hereby 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, FCA
Director
Buck

Contents

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, 2021.

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.

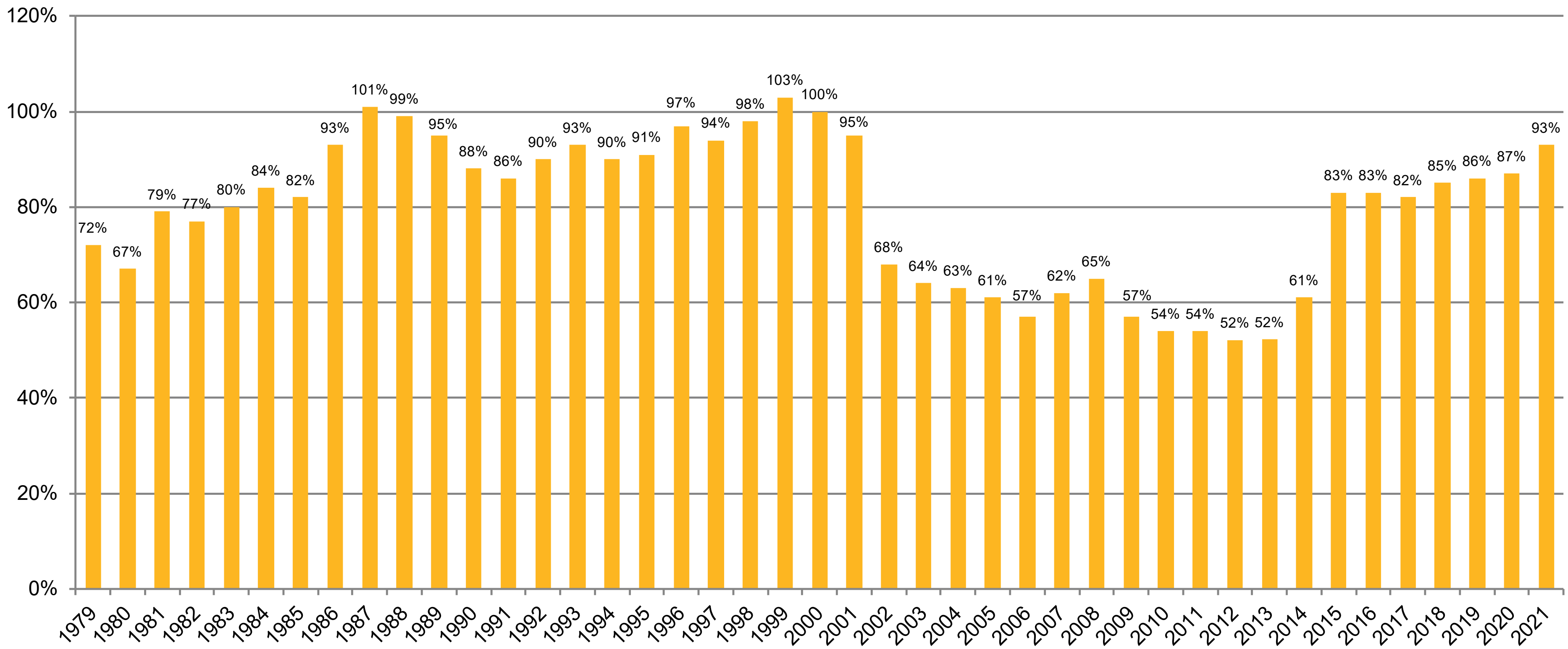
Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

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)	2020	2021
Pension		
a. Actuarial Accrued Liability	$ 7,447,036	$ 7,471,887
b. Valuation Assets	5,587,064	5,910,369
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ 1,859,972	$ 1,561,518
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	75.0%	79.1%
e. Fair Value of Assets	$ 5,444,799	$ 6,731,481
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	73.1%	90.1%
Healthcare		
a. Actuarial Accrued Liability	$ 2,489,675	$ 2,439,603
b. Valuation Assets	3,021,283	3,267,737
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ (531,608)	$ (828,134)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	121.4%	133.9%
e. Fair Value of Assets	$ 2,953,461	$ 3,723,031
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	118.6%	152.6%
Total		
a. Actuarial Accrued Liability	$ 9,936,711	$ 9,911,490
b. Valuation Assets	8,608,347	9,178,106
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ 1,328,364	$ 733,384
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	86.6%	92.6%
e. Fair Value of Assets	$ 8,398,260	$ 10,454,512
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	84.5%	105.5%

Funded Ratio History (Based on Valuation Assets)



The key reasons for the change in the 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 as there are no available financial instruments for purchase. Future experience is likely to vary from assumptions so there is potential for actuarial gains or 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 FY21 investment return based on fair value of assets was approximately 30.1% compared to the expected investment return of 7.38% (net of investment expenses). This resulted in a market asset gain of approximately $1,856 million. Due to the recognition of investment gains and losses over a 5-year period, the FY21 investment return based on actuarial value of assets was approximately 11.6%, which resulted in an actuarial asset gain of approximately $354 million.

2. **Salary Increases**

   Salary increases for continuing active members during FY21 were higher than expected based on the valuation assumptions, resulting in a liability loss of approximately $29 million.

3. **Demographic Experience**

   Section 4 provides statistics on active and inactive participants. The number of active participants decreased 10.4% from 3,789 at June 30, 2020 to 3,396 at June 30, 2021 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 51.92 to 52.14 and average credited service increased from 19.76 to 20.31 years.

   The number of benefit recipients increased 2.1% from 13,689 to 13,972, and their average age increased from 71.85 to 72.26. The number of vested terminated participants decreased 4.8% from 764 to 727. Their average age increased from 52.37 to 52.68.

   The overall effect of the demographic experience during FY21 was a liability loss of approximately $7 million (pension) and a liability gain of approximately $3[1] million (healthcare).

4. **COLA / PRPA Experience**

   The cost-of-living increases (COLA) for benefit recipients during FY21 were less than expected based on the valuation assumptions, resulting in a liability gain of approximately $0.3 million. The postretirement pension adjustments (PRPA) were also less than expected, resulting in a liability gain of approximately $81 million.

5. **Retiree Medical Claims Experience**

   As described in Section 5.2, recent medical claims experience and changes in healthcare enrollment data provided to us for the June 30, 2021 valuation generated a liability gain of approximately $97 million. Reduced claims during FY21, largely attributable to medical claims impacted by COVID-19, generated a liability gain of approximately $11 million.

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

6. **Changes in Methods Since the Prior Valuation**

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

7. **Changes in Assumptions Since the Prior Valuation**

   Healthcare claim costs are updated annually as described in Section 5.2. The amounts included in the Normal Cost for administrative expenses were updated based on the last two years of actual administrative expenses paid from plan assets. There were no other changes in actuarial assumptions since the prior valuation.

8. **Changes in Benefit Provisions Since the Prior Valuation**

   Starting in 2022, prior authorization will be required for certain specialty medications for all participants, and certain preventive benefits for pre-Medicare participants will now be covered by the plan. These changes created an actuarial gain of approximately $22 million. There have been no other changes in benefit provisions valued since the prior valuation.

Projections

Absent future asset (and/or liability) losses, changes in plan provisions or actuarial assumptions, the $1,856 million FY21 market asset gain has a significant impact on the projections shown in Section 3. For example, the pension trust is currently projected to reach a funded status of 100% in FY33. Based on the 2020 valuation projections, the funded status of the pension trust was projected to be only 80% in FY33.

Once the pension trust is projected to reach a funded status of 100%, it may be reasonable to assume that all remaining pension unfunded liability layered amortization amounts should be reduced to zero. Since the healthcare trust is currently more than 100% funded, the healthcare unfunded liability amortization amounts would also be reduced to zero if the Board decides to implement this change (this does not impact the projections shown in Section 3.6 since the healthcare Normal Cost is assumed to be contributed as a minimum in all years after FY23 per Alaska state statutes).

We have shown the table of projected figures in Section 3.6 two ways:

a) Section 3.6A – No changes to the pension unfunded liability layered amortization amounts. In this case, Additional State Contributions totaling approximately $553 million are projected for FY33 through FY39, even though the pension trust is projected to be 100% funded by FY33.

b) Section 3.6B – Eliminate the pension unfunded liability layered amortization amounts when the pension trust is projected to be 100% funded. In this case, the Additional State Contributions are projected to be zero after FY32.

The pros and cons of these two methods can be discussed further upon request.

In both cases, the pension Normal Cost is assumed to be contributed as a minimum based on Alaska state statutes. (The healthcare trust is currently over 100% funded, so the healthcare Normal Cost is also assumed to be contributed as a minimum based on Alaska state statutes.)

Sections 3.3 through 3.5 are based on the projections shown in Section 3.6A.

Comparative Summary of Contribution Rates

Pension		Actual FY 2023	Estimated FY 2024
a.	Normal Cost Rate Net of Member Contributions	2.24%	2.05%
b.	Past Service Cost Rate	15.66%	12.90%
c.	Total Employer/State Contribution Rate, (a) + (b), not less than (a)[1]	17.90%	14.95%

Healthcare		Actual FY 2023	Estimated FY 2024
a.	Normal Cost Rate	2.72%	2.41%
b.	Past Service Cost Rate	(7.93)%	(11.03)%
c.	Total Employer/State Contribution Rate, (a) + (b), not less than (a)[1]	2.72%	2.41%

Total		Actual FY 2023	Estimated FY 2024
a.	Normal Cost Rate Net of Member Contributions	4.96%	4.46%
b.	Past Service Cost Rate	15.66%	12.90%
c.	Total Employer/State Contribution Rate, (a) + (b)[1]	20.62%	17.36%
d.	Board Adopted Total Employer/State Contribution Rate	17.90%[2]	TBD
e.	Defined Contribution Retirement (DCR) Rate Paid by Employers	6.72%	7.03%
f.	Board Adopted Total Rate, Including DCR Rate Paid by Employers, (d) + (e)	24.62%	TBD

Contribution rates are based on total (DB and DCR) payroll. The contribution rates shown above for FY24 are estimated assuming no actuarial gains/losses during FY22 and FY23. Actual FY24 contribution rates will be adopted by the Board in September 2022 reflecting FY22 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.

[2] The FY23 contribution rates adopted by the Board in October 2021 were 17.90% for Pension and 0.00% for Healthcare.

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, 2020 and June 30, 2021 based on DB and DCR payroll combined:

	Pension	Healthcare	Total
1. Total Employer/State Contribution Rate as of June 30, 2020	21.73%	3.30%	25.03%
2. Change due to:			
a. Health Claims Experience	N/A	(0.11)%	(0.11)%
b. Salary Increases	0.25%	N/A	0.25%
c. Investment Experience	(1.95)%	0.00%	(1.95)%
d. Demographic Experience and Miscellaneous[1]	(0.68)%	(0.23)%	(0.91)%
e. Actual vs Expected Contributions	(0.03)%	0.00%	(0.03)%
f. Assumption/Method Changes	0.00%	0.00%	0.00%
g. Plan Changes	0.00%	(0.02)%	(0.02)%
h. Total Change, (a) + (b) + (c) + (d) + (e) + (f) + (g)	(2.41)%	(0.36)%	(2.77)%
3. Total Employer/State Contribution Rate as of June 30, 2021, (1) + (2)(h)	19.32%	2.94%	22.26%

The following table shows the FY21 gain/(loss) on actuarial accrued liability as of June 30, 2021 ($'s in 000's):

	Pension	Healthcare	Total
Retirement Experience	$ 4,502	$ (2,282)	$ 2,220
Termination Experience	(7,088)	(2,979)	(10,067)
Disability Experience	(103)	220	117
Active Mortality Experience	311	(2,709)	(2,398)
Inactive Mortality Experience	(5,089)	269	(4,820)
Salary Increases	(29,192)	N/A	(29,192)
Rehires (Net of Rehire Load)	3,085	3,476	6,561
COLA Increases	293	N/A	293
PRPA Increases	81,362	N/A	81,362
Benefit Payments Different than Expected	14,033	10,592	24,625
Per Capita Claims Cost	N/A	96,861	96,861
Medical and Prescription Drug Plan Changes	N/A	21,763	21,763
Medicare Part B Only Experience	N/A	1,278	1,278
Changes in Dependent Coverage Elections	N/A	9,126	9,126
Programming Changes[2]	(227)	N/A	(227)
Miscellaneous[3]	(6,320)	(4,278)	(10,598)
Total	$ 55,567	$ 131,337	$ 186,904

[1] Includes the effects of census data changes between the two valuations.
[2] Includes the adjustment to the COLA for Tier 2 disabilities to commence immediately.
[3] Includes the effects of various data changes that are typical when new census data is received for the annual valuation, as well as 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, 2021 due to rehires during the most recent plan year, and (ii) the load that was added to the June 30, 2020 Normal Cost based on the rehire load assumption used in the June 30, 2020 valuation. The development of the FY21 rehire gain/(loss) amount is shown in the table below ($'s in 000's):

		Pension	Healthcare	Total
1.	Increase/(Decrease) in Actuarial Accrued Liability at June 30, 2021 due to Rehires	$ 3,917	$ (817)	$ 3,100
2.	June 30, 2020 Normal Cost Rehire Load, with interest to June 30, 2021	$ 7,002	$ 2,659	$ 9,661
3.	Rehire Gain/(Loss), (2) - (1)	$ 3,085	$ 3,476	$ 6,561

Section 1: Actuarial Funding Results

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

As of June 30, 2021	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Retirement Benefits	$ 1,842,511	$ 1,682,831
Termination Benefits	24,805	5,215
Disability Benefits	1,745	(1,845)
Death Benefits	12,117	10,274
Return of Contributions	2,130	(31,947)
Medical and Prescription Drug Benefits	863,878	743,380
Medicare Part D Subsidy	(95,180)	(82,422)
Indebtedness	(26,453)	(26,453)
Subtotal	$ 2,625,553	$ 2,299,033
Inactive Members		
Not Vested	$ 39,268	$ 39,268
Vested Terminations		
- Retirement Benefits	141,625	141,625
- Medical and Prescription Drug Benefits	261,528	261,528
- Medicare Part D Subsidy	(29,859)	(29,859)
- Indebtedness	(4,137)	(4,137)
Retirees & Beneficiaries		
- Retirement Benefits	5,657,056	5,657,056
- Medical and Prescription Drug Benefits	1,836,116	1,836,116
- Medicare Part D Subsidy	(289,140)	(289,140)
Subtotal	$ 7,612,457	$ 7,612,457
Total	**$ 10,238,010**	**$ 9,911,490**
Total Pension	**$ 7,690,667**	**$ 7,471,887**
Total Medical, Net of Part D Subsidy	**$ 2,547,343**	**$ 2,439,603**
Total Medical, Gross of Part D Subsidy	**$ 2,961,522**	**$ 2,841,024**

As of June 30, 2021		Present Value of Projected Benefits		Actuarial Accrued (Past Service) Liability
By Tier				
Tier 1				
- Pension	$	4,372,747	$	4,366,405
- Medical, Net of Part D Subsidy		1,077,186		1,074,462
Tier 2				
- Pension		3,317,920		3,105,482
- Medical, Net of Part D Subsidy		1,470,157		1,365,141
Total	**$**	**10,238,010**	**$**	**9,911,490**

As of June 30, 2021		Normal Cost
Active Members		
Retirement Benefits	$	28,231
Termination Benefits		3,445
Disability Benefits		628
Death Benefits		344
Return of Contributions		6,053
Medical and Prescription Drug Benefits		20,441
Medicare Part D Subsidy		(2,209)
Rehire Assumption (Pension)		6,026
Rehire Assumption (Medical)		2,193
Administrative Expenses (Pension)		3,217
Administrative Expenses (Medical)		1,604
Total	**$**	**69,973**
Total Pension	**$**	**47,944**
Total Medical, Net of Part D Subsidy	**$**	**22,029**
Total Medical, Gross of Part D Subsidy	**$**	**24,238**
By Tier		
Tier 1		
- Pension	$	2,260
- Medical, Net of Part D Subsidy		903
Tier 2		
- Pension		45,684
- Medical, Net of Part D Subsidy		21,126
Total	**$**	**69,973**

Section 1.2: Actuarial Contributions as of June 30, 2021 ($'s in 000's)

Normal Cost Rate	Pension	Healthcare	Total
1. Total Normal Cost	$ 47,944	$ 22,029	$ 69,973
2. DB Rate Payroll Projected for FY22	326,551	326,551	326,551
3. DCR Rate Payroll Projected for FY22	423,783	423,783	423,783
4. Total Rate Payroll Projected for FY22	750,334	750,334	750,334
5. Normal Cost Rate			
a. Based on DB Rate Payroll, (1) ÷ (2)	14.68%	6.75%	21.43%
b. Based on Total Rate Payroll, (1) ÷ (4)	6.39%	2.94%	9.33%
6. Average Member Contribution Rate[1]	3.76%	0.00%	3.76%
7. Employer Normal Cost, (5)(b) - (6)	2.63%	2.94%	5.57%

Past Service Rate	Pension	Healthcare	Total
1. Actuarial Accrued Liability	$ 7,471,887	$ 2,439,603	$ 9,911,490
2. Valuation Assets	5,910,369	3,267,737	9,178,106
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ 1,561,518	$ (828,134)	$ 733,384
4. Funded Ratio, (2) ÷ (1)	79.1%	133.9%	92.6%
5. Past Service Cost Amortization Payment	125,231	(55,785)	69,446
6. Total Rate Payroll Projected for FY22	750,334	750,334	750,334
7. Past Service Rate, (5) ÷ (6)	16.69%	(7.43%)	9.26%
Total Employer / State Contribution Rate, not less than Normal Cost Rate	**19.32%**	**2.94%**	**22.26%**
Normal Cost Rate by Tier (Total Employer and Member)[2]			
Tier 1	15.35%	6.13%	21.49%
Tier 2	14.65%	6.77%	21.42%

[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: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ 1,720,344	$ 1,693,026	$ 133,291
Change in Assumptions	6/30/2018	22	14,346	14,467	1,005
FY19 Loss	6/30/2019	23	94,314	95,008	6,430
FY20 Loss	6/30/2020	24	44,395	44,593	2,945
FY21 Gain	6/30/2021	25	(285,576)	(285,576)	(18,440)
Total				**$ 1,561,518**	**$ 125,231**

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ (48,285)	$ (47,519)	$ (3,741)
Change in Assumptions/Methods/EGWP	6/30/2018	22	(166,274)	(167,686)	(11,647)
FY19 Gain	6/30/2019	23	(213,757)	(215,328)	(14,572)
FY20 Gain	6/30/2020	24	(101,507)	(101,961)	(6,735)
Medical/Prescription Drug Plan Changes	6/30/2021	25	(21,763)	(21,763)	(1,405)
FY21 Gain	6/30/2021	25	(273,877)	(273,877)	(17,685)
Total				**$ (828,134)**	**$ (55,785)**

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

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Amount	6/30/2018	18	$ 1,672,059	$ 1,645,507	$ 129,550
Change in Assumptions/Methods/EGWP	6/30/2018	22	(151,928)	(153,219)	(10,642)
FY19 Gain	6/30/2019	23	(119,443)	(120,320)	(8,142)
FY20 Gain	6/30/2020	24	(57,112)	(57,368)	(3,790)
Medical/Prescription Drug Plan Changes	6/30/2021	25	(21,763)	(21,763)	(1,405)
FY21 Gain	6/30/2021	25	(559,453)	(559,453)	(36,125)
Total				**$ 733,384**	**$ 69,446**

Section 1.3: Roll-Forward Contribution Rate Calculation for FY24 ($'s in 000's)

	Pension	Healthcare	Total
1. Liability Roll Forward			
a. Actuarial Accrued Liability as of June 30, 2021	**$ 7,471,887**	**$ 2,439,603**	**$ 9,911,490**
b. Normal Cost	44,727	20,425	65,152
c. Interest on (a) and (b) at 7.38%	554,726	181,550	736,276
d. Estimated Benefit Payments	(523,901)	(134,643)	(658,544)
e. Interest on (d) at 7.38%, adjusted for timing	(20,601)	(4,880)	(25,481)
f. Expected Actuarial Accrued Liability as of June 30, 2022	**$ 7,526,838**	**$ 2,502,055**	**$ 10,028,893**
g. Projected Normal Cost	40,486	18,726	59,212
h. Interest on (f) and (g) at 7.38%	558,469	186,034	744,503
i. Estimated Benefit Payments	(541,571)	(140,701)	(682,272)
j. Interest on (i) at 7.38%, adjusted for timing	(21,296)	(5,099)	(26,395)
k. Expected Actuarial Accrued Liability as of June 30, 2023	**$ 7,562,926**	**$ 2,561,015**	**$ 10,123,941**
2. Asset Roll Forward			
a. Actuarial Value of Assets as of June 30, 2021	**$ 5,910,369**	**$ 3,267,737**	**$ 9,178,106**
b. Interest on (a) at 7.38%	436,185	241,159	677,344
c. Employee Contributions	31,383	0	31,383
d. Employer Contributions	24,161	22,360	46,521
e. State Assistance Contributions	142,665	0	142,665
f. Interest on (c) thru (e) at 7.38%, adjusted for timing*	12,542	810	13,352
g. Estimated Benefit Payments	(523,901)	(134,643)	(658,544)
h. Administrative Expenses	(3,217)	(1,604)	(4,821)
i. Interest on (g) and (h) at 7.38%, adjusted for timing	(20,717)	(4,938)	(25,655)
j. AVA Adjustments	250,511	140,417	390,928
k. Expected Actuarial Value of Assets as of June 30, 2022	**$ 6,259,981**	**$ 3,531,298**	**$ 9,791,279**
l. Interest on (k) at 7.38%	461,987	260,610	722,597
m. Employee Contributions	29,220	0	29,220
n. Employer Contributions	44,104	0	44,104
o. State Assistance Contributions**	91,029	0	91,029
p. Interest on (m) thru (o) at 7.38%, adjusted for timing*	9,375	0	9,375
q. Estimated Benefit Payments	(541,571)	(140,701)	(682,272)
r. Administrative Expenses	(2,932)	(1,478)	(4,410)
s. Interest on (q) and (r) at 7.38%, adjusted for timing	(21,402)	(5,153)	(26,555)
t. AVA Adjustments	233,895	130,611	364,506
u. Expected Actuarial Value of Assets as of June 30, 2023	**$ 6,563,686**	**$ 3,775,187**	**$ 10,338,873**
3. Expected Unfunded Actuarial Accrued Liability as of June 30, 2023, 1(k) - 2(u)	**$ 999,240**	**$ (1,214,172)**	**$ (214,932)**

* Employee and Employer Contributions are paid throughout the year. State Assistance Contributions are assumed to be paid on July 1, 2021 for FY22, and July 1, 2022 for FY23.

** The FY23 State Assistance Contribution is expected to be contributed 100% to pension.

	Pension		Healthcare		Total
4. Expected Annual Rate Payroll for FY24					
a. Defined Benefit Members				$	270,617
b. Defined Contribution Retirement Members					491,467
c. Total Rate Payroll				**$**	**762,084**
5. Expected FY24 Contribution Rate Calculation					
a. Projected Normal Cost for FY24	$	39,024	$	18,394	$ 57,418
b. Projected Normal Cost Rate for FY24		5.12%		2.41%	7.53%
c. Expected Member Contribution Rate for FY24		(3.07%)		0.00%	(3.07%)
d. Expected Employer Normal Cost Rate for FY24		**2.05%**		**2.41%**	**4.46%**
e. Expected Unfunded Liability as of June 30, 2023	$	999,240	$	(1,214,172)	$ (214,932)
f. FY24 Layered Amortization of Expected Unfunded Liability		98,310		(84,064)	14,246
g. Expected Past Service Cost Contribution Rate for FY24		**12.90%**		**(11.03%)**	**12.90%**
h. Expected Total Contribution Rate for FY24, not less than Normal Cost Rate		**14.95%**		**2.41%**	**17.36%**

The components of the expected FY24 amortization amounts are shown below (totals may not add due to rounding):

Expected FY24 Schedule of Past Service Cost Amortizations - Pension ($'s in 000's)

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining at 6/30/23	Balances: Initial	Balances: Outstanding at 6/30/23	Beginning-of-Year Payment for FY24
Initial Amount	6/30/2018	16	$ 1,720,344	$ 1,651,383	$ 140,722
Change in Assumptions	6/30/2018	20	14,346	14,414	1,061
FY19 Loss	6/30/2019	21	94,314	95,041	6,788
FY20 Loss	6/30/2020	22	44,395	44,772	3,110
FY21 Gain	6/30/2021	23	(285,576)	(287,675)	(19,468)
Expected FY22 Gain	6/30/2022	24	(275,429)	(276,658)	(18,274)
Expected FY23 Gain	6/30/2023	25	(242,037)	(242,037)	(15,629)
Total				**$ 999,240**	**$ 98,310**

Expected FY24 Schedule of Past Service Cost Amortizations - Healthcare ($'s in 000's)

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining at 6/30/23	Balances: Initial	Balances: Outstanding at 6/30/23	Beginning-of-Year Payment for FY24
Initial Amount	6/30/2018	16	$ (48,285)	$ (46,351)	$ (3,950)
Change in Assumptions/Methods/EGWP	6/30/2018	20	(166,274)	(167,070)	(12,296)
FY19 Gain	6/30/2019	21	(213,757)	(215,403)	(15,385)
FY20 Gain	6/30/2020	22	(101,507)	(102,370)	(7,110)
Medical/Prescription Drug Plan Changes	6/30/2021	23	(21,763)	(21,923)	(1,484)
FY21 Gain	6/30/2021	23	(273,877)	(275,889)	(18,671)
Expected FY22 Gain	6/30/2022	24	(199,895)	(200,787)	(13,262)
Expected FY23 Gain	6/30/2023	25	(184,379)	(184,379)	(11,906)
Total				**$ (1,214,172)**	**$ (84,064)**

The components of the expected FY24 amortization amounts are shown below (totals may not add due to rounding):

Expected FY24 Schedule of Past Service Cost Amortizations - Total ($'s in 000's)

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining at 6/30/23	Balances: Initial	Balances: Outstanding at 6/30/23	Beginning-of-Year Payment for FY24
Initial Amount	6/30/2018	16	$ 1,672,059	$ 1,605,032	$ 136,772
Change in Assumptions/Methods/EGWP	6/30/2018	20	(151,928)	(152,656)	(11,235)
FY19 Gain	6/30/2019	21	(119,443)	(120,362)	(8,597)
FY20 Gain	6/30/2020	22	(57,112)	(57,598)	(4,000)
Medical/Prescription Drug Plan Changes	6/30/2021	23	(21,763)	(21,923)	(1,484)
FY21 Gain	6/30/2021	23	(559,453)	(563,564)	(38,139)
Expected FY22 Gain	6/30/2022	24	(475,324)	(477,445)	(31,536)
Expected FY23 Gain	6/30/2023	25	(426,416)	(426,416)	(27,535)
Total				**$ (214,932)**	**$ 14,246**

Section 1.4: Actuarial Gain/(Loss) for FY21 ($'s in 000's)

	Pension	Healthcare	Total
1. Expected Actuarial Accrued Liability			
a. Actuarial Accrued Liability as of June 30, 2020	$ 7,447,036	$ 2,489,675	$ 9,936,711
b. Normal Cost	48,401	23,057	71,458
c. Interest on (a) and (b) at 7.38%	553,163	185,440	738,603
d. Employer Group Waiver Plan	0	18,355	18,355
e. Benefit Payments	(499,942)	(141,137)	(641,079)
f. Refund of Contributions	(1,487)	0	(1,487)
g. Interest on (d) thru (f) at 7.38%, adjusted for timing	(19,717)	(4,450)	(24,167)
h. Assumptions/Methods Changes	0	0	0
i. Expected Actuarial Accrued Liability as of June 30, 2021 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h)	$ 7,527,454	$ 2,570,940	$ 10,098,394
2. Actual Actuarial Accrued Liability as of June 30, 2021	7,471,887	2,439,603	9,911,490
3. Liability Gain/(Loss), (1)(i) - (2)	**$ 55,567**	**$ 131,337**	**$ 186,904**
4. Expected Actuarial Asset Value			
a. Actuarial Value of Assets as of June 30, 2020	$ 5,587,064	$ 3,021,283	$ 8,608,347
b. Interest on (a) at 7.38%	412,325	222,971	635,296
c. Employee Contributions	33,342	0	33,342
d. Employer Contributions	28,430	24,700	53,130
e. State Assistance Contributions	134,976	0	134,976
f. Employer Group Waiver Plan	0	18,355	18,355
g. Interest on (c) thru (f) at 7.38%, adjusted for timing	12,200	1,560	13,760
h. Benefit Payments	(499,942)	(141,137)	(641,079)
i. Refund of Contributions	(1,487)	0	(1,487)
j. Administrative Expenses	(3,446)	(1,836)	(5,282)
k. Interest on (h) thru (j) at 7.38%, adjusted for timing	(19,842)	(5,182)	(25,024)
l. Expected Actuarial Asset Value as of June 30, 2021 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) + (i) + (j) + (k)	$ 5,683,620	$ 3,140,714	$ 8,824,334
5. Actual Actuarial Asset Value as of June 30, 2021	5,910,369	3,267,737	9,178,106
6. Actuarial Asset Value Gain/(Loss), (5) - (4)(l)	**$ 226,749**	**$ 127,023**	**$ 353,772**
7. Total Actuarial Gain/(Loss), (3) + (6)	**$ 282,316**	**$ 258,360**	**$ 540,676**
8. Contribution Gain/(Loss)	**$ 3,606**	**$ 37,720**	**$ 41,326**
9. Administrative Expense Gain/(Loss)	**$ (346)**	**$ (440)**	**$ (786)**
10. FY21 Gain/(Loss), (7) + (8) + (9)	**$ 285,576**	**$ 295,640**	**$ 581,216**

Section 1.5: Development of Change in Unfunded Liability During FY21 ($'s in 000's)

	Pension	Healthcare	Total
1. 2020 Unfunded Liability	$ 1,859,972	$ (531,608)	$ 1,328,364
a. Interest on Unfunded Liability at 7.38%	$ 137,266	$ (39,233)	$ 98,033
b. Normal Cost	48,401	23,057	71,458
c. Employee Contributions	(33,342)	0	(33,342)
d. Employer Contributions	(28,430)	(24,700)	(53,130)
e. State Assistance Contributions	(134,976)	0	(134,976)
f. Administrative Expenses	3,446	1,836	5,282
g. Interest on (b) thru (f) at 7.38%, adjusted for timing	(8,503)	874	(7,629)
h. Assumptions/Methods Changes	0	0	0
i. Expected Change in Unfunded Liability During FY21 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h)	$ (16,138)	$ (38,166)	$ (54,304)
2. Expected 2021 Unfunded Liability, (1) + (1)(i)	$ 1,843,834	$ (569,774)	$ 1,274,060
a. Liability (Gain)/Loss During FY21	$ (55,567)	$ (131,337)	$ (186,904)
b. Actuarial Assets (Gain)/Loss During FY21	(226,749)	(127,023)	(353,772)
c. Total Actuarial (Gain)/Loss During FY21	$ (282,316)	$ (258,360)	$ (540,676)
3. Actual 2021 Unfunded Liability, (2) + (2)(c)	$ 1,561,518	$ (828,134)	$ 733,384

Section 1.6: Analysis of Financial Experience

Pension
Change in Employer / State Contribution Rate as of Valuation Date
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	2017	2018	2019	2020	2021
1. Health Claims	N/A	N/A	N/A	N/A	N/A
2. Salary Experience	(0.34%)	(0.39%)	(0.06%)	(0.06%)	0.25%
3. Investment Experience	1.12%	0.91%	0.93%	0.83%	(1.95%)
4. Demographic Experience and Miscellaneous	(0.47%)	0.37%	0.75%	(0.28%)	(0.68%)
5. Actual vs Expected Contributions	(0.07%)	(0.03%)	(0.15%)	(0.17%)	(0.03%)
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	0.24%	0.86%	1.47%	0.32%	(2.41%)
7. Assumptions / Method Changes	0.00%	(0.32%)	0.00%	0.00%	0.00%
8. Plan Changes	0.00%	0.00%	0.00%	0.00%	0.00%
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	0.24%	0.54%	1.47%	0.32%	(2.41%)
10. Beginning Total Employer / State Contribution Rate	19.16%	19.40%	19.94%	21.41%	21.73%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	19.40%	19.94%	21.41%	21.73%	19.32%
12. Fiscal Year Rates Adopted by ARMB					
a. Fiscal Year Employer / State Contribution Rate	20.71%	20.94%	22.51%	17.90%	14.95% *
b. Fiscal Year for which Rate Applies	FY20	FY21	FY22	FY23	FY24

* Expected rate. Actual rate to be determined

Healthcare
Change in Employer / State Contribution Rate as of Valuation Date
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	**2017**	**2018**	**2019**	**2020**	**2021**
1. Health Claims	(2.32%)	(1.58%)	(2.51%)	(0.95%)	(0.11%)
2. Salary Experience	N/A	N/A	N/A	N/A	N/A
3. Investment Experience	0.56%	0.45%	0.45%	0.38%	0.00%
4. Demographic Experience and Miscellaneous	(0.71%)	1.49%	1.60%	0.49%	(0.23%)
5. Actual vs Expected Contributions	(0.11%)	0.05%	(0.02%)	(0.19%)	0.00%
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(2.58%)	0.41%	(0.48%)	(0.27%)	(0.34%)
7. Assumptions / Method Changes	3.41%	0.24%	0.00%	0.00%	0.00%
8. Plan Changes	0.00%	0.00%	0.00%	0.00%	(0.02%)
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	0.83%	0.65%	(0.48%)	(0.27%)	(0.36%)
10. Beginning Total Employer / State Contribution Rate	2.57%	3.40%	4.05%	3.57%	3.30%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	3.40%	4.05%	3.57%	3.30%	2.94%
12. Fiscal Year Rates Adopted by ARMB					
a. Fiscal Year Employer / State Contribution Rate	3.91%	3.40%	2.98%	0.00%	2.41% *
b. Fiscal Year for which Rate Applies	FY20	FY21	FY22	FY23	FY24

* Expected rate. Actual rate to be determined

Total
Change in Employer / State Contribution Rate as of Valuation Date
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	**2017**	**2018**	**2019**	**2020**	**2021**
1. Health Claims	(2.32%)	(1.58%)	(2.51%)	(0.95%)	(0.11%)
2. Salary Experience	(0.34%)	(0.39%)	(0.06%)	(0.06%)	0.25%
3. Investment Experience	1.68%	1.36%	1.38%	1.21%	(1.95%)
4. Demographic Experience and Miscellaneous	(1.18%)	1.86%	2.35%	0.21%	(0.91%)
5. Actual vs Expected Contributions	(0.18%)	0.02%	(0.17%)	(0.36%)	(0.03%)
6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5)	(2.34%)	1.27%	0.99%	0.05%	(2.75%)
7. Assumptions / Method Changes	3.41%	(0.08%)	0.00%	0.00%	0.00%
8. Plan Changes	0.00%	0.00%	0.00%	0.00%	(0.02%)
9. Composite (Gain) or Loss During Year, (6) + (7) + (8)	1.07%	1.19%	0.99%	0.05%	(2.77%)
10. Beginning Total Employer / State Contribution Rate	21.73%	22.80%	23.99%	24.98%	25.03%
11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10)	22.80%	23.99%	24.98%	25.03%	22.26%
12. Fiscal Year Rates Adopted by ARMB					
a. Fiscal Year Employer / State Contribution Rate	24.62%	24.34%	25.49%	17.90%	17.36% *
b. Fiscal Year for which Rate Applies	FY20	FY21	FY22	FY23	FY24

* Expected rate. Actual rate to be determined

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
June 30, 2020	9,936,711	8,608,347	86.6%	1,328,364
June 30, 2021	9,911,490	9,178,106	92.6%	733,384

Section 2: Plan Assets

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

As of June 30, 2021	Pension	Healthcare	Total	Allocation Percent
Cash and Short-Term Investments				
- Cash and Cash Equivalents	$ 72,735	$ 38,232	$ 110,967	1.1%
- Subtotal	$ 72,735	$ 38,232	$ 110,967	1.1%
Fixed Income Investments				
- Domestic Fixed Income Pool	$ 1,365,542	$ 758,389	$ 2,123,931	20.3%
- International Fixed Income Pool	0	0	0	0.0%
- Tactical Fixed Income Pool	0	0	0	0.0%
- 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	$ 1,365,542	$ 758,389	$ 2,123,931	20.3%
Equity Investments				
- Domestic Equity Pool	$ 1,847,616	$ 1,026,121	$ 2,873,737	27.4%
- International Equity Pool	1,018,255	565,514	1,583,769	15.1%
- Private Equity Pool	1,001,964	556,466	1,558,430	14.9%
- Emerging Markets Equity Pool	216,313	120,135	336,448	3.2%
- Alternative Equity Strategies	393,518	218,551	612,069	5.8%
- Subtotal	$ 4,477,666	$ 2,486,787	$ 6,964,453	66.4%
Other Investments				
- Real Estate Pool	$ 414,283	$ 230,449	$ 644,732	6.1%
- Other Investments Pool	414,089	229,975	644,064	6.1%
- Absolute Return Pool	0	0	0	0.0%
- Other Assets	0	318	318	0.0%
- Subtotal	$ 828,372	$ 460,742	$ 1,289,114	12.2%
Total Cash and Investments	$ 6,744,315	$ 3,744,150	$ 10,488,465	100.0%
Net Accrued Receivables	(12,834)	(21,119)	(33,953)	
Net Assets	$ 6,731,481	$ 3,723,031	$ 10,454,512	

Section 2.2: Changes in Fair Value of Assets During FY21 ($'s in 000's)

Fiscal Year 2021	Pension	Healthcare	Total
1. Fair Value of Assets as of June 30, 2020	$ 5,444,799	$ 2,953,461	$ 8,398,260
2. Additions:			
a. Employee Contributions	$ 33,342	$ 0	$ 33,342
b. Employer Contributions	28,430	24,700	53,130
c. State Assistance Contributions	134,976	0	134,976
d. Interest and Dividend Income	75,824	41,567	117,391
e. Net Appreciation / Depreciation in Fair Value of Investments	1,534,132	835,912	2,370,044
f. Employer Group Waiver Plan	0	18,355	18,355
g. Other	273	247	520
h. Total Additions	$ 1,806,977	$ 920,781	$ 2,727,758
3. Deductions:			
a. Medical Benefits	$ 0	$ 141,137	$ 141,137
b. Retirement Benefits	499,942	0	499,942
c. Refund of Contributions	1,487	0	1,487
d. Investment Expenses	15,420	8,238	23,658
e. Administrative Expenses	3,446	1,836	5,282
f. Total Deductions	$ 520,295	$ 151,211	$ 671,506
4. Fair Value of Assets as of June 30, 2021	$ 6,731,481	$ 3,723,031	$ 10,454,512
5. Approximate Fair Value Investment Return Rate during FY21 Net of Investment Expenses	30.1%	29.9%	30.1%

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 FY21			
a. Fair Value of Assets as of June 30, 2020	$ 5,444,799	$ 2,953,461	$ 8,398,260
b. Contributions	196,748	24,700	221,448
c. Employer Group Waiver Plan	0	18,355	18,355
d. Benefit Payments	501,429	141,137	642,566
e. Administrative Expenses	3,446	1,836	5,282
f. Actual Investment Return (net of investment expenses)	1,594,809	869,488	2,464,297
g. Expected Return Rate (net of investment expenses)	7.38%	7.38%	7.38%
h. Expected Return, Weighted for Timing	394,184	214,344	608,528
i. Investment Gain / (Loss) for the Year, (f) - (h)	1,200,625	655,144	1,855,769
2. Actuarial Value as of June 30, 2021			
a. Fair Value as of June 30, 2021	$ 6,731,481	$ 3,723,031	$ 10,454,512
b. Deferred Investment Gain / (Loss)	821,112	455,294	1,276,406
c. Actuarial Value as of June 30, 2021, (a) - (b)	5,910,369	3,267,737	9,178,106
3. Ratio of Actuarial Value of Assets to Fair Value of Assets	87.8%	87.8%	87.8%
4. Approximate Actuarial Value Investment Return Rate during FY21 Net of Investment Expenses	11.6%	11.7%	11.6%

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

Pension				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 236,679	$ 189,344	$ 47,335	$ 0
June 30, 2018	13,001	7,800	2,600	2,601
June 30, 2019	(82,246)	(32,898)	(16,449)	(32,899)
June 30, 2020	(181,816)	(36,363)	(36,363)	(109,090)
June 30, 2021	1,200,625	0	240,125	960,500
Total	**$ 1,186,243**	**$ 127,883**	**$ 237,248**	**$ 821,112**

Healthcare				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 126,053	$ 100,843	$ 25,210	$ 0
June 30, 2018	9,619	5,772	1,924	1,923
June 30, 2019	(38,309)	(15,324)	(7,662)	(15,323)
June 30, 2020	(92,367)	(18,473)	(18,473)	(55,421)
June 30, 2021	655,144	0	131,029	524,115
Total	**$ 660,140**	**$ 72,818**	**$ 132,028**	**$ 455,294**

Total				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 362,732	$ 290,187	$ 72,545	$ 0
June 30, 2018	22,620	13,572	4,524	4,524
June 30, 2019	(120,555)	(48,222)	(24,111)	(48,222)
June 30, 2020	(274,183)	(54,836)	(54,836)	(164,511)
June 30, 2021	1,855,769	0	371,154	1,484,615
Total	**$ 1,846,383**	**$ 200,701**	**$ 369,276**	**$ 1,276,406**

Section 2.4: Historical Asset Rates of Return

Year Ending	Actuarial Value Annual	Actuarial Value Cumulative*	Fair Value Annual	Fair Value 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%
June 30, 2020	5.8%	6.7%	4.1%	6.4%
June 30, 2021	11.6%	7.0%	30.1%	7.6%

* Cumulative since fiscal year ending June 30, 2005

Section 3: Projections

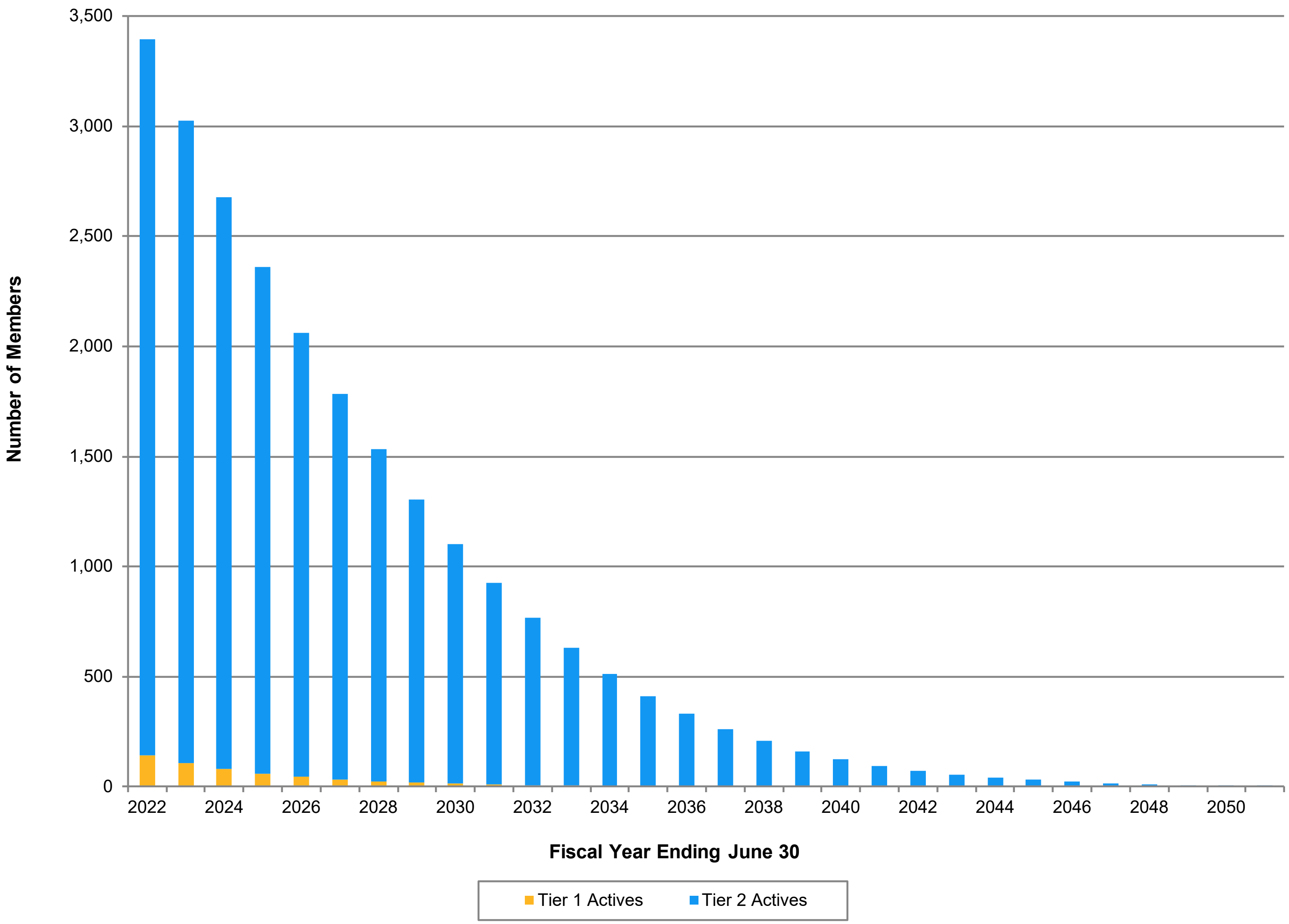
Section 3.1: Projection Assumptions and Methods

Key Assumptions

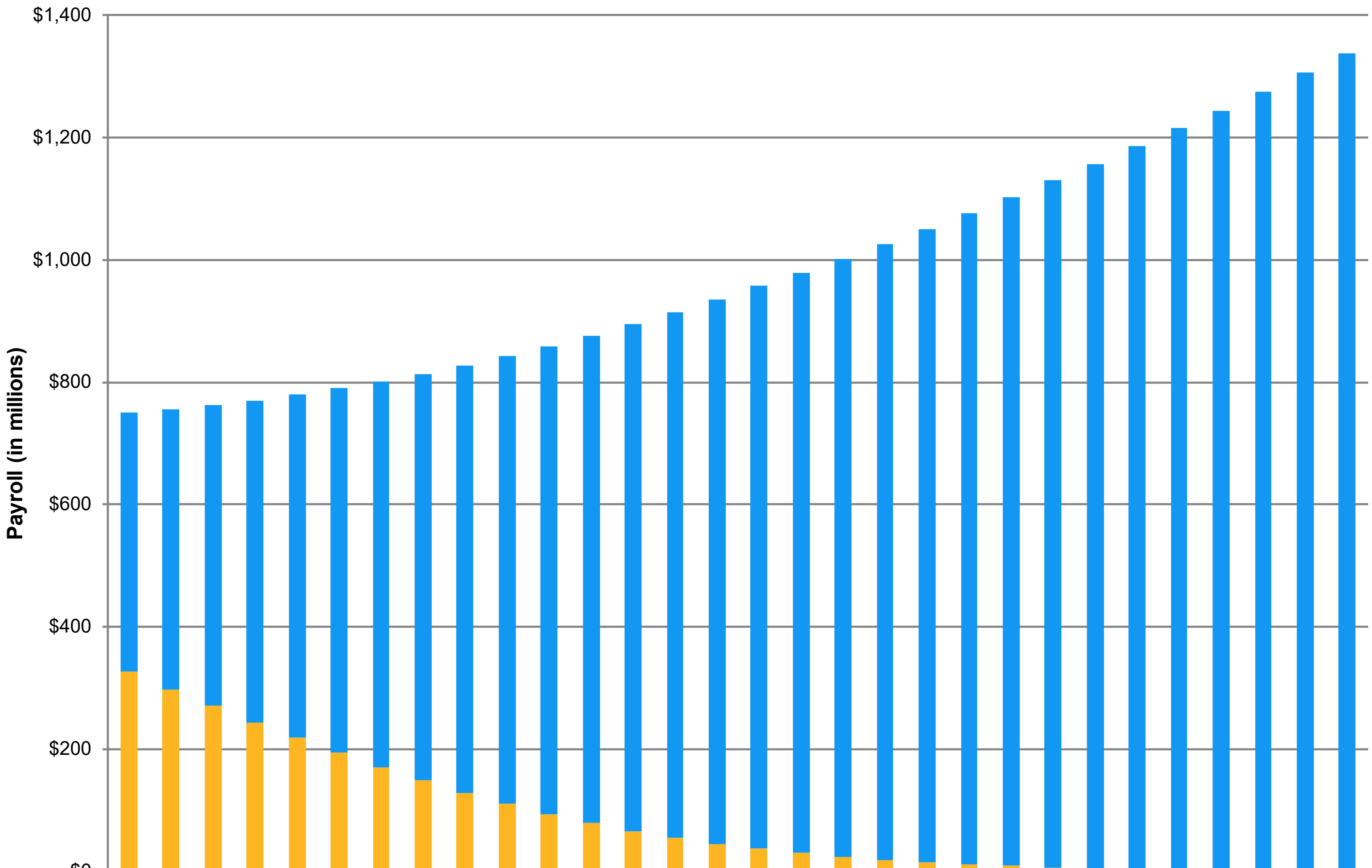
- 7.38% investment return (net of investment expenses) on the Fair Value of Assets in all future years.
- The Actuarial Value of Assets was re-initialized to Fair Value as of June 30, 2014. The Actuarial Value of Assets after June 30, 2014 reflects the deferred gains and losses generated by the smoothing 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, 2021.
- 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.
- The DCR contribution rate determined as of June 30, 2021 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.
- The Normal Cost is increased by the administrative expenses shown in Section 5. For future years, the percent increase is assumed to remain constant.
- In Section 3.6B, we assumed all remaining pension unfunded liability layered amortization amounts would be zero after the pension trust is projected to reach a funded status of 100%.

Section 3.2: Membership Projection

Projected Active Member Count



Projected DB and DCR Payroll

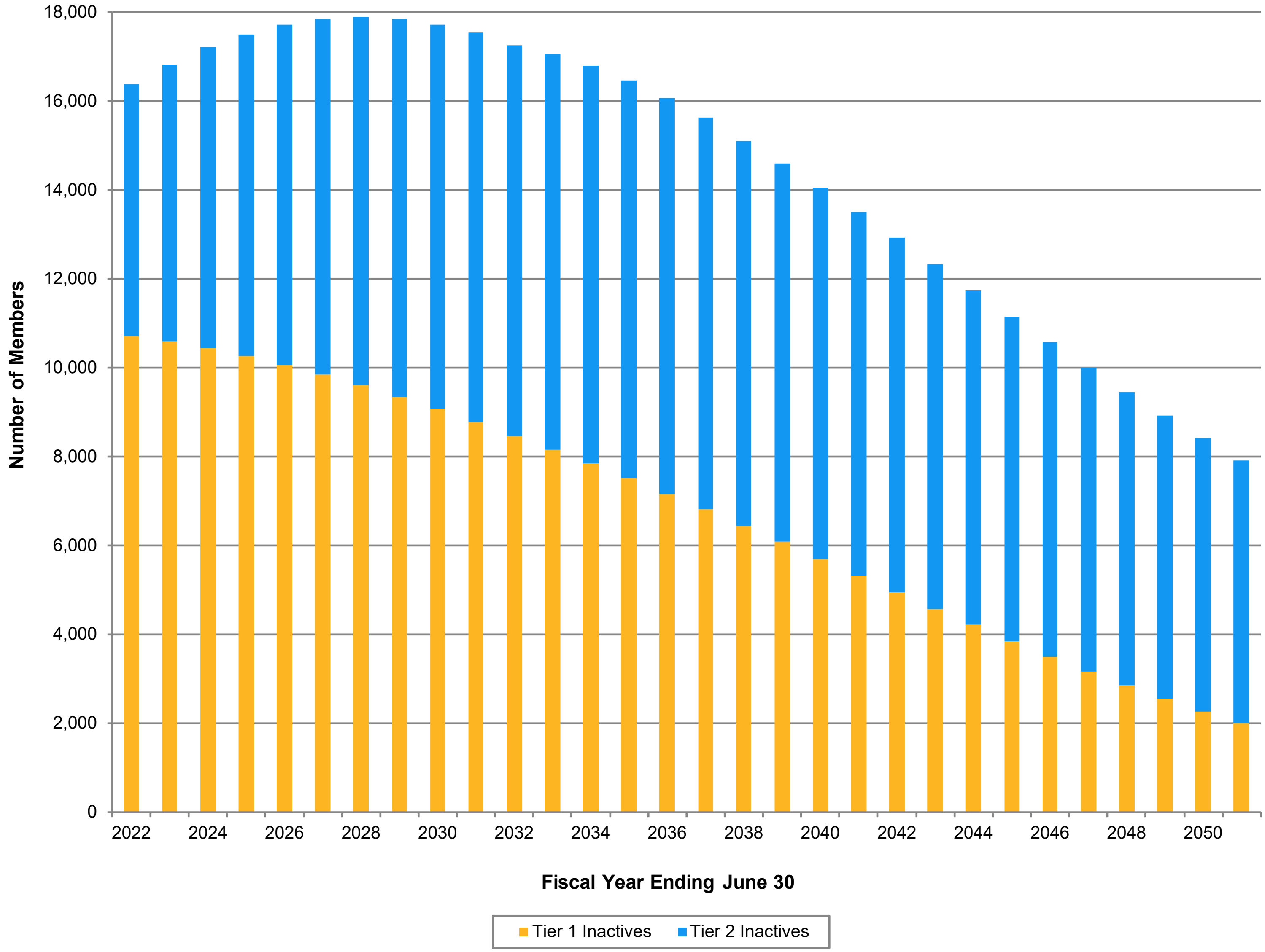


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
DCR Payroll	424	457	491	526	561	596	630	665	698	732	764	797	829	860	890	920	949	978	1,007	1,036	1,064	1,093	1,123	1,152	1,182	1,212	1,242	1,273	1,305	1,337
DB Payroll	327	298	271	244	219	194	171	149	129	111	94	79	66	55	45	37	30	24	19	15	12	9	7	5	4	3	2	2	1	1

Fiscal Year Ending June 30

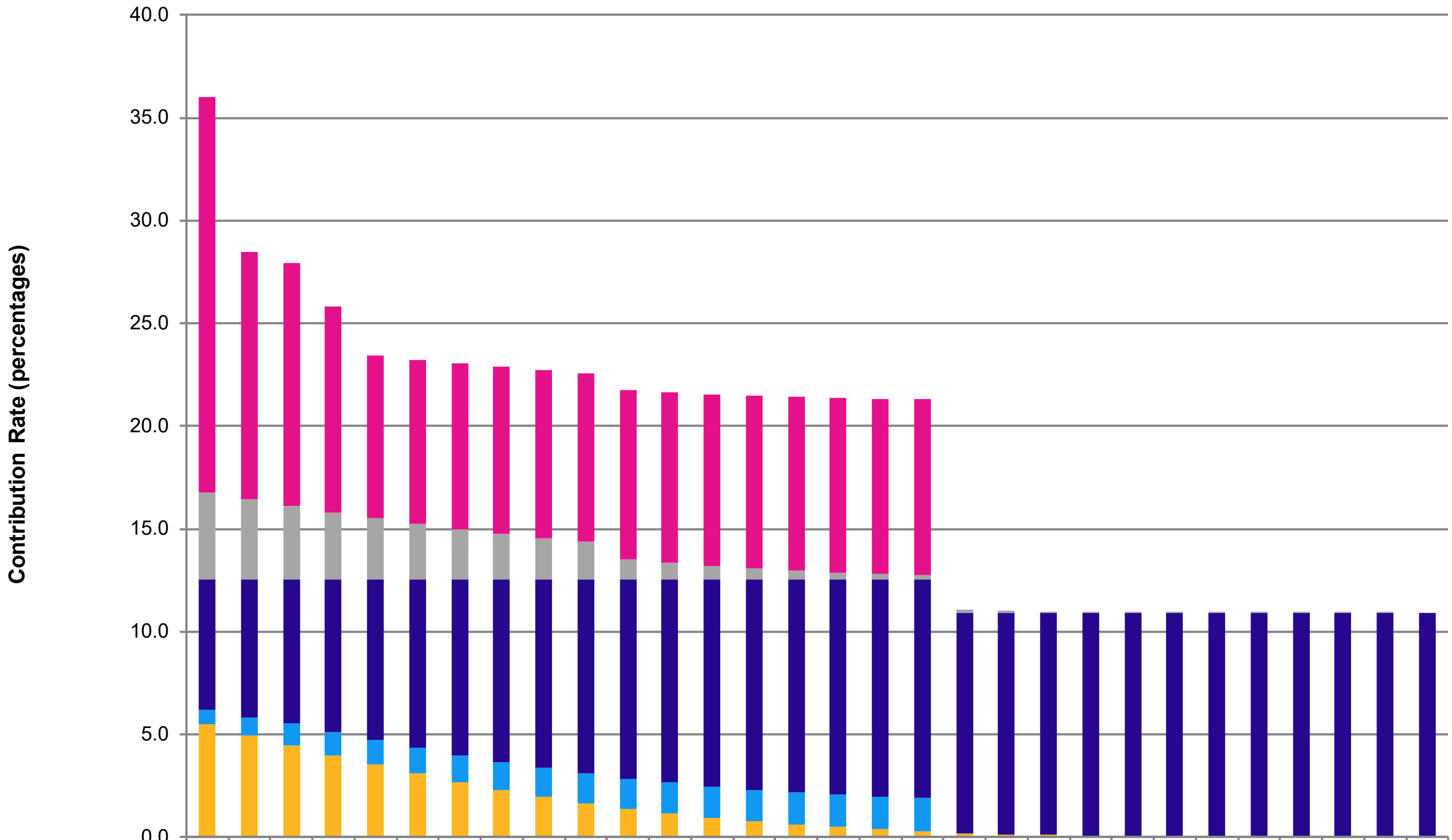
DB Payroll DCR Payroll

Projected Inactive Member Count



Section 3.3: Projected Employer/State Contribution Rates

Based on Total DB and DCR Payroll



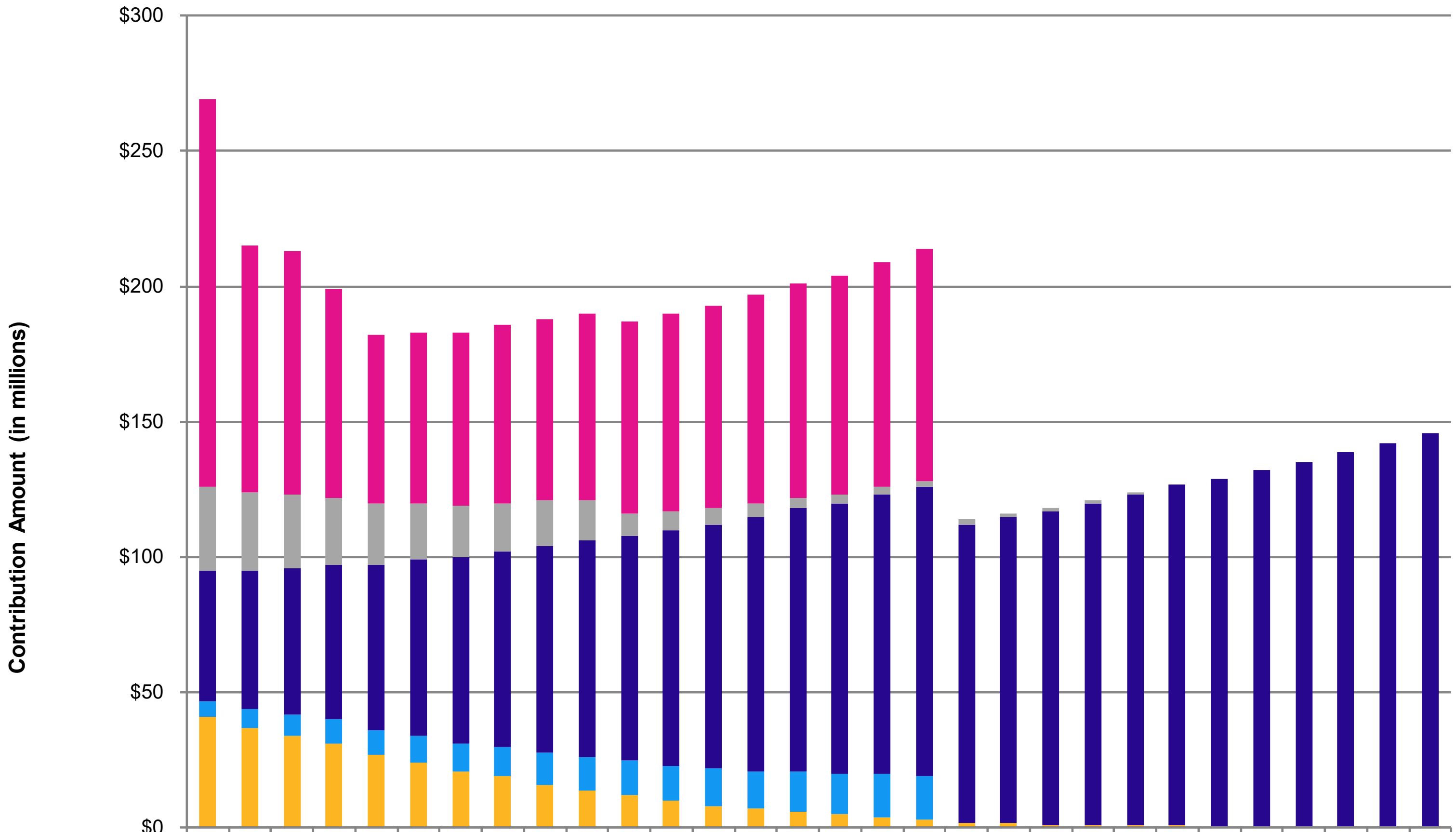
	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
State Assistance	19.29	12.06	11.83	9.99	7.92	7.98	8.05	8.10	8.15	8.20	8.25	8.30	8.33	8.39	8.43
DB EE Contributions	4.18	3.87	3.55	3.24	2.96	2.68	2.43	2.21	2.01	1.83	0.95	0.78	0.64	0.52	0.42
DCR ER Contributions	6.36	6.72	7.03	7.45	7.84	8.23	8.58	8.91	9.20	9.47	9.71	9.91	10.09	10.25	10.38
DB ER Contributions on DCR Pay	0.73	0.88	1.07	1.13	1.20	1.25	1.31	1.35	1.40	1.44	1.47	1.51	1.54	1.56	1.58
DB ER Contributions on DB Pay	5.47	4.96	4.46	3.98	3.52	3.08	2.67	2.30	1.96	1.65	1.38	1.14	0.93	0.75	0.60

	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
State Assistance	8.47	8.51	8.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DB EE Contributions	0.33	0.26	0.20	0.16	0.12	0.09	0.07	0.05	0.04	0.03	0.02	0.01	0.01	0.01	0.00
DCR ER Contributions	10.48	10.57	10.64	10.70	10.75	10.78	10.81	10.83	10.85	10.86	10.87	10.88	10.89	10.89	10.89
DB ER Contributions on DCR Pay	1.60	1.61	1.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DB ER Contributions on DB Pay	0.48	0.38	0.30	0.20	0.15	0.11	0.09	0.06	0.05	0.03	0.03	0.02	0.01	0.01	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

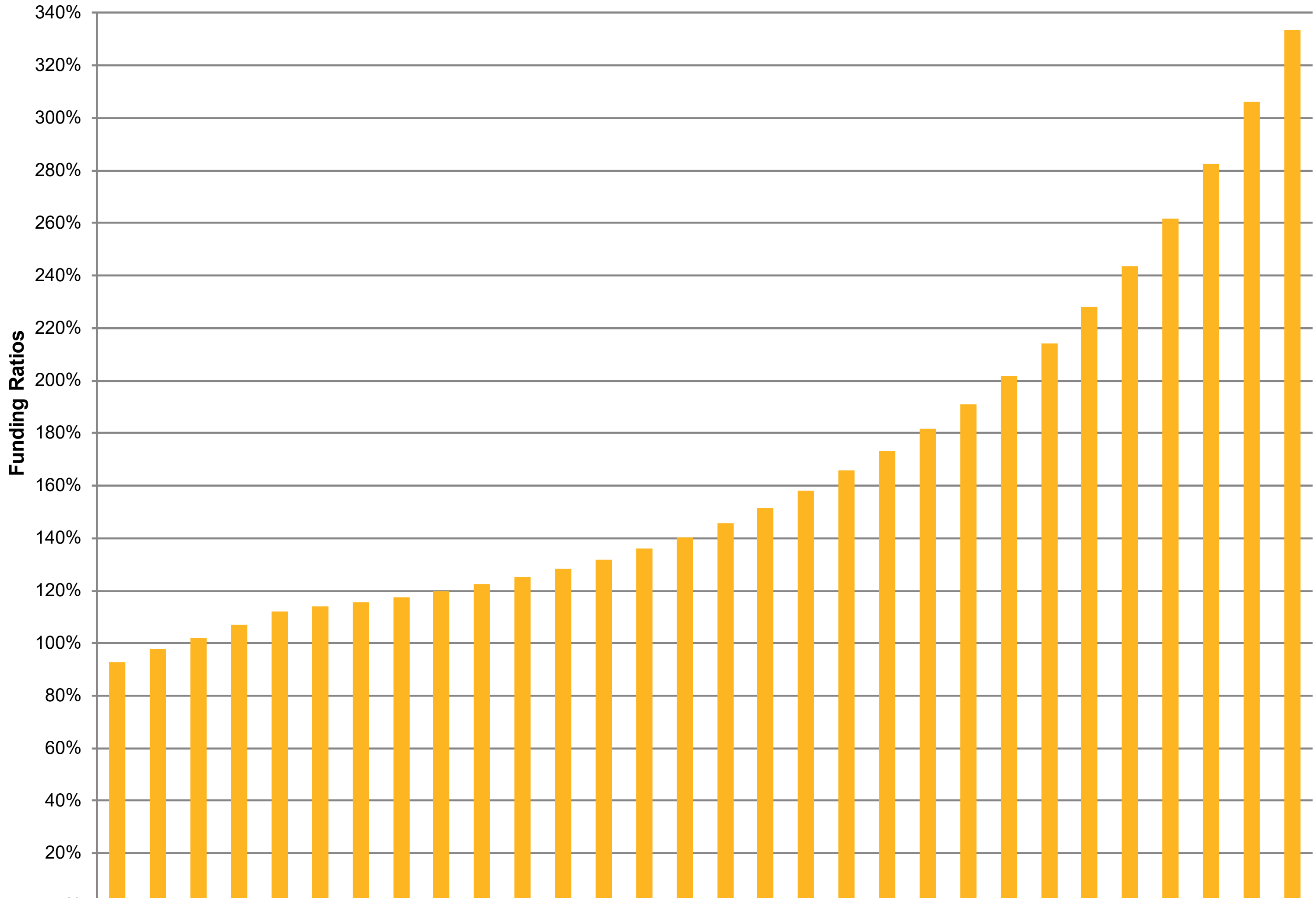


	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
State Assistance	143	91	90	77	62	63	64	66	67	69	71	73	75	77	79	81	83	86	0	0	0	0	0	0	0	0	0	0	0	0
DB EE Contributions	31	29	27	25	23	21	19	18	17	15	8	7	6	5	4	3	3	2	2	1	1	1	1	0	0	0	0	0	0	0
DCR ER Contributions	48	51	54	57	61	65	69	72	76	80	83	87	90	94	97	100	103	107	110	113	116	119	122	126	129	132	135	139	142	146
DB ER Contributions on DCR Pay	6	7	8	9	9	10	10	11	12	12	13	13	14	14	15	15	16	16	0	0	0	0	0	0	0	0	0	0	0	0
DB ER Contributions on DB Pay	41	37	34	31	27	24	21	19	16	14	12	10	8	7	6	5	4	3	2	2	1	1	1	1	0	0	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



	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Funding Ratios	93%	98%	102%	107%	112%	114%	116%	118%	120%	122%	125%	128%	132%	136%	140%

	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051
Funding Ratios	146%	152%	158%	166%	173%	182%	191%	202%	214%	228%	244%	262%	282%	306%	333%

Section 3.6A: Table of Projected Actuarial Results ($'s in 000's)

Fiscal Year End	Valuation Amounts on July 1 (Beginning of FY): Actuarial Assets	Accrued Liability	Funding Ratio	Unfunded Liability / (Surplus)	Cash Flow Amounts during Following 12 Months: Total Salaries	Actuarial Contrib. Rates: DB	DCR	Total	DB Contributions: Employer	State Assistance	Employee	Total	Benefit Payments	Deferred Asset Gain / (Loss)
2022	$ 9,178,106	$ 9,911,490	92.6%	$ 733,384	$ 750,334	25.49%	6.36%	31.85%	$ 46,521	$ 142,665	$ 31,383	$ 220,569	$ 658,544	$ 979,677
2023	9,791,279	10,028,893	97.6%	237,614	755,203	17.90%	6.72%	24.62%	44,104	91,029	29,220	164,353	682,272	687,471
2024	10,338,873	10,123,941	102.1%	(214,932)	762,084	17.36%	7.03%	24.39%	42,143	90,155	27,025	159,323	706,663	371,154
2025	10,899,272	10,193,784	106.9%	(705,488)	770,330	15.10%	7.45%	22.55%	39,364	76,956	24,990	141,310	730,156	0
2026	11,489,368	10,240,200	112.2%	(1,249,168)	779,629	12.64%	7.84%	20.48%	36,799	61,747	23,100	121,646	753,067	0
2027	11,680,120	10,261,023	113.8%	(1,419,097)	789,757	12.31%	8.23%	20.54%	34,197	63,023	21,189	118,409	774,027	0
2028	11,860,260	10,256,329	115.6%	(1,603,931)	801,009	12.03%	8.58%	20.61%	31,880	64,481	19,496	115,857	795,147	0
2029	12,029,532	10,225,194	117.6%	(1,804,338)	813,553	11.75%	8.91%	20.66%	29,695	65,898	17,944	113,537	815,453	0
2030	12,188,201	10,166,564	119.9%	(2,021,637)	827,298	11.51%	9.20%	20.71%	27,797	67,425	16,615	111,837	833,857	0
2031	12,338,080	10,080,920	122.4%	(2,257,160)	842,250	11.29%	9.47%	20.76%	26,025	69,065	15,430	110,520	850,139	0
2032	12,481,100	9,969,584	125.2%	(2,511,516)	858,486	11.10%	9.71%	20.81%	24,466	70,825	8,156	103,447	858,425	0
2033	12,619,080	9,832,428	128.3%	(2,786,652)	876,187	10.95%	9.91%	20.86%	23,219	72,724	6,834	102,777	870,267	0
2034	12,754,565	9,669,875	131.9%	(3,084,690)	894,739	10.80%	10.09%	20.89%	22,100	74,532	5,726	102,358	878,203	0
2035	12,891,657	9,484,401	135.9%	(3,407,256)	914,255	10.70%	10.25%	20.95%	21,119	76,706	4,754	102,579	882,220	0
2036	13,035,192	9,278,669	140.5%	(3,756,523)	934,724	10.61%	10.38%	20.99%	20,377	78,797	3,926	103,100	883,293	0
2037	13,188,986	9,054,611	145.7%	(4,134,375)	956,215	10.55%	10.48%	21.03%	19,889	80,991	3,156	104,036	881,551	0
2038	13,357,129	8,814,138	151.5%	(4,542,991)	978,629	10.50%	10.57%	21.07%	19,475	83,281	2,544	105,300	876,734	0
2039	13,544,196	8,559,463	158.2%	(4,984,733)	1,001,616	10.47%	10.64%	21.11%	19,231	85,638	2,003	106,872	870,111	0
2040	13,753,765	8,291,660	165.9%	(5,462,105)	1,025,544	0.20%	10.70%	10.90%	2,051	0	1,641	3,692	861,473	0
2041	13,877,722	8,012,059	173.2%	(5,865,663)	1,050,331	0.15%	10.75%	10.90%	1,575	0	1,260	2,835	848,623	0
2042	14,023,350	7,724,346	181.5%	(6,299,004)	1,075,968	0.11%	10.78%	10.89%	1,183	0	968	2,151	832,948	0
2043	14,195,351	7,431,010	191.0%	(6,764,341)	1,102,329	0.09%	10.81%	10.90%	992	0	772	1,764	813,044	0
2044	14,400,354	7,136,152	201.8%	(7,264,202)	1,129,431	0.06%	10.83%	10.89%	678	0	565	1,243	791,506	0
2045	14,642,346	6,841,474	214.0%	(7,800,872)	1,157,134	0.05%	10.85%	10.90%	578	0	463	1,041	767,682	0
2046	14,926,751	6,549,448	227.9%	(8,377,303)	1,185,529	0.03%	10.86%	10.89%	356	0	356	712	744,305	0
2047	15,256,103	6,259,887	243.7%	(8,996,216)	1,214,554	0.03%	10.87%	10.90%	364	0	243	607	720,850	0
2048	15,634,029	5,973,113	261.7%	(9,660,916)	1,244,336	0.02%	10.88%	10.90%	248	0	124	372	698,677	0
2049	16,062,648	5,688,055	282.4%	(10,374,593)	1,274,685	0.01%	10.89%	10.90%	127	0	127	254	676,267	0
2050	16,546,068	5,405,124	306.1%	(11,140,944)	1,305,812	0.01%	10.89%	10.90%	131	0	131	262	654,115	0
2051	17,088,195	5,124,249	333.5%	(11,963,946)	1,337,788	0.01%	10.89%	10.90%	134	0	0	134	631,192	0
								Total	**$ 536,818**	**$ 1,415,938**	**$ 270,141**	**$ 2,222,897**		

Pension unfunded liability layered amortization amounts are maintained after the pension trust is projected to be 100% funded.

Section 3.6A: Table of Projected Actuarial Results ($'s in 000's) (continued)

Fiscal Year End	Valuation Amounts on July 1 (Beginning of FY)					
	Funding Ratio			Unfunded Liability / (Surplus)		
	Pension	Healthcare	Total	Pension	Healthcare	Total
2022	79.1%	133.9%	92.6%	$ 1,561,518	$ (828,134)	$ 733,384
2023	83.2%	141.1%	97.6%	1,266,857	(1,029,243)	237,614
2024	86.8%	147.4%	102.1%	999,240	(1,214,172)	(214,932)
2025	90.3%	155.1%	106.9%	733,329	(1,438,817)	(705,488)
2026	94.2%	163.5%	112.2%	437,124	(1,686,292)	(1,249,168)
2027	94.8%	167.2%	113.8%	392,379	(1,811,476)	(1,419,097)
2028	95.5%	171.2%	115.6%	342,345	(1,946,276)	(1,603,931)
2029	96.2%	175.8%	117.6%	286,499	(2,090,837)	(1,804,338)
2030	97.0%	180.9%	119.9%	224,495	(2,246,132)	(2,021,637)
2031	97.9%	186.6%	122.4%	155,794	(2,412,954)	(2,257,160)
2032	98.9%	192.9%	125.2%	79,928	(2,591,444)	(2,511,516)
2033	100.1%	200.1%	128.3%	(3,860)	(2,782,792)	(2,786,652)
2034	101.4%	208.2%	131.9%	(96,549)	(2,988,141)	(3,084,690)
2035	102.9%	217.3%	135.9%	(198,734)	(3,208,522)	(3,407,256)
2036	104.7%	227.5%	140.5%	(311,256)	(3,445,267)	(3,756,523)
2037	106.8%	239.0%	145.7%	(434,961)	(3,699,414)	(4,134,375)
2038	109.2%	251.9%	151.5%	(570,605)	(3,972,386)	(4,542,991)
2039	112.0%	266.4%	158.2%	(719,254)	(4,265,479)	(4,984,733)
2040	115.2%	282.9%	165.9%	(881,936)	(4,580,169)	(5,462,105)
2041	117.0%	301.5%	173.2%	(947,493)	(4,918,170)	(5,865,663)
2042	119.0%	322.4%	181.5%	(1,017,888)	(5,281,116)	(6,299,004)
2043	121.3%	346.1%	191.0%	(1,093,557)	(5,670,784)	(6,764,341)
2044	124.0%	372.4%	201.8%	(1,174,895)	(6,089,307)	(7,264,202)
2045	127.0%	401.6%	214.0%	(1,262,219)	(6,538,653)	(7,800,872)
2046	130.5%	434.0%	227.9%	(1,356,129)	(7,021,174)	(8,377,303)
2047	134.5%	470.0%	243.7%	(1,456,929)	(7,539,287)	(8,996,216)
2048	139.1%	510.1%	261.7%	(1,565,199)	(8,095,717)	(9,660,916)
2049	144.5%	555.4%	282.4%	(1,681,447)	(8,693,146)	(10,374,593)
2050	150.7%	606.6%	306.1%	(1,806,230)	(9,334,714)	(11,140,944)
2051	157.9%	665.0%	333.5%	(1,940,279)	(10,023,667)	(11,963,946)

Pension unfunded liability layered amortization amounts are maintained after the pension trust is projected to be 100% funded.

Section 3.6B: Table of Projected Actuarial Results ($'s in 000's)

Fiscal Year End	Valuation Amounts on July 1 (Beginning of FY)				Cash Flow Amounts during Following 12 Months									Deferred Asset Gain / (Loss)
						Actuarial Contrib. Rates			DB Contributions					
	Actuarial Assets	Accrued Liability	Funding Ratio	Unfunded Liability / (Surplus)	Total Salaries	DB	DCR	Total	Employer	State Assistance	Employee	Total	Benefit Payments	
2022	$ 9,178,106	$ 9,911,490	92.6%	$ 733,384	$ 750,334	25.49%	6.36%	31.85%	$ 46,521	$ 142,665	$ 31,383	$ 220,569	$ 658,544	$ 979,677
2023	9,791,279	10,028,893	97.6%	237,614	755,203	17.90%	6.72%	24.62%	44,104	91,029	29,220	164,353	682,272	687,471
2024	10,338,873	10,123,941	102.1%	(214,932)	762,084	17.36%	7.03%	24.39%	42,143	90,155	27,025	159,323	706,663	371,154
2025	10,899,272	10,193,784	106.9%	(705,488)	770,330	15.10%	7.45%	22.55%	39,364	76,956	24,990	141,310	730,156	0
2026	11,489,368	10,240,200	112.2%	(1,249,168)	779,629	12.64%	7.84%	20.48%	36,799	61,747	23,100	121,646	753,067	0
2027	11,680,120	10,261,023	113.8%	(1,419,097)	789,757	12.31%	8.23%	20.54%	34,197	63,023	21,189	118,409	774,027	0
2028	11,860,260	10,256,329	115.6%	(1,603,931)	801,009	12.03%	8.58%	20.61%	31,880	64,481	19,496	115,857	795,147	0
2029	12,029,532	10,225,194	117.6%	(1,804,338)	813,553	11.75%	8.91%	20.66%	29,695	65,898	17,944	113,537	815,453	0
2030	12,188,201	10,166,564	119.9%	(2,021,637)	827,298	11.51%	9.20%	20.71%	27,797	67,425	16,615	111,837	833,857	0
2031	12,338,080	10,080,920	122.4%	(2,257,160)	842,250	11.29%	9.47%	20.76%	26,025	69,065	15,430	110,520	850,139	0
2032	12,481,100	9,969,584	125.2%	(2,511,516)	858,486	11.10%	9.71%	20.81%	24,466	70,825	8,156	103,447	858,425	0
2033	12,619,080	9,832,428	128.3%	(2,786,652)	876,187	1.05%	9.91%	10.96%	9,200	0	6,834	16,034	870,267	0
2034	12,661,947	9,669,875	130.9%	(2,992,072)	894,739	0.84%	10.09%	10.93%	7,516	0	5,726	13,242	878,203	0
2035	12,697,059	9,484,401	133.9%	(3,212,658)	914,255	0.68%	10.25%	10.93%	6,217	0	4,754	10,971	882,220	0
2036	12,728,424	9,278,669	137.2%	(3,449,755)	934,724	0.53%	10.38%	10.91%	4,954	0	3,926	8,880	883,293	0
2037	12,758,984	9,054,611	140.9%	(3,704,373)	956,215	0.43%	10.48%	10.91%	4,112	0	3,156	7,268	881,551	0
2038	12,792,076	8,814,138	145.1%	(3,977,938)	978,629	0.33%	10.57%	10.90%	3,229	0	2,544	5,773	876,734	0
2039	12,831,180	8,559,463	149.9%	(4,271,717)	1,001,616	0.26%	10.64%	10.90%	2,605	0	2,003	4,608	870,111	0
2040	12,878,942	8,291,660	155.3%	(4,587,282)	1,025,544	0.20%	10.70%	10.90%	2,051	0	1,641	3,692	861,473	0
2041	12,938,337	8,012,059	161.5%	(4,926,278)	1,050,331	0.15%	10.75%	10.90%	1,575	0	1,260	2,835	848,623	0
2042	13,014,639	7,724,346	168.5%	(5,290,293)	1,075,968	0.11%	10.78%	10.89%	1,183	0	968	2,151	832,948	0
2043	13,112,197	7,431,010	176.5%	(5,681,187)	1,102,329	0.09%	10.81%	10.90%	992	0	772	1,764	813,044	0
2044	13,237,264	7,136,152	185.5%	(6,101,112)	1,129,431	0.06%	10.83%	10.89%	678	0	565	1,243	791,506	0
2045	13,393,420	6,841,474	195.8%	(6,551,946)	1,157,134	0.05%	10.85%	10.90%	578	0	463	1,041	767,682	0
2046	13,585,654	6,549,448	207.4%	(7,036,206)	1,185,529	0.03%	10.86%	10.89%	356	0	356	712	744,305	0
2047	13,816,033	6,259,887	220.7%	(7,556,146)	1,214,554	0.03%	10.87%	10.90%	364	0	243	607	720,850	0
2048	14,087,681	5,973,113	235.9%	(8,114,568)	1,244,336	0.02%	10.88%	10.90%	248	0	124	372	698,677	0
2049	14,402,180	5,688,055	253.2%	(8,714,125)	1,274,685	0.01%	10.89%	10.90%	127	0	127	254	676,267	0
2050	14,763,057	5,405,124	273.1%	(9,357,933)	1,305,812	0.01%	10.89%	10.90%	131	0	131	262	654,115	0
2051	15,173,598	5,124,249	296.1%	(10,049,349)	1,337,788	0.01%	10.89%	10.90%	134	0	0	134	631,192	0
								Total	**$ 429,241**	**$ 863,269**	**$ 270,141**	**$ 1,562,651**		

Pension unfunded liability layered amortization amounts are reduced to zero when the pension trust is projected to be 100% funded. The healthcare unfunded liability amortization amounts would also be reduced to zero since the healthcare trust is currently more than 100% funded.

Section 3.6B: Table of Projected Actuarial Results ($'s in 000's) (continued)

Fiscal Year End	Valuation Amounts on July 1 (Beginning of FY)					
	Funding Ratio			Unfunded Liability / (Surplus)		
	Pension	Healthcare	Total	Pension	Healthcare	Total
2022	79.1%	133.9%	92.6%	$ 1,561,518	$ (828,134)	$ 733,384
2023	83.2%	141.1%	97.6%	1,266,857	(1,029,243)	237,614
2024	86.8%	147.4%	102.1%	999,240	(1,214,172)	(214,932)
2025	90.3%	155.1%	106.9%	733,329	(1,438,817)	(705,488)
2026	94.2%	163.5%	112.2%	437,124	(1,686,292)	(1,249,168)
2027	94.8%	167.2%	113.8%	392,379	(1,811,476)	(1,419,097)
2028	95.5%	171.2%	115.6%	342,345	(1,946,276)	(1,603,931)
2029	96.2%	175.8%	117.6%	286,499	(2,090,837)	(1,804,338)
2030	97.0%	180.9%	119.9%	224,495	(2,246,132)	(2,021,637)
2031	97.9%	186.6%	122.4%	155,794	(2,412,954)	(2,257,160)
2032	98.9%	192.9%	125.2%	79,928	(2,591,444)	(2,511,516)
2033	100.1%	200.1%	128.3%	(3,860)	(2,782,792)	(2,786,652)
2034	100.1%	208.2%	130.9%	(3,931)	(2,988,141)	(2,992,072)
2035	100.1%	217.3%	133.9%	(4,136)	(3,208,522)	(3,212,658)
2036	100.1%	227.5%	137.2%	(4,488)	(3,445,267)	(3,449,755)
2037	100.1%	239.0%	140.9%	(4,959)	(3,699,414)	(3,704,373)
2038	100.1%	251.9%	145.1%	(5,552)	(3,972,386)	(3,977,938)
2039	100.1%	266.4%	149.9%	(6,238)	(4,265,479)	(4,271,717)
2040	100.1%	282.9%	155.3%	(7,113)	(4,580,169)	(4,587,282)
2041	100.1%	301.5%	161.5%	(8,108)	(4,918,170)	(4,926,278)
2042	100.2%	322.4%	168.5%	(9,177)	(5,281,116)	(5,290,293)
2043	100.2%	346.1%	176.5%	(10,403)	(5,670,784)	(5,681,187)
2044	100.2%	372.4%	185.5%	(11,805)	(6,089,307)	(6,101,112)
2045	100.3%	401.6%	195.8%	(13,293)	(6,538,653)	(6,551,946)
2046	100.3%	434.0%	207.4%	(15,032)	(7,021,174)	(7,036,206)
2047	100.4%	470.0%	220.7%	(16,859)	(7,539,287)	(7,556,146)
2048	100.5%	510.1%	235.9%	(18,851)	(8,095,717)	(8,114,568)
2049	100.6%	555.4%	253.2%	(20,979)	(8,693,146)	(8,714,125)
2050	100.7%	606.6%	273.1%	(23,219)	(9,334,714)	(9,357,933)
2051	100.8%	665.0%	296.1%	(25,682)	(10,023,667)	(10,049,349)

Pension unfunded liability layered amortization amounts are reduced to zero when the pension trust is projected to be 100% funded. The healthcare unfunded liability amortization amounts would also be reduced to zero since the healthcare trust is currently more than 100% funded.

Section 3.7: Projected Pension Benefit Recipients and Amounts ($'s in 000's)

Fiscal Year End	Pension Recipient Counts	Pension Benefit Amounts
2022	13,972	$ 523,901
2023	14,475	541,571
2024	14,931	558,743
2025	15,322	574,804
2026	15,654	589,941
2027	15,927	603,906
2028	16,120	616,957
2029	16,245	628,371
2030	16,289	638,195
2031	16,267	646,049
2032	16,156	646,045
2033	15,986	649,844
2034	15,736	651,554
2035	15,417	651,076
2036	15,036	648,676
2037	14,618	644,278
2038	14,136	638,247
2039	13,640	630,181
2040	13,127	620,418
2041	12,587	609,059
2042	12,032	596,090
2043	11,460	581,732
2044	10,885	566,218
2045	10,317	549,623
2046	9,759	532,176
2047	9,212	514,031
2048	8,685	495,291
2049	8,174	476,108
2050	7,678	456,645
2051	7,195	437,031
2052	6,728	417,362
2053	6,277	397,718
2054	5,844	378,168
2055	5,429	358,769
2056	5,032	339,565
2057	4,655	320,596
2058	4,295	301,889
2059	3,953	283,470
2060	3,629	265,363

Fiscal Year End	Pension Recipient Counts	Pension Benefit Amounts
2061	3,322	$ 247,589
2062	3,032	230,176
2063	2,757	213,153
2064	2,498	196,552
2065	2,253	180,409
2066	2,023	164,764
2067	1,808	149,662
2068	1,607	135,141
2069	1,419	121,258
2070	1,246	108,058
2071	1,085	95,589
2072	938	83,897
2073	805	73,022
2074	684	62,995
2075	577	53,829
2076	481	45,531
2077	397	38,093
2078	324	31,501
2079	261	25,726
2080	208	20,732
2081	164	16,473
2082	128	12,898
2083	97	9,943
2084	74	7,541
2085	54	5,622
2086	39	4,118
2087	28	2,963
2088	20	2,092
2089	14	1,450
2090	10	987
2091	7	659
2092	4	434
2093	3	281
2094	2	180
2095	2	114
2096	1	73
2097	1	45
2098	0	0
2099	0	0

Counts include retirees, disabilitants, and beneficiaries.

Section 4: Member Data

Section 4.1: Summary of Members Included

As of June 30	2017	2018	2019	2020	2021
Active Members					
1. Number	4,772	4,418	4,044	3,789	3,396[1]
2. Average Age	50.86	51.13	51.48	51.92	52.14
3. Average Credited Service	18.12	18.62	19.21	19.76	20.31
4. Average Entry Age	32.74	32.51	32.27	32.16	31.83
5. Average Annual Earnings	$ 86,327	$ 87,374	$ 88,879	$ 90,564	$ 94,143
6. Number Vested	4,772	4,418	4,044	3,789	3,396
7. Percent Who Are Vested	100.0%	100.0%	100.0%	100.0%	100.0%
Retirees, Disabilitants, and Beneficiaries					
1. Number	12,983	13,277	13,491	13,689	13,972
2. Average Age	70.36	70.78	71.30	71.85	72.26
3. Average Years Since Retirement	14.13	14.40	14.74	15.06	15.24
4. Average Monthly Pension Benefit					
a. Base	$ 2,228	$ 2,273	$ 2,303	$ 2,330	$ 2,363
b. COLA[2]	128	128	126	126	125
c. PRPA[2]	506	488	518	519	491
d. Adjustment	0	0	0	0	(1)
e. Sick	62	65	67	68	70
f. Total	$ 2,924	$ 2,954	$ 3,014	$ 3,043	$ 3,048
Vested Terminations (vested at termination, not refunded contributions, or commenced benefit)					
1. Number	876	797	812	764	727
2. Average Age	50.82	51.01	51.71	52.37	52.68
3. Average Monthly Pension Benefit	$ 1,441	$ 1,350	$ 1,534	$ 1,579	$ 1,635
Non-Vested Terminations (not vested at termination, not refunded contributions)					
1. Number	1,994	1,900	1,810	1,744	1,679
2. Average Account Balance	$ 20,290	$ 20,872	$ 21,612	$ 22,591	$ 23,388
Total Number of Members	**20,625**	**20,392**	**20,157**	**19,986**	**19,774**

[1] Includes 1,060 male active members and 2,336 female active members.

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

Summary of Members Included

As of June 30, 2021	DB Tier 1	DB Tier 2	DB Total	DCR Tier 3	Grand Total
Active Members					
1. Number	142	3,254	3,396	5,521	8,917
2. Average Age	63.37	51.65	52.14	41.90	45.80
3. Average Credited Service	30.23	19.88	20.31	6.34	11.66
4. Average Entry Age	33.14	31.77	31.83	35.56	34.14
5. Annual Earnings					
a. Total	$ 14,388,684	$ 305,322,636	$ 319,711,320	$ 408,804,718	$ 728,516,038
b. Average	$ 101,329	$ 93,830	$ 94,143	$ 74,045	$ 81,700

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

As of June 30, 2021	Tier 1	Tier 2	Total
Retirees, Disabilitants, and Beneficiaries			
1. Number	10,454	3,518	13,972
2. Average Age	74.32	66.14	72.26
3. Average Years Since Retirement	18.30	6.14	15.24
4. Average Monthly Pension Benefit			
a. Base	$ 2,375	$ 2,329	$ 2,363
b. COLA	148	57	125
c. PRPA	630	77	491
d. Adjustment	(1)	(1)	(1)
e. Sick	69	71	70
f. Total	$ 3,221	$ 2,533	$ 3,048

Summary of Members Included

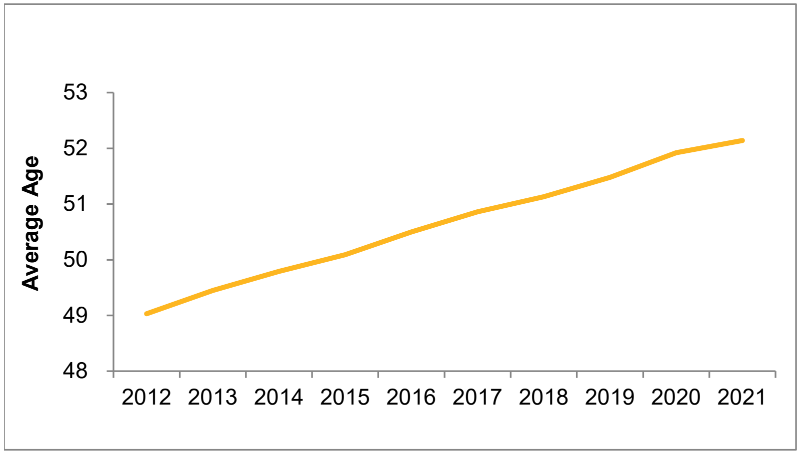
As of June 30, 2021	Active Members	Inactive Members: Retirees	Covered Spouses	Covered Children / Dependents	Deferred	Total Inactive Members
Retiree Medical Participants						
1. Retiree Coverage Only	3,366	7,679	0	0	369	8,048
2. Retiree + Spouse	0	3,935	3,935	0	602	8,472
3. Retiree + Children / Dependents	0	193	0	179	0	372
4. Family	0	331	331	482	0	1,144
5. Total	3,366	12,138	4,266	661	971	18,036

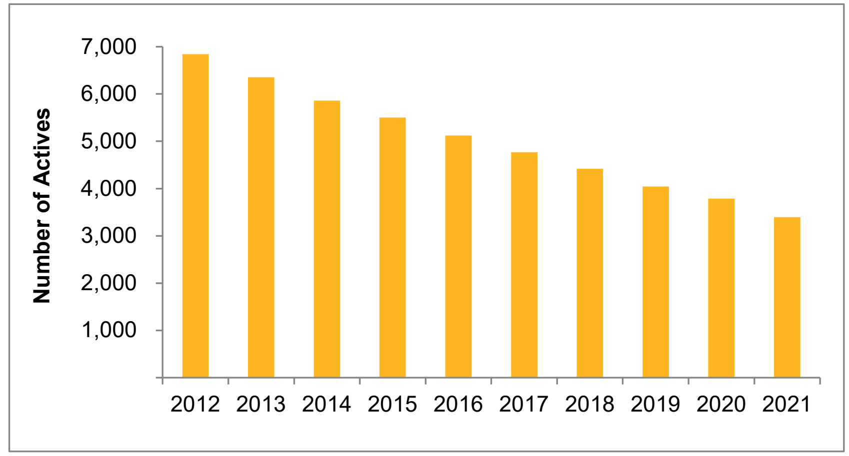
As of June 30, 2021	Retirees	Covered Spouses	Covered Children / Dependents	Deferred	Total Inactive Members
Retiree Medical Participants					
1. Pre-Medicare	2,243	1,274	661	954	5,132
2. Medicare Part A & B	9,685	2,960	0	17	12,662
3. Medicare Part B Only	210	32	0	0	242
4. Total	12,138	4,266	661	971	18,036

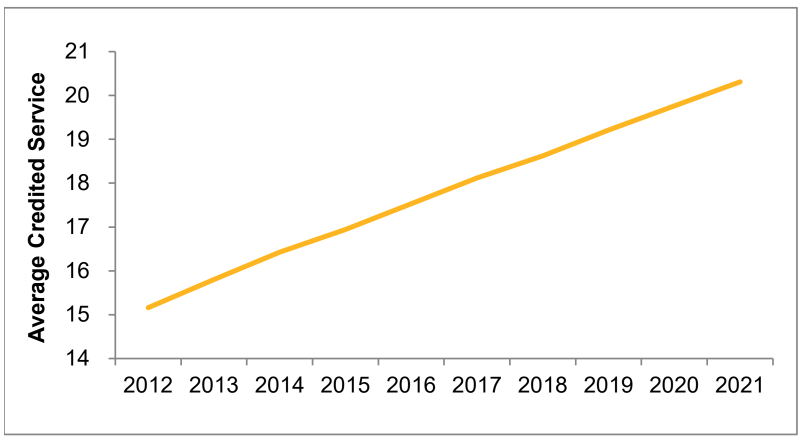
As of June 30, 2021	Retirees
Summary of Retiree Medical Data Received	
1. Retiree records on pension data	13,972
2. Remove duplicates on pension data	(528)
3. Valued in a different retiree healthcare plan[1]	(837)
4. Records without medical coverage	(506)
5. Medical only retirees	37
6. Total	12,138

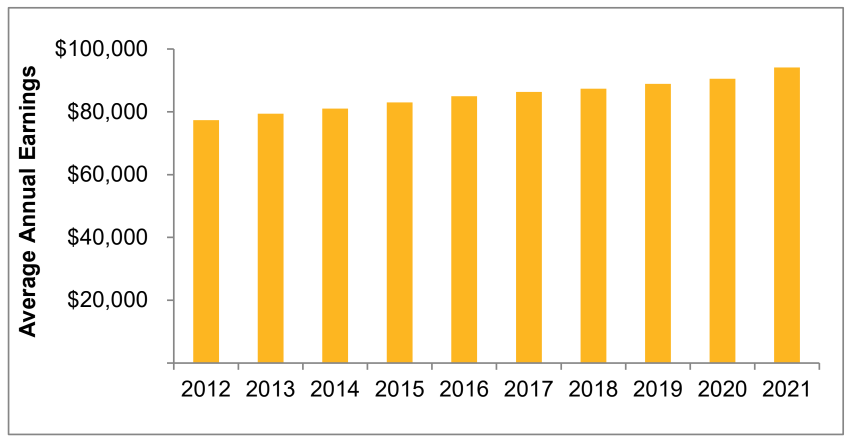
[1] Each member's retiree medical benefits are valued in the plan indicated in the data from Aetna

Summary of Members Included - Active Members at June 30









Average annual earnings (“valuation pay”) 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	53	4,432,577	83,634
40 - 44	530	47,463,436	89,554
45 - 49	858	80,163,262	93,430
50 - 54	902	86,221,152	95,589
55 - 59	582	55,038,876	94,569
60 - 64	295	28,816,905	97,684
65 - 69	111	11,205,958	100,955
70 - 74	48	4,616,849	96,184
75+	17	1,752,305	103,077
Total	**3,396**	**$319,711,320**	**$ 94,143**

Annual Earnings by Credited Service

Years of Service	Number	Total Annual Earnings	Average Annual Earnings
0	0	$ 0	$ 0
1	3	158,220	52,740
2	1	44,803	44,803
3	7	484,633	69,233
4	12	801,689	66,807
0 - 4	**23**	**$ 1,489,345**	**$ 64,754**
5 - 9	89	6,523,824	73,301
10 - 14	252	21,173,526	84,022
15 - 19	1,262	116,203,267	92,079
20 - 24	1,208	116,732,875	96,633
25 - 29	397	40,101,280	101,011
30 - 34	129	13,459,854	104,340
35 - 39	24	2,701,868	112,578
40+	12	1,325,481	110,457
Total	**3,396**	**$319,711,320**	**$ 94,143**

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	0	3	13	36	1	0	0	0	0	53
40 - 44	5	30	83	349	63	0	0	0	0	530
45 - 49	1	25	69	346	381	36	0	0	0	858
50 - 54	11	18	46	265	405	141	16	0	0	902
55 - 59	2	9	20	149	204	136	58	4	0	582
60 - 64	3	2	15	72	105	61	29	6	2	295
65 - 69	0	2	4	29	33	13	20	9	1	111
70 - 74	1	0	1	10	13	8	5	4	6	48
75+	0	0	1	6	3	2	1	1	3	17
Total	**23**	**89**	**252**	**1,262**	**1,208**	**397**	**129**	**24**	**12**	**3,396**

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

		Inactive Members					
	Active Members	Due a Refund	Deferred Benefits	Retired Members	Disabled Members	Bene-ficiaries	Total
As of June 30, 2020	**3,789**	**1,744**	**764**	**12,267**	**20**	**1,402**	**19,986**
Vested Terminations	(116)	(3)	119	0	0	0	0
Non-Vested Terminations	(3)	3	0	0	0	0	0
Refund of Contributions	(1)	(41)	(3)	0	0	0	(45)
Disability Retirements	(1)	0	0	0	1	0	0
Age Retirements	(326)	(7)	(113)	447	(1)	0	0
Deaths With Beneficiary	(1)	0	(2)	(127)	0	130	0
Deaths Without Beneficiary	(2)	(4)	(2)	(124)	0	(46)	(178)
Data Corrections	0	(1)	1	0	0	(8)	(8)
Transfers In/Out	0	0	0	0	0	0	0
Rehires	57	(16)	(37)	(4)	0	0	0
Pick Ups*	0	4	0	0	0	15	19
Net Change	**(393)**	**(65)**	**(37)**	**192**	**0**	**91**	**(212)**
As of June 30, 2021	**3,396**	**1,679**	**727**	**12,459**	**20**	**1,493**	**19,774**

* 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, 2020	**3,746**	**12,019**	**4,220**	**669**	**952**	**17,860**
Vested Terminations	(87)	0	0	0	87	87
Non-Vested Terminations	(2)	0	0	0	0	0
Refund of Contributions	(1)	0	0	0	(3)	(3)
Disability Retirements	(1)	1	0	0	0	1
Age Retirements	(257)	257	131	53	0	441
Deferred Retirements	0	51	28	10	(51)	38
Retired without Medical Coverage	(82)	0	0	0	82	82
Deceased	(3)	(259)	(28)	(3)	(8)	(298)
New Beneficiaries	0	40	(40)	0	0	0
Added Retiree Medical Coverage	0	40	13	1	(40)	14
Added Dependent Coverage	0	0	41	27	0	68
Dropped Retiree Medical Coverage	0	(6)	(1)	(1)	6	(2)
Dropped Dependent Coverage	0	0	(97)	(94)	0	(191)
Rehires	55	(3)	(1)	(1)	(52)	(57)
Transfers In/Out	(2)	(2)	0	0	(2)	(4)
Net Change	**(380)**	**119**	**46**	**(8)**	**19**	**176**
As of June 30, 2021	**3,366**	**12,138**	**4,266**	**661**	**971**	**18,036**

Section 4.4: Schedule of Active Member Data

Valuation Date	Number	Annual Earnings (000's)	Annual Average Earnings	Percent Increase in Average Earnings	Number of Participating Employers
June 30, 2021	3,396	$ 319,711	$ 94,143	4.0%	56
June 30, 2020	3,789	343,146	90,564	1.9%	56
June 30, 2019	4,044	359,426	88,879	1.7%	56
June 30, 2018	4,418	386,016	87,373	1.2%	56
June 30, 2017	4,772	411,951	86,327	1.6%	57
June 30, 2016	5,123	435,222	84,955	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

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 FY21 in employer list	$ 806,609
b) DRB actual reported salaries FY21 in valuation data	719,382
c) Annualized valuation data	728,516
d) Valuation payroll as of June 30, 2021	756,805
e) Rate payroll for FY22	750,334
f) Rate payroll for FY24	762,084

a) Actual reported salaries from DRB employer listing showing all payroll paid during FY21, including those who were not active as of June 30, 2021
b) Payroll from valuation data for people who are in active status as of June 30, 2021
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	2017	2018	2019	2020	2021
Service					
1. Number	376	465	367	331	447
2. Average Age at Commencement	59.77	59.98	59.87	59.71	59.79
3. Average Monthly Pension Benefit	$ 3,300	$ 3,527	$ 3,562	$ 3,693	$ 3,593
Survivor (including surviving spouse and DROs)					
1. Number	108	87	96	127	145
2. Average Age at Commencement	70.57	71.61	74.36	74.16	76.80
3. Average Monthly Pension Benefit	$ 1,643	$ 2,022	$ 1,795	$ 1,903	$ 1,951
Disability					
1. Number	3	3	5	2	1
2. Average Age at Commencement	43.30	49.92	51.51	53.65	54.35
3. Average Monthly Pension Benefit	$ 3,678	$ 3,625	$ 4,182	$ 3,019	$ 4,886
Total					
1. Number	487	555	468	460	593
2. Average Age at Commencement	62.06	61.75	62.75	63.67	63.94
3. Average Monthly Pension Benefit	$ 2,935	$ 3,292	$ 3,206	$ 3,196	$ 3,194

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 7/1/2020 – 6/30/2021:							
Average Monthly Pension	$ 451	$ 764	$ 1,509	$ 2,684	$ 3,625	$ 4,659	$ 6,090
Number of Recipients	8	24	33	83	142	112	46
Period 7/1/2019 – 6/30/2020:							
Average Monthly Pension	$ 243	$ 1,054	$ 1,647	$ 2,600	$ 3,616	$ 4,874	$ 6,772
Number of Recipients	8	19	26	72	90	78	40
Period 7/1/2018 – 6/30/2019:							
Average Monthly Pension	$ 334	$ 891	$ 1,540	$ 2,760	$ 3,567	$ 4,666	$ 6,777
Number of Recipients	4	23	39	87	93	85	41
Period 7/1/2017 – 6/30/2018:							
Average Monthly Pension	$ 204	$ 899	$ 1,583	$ 2,583	$ 3,422	$ 4,580	$ 6,083
Number of Recipients	5	21	61	85	109	130	57
Period 7/1/2016 – 6/30/2017:							
Average Monthly Pension	$ 426	$ 795	$ 1,626	$ 2,433	$ 3,549	$ 4,536	$ 6,351
Number of Recipients	10	22	60	75	100	64	48
Period 7/1/2015 – 6/30/2016:							
Average Monthly Pension	$ 245	$ 1,002	$ 1,535	$ 2,540	$ 3,445	$ 4,472	$ 6,168
Number of Recipients	11	31	82	69	105	74	54
Period 7/1/2014 – 6/30/2015:							
Average Monthly Pension	$ 349	$ 1,041	$ 1,342	$ 2,205	$ 3,267	$ 4,220	$ 5,900
Number of Recipients	11	33	70	67	137	125	94
Period 7/1/2013 – 6/30/2014:							
Average Monthly Pension	$ 235	$ 904	$ 1,435	$ 2,398	$ 3,016	$ 4,073	$ 7,485
Number of Recipients	8	31	31	28	22	18	12
Period 7/1/2012 – 6/30/2013:							
Average Monthly Pension	$ 253	$ 1,030	$ 1,496	$ 2,450	$ 3,281	$ 4,384	$ 6,052
Number of Recipients	10	57	67	90	101	79	64
Period 7/1/2011 – 6/30/2012:							
Average Monthly Pension	$ 353	$ 1,064	$ 1,512	$ 2,241	$ 3,276	$ 4,320	$ 5,739
Number of Recipients	11	43	62	61	118	81	58

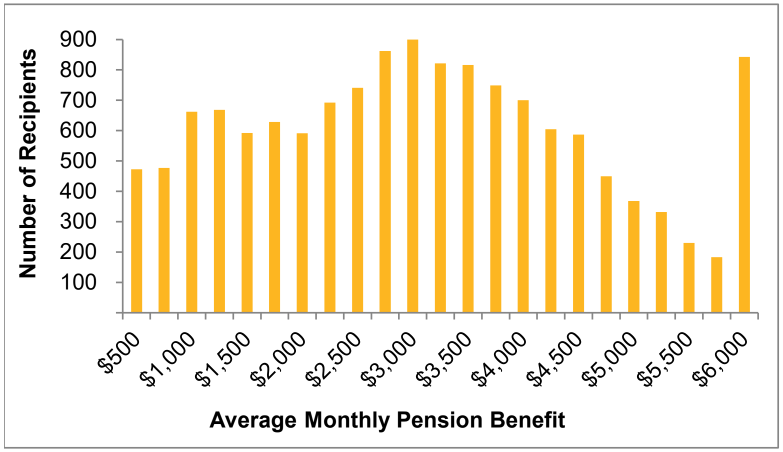
“Average Monthly Pension” includes postretirement pension adjustments and cost-of-living increases.

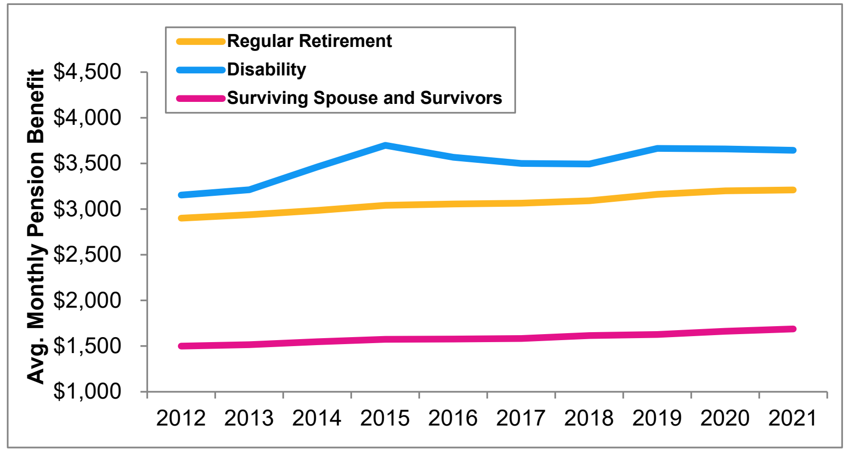
Beneficiaries are not included in the table above.

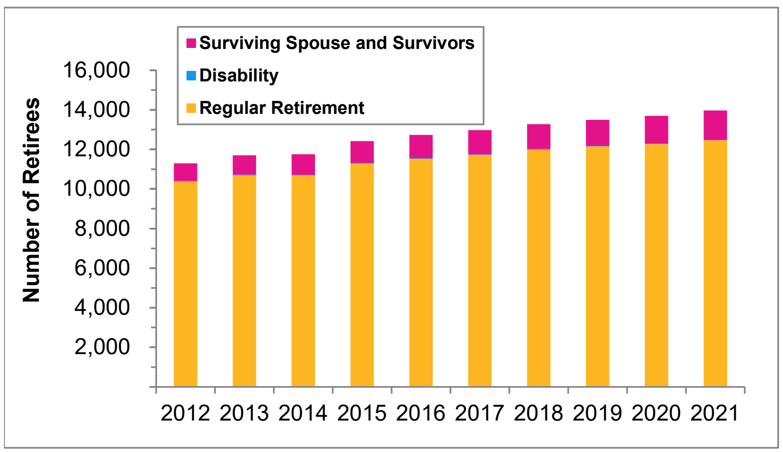
Section 4.7: Summary of All Pension Benefit Recipients

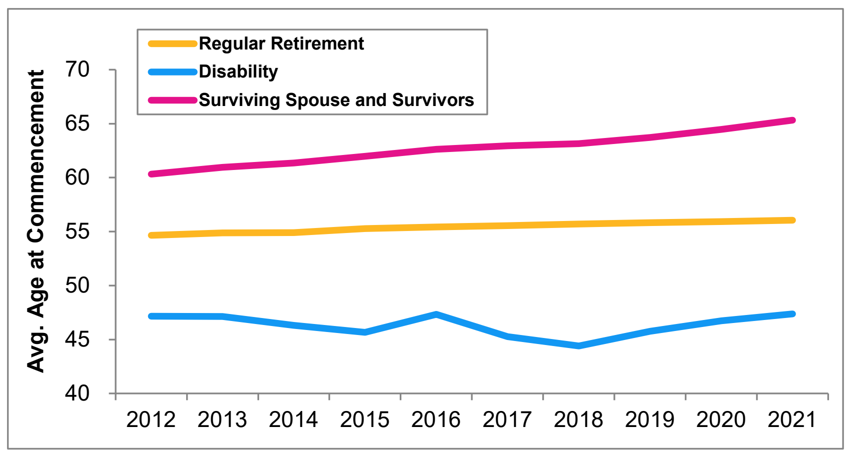
As of June 30	2017	2018	2019	2020	2021
Service					
1. Number, Fiscal Year Start	11,527	11,716	11,988	12,147	12,267
2. Net Change	189	272	159	120	192
3. Number, Fiscal Year End	11,716	11,988	12,147	12,267	12,459
4. Average Age at Commencement	55.55	55.70	55.82	55.93	56.05
5. Average Current Age	70.09	70.50	70.99	71.50	71.85
6. Average Monthly Pension Benefit	$ 3,064	$ 3,093	$ 3,161	$ 3,199	$ 3,210
Surviving Spouse (including DROs)					
1. Number, Fiscal Year Start	1,168	1,237	1,261	1,315	1,400
2. Net Change	69	24	54	85	93
3. Number, Fiscal Year End	1,237	1,261	1,315	1,400	1,493
4. Average Age at Commencement	62.98	63.16	63.73	64.49	65.32
5. Average Current Age	73.42	73.90	74.65	75.26	75.97
6. Average Monthly Pension Benefit	$ 1,584	$ 1,618	$ 1,629	$ 1,665	$ 1,688
Survivor (other than spouse)					
1. Number, Fiscal Year Start	3	3	3	3	2
2. Net Change	0	0	0	(1)	(2)
3. Number, Fiscal Year End	3	3	3	2	0
4. Average Age at Commencement	52.81	53.85	53.85	53.94	0.00
5. Average Current Age	58.22	60.65	61.65	61.56	0.00
6. Average Monthly Pension Benefit	$ 746	$ 749	$ 765	$ 705	$ 0
Disability					
1. Number, Fiscal Year Start	28	27	25	26	20
2. Net Change	(1)	(2)	1	(6)	0
3. Number, Fiscal Year End	27	25	26	20	20
4. Average Age at Commencement	45.25	44.40	45.75	46.74	47.37
5. Average Current Age	50.34	50.02	51.08	51.73	52.85
6. Average Monthly Pension Benefit	$ 3,500	$ 3,494	$ 3,666	$ 3,658	$ 3,643
Total					
1. Number, Fiscal Year Start	12,726	12,983	13,277	13,491	13,689
2. Net Change	257	294	214	198	283
3. Number, Fiscal Year End	12,983	13,277	13,491	13,689	13,972
4. Average Age at Commencement	56.24	56.38	56.56	56.79	57.02
5. Average Current Age	70.36	70.78	71.30	71.85	72.26
6. Average Monthly Pension Benefit	$ 2,924	$ 2,954	$ 3,014	$ 3,043	$ 3,048

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	6	194,721	32,454
45 - 49	55	1,913,518	34,791
50 - 54	258	11,082,589	42,956
55 - 59	703	30,350,083	43,172
60 - 64	1,729	63,061,790	36,473
65 - 69	2,797	98,633,289	35,264
70 - 74	3,393	118,070,449	34,798
75+	5,031	187,776,040	37,324
Total	**13,972**	**$511,082,479**	**$ 36,579**

Annual Pension Benefit by Years Since Commenced

Years Since Comm.	Number	Total Annual Pension Benefit	Average Annual Pension Benefit
0	514	$ 19,547,143	$ 38,029
1	471	18,221,267	38,686
2	474	18,533,172	39,100
3	488	19,918,428	40,816
4	487	18,219,745	37,412
0 - 4	**2,434**	**$ 94,439,755**	**$ 38,800**
5 - 9	2,517	94,156,710	37,408
10 - 14	2,129	72,087,821	33,860
15 - 19	2,184	70,007,604	32,055
20 - 24	2,175	76,417,673	35,135
25 - 29	1,222	48,723,567	39,872
30 - 34	916	39,327,726	42,934
35 - 39	299	12,721,955	42,548
40+	96	3,199,668	33,330
Total	**13,972**	**$511,082,479**	**$ 36,579**

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	3	2	1	0	0	0	0	0	0	6
45 - 49	52	3	0	0	0	0	0	0	0	55
50 - 54	202	49	5	0	2	0	0	0	0	258
55 - 59	416	192	73	20	2	0	0	0	0	703
60 - 64	777	501	274	140	33	3	1	0	0	1,729
65 - 69	430	953	693	462	231	26	1	0	1	2,797
70 - 74	237	514	699	932	720	227	60	2	2	3,393
75+	317	303	384	630	1,187	966	854	297	93	5,031
Total	**2,434**	**2,517**	**2,129**	**2,184**	**2,175**	**1,222**	**916**	**299**	**96**	**13,972**

Section 4.8: Pension Benefit Recipients by Type of 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	240	165	75	0	148	46	39	7
301 – 600	405	276	129	0	228	71	84	22
601 – 900	666	510	156	0	366	135	126	39
901 – 1,200	831	651	180	0	496	158	143	34
1,201 – 1,500	730	560	170	0	406	155	148	21
1,501 – 1,800	735	561	174	0	415	159	138	23
1,801 – 2,100	757	598	159	0	406	155	169	27
2,101 – 2,400	846	714	132	0	383	203	227	33
2,401 – 2,700	999	900	99	0	451	237	281	30
2,701 – 3,000	1,079	1,002	72	5	466	256	324	33
3,001 – 3,300	990	944	42	4	395	244	326	25
3,301 – 3,600	955	919	35	1	392	208	328	27
3,601 – 3,900	874	854	18	2	342	186	320	26
3,901 – 4,200	757	735	17	5	312	163	261	21
4,200+	3,108	3,070	35	3	1,173	555	1,277	103
Total	13,972	12,459	1,493	20	6,379	2,931	4,191	471

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

Year Ended	Added to Rolls: No.[1]	Added to Rolls: Annual Pension Benefits[1]	Removed from Rolls: No.[1]	Removed from Rolls: Annual Pension Benefits[1]	Rolls at End of Year: No.	Rolls at End of Year: Annual Pension Benefits	Percent Increase in Annual Pension Benefits	Average Annual Pension Benefit
June 30, 2021	593	$ 22,728,504	310	$ 11,391,465	13,972	$ 511,082,479	2.3%	$ 36,579
June 30, 2020	460	17,641,920	262	5,527,983	13,689	499,745,440	2.5%	36,507
June 30, 2019	468	18,004,896	254	871,684	13,491	487,631,503	3.6%	36,145
June 30, 2018	555	21,924,986	261	6,926,129	13,277	470,498,291	3.3%	35,437
June 30, 2017	487	17,151,684	230	7,736,025	12,983	455,499,434	2.1%	35,084
June 30, 2016	530	18,364,581	222	6,144,109	12,726	446,083,775	2.8%	35,053
June 30, 2015	888	34,120,658	220	3,531,501	12,418	433,863,303	7.6%	34,938
June 30, 2014	226	5,964,256	181	(1,150,187)	11,750	403,274,146	1.8%	34,321
June 30, 2013	576	19,387,542	172	1,652,575	11,705	396,159,703	4.7%	33,845
June 30, 2012	473	17,104,564	188	(617,561)	11,301	378,424,736	4.9%	33,486

[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, 2021. 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.

Pursuant to AS14.25.070 effective July 1, 2008, each TRS employer will pay a simple uniform contribution rate of 12.56% of member payroll.

Additional State Contributions

Pursuant to AS14.25.085 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 of 12.56%, will be sufficient to pay the total contribution rate adopted by the 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 these options and early retirement, benefits are actuarially adjusted so that members receive the actuarial equivalents of their normal benefit amounts.

Benefit Calculations

Retirement benefits are calculated by multiplying the average 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%.

Salaries are subject to compensation limits under IRC 401(a)(17) for members first hired on or after July 1, 1996. Retirement benefit amounts are subject to IRC 415(b) limits regardless of hire date.

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 Retirement Incentive Programs (RIPs) who return to employment 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 25 years of membership service, are disabled or age 60 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 60 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.

Starting in 2022, prior authorization will be required for certain specialty medications for all participants. There is no change to the medications that are covered by the plan.

Starting in 2022, certain preventive benefits for pre-Medicare participants will now be covered by the plan.

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, excluding 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 is 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 (see 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 (see 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 (see 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.

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, but excluding the Alaska COLA, times:

a. The lesser of 75% of the CPI increase in the preceding calendar year or 9% if the recipient is at least age 65 or on TRS disability; or
b. The lesser of 50% of the CPI increase in the preceding calendar year or 6% 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

Starting in 2022, prior authorization will be required for certain specialty medications for all participants, and certain preventive benefits for pre-Medicare participants will now be covered by the plan. There were no other 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 Cost Method

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method, level percent of pay.

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.

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[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 valuation method recognizes 20% of the gain or loss each year, for a period of five 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 were 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 in the internal model developed by Buck to calculate 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, 2020 to June 30, 2021.

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.

<u>Benefits</u>

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.

<u>Administration and Data Sources</u>

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 2019 through June 2021 (FY20 through FY21) 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, 2021 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 the 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).

<u>Methodology</u>

Buck projected historical claim data to FY22 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 FY20 through FY21.
   - 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 FY22).
   - Because the reports provided 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, 2020, and July 1, 2021, 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 Optum, rebates were assumed to be 19.5% of prescription drug claims for FY20, 16.2% of pre-Medicare, and 14.3% of Medicare prescription drug claims for FY21.
2. Develop estimated EGWP reimbursements – Segal provided estimated 2022 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. FY19 and FY20 experience were compared to assess the impact of COVID-19 and whether an adjustment to FY20 claims was indicated for use in the June 30, 2020 valuation. A material decrease in medical claims during March 2020 to June 2020 was experienced due to COVID-19. Therefore, an adjustment was made for those months to adjust for the decrease that is not expected to continue in future years. There was an observed spike in prescription drug claims in March 2020; however, the FY20 prescription drug experience appears reasonable to use without adjustment for COVID-19. To adjust for the decrease in medical claims due to COVID-19 during the last 4 months of FY20, the per capita cost during the first 8 months was used as the basis for estimating claims that would have occurred in the absence of COVID-19. FY21 experience was also thoroughly reviewed to assess the impact of COVID-19 and whether an adjustment to FY21 claims was appropriate for use in the June 30, 2021 valuation. FY21 medical per capita claims were noticeably lower than expected, so a 4% load was added to the FY21 medical claims used in the per capita claims cost development to better reflect future expected long-term costs of the plan. Total prescription drug claims experience for FY21 was reasonable and consistent with FY19 and FY20 experience. Therefore, no adjustment was made to FY21 prescription drug claims. Due to group size and demographics, we did not make any additional 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 FY22 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 for FY20 to FY21 medical and both years of prescription drugs 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. For FY21 to FY22 medical we applied 100% weight to national trends because the Alaska-specific trends were impacted by COVID-19:

Alaska-Specific and National Average Weighted Trend from Experience Period to Valuation Year

Experience Period	Medical	Prescription	Weighting Factors
FY20 to FY21	6.3% Pre-Medicare / 5.2% Medicare	7.6%	50%
FY21 to FY22	8.1% Pre-Medicare / 4.8% Medicare	8.0%	50%

Trend assumptions used for rate development are assessed annually and as additional/improved reporting becomes available, we will incorporate into rate development as appropriate.

6. Starting in 2022, prior authorization will be required for certain specialty medications. There is no change to the medications that are covered by the plan. Segal provided an estimate of the impact of this change to the DB retiree health plan cost for calendar year 2022. The DB base claims costs for pre-Medicare prescription drug, Medicare prescription drug, and EGWP were adjusted to reflect this change. Additionally, starting in 2022, certain preventive benefits for pre-Medicare participants will now be covered by the plan. Segal provided an estimate of the impact of this change to the DB retiree health plan cost for calendar year 2022. The DB base claims cost for pre-Medicare medical was adjusted to reflect this change.
7. Develop separate administration costs – no adjustments were made for internal administrative costs. Third party retiree plan administration fees for FY22 are based upon total fees projected to 2022 by Segal based on actual FY21 fees. The annual per participant per year administrative cost rate for medical and prescription benefits is $493.

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 due to these 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 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 provisions of healthcare 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:

- 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 2020				
1. Incurred Claims	$ 229,531,664	$ 89,497,345	$ 64,442,660	$ 188,022,328
2. Adjustments for Rx Rebates	0	0	(12,566,319)	(36,664,354)
3. Net incurred claims	$ 229,531,664	$ 89,497,345	$ 51,876,341	$ 151,357,974
4. Average Enrollment	19,354	44,965	19,354	44,965
5. Claim Cost Rate (3) / (4)	11,860	1,990	2,680	3,366
6. Trend to Fiscal 2022	1.149	1.103	1.162	1.162
7. Fiscal 2022 Incurred Cost Rate (5) x (6)	$ 13,630	$ 2,195	$ 3,116	$ 3,912
B. Fiscal 2021				
1. Incurred Claims	$ 196,566,470	$ 86,512,435	$ 60,691,609	$ 207,822,858
2. Adjustments for Rx Rebates and COVID (Medical only)	7,862,659	3,460,497	(9,832,041)	(29,718,669)
3. Net incurred claims	$ 204,429,129	$ 89,972,933	$ 50,859,568	$ 178,104,189
4. Average Enrollment	18,106	47,025	18,106	47,025
5. Claim Cost Rate (3) / (4)	11,291	1,913	2,809	3,787
6. Trend to Fiscal 2022	1.081	1.048	1.080	1.080
7. Fiscal 2022 Incurred Cost Rate (5) x (6)	$ 12,205	$ 2,005	$ 3,034	$ 4,090

	Medical		Prescription Drugs (Rx)	
	Pre-Medicare	Medicare	Pre-Medicare	Medicare
C. Incurred Cost Rate by Fiscal Year				
1. Fiscal 2020 A.(7)	13,630	2,195	3,116	3,912
2. Fiscal 2021 B.(7)	12,205	2,005	3,034	4,090
D. Weighting by Fiscal Year				
1. Fiscal 2020	50%	50%	50%	50%
2. Fiscal 2021	50%	50%	50%	50%
E. Fiscal 2022 Incurred Cost Rate				
1. Rate at Average Age C x D	$ 12,918	$ 2,100	$ 3,075	$ 4,001
2. Average Aging Factor	0.822	1.271	0.832	1.124
3. Rate at Age 65 (1) / (2)	$ 15,708	$ 1,652	$ 3,695	$ 3,560
F. Development of Part A&B and Part B Only Cost from Pooled Rate Above				
1. Part A&B Average Enrollment		46,602		
2. Part B Only Average Enrollment		423		
3. Total Medicare Average Enrollment B(4)		47,025		
4. Cost ratio for those with Part B only to those with Parts A&B		3.300		
5. Factor to determine cost for those with Parts A&B (2) / (3) x (4) + (1) / (3) x 1.00		1.021		
6. Medicare per capita cost for all participants: E(3)		$ 1,652		
7. Cost for those eligible for Parts A&B: (6) / (5)		$ 1,619		
8. Cost for those eligible for Part B only: (7) x (4)		$ 5,341		

	Medical		Prescription Drugs (Rx)	
	Pre-Medicare	Medicare	Pre-Medicare	Medicare
1. Rate at Age 65	$ 15,708	$ 1,619	$ 3,695	$ 3,560
2. Adjustment factor for plan changes	1.39%	0.00%	-8.67%	-2.41%
3. Adjusted Rate at Age 65 (1) x [1 + (2)]	$ 15,926	$ 1,619	$ 3,375	$ 3,474

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, 2021 through June 30, 2022

Age	Medical and Medicare Parts A & B	Medical and Medicare Part B Only	Prescription Drug	Medicare EGWP Subsidy
45	$ 9,719	$ 9,719	$ 2,062	$ 0
50	10,996	10,996	2,449	0
55	12,441	12,441	2,908	0
60	14,076	14,076	3,133	0
65	1,619	5,341	3,474	1,131
70	1,877	6,192	3,836	1,249
75	2,176	7,178	4,235	1,379
80	2,402	7,925	4,130	1,345

Section 5.3: Summary of Actuarial Assumptions

The demographic and economic assumptions used in the June 30, 2021 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.

RP-2014 white-collar employee 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.

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.

Turnover

Select and ultimate rates based upon the 2013-2017 actual experience (see Table 2).

Disability

Incidence rates based upon the 2013-2017 actual experience (see Table 3). Disability rates cease once a member is eligible for retirement.

Post-disability mortality in accordance with the RP-2014 disabled table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement.

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% of 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 five 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%

Re-Employment Option

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

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.

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, 2021 was increased by the following amounts for administrative expenses (for projections, the percent increase was assumed to remain constant in future years):

- Pension: $3,217,000
- Healthcare: $1,604,000

Part-Time Status

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

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.

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 FY22 medical and prescription drugs are shown below. The prescription drug costs reflect the plan change to require prior authorization for certain specialty medications. The pre-Medicare medical cost reflects the coverage of additional preventive benefits.

	Medical	Prescription Drugs
Pre-Medicare	$ 15,926	$ 3,375
Medicare Parts A & B	$ 1,619	$ 3,474
Medicare Part B Only	$ 5,341	$ 3,474
Medicare Part D – EGWP	N/A	$ 1,131

Members are assumed to attain Medicare eligibility at age 65. All costs are for the 2022 fiscal year (July 1, 2021 – June 30, 2022).

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

$493 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, 6.3% is applied to the FY22 pre-Medicare medical claims costs to get the FY23 medical claims costs.

	Medical Pre-65	Medical Post-65	Prescription Drugs / EGWP
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 FY22 contributions based on monthly rates shown below for calendar 2022 are assumed based on the coverage category for current retirees. The retiree only rate shown is used for current active and inactive members and spouses 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 2022 Annual Contribution	Calendar 2022 Monthly Contribution	Calendar 2021 Monthly Contribution
Retiree Only	$ 8,448	$ 704	$ 704
Retiree and Spouse	$ 16,896	$ 1,408	$ 1,408
Retiree and Child(ren)	$ 11,940	$ 995	$ 995
Retiree and Family	$ 20,388	$ 1,699	$ 1,699
Composite	$ 12,552	$ 1,046	$ 1,046

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 FY22 retired member medical contributions to get the FY23 retired member medical contributions.

Trend Assumptions	
FY22	0.0%
FY23+	4.0%

Graded trend rates for retired member medical contributions are consistent with the rates used for the June 30, 2020 valuation. Actual FY22 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. The amounts included in the Normal Cost for administrative expenses were changed from $3,003,000 to $3,217,000 for pension, and from $1,362,000 to $1,604,000 for healthcare (based on the most recent two years of actual administrative expenses paid from plan assets).

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
22	2.62%	3.79%
23	2.62%	3.79%
24	2.61%	3.79%
25	2.61%	3.79%
26	2.61%	3.79%
27	2.60%	3.79%
28	2.60%	4.27%
29	2.60%	4.76%
30	2.60%	5.24%
31	2.60%	5.73%
32	2.59%	6.22%
33	2.59%	5.72%
34	2.59%	5.23%
35	2.59%	4.74%
36	2.58%	4.25%
37	2.58%	3.75%
38	2.58%	3.75%

Age	Male	Female
39	2.57%	3.74%
40	2.26%	2.75%
41	2.26%	2.75%
42	2.25%	2.74%
43	2.24%	2.73%
44	2.23%	2.73%
45	2.22%	2.72%
46	2.21%	2.71%
47	2.20%	2.70%
48	2.18%	2.69%
49	2.16%	2.68%
50	3.43%	4.42%
51	3.39%	4.39%
52	3.35%	4.36%
53	3.30%	4.32%
54	3.00%	7.56%
55+	2.00%	5.00%

Table 3: Disability Rates

Age	Male	Female	Age	Male	Female
< 31	0.0337%	0.0612%	50	0.0601%	0.1093%
31	0.0337%	0.0613%	51	0.0634%	0.1152%
32	0.0337%	0.0613%	52	0.0666%	0.1211%
33	0.0342%	0.0622%	53	0.0746%	0.1356%
34	0.0347%	0.0631%	54	0.0826%	0.1501%
35	0.0353%	0.0641%	55	0.0905%	0.1645%
36	0.0357%	0.0650%	56	0.0985%	0.1790%
37	0.0362%	0.0659%	57	0.1064%	0.1935%
38	0.0371%	0.0674%	58	0.1245%	0.2263%
39	0.0379%	0.0689%	59	0.1426%	0.2592%
40	0.0387%	0.0703%	60	0.1606%	0.2920%
41	0.0395%	0.0718%	61	0.1787%	0.3249%
42	0.0403%	0.0733%	62	0.1967%	0.3577%
43	0.0423%	0.0770%	63	0.2253%	0.4096%
44	0.0443%	0.0806%	64	0.2572%	0.4677%
45	0.0464%	0.0843%	65	0.2933%	0.5332%
46	0.0483%	0.0879%	66	0.3343%	0.6079%
47	0.0504%	0.0916%	67	0.3812%	0.6930%
48	0.0536%	0.0975%	68	0.4345%	0.7900%
49	0.0569%	0.1034%	69	0.4953%	0.9006%
			70+	0.5647%	1.0267%

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.

Actuarial Standard of Practice No. 51 (ASOP 51)[1] 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 actuarially determined contribution
- 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.

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.

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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.

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 actuarially determined contribution differ.

- If the actual contribution is lower than the actuarially determined 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 could 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 being 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 four-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 in the Executive Summary illustrates how the plan's funded status (comparison of actuarial accrued liabilities to actuarial value of assets) has changed 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, 2020	June 30, 2021
1. Retiree and Beneficiary Accrued Liability	$ 5,570,625	$ 5,657,056
2. Total Accrued Liability	$ 7,447,036	$ 7,471,887
3. Ratio, (1) ÷ (2)	74.8%	75.7%

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 item #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, 2020	FYE June 30, 2021
1. Contributions	$ 207,899	$ 196,748
2. Benefit Payments	490,447	501,429
3. Cash Flow, (1) - (2)	$ (282,548)	$ (304,681)
4. Fair Value of Assets	$ 5,444,799	$ 6,731,481
5. Ratio, (3) ÷ (4)	(5.2%)	(4.5%)

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 generate 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, 2020	June 30, 2021
1. Fair Value of Assets	$ 5,444,799	$ 6,731,481
2. DB/DCR Payroll	$ 741,090	$ 750,334
3. Asset to Payroll Ratio, (1) ÷ (2)	734.7%	897.1%
4. Accrued Liability	$ 7,447,036	$ 7,471,887
5. Liability to Payroll Ratio, (4) ÷ (2)	1,004.9%	995.8%

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.

BUCK

State of Alaska

Teachers' Retirement System Defined Contribution Retirement Plan

For Occupational Death & Disability and Retiree Medical Benefits

Actuarial Valuation Report

As of June 30, 2021

May 2022

May 12, 2022

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 Defined Contribution Retirement (TRS DCR) Plan as of June 30, 2021 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, 2021. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under TRS DCR 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 DCR as of June 30, 2021.

TRS DCR is funded by Employer Contributions in accordance with the funding policy adopted by the Alaska Retirement Management Board (Board). The funding objective for TRS DCR is to pay required contributions that remain level as a percent of TRS DCR 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 as a level percent of TRS DCR compensation over closed layered 25-year periods. This objective is currently being met and is projected to continue to be met as required by the Alaska State statutes. 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 remain at or above 100%.

The Board and staff of the State of Alaska may use this report for the review of the operations of TRS DCR. 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 actuarial assumptions, changes 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 claims cost rates effective June 30, 2021 to better reflect expected future healthcare experience. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Sections 4.2 and 4.3. We certify that the assumptions and methods described in Sections 4.2 and 4.3 of this report meet the requirements of all applicable Actuarial Standards of Practice.

Governmental Accounting Standards Board (GASB) Statement No. 74 (GASB 74) was effective for TRS DCR beginning with fiscal year ending June 30, 2017, and GASB 75 was effective beginning with fiscal year ending June 30, 2018. Separate GASB 74 and GASB 75 reports have been prepared.

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 DCR. We also believe ASOP 51 does not apply to the occupational death & disability portion of TRS DCR. Therefore, information related to ASOP 51 is not included in this report. However, it may be beneficial to review the ASOP 51 information provided in the TRS valuation report for information on risks that may also relate to the occupational death & disability benefits provided by this plan.

Use of Models

Actuarial Standard of Practice No. 56 (ASOP 56) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Buck uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of the plan using data and assumptions as of the measurement date under the funding methods specified in this report. The output from the third-party vendor software is used as input to an internally developed model that applies applicable funding methods and policies to the derived liabilities and other inputs, such as plan assets and contributions, to generate many of the exhibits found in this report. Buck has an extensive review process in which the results of the liability calculations are checked using detailed sample life output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other funding outputs and the internal model are similarly reviewed in detail and at a higher level for accuracy, reasonability, and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software. This review is performed by experts within Buck who are familiar with applicable funding methods, as well as the manner in which the model generates its output. If significant changes are made to the internal model, extra checking and review are completed. Significant changes to the internal model that are applicable to multiple clients are generally developed, checked, and reviewed by multiple experts within Buck who are familiar with the details of the required changes.

Buck used manual rate models to determine relative plan values for the defined benefit (DB) retiree medical plan and the DCR retiree medical plan, and to reflect the different Medicare coordination methods between the two plans. The manual rate models are intended to provide benchmark data and pricing capabilities, calculate per capita costs, and calculate actuarial values of different commercial health plans. Buck relied on the models, which were developed using industry data by actuaries and consultants at OptumInsight.

COVID-19

The potential impact of the ongoing COVID-19 pandemic on costs and liabilities was considered and an adjustment was made in setting the medical per capita claims cost assumption. FY20 medical claims were adjusted for a COVID-19 related decline in claims during the last four months (March – June) of FY20. FY21 medical claims were adjusted for a COVID-19 related decline in those claims during the fiscal year. A more detailed explanation on these adjustments is shown in Sections 4.2 and 4.3 and in the valuation report for the DB plan.

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

Scott Young

Scott Young, FSA, EA, MAAA, FCA
Director
Buck

Contents

Executive Summary

Overview

The State of Alaska Teachers' Retirement System Defined Contribution Retirement (TRS DCR) Plan provides occupational death & disability and retiree medical benefits to teachers and other eligible members hired after June 30, 2006 or who have elected participation in this plan. 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 DCR as of the valuation date of June 30, 2021.

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 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 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 DCR based on the plan provisions, membership data, assets, and actuarial methods and assumptions as of the valuation date.

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)		2020	2021
Occupational Death & Disability			
a.	Actuarial Accrued Liability	$ 223	$ 205
b.	Valuation Assets	4,933	5,843
c.	Unfunded Actuarial Accrued Liability, (a) - (b)	$ (4,710)	$ (5,638)
d.	Funded Ratio based on Valuation Assets, (b) ÷ (a)	2,212.1%	2,850.2%
e.	Fair Value of Assets	$ 4,823	$ 6,623
f.	Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	2,162.8%	3,230.7%

Funded Status as of June 30 ($'s in 000's)	2020	2021
Retiree Medical		
a. Actuarial Accrued Liability	$ 40,634	$ 44,396
b. Valuation Assets	49,554	59,380
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ (8,920)	$ (14,984)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	122.0%	133.8%
e. Fair Value of Assets	$ 48,413	$ 67,278
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	119.1%	151.5%
Total		
a. Actuarial Accrued Liability	$ 40,857	$ 44,601
b. Valuation Assets	54,487	65,223
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$ (13,630)	$ (20,622)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)	133.4%	146.2%
e. Fair Value of Assets	$ 53,236	$ 73,901
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)	130.3%	165.7%

The key reasons for the change in the 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 as there are no available financial instruments for purchase. Future experience is likely to vary from assumptions so there is potential for actuarial gains or losses.

1. **Investment Experience**

   The approximate FY21 investment return based on fair value of assets was 29.5% compared to the expected investment return of 7.38% (net of investment expenses). This resulted in a gain of approximately $12,235,000 to the plan from investment experience. The asset valuation method recognizes 20% of this gain ($2,447,000) this year and an additional 20% in each of the next 4 years. In addition, 20% of the FY17 investment gain, 20% of the FY18 investment loss, 20% of the FY19 investment loss, and 20% of the FY20 investment loss were recognized this year. The approximate FY21 asset return based on actuarial value of assets was 11.3% compared to the expected asset return of 7.38% (net of investment expenses).

2. **Salary Increases**

   Salary increases for continuing active members during FY21 were higher than anticipated based on the valuation assumptions, resulting in a liability loss of approximately $1,000.

3. **Demographic Experience**

   The number of active members increased 3.5% from 5,332 at June 30, 2020 to 5,521 at June 30, 2021. The average age of active members increased from 41.63 to 41.90 and average credited service increased from 6.03 to 6.34 years.

   The demographic experience gains/losses are shown on page 4.

4. **Retiree Medical Claims Experience**

   Please refer to the State of Alaska Teachers' Retirement System (TRS) Defined Benefit Plan Actuarial Valuation Report as of June 30, 2021 for a full description of the assumptions and costs of the retiree medical plan. Adjustments to these costs and assumptions are described in this report.

   The recent claims experience described in Section 4.2 of this report (Section 5.2 of the TRS report) created an actuarial gain of approximately $1,883,000.

5. **Changes in Methods Since the Prior Valuation**

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

6. **Changes in Assumptions Since the Prior Valuation**

   Healthcare claim costs are updated annually as described in Section 4.2. The amounts included in Normal Cost for administrative expenses were updated based on the last two years of actual administrative expenses paid from plan assets. There were no other changes in actuarial assumptions since the prior valuation.

7. **Changes in Benefit Provisions Since the Prior Valuation**

   Starting in 2022, prior authorization will be required for certain specialty medications. This change created an actuarial gain of approximately $528,000. There have been no other changes in benefit provisions valued since the prior valuation.

Comparative Summary of Contribution Rates

Occupational Death & Disability		FY 2023	FY 2024
a.	Employer Normal Cost Rate	0.08%	0.08%
b.	Past Service Cost Rate	(0.10)%	(0.11)%
c.	Total Employer Contribution Rate, (a) + (b), not less than (a)	0.08%	0.08%
Retiree Medical		**FY 2023**	**FY 2024**
a.	Employer Normal Cost Rate	0.87%	0.82%
b.	Past Service Cost Rate	(0.14)%	(0.22)%
c.	Total Employer Contribution Rate, (a) + (b), not less than (a)	0.87%	0.82%
Total		**FY 2023**	**FY 2024**
a.	Employer Normal Cost Rate	0.95%	0.90%
b.	Past Service Cost Rate	(0.24)%	(0.33)%
c.	Total Employer Contribution Rate, (a) + (b), not less than (a)	0.95%	0.90%

The exhibit below shows the historical Board-adopted employer contribution rates for TRS DCR.

		Total Employer Contribution Rate		
Valuation Date	Fiscal Year	Occupational Death & Disability	Retiree Medical	Total
June 30, 2010	FY13	0.00%	0.49%	0.49%
June 30, 2011	FY14	0.00%	0.47%	0.47%
June 30, 2012	FY15	0.00%	2.04%	2.04%
June 30, 2013	FY16	0.00%	2.04%	2.04%
June 30, 2014	FY17	0.00%	1.05%	1.05%
June 30, 2015	FY18	0.00%	0.91%	0.91%
June 30, 2016	FY19	0.08%	0.79%	0.87%
June 30, 2017	FY20	0.08%	1.09%	1.17%
June 30, 2018	FY21	0.08%	0.93%	1.01%
June 30, 2019	FY22	0.08%	0.83%	0.91%
June 30, 2020	FY23	0.08%	0.87%	0.95%
June 30, 2021	FY24	TBD	TBD	TBD

Summary of Actuarial Accrued Liability Gain/(Loss)

The following table shows the FY21 gain/(loss) on actuarial accrued liability as of June 30, 2021 ($'s in 000's):

	Occupational Death & Disability	Retiree Medical	Total
Retirement Experience	$ 0	$ 550	$ 550
Termination Experience	(7)	2,361	2,354
Disability Experience	219	(57)	162
Active Mortality Experience	107	(9)	98
Inactive Mortality Experience	(1)	(30)	(31)
Salary Increases	(1)	N/A	(1)
New Entrants	0	(581)	(581)
Rehires	1	(2,038)	(2,037)
Benefit Payments Different than Expected	18	(101)	(83)
Per Capita Claims Costs	N/A	1,883	1,883
Prescription Drug Plan Changes	N/A	528	528
Miscellaneous[1]	8	195	203
Total	$ 344	$ 2,701	$ 3,045

[1] Includes the effects of various data changes that are typical when new census data is received for the annual valuation, as well as other items that do not fit neatly into any of the other categories.

Section 1: Actuarial Funding Results

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

As of June 30, 2021	Present Value of Projected Benefits	Actuarial Accrued (Past Service) Liability
Active Members		
Occupational Death Benefits	$ 844	$ 94
Occupational Disability Benefits	1,407	(66)
Medical and Prescription Drug Benefits	83,777	54,549
Medicare Part D Subsidy	(17,536)	(11,418)
Subtotal	$ 68,492	$ 43,159
Benefit Recipients		
Survivor Benefits	$ 0	$ 0
Disability Benefits	177	177
Medical and Prescription Drug Benefits	1,600	1,600
Medicare Part D Subsidy	(335)	(335)
Subtotal	$ 1,442	$ 1,442
Total	**$ 69,934**	**$ 44,601**
Total Occupational Death & Disability	**$ 2,428**	**$ 205**
Total Retiree Medical, Net of Part D Subsidy	**$ 67,506**	**$ 44,396**
Total Retiree Medical, Gross of Part D Subsidy	**$ 85,377**	**$ 56,149**

As of June 30, 2021	Normal Cost
Active Members	
Occupational Death Benefits	$ 118
Occupational Disability Benefits	217
Medical and Prescription Drug Benefits	4,361
Medicare Part D Subsidy	(913)
Subtotal	$ 3,783
Administrative Expense Load	
Occupational Death & Disability	$ 5
Retiree Medical	22
Subtotal	$ 27
Total	**$ 3,810**
Total Occupational Death & Disability	**$ 340**
Total Retiree Medical, Net of Part D Subsidy	**$ 3,470**
Total Retiree Medical, Gross of Part D Subsidy	**$ 4,383**

Section 1.2: Actuarial Contributions as of June 30, 2021 for FY24 ($'s in 000's)

Normal Cost Rate	Occupational Death & Disability	Retiree Medical	Total
1. Total Normal Cost	$ 340	$ 3,470	$ 3,810
2. DCR Plan Rate Payroll Projected for FY22	423,783	423,783	423,783
3. Employer Normal Cost Rate, (1) ÷ (2)	0.08%	0.82%	0.90%
Past Service Cost Rate			
1. Actuarial Accrued Liability	$ 205	$ 44,396	$ 44,601
2. Valuation Assets	5,843	59,380	65,223
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ (5,638)	$ (14,984)	$ (20,622)
4. Funded Ratio based on Valuation Assets	2,850.2%	133.8%	146.2%
5. Past Service Cost Amortization Payment	(448)	(934)	(1,382)
6. DCR Plan Rate Payroll Projected for FY22	423,783	423,783	423,783
7. Past Service Cost Rate, (5) ÷ (6)	(0.11%)	(0.22%)	(0.33%)
Total Employer Contribution Rate, not less than Normal Cost Rate	**0.08%**	**0.82%**	**0.90%**

The table below shows the total employer contribution rate based on total DB and DCR Plan payroll for informational purposes.

Total Employer Contribution Rate as Percent of Total Payroll	Occupational Death & Disability	Retiree Medical	Total
1. Total Normal Cost	$ 340	$ 3,470	$ 3,810
2. Total DB and DCR Plan Rate Payroll Projected for FY22	750,334	750,334	750,334
3. Employer Normal Cost Rate, (1) ÷ (2)	0.05%	0.46%	0.51%
4. Past Service Cost Amortization Payment	(448)	(934)	(1,382)
5. Past Service Cost Rate, (4) ÷ (2)	(0.06%)	(0.12%)	(0.18%)
Total Employer Contribution Rate, not less than Normal Cost Rate	**0.05%**	**0.46%**	**0.51%**

Schedule of Past Service Cost Amortizations - Occupational Death & Disability ($'s in 000's)

	Amortization Period		Balances		
Layer	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ 16	$ 14	$ 2
FY08 Gain	06/30/2008	12	(392)	(367)	(39)
Change in Assumptions	06/30/2009	13	(82)	(78)	(8)
FY09 Gain	06/30/2009	13	(594)	(577)	(57)
Change in Assumptions	06/30/2010	14	(7)	(8)	(1)
FY10 Gain	06/30/2010	14	(479)	(472)	(44)
FY11 Gain	06/30/2011	15	(560)	(559)	(50)
FY12 Gain	06/30/2012	16	(129)	(131)	(11)
FY13 Gain	06/30/2013	17	(149)	(150)	(12)
Change in Assumptions	06/30/2014	18	(50)	(53)	(4)
PRPA Modification	06/30/2014	18	(25)	(25)	(2)
FY14 Gain	06/30/2014	18	(255)	(260)	(20)
FY15 Gain	06/30/2015	19	(275)	(280)	(21)
FY16 Gain	06/30/2016	20	(209)	(215)	(16)
FY17 Gain	06/30/2017	21	(251)	(253)	(18)
Change in Assumptions[1]	06/30/2018	22	0	0	0
FY18 Gain	06/30/2018	22	(257)	(259)	(18)
FY19 Gain	06/30/2019	23	(338)	(340)	(23)
FY20 Gain	06/30/2020	24	(637)	(640)	(42)
FY21 Gain	06/30/2021	25	(985)	(985)	(64)
Total				**$ (5,638)**	**$ (448)**

[1] The net effect of changing assumptions was less than $1,000.

Schedule of Past Service Cost Amortizations - Retiree Medical ($’s in 000’s)

	Amortization Period		Balances		
Layer	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (239)	$ (221)	$ (25)
Change in Assumptions	06/30/2008	12	84	83	9
FY08 Gain	06/30/2008	12	(393)	(367)	(39)
Change in Assumptions	06/30/2009	13	(69)	(66)	(7)
FY09 Gain	06/30/2009	13	(281)	(274)	(27)
Change in Assumptions[1]	06/30/2010	14	0	0	0
FY10 Gain	06/30/2010	14	(545)	(537)	(50)
FY11 Gain	06/30/2011	15	(94)	(92)	(8)
Change in Assumptions	06/30/2012	16	11,518	11,654	993
FY12 Gain	06/30/2012	16	(60)	(57)	(5)
FY13 Loss	06/30/2013	17	3,439	3,506	287
Change in Assumptions	06/30/2014	18	(9,736)	(9,951)	(783)
FY14 Loss	06/30/2014	18	1,616	1,650	130
FY15 Gain	06/30/2015	19	(3,485)	(3,562)	(271)
EGWP Impact	06/30/2016	20	(6,400)	(6,528)	(480)
FY16 Loss	06/30/2016	20	958	980	72
Change in Assumptions	06/30/2017	21	7,645	7,761	554
FY17 Gain	06/30/2017	21	(1,451)	(1,473)	(105)
Change in Assumptions/Methods	06/30/2018	22	(9,505)	(9,585)	(666)
FY18 Loss	06/30/2018	22	2,491	2,512	174
FY19 Gain	06/30/2019	23	(4,904)	(4,941)	(334)
Change in Assumptions	06/30/2020	24	2,153	2,163	143
FY20 Gain	06/30/2020	24	(1,655)	(1,662)	(110)
Prescription Drug Plan Changes	06/30/2021	25	(528)	(528)	(34)
FY21 Gain	06/30/2021	25	(5,449)	(5,449)	(352)
Total				**$ (14,984)**	**$ (934)**

[1] The net effect of changing assumptions was less than $1,000. The demographic assumption changes decreased liability by $133,000 and the economic assumptions changes increased the liability by $133,000. Therefore, the net effect of all assumptions changes is $0 for amortization purposes.

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

	Amortization Period		Balances		
Layer	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	06/30/2007	11	$ (223)	$ (207)	$ (23)
Change in Assumptions	06/30/2008	12	84	83	9
FY08 Gain	06/30/2008	12	(785)	(734)	(78)
Change in Assumptions	06/30/2009	13	(151)	(144)	(15)
FY09 Gain	06/30/2009	13	(875)	(851)	(84)
Change in Assumptions	06/30/2010	14	(7)	(8)	(1)
FY10 Gain	06/30/2010	14	(1,024)	(1,009)	(94)
FY11 Gain	06/30/2011	15	(654)	(651)	(58)
Change in Assumptions	06/30/2012	16	11,518	11,654	993
FY12 Gain	06/30/2012	16	(189)	(188)	(16)
FY13 Loss	06/30/2013	17	3,290	3,356	275
Change in Assumptions	06/30/2014	18	(9,786)	(10,004)	(787)
PRPA Modification	06/30/2014	18	(25)	(25)	(2)
FY14 Loss	06/30/2014	18	1,361	1,390	110
FY15 Gain	06/30/2015	19	(3,760)	(3,842)	(292)
EGWP Impact	06/30/2016	20	(6,400)	(6,528)	(480)
FY16 Loss	06/30/2016	20	749	765	56
Change in Assumptions	06/30/2017	21	7,645	7,761	554
FY17 Gain	06/30/2017	21	(1,702)	(1,726)	(123)
Change in Assumptions/Methods	06/30/2018	22	(9,505)	(9,585)	(666)
FY18 Loss	06/30/2018	22	2,234	2,253	156
FY19 Gain	06/30/2019	23	(5,242)	(5,281)	(357)
Change in Assumptions	06/30/2020	24	2,153	2,163	143
FY20 Gain	06/30/2020	24	(2,292)	(2,302)	(152)
Prescription Drug Plan Changes	06/30/2021	25	(528)	(528)	(34)
FY21 Gain	06/30/2021	25	(6,434)	(6,434)	(416)
Total				**$ (20,622)**	**$ (1,382)**

Section 1.3: Actuarial Gain/(Loss) for FY21 ($'s in 000's)

	Occupational Death & Disability	Retiree Medical	Total
1. Expected Actuarial Accrued Liability			
a. Actuarial Accrued Liability as of June 30, 2020	$ 223	$ 40,634	$ 40,857
b. Normal Cost	312	3,388	3,700
c. Interest on (a) and (b) at 7.38%	39	3,249	3,288
d. Employer Group Waiver Plan	0	3	3
e. Benefit Payments	(24)	(171)	(195)
f. Interest on (d) and (e) at 7.38%, adjusted for timing	(1)	(6)	(7)
g. Assumption/Method Changes	0	0	0
h. Expected Actuarial Accrued Liability as of June 30, 2021 (a) + (b) + (c) + (d) + (e) + (f) + (g)	$ 549	$ 47,097	$ 47,646
2. Actual Actuarial Accrued Liability as of June 30, 2021	205	44,396	44,601
3. Liability Gain/(Loss), (1)(h) - (2)	**$ 344**	**$ 2,701**	**$ 3,045**
4. Expected Actuarial Asset Value			
a. Actuarial Asset Value as of June 30, 2020	$ 4,933	$ 49,554	$ 54,487
b. Interest on (a) at 7.38%	364	3,657	4,021
c. Employer Contributions	362	4,217	4,579
d. Employer Group Waiver Plan	0	3	3
e. Interest on (c) and (d) at 7.38%, adjusted for timing	13	153	166
f. Benefit Payments	(24)	(171)	(195)
g. Administrative Expenses	(9)	(34)	(43)
h. Interest on (f) and (g) at 7.38%, adjusted for timing	(1)	(7)	(8)
i. Expected Actuarial Asset Value as of June 30, 2021 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h)	$ 5,638	$ 57,372	$ 63,010
5. Actuarial Asset Value as of June 30, 2021	5,843	59,380	65,223
6. Actuarial Asset Gain/(Loss), (5) - (4)(i)	**$ 205**	**$ 2,008**	**$ 2,213**
7. Total Actuarial Gain/(Loss), (3) + (6)	**$ 549**	**$ 4,709**	**$ 5,258**
8. Contribution Gain/(Loss)	**$ 445**	**$ 1,295**	**$ 1,740**
9. Administrative Expense Gain/(Loss)	**$ (9)**	**$ (27)**	**$ (36)**
10. FY21 Gain/(Loss), (7) + (8) + (9)	**$ 985**	**$ 5,977**	**$ 6,962**

Section 1.4: 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, 2007	$ 374	$ 597	159.7%	$ (223)
June 30, 2008	801	1,728	215.7%	(927)
June 30, 2009	1,460	3,424	234.5%	(1,964)
June 30, 2010	2,448	5,472	223.5%	(3,024)
June 30, 2011	3,858	7,566	196.1%	(3,708)
June 30, 2012	16,874	9,285	55.0%	7,589
June 30, 2013	22,138	11,146	50.3%	10,992
June 30, 2014	16,296	13,611	83.5%	2,685
June 30, 2015	19,797	20,847	105.3%	(1,050)
June 30, 2016	22,007	28,733	130.6%	(6,726)
June 30, 2017	33,707	34,586	102.6%	(879)
June 30, 2018	32,459	40,621	125.1%	(8,162)
June 30, 2019	33,221	46,666	140.5%	(13,445)
June 30, 2020	40,857	54,487	133.4%	(13,630)
June 30, 2021	44,601	65,223	146.2%	(20,622)

Section 2: Plan Assets

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

As of June 30, 2021	Occupational Death & Disability	Retiree Medical	Total	Allocation Percent
Cash and Short-Term Investments				
- Cash and Cash Equivalents	$ 75	$ 757	$ 832	1.1%
- Subtotal	$ 75	$ 757	$ 832	1.1%
Fixed Income Investments				
- Domestic Fixed Income Pool	$ 1,336	$ 13,569	$ 14,905	20.2%
- International Fixed Income Pool	0	0	0	0.0%
- Tactical Fixed Income Pool	0	0	0	0.0%
- 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	$ 1,336	$ 13,569	$ 14,905	20.2%
Equity Investments				
- Domestic Equity Pool	$ 1,809	$ 18,359	$ 20,168	27.4%
- International Equity Pool	997	10,118	11,115	15.1%
- Private Equity Pool	981	9,956	10,937	14.9%
- Emerging Markets Equity Pool	212	2,150	2,362	3.2%
- Alternative Equity Strategies	385	3,910	4,295	5.8%
- Subtotal	$ 4,384	$ 44,493	$ 48,877	66.4%
Other Investments				
- Real Estate Pool	$ 406	$ 4,124	$ 4,530	6.2%
- Other Investments Pool	406	4,115	4,521	6.1%
- Absolute Return Pool	0	0	0	0.0%
- Other Assets	0	0	0	0.0%
- Subtotal	$ 812	$ 8,239	$ 9,051	12.3%
Total Cash and Investments	$ 6,607	$ 67,058	$ 73,665	100.0%
Net Accrued Receivables	16	220	236	
Net Assets	$ 6,623	$ 67,278	$ 73,901	

Section 2.2: Changes in Fair Value of Assets During FY21 ($'s in 000's)

Fiscal Year 2021	Occupational Death & Disability	Retiree Medical	Total
1. Fair Value of Assets as of June 30, 2020	$ 4,823	$ 48,413	$ 53,236
2. Additions:			
a. Member Contributions	$ 0	$ 0	$ 0
b. Employer Contributions	362	4,217	4,579
c. Interest and Dividend Income	70	707	777
d. Net Appreciation/(Depreciation) in Fair Value of Investments	1,415	14,279	15,694
e. Employer Group Waiver Plan	0	3	3
f. Other	0	2	2
g. Total Additions	$ 1,847	$ 19,208	$ 21,055
3. Deductions:			
a. Medical Benefits	$ 0	$ 171	$ 171
b. Death & Disability Benefits	24	0	24
c. Investment Expenses	14	138	152
d. Administrative Expenses	9	34	43
e. Total Deductions	$ 47	$ 343	$ 390
4. Fair Value of Assets as of June 30, 2021	$ 6,623	$ 67,278	$ 73,901
5. Approximate Fair Value Investment Return Rate during FY21 Net of Investment Expenses	29.5%	29.5%	29.5%

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

The actuarial value of assets and the fair value were $0 at June 30, 2006. Investment gains and losses are recognized 20% per year over 5 years. In no event may valuation assets be less than 80% or more than 120% of fair value as of the current valuation date.

	Occupational Death & Disability	Retiree Medical	Total
1. Investment Gain/(Loss) for FY21			
a. Fair Value as of June 30, 2020	$ 4,823	$ 48,413	$ 53,236
b. Contributions	362	4,217	4,579
c. Employer Group Waiver Plan	0	3	3
d. Benefit Payments	24	171	195
e. Administrative Expenses	9	34	43
f. Actual Investment Return (net of investment expenses)	1,471	14,850	16,321
g. Expected Return Rate (net of investment expenses)	7.38%	7.38%	7.38%
h. Expected Return	368	3,718	4,086
i. Investment Gain/(Loss) for the Year (f) - (h)	1,103	11,132	12,235
2. Actuarial Value as of June 30, 2021			
a. Fair Value as of June 30, 2021	$ 6,623	$ 67,278	$ 73,901
b. Deferred Investment Gain/(Loss)	780	7,898	8,678
c. Preliminary Actuarial Value as of June 30, 2021, (a) - (b)	5,843	59,380	65,223
d. Upper Limit: 120% of Fair Value as of June 30, 2021	7,947	80,733	88,680
e. Lower Limit: 80% of Fair Value as of June 30, 2021	5,299	53,823	59,122
f. Actuarial Value at June 30, 2021, (c) limited by (d) and (e)	5,843	59,380	65,223
3. Ratio of Actuarial Value of Assets to Fair Value of Assets	88.2%	88.3%	88.3%
4. Approximate Actuarial Value Investment Return Rate during FY21 Net of Investment Expenses	11.4%	11.3%	11.3%

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

Occupational Death & Disability				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 143	$ 115	$ 28	$ 0
June 30, 2018	8	6	2	0
June 30, 2019	(48)	(20)	(10)	(18)
June 30, 2020	(140)	(28)	(28)	(84)
June 30, 2021	1,103	0	221	882
Total	**$ 1,066**	**$ 73**	**$ 213**	**$ 780**

Retiree Medical				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 1,184	$ 948	$ 236	$ 0
June 30, 2018	(19)	(12)	(4)	(3)
June 30, 2019	(460)	(184)	(92)	(184)
June 30, 2020	(1,367)	(273)	(273)	(821)
June 30, 2021	11,132	0	2,226	8,906
Total	**$ 10,470**	**$ 479**	**$ 2,093**	**$ 7,898**

Total				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 1,327	$ 1,063	$ 264	$ 0
June 30, 2018	(11)	(6)	(2)	(3)
June 30, 2019	(508)	(204)	(102)	(202)
June 30, 2020	(1,507)	(301)	(301)	(905)
June 30, 2021	12,235	0	2,447	9,788
Total	**$ 11,536**	**$ 552**	**$ 2,306**	**$ 8,678**

Section 2.4: Historical Asset Rates of Return

Year Ending	Actuarial Value		Fair Value	
	Annual	Cumulative*	Annual	Cumulative*
June 30, 2008	6.4%	6.4%	(0.3%)	(0.3%)
June 30, 2009	3.2%	4.8%	(12.0%)	(6.3%)
June 30, 2010	4.2%	4.6%	6.4%	(2.3%)
June 30, 2011	7.4%	5.3%	18.9%	2.6%
June 30, 2012	6.9%	5.6%	1.6%	2.4%
June 30, 2013	7.7%	6.0%	11.9%	3.9%
June 30, 2014	10.9%	6.6%	18.0%	5.8%
June 30, 2015	9.5%	7.0%	3.1%	5.5%
June 30, 2016	6.5%	6.9%	(0.1%)	4.9%
June 30, 2017	7.6%	7.0%	12.6%	5.6%
June 30, 2018	7.8%	7.1%	8.0%	5.8%
June 30, 2019	6.4%	7.0%	6.2%	5.9%
June 30, 2020	6.3%	7.0%	4.3%	5.7%
June 30, 2021	11.3%	7.3%	29.5%	7.3%

* Cumulative since fiscal year ending June 30, 2008

Section 3: Member Data

Section 3.1: Summary of Members Included

As of June 30	2017	2018	2019	2020	2021
Active Members					
1. Number	4,694	4,915	4,998	5,332	5,521[1]
2. Average Age	40.21	40.64	41.06	41.63	41.90
3. Average Credited Service	4.88	5.30	5.67	6.03	6.34
4. Average Entry Age	35.33	35.34	35.39	35.60	35.56
5. Average Annual Earnings	$ 66,542	$ 68,119	$ 69,619	$ 71,118	$ 74,045
Disabilitants and Beneficiaries (Occupational Death & Disability)					
1. Number	0	0	1	1	1
2. Average Age	N/A	N/A	53.45	54.45	55.45
3. Average Monthly Death & Disability Benefit	N/A	N/A	$ 2,024	$ 2,024	$ 2,024
Retirees, Surviving Spouses, and Dependent Spouses (Retiree Medical)					
1. Number	4	9	12	17	24
2. Average Age	69.72	68.59	68.54	68.79	67.71
Total Number of Members	**4,698**	**4,924**	**5,011**	**5,350**	**5,546**

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

[1] Includes 1,431 male active members and 4,090 female active members.

Section 3.2: 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	93	4,820,122	51,829
25 - 29	582	35,233,778	60,539
30 - 34	913	62,245,631	68,177
35 - 39	1,122	84,044,406	74,906
40 - 44	897	68,120,327	75,942
45 - 49	632	50,198,959	79,429
50 - 54	521	41,787,962	80,207
55 - 59	404	32,949,416	81,558
60 - 64	245	20,049,134	81,833
65 - 69	87	7,203,861	82,803
70 - 74	21	1,709,445	81,402
75+	4	441,677	110,419
Total	**5,521**	**$ 408,804,718**	**$ 74,045**

Annual Earnings by Credited Service

Years of Service	Number	Total Annual Earnings	Average Annual Earnings
0	134	$ 7,688,581	$ 57,377
1	677	42,392,282	62,618
2	549	36,410,038	66,321
3	516	35,912,821	69,598
4	442	30,921,457	69,958
0 - 4	**2,318**	**$ 153,325,179**	**$ 66,145**
5 - 9	1,864	141,448,230	75,884
10 - 14	1,221	103,476,219	84,747
15 - 19	116	10,364,704	89,351
20 - 24	2	190,386	95,193
25 - 29	0	0	0
30 - 34	0	0	0
35 - 39	0	0	0
40+	0	0	0
Total	**5,521**	**$ 408,804,718**	**$ 74,045**

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	93	0	0	0	0	0	0	0	0	93
25 - 29	485	97	0	0	0	0	0	0	0	582
30 - 34	426	428	59	0	0	0	0	0	0	913
35 - 39	336	405	367	14	0	0	0	0	0	1,122
40 - 44	317	295	255	29	1	0	0	0	0	897
45 - 49	216	207	188	21	0	0	0	0	0	632
50 - 54	173	181	151	15	1	0	0	0	0	521
55 - 59	140	132	116	16	0	0	0	0	0	404
60 - 64	90	77	60	18	0	0	0	0	0	245
65 - 69	30	34	20	3	0	0	0	0	0	87
70 - 74	11	7	3	0	0	0	0	0	0	21
75+	1	1	2	0	0	0	0	0	0	4
Total	**2,318**	**1,864**	**1,221**	**116**	**2**	**0**	**0**	**0**	**0**	**5,521**

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

Section 3.3: Member Data Reconciliation

	Actives	Retirees and Surviving Spouses	Dependent Spouses	OD&D Disabilitants	OD&D Beneficiaries	Total
As of June 30, 2020 [1]	**5,332**	**14**	**3**	**1**	**0**	**5,350**
New Entrants	702	0	0	0	0	702
Rehires	230	0	0	0	0	230
Vested Terminations	(308)	0	0	0	0	(308)
Non-Vested Terminations	(384)	0	0	0	0	(384)
Refund of Contributions	(41)	0	0	0	0	(41)
Disability Retirements	0	0	0	0	0	0
Age Retirements	(6)	6	2	0	0	2
Deaths With Beneficiary	0	0	0	0	0	0
Deaths Without Beneficiary	(8)	0	0	0	0	(8)
Data Corrections	4	0	(1)	0	0	3
Net Change	**189**	**6**	**1**	**0**	**0**	**196**
As of June 30, 2021 [2]	**5,521**	**20**	**4**	**1**	**0**	**5,546**

[1] 125 participants are expected to receive retiree medical benefits in a different plan and are included for OD&D benefits only.

[2] 128 participants are expected to receive retiree medical benefits in a different plan and are included for OD&D benefits only.

Section 3.4: Schedule of Active Member Data

Valuation Date	Number	Annual Earnings (000's)	Annual Average Earnings	Percent Increase in Average Earnings	Number of Participating Employers
June 30, 2021	5,521	$ 408,805	$ 74,045	4.1%	57
June 30, 2020	5,332	379,201	71,118	2.2%	57
June 30, 2019	4,998	347,957	69,619	2.2%	57
June 30, 2018	4,915	334,803	68,119	2.4%	57
June 30, 2017	4,694	312,347	66,542	2.0%	57
June 30, 2016	4,383	285,854	65,219	2.5%	58
June 30, 2015	4,095	260,584	63,635	2.7%	58
June 30, 2014	3,547	219,701	61,940	2.4%	58
June 30, 2013	3,272	197,944	60,496	3.5%	58
June 30, 2012	3,057	178,761	58,476	4.7%	58

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

Section 3.5: Active Member Payroll Reconciliation

Payroll Field	Payroll Data (000's)
a) DRB actual reported salaries FY21 in employer list	$ 451,880
b) DRB actual reported salaries FY21 in valuation data	401,736
c) Annualized valuation data	408,805
d) Valuation payroll as of June 30, 2021	427,762
e) Rate payroll for FY22	423,783

a) Actual reported salaries from DRB employer listing showing all payroll paid during FY21, including those who were not active as of June 30, 2021
b) Payroll from valuation data for people who are in active status as of June 30, 2021
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

Section 4: Basis of the Actuarial Valuation

Section 4.1: Summary of Plan Provisions

Effective Date

July 1, 2006, with amendments through June 30, 2021.

Administration of Plan

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

The Alaska Retirement Management Board prescribes policies, adopts regulations, invests the funds, and performs other activities necessary to carry out the provisions of the Plan.

Employers Included

Currently there are 57 employers participating in TRS DCR, including the State of Alaska, 53 school districts, and three other eligible organizations.

Membership

An employee of a participating employer who first enters service on or after July 1, 2006, or a member of the defined benefit plan who works for an employer who began participation on or after July 1, 2006, and meets the following criteria is a member in the Plan:

- Permanent full-time or part-time elementary or secondary teachers, school nurses, or a person in a position requiring a teaching certificate as a condition of hire in a public school of the State of Alaska, the Department of Education and Early Development, or in the Department of Labor and Workforce Development.
- Full-time or part-time teachers at the University of Alaska or persons occupying full-time administrative positions requiring academic standing who are not in the University’s Optional Retirement Plan.

Members can convert to TRS DCR if they are an eligible non-vested member of the TRS defined benefit plan whose employer consents to transfers to the defined contribution plan and they elect to transfer his or her account balance to TRS DCR.

Member Contributions

Other than the member-paid premiums discussed later in this section, there are no member contributions for the occupational death & disability and retiree medical benefits.

Retiree Medical Benefits

- Member must retire directly from the plan to be eligible for retiree medical coverage. Normal retirement eligibility is the earlier of a) 30 years of service or b) Medicare eligible and 10 years of service.
- No subsidized retiree medical benefits are provided until normal retirement eligibility. The member's and any covered dependent's premium is 100% until the member is Medicare eligible. Upon the member's Medicare-eligibility, the required contribution will follow the service-based schedule shown below.
- Coverage cannot be denied except for failure to pay premium.
- Members who are receiving disability benefits or survivors who are receiving monthly survivor benefits are not eligible until the member meets, or would have met if he/she had lived, the normal retirement eligibility requirements.
- The following is a summary of the medical benefit design adopted in July 2016. The plan description below is used for valuation purposes and indicates participant cost-sharing. Please refer to the benefit handbook for more details.

Plan Design Feature	In-Network[1]	Out-of-Network[1 2]
Deductible (single / family)	$300 / $600	
Medical services (participant share)	20%	40%
Emergency Room Copay (non-emergent use)	$100	$100
Medical Out-of-Pocket Maximum (single / family, including deductible)	$1,500 / $3,000	$3,000 / $6,000
Medicare Coordination	Exclusion	Exclusion
Pharmacy	No Deductible	No Deductible
Retail Generic (per 30-day fill)	20% $10 min / $50 max	
Retail Non-Formulary Brand (per 30-day fill)	25% $25 min / $75 max	40%
Retail Formulary Brand (per 30-day fill)	35% $80 min / $150 max	
Mail-Order Generic	$20 copay	
Mail-Order Non-Formulary Brand	$50 copay	40%
Mail-Order Formulary Brand	$100 copay	
Pharmacy Out-of-Pocket Max (single / family)	$1,000 / $2,000	
Medicare Pharmacy Arrangement	Retiree Drug Subsidy / Employer Group Waiver Plan effective 1/1/2019	
Wellness / Preventative	100% covered, not subject to deductible	20%, after deductible

1 Section 1.1 of the AlaskaCare Defined Contribution Retiree Benefit Plan states that this health plan shall be updated from time to time to reflect changes in benefits, including annual adjustments to the premium, deductible, coinsurance, medical out-of-pocket limit, and prescription drug out-of-pocket limit.
2 OON applies only to non-Medicare eligible participants.

- Buck used manual rate models to determine relative plan values for the defined benefit (DB) retiree medical plan and the DCR retiree medical plan outlined above. We applied the ratio of the DCR retiree medical plan value to the DB retiree medical plan value to the per capita costs determined for each of pre/post-Medicare medical and pharmacy benefits to estimate corresponding values for the DCR retiree medical plan design. These factors are noted in Section 4.3. We further adjusted the Medicare medical manual rate to reflect the Medicare coordination method adopted. The estimated 2022 reimbursements under EGWP were provided by Segal Consulting (who worked with the EGWP administrator, Optum, to develop those estimates). We reflect estimated discounts and pharmacy rebates in the defined benefit medical cost so no further adjustment was needed for the DCR retiree medical plan. The medical network differential is reflected in the relative plan value adjustments.
- Starting in 2022, prior authorization will be required for certain specialty medications. There is no change to the medications that are covered by the plan.
- The retiree medical plan's coverage is supplemental to Medicare. Medicare coordination is described in the DCR Plan Handbook, referred to in the industry as exclusion coordination: Medicare payment is deducted from the Medicare allowable expense and plan parameters are applied to the remaining amount. Starting in 2019, the prescription drug coverage is through a Medicare Part D EGWP arrangement.
- The premium for Medicare-eligible retirees will be based on the member's years of service. The percentage of premium paid by the member is as follows:

Years of Service	Percent of Premium Paid by Member
< 15	30%
15 – 19	25%
20 – 24	20%
25 – 29	15%
30+	10%

- The premium for dependents who are not eligible for Medicare aligns with the member's subsidy. While a member is not Medicare-eligible, premiums are 100% of the estimated cost.
- Members have a separate defined contribution Health Reimbursement Arrangement account, which is not reflected in this valuation, that can be used to pay for premiums or other medical expenses.
- For valuation purposes, retiree premiums were assumed to equal the percentages outlined in the table above times the age-related plan costs. Future premiums calculated and charged to DCR participants will need to be determined reflecting any appropriate adjustments to the defined benefit (DB) plan data because current DB premiums were determined using information based upon enrollment with members who have double coverage.
- Coverage will continue for surviving spouses of covered retired members.

Occupational Disability Benefits

- Benefit is 40% of salary at date of disability.
- Disability Benefit Adjustment: The disability benefit is increased by 75% of the cost of living increase in the preceding calendar year or 9%, whichever is less.
- Member earns service while on occupational disability.
- Benefits cease when the member becomes eligible for normal retirement at Medicare-eligible age and 10 years of service, or at any age with 30 years of service.
- No subsidized retiree medical benefits are provided until normal retirement eligibility. The member's premium is 100% of the estimated cost until they are Medicare eligible. Medicare-eligible premiums follow the service-based schedule above.

Occupational Death Benefits

- Benefit is 40% of salary.
- Survivor's Pension Adjustment: A survivor's pension is increased by 50% of the cost of living increase in the preceding calendar year or 6%, whichever is less, if the recipient is at least age 60 on July 1, or under age 60 if the recipient has been receiving TRS benefits for at least 8 years as of July 1.
- Benefits cease when the member would have become eligible for normal retirement.
- The period during which the survivor is receiving benefits is counted as service credit toward retiree medical benefits.
- No subsidized retiree medical benefits are provided until the member would have been eligible for normal retirement. The surviving spouse's premium is 100% of the estimated cost until the member would have been Medicare eligible. Medicare-eligible premiums follow the service-based schedule above.

Changes Since the Prior Valuation

Starting in 2022, prior authorization will be required for certain specialty medications. There have been no other changes in TRS DCR benefit provisions valued since the prior valuation.

Section 4.2: Description of Actuarial Methods and Valuation Procedures

The funding method used in this valuation was adopted by the Board in October 2006, and was modified as part of the experience study for the period July 1, 2013 to June 30, 2017. The asset smoothing method used to determine valuation assets was implemented effective June 30, 2006.

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 Cost Method

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method, level percent of pay. Each year’s difference between actual and expected unfunded actuarial accrued liability is amortized over 25 years as a level percentage of expected payroll.

Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year for death & disability benefits and retiree medical benefits, from the assumed entry age to the last age with a future benefit 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 DCR Plan 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 beneficiaries and disabled members currently receiving benefits (if any) 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.

Valuation of Assets

Effective June 30, 2006, the asset valuation method recognizes 20% of the investment gain or loss in each of the current and preceding four years. This method was phased in over five years. Fair Value of Assets was $0 as of June 30, 2006. 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. Valuation assets are constrained to a range of 80% to 120% of the fair value of assets.

Changes in Methods Since the Prior Valuation

There were no changes in the asset or valuation methods since the prior valuation.

Valuation of Retiree Medical and Prescription Drug Benefits

The methodology used for the valuation of the retiree medical benefits is described in Section 5.2 of the State of Alaska Teachers' Retirement System Defined Benefit Plan Actuarial Valuation Report as of June 30, 2021.

Starting in 2022, prior authorization will be required for certain specialty medications. There is no change to the medications that are covered by the plan. Segal provided an estimate of the impact of this change to the DB retiree health plan cost for calendar year 2022. The DB base claims costs for pre-Medicare prescription drug, Medicare prescription drug, and EGWP were adjusted to reflect this change. Those base claims costs were used for the DCR valuation with further adjustments as noted below. Additionally, starting in 2022, certain common preventive benefits will be covered for the DB plan. However, preventive benefits are already covered under the DCR plan so no adjustment is needed for that change. Therefore, the base claims cost for the DB plan prior to reflecting the addition of preventive benefits was used for the DCR valuation with further adjustments as noted below.

Due to the lack of experience for the DCR retiree medical plan, base claims costs are based on those described in the actuarial valuation as of June 30, 2021 for the Defined Benefit (DB) retiree medical plan covering TRS and PERS. The DB rates were used with some adjustments. The claims costs were adjusted to reflect the differences between the DCR medical plan and the DB medical plan. These differences include network steerage, different coverage levels, different Medicare coordination for medical benefits, and an indexing of the retiree out-of-pocket dollar amounts. To account for higher initial copays, deductibles and out-of-pocket limits, projected FY22 claims costs were reduced 3.1% for medical claims, and 8.9% for prescription drugs. In addition, to account for the difference in Medicare coordination, projected FY22 medical claims costs for Medicare eligible retirees were further reduced 29.5%.

To adjust for the decrease in medical claims due to COVID-19 during the last 4 months of FY20, the per capita cost during the first 8 months was used as the basis for estimating claims that would have occurred in the absence of COVID-19. FY21 experience was also thoroughly reviewed to assess the impact of COVID-19 and whether an adjustment to FY21 claims was appropriate for use in the June 30, 2021 valuation. FY21 medical per capita claims were noticeably lower than expected, so a 4% load was added to the FY21 medical claims used in the per capita claims cost development to better reflect future expected long-term costs of the plan.

No implicit subsidies are assumed. Employees projected to retire with 30 years of service prior to Medicare are valued with commencement deferred to Medicare eligibility, because those members will be required to pay the full plan premium prior to Medicare. Explicit subsidies for disabled and normal retirement are determined using the plan-defined percentages of age-related total projected plan costs, again with no implicit subsidy assumed.

The State transitioned to an Employer Group Waiver Program (EGWP) for DCR participants effective January 1, 2019. The estimated 2022 reimbursements under EGWP were provided by Segal Consulting (who worked with the EGWP administrator, Optum, to develop those estimates).

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 due to these provisions.

Because the State plan is retiree-only, not all provisions are required. Unlimited lifetime benefits and dependent coverage to age 26 are two of these provisions. The adopted DCR plan does not place lifetime limits on benefits, but does restrict dependent child coverage.

The Further Consolidated Appropriations Act, 2020 passed in December 2019 repealed several healthcare-related taxes, including the Cadillac Tax.

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 provisions of healthcare 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.

Section 4.3: Summary of Actuarial Assumptions

The demographic and economic assumptions used in the June 30, 2021 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.

RP-2014 white-collar employee 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.

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.

Turnover

Select and ultimate rates based upon the 2013-2017 actual experience (see Table 2).

Disability

Incidence rates based upon the 2013-2017 actual experience (see Table 3). For retiree medical benefits, the disability rates cease once a member is eligible for retirement. However, the disability rates continue after retirement eligibility for occupational death & disability benefits.

Disabilities are assumed to be occupational 15% of the time.

Post-disability mortality in accordance with the RP-2014 disabled table, benefit-weighted, rolled back to 2006, and projected with MP-2017 generational improvement.

Retirement

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

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 Occupational Death & Disability

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% of female members are assumed to be married and cover a dependent spouse.

Part-Time Status

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

Per Capita Claims Cost

Sample claims cost rates (before base claims cost adjustments described below) adjusted to age 65 for FY22 medical and prescription drugs are shown below. The prescription drug costs reflect the plan change to require prior authorization for certain specialty medications.

	Medical	Prescription Drugs
Pre-Medicare	$ 15,708	$ 3,375
Medicare Parts A & B	$ 1,619	$ 3,474
Medicare Part D – EGWP	N/A	$ 1,131

Members are assumed to attain Medicare eligibility at age 65. All costs are for the 2022 fiscal year (July 1, 2021 – June 30, 2022).

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

$493 per person per year; assumed to increase at 4.5% per year.

Base Claims Cost Adjustments

Due to higher initial copays, deductibles, out-of-pocket limits and member cost sharing compared to the DB medical plan, the following cost adjustments are applied to the per capita claims cost rates above:

- 0.969 for the pre-Medicare plan.
- 0.674 for both the Medicare medical plan and Medicare coordination method (3.1% reduction for the medical plan and 29.5% reduction for the coordination method).
- 0.911 for the prescription drug plan.

Administrative Expenses

Beginning with the June 30, 2018 valuation, the Normal Cost is increased for administrative expenses expected to be paid from plan assets during the year. The amounts included in the June 30, 2021 Normal Cost, which are based on the average of actual administrative expenses during the last two fiscal years, are $5,000 for occupational death & disability and $22,000 for retiree medical.

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, 6.3% is applied to the FY22 pre-Medicare medical claims costs to get the FY23 medical claims costs.

	Medical Pre-65	Medical Post-65	Prescription Drugs / EGWP
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%

Retiree Medical Participation

Death / Disability Decrement		Retirement Decrement		
Age	Percent Participation	Age	Percent Participation*	
< 56	75.0%	55	50.0%	
56	77.5%	56	55.0%	
57	80.0%	57	60.0%	
58	82.5%	58	65.0%	
59	85.0%	59	70.0%	
60	87.5%	60	75.0%	
61	90.0%	61	80.0%	
62	92.5%	62	85.0%	
63	95.0%	63	90.0%	
64	97.5%	64	95.0%	
65+	100.0%	65+	**Years of Service**	
			< 15	75.0%
			15 – 19	80.0%
			20 – 24	85.0%
			25 – 29	90.0%
			30+	95.0%

* Participation assumption is a combination of (i) the service-based rates for retirement from employment at age 65+ and (ii) the age-based rates for retirement from employment before age 65. These rates reflect the expected plan election rate that varies by reason for decrement, duration that a member may pay full cost prior to Medicare eligibility, and availability of alternative and/or lower cost options, particularly in the Medicare market. This assumption is based on observed trends in participation from a range of other plans.

Imputed Data

Data changes from the prior year which are deemed to have 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.

Changes in Assumptions Since the Prior Valuation

The amounts included in the Normal Cost for administrative expenses were changed from $0 to $5,000 for occupational death & disability, and from $8,000 to $22,000 for retiree medical (based on the most recent two years of actual administrative expenses paid from plan assets). The per capita claims cost assumption is updated annually.

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 6 Years of Employment

Years of Service	Male	Female
0	20.70%	21.80%
1	19.55%	18.70%
2	16.10%	15.40%
3	13.80%	13.20%
4	11.50%	11.00%
5	7.32%	8.05%

Ultimate Rates after the First 6 Years of Employment

Age	Male	Female	Age	Male	Female
< 26	9.41%	8.31%	45	9.05%	8.09%
26	9.41%	8.32%	46	8.99%	8.07%
27	9.40%	8.33%	47	8.94%	8.04%
28	9.39%	8.32%	48	8.86%	8.00%
29	9.39%	8.32%	49	8.78%	7.95%
30	9.38%	8.31%	50	8.70%	7.91%
31	9.37%	8.31%	51	8.62%	7.86%
32	9.36%	8.30%	52	8.54%	7.82%
33	9.35%	8.29%	53	8.37%	7.73%
34	9.35%	8.28%	54	8.20%	7.64%
35	9.34%	8.27%	55	8.03%	7.55%
36	9.34%	8.26%	56	7.86%	7.46%
37	9.33%	8.25%	57	7.69%	7.36%
38	9.31%	8.24%	58	7.76%	7.50%
39	9.29%	8.22%	59	7.82%	7.64%
40	9.26%	8.21%	60	7.89%	7.78%
41	9.24%	8.19%	61	7.95%	7.92%
42	9.22%	8.17%	62	8.02%	8.05%
43	9.16%	8.15%	63	8.59%	8.29%
44	9.11%	8.12%	64	9.17%	8.52%
			65+	9.75%	8.75%

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%

Age	Male	Female
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%
55	0.0905%	0.1645%
56	0.0985%	0.1790%
57	0.1064%	0.1935%
58	0.1245%	0.2263%
59	0.1426%	0.2592%
60	0.1606%	0.2920%
61	0.1787%	0.3249%
62	0.1967%	0.3577%
63	0.2253%	0.4096%
64	0.2572%	0.4677%
65	0.2933%	0.5332%
66	0.3343%	0.6079%
67	0.3812%	0.6930%
68	0.4345%	0.7900%
69	0.4953%	0.9006%
70+	0.5647%	1.0267%

Table 4: Retirement Rates

Age	Rate
< 55	2.0%
55	3.0%
56	3.0%
57	3.0%
58	3.0%
59	3.0%
60	5.0%
61	5.0%
62	10.0%
63	5.0%
64	5.0%
65	25.0%
66	25.0%
67	25.0%
68	20.0%
69	20.0%
70+	100.0%

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 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.

January 6, 2022

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

Re: Judicial Retirement System and National Guard and Naval Militia Retirement System Roll-Forward Actuarial Valuations as of June 30, 2021

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

We have completed the roll-forward actuarial valuations for the State of Alaska Judicial Retirement System (JRS) and the National Guard and Naval Militia Retirement System (NGNMRS) as of June 30, 2021. The valuations have been performed by a projection or "roll forward" of results from the last valuation date of June 30, 2020 to June 30, 2021. Actual asset values as of June 30, 2021 were reflected. A summary of results and description of assumptions and methods are included in this report.

The purposes of these roll-forward valuations are to (i) determine the employer contributions necessary to meet the Board's funding policy for each System, (ii) disclose the funding assets and liability measures as of the valuation date, and (iii) review the current funded status of each System and assess the funded status as an appropriate measure for determining future actuarially determined contributions.

The Board and staff of the State of Alaska may use this report for the review of the operations of JRS and NGNMRS. 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 actuarial assumptions, changes 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 these valuations.

Actuarial Assumptions and Methods

In lieu of collecting new participant data as of June 30, 2021 and performing a full actuarial valuation, the actuarial liabilities are projected or "rolled forward" from the June 30, 2020 valuation date to June 30, 2021 by assuming the actuarial assumptions during the year are exactly realized.

The actuarial value of assets was calculated as of June 30, 2021 using actual assets and cash flows during FY21. The asset valuation method recognizes 20% of the investment gain or loss each year, for a period of five years. Valuation assets are constrained to a range of 80% to 120% of the fair value of assets.

All data, actuarial assumptions, methods, and plan provisions are the same as those shown in the June 30, 2020 valuation reports dated May 20, 2021, with the following exceptions:

- For JRS, the amounts included in the Normal Cost for administrative expenses were changed from $83,000 to $102,000 for pension and from $24,000 to $31,000 for healthcare, based on the most recent two years of actual administrative expenses paid from plan assets.
- For NGNMRS, the amount included in the Normal Cost for administrative expenses was changed from $256,000 to $268,000, based on the most recent two years of actual administrative expenses paid from plan assets.
- For NGNMRS, the June 30, 2020 actuarial accrued liability used for the roll-forward valuation reflects a valuation system coding update that was recommended by the reviewing actuary. This update decreased the June 30, 2020 actuarial accrued liability by $38,250.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of each System and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under each System.

Funded Status

Where presented, references to "funded ratio", "funded status", 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 actuarial accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but make no assessment regarding the funded status of the plans if the plans were to settle (i.e. purchase annuities) for a portion or all of their liabilities.

Summary of Results

The results of the June 30, 2021 roll-forward valuations are shown below (results from the June 30, 2020 valuations are shown for comparison purposes):

	June 30, 2020	June 30, 2021
Judicial Retirement System		
• Funded Status[1]		
o Pension	92.0%	98.6%
o Healthcare	207.6%	211.4%
o Total	100.5%	107.1%
• Employer/State Contribution Rates[2]		
o Pension	63.6%	58.7%
o Healthcare	6.5%	6.5%
o Total	70.1%	65.2%
National Guard and Naval Militia Retirement System		
• Funded Status[1]	191.9%	196.9%
• Actuarially Determined Contribution, not less than zero[3]	$ 0	$ 0

The following table summarizes the FY21 actuarial gains/(losses). Net actuarial gains/losses decrease/increase the unfunded actuarial accrued liability versus what was expected based on the previous valuation.

	JRS	NGNMRS
Asset Gain/(Loss)	$ 9,349,000	$ 1,040,000
Liability Gain/(Loss)	N/A	41,000[4]
Healthcare Benefit Payment Gain/(Loss)	(608,000)	N/A
Contribution Gain/(Loss)	4,665,000	0
Administrative Expense Gain/(Loss)	(19,000)	(41,000)
Total Gain/(Loss)	$ 13,387,000	$ 1,040,000

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1 The funded status shown is based on the actuarial value of assets. The funded status is different based on the fair value of assets.
2 The June 30, 2020 valuation determined the contribution rates for FY23. The June 30, 2021 valuation determines the contribution rates for FY24. Total contribution rates are not less than the Normal Cost rate.
3 The June 30, 2020 valuation determined the contribution for FY23. The June 30, 2021 valuation determines the contribution for FY24.
4 The June 30, 2020 actuarial accrued liability used for the roll-forward valuation reflects a valuation system coding update that was recommended by the reviewing actuary. The amount shown includes interest to June 30, 2021.

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 healthcare portion of JRS. See pages 16-18 of this report for further details regarding ASOP 51.

Use of Models

Actuarial Standard of Practice No. 56 (ASOP 56) provides guidance to actuaries when performing actuarial services with respect to designing, developing, selecting, modifying, using, reviewing, or evaluating models. Buck uses third-party software in the performance of annual actuarial valuations and projections. The model is intended to calculate the liabilities associated with the provisions of each plan using data and assumptions as of the measurement date under the funding methods specified in this report. The output from the third-party vendor software is used as input to internally developed models that apply applicable funding methods and policies to the derived liabilities and other inputs, such as plan assets and contributions, to generate many of the exhibits found in this report. Buck has an extensive review process in which the results of the liability calculations are checked using detailed sample life output, changes from year to year are summarized by source, and significant deviations from expectations are investigated. Other funding outputs and the internal models are similarly reviewed in detail and at a higher level for accuracy, reasonability, and consistency with prior results. Buck also reviews the third-party model when significant changes are made to the software. This review is performed by experts within Buck who are familiar with applicable funding methods, as well as the manner in which the model generates its output. If significant changes are made to the internal models, extra checking and review are completed. Significant changes to the internal models that are applicable to multiple clients are generally developed, checked, and reviewed by multiple experts within Buck who are familiar with the details of the required changes.

Additional models used in valuing health benefits for JRS are described in Section 4.2 of the June 30, 2020 report dated May 20, 2021.

This report was prepared under our supervision and in accordance with all applicable Actuarial Standards of Practice. We are Fellows of the Society of Actuaries, Enrolled Actuaries, Fellows of the Conference of Consulting Actuaries, and Members of the American Academy of Actuaries. We meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein.

Please let us know if you have any questions or if you would like to discuss these results in more detail. David can be reached at 602-803-6174 and Scott can be reached at 216-315-1929.

Sincerely,

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

Scott Young, FSA, EA, MAAA, FCA
Director
Buck

Attachments

cc: Mr. Kevin Worley, State of Alaska

Judicial Retirement System

Funded Status as of June 30		2020		2021
Pension				
a. Actuarial Accrued Liability	$	211,742,043	$	218,717,460
b. Valuation Assets		194,788,043		215,641,198
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$	16,954,000	$	3,076,262
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)		92.0%		98.6%
e. Fair Value of Assets	$	189,844,025	$	245,047,997
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)		89.7%		112.0%
Healthcare				
a. Actuarial Accrued Liability	$	16,763,770	$	17,920,646
b. Valuation Assets		34,805,639		37,884,167
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$	(18,041,869)	$	(19,963,521)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)		207.6%		211.4%
e. Fair Value of Assets	$	34,036,503	$	43,173,349
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)		203.0%		240.9%
Total				
a. Actuarial Accrued Liability	$	228,505,813	$	236,638,106
b. Valuation Assets		229,593,683		253,525,365
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$	(1,087,869)	$	(16,887,259)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)		100.5%		107.1%
e. Fair Value of Assets	$	223,880,528	$	288,221,346
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)		98.0%		121.8%

Comparative Summary of Contribution Rates	FY 2023	FY 2024
Pension		
a. Normal Cost Rate Net of Member Contributions	38.85%	38.99%
b. Past Service Cost Rate	24.74%	19.71%
c. Total Employer/State Contribution Rate, (a) + (b), not less than (a)	63.59%	58.70%
Healthcare		
a. Normal Cost Rate	6.49%	6.54%
b. Past Service Cost Rate	(8.24)%	(9.33)%
c. Total Employer/State Contribution Rate, (a) + (b), not less than (a)	6.49%	6.54%
Total		
a. Normal Cost Rate Net of Member Contributions	45.34%	45.53%
b. Past Service Cost Rate	24.74%	19.71%
c. Total Employer/State Contribution Rate, (a) + (b), not less than (a)	70.08%	65.24%

Judicial Retirement System (continued)

Actuarial Contributions as of June 30, 2021 for FY24	Pension	Healthcare	Total
Normal Cost Rate			
1. Total Normal Cost	$ 5,952,927	$ 860,927	$ 6,813,854
2. Base Salaries for Upcoming Fiscal Year	13,157,172	13,157,172	13,157,172
3. Normal Cost Rate, (1) ÷ (2)	45.24%	6.54%	51.78%
4. Average Member Contribution Rate	6.25%	0.00%	6.25%
5. Employer Normal Cost Rate, (3) - (4)	38.99%	6.54%	45.53%
Past Service Rate			
1. Actuarial Accrued Liability	$ 218,717,460	$ 17,920,646	$ 236,638,106
2. Valuation Assets	215,641,198	37,884,167	253,525,365
3. Unfunded Actuarial Accrued Liability, (1) - (2)	$ 3,076,262	$ (19,963,521)	$ (16,887,259)
4. Funded Ratio, (2) ÷ (1)	98.6%	211.4%	107.1%
5. Past Service Cost Amortization Payment	2,593,806	(1,227,111)	1,366,695
6. Base Salaries for Upcoming Fiscal Year	13,157,172	13,157,172	13,157,172
7. Past Service Rate, (5) ÷ (6)	19.71%	(9.33)%	10.38%
Total Employer Contribution Rate, not less than Normal Cost Rate	58.70%	6.54%	65.24%

Judicial Retirement System (continued)

Schedule of Past Service Cost Amortizations - Pension

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability[1]	6/30/2002	6	$ 5,864,449	$ 3,943,106	$ 731,664
FY03/04 Loss[1]	6/30/2004	8	855,068	681,204	98,849
Revaluation of Liabilities[1]	6/30/2005	9	9,115,451	7,702,909	1,014,308
FY05/06 Loss[1]	6/30/2006	10	18,186,558	16,102,295	1,947,827
FY07 Loss	6/30/2007	11	1,364,721	1,254,213	140,759
FY08 Gain	6/30/2008	12	(29,014,739)	(27,481,906)	(2,884,889)
FY09 Loss	6/30/2009	13	21,273,454	20,625,359	2,039,004
Change in Assumptions	6/30/2010	14	13,976,981	13,791,031	1,291,385
FY10 Loss	6/30/2010	14	6,474,780	6,388,639	598,229
FY11 Loss	6/30/2011	15	7,397,917	7,407,859	660,308
FY12 Loss	6/30/2012	16	11,916,371	12,057,403	1,027,469
FY13 Loss	6/30/2013	17	7,033,497	6,922,837	566,097
Change in Assumptions	6/30/2014	18	4,219,851	4,312,578	339,526
FY14 Gain	6/30/2014	18	(14,458,986)	(14,776,719)	(1,163,359)
FY15 Gain	6/30/2015	19	(3,325,706)	(3,400,048)	(258,478)
FY16 Gain	6/30/2016	20	(9,932,623)	(10,131,681)	(745,694)
FY17 Gain	6/30/2017	21	(1,137,538)	(1,154,977)	(82,492)
Change in Assumptions	6/30/2018	22	10,343,783	10,431,580	724,547
FY18 Gain	6/30/2018	22	(12,096,419)	(12,199,094)	(847,313)
Change in Assumptions	6/30/2019	23	(14,775,890)	(14,884,472)	(1,007,300)
FY19 Loss	6/30/2019	23	3,344,559	3,369,137	228,005
Change in Assumptions	6/30/2020	24	(21,604,253)	(21,700,673)	(1,433,384)
FY20 Loss	6/30/2020	24	5,424,705	5,448,915	359,915
FY21 Gain	6/30/2021	25	(11,633,233)	(11,633,233)	(751,177)
Total				**$ 3,076,262**	**$ 2,593,806**

[1] The pension and healthcare split was done based on the ratio of unfunded actuarial accrued liability as of June 30, 2006.

Judicial Retirement System (continued)

Schedule of Past Service Cost Amortizations - Healthcare

Layer	Amortization Period		Balances		
	Date Created	Years Remaining	Initial	Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability[1]	6/30/2002	6	$ 2,295,257	$ 1,543,274	$ 286,362
FY03/04 Loss[1]	6/30/2004	8	334,660	266,612	38,688
Revaluation of Liabilities[1]	6/30/2005	9	3,567,649	3,014,800	396,985
FY05/06 Loss[1]	6/30/2006	10	7,117,943	6,302,194	762,350
FY07 Gain	6/30/2007	11	(810,073)	(744,478)	(83,552)
Change in Assumptions	6/30/2008	12	789,072	747,387	78,456
FY08 Gain	6/30/2008	12	(14,011,596)	(13,271,372)	(1,393,151)
FY09 Loss	6/30/2009	13	901,355	873,897	86,393
Change in Assumptions	6/30/2010	14	2,006,196	1,979,505	185,360
FY10 Gain	6/30/2010	14	(1,930,656)	(1,904,968)	(178,380)
FY11 Loss	6/30/2011	15	550,376	551,115	49,124
Change in Assumptions	6/30/2012	16	353,605	357,788	30,489
FY12 Gain	6/30/2012	16	(5,516,210)	(5,581,498)	(475,626)
FY13 Loss	6/30/2013	17	226,259	230,466	18,846
Change in Assumptions	6/30/2014	18	772,305	789,275	62,139
FY14 Gain	6/30/2014	18	(3,342,464)	(3,415,915)	(268,932)
FY15 Gain	6/30/2015	19	(1,416,996)	(1,448,671)	(110,131)
Change in Method	6/30/2016	20	(3,567,789)	(3,639,291)	(267,852)
FY16 Gain	6/30/2016	20	(425,711)	(434,243)	(31,960)
FY17 Gain	6/30/2017	21	(586,113)	(595,099)	(42,504)
Change in Assumptions/ Methods/EGWP	6/30/2018	22	1,009,960	1,018,532	70,744
FY18 Gain	6/30/2018	22	(2,148,478)	(2,166,713)	(150,494)
Change in Assumptions	6/30/2019	23	126,754	127,684	8,641
FY19 Gain	6/30/2019	23	(155,028)	(156,166)	(10,568)
Change in Assumptions	6/30/2020	24	200,955	201,852	13,333
FY20 Gain	6/30/2020	24	(2,842,610)	(2,855,296)	(188,600)
FY21 Gain	6/30/2021	25	(1,754,192)	(1,754,192)	(113,271)
Total				**$ (19,963,521)**	**$ (1,227,111)**

[1] The pension and healthcare split was done based on the ratio of unfunded actuarial accrued liability as of June 30, 2006.

Judicial Retirement System (continued)

Schedule of Past Service Cost Amortizations - Total

Layer	Amortization Period: Date Created	Amortization Period: Years Remaining	Balances: Initial	Balances: Outstanding	Beginning-of-Year Payment
Initial Unfunded Liability	6/30/2002	6	$ 8,159,706	$ 5,486,380	$ 1,018,026
FY03/04 Loss	6/30/2004	8	1,189,728	947,816	137,537
Revaluation of Liabilities	6/30/2005	9	12,683,100	10,717,709	1,411,293
FY05/06 Loss	6/30/2006	10	25,304,501	22,404,489	2,710,177
FY07 Loss	6/30/2007	11	554,648	509,735	57,207
Change in Assumptions	6/30/2008	12	789,072	747,387	78,456
FY08 Gain	6/30/2008	12	(43,026,335)	(40,753,278)	(4,278,040)
FY09 Loss	6/30/2009	13	22,174,809	21,499,256	2,125,397
Change in Assumptions	6/30/2010	14	15,983,177	15,770,536	1,476,745
FY10 Loss	6/30/2010	14	4,544,124	4,483,671	419,849
FY11 Loss	6/30/2011	15	7,948,293	7,958,974	709,432
Change in Assumptions	6/30/2012	16	353,605	357,788	30,489
FY12 Loss	6/30/2012	16	6,400,161	6,475,905	551,843
FY13 Loss	6/30/2013	17	7,259,756	7,153,303	584,943
Change in Assumptions	6/30/2014	18	4,992,156	5,101,853	401,665
FY14 Gain	6/30/2014	18	(17,801,450)	(18,192,634)	(1,432,291)
FY15 Gain	6/30/2015	19	(4,742,702)	(4,848,719)	(368,609)
Change in Method	6/30/2016	20	(3,567,789)	(3,639,291)	(267,852)
FY16 Gain	6/30/2016	20	(10,358,334)	(10,565,924)	(777,654)
FY17 Gain	6/30/2017	21	(1,723,651)	(1,750,076)	(124,996)
Change in Assumptions/ Methods/EGWP	6/30/2018	22	11,353,743	11,450,112	795,291
FY18 Gain	6/30/2018	22	(14,244,897)	(14,365,807)	(997,807)
Change in Assumptions	6/30/2019	23	(14,649,136)	(14,756,788)	(998,659)
FY19 Loss	6/30/2019	23	3,189,531	3,212,971	217,437
Change in Assumptions	6/30/2020	24	(21,403,298)	(21,498,821)	(1,420,051)
FY20 Loss	6/30/2020	24	2,582,095	2,593,619	171,315
FY21 Gain	6/30/2021	25	(13,387,425)	(13,387,425)	(864,448)
Total				**$ (16,887,259)**	**$ 1,366,695**

Judicial Retirement System (continued)

Changes in Fair Value of Assets During FY21	Pension	Healthcare	Total
1. Fair Value of Assets as of June 30, 2020	$ 189,844,025	$ 34,036,503	$ 223,880,528
2. Additions:			
a. Employee Contributions	$ 837,686	$ 0	$ 837,686
b. Employer Contributions	6,962,607	654,383	7,616,990
c. State Contributions	5,145,000	0	5,145,000
d. Interest and Dividend Income	2,685,812	478,159	3,163,971
e. Net Appreciation / Depreciation in Fair Value of Investments	54,575,739	9,641,569	64,217,308
f. Employer Group Waiver Plan	0	168,159	168,159
g. Other	7,891	14,345	22,236
h. Total Additions	$ 70,214,735	$ 10,956,615	$ 81,171,350
3. Deductions:			
a. Medical Benefits	$ 0	$ 1,692,383	$ 1,692,383
b. Retirement Benefits	14,368,857	0	14,368,857
c. Refund of Contributions	0	0	0
d. Investment Expenses	544,884	95,170	640,054
e. Administrative Expenses	97,022	32,216	129,238
f. Total Deductions	$ 15,010,763	$ 1,819,769	$ 16,830,532
4. Fair Value of Assets as of June 30, 2021	$ 245,047,997	$ 43,173,349	$ 288,221,346
5. Approximate Fair Value Investment Return Rate during FY21 Net of Investment Expenses	30.0%	29.9%	30.0%

Judicial Retirement System (continued)

Development of Actuarial Value of Assets		Pension	Healthcare	Total
1.	Investment Gain / (Loss) for FY21			
a.	Fair Value of Assets as of June 30, 2020	$ 189,844,025	$ 34,036,503	$ 223,880,528
b.	Contributions	12,945,293	654,383	13,599,676
c.	Employer Group Waiver Plan	0	168,159	168,159
d.	Benefit Payments	14,368,857	1,692,383	16,061,240
e.	Administrative Expenses	97,022	32,216	129,238
f.	Actual Investment Return (net of investment expenses)	56,724,558	10,038,903	66,763,461
g.	Expected Return Rate (net of investment expenses)	7.38%	7.38%	7.38%
h.	Expected Return, Weighted for Timing	14,104,367	2,479,200	16,583,567
i.	Investment Gain / (Loss) for the Year, (f) - (h)	42,620,191	7,559,703	50,179,894
2.	Actuarial Value as of June 30, 2021			
a.	Fair Value as of June 30, 2021	$ 245,047,997	$ 43,173,349	$ 288,221,346
b.	Deferred Investment Gain / (Loss)	29,406,799	5,289,182	34,695,981
c.	Preliminary Actuarial Value at June 30, 2021, (a) - (b)	215,641,198	37,884,167	253,525,365
d.	Lower Limit: 80% of Fair Value as of June 30, 2021	196,038,398	34,538,679	230,577,077
e.	Upper Limit: 120% of Fair Value as of June 30, 2021	294,057,596	51,808,019	345,865,615
f.	Actuarial Value as of June 30, 2021, (c) limited by (d) and (e)	$ 215,641,198	$ 37,884,167	$ 253,525,365
3.	Ratio of Actuarial Value of Assets to Fair Value of Assets	88.0%	87.7%	88.0%
4.	Approximate Actuarial Value Investment Return Rate during FY21 Net of Investment Expenses	11.5%	11.6%	11.5%

Judicial Retirement System (continued)

Pension				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 7,229,597	$ 5,783,677	$ 1,445,920	$ 0
June 30, 2018	292,590	175,554	58,518	58,518
June 30, 2019	(2,647,188)	(1,058,876)	(529,437)	(1,058,875)
June 30, 2020	(6,148,327)	(1,229,665)	(1,229,665)	(3,688,997)
June 30, 2021	42,620,191	0	8,524,038	30,096,153
Total	**$ 41,346,863**	**$ 3,670,690**	**$ 8,269,374**	**$ 29,406,799**

Healthcare				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 1,282,441	$ 1,025,952	$ 256,489	$ 0
June 30, 2018	98,500	59,100	19,700	19,700
June 30, 2019	(409,783)	(163,914)	(81,956)	(163,913)
June 30, 2020	(1,023,945)	(204,789)	(204,789)	(614,367)
June 30, 2021	7,559,703	0	1,511,941	6,047,762
Total	**$ 7,506,916**	**$ 716,349**	**$ 1,501,385**	**$ 5,289,182**

Total				
Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 8,512,038	$ 6,809,629	$ 1,702,409	$ 0
June 30, 2018	391,090	234,654	78,218	78,218
June 30, 2019	(3,056,971)	(1,222,790)	(611,393)	(1,222,788)
June 30, 2020	(7,172,272)	(1,434,454)	(1,434,454)	(4,303,364)
June 30, 2021	50,179,894	0	10,035,979	40,143,915
Total	**$ 48,853,779**	**$ 4,387,039**	**$ 9,770,759**	**$ 34,695,981**

National Guard and Naval Militia Retirement System

Funded Status as of June 30		2020		2021
a. Actuarial Accrued Liability	$	22,417,247	$	22,975,269
b. Valuation Assets		43,020,393		45,248,391
c. Unfunded Actuarial Accrued Liability, (a) - (b)	$	(20,603,146)	$	(22,273,122)
d. Funded Ratio based on Valuation Assets, (b) ÷ (a)		191.9%		196.9%
e. Fair Value of Assets	$	42,095,708	$	49,813,036
f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a)		187.8%		216.8%

Actuarial Determined Contribution Amounts		FY 2023		FY 2024
a. Normal Cost	$	503,140	$	503,140
b. Administrative Expense Load		256,000		268,000
c. Past Service Cost		(3,224,638)		(3,486,009)
d. Total Annual Contribution, (a) + (b) + (c), not less than 0	$	0	$	0

National Guard and Naval Militia Retirement System (continued)

Changes in Fair Value of Assets During FY21

1.	Fair Value of Assets as of June 30, 2020	$	42,095,708
2.	Additions:		
	a. Employer Contributions	$	0
	b. Investment Income		9,571,576
	c. Other		1,690
	d. Total Additions	$	9,573,266
3.	Deductions:		
	a. Retirement Benefits	$	1,454,330
	b. Investment Expenses		97,169
	c. Administrative Expenses		304,439
	d. Total Deductions	$	1,855,938
4.	Fair Value of Assets as of June 30, 2021	$	49,813,036
5.	Approximate Fair Value Investment Return Rate during FY21 Net of Investment Expenses		23.0%

National Guard and Naval Militia Retirement System (continued)

Development of Actuarial Value of Assets

1.	Investment Gain / (Loss) for FY21		
a.	Fair Value of Assets as of June 30, 2020	$	42,095,708
b.	Contributions		0
c.	Benefit Payments		1,454,330
d.	Administrative Expenses		304,439
e.	Actual Investment Return (net of investment expenses)		9,476,097
f.	Expected Return Rate (net of investment expenses)		7.00%
g.	Expected Return, Weighted for Timing		2,881,937
h.	Investment Gain / (Loss) for the Year, (e) - (g)		6,594,160
2.	Actuarial Value as of June 30, 2021		
a.	Fair Value as of June 30, 2021	$	49,813,036
b.	Deferred Investment Gain / (Loss)		4,564,645
c.	Preliminary Actuarial Value at June 30, 2021, (a) - (b)		45,248,391
d.	Lower Limit: 80% of Fair Value as of June 30, 2021		39,850,429
e.	Upper Limit: 120% of Fair Value as of June 30, 2021		59,775,643
f.	Actuarial Value as of June 30, 2021, (c) limited by (d) and (e)	$	45,248,391
3.	Ratio of Actuarial Value of Assets to Fair Value of Assets		90.8%
4.	Approximate Actuarial Value Investment Return Rate during FY21 Net of Investment Expenses		9.5%

Fiscal Year Ending	Asset Gain / (Loss)	Gain / (Loss) Recognized in Prior Years	Gain / (Loss) Recognized This Year	Gain / (Loss) Deferred to Future Years
June 30, 2017	$ 704,309	$ 563,448	$ 140,861	$ 0
June 30, 2018	(681,054)	(408,633)	(136,211)	(136,210)
June 30, 2019	(407,413)	(162,966)	(81,483)	(162,964)
June 30, 2020	(685,847)	(137,169)	(137,169)	(411,509)
June 30, 2021	6,594,160	0	1,318,832	5,275,328
Total	**$ 5,524,155**	**$ (145,320)**	**$ 1,104,830**	**$ 4,564,645**

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 plans. However, to the extent future experience deviates from the assumptions used, variations will occur in these calculated values. These variations create risk to the plans. Understanding the risks to the funding of the plans is important.

Actuarial Standard of Practice No. 51 (ASOP 51)[1] requires certain disclosures of potential risks to the plans 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 plans' future financial condition and contribution requirements.

- Investment Risk – potential that the investment return will be different than the return expected in the actuarial valuation (7.38% for JRS and 7.00% for NGNMRS)
- Contribution Risk – potential that the contribution actually made will be different than the actuarially determined contribution
- 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[2] – potential that future salaries will be different than expected in the actuarial valuation
- Inflation Risk[2] – potential that the consumer price index (CPI) for urban wage earners and clerical workers for Anchorage is different than the 2.5% inflation rate 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 JRS. Accordingly, all comments in this section relate to the pension portion of JRS.

[2] Salary increase risk and inflation risk apply to JRS only.

Note that ASOP 51 does not require the actuary to evaluate the ability or willingness of the plan sponsor to make contributions to the plans 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 plans use 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 2.5 (JRS) and Section 2.4 (NGNMRS) of the June 30, 2020 reports dated May 20, 2021. This historical experience illustrates how returns can vary over time.

Contribution Risk

There is a risk to the plans when the employer's and/or State's actual contribution amount and the actuarially determined contribution differ.

- If the actual contributions are lower than the actuarially determined contributions, the plans 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 plans' asset allocations 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 the actuarial accrued liability by approximately 11% for JRS and 9% for NGNMRS.

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 plans could increase.
- The mortality assumptions for the plans mitigates this risk by assuming future improvements in mortality. However, any improvement in future mortality greater than that expected by the current mortality assumptions would lead to increased costs for the plans.

JRS provides cost-of-living adjustments on retirement benefits (based on salary changes of sitting judges) that 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[1]

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[1]

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 being discussed here.

Other Demographic Risk

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

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[1] Salary increase risk and inflation risk apply to JRS only.