# ALASKA RETIREMENT MANAGEMENT BOARD

MARCH 19, 2020

UPDATED MEETING

## BOARD OF TRUSTEES MEETING

TELECONFERENCE: 1-800-315-6338
ACCESS CODE: 12762#

# THURSDAY, MARCH 19, 2020

| | | |
|---|---|---|
| **I.** | **9:00 am** | **Call to Order** |
| **II.** | | **Roll Call** |
| **III.** | | **Public Meeting Notice** |
| **IV.** | | **Approval of Agenda** |
| **V.** | | **Introductory Comments from CIO** |
| **VI.** | | **Public/Member Participation, Communications, and Appearances** (Three Minute Limit) |
| **VII.** | **9:10** | **Chair Report** *Robert Johnson, ARMB Chair* |
| **VIII.** | **9:15** | **Minutes, Calendar/Disclosures, and Staff Reports** |

1. Approval of Minutes – December 12-13, 2019

2. Calendar/Disclosures
   *Stephanie Alexander, Liaison Officer*

3. Fund Financial Presentation and Cash Flow Update
   *Kayla Wisner, Comptroller, DOR*
   *Kevin Worley, CFO, Division of Retirement & Benefits*

4. Investment Transaction Summary
   *Bob Mitchell, Chief Investment Officer*

5. Retirement & Benefits Division Report
   A. Membership Statistics (informational)
   B. Buck Invoices (informational)
   *Kevin Worley, CFO, Division of Retirement & Benefits*

6. Treasury Division Report
   *Pamela Leary, Director, Treasury Division*

7. Information Report – Response to Trustee Inquiry
   *Bob Mitchell, Chief Investment Officer*

**IX. 9:40 Existing Business**

8. Performance Measurement – 4th Quarter
   *Paul Erlendson, Callan LLC*
   *Steve Center, Callan LLC*

## 10:20AM – 10 MINUTE BREAK

| | | |
|---|---|---|
| 10:30-10:50 | 9. | Market and Portfolio Update<br>*Bob Mitchell, Chief Investment Officer* |
| 10:50–11:00 | 10. | Use of Equity Futures in Internally Managed Portfolios<br>*Mark Moon, Director, Internal Public Equity* |
| 11:00-11:30 | 11. | Buck Updates<br>A. Actuary Reports – 2019 Draft Actuarial Valuation – PERS, TRS, JRS, and NGNMRS<br>B. Review Timelines: Valuation<br>*David Kershner, Buck*<br>*Scott Young, Buck* |
| 11:30-11:50 | 12. | GRS Report<br>*A.* Draft Audit Results and Recommendations<br>*Paul Wood, GRS Consulting*<br>*Bill Detweiler, GRS Consulting* |
| 11:50– | 13. | Investment Actions<br>*Bob Mitchell, Chief Investment Officer* |

**X. Unfinished Business**
**XI. New Business**
**XII. Other Matters to Properly Come Before the Board**
**XIII. Public/Member Comments**
**XIV. Investment Advisory Council Comments**
**XV. Trustee Comments**
**XVI. Future Agenda Items**
**XVII. Adjournment**

*NOTE: Times are approximate and every attempt will be made to stay on schedule; however, adjustments may be made.*

**State of Alaska**
**ALASKA RETIREMENT MANAGEMENT BOARD**
**MEETING**

**Location**
Alaska State Museum
Lecture Hall
395 Whittier Street
Juneau, Alaska

**MINUTES OF**
**December 12 - 13, 2019**

**Thursday, December 12, 2019**

## CALL TO ORDER

CHAIR ROBERT JOHNSON called the meeting of the Alaska Retirement Management Board (ARMB) to order at 9:00 a.m.

## ROLL CALL

Nine ARMB trustees were present at roll call to form a quorum.

**Board Members Present**
Robert Johnson, *Chair*
Tom Brice, *Vice-Chair*
Gayle Harbo, *Secretary*
Lorne Bretz
Allen Hippler
Acting Commissioner Mike Barnhill
Commissioner Kelly Tshibaka
Norman West
Bob Williams

**Board Members Absent**
None

**Investment Advisory Council Members Present**
Dr. William Jennings

**Department of Revenue Staff Present**
Bob Mitchell, Chief Investment Officer
Kayla Wisner, State Comptroller
Zachary Hanna, State Investment Officer

Shane Carson, State Investment Officer
Scott Jones, State Investment Officer
Stephanie Alexander, Board Liaison
Steve Sikes
Michelle Prebula
Sean Howard
Nick Orr
Casey Colton
Victor Djajalie
Ryan Kauzlarich

**Department of Administration Staff Present**
Kevin Worley, Chief Financial Officer, DRB
Ajay Desai, Director, DRB

**ARMB Legal Counsel**
Stuart Goering, Department of Law, Assistant Attorney General

**Consultants, Invited Participants, and Others Present**
Paul Erlendson, Callan LLC
Steve Center, Callan LLC
Gary Robertson, Callan LLC
David Kershner, Buck
Scott Young, Buck
Tonya Manning, Buck
Kristin Shofner, Fidelity Institutional Asset Management
Dan Tremblay, Fidelity Institutional Asset Management
Beau Coash, Fidelity Institutional Asset Management
Andy Rubin, Fidelity Institutional Asset Management
Beth Stuart, KPMG
Melissa Beedle, KPMG
Anthony Bassili, BlackRock
Laura Champion, BlackRock
Josh Yager, Anodos Advisors
Ryan Wolfshorndl, Anodos Advisors
Melissa Ruffel, Legal and General Investment Management
Jason Shoup, Legal and General Investment Management
Bill Detweiler, GRS

**Members of the Public**
Gretchen Keiser
Bob Schroeder
Richard Farnell
Don Gotschall
Nils Andreassen, Alaska Municipal League Executive Director
Brad Owens, RPEA (telephonic)

## PUBLIC MEETING NOTICE

Board Liaison STEPHANIE ALEXANDER confirmed that public meeting notice requirements had been met.

## APPROVAL OF AGENDA

MS. HARBO moved to approve the agenda. MR. WEST seconded the motion.

With no objections, the agenda was adopted.

## APPROVAL OF MINUTES: August 26, 2019 and September 19 -20, 2019

MR. BRICE moved to approve the minutes of the August 26, 2019 ARM Board meeting. MS. HARBO seconded the motion.

With no objections, the minutes were approved.

MS. HARBO moved to approve the minutes of the September 19 - 20, 2019 meeting of the ARM Board. MR. BRICE seconded the motion.

With no objections, the minutes were approved.

## PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS AND APPEARANCES

GRETCHEN KEISER addressed the Board, along with two other representatives of 350 Juneau, a local affiliate of 350.org, an international climate action organization. MS. KEISER explained that the number 350 refers to the concentration of carbon dioxide in the atmosphere in parts per million; scientists say that at over 350 ppm, life as we know it is not sustainable, and the concentration of $CO_2$ is now 410 ppm and rising.

MS. KEISER stated that she is a beneficiary receiving a pension from the Alaska PERS system, and that she and the others are seeking a public accounting of the pension funds' investments in the energy sector, including support companies, to show how much is invested in the energy sector and how well those investments have performed over the last five to ten years. Also, they want a commitment to conduct a thorough assessment of the financial risk that the unfolding global climate emergency poses to Alaska's pension funds, with "climate-related risk" referring to a set of conditions caused by both the physical impacts of climate change and the regulatory, technological, litigation, and social responses as people transition to a low-carbon economy.

MS. KEISER asserted that the energy sector has been a poor-performing investment for at least the past decade, and will increasingly experience negative impacts via revenue losses from extreme weather events, reduced profitability due to regulatory action, or impaired financials as their assets become stranded and worthless. She said that in global financial markets, many institutional funds are committing to divest of fossil fuels, and global entities such as the World Bank, the International Monetary Fund, and the European Investment Bank, as well as international insurance companies have announced that they will no longer finance or insure new fossil fuel projects.

MS. KEISER concluded that they are concerned that if the ARM Board fails to address climate-related financial risk, the funds and its beneficiaries will be exposed to an uncertain financial future, and 350 Juneau urges the Board to take seriously the impacts of climate emergency on Alaska's pension funds.

BOB SCHROEDER also receives a PERS pension as a former ADF&G employee, and has SBS and Deferred Compensation funds invested under the authority of the ARM Board. He urged the Board to consider divestment of invested funds from companies that explore for, produce, transport, or market fossil fuels, and from financial firms that provide capital and fiscal support for the fossil fuel industry. He stated that divestment is justified by the poor past fiscal performance of this sector and a substantial risk for poor performance in the next five to ten years, as well as by demands for moral and ethical scrutiny of the fossil fuel sector.

MR. SCHROEDER stated that the International Panel on Climate Change October 2018 report and the United States November 2018 National Climate Assessment conclude that global heating is an emergency and humanity must act quickly to avoid quite literally the end of the world as we know it. He stated that climate scientists estimate that about two thirds to three quarters of the presently known reserves of oil must not be burned if there is to be any hope of limiting global heating, which suggests that the valuation of fossil fuel companies may be greatly inflated because the valuations include assets that may never be produced. MR. SCHROEDER noted that there has been some initial response by the markets as the fossil fuel sector has underperformed in the past decade, and its percentage as part of the overall equity market has declined in recent years. He said they believe this is just the beginning of what will be a rapid deflation of the value of carbon-extracting industries as the world moves to a post-carbon economy. He cited examples of public funds losing money as a result of sticking with fossil fuels, and reiterated that there has been a lot of divestment, saying that fossil fuel industries are in jeopardy and at this time, they are very high-risk and low-return investments.

MR. SCHROEDER said that they believe it is our collective responsibility to act in ways to address the climate emergency, which for the pension fund means scrutinizing and evaluating whether fund investments promote the general public good and whether they reflect the interests of Alaskans who benefit from the invested funds. He stated that they believe that further investment in fossil fuels acts against the general interests of fund recipients, as well as hurting them fiduciarily. Juneau 350 will be making some information requests so they can better understand past and present investments of the funds managed by the pension board, and to review documents and correspondence to see how well the pension board has met its fiduciary responsibilities to examine climate risk investments. He also suggested that the Board consider green and carbon-neutral investments, and said there is an S&P fund that excludes fossil fuel sectors.

RICHARD FARNELL stated that he is also a current recipient of a PERS pension, and on behalf of 350 Juneau as well as all current and future pensioners of Alaska pension funds, he requested that the Board perform a climate-based financial risk assessment of all holdings in the pension funds. He noted that the International Forum of Sovereign Wealth Funds, of which the Alaska Permanent Fund is a member, held an online seminar in March 2017 called "How Can Sovereign Wealth Funds

Respond to Climate Change?" MR. FARNELL said that the seminar and accompanying risk report have numerous recommendations about methods that can be used to perform a climate risk assessment, establish governance criteria, and improve performance. Also, he referred to a document from GARP Risk Management titled "Climate Risk Management at Financial Firms, May 2019" which may prove useful to the Board in directing the preparation of a climate-based financial risk assessment of their funds, and he said he included a link to it in testimony he provided and gave printed information to Board Liaison MS. ALEXANDER.

NILS ANDREASSEN, Executive Director of the Alaska Municipal League, thanked the Board and staff for their stewardship of the TRS and PERS assets and others that they are responsible for, as well as managing related liabilities. MR. ANDREASSEN said that he reads the Board meeting packets and minutes, and he noted that the August 26 minutes indicated an inability to compare the recommended assumption change cost to the actual assumption change cost. He said he would appreciate a better answer than that it's an apples-to-oranges comparison. He also commented that he appreciated the suggestion in September of a full accounting of the ARM Board meeting costs, and he raised a question about an apparent discrepancy in the additional state contribution for TRS. MR. ANDREASSEN also commented that the total numbers of contributions are interesting, but it would be better to have year-over-year comparisons or indications of trends within employer groups over time.

MR. ANDREASSEN stated that he is concerned that the additional state contribution of $203 million for this year may not adequately fund the pension system, noting that last year at this time Buck estimated it at $354 million, and in the spring the estimate was $279 million. He pointed out that Buck's preliminary valuation results show that the plan is 4 percent less funded than in 2015, not making the progress that is needed.

MR. ANDREASSEN added that he appreciated the success in the healthcare portion, and appreciated the conversation yesterday about valuation of costs of these meetings and the return on investment. He commented that that is a different conversation than about the public perception of the cost, and he would be concerned if a mechanism for due diligence by the Board were altered because of that, but he suggested that they compare their costs to those of similarly resourced governing bodies in Alaska, in other states, and internationally, concluding that employees and beneficiaries do expect the plan sponsor to make the necessary investments in governance and administration. He added that he hopes to present at another public comment period on the outcomes of the non-state PERS employer workshop that the AML held in October.

BRAD OWENS from Anchorage tried to address the Board telephonically, but he could not be heard clearly, so Chair Johnson invited him to submit comments by e-mail to be read into the record.

## ELECTION OF OFFICERS

CHAIR JOHNSON introduced the annual election of officers. MS. HARBO nominated the following slate of officers: ROBERT JOHNSON, Chair; TOM BRICE, Vice Chair; and GAYLE HARBO, secretary. MR. WEST seconded the motion.

A roll call vote was taken, and the same slate of officers was approved.

## STAFF REPORTS

### 1. RETIREMENT & BENEFITS DIVISION REPORT

DIRECTOR AJAY DESAI gave an update on the modernization project, saying that they are now in the procurement process and have not yet selected a vendor. He said that after seeing numerous presentations, he believes the new system is going to perform even more than he had expected. He said they formed a team of about 20 people to do the selection, including representatives from pension, health, finance, and OIT. He said they will probably be moving on to the clarification process in early January, then will make a decision and award the project to the vendor.

CFO KEVIN WORLEY reviewed the membership activity for the first quarter of FY 2020, noting that active membership in TRS Tier I and II increased as a result of school starting in the fall, and retirees have decreased in all tiers, primarily in Tier I for both PERS and TRS.

MR. WORLEY reviewed the summary of monthly billings for Buck, and he updated the amounts of the additional state contribution, which are in Section 23 of the operating budget. He stated that the amounts requested by the Board via resolution in September were $203 million for PERS and $134 million for TRS. He noted that there will also be a request of about $725,000 for the National Guard.

### 2. CALENDAR/DISCLOSURES

MS. ALEXANDER said that the disclosure memo is in the packet, and no transactions require further review or discussion. The 2020 calendar was also included in the packet, and the proposed 2021 calendar will be prepared for the next meeting. MS. ALEXANDER also said that she would include the public comments received as attachments in the digital packet when she archives it after this meeting.

### 3. CIO REPORT

Chief Investment Officer BOB MITCHELL began by noting that they have done a lot of work on manager structure in the domestic equity, international equity, and fixed income asset classes over the past few months, and he expects to see some improvement in the returns as a result. He said that they did not want to reduce management fees at the expense of performance, and noted that there are a variety of ways of measuring fees. MR. MITCHELL reviewed the amounts spent on investment management fees over the last three fiscal years, showing a reduction of $8.5 million since FY 17 and projecting a further reduction of almost $20 million this year. He emphasized that they are continuing efforts to reduce fees where possible and would be reviewing private equity at this meeting.

MR. MITCHELL said that real assets comprise about 13 percent of the portfolio under roughly a dozen mandates, and staff is examining the structure of that asset class and may have recommendations in March or June.

MR. MITCHELL explained that they are continuing to try to figure out exactly how much the investment fees are, but in general fees are declining over time, as shown by Callan's recently revised investment management fee study. He said that the efforts over the past year or so have been focusing on restructuring in ways that reduce traditional active management and gravitate more toward factor-based investing, and looking at ways to improve outcomes net of fees.

MR. WILLIAMS remarked that the savings by managing internally is exciting, but he questioned whether the CIO is confident that they can continue to attract and retain people who can do it well; MR. MITCHELL replied that it's a challenge to say, since they don't have multiyear visibility on resources available to compensate staff, and said that if he were a Trustee, he would focus on that. He said whether they can continue to expect to attract and retain qualified staff will always be a consideration; he added that the benefit of "insourcing" declines as fees in general are declining.

MR. MITCHELL continued that factor-based investing is an important element of the changes that are being implemented, and he said they are looking at the theoretical notion of risk premia and how to best get exposure to those risks. He said that he hopes to have a discussion about what factors are and why we care about them, and the best options for getting exposure to those factors.

MR. MITCHELL said that several people have been repositioned within the Treasury Division, and there is a new middle office group focusing on things like performance and operational risk, compliance, and streamlining processes, which is overseen by SCOTT JONES, former comptroller; KAYLA WISNER is now the comptroller. NICK ORR has been returned to the fixed income group, and STEVE SIKES is now back on the real assets portfolio as well as opportunistic. SHANE CARSON has been transferred to the alternatives group to focus on private credit and risk management.

MR. MITCHELL then went on to the CIO report, focusing on individual manager transactions that took place in September and October of 2019. He showed tables splitting the transactions into internal and external, those which don't involve going to the market and those which do. He pointed out a lot of small negative signs relating to cash outflows from a variety of accounts that have been terminated, building up residual cash positions.

MR. MITCHELL pointed out that one of the larger transactions liquidated about $250 million in domestic equities to go into REITs. $15 million was invested in the real estate high income fund managed by Fidelity as part of a multi-month program to increase their exposure into that investment. He discussed inflows and outflows including a direct private equity investment in Clearlake Capital VI which he decided to make under his authority as CIO; also, there was an internal transfer, which swaps ownership interest in the underlying investment pools by plan participants.

MR. MITCHELL stated that there were no managers on the watch list, and they were not recommending placing any on the watch list at this time.

He said that LaSalle Investment Management managed three properties in a separate real estate account, but over the past year they have been discussing shutting down that portfolio to move to other vehicles. Two of the three properties have been sold, and LaSalle gave 60 days' notice and asked what ARMB wanted to do with the third one; MR. MITCHELL said that he had it transferred to UBS Realty, another manager that has about 11 properties. MR. MITCHELL said that he plans to have UBS, in conjunction with staff, conduct a hold/sell analysis during the first quarter of 2020.

MR. MITCHELL explained that after the September ARM Board meeting, the IAC, Callan, and staff conducted a manager review meeting, which they do once a year. There were no significant concerns about any managers expressed at the meeting, but he wanted to highlight a couple of comments. First, there was a note from Callan that it is increasingly uncommon to see balanced funds in a participant-directed lineup; the ARM Board has two, which are legacy portfolios with a substantial amount of assets. Staff believes they should keep the balanced funds, but the Board should be aware that Callan has again expressed that concern. Also, MR. MITCHELL noted that Callan, while expressing confidence in staff, reiterated that staff should be held to the same scrutiny as external managers.

MR. MITCHELL stated that existing equity guidelines allow them to engage in futures and the purchase of ETFs in addition to equity securities, and it is staff's intent to begin doing that; he said that in March he would ask the head of their internal equity program to make a presentation on that topic before implementation is begun.

MR. MITCHELL gave an update on risk parity, stating that staff has observed that the implementation strategies of leading risk parity managers vary considerably, so they have decided that more work is warranted before moving forward.

MS. HARBO asked whether the new IAC member, MS. RYERSON, had been able to participate in the manager review meeting; MR. MITCHELL said no. MS. HARBO asked whether the Board could get the minutes from that meeting as they had in the past; MR. MITCHELL answered that if it is the Board's will to continue doing that, they could, though they had been admittedly inconsistent. He also noted that not having minutes may allow for more candor in discussions and possibly more meaningful conversations. MS. HARBO said she wouldn't want to add more duties, but she did enjoy reading those; MR. WEST added that he would also like to see them, but then they would be part of the public record and available to the managers, and there may be a better way to inform the Board.

## 4. FUND FINANCIAL PRESENTATION

New STATE COMPTROLLER KAYLA WISNER referred to the financials in the meeting packet for October 31st, 2019, then she reported the current figures. As of November 30, total nonparticipant-directed ending investment assets were $27.5 billion, $14.4 billion of which is internally managed. Total participant-directed assets were $7.1 billion, for a total of $34.6 billion. Through November 30 the plans experienced investment income of $1.3 billion and a net withdrawal of $224 million; fiscal year-to-date through December 11th, total nonparticipant-directed assets were up 2.05 percent.

CFO KEVIN WORLEY mentioned the standard supplement report showing year-to-date fiscal activity through October 31st and for the month ending October 31st. He noted that at the request of the Board, he had included information about the distribution payouts for the fiscal year by plan, and breaking it down by vesting and by tiers.

MS. HARBO thanked MR. WORLEY for that information, and confirmed the answer to MR. ANDREASSEN's question about the state contribution, which is shown as $159 million for PERS and $141 million for TRS.

## 5. CHAIR REPORT

CHAIR JOHNSON stated that he had no report.

## 6. COMMITTEE REPORTS

### A. Audit Committee

CHAIR JOHNSON reported that the Audit Committee had a meeting the previous day at 8 a.m., and had a good, thorough presentation by MELISSA BEEDLE of KPMG reviewing the financial statements and letters to the Audit Committee, and no problems were identified. Also, the GASB 68 schedule for participating employers was presented, which is the allocation process that assigns contributions to the various employers in the plans. Also, the new comptroller gave a presentation on indirect foreign exchange services.

### B. Actuarial Committee

MR. WEST reported that a lot of the Actuarial Committee meeting the day before had focused on gaining understanding of the actuarial process; he said they were glad to have TONYA MANNING from Buck occasionally break things down for them to comprehend. They also got an update from Buck on the current valuation process, and they discussed the statute pertaining to the Board's responsibility to review actuarial assumptions, with the actuarial review currently in progress.

### C. DC Plan Committee

BOB WILLIAMS, chairman of the DC Plan Committee, reported that they had a four-hour education session on Tuesday afternoon, and an over-two-hour meeting Wednesday. They heard from a national expert on fiduciary oversight, MARILYN COLLISTER, and had a presentation on value-managed accounts and My Total Retirement, which is part of Empower. Also, Empower gave an overview of their company, their communication strategy, and efforts at participant engagement. The DC Plan Committee also did another re-examination of the June 2019 Monte Carlo analysis, the big message of which is, the more that is put in over longer periods of time, the higher the chances of success.

MR. WILLIAMS said that they also discussed the possibility of adding another REIT option, and they hope to get input from Callan on that. The committee also discussed the idea of finding a way to give people a lifetime guarantee of income, and JPMorgan gave a presentation on their SmartSpending option.

MR. WILLIAMS said that KATHY LEA updated them on the potential timeline if they choose to proceed with auto enrollment, which would require legislation to enact; and MR. WORLEY presented a flowchart showing how the numbers work with the Defined Contribution plan, in response to a question from TRUSTEE HIPPLER. Also, MR. WILLIAMS said that there is continued interest in opening up a brokerage window, and the committee plans to keep considering options.

### D. Operations Committee

MR. BRICE reported that the Operations Committee talked at their meeting with MS. PREBULA, an investment officer at the Treasury, about policies and procedures, on-boarding, and due diligence. They also had an update from PAM O'LEARY on some changes in Treasury operations, and started what will be an ongoing conversation about the costs associated with the ARM Board meetings.

MR. BRICE moved on behalf of the Operations Committee that the Alaska Retirement Management Board approve the Board of Trustees Investment Policy and Procedures Manual, as revised with edits, as indicated.

A roll call vote was taken, and the motion passed unanimously.

MR. BRICE moved another recommendation from the Operations Committee: That the Alaska Retirement Management Board terminate BlackRock's passive fixed income strategy and transfer the existing assets into an internally managed Barclays Aggregate Fund benchmarked against the Bloomberg Barclays U.S. Aggregate Bond Index. He added that that related to the Alaska National Guard and the Naval Militia Retirement Systems. MR. MITCHELL clarified that this action item is not a reflection on BlackRock's management of the portfolio; it is a relatively small mandate at about $13.5 million, and they now have an internally managed substitute.

A roll call vote was taken, and the motion passed unanimously.

### E. Retiree Health Plan Advisory Board

MS. HARBO reported that the "ReHAB" board met on November 14th, with most board members in Anchorage and the health team in Juneau. The Anchorage meeting followed the quarterly meeting of the DRB health team with the different heathcare vendors. Chief Health Administrator EMILY RICCI reported on new contracts, and the DRB health team has been very busy with the open enrollment for the dental plans, with a choice of the legacy plan that was in place before 2014 or the standard plan currently in use. The enrollment has been extended, and the state is still planning to appeal the court decision, but they have worked hard to help members make an informed choice. The committee also heard an update from DIRECTOR DESAI on the modernization project, an update on EGWP, and an interesting presentation from the director of the Petersburg Medical Center on using telehealth technology to prevent patients having to travel. MS. HARBO said that the initiative to modernize the healthcare plan in still underway, with a subcommittee meeting in January, and the next board meeting is February 6th, mostly in Anchorage.

CHAIR JOHNSON recessed the meeting from 10:38 a.m. to 10:46 a.m.

## 7. LEGAL REPORT

Assistant Attorney General STUART GOERING said there are now three cases involving diminishment claims that could potentially impact the funds. The Board is not a party to any of the litigation, and it may not impact their work, but they should know. Two of these cases have been going on for a while, and the third one is very early in the process. MR. GOERING added that the process of doing all the transactions with managers has gone smoothly, and staff has had a much higher workload than usual, but they've handled it well.

## 8. ACTUARIAL PRESENTATION

DAVID KERSHNER, retirement actuary from Buck, introduced SCOTT YOUNG, the lead healthcare actuary, and TONYA MANNING, the chief actuary for Buck's U.S. retirement practice.

MR. KERSHNER explained that the preliminary 6-30-19 valuation results are currently being reviewed by GRS, and will be finalized over the next month or two and reported at the March meeting. The purpose of this valuation is to measure the assets and liabilities of each plan, then review the experience during the year, which forms the basis to set the FY22 contribution rates to be adopted in the fall. MR. KERSHNER said assets performed worse than expected, but liabilities are also lower than expected, primarily because of the experience with medical and prescription drugs. The liability gains were higher than the asset losses, resulting in a higher funded ratio than last year, which results in lower contribution rates.

MS. MANNING came from North Carolina to talk about a new actuarial standard of practice called ASOP 51, which applies to how pension actuaries are required to do their work, and is designed to ensure that the stakeholders in pension plans have access to information that explains the risk of things going differently than what is currently assumed. This new standard of practice focuses on the assessment and disclosure of a plan's risk. The actuaries are not required to say how a plan should address a risk, only to assess and disclose the risk, and only on actuarially determined contributions.

MS. MANNING explained that this new standard is going to apply to the funding valuation reports that Buck provides to the ARM Board every year. She noted that it doesn't apply to GASB information such as Scott Young does with post-retirement medical. It had an effective date of November 1, 2018, and the first time it will apply is with the valuation reports that they are now working on.

MS. MANNING went on to explain that the actuary doesn't have to evaluate a sponsor's willingness or ability to make contributions when due. They also do not assess the likelihood of consequences of future changes in the law. She said that Buck will identify the big risks, which are unique to each fund, and assess the risks, looking at the future financial condition. Numerical calculations are not required, but they do have to provide information that meets the spirit of the standard. They may also recommend additional analyses or assessments. She noted that in their disclosures, they are required to calculate maturity measures, which consider what will happen if a plan gets to the point that it has more inactives and retirees drawing benefits than it has active employees who are providing contributions into the fund, which shifts the risk profile of a fund. With the Alaska pension funds being closed, she said that is on track to eventually be a significant risk.

MS. MANNING went over examples of risks, including investment risk, longevity risk, and contribution risk. She noted that the practice of having an experience study every four years is a good measure to address risk in a plan and track assumptions. However, the risk analysis is intended to inform future decisions, and some approaches that Buck may recommend for further analysis include scenario testing, stress testing, sensitivity analysis, and stochastic modeling. She said they will look at simple ways to assess and inform the Board about risk. Every pension plan has a different risk profile, and the Board will be obligated to think about how the information might be interpreted by different stakeholders, how it can be appropriately understood and applied and how it could be misunderstood or misapplied.

MR. DETWEILER from GRS commented that he is curious to see what Buck will come back with, and how the Board takes it. He said some boards ignore this type of information, and others use it to learn more and lead to actions.

MR KERSHNER concluded that the next steps are to finalize the valuation results and run projections, and he commented that the risk analysis may guide the Board in the selection of the assumptions used to measure the liabilities and determine the contribution rates.

**9. REVIEW OF FIDELITY MANDATES**

MR. MITCHELL noted that Fidelity manages three mandates on behalf of the ARM Board, which total over a billion dollars, just over 3.5 percent of the assets in the portfolio.

KRISTIN SHOFNER thanked the ARM Board for their business, and said that Fidelity is privately owned, so the only people they report to is their clients. With her were ANDY RUBIN, the institutional PM for ARMB's real estate portfolio; BEAU COASH, institutional PM for the tactical bond portfolio; and DAN TREMBLAY, institutional PM for the signaling portfolio, who got stuck in Seattle and had to participate telephonically.

MR. COASH described the tactical bond strategy as a multi-sector asset class strategy in fixed income, launched in 2006, and he reviewed how it has compounded over the last 10 years compared to other strategies and how its level of risk compares. He reviewed performance and current positioning, stating the current yield at about 4.3 percent, and said that they don't foresee big drawdowns in the economy or recessions looming.

ACTING COMMISSIONER BARNHILL asked whether their sector weights have materially changed over time; MR. COASH said yes. MR. BARNHILL asked whether he thought those recent changes have materially added risk to this portfolio; MR. COASH replied that they have been reducing risk, because there are not a lot of opportunities since spreads have tightened in the bond markets, but when they see opportunities where things are cheap, they add value.

MR. RUBIN discussed Fidelity's high yield commercial mortgage-backed securities strategy, which dates back to the team's beginnings in 1995. He explained that the strategy also owns other instruments within the real estate debt securities market, such as corporate bonds issued by REITs, floating rate and leverage loans, and real estate. He said there are tremendous inefficiencies in the market that they can exploit to earn above average income which is very attractive on a risk-adjusted basis, and it has a low correlation with other fixed income sectors, so is a good diversifier.

MR. RUBIN explained that they try to invest with a margin of safety and to limit interest rate risk; he said that the ultimate lever they have to mitigate risk is being effective credit investors, cognizant of the broader backdrop of real estate, credit, and the economy. Fidelity has a robust credit research process which he said gets rewarded when individual properties experience positive credit events like an uplift in occupancy or growth of rental rates. He showed net-of-fee performance for their commingled vehicle, in which ARMB is invested, of just under 10 percent.

MR. TREMBLAY spoke about the signaling portfolio, which is much broader than a single portfolio and is designed for pension CIOs and their teams to focus on asset allocation decisions to benefit from the many perspectives they hear. He explained that it is a proxy for ARMB's policy index and how major asset classes are allocated. He said it helps bring some macro perspective, and in the quarterly conference call, various Fidelity experts collaborate in the portfolio review. MR. TREMBLAY reviewed their investment process, and explained how they have researched business cycles going back to 1950 to understand how things go in each of the phases of the business cycle: early, mid, late, and recession. He said the U.S. is now firmly in late cycle, but they don't see the recession coming in the next few quarters, so they continue to have a small risk budget. He said they have a below-average active risk, a slight bias toward non-U.S. from a valuation standpoint, and very small tilts toward inflation and commodities, which is common in late cycle. He said the portfolio has outperformed over all time periods of the past year, then he reviewed the building blocks that make up the strategy. He summarized by saying that they have taken their active risk budget down to about 50 basis points versus a long-term average of 100, and they will find better times to take risk in the future when there are clear signals of a recession and recovery.

MS. SHOFNER reiterated how much Fidelity appreciates ARMB's business and commented on the superior staff, with whom they've worked closely since adding these three portfolios. She said the staff is very thorough and one of the finest in the industry.

CHAIR JOHNSON recessed the meeting from 12:07 p.m. until 1:15 p.m.

## 10. KPMG – AUDIT REPORT

MELISSA BEEDLE of KPMG presented their audit results of the June 30, 2019 financial statements. She said they are pleased to say that they have issued unmodified opinions, which is the best they can give, on each of the systems except the National Guard, which is still pending. They will be issuing the GASB allocation schedules to employers in the next few weeks, which is about four months earlier than last year, and she thanked staff for their hard work helping get through that.

BETH STUART noted that the most significant estimates within the financial statements are the net pension liability and the net OPEB (other post-employment benefits) liability, are very important to employers because they become liabilities within the employers' financial statements. She said that KPMG audited the reasonableness of Buck's estimates and ultimately concluded that the estimates were reasonable and the actuarial calculations were appropriate. The other most significant risk is associated with management override of internal controls, which is considered to exist in every audit. She said they always design their audit to detect material misstatements, and they did not identify any concerns here, though their audit is not designed to give an opinion on internal controls.

After a few clarifying questions, CHAIR JOHNSON thanked the representatives from KPMG for their work and their presentations to the Board and to the Audit Committee.

## 11. PRIVATE EQUITY ANNUAL PLAN

CIO BOB MITCHELL introduced ZACH HANNA and SEAN HOWARD to present an update on private equity markets and the ARM Board's private equity portfolio and staff's plan for 2020, with a couple of action items to follow.

MR. HOWARD gave an overview of the private equity asset class, which is illiquid, long-term investments in private companies. The universe is large, and this asset class has delivered returns higher than expected. However, he said that with the inflow of capital, private equity has become more efficient, and they would expect lower excess returns in the future.

MR. HOWARD explained that investments in private equity are typically made through limited partnerships, mostly through drawdown structures, in which a commitment of capital is made to a fund, then that capital is drawn down over the first four to six years as the general partner makes investments, and capital is returned as investments are sold. The partnerships usually have a 10- to 12-year life. Besides staff making direct commitments, the ARM Board utilizes two advisors, Abbott and Pathway, which have discretion to make commitments on ARMB's behalf.

MR. HOWARD named three primary strategies in private equity: venture capital; buyout funds; and special situations funds. He said manager selection is critical, requiring access, careful due diligence, and monitoring over time; he said that ARMB's portfolio is invested through institutional quality managers with well-established businesses and proven market capabilities. He said that diversification is also important, since private equity can be cyclical, and briefly discussed trends in private equity.

MR. HANNA reviewed the performance of the private equity portfolio, concluding that it has outperformed the Russell 3000 by 410 basis points, resulting in $1.8 billion of additional portfolio value compared to investing in public equities alone. He reiterated what MR. HOWARD said about the asset class increasing in efficiency, which lowers expectations for future returns, and said that staff will be recommending some changes to the private equity benchmark. In response to a question from CHAIR JOHNSON, MR. HANNA explained that the performance numbers he gave were net of fees, which are generally about 1.5 percent per year. The underlying partnerships share in the performance of these portfolios, mostly through 20 percent carried interest. He said that 150 basis points on a $3 billion portfolio is a sizable number, but historically they have achieved a very significant premium net of those fees.

MR. HANNA showed the breakdown by strategy, which is close to the targets of 25 percent venture capital, 45 percent buyout, and 30 percent special situations. He also showed the cash flows charted over time, and stated that overall, the private equity portfolio has been a significant cash generator for the retirement systems over the past five years, providing net inflows of $376 million. He said that about 25 percent is invested internationally, down from about a third 10 years ago, and the software industry is a little overweight at 28 percent, but staff doesn't currently recommend changing that.

MR. HANNA explained co-investments, which are larger investments than any one fund wants to take on alone, so they offer partnerships, which can save enormously on fees, but are big bets, and he noted that during the financial crisis the really big deals were the worst performing. He said that

Pathway handles co-investments under a program that is now three years old and has performed well so far; Abbott does them at the margin as well. MR. MITCHELL clarified that co-investments are a decision to invest in a specific company, as opposed to a portfolio of companies; MR. HANNA explained that these deals are usually on a fast track, with only about two weeks to two months to make a decision. This program is constrained by the commitment budget that the ARM Board sets each year, which was about $540 million in 2019, and Pathway targets 15 to 20 percent of their annual commitment to co-invest; they did 33 deals in the past year, he said. The exit environment is strongly linked to public markets through IPOs and public company acquirers, and liquidity will remain strong if the extended bull market continues.

MR. HANNA said that the recommended private equity commitment target for 2020 is $600 million, split equally between Abbott, Pathway, and staff. He said that staff will continue to look for opportunities to drive performance and cost improvement, and the portfolio is expected to continue to deliver a reasonable premium to public equities.

MR. HANNA said that staff, with the support of Callan, is recommending some changes to the definition of this premium that will better reflect the program structure and future expectations for the asset class. They recommend moving to rolling 10-year periods to better measure the portfolio, and they recommend adopting a premium that is adequate compensation for the liquidity and risk of private equity, and also achievable, given the growing efficiency of the asset class. Staff is recommending a 200-basis-point premium, he said. Also, staff recommends adopting the benchmark blend that Callan has always used for private equity, which better reflects the natural structure of the ARM Board's program, particularly the international exposure. The final change they recommend is to change the guidelines from referring to the Thompson benchmark, which has been discontinued, to a generic reference to industry standard peer universes.

MR. HANNA said staff recommends the Board pass two action memos in the packet, Resolutions 2019-18, which revises the guidelines to change the private equity benchmark, and Resolution 2019-19, which adopts the plan as presented.

MR. BRICE moved to approve Resolution 2019-18. MR. WEST seconded the motion.

After some discussion, a roll call vote was taken, and Resolution 2019-18 passed unanimously.

MS. HARBO moved to adopt Resolution 2019-19, which approves the 2019 Annual Tactical Plan as described. MR. WILLIAMS seconded the motion.

A roll call vote was taken, and Resolution 2019-19 passed unanimously.

## 12. PRIVATE EQUITY REVIEW

MR. MITCHELL explained that Callan conducts an annual review of the ARM Board's private equity portfolio. GARY ROBERTSON, senior vice-president at Callan, said he would supplement the presentation from MR. HANNA and MR. HOWARD and take questions.

MR. ROBERTSON explained that a lot of household names are private equity companies, and to get access, investors go through private equity partnerships, which are really securities, and for diversification it's necessary to have a fair amount of them, so asset managers like Abbott and Pathway are used. He discussed how the investments are made over a period of several years, so the decisions made now are long-lasting; distributions start to come back to investors after a few years, but there may be some harder-to-sell assets left at the end of the investment period.

MR. ROBERTSON discussed the ARM Board's private equity program, which they've been doing for 21 years. The original allocation was 3 percent and it has been increasing over time. He noted that every time they increase it, it detracts from the interim performance. He said they started right before the tech bubble, and the in-house program started right before the top of the mortgage bubble, so they had headwinds at the beginning, but now as the target allocation has increased to 11 percent as of July 1st, they are in a booming market for this asset class and prices are high. As prices go up, partners are putting more equity in instead of using debt, which lowers expected returns. He noted that many investors are preparing for a recession by making sure they have cash reserves on hand to fund working capital. Comparing public and private equity, MR. ROBERTSON noted that spreads have tightened, but they expect that there will continue to be a premium, even though it's coming down.

MR. ROBERTSON reviewed the analysis of the private equity portfolio since inception, and showed the return calculation of about 11.8 percent. He explained how to interpret the numbers, then he went over the portfolios of Abbott, Pathway, and the in-house portfolio. He noted that five partnerships were added to the in-house portfolio this year, which was something staff and Callan had discussed as a goal rather than two, as this portfolio has become more stable and less auxiliary.

CHAIR JOHNSON recessed the meeting from 3:15 p.m. to 3:30 p.m.

## 13. INTERNATIONAL EQUITY MANAGER TRANSITION UPDATE

MR. MITCHELL said that in the committee meeting yesterday, COMPTROLLER WISNER had referred to the "exodus" from international equity, as seven mandates totaling about $2 billion were terminated as part of the review of manager structure. To effect those changes, they decided to hire a transition manager.

MR. SHANE CARSON explained the selection process for a transition manager, and began by reviewing the decisions made by the Board. He said that staff gave a lot of thought to how to implement these changes, and they provided each of the transition manager candidates with scenarios that were close to the actual event but not actually the same, partly so as not to broadcast what they were preparing to do. The three transition managers then came back with rates and a project plan, and staff reviewed these with the managers through conference calls and evaluated the plans, some of which brought up issues staff hadn't thought of. They also did an evaluation of internal crossing, a cost-saving move in which a transition manager can trade between two clients without going to the open market, which also avoids signaling what's going on.

LAURA CHAMPION from BlackRock introduced ANTHONY BASSILI from BlackRock's transition management team, who reviewed the scope of the transition assignment, an overview of what they've done, and the outcomes. MR. BASSILI explained that transitions incur a lot of costs and risks, and the transition manager's job is to control for market exposure throughout the event, minimize transaction costs, and lend their expertise. He described the accounts that had to be terminated and the target structure, and reviewed how they effected the changes and some of the ways they saved on costs. He emphasized that BlackRock does not earn revenue from internal crossing; it is a service they offer to their clients free of charge. The currency trading involved was also free, with BlackRock acting as a fiduciary and an agent, and they don't share information for profit either.

MR. BASSILI said that they had estimated 30 basis points of cost, and the actual result was 16.5 basis points, which is equivalent to a savings of about $3.1 million. CHAIR JOHNSON asked where the revenue earned by BlackRock as an explicit commission on equity trades is disclosed. MR. BASSILI referred to the letter of agreement which estimated 4.6 basis points, but it ended up being 4.1, and there is also an ETF manager fee of about .2 basis points. MR. CARSON confirmed that the revenue component was a negotiated rate, not stated.

CHAIR JOHNSON thanked the representatives from BlackRock for an effort well performed, and thanked MR. CARSON for his participation in the transition.

**RECESS FOR THE DAY**

CHAIR JOHNSON recessed the meeting for the day at 4:05 p.m.

**Friday, December 13, 2019**

**CALL BACK TO ORDER**

CHAIR JOHNSON reconvened the meeting at 9:00 a.m. on Friday, December 13.

**14. FINDINGS FROM PERFORMANCE AUDIT**

MR. MITCHELL explained that statute directs the Board to contract for an independent audit of the state's performance consultants not less than every four years, and Anodos Advisors were selected through an RFP process to conduct an evaluation of Callan's performance service. He introduced JOSH YAGER and RYAN WOLFSHORNDL, who presented telephonically.

MR. YAGER started by reviewing the Board's five central duties of care: to act prudently as Trustees over the capital; to establish a return objective and risk expectations; to diversify the corpus; to pay only fair and reasonable fees; and to monitor the capital. The Board delegates to Callan to help them fulfill those responsibilities, and the scope of the engagement for which Anodos was hired is to test whether the reports that are provided to the Board give them the information they need to fulfill each of those duties of care. The second component is to test the calculations from Callan to see whether they are consistent with best practices as defined by GIPS.

MR. YAGER said that they looked at three components of the portfolio: the fund level targeted return; the pool or asset class level return; and the manager level returns. At each level, they found there is plenty of data in the reports to equip the Board to test whether return objectives are being fulfilled, and they had no suggestions for improvement. One modest finding was that the Board has the ability to measure the risk of the fund, but doesn't have the ability to test the risk of the approved allocations. MR. YAGER also noted that the reports tend to present more information about returns than about risk, and they recommended a performance dashboard that would represent the return of each particular asset, pool, or manager and the risk associated with it. Risk might be represented in several different ways, including standard deviation, maximum drawdown, or Sharpe ratio.

Regarding the duty to diversify the assets, Anodos found that there is plenty of information about diversity provided to the Board at the various levels of the portfolio, and they had no recommendations pertaining to that.

MR. YAGER discussed the duty to pay only reasonable fees, and said Trustees have to consider the effect of fees on performance, and they must be able to answer the question of who got paid what by whom. He said Callan provides performance gross and net of fee, covering the first part, but they didn't find information in Callan's reports to enable the Board to answer who is getting paid what by whom. He said this is a hot-button issue in the pension and ERISA world right now in private plans, and there is a lot of litigation charging boards with failing to fulfill this particular duty; thus, as a prophylactic measure, they would recommend having Callan and staff develop a fee dashboard.

The final duty, to monitor the activities of investment advisors after delegations have been made to them, uses benchmarks, and MR. YAGER said that everything looked in order and reasonable and customary. However, they thought some work needed to be done on the benchmarks being used to track fixed income to differentiate by credit quality, issue, and type. Since none of these elements of fixed income benchmarking are included in the reports given to the Board, the Board has no way to test whether the benchmarks being used are the appropriate ones. Another issue Anodos raised was that if a benchmark is changed after a manager has begun, there should be a note in the file indicating why the benchmark was changed and who initiated it.

CHAIR JOHNSON asked MR. MITCHELL about his intentions for having staff and Callan respond to this evaluation; MR. MITCHELL said he envisioned responding at a future meeting, after staff and Callan had a chance to develop specific responses to each recommendation. MR. BRETZ noted that these recommendations seem very similar to those in the 2014 report, and said he looks forward to the response from management.

MR. YAGER discussed the recalculations they did to test Callan's processes. He first noted that everything regarding the custody of data looks fine, and the frequency of valuation of assets are consistent with GIPS standards. They tested Callan's performance calculations, all of which were accurate. However, they recommended having more frequent risk calculations, monthly rather than quarterly.

MR. YAGER concluded that their most important recommendation is that the Board should spend time to understand the risk measure, noting that it is a common tendency to focus more on performance than on risk, and nothing in the contract with Callan requires much data on risk. Also, the issue about being able to track investment fees is important.

MR. WILLIAMS pointed out that the further analysis of risk Anodos suggested is mostly just risk associated with volatility, and there are lots of other kinds of risk. He also asked how hard it is to get the peer group average to compare manager fees. MR. YAGER replied that certainly there are a whole panoply of risks within any investment, such as lack of liquidity, difficultly priced assets, and risk of concentration, and a board doesn't need to get too deeply into it, but it would be good if risk were more visible in the reports. He added that there was a lack of data in the documents he reviewed to demonstrate that the Board could answer at any level how much has been paid to managers. He said measurement compared to peer groups is not difficult, because the data exists.

MR. MITCHELL remarked that the Board is receiving gross and net of fee information from which they can impute what the fees are, though that is a separate issue from whether they are able to determine if the fees are reasonable. MR. YAGER replied that he agreed that Trustees were able to understand the impact of fees on the portfolio, but the second point of being able to see whether fees are objectively reasonable compared to peers is currently not part of the data provided by Callan.

CHAIR JOHNSON thanked the representatives from Anodos for their helpful presentation.

## 15. PERFORMANCE MEASUREMENT – 3RD QUARTER

MR. ERLENDSON from Callan said that nobody likes having someone look over their shoulder, but they welcome it, because one of the challenges Trustees have is figuring out what information they want presented to them, and the feedback from Anodos, staff, and the Board helps Callan do a better job. He noted that the ARM Board is one of only a couple of funds that actually go through this exercise of having a third party come in, though the state of Texas is now starting to require it. He said that Callan has already started working with staff on some of these things, like a fee review showing dollars, rate, and peer group comparisons, and they hope to have samples of this type of information at the next meeting.

MR. BRETZ noted that he believes the issue of fees was one of the recommendations in the previous report, and he pointed out that the reports are getting thinner, as maybe the Board is giving them less to report on as they implement recommendations. However, he would like to know if the ARM Board is not implementing the recommendations, why not? MR. MITCHELL said it would be their intent to put on the record whether they would like to comply or not and why with each of the recommendations. MR. WEST commented that it is obvious to him that some of these items really have to do with staff, not Callan, and how they are reporting things. He added that he is skeptical of the whole advisory services business, but it sounds to him like what is needed is better documentation so as not to have questions about what is reported and why.

MS. HARBO added that Anodos was the only respondent to the RFP, and it would be nice to have a choice instead of the same company over and over.

MR. ERLENDSON reviewed performance through September, noting that things have changed since then and the information seems old. He noted how much movement of assets there has been, as discussed in the CIO report, and said he would therefore not show any performance attribution for the third quarter because it is meaningless, being a moving target. He said the economy continues to grow, though the slope of quarterly growth of GDP has been coming down, and inflation has also been low. He mentioned negative interest rates, the topic of the next presentation, and said they want to be prepared in case that happens in the U.S., and ARMB's diversified fund allows them to do that.

MR. ERLENDSON compared why the differences in returns are so great between the U.S. and non-U.S., and why returns are so different between growth and value managers. He showed that before the global financial crisis in 2008-2009, non-U.S. stocks actually did better, but since that time, U.S. stocks have compounded at a rate much higher than non-U.S. stocks. He said one big factor is that financial stocks, a large sector for value managers, have not done very well, but IT has done extremely well in the growth sector. He said that such a narrow set of contributing factors can't persist forever, but the question is, when will it end? Not knowing, it's important to be diversified.

MR. ERLENDSON said that it has always been assumed that bond yields are higher than stock dividends, but since the global financial crisis, dividend yields have been almost as high as bond yields, and low interest rates mean low returns. Earlier this year, 10-year Treasury yields were lower than cash, which makes no sense economically. However, even though bonds won't help meet the actuarial return target, they are important to have as insurance, because in 2008 and 2009, if the fund had been invested all in equities, more than half the capital would have been lost. He commented that the two competing objectives of an investor, to grow the capital but protect the principal, are mutually exclusive.

MR. ERLENDSON noted that after the global financial crisis, the Board put more money in equities and reduced fixed income to about 10 percent. ARMB's bond returns were lower than those of peers, because ARMB held a purely Treasury portfolio, the lowest yielding fixed income instruments, but this decision was made so the bond portfolio would be pure protection. He said it served its purpose, and fortunately wasn't needed except in the fourth quarter of last year, but recently the Board has decided to expand the universe of securities in the fixed income portfolio.

MR. ERLENDSON said the ARM Board has a healthy 13 percent of their assets invested in real estate, including commercial, timber, and farmland, and one of the benefits of real estate and other real assets is to protect investors in periods of rising inflation. Though inflation hasn't been a problem lately, these portfolios have generated a fair amount of yield. Income from these assets has been very beneficial in helping with cash flow and liquidity risk.

MR. ERLENDSON reviewed how public pension funds started out consisting of stocks and bonds and little else, but allocations have grown more complex over time; he noted that every additional slice of pie in these charts was more expensive from a management fee perspective than the source of the funding that made room available for that new strategy. Average rolling 10-year returns have been coming down and investment management costs have been going up. MR. ERLENDSON said that the movements the ARM Board has been doing in asset allocation are working to eliminate strategies that don't add value net of fees and to focus on those that do, and to try to minimize costs and maximize net-of-fee returns. He noted that fee rates have been coming down in general, and the vast majority of active investment fees are collected by a small handful of firms, including BlackRock.

MR. CENTER explained that the asset allocation changes during the quarter rippled throughout the portfolio. The rapid increase in fixed income from 10 to 24 percent, along with the drop in non-U.S. equity and the removal of the absolute return asset class, have changed the overall risk within the portfolio and changed the benchmark. He said that Callan worked with staff to create a custom benchmark for the fixed income portfolio during the transition period, which extends over about five months to reduce market timing issues and transaction costs.

CHAIR JOHNSON asked whether concerns about negative interest rates affect the ARM Board's investment analysis; MR. CENTER answered that the internally managed fixed income portfolio is benchmarked to the aggregate, and is therefore a U.S. portfolio. He added that the U.S. space has remained attractive to U.S. and non-U.S. investors because it still has positive rates, so the period of zero and negative interest rates outside the U.S. has actually been good for the U.S. bond market.

MR. CENTER reviewed the asset allocation as of the end of the quarter, using the PERS plan to illustrate, and compared the ARM Board's asset allocation to other public funds. He noted that the asset allocations tend to vary based on the funded status health of the plans and whether they are open or closed. Another factor that affects how much risk plans take is the financial ability of the sponsor to write a check if needed in declining market periods.

MR. HIPPLER asked if it would be possible to have a comparison with plans that are in similar states of funding as PERS and TRS, because maybe ARMB is on average with all public plans, but way off compared to other plans that are similarly funded. MR. MITCHELL replied that he would recommend looking at a graphic in a presentation from an actuary that showed the funded status of PERS combined relative to peers, in which ARMB was just below the middle of the pack.

MR. CENTER then reviewed performance information about the total plan over the last year and the last 10 years. Over the last year the fund returned 3.75 percent, slightly ahead of its benchmark, and above median in the past three, five, and 10 years. The Sharpe ratio has been strong, above median compared to peers; the maximum drawdown has been around the median, and the standard deviation has been about average. Long-term total fund performance has been very similar to its target over time. For the past quarter, the plans lagged their benchmarks by 7 to 9 basis points, largely due to performance within the fixed income portfolio. For longer term performance, however, over three years and five years, both PERS and TRS are ahead of the benchmark.

MR. ERLENDSON pointed out that in 2015, half the public pension funds had a zero rate of return, but in 2017, those same asset allocations returned 15.5. He said that is the ARM Board's dilemma, trying to manage risk over decades, and by taking the long view, they have to be willing to suffer the negative consequences of short-term market aberrations.

MR. CENTER reviewed performance of the various asset classes that make up the portfolio. MR. ERLENDSON said they are working with staff to create a calendar for periodic deep dives into the internally managed portfolios and to enhance the reporting for the fixed income portfolio, as suggested by Anodos.

MR. MITCHELL asked about the comments that were made in the investment manager meeting regarding the level of scrutiny of internal versus external strategies; MR. ERLENDSON said their view is that the same standard should be applied regardless of who is managing the money. He said that it's natural to have a harder time being objective when it's somebody closer to you, but Callan is going to work out protocols so there are standards, then they will meet those standards in their reporting. They are considering having people from their manager research group do on-site visits with managers and write up due diligence reports afterward. He said they are going to raise the bar to apply the same standards for internal staff as they do for external managers, and the Board will get not only quantitative measurements, but a qualitative assessment about risk management protocols, staff backups, and the overall investment process.

DR. JENNINGS commented that one could argue that the Board has even more responsibility for oversight of internal management, since external managers are also being scrutinized by other boards and consultant. However, he noted that this is mitigated by the fact that internal investments are heavily indexed or factor-oriented and simpler.

MR. BRICE asked, considering that when an external manager doesn't perform, they are placed on the watch list or dismissed, what kind of process would be undertaken if an internal team isn't performing as expected? MR. CENTER said his understanding was that internal portfolios are subject to the same hurdles and watch list criteria as the external managers. MR. MITCHELL noted that the watch list criteria apply only to active strategies, not to parts of the portfolio that are passively invested or have tight tracking errors, and some of the alternatives in which there is limited ability to change course. DR. JENNINGS pointed out that there have been instances of changes in internally managed mandates; the Board expressed concern, and staff adapted, so there is a process for improvement, even if not spelled out.

CHAIR JOHNSON recessed the meeting from 10:50 a.m. until 11:02 a.m.

After the break, MR. CENTER went on to discuss the opportunistic allocation within the pension plans, which includes some multi-asset strategies like alternative beta and tactical asset funds, along with some alternative equity and other investments, and the real estate portfolio.

For the participant-directed Defined Contribution plans, MR. CENTER gave a quick overview of the overall size and growth of the various plans, then discussed the underlying investment options. MR. ERLENDSON pointed out that in Tier I, new participants are almost all choosing target date funds, though older participants are still using other funds that now have bigger balances, so the current cash flows are not accurately represented by the allocations shown to different strategies. MR. CENTER showed that compared to other target date funds of the same vintage, T. Rowe Price is in the top quartile or even top decile for most time periods. MR. WILLIAMS asked how flexible they are to liquidate and go to someone else's target date funds if the Board wanted to; MR. CENTER answered that they are not locked in, and if the Board decided that they wanted a different provider for target date funds, the manager could be replaced. MR. ERLENDSON added that many providers have off-the-shelf plans, but these glide paths were custom designed by T. Rowe Price with input from the ARM Board.

MR. MITCHELL asked for comment on balanced funds versus target date funds; MR. ERLENDSON said that they did an extensive review of the Defined Contribution plan a couple of years ago, and recommended that it is unusual for a plan of this size and sophistication to have balanced funds. He said they were state of the art at the time, and the two balanced funds are the largest because people have been using them the longest. He said the Board could take affirmative action and close those funds to people hired after a certain date, but he would not recommend making those currently enrolled in them move to another fund. Several Trustees concurred that people wouldn't like that. MR. CENTER said the balanced funds are well designed and low cost, and there is no reason to get rid of them, but if they were starting anew they would not choose to offer them; they would use target date funds instead.

MR. CENTER reminded everyone that Callan has a conference in January in San Francisco with some great speakers. CHAIR JOHNSON thanked the colleagues from Callan for an excellent presentation.

## 16. LESS THAN ZERO (RATES, THAT IS)

MR. MITCHELL said that although the U.S. has so far escaped negative interest rates, it could happen here, so he thought it worthwhile to expose the Board to the fact that there are large swaths of developed markets with negative interest rates currently. He invited strategists from Legal and General to talk about negative interest rates.

MELISSA RUFFEL said that the ARM Board is currently invested in two scientific beta multistrategy factor passive mandates with Legal and General, both funded this year. She introduced JASON SHOUP, who is the head of their global credit strategy and a senior portfolio manager.

MR. SHOUP said he would talk about why and how rates go negative, the underlying drivers, the effects of low rates, and what to do about them. He said that negative rates have become pervasive, but are a relatively recent phenomenon. He showed that 25 percent of the global aggregate index was trading with a negative yield as recently as August, and the amount of negative-yielding debt rose during 2019, but is fluctuating. He said this is probably due to concerns about global growth slowing down, manufacturing slowing down, and trade wars. If the U.S. were to go into a recession, that percentage could rise, but he said the U.S. seems to be moving away from the likelihood of a recession in the near term, and with this the amount of negative-yielding debt is coming down.

MR. SHOUP explained that crossing the threshold from low rates to negative rates has a lot to do with central bank policy, and is somewhat dependent on the willingness of institutions like the Federal Reserve or the European Central Bank to set policy rates at a negative level. He showed that the countries that have the most negative rates, like Denmark, Germany, the Netherlands, and Finland, have the most negative central bank rate as well. The U.S. is an outlier now, the only country that has positive-yielding securities at any maturity on the fixed income interest rate curve. The U.S. is also the only one currently with a positive central bank policy rate, though it has been cut three times this year.

MR. SHOUP examined why central banks would allow rates to go negative. He said when central banks have limited room to do traditional stimulus, they turn to extraordinary measures like directly purchasing assets, referred to as quantitative easing. He showed that between the Fed, the Bank of Japan, the European Central Bank, the Bank of England, and the Swiss National Bank, $12 trillion of fixed income securities are on their balance sheets.

MR. SHOUP explained that central banks actually have lots of rates they can use to control interest rates within the economy, and this decision about eight or nine years ago to start purchasing assets has actually forced a change in their primary rate as well. He said the Federal funds rate is not the primary rate; the primary rate is called the IOER, Interest on Extra Reserves. As a byproduct of quantitative easing, banks are flush with reserves, so the Fed has started paying interest on those reserves which are held by the Fed. If the Fed wanted to go negative, they would have to change from paying banks to hold their deposits to charging banks, which could be construed as a tax, and the Fed would probably seek approval from Congress before doing that.

MR. SHOUP explained how bonds work, and how they would work with negative interest rates, and how things develop to the point that investors potentially have to pay to lend money. He said the two main drivers are debt and demographics. He explained that over the past 40 years, borrowing by government, corporations, and individuals has increased tremendously, which depresses growth going forward, which is then met with lower interest rates. He described debt as an albatross around the ability to grow. Another constraint on ability to grow is an aging population. The highest growth rates in the U.S. coincided with the largest growth in the workforce, and as we move away from those years, it is not surprising that growth declines.

MR. SHOUP said that supply and demand in investment opportunities also have squeezed rates lower, as there is a lot of money looking for something to invest in. Investment opportunity is much lower from a dollars-needed perspective in the current service-led economy, and there are more older people who have large retirement balances to invest.

MR. SHOUP said the benefits of low rates are in question as the Fed considers the results it should see from them. Central bankers would hope that lower rates would encourage more companies to borrow money and make the types of investments that help growth and employment and create inflation, yet the demand for corporate loans is down. Also, inflation hasn't responded as the Fed would hope.

MR. SHOUP discussed the problems created by rates not behaving as expected, saying the consequences of low rates are quite high as well, the first of which is how banks do financially. Corporate pension funds and insurance companies also suffer and have to take more risk to meet future liabilities.

As for what can be done about negative interest rates, MR. SHOUP said that many investors are looking for alternatives to government securities and are moving down the credit quality spectrum. He pointed out that the silver lining is that the U.S. still has significantly positive rates, and we get the opportunity to see how things go in other countries and how to potentially respond.

MS. RUFFEL discussed implications for asset classes, and said two areas that would be significantly impacted by negative rates are equity and fixed income. She explained that different factors have various sensitivities to interest rates, and that Legal and General manages multifactor strategies for Alaska, which in the full market cycle would be expected to have better risk-adjusted returns than the market cap benchmarks. For example, she said that low volatility would be expected to perform well in a risk-off market downturn, low interest rate environment, or falling interest rate environment. Regarding fixed income, she said the relationship between interest rates going down and prices going up is a little more clear, but with a negative interest rate, investors buying bonds would expect to lose money. Then active management would be key, because active managers can anticipate and avoid sectors that are underperforming, and find opportunities to add value. She suggested that if investors had a strong conviction that rates were going to go negative, they should think about extending the duration of their fixed income allocation, but only if they felt sure, because insurance is not free; extending the duration would lead to underperformance if rates trend upwards.

CHAIR JOHNSON recessed the meeting from 11:54 a.m. until 1:05 p.m.

## 17. RISK MANAGEMENT REPORT

MR. HANNA said that anything that might impact the objective of paying all benefits when they're due is subject to risk analysis and monitoring, and staff has selected some of the more impactful risks for discussion. He noted that setting and managing investment risk drives many of the ARM Board's and staff's actions, and three important risk drivers are asset allocation, liquidity, and rebalancing. The ARM Board changed both its actuarial assumptions and the system's asset allocation over the past year, consistent with the ARM Board's real return target and the weighted average life of the pension systems. He said the most significant asset allocation change was adopting the 24 percent fixed income target, which lowered the risk and raised the liquidity of the systems.

MR. HANNA showed a chart of asset allocation data from Callan, and thanked them for working overtime during the power outages in the Bay Area to get this data to the DOR. In response to a question from TRUSTEE HIPPLER, he defined illiquid assets as all of private equity and real assets, minus the 1 percent allocation to REITs. MR. HANNA emphasized that liquidity is a larger issue to the ARM Board than for most plans since the system is closed and more mature. Outflows grow over the next 20 years, and liquidity is critical for meeting those outflows and for maintaining the plan's risk posture through rebalancing. He showed ARMB's liquidity profile compared to other plans with alternative assets, and said it is likely sufficient for the long-term or 20-year planning horizon.

MR. HANNA stated that since equities are so volatile, plans need to have a sufficient level of fixed income to rebalance in the downturn or they are unlikely to get the full benefit of the strategic asset allocation; in other words, plans need to have enough fixed income to be able to afford their equity exposure. He said the last two market crashes resulted in roughly 45 percent equity drawdowns. The fund can now withstand a 32 percent equity drawdown, but rebalancing is constrained with the size of the fixed income rebalancing span, which is currently 6 percent. He said staff is recommending increasing the span to 10 percent, which should give the ARM Board the ability to rebalance in times of significant market stress, and an action memo follows.

MR. CARSON discussed the truView risk monitoring tool, which helps staff answer several key questions: Where is the allocation of risk compared to the ARM Board's asset allocation targets? Are there any significant contributors to risk that are outside of staff's expectations? What is the probability and magnitude of potential losses? How would the current portfolio perform during periods of market stress?

MR. CARSON explained value at risk, or VaR, as an attempt to estimate the size of loss that will not be exceeded for a given level of frequency. VaR relies on assumptions, such as future risk projected from historical distributions of returns, which may not be predictive, so they do stress testing where they use scenario analysis to shock the inputs to the model and observe the results.

MR. CARSON showed the actual allocations as of June 30th versus the target; about 63 percent of the volatility came from equities, and total volatility was calculated at about 8.5 percent. He explained that VaR for the total portfolio was 10.6 percent, with public equities contributing to over half that risk, and with private equity the total contribution to VaR was just under 74 percent. Fixed income proved to be a good diversifier during this analysis period.

DR. JENNINGS commented that sometimes it's useful to do the math and look at those VaR numbers as billions of dollars, to make it more real.

MR. CARSON went on to say that the total portfolio had a value at risk slightly higher than the benchmark, mainly driven by commodity exposure, but this will be different on the end-of-year report. He said that one detractor from relying solely on VaR as a measure of risk is its reliance on a time period distribution of performance and a limited ability to estimate extraordinary events if they do not occur during the measurement period. To overcome this, they stress test the portfolio, and observe the results. During the global financial crisis, it would have incurred a loss of about 30 percent, but the benchmark would have incurred a loss of about 34 percent. This indicates that they are not concentrating risk in such a way that if there was a major unexpected event, the portfolio would significantly underperform. MR. CARSON said that as expected, risk is dominated by equity and equity-like investments, and given the restructuring of several asset classes and the changes to the asset allocation, the year-end report should be revealing and interesting.

MR. CARSON said that staff recommended that the ARM Board adopt Resolution 2019-17, expanding a fixed income allocation band from plus or minus 6 percent to plus or minus 10 percent for FY 2020.

MR. WILLIAMS asked about DR. JENNINGS' comment about thinking in terms of dollars, if that means they have a particular chance of losing $3.2 billion? MR. HANNA replied yes, there would be a 5 percent chance of having a loss that exceeds $3.2 billion. MR. WILLIAMS asked if then, even though they did slightly better than the benchmark during that drop of 30 percent, they really weren't inoculated from something like that because they had such exposure to equities. MR. HANNA said that is accurate, and he would expect with the portfolio changes that have been made to go more to passive, some of that defensiveness might go away. Some other factors may continue to provide defense, but they didn't go into the risk as deeply this time as in the past because there have been so many portfolio changes since June 30th. He said he planned to do additional work with the December 31st information.

MR. WILLIAMS asked if they could also say what the percent chance is of losing $6 billion; MR. HANNA said that could be quantified, though he didn't know offhand. MR. MITCHELL commented that when he first started working at Treasury, he learned to remove at least three digits from numbers they were working with, because they are so big and scary. Using percentages helps mitigate sleepless nights. MR. MITCHELL added that besides VaR there is conditional VaR, which is that one out of 20 times when they experience a loss greater than the VaR threshold, which would likely be significantly greater, and that's why he likes to focus on percentages.

MR. HANNA followed up on conditional VaR, abbreviated cVaR, which he said was 15.5 percent using the June 30th data. But he said that when those numbers are viewed through the perspective of Callan's capital market assumptions and the standard deviations inherent in those, they would expect a VaR closer to 20 percent and a cVaR in the mid 20s. He said they would try to put a finer point on it when they use the December 31st data, because that will more fully reflect the current risk posture of the asset allocation.

There was some discussion of rebalancing bands and further explanation by MR. HANNA and MR. MITCHELL about how rebalancing is used to stay close to the target asset allocations. MR. MITCHELL emphasized the importance of having flexibility to use his authority to make decisions in extreme circumstances.

MS. HARBO moved to pass Resolution 2019-17. MR. BRICE seconded the motion.

ACTING COMMISSIONER BARNHILL asked for thoughts from TRUSTEE WEST. MR. WEST asked MR. MITCHELL whether they should have a band or a point or a process that would indicate not to rebalance, pointing out that there were things they shouldn't have rebalanced in 2008, like student loans and adjustable-rate securities, for which there is no market now. MR. MITCHELL responded that certainly any time they are looking to liquidate a security, they evaluate the liquidity of that instrument, and he would argue that they have plenty of options to consider when trying to become compliant with the investment guidelines. To the question of whether wider bands give more authority to him, he said one could argue that, but then he also has discretion if the bands are exceeded to make a determination as to whether the costs outweigh the benefits. MR. BARNHILL commented that in times of stress, boards tend to meet more frequently, and there will be lots of chances to second-guess the CIO.

A roll call vote was taken, and Resolution 2019-17 was approved unanimously.

## 18. 2020 GIPS STANDARDS

MR. SCOTT JONES, manager of investment operations and analytics, explained that in FY 17 Treasury brought the performance book of record for assets under the fiduciary authority of the Commissioner of Revenue in-house. He said this process has gone through several iterations, getting more sophisticated and efficient, and now they produce time-weighted gross and net of fee reporting for the Commissioner's assets based on daily information that they receive and process from the custodial bank. Also, they are working toward fully integrating the accounting section's daily reconciliation work to help ensure the data integrity and to save time for accounting staff so they can focus more on value-added activities.

MR. JONES said that they also recently stood up a reporting system for the ARM Board's private equity portfolio, with reports generated quarterly that include metrics such as internal rate of return, cumulative community capital, unfunded commitments, total value paid in, and others. Also, staff can slice these data in various ways, including by strategy, vintage year, and manager. As they've built these systems, they have used GIPS as a guideline, and they are internally reviewing the GIPS standards for asset owners and considering implementing them in the future.

STEVE CENTER explained that GIPS stands for Global Investment Performance Standards, developed by the Chartered Financial Analyst, or CFA, Institute in 1999, based on what was then called the Association of Investment Management and Research Performance Presentation Standards.

GIPS standards were designed as a way for investors to gain confidence in the numbers that investment managers presented. He said the standards were well developed, having gone through a couple of iterations to become more accurate and standardized, to be applicable to pool funds and high net worth investors, but they were developed for investment firms managing composite strategies with a focus on how they present that performance to prospective clients.

MR. CENTER explained that because the standards weren't easily applicable to the way institutional investors create their portfolios, the CFA Institute decided this year to redevelop the standards in two separate ways, one for firms and one for asset owners like the ARM Board. The intent is to create a single standard for calculating and presenting performance for the institutional investment space. He pointed out that they receive GIPS disclosures from their asset managers, and under the new standards for asset owners, there is a disclosure called an asset owner statement, which is similar in what has to be disclosed, and in order to claim compliance the ARM Board will have to create one.

GIPS asset owner standards include fundamentals of compliance and calculation and methodology, with required steps and recommended steps in each area. Ultimately, he said, a policy and procedures manual would have to be created to document and confirm that all the necessary steps are being followed to meet the standards and requirements, and the data has to be available externally as well. Time-weighted returns have to be used, and though quarterly updates are recommended, the requirement is an annual update.

CHAIR JOHNSON asked if MR. CENTER thought GIPS compliance was going to become a requirement; he answered that the CFA is not a regulatory board, and this practice is very new, but it will probably gain traction. MR. MITCHELL added that he thinks there is a benefit to striving to be compliant, but that is not being offered at this point; this presentation is to inform the Board about it.

MS. HARBO asked if there would be a fee to participate; MR. CENTER answered that although it is recommended that a third party be hired to audit performance, it is not a requirement, so a fund can produce an asset owner report and claim compliance without hiring a third party auditor. MR. CENTER said that Callan does not offer third-party verification of GIPS compliance, and the standards are so new that he doesn't know who will be offering that.

MR. MITCHELL said there were two primary motivators in bringing this to the Board's attention: First, it is an evolution in the industry that they should be aware of. And to the extent that it is perceived as best practice, and their practices are consistent with it, he thinks it is a good exercise to go through. Regarding the decision of whether the Board wants to formally claim compliance with the standards, he said they are not prepared to have an opinion on that at this point.

MR. CENTER reviewed the calculation methodology requirements for GIPS, which are all currently being done by Callan and staff. The key points are that assets need to be reported at fair market value, returns have to be calculated after transaction costs, and trade date and accrual basis must be used for accounting. Public market portfolios have to be valued at least monthly and revalued on the date of any substantially large cash flows, private markets valued at least quarterly, and real estate holdings valued at least every 12 to 36 months by an external party. Recommendations include that the portfolio be valued on the date of all external cash flows; using accrual accounting for dividends, not just for interest-bearing securities; and that management fees are accrued rather than just tacked on when they are actually paid. The recommendations also apply the typical accounting hierarchy and recommend external valuation for private market assets once every 12 months.

MR. CENTER explained the requirements for the asset owner report, which include reporting on at least a minimum of one-year performance; showing returns net of fees; and showing a three-year standard deviation using monthly returns if they are available. The asset owner has to detail the currency that is being used, how much of the portfolio value is estimated rather than actual, and things of that nature. MR. CENTER also went through recommendations and disclosures, and reviewed the example that the CFA Institute included in their manual. MR. ERLENDSON pointed out, since the ARMB has seven plans, this would have to be done seven times; MR. CENTER confirmed that.

## 19. INVESTMENT ACTIONS

CHAIR JOHNSON noted that the investment actions had been addressed under the Operations Committee.

## UNFINISHED BUSINESS

None.

## NEW BUSINESS

None.

## OTHER MATTERS TO PROPERLY COME BEFORE THE BOARD

None.

## PUBLIC/MEMBER COMMENTS

BRAD OWENS from Anchorage sent his comments by e-mail, which CHAIR JOHNSON read into the record. MR. OWENS said he is VP of Retired Public Employees of Alaska, or RPEA, and he called in to the teleconference because he wanted to make some comments or requests, but he was unable to do so because of telephonic problems, which ironically underscores his remarks. He said that participating in a telephonic conference of the ARM Board meeting is problematic, particularly when there is no video. This demonstrates the limitations of holding ARM Board meetings solely in Juneau, effectively disenfranchising people like him from participating.

MR. OWENS said that he believes that appropriate and reasonable public participation in public boards such as ARMB demands that the Board meet in places other than only Juneau. He requested that ARMB establish a policy requiring meetings to be held at least once annually in both Anchorage and in Fairbanks, as well as in Juneau. His second suggestion is that a public location with videoconferencing should be provided in locations where the Board is not meeting. This has been done previously, and besides allowing public participation by both audio and video, it allows participants to obtain documents and reports provided to or by the ARMB without having to print those documents themselves.

## INVESTMENT ADVISORY COUNCIL COMMENTS

None.

## TRUSTEE COMMENTS

MR. BRETZ asked if management could respond at the next meeting to the recommendations in the Anodos report; MR. MITCHELL answered yes.

MS. HARBO wished everyone a merry Christmas and happy new year, and thanked them for all their hard work.

MR. BRICE thanked CIO MITCHELL for an informative and packed meeting, and wished everyone a merry Christmas and safe travels.

MR. WILLIAMS commented that he has always considered it a deep and meaningful honor to be part of this Board and to be a Trustee, and he learns a lot at each meeting. He thanked CIO MITCHELL and KATHY LEA for answering his questions between meetings, and said the professionalism and good communication of staff is very helpful and makes meetings go smoothly.

ACTING COMMISSIONER BARNHILL said he was thrilled to be here today as Acting Commissioner and Trustee of the ARM Board, commenting that he has worked in and around this Board since its inception, so this was a meaningful opportunity for him. He expressed heartfelt thanks to the staff of the Division of Retirement and Benefits, of the Treasury Division, and of the Department of Law that support this system, who work incredibly hard to deliver on the promises the State of Alaska has made to its beneficiaries. He added that he thinks he now may be the only person that has served in every organization of this retirement system: Department of Law, Department of Administration, Treasury Division, and now the ARM Board.

CHAIR JOHNSON commented that he hopes the Department of Revenue and the powers that be will give careful consideration to revisiting what is currently scheduled to be a telephonic conference for the March meeting.

CHAIR JOHNSON stated that he thinks they should examine the issue of how much environmental, social, and governance issues should become part of the analysis of investments. Also, he said he thinks at some point they should revisit the structure of the Board and its committees. He said that many other boards use an Investment Committee to handle things that this full Board handles; however, he wouldn't want the Board to give up its full authority to make decisions.

## FUTURE AGENDA ITEMS

CHAIR JOHNSON suggested that the subject of cybersecurity should be continually revisited.

## ADJOURNMENT

There being no objection and no further business to come before the board, the meeting was adjourned at 2:40 p.m. on December 13, 2019, on a motion made by MS. HARBO and seconded by VICE CHAIR BRICE.

Chair of the Board of Trustees
Alaska Retirement Management Board

**ATTEST:**

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.

Confidential Office Services
Karen Pearce Brown
Juneau, Alaska

**ALASKA RETIREMENT MANAGEMENT BOARD**

**STAFF REPORT**

**Disclosure - Calendar Update**
**March 19, 2019**

**The Disclosure Memorandum is included in the packet; no transactions require additional review or discussion.**

**The 2020 ARMB calendar-to-date is attached.**

**Nothing further to report.**

***ALASKA RETIREMENT MANAGEMENT BOARD***
***M E M O R A N D U M***

To: ARMB Trustees
From: Stephanie Alexander
Date: March 5, 2020
Subject: Financial Disclosures

As required by AS 37.10.230 and Alaska Retirement Management Board policy relating to investment conduct and reporting, trustees and staff must disclose certain financial interests. We are hereby submitting to you a list of disclosures for individual transactions made by trustees and staff.

**3rd Quarter – October 1, 2019 to December 31, 2019**

| Name | Position Title | Disclosure Type | Disclosure Date |
|---|---|---|---|
| Bob Mitchell | Chief Investment Officer | Equities | 01/06/2020 |
| Tina Martin | Treasury Accounting Staff | Equities | 01/13/2020 |
| Michelle Prebula | State Investment Officer | Equities | 01/14/2020 |
| Scott Jones | Treasury Accounting Staff | Equities | 01/24/2020 |
| Victor Djajalie | State Investment Officer | Equities | 01/24/2020 |
| Greg Samorajski | Deputy Commissioner | Equities, Fixed Income | 02/13/2020 |
| Hunter Romberg | Treasury Accounting Staff | Equities | 02/27/2020 |

| ALASKA RETIREMENT MANAGEMENT BOARD<br>2020 Meeting Calendar | | |
|---|---|---|
| **DATE** | **LOCATION** | **DESCRIPTION** |
| March 18<br>Wednesday | Telephonic | Actuarial Committee<br>Audit Committee<br>Operations Committee<br>Defined Contribution Plan Committee |
| **March 19-20<br>Thursday-Friday** | **Telephonic** | **Board of Trustees Meeting:**<br>**Performance Measurement – 4th Quarter*<br>**Buck Draft Actuarial Report/GRS Draft Actuary Certification*<br>**Capital Markets – Asset Allocation*<br>**Manager Presentations* |
| April 30<br>Thursday | Telephonic | Actuarial Committee<br>**As necessary: follow-up/additional discussion/questions on valuations* |
| **May 1<br>Friday** | **Telephonic** | **Board of Trustees Meeting**<br>**As necessary* |
| June 17<br>Wednesday | Juneau, AK | Actuarial Committee<br>Audit Committee<br>Operations Committee<br>Defined Contribution Plan Committee |
| **June 18-19<br>Thursday - Friday** | **Juneau, AK** | **Board of Trustees Meeting:**<br>**Final Actuary Reports/Adopt Valuation*<br>**Adopt Asset Allocation*<br>**Performance Measurement - 1st Quarter*<br>**Manager Presentations* |
| September 16<br>Wednesday | Juneau, AK | Actuarial Committee<br>Audit Committee<br>Operations Committee<br>Defined Contribution Plan Committee |
| **September 17-18<br>Thursday - Friday** | **Juneau, AK** | **Board of Trustees Meeting:**<br>**Set Contribution Rates*<br>**Audit Results/Assets – Auditor*<br>**Approve Budget*<br>**Performance Measurement – 2nd Quarter*<br>**Real Estate Annual Plan*<br>**Real Assets Evaluation – Callan LLC*<br>**Manager Presentations* |
| October 16<br>Friday (placeholder) | Telephonic | Audit Committee |
| December 2<br>Wednesday | Juneau, AK | Actuarial Committee<br>Audit Committee<br>Operations Committee<br>Defined Contribution Plan Committee |
| **December 3-4<br>Thursday-Friday** | **Juneau, AK** | **Board of Trustees Meeting:**<br>**Audit Report - DRB Auditor*<br>**Performance Measurement – 3rd Quarter*<br>**Manager Review (Questionnaire)*<br>**Private Equity Evaluation - Callan LLC*<br>**Review Private Equity Annual Plan*<br>**Manager Presentations* |

# ALASKA RETIREMENT MANAGEMENT BOARD

## STAFF REPORT

### Fund Financials – Cash Flow Report
### March 19, 2020

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**Kayla Wisner, State Comptroller, Department of Revenue**

As of January month-end, total plan assets were as follows: PERS - $19.9 billion, TRS - $9.5 billion, JRS - $229.7 million, NGNMRS - $42.9 million, SBS - $4.3 billion, DCP - $1 billion. Total non-participant direct plans totaled $27.7 billion, and participant-directed plans totaled $7.3 billion. Total assets were $35 billion.

Year-to-date income was $1.9 billion, and the plans experienced a net withdrawal of $450.7 million. Total assets were up 4.28% year-to-date.

Internally managed assets totaled $14.8 billion

As of month-end, all plans were within the bands of their asset allocations.

**Kevin Worley, Chief Financial Officer, Division of Retirement and Benefits**

Presented is the Division of Retirement and Benefits (DRB) Supplement to the Treasury Division's Financial Report as of January 31, 2020.

DRB's supplement report expands on the ARMB Financial Report column "Net Contributions (Withdrawals)" located on pages 1 and 2. DRB reports the summary totals of actual employee and employer, State of Alaska, and other revenue contributions, as well as benefit payments, refunds / distributions, and combined administrative / investment expenditures. DRB's report presents cash inflows / outflows for the 7 months ended January 31, 2020 (page 1) and the month of January 2020 (page 2).

Also presented are participant-directed distributions by plan and by type for the 7-month period on page 3. This page has been updated for Tier information on the defined benefit refunds, and vested percentage on defined contribution distributions.

"Notes for the DRB Supplement to the Treasury Report" includes information for the pension and healthcare plans. Additional information regarding other income is also presented on pages 4 and 5.

# ALASKA RETIREMENT MANAGEMENT BOARD
# FINANCIAL REPORT

As of January 31, 2020

**ALASKA RETIREMENT MANAGEMENT BOARD**
**Schedule of Investment Income and Changes in Invested Assets by Fund**
**Fiscal Year-to-Date through January 31, 2020**

| | Beginning Invested Assets | Investment Income (1) | Net Contributions (Withdrawals) | Ending Invested Assets | % Change in Invested Assets | % Change due to Investment Income (2) |
|---|---|---|---|---|---|---|
| **Public Employees' Retirement System (PERS)** | | | | | | |
| Defined Benefit Plans: | | | | | | |
| Retirement Trust | $ 9,465,719,458 | $ 519,518,669 | $ (159,725,594) | $ 9,825,512,533 | 3.80% | 5.54% |
| Retirement Health Care Trust | 7,807,287,545 | 424,118,506 | (174,377,428) | 8,057,028,623 | 3.20% | 5.49% |
| Total Defined Benefit Plans | 17,273,007,003 | 943,637,175 | (334,103,022) | 17,882,541,156 | 3.53% | 5.52% |
| Defined Contribution Plans: | | | | | | |
| Participant Directed Retirement | 1,218,753,974 | 85,165,712 | 63,937,002 | 1,367,856,688 | 12.23% | 6.81% |
| Health Reimbursement Arrangement | 419,023,779 | 23,634,656 | 25,213,508 | 467,871,943 | 11.66% | 5.48% |
| Retiree Medical Plan | 117,399,406 | 6,696,048 | 9,943,431 | 134,038,885 | 14.17% | 5.47% |
| Defined Benefit Occupational Death and Disability: | | | | | | |
| Public Employees | 24,859,446 | 1,408,596 | 1,687,481 | 27,955,523 | 12.45% | 5.48% |
| Police and Firefighters | 11,367,334 | 639,363 | 588,679 | 12,595,376 | 10.80% | 5.48% |
| Total Defined Contribution Plans | 1,791,403,939 | 117,544,375 | 101,370,101 | 2,010,318,415 | 12.22% | 6.38% |
| **Total PERS** | **19,064,410,942** | **1,061,181,550** | **(232,732,921)** | **19,892,859,571** | 4.35% | 5.60% |
| **Teachers' Retirement System (TRS)** | | | | | | |
| Defined Benefit Plans: | | | | | | |
| Retirement Trust | 5,505,314,103 | 302,825,827 | (112,967,267) | 5,695,172,663 | 3.45% | 5.56% |
| Retirement Health Care Trust | 2,940,744,859 | 159,740,389 | (63,934,848) | 3,036,550,400 | 3.26% | 5.49% |
| Total Defined Benefit Plans | 8,446,058,962 | 462,566,216 | (176,902,115) | 8,731,723,063 | 3.38% | 5.53% |
| Defined Contribution Plans: | | | | | | |
| Participant Directed Retirement | 516,072,656 | 35,588,865 | 18,758,271 | 570,419,792 | 10.53% | 6.77% |
| Health Reimbursement Arrangement | 124,841,136 | 7,006,762 | 6,260,648 | 138,108,546 | 10.63% | 5.48% |
| Retiree Medical Plan | 41,730,124 | 2,337,055 | 2,118,997 | 46,186,176 | 10.68% | 5.46% |
| Defined Benefit Occupational Death and Disability | 4,293,954 | 239,267 | 152,521 | 4,685,742 | 9.12% | 5.47% |
| Total Defined Contribution Plans | 686,937,870 | 45,171,949 | 27,290,437 | 759,400,256 | 10.55% | 6.45% |
| **Total TRS** | **9,132,996,832** | **507,738,165** | **(149,611,678)** | **9,491,123,319** | 3.92% | 5.61% |
| **Judicial Retirement System (JRS)** | | | | | | |
| Defined Benefit Plan Retirement Trust | 183,941,036 | 10,263,003 | 929,933 | 195,133,972 | 6.09% | 5.57% |
| Defined Benefit Retirement Health Care Trust | 33,156,612 | 1,811,110 | (356,851) | 34,610,871 | 4.39% | 5.49% |
| **Total JRS** | **217,097,648** | **12,074,113** | **573,082** | **229,744,843** | 5.83% | 5.55% |
| **National Guard/Naval Militia Retirement System (MRS)** | | | | | | |
| Defined Benefit Plan Retirement Trust | 40,994,203 | 2,331,778 | (472,850) | 42,853,131 | 4.53% | 5.72% |
| **Other Participant Directed Plans** | | | | | | |
| Supplemental Annuity Plan | 4,111,631,106 | 241,630,178 | (52,061,291) | 4,301,199,993 | 4.61% | 5.91% |
| Deferred Compensation Plan | 983,593,517 | 61,954,066 | (16,427,006) | 1,029,120,577 | 4.63% | 6.35% |
| **Total All Funds** | **33,550,724,248** | **1,886,909,850** | **(450,732,664)** | **34,986,901,434** | | |
| Total Non-Participant Directed | 26,720,672,995 | 1,462,571,029 | (464,939,640) | 27,718,304,384 | 3.73% | 5.52% |
| Total Participant Directed | 6,830,051,253 | 424,338,821 | 14,206,976 | 7,268,597,050 | 6.42% | 6.21% |
| **Total All Funds** | **$ 33,550,724,248** | **$ 1,886,909,850** | **$ (450,732,664)** | **$ 34,986,901,434** | **4.28%** | **5.66%** |

Notes:

(1) Includes interest, dividends, securities lending, expenses, realized and unrealized gains/losses

(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates and can be found at: http://www.revenue.state.ak.us/treasury/programs/programs/other/armb/investmentresults.aspx

**ALASKA RETIREMENT MANAGEMENT BOARD**
**Schedule of Investment Income and Changes in Invested Assets by Fund**
**For the Month Ended January 31, 2020**

| | Beginning Invested Assets | Investment Income (1) | Net Contributions (Withdrawals) | Ending Invested Assets | % Change in Invested Assets | % Change due to Investment Income (2) |
|---|---|---|---|---|---|---|
| **Public Employees' Retirement System (PERS)** | | | | | | |
| Defined Benefit Plans: | | | | | | |
| Retirement Trust | $ 9,878,641,257 | $ (10,484,002) | $ (42,644,722) | $ 9,825,512,533 | -0.54% | -0.11% |
| Retirement Health Care Trust | 8,095,980,397 | (9,680,986) | (29,270,788) | 8,057,028,623 | -0.48% | -0.12% |
| Total Defined Benefit Plans | 17,974,621,654 | (20,164,988) | (71,915,510) | 17,882,541,156 | -0.51% | -0.11% |
| Defined Contribution Plans: | | | | | | |
| Participant Directed Retirement | 1,366,468,333 | (8,936,993) | 10,325,348 | 1,367,856,688 | 0.10% | -0.65% |
| Health Reimbursement Arrangement | 464,423,426 | (577,902) | 4,026,419 | 467,871,943 | 0.74% | -0.12% |
| Retiree Medical Plan | 132,620,968 | (166,630) | 1,584,547 | 134,038,885 | 1.07% | -0.12% |
| Defined Benefit Occupational Death and Disability: | | | | | | |
| Public Employees | 27,732,927 | (34,538) | 257,134 | 27,955,523 | 0.80% | -0.12% |
| Police and Firefighters | 12,509,340 | (15,529) | 101,565 | 12,595,376 | 0.69% | -0.12% |
| Total Defined Contribution Plans | 2,003,754,994 | (9,731,592) | 16,295,013 | 2,010,318,415 | 0.33% | -0.48% |
| **Total PERS** | **19,978,376,648** | **(29,896,580)** | **(55,620,497)** | **19,892,859,571** | -0.43% | -0.15% |
| **Teachers' Retirement System (TRS)** | | | | | | |
| Defined Benefit Plans: | | | | | | |
| Retirement Trust | 5,736,405,960 | (6,056,669) | (35,176,628) | 5,695,172,663 | -0.72% | -0.11% |
| Retirement Health Care Trust | 3,050,109,698 | (3,653,772) | (9,905,526) | 3,036,550,400 | -0.44% | -0.12% |
| Total Defined Benefit Plans | 8,786,515,658 | (9,710,441) | (45,082,154) | 8,731,723,063 | -0.62% | -0.11% |
| Defined Contribution Plans: | | | | | | |
| Participant Directed Retirement | 570,480,868 | (4,011,238) | 3,950,162 | 570,419,792 | -0.01% | -0.70% |
| Health Reimbursement Arrangement | 137,255,937 | (170,438) | 1,023,047 | 138,108,546 | 0.62% | -0.12% |
| Retiree Medical Plan | 45,865,569 | (57,131) | 377,738 | 46,186,176 | 0.70% | -0.12% |
| Defined Benefit Occupational Death and Disability | 4,665,530 | (5,756) | 25,968 | 4,685,742 | 0.43% | -0.12% |
| Total Defined Contribution Plans | 758,267,904 | (4,244,563) | 5,376,915 | 759,400,256 | 0.15% | -0.56% |
| **Total TRS** | **9,544,783,562** | **(13,955,004)** | **(39,705,239)** | **9,491,123,319** | -0.56% | -0.15% |
| **Judicial Retirement System (JRS)** | | | | | | |
| Defined Benefit Plan Retirement Trust | 196,111,974 | (209,455) | (768,547) | 195,133,972 | -0.50% | -0.11% |
| Defined Benefit Retirement Health Care Trust | 34,706,331 | (41,867) | (53,593) | 34,610,871 | -0.28% | -0.12% |
| **Total JRS** | **230,818,305** | **(251,322)** | **(822,140)** | **229,744,843** | -0.47% | -0.11% |
| **National Guard/Naval Militia Retirement System (MRS)** | | | | | | |
| Defined Benefit Plan Retirement Trust | 43,016,545 | 61,839 | (225,253) | 42,853,131 | -0.38% | 0.14% |
| **Other Participant Directed Plans** | | | | | | |
| Supplemental Annuity Plan | 4,313,916,386 | (3,962,314) | (8,754,079) | 4,301,199,993 | -0.29% | -0.09% |
| Deferred Compensation Plan | 1,035,674,167 | (2,401,992) | (4,151,598) | 1,029,120,577 | -0.63% | -0.23% |
| **Total All Funds** | **35,146,585,613** | **(50,405,373)** | **(109,278,806)** | **34,986,901,434** | | |
| Total Non-Participant Directed | 27,860,045,859 | (31,092,836) | (110,648,639) | 27,718,304,384 | -0.51% | -0.11% |
| Total Participant Directed | 7,286,539,754 | (19,312,537) | 1,369,833 | 7,268,597,050 | -0.25% | -0.27% |
| **Total All Funds** | **$ 35,146,585,613** | **$ (50,405,373)** | **$ (109,278,806)** | **$ 34,986,901,434** | **-0.45%** | **-0.14%** |

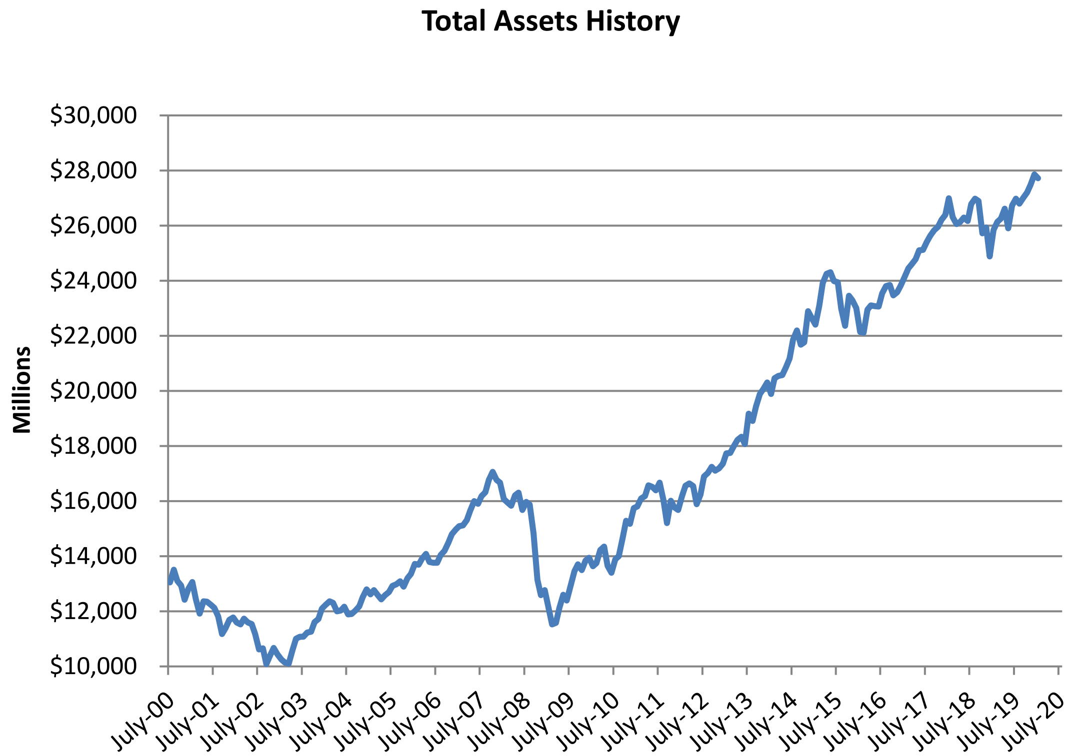
Notes:

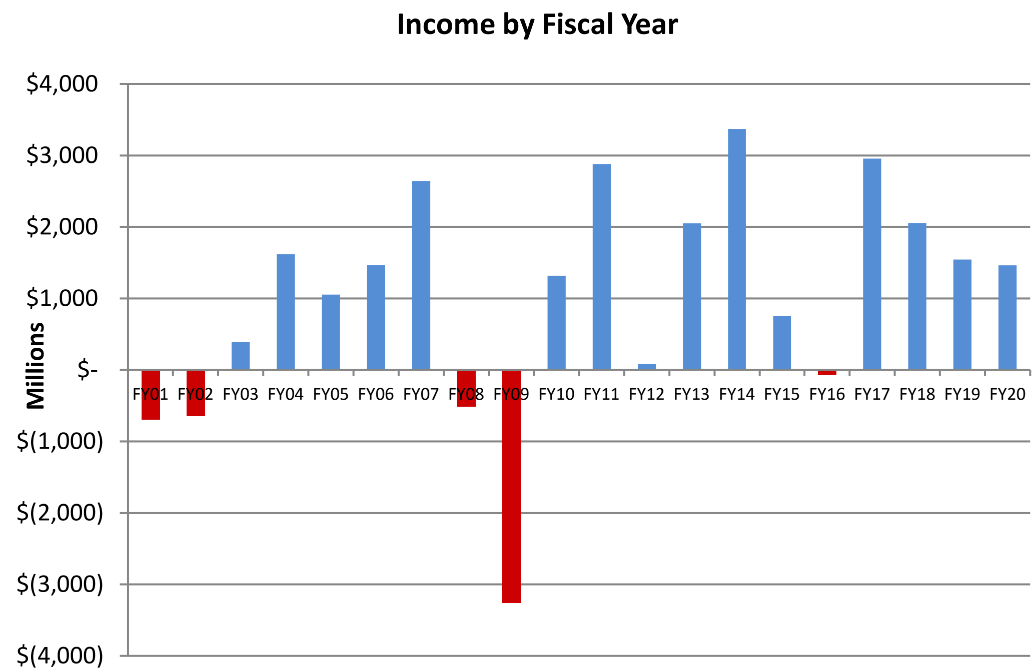
(1) Includes interest, dividends, securities lending, expenses, realized and unrealized gains/losses

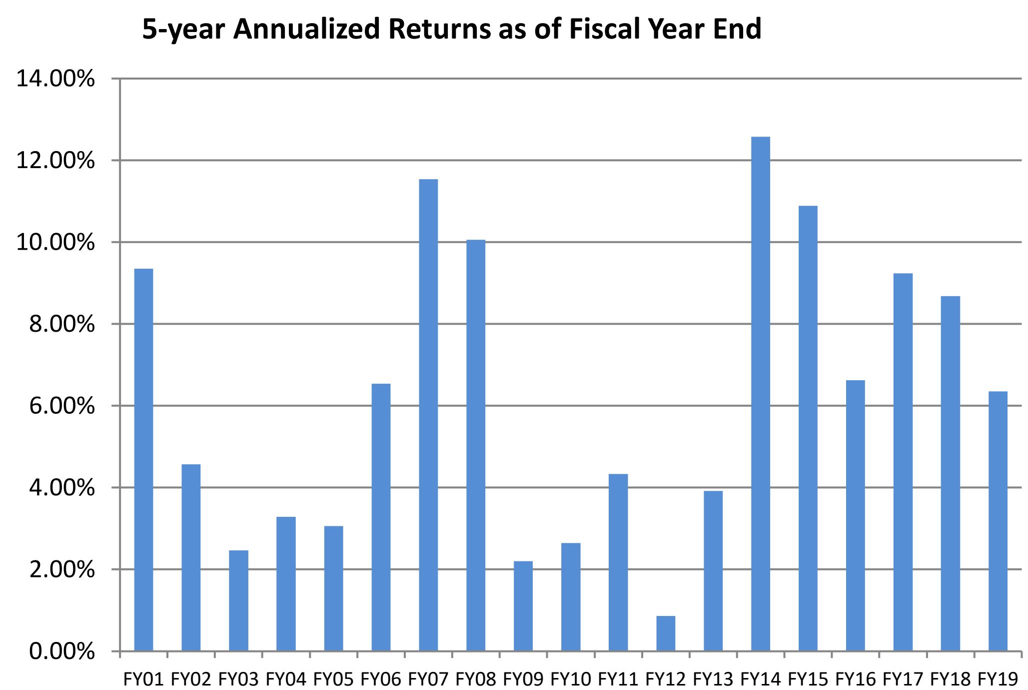
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates and can be found at: http://www.revenue.state.ak.us/treasury/programs/programs/other/armb/investmentresults.aspx

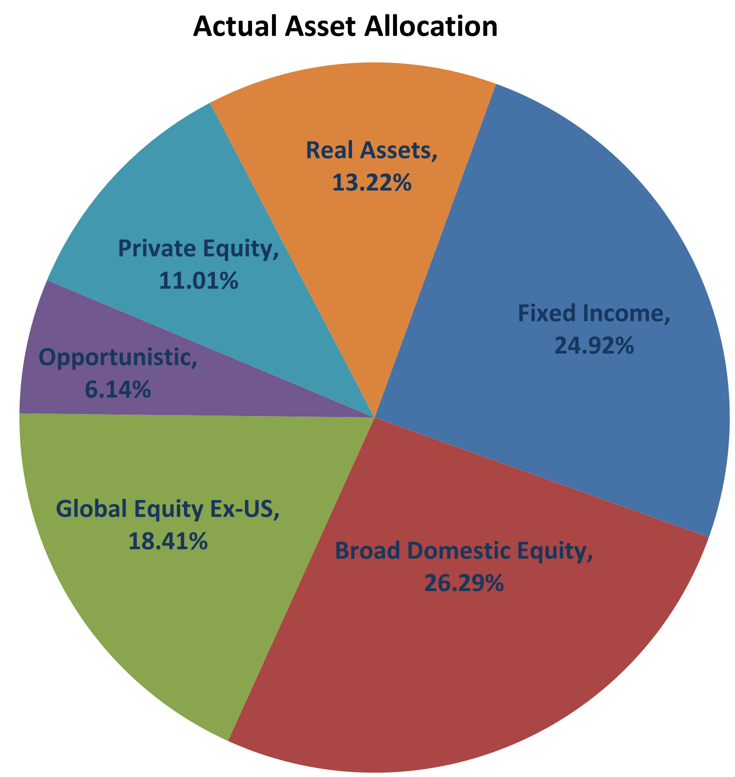
# Total Non Participant Directed Assets

**As of January 31, 2020**



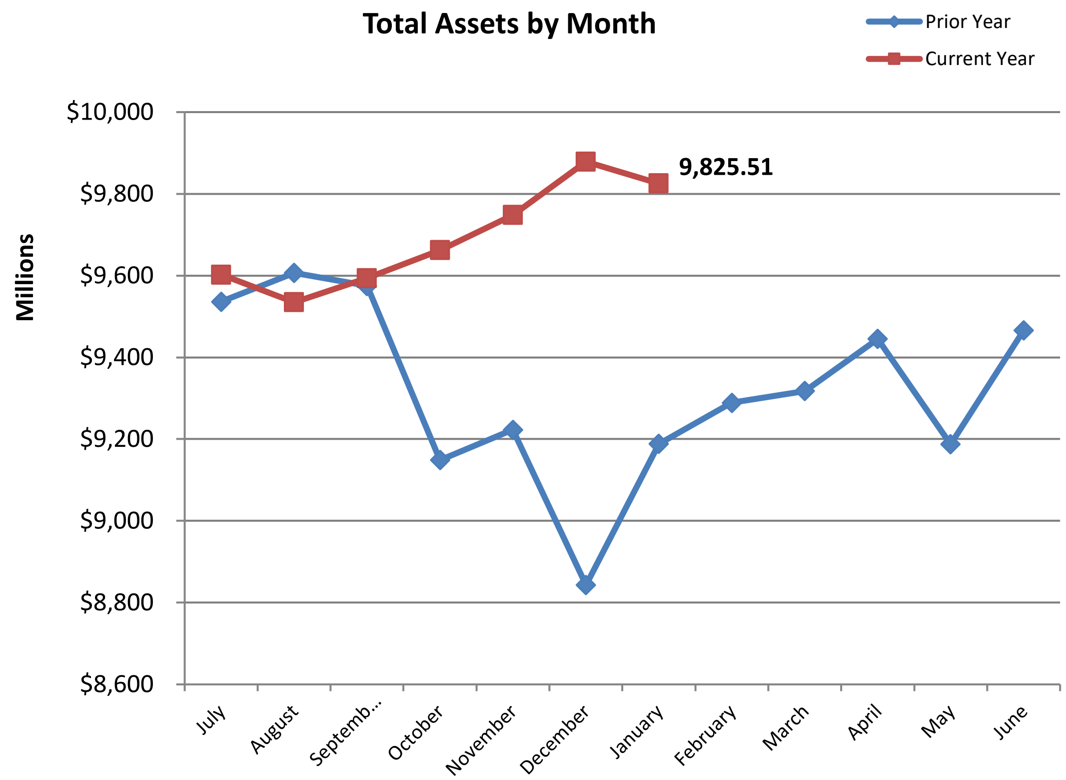



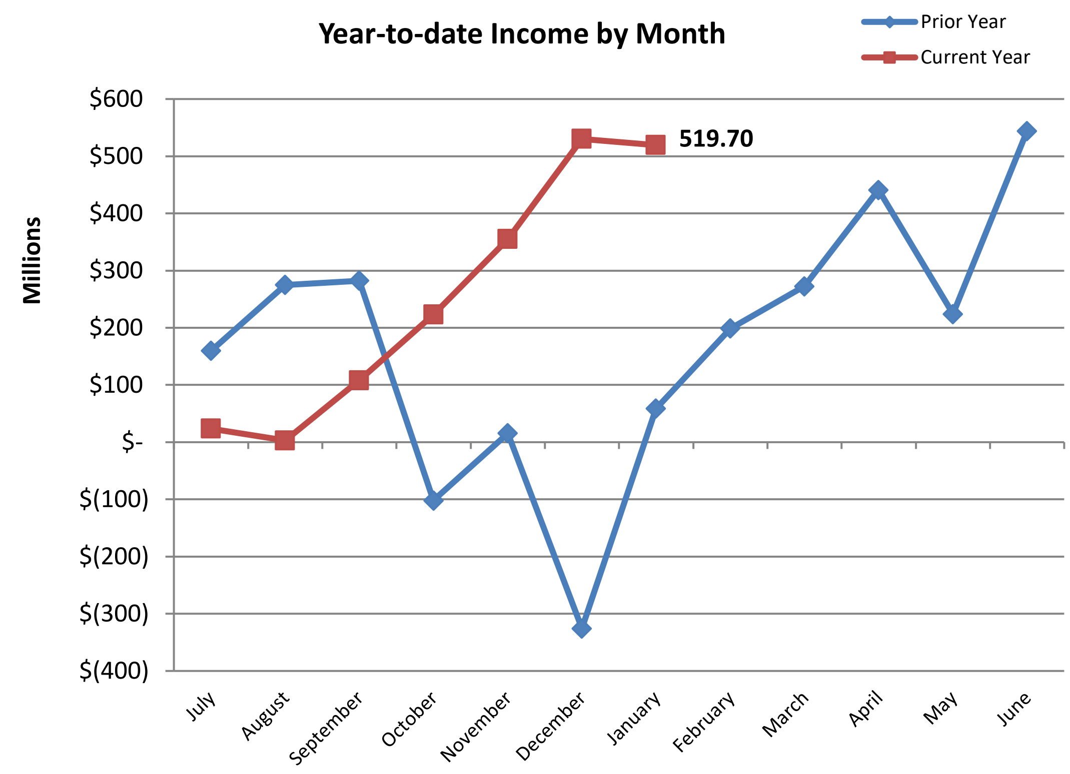



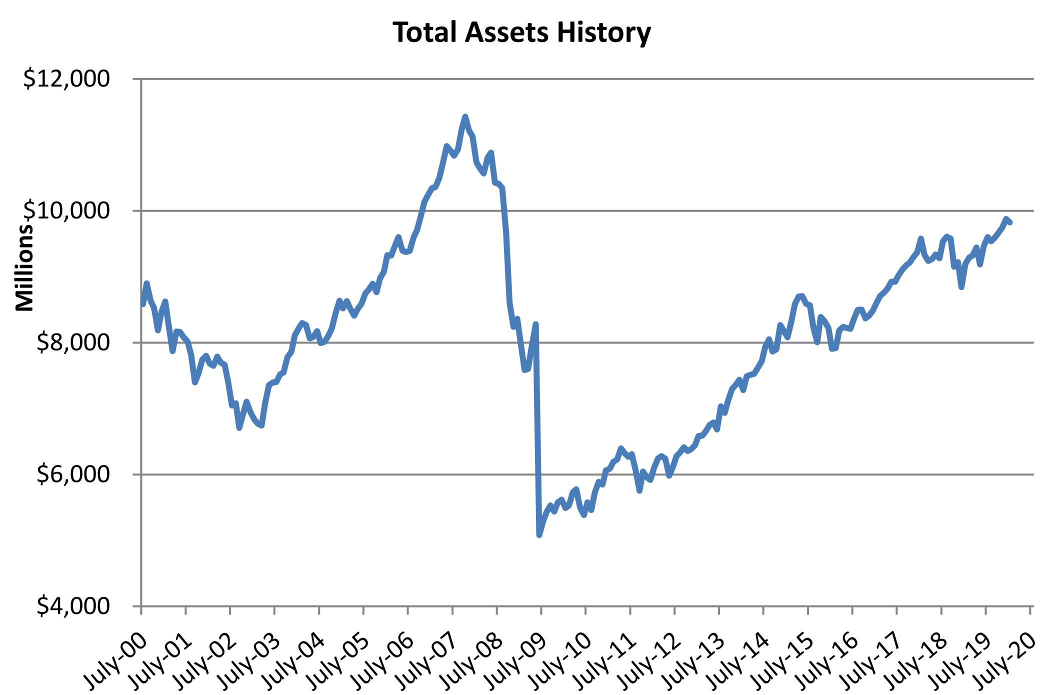



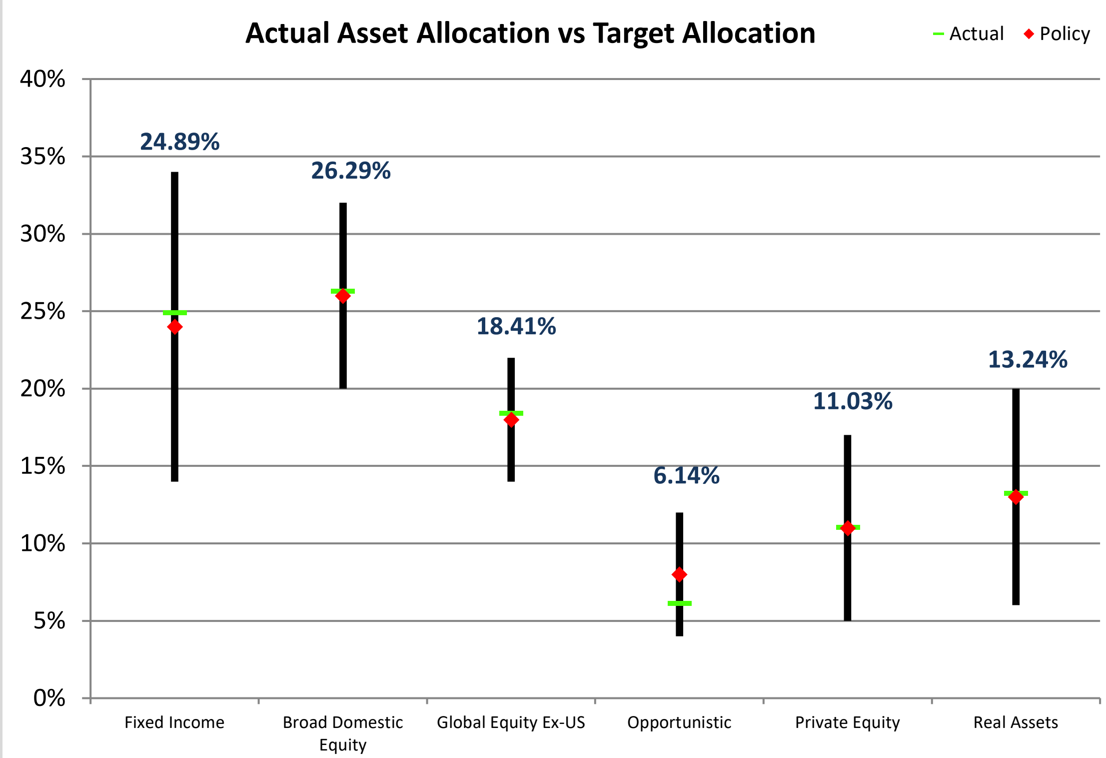
## Public Employees' Retirement Pension Trust Fund

**Fiscal Year-to-Date through January 31, 2020**



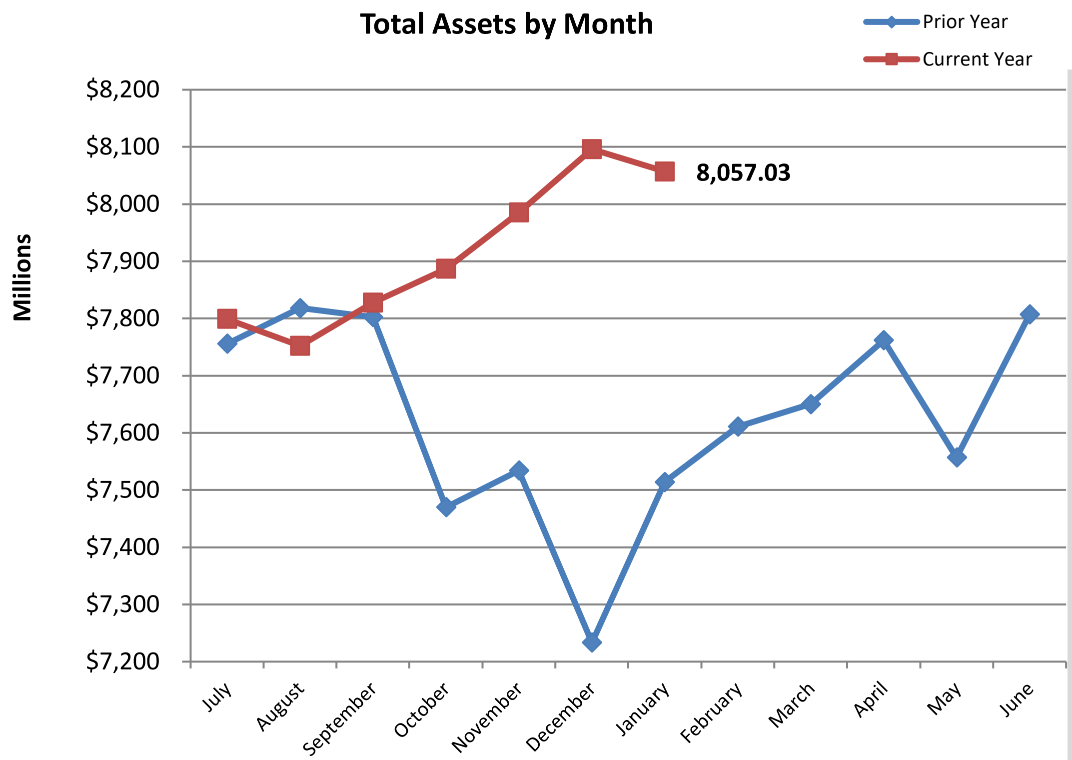



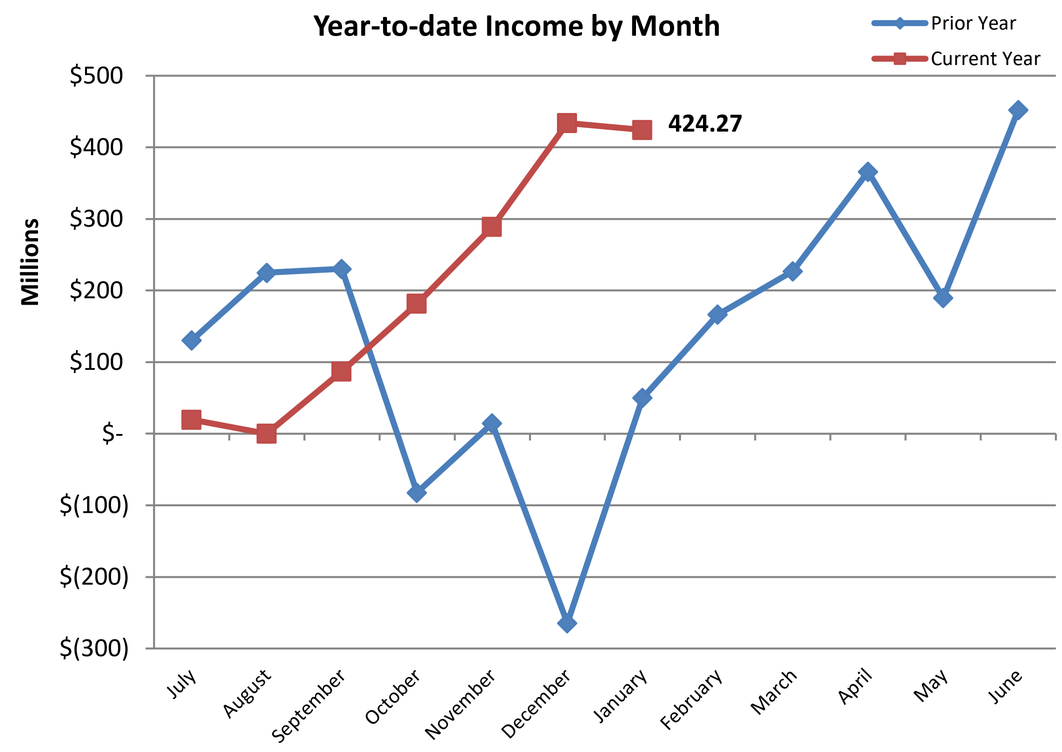



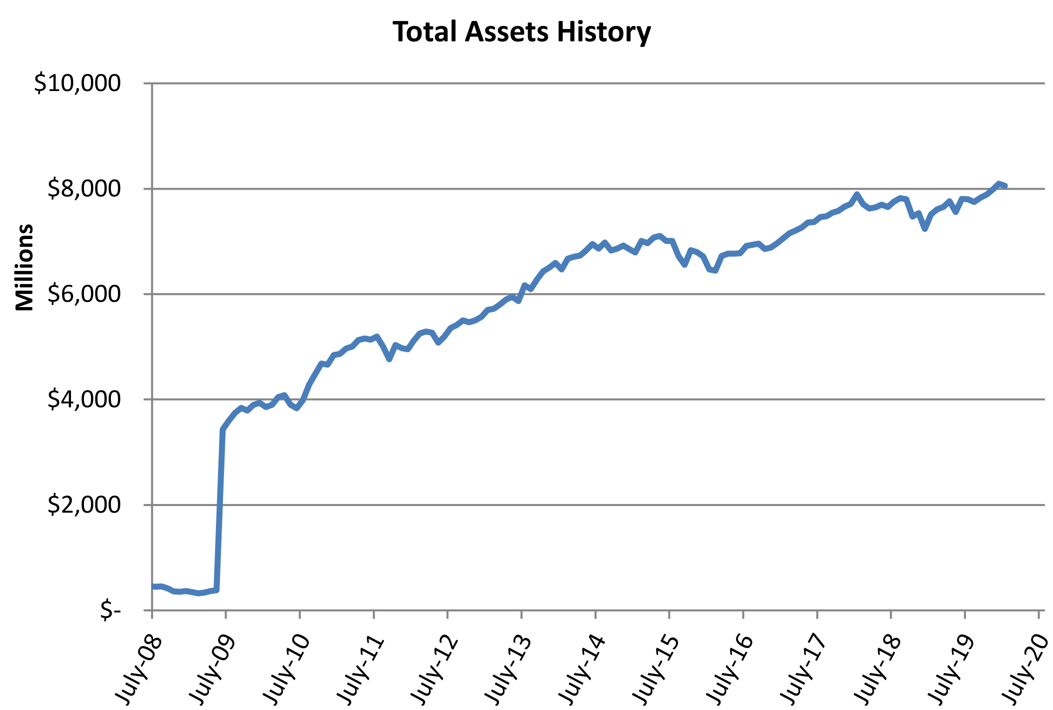



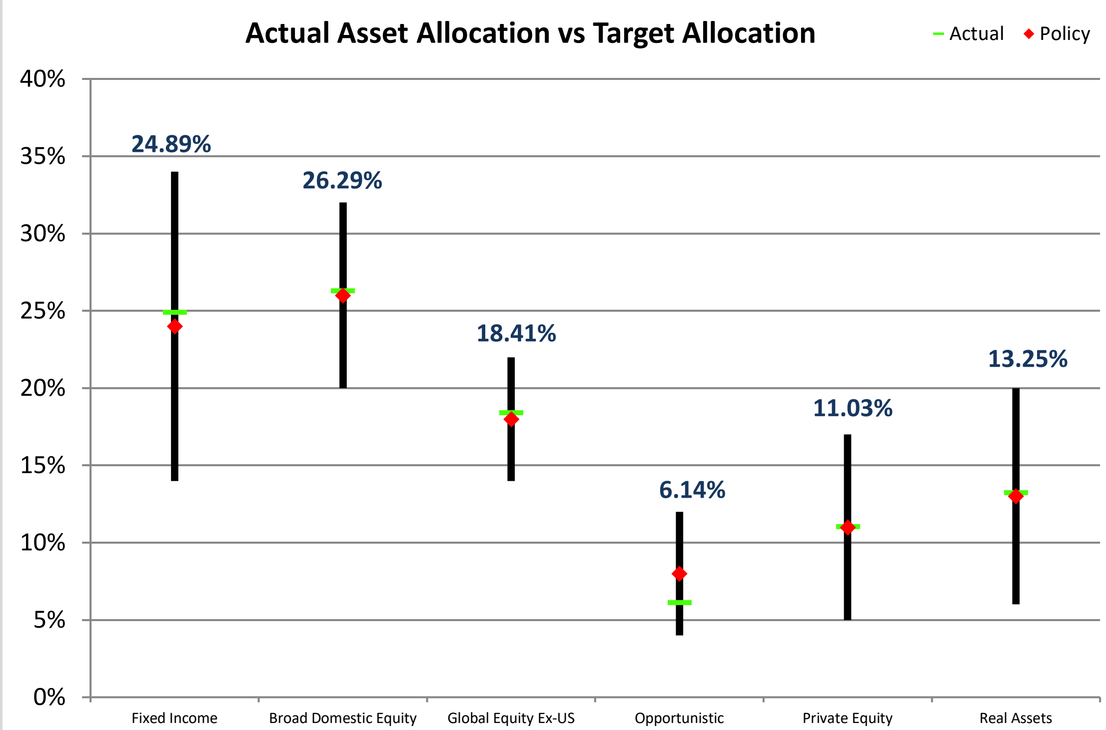
# Public Employees' Retirement Health Care Trust Fund

**Fiscal Year-to-Date through January 31, 2020**



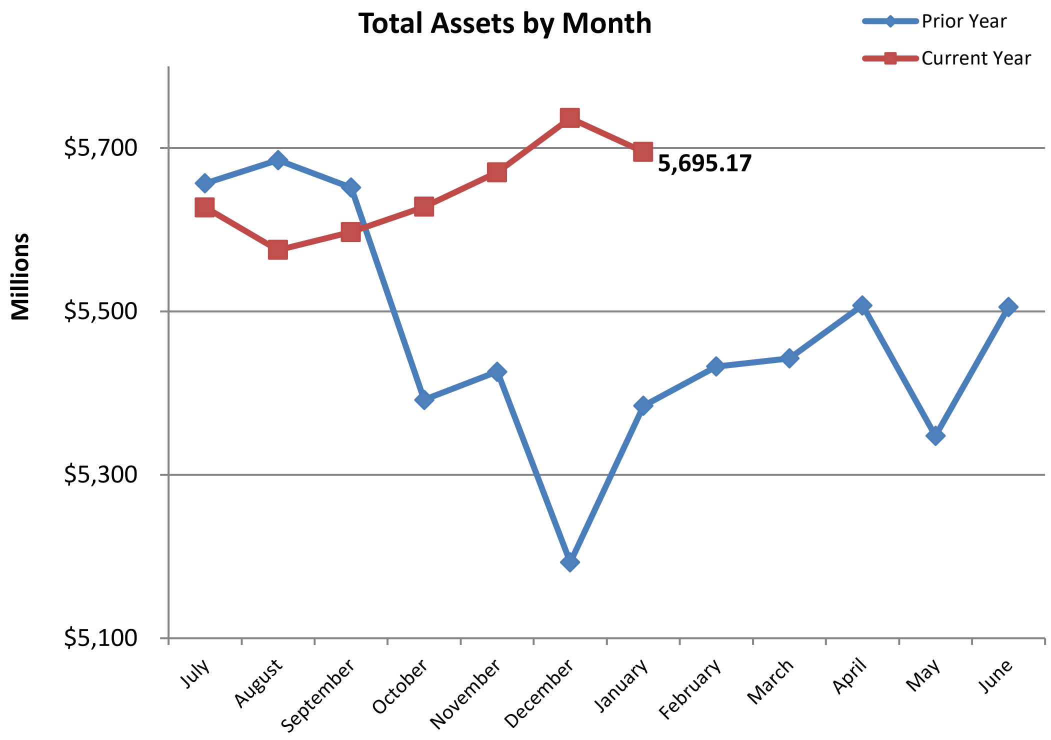



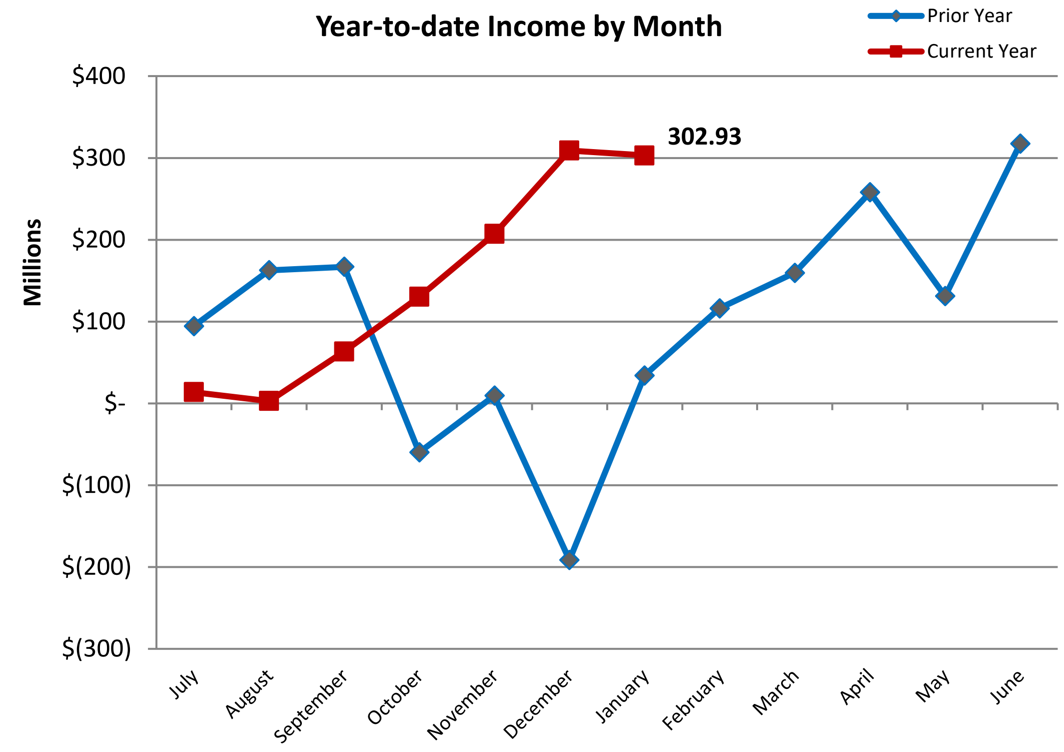



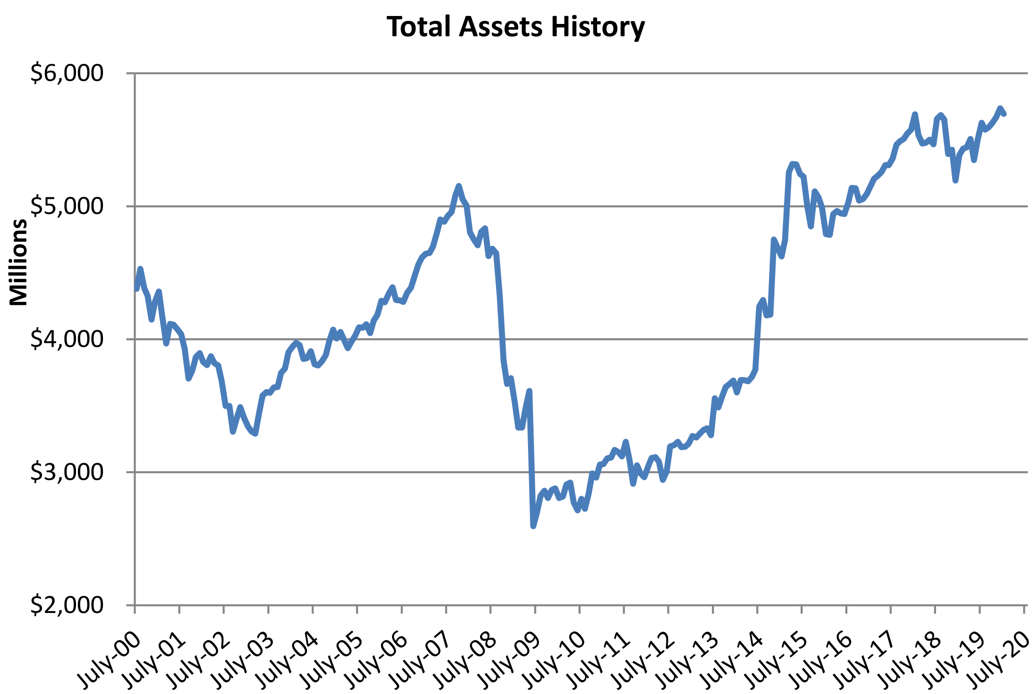



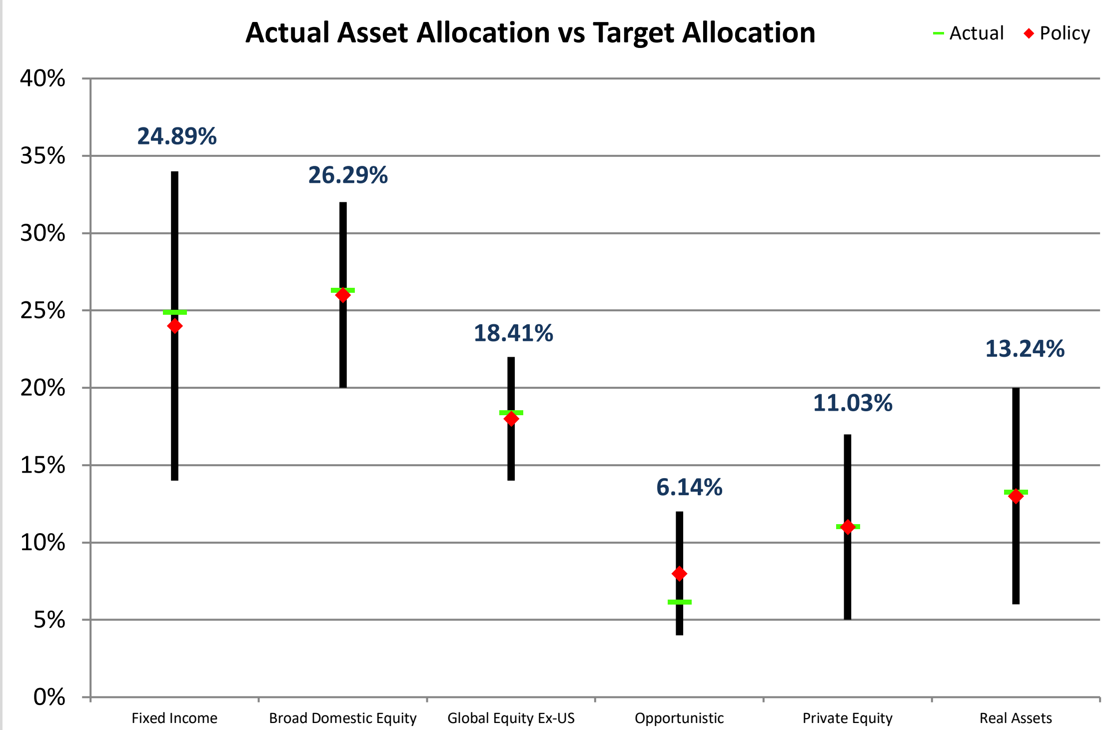
## Teachers' Retirement Pension Trust Fund

**Fiscal Year-to-Date through January 31, 2020**



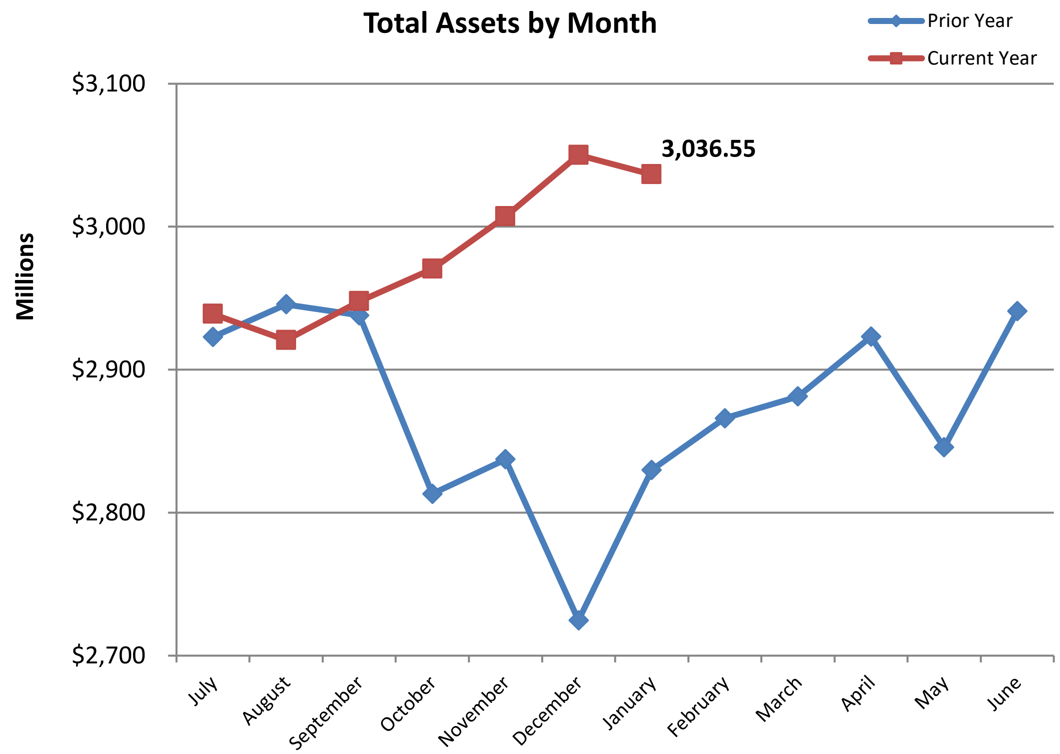



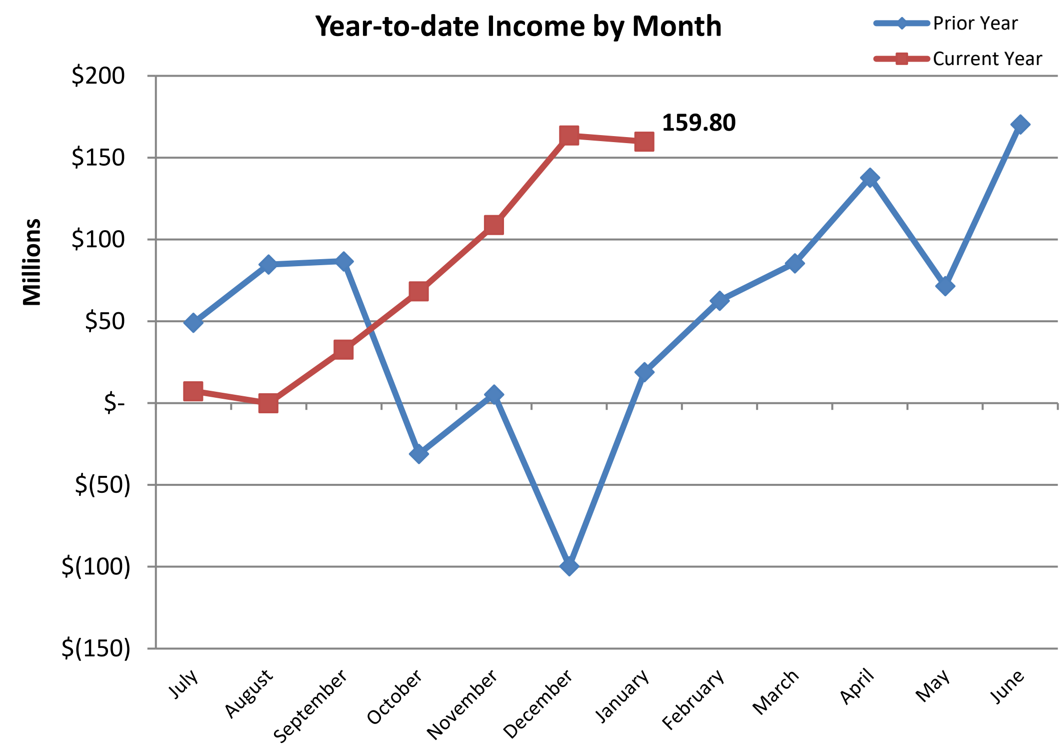



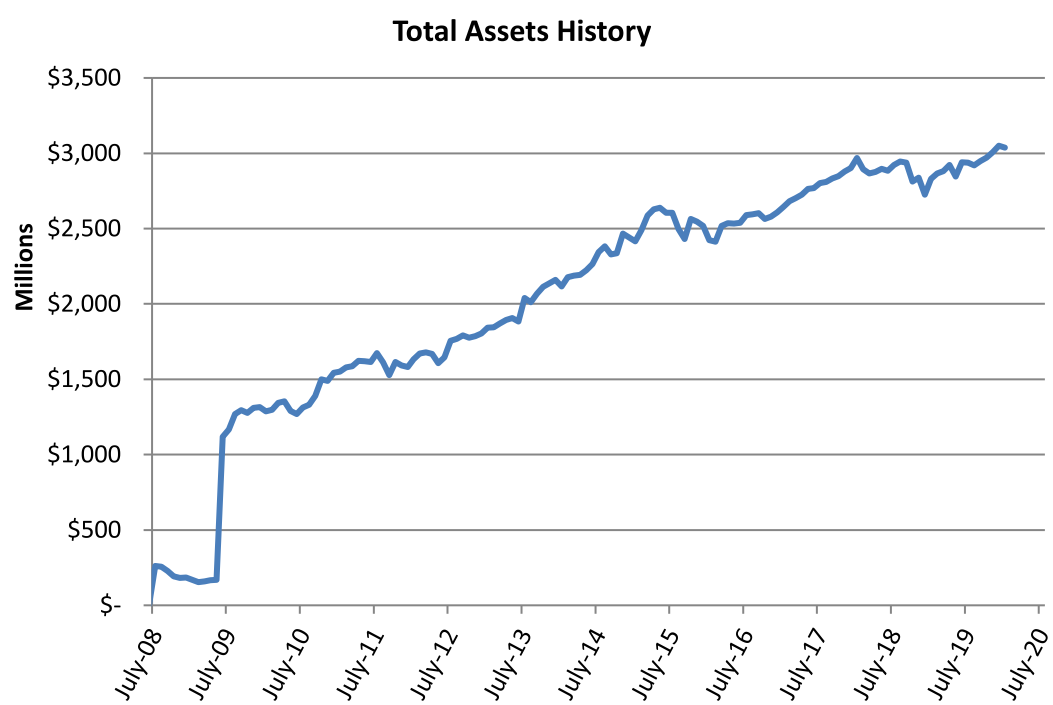



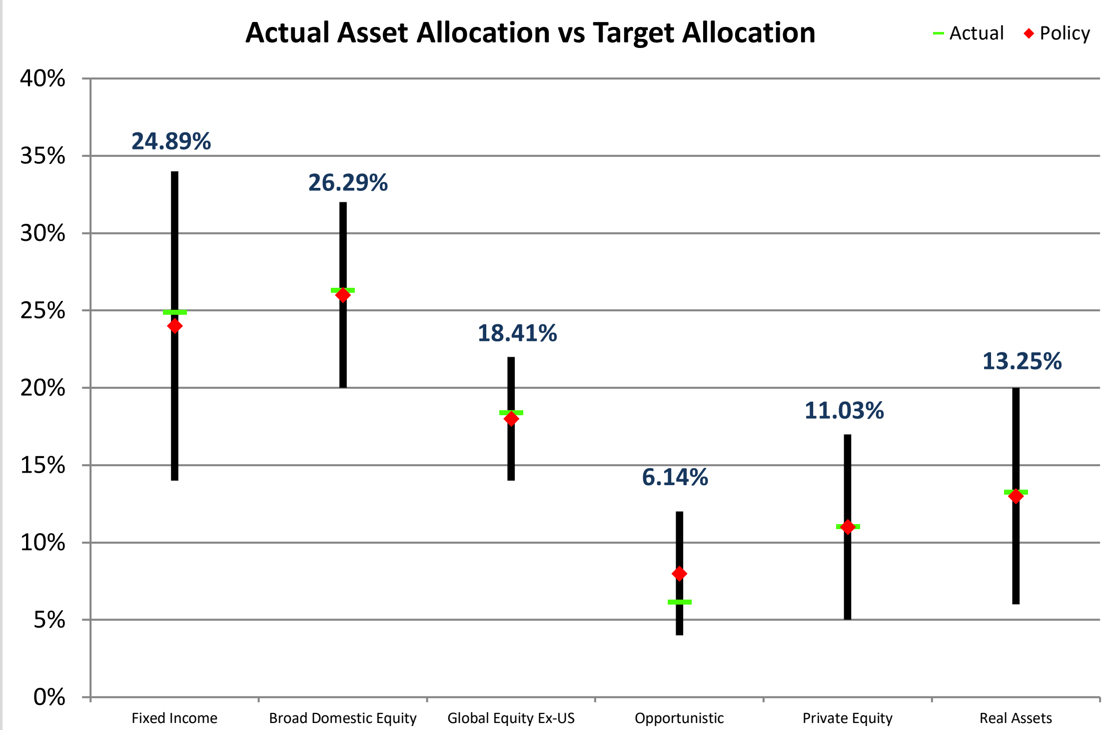
# Teachers' Retirement Health Care Trust Fund

**Fiscal Year-to-Date through January 31, 2020**



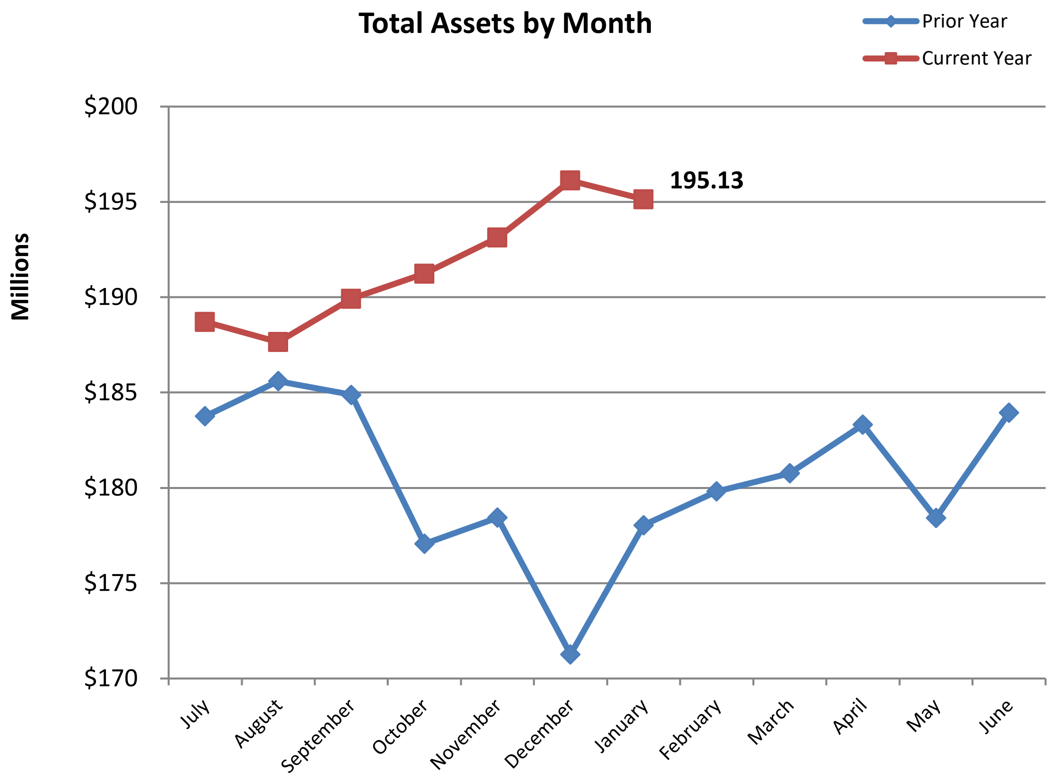



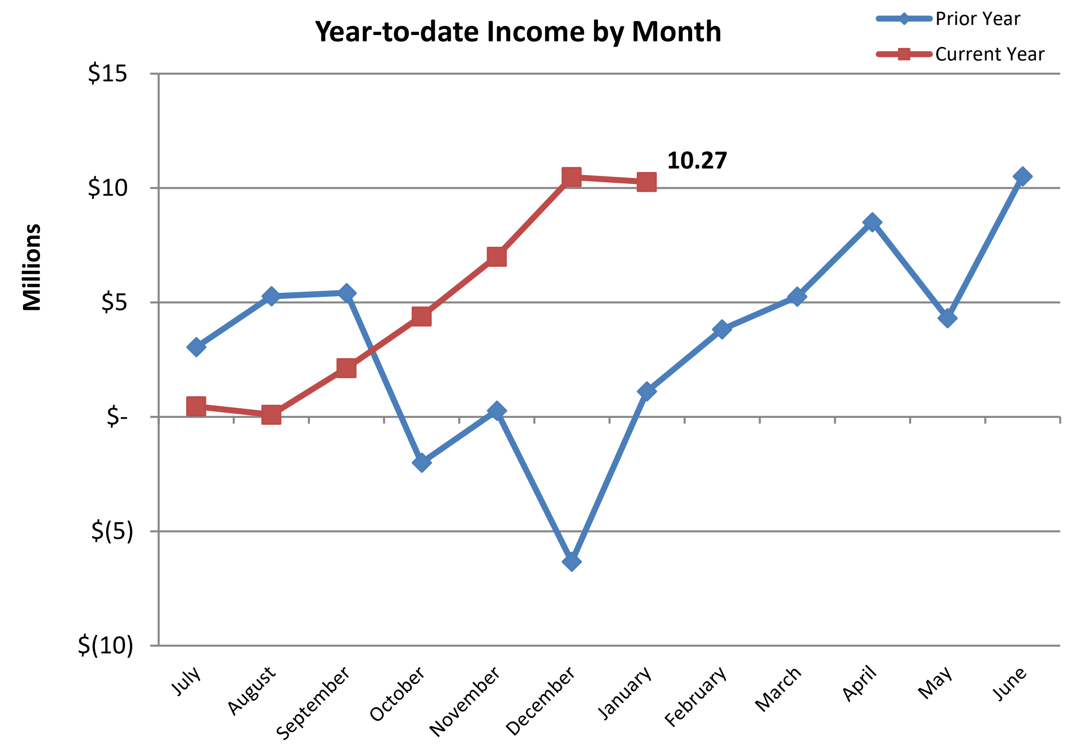



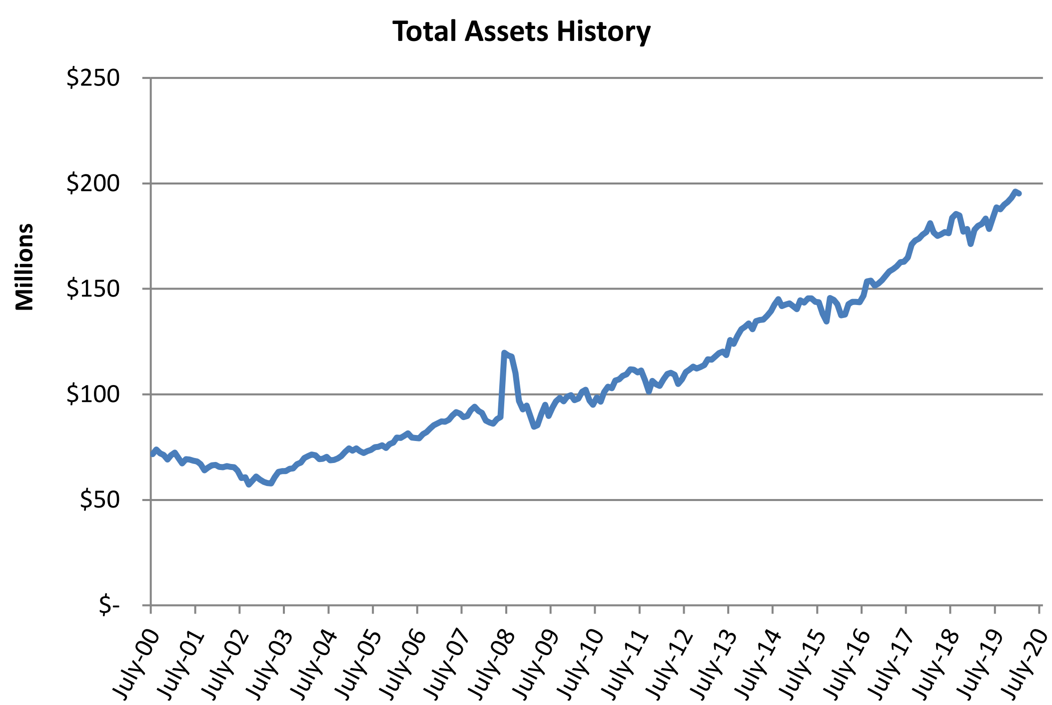



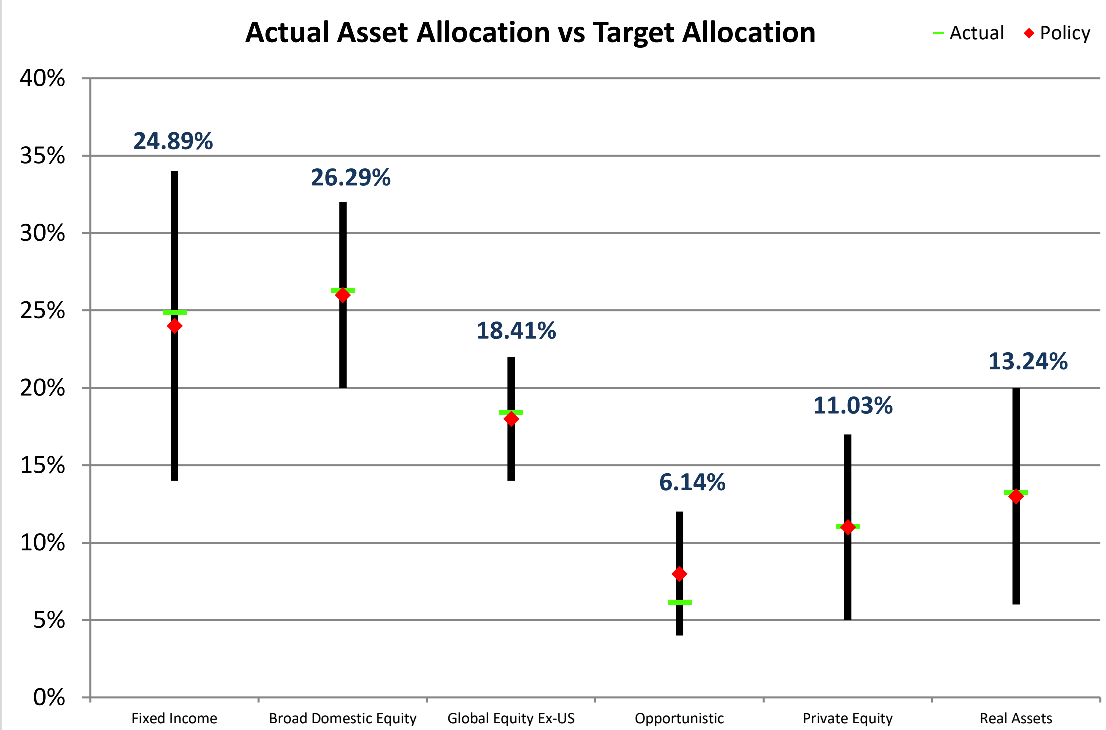
# Judicial Retirement Pension Trust Fund

**Fiscal Year-to-Date through January 31, 2020**



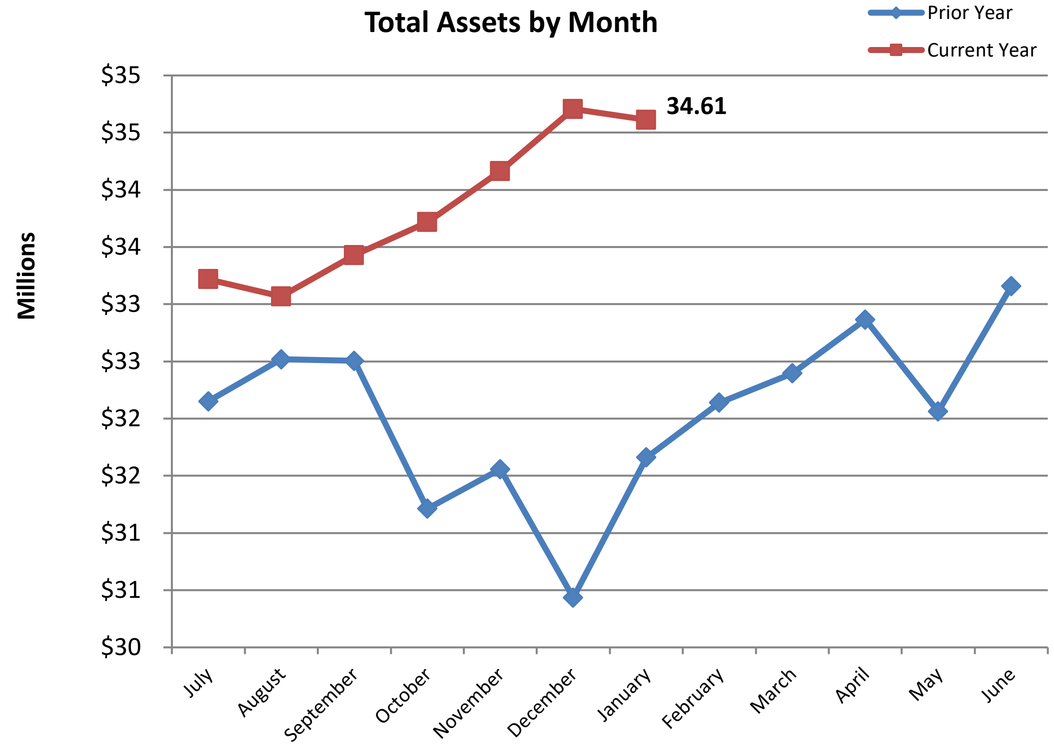



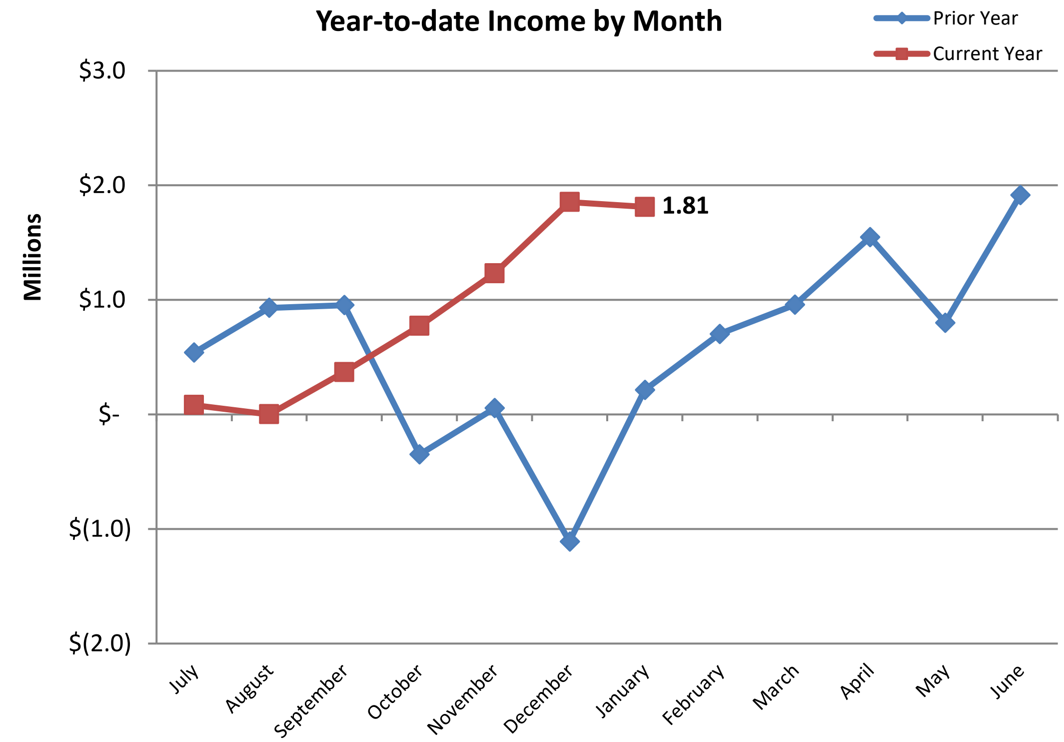



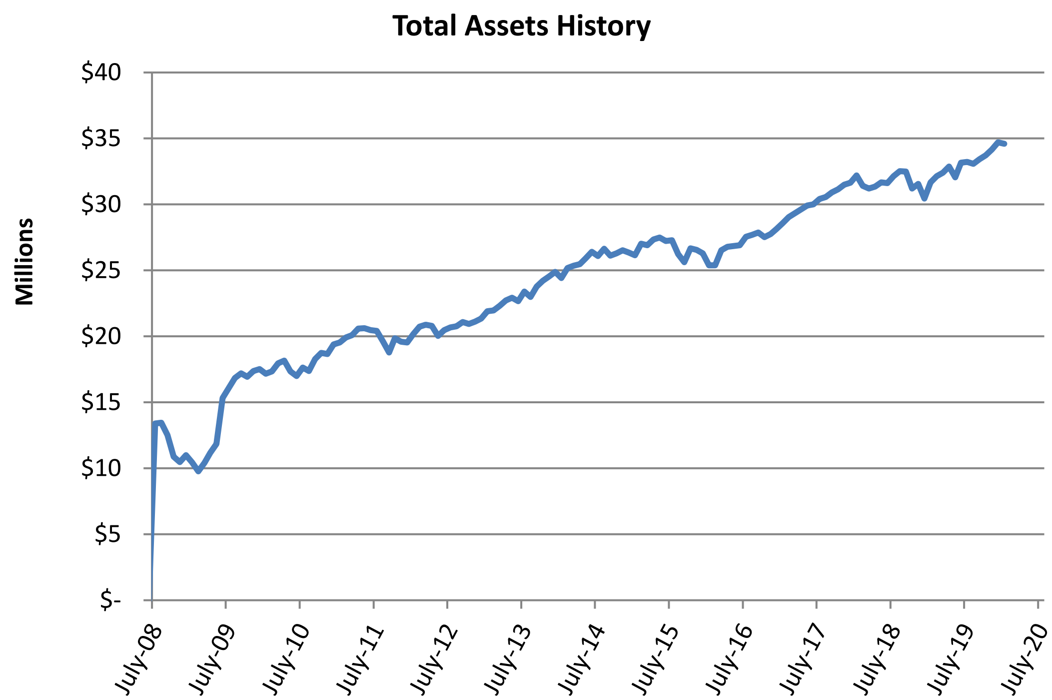



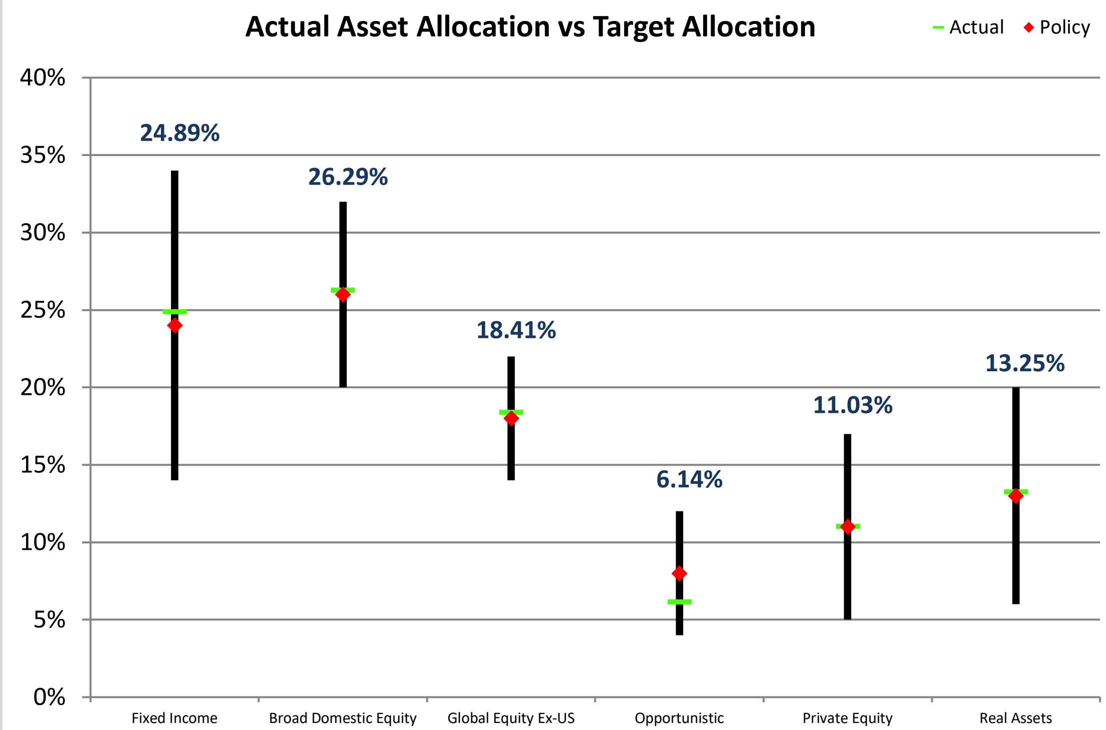
# Judicial Retirement Health Care Trust Fund

**Fiscal Year-to-Date through January 31, 2020**



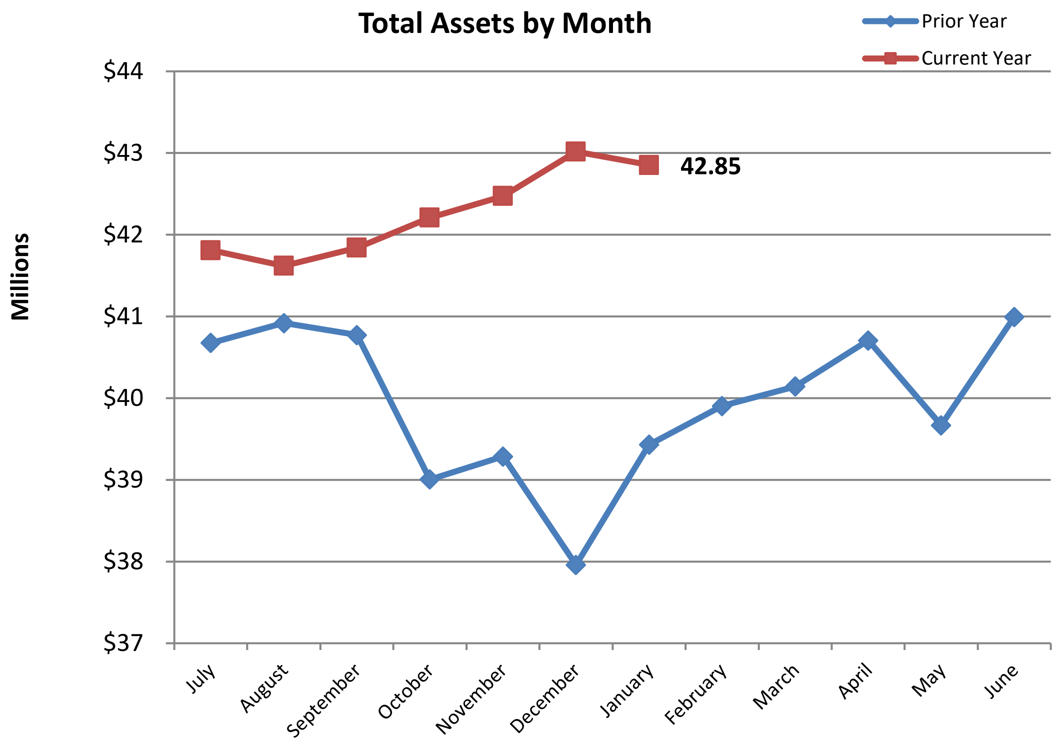



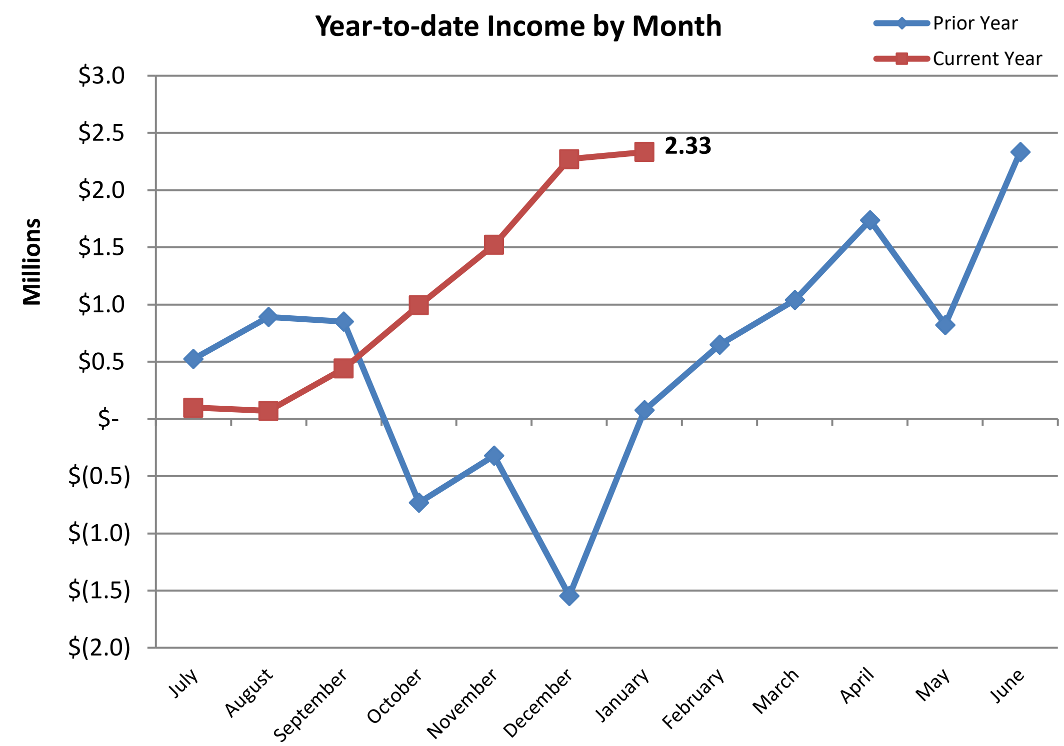



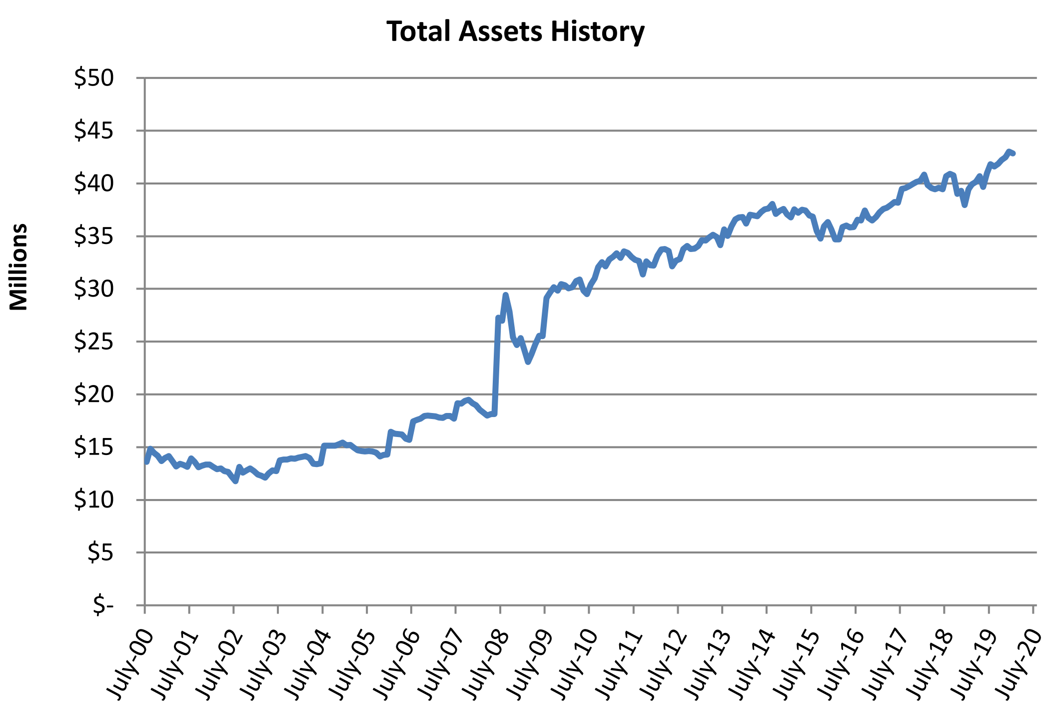



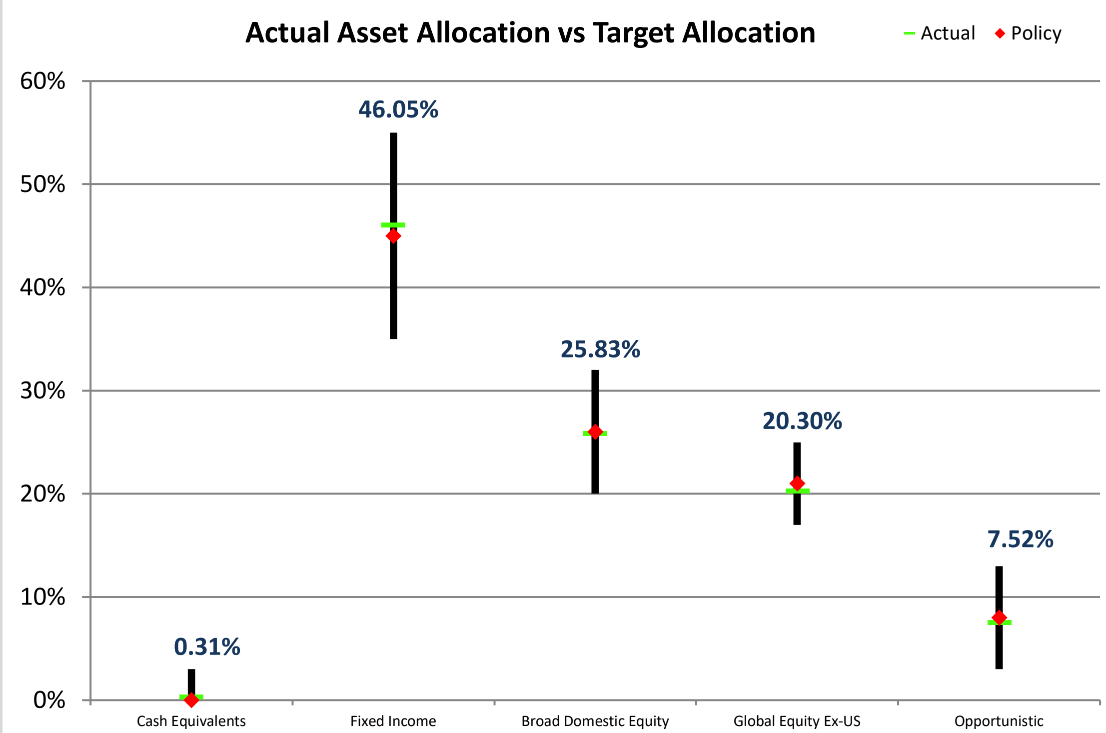
# Military Retirement Trust Fund

**Fiscal Year-to-Date through January 31, 2020**



# ALASKA RETIREMENT MANAGEMENT BOARD

## Reporting of Funds by Manager

All Non-Participant Directed Plans

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended January 31, 2020**

| | Beginning Invested Assets | Investment Income | Net Contributions and (Withdrawals) | Ending Invested Assets | % increase (decrease) | % Change due to Investment Income |
|---|---|---|---|---|---|---|
| **Cash** | | | | | | |
| Short-Term Fixed Income Pool | $ 95,653,276 | $ 271,909 | $ 163,361,417 | $ 259,286,602 | 171.07% | 0.15% |
| Securities Lending Income Pool | 62,539 | 42,178 | (62,063) | 42,654 | -31.80% | 133.87% |
| **Total Cash** | 95,715,815 | 314,087 | 163,299,354 | 259,329,256 | 170.94% | 0.18% |
| **Fixed Income** | | | | | | |
| Alternative Fixed Income | | | | | | |
| Crestline Investors, Inc. | 586,332,741 | - | 4,295,700 | 590,628,441 | 0.73% | - |
| Prisma Capital Partners | 250,539,231 | 5,678,822 | (86,000,000) | 170,218,053 | -32.06% | 2.74% |
| Crestline Specialty Fund | 29,933,637 | - | (1,350,308) | 28,583,329 | -4.51% | - |
| Crestline Specialty Lending Fund II | 29,359,625 | - | - | 29,359,625 | - | - |
| Total Alternative Fixed Income | 896,165,234 | 5,678,822 | (83,054,608) | 818,789,448 | -8.63% | 0.66% |
| Opportunistic Fixed Income | | | | | | |
| Fidelity Inst. Asset Mgmt. High Yield CMBS | 216,106,110 | 3,742,868 | - | 219,848,978 | 1.73% | 1.73% |
| Fidelity Institutional Asset Management | 364,238,566 | 6,409,341 | - | 370,647,907 | 1.76% | 1.76% |
| MacKay Shields, LLC | 5,700,207 | 40,721 | (87,504) | 5,653,424 | -0.82% | 0.72% |
| Mondrian Investment Partners | 36,602 | (625) | - | 35,977 | -1.71% | -1.71% |
| Total Opportunistic Fixed Income | 586,081,485 | 10,192,305 | (87,504) | 596,186,286 | 1.72% | 1.74% |
| US Aggregate Bond Index | | | | | | |
| Blackrock US Debt Index Non-Lending Fund | (1,126) | - | - | (1,126) | - | - |
| ARMB US Treasury Pool | | | | | | |
| ARMB US Treasury Fixed Income | 385 | (65) | (320) | - | -100.00% | -28.89% |
| ARMB Barclays Agg Bond Fund | | | | | | |
| ARMB Barclays Agg Bond Fund | 4,927,283,710 | 107,015,296 | 199,850,320 | 5,234,149,326 | 6.23% | 2.13% |
| **Total Fixed Income** | 6,409,529,688 | 122,886,358 | 116,707,888 | 6,649,123,934 | 3.74% | 1.90% |
| **Domestic Equities** | | | | | | |
| **Small Cap** | | | | | | |
| Passively Managed | | | | | | |
| ARMB Futures Small Cap | (6) | - | - | (6) | - | - |
| ARMB S&P 600 | 616,584,723 | (24,325,114) | (25,000,000) | 567,259,609 | -8.00% | -4.03% |
| SSgA Russell 2000 Growth | 6,993 | - | - | 6,993 | - | - |
| SSgA Russell 2000 Value | 8,047 | - | - | 8,047 | - | - |
| Total Passive | 616,599,757 | (24,325,114) | (25,000,000) | 567,274,643 | -8.00% | -4.03% |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended January 31, 2020**

| | | | | | | |
|---|---|---|---|---|---|---|
| Actively Managed | | | | | | |
| Lord Abbett & Co.- Micro Cap | 144 | - | - | 144 | - | - |
| Transition Account | 184,273 | 239 | - | 184,512 | 0.13% | 0.13% |
| Total Active | 184,417 | 239 | - | 184,656 | 0.13% | 0.13% |
| **Total Small Cap** | 616,784,174 | (24,324,875) | (25,000,000) | 567,459,299 | -8.00% | -4.03% |
| | | | | | | |
| **Large Cap** | | | | | | |
| Passively Managed | | | | | | |
| ARMB Futures Large Cap | 10 | - | - | 10 | - | - |
| ARMB S&P 900 | 4,852,647,939 | (9,606,123) | (150,000,000) | 4,693,041,816 | -3.29% | -0.20% |
| ARMB Russell 1000 Value | 4,345 | 20,987 | - | 25,332 | 483.01% | 483.01% |
| ARMB Russell Top 200 | 321 | 9 | - | 330 | 2.80% | 2.80% |
| Total Passive | 4,852,652,615 | (9,585,127) | (150,000,000) | 4,693,067,488 | -3.29% | -0.20% |
| Actively Managed | | | | | | |
| Allianz Global Investors | 2,272 | - | - | 2,272 | - | - |
| ARMB Equity Yield | 5,058 | - | - | 5,058 | - | - |
| ARMB Large Cap Multi-Factor | 115,200,476 | (98,568) | - | 115,101,908 | -0.09% | -0.09% |
| ARMB Scientific Beta | 1,940,389,762 | (3,179,879) | (24,885,741) | 1,912,324,142 | -1.45% | -0.16% |
| Lazard Freres | 2,628 | 8,047 | - | 10,675 | 306.20% | 306.20% |
| Portable Alpha | 133,095 | (52,651) | - | 80,444 | -39.56% | -39.56% |
| Transition Account | 103,437 | 143 | - | 103,580 | 0.14% | 0.14% |
| Total Active | 2,055,836,728 | (3,322,908) | (24,885,741) | 2,027,628,079 | -1.37% | -0.16% |
| **Total Large Cap** | 6,908,489,343 | (12,908,035) | (174,885,741) | 6,720,695,567 | -2.72% | -0.19% |
| **Total Domestic Equity** | 7,525,273,517 | (37,232,910) | (199,885,741) | 7,288,154,866 | -3.15% | -0.50% |
| | | | | | | |
| **Global Equities Ex US** | | | | | | |
| **Small Cap** | | | | | | |
| Mondrian Investment Partners | 236,506 | (3,886) | 144,557 | 377,177 | 59.48% | -1.26% |
| Schroder Investment Management | 153,440 | (2,517) | - | 150,923 | -1.64% | -1.64% |
| **Total Small Cap** | 389,946 | (6,403) | 144,557 | 528,100 | 35.43% | -1.39% |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended January 31, 2020**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Large Cap** | | | | | | |
| Allianz Global Investors | 132,038 | (1,438) | - | 130,600 | -1.09% | -1.09% |
| Arrow Street Capital | 534,320,221 | (12,644,590) | (12,000,000) | 509,675,631 | -4.61% | -2.39% |
| Baillie Gifford Overseas Limited | 272,666,208 | (6,376,215) | (13,000,000) | 253,289,993 | -7.11% | -2.40% |
| Blackrock ACWI Ex-US IMI | (23,516) | - | - | (23,516) | - | - |
| Brandes Investment Partners | 269,205,337 | (12,924,527) | - | 256,280,810 | -4.80% | -4.80% |
| Cap Guardian Trust Co | 538,866,495 | (11,748,006) | (20,000,000) | 507,118,489 | -5.89% | -2.22% |
| Lazard Freres | 619,705 | (6,255) | - | 613,450 | -1.01% | -1.01% |
| Legal & General | 793,136,075 | (12,696,706) | 42,180 | 780,481,549 | -1.60% | -1.60% |
| McKinley Capital Management | 3,144,136 | (24,848) | (977,545) | 2,141,743 | -31.88% | -0.94% |
| SSgA MSCI World Ex-US IMI Index Fund | 1,985,393,788 | (41,243,015) | (20,000,000) | 1,924,150,773 | -3.08% | -2.09% |
| State Street Global Advisors | 2,064,083 | (11,775) | (341) | 2,051,967 | -0.59% | -0.57% |
| **Total Large Cap** | 4,399,524,570 | (97,677,375) | (65,935,706) | 4,235,911,489 | -3.72% | -2.24% |
| **Emerging Markets Equity** | | | | | | |
| MSCI Emerging Markets Index Fund | 668,612,207 | (32,684,909) | (25,000,000) | 610,927,298 | -8.63% | -4.98% |
| DePrince, Race, and Zollo Emerging Markets | 500,000 | 791,829 | (791,829) | 500,000 | - | 760.75% |
| Legal & General Sci-Beta Emerging Markets | 268,848,928 | (14,080,454) | 8,320 | 254,776,794 | -5.23% | -5.24% |
| **Total Emerging Markets** | 937,961,135 | (45,973,534) | (25,783,509) | 866,204,092 | -7.65% | -4.97% |
| **Total Global Equities** | 5,337,875,651 | (143,657,312) | (91,574,658) | 5,102,643,681 | -4.41% | -2.71% |
| **Opportunistic** | | | | | | |
| **Alternative Equity Strategy** | | | | | | |
| Alternative Equity Strategies Transition Account | - | - | - | - | - | - |
| Analytic Buy Write Account | 6,916 | 4 | (104) | 6,816 | -1.45% | 0.06% |
| ARMB STOXX Minimum Variance | (10,377) | 1,612 | 8,765 | - | 100.00% | 26.89% |
| McKinley Global Health Care | 265,967,908 | (780,460) | 306,334 | 265,493,782 | -0.18% | -0.29% |
| **Total Alternative Equity Strategy** | 265,964,447 | (778,844) | 314,995 | 265,500,598 | -0.17% | -0.29% |
| **Alternative Beta** | | | | | | |
| JPM Systemic Alpha | 169,799,581 | (850,821) | - | 168,948,760 | -0.50% | -0.50% |
| Man Group Alternative Risk Premia | 325,734,321 | 2,137,007 | - | 327,871,328 | 0.66% | 0.66% |
| Zebra Global Equity Fund | 3,903,353 | - | - | 3,903,353 | - | - |
| **Total Alternative Beta** | 499,437,255 | 1,286,186 | - | 500,723,441 | 0.26% | 0.26% |
| **Other Opportunities** | | | | | | |
| Project Pearl | 9,914,405 | - | - | 9,914,405 | - | - |
| Schroders Insurance Linked Securities | 83,887,723 | 2,656,478 | (20,000,000) | 66,544,201 | -20.67% | 3.60% |
| **Total Other Opportunities** | 93,802,128 | 2,656,478 | (20,000,000) | 76,458,606 | -18.49% | 3.17% |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended January 31, 2020**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Tactical Allocation Strategies** | | | | | | |
| Fidelity Signals | 435,284,221 | (1,123,631) | - | 434,160,590 | -0.26% | -0.26% |
| PineBridge | 434,451,770 | (9,741,319) | - | 424,710,451 | -2.24% | -2.24% |
| **Total Tactical Allocation Strategies** | 869,735,991 | (10,864,950) | - | 858,871,041 | -1.25% | -1.25% |
| **Total Opportunistic** | 1,728,939,821 | (7,701,130) | (19,685,005) | 1,701,553,686 | -1.58% | -0.45% |
| | | | | | | |
| **Private Equity** | | | | | | |
| Abbott Capital | 1,174,426,807 | 136,217 | 8,225,822 | 1,182,788,846 | 0.71% | 0.01% |
| Advent International GPE Fund VIII-B | 27,643,717 | - | - | 27,643,717 | - | - |
| Advent International GPE Fund IX | 3,265,797 | - | 1,500,000 | 4,765,797 | 45.93% | - |
| Angelo, Gordon & Co. | 3,874 | - | - | 3,874 | - | - |
| Dyal Capital Partners III | 30,082,956 | - | - | 30,082,956 | - | - |
| Dyal Capital Partners IV | 2,282,282 | - | - | 2,282,282 | - | - |
| Glendon Opportunities | 41,932,765 | - | (7,202,114) | 34,730,651 | -17.18% | - |
| Glendon Opportunities II | 7,500,000 | - | - | 7,500,000 | - | - |
| KKR Lending Partners II | 29,397,384 | - | - | 29,397,384 | - | - |
| Lexington Capital Partners VIII | 35,553,384 | - | 1,378,469 | 36,931,853 | 3.88% | - |
| Lexington Partners VII | 17,551,715 | - | (557,221) | 16,994,494 | -3.17% | - |
| Merit Capital Partners | 13,141,402 | - | - | 13,141,402 | - | - |
| NB SOF III | 21,767,701 | - | (1,358,914) | 20,408,787 | -6.24% | - |
| NB SOF IV | 21,528,490 | - | 1,500,000 | 23,028,490 | 6.97% | - |
| New Mountain Partners IV | 18,711,614 | - | - | 18,711,614 | - | - |
| New Mountain Partners V | 28,389,060 | - | 315,737 | 28,704,797 | 1.11% | - |
| NGP XI | 42,363,938 | - | - | 42,363,938 | - | - |
| NGP XII | 18,555,928 | - | - | 18,555,928 | - | - |
| Onex Partnership III | 8,561,593 | - | - | 8,561,593 | - | - |
| Pathway Capital Management LLC | 1,325,266,293 | 77,274 | 3,057,629 | 1,328,401,196 | 0.24% | 0.01% |
| Resolute Fund III | 18,188,529 | - | - | 18,188,529 | - | - |
| Resolute Fund IV | 20,114,546 | - | (531,062) | 19,583,484 | -2.64% | - |
| Summit Partners GE IX | 36,324,361 | - | 276,000 | 36,600,361 | 0.76% | - |
| Warburg Pincus Global Growth Fund | 5,895,345 | - | - | 5,895,345 | - | - |
| Warburg Pincus X | 9,247,722 | (27,379) | (1,813,297) | 7,407,046 | -19.90% | -0.33% |
| Warburg Pincus XI | 18,862,466 | - | - | 18,862,466 | - | - |
| Warburg Pincus XII | 69,057,298 | - | 1,300,000 | 70,357,298 | 1.88% | - |
| **Total Private Equity** | 3,045,616,967 | 186,112 | 6,091,049 | 3,051,894,128 | 0.21% | 0.01% |
| | | | | | | |
| **Real Assets** | | | | | | |
| **Farmland** | | | | | | |
| Hancock Agricultural Investment Group | 262,278,958 | - | - | 262,278,958 | - | - |
| UBS Agrivest, LLC | 589,522,753 | - | - | 589,522,753 | - | - |
| **Total Farmland** | 851,801,711 | - | - | 851,801,711 | - | - |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended January 31, 2020**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Timber** | | | | | | |
| Hancock Natural Resource Group | 99,700,080 | - | - | 99,700,080 | - | - |
| Timberland Invt Resource LLC | 271,017,527 | (2,321,801) | (1,300,000) | 267,395,726 | -1.34% | -0.86% |
| **Total Timber** | 370,717,607 | (2,321,801) | (1,300,000) | 367,095,806 | -0.98% | -0.63% |
| **Energy** | | | | | | |
| EIG Energy Fund XIV-A | 9,302,731 | (1,959,519) | (286,758) | 7,056,454 | -24.15% | -21.39% |
| EIG Energy Fund XV | 17,781,402 | (797,706) | (140,386) | 16,843,310 | -5.28% | -4.50% |
| EIG Energy Fund XVI | 57,224,424 | (1,171,413) | - | 56,053,011 | -2.05% | -2.05% |
| **Total Energy** | 84,308,557 | (3,928,638) | (427,144) | 79,952,775 | -5.17% | -4.67% |
| **REIT** | | | | | | |
| REIT Transition Account | 302 | - | - | 302 | - | - |
| ARMB REIT | 346,992,012 | 4,374,577 | - | 351,366,589 | 1.26% | 1.26% |
| **Total REIT** | 346,992,314 | 4,374,577 | - | 351,366,891 | 1.26% | 1.26% |
| **Infrastructure Private** | | | | | | |
| IFM Global Infrastructure Fund-Private | 530,846,770 | 27,886,246 | - | 558,733,016 | 5.25% | 5.25% |
| JP Morgan Infrastructure Fund-Private | 123,526,887 | - | - | 123,526,887 | - | - |
| **Total Infrastructure Private** | 654,373,657 | 27,886,246 | - | 682,259,903 | 4.26% | 4.26% |
| **Infrastructure Public** | | | | | | |
| Brookfield Investment Mgmt.-Public | 26,187 | (335) | - | 25,852 | -1.28% | -1.28% |
| Lazard Asset Mgmt.-Public | 75,743 | (996) | - | 74,747 | -1.31% | -1.31% |
| **Total Infrastructure Public** | 101,930 | (1,331) | - | 100,599 | -1.31% | -1.31% |
| **Real Estate** | | | | | | |
| Core Commingled Accounts | | | | | | |
| BlackRock US Core Property Fund | 218,493,688 | 4,123,099 | - | 222,616,787 | 1.89% | 1.89% |
| JP Morgan | 260,847,743 | 2,775,499 | (81,001,002) | 182,622,240 | -29.99% | 1.26% |
| UBS Trumbull Property Fund | 53,872,033 | (88,453) | (3,566,768) | 50,216,812 | -6.79% | -0.17% |
| Total Core Commingled | 533,213,464 | 6,810,145 | (84,567,770) | 455,455,839 | -14.58% | 1.39% |
| Core Separate Accounts | | | | | | |
| LaSalle Investment Management | 65,796,436 | - | - | 65,796,436 | - | - |
| Sentinel Separate Account | 173,580,584 | - | (602,256) | 172,978,328 | -0.35% | - |
| UBS Realty | 541,280,165 | - | (1,405,387) | 539,874,778 | -0.26% | - |
| Total Core Separate | 780,657,185 | - | (2,007,643) | 778,649,542 | -0.26% | - |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended January 31, 2020**

| | | | | | | |
|---|---|---|---|---|---|---|
| Non-Core Commingled Accounts | | | | | | |
| Almanac Realty Securities V | 277,435 | - | - | 277,435 | - | - |
| Almanac Realty Securities VII | 20,040,819 | - | - | 20,040,819 | - | - |
| Almanac Realty Securities VIII | 4,188,326 | - | - | 4,188,326 | - | - |
| Clarion Ventures 4 | 30,151,163 | - | - | 30,151,163 | - | - |
| Colony Investors VIII, L.P. | 1,362,383 | - | - | 1,362,383 | - | - |
| Coventry | 226,833 | - | - | 226,833 | - | - |
| ING Clarion Development Ventures III | 2,629,572 | - | - | 2,629,572 | - | - |
| KKR Real Estate Partners Americas II | 14,194,115 | 733,208 | 2,701,031 | 17,628,354 | 24.19% | 4.72% |
| KKR Real Estate Partners Americas L.P. | 13,544,085 | 559,553 | - | 14,103,638 | 4.13% | 4.13% |
| Silverpeak Legacy Pension Partners II, L.P. | 1,938,527 | - | - | 1,938,527 | - | - |
| Silverpeak Legacy Pension Partners III, L.P. | 3,843,014 | - | - | 3,843,014 | - | - |
| Tishman Speyer Real Estate Venture VI | 1,976,739 | - | - | 1,976,739 | - | - |
| Tishman Speyer Real Estate Venture VII | 554,964 | - | - | 554,964 | - | - |
| Total Non-Core Commingled | 94,927,975 | 1,292,761 | 2,701,031 | 98,921,767 | 4.21% | 1.34% |
| **Total Real Estate** | 1,408,798,624 | 8,102,906 | (83,874,382) | 1,333,027,148 | -5.38% | 0.59% |
| **Total Real Assets** | 3,717,094,400 | 34,111,959 | (85,601,526) | 3,665,604,833 | -1.39% | 0.93% |
| **Total Assets** | $ 27,860,045,859 | $ (31,092,836) | $ (110,648,639) | $ 27,718,304,384 | -0.51% | -0.11% |

# ALASKA RETIREMENT MANAGEMENT BOARD

## Reporting of Funds by Manager

Participant Directed Plans

**Supplemental Annuity Plan**
**Schedule of Investment Income and Changes in Invested Assets**
**for the Month Ended**
**January 31, 2020**

| Participant Options | Beginning Invested Assets | Investment Income | Net Contributions (Withdrawals) | Transfers In (Out) | Ending Invested Assets | % Change in Invested Assets | % Change due to Investment Income (1) |
|---|---|---|---|---|---|---|---|
| T. Rowe Price | | | | | | | |
| Stable Value Fund | $ 419,936,615 | $ 866,644 | $ (3,583,090) | $ 4,575,508 | $ 421,795,677 | 0.44% | 0.21% |
| Small Cap Stock Fund | 217,571,217 | (3,096,112) | 59,309 | (2,171,254) | 212,363,160 | -2.39% | -1.43% |
| Alaska Balanced Trust | 1,133,371,463 | 5,069,337 | (5,398,406) | (952,324) | 1,132,090,070 | -0.11% | 0.45% |
| Long Term Balanced Fund | 708,139,912 | (1,250,755) | 299,120 | (4,451,406) | 702,736,871 | -0.76% | -0.18% |
| AK Target Date 2010 Trust | 10,132,072 | 15,740 | (56,076) | (8,884) | 10,082,852 | -0.49% | 0.16% |
| AK Target Date 2015 Trust | 81,093,862 | 47,216 | (1,066,303) | (465,445) | 79,609,330 | -1.83% | 0.06% |
| AK Target Date 2020 Trust | 98,212,265 | (119,186) | (594,095) | (580,546) | 96,918,438 | -1.32% | -0.12% |
| AK Target Date 2025 Trust | 92,410,444 | (308,636) | (295,331) | 2,280,120 | 94,086,597 | 1.81% | -0.33% |
| AK Target Date 2030 Trust | 72,529,650 | (343,680) | 479,359 | (284,131) | 72,381,198 | -0.20% | -0.47% |
| AK Target Date 2035 Trust | 67,717,630 | (446,598) | 595,437 | 667,612 | 68,534,081 | 1.21% | -0.65% |
| AK Target Date 2040 Trust | 69,619,346 | (528,102) | 760,482 | (137,662) | 69,714,064 | 0.14% | -0.76% |
| AK Target Date 2045 Trust | 78,913,950 | (695,164) | 766,170 | 311,625 | 79,296,581 | 0.48% | -0.87% |
| AK Target Date 2050 Trust | 88,531,499 | (766,755) | 1,031,248 | (184,014) | 88,611,978 | 0.09% | -0.86% |
| AK Target Date 2055 Trust | 83,305,073 | (731,862) | 1,353,681 | (41,768) | 83,885,124 | 0.70% | -0.87% |
| AK Target Date 2060 Trust | 4,305,809 | (36,747) | 3,449 | (59,916) | 4,212,595 | -2.16% | -0.86% |
| AK Target Date 2065 Trust | - | (7,284) | (48,384) | 442,776 | 387,108 | 0.00% | -3.69% |
| Total Investments with T. Rowe Price | 3,225,790,807 | (2,331,944) | (5,693,430) | (1,059,709) | 3,216,705,724 | | |
| State Street Global Advisors | | | | | | | |
| Money Market | 54,476,457 | 71,597 | (452,096) | 1,862,994 | 55,958,952 | 2.72% | 0.13% |
| S&P 500 Stock Index Fund Series A | 442,830,458 | (155,733) | (1,829,497) | (881,704) | 439,963,524 | -0.65% | -0.04% |
| Russell 3000 Index | 146,477,494 | (92,683) | (40,890) | (4,042,757) | 142,301,164 | -2.85% | -0.06% |
| World Equity Ex-US Index | 82,343,394 | (2,755,869) | 59,283 | (2,489,498) | 77,157,310 | -6.30% | -3.40% |
| Total Investments with SSgA | 726,127,803 | (2,932,688) | (2,263,200) | (5,550,965) | 715,380,950 | | |
| BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 165,368,194 | 3,177,691 | (239,444) | 1,264,950 | 169,571,391 | 2.54% | 1.92% |
| Strategic Completion Fund | 44,271,388 | (153,993) | (163,163) | (500,176) | 43,454,056 | -1.85% | -0.35% |
| Total Investments with BlackRock | 209,639,582 | 3,023,698 | (402,607) | 764,774 | 213,025,447 | | |
| Brandes/Baillie Gifford (2) | | | | | | | |
| AK International Equity Fund | 62,659,036 | (2,413,635) | (112,029) | 2,169,208 | 62,302,580 | -0.57% | -3.79% |
| Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 89,699,158 | 692,255 | (282,813) | 3,676,692 | 93,785,292 | 4.56% | 0.76% |
| **Total All Funds** | $ 4,313,916,386 | $ (3,962,314) | $ (8,754,079) | $ - | $ 4,301,199,993 | -0.29% | -0.09% |

Notes: Source data provided by the record keeper, Empower Retirement.

(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

(2) This investment is comprised of two funds, Brandes International Equity Fund and Baillie Gifford International Equity Fund.

**Supplemental Annuity Plan**
**Schedule of Invested Assets with**
**Schedule of Investment Income and Changes in Invested Assets**
**By Month Through the Month Ended**
**January 31, 2020**
**$ (Thousands)**

| **Invested Assets (at fair value)** | **July** | **August** | **September** | **October** | **November** | **December** | **January** |
|---|---|---|---|---|---|---|---|
| Investments with T. Rowe Price | | | | | | | |
| Stable Value Fund | $ 390,930 | $ 399,454 | $ 412,664 | $ 420,316 | $ 420,772 | $ 419,937 | $ 421,796 |
| Small Cap Stock Fund | 200,646 | 196,187 | 200,339 | 206,502 | 214,069 | 217,571 | 212,363 |
| Alaska Balanced Trust | 1,136,113 | 1,129,963 | 1,121,844 | 1,121,617 | 1,124,727 | 1,133,371 | 1,132,090 |
| Long Term Balanced Fund | 684,783 | 675,729 | 679,423 | 687,126 | 697,002 | 708,140 | 702,737 |
| AK Target Date 2010 Trust | 10,189 | 9,988 | 10,032 | 9,996 | 9,957 | 10,132 | 10,083 |
| AK Target Date 2015 Trust | 83,190 | 81,950 | 81,406 | 81,818 | 81,720 | 81,094 | 79,609 |
| AK Target Date 2020 Trust | 97,905 | 95,383 | 95,622 | 95,881 | 97,734 | 98,212 | 96,918 |
| AK Target Date 2025 Trust | 84,647 | 84,454 | 86,846 | 88,608 | 89,932 | 92,410 | 94,087 |
| AK Target Date 2030 Trust | 66,366 | 66,147 | 67,775 | 68,959 | 70,507 | 72,530 | 72,381 |
| AK Target Date 2035 Trust | 61,813 | 60,851 | 62,152 | 64,106 | 65,772 | 67,718 | 68,534 |
| AK Target Date 2040 Trust | 62,429 | 62,054 | 63,078 | 65,003 | 67,631 | 69,619 | 69,714 |
| AK Target Date 2045 Trust | 70,965 | 70,008 | 71,559 | 73,397 | 75,716 | 78,914 | 79,297 |
| AK Target Date 2050 Trust | 80,073 | 79,250 | 80,851 | 83,135 | 85,379 | 88,531 | 88,612 |
| AK Target Date 2055 Trust | 72,253 | 72,118 | 74,105 | 76,947 | 80,147 | 83,305 | 83,885 |
| AK Target Date 2060 Trust | 4,171 | 4,189 | 4,182 | 3,977 | 4,076 | 4,306 | 4,213 |
| AK Target Date 2065 Trust | - | - | - | - | - | - | 387 |
| | | | | | | | |
| State Street Global Advisors | | | | | | | |
| Money Market | 48,583 | 51,584 | 51,228 | 52,402 | 54,697 | 54,476 | 55,959 |
| S&P 500 Stock Index Fund Series A | 485,856 | 458,600 | 437,251 | 423,128 | 431,566 | 442,830 | 439,964 |
| Russell 3000 Index | 77,118 | 90,072 | 112,374 | 134,994 | 145,500 | 146,477 | 142,301 |
| US Real Estate Investment Trust Index | 39,340 | - | - | - | - | - | - |
| World Equity Ex-US Index | 70,168 | 70,243 | 74,123 | 79,423 | 80,674 | 82,343 | 77,157 |
| US Treasury Inflation Protected Securities Index | 48,876 | - | - | - | - | - | - |
| | | | | | | | |
| Investments with BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 126,578 | 141,390 | 150,818 | 162,717 | 166,390 | 165,368 | 169,571 |
| Strategic Completion Fund | - | 78,755 | 63,183 | 49,098 | 44,585 | 44,271 | 43,454 |
| | | | | | | | |
| Investments with Brandes/Baillie Gifford | | | | | | | |
| AK International Equity Fund | 62,924 | 58,085 | 55,885 | 54,044 | 55,381 | 62,659 | 62,303 |
| | | | | | | | |
| Investments with Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 60,303 | 63,627 | 71,495 | 78,355 | 84,080 | 89,699 | 93,785 |
| **Total Invested Assets** | **$ 4,126,219** | **$ 4,100,080** | **$ 4,128,232** | **$ 4,181,547** | **$ 4,248,015** | **$ 4,313,916** | **$ 4,301,200** |
| | | | | | | | |
| **Change in Invested Assets** | | | | | | | |
| Beginning Assets | $ 4,111,631 | $ 4,126,219 | $ 4,100,080 | $ 4,128,232 | $ 4,181,547 | $ 4,248,015 | $ 4,313,916 |
| Investment Earnings | 20,000 | (21,625) | 40,452 | 59,168 | 71,303 | 76,294 | (3,962) |
| Net Contributions (Withdrawals) | (5,413) | (4,514) | (12,300) | (5,853) | (4,835) | (10,393) | (8,754) |
| **Ending Invested Assets** | **$ 4,126,219** | **$ 4,100,080** | **$ 4,128,232** | **$ 4,181,547** | **$ 4,248,015** | **$ 4,313,916** | **$ 4,301,200** |



Source data provided by the record keeper, Empower Retirement.

**Deferred Compensation Plan**
**Schedule of Invested Assets and Changes in Invested Assets**
**for the Month Ended**
**January 31, 2020**

| Participant Options | | Beginning Invested Assets | | Investment Income | | Net Contributions (Withdrawals) | | Transfers In (Out) | | Ending Invested Assets | % Change in Invested Assets | % Change due to Investment Income (1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T. Rowe Price | | | | | | | | | | | | |
| Stable Value Fund | $ | 190,454,772 | $ | 392,097 | $ | (2,035,753) | $ | (44,556) | $ | 188,766,560 | -0.89% | 0.21% |
| Small Cap Stock Fund | | 125,876,426 | | (1,795,551) | | (510,280) | | 127,205 | | 123,697,800 | -1.73% | -1.43% |
| Alaska Balanced Trust | | 29,786,179 | | 133,245 | | (64,765) | | (124,770) | | 29,729,889 | -0.19% | 0.45% |
| Long Term Balanced Fund | | 87,059,571 | | (144,123) | | (345,083) | | (1,209,278) | | 85,361,087 | -1.95% | -0.17% |
| AK Target Date 2010 Trust | | 3,413,784 | | 5,395 | | (8,999) | | (18,979) | | 3,391,201 | -0.66% | 0.16% |
| AK Target Date 2015 Trust | | 9,307,921 | | 4,045 | | (52,918) | | 30,890 | | 9,289,938 | -0.19% | 0.04% |
| AK Target Date 2020 Trust | | 25,771,902 | | (34,996) | | (484,953) | | 661,397 | | 25,913,350 | 0.55% | -0.14% |
| AK Target Date 2025 Trust | | 23,526,507 | | (79,426) | | (154,226) | | 413,654 | | 23,706,509 | 0.77% | -0.34% |
| AK Target Date 2030 Trust | | 14,249,239 | | (69,520) | | 21,892 | | 101,374 | | 14,302,985 | 0.38% | -0.49% |
| AK Target Date 2035 Trust | | 9,014,871 | | (62,293) | | 197,871 | | 148,796 | | 9,299,245 | 3.15% | -0.68% |
| AK Target Date 2040 Trust | | 9,766,258 | | (72,137) | | (34,124) | | (106,140) | | 9,553,857 | -2.17% | -0.74% |
| AK Target Date 2045 Trust | | 7,269,103 | | (64,128) | | 128,251 | | 3,986 | | 7,337,212 | 0.94% | -0.87% |
| AK Target Date 2050 Trust | | 5,437,851 | | (47,000) | | (46,899) | | (24,728) | | 5,319,224 | -2.18% | -0.87% |
| AK Target Date 2055 Trust | | 4,668,965 | | (42,552) | | 96,928 | | 37,867 | | 4,761,208 | 1.98% | -0.90% |
| AK Target Date 2060 Trust | | 1,020,394 | | (7,981) | | (28,266) | | (117,028) | | 867,119 | -15.02% | -0.84% |
| AK Target Date 2065 Trust | | - | | (295) | | (2) | | 20,540 | | 20,243 | 0.00% | -2.87% |
| Total Investments with T. Rowe Price | | 546,623,743 | | (1,885,220) | | (3,321,326) | | (99,770) | | 541,317,427 | | |
| State Street Global Advisors | | | | | | | | | | | | |
| Money Market | | 17,621,323 | | 23,030 | | (233,174) | | 579,119 | | 17,990,298 | 2.09% | 0.13% |
| S&P 500 Stock Index | | 235,234,899 | | (135,330) | | (506,613) | | 2,526,891 | | 237,119,847 | 0.80% | -0.06% |
| Russell 3000 Index | | 44,069,190 | | 53,660 | | (130,478) | | (6,300,950) | | 37,691,422 | -14.47% | 0.13% |
| World Equity Ex-US Index | | 24,480,057 | | (800,447) | | 27,089 | | (1,234,057) | | 22,472,642 | -8.20% | -3.35% |
| Total Investments with SSgA | | 321,405,469 | | (859,087) | | (843,176) | | (4,428,997) | | 315,274,209 | | |
| BlackRock | | | | | | | | | | | | |
| Strategic Completion Fund | | 19,363,097 | | (67,922) | | 21,109 | | (205,819) | | 19,110,465 | -1.30% | -0.35% |
| Passive U.S. Bond Index Fund | | 76,938,166 | | 1,483,723 | | 15,997 | | 969,971 | | 79,407,857 | 3.21% | 1.92% |
| Total Investments with BlackRock | | 96,301,263 | | 1,415,801 | | 37,106 | | 764,152 | | 98,518,322 | | |
| Brandes/Baillie Gifford (2) | | | | | | | | | | | | |
| AK International Equity Fund | | 35,046,825 | | (1,339,478) | | (87,482) | | 792,249 | | 34,412,114 | -1.81% | -3.78% |
| Northern Trust | | | | | | | | | | | | |
| Environmental, Social, and Governance Fund | | 36,296,867 | | 265,992 | | 63,280 | | 2,972,366 | | 39,598,505 | 9.10% | 0.70% |
| **Total All Funds** | $ | 1,035,674,167 | $ | (2,401,992) | $ | (4,151,598) | $ | - | $ | 1,029,120,577 | -0.63% | -0.23% |

Notes: Source data provided by the record keeper, Empower Retirement.

(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

(2) This investment is comprised of two funds, Brandes International Equity Fund and Baillie Gifford International Equity Fund.

**Deferred Compensation Plan**
**Schedule of Invested Assets with**
**Schedule of Investment Income and Changes in Invested Assets**
**By Month Through the Month Ended**
**January 31, 2020**
**$ (Thousands)**

| **Invested Assets (at fair value)** | July | August | September | October | November | December | January |
|---|---|---|---|---|---|---|---|
| Investments with T. Rowe Price | | | | | | | |
| Stable Value Fund | $ 183,474 | $ 185,942 | $ 188,292 | $ 191,328 | $ 190,821 | $ 190,455 | $ 188,767 |
| Small Cap Stock Fund | 120,406 | 116,510 | 117,756 | 119,686 | 123,718 | 125,876 | 123,698 |
| Alaska Balanced Trust | 31,506 | 31,031 | 30,849 | 29,518 | 29,479 | 29,786 | 29,730 |
| Long Term Balanced Fund | 86,198 | 84,760 | 85,056 | 86,056 | 86,842 | 87,060 | 85,361 |
| AK Target Date 2010 Trust | 3,977 | 3,838 | 3,870 | 3,663 | 3,370 | 3,414 | 3,391 |
| AK Target Date 2015 Trust | 9,411 | 9,349 | 9,416 | 9,404 | 9,418 | 9,308 | 9,290 |
| AK Target Date 2020 Trust | 24,801 | 24,501 | 24,738 | 24,941 | 25,090 | 25,772 | 25,913 |
| AK Target Date 2025 Trust | 20,841 | 20,599 | 21,087 | 21,492 | 23,246 | 23,527 | 23,707 |
| AK Target Date 2030 Trust | 13,580 | 12,866 | 13,206 | 13,511 | 13,638 | 14,249 | 14,303 |
| AK Target Date 2035 Trust | 7,893 | 8,032 | 8,187 | 8,444 | 8,618 | 9,015 | 9,299 |
| AK Target Date 2040 Trust | 8,985 | 9,000 | 9,223 | 9,150 | 9,509 | 9,766 | 9,554 |
| AK Target Date 2045 Trust | 6,557 | 6,496 | 6,652 | 6,829 | 6,965 | 7,269 | 7,337 |
| AK Target Date 2050 Trust | 4,762 | 4,726 | 4,880 | 5,000 | 5,190 | 5,438 | 5,319 |
| AK Target Date 2055 Trust | 4,539 | 4,487 | 4,412 | 4,524 | 4,739 | 4,669 | 4,761 |
| AK Target Date 2060 Trust | 892 | 845 | 893 | 856 | 874 | 1,020 | 867 |
| AK Target Date 2065 Trust | - | - | - | - | - | - | 20 |
| State Street Global Advisors | | | | | | | |
| Money Market | 15,439 | 16,190 | 16,283 | 16,818 | 17,461 | 17,621 | 17,990 |
| S&P 500 Stock Index | - | - | - | - | 226,205 | 235,235 | 237,120 |
| Russell 3000 Index | 49,810 | 48,284 | 48,709 | 49,603 | 48,966 | 44,069 | 37,691 |
| US Real Estate Investment Trust Index | 14,386 | - | - | - | - | - | - |
| World Equity Ex-US Index | 21,943 | 22,073 | 23,281 | 24,520 | 24,267 | 24,480 | 22,473 |
| US Treasury Inflation Protected Securities Index | 19,161 | - | - | - | - | - | - |
| Investments with BlackRock | | | | | | | |
| S&P 500 Index Fund | 221,137 | 215,581 | 215,993 | 219,007 | - | - | - |
| Strategic Completion Fund | - | 30,241 | 26,005 | 21,726 | 19,648 | 19,363 | 19,110 |
| Passive U.S. Bond Index Fund | 62,456 | 67,832 | 70,658 | 74,139 | 76,154 | 76,938 | 79,408 |
| Investments with Brandes/Baillie Gifford | | | | | | | |
| AK International Equity Fund | 33,579 | 31,725 | 31,753 | 31,630 | 32,551 | 35,047 | 34,412 |
| Investments with Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 24,052 | 24,595 | 27,001 | 28,939 | 32,295 | 36,297 | 39,599 |
| **Total Invested Assets** | **$ 989,787** | **$ 979,503** | **$ 988,201** | **$ 1,000,783** | **$ 1,019,063** | **$ 1,035,674** | **$ 1,029,121** |
| **Change in Invested Assets** | | | | | | | |
| Beginning Assets | $ 983,594 | $ 989,787 | $ 979,503 | $ 988,201 | $ 1,000,783 | $ 1,019,063 | $ 1,035,674 |
| Investment Earnings | 7,422 | (7,979) | 10,636 | 14,636 | 20,354 | 19,287 | (2,402) |
| Net Contributions (Withdrawals) | (1,228) | (2,305) | (1,937) | (2,054) | (2,074) | (2,677) | (4,152) |
| **Ending Invested Assets** | **$ 989,787** | **$ 979,503** | **$ 988,201** | **$ 1,000,783** | **$ 1,019,063** | **$ 1,035,674** | **$ 1,029,121** |

Source data provided by the record keeper, Empower Retirement.

**Defined Contribution Retirement - Participant Directed PERS**
**Schedule of Investment Income and Changes in Invested Assets**
**for the Month Ended**
**January 31, 2020**

| Participant Options | Beginning Invested Assets | Investment Income | Net Contributions (Withdrawals) | Transfers In (Out) | Ending Invested Assets | % Change in Invested Assets | % Change due to Investment Income (1) |
|---|---|---|---|---|---|---|---|
| T. Rowe Price | | | | | | | |
| Stable Value Fund | $ 69,792,257 | $ 146,788 | $ (73,550) | $ 2,846,626 | $ 72,712,121 | 4.18% | 0.21% |
| Small Cap Stock Fund | 92,960,596 | (1,314,759) | 326,806 | (1,118,986) | 90,853,657 | -2.27% | -1.42% |
| Alaska Balanced Trust | 13,329,641 | 58,276 | 55,650 | 529,526 | 13,973,093 | 4.83% | 0.43% |
| Long Term Balanced Fund | 15,727,800 | (19,914) | 44,872 | (1,058,036) | 14,694,722 | -6.57% | -0.13% |
| AK Target Date 2010 Trust | 2,523,230 | 3,728 | 24,346 | - | 2,551,304 | 1.11% | 0.15% |
| AK Target Date 2015 Trust | 12,322,869 | 4,258 | 102,657 | 36,555 | 12,466,339 | 1.16% | 0.03% |
| AK Target Date 2020 Trust | 38,376,151 | (50,700) | 143,439 | (86,728) | 38,382,162 | 0.02% | -0.13% |
| AK Target Date 2025 Trust | 64,182,947 | (208,133) | 604,911 | 195,779 | 64,775,504 | 0.92% | -0.32% |
| AK Target Date 2030 Trust | 69,033,091 | (336,074) | 640,693 | (61,106) | 69,276,604 | 0.35% | -0.48% |
| AK Target Date 2035 Trust | 83,816,273 | (534,347) | 906,847 | (219,414) | 83,969,359 | 0.18% | -0.63% |
| AK Target Date 2040 Trust | 98,901,860 | (750,834) | 697,920 | (132,038) | 98,716,908 | -0.19% | -0.76% |
| AK Target Date 2045 Trust | 127,543,123 | (1,114,447) | 1,211,157 | (302,212) | 127,337,621 | -0.16% | -0.87% |
| AK Target Date 2050 Trust | 151,365,387 | (1,319,025) | 1,520,959 | (669,709) | 150,897,612 | -0.31% | -0.87% |
| AK Target Date 2055 Trust | 144,745,485 | (1,286,896) | 2,831,817 | (420,487) | 145,869,919 | 0.78% | -0.88% |
| AK Target Date 2060 Trust | 1,741,171 | (12,692) | 45,502 | (150,981) | 1,623,000 | -6.79% | -0.75% |
| AK Target Date 2065 Trust | - | (3,146) | 4,762 | 160,951 | 162,567 | 0.00% | -3.80% |
| Total Investments with T. Rowe Price | 986,361,881 | (6,737,917) | 9,088,788 | (450,260) | 988,262,492 | | |
| State Street Global Advisors | | | | | | | |
| Money Market | 12,681,264 | 16,590 | 5,535 | 129,572 | 12,832,961 | 1.20% | 0.13% |
| S&P 500 Stock Index Fund Series A | 44,366,488 | (32,815) | 213,560 | 720,628 | 45,267,861 | 2.03% | -0.07% |
| Russell 3000 Index | 90,354,749 | (59,623) | 355,329 | (3,200,469) | 87,449,986 | -3.21% | -0.07% |
| World Equity Ex-US Index | 74,977,169 | (2,504,602) | 270,503 | (2,522,447) | 70,220,623 | -6.34% | -3.39% |
| Total Investments with SSgA | 222,379,670 | (2,580,450) | 844,927 | (4,872,716) | 215,771,431 | | |
| BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 74,890,193 | 1,464,039 | 147,434 | 2,113,481 | 78,615,147 | 4.97% | 1.93% |
| Strategic Completion Fund | 5,194,057 | (17,348) | (22,812) | (137,971) | 5,015,926 | -3.43% | -0.34% |
| Total Investments with BlackRock | 80,084,250 | 1,446,691 | 124,622 | 1,975,510 | 83,631,073 | | |
| Brandes/Baillie Gifford (2) | | | | | | | |
| AK International Equity Fund | 35,000,302 | (1,400,875) | 165,741 | 2,434,909 | 36,200,077 | 3.43% | -3.86% |
| Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 42,642,230 | 335,558 | 101,270 | 912,557 | 43,991,615 | 3.16% | 0.78% |
| **Total All Funds** | $ 1,366,468,333 | $ (8,936,993) | $ 10,325,348 | $ - | $ 1,367,856,688 | 0.10% | -0.65% |

Notes: Source data provided by the record keeper, Empower Retirement.
(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.
(2) This investment is comprised of two funds, Brandes International Equity Fund and Baillie Gifford International Equity Fund.

**Defined Contribution Retirement - Participant Directed PERS**
**Schedule of Invested Assets with**
**Schedule of Investment Income and Changes in Invested Assets**
**By Month Through the Month Ended**
**January 31, 2020**
**$ (Thousands)**

| **Invested Assets** (at fair value) | July | August | September | October | November | December | January |
|---|---|---|---|---|---|---|---|
| Investments with T. Rowe Price | | | | | | | |
| Stable Value Fund | $ 49,550 | $ 53,405 | $ 60,034 | $ 65,234 | $ 68,077 | $ 69,792 | $ 72,712 |
| Small Cap Stock Fund | 85,588 | 84,037 | 85,540 | 88,225 | 91,601 | 92,961 | 90,854 |
| Alaska Balanced Trust | 25,259 | 22,057 | 17,849 | 13,477 | 12,684 | 13,330 | 13,973 |
| Long Term Balanced Fund | 15,570 | 15,571 | 16,022 | 16,568 | 16,369 | 15,728 | 14,695 |
| AK Target Date 2010 Trust | 2,364 | 2,407 | 2,422 | 2,462 | 2,511 | 2,523 | 2,551 |
| AK Target Date 2015 Trust | 12,447 | 12,475 | 12,347 | 12,392 | 12,573 | 12,323 | 12,466 |
| AK Target Date 2020 Trust | 36,313 | 35,922 | 36,333 | 36,927 | 37,451 | 38,376 | 38,382 |
| AK Target Date 2025 Trust | 58,997 | 58,278 | 59,088 | 60,616 | 62,489 | 64,183 | 64,776 |
| AK Target Date 2030 Trust | 61,669 | 61,231 | 62,610 | 64,347 | 66,514 | 69,033 | 69,277 |
| AK Target Date 2035 Trust | 74,455 | 74,147 | 75,694 | 77,734 | 80,500 | 83,816 | 83,969 |
| AK Target Date 2040 Trust | 88,249 | 87,469 | 89,345 | 91,921 | 95,173 | 98,902 | 98,717 |
| AK Target Date 2045 Trust | 113,710 | 112,618 | 116,000 | 118,849 | 123,072 | 127,543 | 127,338 |
| AK Target Date 2050 Trust | 135,192 | 133,855 | 137,374 | 141,506 | 145,984 | 151,365 | 150,898 |
| AK Target Date 2055 Trust | 123,545 | 123,185 | 127,227 | 132,393 | 138,301 | 144,745 | 145,870 |
| AK Target Date 2060 Trust | 1,437 | 1,436 | 1,502 | 1,550 | 1,627 | 1,741 | 1,623 |
| AK Target Date 2065 Trust | - | - | - | - | - | - | 163 |
| State Street Global Advisors | | | | | | | |
| Money Market | 11,355 | 12,169 | 12,199 | 12,295 | 12,378 | 12,681 | 12,833 |
| S&P 500 Stock Index Fund Series A | 112,815 | 93,825 | 69,994 | 47,161 | 42,738 | 44,366 | 45,268 |
| Russell 3000 Index | 13,165 | 29,669 | 54,395 | 80,956 | 89,558 | 90,355 | 87,450 |
| US Real Estate Investment Trust Index | 17,236 | - | - | - | - | - | - |
| World Equity Ex-US Index | 60,410 | 61,642 | 66,646 | 72,519 | 73,184 | 74,977 | 70,221 |
| US Treasury Inflation Protected Securities Index | 20,051 | - | - | - | - | - | - |
| Investments with BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 52,746 | 58,392 | 65,047 | 71,583 | 74,010 | 74,890 | 78,615 |
| Strategic Completion Fund | - | 30,060 | 19,184 | 8,300 | 5,193 | 5,194 | 5,016 |
| Investments with Brandes/Baillie Gifford | | | | | | | |
| AK International Equity Fund | 39,804 | 35,904 | 32,831 | 29,808 | 30,829 | 35,000 | 36,200 |
| Investments with Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 19,449 | 23,374 | 29,983 | 36,577 | 40,207 | 42,642 | 43,992 |
| **Total Invested Assets** | **$ 1,231,376** | **$ 1,223,126** | **$ 1,249,666** | **$ 1,283,402** | **$ 1,323,024** | **$ 1,366,468** | **$ 1,367,857** |
| **Change in Invested Assets** | | | | | | | |
| Beginning Assets | $ 1,218,754 | $ 1,231,376 | $ 1,223,126 | $ 1,249,666 | $ 1,283,402 | $ 1,323,024 | $ 1,366,468 |
| Investment Earnings | 5,513 | (15,573) | 17,922 | 24,420 | 28,841 | 32,981 | (8,937) |
| Net Contributions (Withdrawals) | 7,110 | 7,323 | 8,618 | 9,316 | 10,781 | 10,463 | 10,325 |
| **Ending Invested Assets** | **$ 1,231,376** | **$ 1,223,126** | **$ 1,249,666** | **$ 1,283,402** | **$ 1,323,024** | **$ 1,366,468** | **$ 1,367,857** |



Source data provided by the record keeper, Empower Retirement.

**Defined Contribution Retirement - Participant Directed TRS**
**Schedule of Investment Income and Changes in Invested Assets**
**for the Month Ended**
**January 31, 2020**

| Participant Options | Beginning Invested Assets | Investment Income | Net Contributions (Withdrawals) | Transfers In (Out) | Ending Invested Assets | % Change in Invested Assets | % Change due to Investment Income (1) |
|---|---|---|---|---|---|---|---|
| T. Rowe Price | | | | | | | |
| Stable Value Fund | $ 28,050,345 | $ 59,081 | $ 84,921 | $ 1,090,522 | $ 29,284,869 | 4.40% | 0.21% |
| Small Cap Stock Fund | 39,238,897 | (556,722) | 120,522 | (481,755) | 38,320,942 | -2.34% | -1.43% |
| Alaska Balanced Trust | 4,888,005 | 21,857 | 16,857 | 129,718 | 5,056,437 | 3.45% | 0.44% |
| Long Term Balanced Fund | 6,801,146 | (8,021) | 27,819 | (474,596) | 6,346,348 | -6.69% | -0.12% |
| AK Target Date 2010 Trust | 915,632 | 1,628 | 4,188 | (46,086) | 875,362 | -4.40% | 0.18% |
| AK Target Date 2015 Trust | 3,797,170 | 2,300 | (57,049) | (19,377) | 3,723,044 | -1.95% | 0.06% |
| AK Target Date 2020 Trust | 11,315,477 | (15,842) | 114,671 | - | 11,414,306 | 0.87% | -0.14% |
| AK Target Date 2025 Trust | 20,526,754 | (66,006) | 80,980 | 121 | 20,541,849 | 0.07% | -0.32% |
| AK Target Date 2030 Trust | 25,615,270 | (124,073) | 261,688 | (101,299) | 25,651,586 | 0.14% | -0.48% |
| AK Target Date 2035 Trust | 37,128,013 | (234,151) | 315,424 | (125,730) | 37,083,556 | -0.12% | -0.63% |
| AK Target Date 2040 Trust | 41,477,999 | (317,402) | 367,689 | (39,360) | 41,488,926 | 0.03% | -0.76% |
| AK Target Date 2045 Trust | 60,762,257 | (531,504) | 489,026 | (5,607) | 60,714,172 | -0.08% | -0.87% |
| AK Target Date 2050 Trust | 86,122,768 | (753,538) | 781,394 | (144,732) | 86,005,892 | -0.14% | -0.87% |
| AK Target Date 2055 Trust | 48,703,185 | (433,293) | 774,468 | (146,834) | 48,897,526 | 0.40% | -0.88% |
| AK Target Date 2060 Trust | 557,765 | (4,929) | 4,762 | - | 557,598 | -0.03% | -0.88% |
| Total Investments with T. Rowe Price | 415,900,683 | (2,960,615) | 3,387,360 | (365,015) | 415,962,413 | | |
| State Street Global Advisors | | | | | | | |
| Money Market | 3,442,438 | 4,491 | 25,839 | 22,474 | 3,495,242 | 1.53% | 0.13% |
| S&P 500 Stock Index Fund Series A | 13,182,469 | (7,807) | 67,886 | 173,339 | 13,415,887 | 1.77% | -0.06% |
| Russell 3000 Index | 40,083,936 | (34,034) | 136,785 | (1,203,044) | 38,983,643 | -2.74% | -0.09% |
| World Equity Ex-US Index | 34,175,879 | (1,151,665) | 98,641 | (905,163) | 32,217,692 | -5.73% | -3.41% |
| Total Investments with SSgA | 90,884,722 | (1,189,015) | 329,151 | (1,912,394) | 88,112,464 | | |
| BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 29,686,028 | 580,761 | 99,822 | 793,200 | 31,159,811 | 4.96% | 1.93% |
| Strategic Completion Fund | 1,730,159 | (6,311) | 13,045 | 20,039 | 1,756,932 | 1.55% | -0.36% |
| Total Investments with BlackRock | 31,416,187 | 574,450 | 112,867 | 813,239 | 32,916,743 | | |
| Brandes/Baillie Gifford (2) | | | | | | | |
| AK International Equity Fund | 14,337,395 | (576,771) | 60,867.00 | 1,085,768 | 14,907,259 | 3.97% | -3.87% |
| Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 17,941,881 | 140,713 | 59,917.00 | 378,402 | 18,520,913 | 3.23% | 0.77% |
| **Total All Funds** | $ 570,480,868 | $ (4,011,238) | $ 3,950,162 | $ - | $ 570,419,792 | -0.01% | -0.70% |

Notes: Source data provided by the record keeper, Empower Retirement.
(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.
(2) This investment is comprised of two funds, Brandes International Equity Fund and Baillie Gifford International Equity Fund.

**Defined Contribution Retirement - Participant Directed TRS**
**Schedule of Invested Assets with**
**Schedule of Investment Income and Changes in Invested Assets**
**By Month Through the Month Ended**
**January 31, 2020**
**$ (Thousands)**

| **Invested Assets (at fair value)** | **July** | **August** | **September** | **October** | **November** | **December** | **January** |
|---|---|---|---|---|---|---|---|
| Investments with T. Rowe Price | | | | | | | |
| Stable Value Fund | $ 20,540 | $ 22,070 | $ 24,472 | $ 26,796 | $ 27,760 | $ 28,050 | $ 29,285 |
| Small Cap Stock Fund | 36,368 | 35,589 | 36,076 | 37,049 | 38,422 | 39,239 | 38,321 |
| Alaska Balanced Trust | 10,692 | 9,202 | 7,147 | 5,102 | 4,626 | 4,888 | 5,056 |
| Long Term Balanced Fund | 6,574 | 6,478 | 6,648 | 6,892 | 7,060 | 6,801 | 6,346 |
| AK Target Date 2010 Trust | 860 | 859 | 868 | 883 | 899 | 916 | 875 |
| AK Target Date 2015 Trust | 3,718 | 3,702 | 3,671 | 3,734 | 3,815 | 3,797 | 3,723 |
| AK Target Date 2020 Trust | 10,625 | 10,368 | 10,430 | 10,709 | 11,003 | 11,315 | 11,414 |
| AK Target Date 2025 Trust | 19,684 | 19,121 | 19,430 | 19,628 | 20,042 | 20,527 | 20,542 |
| AK Target Date 2030 Trust | 23,081 | 22,832 | 23,319 | 23,954 | 24,639 | 25,615 | 25,652 |
| AK Target Date 2035 Trust | 34,192 | 33,605 | 34,264 | 35,031 | 36,033 | 37,128 | 37,084 |
| AK Target Date 2040 Trust | 37,136 | 36,244 | 37,067 | 38,358 | 39,809 | 41,478 | 41,489 |
| AK Target Date 2045 Trust | 55,300 | 54,086 | 55,171 | 56,773 | 58,681 | 60,762 | 60,714 |
| AK Target Date 2050 Trust | 77,799 | 76,297 | 77,822 | 80,176 | 83,056 | 86,123 | 86,006 |
| AK Target Date 2055 Trust | 42,579 | 41,668 | 42,529 | 44,266 | 46,341 | 48,703 | 48,898 |
| AK Target Date 2060 Trust | 524 | 521 | 532 | 547 | 550 | 558 | 558 |
| State Street Global Advisors | | | | | | | |
| Money Market | 3,144 | 3,340 | 3,352 | 3,468 | 3,393 | 3,442 | 3,495 |
| S&P 500 Stock Index Fund Series A | 45,559 | 37,389 | 26,061 | 15,289 | 12,354 | 13,182 | 13,416 |
| Russell 3000 Index | 4,569 | 11,581 | 23,298 | 34,819 | 39,532 | 40,084 | 38,984 |
| US Real Estate Investment Trust Index | 7,072 | - | - | - | - | - | - |
| World Equity Ex-US Index | 27,203 | 27,650 | 29,946 | 32,630 | 33,279 | 34,176 | 32,218 |
| US Treasury Inflation Protected Securities Index | 7,449 | - | - | - | - | - | - |
| Investments with BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 21,451 | 23,517 | 25,886 | 28,341 | 29,320 | 29,686 | 31,160 |
| Strategic Completion Fund | - | 11,844 | 7,262 | 2,993 | 1,677 | 1,730 | 1,757 |
| Investments with Brandes/Baillie Gifford | | | | | | | |
| AK International Equity Fund | 17,368 | 15,544 | 13,997 | 12,577 | 12,414 | 14,337 | 14,907 |
| Investments with Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 8,276 | 9,906 | 12,717 | 15,600 | 17,042 | 17,942 | 18,521 |
| **Total Invested Assets** | **$ 521,761** | **$ 513,410** | **$ 521,965** | **$ 535,614** | **$ 551,745** | **$ 570,481** | **$ 570,420** |
| **Change in Invested Assets** | | | | | | | |
| Beginning Assets | $ 516,073 | $ 521,761 | $ 513,410 | $ 521,965 | $ 535,614 | $ 551,745 | $ 570,481 |
| Investment Earnings | 2,269 | (6,905) | 7,675 | 10,364 | 12,181 | 14,017 | (4,011) |
| Net Contributions (Withdrawals) | 3,420 | (1,446) | 880 | 3,285 | 3,951 | 4,718 | 3,950 |
| **Ending Invested Assets** | **$ 521,761** | **$ 513,410** | **$ 521,965** | **$ 535,614** | **$ 551,745** | **$ 570,481** | **$ 570,420** |



Source data provided by the record keeper, Empower Retirement.

# ALASKA RETIREMENT MANAGEMENT BOARD

## FINANCIAL REPORT
## (Supplement to the Treasury Division Report)

## As of January 31, 2020

## Prepared by the Division of Retirement & Benefits

**ALASKA RETIREMENT MANAGEMENT BOARD**
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**
**(Supplement to the Treasury Division Report)**
**For the Seven Months Ending January 31, 2020**

| | **Contributions** | | | | **Expenditures** | | | | **Net** |
|---|---|---|---|---|---|---|---|---|---|
| | Contributions EE and ER | State of Alaska | Other | Total Contributions | Benefits | Refunds & Disbursements | Administrative & Investment | Total Expenditures | **Contributions/ (Withdrawals)** |
| **Public Employees' Retirement System (PERS)** | | | | | | | | | |
| Defined Benefit Plans: | | | | | | | | | |
| Retirement Trust | $ 209,320,553 | $ 159,055,000 | $ 110,357 | $ 368,485,910 | $ (518,102,511) | $ (6,511,768) | $ (3,597,225) | $ (528,211,504) | $ (159,725,594) |
| Retirement Health Care Trust | 64,427,281 | - | 43,036,896 | 107,464,177 | (271,523,965) | - | (10,317,640) | (281,841,605) | (174,377,428) |
| Total Defined Benefit Plans | 273,747,834 | 159,055,000 | 43,147,253 | 475,950,087 | (789,626,476) | (6,511,768) | (13,914,865) | (810,053,109) | (334,103,022) |
| Defined Contribution Plans: | | | | | | | | | |
| Participant Directed Retirement | 102,373,227 | - | - | 102,373,227 | - | (35,146,250) | (3,289,975) | (38,436,225) | 63,937,002 |
| Health Reimbursement Arrangement [(a)] | 25,377,211 | - | - | 25,377,211 | (79,931) | - | (83,772) | (163,703) | 25,213,508 |
| Retiree Medical Plan [(a)] | 10,125,548 | - | 29,726 | 10,155,274 | (179,287) | - | (32,556) | (211,843) | 9,943,431 |
| Occupational Death and Disability: [(a)] | | | | | | | | | |
| All Others | 1,755,162 | - | - | 1,755,162 | (62,914) | - | (4,767) | (67,681) | 1,687,481 |
| Peace Officers and Firefighters | 820,079 | - | - | 820,079 | (229,236) | - | (2,164) | (231,400) | 588,679 |
| Total Defined Contribution Plans | 140,451,227 | - | 29,726 | 140,480,953 | (551,368) | (35,146,250) | (3,413,234) | (39,110,852) | 101,370,101 |
| **Total PERS** | **414,199,061** | **159,055,000** | **43,176,979** | **616,431,040** | **(790,177,844)** | **(41,658,018)** | **(17,328,099)** | **(849,163,961)** | **(232,732,921)** |
| **Teachers' Retirement System (TRS)** | | | | | | | | | |
| Defined Benefit Plans: | | | | | | | | | |
| Retirement Trust | 35,209,594 | 141,129,000 | 20,031 | 176,358,625 | (286,331,244) | (1,109,809) | (1,884,839) | (289,325,892) | (112,967,267) |
| Retirement Health Care Trust | 9,890,138 | - | 14,424,316 | 24,314,454 | (84,390,480) | - | (3,858,822) | (88,249,302) | (63,934,848) |
| Total Defined Benefit Plans | 45,099,732 | 141,129,000 | 14,444,347 | 200,673,079 | (370,721,724) | (1,109,809) | (5,743,661) | (377,575,194) | (176,902,115) |
| Defined Contribution Plans: | | | | | | | | | |
| Participant Directed Retirement | 31,366,045 | - | - | 31,366,045 | - | (11,419,731) | (1,188,043) | (12,607,774) | 18,758,271 |
| Health Reimbursement Arrangement [(a)] | 6,312,417 | - | - | 6,312,417 | (26,416) | - | (25,353) | (51,769) | 6,260,648 |
| Retiree Medical Plan [(a)] | 2,189,769 | - | 2,287 | 2,192,056 | (61,651) | - | (11,408) | (73,059) | 2,118,997 |
| Occupational Death and Disability [(a)] | 167,416 | - | - | 167,416 | (14,170) | - | (725) | (14,895) | 152,521 |
| Total Defined Contribution Plans | 40,035,647 | - | 2,287 | 40,037,934 | (102,237) | (11,419,731) | (1,225,529) | (12,747,497) | 27,290,437 |
| **Total TRS** | **85,135,379** | **141,129,000** | **14,446,634** | **240,711,013** | **(370,823,961)** | **(12,529,540)** | **(6,969,190)** | **(390,322,691)** | **(149,611,678)** |
| **Judicial Retirement System (JRS)** | | | | | | | | | |
| Defined Benefit Plan Retirement Trust | 4,217,774 | 5,010,000 | - | 9,227,774 | (8,197,265) | - | (100,576) | (8,297,841) | 929,933 |
| Defined Benefit Retirement Health Care Trust | 403,976 | - | 187,779 | 591,755 | (900,866) | - | (47,740) | (948,606) | (356,851) |
| **Total JRS** | **4,621,750** | **5,010,000** | **187,779** | **9,819,529** | **(9,098,131)** | **-** | **(148,316)** | **(9,246,447)** | **573,082** |
| **National Guard/Naval Militia Retirement System (NGNMRS)** | | | | | | | | | |
| Defined Benefit Plan Retirement Trust [(a)] | 860,686 | - | - | 860,686 | (1,241,948) | - | (91,588) | (1,333,536) | (472,850) |
| **Other Participant Directed Plans** | | | | | | | | | |
| Supplemental Annuity Plan | 103,833,687 | - | - | 103,833,687 | - | (152,247,567) | (3,647,411) | (155,894,978) | (52,061,291) |
| Deferred Compensation Plan | 28,084,695 | - | - | 28,084,695 | - | (43,299,210) | (1,212,491) | (44,511,701) | (16,427,006) |
| **Total All Funds** | **636,735,258** | **305,194,000** | **57,811,392** | **999,740,650** | **(1,171,341,884)** | **(249,734,335)** | **(29,397,095)** | **(1,450,473,314)** | **(450,732,664)** |
| Total Non-Participant Directed | 371,077,604 | 305,194,000 | 57,811,392 | 734,082,996 | (1,171,341,884) | (7,621,577) | (20,059,175) | (1,199,022,636) | (464,939,640) |
| Total Participant Directed | 265,657,654 | - | - | 265,657,654 | - | (242,112,758) | (9,337,920) | (251,450,678) | 14,206,976 |
| **Total All Funds** | **$ 636,735,258** | **$ 305,194,000** | **$ 57,811,392** | **$ 999,740,650** | **$ (1,171,341,884)** | **$ (249,734,335)** | **$ (29,397,095)** | **$ (1,450,473,314)** | **$ (450,732,664)** |

(a) Employer only contributions.

**ALASKA RETIREMENT MANAGEMENT BOARD**
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**
**(Supplement to the Treasury Division Report)**
**For the Month Ended January 31, 2020**

| | **Contributions** | | | | **Expenditures** | | | | **Net** |
|---|---|---|---|---|---|---|---|---|---|
| | Contributions EE and ER | State of Alaska | Other | Total Contributions | Benefits | Refunds & Disbursements | Administrative & Investment | Total Expenditures | **Contributions/ (Withdrawals)** |
| **Public Employees' Retirement System (PERS)** | | | | | | | | | |
| Defined Benefit Plans: | | | | | | | | | |
| Retirement Trust | $ 32,873,163 | $ - | $ 3,065 | $ 32,876,228 | $ (74,525,484) | $ (679,024) | $ (316,442) | $ (75,520,950) | $ (42,644,722) |
| Retirement Health Care Trust | 10,363,129 | - | 1,245,573 | 11,608,702 | (40,302,024) | - | (577,466) | (40,879,490) | (29,270,788) |
| Total Defined Benefit Plans | 43,236,292 | - | 1,248,638 | 44,484,930 | (114,827,508) | (679,024) | (893,908) | (116,400,440) | (71,915,510) |
| Defined Contribution Plans: | | | | | | | | | |
| Participant Directed Retirement | 15,672,747 | - | - | 15,672,747 | - | (4,790,302) | (557,097) | (5,347,399) | 10,325,348 |
| Health Reimbursement Arrangement [(a)] | 4,038,475 | - | - | 4,038,475 | (4,248) | - | (7,808) | (12,056) | 4,026,419 |
| Retiree Medical Plan [(a)] | 1,598,940 | - | 1,846 | 1,600,786 | (13,682) | - | (2,557) | (16,239) | 1,584,547 |
| Occupational Death and Disability: [(a)] | | | | | | | | - | |
| All Others | 266,575 | - | - | 266,575 | (8,985) | - | (456) | (9,441) | 257,134 |
| Peace Officers and Firefighters | 132,906 | - | - | 132,906 | (31,146) | - | (195) | (31,341) | 101,565 |
| Total Defined Contribution Plans | 21,709,643 | - | 1,846 | 21,711,489 | (58,061) | (4,790,302) | (568,113) | (5,416,476) | 16,295,013 |
| **Total PERS** | **64,945,935** | **-** | **1,250,484** | **66,196,419** | **(114,885,569)** | **(5,469,326)** | **(1,462,021)** | **(121,816,916)** | **(55,620,497)** |
| **Teachers' Retirement System (TRS)** | | | | | | | | | |
| Defined Benefit Plans: | | | | | | | | | |
| Retirement Trust | 6,005,801 | - | 3,424 | 6,009,225 | (40,830,054) | (203,440) | (152,359) | (41,185,853) | (35,176,628) |
| Retirement Health Care Trust | 1,727,149 | - | 432,827 | 2,159,976 | (11,856,755) | - | (208,747) | (12,065,502) | (9,905,526) |
| Total Defined Benefit Plans | 7,732,950 | - | 436,251 | 8,169,201 | (52,686,809) | (203,440) | (361,106) | (53,251,355) | (45,082,154) |
| Defined Contribution Plans: | | | | | | | | | |
| Participant Directed Retirement | 5,272,158 | - | - | 5,272,158 | - | (1,081,546) | (240,450) | (1,321,996) | 3,950,162 |
| Health Reimbursement Arrangement [(a)] | 1,026,175 | - | - | 1,026,175 | (786) | - | (2,342) | (3,128) | 1,023,047 |
| Retiree Medical Plan [(a)] | 388,175 | - | 75 | 388,250 | (9,700) | - | (812) | (10,512) | 377,738 |
| Occupational Death and Disability [(a)] | 28,059 | - | - | 28,059 | (2,024) | - | (67) | (2,091) | 25,968 |
| Total Defined Contribution Plans | 6,714,567 | - | 75 | 6,714,642 | (12,510) | (1,081,546) | (243,671) | (1,337,727) | 5,376,915 |
| **Total TRS** | **14,447,517** | **-** | **436,326** | **14,883,843** | **(52,699,319)** | **(1,284,986)** | **(604,777)** | **(54,589,082)** | **(39,705,239)** |
| **Judicial Retirement System (JRS)** | | | | | | | | | |
| Defined Benefit Plan Retirement Trust | 438,408 | - | - | 438,408 | (1,202,322) | - | (4,633) | (1,206,955) | (768,547) |
| Defined Benefit Retirement Health Care Trust | 45,217 | - | 3,902 | 49,119 | (100,788) | - | (1,924) | (102,712) | (53,593) |
| **Total JRS** | **483,625** | **-** | **3,902** | **487,527** | **(1,303,110)** | **-** | **(6,557)** | **(1,309,667)** | **(822,140)** |
| **National Guard/Naval Militia Retirement System (NGNMRS)** | | | | | | | | | |
| Defined Benefit Plan Retirement Trust [(a)] | - | - | - | - | (222,539) | - | (2,714) | (225,253) | (225,253) |
| **Other Participant Directed Plans** | | | | | | | | | |
| Supplemental Annuity Plan | 17,858,543 | - | - | 17,858,543 | - | (25,896,624) | (715,998) | (26,612,622) | (8,754,079) |
| Deferred Compensation Plan | 5,346,306 | - | - | 5,346,306 | - | (9,273,267) | (224,637) | (9,497,904) | (4,151,598) |
| **Total All Funds** | **103,081,926** | **-** | **1,690,712** | **104,772,638** | **(169,110,537)** | **(41,924,203)** | **-** | **(214,051,444)** | **(109,278,806)** |
| Total Non-Participant Directed | 58,932,172 | - | 1,690,712 | 60,622,884 | (169,110,537) | (882,464) | (1,278,522) | (171,271,523) | (110,648,639) |
| Total Participant Directed | 44,149,754 | - | - | 44,149,754 | - | (41,041,739) | (1,738,182) | (42,779,921) | 1,369,833 |
| **Total All Funds** | **$ 103,081,926** | **$ -** | **$ 1,690,712** | **$ 104,772,638** | **$ (169,110,537)** | **$ (41,924,203)** | **$ (3,016,704)** | **$ (214,051,444)** | **$ (109,278,806)** |

(a) Employer only contributions.

**ALASKA RETIREMENT MANAGEMENT BOARD**
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**
**(Supplement to the Treasury Division Report)**
**For the Seven Months Ending January 31, 2020**

## PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND TYPE

| Type | PERS DCR Plan | TRS DCR Plan | Supplemental Annuity Plan | Deferred Compensation | TOTAL | % of Total |
|---|---|---|---|---|---|---|
| Payment to Beneficiary | $ 10,833 | $ - | $ 261,262 | $ 86,613 | $ 358,708 | 0.1% |
| Death Benefit | 189,058 | 16,942 | 9,381,901 | 1,568,298 | 11,156,199 | 4.6% |
| Disability / Hardship | 34,131 | - | 109,776 | 78,619 | 222,526 | 0.1% |
| Minimum Required Distribution | 97,405 | 26,791 | 7,026,752 | 2,544,425 | 9,695,373 | 4.0% |
| Qualified Domestic Relations Order | 246,141 | 169,320 | 3,577,971 | 499,748 | 4,493,180 | 1.9% |
| Separation from Service / Retirement | 34,568,682 | 11,206,678 | 131,102,749 | 38,331,856 | 215,209,965 | 88.9% |
| Purchase of Service Credit | - | - | 787,156 | 189,651 | 976,807 | 0.4% |
| Transfer to a Qualifying Plan | - | - | - | - | - | 0.0% |
| TOTAL | $ 35,146,250 | $ 11,419,731 | $ 152,247,567 | $ 43,299,210 | $ 242,112,758 | 100.0% |

## PERS & TRS PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND VESTED PERCENTAGE

| Vesting | PERS DCR Plan | TRS DCR Plan | TOTAL | % of Total |
|---|---|---|---|---|
| 100% Vested | $ 30,421,679 | $ 10,073,802 | $ 40,495,481 | 87.0% |
| 75% Vested | 1,035,966 | 203,074 | 1,239,039 | 2.7% |
| 50% Vested | 1,241,715 | 361,208 | 1,602,923 | 3.4% |
| 25% Vested | 991,682 | 410,171 | 1,401,852 | 3.0% |
| 0% Vested | 1,455,210 | 371,477 | 1,826,687 | 3.9% |
| TOTAL | $ 35,146,250 | $ 11,419,731 | $ 46,565,982 | 100.0% |

## DEFINED BENEFIT REFUNDS BY PLAN, TIER, CONTRIBUTION TYPE AND VESTED STATUS

| | PERS DB Pension Plan | | | | TRS DB Pension Plan | | | JRS |
|---|---|---|---|---|---|---|---|---|
| Contribution Type | Tier 1 | Tier 2 | Tier 3 | Total | Tier 1 | Tier 2 | Total | DB Pension Plan |
| Mandatory Vested | $ 363,164 | $ 378,264 | $ 2,466,830 | $ 3,208,258 | $ 62,300 | $ 134,110 | $ 196,410 | $ - |
| Mandatory Non-Vested | 117,870 | 157,764 | 635,255 | 910,889 | 120,068 | 558,632 | 678,700 | - |
| Geographic Differential | - | 240,376 | 100,603 | 340,979 | - | - | - | - |
| Voluntary Full | 378,564 | 719,010 | 806,503 | 1,904,077 | - | - | - | - |
| Indebtedness, Lagging & Partial | 29,232 | 64,369 | 53,964 | 147,565 | 27 | 234,672 | 234,699 | - |
| TOTAL | $ 888,830 | $ 1,559,783 | $ 4,063,155 | $ 6,511,768 | $ 182,395 | $ 927,414 | $ 1,109,809 | $ - |

## Notes for the DRB Supplement to the Treasury Report

## January 2020

This report is the DRB supplement to the Treasury Division's Financial Report. It expands their "Net Contributions (Withdrawals)" column into contributions and expenditures. It shows contributions received from both employees and employers, contributions from the State of Alaska, and other non-investment income. It also expands expenditures into benefits, refunds & disbursements, and administrative & investment expenditures. The net amount of total contributions and total expenditures, presented as "Net Contributions (Withdrawals)", agrees with the same column in the Treasury Division's Report. Page one shows the year-to-date totals for the first seven months of Fiscal Year 2020, while page two shows only the month of January 2020.

Highlights – On page one, for the **seven months** ending January 31, 2020:

- PERS DB Pension – Average employer and employee contributions of $29.9 million per month; benefit payments of approximately $74 million per month; refunds average $930 thousand; and Administrative and Investment expenditures of $514 thousand per month (DOR and DRB).
- PERS DB Healthcare – Average employer contributions of $9.2 million per month; other income of $28.6 million from Aetna & OptumRx Pharmacy rebates (most recently received in December for 4th Quarter CY2018), $1 million from Medicare drug subsidy (most recently received in July for CY2013 ) and $13.5 million from monthly EGWP subsidies; benefit payments of approximately $38.8 million per month; and average Administrative and Investment expenditures of $1.5 million per month (DOR and DRB).
- PERS DC Pension – Average employer and employee contributions of $14.6 million per month; participant disbursements average $5 million per month; and average Administrative and Investment expenditures of $470 thousand per month (DOR and DRB).
- PERS DCR Health – For HRA, RMP, and OD&D, only employer contributions average $5.4 million per month on behalf of participating employees; benefit payments of approximately $79 thousand per month. Currently, 58 benefits are being paid from the Occupational Death & Disability plans, 43 retirees are participating in RMP, and 53 retirees are participating in HRA. Administrative and investment expenditures were approximately $18 thousand per month (DOR and DRB).
- TRS DB Pension - Average employer and employee contributions of $5 million per month; benefit payments of approximately $40.9 million per month; refunds average $159 thousand; and average Administrative and Investment expenditures of $269 thousand per month (DOR and DRB).
- TRS DB Healthcare – Average employer contributions of $1.4 million per month; other income of $9.4 million from Aetna & OptumRx Pharmacy rebates (most recently received in December for 4th Quarter CY2018), $340 thousand from Medicare drug subsidy (most recently received in July for CY2013 ) and $4.7 million from monthly EGWP subsidies; benefit payments of approximately $12.1 million per month; and average Administrative and Investment expenditures of $551 thousand per month (DOR and DRB).

- TRS DC Pension – Average employer and employee contributions of $4.5 million per month; participant disbursements average $1.6 million per month; and average Administrative and investment expenditures of $170 thousand per month (DOR and DRB).
- TRS DCR Health – For HRA, RMP, and OD&D, only employer contributions average $1.2 million per month on behalf of participating employees; benefit payments of approximately $15 thousand per month. Currently, 15 benefits are being paid from the Occupational Death & Disability plans, 18 retirees are participating in RMP, and 18 retirees are participating in HRA. Administrative and investment expenditures were approximately $5 thousand per month (DOR and DRB).
- JRS Pension – Average employer and employee contributions of $603 thousand per month; benefit payments of approximately $1.2 million per month; and average Administrative and Investment expenditures of $14 thousand per month (DOR and DRB).
- JRS Healthcare – Average employer contributions of $58 thousand per month; other income of $130 thousand from Aetna & OptumRx Pharmacy rebates (most recently received in December for 4th Quarter CY2018), $4 thousand from Medicare drug subsidy (most recently received in July for CY2013 ) and $54 thousand from monthly EGWP subsidies; benefit payments of approximately $129 thousand per month; and average Administrative and Investment expenditures of $7 thousand per month (DOR and DRB).
- NGNMRS – Annual contribution from DMVA in the amount of $861 thousand was received in July; combination of lump-sum and monthly benefit payments of $177 thousand per month; and average Administrative and Investment expenditures of $13 thousand per month (DOR and DRB).
- SBS – Average employer and employee contributions and transfers in of $14.8 million per month. Participant disbursements average of $21.7 million per month; and average Administrative and Investment expenditures of $521 thousand per month (DOR and DRB).
- Deferred Compensation – Average member-only contributions and transfers in of $4 million per month; participant disbursements average of $6.2 million per month; and average Administrative and Investment expenditures of $173 thousand per month (DOR and DRB).

Highlights – On page two, activity for the **one month** of January 2020 only:

- PERS DB Pension – Other Income of $1.2 million from OptumRx EGWP subsidies.
- PERS DB Healthcare – Other Income of $433 thousand from OptumRx EGWP subsidies.
- PERS DC Pension – Other Income of $4 thousand from OptumRx EGWP subsidies.
- All other funds – Nothing significant to report

If you have any questions or comments, please let me know.

**Individual Manager Transactions**

Nov 2019 - Feb 2020

| Asset Class | Total | Internal | External |
|---|---|---|---|
| Broad Domestic Equity (DE) | (292,080,399) | (80,399) | (292,000,000) |
| Global Equity Ex-US (IE) | (201,490,519) | 72,663 | (201,563,182) |
| Fixed Income (FI) | 513,571,022 | 7,841 | 513,563,182 |
| Real Assets (Real) | - | - | - |
| Private Equity (PE) | - | - | - |
| Opportunistic (Opp) | (20,000,104) | (104) | (20,000,000) |
| Total | (0) | (0) | (0) |

| Manager | Total | Internal | External | Fund | Asset Class | Descrption of Large Transactions |
|---|---|---|---|---|---|---|
| ARMB S&P 600 Index | (25,000,000) | - | (25,000,000) | AYGA | DE | Rebalancing |
| ARMB S&P 900 | (242,000,000) | - | (242,000,000) | AY4L | DE | Benefit funding/Rebalancing |
| ARMB Scientific Beta | (25,000,000) | - | (25,000,000) | ALYM | DE | Rebalancing |
| Jennison Associates | (170) | (170) | - | AYGB | DE | |
| Portable Alpha | (41) | (41) | - | AYG2 | DE | |
| Portable Alpha FOF | (29) | (29) | - | AYG1 | DE | |
| Victory Capital Management | (80,160) | (80,160) | - | AYGJ | DE | |
| ARMB Barclays Aggregate Bond Fund | 2,067,849,491 | 1,708,849,491 | 359,000,000 | AY77 | FI | Building new mandate/Rebalancing |
| BlackRock US Debt Index Non-Lending Fund | (13,498,416) | (13,498,416) | - | AY1N | FI | Terminated mandate |
| MacKay Shields | (87,504) | - | (87,504) | AY9P | FI | |
| Short-Term Investment Pool | 155,183,526 | 532,841 | 154,650,686 | AY70 | FI | |
| US Treasury Fixed Income | (1,695,876,075) | (1,695,876,075) | - | AY1A | FI | Terminated mandate |
| Arrowstreet Capital | 95,308,495 | - | 95,308,495 | AYLQ | IE | International Restructure |
| Baillie Gifford | (115,330,449) | (96,394,958) | (18,935,492) | AYLR | IE | International Restructure |
| BlackRock ACWI ex-US IMI | (471,845,961) | (346,263,615) | (125,582,346) | AY6U | IE | International Restructure |
| Brandes Investment Partners | (530,342,907) | (505,964,514) | (24,378,393) | AY65 | IE | International Restructure |
| Capital Group | 76,941,054 | - | 76,941,054 | AY67 | IE | International Restructure |
| DRZ Emerging Markets | (291,415,012) | (291,415,012) | - | AYLG | IE | International Restructure |
| IE State Street Global ADV. | (281,645) | (281,645) | - | AY68 | IE | |
| Lazard Asset Management | (369,013,797) | (345,510,139) | (23,503,659) | AY58 | IE | International Restructure |
| Lazard Asset Management | (51,323,463) | (51,323,463) | - | AY6P | IE | International Restructure |
| Legal and General Dev ex-US | 564,845,301 | - | 564,845,301 | AYLS | IE | International Restructure |
| Legal and General EM | 256,784,173 | - | 256,784,173 | AYLH | IE | International Restructure |
| Mondrian Investment Partners | (146,309,598) | (145,755,669) | (553,929) | AY5B | IE | International Restructure |
| Schroders Investment Management | (145,655,530) | (139,982,236) | (5,673,294) | AY5D | IE | International Restructure |
| SSGA - MSCI World Ex-US IMI Index Fund | 809,781,478 | - | 809,781,478 | AYL7 | IE | International Restructure |
| SSGA MSCI Emerging Markets Index Fund | 513,213,266 | - | 513,213,266 | AYLB | IE | International Restructure |
| Transition Account BlackRock | (396,845,925) | 1,922,963,913 | (2,319,809,838) | AY69 | IE | International Restructure |
| Schroders Insurance Linked Securities | (20,000,000) | - | (20,000,000) | AY1H | Opp | Liquidating |
| Wire from Morgan Stanley Account | (104) | (104) | - | AY4X | Opp | |

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Retirement System Membership Activity as of December 31, 2019 | ACTION: | |
| DATE: | March 19, 2020 | INFORMATION: | **X** |

**BACKGROUND:**

Information related to PERS, TRS, JRS, NGNMRS, SBS, and DCP membership activity as requested by the Board.

**STATUS:**

Membership information as of December 31, 2019.

# ALASKA RETIREMENT MANAGEMENT BOARD

## STAFF REPORT

### Division of Retirement & Benefits Report
### March 19, 2020

---

**Retirement System Membership Activity as of December 31, 2019**

Attached for your information are the membership statistics for the quarter ending

- December 31, 2019

We see net decrease in active members from last quarter, primarily in PERS DCR members:

- PERS Tier 1-3 active members decreased from 11,943 to 11,850 or a decrease of 93.
- PERS DCR active members increased from 22,663 to 23,225 or an increase of 562.
- PERS active members had a net increase of 469.

- TRS Tier 1-2 active members decreased from 4,150 to 4,144 or a decrease of 6.
- TRS DCR active members increased from 6,113 to 6,143 or an increase of 30.
- TRS active members had a net increase of 24.

Retiree counts have changed in the following manner:

- PERS retirees increased from 35,796 to 35,923, or an increase of 127 (all tiers).
- TRS retirees decreased from 13,145 to 13,126, or a decrease of 19 (all tiers).

## MEMBERSHIP STATISTICS AS OF SEPTEMBER 30, 2019

| | PERS | | | | | | TRS | | | | | JRS | NGNMRS | SBS | DCP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DB | | | | DCR | SYSTEM | DB | | | DCR | SYSTEM | | | | |
| | Tier I | Tier II | Tier III | Total | Tier IV | TOTAL | Tier I | Tier II | Total | Tier III | TOTAL | | | | |
| Active Members | 942 | 2,923 | 8,078 | 11,943 | 22,663 | 34,606 | 267 | 3,883 | 4,150 | 6,113 | 10,263 | 71 | n/a | 20,209 | 6,181 |
| Terminated Members | | | | | | | | | | | | | | | |
| Entitled to Future Benefits | 308 | 1,891 | 3,172 | 5,371 | 1,566 | 6,937 | 30 | 646 | 676 | 626 | 1,302 | 2 | n/a | 26,885 | 5,393 |
| Other Terminated Members | 1,053 | 2,092 | 7,566 | 10,711 | 13,729 | 24,440 | 242 | 1,532 | 1,774 | 2,418 | 4,192 | 1 | n/a | n/a | n/a |
| Total Terminated Members | 1,361 | 3,983 | 10,738 | 16,082 | 15,295 | 31,377 | 272 | 2,178 | 2,450 | 3,044 | 5,494 | 3 | n/a | 26,885 | 5,393 |
| Retirees & Beneficiaries | 22,876 | 8,432 | 4,388 | 35,696 | 100 | 35,796 | 10,210 | 2,903 | 13,113 | 32 | 13,145 | 142 | 715 | n/a | n/a |
| Managed Accounts | n/a | n/a | n/a | n/a | 5,752 | 5,752 | n/a | n/a | n/a | 1,528 | 1,528 | n/a | n/a | 2,395 | 2,601 |
| Retirements - 1st QTR FY20 | 84 | 181 | 145 | 410 | 13 | 423 | 63 | 185 | 248 | 9 | 257 | 1 | 15 | n/a | n/a |
| Full Disbursements - 1st QTR FY20 | 21 | 72 | 109 | 202 | 524 | 726 | 5 | 11 | 16 | 111 | 127 | - | n/a | 667 | 189 |
| Partial Disbursements - 1st QTR FY20 | n/a | n/a | n/a | n/a | 99 | 99 | n/a | n/a | n/a | 27 | 27 | n/a | n/a | 1,296 | 617 |

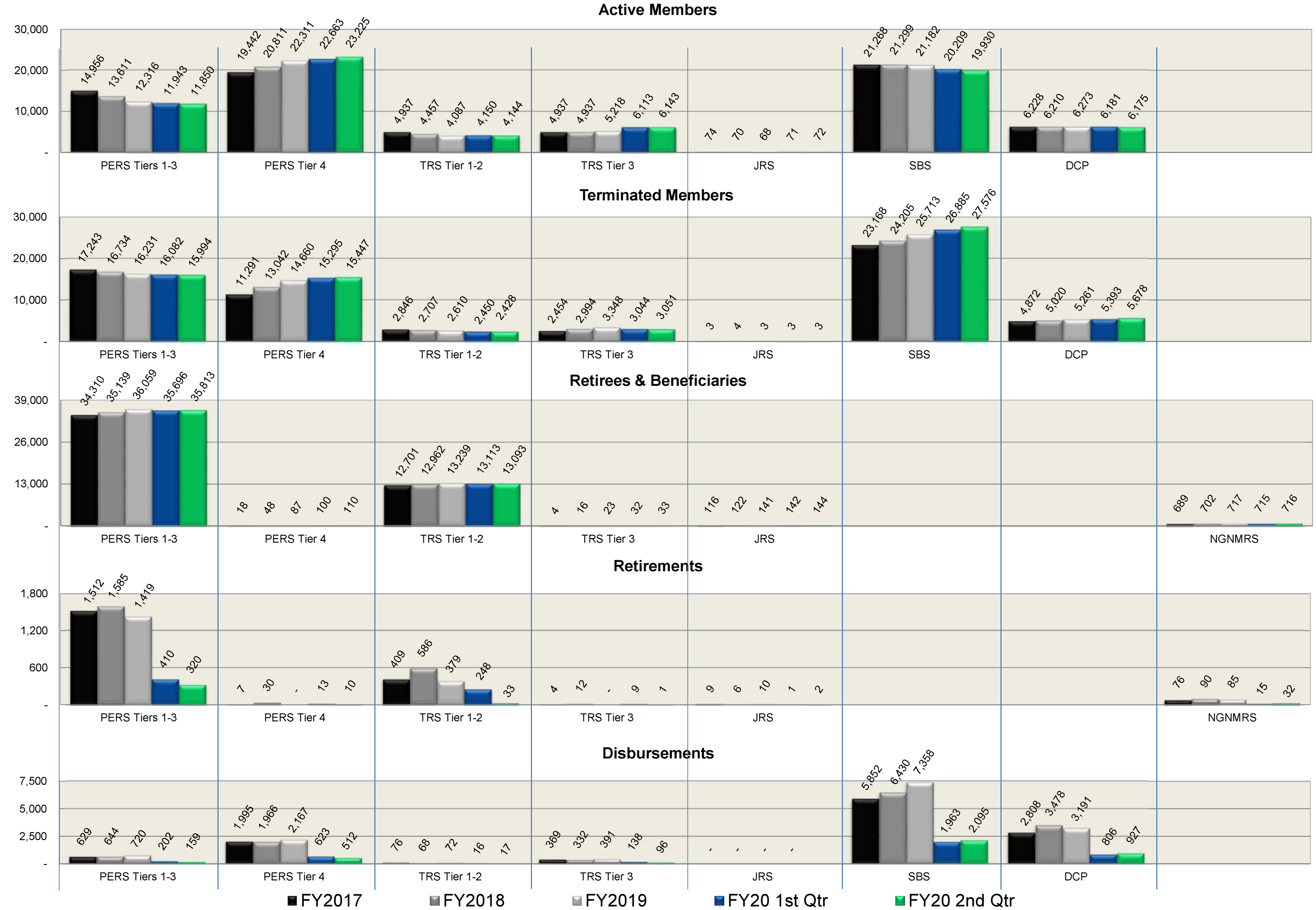
## MEMBERSHIP STATISTICS AS OF DECEMBER 31, 2019

| | PERS | | | | | | TRS | | | | | JRS | NGNMRS | SBS | DCP |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DB | | | | DCR | SYSTEM | DB | | | DCR | SYSTEM | | | | |
| | Tier I | Tier II | Tier III | Total | Tier IV | TOTAL | Tier I | Tier II | Total | Tier III | TOTAL | | | | |
| Active Members | 932 | 2,896 | 8,022 | 11,850 | 23,225 | 35,075 | 264 | 3,880 | 4,144 | 6,143 | 10,287 | 72 | n/a | 19,930 | 6,175 |
| Terminated Members | | | | | | | | | | | | | | | |
| Entitled to Future Benefits | 291 | 1,860 | 3,170 | 5,321 | 1,571 | 6,892 | 29 | 633 | 662 | 614 | 1,276 | 2 | n/a | 27,576 | 5,678 |
| Other Terminated Members | 1,044 | 2,081 | 7,548 | 10,673 | 13,876 | 24,549 | 241 | 1,525 | 1,766 | 2,437 | 4,203 | 1 | n/a | n/a | n/a |
| Total Terminated Members | 1,335 | 3,941 | 10,718 | 15,994 | 15,447 | 31,441 | 270 | 2,158 | 2,428 | 3,051 | 5,479 | 3 | n/a | 27,576 | 5,678 |
| Retirees & Beneficiaries | 22,830 | 8,516 | 4,467 | 35,813 | 110 | 35,923 | 10,167 | 2,926 | 13,093 | 33 | 13,126 | 144 | 716 | n/a | n/a |
| Managed Accounts | n/a | n/a | n/a | n/a | 5,823 | 5,823 | n/a | n/a | n/a | 1,532 | 1,532 | n/a | n/a | 2,565 | 2,793 |
| Retirements - 2nd QTR FY20 | 62 | 136 | 122 | 320 | 10 | 330 | 7 | 26 | 33 | 1 | 34 | 2 | 32 | n/a | n/a |
| Full Disbursements - 2nd QTR FY20 | 17 | 50 | 92 | 159 | 411 | 570 | 3 | 14 | 17 | 67 | 84 | - | n/a | 536 | 206 |
| Partial Disbursements - 2nd QTR FY20 | n/a | n/a | n/a | n/a | 101 | 101 | n/a | n/a | n/a | 29 | 29 | n/a | n/a | 1,559 | 721 |

Alaska Division of Retirement and Benefits

# FY 2020 QUARTERLY REPORT OF MEMBERSHIP STATISTICS

Annual & Quarterly Trends as of December 31, 2019



## LEGEND

**Active Members** - All active members at the time of the data pull,
except SBS & DCP, which are counts of contributors during the final quarter of each period.

**Terminated Members** - All members who have terminated without refunding their account,
except SBS & DCP, which are counts of members with balances at the end of the period less active members.

**Retirees & Beneficiaries** - All members who have retired from the plans, including beneficiaries eligible for benefits.

**Managed Accounts** - Individuals who have elected to participate in the managed accounts option with Empower.

**Retirements** - The number of retirement applications processed.

**Full Disbursements** - All types of disbursements that leave the member balance at zero.

**Partial Disbursements** - All types of disbursements that leave the member balance above zero. If more than one partial disbursement is completed during the quarter for a member, they are counted only once for statistical purposes.

# ALASKA RETIREMENT MANAGEMENT BOARD
## STAFF REPORT
## Division of Retirement & Benefits Report
## March 19, 2020

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**Summary of Monthly Billings – Buck**

Attached for your information are the quarterly payments related to actuarial services provided by the Division's consulting actuary, Buck.

Items listed represent regular and non-regular costs incurred under our current contract.

The listed costs are charged to the System or Plan noted on the column headings.

Summary through the six months ended December 31, 2019

New for this quarter is the GASB valuation reports 67/68/74/75 (PERS/TRS/JRS/NGNMRS).

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Summary of Monthly Billings - Buck | ACTION: | |
| DATE: | March 19, 2020 | INFORMATION: | X |

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…."

As part of the oversight process, the Board has requested that the Division of Retirement & Benefits provide quarterly summary updates to review billings and services provided for actuarial valuations and other systems' request.

STATUS:

Attached are the summary totals for the six months ended December 31, 2019.

**Buck**
**Billing Summary**
**For the Three Months Ended September 30, 2019**

| | PERS | TRS | JRS | NGNMRS | EPORS | AHF | RHF | SBS | DCP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Actuarial valuations | $ 112,879 | 93,380 | 16,948 | 14,876 | - | - | - | - | - | $ 238,083 |
| KPMG audit information request | 6,192 | 2,518 | 45 | 177 | - | - | - | - | - | 8,932 |
| ARMB presentations and meeting attendance | 9,270 | 3,768 | 69 | 265 | - | - | - | - | - | 13,372 |
| FY20 final PERS/TRS contribution rates | 8,780 | 3,563 | - | - | - | - | - | - | - | 12,343 |
| Unfunded liability article | 2,918 | 1,187 | 21 | 87 | - | - | - | - | - | 4,213 |
| FY20 AlaskaCare rates review | - | - | - | - | - | - | 6,786 | - | - | 6,786 |
| EGWP cost savings analysis | 4,951 | 1,813 | 13 | - | - | - | 29 | - | - | 6,806 |
| Actuarial dashboard | 1,576 | 639 | 12 | 45 | - | - | 1,984 | - | - | 4,256 |
| Misc emails and phone calls | 1,129 | 798 | 1 | 53 | - | - | - | - | - | 1,981 |
| **TOTAL** | $ 147,695 | 107,666 | 17,109 | 15,503 | - | - | 8,799 | - | - | $ 296,772 |
| **For the Three Months Ended September 30, 2018** | $ 242,349 | 98,967 | 5,593 | 16,577 | - | - | - | - | - | $ 363,486 |

**For the Three Months Ended December 31, 2019**

| | PERS | TRS | JRS | NGNMRS | EPORS | AHF | RHF | SBS | DCP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Actuarial Valuations | $ 235,644 | 117,925 | 12,465 | 4,013 | - | - | - | - | - | $ 370,047 |
| KPMG audit information request | 1,904 | 774 | 14 | 54 | - | - | - | - | - | 2,746 |
| ARMB presentations and meeting attendance | 27,015 | 10,999 | 200 | 773 | - | - | - | - | - | 38,987 |
| FY20 AlaskaCare rates review | - | - | - | - | - | - | 5,744 | - | - | 5,744 |
| GASB valuation reports 67/68/74/75 (PERS/TRS/JRS/NGNMRS) | 9,761 | 7,717 | 4,484 | 2,882 | - | - | - | - | - | 24,844 |
| EGWP cost savings analysis | 618 | 226 | 2 | - | - | - | 3 | - | - | 849 |
| **TOTAL** | $ 274,942 | 137,641 | 17,165 | 7,722 | - | - | 5,747 | - | - | $ 443,217 |
| **For the Three Months Ended December 31, 2018** | $ 228,137 | 112,943 | 3,183 | 24,064 | - | - | - | - | - | $ 368,327 |

**Summary through the Six Months Ended December 31, 2019**

| | PERS | TRS | JRS | NGNMRS | EPORS | AHF | RHF | SBS | DCP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Actuarial valuations | $ 348,523 | 211,305 | 29,413 | 18,889 | - | - | - | - | - | $ 608,130 |
| KPMG audit information request | 8,096 | 3,292 | 59 | 231 | - | - | - | - | - | 11,678 |
| ARMB presentations and meeting attendance | 36,285 | 14,767 | 269 | 1,038 | - | - | - | - | - | 52,359 |
| FY20 final PERS/TRS contribution rates | 8,780 | 3,563 | - | - | - | - | - | - | - | 12,343 |
| Unfunded liability article | 2,918 | 1,187 | 21 | 87 | - | - | - | - | - | 4,213 |
| FY20 AlaskaCare rates review | - | - | - | - | - | - | 12,530 | - | - | 12,530 |
| GASB valuation reports 67/68/74/75 (PERS/TRS/JRS/NGNMRS) | 9,761 | 7,717 | 4,484 | 2,882 | - | - | - | - | - | 24,844 |
| EGWP cost savings analysis | 5,569 | 2,039 | 15 | - | - | - | 32 | - | - | 7,655 |
| Actuarial dashboard | 1,576 | 639 | 12 | 45 | - | - | 1,984 | - | - | 4,256 |
| Misc emails and phone calls | 1,129 | 798 | 1 | 53 | - | - | - | - | - | 1,981 |
| **TOTAL** | $ 422,637 | 245,307 | 34,274 | 23,225 | - | - | 14,546 | - | - | 739,989 |
| **Summary through the Six Months Ended December 31, 2018** | $ 470,486 | 211,910 | 8,776 | 40,641 | - | - | - | - | - | $ 731,813 |

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Performance of Low Volatility Equity Strategies in Japan | ACTION: | |
| DATE: | March 19-20, 2020 | INFORMATION: | **X** |

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BACKGROUND

At the December 2019 meeting of the Alaska Retirement Management Board (ARMB), Jason Schoup and Melissa Ruffel of Legal & General Investment America (Legal & General) made a presentation entitle "Negative Interest Rates." During the presentation, Mr. Shoup indicated that the performance of low volatility equity factor strategies are correlated with low interest rate environments. A trustee asked if this has historically been the case in Japan, a market that has experienced an extended period of low interest rates. Ms. Ruffel offered to respond more fully to the question in the future.

STATUS

Ms. Ruffel subsequently provided a response: "The Low Vol strategy outperformed the market-cap index in 2016, when the BOJ initially implemented their negative rates policy and in 2018. In 2017 and 2019 it underperformed relative to the market-cap index."

Legal & General provided the attached tables as a reference. *SciBeta Japan Low-Volatility Diversified Multi-Strategy* is a low volatility Japanese equity index provided by Scientific Beta. *SciBeta Japan High-Factor-Intensity Diversified Multi-Beta Multi-Strategy 6-Factor 4-Strategy EW* is a multi-factor Japanese equity index provided by Scientific Beta. *MSCI Japan Net Total Return USD Index* is a Japanese equity market cap-weighted index provided by MSCI.

**Annualized Performance**

| Index | 1 Year | 2 Year | 3 Year | 5 Year | 10 Year | Jul-02 |
|---|---|---|---|---|---|---|
| SciBeta Japan Low-Volatility Diversified Multi-Strategy | 12.68% | 1.94% | 7.58% | 9.48% | 8.62% | 8.31% |
| SciBeta Japan High-Factor-Intensity Diversified Multi-Beta Multi-Strategy 6-Factor 4-Strategy EW | 11.49% | -1.62% | 6.98% | 9.62% | 9.18% | 8.94% |
| MSCI Japan Net Total Return USD Index | 19.61% | 2.08% | 8.92% | 7.70% | 6.59% | 5.07% |

Relative Performance

| Index | 1 Year | 2 Year | 3 Year | 5 Year | 10 Year | Jul-02 |
|---|---|---|---|---|---|---|
| SciBeta Japan Low-Volatility Diversified Multi-Strategy | -6.93% | -0.14% | -1.33% | 1.77% | 2.04% | 3.24% |
| SciBeta Japan High-Factor-Intensity Diversified Multi-Beta Multi-Strategy 6-Factor 4-Strategy EW | -8.12% | -3.70% | -1.94% | 1.92% | 2.60% | 3.87% |
| MSCI Japan Net Total Return USD Index | - | - | - | - | - | - |

**Yearly Performance**

| Index | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SciBeta Japan Low-Volatility Diversified Multi-Strategy | -7.86% | 31.26% | 21.50% | 20.33% | 6.50% | -0.54% | -3.87% | -1.80% | 14.33% | -0.67% | 0.45% | 20.84% | 5.47% | 20.31% | 4.96% | 19.82% | -7.77% | 12.68% |
| SciBeta Japan High-Factor-Intensity Diversified Multi-Beta Multi-Strategy 6-Factor 4-Strategy EW | -7.26% | 38.21% | 22.56% | 24.72% | 5.78% | -2.60% | -7.76% | -0.24% | 17.67% | -0.92% | 0.79% | 24.88% | 3.63% | 21.95% | 6.03% | 26.50% | -13.19% | 11.49% |
| MSCI Japan Net Total Return USD Index | -17.05% | 35.91% | 15.86% | 25.52% | 6.24% | -4.23% | -29.21% | 6.25% | 15.44% | -14.33% | 8.18% | 27.16% | -4.02% | 9.57% | 2.38% | 23.99% | -12.88% | 19.61% |

**Yearly Performance - Relative**

| Index | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SciBeta Japan Low-Volatility Diversified Multi-Strategy | 9.19% | -4.65% | 5.64% | -5.19% | 0.26% | 3.69% | 25.34% | -8.06% | -1.10% | 13.67% | -7.73% | -6.32% | 9.49% | 10.74% | 2.59% | -4.16% | 5.11% | -6.93% |
| SciBeta Japan High-Factor-Intensity Diversified Multi-Beta Multi-Strategy 6-Factor 4-Strategy EW | 9.80% | 2.31% | 6.69% | -0.80% | -0.47% | 1.63% | 21.45% | -6.49% | 2.24% | 13.41% | -7.39% | -2.28% | 7.65% | 12.38% | 3.66% | 2.51% | -0.31% | -8.12% |
| MSCI Japan Net Total Return USD Index | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

Callan

March 19-20, 2020

# ARMB Board Meeting

## Preliminary Investment Performance
## Periods Ended December 31, 2019

**Steve Center, CFA**
Senior Vice President

**Paul Erlendson**
Senior Vice President

# Agenda

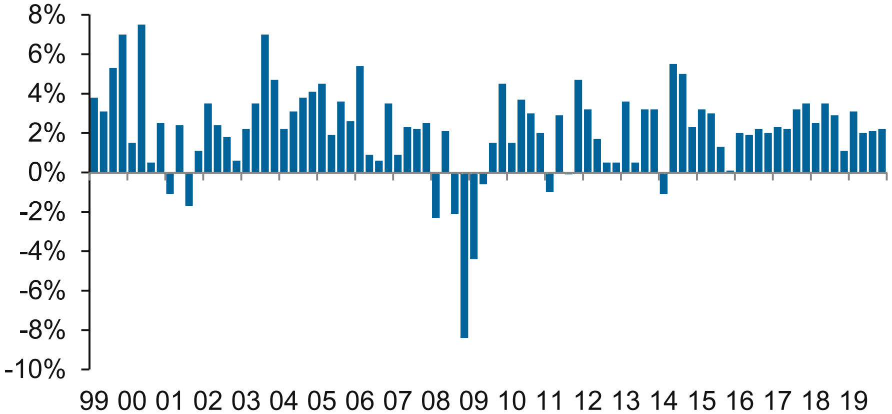
- Market and Economic Environment

- Total Fund Performance
  - Defined Benefit Plans’ Major Asset Classes
  - Participant-Directed Plans

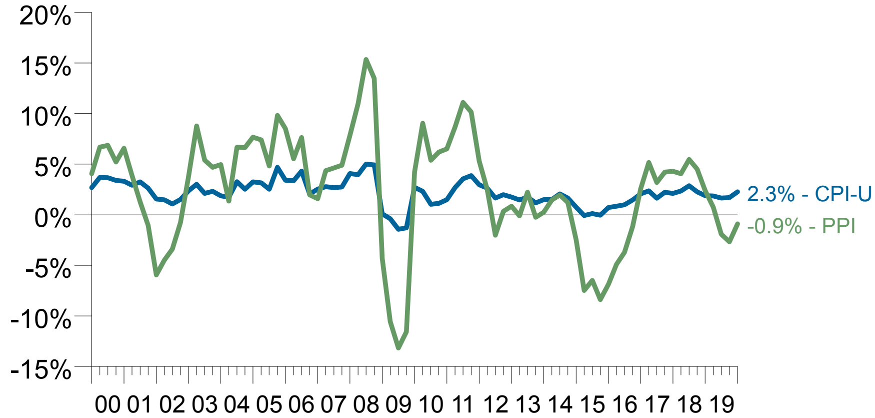
# U.S. Economy—Summary

For periods ended December 31, 2019

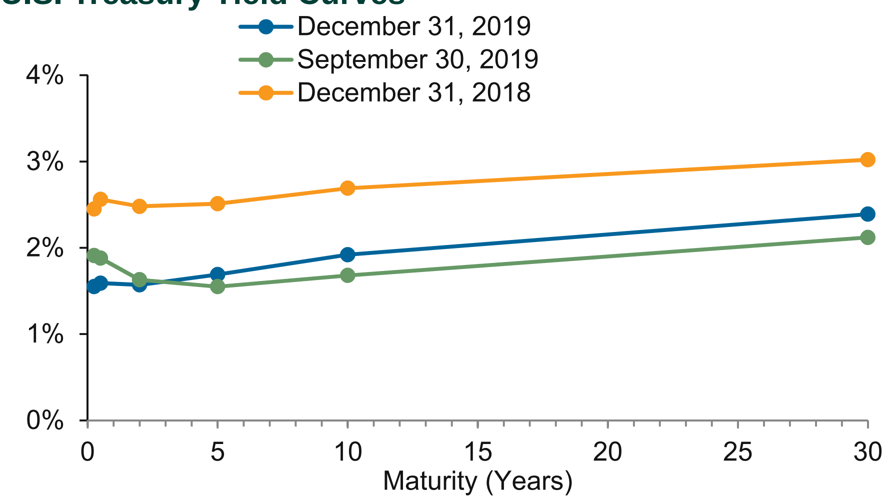
### Quarterly Real GDP Growth



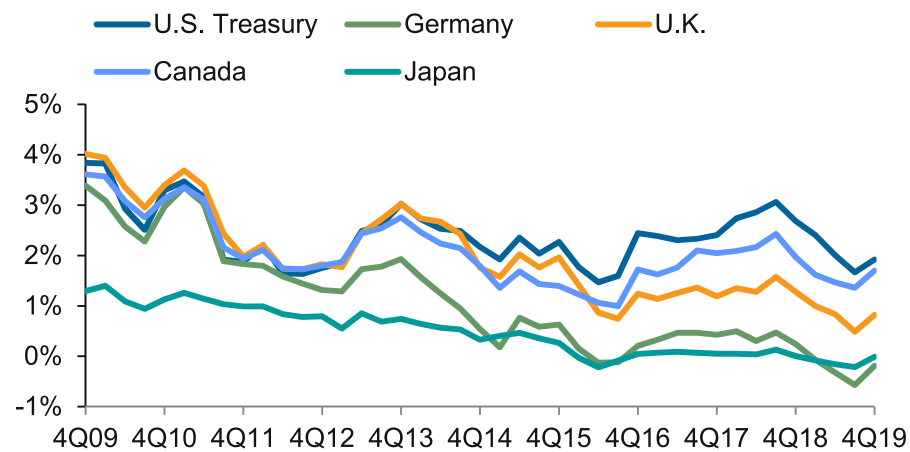

### Inflation Year-Over-Year




### U.S. Treasury Yield Curves




### 10-Year Global Government Bond Yields




Sources: Bloomberg, Bureau of Labor Statistics, Callan

## What does it all mean relative to economic growth?

### Selected Changes in 2020 GDP Growth Forecasts[1]

| | Pre-virus | Latest | Change | | Pre-virus | Latest | Change |
|---|---|---|---|---|---|---|---|
| *Advanced* | *1.2* | *1.0* | *-0.2* | *Emerging* | *3.9* | *2.8* | *-1.1* |
| **US** | 2.0 | 1.8 | -0.2 | **China** | 5.0 | 2.0 | -3.0 |
| **Euro-zone** | 0.7 | 0.5 | -0.2 | **India** | 5.7 | 5.0 | -0.7 |
| **Japan** | -0.2 | -0.5 | -0.3 | **S. Korea** | 2.5 | 1.0 | -1.5 |
| **UK** | 1.0 | 0.8 | -0.2 | **Brazil** | 1.5 | 1.3 | -0.2 |
| **Sweden** | 0.8 | 0.5 | -0.3 | **Mexico** | 0.5 | 0.3 | -0.2 |
| **Switzerland** | 0.8 | 0.5 | -0.3 | **Russia** | 1.8 | 1.5 | -0.3 |
| **Global** | 2.9 | 2.0 | -0.9 | **Turkey** | 4.3 | 3.8 | -0.5 |

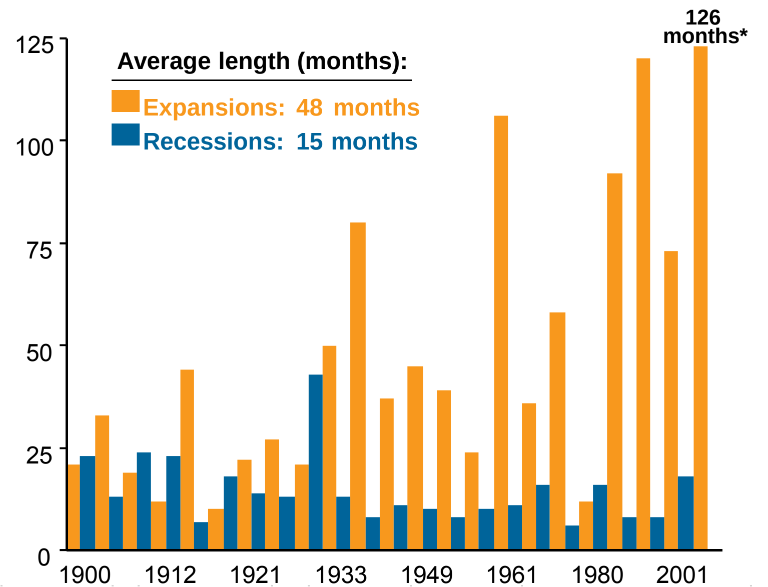
- The immediate impact from the outbreak has been disrupted production and an interruption to supply chains around the world.
- Equity declines cross virtually all markets and are no longer centered on the initial impact regions of China, South Korea and Italy.
- The depth of the decline, while not out of line with other stock market corrections, suggests a potential drop in global GDP .
- Yields for US government bonds have broken through their historic lows. Bond markets signal expectations of central bank easing.
- It is Callan’s belief that the are no reasons for an investor to either abandon or adjust its long-term strategic asset allocation policy.

[1] Refinitiv, Capital Economics

# Expansion Continues, but Not Without Raising Concerns

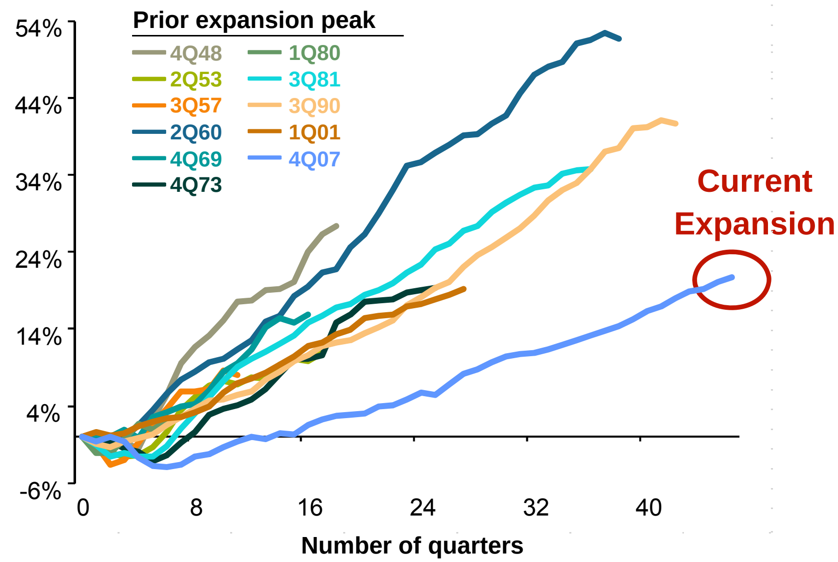
## Expansions do not die of old age, but this one has become the longest

### Length of Economic Expansions and Recessions




### Strength of Economic Expansions

Cumulative real GDP growth since prior peak, percent




- The slow burn in the current expansion has enabled it to continue, at the risk of building back up asset price bubbles.
- The current recovery is now the longest, but also one of the slowest, averaging GDP growth in the U.S. of just 2.2%.
- Inverted yield curves typically suggest the onset of recession; the yield curve inverted mid-2019, but was no longer inverted by the end of the year.
- Long rates did not budge as short rates rose during 2017-18; long rates have since dropped over 100 bps.
- The explanatory power of an inverted yield curve has lessened in the wake of the Global Financial Crisis (GFC) and quantitative easing. Demand on the long end and limited supply are holding down the long end.

Source: JPMorgan Asset Management

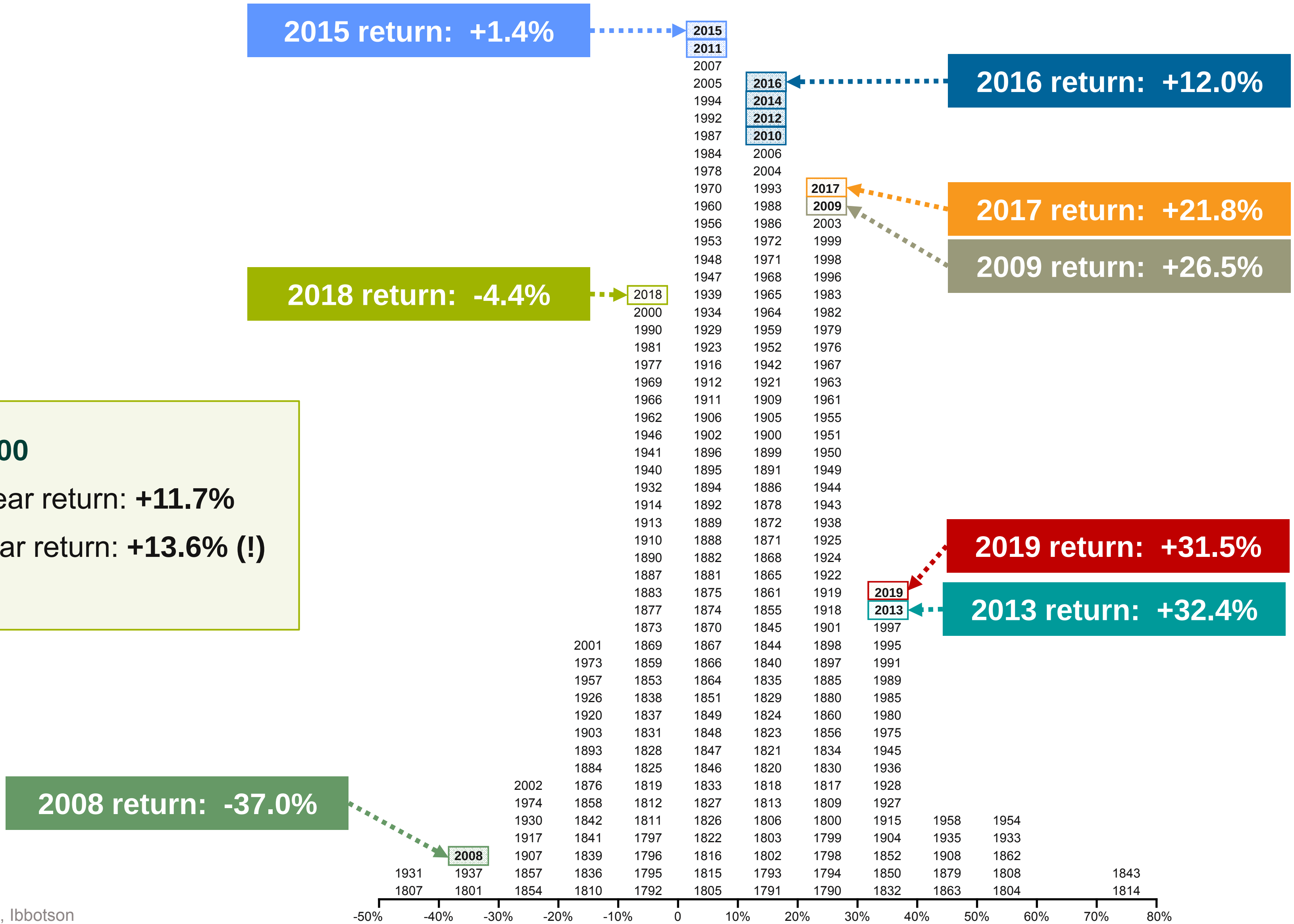
## Asset Class Performance

### Periodic Table of Investment Returns for Periods Ended December 31, 2019

| Best → Worst | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years | Last 20 Years |
|---|---|---|---|---|---|---|
| Best | MSCI:EM Gross 11.9% | S&P:500 31.5% | S&P:500 15.3% | S&P:500 11.7% | S&P:500 13.6% | Russell:Midcap Index **9.0%** |
| | Russell:2000 Index 9.9% | Russell:Midcap Index **30.5%** | Russell:Midcap Index **12.1%** | Russell:Midcap Index **9.3%** | Russell:Midcap Index **13.2%** | Russell:2000 Index 7.6% |
| | S&P:500 9.1% | Russell:2000 Index 25.5% | MSCI:EM Gross 12.0% | Russell:2000 Index 8.2% | Russell:2000 Index 11.8% | MSCI:EM Gross 7.0% |
| | MSCI:EAFE 8.2% | MSCI:EAFE 22.0% | MSCI:EAFE 9.6% | MSCI:EM Gross 6.0% | MSCI:EAFE 5.5% | S&P:500 6.1% |
| | Russell:Midcap Index **7.1%** | MSCI:EM Gross 18.9% | Russell:2000 Index 8.6% | MSCI:EAFE 5.7% | MSCI:EM Gross 4.0% | Blmbg:Aggregate 5.0% |
| | 3 Month T-Bill 0.5% | Blmbg:Aggregate 8.7% | Blmbg:Aggregate 4.0% | Blmbg:Aggregate 3.0% | Blmbg:Aggregate 3.7% | MSCI:EAFE 3.3% |
| Worst | Blmbg:Aggregate 0.2% | 3 Month T-Bill 2.3% | 3 Month T-Bill 1.7% | 3 Month T-Bill 1.1% | 3 Month T-Bill 0.6% | 3 Month T-Bill 1.8% |

# Stock Market Returns by Calendar Year

2019 performance in perspective: History of the U.S. stock market (230 years of returns)




**S&P 500**

Five-year return: **+11.7%**

Ten-year return: **+13.6% (!)**

Sources: Callan, Ibbotson

# U.S. Stock Markets Renew Surge Through Q4 2019

**New record for the S&P 500 reached in Q4 2019.**

– 9% gain in Q4, after slowing to 1.7% in Q3; 31.5% total return for 2019

**Forward valuation jumped to 18.2 in Q4, well above its 25-year average (16.2).**

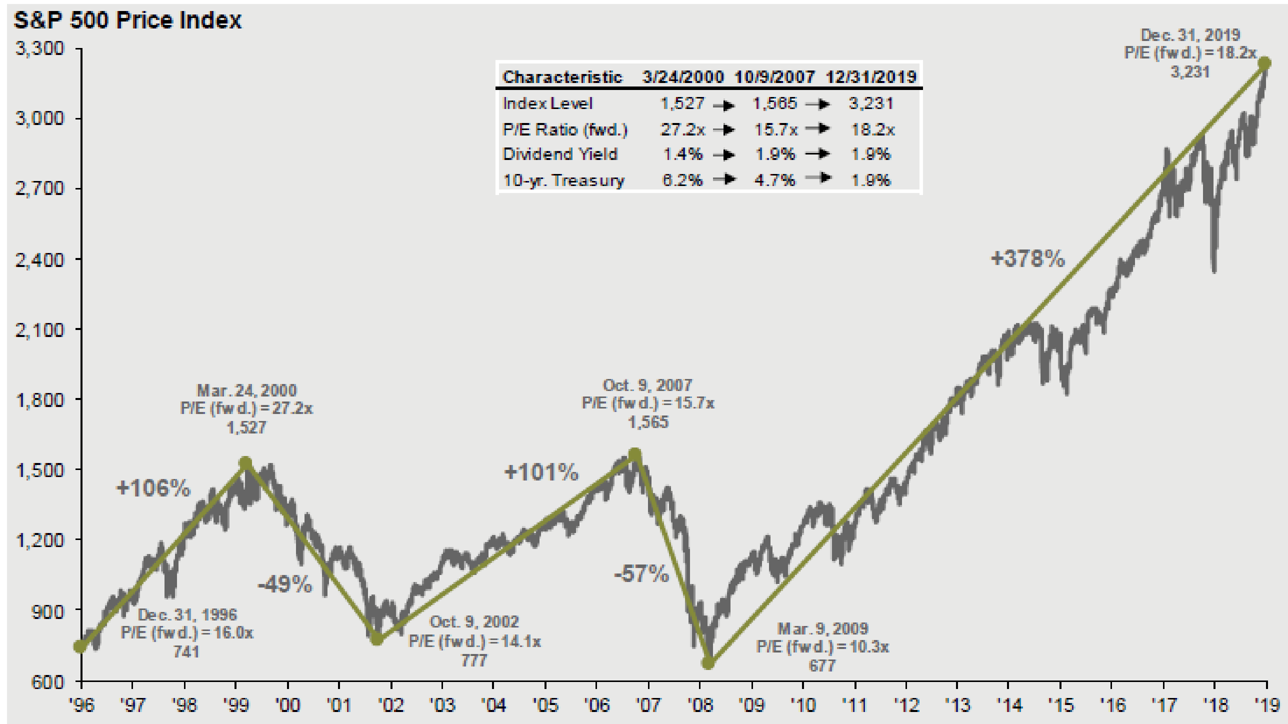
– Still nowhere near the peak set in 2000

**Yield on 10-year Treasury inched back to the level of the dividend yield on stocks.**

– Prior to GFC, Treasury yield typically exceeded that of the stock dividend; two yields were very close for eight years following GFC.

– Gap began to widen with Fed tightening in 2017, but narrowed again in Q2 with reversal of Fed policy.

– Vastly different relationship between stock and bond yields in 2000 and 2007




Source: Compustat, FactSet, Federal Reserve, Standard & Poor's, J.P. Morgan Asset Management.
Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat. Forward price to earnings ratio is a bottom-up calculation based on the most recent S&P 500 Index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns.
*Guide to the Markets – U.S.* Data are as of December 31, 2019.

Source: JPMorgan Asset Management

## U.S. Equity Market

### For periods ended December 31, 2019

- The Russell 1000 Index appreciated 9.0% in the fourth quarter and rose 31.4% for the year
  - R1000 Growth climbed 10.6% in the quarter, while R1000 Value grew 7.4%.
  - The spread between growth and value in large caps for the year was nearly 10% (9.9%)
- For the quarter, small caps outperformed, followed by large cap and finally, mid caps
- For the year, large cap was the best performing followed by mid then small.
  - Growth bested value for all capitalization ranges for the quarter and the year

| Large Cap Equity | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years | Last 15 Years |
|---|---|---|---|---|---|---|
| Russell 1000 Index | 9.0 | 31.4 | 15.0 | 11.5 | 13.5 | 9.1 |
| Russell 1000 Growth | 10.6 | 36.4 | 20.5 | 14.6 | 15.2 | 10.5 |
| Russell 1000 Value | 7.4 | 26.5 | 9.7 | 8.3 | 11.8 | 7.6 |
| Mid Cap Equity | | | | | | |
| Russell Midcap Index | 7.1 | 30.5 | 12.1 | 9.3 | 13.2 | 9.5 |
| Russell Midcap Growth | 8.2 | 35.5 | 17.4 | 11.6 | 14.2 | 10.1 |
| Russell Midcap Value | 6.4 | 27.1 | 8.1 | 7.6 | 12.4 | 8.8 |
| Small Cap Equity | | | | | | |
| Russell 2000 Index | 9.9 | 25.5 | 8.6 | 8.2 | 11.8 | 7.9 |
| Russell 2000 Growth | 11.4 | 28.5 | 12.5 | 9.3 | 13.0 | 8.8 |
| Russell 2000 Value | 8.5 | 22.4 | 4.8 | 7.0 | 10.6 | 6.9 |

# U.S. Equity: Continued Risk-On Environment

## For periods ended December 31, 2019

**Shift away from defensive sectors toward cyclicals**

– Utilities, Real Estate, and Staples took a back seat to cyclically oriented sectors during the fourth quarter.

– Investors harnessed three interest rate cuts, a potential U.S.-China trade armistice, and some clarity around Brexit in the risk-on environment.

**Small caps outpaced large for quarter but lagged on year.**

– Heightened new drug approvals and M&A activity within Health Care's biotech and pharma industries propelled small caps.

– While small cap prevailed in the fourth quarter, large caps led for the third straight year, owing much of the gains to the Tech sector (+50.3%) and Communication Services (+32.7%).

– Apple (+85%) and Microsoft (+54%) hit over $1 trillion in market cap, accounting for 15% of the S&P 500's annual advance.

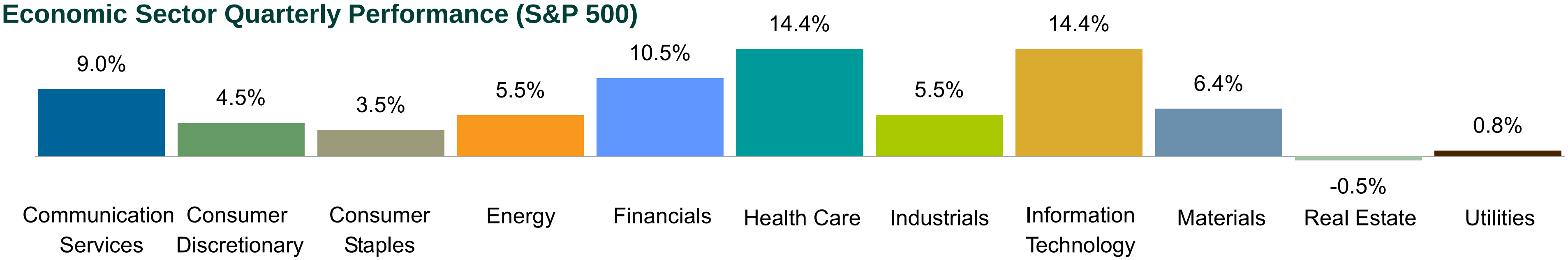
**Growth vs. value**

– Growth continued its dominance over value during the quarter across the market cap spectrum, closing out a decade-long trend supported by a low-rate environment.

### U.S. Equity: Quarterly Returns


### U.S. Equity: One-Year Returns


### Economic Sector Quarterly Performance (S&P 500)




Sources: FTSE Russell, S&P Dow Jones Indices

# Global ex-U.S. Equity Performance

## For periods ended December 31, 2019

**Trade war de-escalation and Brexit clarity turned global ex-U.S. markets positive.**

– The "phase one" trade deal triggered a "risk-on" market environment.

– The Conservative Party gained command of Parliament in December, adding further clarity to the Brexit withdrawal plan and sparking the pound to rally.

– China soared 14.7% with easing trade tensions and expected fiscal and monetary stimulus packages in 2020.

**Trade-related sectors prevailed.**

– Technology, specifically within Asia, fueled the market as trade tensions receded.

– Factor performance favored risk, including beta and volatility, reflecting risk-on market environment.

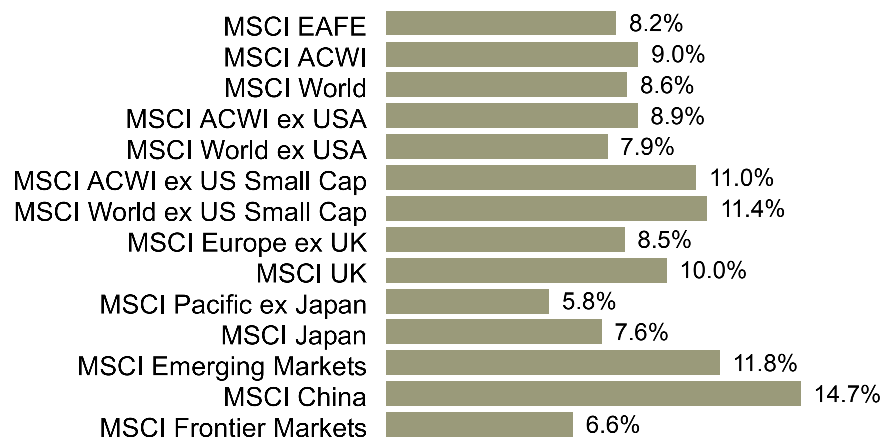
**U.S. dollar vs. other developed and emerging market currencies**

– Major developed and emerging market currencies declined vs. the dollar as optimism replaced market anxiety as the phase one trade deal neared.

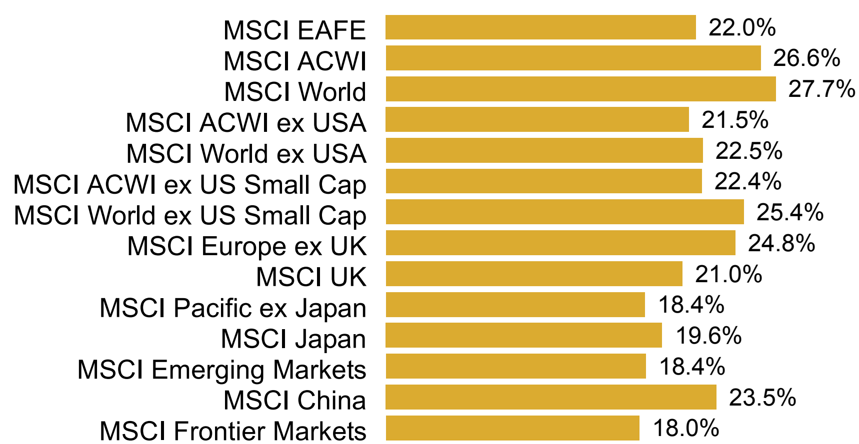
**Growth vs. value**

– Growth continued to outperform value within markets and capitalizations, supported by Technology and Health Care.

### Global Equity: Quarterly Returns




### Global Equity: Annual Returns



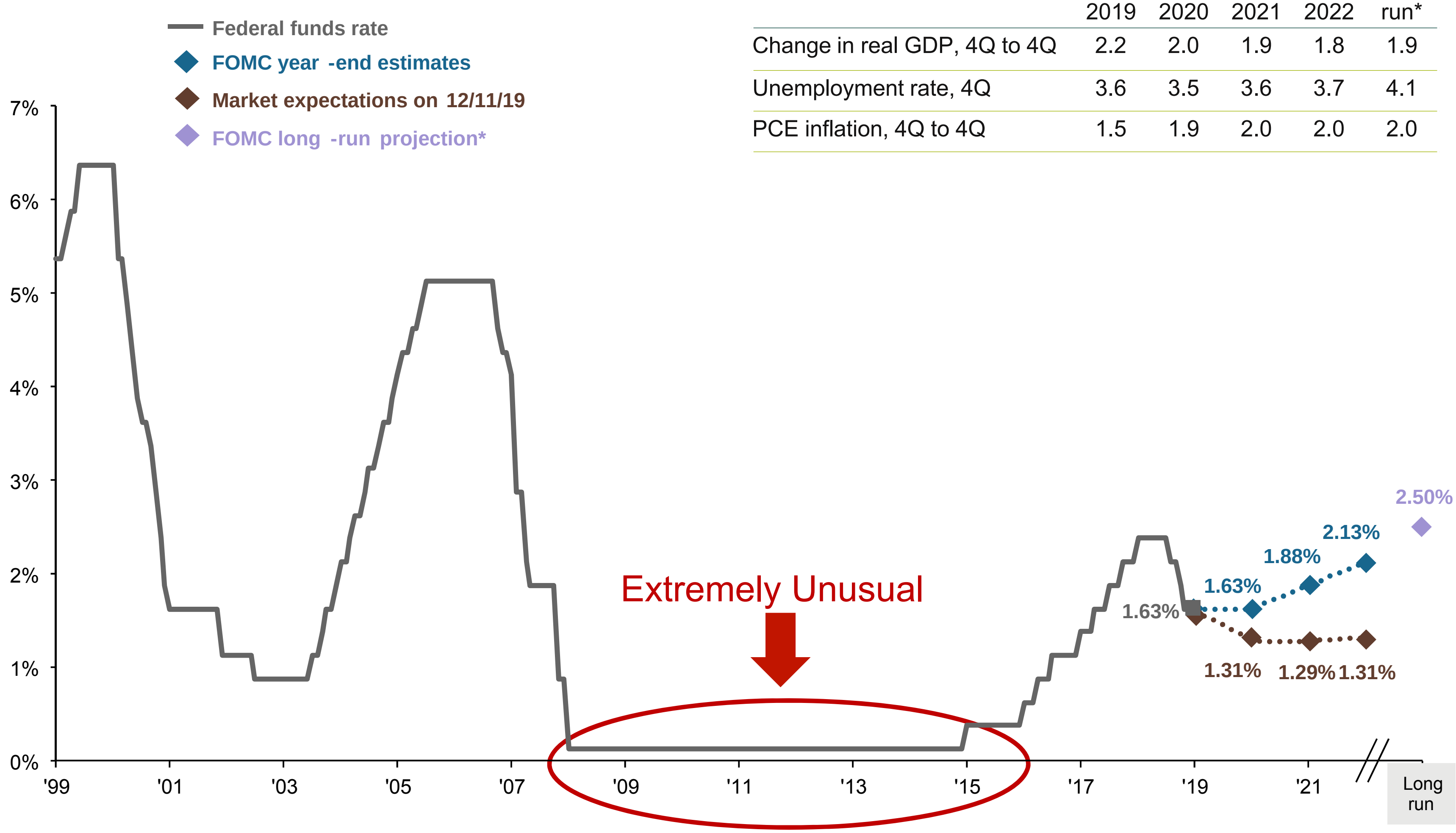

Source: MSCI

# Fed Policy Reversal Upended Fixed Income Market Expectations

## Fed halted interest rate increases in January 2019; cut twice in Q3 and once in Q4 2019

### Federal Funds Rate Expectations

FOMC and market expectations for the fed funds rate




### FOMC December 2019 Forecasts (%)

| | 2019 | 2020 | 2021 | 2022 | Long run* |
|---|---|---|---|---|---|
| Change in real GDP, 4Q to 4Q | 2.2 | 2.0 | 1.9 | 1.8 | 1.9 |
| Unemployment rate, 4Q | 3.6 | 3.5 | 3.6 | 3.7 | 4.1 |
| PCE inflation, 4Q to 4Q | 1.5 | 1.9 | 2.0 | 2.0 | 2.0 |

*Long-run projections are the rates of growth, unemployment, and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy.
Sources: Bloomberg, FactSet, Federal Reserve, JPMorgan Asset Management. *Guide to the Markets – U.S.* Data are as of December 18, 2019.
Market expectations are the federal funds rates priced into the fed futures market as of the date of the December 2019 FOMC meeting and are through December 2022.

# U.S. Fixed Income Performance

## For periods ended December 31, 2019

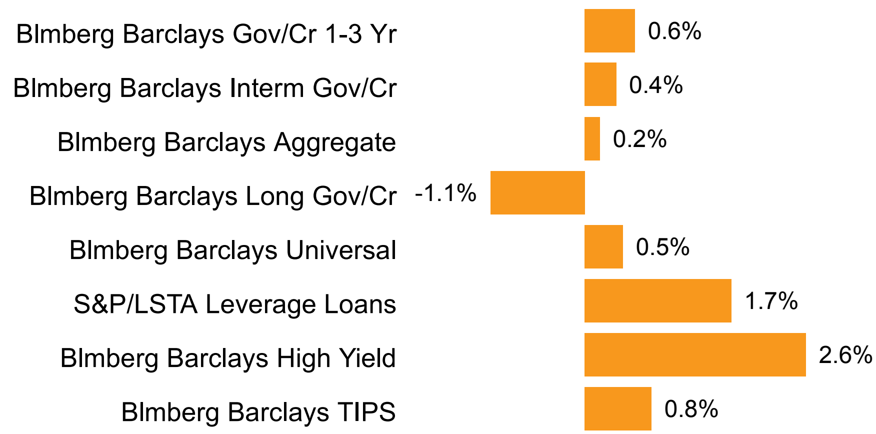
**The yield curve steepened on stronger growth expectations.**

– Treasuries declined 0.8% with the steepening yield curve, with yields falling on short end and rising modestly on intermediate to long end of the curve on stronger economic growth expectations.
– Spread between the 2-year and 10-year Treasuries remained positive, ending the year at 34 bps.
– Long Treasuries fell (-4.1%) as the 30-year yield rose 27 bps to end the year at 2.39% as investors favored risk assets.
– TIPS outperformed nominal Treasuries as inflation expectations rose; 10-year breakeven spread was 1.77% as of quarter-end, up from 1.53% as of Sept. 30.

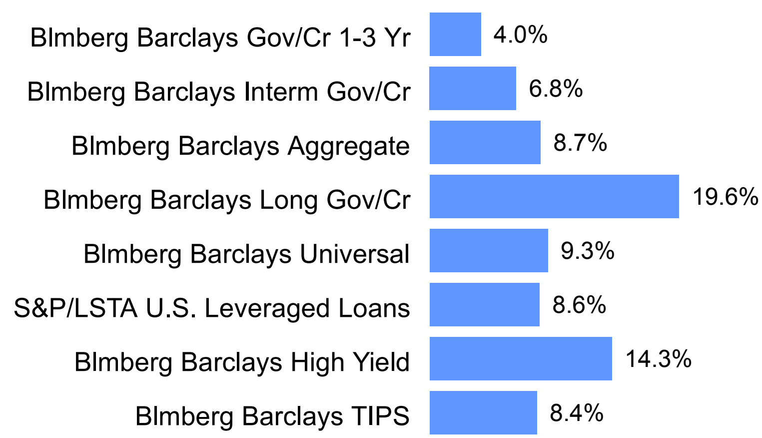
**Corporate bonds rally across credit ratings spectrum.**

– IG corporate spreads narrowed and posted best results within BB US Aggregate amid risk-on market; BBB-rated corporates (+1.7%) outperformed single A or higher (+0.7%), indicating investor willingness to extend risk down the credit spectrum.
– Below-investment grade CCC-rated corporates (+3.7%) outperformed BB-rated corporates (+2.5%), as the risk-on market sentiment spurred demand for lower-rated securities.
– Spreads across credit quality buckets tightened in the fourth quarter, as the market anticipated improvement in credit fundamentals.

### U.S. Fixed Income: Quarterly Returns




### U.S. Fixed Income: Annual Returns




Sources: Bloomberg Barclays, S&P Dow Jones Indices

# U.S. Real Estate

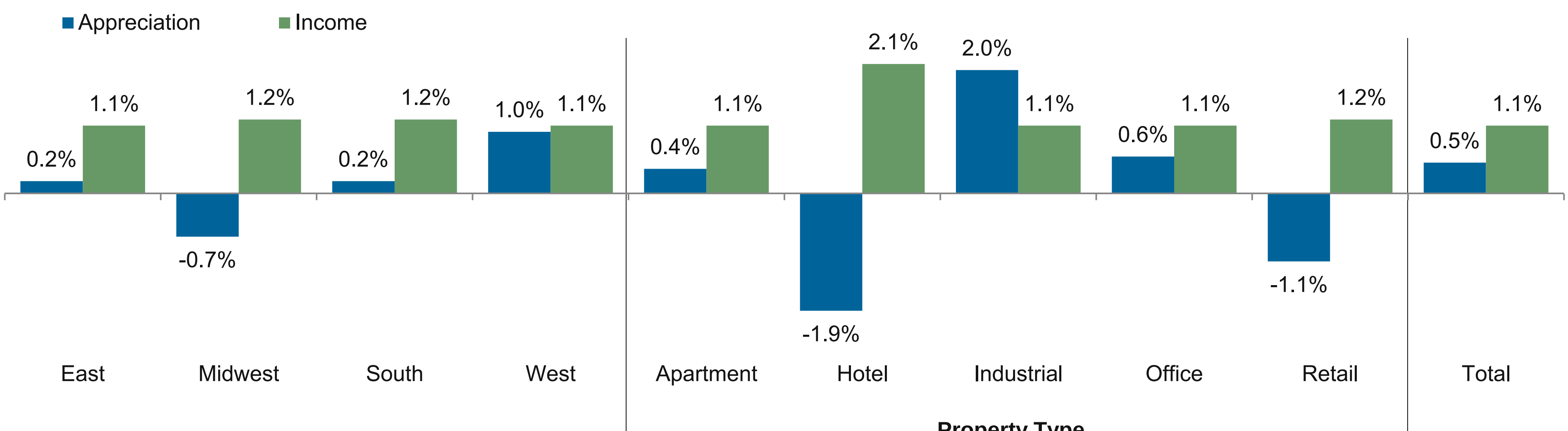
## For periods ended December 31, 2019

**Returns continue to moderate.**

– U.S. core real estate returns continue to be driven by income, with limited appreciation this late in the cycle.
– Returns coming from net operating income (NOI) growth rather than further cap rate compression
– Industrial real estate keeps outperforming other property types.
– Retail continues to show signs of depreciation.
– Defensive posturing and disciplined asset acquisitions are key.

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 7 Years |
|---|---|---|---|---|---|
| NCREIF ODCE | 1.3% | 4.4% | 6.1% | 8.0% | 9.2% |
| Appreciation | 0.5% | 1.1% | 2.8% | 4.4% | 5.4% |
| Income | 0.8% | 3.3% | 3.3% | 3.5% | 3.7% |
| NCREIF Property Index | 1.6% | 6.4% | 6.7% | 8.3% | 9.1% |
| Appreciation | 0.5% | 1.8% | 2.0% | 3.4% | 4.1% |
| Income | 1.1% | 4.5% | 4.6% | 4.7% | 4.9% |

### NCREIF Property Index Returns by Region and Property Type



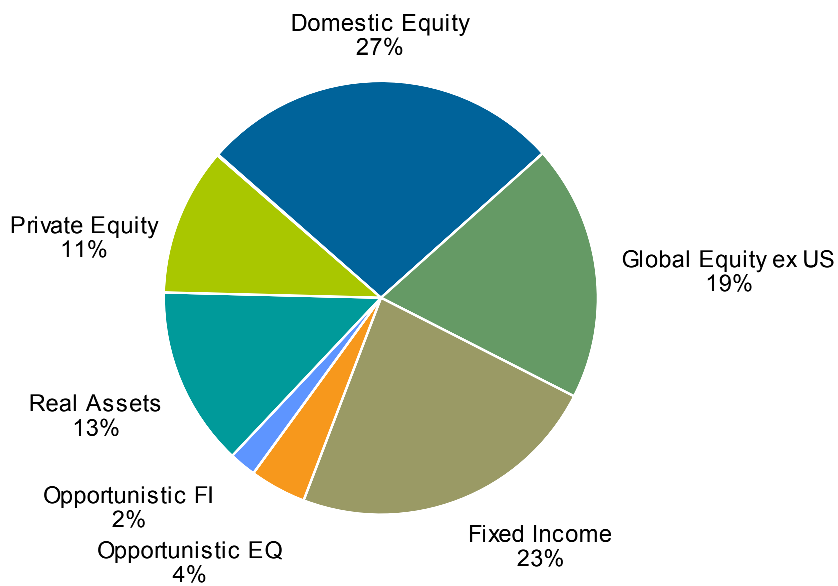

Source: NCREIF

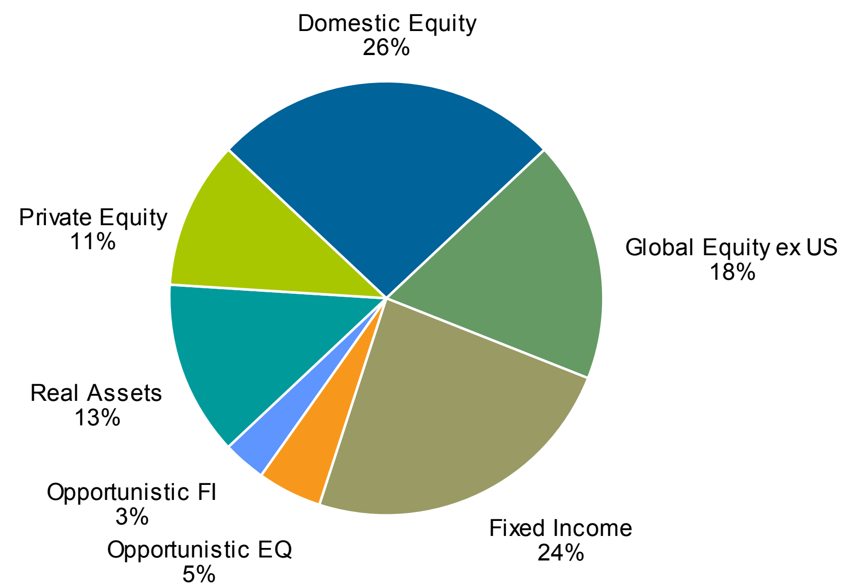
Callan

# Pension Plan

# Asset Allocation – Public Employees' Retirement System

Quarter Ending December 31, 2019




| Asset Class | $000s Actual | Weight Actual | Target | Percent Difference | $000s Difference |
|---|---|---|---|---|---|
| Domestic Equity | 2,666,882 | 26.9% | 26.0% | 0.9% | 93,316 |
| Global Equity ex US | 1,891,282 | 19.1% | 18.0% | 1.1% | 109,582 |
| Fixed Income | 2,309,943 | 23.3% | 24.0% | (0.7%) | (65,657) |
| Opportunistic EQ | 418,880 | 4.2% | 4.8% | (0.6%) | (56,240) |
| Opportunistic FI | 194,166 | 2.0% | 3.2% | (1.2%) | (122,580) |
| Real Assets | 1,327,402 | 13.4% | 13.0% | 0.4% | 39,629 |
| Private Equity | 1,089,777 | 11.0% | 11.0% | 0.0% | (30) |
| Total | 9,898,332 | 100.0% | 100.0% | | |

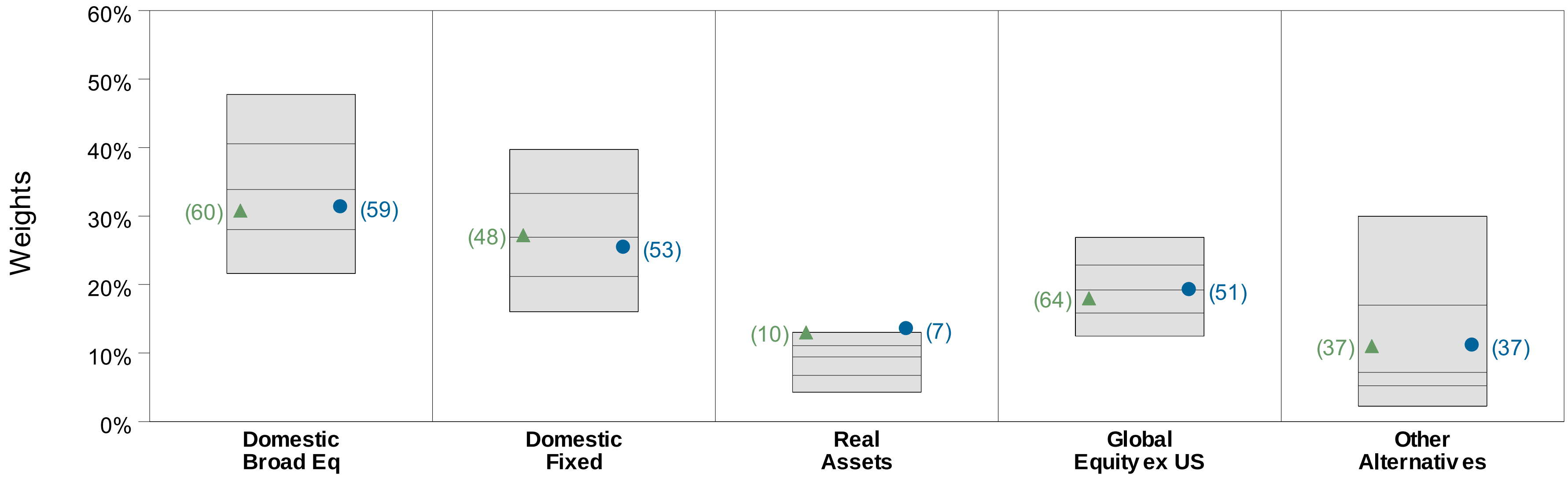
**PERS is used as illustrative throughout the presentation.**

**The other plans exhibit similar modest and understandable variations from strategic target allocations.**

# Asset Allocation vs. Public Funds (PERS)

## Callan Public Fund Database

### Asset Class Weights vs Callan Public Fund Sponsor Database




| | Domestic Broad Eq | Domestic Fixed | Real Assets | Global Equity ex US | Other Alternatives |
|---|---|---|---|---|---|
| 10th Percentile | 47.76 | 39.71 | 13.03 | 26.90 | 29.96 |
| 25th Percentile | 40.55 | 33.32 | 11.07 | 22.85 | 17.00 |
| Median | 33.89 | 26.91 | 9.43 | 19.21 | 7.18 |
| 75th Percentile | 28.01 | 21.17 | 6.76 | 15.84 | 5.22 |
| 90th Percentile | 21.60 | 16.03 | 4.27 | 12.48 | 2.24 |
| **Fund** ● | 31.17 | 25.30 | 13.41 | 19.11 | 11.01 |
| Target ▲ | 30.79 | 27.19 | 13.01 | 18.00 | 11.01 |

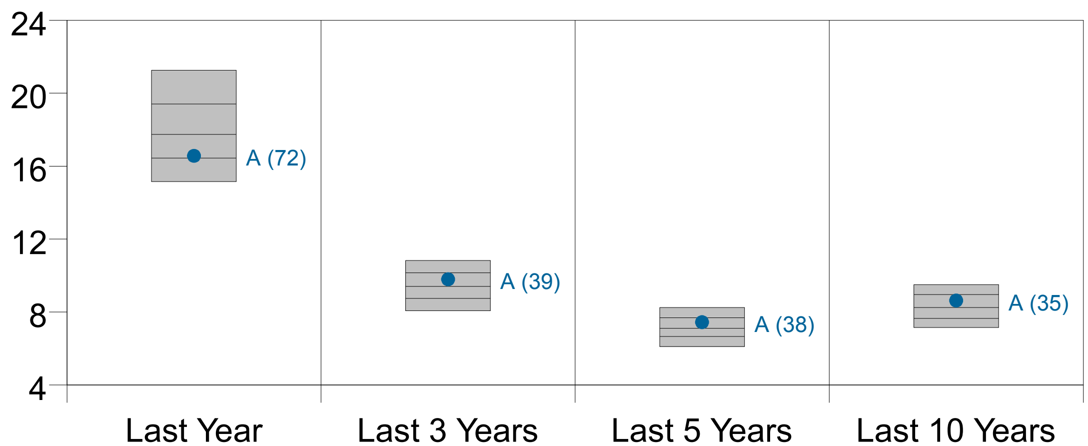
- Asset class weights are in line with their targets given the recent change to the asset allocation and the associated rebalancing. Fixed income is now in line with the “average” weighting of other public funds after being historically underweight by a wide margin.
- Weightings to real assets and alternatives remain high relative to other public funds.

*Note that “Other Alternatives” represents private equity

# Total Fund Return vs Public Funds (PERS)

## Callan Public Fund Database

Returns
for Periods Ended December 31, 2019
Group: Callan Public Fund Sponsor Database



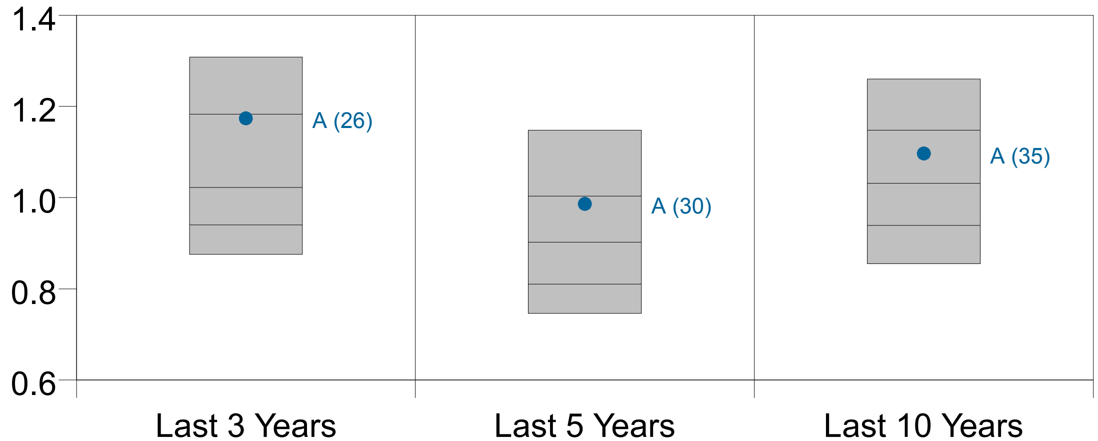

| | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | 21.27 | 10.83 | 8.25 | 9.51 |
| 25th Percentile | 19.41 | 10.16 | 7.69 | 8.96 |
| Median | 17.75 | 9.40 | 7.11 | 8.25 |
| 75th Percentile | 16.45 | 8.75 | 6.66 | 7.65 |
| 90th Percentile | 15.16 | 8.08 | 6.10 | 7.15 |
| Member Count | 210 | 209 | 209 | 189 |
| PERS - Total Fund ● A | 16.57 | 9.80 | 7.45 | 8.63 |

- Despite the recent change to the asset allocation, longer-term performance reflects ARMB’s prior orientation toward capital growth as opposed to income generation.
- It is worth noting that the Funds’ lower weighting to Domestic Equity compared to Public Fund peers will reflect relative return rankings versus that peer group based on domestic equity results.

# Total Fund Sharpe Ratio Rankings vs Public Funds (PERS)

## Callan Public Fund Database

Sharpe Ratio
for Periods Ended December 31, 2019
Group: Callan Public Fund Sponsor Database

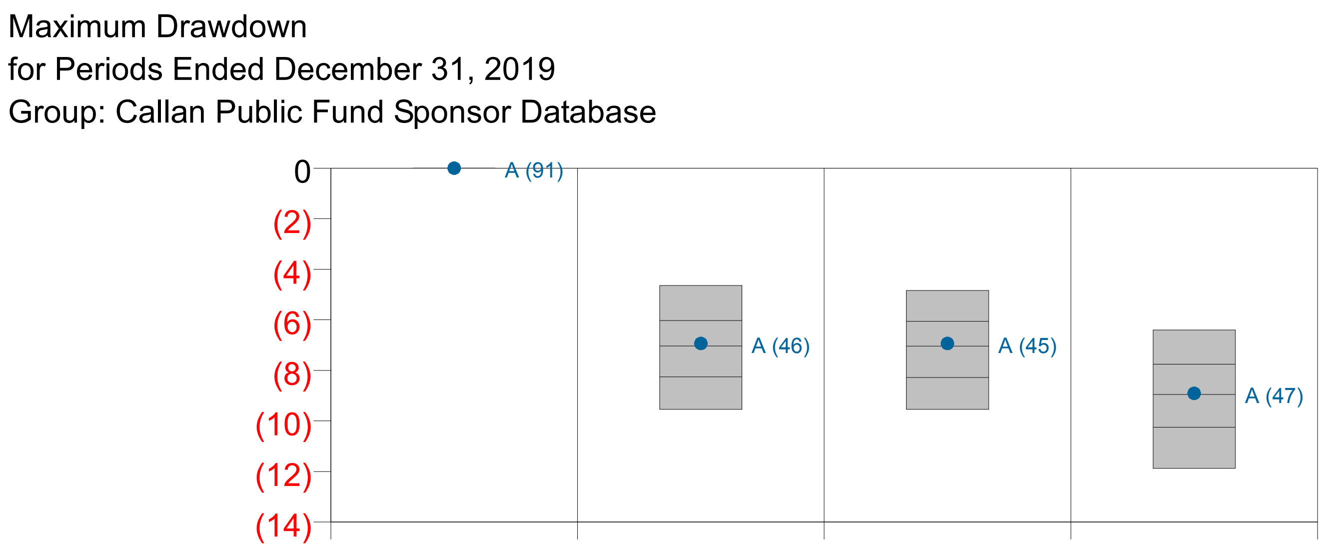



| | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|
| 10th Percentile | 1.31 | 1.15 | 1.26 |
| 25th Percentile | 1.18 | 1.00 | 1.15 |
| Median | 1.02 | 0.90 | 1.03 |
| 75th Percentile | 0.94 | 0.81 | 0.94 |
| 90th Percentile | 0.88 | 0.75 | 0.86 |
| Member Count | 209 | 209 | 189 |
| PERS - Total Fund ● A | 1.17 | 0.99 | 1.10 |

- Sharpe ratio is a risk-adjusted measure of return.
- ARMB's risk-adjusted return (Sharpe ratio) was above the Public Funds median for the three-, five-, and 10-year periods.

# Total Maximum Drawdown Rankings vs Public Funds (PERS)

## Callan Public Fund Database




| | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | 0.00 | (4.64) | (4.84) | (6.40) |
| 25th Percentile | 0.00 | (6.02) | (6.05) | (7.75) |
| Median | 0.00 | (7.03) | (7.04) | (8.95) |
| 75th Percentile | 0.00 | (8.25) | (8.28) | (10.25) |
| 90th Percentile | 0.00 | (9.54) | (9.54) | (11.87) |
| Member Count | 210 | 209 | 209 | 189 |
| PERS - Total Fund ● A | 0.00 | (6.93) | (6.93) | (8.90) |

- "Maximum drawdown" is a measure of the largest loss from peak to trough in a given period.
- Lower rankings reflect larger drawdowns (i.e. bigger losses). ARMB had ranked below-median over the five- and 10-year periods but now ranks above median for all trailing periods shown.
- Drawdowns in the three and five years reflect performance during the fourth quarter of 2018.

## Standard Deviation Ranking vs Public Funds (PERS)

### Callan Public Fund Database

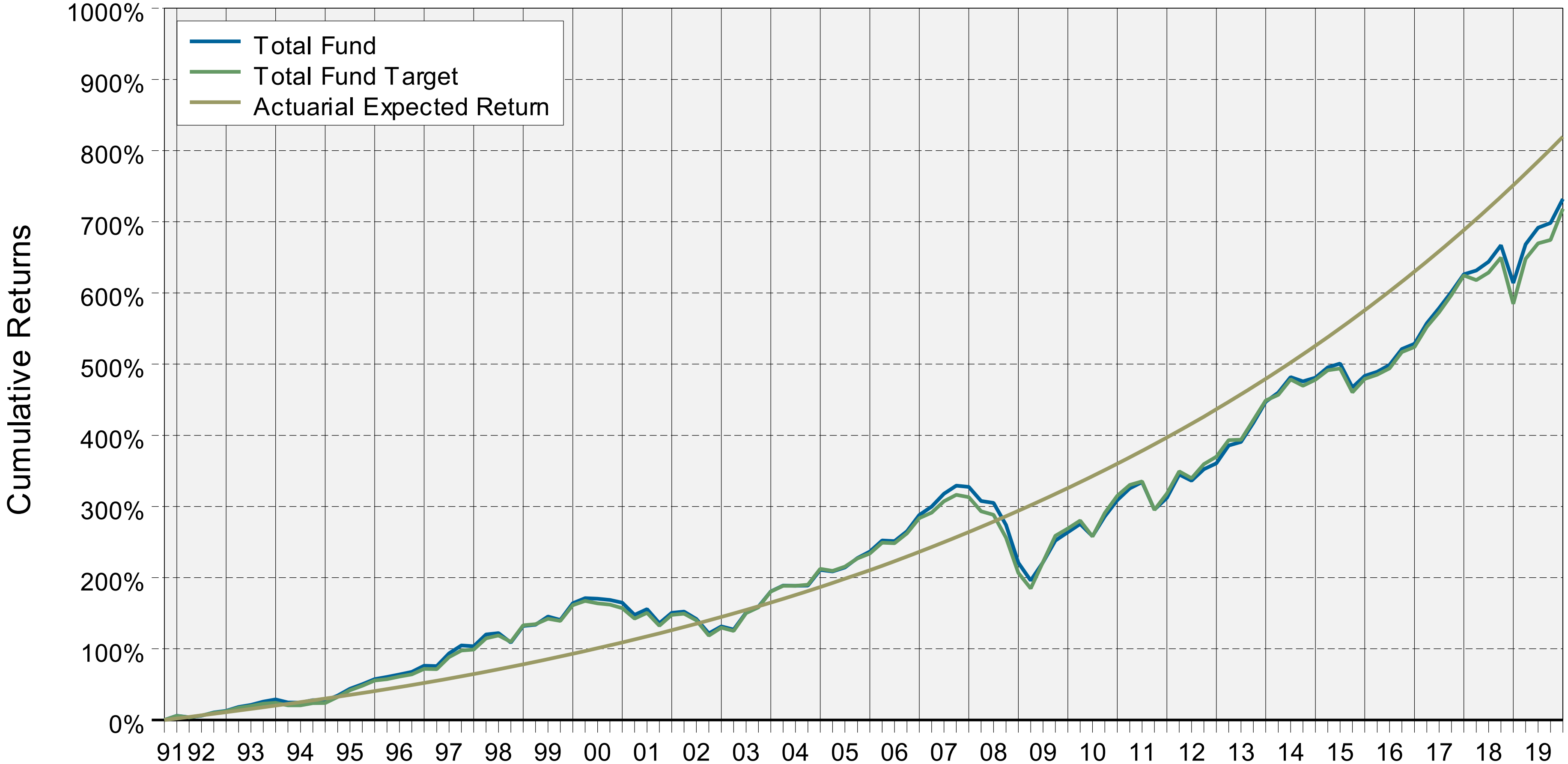
Standard Deviation
for Periods Ended December 31, 2019
Group: Callan Public Fund Sponsor Database


| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | 9.16 | 8.12 | 9.22 |
| 25th Percentile | | 8.19 | 7.38 | 8.37 |
| Median | | 7.30 | 6.55 | 7.56 |
| 75th Percentile | | 6.57 | 6.02 | 6.57 |
| 90th Percentile | | 5.59 | 5.33 | 5.92 |
| Member Count | | 209 | 209 | 189 |
| PERS - Total Fund | ● A | 6.93 | 6.46 | 7.34 |

- “Standard deviation” measures variability of returns. It is one measurement of investment risk.
- Less standard deviation results in lower rankings. A lower ranking of standard deviation is good.
- ARMB’s portfolio diversification has resulted in volatility that is lower than median compared to peers.

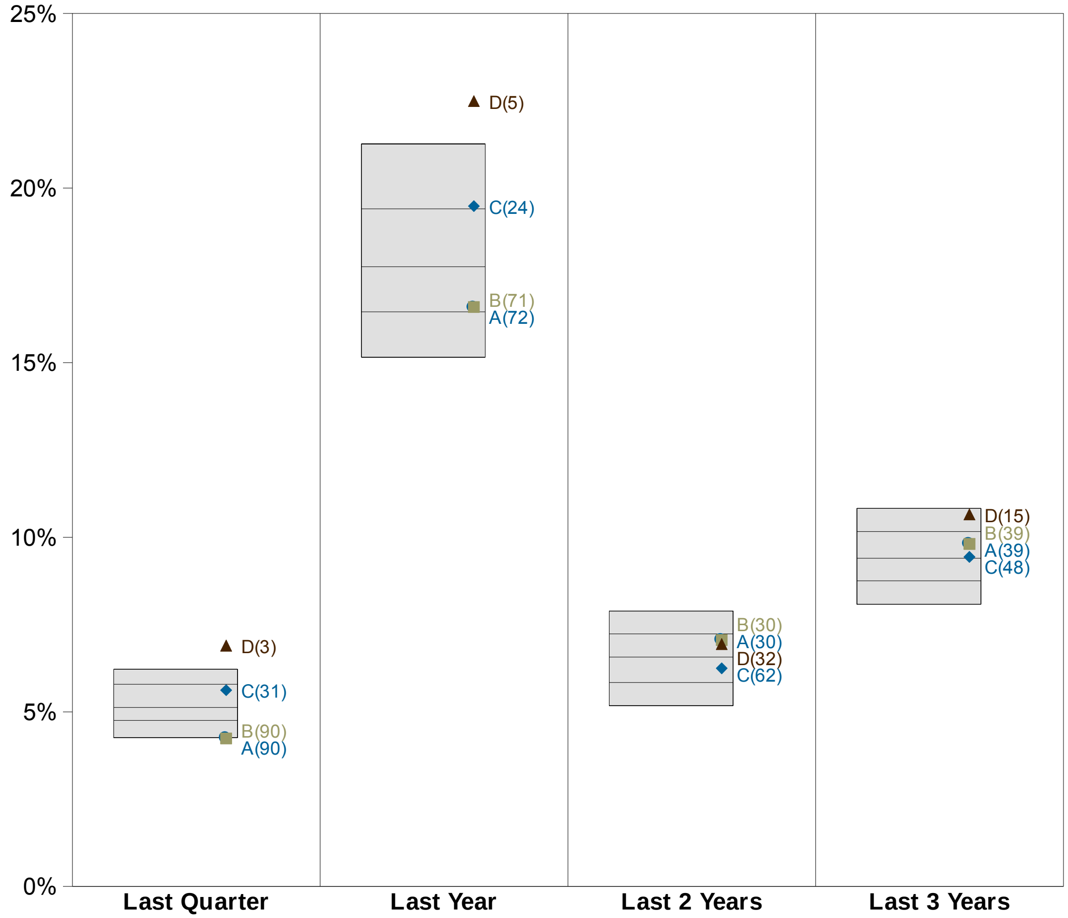
# PERS Long-Term Total Fund Performance as of 12/31/19

## Cumulative Returns Actual vs Target




- Each Fund has two targets: the asset allocation policy return and the actuarial return.
- Total Fund returns continue to closely track the strategic allocation target.
- Setbacks in 3Q15 and 4Q18 have hindered the Total Fund's progress toward closing the gap versus the actuarial return following the Global Financial Crisis of 2008/2009.

# Annualized Total Fund Returns as of 12/31/19

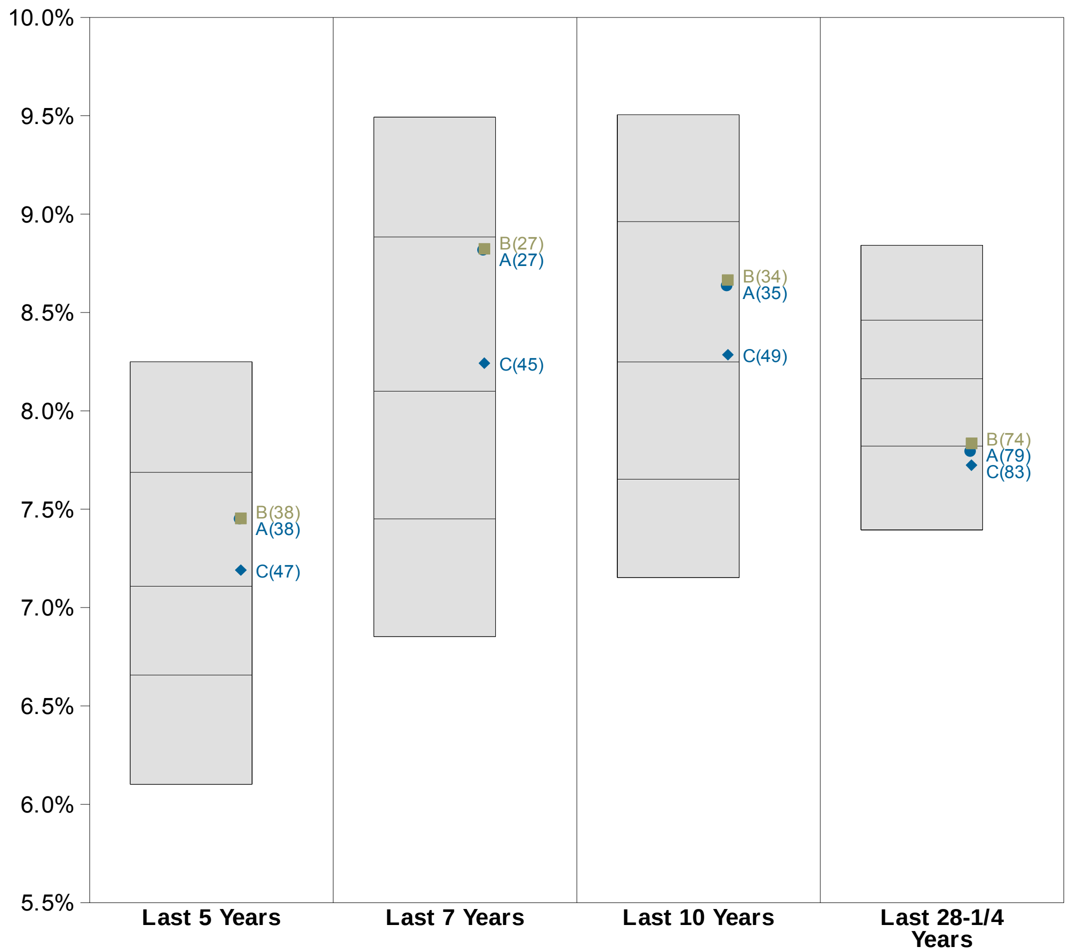



| | Last Quarter | Last Year | Last 2 Years | Last 3 Years |
|---|---|---|---|---|
| 10th Percentile | 6.22 | 21.27 | 7.89 | 10.83 |
| 25th Percentile | 5.79 | 19.41 | 7.24 | 10.16 |
| Median | 5.13 | 17.75 | 6.57 | 9.40 |
| 75th Percentile | 4.75 | 16.45 | 5.84 | 8.75 |
| 90th Percentile | 4.26 | 15.16 | 5.18 | 8.08 |
| PERS Total Plan ● A | 4.24 | 16.57 | 7.05 | 9.80 |
| TRS Total Plan ■ B | 4.24 | 16.59 | 7.06 | 9.81 |
| Target Index ◆ C | 5.62 | 19.49 | 6.25 | 9.44 |
| Public Market Proxy ▲ D | 6.90 | 22.49 | 6.94 | 10.66 |

- PERS and TRS have outperformed their target for the last two-year and three-year periods.
- PERS 4th quarter performance trailed the target meaningfully, underperforming by 138 basis points. Underperformance in Domestic Equity, Opportunistic, and Private Equity were the primary detractors.

The Public Market Proxy consists of 45% Russell 3000 Index, 30% MSCI ACWI ex US IMI (Net), and 25% Bloomberg Aggregate Index.

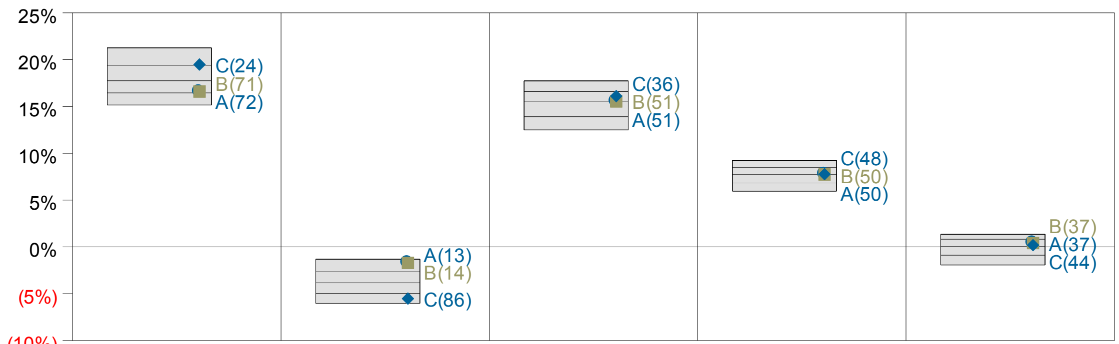
# Longer-Term Total Fund Returns as of 12/31/19



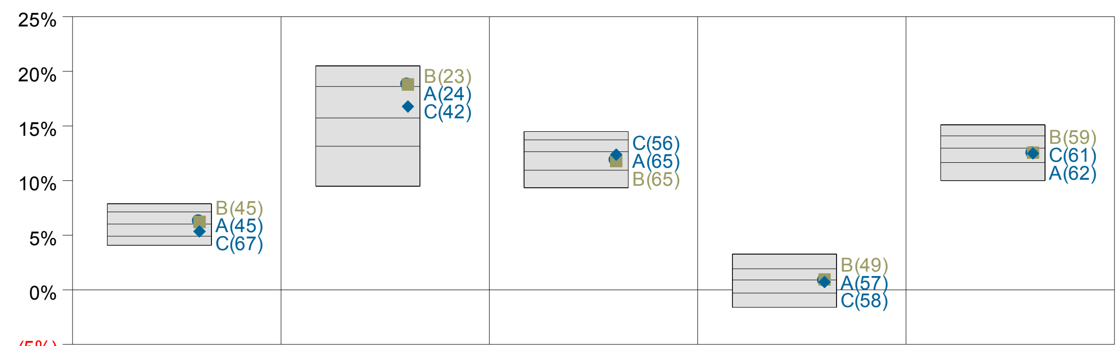

| | | Last 5 Years | Last 7 Years | Last 10 Years | Last 28-1/4 Years |
|---|---|---|---|---|---|
| 10th Percentile | | 8.25 | 9.49 | 9.51 | 8.84 |
| 25th Percentile | | 7.69 | 8.88 | 8.96 | 8.46 |
| Median | | 7.11 | 8.10 | 8.25 | 8.16 |
| 75th Percentile | | 6.66 | 7.45 | 7.65 | 7.82 |
| 90th Percentile | | 6.10 | 6.85 | 7.15 | 7.39 |
| PERS Total Plan | ● A | 7.45 | 8.81 | 8.63 | 7.79 |
| TRS Total Plan | ■ B | 7.45 | 8.82 | 8.67 | 7.83 |
| Target Index | ◆ C | 7.19 | 8.24 | 8.29 | 7.72 |

- Five-, seven-, and ten-year performance is above target and median.
- 28¼ year return for PERS beats the target by seven basis points.

# Calendar Period Total Fund Performance




| | | 2019 | 2018 | 2017 | 2016 | 2015 |
|---|---|---|---|---|---|---|
| 10th Percentile | | 21.27 | (1.32) | 17.74 | 9.24 | 1.34 |
| 25th Percentile | | 19.41 | (2.67) | 16.59 | 8.49 | 0.83 |
| Median | | 17.75 | (3.85) | 15.56 | 7.71 | 0.03 |
| 75th Percentile | | 16.45 | (4.95) | 13.92 | 6.82 | (0.89) |
| 90th Percentile | | 15.16 | (6.02) | 12.49 | 5.95 | (1.94) |
| PERS Total Plan | ● A | 16.57 | (1.70) | 15.52 | 7.74 | 0.40 |
| TRS Total Plan | ■ B | 16.59 | (1.70) | 15.54 | 7.74 | 0.41 |
| Target Index | ◆ C | 19.49 | (5.53) | 16.11 | 7.77 | 0.18 |




| | | 2014 | 2013 | 2012 | 2011 | 2010 |
|---|---|---|---|---|---|---|
| 10th Percentile | | 7.88 | 20.49 | 14.49 | 3.27 | 15.10 |
| 25th Percentile | | 7.13 | 18.61 | 13.73 | 1.93 | 14.09 |
| Median | | 6.02 | 15.74 | 12.66 | 0.91 | 12.97 |
| 75th Percentile | | 4.92 | 13.14 | 10.96 | (0.30) | 11.65 |
| 90th Percentile | | 4.08 | 9.49 | 9.34 | (1.59) | 10.00 |
| PERS Total Plan | ● A | 6.22 | 18.74 | 11.81 | 0.77 | 12.45 |
| TRS Total Plan | ■ B | 6.22 | 18.79 | 11.79 | 0.95 | 12.55 |
| Target Index | ◆ C | 5.35 | 16.78 | 12.38 | 0.72 | 12.49 |

- PERS ranks above median in four and TRS ranks above median in five of the 10 periods shown.
- Peer group range of returns during 2016, 2015, and 2014 were very tight.
- Wide range of peer group returns during calendar 2013 due to varying fixed-income allocations within the Public Fund universe.

# Total Domestic Equity through 12/31/19

## Performance vs Public Fund - Domestic Equity (Gross)


| | | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | | 9.48 | 32.26 | 15.47 | 11.73 | 11.71 | 13.79 |
| 25th Percentile | | 9.24 | 31.38 | 14.73 | 11.26 | 11.29 | 13.46 |
| Median | | 9.02 | 30.57 | 13.97 | 10.83 | 10.81 | 13.20 |
| 75th Percentile | | 8.49 | 29.22 | 13.05 | 10.36 | 10.32 | 12.77 |
| 90th Percentile | | 7.89 | 27.84 | 12.17 | 9.48 | 9.65 | 12.26 |
| Domestic Equity Pool | ● A | 7.95 | 29.93 | 13.86 | 10.82 | 10.84 | 12.97 |
| Standard & Poor's 500 | ■ B | 9.07 | 31.49 | 15.27 | 11.70 | 12.03 | 13.56 |
| Russell 3000 Index | ▲ | 9.10 | 31.02 | 14.57 | 11.24 | 11.46 | 13.42 |

# Domestic Equity Component Returns

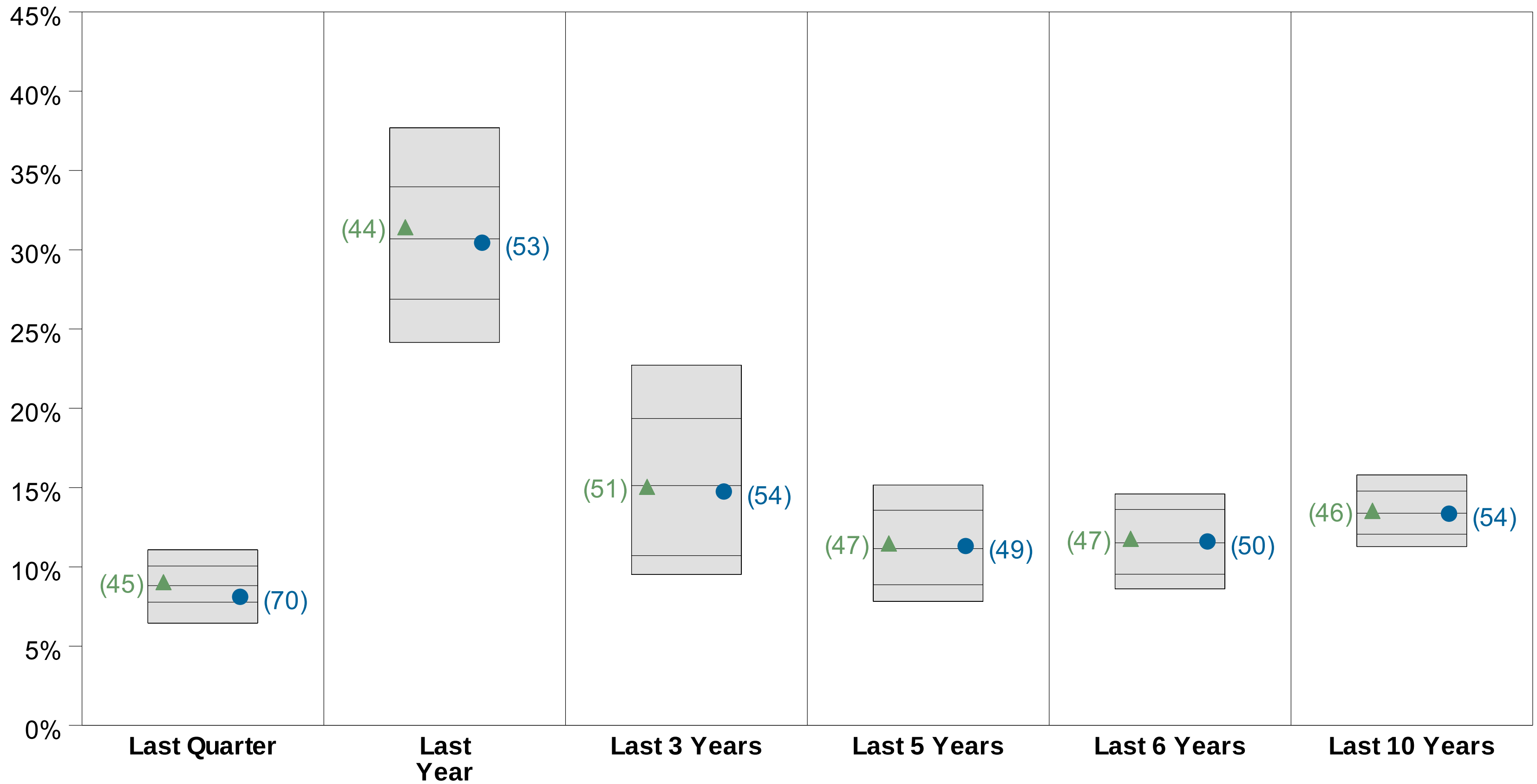
## Returns for Periods Ended December 31, 2019

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 6 Years |
|---|---|---|---|---|---|
| Total Dom Equity Pool | 7.95% | 29.93% | 13.86% | 10.82% | 10.84% |
| Russell 3000 Index | 9.10% | 31.02% | 14.57% | 11.24% | 11.46% |
| Large Cap Managers | 8.00% | 30.32% | 14.63% | 11.20% | 11.47% |
| Russell 1000 Index | 9.04% | 31.43% | 15.05% | 11.48% | 11.77% |
| Small Cap Managers | 8.37% | 27.19% | 10.39% | 9.19% | 8.44% |
| Russell 2000 Index | 9.94% | 25.52% | 8.59% | 8.23% | 7.67% |

- The large cap composite trailed its benchmark (the Russell 1000 index) over all periods shown in the table.
- Despite underperforming in the recent quarter, the small cap composite has contributed positive excess return when compared to its benchmark (the Russell 2000 index) over each of the remaining periods shown.

# Large Cap Domestic Equity through 12/31/19

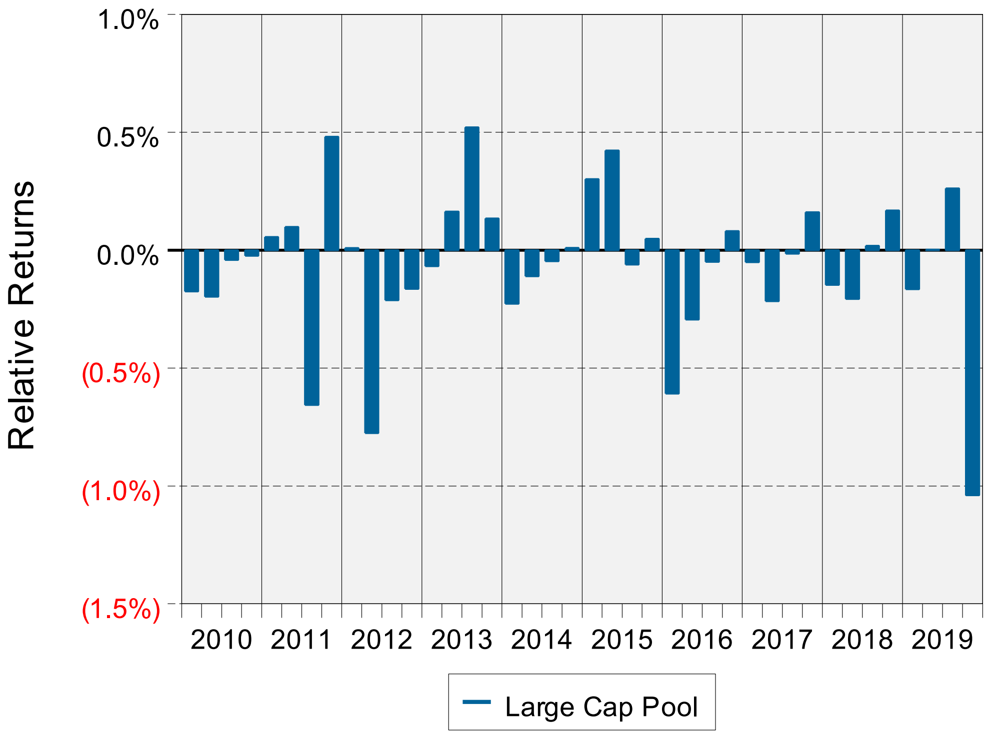
## Performance vs Callan Large Capitalization (Gross)



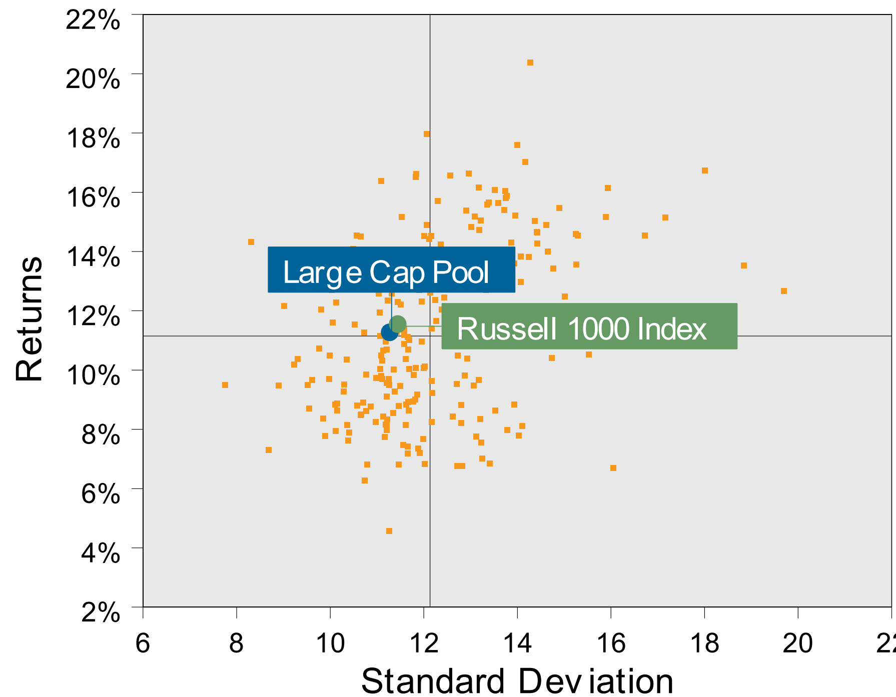

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|
| 10th Percentile | 11.07 | 37.69 | 22.73 | 15.16 | 14.60 | 15.80 |
| 25th Percentile | 10.05 | 33.97 | 19.37 | 13.57 | 13.62 | 14.78 |
| Median | 8.82 | 30.68 | 15.13 | 11.15 | 11.52 | 13.39 |
| 75th Percentile | 7.77 | 26.88 | 10.71 | 8.87 | 9.54 | 12.06 |
| 90th Percentile | 6.45 | 24.16 | 9.51 | 7.82 | 8.61 | 11.27 |
| **Large Cap Pool** ● | 8.00 | 30.32 | 14.63 | 11.20 | 11.47 | 13.23 |
| Russell 1000 Index ▲ | 9.04 | 31.43 | 15.05 | 11.48 | 11.77 | 13.54 |

# Large Cap Domestic Equity as of 12/31/19

## Relative Return vs Russell 1000 Index



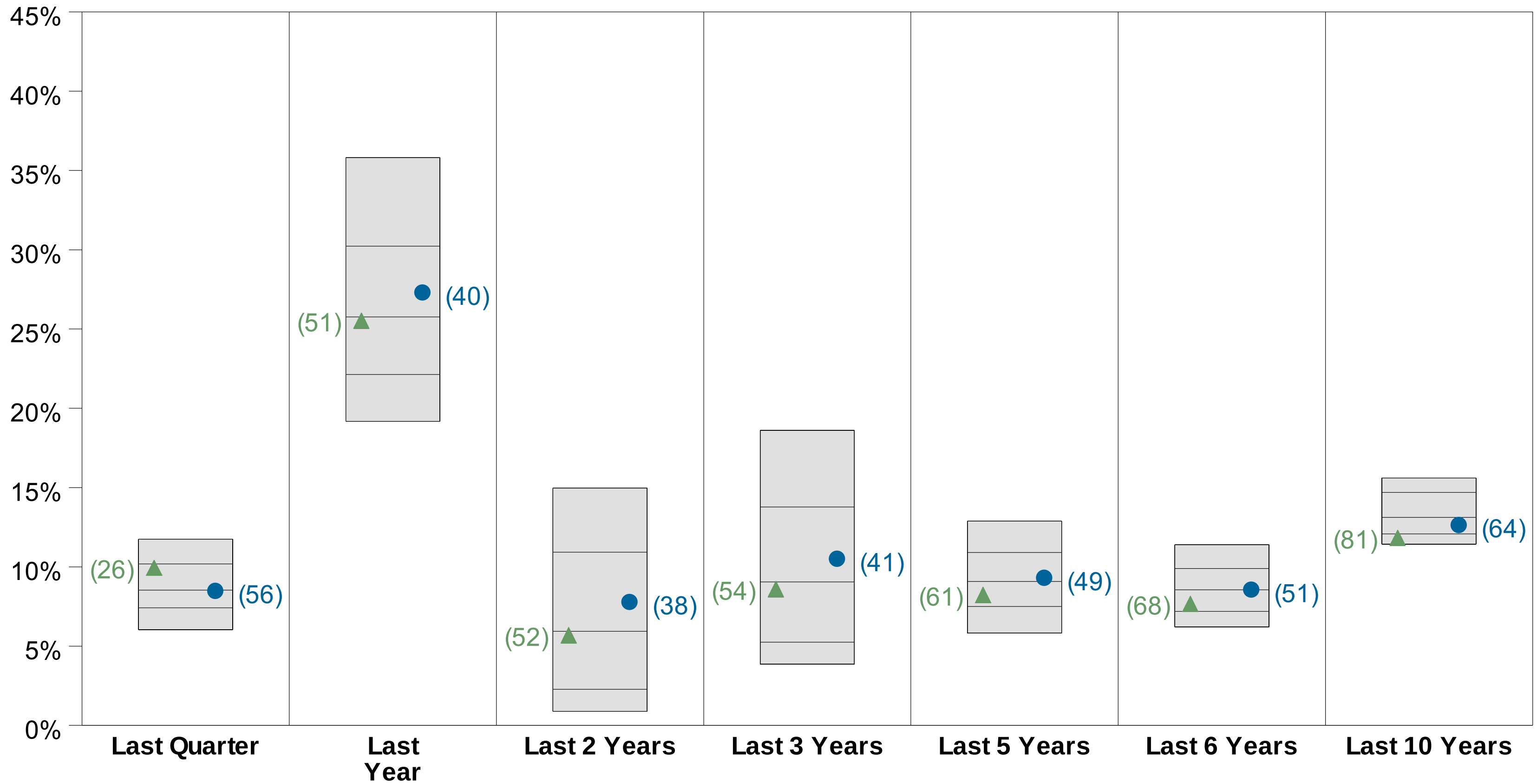

## Callan Large Capitalization (Gross) Annualized Five Year Risk vs Return




- Long-term performance exhibits market-like returns with similar risk.

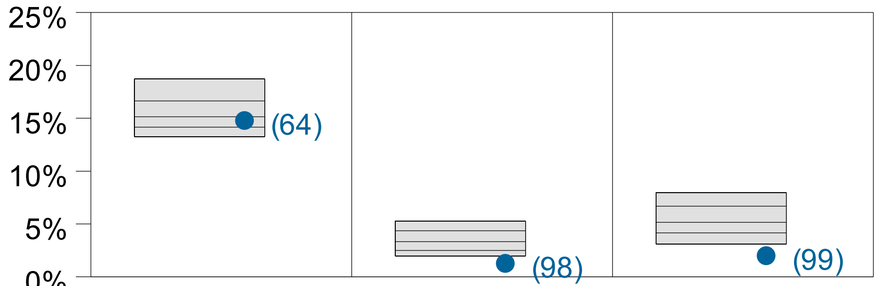
# Small Cap Domestic Equity through 12/31/19

## Performance vs Callan Small Capitalization (Gross)



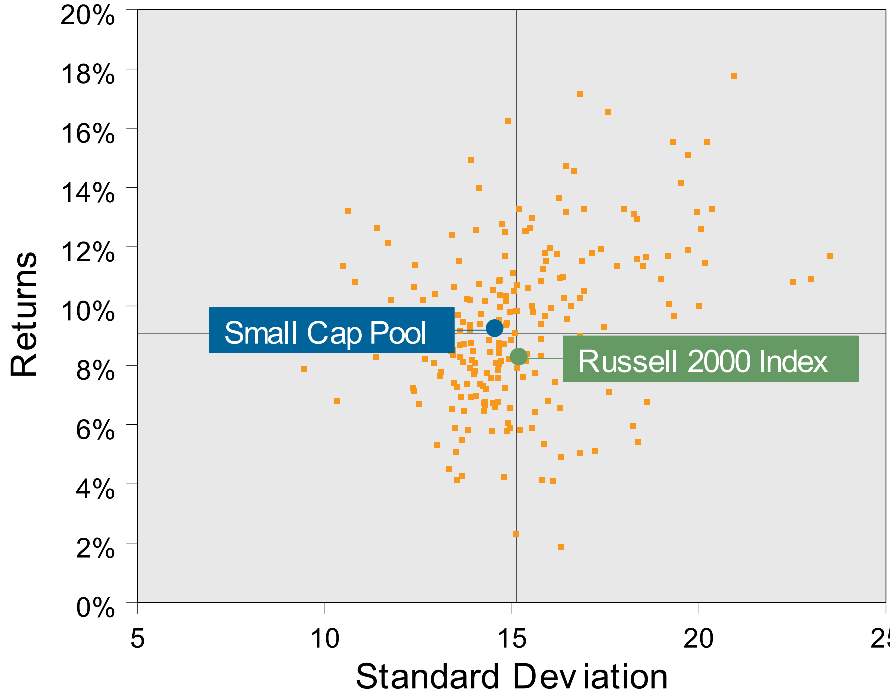

| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | 11.74 | 35.81 | 14.97 | 18.61 | 12.88 | 11.39 | 15.61 |
| 25th Percentile | 10.18 | 30.22 | 10.92 | 13.77 | 10.91 | 9.89 | 14.69 |
| Median | 8.53 | 25.76 | 5.94 | 9.05 | 9.08 | 8.56 | 13.12 |
| 75th Percentile | 7.42 | 22.13 | 2.28 | 5.25 | 7.50 | 7.19 | 12.08 |
| 90th Percentile | 6.04 | 19.18 | 0.89 | 3.86 | 5.82 | 6.21 | 11.43 |
| **Small Cap Pool** ● | 8.37 | 27.19 | 7.68 | 10.39 | 9.19 | 8.44 | 12.53 |
| Russell 2000 Index ▲ | 9.94 | 25.52 | 5.69 | 8.59 | 8.23 | 7.67 | 11.83 |

# Small Cap Domestic Equity through 12/31/19



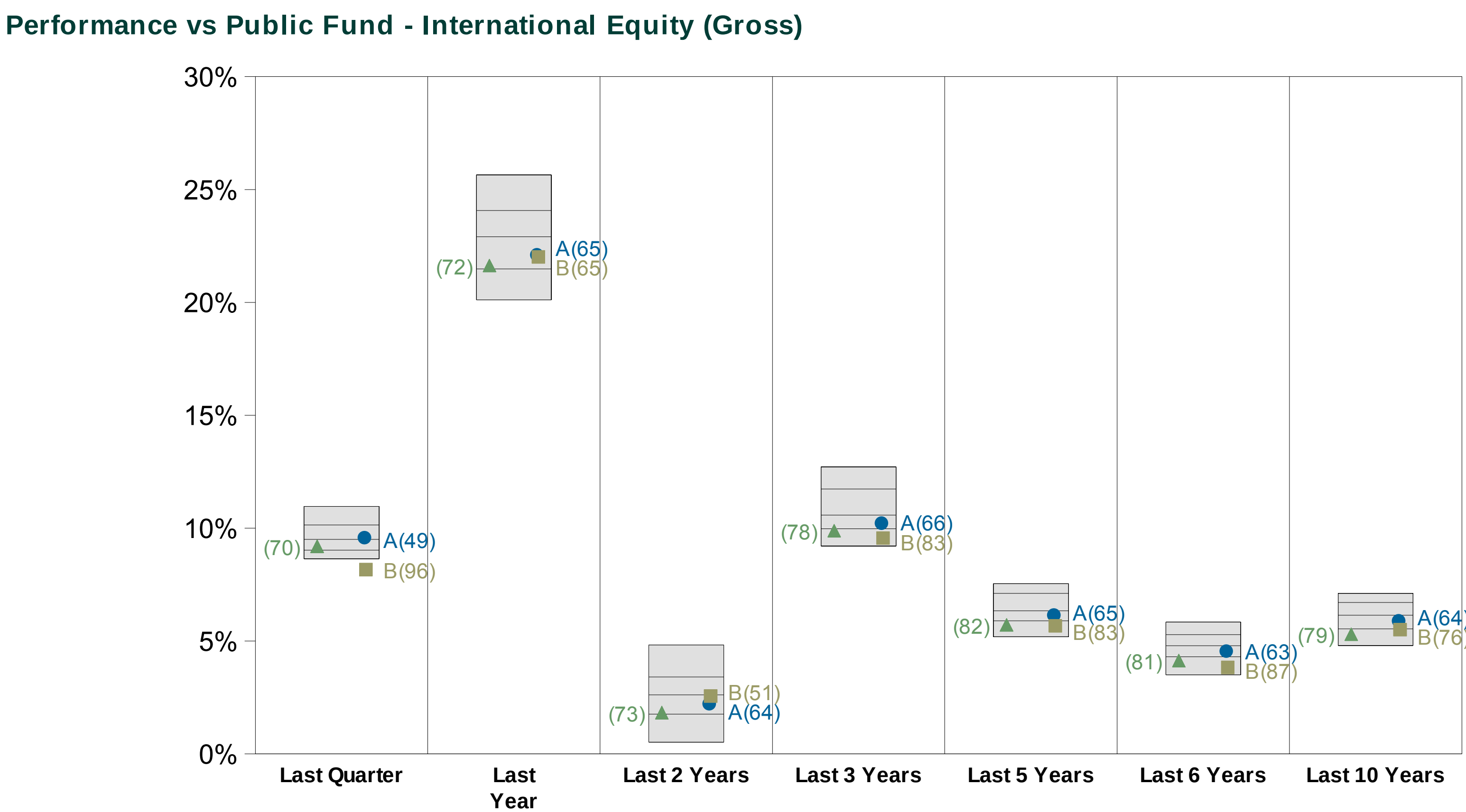

| | Standard Deviation | Downside Risk | Tracking Error |
|---|---|---|---|
| 10th Percentile | 18.73 | 5.27 | 7.96 |
| 25th Percentile | 16.63 | 4.34 | 6.67 |
| Median | 15.13 | 3.33 | 5.16 |
| 75th Percentile | 14.15 | 2.49 | 4.14 |
| 90th Percentile | 13.25 | 1.96 | 3.11 |
| **Small Cap Equity Pool** ● | 14.59 | 1.07 | 1.80 |

**Callan Small Capitalization (Gross)**
**Annualized Five Year Risk vs Return**




- The five-year risk statistics of standard deviation, downside risk, and tracking error compare favorably versus the peer group of small cap managers.

# Global Equity ex-US through 12/31/19

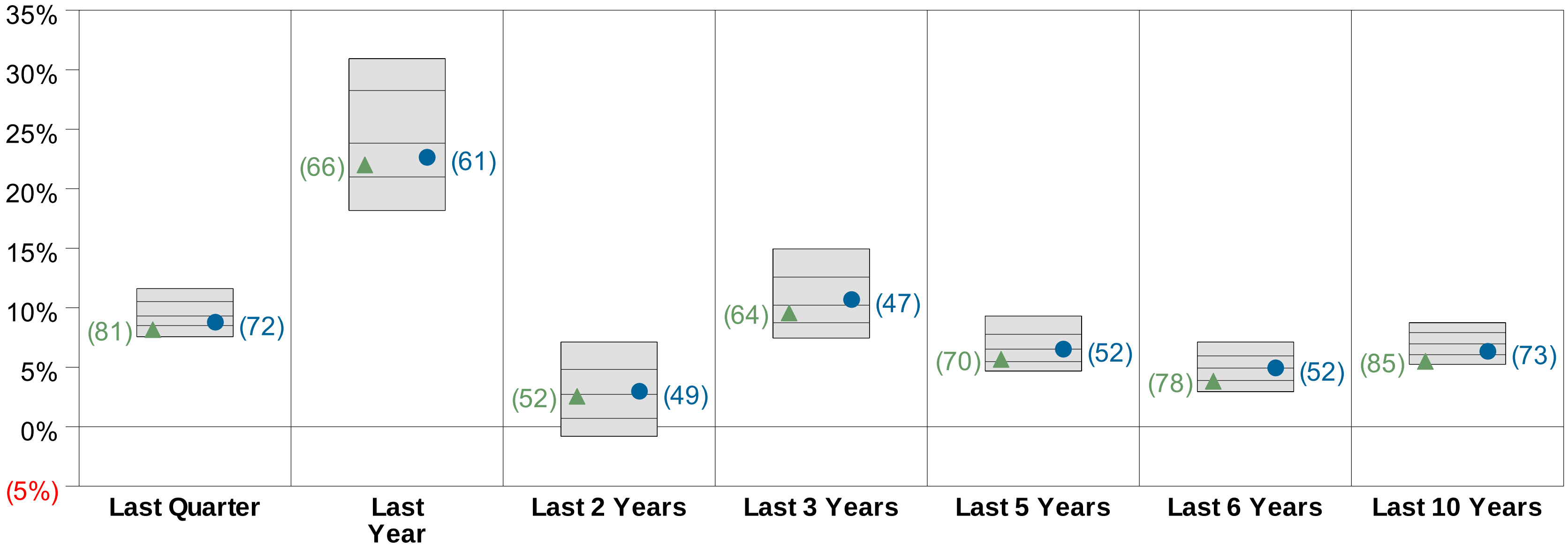



| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | 10.97 | 25.65 | 4.83 | 12.71 | 7.54 | 5.85 | 7.11 |
| 25th Percentile | 10.15 | 24.07 | 3.41 | 11.73 | 7.11 | 5.28 | 6.71 |
| Median | 9.51 | 22.91 | 2.62 | 10.57 | 6.33 | 4.80 | 6.14 |
| 75th Percentile | 9.02 | 21.48 | 1.76 | 9.98 | 5.90 | 4.30 | 5.54 |
| 90th Percentile | 8.64 | 20.11 | 0.52 | 9.21 | 5.19 | 3.50 | 4.80 |
| Global Equity ex-US ● A | 9.51 | 22.04 | 2.16 | 10.15 | 6.08 | 4.49 | 5.83 |
| MSCI EAFE Index ■ B | 8.17 | 22.01 | 2.56 | 9.56 | 5.67 | 3.83 | 5.50 |
| Int'l Equity Target ▲ | 9.20 | 21.63 | 1.83 | 9.89 | 5.72 | 4.13 | 5.30 |

The Int'l Equity Target currently consists of MSCI ACWI ex U.S. IMI.

# International Equity ex Emerging Markets through 12/31/19

## Performance vs Callan Non-US Equity (Gross)



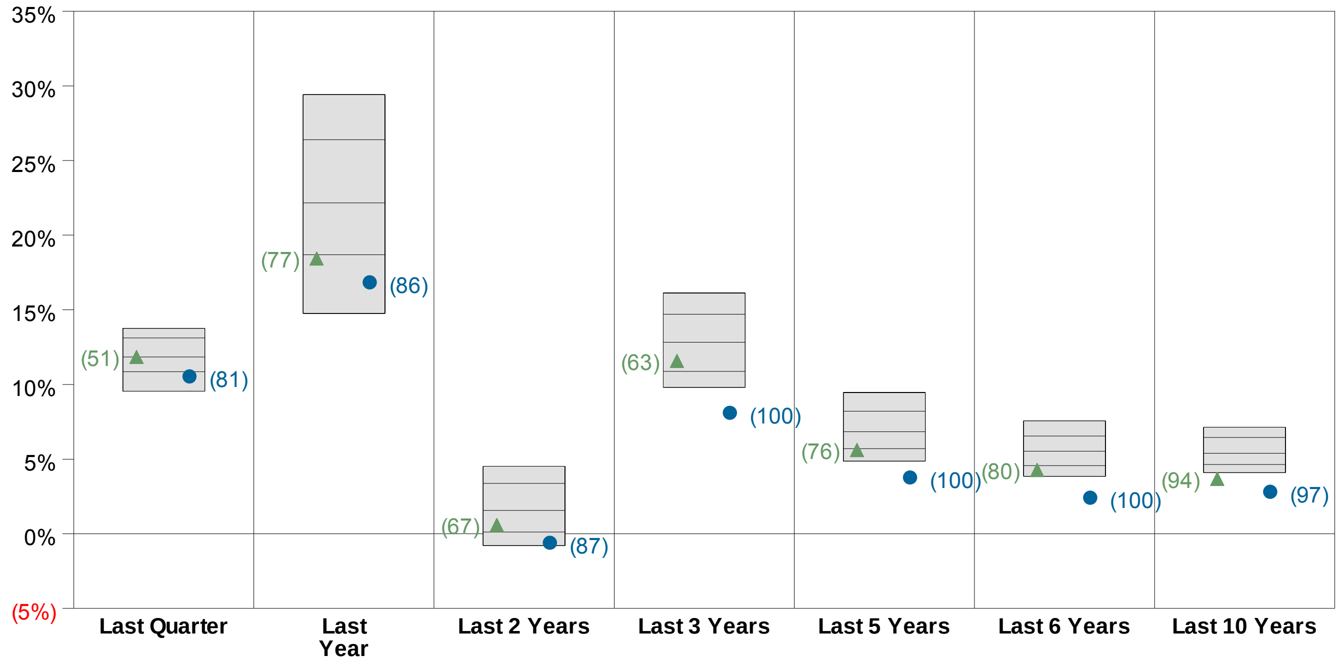

| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | 11.61 | 30.93 | 7.11 | 14.95 | 9.32 | 7.11 | 8.74 |
| 25th Percentile | 10.52 | 28.26 | 4.82 | 12.58 | 7.76 | 5.97 | 7.91 |
| Median | 9.32 | 23.83 | 2.74 | 10.22 | 6.52 | 4.94 | 6.96 |
| 75th Percentile | 8.50 | 20.99 | 0.70 | 8.74 | 5.48 | 3.89 | 6.06 |
| 90th Percentile | 7.58 | 18.18 | (0.81) | 7.46 | 4.68 | 2.95 | 5.25 |
| **Int'l Equity Pool (ex Emerging. Mkt)** ● | 8.62 | 22.49 | 2.82 | 10.53 | 6.39 | 4.79 | 6.19 |
| MSCI EAFE ▲ | 8.17 | 22.01 | 2.56 | 9.56 | 5.67 | 3.83 | 5.50 |

# International Equity ex Emerging Markets through 12/31/19

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| **Int'l Equity Pool (ex Emerging Market)** | **8.62%** | **22.49%** | **10.53%** | **6.39%** | **6.19%** |
| Arrowstreet ACWI ex -US | 10.17% | 24.40% | 11.67% | 7.28% | - |
| Baillie Gifford ACWI ex US | 12.76% | 34.28% | 14.18% | 9.09% | - |
| Brandes Investment | 9.67% | 16.13% | 7.33% | 5.61% | 5.74% |
| Capital Guardian | 10.83% | 33.75% | 16.02% | 9.26% | 8.05% |
| L&G Sci Beta Dev ex US | 7.68% | - | - | - | - |
| SSgA World ex US IMI | 8.35% | - | - | - | - |
| MSCI EAFE Index | 8.17% | 22.01% | 9.56% | 5.67% | 5.50% |
| MSCI ACWI ex-US IMI Index | 9.20% | 21.63% | 9.84% | 5.71% | 5.21% |

# Emerging Markets through 12/31/19

Performance vs Callan Emerging Broad (Gross)




| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | 13.76 | 29.41 | 4.52 | 16.12 | 9.46 | 7.57 | 7.14 |
| 25th Percentile | 13.12 | 26.39 | 3.37 | 14.70 | 8.21 | 6.55 | 6.45 |
| Median | 11.84 | 22.16 | 1.57 | 12.82 | 6.83 | 5.52 | 5.38 |
| 75th Percentile | 10.86 | 18.69 | 0.12 | 10.88 | 5.70 | 4.56 | 4.64 |
| 90th Percentile | 9.55 | 14.75 | (0.79) | 9.80 | 4.87 | 3.84 | 4.08 |
| **Emerging Markets Pool** ● | 10.43 | 16.73 | (0.71) | 7.99 | 3.67 | 2.31 | 2.69 |
| MSCI EM ▲ | 11.84 | 18.44 | 0.59 | 11.58 | 5.61 | 4.27 | 3.68 |

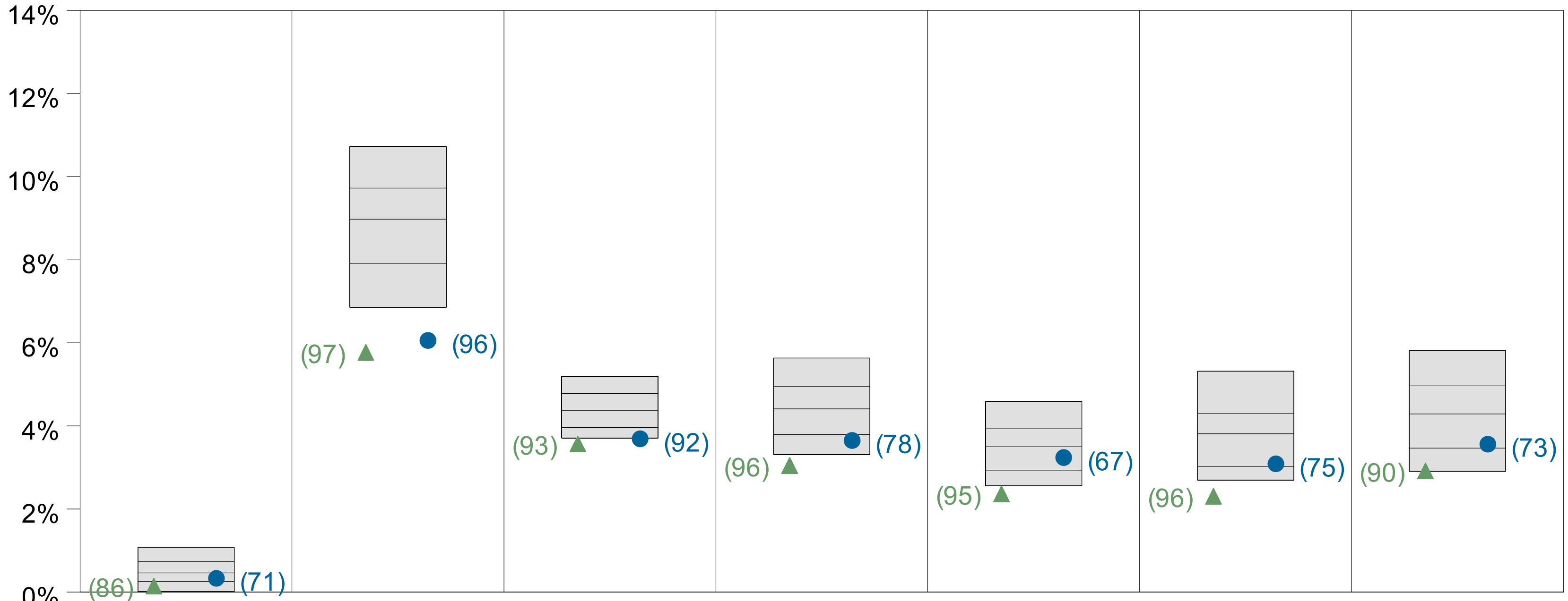
- After underperforming by 3.76% in 2Q17, 1.38% in 3Q17, 1.68% in 4Q17, 4.03% in 2Q18, 1.87% in 1Q19, and 1.41% in 4Q19, the Emerging Markets Pool lags the benchmark and ranks in the bottom quartile for all trailing periods of one year and longer.
- DRZ and Lazard were liquidated and L&G Scientific Beta was funded this quarter, leaving only passive and smart beta approaches within the emerging markets equity space.

# Emerging Markets Pool through 12/31/19

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| **Emerging Markets Pool** | **10.43%** | **16.73%** | **7.99%** | **3.67%** | **2.69%** |
| SSgA Emerging Markets | 11.71% | - | - | - | - |
| MSCI EM | 11.84% | 18.44% | 11.58% | 5.61% | 3.68% |

# Total Fixed Income as of 12/31/19

## Performance vs Public Fund - Domestic Fixed (Gross)




| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | 1.08 | 10.73 | 5.19 | 5.64 | 4.59 | 5.32 | 5.82 |
| 25th Percentile | 0.74 | 9.72 | 4.78 | 4.95 | 3.93 | 4.30 | 4.98 |
| Median | 0.46 | 8.98 | 4.38 | 4.41 | 3.50 | 3.81 | 4.29 |
| 75th Percentile | 0.25 | 7.91 | 3.96 | 3.79 | 2.94 | 3.03 | 3.47 |
| 90th Percentile | 0.01 | 6.85 | 3.71 | 3.31 | 2.56 | 2.70 | 2.91 |
| **Total Fixed Income Pool** ● | 0.29 | 6.02 | 3.64 | 3.61 | 3.19 | 3.04 | 3.52 |
| Fixed Income Target ▲ | 0.15 | 5.77 | 3.57 | 3.05 | 2.37 | 2.31 | 2.92 |

- The transition from intermediate Treasury to Aggregate mandates was completed during the fourth quarter.

Includes In-House and External Portfolios

# Opportunistic through 12/31/19

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| **Opportunistic (T)** | **3.68%** | **14.46%** | **-** | **-** | **-** |
| **Alternative Equity Strategies** | **8.80%** | **16.85%** | **8.93%** | **7.43%** | **8.84%** |
| McKinley Healthcare Transformation | 8.79% | - | - | - | - |
| Russell 1000 Index | 9.04% | 31.43% | 15.05% | 11.48% | 13.54% |
| **Other Opportunities** | **(1.69%)** | **1.20%** | **1.26%** | **2.51%** | **-** |
| Project Pearl | (0.92%) | - | - | - | - |
| Schroders Insurance Linked | (1.78%) | (4.42%) | (2.78%) | - | - |
| T-Bills + 6% | 1.91% | 8.28% | 7.67% | 7.07% | 6.58% |
| **Tactical Allocation Strategies** | **6.77%** | **17.77%** | **-** | **-** | **-** |
| PineBridge | 7.73% | 15.19% | - | - | - |
| Pine Bridge Benchmark | 5.19% | 15.14% | 7.71% | 4.34% | 3.98% |
| Fidelity Signals | 5.83% | 20.34% | - | - | - |
| Fidelity Signals Benchmark | 5.44% | 19.28% | 8.99% | 6.39% | 7.07% |
| **Alternative Beta** | | | | | |
| JP Morgan Systematic Alpha | (1.46%) | (3.65%) | - | - | - |
| Man Group Alternative Risk Premia | (3.29%) | 2.84% | - | - | - |
| T-Bills + 5% | 1.67% | 7.28% | 6.67% | 6.07% | 5.58% |

## Real Assets through 12/31/19

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 6 Years |
|---|---|---|---|---|---|
| **Real Assets** | **0.82%** | **8.80%** | **6.57%** | **5.73%** | **6.50%** |
| Real Assets Target (1) | 1.11% | 9.59% | 5.65% | 6.22% | 7.00% |
| Real Estate Pool | 1.83% | 8.32% | 7.34% | 8.51% | 9.37% |
| Real Estate Target (2) | 1.41% | 8.58% | 7.12% | 8.33% | 9.16% |
| Private Real Estate | 2.18% | 5.87% | 7.03% | 8.75% | 9.04% |
| NCREIF Total Index | 1.55% | 6.42% | 6.70% | 8.25% | 8.84% |
| ARMB REIT | 0.12% | 28.43% | 10.15% | 8.31% | 11.43% |
| NAREIT Equity Index | 0.13% | 28.66% | 10.29% | 8.43% | 11.47% |
| Total Farmland | 0.62% | 2.21% | 3.31% | 4.08% | 4.40% |
| UBS Farmland | 0.43% | 2.70% | 3.70% | 4.40% | 4.92% |
| Hancock Agricultural | 1.04% | 1.22% | 2.48% | 3.41% | 3.31% |
| ARMB Farmland Target (3) | 1.64% | 4.61% | 5.60% | 5.65% | 6.03% |
| Total Timber | (0.66%) | 2.49% | 2.55% | 2.88% | 3.98% |
| Timberland Investment Resources | (0.86%) | 1.72% | 2.44% | 2.99% | 3.58% |
| Hancock Timber | (0.14%) | 4.63% | 2.89% | 2.56% | 4.59% |
| NCREIF Timberland Index | (0.04%) | 1.30% | 2.71% | 3.13% | 4.32% |
| Total Energy Funds * | (1.09%) | (6.95%) | 7.81% | (6.36%) | (5.63%) |
| CPI + 5% | 1.30% | 7.32% | 7.09% | 6.73% | 6.49% |
| Total Infrastructure * | 2.19% | 13.66% | 12.61% | 8.69% | - |
| JPM Infrastructure | 0.32% | 4.90% | 7.08% | 4.77% | - |
| IFM Infrastructure | 2.66% | 12.34% | 14.64% | - | - |
| Global Infrastructure Idx | 5.12% | 26.99% | 11.35% | 6.57% | 7.61% |

(1) As of 10/01/2019, Real Assets Target is 37.5% NFI-ODCE Value Weight Net Index, 10% FTSE NAREIT All Equity Index, 25% NCREIF Farmland Index, 10% NCREIF Timberland Index, 17.5% CPI+4.

(2) ARMB Custom Real Estate Target is 90% NCREIF Property Index and 10% FTSE NAREIT All Equity REIT Index.

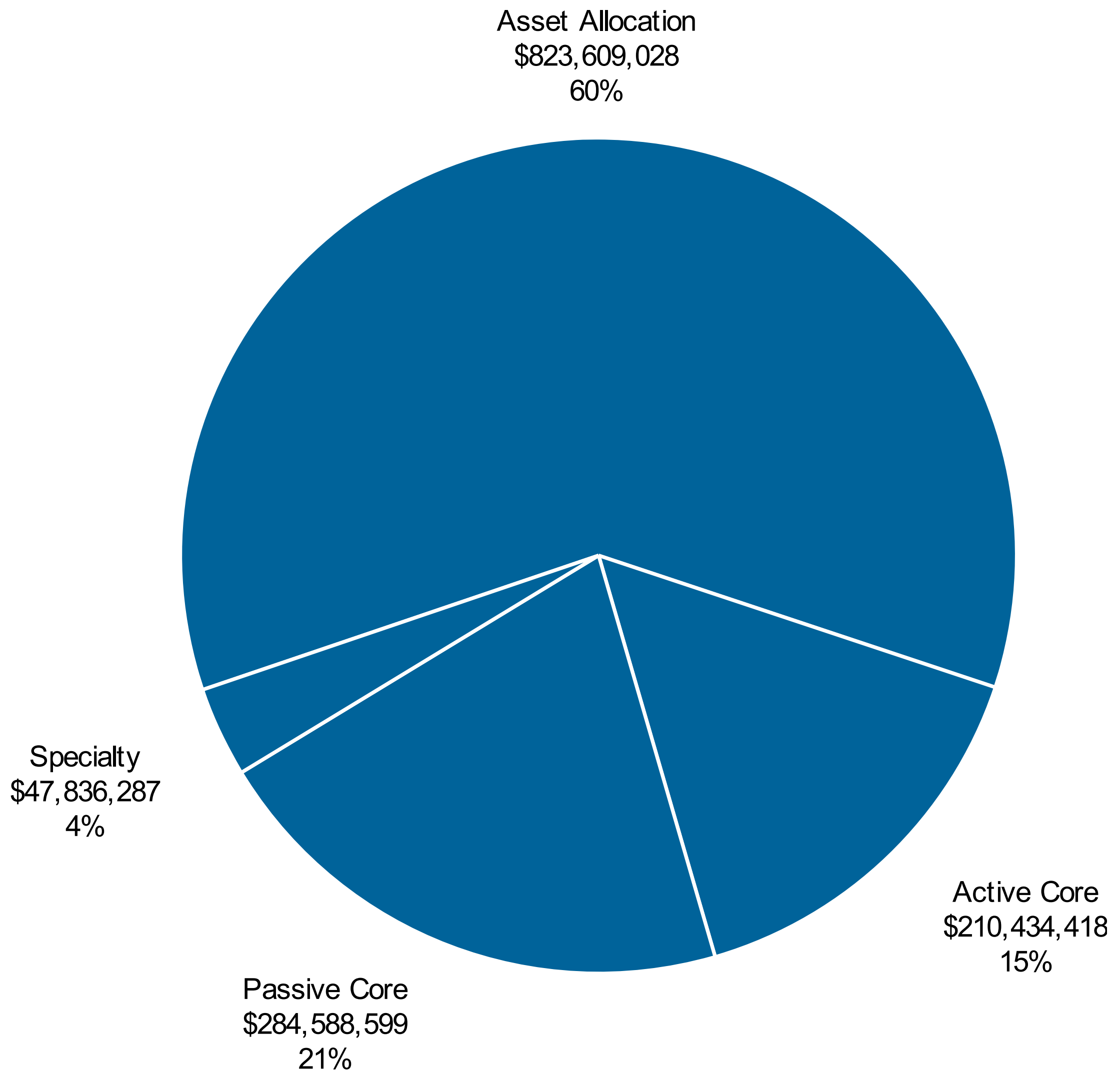
(3) ARMB Custom Farmland Target is leased-only properties in the NCREIF Farmland Index reweighted to reflect 90% row crops and 10% permanent crops until 1/1/08 and 80% row crops and 20% permanent crops thereafter . Farmland and Timber data supplied by the manager and may vary from State Street returns due to timing variations.

* Return data supplied by State Street.

## Participant-Directed Plans

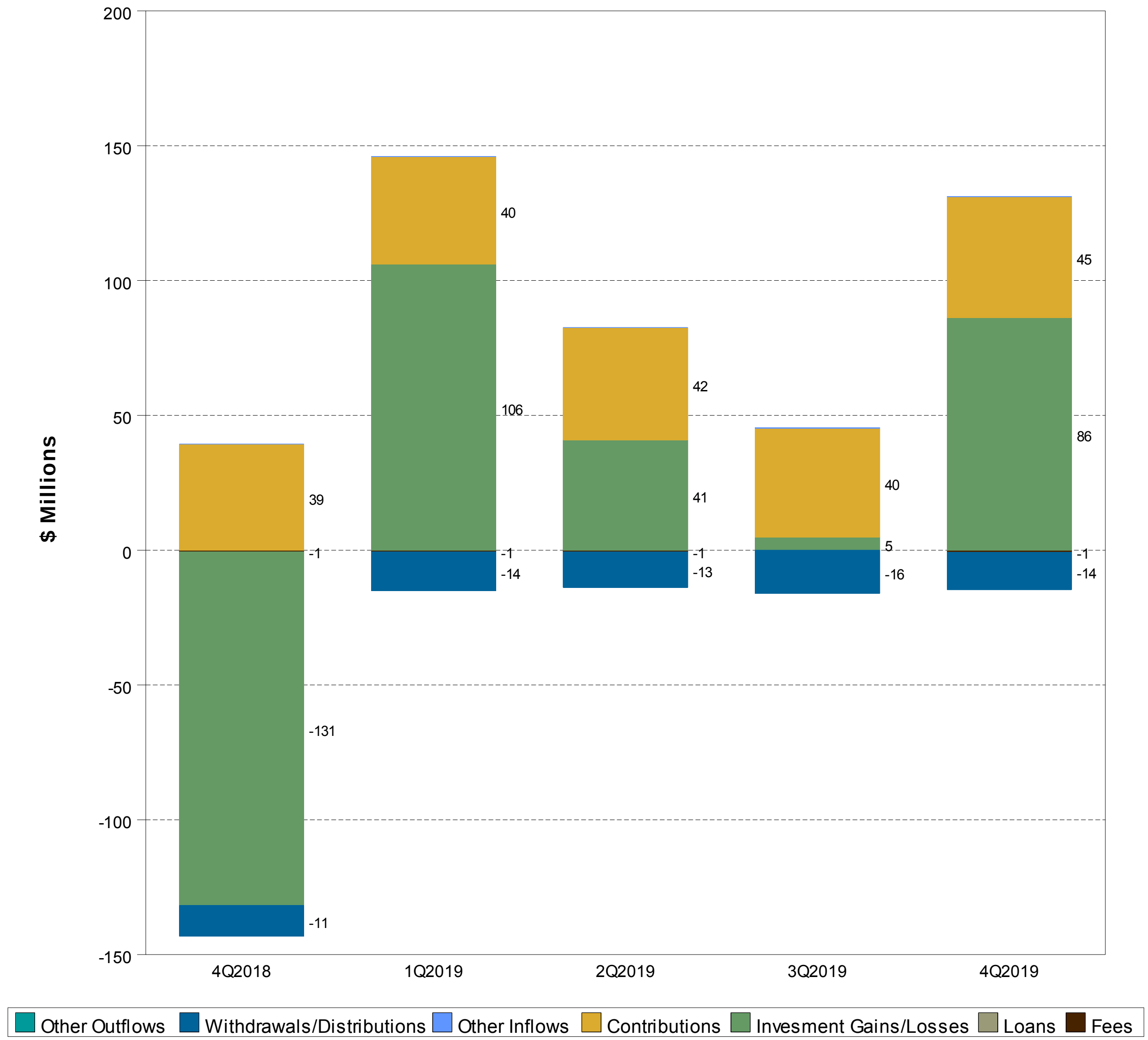
# PERS DC Plan

December 31, 2019



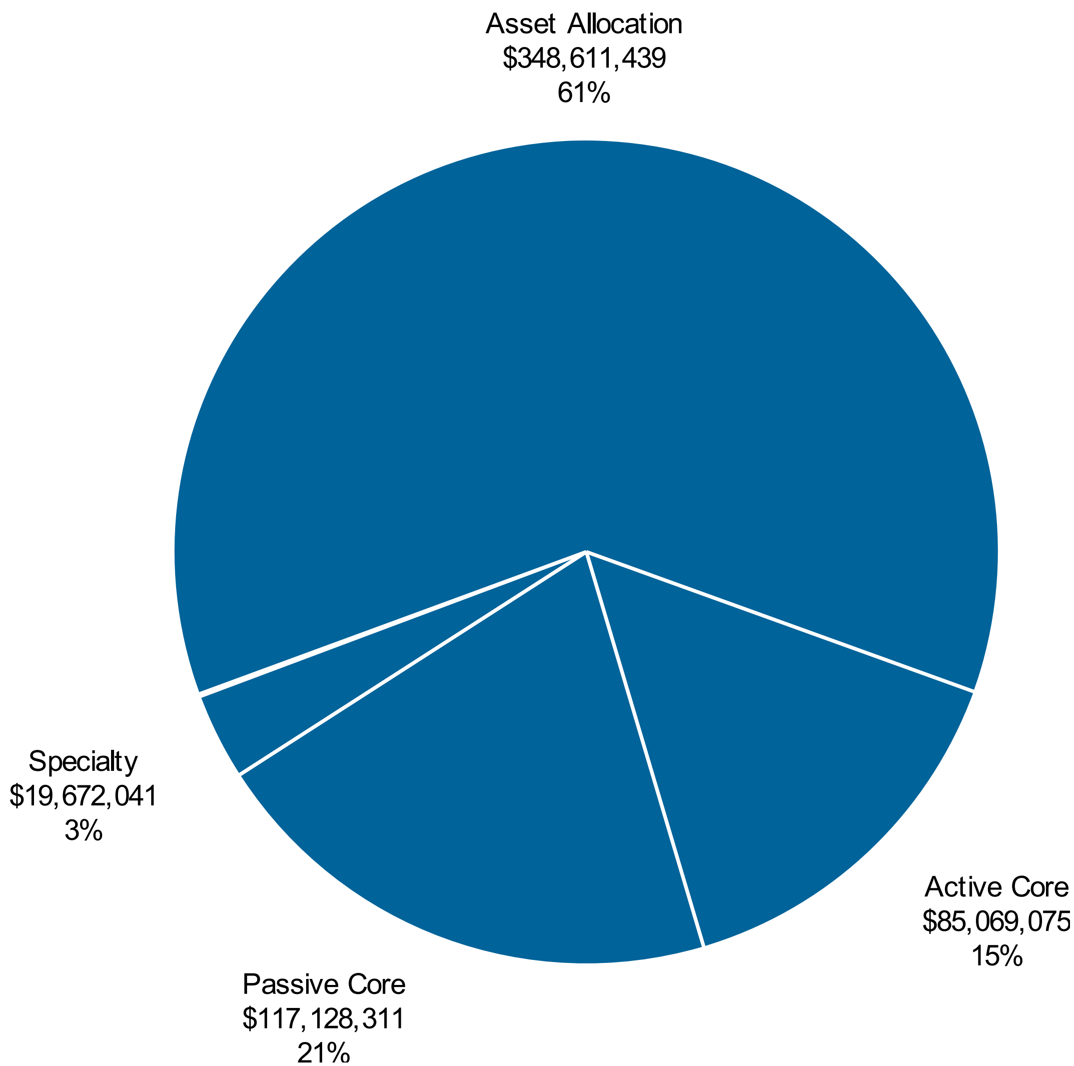
# PERS DC Plan: Asset Changes

## December 31, 2019



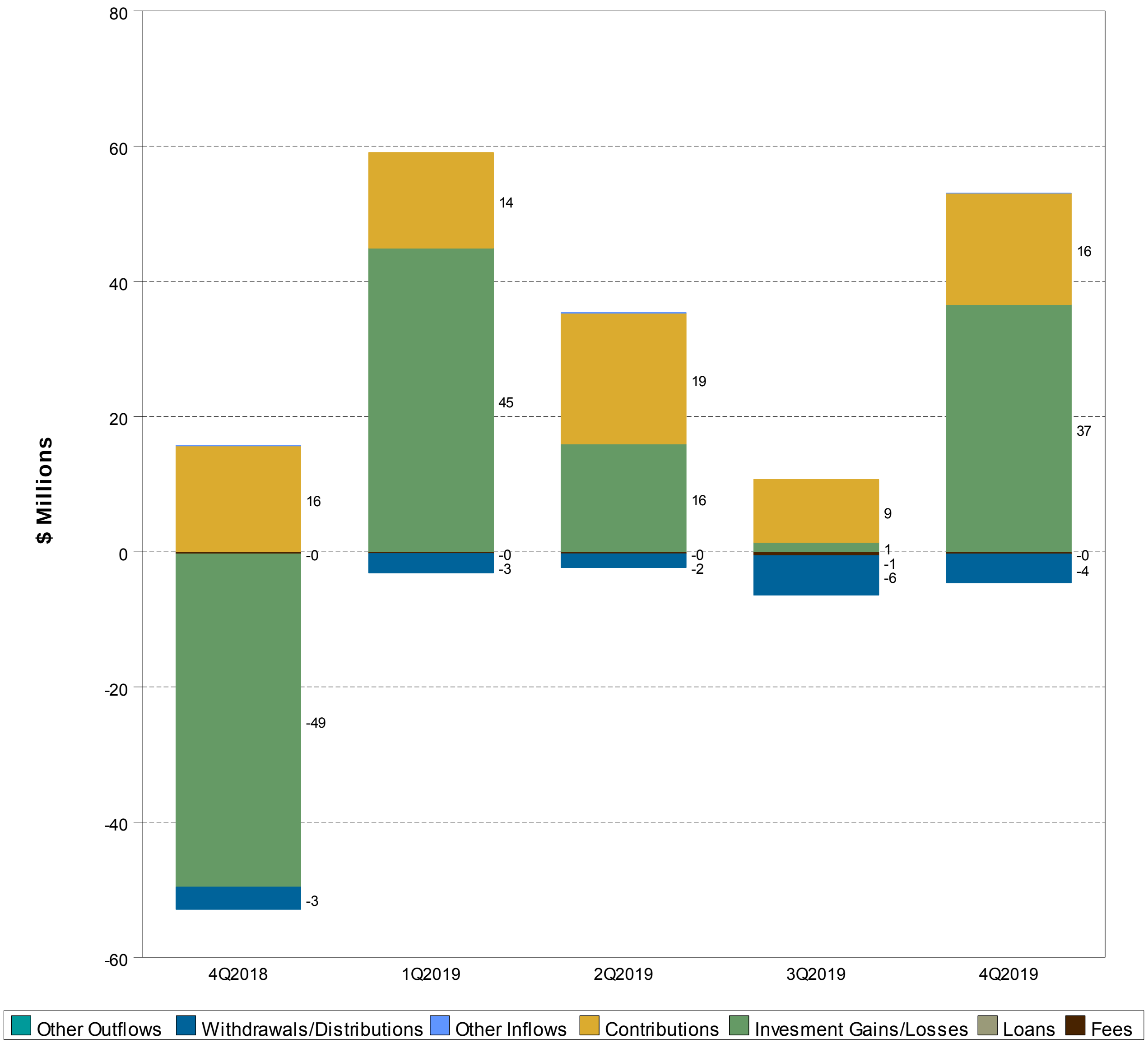
# TRS DC Plan

December 31, 2019



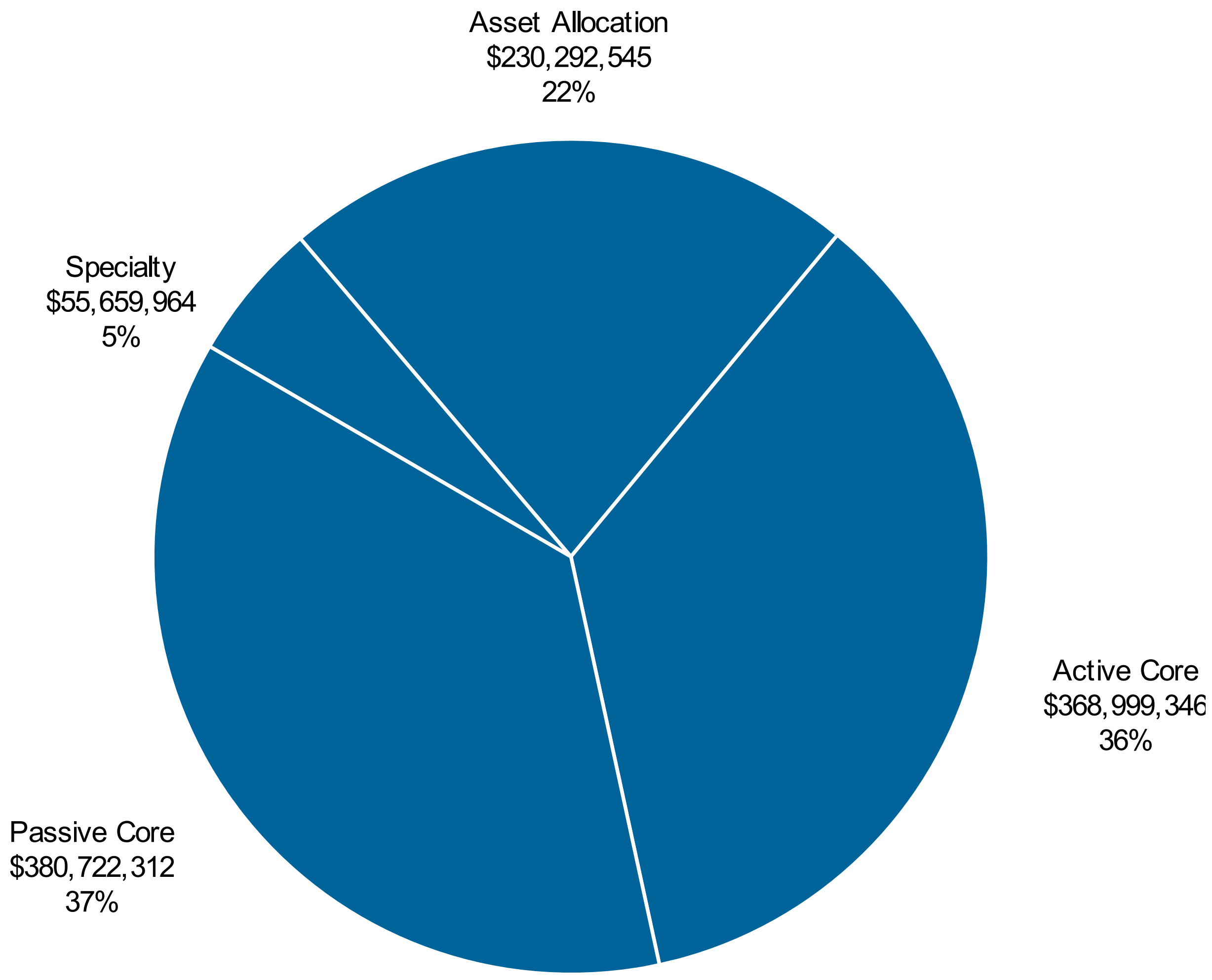
# TRS DC Plan: Asset Changes

December 31, 2019



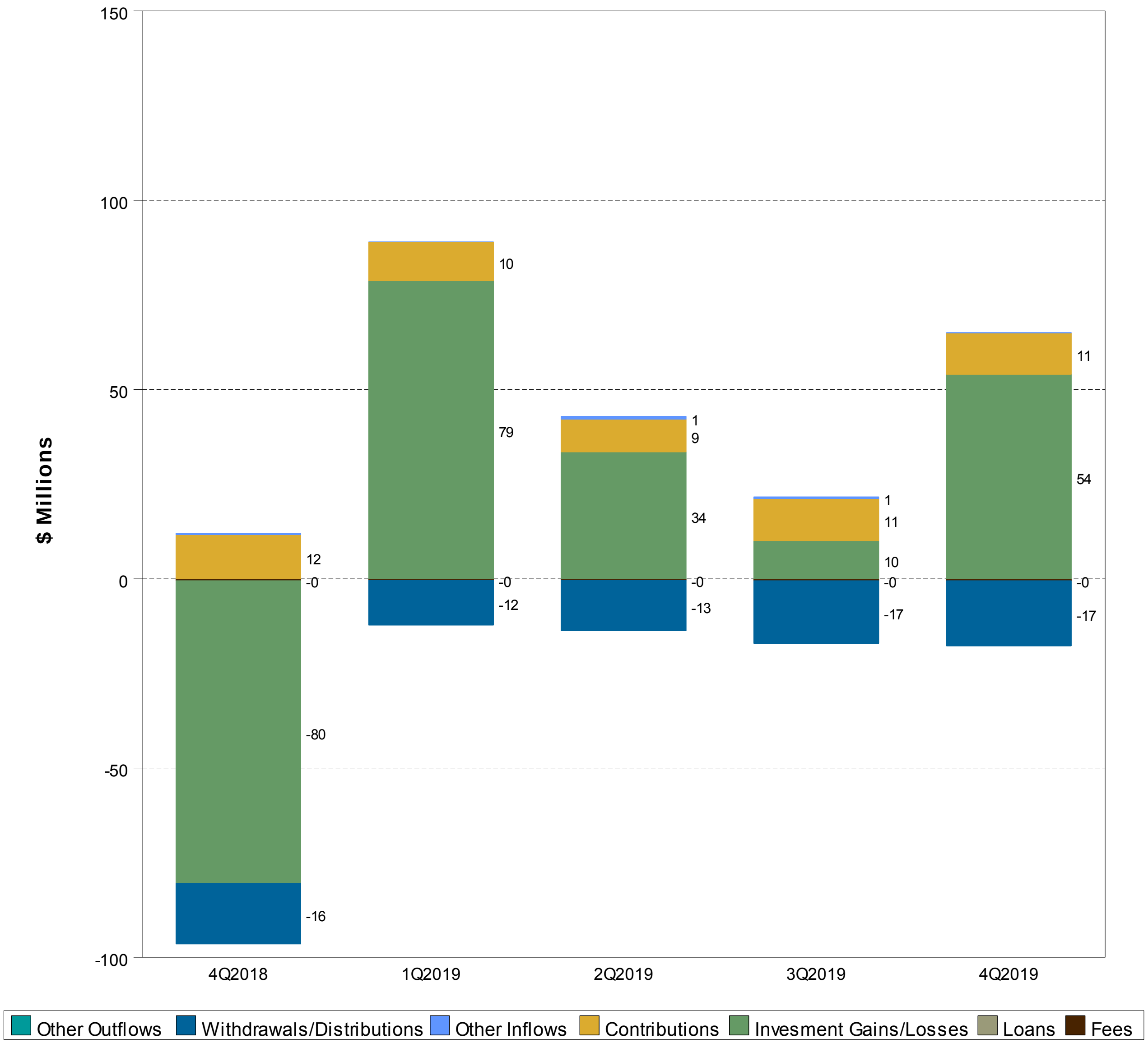
# Deferred Comp Plan

December 31, 2019



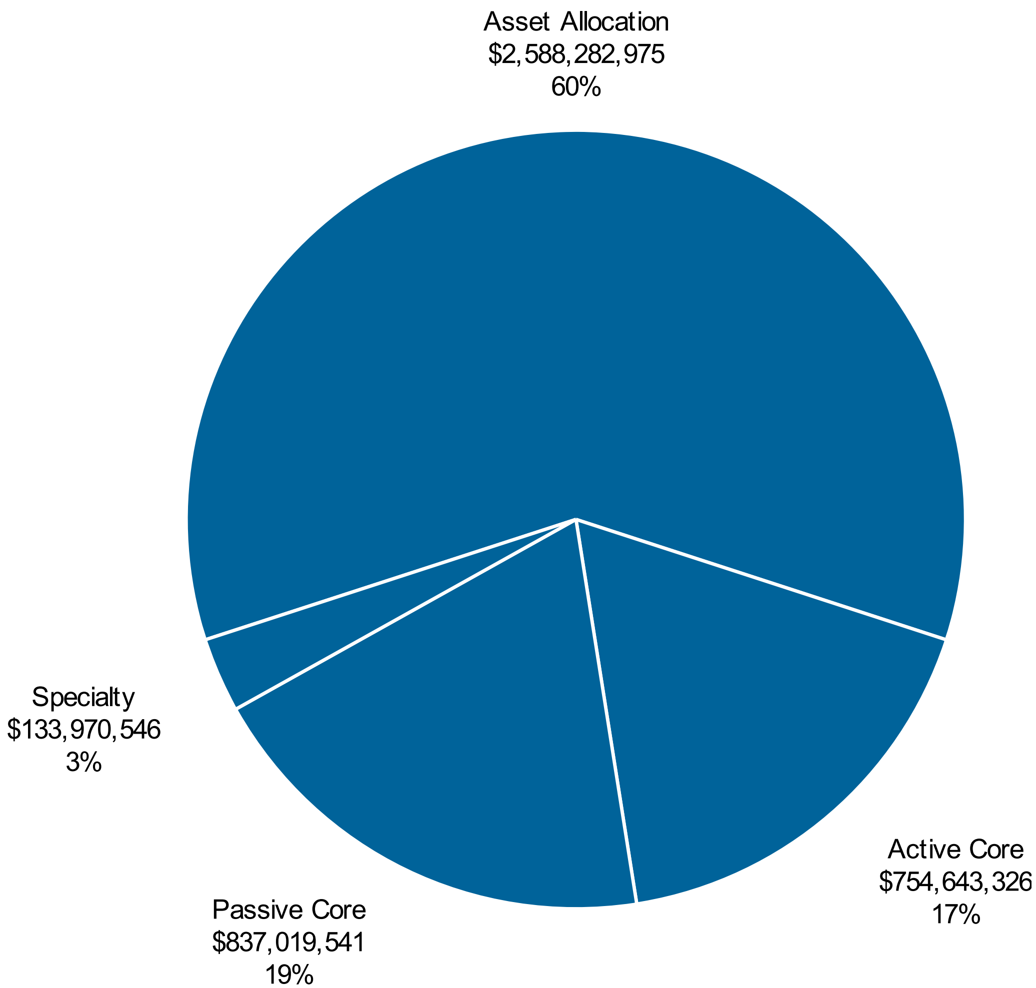
# Deferred Comp Plan: Asset Changes

December 31, 2019



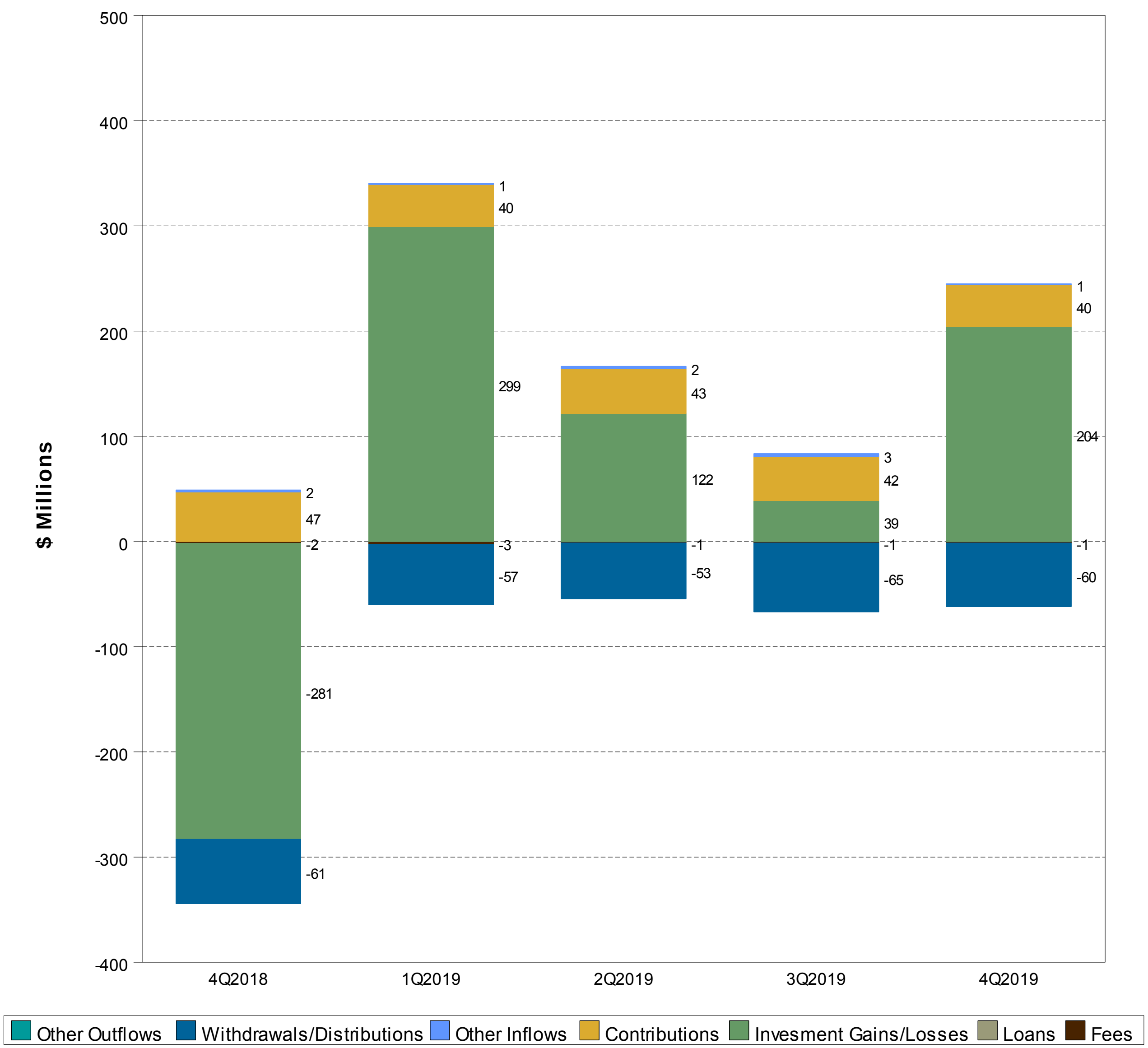
# SBS Fund

December 31, 2019



# SBS Fund: Asset Changes

## December 31, 2019



# Individual Account Option Performance: 12/31/19

## Balanced & Target Date Funds

| Investment Manager | Last Quarter Return | Last Year Return | 3 Year Return | 5 Year Return | 7 Year Return | 5 Year Risk | 5 Year Risk Quadrant | 5 Year Excess Rtn Ratio | 3 Year Tracking Error | 5 Year Sharpe Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| **Asset Allocation** | | | | | | | | | | |
| **Alaska Balanced Trust** | **3.3** 23 | **13.5** 40 | **6.7** 20 | **5.1** 20 | **5.8** 21 | **4.1** 65 | | **-0.3** 73 | **0.2** 100 | **1.0** 36 |
| CAI MA Tgt Alloc Cons MFs | | | | | | | | | | |
| Passive Target | 3.4 19 | 13.9 35 | 6.8 14 | 5.1 19 | 5.8 21 | 4.2 58 | | | | 1.0 38 |
| **Alaska Long-Term Balanced** | **5.4** 29 | **18.6** 43 | **9.1** 29 | **6.8** 27 | **8.2** 29 | **6.7** 61 | | **-0.7** 89 | **0.3** 100 | **0.8** 48 |
| CAI MA Tgt Alloc Mod MFs | | | | | | | | | | |
| Passive Target | 5.5 22 | 19.4 36 | 9.4 25 | 7.0 25 | 8.3 28 | 6.9 56 | | | | 0.9 45 |
| **Target 2010 Trust** | **3.8** 27 | **14.2** 63 | **7.2** 41 | **5.4** 46 | **6.6** 20 | **4.9** 63 | | **-0.6** 95 | **0.2** 99 | **0.9** 75 |
| CAI Tgt Date 2010 | | | | | | | | | | |
| Custom Index | 3.9 17 | 14.6 39 | 7.4 35 | 5.5 39 | 6.7 16 | 5.0 56 | | | | 0.9 74 |
| **Target 2015 Trust** | **4.3** 21 | **15.8** 37 | **8.1** 25 | **6.1** 24 | **7.6** 10 | **5.7** 37 | | **-0.2** 61 | **0.2** 100 | **0.9** 77 |
| CAI Tgt Date 2015 | | | | | | | | | | |
| Custom Index | 4.4 18 | 16.2 32 | 8.2 23 | 6.1 24 | 7.7 9 | 5.8 35 | | | | 0.9 77 |
| **Target 2020 Trust** | **5.1** 12 | **18.1** 16 | **9.1** 12 | **6.9** 10 | **8.6** 5 | **6.8** 18 | | **-0.2** 31 | **0.2** 100 | **0.9** 67 |
| CAI Tgt Date 2020 | | | | | | | | | | |
| Custom Index | 5.3 9 | 18.5 10 | 9.3 9 | 6.9 9 | 8.6 4 | 6.9 15 | | | | 0.8 68 |
| **Target 2025 Trust** | **5.9** 10 | **20.2** 13 | **10.0** 10 | **7.5** 8 | **9.4** 4 | **7.7** 16 | | **-0.3** 46 | **0.2** 100 | **0.8** 70 |
| CAI Tgt Date 2025 | | | | | | | | | | |
| Custom Index | 6.1 9 | 20.6 8 | 10.2 7 | 7.5 8 | 9.5 3 | 7.8 9 | | | | 0.8 72 |
| **Target 2030 Trust** | **6.5** 13 | **22.0** 18 | **10.7** 15 | **8.0** 12 | **10.1** 5 | **8.6** 21 | | **-0.4** 54 | **0.2** 100 | **0.8** 62 |
| CAI Tgt Date 2030 | | | | | | | | | | |
| Custom Index | 6.7 11 | 22.5 8 | 11.0 9 | 8.1 9 | 10.2 2 | 8.7 19 | | | | 0.8 62 |
| **Target 2035 Trust** | **7.2** 19 | **23.6** 17 | **11.4** 17 | **8.5** 16 | **10.7** 3 | **9.3** 29 | | **-0.3** 41 | **0.2** 100 | **0.8** 44 |
| CAI Tgt Date 2035 | | | | | | | | | | |
| Custom Index | 7.3 16 | 24.1 14 | 11.6 13 | 8.5 15 | 10.8 2 | 9.4 25 | | | | 0.8 44 |
| **Target 2040 Trust** | **7.7** 22 | **24.8** 19 | **11.9** 19 | **8.8** 13 | **11.1** 4 | **9.9** 37 | | **-0.3** 37 | **0.2** 100 | **0.8** 34 |
| CAI Tgt Date 2040 | | | | | | | | | | |
| Custom Index | 7.8 17 | 25.3 13 | 12.1 13 | 8.9 11 | 11.2 3 | 10.0 30 | | | | 0.8 35 |
| **Target 2045 Trust** | **8.0** 28 | **25.6** 23 | **12.1** 17 | **9.0** 11 | **11.2** 3 | **10.1** 60 | | **-0.3** 40 | **0.3** 100 | **0.8** 32 |
| CAI Tgt Date 2045 | | | | | | | | | | |
| Custom Index | 8.2 19 | 26.1 13 | 12.4 10 | 9.0 7 | 11.3 1 | 10.3 36 | | | | 0.8 32 |

Returns:
- above median
- third quartile
- fourth quartile

Risk:
- below median
- second quartile
- first quartile

Risk Quadrant:


Excess Return Ratio:
- above median
- third quartile
- fourth quartile

Tracking Error:
- below median
- second quartile
- first quartile

Sharpe Ratio:
- above median
- third quartile
- fourth quartile

# Individual Account Option Performance: 12/31/19

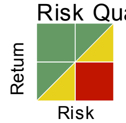
## Balanced & Target Date Funds

| Investment Manager | Last Quarter Return | Last Year Return | 3 Year Return | 5 Year Return | 7 Year Return | 5 Year Risk | 5 Year Risk Quadrant | 5 Year Excess Rtn Ratio | 3 Year Tracking Error | 5 Year Sharpe Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| **Target 2050 Trust** | **8.0** 33 | **25.5** 30 | **12.1** 20 | **8.9** 11 | **11.2** 3 | **10.1** 62 | | **-0.4** 60 | **0.3** 99 | **0.8** 32 |
| CAI Tgt Date 2050 Custom Index | 8.2 18 | 26.1 18 | 12.4 11 | 9.0 7 | 11.3 2 | 10.3 45 | | | | 0.8 32 |
| **Target 2055 Trust** | **8.0** 37 | **25.6** 33 | **12.1** 22 | **8.9** 12 | **11.2** 4 | **10.1** 66 | | **-0.3** 55 | **0.3** 100 | **0.8** 32 |
| CAI Tgt Date 2055 Custom Index | 8.2 26 | 26.1 23 | 12.4 12 | 9.0 8 | 11.3 2 | 10.3 58 | | | | 0.8 32 |
| **Target 2060 Trust** | **7.9** 46 | **25.5** 44 | **12.0** 35 | | | | | | **0.3** 98 | |
| CAI Tgt Date 2060 Custom Index | 8.2 26 | 26.1 24 | 12.4 14 | | | | | | | |

Returns:
- above median
- third quartile
- fourth quartile

Risk:
- below median
- second quartile
- first quartile

Risk Quadrant:




Excess Return Ratio:
- above median
- third quartile
- fourth quartile

Tracking Error:
- below median
- second quartile
- first quartile

Sharpe Ratio:
- above median
- third quartile
- fourth quartile

# Other Options: 12/31/19

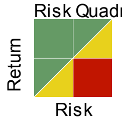
## Passive Strategies

| Investment Manager | Last Quarter Return | Last Year Return | 3 Year Return | 5 Year Return | 7 Year Return | 5 Year Risk | 5 Year Risk Quadrant | 5 Year Excess Rtn Ratio | 3 Year Tracking Error | 5 Year Sharpe Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| **Index Funds** | | | | | | | | | | |
| **SSgA S&P 500 Index Fund (i)**<br>**Callan S&P 500 Index MFs** | **9.1** 6 | **31.5** 11 | **15.3** 8 | **11.7** 9 | **14.7** 6 | **11.3** 26 | | **-0.6** 8 | **0.0** 90 | **0.9** 9 |
| S&P 500 Index | 9.1 6 | 31.5 8 | 15.3 5 | 11.7 5 | 14.7 4 | 11.3 40 | | | | 0.9 5 |
| **SSgA Russell 3000 Index Fund (i)**<br>**CAI Mut Fd: Large Cap Broad Style (Net)** | **9.1** 42 | **31.0** 44 | **14.6** 52 | **11.2** 44 | **14.4** 43 | **11.7** 63 | | **0.0** 42 | **0.0** 100 | **0.9** 32 |
| Russell 3000 Index | 9.1 42 | 31.0 44 | 14.6 52 | 11.2 44 | 14.4 43 | 11.7 63 | | | | 0.9 32 |
| **SSgA World Equity ex-US Index Fund (i)**<br>**CAI MF: Non-U.S. Equity Style** | **8.9** 55 | **21.7** 63 | **10.1** 50 | **5.8** 44 | **5.4** 69 | **11.8** 72 | | **0.4** 26 | **0.3** 99 | **0.4** 37 |
| MSCI ACWI x U.S. Index (Net) | 8.9 54 | 21.5 67 | 9.9 50 | 5.5 53 | 5.4 69 | 11.9 71 | | | | 0.4 46 |
| **BlackRock Passive US Bd Index Fund (i)**<br>**Callan Core Bond MFs** | **0.2** 46 | **8.7** 61 | | | | | | | | |
| Blmbg Aggregate | 0.2 43 | 8.7 60 | 4.0 64 | 3.0 56 | 2.7 50 | 3.3 39 | | | | 0.6 66 |

Returns:
- above median
- third quartile
- fourth quartile

Risk:
- below median
- second quartile
- first quartile

Risk Quadrant:




Excess Return Ratio:
- above median
- third quartile
- fourth quartile

Tracking Error:
- below median
- second quartile
- first quartile

Sharpe Ratio:
- above median
- third quartile
- fourth quartile

(i) – Indexed scoring method used. Green: manager & index ranking differ by less than +/- 10 percentiles; Yellow: manager and index ranking differ by +/- 20 percentiles; Red: manager & index ranking differ by more than 20 percentiles.

# Other Options: 12/31/19

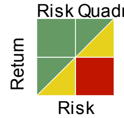
## Active Equity, Stable Value, and Money Market

| Investment Manager | Last Quarter Return | Last Year Return | 3 Year Return | 5 Year Return | 7 Year Return | 5 Year Risk | 5 Year Risk Quadrant | 5 Year Excess Rtn Ratio | 3 Year Tracking Error | 5 Year Sharpe Ratio |
|---|---|---|---|---|---|---|---|---|---|---|
| **Active and Other Funds** | | | | | | | | | | |
| **BlackRrock Strategic Completion Fd** | **2.1** 71 | | | | | | | | | |
| Callan Real Assets MFs | | | | | | | | | | |
| Strategic Completion Custom Index | 2.1 72 | | | | | | | | | |
| **Northern Trust ESG Fund** | **8.6** 54 | **31.4** 41 | | | | | | | | |
| Callan Lg Cap Broad MF | | | | | | | | | | |
| MSCI USA ESG | 8.6 52 | 31.7 40 | 15.4 44 | 11.1 45 | 14.3 44 | 10.6 86 | | | | 1.0 19 |
| **International Equity Fund** | **11.0** 16 | **25.0** 40 | **8.1** 71 | **2.3** 98 | | **12.6** 52 | | **-1.0** 100 | **2.9** 60 | **0.1** 97 |
| CAI Mut Fd: Non-U.S. Equity Style | | | | | | | | | | |
| MSCI ACWI ex US Index | 8.9 54 | 21.5 67 | 9.9 50 | 5.5 53 | 5.4 69 | 11.9 71 | | | | 0.4 46 |
| **T. Rowe Price Small Cap** | **7.4** 75 | **34.2** 17 | **14.6** 33 | **11.7** 19 | **14.7** 21 | **13.7** 86 | | **0.9** 3 | **4.2** 70 | **0.8** 8 |
| CAI Mut Fd: Sm Cap Broad Style | | | | | | | | | | |
| Russell 2000 Index | 9.9 29 | 25.5 57 | 8.6 56 | 8.2 55 | 11.6 55 | 15.2 57 | | | | 0.5 55 |
| **T. Rowe Price Stable Value** | **0.7** 1 | **2.6** 1 | **2.5** 2 | **2.4** 1 | **2.5** 1 | **0.1** 92 | | **3.3** 5 | **0.3** 13 | **19.1** 1 |
| Callan Stable Value CT | | | | | | | | | | |
| FTSE 3 Mo T-Bill | 0.5 93 | 2.3 25 | 1.7 81 | 1.0 99 | 0.8 99 | 0.5 1 | | | | -0.1 98 |
| **SSgA Inst Treasury Money Market** | **0.4** 10 | **2.1** 12 | **1.5** 9 | **1.0** 10 | **0.7** 12 | **0.4** 7 | | **-3.5** 60 | **0.0** 78 | **-0.3** 11 |
| Callan Money Market Funds | | | | | | | | | | |
| FTSE 3 Mo T-Bill | 0.5 2 | 2.3 3 | 1.7 4 | 1.0 2 | 0.8 2 | 0.5 3 | | | | -0.1 2 |

Returns:
- above median
- third quartile
- fourth quartile

Risk:
- below median
- second quartile
- first quartile

Risk Quadrant:



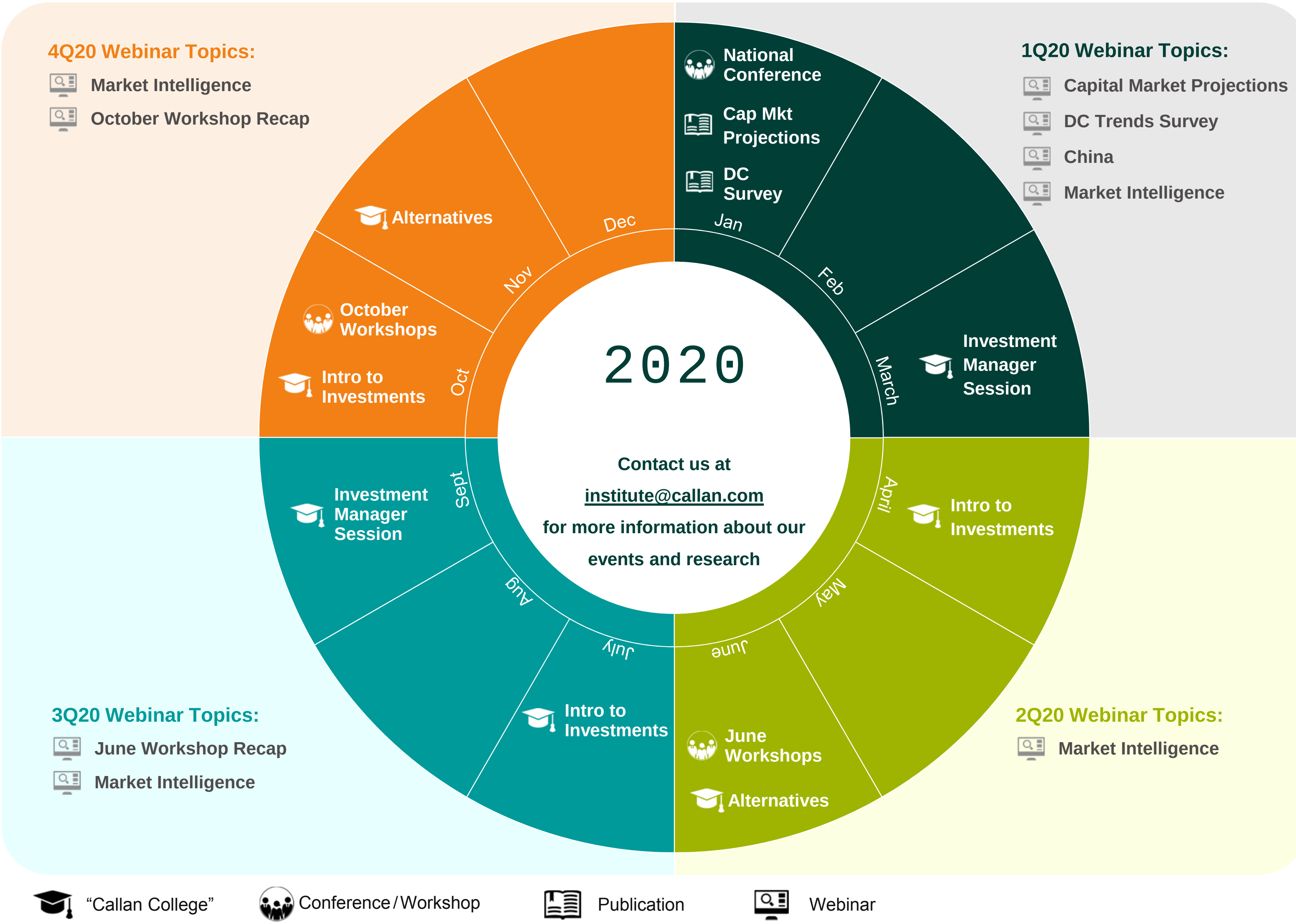

Excess Return Ratio:
- above median
- third quartile
- fourth quartile

Tracking Error:
- below median
- second quartile
- first quartile

Sharpe Ratio:
- above median
- third quartile
- fourth quartile

# Callan Update

# Content Calendar – Callan Institute

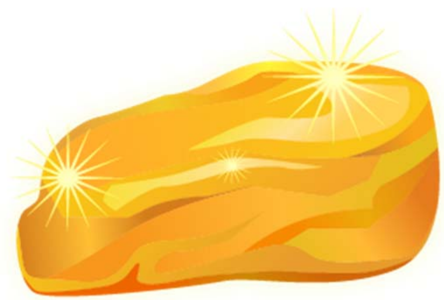


# Published Research Highlights from 4Q19

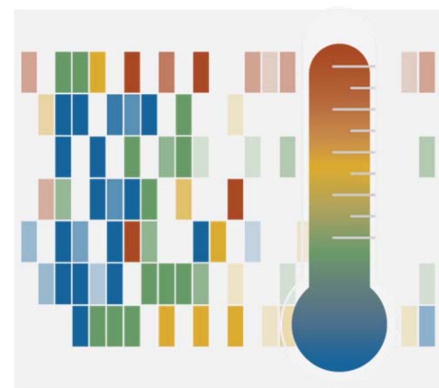
### Callan's 2019 Investment Management Fee Study

### Long-Dated Private Equity Funds: More Illiquidity Please

### Gold: Real Asset, Risk Mitigator, or Pet Rock?



### Real Estate Indicators: Too Hot to Touch or Cool Enough to Handle?



## Recent Blog Posts

**What You Need to Know About the SECURE Act**
James Veneruso

**ESG: What the Future May Hold**
Mike Stellato

**10 Questions to Address When Evaluating Infrastructure Managers**
Jan Mende

### Additional Reading

*Private Equity Trends* quarterly newsletter

Active vs. Passive quarterly charts

*Capital Market Review* quarterly newsletter

Monthly Updates to the Periodic Table

*Market Pulse Flipbook* quarterly markets update

*Real Assets Reporter* quarterly newsletter

# Callan Institute Events

## Upcoming Conferences, Workshops, and Webinars

### "Callan College"

*These sessions provide institutional investors across the industry with basic- to intermediate-level instruction.*

**Introduction to Investments**

San Francisco, April 21–22, 2020

Chicago, July 21-22, 2020

Chicago, October 13-14, 2020

**Introduction to Alternative Investments**

San Francisco, June 16, 2020

Chicago, November 3, 2020

*All sessions qualify for continuing education credits*

**Register at callan.com/callan-institute-events**

***"The Introduction to Alternative Investments sessions are a great opportunity for investors of all types to get a thorough introduction to alternative investments and meet the Callan team."***

Pete Keliuotis
Executive Vice President

### 2020 DC Trends Webinar

**February 20, 2020, at 9:30 am (PST)**

During this webinar, Callan experts Jamie McAllister and Greg Ungerman will offer key insights from our *DC Trends Survey.* They will discuss in detail the SECURE Act, retirement income solutions, and plan leakage as well as other key findings. They will be joined by an industry specialist, Marla Kreindler, a partner at Morgan Lewis.

### Regional Workshops

San Francisco, June 23, 2020

Chicago, June 25, 2020

Atlanta, October 27, 2020

Portland, October 29, 2020

### On-Demand Webinars

**Visit our website for** On-Demand webinar options at https://www.callan.com/on-demand-webinars/

Our most recent webinar covered Callan's Capital Market Assumptions.

# Callan Updates

## Firm updates by the numbers, as of December 31, 2019

**Total Associates: 194**

**Ownership**
- 100% employees
- Broadly distributed across 93 shareholders

**Leadership Changes**
- No executive additions or departures
- No leadership changes this quarter

**Total General and Fund Sponsor Consultants: more than 45**

**Total Specialty and Research Consultants: more than 60**

**Total CFA/CAIA/FRMs: more than 55**

**Total Fund Sponsor Clients: more than 400**

**AUA: more than $2.5 trillion**

**"The Callan culture that we have all built together over the years is the reason we like coming to work each day ... Our culture of supporting and caring about each other, of appreciating and respecting each other while still having some fun and good humor has been the key to our longevity and success. We never want to diminish it."**

*— Ron Peyton, Executive Chairman*

ALASKA RETIREMENT MANAGEMENT BOARD

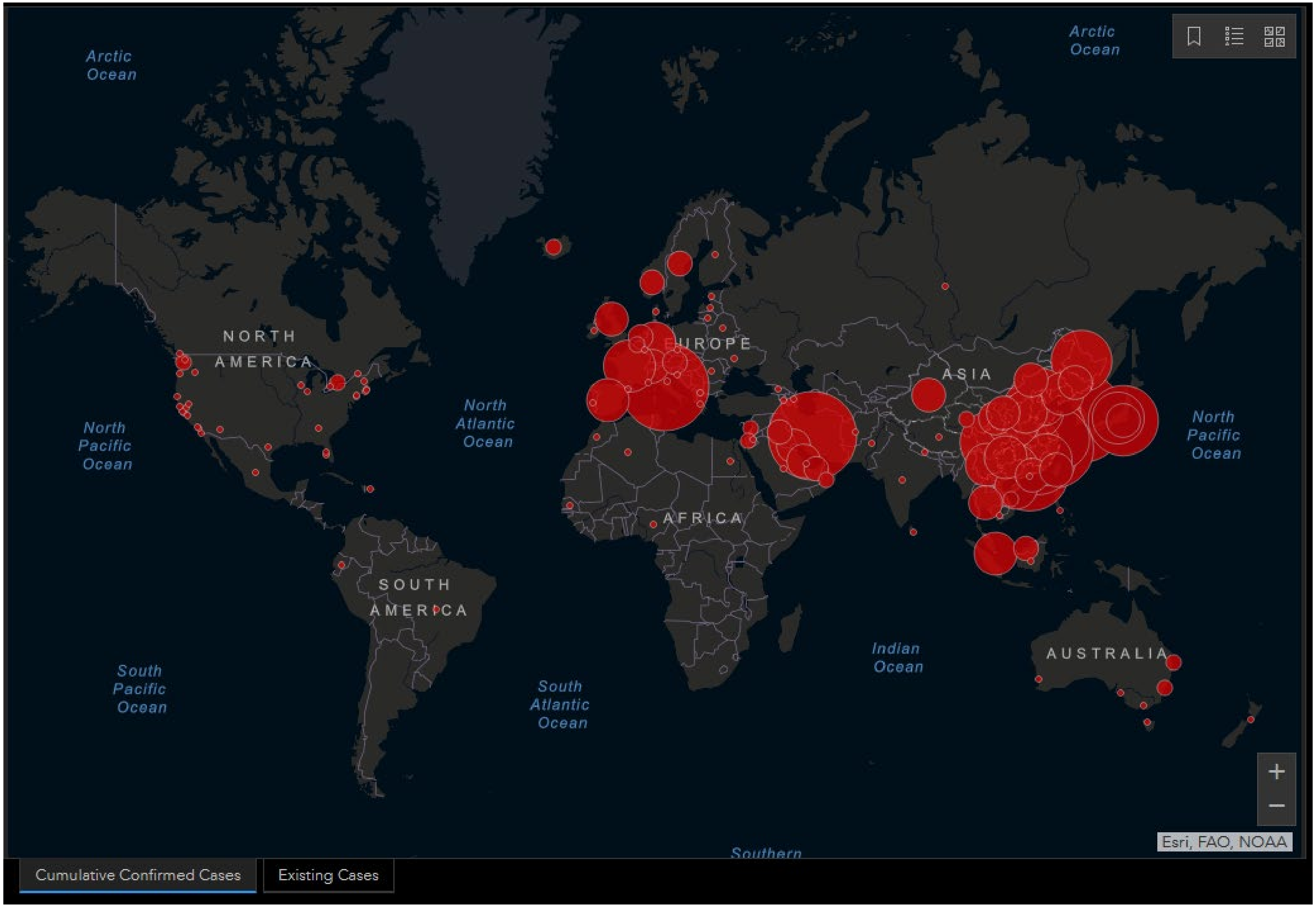
# Market and Portfolio Update

Bob Mitchell, CFA
Chief Investment Officer
March 19, 2020

# Overview

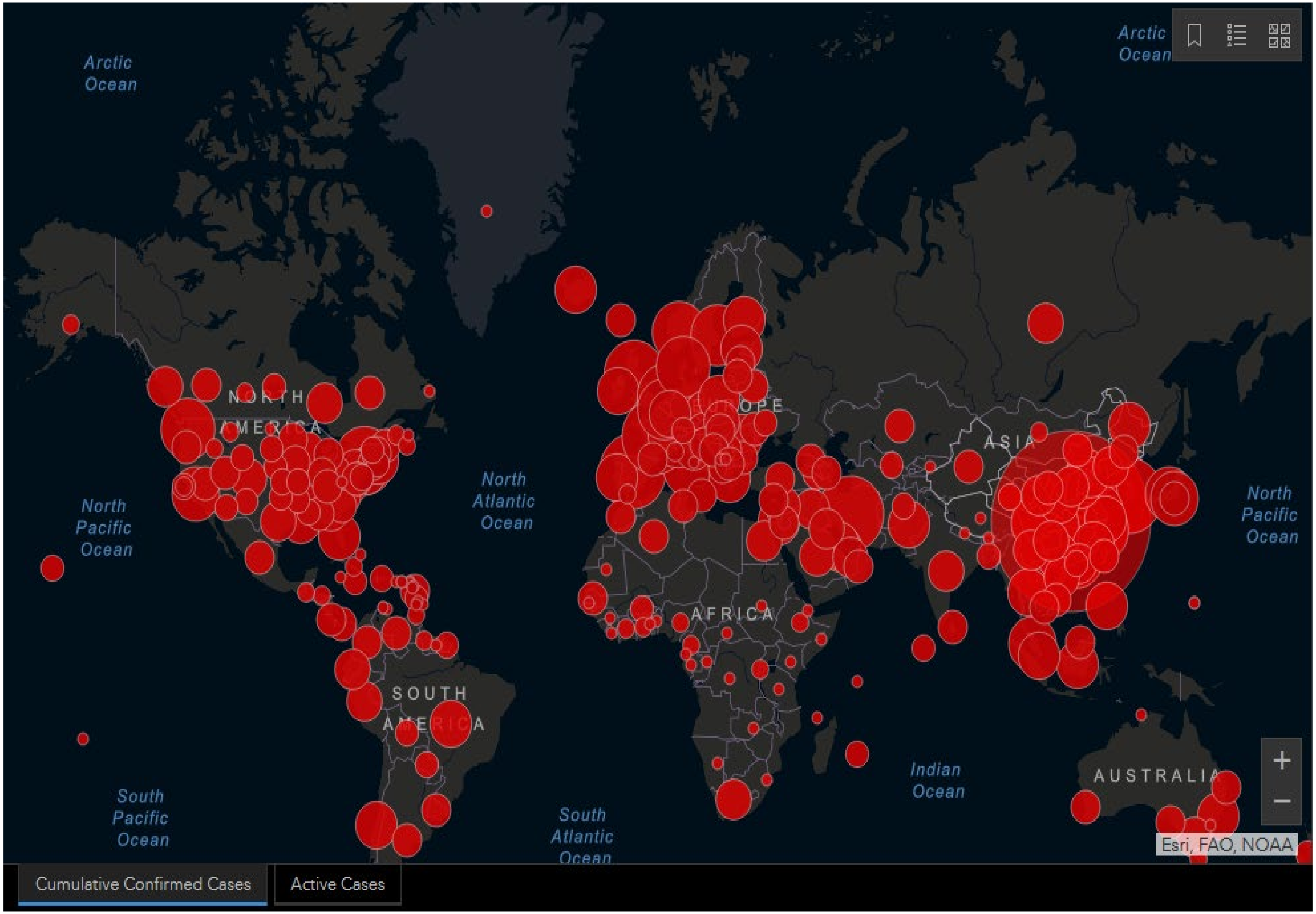
- COVID-19 Observations
- Economic Impact
- Market Impact
- Policy Response
- Portfolio Positioning

# COVID 19 – early March



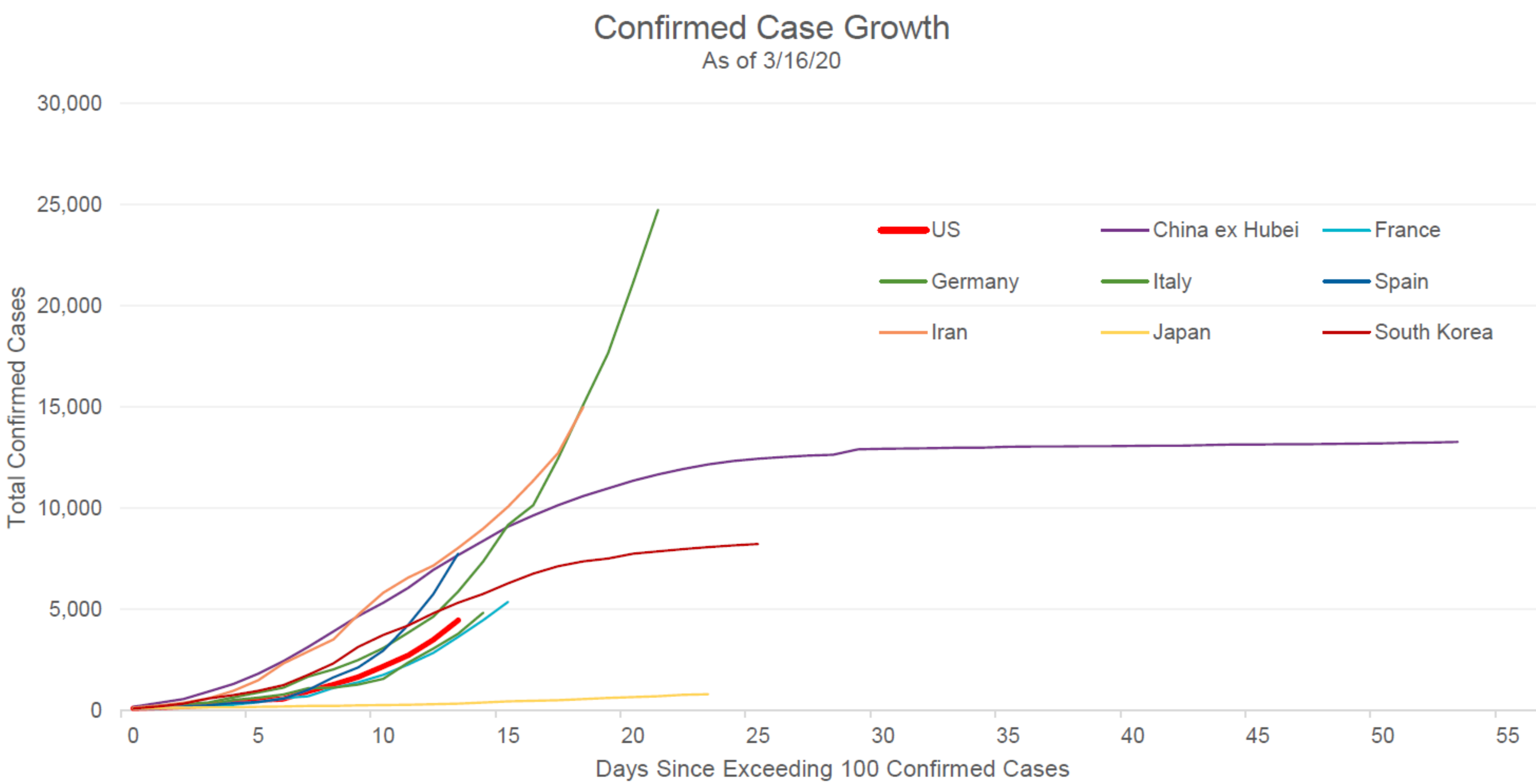

Source: Johns Hopkins University

# COVID 19 – March 18th



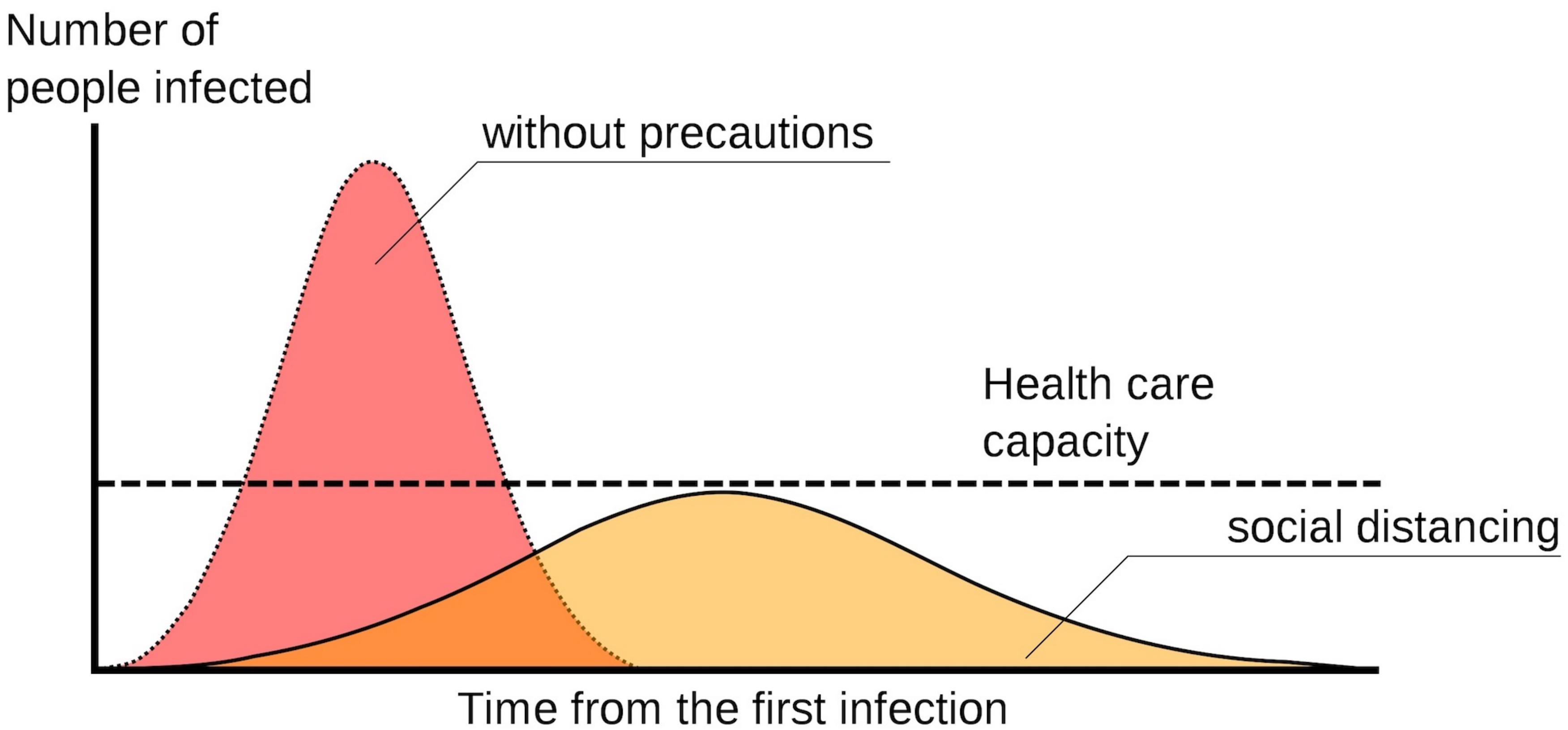

Source: Johns Hopkins University

# COVID 19 – Propagation by Country




Source: Natixis PRCG, WHO, John Hopkins University.

# COVID 19 – Propagation by Country



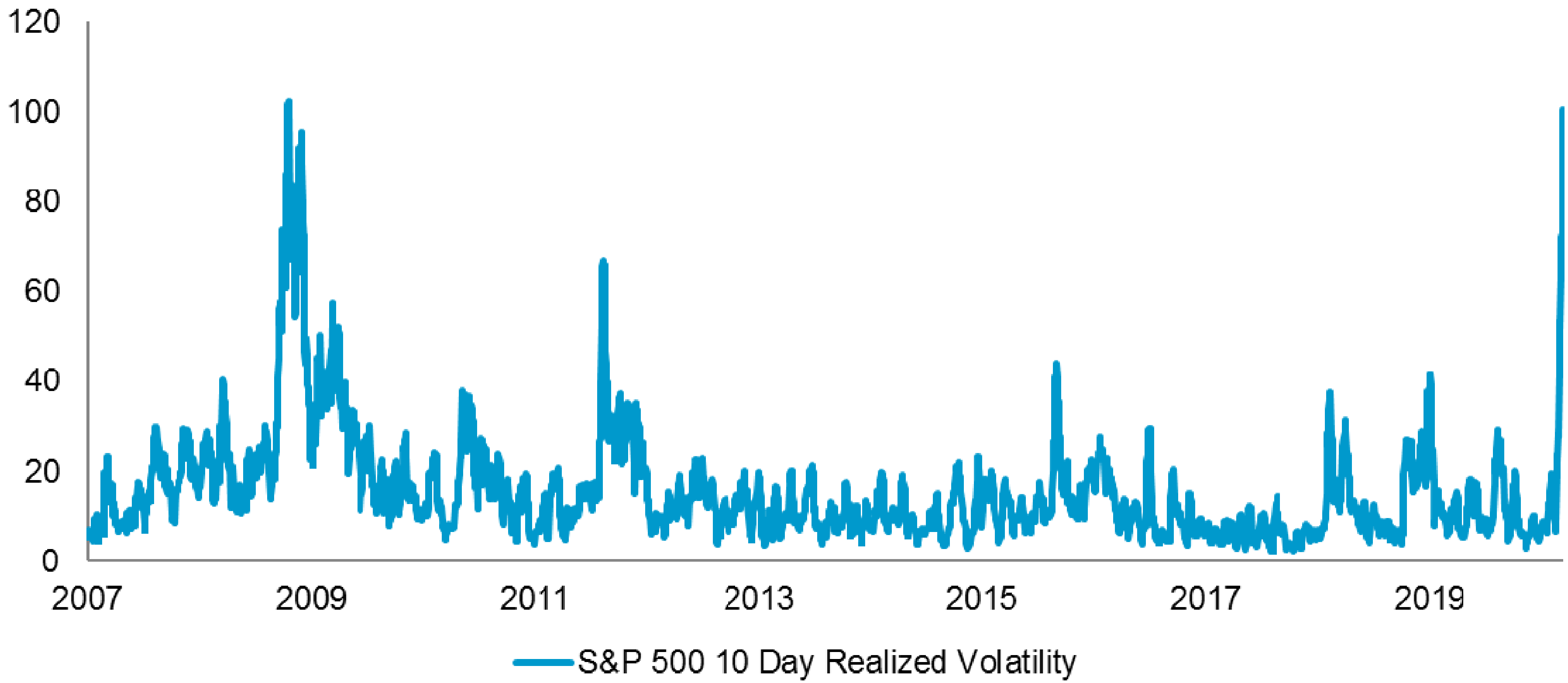

Source: livescience.com

# Economic Impact

- GDP
  - China – impact limited to 1Q, recovery expected afterward
  - US
    - Morgan Stanley – recession in 1H, 2H rebound
    - Goldman Sachs – 2Q GDP = -5%
- Supply: supply-chain impacts acute in Jan/Feb; appear to be waning in Asia
- Demand: consumption rebounding in Asia; quarantine impact ramping up in West

# Market Impact – Stocks More Volatile

**S&P 500 10-day realized volatility**




Source: Bloomberg, data as of March 13, 2020.

# Market Impact – Bond Yields Lower

### U.S. Rate environment

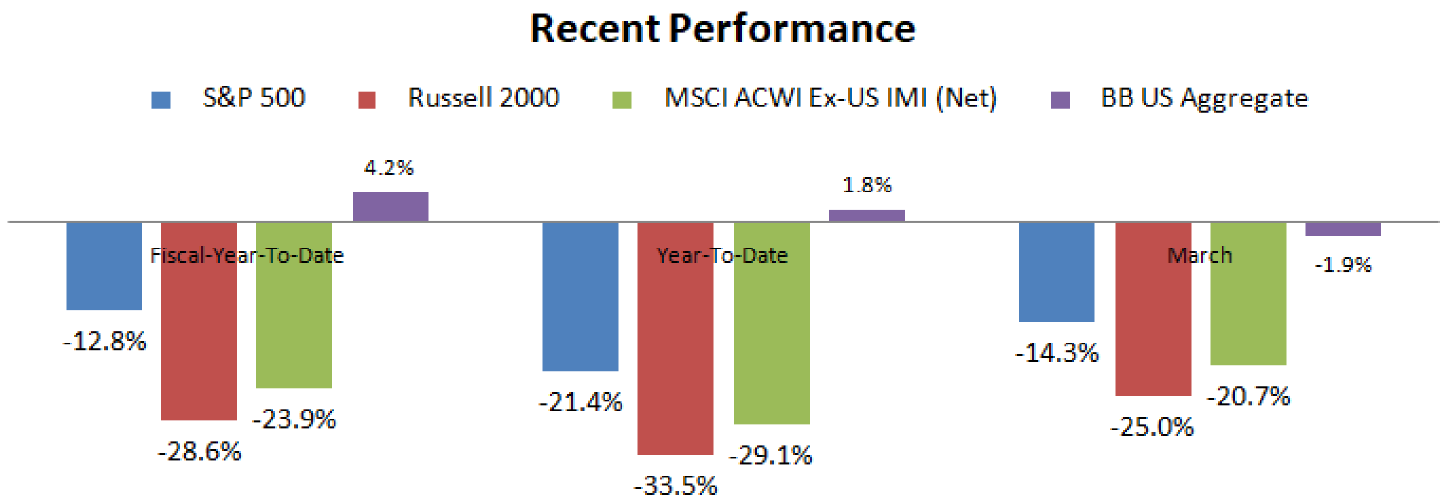
| Index | 3/13/2020 | 1-month ago | 3-months ago | 1-year ago |
|---|---|---|---|---|
| Fed Funds Rate | 0.0 - 0.25%* | 1.75% | 1.75% | 2.50% |
| 2-year | 0.49 | 1.43 | 1.60 | 2.46 |
| 5-year | 0.72 | 1.42 | 1.65 | 2.43 |
| 10-year | 0.96 | 1.58 | 1.82 | 2.63 |
| 30-year | 1.53 | 2.04 | 2.25 | 3.05 |

Source: Bloomberg, data as of March 13, 2020.
* Data as of March 15, 2020.

Source: Legal & General

# Market Impact

- Significant equity sell off, with large swings on a daily basis
- Markets functioning, strains appearing in bond market
- Company liquidity a concern 10-15 days ago, with private equity managers recommending their companies draw on lines of credit

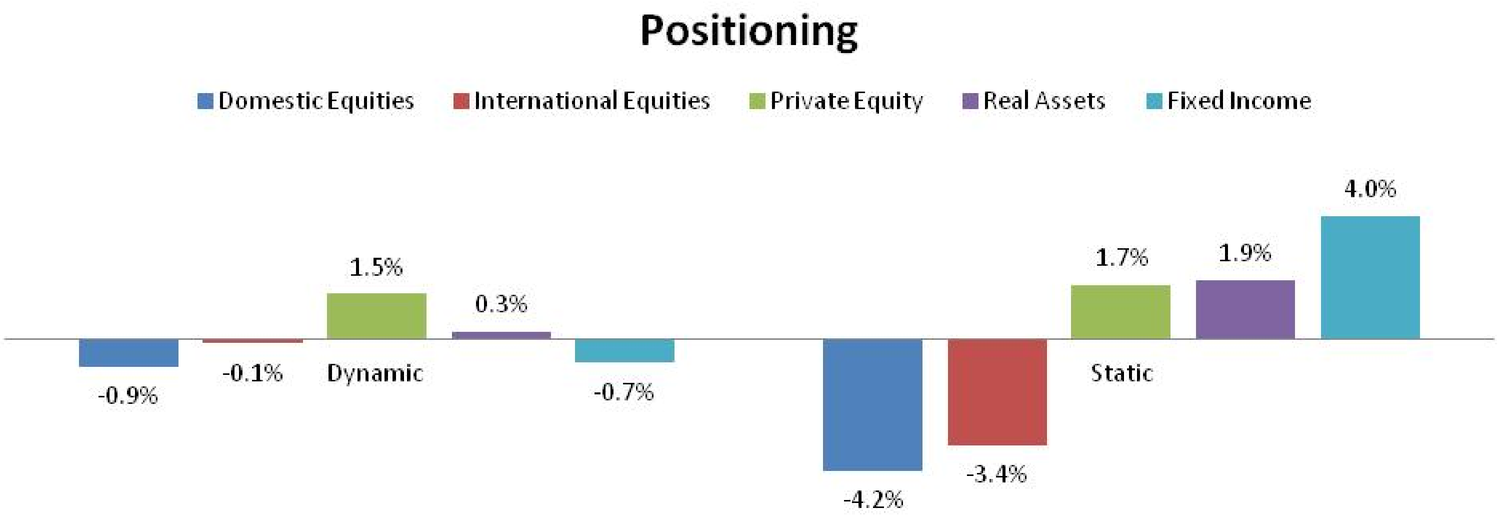


# Mitigation Policy Response

- Monetary Response
  - Significant central bank easing
  - Utilization of 13(3) Fed powers to lend to companies
- Fiscal Response
  - Funding to combat virus
  - Multiple aid programs being discussed
    - Direct payments to people
    - Loans so small businesses
    - Social safety net enhancements
    - Eviction/foreclosure moratoriums and tax holidays
    - Price gouging measures
- Other
  - Travel bans, event cancelations & postponements, common meeting area restrictions, voluntary quarantining, telework
  - Pentagon distributing 5MM masks and 2,000 ventilators

# Portfolio Positioning

- Increased cash from by ~ 1% to ~ 2 % in mid-March while assessing the liquidity conditions in fixed income markets
- Currently, the portfolios are modestly underweight public equities and fixed income, overweight private equity
- Relative to a static asset allocation, we are significantly underweight public equities, and overweight fixed income and real assets



ALASKA RETIREMENT MANAGEMENT BOARD

# Index Futures as Portfolio Management Tools

Mark Moon, Director, Internal Public Equity

# Daily approach to managing equity portfolios

- For passive portfolios, we utilize *tracking error* as primary measure of portfolios' distance from benchmarks
  - Zero tracking error would be portfolio exactly mirrors benchmark
  - 0 to 10 bp is typically the range we achieve in practice
- Differences in relative position weights (portfolio vs. benchmark) add to tracking error
- Increases in cash balances add to tracking error (benchmarks assume zero cash)
  - Daily increases in cash from dividends and corporate actions
  - Periodic increases/decreases due to asset reallocations
- As portfolios deviate from benchmarks (and tracking error grows) we want to trade
- Potential challenge of managing portfolio beta exposure between trade and settlement dates

# We cannot always trade when desired

- Sometimes there are *frictions* to trading exactly when we would like
  - Does the account have the needed cash in custody?
  - Does the account have the securities in custody?
  - Is fully trading today extra costly?
- Such frictions limit are ability to run portfolios at *zero* tracking error all the time

# Index futures offer a solution

- Maintain larger cash positions in equity accounts, with cash being “equitized” via long futures positions
- Allow for quick, low-cost, changes in broad exposures to underlying markets to be made
- Additional tool for enhancing flexibility and running low tracking error portfolios

# How index futures work

- Investor maintains small collateral account (e.g., US T-Bills)
- Investor executes futures trades depending on desired exposure
- Daily cash flows to/from investor based on daily mark-to-market of position
- Investor rolls futures position from one contract to the next prior to contract expiration
- In certain markets, futures are *extremely liquid* (e.g., S&P 500 futures)
- Clearinghouse structure and daily mark-to-market of futures mitigate any counterparty risk issues

# Specific contracts of most interest

- Contracts that closely mirror broad exposure of existing internal equity account benchmarks
  - S&P 500 E-mini => S&P 900 strategy
  - S&P 400 E-mini => S&P 900 strategy
  - Russell 2000 E-mini => S&P 600 strategy

# Anticipated uses of index futures

- Maintaining small exposures to benchmarks via long futures positions in individual equity portfolio accounts (e.g., typically < 1% positions)
  - Allow for larger cash positions in account *without* cash drag/higher tracking error
  - Reduce delayed trading friction from settlement issues
  - Facilitate increased market-on-close (MOC) trading (which indexes assume)

- Add to futures positions to reinvest dividend cash, in lieu of investing cash immediately across large number of benchmark stocks

- Employ index futures positions to help with transition/reallocation actions, as directed by Chief Investment Officer,
  - Goal is to maintain economic exposures in response to reallocation actions

# ARMB staff experience with futures

- Used successfully as integral part of ARMB Portable Alpha Program from 2016 thru 2019
  – Generally maintained long S&P 500 futures exposure and short Russell 2000 exposure
  – Previously equitized cash internally

- Additional staff prior experience using futures
  – S&P 500 futures to *equitize* long/short equity market neutral strategy
  – Eurodollar interest rate futures to hedge interest rate risk in asset-liability book
  – Currency futures to hedge corporate foreign exchange risk
  – Gold futures to hedge natural resource investments exposure to gold

# Summary

- Use of index futures offers various benefits
  - Greater flexibility in timing of trades
  - Lower effective cash positions
  - Quicker and more precise transition of economic exposures associated with rebalancing
  - Lower tracking error equity portfolios
  - Easier use of market on close trading (which equity index benchmarks assume)

- Costs are extra demands required of ARMB staff
  - Understanding needed of economic exposures associated with individual contracts
  - Operational efforts required around daily mark-to-market cash flows

BUCK

# Ric Ford, FSA, CFA, FCA, EA, MAAA

### Principal, Atlanta Wealth Practice Leader

Ric serves as a Principal with Buck Global, LLC where he leads the Atlanta Wealth Practice. In this role he has three primary responsibilities. The first is to help clients ensure that the design and operation of their retirement programs (Defined Benefit, Defined Contribution, etc.) are aligned with their strategic objectives and that they are receiving the appropriate level of service. The second role is to drive the business development efforts of the firm. The third role is to ensure the continued growth and development of his Buck colleagues. Ric also leads our public plan business development efforts on a national basis.

Prior to Buck, Ric worked for Voya Financial where he was responsible for the non-administrative aspects of the company's defined benefit, defined contribution, and deferred compensation plans. His role included portfolio construction, asset allocation, manager selection/monitoring, development of investment policy statements and glide paths, risk management, and governance. Ric served on the Pension Committee and as chairman of the Pension Investment and Pension Administration Subcommittees. He also served as a liaison between Finance, Treasury, Legal, and HR with respect to the plans. During his time at Voya, the returns on the defined benefit plan consistently beat the custom benchmark and ranked as high as 1st for the trailing ten-year period in the Corporate Plan Universe. He also reduced fees in the 401(k) plans by moving out of mutual fund vehicles and utilizing economies of scale where feasible. The annual fees on the passive assets in the 401(k) plans were reduced to less than 3 bps.

Prior to Voya, Ric worked at Mercer, a global consulting firm where he helped clients achieve pension fund excellence through plan design, asset allocation, manager selection and risk management. During his tenure at Mercer, Ric led over 150 Asset Liability Management projects for corporate and public pension plans that helped clients optimize their policies on cash funding, asset allocation and dynamic de-risking investment strategies. In his last year at Mercer, he led a team that won the prestigious "team of the year" award for the best performing team in the Atlanta office.

Ric has served on many client advisory and local community boards, most recently as a member of the T.Rowe Price DCIO client advisory board. Ric is a Fellow of the Society of Actuaries and holds both the Chartered Financial Analyst and the Enrolled Actuary designations. He graduated with a BS in Chemistry from Oglethorpe University and attended the Georgia State University Actuarial Science program.

### To contact me
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# State of Alaska Retirement Systems

## Presentation to Actuarial Committee and ARMB

## June 30, 2019 Valuation Results

March 18-19, 2020

BUCK

# Contents

# 1. Highlights of the 2019 Valuation Results

## Highlights of the 2019 Valuation Results

- FY19 asset returns were less than expected.  This created asset ***losses***.
- FY19 liability experience overall was better than expected, mainly due to medical/Rx claims experience.  This created liability ***gains***.
- Repeal of Cadillac Tax reduced healthcare liabilities, creating additional liability ***gains***.
- The liability gains were ***larger*** than the asset losses.  As a result, funded ratios are ***higher*** than last year, and contribution rates at the valuation date are generally ***lower*** than last year.

# Highlights of the 2019 Valuation Results (cont'd)

- FY19 asset experience

| | PERS | TRS | PERS DCR | TRS DCR |
|---|---|---|---|---|
| Market return | 6.0% | 5.9% | 6.2% | 6.2% |
| Actuarial return | 5.5% | 5.5% | 6.6% | 6.4% |
| Actuarial asset gain/(loss) | $(320)M | $(155)M | $(1.1)M | $(0.4)M |

- FY19 liability experience

| | PERS | TRS | PERS DCR | TRS DCR |
|---|---|---|---|---|
| Medical claims gain/(loss) | $696M | $246M | $17M | $4.5M |
| • % of expected liability | 3.0% | 2.4% | 10.7% | 11.7% |
| Gain due to Repeal of Cadillac Tax | $36M | $14M | $0.9M | $0.3M |
| • % of expected liability | 0.2% | 0.1% | 0.6% | 0.7% |
| Other gain/(loss) | $(33)M | $(6)M | $2.6M | $0.5M |
| • % of expected liability | (0.1)% | (0.1)% | 1.7% | 1.3% |

Note: Rounded figures are displayed

# Highlights of the 2019 Valuation Results (cont'd)

- Funded ratios (actuarial asset value basis)

| | PERS | TRS | PERS DCR | TRS DCR |
|---|---|---|---|---|
| June 30, 2019 | 78.4% | 85.9% | 115.4% | 140.5% |
| June 30, 2018 | 76.9% | 84.7% | 103.8% | 125.1% |

- Contribution rates at valuation date

| | PERS* | TRS* | PERS DCR** | TRS DCR** |
|---|---|---|---|---|
| June 30, 2019 | 24.08% | 24.98% | 1.43% | 0.91% |
| June 30, 2018 | 24.59% | 23.99% | 1.63% | 1.01% |

* % of DB/DCR payroll
** % of DCR payroll

# 2. Changes From December Preliminary Results

# Changes From December 2019 Preliminary Results Presentation

- The Further Consolidated Appropriations Act, 2020 that was passed in December made several changes, including the repeal of the Cadillac Tax. Accordingly, the preliminary results were updated to reflect this change in law. **This led to decrease in June 30, 2019 healthcare liabilities of**:
  - PERS: $36.3M
  - TRS: $14.3M
  - PERS DCR: $ 0.9M
  - TRS DCR: $ 0.3M

# 3. FY19 Actuarial (Gains)/Losses

# DB Plans: FY19 Actuarial (Gains)/Losses ($000's)

| | PERS | | | TRS | | |
|---|---|---|---|---|---|---|
| | Pension | Healthcare | Total | Pension | Healthcare | Total |
| **Liabilities** | | | | | | |
| - Demographic Experience | (14,612) | (2,147) | (16,759) | 8,441 | 2,428 | 10,869 |
| - Changes in Dependent Coverage Elections | n/a | (18,580) | (18,580) | n/a | (15,195) | (15,195) |
| - Salary Increases | 59,955 | n/a | 59,955 | (7,272) | n/a | (7,272) |
| - COLA/PRPA Increases | 8,371 | n/a | 8,371 | 5,231 | n/a | 5,231 |
| - Medical Claims Experience/Cadillac Tax | n/a | (696,318) | (696,318) | n/a | (246,132) | (246,132) |
| - Repeal of Cadillac Tax | n/a | (36,301) | (36,301) | n/a | (14,283) | (14,283) |
| - Rehires (net of rehire load) | 13,297 | (10,708) | 2,589 | (2,148) | (1,710) | (3,858) |
| - Medicare Part B Only Experience | n/a | (6,164) | (6,164) | n/a | (1,594) | (1,594) |
| - Other | 8,534 | (5,064) | 3,470 | 3,295 | 14,087 | 17,382 |
| - Total Liabilities | 75,545 | (775,282) | (699,737) | 7,547 | (262,399) | (254,852) |
| **Assets** | 181,586 | 138,335 | 319,921 | 104,199 | 50,750 | 154,949 |
| **Actual vs Expected Contributions** | 40,106 | 6,996 | 47,102 | (17,370) | (1,734) | (19,104) |
| **Actual vs Expected Admin Expenses** | 302 | (889) | (587) | (62) | (374) | (436) |
| **Total** | 297,539 | (630,840) | (333,301) | 94,314 | (213,757) | (119,443) |

# DCR Plans: FY19 Actuarial (Gains)/Losses ($000's)

| | PERS DCR | | | TRS DCR | | |
|---|---|---|---|---|---|---|
| | ODD | Ret Med | Total | ODD | Ret Med | Total |
| **Liabilities** | | | | | | |
| - Demographic Experience | (2,975) | (2,717) | (5,692) | (294) | (2,139) | (2,433) |
| - Salary Increases | 80 | n/a | 80 | (1) | n/a | (1) |
| - Medical Claims Experience/Cadillac Tax | n/a | (16,599) | (16,599) | n/a | (4,524) | (4,524) |
| - Repeal of Cadillac Tax | n/a | (925) | (925) | n/a | (286) | (286) |
| - New Entrants/Rehires | 158 | 4,106 | 4,264 | 209 | 1,473 | 1,682 |
| - Other | (80) | (1,181) | (1,261) | 27 | 222 | 249 |
| - Total Liabilities | (2,817) | (17,316) | (20,133) | (59) | (5,254) | (5,313) |
| **Assets** | 363 | 754 | 1,117 | 68 | 341 | 409 |
| **Actual vs Expected Contributions** | (1,302) | 4,424 | 3,122 | (341) | 11 | (330) |
| **Actual vs Expected Admin Expenses** | (9) | 6 | (3) | (6) | (2) | (8) |
| **Total** | (3,765) | (12,132) | (15,897) | (338) | (4,904) | (5,242) |

# 4. Projections - PERS/TRS

# Projection Assumptions

- Investment return (market, net of investment expenses):
  - Baseline Scenario:  7.38% per year
  - Alternative Scenario:  7.38% per year, except 5.75% each year in FY21-FY25*
- Future experience matches all assumptions, except asset returns in Alternative Scenario
- 0% active population growth, all new entrants assumed to enter DCR plan
- June 30, 2019 DCR contribution rates assumed to remain constant every year
- Active rehire assumption grades to zero uniformly over 20 years
- Additional State Contributions allocated 100% to pension trust each year

* The average market return over 5 years FY15-FY19 was approx. 5.75%

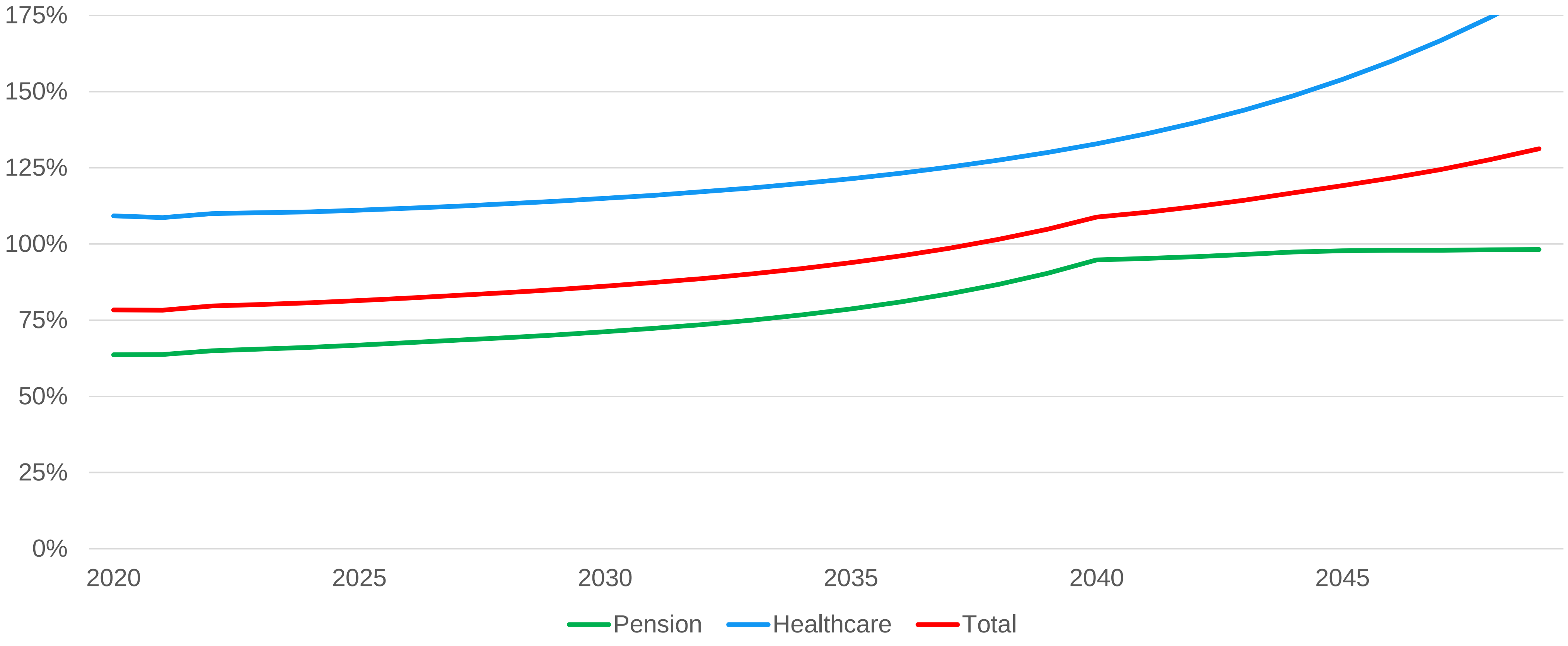
# Additional State Contribution Projections - Baseline and Alternative Scenarios ($000's)

| Fiscal | PERS - 2019 Valuation | | | TRS - 2019 Valuation | | | 2018 Valuation - Baseline | |
|---|---|---|---|---|---|---|---|---|
| Year | Baseline | Alternative | Increase | Baseline | Alternative | Increase | PERS | TRS |
| 2022 | 178,702 | 180,610 | 1,908 | 135,047 | 136,156 | 1,109 | 185,911 | 131,161 |
| 2023 | 182,291 | 189,043 | 6,752 | 139,211 | 143,103 | 3,892 | 185,255 | 133,419 |
| 2024 | 185,993 | 200,150 | 14,157 | 143,462 | 151,424 | 7,962 | 186,254 | 136,141 |
| 2025 | 188,295 | 212,543 | 24,248 | 146,770 | 160,386 | 13,616 | 187,212 | 139,126 |
| 2026 | 191,073 | 228,031 | 36,958 | 150,325 | 170,863 | 20,538 | 189,573 | 142,166 |
| 2027 | 194,586 | 242,402 | 47,816 | 153,963 | 180,470 | 26,507 | 191,637 | 145,533 |
| 2028 | 199,063 | 255,269 | 56,206 | 157,904 | 188,984 | 31,080 | 195,856 | 148,935 |
| 2029 | 203,840 | 266,396 | 62,556 | 161,809 | 196,259 | 34,450 | 199,585 | 152,802 |
| 2030 | 209,682 | 276,153 | 66,471 | 166,496 | 203,131 | 36,635 | 204,346 | 156,619 |
| 2031 | 215,634 | 283,831 | 68,197 | 170,855 | 208,518 | 37,663 | 209,331 | 160,719 |
| 2032 | 222,110 | 292,101 | 69,991 | 175,349 | 214,004 | 38,655 | 215,330 | 164,769 |
| 2033 | 228,296 | 300,450 | 72,154 | 180,003 | 219,796 | 39,793 | 221,322 | 169,208 |
| 2034 | 235,334 | 309,449 | 74,115 | 185,080 | 225,884 | 40,804 | 228,140 | 173,778 |
| 2035 | 242,982 | 319,140 | 76,158 | 190,023 | 232,073 | 42,050 | 235,774 | 178,449 |
| 2036 | 251,174 | 329,434 | 78,260 | 195,189 | 238,256 | 43,067 | 243,599 | 183,196 |
| 2037 | 260,165 | 340,557 | 80,392 | 200,626 | 244,937 | 44,311 | 251,692 | 188,136 |
| 2038 | 269,548 | 351,838 | 82,290 | 206,207 | 251,717 | 45,510 | 260,777 | 193,169 |
| 2039 | 279,046 | 363,656 | 84,610 | 211,794 | 258,653 | 46,859 | 269,649 | 198,704 |
| Total | 3,937,814 | 4,941,053 | 1,003,239 | 3,070,113 | 3,624,614 | 554,501 | 3,861,241 | 2,896,030 |

Notes:

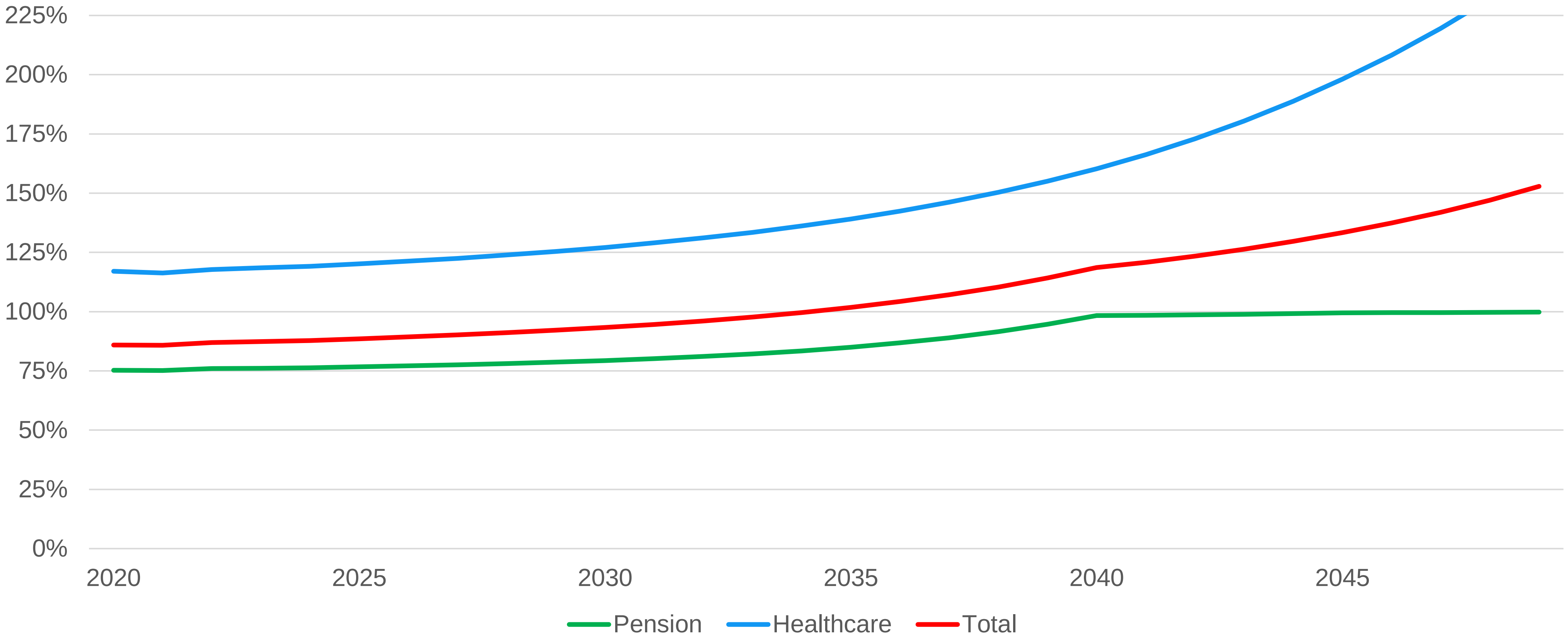
1. Asset return assumption: Baseline - 7.38% per year; Alternative - 5.75% in FY21-FY25, 7.38% in all other years
2. TRS Additional State Contributions in FY40-FY49 are projected to be approximately $437M under the Alternative Scenario

# Funded Ratio Projections - Baseline Scenario (PERS)




Note: Funded Ratio is based on Actuarial Value of Assets

# Funded Ratio Projections - Baseline Scenario (TRS)




Note:  Funded Ratio is based on Actuarial Value of Assets

# 5. Roll-Forward Valuation Results – JRS/NGNMRS

# June 30, 2019 Roll-Forward Valuations – JRS/NGNMRS

| | JRS | | | NGNMRS |
|---|---|---|---|---|
| | Pension | Healthcare | Total | Pension |
| Actuarial Accrued Liability (AAL) | 221,159,289 | 18,089,100 | 239,248,389 | 22,592,882 |
| Actuarial Value of Assets (AVA) | 186,117,830 | 33,319,896 | 219,437,726 | 41,939,204 |
| Unfunded Liability (AVA basis) | 35,041,459 | (15,230,796) | 19,810,663 | (19,346,322) |
| Funded Ratio (AVA basis) | 84.2% | 184.2% | 91.7% | 185.6% |
| Normal Cost | 6,138,783 | 840,972 | 6,979,755 | 483,551 |
| FY22 Contribution Rate/Amount | | | | |
| - Normal Cost (net of employee contributions) | 39.26% | 6.12% | 45.38% | 483,551 |
| - Administrative Expenses | 0.46% | 0.16% | 0.62% | 254,000 |
| - Unfunded Liability Amortization | 31.25% | 0.00% | 31.25% | (3,027,930) |
| - Total | 70.97% | 6.28% | 77.25% | 0 |



Note: Assumptions are the same as those used in the June 30, 2018 valuations, except the JRS salary increase for first two years changed to 0%

# 6. Miscellaneous

# Miscellaneous

- ASOP 51 Risk Assessment
  - For further details see the December 2019 preliminary valuation results presentation, Section 7 of the draft PERS/TRS June 30, 2019 valuation reports, and the JRS/NGNMRS June 30, 2019 roll-forward valuation report
- ASOP 4 revision – 2nd Exposure Draft
  - ASOP 4 covers the measurement of pension obligations, and the determination of pension plan costs and contributions
  - 2nd Exposure Draft released in January 2020 (deadline for comments is April 30)
  - When performing a funding valuation, should measure and disclose a *Low-Default-Risk Obligation*
    - Would require use of lower discount rate that is derived from low-default-risk fixed income securities (e.g., US Treasury yields, settlement rates, tax-exempt municipal bonds)
    - Lower discount rate would result in disclosure of higher liabilities than those used for funding/GASB reporting

# Miscellaneous (cont'd)

- NCPERS (National Conference on Public Employee Retirement Systems) 2019 Study was released in January 2020
  - Includes data for 155 state and local government pension funds, covering more than 12.6 million active/retired members and assets exceeding $1.4 trillion
  - Key findings include:
    - One-year market returns = 4.5% (highly dependent on timing of fiscal year end)
    - Five-year and ten-year market returns = 7.1% and 7.7%, respectively
    - Average assumed rate of return = 7.24% (7.34% one year earlier)
    - Average inflation rate = 2.8% (unchanged from one year earlier)
    - Average COLA = 1.6%
    - Administrative and investment manager expenses are approx. 55 basis points (down from 60 basis points in prior year)
    - Approx. 25% of respondents indicated difficulties attracting/retaining skilled workers
    - Approx. 50% of respondents are, or are considering, implementing higher age/service requirements for retirement benefits
    - Raising employee contributions is also a popular strategy being considered

# Miscellaneous (cont'd)

- The Pew Charitable Trusts Update: 50-State Survey of Retiree Health Care Liabilities was released in December 2018
  - Compares the 2016 results for each state
  - Key findings include:
    - Of the 48 states that reported OPEB liabilities in 2016, 19 have not put aside any funds to pay for promised benefits or their available funds are negligible
    - 10 states have a funded ratio of less than 10%
    - 11 states have a funded ratio between 10% - 29%
    - Only 8 states have a funded ratio of 30% or more
    - Alaska had the 4th highest funded ratio among all states
    - Given the changes reflected over the past couple years (favorable claims experience, adoption of EGWP), Alaska could possibly rank even higher when an updated study is completed
    - While 9 states reported higher total liabilities than Alaska, only 1 state (Ohio) had more assets set aside to pay for retiree health care benefits

# 7. Valuation Timeline

# Valuation Timeline

| Item # | Task | Original Deadline | Revised Deadline | Date Completed | Team Responsible | Comments / Notes |
|---|---|---|---|---|---|---|
| 1 | Valuation Data Request to DRB | July 15 | | July 11 | Buck | |
| 2 | Enrollment Data Request to Aetna | July 15 | | July 15 | Buck | Request was sent to Daniel Dudley at Aetna |
| 3 | Claims Data Request to DRB | July 15 | | July 15 | Buck | |
| 4 | Preliminary 6/30/2019 Assets to Buck | September 6 | | August 16 | DRB | |
| 5 | Valuation Data to Buck | September 9 | September 3 | August 30 | DRB | |
| 6 | Audit Data and Sample Lives Request to Buck | September 15 | | October 7 | GRS | |
| 7 | Monthly Audit Discussion with GRS / Buck | September 16 | | September 16 | GRS / Buck | |
| 8 | Actuarial Committee Meeting - FY21 Contribution Rates | September 18 | | September 18 | All | Juneau (FY21 contribution rates are based on 6/30/18 valuations and FY19 asset performance) |
| 9 | Data Questions to DRB | September 30 | | October 1 | Buck | |
| 10 | Data Answers to Buck | October 11 | | October 14 | DRB | Follow-up data questions were sent to DRB on 10/18 |
| 11 | Claims Data to Buck | October 15 | | October 22 | DRB/Segal | To includes claims through 6/30/19 that are paid through 9/30/19 |
| 12 | Monthly Audit Discussion with GRS / Buck | October 21 | | October 21 | GRS / Buck | |
| 13 | TRS (and selected school districts in PERS) updated active listing at 10/1/19 to capture term/rehires since 6/30/19 | October 18 | | November 22 | DRB | On 7/31 AC call it was agreed to eliminate this added step for the 6/30/19 valuations. DRB will still provide Buck with the 10/1 file so we can track how many terms/rehires there are for each plan. |
| 14 | 6/30/2019 Valuation Data to GRS | November 1 | | November 22 | Buck | Also provide GRS with data questions that were sent to DRB. Data files were provided to GRS on 11/4, 11/20, 11/21, and 11/22. |
| 15 | Monthly Audit Discussion with GRS / Buck | November 18 | November 20 | November 20 | GRS / Buck | |
| 16 | Sample Life Information to GRS | November 22 | | November 25 | Buck | TRS/TRS DCR sample lives were provided on 11/22; PERS/PERS DCR sample lives were provided on 11/25. OPEB sample lives were provided on 11/25. OPEB sample lives reflecting the repeal of the Cadillac Tax were provided on 1/31. |
| 17 | Final 6/30/2019 Assets to Buck | November 22 | September 13 | September 24 | DRB | Final audit reports to be issued by 10/15 |
| 18 | Preliminary Valuation Results and PVB's by individual to GRS | December 2 | | December 4 | Buck | |
| 19 | Actuarial Committee Meeting - 6/30/19 valuation results (preliminary) | December 11 | | December 11 | All | Juneau. Also include "trustee education" materials. |
| 20 | Monthly Audit Discussion with GRS / Buck | December 16 | | December 16 | GRS / Buck | |
| 21 | Actuarial Committee Meeting - 6/30/19 valuation results (full) | TBD (Jan) | | no meeting | All | Teleconference |
| 22 | Draft DCR Valuation Reports to GRS | January 10 | | January 10 | Buck | Updated draft DCR reports reflecting the repeal of the Cadillac Tax were provided on 1/23 |
| 23 | Monthly Audit Discussion with GRS / Buck | January 20 | January 22 | January 22 | GRS / Buck | |
| 24 | Draft DB Valuation Reports to GRS | January 24 | | February 14 | Buck | Draft PERS report was provided on 1/31 (updated draft provided on 2/14). Draft TRS report was provided on 2/6. |
| 25 | Monthly Audit Discussion with GRS / Buck | February 17 | February 19 | February 19 | GRS / Buck | |
| 26 | Actuarial Committee Meeting - draft valuation reports | TBD (Mar) | March 18 | | All | Juneau. Include roll-forward valuation results for JRS and NGNMRS. |
| 27 | Monthly Audit Discussion with GRS / Buck | March 16 | | | GRS / Buck | |
| 28 | Draft Actuarial Review Report to Buck | March 27 | | | GRS | |
| 29 | Monthly Audit Discussion with GRS / Buck | April 20 | | | GRS / Buck | |
| 30 | Final DB and DCR valuation reports reflecting GRS comments | April 30 | | | Buck | |
| 31 | Monthly Audit Discussion with GRS / Buck | May 18 | | | GRS / Buck | |
| 32 | Actuarial Committee Meeting - final valuation reports | TBD (June) | | | All | Juneau |

# 8. Actuarial Certification

# Actuarial Certification

The purpose of this presentation is to provide the Actuarial Committee and ARMB with June 30, 2019 valuation results for discussion at the March 18-19, 2020 meetings. This presentation should be considered part of the June 30, 2019 actuarial valuation report services. Additional details can be found in the preliminary valuation results presentation from the December 11, 2019 meeting and the June 30, 2019 valuation reports (including the JRS/NGNMRS roll-forward valuation report).

The data, assumptions, methods, and plan provisions used to determine the results shown in this presentation are as shown in the June 30, 2019 actuarial valuation reports.

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 actuarial 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) all or a portion of its liabilities.

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 were prepared under the direction of David Kershner and Scott Young, both of whom meet 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

Scott Young
FSA, EA, MAAA
Director, Health

# State of Alaska

## Public Employees' Retirement System

Actuarial Valuation Report

As of June 30, 2019

February 2020

BUCK

February 14, 2020

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

**Certification of Actuarial Valuation**

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

This report summarizes the annual actuarial valuation results of the State of Alaska Public Employees' Retirement System (PERS) as of June 30, 2019 performed by Buck Global, LLC (Buck).

The actuarial valuation is based on financial information provided in the financial statements audited by KPMG LLP, member data provided by the Division of Retirement and Benefits, and medical enrollment data provided by the healthcare claims administrator (Aetna), as summarized in this report. The benefits considered are those delineated in Alaska statutes effective June 30, 2019. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under 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, 2019.

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 6.2. 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 is expected to increase to 100% after 25 years.

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

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. In particular, retiree group benefits models necessarily rely on the use of approximations and estimates and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. An analysis of the potential range of such future differences is beyond the scope of this valuation.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the plan. The actuary performs an analysis of plan experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. The last full experience analysis was performed for the period July 1, 2013 to June 30, 2017. Based on that experience study, the Board adopted new assumptions effective beginning with the June 30, 2018 valuation to better reflect expected future experience. Based on our annual analysis of recent claims experience, changes were made to the per capita claim cost rates effective June 30, 2019 to better reflect expected future healthcare experience. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Sections 6.2 and 6.3.

Governmental Accounting Standards Board (GASB) Statement No. 67 (GASB 67) was effective for PERS beginning with fiscal year ending June 30, 2014, and Statement No. 74 (GASB 74) was effective for PERS beginning with fiscal year ending June 30, 2017. Separate GASB 67 and GASB 74 reports as of June 30, 2019 have been prepared. Section 3 of this report contains accounting information previously disclosed under GASB 25 for fiscal years 2007 through 2013 and accounting information previously disclosed under GASB 43 for fiscal years 2007 through 2016. We have also prepared the member data tables shown in Section 5 of this report for the Statistical Section of the CAFR, and the summary of actuarial assumptions, solvency test, and analysis of financial experience for the Actuarial Section of the CAFR. Please see our separate GASB 67 and GASB 74 reports for other information needed for the CAFR.

**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. See Section 7 of this report for further details regarding ASOP 51.

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

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

Respectfully submitted,

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

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

Scott Young

Scott Young, FSA, EA, MAAA
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, 2019.

### Purpose

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

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

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

Actuarial projections are also performed to provide a long-term view of the expected future funded status and contribution patterns (see Section 4). The future funded status and contribution patterns would be different than those shown in Section 4 if future experience does not match the actuarial assumptions used in the projections.

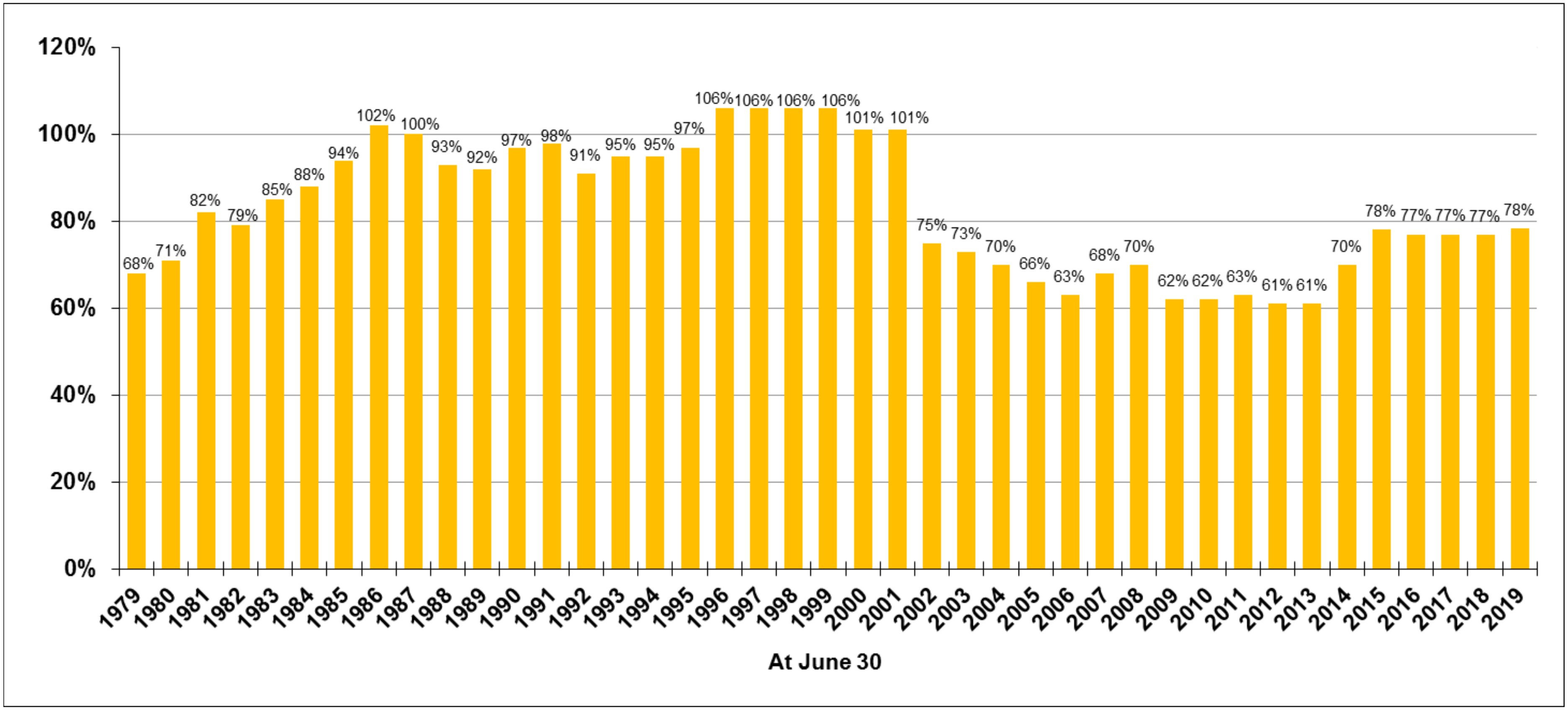
Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

## Funded Status

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

| Funded Status as of June 30 ($’s in 000’s) | | 2018 | 2019 |
|---|---|---|---|
| **Pension** | | | |
| a. | Actuarial Accrued Liability | $ 14,606,033 | $ 15,039,180 |
| b. | Valuation Assets | 9,430,192 | 9,576,693 |
| c. | Unfunded Actuarial Accrued Liability, (a) – (b) | $ 5,175,841 | $ 5,462,487 |
| d. | Funded Ratio based on Valuation Assets, (b) ÷ (a) | 64.6% | 63.7% |
| e. | Fair Value of Assets | $ 9,306,675 | $ 9,489,405 |
| f. | Funded Ratio based on Fair Value of Assets, (e) ÷ (a) | 63.7% | 63.1% |
| **Healthcare** | | | |
| a. | Actuarial Accrued Liability | $ 7,658,104 | $ 7,151,694 |
| b. | Valuation Assets | 7,686,509 | 7,810,491 |
| c. | Unfunded Actuarial Accrued Liability, (a) – (b) | $ (28,405) | $ (658,797) |
| d. | Funded Ratio based on Valuation Assets, (b) ÷ (a) | 100.4% | 109.2% |
| e. | Fair Value of Assets | $ 7,612,001 | $ 7,767,692 |
| f. | Funded Ratio based on Fair Value of Assets, (e) ÷ (a) | 99.4% | 108.6% |
| **Total** | | | |
| a. | Actuarial Accrued Liability | $ 22,264,137 | $ 22,190,874 |
| b. | Valuation Assets | 17,116,701 | 17,387,184 |
| c. | Unfunded Actuarial Accrued Liability, (a) – (b) | $ 5,147,436 | $ 4,803,690 |
| d. | Funded Ratio based on Valuation Assets, (b) ÷ (a) | 76.9% | 78.4% |
| e. | Fair Value of Assets | $ 16,918,676 | $ 17,257,097 |
| f. | Funded Ratio based on Fair Value of Assets, (e) ÷ (a) | 76.0% | 77.8% |

**PERS Funded Ratio History (Based on Valuation Assets)**



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

**1. Investment Experience**

The actuarial asset value was reinitialized to equal fair value of assets as of June 30, 2014. Beginning in FY15, the asset valuation method recognizes 20% of the investment gain or loss each year, for a period of five years. The FY19 investment return based on fair value of assets was approximately 6.0% compared to the expected investment return of 7.38% (net of investment expenses of approximately 0.04%). This resulted in a market asset loss of approximately $237 million. Due to the recognition of investment gains and losses over a 5-year period, the FY19 investment return based on actuarial value of assets was approximately 5.5%, which resulted in an actuarial asset loss of approximately $320 million.

**2. Salary Increases**

Salary increases for continuing active members during FY19 were higher than expected based on the valuation assumptions, resulting in a liability loss of approximately $60 million.

**3. Demographic Experience**

Section 5 provides statistics on active and inactive participants. The number of active participants decreased 9.5%, from 13,434 at June 30, 2018 to 12,152 at June 30, 2019 due to active members exiting the plan during the year (due to retirement, termination, death and disability) and the closure of the plan to new entrants as of July 1, 2006. The average age of active participants increased from 52.52 to 52.84, and average credited service increased from 17.21 to 17.80 years.

The number of benefit recipients increased 2.4%, from 35,454 to 36,310 and their average age increased from 69.85 to 70.29. The number of vested terminated participants decreased 2.8%, from 5,660 to 5,499. Their average age increased from 52.56 to 53.06.

The overall effect of the demographic experience during FY19 was an actuarial gain of approximately $14.6 million (pension) and $26.9[1] million (healthcare).

**4. COLA/PRPA Experience**

The cost-of-living increases and postretirement pension adjustments for benefit recipients during FY19 were more than expected based on the valuation assumptions, resulting in a liability loss of approximately $8.4 million.

**5. Medical Claims Experience and Assumptions**

As described in Section 6.2, recent medical claims experience and changes in healthcare enrollment data provided to us for the June 30, 2019 valuation generated an actuarial gain of approximately $696 million (this amount includes a $54 million gain due to the Cadillac Tax).

**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 6.2. Retired member contribution trend rates were updated to reflect the ongoing shift in population from pre-Medicare to Medicare-eligible and a projection of expected future retiree contributions reflecting the 10% decrease from 2019 to 2020. The Further Consolidated Appropriations Act, 2020 that was signed in December 2019 made several changes, including the repeal of the Cadillac Tax. The repeal of the Cadillac Tax reduced the plan's liabilities as of June 30, 2019 by approximately $36.3M. The amounts included in

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

the Normal Cost for administrative expenses were updated based on the most recent two years of actual administrative expenses paid from plan assets.

## 8. Changes in Benefit Provisions Since the Prior Valuation

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

**Comparative Summary of Key Actuarial Valuation Results**

| **Pension Employer/State Contribution Rates for Fiscal Year:** | **2021** | **2022** |
|---|---|---|
| a. Normal Cost Rate Net of Member Contributions | 2.88% | 2.58% |
| b. Past Service Rate | 17.78% | 17.69% |
| c. Total Employer/State Contribution Rate, (a) + (b), not less than (a) [1] | 20.66% | 20.27% |

| **Healthcare Employer/State Contribution Rates for Fiscal Year:** | **2021** | **2022** |
|---|---|---|
| a. Normal Cost Rate | 3.82% | 3.12% |
| b. Past Service Rate | 0.45% | (2.15%) |
| c. Total Employer/State Contribution Rate, (a) + (b), not less than (a)[1] | 4.27% | 3.12% |

| **Total Employer/State Contribution Rates for Fiscal Year:** | **2021** | **2022** |
|---|---|---|
| a. Normal Cost Rate Net of Member Contributions | 6.70% | 5.70% |
| b. Past Service Rate | 18.23% | 17.69% |
| c. Total Employer/State Contribution Rate (a) + (b)[1] | 24.93% | 23.39% |
| d. Board Adopted Total Employer/State Contribution Rate | 24.93% | TBD |
| e. Defined Contribution Retirement (DCR) Rate Paid by Employers | 5.92% | 6.10% |
| f. Board Adopted Total Rate, Including DCR Rate Paid by Employers, (d) + (e) | 30.85% | TBD |

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

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

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

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

The following table summarizes the sources of change in the total Employer/State contribution rate as of June 30, 2018 and June 30, 2019 based on DB and DCR payroll combined:

| | | Pension | Healthcare | Total |
|---|---|---|---|---|
| 1. | Total Employer/State contribution rate as of June 30, 2018 | 19.85% | 4.74% | 24.59% |
| 2. | Change due to: | | | |
| | a. Health claims experience | N/A | (2.39%) | (2.39%) |
| | b. Salary increases | 0.16% | N/A | 0.16% |
| | c. Investment experience | 0.50% | 0.38% | 0.88% |
| | d. Demographic experience and miscellaneous[1] | (0.45%) | 1.16% | 0.71% |
| | e. FY19 Contribution shortfall/(excess) | 0.11% | 0.02% | 0.13% |
| | f. Assumption changes | 0.00% | 0.00% | 0.00% |
| | g. Total change, (a) + (b) + (c) + (d) + (e) + (f) | 0.33% | (0.83%) | (0.50%) |
| 3. | Total Employer/State contribution rate as of June 30, 2019, (1) + (2g) | 20.17% | 3.91% | 24.08% |

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

| | Pension | Healthcare | Total |
|---|---|---|---|
| Retirement Experience | $ (3,126) | $ 1,098 | $ (2,028) |
| Termination Experience | 6,714 | (946) | 5,768 |
| Active Mortality Experience | 8,209 | 1,977 | 10,186 |
| Inactive Mortality Experience | 4,250 | 999 | 5,249 |
| Disability Experience | (1,435) | (981) | (2,416) |
| Rehires | (13,297) | 10,708 | (2,589) |
| Salary Increases | (59,955) | N/A | (59,955) |
| Alaska COLA | 8,345 | N/A | 8,345 |
| PRPA | (16,716) | N/A | (16,716) |
| Medical Claims Experience | N/A | 642,081 | 642,081 |
| Cadillac Tax – Medical Claims Experience | N/A | 54,237 | 54,237 |
| Cadillac Tax – Repeal | N/A | 36,301 | 36,301 |
| Modified Part B Only Experience | N/A | 6,164 | 6,164 |
| Dependent Coverage Elections | N/A | 18,580 | 18,580 |
| FY20 contributions reduced by 10% and revised trend[2] | N/A | (14,270) | (14,270) |
| Programming Changes[3] | N/A | 11,585 | 11,585 |
| Miscellaneous[4] | (8,534) | 7,749 | (785) |
| Total | $ (75,545) | $ 775,282 | $ 699,737 |

[1] Includes the effects of census data changes between the two valuations.
[2] Based on a projection of future expected retiree contributions, trend was revised to be 0% for the next 3 years and 4% per year thereafter.
[3] Added Part D benefits for deferred retirees.
[4] Includes the effects of various data changes that are typical when new census data is received for the annual valuation, the effects of the differences between expected and actual benefit payments, and other items that do not fit neatly into any of the other categories.

The rehire gain/(loss) amount shown on the previous page is the difference between (i) the increase in Actuarial Accrued Liability at June 30, 2019 due to rehires during the most recent plan year, and (ii) the load that was added to the June 30, 2018 Normal Cost based on the rehire load assumption used in the June 30, 2018 valuation. The development of the FY19 rehire gain/(loss) amount is shown in the table below ($'s in 000's):

| | Pension | Healthcare | Total |
|---|---|---|---|
| 1. Increase in Actuarial Accrued Liability at June 30, 2019 due to Rehires | $ 38,747 | $ 5,468 | $ 44,215 |
| 2. June 30, 2018 Normal Cost Rehire Load, with interest to June 30, 2019 | $ 25,450 | $ 16,176 | $ 41,626 |
| 3. Rehire Gain/(Loss), (2) – (1) | $ (13,297) | $ 10,708 | $ (2,589) |

# Section 1: Actuarial Funding Results

## Section 1.1: Actuarial Liabilities and Normal Cost

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

| As of June 30, 2019 | Present Value of Projected Benefits | Actuarial Accrued (Past Service) Liability |
|---|---|---|
| **Active Members** | | |
| Retirement Benefits | $ 939,467 | $ 821,094 |
| Termination Benefits | 14,833 | 4,854 |
| Disability Benefits | 1,989 | (996) |
| Death Benefits | 10,468 | 6,592 |
| Return of Contributions | 1,735 | (4,931) |
| Medical and Prescription Drug Benefits | 403,117 | 336,045 |
| Medicare Part D Subsidy | (34,438) | (28,768) |
| Indebtedness | (4,913) | (4,913) |
| Subtotal | $ 1,332,258 | $ 1,128,977 |
| **Inactive Members** | | |
| Not Vested | $ 2,294 | $ 2,294 |
| Vested Terminations | | |
| - Retirement Benefits | 33,268 | 33,268 |
| - Medical and Prescription Drug Benefits | 98,506 | 98,506 |
| - Medicare Part D Subsidy | (9,681) | (9,681) |
| - Indebtedness | (524) | (524) |
| Retirees & Beneficiaries | | |
| - Retirement Benefits | 1,565,096 | 1,565,096 |
| - Medical and Prescription Drug Benefits | 554,635 | 554,635 |
| - Medicare Part D Subsidy | (73,627) | (73,627) |
| Subtotal | $ 2,169,967 | $ 2,169,967 |
| **Total** | **$ 3,502,225** | **$ 3,298,944** |
| **Total Pension** | **$ 2,563,713** | **$ 2,421,834** |
| **Total Medical, Net of Part D Subsidy** | **$ 938,512** | **$ 877,110** |
| **Total Medical, Gross of Part D Subsidy** | **$ 1,056,258** | **$ 989,186** |

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

| As of June 30, 2019 | Present Value of Projected Benefits | Actuarial Accrued (Past Service) Liability |
|---|---|---|
| **By Tier** | | |
| Tier 1 | | |
| - Pension | $ 1,045,675 | $ 1,044,284 |
| - Medical, Net of Part D Subsidy | 310,089 | 309,304 |
| Tier 2 | | |
| - Pension | 664,294 | 644,752 |
| - Medical, Net of Part D Subsidy | 263,996 | 256,450 |
| Tier 3 | | |
| - Pension | 853,744 | 732,798 |
| - Medical, Net of Part D Subsidy | 364,427 | 311,356 |
| **Total** | **$ 3,502,225** | **$ 3,298,944** |

| As of June 30, 2019 | Normal Cost |
|---|---|
| **Active Members** | |
| Retirement Benefits | $ 20,338 |
| Termination Benefits | 1,774 |
| Disability Benefits | 529 |
| Death Benefits | 710 |
| Return of Contributions | 1,170 |
| Medical and Prescription Drug Benefits | 11,222 |
| Medicare Part D Subsidy | (973) |
| Rehire Assumption (Pension) | 4,603 |
| Rehire Assumption (Medical) | 1,752 |
| Administrative Expenses (Pension) | 1,407 |
| Administrative Expenses (Medical) | 511 |
| **Total** | **$ 43,043** |
| **Total Pension** | **$ 30,531** |
| **Total Medical, Net of Part D Subsidy** | **$ 12,512** |
| **Total Medical, Gross of Part D Subsidy** | **$ 13,485** |
| **By Tier** | |
| Tier 1 | |
| - Pension | $ 584 |
| - Medical, Net of Part D Subsidy | 319 |
| Tier 2 | |
| - Pension | 5,809 |
| - Medical, Net of Part D Subsidy | 2,131 |
| Tier 3 | |
| - Pension | 24,138 |
| - Medical, Net of Part D Subsidy | 10,062 |
| **Total** | **$ 43,043** |

## Section 1.1:  Actuarial Liabilities and Normal Cost

**Others ($'s in 000's)**

| As of June 30, 2019 | Present Value of Projected Benefits | | Actuarial Accrued (Past Service) Liability | |
|---|---|---|---|---|
| **Active Members** | | | | |
| Retirement Benefits | $ | 3,674,545 | $ | 3,310,952 |
| Termination Benefits | | 247,320 | | 137,846 |
| Disability Benefits | | 18,908 | | 5,067 |
| Death Benefits | | 51,825 | | 39,961 |
| Return of Contributions | | 16,214 | | (34,225) |
| Medical and Prescription Drug Benefits | | 2,196,562 | | 1,766,876 |
| Medicare Part D Subsidy | | (274,706) | | (227,249) |
| Indebtedness | | (43,850) | | (43,850) |
| Subtotal | $ | 5,886,818 | $ | 4,955,378 |
| **Inactive Members** | | | | |
| Not Vested | $ | 73,314 | $ | 73,314 |
| Vested Terminations | | | | |
| - Retirement Benefits | | 629,468 | | 629,468 |
| - Medical and Prescription Drug Benefits | | 959,991 | | 959,991 |
| - Medicare Part D Subsidy | | (103,660) | | (103,660) |
| - Indebtedness | | (12,619) | | (12,619) |
| Retirees & Beneficiaries | | | | |
| - Retirement Benefits | | 8,511,432 | | 8,511,432 |
| - Medical and Prescription Drug Benefits | | 4,575,948 | | 4,575,948 |
| - Medicare Part D Subsidy | | (697,322) | | (697,322) |
| Subtotal | $ | 13,936,552 | $ | 13,936,552 |
| **Total** | **$** | **19,823,370** | **$** | **18,891,930** |
| **Total Pension** | **$** | **13,166,557** | **$** | **12,617,346** |
| **Total Medical, Net of Part D Subsidy** | **$** | **6,656,813** | **$** | **6,274,584** |
| **Total Medical, Gross of Part D Subsidy** | **$** | **7,732,501** | **$** | **7,302,815** |

**Others ($'s in 000's)**

| As of June 30, 2019 | | Present Value of Projected Benefits | | Actuarial Accrued (Past Service) Liability |
|---|---|---|---|---|
| **By Tier** | | | | |
| Tier 1 | | | | |
| - Pension | $ | 6,346,268 | $ | 6,309,542 |
| - Medical, Net of Part D Subsidy | | 2,671,152 | | 2,636,032 |
| Tier 2 | | | | |
| - Pension | | 3,661,983 | | 3,537,823 |
| - Medical, Net of Part D Subsidy | | 1,958,353 | | 1,870,865 |
| Tier 3 | | | | |
| - Pension | | 3,158,306 | | 2,769,981 |
| - Medical, Net of Part D Subsidy | | 2,027,308 | | 1,767,687 |
| **Total** | **$** | **19,823,370** | **$** | **18,891,930** |

| As of June 30, 2019 | | Normal Cost |
|---|---|---|
| **Active Members** | | |
| Retirement Benefits | $ | 65,622 |
| Termination Benefits | | 16,611 |
| Disability Benefits | | 2,234 |
| Death Benefits | | 2,092 |
| Return of Contributions | | 8,105 |
| Medical and Prescription Drug Benefits | | 73,052 |
| Medicare Part D Subsidy | | (8,170) |
| Rehire Assumption (Pension) | | 17,768 |
| Rehire Assumption (Medical) | | 11,088 |
| Administrative Expenses (Pension) | | 5,432 |
| Administrative Expenses (Medical) | | 3,233 |
| **Total** | **$** | **197,067** |
| **Total Pension** | **$** | **117,864** |
| **Total Medical, Net of Part D Subsidy** | **$** | **79,203** |
| **Total Medical, Gross of Part D Subsidy** | **$** | **87,373** |
| **By Tier** | | |
| Tier 1 | | |
| - Pension | $ | 12,920 |
| - Medical, Net of Part D Subsidy | | 11,864 |
| Tier 2 | | |
| - Pension | | 30,524 |
| - Medical, Net of Part D Subsidy | | 20,305 |
| Tier 3 | | |
| - Pension | | 74,420 |
| - Medical, Net of Part D Subsidy | | 47,034 |
| **Total** | **$** | **197,067** |

## Section 1.1: Actuarial Liabilities and Normal Cost

**All Members ($'s in 000's)**

| As of June 30, 2019 | Present Value of Projected Benefits | Actuarial Accrued (Past Service) Liability |
|---|---|---|
| **Active Members** | | |
| Retirement Benefits | $ 4,614,012 | $ 4,132,046 |
| Termination Benefits | 262,153 | 142,700 |
| Disability Benefits | 20,897 | 4,071 |
| Death Benefits | 62,293 | 46,553 |
| Return of Contributions | 17,949 | (39,156) |
| Medical and Prescription Drug Benefits | 2,599,679 | 2,102,921 |
| Medicare Part D Subsidy | (309,144) | (256,017) |
| Indebtedness | (48,763) | (48,763) |
| Subtotal | $ 7,219,076 | $ 6,084,355 |
| **Inactive Members** | | |
| Not Vested | $ 75,608 | $ 75,608 |
| Vested Terminations | | |
| - Retirement Benefits | 662,736 | 662,736 |
| - Medical and Prescription Drug Benefits | 1,058,497 | 1,058,497 |
| - Medicare Part D Subsidy | (113,341) | (113,341) |
| - Indebtedness | (13,143) | (13,143) |
| Retirees & Beneficiaries | | |
| - Retirement Benefits | 10,076,528 | 10,076,528 |
| - Medical and Prescription Drug Benefits | 5,130,583 | 5,130,583 |
| - Medicare Part D Subsidy | (770,949) | (770,949) |
| Subtotal | $ 16,106,519 | $ 16,106,519 |
| **Total** | **$ 23,325,595** | **$ 22,190,874** |
| **Total Pension** | **$ 15,730,270** | **$ 15,039,180** |
| **Total Medical, Net of Part D Subsidy** | **$ 7,595,325** | **$ 7,151,694** |
| **Total Medical, Gross of Part D Subsidy** | **$ 8,788,759** | **$ 8,292,001** |

**All Members ($’s in 000’s)**

| As of June 30, 2019 | Present Value of Projected Benefits | Actuarial Accrued (Past Service) Liability |
|---|---|---|
| **By Tier** | | |
| Tier 1 | | |
| - Pension | $ 7,391,943 | $ 7,353,826 |
| - Medical, Net of Part D Subsidy | 2,981,241 | 2,945,336 |
| Tier 2 | | |
| - Pension | 4,326,277 | 4,182,575 |
| - Medical, Net of Part D Subsidy | 2,222,349 | 2,127,315 |
| Tier 3 | | |
| - Pension | 4,012,050 | 3,502,779 |
| - Medical, Net of Part D Subsidy | 2,391,735 | 2,079,043 |
| **Total** | **$ 23,325,595** | **$ 22,190,874** |

| As of June 30, 2019 | Normal Cost |
|---|---|
| **Active Members** | |
| Retirement Benefits | $ 85,960 |
| Termination Benefits | 18,385 |
| Disability Benefits | 2,763 |
| Death Benefits | 2,802 |
| Return of Contributions | 9,275 |
| Medical and Prescription Drug Benefits | 84,274 |
| Medicare Part D Subsidy | (9,143) |
| Rehire Assumption (Pension) | 22,371 |
| Rehire Assumption (Medical) | 12,840 |
| Administrative Expenses (Pension) | 6,839 |
| Administrative Expenses (Medical) | 3,744 |
| **Total** | **$ 240,110** |
| **Total Pension** | **$ 148,395** |
| **Total Medical, Net of Part D Subsidy** | **$ 91,715** |
| **Total Medical, Gross of Part D Subsidy** | **$ 100,858** |
| **By Tier** | |
| Tier 1 | |
| - Pension | $ 13,504 |
| - Medical, Net of Part D Subsidy | 12,183 |
| Tier 2 | |
| - Pension | 36,333 |
| - Medical, Net of Part D Subsidy | 22,436 |
| Tier 3 | |
| - Pension | 98,558 |
| - Medical, Net of Part D Subsidy | 57,096 |
| **Total** | **$ 240,110** |

## Section 1.2: Actuarial Contributions as of June 30, 2019

**Actuarial Contributions as of June 30, 2019 - Peace Officer/Firefighter ($'s in 000's)**

| Normal Cost Rate | Pension | Healthcare | Total |
|---|---|---|---|
| 1. Total Normal Cost | $ 30,531 | $ 12,512 | $ 43,043 |
| 2. DB Rate Payroll Projected for FY20 | 169,949 | 169,949 | 169,949 |
| 3. DCR Rate Payroll Projected for FY20 | 180,262 | 180,262 | 180,262 |
| 4. Total Rate Payroll Projected for FY20 | 350,211 | 350,211 | 350,211 |
| 5. Normal Cost Rate | | | |
| a. Based on DB Rate Payroll, (1) / (2) | 17.97% | 7.36% | 25.33% |
| b. Based on Total Rate Payroll, (1) / (4) | 8.72% | 3.57% | 12.29% |
| 6. Average Member Contribution Rate | 3.64% | 0.00% | 3.64% |
| 7. Employer Normal Cost, (5)(b) - (6) | 5.08% | 3.57% | 8.65% |

| Past Service Rate | | | |
|---|---|---|---|
| 1. Actuarial Accrued Liability | $ 2,421,834 | $ 877,110 | $ 3,298,944 |
| 2. Valuation Assets[1] | 1,542,183 | 957,907 | 2,500,090 |
| 3. Unfunded Actuarial Accrued Liability, (1) - (2) | $ 879,651 | $ (80,797) | $ 798,854 |
| 4. Funded Ratio, (2) / (1) | 63.7% | 109.2% | 75.8% |
| 5. Past Service Cost Amortization Payment | 63,514 | (5,455) | 58,059 |
| 6. Total Rate Payroll Projected for FY20 | 350,211 | 350,211 | 350,211 |
| 7. Past Service Rate, (5) / (6) | 18.14% | (1.56%) | 18.14% |
| **Total Employer / State Contribution Rate, not less than Normal Cost Rate** | **23.22%** | **3.57%** | **26.79%** |
| **Normal Cost Rate by Tier (Total Employer and Member)[2]** | | | |
| Tier 1 | 19.91% | 10.88% | 30.79% |
| Tier 2 | 17.67% | 6.48% | 24.15% |
| Tier 3 | 18.00% | 7.50% | 25.50% |

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

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

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

| | Amortization Period | | Balances | | |
|---|---|---|---|---|---|
| Layer | Date Created | Years Remaining | Initial | Outstanding | Beginning-of-Year Payment |
| Initial Amount | 06/30/2018 | 20 | $ 731,232 | $ 729,116 | $ 53,663 |
| Experience Study and EGWP | 06/30/2018 | 24 | 88,162 | 88,555 | $ 5,849 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | 61,980 | 61,980 | $ 4,002 |
| **Total** | | | | **$ 879,651** | **$ 63,514** |

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

| | Amortization Period | | Balances | | |
|---|---|---|---|---|---|
| Layer | Date Created | Years Remaining | Initial | Outstanding | Beginning-of-Year Payment |
| Initial Amount | 06/30/2018 | 20 | $ (30,991) | $ (30,901) | $ (2,274) |
| Experience Study and EGWP | 06/30/2018 | 24 | 27,556 | 27,679 | 1,828 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | (77,575) | (77,575) | (5,009) |
| **Total** | | | | **$ (80,797)** | **$ (5,455)** |

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

| | Amortization Period | | Balances | | |
|---|---|---|---|---|---|
| Layer | Date Created | Years Remaining | Initial | Outstanding | Beginning-of-Year Payment |
| Initial Amount | 06/30/2018 | 20 | $ 700,241 | $ 698,215 | $ 51,389 |
| Experience Study and EGWP | 06/30/2018 | 24 | 115,718 | 116,234 | 7,677 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | (15,595) | (15,595) | (1,007) |
| **Total** | | | | **$ 798,854** | **$ 58,059** |

## Section 1.2: Actuarial Contributions as of June 30, 2019

**Actuarial Contributions as of June 30, 2019 - Others ($'s in 000's)**

| Normal Cost Rate | Pension | Healthcare | Total |
|---|---|---|---|
| 1. Total Normal Cost | $ 117,864 | $ 79,203 | $ 197,067 |
| 2. DB Rate Payroll Projected for FY20 | 834,518 | 834,518 | 834,518 |
| 3. DCR Rate Payroll Projected for FY20 | 1,162,577 | 1,162,577 | 1,162,577 |
| 4. Total Rate Payroll Projected for FY20 | 1,997,095 | 1,997,095 | 1,997,095 |
| 5. Normal Cost Rate | | | |
| a. Based on DB Rate Payroll, (1) / (2) | 14.12% | 9.49% | 23.61% |
| b. Based on Total Rate Payroll, (1) / (4) | 5.90% | 3.97% | 9.87% |
| 6. Average Member Contribution Rate | 2.86% | 0.00% | 2.86% |
| 7. Employer Normal Cost, (5)(b) - (6) | 3.04% | 3.97% | 7.01% |

| Past Service Rate | | | |
|---|---|---|---|
| 1. Actuarial Accrued Liability | $ 12,617,346 | $ 6,274,584 | $ 18,891,930 |
| 2. Valuation Assets[1] | 8,034,510 | 6,852,584 | 14,887,094 |
| 3. Unfunded Actuarial Accrued Liability, (1) - (2) | $ 4,582,836 | $ (578,000) | $ 4,004,836 |
| 4. Funded Ratio, (2) / (1) | 63.7% | 109.2% | 78.8% |
| 5. Past Service Cost Amortization Payment | 331,629 | (37,715) | 293,914 |
| 6. Total Rate Payroll Projected for FY20 | 1,997,095 | 1,997,095 | 1,997,095 |
| 7. Past Service Rate, (5) / (6) | 16.61% | (1.89%) | 16.61% |
| **Total Employer / State Contribution Rate, not less than Normal Cost Rate** | **19.65%** | **3.97%** | **23.62%** |
| **Normal Cost Rate by Tier (Total Employer and Member)[2]** | | | |
| Tier 1 | 17.42% | 16.00% | 33.42% |
| Tier 2 | 13.16% | 8.75% | 21.91% |
| Tier 3 | 14.08% | 8.90% | 22.98% |

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

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

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

| Layer | Amortization Period: Date Created | Amortization Period: Years Remaining | Balances: Initial | Balances: Outstanding | Beginning-of-Year Payment |
|---|---|---|---|---|---|
| Initial Amount | 06/30/2018 | 20 | $ 3,889,167 | $ 3,877,911 | $ 285,415 |
| Experience Study and EGWP | 06/30/2018 | 24 | 467,280 | 469,366 | 31,003 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | 235,559 | 235,559 | 15,211 |
| **Total** | | | | **$ 4,582,836** | **$ 331,629** |

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

| Layer | Amortization Period: Date Created | Amortization Period: Years Remaining | Balances: Initial | Balances: Outstanding | Beginning-of-Year Payment |
|---|---|---|---|---|---|
| Initial Amount | 06/30/2018 | 20 | $ (47,263) | $ (47,127) | $ (3,469) |
| Experience Study and EGWP | 06/30/2018 | 24 | 22,293 | 22,392 | 1,479 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | (553,265) | (553,265) | (35,725) |
| **Total** | | | | **$ (578,000)** | **$ (37,715)** |

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

| Layer | Amortization Period: Date Created | Amortization Period: Years Remaining | Balances: Initial | Balances: Outstanding | Beginning-of-Year Payment |
|---|---|---|---|---|---|
| Initial Amount | 06/30/2018 | 20 | $ 3,841,904 | $ 3,830,784 | $ 281,946 |
| Experience Study and EGWP | 06/30/2018 | 24 | 489,573 | 491,758 | 32,482 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | (317,706) | (317,706) | (20,514) |
| **Total** | | | | **$ 4,004,836** | **$ 293,914** |

## Section 1.2: Actuarial Contributions as of June 30, 2019

**Actuarial Contributions as of June 30, 2019 - All Members ($'s in 000's)**

| Normal Cost Rate | Pension | Healthcare | Total |
|---|---|---|---|
| 1. Total Normal Cost | $ 148,395 | $ 91,715 | $ 240,110 |
| 2. DB Rate Payroll Projected for FY20 | 1,004,467 | 1,004,467 | 1,004,467 |
| 3. DCR Rate Payroll Projected for FY20 | 1,342,839 | 1,342,839 | 1,342,839 |
| 4. Total Rate Payroll Projected for FY20 | 2,347,306 | 2,347,306 | 2,347,306 |
| 5. Normal Cost Rate | | | |
| a. Based on DB Rate Payroll, (1) / (2) | 14.77% | 9.13% | 23.90% |
| b. Based on Total Rate Payroll, (1) / (4) | 6.32% | 3.91% | 10.23% |
| 6. Average Member Contribution Rate[1] | 2.98% | 0.00% | 2.98% |
| 7. Employer Normal Cost, (5)(b) - (6) | 3.34% | 3.91% | 7.25% |

| Past Service Rate | | | |
|---|---|---|---|
| 1. Actuarial Accrued Liability | $ 15,039,180 | $ 7,151,694 | $ 22,190,874 |
| 2. Valuation Assets | 9,576,693 | 7,810,491 | 17,387,184 |
| 3. Unfunded Actuarial Accrued Liability, (1) - (2) | $ 5,462,487 | $ (658,797) | $ 4,803,690 |
| 4. Funded Ratio, (2) / (1) | 63.7% | 109.2% | 78.4% |
| 5. Past Service Cost Amortization Payment | 395,143 | (43,170) | 351,973 |
| 6. Total Rate Payroll Projected for FY20 | 2,347,306 | 2,347,306 | 2,347,306 |
| 7. Past Service Rate, (5) / (6) | 16.83% | (1.84%) | 16.83% |
| **Total Employer / State Contribution Rate, not less than Normal Cost Rate** | **20.17%** | **3.91%** | **24.08%** |
| **Normal Cost Rate by Tier (Total Employer and Member)[2]** | | | |
| Tier 1 | 17.51% | 15.80% | 33.31% |
| Tier 2 | 13.72% | 8.47% | 22.19% |
| Tier 3 | 14.88% | 8.62% | 23.50% |

[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.

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

| Layer | Amortization Period | | Balances | | Beginning-of-Year Payment |
|---|---|---|---|---|---|
| | Date Created | Years Remaining | Initial | Outstanding | |
| Initial Amount | 06/30/2018 | 20 | $ 4,620,399 | $ 4,607,027 | $ 339,078 |
| Experience Study and EGWP | 06/30/2018 | 24 | 555,442 | 557,921 | 36,852 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | 297,539 | 297,539 | 19,213 |
| **Total** | | | | **$ 5,462,487** | **$ 395,143** |

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

| Layer | Amortization Period | | Balances | | Beginning-of-Year Payment |
|---|---|---|---|---|---|
| | Date Created | Years Remaining | Initial | Outstanding | |
| Initial Amount | 06/30/2018 | 20 | $ (78,254) | $ (78,028) | $ (5,743) |
| Experience Study and EGWP | 06/30/2018 | 24 | 49,849 | 50,071 | 3,307 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | (630,840) | (630,840) | (40,734) |
| **Total** | | | | **$ (658,797)** | **$ (43,170)** |

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

| Layer | Amortization Period | | Balances | | Beginning-of-Year Payment |
|---|---|---|---|---|---|
| | Date Created | Years Remaining | Initial | Outstanding | |
| Initial Amount | 06/30/2018 | 20 | $ 4,542,145 | $ 4,528,999 | $ 333,335 |
| Experience Study and EGWP | 06/30/2018 | 24 | 605,291 | 607,992 | 40,159 |
| FY19 (Gain)/Loss | 06/30/2019 | 25 | (333,301) | (333,301) | (21,521) |
| **Total** | | | | **$ 4,803,690** | **$ 351,973** |

## Section 1.3: Roll Forward Contribution Rate Calculation for FY20 ($'s in 000's)

| | Pension | Healthcare | Total |
|---|---|---|---|
| **1. Liability Roll Forward** | | | |
| **a. Actuarial Accrued Liability as of June 30, 2019** | **$ 15,039,180** | **$ 7,151,694** | **$ 22,190,874** |
| b. Normal Cost | 141,556 | 87,971 | 229,527 |
| c. Interest on (a) and (b) at 7.38% | 1,120,338 | 534,287 | 1,654,625 |
| d. Estimated Benefit Payments | (904,085) | (398,844) | (1,302,929) |
| e. Interest on (d) at 7.38%, adjusted for timing | (35,551) | (14,455) | (50,006) |
| **f. Expected Actuarial Accrued Liability as of June 30, 2020** | **$ 15,361,438** | **$ 7,360,653** | **$ 22,722,091** |
| g. Projected Normal Cost | 127,518 | 79,403 | 206,921 |
| h. Interest on (f) and (g) at 7.38% | 1,143,085 | 549,076 | 1,692,161 |
| i. Estimated Benefit Payments | (953,247) | (421,016) | (1,374,263) |
| j. Interest on (i) at 7.38%, adjusted for timing | (37,484) | (15,259) | (52,743) |
| **k. Expected Actuarial Accrued Liability as of June 30, 2021** | **$ 15,641,310** | **$ 7,552,857** | **$ 23,194,167** |
| **2. Asset Roll Forward** | | | |
| **a. Actuarial Value of Assets as of June 30, 2019** | **$ 9,576,693** | **$ 7,810,491** | **$ 17,387,184** |
| b. Interest on (a) at 7.38% | 706,760 | 576,414 | 1,283,174 |
| c. Employee Contributions | 76,365 | 0 | 76,365 |
| d. Employer Contributions | 295,761 | 92,953 | 388,714 |
| e. State Assistance Contributions | 159,055 | 0 | 159,055 |
| f. Interest on (c), (d) and (e) at 7.38%, adjusted for timing* | 25,225 | 3,369 | 28,594 |
| g. Estimated Benefit Payments | (904,085) | (398,844) | (1,302,929) |
| h. Administrative Expenses | (6,839) | (3,744) | (10,583) |
| i. AVA Adjustments | (97,840) | (65,909) | (163,749) |
| j. Interest on (g) and (h) at 7.38%, adjusted for timing | (35,798) | (14,591) | (50,389) |
| **k. Expected Actuarial Value of Assets as of June 30, 2020** | **$ 9,795,297** | **$ 8,000,139** | **$ 17,795,436** |
| l. Interest on (k) at 7.38% | 722,893 | 590,410 | 1,313,303 |
| m. Employee Contributions | 70,772 | 0 | 70,772 |
| n. Employer Contributions | 284,407 | 95,748 | 380,155 |
| o. State Assistance Contributions** | 203,585 | 0 | 203,585 |
| p. Interest on (m), (n) and (o) at 7.38%, adjusted for timing* | 27,897 | 3,470 | 31,367 |
| q. Estimated Benefit Payments | (953,247) | (421,016) | (1,374,263) |
| r. Administrative Expenses | (6,210) | (3,404) | (9,614) |
| s. AVA Adjustments | 55,343 | 55,677 | 111,020 |
| t. Interest on (q) and (r) at 7.38%, adjusted for timing | (37,709) | (15,382) | (53,091) |
| **u. Expected Actuarial Value of Assets as of June 30, 2021** | **$ 10,163,028** | **$ 8,305,642** | **$ 18,468,670** |
| **3. Expected Unfunded Actuarial Accrued Liability as of June 30, 2021, 1(k) - 2(s)** | **$ 5,478,282** | **$ (752,785)** | **$ 4,725,497** |

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

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

| | Pension | Healthcare | Total |
|---|---|---|---|
| **4. Expected Annual Rate Payroll for FY22** | | | |
| a. Defined Benefit Members | | | $ 842,859 |
| a. Defined Contribution Retirement Members | | | 1,543,010 |
| **c. Total Rate Payroll** | | | **$ 2,385,869** |
| | | | |
| **5. Expected FY22 Contribution Rate Calculation** | | | |
| a. Projected Normal Cost for FY22 | $ 120,047 | $ 74,512 | $ 194,559 |
| b. Projected Normal Cost Rate for FY22 | 5.03% | 3.12% | 8.15% |
| c. Expected Member Contribution Rate for FY22 | (2.45%) | 0.00% | (2.45%) |
| **d. Expected Employer Normal Cost Rate for FY22** | **2.58%** | **3.12%** | **5.70%** |
| | | | |
| e. Expected Unfunded Liability as of June 30, 2021 | $ 5,478,282 | $ (752,785) | $ 4,725,497 |
| f. FY22 Layered Amortization of Expected Unfunded Liability | 421,969 | (51,393) | 370,576 |
| **g. Expected Past Service Cost Contribution Rate for FY22** | **17.69%** | **(2.15%)** | **17.69%** |
| | | | |
| **h. Expected Total Contribution Rate for FY22** | **20.27%** | **3.12%** | **23.39%** |

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

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

| Layer | Amortization Period: Date Created | Amortization Period: Years Remaining as of June 30, 2021 | Balances: Initial | Balances: Outstanding as of June 30, 2021 | Beginning-of-Year Payment for 2022 |
|---|---|---|---|---|---|
| Initial Amount | 06/30/2018 | 18 | $ 4,620,399 | $ 4,547,029 | $ 357,984 |
| Experience Study | 06/30/2018 | 22 | 555,442 | 560,157 | 38,907 |
| (Gain)/Loss FY19 | 06/30/2019 | 23 | 297,539 | 299,724 | 20,284 |
| Expected (Gain)/Loss FY20 | 06/30/2020 | 24 | 124,827 | 125,384 | 8,282 |
| Expected (Gain)/Loss FY21 | 06/30/2021 | 25 | (54,012) | (54,012) | (3,488) |
| **Total** | | | | **$ 5,478,282** | **$ 421,969** |

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

| Layer | Amortization Period: Date Created | Amortization Period: Years Remaining as of June 30, 2021 | Balances: Initial | Balances: Outstanding as of June 30, 2021 | Beginning-of-Year Payment for 2022 |
|---|---|---|---|---|---|
| Initial Amount | 06/30/2018 | 18 | $ (78,254) | $ (77,012) | $ (6,063) |
| Experience Study and EGWP | 06/30/2018 | 22 | 49,849 | 50,272 | 3,492 |
| (Gain)/Loss FY19 | 06/30/2019 | 23 | (630,840) | (635,476) | (43,006) |
| Expected (Gain)/Loss FY20 | 06/30/2020 | 24 | 21,574 | 21,671 | 1,431 |
| Expected (Gain)/Loss FY21 | 06/30/2021 | 25 | (112,240) | (112,240) | (7,247) |
| **Total** | | | | **$ (752,785)** | **$ (51,393)** |

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

| Layer | Amortization Period: Date Created | Amortization Period: Years Remaining as of June 30, 2021 | Balances: Initial | Balances: Outstanding as of June 30, 2021 | Beginning-of-Year Payment for 2022 |
|---|---|---|---|---|---|
| Initial Amount | 06/30/2018 | 18 | $ 4,542,145 | $ 4,470,017 | $ 351,921 |
| Experience Study and EGWP | 06/30/2018 | 22 | 605,291 | 610,429 | 42,399 |
| (Gain)/Loss FY19 | 06/30/2019 | 23 | (333,301) | (335,752) | (22,722) |
| Expected (Gain)/Loss FY20 | 06/30/2020 | 24 | 146,401 | 147,055 | 9,713 |
| Expected (Gain)/Loss FY21 | 06/30/2021 | 25 | (166,252) | (166,252) | (10,735) |
| **Total** | | | | **$ 4,725,497** | **$ 370,576** |

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

| | Pension | Healthcare | Total |
|---|---|---|---|
| **1. Expected Actuarial Accrued Liability** | | | |
| a. Actuarial Accrued Liability as of June 30, 2018 | $ 14,606,033 | $ 7,658,104 | $ 22,264,137 |
| b. Normal Cost | 149,974 | 103,208 | 253,182 |
| c. Interest on (a) and (b) at 7.38% | 1,088,993 | 572,785 | 1,661,778 |
| d. Medicare Part D Subsidy and EGWP | 0 | 27,547 | 27,547 |
| e. Benefit Payments | (837,381) | (420,429) | (1,257,810) |
| f. Refund of Contributions | (10,638) | 0 | (10,638) |
| g. Interest on (d), (e) and (f) at 7.38%, adjusted for timing | (33,346) | (14,239) | (47,585) |
| h. Assumptions/Methods Changes | - | - | - |
| i. Expected Actuarial Accrued Liability as of June 30, 2019<br>(a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) | $ 14,963,635 | $ 7,926,976 | $ 22,890,611 |
| 2. Actual Actuarial Accrued Liability as of June 30, 2019 | 15,039,180 | 7,151,694 | 22,190,874 |
| **3. Liability Gain/(Loss), (1)(i) - (2)** | **$ (75,545)** | **$ 775,282** | **$ 699,737** |
| 4. Expected Actuarial Asset Value | | | |
| a. Actuarial Value of Assets as of June 30, 2018 | $ 9,430,192 | $ 7,686,509 | $ 17,116,701 |
| b. Interest on (a) at 7.38% | 695,948 | 567,264 | 1,263,212 |
| c. Employee Contributions | 79,609 | 0 | 79,609 |
| d. Employer Contributions | 283,098 | 102,266 | 385,364 |
| e. State Assistance Contributions | 135,360 | 0 | 135,360 |
| f. Medicare Part D Subsidy and EGWP | 0 | 27,547 | 27,547 |
| g. Interest on (c), (d), (e) and (f) at 7.38%, adjusted for timing | 23,135 | 4,705 | 27,840 |
| h. Benefit Payments | (837,381) | (420,429) | (1,257,810) |
| i. Refund of Contributions | (10,638) | 0 | (10,638) |
| j. Administrative Expenses | (7,429) | (3,665) | (11,094) |
| k. Interest on (h), (i) and (j) at 7.38%, adjusted for timing | (33,615) | (15,371) | (48,986) |
| l. Expected Actuarial Asset Value as of June 30, 2019<br>(a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) + (i) + (j) + (k) | $ 9,758,279 | $ 7,948,826 | $ 17,707,105 |
| 5. Actual Actuarial Asset Value as of June 30, 2019 | 9,576,693 | 7,810,491 | 17,387,184 |
| **6. Actual Asset Value Gain/(Loss), (5) - (4)(l)** | **$ (181,586)** | **$ (138,335)** | **$ (319,921)** |
| **7. Total Actuarial Gain/(Loss), (3) + (6)** | **$ (257,131)** | **$ 636,947** | **$ 379,816** |
| **8. Contribution Gain/(Loss)** | **$ (40,106)** | **$ (6,996)** | **$ (47,102)** |
| **9. Administrative Expense Gain/(Loss)** | **$ (302)** | **$ 889** | **$ 587** |
| **10. FY19 Gain/(Loss), (7) + (8) + (9)** | **$ (297,539)** | **$ 630,840** | **$ 333,301** |

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

| | Pension | Healthcare | Total |
|---|---|---|---|
| 1. 2018 Unfunded Liability | $ 5,175,841 | $ (28,405) | $ 5,147,436 |
| a. Interest on Unfunded Liability at 7.38% | 381,977 | (2,096) | 379,881 |
| b. Normal Cost | 149,974 | 103,208 | 253,182 |
| c. Employee Contributions | (79,609) | 0 | (79,609) |
| d. Employer Contributions | (283,098) | (102,266) | (385,364) |
| e. State Assistance Contributions | (135,360) | 0 | (135,360) |
| f. Administrative Expenses | 7,429 | 3,665 | 11,094 |
| g. Interest on (b), (c), (d), (e) and (f) at 7.38%, adjusted for timing | (11,798) | 4,044 | (7,754) |
| h. Assumptions/Methods Changes | 0 | 0 | 0 |
| i. Expected Change in Unfunded Liability During FY19 (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) | $ 29,515 | $ 6,555 | $ 36,070 |
| 2. Expected 2019 Unfunded Liability, (1) + (1)(i) | $ 5,205,356 | $ (21,850) | $ 5,183,506 |
| a. Liability (Gain)/Loss During FY19 | $ 75,545 | $ (775,282) | $ (699,737) |
| b. Actuarial Assets (Gain)/Loss During FY19 | 181,586 | 138,335 | 319,921 |
| c. Total Actuarial (Gain)/Loss During FY19 | $ 257,131 | $ (636,947) | $ (379,816) |
| 3. Actual 2019 Unfunded Liability, (2) + (2)(c) | $ 5,462,487 | $ (658,797) | $ 4,803,690 |

## Section 1.6: Analysis of Financial Experience

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

| | Change in Employer / State Contribution Rate During Fiscal Year | | | | |
|---|---|---|---|---|---|
| | Pension | | | | |
| **Type of (Gain) or Loss** | **2015** | **2016** | **2017** | **2018** | **2019** |
| 1. Health Claims | N/A | N/A | N/A | N/A | N/A |
| 2. Salary Experience | (0.32%) | (0.35%) | (0.42%) | (0.37%) | 0.17% |
| 3. Investment Experience | 0.24% | 0.77% | 0.75% | 0.63% | 0.52% |
| 4. Demographic Experience and Miscellaneous | 0.34% | 0.13% | (1.01%) | (0.24%) | (0.91%) |
| 5. Contribution Shortfall | 0.00% | 0.00% | 0.18% | 0.17% | 0.11% |
| 6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5) | 0.26% | 0.55% | (0.50%) | 0.19% | (0.11%) |
| 7. Assumptions / Method Changes | 0.00% | 1.92% | 0.00% | 1.98% | 0.00% |
| 8. System Benefit Changes | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 9. Composite (Gain) or Loss During Year, (6) + (7) + (8) | 0.26% | 2.47% | (0.50%) | 2.17% | (0.11%) |
| 10. Beginning Total Employer / State Contribution Rate | 15.98% | 16.24% | 18.71% | 18.21% | 20.38% |
| 11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10) | 16.24% | 18.71% | 18.21% | 20.38% | 20.27% |
| 12. Fiscal Year Rates | | | | | |
| a. Fiscal Year Employer / State Contribution Rate | 17.27% | 18.27% | 18.29% | 20.66% | 20.27% * |
| b. Fiscal Year for which Rate Applies | FY18 | FY19 | FY20 | FY21 | FY22 |

* Expected rate. Actual rate to be determined

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

| | Change in Employer / State Contribution Rate During Fiscal Year | | | | |
|---|---|---|---|---|---|
| | Healthcare | | | | |
| **Type of (Gain) or Loss** | **2015** | **2016** | **2017** | **2018** | **2019** |
| 1. Health Claims[1] | (3.65%) | 1.02% | (2.90%) | (1.75%) | (2.39%) |
| 2. Salary Experience | N/A | N/A | N/A | N/A | N/A |
| 3. Investment Experience | 0.21% | 0.63% | 0.61% | 0.49% | 0.40% |
| 4. Demographic Experience and Miscellaneous | N/A | N/A | (0.96%) | (1.64%) | 0.83% |
| 5. Contribution Shortfall | 0.00% | 0.00% | (0.14%) | 0.08% | 0.02% |
| 6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5) | (3.44%) | 1.65% | (3.39%) | (2.82%) | (1.14%) |
| 7. Assumptions / Method Changes | 0.00% | 0.93% | 3.41% | 2.12% | 0.00% |
| 8. System Benefit Changes | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 9. Composite (Gain) or Loss During Year, (6) + (7) + (8) | (3.44%) | 2.58% | 0.02% | (0.70%) | (1.14%) |
| 10. Beginning Total Employer / State Contribution Rate | 5.80% | 2.36% | 4.94% | 4.96% | 4.26% |
| 11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10) | 2.36% | 4.94% | 4.96% | 4.26% | 3.12% |
| 12. Fiscal Year Rates | | | | | |
| a. Fiscal Year Employer / State Contribution Rate | 3.11% | 4.37% | 4.89% | 4.27% | 3.12% * |
| b. Fiscal Year for which Rate Applies | FY18 | FY19 | FY20 | FY21 | FY22 |

* Expected rate. Actual rate to be determined

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

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

| | Change in Employer / State Contribution Rate During Fiscal Year | | | | |
|---|---|---|---|---|---|
| | Total | | | | |
| **Type of (Gain) or Loss** | **2015** | **2016** | **2017** | **2018** | **2019** |
| 1. Health Claims[1] | (3.65%) | 1.02% | (2.90%) | (1.75%) | (2.39%) |
| 2. Salary Experience | (0.32%) | (0.35%) | (0.42%) | (0.37%) | 0.17% |
| 3. Investment Experience | 0.45% | 1.40% | 1.36% | 1.12% | 0.92% |
| 4. Demographic Experience and Miscellaneous | 0.34% | 0.13% | (1.97%) | (1.88%) | (0.08%) |
| 5. Contribution Shortfall | 0.00% | 0.00% | 0.04% | 0.25% | 0.13% |
| 6. (Gain) or Loss During Year From Experience, (1) + (2) + (3) + (4) + (5) | (3.18%) | 2.20% | (3.89%) | (2.63%) | (1.25%) |
| 7. Assumptions / Method Changes | 0.00% | 2.85% | 3.41% | 4.10% | 0.00% |
| 8. System Benefit Changes | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| 9. Composite (Gain) or Loss During Year, (6) + (7) + (8) | (3.18%) | 5.05% | (0.48%) | 1.47% | (1.25%) |
| 10. Beginning Total Employer / State Contribution Rate | 21.78% | 18.60% | 23.65% | 23.17% | 24.64% |
| 11. Ending Valuation Year Employer / State Contribution Rate, (9) + (10) | 18.60% | 23.65% | 23.17% | 24.64% | 23.39% |
| 12. Fiscal Year Rates | | | | | |
| a. Fiscal Year Employer / State Contribution Rate | 20.38% | 22.64% | 23.18% | 24.93% | 23.39% * |
| b. Fiscal Year for which Rate Applies | FY18 | FY19 | FY20 | FY21 | FY22 |

* Expected rate. Actual rate to be determined

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

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

| Valuation Date | Total Actuarial Accrued Liability | Valuation Assets | Assets as a Percent of Actuarial Accrued Liability | Unfunded Actuarial Accrued Liability (UAAL) |
|---|---|---|---|---|
| June 30, 2003 | 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 |

# Section 2: Plan Assets

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

| As of June 30, 2019 | Pension | Healthcare | Total Fair Value | Allocation Percent |
|---|---|---|---|---|
| Cash and Short-Term Investments | | | | |
| - Cash and Cash Equivalents | $ 193,372 | $ 159,554 | $ 352,926 | 2.0% |
| - Subtotal | $ 193,372 | $ 159,554 | $ 352,926 | 2.0% |
| Fixed Income Investments | | | | |
| - Domestic Fixed Income Pool | $ 993,678 | $ 819,561 | $ 1,813,239 | 10.5% |
| - 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 | $ 993,678 | $ 819,561 | $ 1,813,239 | 10.5% |
| Equity Investments | | | | |
| - Domestic Equity Pool | $ 2,188,657 | $ 1,805,150 | $ 3,993,807 | 23.1% |
| - International Equity Pool | 1,736,262 | 1,432,026 | 3,168,288 | 18.3% |
| - Private Equity Pool | 997,227 | 822,488 | 1,819,715 | 10.5% |
| - Emerging Markets Equity Pool | 341,699 | 281,826 | 623,525 | 3.6% |
| - Alternative Equity Strategies | 921,017 | 759,632 | 1,680,649 | 9.7% |
| - Subtotal | $ 6,184,862 | $ 5,101,122 | $ 11,285,984 | 65.2% |
| Other Investments | | | | |
| - Real Estate Pool | $ 641,672 | $ 529,323 | $ 1,170,995 | 6.8% |
| - Other Investments Pool | 922,588 | 760,927 | 1,683,515 | 9.7% |
| - Absolute Return Pool | 545,747 | 450,119 | 995,866 | 5.8% |
| - Other Assets | 15 | 967 | 982 | 0.0% |
| - Subtotal | $ 2,110,022 | $ 1,741,336 | $ 3,851,358 | 22.3% |
| Total Cash and Investments | $ 9,481,934 | $ 7,821,573 | $ 17,303,507 | 100.0% |
| Net Accrued Receivables | 7,471 | (53,881) | (46,410) | |
| Net Assets | $ 9,489,405 | $ 7,767,692 | $ 17,257,097 | |

## Section 2.2: Changes in Fair Value of Assets During FY 2019 ($'s in 000's)

| As of June 30, 2019 | Pension | Healthcare | Total Fair Value |
|---|---|---|---|
| 1. Fair Value of Assets as of June 30, 2018 | $ 9,306,675 | $ 7,612,001 | $ 16,918,676 |
| 2. Additions: | | | |
| a. Employee Contributions | $ 79,609 | $ 0 | $ 79,609 |
| b. Employer Contributions | 283,098 | 102,266 | 385,364 |
| c. State Assistance Contributions | 135,360 | 0 | 135,360 |
| d. Interest and Dividend Income | 171,359 | 140,836 | 312,195 |
| e. Net Appreciation / Depreciation | | | |
| in Fair Value of Investments | 372,865 | 311,499 | 684,364 |
| f. Medicare Part D Subsidy | 0 | 27,547 | 27,547 |
| g. Other | 23 | 874 | 897 |
| h. Total Additions | $ 1,042,314 | $ 583,022 | $ 1,625,336 |
| 3. Deductions: | | | |
| a. Medical Benefits | $ 0 | $ 420,429 | $ 420,429 |
| b. Retirement Benefits | 837,381 | 0 | 837,381 |
| c. Refund of Contributions | 10,638 | 0 | 10,638 |
| d. Investment Expenses | 4,136 | 3,237 | 7,373 |
| e. Administrative Expenses | 7,429 | 3,665 | 11,094 |
| f. Total Deductions | $ 859,584 | $ 427,331 | $ 1,286,915 |
| 4. Fair Value of Assets as of June 30, 2019 | $ 9,489,405 | $ 7,767,692 | $ 17,257,097 |
| Approximate Fair Value Investment Return Rate | | | |
| During FY 2019 Net of Investment Expenses | 5.9% | 6.0% | 6.0% |

## 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. Investment Gain / (Loss) for FY 2019 | | | |
| a. Fair Value of Assets as of June 30, 2018 | $ 9,306,675 | $ 7,612,001 | $ 16,918,676 |
| b. Contributions | 498,067 | 102,266 | 600,333 |
| c. Medicare Part D Subsidy | 0 | 27,547 | 27,547 |
| d. Benefit Payments | 848,019 | 420,429 | 1,268,448 |
| e. Administrative Expenses | 7,429 | 3,665 | 11,094 |
| f. Actual Investment Return (net of expenses) | 540,111 | 449,972 | 990,083 |
| g. Expected Return Rate (net of expenses) | 7.38% | 7.38% | 7.38% |
| h. Expected Return - Weighted for Timing | 676,353 | 551,100 | 1,227,453 |
| i. Investment Gain / (Loss) for the Year, (f) - (h) | (136,242) | (101,128) | (237,370) |
| 2. Actuarial Value as of June 30, 2019 | | | |
| a. Fair Value as of June 30, 2019 | $ 9,489,405 | $ 7,767,692 | $ 17,257,097 |
| b. Deferred Investment Gain / (Loss) | (87,288) | (42,799) | (130,087) |
| c. Actuarial Value as of June 30, 2019, (a) - (b) | 9,576,693 | 7,810,491 | 17,387,184 |
| 3. Ratio of Actuarial Value of Assets to Fair Value of Assets | 100.9% | 100.6% | 100.8% |
| 4. Approximate Actuarial Value Investment Return Rate | | | |
| During FY 2019 Net of Investment Expenses | 5.4% | 5.5% | 5.5% |

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

| Pension | | | | |
|---|---|---|---|---|
| **Plan Year Ending** | **Asset Gain / (Loss)** | **Gain / (Loss) Recognized in Prior Years** | **Gain / (Loss) Recognized This Year** | **Gain / (Loss) Deferred to Future Years** |
| June 30, 2015 | $ (405,373) | $ (324,300) | $ (81,073) | $ 0 |
| June 30, 2016 | (732,190) | (439,314) | (146,438) | (146,438) |
| June 30, 2017 | 393,607 | 157,442 | 78,721 | 157,444 |
| June 30, 2018 | 17,834 | 3,567 | 3,567 | 10,700 |
| June 30, 2019 | (136,242) | 0 | (27,248) | (108,994) |
| **Total** | **$ (862,364)** | **$ (602,605)** | **$ (172,471)** | **$ (87,288)** |

| Healthcare | | | | |
|---|---|---|---|---|
| **Plan Year Ending** | **Asset Gain / (Loss)** | **Gain / (Loss) Recognized in Prior Years** | **Gain / (Loss) Recognized This Year** | **Gain / (Loss) Deferred to Future Years** |
| June 30, 2015 | $ (350,420) | $ (280,336) | $ (70,084) | $ 0 |
| June 30, 2016 | (584,781) | (350,868) | (116,956) | (116,957) |
| June 30, 2017 | 341,151 | 136,460 | 68,230 | 136,461 |
| June 30, 2018 | 30,997 | 6,199 | 6,199 | 18,599 |
| June 30, 2019 | (101,128) | 0 | (20,226) | (80,902) |
| **Total** | **$ (664,181)** | **$ (488,545)** | **$ (132,837)** | **$ (42,799)** |

| Total | | | | |
|---|---|---|---|---|
| **Plan Year Ending** | **Asset Gain / (Loss)** | **Gain / (Loss) Recognized in Prior Years** | **Gain / (Loss) Recognized This Year** | **Gain / (Loss) Deferred to Future Years** |
| June 30, 2015 | $ (755,793) | $ (604,636) | $ (151,157) | $ 0 |
| June 30, 2016 | (1,316,971) | (790,182) | (263,394) | (263,395) |
| June 30, 2017 | 734,758 | 293,902 | 146,951 | 293,905 |
| June 30, 2018 | 48,831 | 9,766 | 9,766 | 29,299 |
| June 30, 2019 | (237,370) | 0 | (47,474) | (189,896) |
| **Total** | **$ (1,526,545)** | **$ (1,091,150)** | **$ (305,308)** | **$ (130,087)** |

## 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 | 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% |

* Cumulative since fiscal year ending June 30, 2005

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

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

### Schedule of Employer Contributions

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

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

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

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

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

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

[1] Change in Asset Valuation Method
[2] Change of Assumptions
[3] Change in Methods

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

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

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

[1] Actual active member payroll has been based on information provided by KPMG, LLP.
[2] Change in assumptions

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

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

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

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

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

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

* Change in discount rate assumptions effective June 30, 2010

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

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

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

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

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

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

[1] Change in Assumptions
[2] Change in Methods
[3] The pension and postemployment healthcare valuation assets were allocated using a ratio of fair value of assets as of June 30, 2005.

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

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

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

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[1] Change in Assumptions
[2] Change in Methods
[3] The pension and postemployment healthcare valuation assets were allocated using a ratio of fair value of assets as of June 30, 2005.

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

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

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

[1] Change in Assumptions
[2] Change in Methods
[3] Change in Asset Valuation Method

# Section 4: Projections

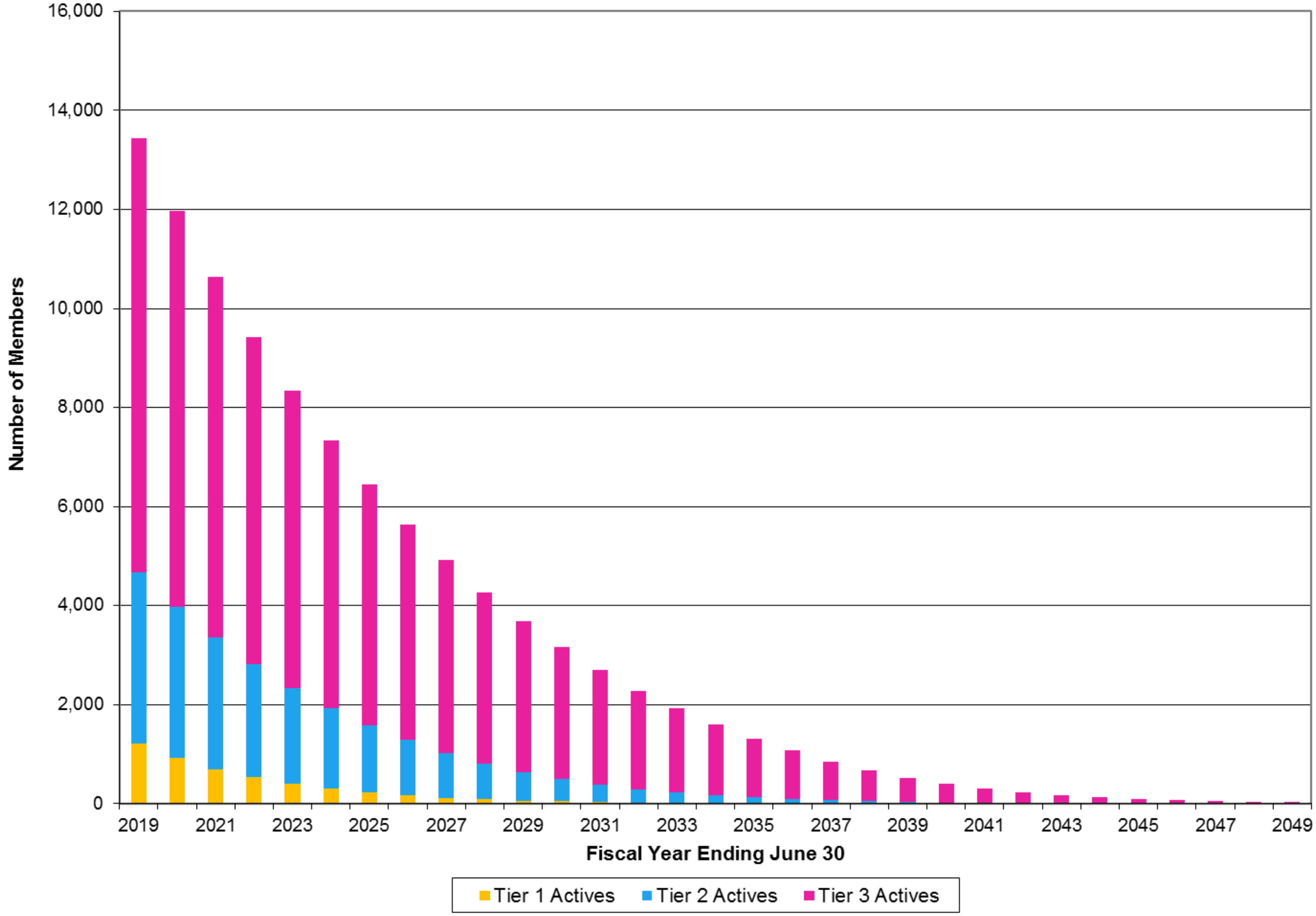
## Section 4.1: Projection Assumptions and Methods

**Key Assumptions**

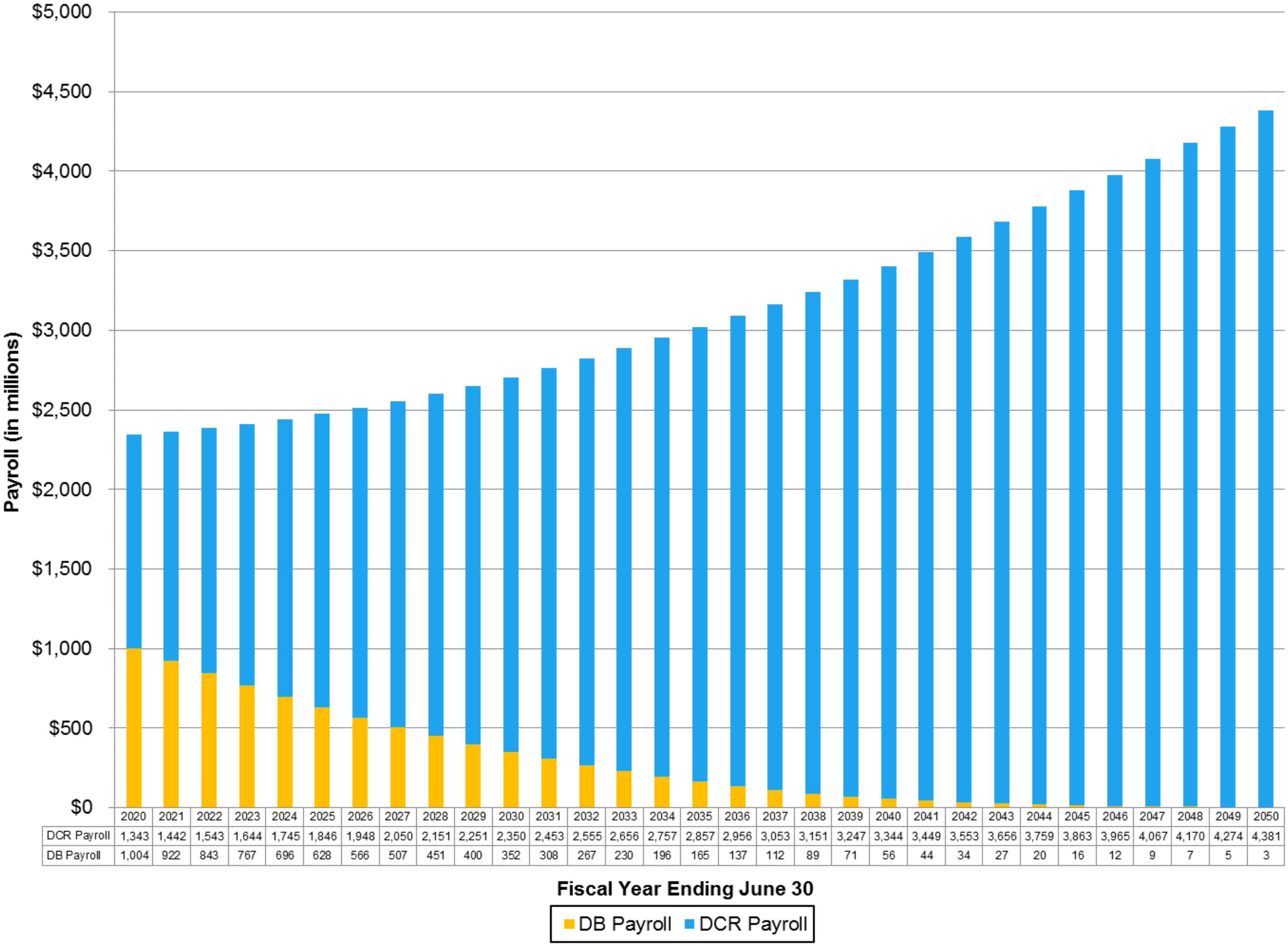
- 7.38% investment return (net of investment expenses) on the Fair Value of Assets in all future years.
- The Actuarial Value of Assets was re-initialized to Fair Value as of June 30, 2014. The Actuarial Value of Assets after June 30, 2014 reflects the deferred gains and losses generated by the smoothing method. The current deferred amount is recognized in the first four years of the projections.
- Actuarial assumptions and methods as described in Section 6. No actuarial gains/losses are assumed after June 30, 2019.
- The actuarially calculated contribution rate using a two-year roll-forward approach is adopted each year.
- Projections assume a 0% increase in the total active member population. All new members are expected to enter the DCR plan.
- Contribution rates are determined as a percent of total DB and DCR payroll, combined.
- The DCR contribution rate determined as of June 30, 2019 is assumed to remain constant in all future years.
- The active rehire assumption shown in Section 6 is assumed to grade to zero on a uniform basis over 20 years.

## Section 4.2: Membership Projection

### Projected Active Member Count

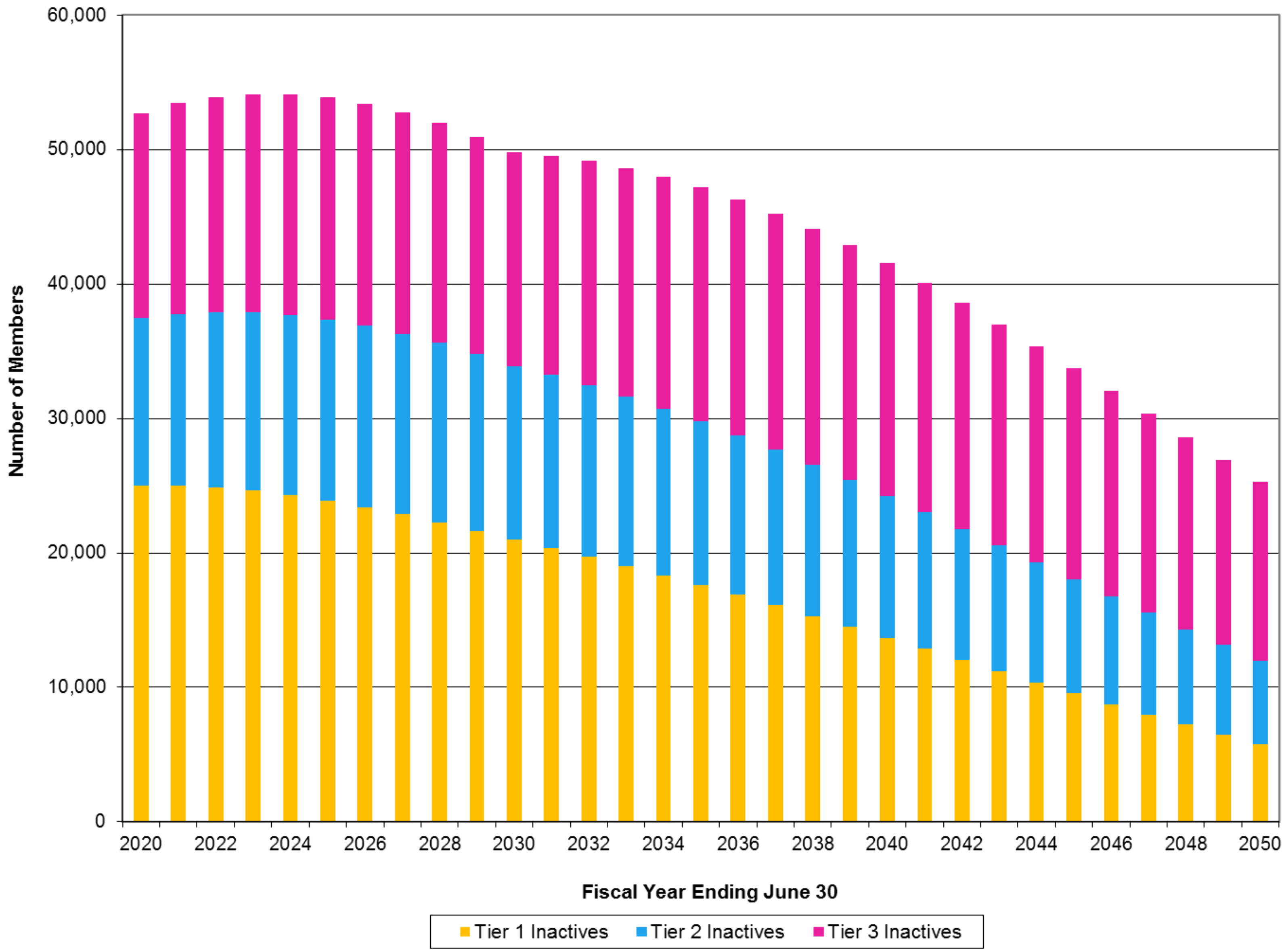


## Projected DB and DCR Payroll



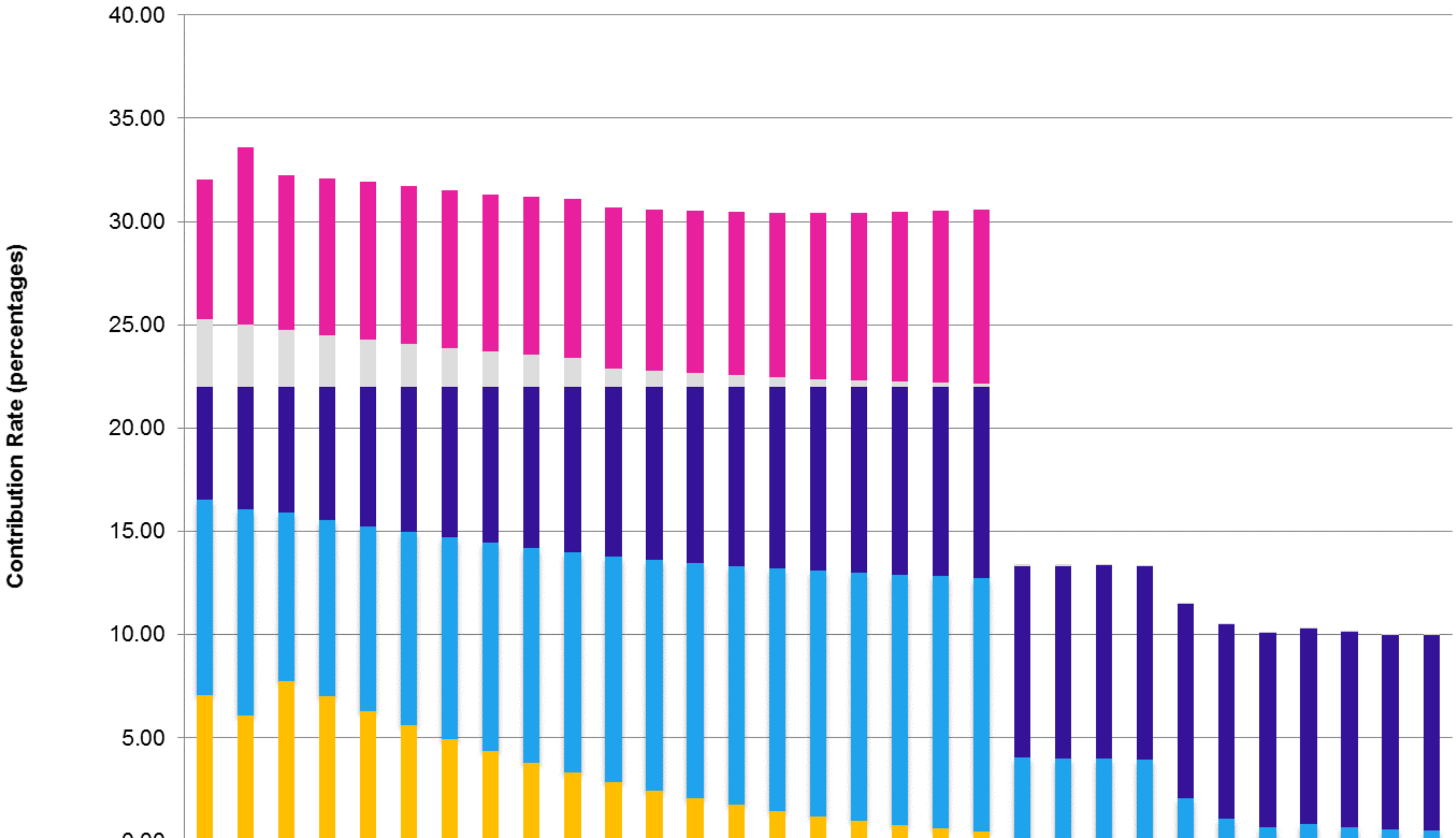

| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCR Payroll | 1,343 | 1,442 | 1,543 | 1,644 | 1,745 | 1,846 | 1,948 | 2,050 | 2,151 | 2,251 | 2,350 | 2,453 | 2,555 | 2,656 | 2,757 | 2,857 | 2,956 | 3,053 | 3,151 | 3,247 | 3,344 | 3,449 | 3,553 | 3,656 | 3,759 | 3,863 | 3,965 | 4,067 | 4,170 | 4,274 | 4,381 |
| DB Payroll | 1,004 | 922 | 843 | 767 | 696 | 628 | 566 | 507 | 451 | 400 | 352 | 308 | 267 | 230 | 196 | 165 | 137 | 112 | 89 | 71 | 56 | 44 | 34 | 27 | 20 | 16 | 12 | 9 | 7 | 5 | 3 |

**Projected Inactive Member Count**



# Section 4.3: Projected Employer/State Contribution Rates

**Based on Total DB and DCR Payroll**



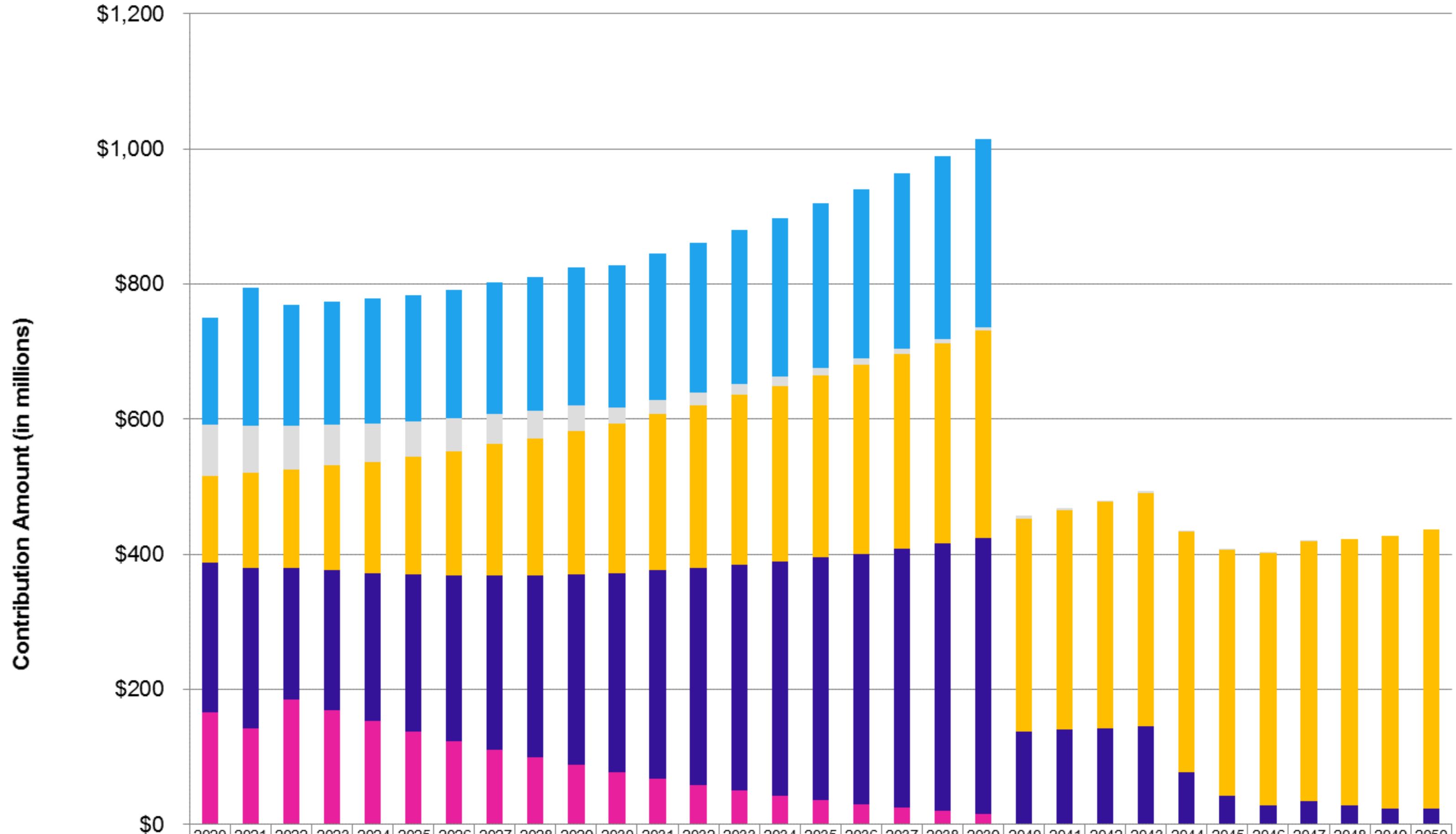

| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State Assistance | 6.78 | 8.61 | 7.49 | 7.56 | 7.62 | 7.61 | 7.60 | 7.61 | 7.65 | 7.69 | 7.76 | 7.81 | 7.87 | 7.91 | 7.97 | 8.04 |
| DB EE Contributions | 3.25 | 2.99 | 2.74 | 2.51 | 2.29 | 2.09 | 1.89 | 1.72 | 1.55 | 1.41 | 0.90 | 0.77 | 0.65 | 0.55 | 0.46 | 0.38 |
| DCR ER Contributions | 5.44 | 5.92 | 6.10 | 6.43 | 6.75 | 7.04 | 7.31 | 7.57 | 7.80 | 8.02 | 8.21 | 8.39 | 8.55 | 8.69 | 8.81 | 8.92 |
| DB ER Contributions on DCR Pay | 9.47 | 10.02 | 8.13 | 8.57 | 8.98 | 9.37 | 9.74 | 10.07 | 10.39 | 10.66 | 10.92 | 11.16 | 11.37 | 11.56 | 11.73 | 11.88 |
| DB ER Contributions on DB Pay | 7.09 | 6.06 | 7.77 | 7.00 | 6.27 | 5.59 | 4.95 | 4.36 | 3.81 | 3.32 | 2.87 | 2.45 | 2.08 | 1.75 | 1.46 | 1.20 |

| | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State Assistance | 8.12 | 8.22 | 8.32 | 8.41 | 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 | 0.31 | 0.25 | 0.19 | 0.15 | 0.11 | 0.08 | 0.06 | 0.05 | 0.04 | 0.03 | 0.02 | 0.02 | 0.01 | 0.01 | 0.01 |
| DCR ER Contributions | 9.02 | 9.11 | 9.18 | 9.24 | 9.28 | 9.32 | 9.35 | 9.37 | 9.39 | 9.40 | 9.41 | 9.42 | 9.42 | 9.43 | 9.43 |
| DB ER Contributions on DCR Pay | 12.00 | 12.11 | 12.22 | 12.29 | 3.98 | 3.96 | 3.95 | 3.93 | 2.07 | 1.10 | 0.70 | 0.85 | 0.70 | 0.57 | 0.53 |
| DB ER Contributions on DB Pay | 0.98 | 0.78 | 0.60 | 0.47 | 0.07 | 0.05 | 0.04 | 0.03 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**Fiscal Year Ending June 30**

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

## Section 4.4: Projected Employer/State Contribution Amounts

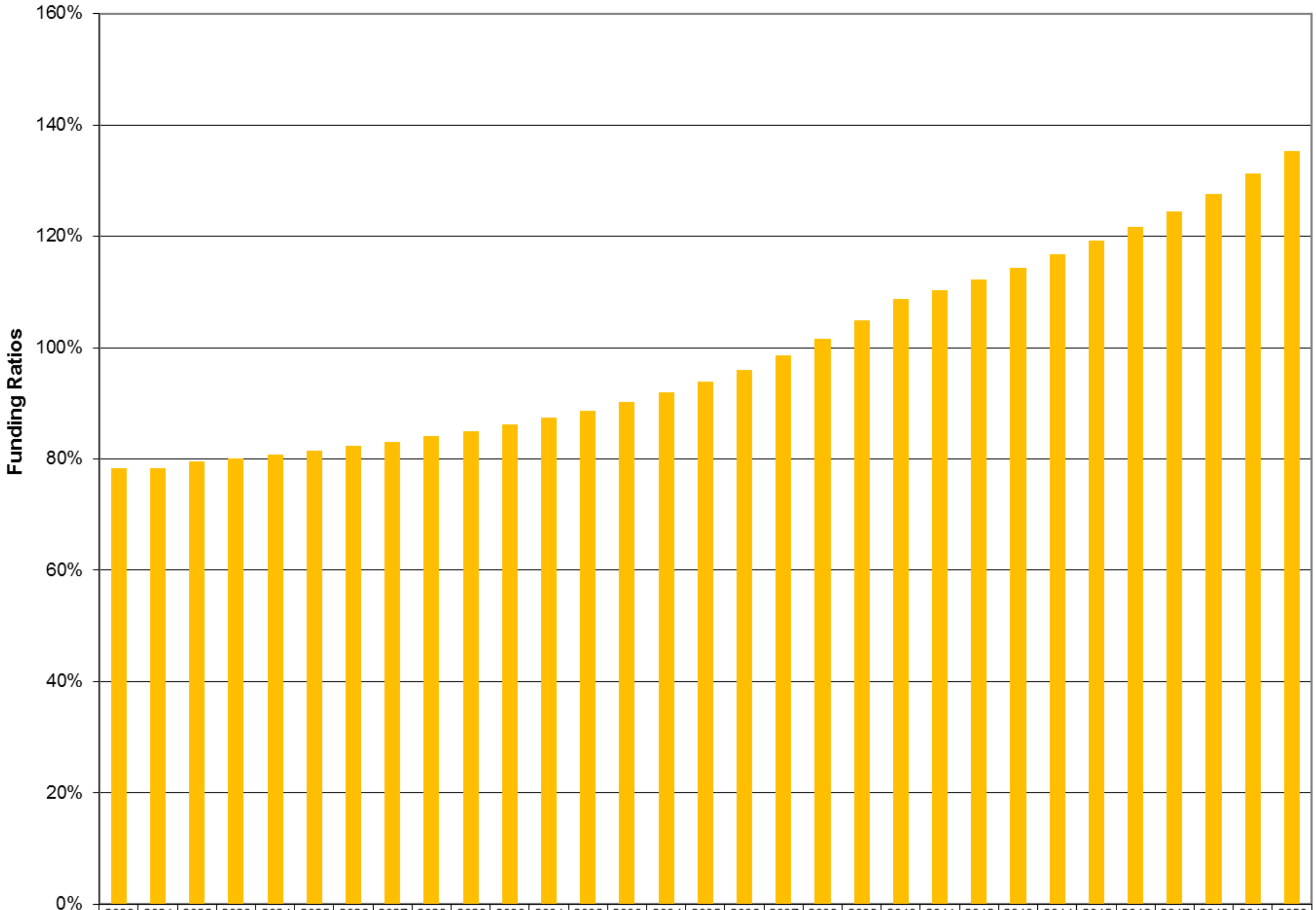



| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State Assistance | 159 | 204 | 179 | 182 | 186 | 188 | 191 | 195 | 199 | 204 | 210 | 216 | 222 | 228 | 235 | 243 | 251 | 260 | 270 | 279 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DB EE Contributions | 76 | 71 | 65 | 61 | 56 | 52 | 48 | 44 | 40 | 37 | 24 | 21 | 18 | 16 | 14 | 11 | 10 | 8 | 6 | 5 | 4 | 3 | 2 | 2 | 2 | 1 | 1 | 1 | 0 | 0 | 0 |
| DCR ER Contributions | 128 | 140 | 146 | 155 | 165 | 174 | 184 | 194 | 203 | 212 | 222 | 232 | 241 | 251 | 260 | 270 | 279 | 288 | 297 | 307 | 316 | 326 | 335 | 345 | 355 | 365 | 374 | 384 | 394 | 403 | 413 |
| DB ER Contributions on DCR Pay | 222 | 237 | 194 | 207 | 219 | 232 | 245 | 258 | 270 | 283 | 295 | 308 | 321 | 334 | 346 | 359 | 371 | 383 | 396 | 408 | 135 | 138 | 142 | 145 | 78 | 42 | 28 | 35 | 29 | 24 | 23 |
| DB ER Contributions on DB Pay | 166 | 143 | 185 | 169 | 153 | 138 | 124 | 111 | 99 | 88 | 77 | 68 | 59 | 51 | 43 | 36 | 30 | 25 | 20 | 16 | 2 | 2 | 1 | 1 | 0 | 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 4.5: Projection of Funded Ratios




| | 2020 | 2021 | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Funding Ratios | 78% | 78% | 80% | 80% | 81% | 81% | 82% | 83% | 84% | 85% | 86% | 87% | 89% | 90% | 92% | 94% | 96% | 99% | 102% | 105% | 109% | 110% | 112% | 114% | 117% | 119% | 122% | 124% | 128% | 131% | 135% |

**Fiscal Year Ending June 30**

# Section 4.6: Table of Projected Actuarial Results

**State of Alaska PERS**
**Financial Projections ($ in Thousands)**
**Based on 2019 Actuarial Valuation Results, 0% Population Growth for Payroll**
**Baseline**

| | Valuation Amounts on July 1 (Beginning of Fiscal Year) | | | | Flow Amounts During Following 12 Months | | | | | | | | | | | Deferred | Ending |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | DB Contributions | | | | | | | | |
| Fiscal Year End | Actuarial Assets | Accrued Liability | Funding Ratio | Surplus (Deficit) | Total Salaries | Er/State Ctb Rate | DCR Ctb Rate | Total Ctb Rate | Employer | State Assistance | Employee | Total | Benefit Payments | Net Contribs | Investment Earnings | Asset Gain/(Loss) | Actuarial Assets |
| 2020 | $17,387,184 | $22,190,874 | 78.4% | ($4,803,690) | $2,347,306 | 23.34% | 5.44% | 28.78% | $388,714 | $159,055 | $76,365 | $624,134 | $1,302,929 | ($678,795) | $1,251,778 | $24,062 | $17,795,436 |
| 2021 | 17,795,436 | 22,722,091 | 78.3% | (4,926,655) | 2,364,145 | 24.69% | 5.92% | 30.61% | 380,155 | 203,585 | 70,772 | 654,512 | 1,374,263 | (719,751) | 1,293,355 | (85,182) | 18,468,670 |
| 2022 | 18,468,670 | 23,194,167 | 79.6% | (4,725,497) | 2,385,869 | 23.39% | 6.10% | 29.49% | 379,353 | 178,702 | 65,459 | 623,514 | 1,445,206 | (821,692) | 1,330,232 | (47,474) | 18,930,801 |
| 2023 | 18,930,801 | 23,616,968 | 80.2% | (4,686,167) | 2,411,254 | 23.13% | 6.43% | 29.56% | 375,432 | 182,291 | 60,610 | 618,333 | 1,513,140 | (894,807) | 1,364,492 | 0 | 19,345,169 |
| 2024 | 19,345,169 | 23,972,154 | 80.7% | (4,626,985) | 2,440,856 | 22.87% | 6.75% | 29.62% | 372,231 | 185,993 | 55,979 | 614,203 | 1,578,474 | (964,271) | 1,396,089 | 0 | 19,769,951 |
| 2025 | 19,769,951 | 24,266,654 | 81.5% | (4,496,703) | 2,474,306 | 22.57% | 7.04% | 29.61% | 370,156 | 188,295 | 51,789 | 610,240 | 1,640,811 | (1,030,571) | 1,425,016 | 0 | 20,158,108 |
| 2026 | 20,158,108 | 24,500,630 | 82.3% | (4,342,522) | 2,514,124 | 22.29% | 7.31% | 29.60% | 369,325 | 191,073 | 47,574 | 607,972 | 1,700,059 | (1,092,087) | 1,451,438 | 0 | 20,511,859 |
| 2027 | 20,511,859 | 24,674,678 | 83.1% | (4,162,819) | 2,556,989 | 22.04% | 7.57% | 29.61% | 368,974 | 194,586 | 44,016 | 607,576 | 1,754,730 | (1,147,154) | 1,475,584 | 0 | 20,835,335 |
| 2028 | 20,835,335 | 24,789,941 | 84.0% | (3,954,606) | 2,602,138 | 21.85% | 7.80% | 29.65% | 369,504 | 199,063 | 40,349 | 608,916 | 1,807,066 | (1,198,150) | 1,497,685 | 0 | 21,130,511 |
| 2029 | 21,130,511 | 24,846,537 | 85.0% | (3,716,026) | 2,650,707 | 21.67% | 8.02% | 29.69% | 370,568 | 203,840 | 37,365 | 611,773 | 1,855,944 | (1,244,171) | 1,517,896 | 0 | 21,400,418 |
| 2030 | 21,400,418 | 24,844,459 | 86.1% | (3,444,041) | 2,702,088 | 21.55% | 8.21% | 29.76% | 372,618 | 209,682 | 24,319 | 606,619 | 1,892,273 | (1,285,654) | 1,536,490 | 0 | 21,647,931 |
| 2031 | 21,647,931 | 24,783,528 | 87.3% | (3,135,597) | 2,761,000 | 21.42% | 8.39% | 29.81% | 375,772 | 215,634 | 21,260 | 612,666 | 1,938,424 | (1,325,758) | 1,553,458 | 0 | 21,872,754 |
| 2032 | 21,872,754 | 24,659,644 | 88.7% | (2,786,890) | 2,822,228 | 21.32% | 8.55% | 29.87% | 379,589 | 222,110 | 18,344 | 620,043 | 1,982,322 | (1,362,279) | 1,568,910 | 0 | 22,076,913 |
| 2033 | 22,076,913 | 24,472,463 | 90.2% | (2,395,550) | 2,886,168 | 21.22% | 8.69% | 29.91% | 384,149 | 228,296 | 15,874 | 628,319 | 2,022,615 | (1,394,296) | 1,582,999 | 0 | 22,263,507 |
| 2034 | 22,263,507 | 24,221,418 | 91.9% | (1,957,911) | 2,952,756 | 21.16% | 8.81% | 29.97% | 389,469 | 235,334 | 13,583 | 638,386 | 2,057,108 | (1,418,722) | 1,596,110 | 0 | 22,439,112 |
| 2035 | 22,439,112 | 23,908,844 | 93.9% | (1,469,732) | 3,022,165 | 21.12% | 8.92% | 30.04% | 395,300 | 242,982 | 11,484 | 649,766 | 2,086,336 | (1,436,570) | 1,608,682 | 0 | 22,609,731 |
| 2036 | 22,609,731 | 23,536,279 | 96.1% | (926,548) | 3,093,285 | 21.10% | 9.02% | 30.12% | 401,509 | 251,174 | 9,589 | 662,272 | 2,110,746 | (1,448,474) | 1,621,133 | 0 | 22,781,153 |
| 2037 | 22,781,153 | 23,104,649 | 98.6% | (323,496) | 3,165,022 | 21.11% | 9.11% | 30.22% | 407,971 | 260,165 | 7,913 | 676,049 | 2,130,815 | (1,454,766) | 1,633,888 | 0 | 22,959,273 |
| 2038 | 22,959,273 | 22,616,499 | 101.5% | 342,774 | 3,239,767 | 21.14% | 9.18% | 30.32% | 415,339 | 269,548 | 6,156 | 691,043 | 2,141,569 | (1,450,526) | 1,647,550 | 0 | 23,155,495 |
| 2039 | 23,155,495 | 22,077,080 | 104.9% | 1,078,415 | 3,318,029 | 21.17% | 9.24% | 30.41% | 423,381 | 279,046 | 4,977 | 707,404 | 2,146,094 | (1,438,690) | 1,662,841 | 0 | 23,379,012 |
| 2040 | 23,379,012 | 21,489,747 | 108.8% | 1,889,265 | 3,399,457 | 4.05% | 9.28% | 13.33% | 137,678 | 0 | 3,739 | 141,417 | 2,139,577 | (1,998,160) | 1,648,622 | 0 | 23,028,974 |
| 2041 | 23,028,974 | 20,863,037 | 110.4% | 2,165,937 | 3,492,862 | 4.01% | 9.32% | 13.33% | 140,064 | 0 | 2,794 | 142,858 | 2,126,001 | (1,983,143) | 1,623,388 | 0 | 22,668,825 |
| 2042 | 22,668,825 | 20,201,914 | 112.2% | 2,466,911 | 3,587,159 | 3.99% | 9.35% | 13.34% | 143,128 | 0 | 2,152 | 145,280 | 2,103,236 | (1,957,956) | 1,597,791 | 0 | 22,308,353 |
| 2043 | 22,308,353 | 19,513,845 | 114.3% | 2,794,508 | 3,682,686 | 3.96% | 9.37% | 13.33% | 145,834 | 0 | 1,841 | 147,675 | 2,073,691 | (1,926,016) | 1,572,429 | 0 | 21,954,529 |
| 2044 | 21,954,529 | 18,804,237 | 116.8% | 3,150,292 | 3,779,717 | 2.08% | 9.39% | 11.47% | 78,618 | 0 | 1,512 | 80,130 | 2,032,104 | (1,951,974) | 1,545,472 | 0 | 21,547,845 |
| 2045 | 21,547,845 | 18,084,245 | 119.2% | 3,463,600 | 3,878,119 | 1.10% | 9.40% | 10.50% | 42,659 | 0 | 1,163 | 43,822 | 1,984,318 | (1,940,496) | 1,515,984 | 0 | 21,123,194 |
| 2046 | 21,123,194 | 17,359,782 | 121.7% | 3,763,412 | 3,976,969 | 0.70% | 9.41% | 10.11% | 27,838 | 0 | 795 | 28,633 | 1,929,799 | (1,901,166) | 1,486,189 | 0 | 20,708,114 |
| 2047 | 20,708,114 | 16,637,727 | 124.5% | 4,070,387 | 4,076,145 | 0.85% | 9.42% | 10.27% | 34,647 | 0 | 815 | 35,462 | 1,868,254 | (1,832,792) | 1,458,162 | 0 | 20,333,407 |
| 2048 | 20,333,407 | 15,925,715 | 127.7% | 4,407,692 | 4,176,674 | 0.70% | 9.42% | 10.12% | 29,237 | 0 | 418 | 29,655 | 1,804,074 | (1,774,419) | 1,432,760 | 0 | 19,991,691 |
| 2049 | 19,991,691 | 15,227,357 | 131.3% | 4,764,334 | 4,279,243 | 0.57% | 9.43% | 10.00% | 24,392 | 0 | 428 | 24,820 | 1,736,056 | (1,711,236) | 1,409,973 | 0 | 19,690,387 |
| | | | | | | | **Totals:** | | $8,493,604 | $4,300,454 | $699,434 | $13,493,492 | | | | | |

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

## Section 4.6: Table of Projected Actuarial Results (continued)

**State of Alaska PERS**
**Financial Projections ($ in Thousands)**
**Based on 2019 Actuarial Valuation Results, 0% Population Growth for Payroll**
**Baseline**

| | Valuation Amounts on July 1 (Beginning of Fiscal Year) | | | | | |
|---|---|---|---|---|---|---|
| Fiscal Year End | Funding Ratio Pension | Funding Ratio Healthcare | Funding Ratio Total | Surplus (Deficit) Pension | Surplus (Deficit) Healthcare | Surplus (Deficit) Total |
| -------- | -------- | -------- | -------- | -------- | -------- | -------- |
| 2020 | 63.7% | 109.2% | 78.4% | ($5,462,487) | 658,797 | ($4,803,690) |
| 2021 | 63.8% | 108.7% | 78.3% | ($5,566,141) | 639,486 | ($4,926,655) |
| 2022 | 65.0% | 110.0% | 79.6% | ($5,478,282) | 752,785 | ($4,725,497) |
| 2023 | 65.5% | 110.3% | 80.2% | ($5,479,436) | 793,269 | ($4,686,167) |
| 2024 | 66.1% | 110.5% | 80.7% | ($5,455,981) | 828,996 | ($4,626,985) |
| 2025 | 66.9% | 111.1% | 81.5% | ($5,385,982) | 889,279 | ($4,496,703) |
| 2026 | 67.6% | 111.7% | 82.3% | ($5,296,848) | 954,326 | ($4,342,522) |
| 2027 | 68.4% | 112.4% | 83.1% | ($5,187,205) | 1,024,386 | ($4,162,819) |
| 2028 | 69.3% | 113.2% | 84.0% | ($5,055,028) | 1,100,422 | ($3,954,606) |
| 2029 | 70.2% | 114.0% | 85.0% | ($4,897,773) | 1,181,747 | ($3,716,026) |
| 2030 | 71.2% | 115.0% | 86.1% | ($4,713,669) | 1,269,628 | ($3,444,041) |
| 2031 | 72.3% | 116.0% | 87.3% | ($4,499,683) | 1,364,086 | ($3,135,597) |
| 2032 | 73.6% | 117.2% | 88.7% | ($4,253,064) | 1,466,174 | ($2,786,890) |
| 2033 | 75.1% | 118.4% | 90.2% | ($3,970,765) | 1,575,215 | ($2,395,550) |
| 2034 | 76.7% | 119.9% | 91.9% | ($3,650,356) | 1,692,445 | ($1,957,911) |
| 2035 | 78.7% | 121.4% | 93.9% | ($3,287,906) | 1,818,174 | ($1,469,732) |
| 2036 | 81.0% | 123.2% | 96.1% | ($2,879,664) | 1,953,116 | ($926,548) |
| 2037 | 83.6% | 125.2% | 98.6% | ($2,422,427) | 2,098,931 | ($323,496) |
| 2038 | 86.7% | 127.5% | 101.5% | ($1,911,477) | 2,254,251 | $342,774 |
| 2039 | 90.4% | 130.0% | 104.9% | ($1,342,241) | 2,420,656 | $1,078,415 |
| 2040 | 94.8% | 132.9% | 108.8% | ($710,128) | 2,599,393 | $1,889,265 |
| 2041 | 95.2% | 136.1% | 110.4% | ($625,187) | 2,791,124 | $2,165,937 |
| 2042 | 95.8% | 139.8% | 112.2% | ($530,050) | 2,996,961 | $2,466,911 |
| 2043 | 96.5% | 144.0% | 114.3% | ($423,539) | 3,218,047 | $2,794,508 |
| 2044 | 97.4% | 148.7% | 116.8% | ($305,035) | 3,455,327 | $3,150,292 |
| 2045 | 97.8% | 154.0% | 119.2% | ($246,659) | 3,710,259 | $3,463,600 |
| 2046 | 97.9% | 160.0% | 121.7% | ($220,628) | 3,984,040 | $3,763,412 |
| 2047 | 98.0% | 166.7% | 124.5% | ($207,558) | 4,277,945 | $4,070,387 |
| 2048 | 98.1% | 174.3% | 127.7% | ($186,102) | 4,593,794 | $4,407,692 |
| 2049 | 98.2% | 182.8% | 131.3% | ($168,394) | 4,932,728 | $4,764,334 |

# Section 5: Member Data

## Section 5.1: Summary of Members Included

| As of June 30 | 2015 | 2016 | 2017 | 2018[1] | 2019 |
|---|---|---|---|---|---|
| **Active Members** | | | | | |
| 1. Number | 17,660 | 16,105 | 14,719 | 13,434 | 12,152 |
| 2. Average Age | 51.34 | 51.74 | 52.10 | 52.52 | 52.84 |
| 3. Average Credited Service | 15.29 | 15.95 | 16.57 | 17.21 | 17.80 |
| 4. Average Entry Age | 36.05 | 35.79 | 35.53 | 35.30 | 35.04 |
| 5. Average Annual Earnings | $ 73,248 | $ 75,717 | $ 76,902 | $ 77,813 | $ 82,192 |
| 6. Number Vested | 16,996 | 15,607 | 14,314 | 13,103 | 11,868 |
| 7. Percent Who Are Vested | 96.2% | 96.9% | 97.2% | 97.5% | 97.7% |
| **Retirees, Disabilitants and Beneficiaries** | | | | | |
| 1. Number | 32,145 | 33,353 | 34,347 | 35,454 | 36,310 |
| 2. Average Age | 68.60 | 69.02 | 69.42 | 69.85 | 70.29 |
| 3. Average Years Since Retirement | 11.27 | 11.48 | 11.71 | 11.87 | 12.14 |
| 4. Average Monthly Pension Benefit | | | | | |
| Base | $ 1,490 | $ 1,529 | $ 1,574 | $ 1,616 | $ 1,660 |
| COLA[2] | 92 | 93 | 93 | 94 | 92 |
| P.R.P.A.[2] | 258 | 245 | 230 | 222 | 241 |
| Adjustment | 1 | 1 | 1 | 1 | 1 |
| Total | $ 1,841 | $ 1,868 | $ 1,898 | $ 1,933 | $ 1,994 |
| **Vested Terminations (vested at time of termination, not refunded contributions or commenced benefits)** | | | | | |
| 1. Number | 6,304 | 6,160 | 5,962 | 5,660 | 5,499 |
| 2. Average Age | 51.80 | 52.08 | 52.45 | 52.56 | 53.06 |
| 3. Average Monthly Pension Benefit | $ 991 | $ 1,042 | $ 1,080 | $ 1,087 | $ 1,123 |
| **Non-Vested Terminations With Account Balances (not vested at termination, not refunded contributions)** | | | | | |
| 1. Number | 12,339 | 11,880 | 11,506 | 11,192 | 10,921 |
| 2. Average Account Balance | $ 5,981 | $ 6,212 | $ 6,462 | $ 6,558 | $ 6,923 |
| **Total Number of Members** | **68,448** | **67,498** | **66,534** | **65,740** | **64,882** |

[1] 4 members who were terminated before the valuation date were subsequently rehired, per census data as of October 1, 2018. These members were valued as active as of the valuation date.
[2] Calculated by taking the average of the data field, as provided by the State of Alaska, for all participants in the group.

### Summary of Members Included

### Active Members

| As of June 30, 2019 | DB Tier 1 | DB Tier 2 | DB Tier 3 | DB Total | DCR Tier 4 | Grand Total |
|---|---|---|---|---|---|---|
| 1. Number | 982 | 3,030 | 8,140 | 12,152 | 21,902 | 34,054 |
| 2. Average Age | 61.82 | 55.80 | 50.66 | 52.84 | 40.96 | 45.20 |
| 3. Average Credited Service | 22.75 | 22.37 | 15.50 | 17.80 | 4.33 | 9.14 |
| 4. Average Entry Age | 39.07 | 33.43 | 35.16 | 35.04 | 36.63 | 36.06 |
| 5. Annual Earnings | | | | | | |
| (a) Amount (000's) | $ 77,264 | $ 263,316 | $ 658,216 | $ 998,796 | $ 1,328,934 | $ 2,327,730 |
| (b) Average | $ 78,680 | $ 86,903 | $ 80,862 | $ 82,192 | $ 60,676 | $ 68,354 |

### Retirees, Disabilitants and Beneficiaries

| As of June 30, 2019 | Tier 1 | Tier 2 | Tier 3 | Total |
|---|---|---|---|---|
| 1. Number | 23,614 | 8,378 | 4,318 | 36,310 |
| 2. Average Age | 71.57 | 68.46 | 66.78 | 70.29 |
| 3. Average Years Since Retirement | 14.92 | 8.04 | 4.91 | 12.14 |
| 4. Average Monthly Pension Benefit | | | | |
| Base | $ 1,719 | $ 1,709 | $ 1,237 | $ 1,660 |
| COLA | 116 | 52 | 39 | 92 |
| P.R.P.A. | 327 | 102 | 44 | 241 |
| Adjustment | 1 | 2 | 3 | 1 |
| Total | 2,163 | 1,865 | 1,323 | 1,994 |

**Summary of Members Included**

| As of June 30, 2019 | Active | Retiree | Covered Spouse | Covered Children / Dependent | Deferred | Total |
|---|---|---|---|---|---|---|
| **Retiree Medical Participants** | | | | | | |
| 1. Retiree Coverage Only | 12,019 | 18,732 | 0 | 0 | 2,413 | 21,145 |
| 2. Retiree + Spouse | 0 | 12,318 | 12,318 | 0 | 3,368 | 28,004 |
| 3. Retiree + Children / Other Dependent | 0 | 427 | 0 | 437 | 0 | 864 |
| 4. Family | 0 | 813 | 813 | 1,128 | 0 | 2,754 |
| 5. Total | 12,019 | 32,290 | 13,131 | 1,565 | 5,781 | 52,767 |

**Retiree Medical Participants as of June 30, 2019**

| | Retiree | Covered Spouse | Covered Children / Dependent | Deferred | All Members |
|---|---|---|---|---|---|
| Pre-Medicare | 8,466 | 5,246 | 1,565 | 5,637 | 20,914 |
| Medicare Part A & B | 23,643 | 7,847 | 0 | 144 | 31,634 |
| Medicare Part B Only | 181 | 38 | 0 | 0 | 219 |
| Total | 32,290 | 13,131 | 1,565 | 5,781 | 52,767 |

| As of June 30, 2019 | Retiree |
|---|---|
| **Summary of Retiree Medical Data Received** | |
| 1. Retiree records on pension data | 36,328 |
| 2. Multiple records on pension data | (918) |
| 3. Records valued in a different retiree healthcare plan[1] | (1,101) |
| 4. Records without medical coverage | (2,019) |
| 5. Total | 32,290 |

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

**Summary of Members Included**

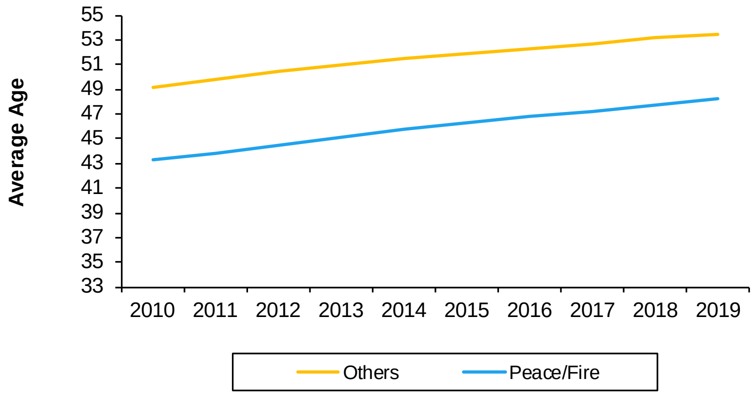
**Active Members – DB Only**

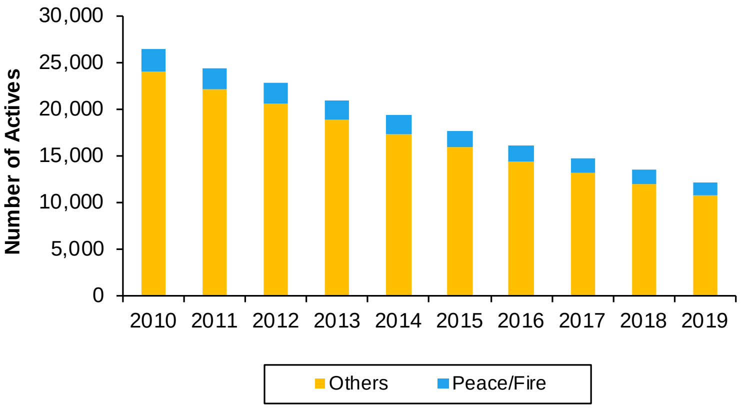
| As of June 30 | | 2015 | 2016 | 2017 | 2018[1] | 2019 |
|---|---|---|---|---|---|---|
| **Peace Officer/Firefighter** | | | | | | |
| 1. | Number | 1,827 | 1,704 | 1,606 | 1,507 | 1,382 |
| 2. | Average Age | 46.26 | 46.80 | 47.22 | 47.75 | 48.25 |
| 3. | Average Credited Service | 16.23 | 16.87 | 17.41 | 18.15 | 18.90 |
| 4. | Average Entry Age | 30.03 | 29.93 | 29.81 | 29.60 | 29.35 |
| 5. | Average Annual Earnings | $ 101,450 | $ 105,317 | $ 106,987 | $ 108,580 | $ 120,089 |
| 6. | Number Vested | 1,817 | 1,695 | 1,599 | 1,500 | 1,374 |
| 7. | Percent Who Are Vested | 99.5% | 99.5% | 99.6% | 99.5% | 99.4% |
| **Others** | | | | | | |
| 1. | Number | 15,833 | 14,401 | 13,113 | 11,927 | 10,770 |
| 2. | Average Age | 51.93 | 52.32 | 52.70 | 53.12 | 53.43 |
| 3. | Average Credited Service | 15.18 | 15.84 | 16.47 | 17.09 | 17.66 |
| 4. | Average Entry Age | 36.75 | 36.48 | 36.23 | 36.03 | 35.77 |
| 5. | Average Annual Earnings | $ 69,994 | $ 72,214 | $ 73,218 | $ 73,926 | $ 77,329 |
| 6. | Number Vested | 15,179 | 13,912 | 12,715 | 11,603 | 10,494 |
| 7. | Percent Who Are Vested | 95.9% | 96.6% | 97.0% | 97.3% | 97.4% |
| **Total** | | | | | | |
| 1. | Number | 17,660 | 16,105 | 14,719 | 13,434 | 12,152 |
| 2. | Average Age | 51.34 | 51.74 | 52.10 | 52.52 | 52.84 |
| 3. | Average Credited Service | 15.29 | 15.95 | 16.57 | 17.21 | 17.80 |
| 4. | Average Entry Age | 36.05 | 35.79 | 35.53 | 35.30 | 35.04 |
| 5. | Average Annual Earnings | $ 73,248 | $ 75,717 | $ 76,902 | $ 77,813 | $ 82,192 |
| 6. | Number Vested | 16,996 | 15,607 | 14,314 | 13,103 | 11,868 |
| 7. | Percent Who Are Vested | 96.2% | 96.9% | 97.3% | 97.5% | 97.7% |

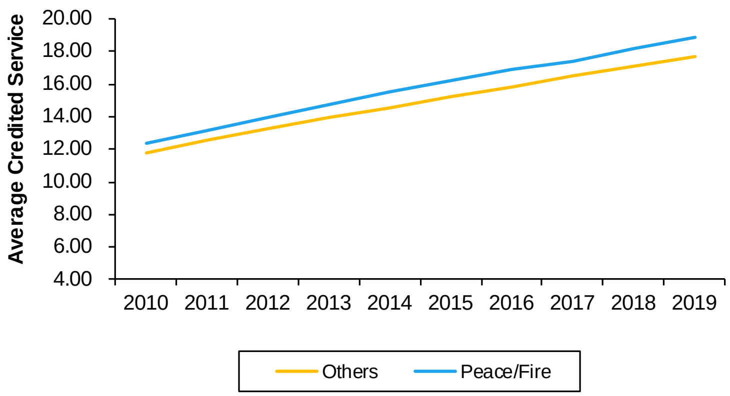
Total and average annual earnings ("valuation pay") are the annualized earnings for the fiscal year ending on the valuation date.

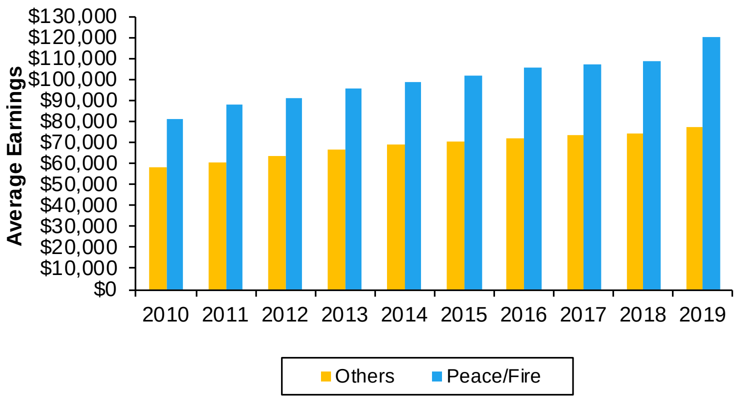
[1] 4 members who were terminated before the valuation date were subsequently rehired, per census data as of October 1, 2018. These members were valued as active as of the valuation date.

**Summary of Members Included – Active Members as of June 30**




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

## Section 5.2: Age and Service Distribution of Active Members

### Peace Officer/Firefighter

**Annual Earnings by Age**

| Age | Number | Total Annual Earnings | Average Annual Earnings |
|---|---|---|---|
| 0 – 19 | 0 | $ 0 | $ 0 |
| 20 – 24 | 0 | 0 | 0 |
| 25 – 29 | 0 | 0 | 0 |
| 30 – 34 | 12 | 1,207,294 | 100,608 |
| 35 – 39 | 142 | 17,038,253 | 119,988 |
| 40 – 44 | 307 | 37,690,010 | 122,769 |
| 45 – 49 | 403 | 49,487,557 | 122,798 |
| 50 – 54 | 294 | 35,292,738 | 120,043 |
| 55 – 59 | 159 | 18,275,385 | 114,940 |
| 60 – 64 | 52 | 5,507,215 | 105,908 |
| 65 – 69 | 11 | 1,292,101 | 117,464 |
| 70 – 74 | 2 | 172,186 | 86,093 |
| 75+ | 0 | 0 | 0 |
| Total | 1,382 | $ 165,962,739 | $ 120,089 |

**Annual Earnings by Credited Service**

| Years of Service | Number | Total Annual Earnings | Average Annual Earnings |
|---|---|---|---|
| 0 | 1 | $ 33,369 | $ 33,369 |
| 1 | 1 | 69,125 | 69,125 |
| 2 | 1 | 57,954 | 57,954 |
| 3 | 2 | 171,473 | 85,737 |
| 4 | 2 | 152,967 | 76,484 |
| 0 – 4 | 7 | 484,888 | 69,270 |
| 5 – 9 | 15 | 1,217,948 | 81,197 |
| 10 – 14 | 318 | 35,403,668 | 111,332 |
| 15 – 19 | 540 | 63,121,664 | 116,892 |
| 20 – 24 | 357 | 47,124,548 | 132,002 |
| 25 – 29 | 115 | 14,804,244 | 128,733 |
| 30 – 34 | 25 | 3,180,082 | 127,203 |
| 35 – 39 | 3 | 337,333 | 112,444 |
| 40+ | 2 | 288,364 | 144,182 |
| Total | 1,382 | $ 165,962,739 | $ 120,089 |

**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 | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 35 – 39 | 2 | 2 | 88 | 49 | 1 | 0 | 0 | 0 | 0 | 142 |
| 40 – 44 | 2 | 4 | 79 | 166 | 56 | 0 | 0 | 0 | 0 | 307 |
| 45 – 49 | 1 | 1 | 59 | 144 | 158 | 40 | 0 | 0 | 0 | 403 |
| 50 – 54 | 1 | 5 | 37 | 96 | 100 | 48 | 7 | 0 | 0 | 294 |
| 55 – 59 | 0 | 1 | 31 | 66 | 31 | 20 | 9 | 1 | 0 | 159 |
| 60 – 64 | 0 | 1 | 11 | 15 | 11 | 6 | 7 | 1 | 0 | 52 |
| 65 – 69 | 0 | 1 | 1 | 4 | 0 | 1 | 2 | 1 | 1 | 11 |
| 70 – 74 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 75+ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 7 | 15 | 318 | 540 | 357 | 115 | 25 | 3 | 2 | 1,382 |

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 | 91 | 6,351,422 | 69,796 |
| 35 – 39 | 663 | 50,873,398 | 76,732 |
| 40 – 44 | 1,189 | 92,458,881 | 77,762 |
| 45 – 49 | 1,611 | 132,715,934 | 82,381 |
| 50 – 54 | 2,175 | 169,842,911 | 78,089 |
| 55 – 59 | 2,763 | 212,370,958 | 76,862 |
| 60 – 64 | 1,524 | 112,714,258 | 73,959 |
| 65 – 69 | 571 | 42,570,616 | 74,554 |
| 70 – 74 | 145 | 10,590,906 | 73,041 |
| 75+ | 38 | 2,342,687 | 61,650 |
| Total | 10,770 | $ 832,831,971 | $ 77,329 |

### Annual Earnings by Credited Service

| Years of Service | Number | Total Annual Earnings | Average Annual Earnings |
|---|---|---|---|
| 0 | 15 | $ 784,565 | $ 52,304 |
| 1 | 45 | 2,257,784 | 50,173 |
| 2 | 45 | 2,651,443 | 58,921 |
| 3 | 55 | 2,953,579 | 53,701 |
| 4 | 93 | 5,372,917 | 57,773 |
| 0 – 4 | 253 | 14,020,288 | 55,416 |
| 5 – 9 | 766 | 45,621,819 | 59,559 |
| 10 – 14 | 2,940 | 207,099,506 | 70,442 |
| 15 – 19 | 3,461 | 271,278,784 | 78,382 |
| 20 – 24 | 1,867 | 158,511,035 | 84,901 |
| 25 – 29 | 1,098 | 99,990,319 | 91,066 |
| 30 – 34 | 291 | 27,326,226 | 93,905 |
| 35 – 39 | 74 | 7,137,003 | 96,446 |
| 40+ | 20 | 1,846,991 | 92,350 |
| Total | 10,770 | $ 832,831,971 | $ 77,329 |

### 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 | 12 | 28 | 48 | 3 | 0 | 0 | 0 | 0 | 0 | 91 |
| 35 – 39 | 44 | 91 | 368 | 157 | 3 | 0 | 0 | 0 | 0 | 663 |
| 40 – 44 | 44 | 119 | 448 | 479 | 97 | 2 | 0 | 0 | 0 | 1,189 |
| 45 – 49 | 38 | 116 | 469 | 619 | 310 | 57 | 2 | 0 | 0 | 1,611 |
| 50 – 54 | 46 | 139 | 556 | 680 | 429 | 280 | 44 | 1 | 0 | 2,175 |
| 55 – 59 | 37 | 130 | 573 | 836 | 586 | 474 | 114 | 13 | 0 | 2,763 |
| 60 – 64 | 19 | 98 | 330 | 459 | 313 | 190 | 84 | 27 | 4 | 1,524 |
| 65 – 69 | 9 | 32 | 116 | 173 | 105 | 74 | 32 | 23 | 7 | 571 |
| 70 – 74 | 3 | 10 | 25 | 38 | 22 | 21 | 12 | 9 | 5 | 145 |
| 75+ | 1 | 3 | 7 | 17 | 2 | 0 | 3 | 1 | 4 | 38 |
| Total | 253 | 766 | 2,940 | 3,461 | 1,867 | 1,098 | 291 | 74 | 20 | 10,770 |

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

## Section 5.3: Member Data Reconciliation

### Pension

| | | Inactive Members | | | | | |
|---|---|---|---|---|---|---|---|
| | Active Members | Due a Refund | With Deferred Benefits | Retired Members | Disabled Members | Beneficiaries | Total |
| **As of June 30, 2018** | **13,434** | **11,192** | **5,660** | **31,218*** | **189** | **4,062** | **65,755** |
| Vested Terminations | (485) | (4) | 499 | 0 | (10) | 0 | 0 |
| Non-vested Terminations | (54) | 54 | 0 | 0 | 0 | 0 | 0 |
| Cash-outs | (37) | (217) | (59) | 0 | (1) | (51) | (365) |
| Converted to DCR Plan | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Disability Retirements | (18) | 0 | (3) | 0 | 21 | 0 | 0 |
| Age Retirements | (989) | (10) | (390) | 1,412 | (23) | N/A | 0 |
| Deaths With Beneficiary | (20) | (5) | (21) | (271) | 0 | 329 | 12 |
| Deaths Without Beneficiary | (6) | (14) | (2) | (412) | (2) | (133) | (569) |
| Expired Benefits | 0 | 0 | 0 | 0 | 0 | (7) | (7) |
| Data Corrections | (1) | 2 | (3) | 4 | 0 | (18) | (16) |
| Transfers Out | 5 | 0 | (3) | (2) | 0 | 0 | 0 |
| Rehires | 322 | (111) | (179) | (29) | (1) | 0 | 2 |
| Pick Ups*** | 1 | 0 | 0 | 2 | 0 | 49 | 52 |
| **Net Change** | **(1,282)** | **(305)** | **(161)** | **704** | **(16)** | **169** | **(891)** |
| **As of June 30, 2019** | **12,152** | **10,887** | **5,499** | **31,922**** | **173** | **4,231** | **64,864** |

* Includes 15 medical only retirees
** Includes 16 medical only retirees
*** Pickup beneficiaries are primarily new QDROs

**Healthcare**

| | | Inactive Members | | | | |
|---|---|---|---|---|---|---|
| | Active | Inactive Individuals | Covered Spouses | Covered Children | Deferred | Total Inactive Members |
| **As of June 30, 2018** | **13,380** | **31,396** | **12,880** | **1,645** | **6,070** | **51,991** |
| Vested Terminations | (442) | 0 | 0 | 0 | 442 | 442 |
| Non-vested Terminations | (66) | 0 | 0 | 0 | 0 | 0 |
| Cash-outs | (37) | 0 | 0 | 0 | (97) | (97) |
| Disability | (22) | 22 | 12 | 16 | 0 | 50 |
| Rehires | 308 | (19) | 0 | (6) | (179) | (204) |
| Retirement | (1,021) | 1,021 | 546 | 167 | 0 | 1,734 |
| Retired from deferred status | 0 | 409 | 218 | 49 | (422) | 254 |
| Retired without medical coverage | (56) | 0 | 0 | 0 | (17) | (17) |
| Deceased | (25) | (696) | (178) | (4) | (14) | (892) |
| New Beneficiaries | 0 | 149 | (149) | 0 | 0 | 0 |
| Added Dependent Coverage | N/A | 0 | 153 | 82 | 0 | 235 |
| Dropped Dependent Coverage | N/A | 0 | (334) | (377) | 0 | (711) |
| Added Retiree Medical Coverage | 0 | 153 | 0 | 0 | 0 | 153 |
| Dropped Retiree Medical Coverage | 0 | (144) | (11) | 0 | 0 | (155) |
| Transfer to/from another plan | 0 | (1) | (6) | (7) | (2) | (16) |
| **Net Change** | **(1,361)** | **894** | **251** | **(80)** | **(289)** | **776** |
| **As of June 30, 2019** | **12,019** | **32,290** | **13,131** | **1,565** | **5,781** | **52,767** |

## Section 5.4: Schedule of Active Member Data

**Peace Officer/Firefighter**

| Valuation Date | Number | Annual Earnings (000's) | Annual Average Earnings | Percent Increase/ (Decrease) in Average Earnings | Number of Participating Employers |
|---|---|---|---|---|---|
| June 30, 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 | 91,286 | 4.1% | 160 |
| June 30, 2011 | 2,275 | 199,537 | 87,709 | 8.6% | 160 |
| June 30, 2010 | 2,388 | 192,895 | 80,777 | 2.8% | 160 |

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

**Others**

| Valuation Date | Number | Annual Earnings (000's) | Annual Average Earnings | Percent Increase/ (Decrease) in Average Earnings | Number of Participating Employers |
|---|---|---|---|---|---|
| June 30, 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 |
| June 30, 2011 | 22,118 | 1,342,122 | 60,680 | 4.7% | 160 |
| June 30, 2010 | 24,054 | 1,393,803 | 57,945 | 4.5% | 160 |

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

## Section 5.5: Active Member Payroll Reconciliation

| | Payroll Field | Payroll Data (000s) |
|---|---|---|
| a) | DRB actual reported salaries FY19 – employer list | $ 2,166,250 |
| b) | DRB actual reported salaries FY19 – valuation data | 2,123,367 |
| c) | Annualized valuation data | 2,327,729 |
| d) | Valuation payroll as of June 30, 2019 | 2,425,842 |
| e) | Rate payroll for FY20 | 2,347,306 |
| f) | Rate payroll for FY22 | 2,385,869 |

a) Actual reported salaries from DRB employer listing showing all payroll paid during FY19, including those who were not active as of June 30, 2019
b) Payroll from valuation data for people who are in active status as of June 30, 2019
c) Payroll from (b) annualized for both new entrants and part-timers
d) Payroll from (c) with one year of salary scale applied to estimate salaries payable for the upcoming year
e) Payroll from (d) with the part-timer annualization removed
f) Payroll from (e) with two years of assumed decrements and salary scale, and 0% population growth

## Section 5.6: Summary of New Pension Benefit Recipients

**Peace Officer/Firefighter**

| During the Year Ending June 30 | | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| **Service** | | | | | | |
| 1. | Number | 97 | 108 | 119 | 105 | 109 |
| 2. | Average Age at Commencement | 55.29 | 55.91 | 56.65 | 55.70 | 55.61 |
| 3. | Average Monthly Pension Benefit | $ 4,146 | $ 4,614 | $ 4,166 | $ 4,519 | $ 4,412 |
| **Survivor (including surviving spouse and DROs)** | | | | | | |
| 1. | Number | 36 | 27 | 42 | 44 | 36 |
| 2. | Average Age at Commencement | 63.51 | 61.48 | 62.88 | 63.76 | 68.19 |
| 3. | Average Monthly Pension Benefit | $ 1,546 | $ 1,745 | $ 1,797 | $ 2,187 | $ 1,842 |
| **Disability Retirements** | | | | | | |
| 1. | Number | 3 | 2 | 4 | 4 | 4 |
| 2. | Average Age at Commencement | 40.50 | 42.07 | 49.33 | 46.56 | 50.44 |
| 3. | Average Monthly Pension Benefit | $ 3,433 | $ 3,096 | $ 2,427 | $ 3,230 | $ 3,071 |
| **Total** | | | | | | |
| 1. | Number | 136 | 137 | 165 | 153 | 149 |
| 2. | Average Age at Commencement | 57.14 | 56.81 | 58.06 | 57.78 | 58.51 |
| 3. | Average Monthly Pension Benefit | $ 3,442 | $ 4,026 | $ 3,521 | $ 3,814 | $ 3,755 |

**Summary of New Pension Benefit Recipients**

**Average Pension Benefit Payments – Peace Officer/Firefighter**

| | Years of Credited Service | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30+ |
| Period 7/1/18 - 6/30/19: | | | | | | | |
| Average Monthly Pension Benefit | $ 0 | $ 651 | $ 1,933 | $ 3,362 | $ 4,786 | $ 6,196 | $ 5,688 |
| Number of Recipients | 0 | 5 | 11 | 25 | 38 | 26 | 6 |
| Period 7/1/17 - 6/30/18: | | | | | | | |
| Average Monthly Pension Benefit | $ 0 | $ 1,063 | $ 2,133 | $ 3,747 | $ 4,847 | $ 6,024 | $ 7,717 |
| Number of Recipients | 0 | 4 | 18 | 19 | 35 | 30 | 3 |
| Period 7/1/16 - 6/30/17: | | | | | | | |
| Average Monthly Pension Benefit | $ 0 | $ 686 | $ 2,075 | $ 3,234 | $ 4,462 | $ 5,151 | $ 6,376 |
| Number of Recipients | 0 | 8 | 9 | 28 | 41 | 23 | 14 |
| Period 7/1/15 - 6/30/16: | | | | | | | |
| Average Monthly Pension Benefit | $ 0 | $ 958 | $ 1,742 | $ 3,347 | $ 4,622 | $ 5,778 | $ 7,221 |
| Number of Recipients | 0 | 6 | 11 | 19 | 30 | 28 | 16 |
| Period 7/1/14 - 6/30/15: | | | | | | | |
| Average Monthly Pension Benefit | $ 0 | $ 1,173 | $ 1,621 | $ 3,632 | $ 4,436 | $ 5,457 | $ 6,863 |
| Number of Recipients | 0 | 8 | 9 | 26 | 24 | 25 | 7 |
| Period 7/1/13 - 6/30/14: | | | | | | | |
| Average Monthly Pension Benefit | $ 290 | $ 1,423 | $ 2,002 | $ 2,902 | $ 4,014 | $ 5,464 | $ 6,299 |
| Number of Recipients | 1 | 9 | 10 | 14 | 22 | 16 | 7 |
| Period 7/1/12 - 6/30/13: | | | | | | | |
| Average Monthly Pension Benefit | $ 0 | $ 865 | $ 1,779 | $ 2,762 | $ 3,793 | $ 4,983 | $ 4,911 |
| Number of Recipients | 0 | 9 | 8 | 19 | 31 | 18 | 4 |
| Period 7/1/11 - 6/30/12: | | | | | | | |
| Average Monthly Pension Benefit | $ 0 | $ 1,159 | $ 1,161 | $ 3,142 | $ 3,504 | $ 4,673 | $ 5,079 |
| Number of Recipients | 0 | 13 | 13 | 12 | 20 | 17 | 7 |
| Period 7/1/10 - 6/30/11: | | | | | | | |
| Average Monthly Pension Benefit | $ 525 | $ 880 | $ 1,469 | $ 2,666 | $ 3,743 | $ 4,806 | $ 5,661 |
| Number of Recipients | 1 | 8 | 18 | 10 | 24 | 16 | 8 |
| Period 7/1/09 - 6/30/10: | | | | | | | |
| Average Monthly Pension Benefit | $ 1,902 | $ 1,242 | $ 1,459 | $ 2,284 | $ 3,179 | $ 4,527 | $ 4,695 |
| Number of Recipients | 4 | 7 | 16 | 14 | 28 | 14 | 7 |

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

### Summary of New Pension Benefit Recipients

### Others

| During the Year Ending June 30 | | 2015 | | 2016 | | 2017 | | 2018 | | 2019 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Service** | | | | | | | | | | |
| 1. Number | | 1,281 | | 1,472 | | 1,393 | | 1,419 | | 1,288 |
| 2. Average Age at Commencement | | 60.70 | | 61.28 | | 61.40 | | 62.19 | | 61.38 |
| 3. Average Monthly Pension Benefit | $ | 2,310 | $ | 2,269 | $ | 2,404 | $ | 2,477 | $ | 2,540 |
| **Survivor (including surviving spouse and DROs)** | | | | | | | | | | |
| 1. Number | | 275 | | 286 | | 292 | | 261 | | 238 |
| 2. Average Age at Commencement | | 69.00 | | 66.30 | | 67.12 | | 70.38 | | 69.25 |
| 3. Average Monthly Pension Benefit | $ | 1,159 | $ | 1,093 | $ | 1,150 | $ | 1,120 | $ | 1,249 |
| **Disability Retirements** | | | | | | | | | | |
| 1. Number | | 27 | | 22 | | 14 | | 28 | | 17 |
| 2. Average Age at Commencement | | 51.39 | | 53.04 | | 52.43 | | 53.80 | | 52.95 |
| 3. Average Monthly Pension Benefit | $ | 1,858 | $ | 2,209 | $ | 2,405 | $ | 1,896 | $ | 2,313 |
| **Total** | | | | | | | | | | |
| 1. Number | | 1,583 | | 1,780 | | 1,699 | | 1,708 | | 1,543 |
| 2. Average Age at Commencement | | 61.98 | | 61.98 | | 62.31 | | 63.31 | | 62.50 |
| 3. Average Monthly Pension Benefit | $ | 2,103 | $ | 2,079 | $ | 2,189 | $ | 2,260 | $ | 2,339 |

**Summary of New Pension Benefit Recipients**

**Average Pension Benefit Payments – Others**

| | Years of Credited Service | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0 - 4 | 5 - 9 | 10 - 14 | 15 - 19 | 20 - 24 | 25 - 29 | 30+ |
| Period 7/1/18 - 6/30/19: | | | | | | | |
| Average Monthly Pension Benefit | $ 652 | $ 646 | $ 1,301 | $ 2,071 | $ 3,058 | $ 4,596 | $ 5,685 |
| Number of Recipients | 21 | 190 | 266 | 289 | 222 | 205 | 105 |
| Period 7/1/17 - 6/30/18: | | | | | | | |
| Average Monthly Pension Benefit | $ 414 | $ 607 | $ 1,299 | $ 1,982 | $ 3,034 | $ 4,475 | $ 6,085 |
| Number of Recipients | 26 | 221 | 351 | 280 | 223 | 214 | 127 |
| Period 7/1/16 - 6/30/17: | | | | | | | |
| Average Monthly Pension Benefit | $ 381 | $ 640 | $ 1,271 | $ 2,067 | $ 3,119 | $ 4,579 | $ 6,224 |
| Number of Recipients | 27 | 254 | 375 | 233 | 212 | 191 | 115 |
| Period 7/1/15 - 6/30/16: | | | | | | | |
| Average Monthly Pension Benefit | $ 434 | $ 660 | $ 1,240 | $ 2,017 | $ 3,059 | $ 4,158 | $ 6,583 |
| Number of Recipients | 30 | 323 | 387 | 266 | 192 | 161 | 135 |
| Period 7/1/14 - 6/30/15: | | | | | | | |
| Average Monthly Pension Benefit | $ 430 | $ 685 | $ 1,260 | $ 2,008 | $ 3,086 | $ 4,544 | $ 6,195 |
| Number of Recipients | 42 | 284 | 304 | 213 | 198 | 169 | 98 |
| Period 7/1/13 - 6/30/14: | | | | | | | |
| Average Monthly Pension Benefit | $ 503 | $ 700 | $ 1,189 | $ 2,065 | $ 3,021 | $ 4,439 | $ 5,490 |
| Number of Recipients | 48 | 347 | 319 | 241 | 214 | 224 | 121 |
| Period 7/1/12 - 6/30/13: | | | | | | | |
| Average Monthly Pension Benefit | $ 414 | $ 650 | $ 1,179 | $ 1,925 | $ 2,879 | $ 4,356 | $ 5,208 |
| Number of Recipients | 59 | 349 | 365 | 257 | 206 | 209 | 132 |
| Period 7/1/11 - 6/30/12: | | | | | | | |
| Average Monthly Pension Benefit | $ 407 | $ 610 | $ 1,147 | $ 1,931 | $ 2,805 | $ 4,214 | $ 5,076 |
| Number of Recipients | 67 | 351 | 314 | 204 | 208 | 188 | 106 |
| Period 7/1/10 - 6/30/11: | | | | | | | |
| Average Monthly Pension Benefit | $ 409 | $ 633 | $ 1,150 | $ 1,876 | $ 2,690 | $ 4,294 | $ 5,226 |
| Number of Recipients | 73 | 352 | 270 | 227 | 172 | 205 | 105 |
| Period 7/1/09 - 6/30/10: | | | | | | | |
| Average Monthly Pension Benefit | $ 485 | $ 579 | $ 1,116 | $ 1,763 | $ 2,674 | $ 4,008 | $ 5,039 |
| Number of Recipients | 93 | 367 | 273 | 217 | 218 | 200 | 74 |

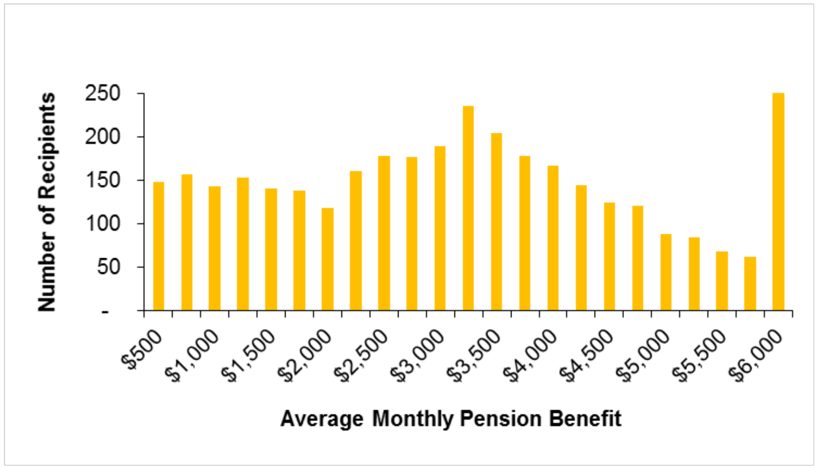
“Average Monthly Benefit” includes post-retirement pension adjustments and cost-of-living increases.

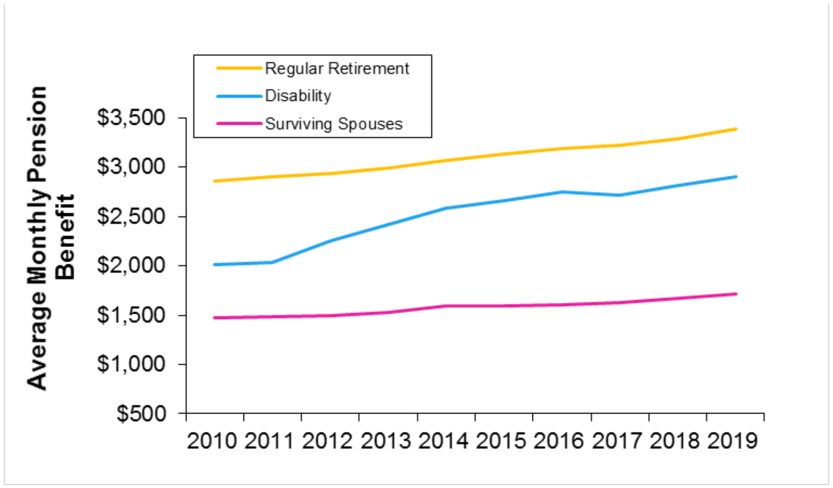
## Section 5.7: Summary of All Pension Benefit Recipients

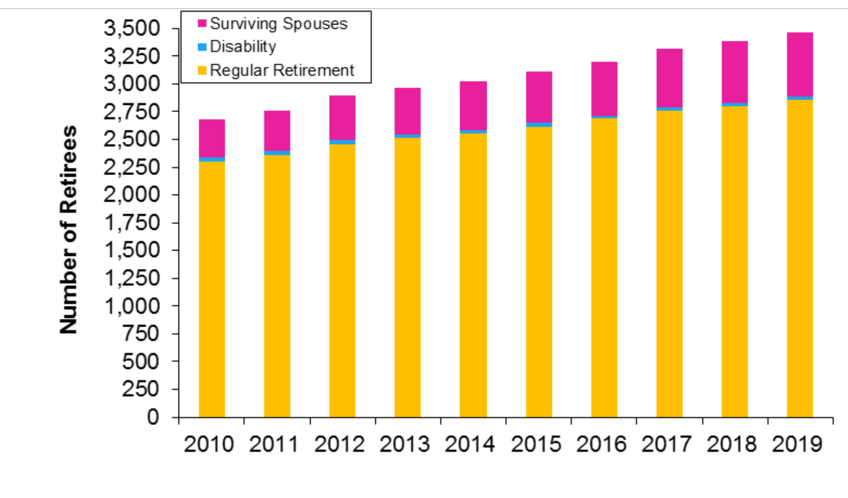
| | | Peace Officer/ Firefighter | Others |
|---|---|---|---|
| **Service Retirements** | | | |
| 1. | Number, June 30, 2018 | 2,803 | 28,400 |
| 2. | Net Change During FY19 | 54 | 649 |
| 3. | Number, June 30, 2019 | 2,857 | 29,049 |
| 4. | Average Age At Commencement | 53.02 | 58.20 |
| 5. | Average Current Age | 67.96 | 70.36 |
| 6. | Average Monthly Pension Benefit | $ 3,388 | $ 1,978 |
| **Survivors (including surviving spouses and DROs)** | | | |
| 1. | Number, June 30, 2018 | 559 | 3,503 |
| 2. | Net Change During FY19 | 23 | 146 |
| 3. | Number, June 30, 2019 | 582 | 3,649 |
| 4. | Average Age At Commencement | 56.73 | 62.60 |
| 5. | Average Current Age | 68.05 | 72.62 |
| 6. | Average Monthly Pension Benefit | $ 1,713 | $ 1,082 |
| **Disability Retirements** | | | |
| 1. | Number, June 30, 2018 | 25 | 164 |
| 2. | Net Change During FY19 | 1 | (17) |
| 3. | Number, June 30, 2019 | 26 | 147 |
| 4. | Average Age At Commencement | 43.29 | 46.71 |
| 5. | Average Current Age | 48.73 | 54.90 |
| 6. | Average Monthly Pension Benefit | $ 2,900 | $ 1,838 |
| **Total** | | | |
| 1. | Number, June 30, 2018 | 3,387 | 32,067 |
| 2. | Net Change During FY19 | 78 | 778 |
| 3. | Number, June 30, 2019 | 3,465 | 32,845 |
| 4. | Average Age At Commencement | 53.57 | 58.63 |
| 5. | Average Current Age | 67.83 | 70.55 |
| 6. | Average Monthly Pension Benefit | $ 3,103 | $ 1,877 |

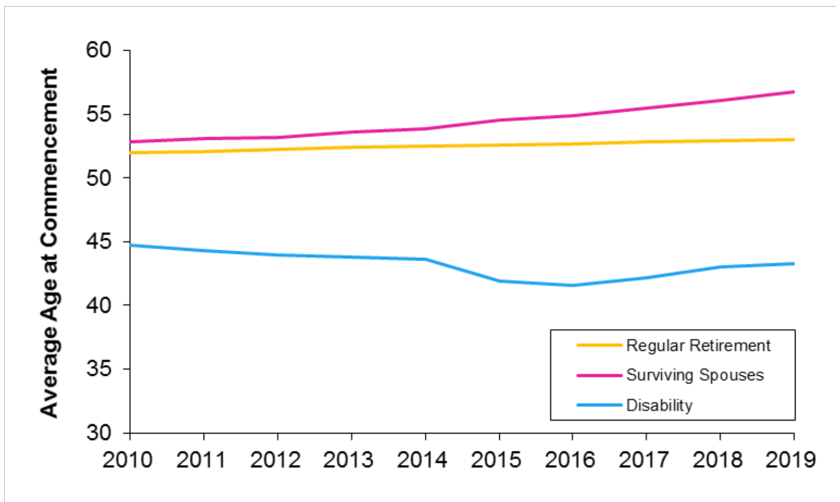
## Summary of All Pension Benefit Recipients

### Peace Officer/Firefighter



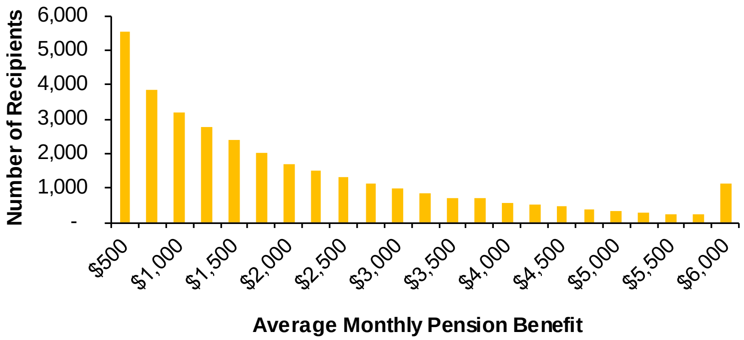



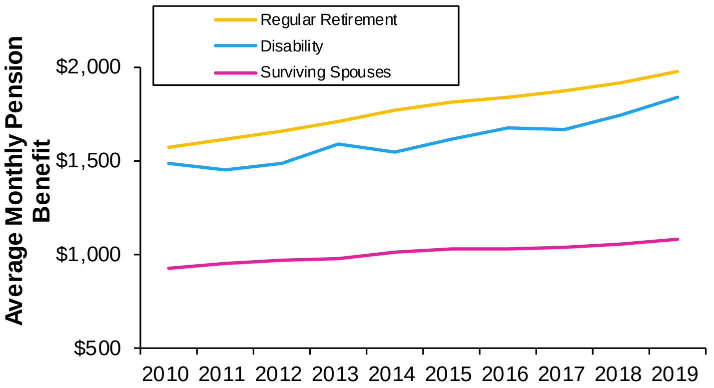



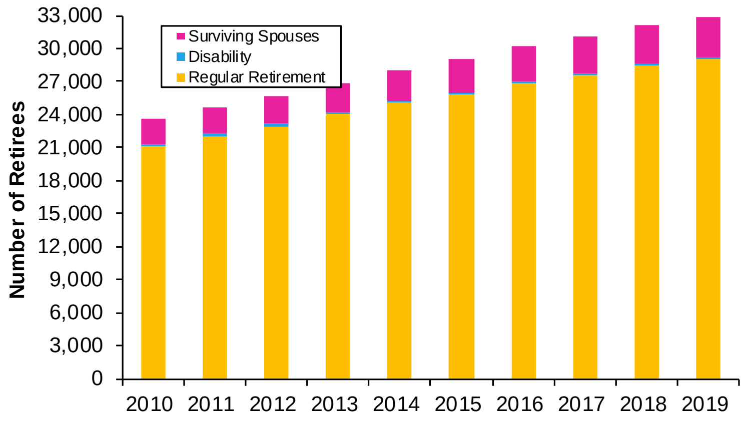



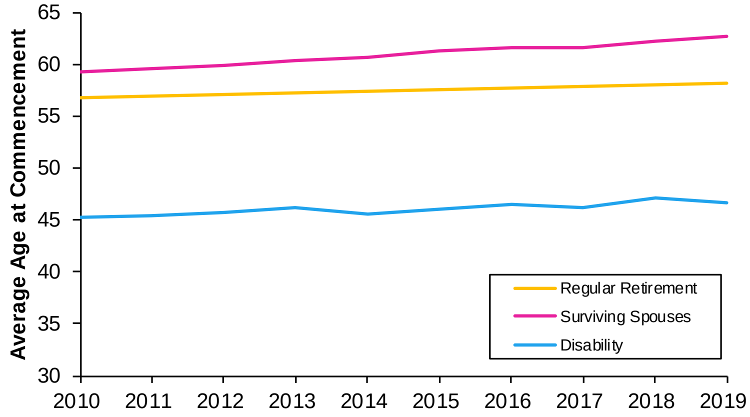
**Summary of All Pension Benefit Recipients**

**Others**



## Summary of All Pension Benefit Recipients

## Peace Officer/Firefighter

### Annual Pension Benefit by Age

| Age | Number | Total Annual Benefit | Average Annual Benefit |
|---|---|---|---|
| 0 – 19 | 0 | $ 0 | $ 0 |
| 20 – 24 | 0 | 0 | 0 |
| 25 – 29 | 0 | 0 | 0 |
| 30 – 34 | 0 | 0 | 0 |
| 35 – 39 | 4 | 173,169 | 43,292 |
| 40 – 44 | 8 | 310,438 | 38,805 |
| 45 – 49 | 74 | 3,532,323 | 47,734 |
| 50 – 54 | 188 | 9,809,800 | 52,180 |
| 55 – 59 | 352 | 14,735,404 | 41,862 |
| 60 – 64 | 634 | 23,536,821 | 37,124 |
| 65 – 69 | 806 | 28,407,111 | 35,245 |
| 70 – 74 | 681 | 23,926,286 | 35,134 |
| 75+ | 718 | 24,589,136 | 34,247 |
| Total | 3,465 | $129,020,488 | $ 37,235 |

### Annual Pension Benefit by Years Since Commencement

| Years Since Commencement | Number | Total Annual Benefit | Average Annual Benefit |
|---|---|---|---|
| 0 | 137 | $ 6,129,853 | $ 44,743 |
| 1 | 157 | 7,175,326 | 45,703 |
| 2 | 150 | 6,299,539 | 41,997 |
| 3 | 137 | 6,278,885 | 45,831 |
| 4 | 152 | 6,615,694 | 43,524 |
| 0 – 4 | 733 | 32,499,297 | 44,337 |
| 5 – 9 | 525 | 18,871,668 | 35,946 |
| 10 – 14 | 589 | 17,791,088 | 30,206 |
| 15 – 19 | 644 | 21,905,509 | 34,015 |
| 20 – 24 | 535 | 19,830,615 | 37,067 |
| 25 – 29 | 227 | 8,463,805 | 37,285 |
| 30 - 34 | 154 | 7,521,824 | 48,843 |
| 35 – 39 | 38 | 1,607,036 | 42,290 |
| 40+ | 20 | 529,646 | 26,482 |
| Total | 3,465 | $129,020,488 | $ 37,235 |

### Years Since Benefit 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 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 40 – 44 | 5 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 45 – 49 | 58 | 12 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 74 |
| 50 – 54 | 134 | 42 | 8 | 3 | 1 | 0 | 0 | 0 | 0 | 188 |
| 55 – 59 | 185 | 73 | 63 | 27 | 2 | 2 | 0 | 0 | 0 | 352 |
| 60 – 64 | 182 | 132 | 143 | 149 | 24 | 2 | 1 | 1 | 0 | 634 |
| 65 – 69 | 87 | 163 | 192 | 227 | 117 | 16 | 2 | 1 | 1 | 806 |
| 70 – 74 | 34 | 67 | 133 | 157 | 191 | 62 | 29 | 3 | 5 | 681 |
| 75+ | 45 | 34 | 46 | 80 | 199 | 145 | 122 | 33 | 14 | 718 |
| Total | 733 | 525 | 589 | 644 | 535 | 227 | 154 | 38 | 20 | 3,465 |

## Summary of All Benefit Recipients

### Others

**Annual Pension Benefit by Age**

| Age | Number | Total Annual Pension Benefit | Average Annual Pension Benefit |
|---|---|---|---|
| 0 – 19 | 0 | $ 0 | $ 0 |
| 20 – 24 | 0 | 0 | 0 |
| 25 – 29 | 1 | 62,938 | 62,938 |
| 30 – 34 | 1 | 6,894 | 6,894 |
| 35 – 39 | 4 | 63,045 | 15,761 |
| 40 – 44 | 12 | 130,978 | 10,915 |
| 45 – 49 | 42 | 703,685 | 16,754 |
| 50 – 54 | 213 | 6,076,425 | 28,528 |
| 55 – 59 | 1,653 | 49,181,216 | 29,753 |
| 60 – 64 | 6,592 | 170,029,546 | 25,793 |
| 65 – 69 | 8,677 | 203,424,005 | 23,444 |
| 70 – 74 | 7,018 | 148,851,344 | 21,210 |
| 75+ | 8,632 | 161,436,620 | 18,702 |
| Total | 32,845 | $739,966,696 | $ 22,529 |

**Annual Pension Benefit by Years Since Commencement**

| Years Since Commencement | Number | Total Annual Pension Benefit | Average Annual Pension Benefit |
|---|---|---|---|
| 0 | 1,485 | $ 41,029,368 | $ 27,629 |
| 1 | 1,689 | 46,470,707 | 27,514 |
| 2 | 1,482 | 38,994,335 | 26,312 |
| 3 | 1,636 | 41,504,829 | 25,370 |
| 4 | 1,626 | 42,730,378 | 26,279 |
| 0 – 4 | 7,918 | 210,729,617 | 26,614 |
| 5 – 9 | 7,752 | 187,787,212 | 24,224 |
| 10 – 14 | 6,358 | 133,882,757 | 21,057 |
| 15 – 19 | 4,795 | 93,818,164 | 19,566 |
| 20 – 24 | 3,286 | 66,314,955 | 20,181 |
| 25 – 29 | 1,595 | 26,887,909 | 16,858 |
| 30 - 34 | 861 | 16,208,288 | 18,825 |
| 35 – 39 | 229 | 3,511,241 | 15,333 |
| 40+ | 51 | 826,553 | 16,207 |
| Total | 32,845 | $739,966,696 | $ 22,529 |

| | 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 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 30 – 34 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 35 – 39 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 40 – 44 | 6 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 45 – 49 | 19 | 12 | 8 | 3 | 0 | 0 | 0 | 0 | 0 | 42 |
| 50 – 54 | 148 | 30 | 18 | 12 | 4 | 1 | 0 | 0 | 0 | 213 |
| 55 – 59 | 1,149 | 398 | 64 | 27 | 10 | 4 | 1 | 0 | 0 | 1,653 |
| 60 – 64 | 3,521 | 2,274 | 710 | 54 | 19 | 10 | 3 | 1 | 0 | 6,592 |
| 65 – 69 | 1,828 | 3,055 | 2,740 | 948 | 86 | 10 | 8 | 2 | 0 | 8,677 |
| 70 – 74 | 669 | 1,315 | 1,855 | 2,257 | 883 | 23 | 11 | 4 | 1 | 7,018 |
| 75+ | 575 | 661 | 961 | 1,494 | 2,284 | 1,547 | 838 | 222 | 50 | 8,632 |
| Total | 7,918 | 7,752 | 6,358 | 4,795 | 3,286 | 1,595 | 861 | 229 | 51 | 32,845 |

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

**Peace Officer/Firefighter**

| Amount of Monthly Pension Benefit | Number of Recipients | Type of Pension Benefit 1 | Type of Pension Benefit 2 | Type of Pension Benefit 3 | Option Selected 1 | Option Selected 2 | Option Selected 3 | Option Selected 4 | Option Selected 5 |
|---|---|---|---|---|---|---|---|---|---|
| $ 1 – $ 300 | 53 | 20 | 33 | 0 | 37 | 7 | 0 | 2 | 7 |
| 301 – 600 | 172 | 106 | 66 | 0 | 92 | 38 | 23 | 7 | 12 |
| 601 – 900 | 172 | 96 | 75 | 1 | 102 | 39 | 9 | 11 | 11 |
| 901 – 1,200 | 179 | 103 | 76 | 0 | 109 | 36 | 19 | 8 | 7 |
| 1,201 – 1,500 | 171 | 115 | 55 | 1 | 98 | 37 | 20 | 6 | 10 |
| 1,501 – 1,800 | 163 | 121 | 41 | 1 | 86 | 43 | 23 | 8 | 3 |
| 1,801 – 2,100 | 156 | 109 | 45 | 2 | 70 | 43 | 30 | 7 | 6 |
| 2,101 – 2,400 | 216 | 164 | 51 | 1 | 96 | 68 | 29 | 13 | 10 |
| 2,401 – 2,700 | 201 | 170 | 26 | 5 | 78 | 70 | 34 | 13 | 6 |
| 2,701 – 3,000 | 228 | 204 | 22 | 2 | 68 | 97 | 40 | 14 | 9 |
| 3,001 – 3,300 | 285 | 250 | 32 | 3 | 93 | 117 | 51 | 13 | 11 |
| 3,301 – 3,600 | 242 | 213 | 24 | 5 | 87 | 100 | 32 | 13 | 10 |
| 3,601 – 3,900 | 184 | 169 | 12 | 3 | 60 | 80 | 28 | 12 | 4 |
| 3,901 – 4,200 | 186 | 181 | 4 | 1 | 46 | 87 | 34 | 15 | 4 |
| Over $4,200 | 857 | 836 | 20 | 1 | 215 | 434 | 133 | 63 | 12 |
| Totals | 3,465 | 2,857 | 582 | 26 | 1,337 | 1,296 | 505 | 205 | 122 |

**Type of Pension Benefit**
1. Regular retirement
2. Survivor payment
3. Disability

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

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

### Others

| Amount of Monthly Pension Benefit | Number of Recipients | Type of Pension Benefit 1 | Type of Pension Benefit 2 | Type of Pension Benefit 3 | Option Selected 1 | Option Selected 2 | Option Selected 3 | Option Selected 4 | Option Selected 5 |
|---|---|---|---|---|---|---|---|---|---|
| $ 1 – $ 300 | 2,100 | 1,560 | 538 | 2 | 997 | 391 | 281 | 68 | 363 |
| 301 – 600 | 5,088 | 4,288 | 790 | 10 | 2,655 | 1,197 | 824 | 258 | 154 |
| 601 – 900 | 4,239 | 3,561 | 663 | 15 | 2,215 | 1,024 | 684 | 190 | 126 |
| 901 – 1,200 | 3,401 | 2,938 | 456 | 7 | 1,663 | 843 | 642 | 159 | 94 |
| 1,201 – 1,500 | 2,940 | 2,572 | 347 | 21 | 1,425 | 775 | 541 | 117 | 82 |
| 1,501 – 1,800 | 2,351 | 2,085 | 244 | 22 | 1,074 | 681 | 443 | 89 | 64 |
| 1,801 – 2,100 | 1,973 | 1,782 | 175 | 16 | 896 | 547 | 374 | 97 | 59 |
| 2,101 – 2,400 | 1,684 | 1,542 | 123 | 19 | 726 | 480 | 348 | 81 | 49 |
| 2,401 – 2,700 | 1,414 | 1,319 | 82 | 13 | 588 | 436 | 272 | 67 | 51 |
| 2,701 – 3,000 | 1,176 | 1,100 | 70 | 6 | 475 | 389 | 240 | 35 | 37 |
| 3,001 – 3,300 | 984 | 933 | 43 | 8 | 398 | 324 | 195 | 40 | 27 |
| 3,301 – 3,600 | 857 | 826 | 31 | 0 | 312 | 280 | 195 | 51 | 19 |
| 3,601 – 3,900 | 753 | 725 | 24 | 4 | 288 | 261 | 150 | 35 | 19 |
| 3,901 – 4,200 | 647 | 622 | 25 | 0 | 241 | 213 | 146 | 32 | 15 |
| Over $4,200 | 3,238 | 3,196 | 38 | 4 | 1,077 | 1,193 | 738 | 180 | 50 |
| Totals | 32,845 | 29,049 | 3,649 | 147 | 15,030 | 9,034 | 6,073 | 1,499 | 1,209 |

**Type of Pension Benefit**
1. Regular retirement
2. Survivor payment
3. Disability

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

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

**Peace Officer/Firefighter**

| | Added to Rolls | | Removed from Rolls | | Rolls – End of Year | | | |
|---|---|---|---|---|---|---|---|---|
| Year Ended | No.[1] | Annual Pension Benefits[1] | No.[1] | Annual Pension Benefits[1] | No. | Annual Pension Benefits | Percent Increase in Annual Pension Benefits | Average Annual Pension Benefit |
| 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 | 166 | 6,971,580 | 54 | 2,132,027 | 3,315 | 118,111,073 | 4.3% | 35,629 |
| June 30, 2016 | 137 | 6,618,744 | 49 | 1,594,392 | 3,204 | 113,271,520 | 4.6% | 35,353 |
| June 30, 2015 | 136 | 5,617,344 | 46 | 633,048 | 3,116 | 108,247,168 | 4.8% | 34,739 |
| June 30, 2014 | 109 | 4,270,620 | 50 | (145,771) | 3,026 | 103,262,870 | 4.5% | 34,125 |
| June 30, 2013 | 113 | 4,162,920 | 42 | 240,775 | 2,967 | 98,846,479 | 4.1% | 33,315 |
| June 30, 2012 | 179 | 5,246,271 | 41 | (177,568) | 2,896 | 94,924,334 | 6.1% | 32,778 |
| June 30, 2011 | 114 | 3,772,720 | 33 | 116,090 | 2,758 | 89,500,495 | 4.3% | 32,451 |
| June 30, 2010 | 118 | 3,593,724 | 46 | 1,413,071 | 2,677 | 85,843,865 | 2.6% | 32,067 |

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

**Pension Benefit Recipients Added to and Removed from Rolls**

**Others**

| 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 – End of Year No. | Rolls – End of Year Annual Pension Benefits | Percent Increase in Annual Pension Benefits | Average Annual Pension Benefit |
|---|---|---|---|---|---|---|---|---|
| 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% | 21,822 |
| June 30, 2017 | 1,699 | 44,619,382 | 816 | 14,610,212 | 31,032 | 663,978,286 | 4.7% | 21,398 |
| June 30, 2016 | 1,780 | 44,409,702 | 660 | 12,099,362 | 30,149 | 633,969,116 | 5.4% | 21,028 |
| June 30, 2014 | 1,583 | 39,939,292 | 627 | 7,232,812 | 29,029 | 601,658,776 | 5.7% | 20,726 |
| June 30, 2013 | 1,778 | 44,823,611 | 603 | 3,011,383 | 28,073 | 568,952,296 | 7.9% | 20,267 |
| June 30, 2012 | 1,808 | 43,247,667 | 554 | 4,861,626 | 26,898 | 527,140,068 | 7.9% | 19,598 |
| June 30, 2012 | 1,679 | 37,855,250 | 636 | 5,344,239 | 25,644 | 488,754,027 | 7.1% | 19,059 |
| June 30, 2011 | 1,595 | 37,100,217 | 554 | 6,897,899 | 24,601 | 456,243,016 | 7.1% | 18,546 |
| June 30, 2010 | 1,667 | 35,089,579 | 517 | 8,712,630 | 23,560 | 426,040,698 | 6.6% | 18,083 |

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

# Section 6: Basis of the Actuarial Valuation

## Section 6.1: Summary of Plan Provisions

### Effective Date

January 1, 1961, with amendments through June 30, 2019. Chapter 82, 1986 Session Laws of Alaska, created a two tier retirement system. Members who were first hired under PERS before July 1, 1986 (Tier 1) are eligible for different benefits than members hired after June 30, 1986 (Tier 2). Chapter 4, 1996 Session Laws of Alaska created a third tier for members who were first hired after June 30, 1996 (Tier 3). Chapter 9, 2005 Session Laws of Alaska, closed the plan to new members hired after June 30, 2006.

### Administration of Plan

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

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

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

### Employers Included

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

### Membership

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

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

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

### Credited Service

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

Members may claim other types of service, including:

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

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

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

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

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

### Employer Contributions

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

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

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

Employer rates cannot be less than the normal cost rate.

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

**Additional State Contributions**

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

**Member Contributions**

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

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

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

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

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

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

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

**Retirement Benefits**

**Eligibility**

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

**Benefit Type**

Lifetime benefits are paid to members. Eligible members may receive normal, unreduced benefits when they (1) reach normal retirement age and complete the service required; or (2) satisfy the minimum service requirements under the "20 and out" or "30 and out" provisions. Members may receive early, actuarially reduced benefits when they reach early retirement age and complete the service required.

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

**Benefit Calculations**

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

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

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

**Indebtedness**

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

**Reemployment of Retired Members**

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

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

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

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

**Postemployment Healthcare Benefits**

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

Medical, prescription drug, dental, vision and audio coverage is provided through the AlaskaCare Retiree Health Plan. Health plan provisions do not vary by retirement tier or age, except for Medicare coordination. Participants in dental, vision, and audio coverage pay a full self-supporting rate and those benefits are not included in this valuation.

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

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

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

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

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

**Disability Benefits**

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

**Occupational Disability**

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

### Non-occupational Disability

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

## Death Benefits

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

### Occupational Death

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

### Death after Occupational Disability

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

### Non-occupational Death

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

### Lump Sum Non-occupational Death Benefit

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

### Death After Retirement

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

## Postretirement Pension Adjustments

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

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

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

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

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

**Alaska Cost of Living Allowance**

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

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

**Changes in Benefit Provisions Valued Since the Prior Valuation**

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

## Section 6.2: Description of Actuarial Methods and Valuation Procedures

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

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

### Actuarial Method

Entry Age Normal Cost.

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

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

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

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

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

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

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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 value method recognizes 20% of the gain or loss each year, for a period of 5 years. All assets are valued at fair value. Assets are accounted for on an accrued basis and are taken directly from financial statements audited by KPMG LLP.

**Changes in Methods Since the Prior Valuation**

There have been no changes in the asset or valuation methods since the prior valuation.

**Valuation of Retiree Medical and Prescription Drug Benefits**

This section outlines the detailed methodology used to develop the initial per capita claims cost rates for the PERS postemployment healthcare plan. Note that the methodology reflects the results of our annual experience rate update for the period from July 1, 2018 to June 30, 2019.

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

<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 2017 through June 2019 (FY18 through FY19) were provided by the State of Alaska from reports extracted from their data warehouse, which separated claims by Medicare status. Monthly enrollment data for the same period was provided by Aetna.

Aetna also provided census information identifying Medicare Part B only participants. These participants are identified when hospital claims are denied by Medicare; Aetna then flags that participant as a Part B only participant. Buck added newly identified participants to our list of Medicare Part B only participants. Buck assumes that once identified as Part B only, that participant remains in that status until we are notified otherwise.

Aetna provided a snapshot file as of July 1, 2019 of retirees and dependents that included a coverage level indicator. The monthly enrollment data includes double coverage participants. These are participants whereby both the retiree and spouse are retirees from the State and both are reflected with Couple coverage in the enrollment. In this case, such a couple would show up as four members in the monthly enrollment (each would be both a retiree and a spouse). As a result, the snapshot census file was used to adjust the total member counts in the monthly enrollment reports to estimate that number of unique participants enrolled in coverage. Based on the snapshot files from the last two valuations, the total member count in the monthly enrollment reports needs to be reduced by approximately 13% to account for the number of participants with double coverage.

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

<u>Methodology</u>

Buck projected historical claim data to FY20 for retirees using the following summarized steps:

1. Develop historical annual incurred claim cost rates – an analysis of medical costs was completed based on claims information and enrollment data provided by the State of Alaska and Aetna for each year in the experience period of FY18 through FY19
   - Costs for medical services and prescriptions were analyzed separately, and separate trend rates were developed to project expected future medical and prescription costs for the valuation year (e.g. from the experience period up through FY20).
   - Because the reports provided this year reflected incurred claims, no additional adjustment was needed to determine incurred claims to be used in the valuation.
   - An offset for costs expected to be reimbursed by Medicare was incorporated beginning at age 65. Alaska retirees who do not have 40 quarters of Medicare-covered compensation do not qualify for Medicare Part A coverage free of charge. This is a relatively small and closed group. Medicare was applied to State employment for all employees hired after March 31, 1986. For the "no-Part A" individuals who are required to enroll in Medicare Part B, the State is the primary payer for hospital bills and other Part A services. Claim experience is not available separately for participants with both Medicare Parts A and B and those with Part B only. For Medicare Part B only participants, a lower average claims cost was applied to retirees covered by both Medicare Part A and B vs. retirees covered only by Medicare Part B based upon manual rate models that estimate the Medicare covered proportion of medical costs. To the extent that no-Part A claims can be isolated and applied strictly to the appropriate closed group, actuarial accrued liability will be more accurate.
   - Based on census data received from Aetna, less than 1% of the current retiree population was identified as having coverage only under Medicare Part B. We assume that 5% of actives hired before 4/1/1986 and current retirees who are not yet Medicare eligible will not be eligible for Medicare Part A.
   - Based upon a reconciliation of valuation census data to the snapshot eligibility files provided by Aetna as of July 1, 2018, and July 1, 2019, Buck adjusted member counts used for duplicate records where participants have double coverage; i.e. primary coverage as a retiree and secondary coverage as the covered spouse of another retiree. This is to reflect the total cost per distinct individual/member which is then applied to distinct members in the valuation census.
   - Buck understands that pharmacy claims reported do not reflect rebates. Based on actual pharmacy rebate information provided by Aetna for years through 2018 and Optum for January-June 2019, rebates were assumed to be 12% of prescription drug claims for FY18 and 17% of prescription drug claims for FY19.
2. Develop estimated EGWP reimbursements – Segal provided estimated 2019 EGWP subsidies, developed with the assistance of OptumRx. These amounts are applicable only to Medicare-eligible participants.
3. Adjust for claim fluctuation, anomalous experience, etc. – explicit adjustments are often made for anticipated large claims or other anomalous experience. Due to group size and demographics, we did not make any large claim adjustments. We do blend both Alaska plan-specific and national trend factors as described below. Buck compared data utilized to lag reports and quarterly plan experience presentations provided by the State and Aetna to assess accuracy and reasonableness of data.

4. Trend all data points to the projection period – project prior years' experience forward to FY20 for retiree benefits on an incurred claim basis. Trend factors derived from historical Alaska-specific experience and national trend factors are shown in the table in item 5 below.
5. Apply credibility to prior experience – adjust prior year's data by assigning weight to recent periods, as shown at the right of the table below. The Board approved a change in the weighting of experience periods beginning with the 6/30/17 valuation as outlined below. Note also that we averaged projected plan costs using Alaska-specific trend factors and national trend factors, assigning 75% weight to Alaska-specific trends and 25% to national trends:

| Alaska-Specific and National Average Weighted Trend from Experience Period to Valuation Year | | | |
|---|---|---|---|
| **Experience Period** | **Medical** | **Prescription** | **Weighting Factors** |
| FY18 to FY19 | 6.2% Pre-Medicare / 4.0% Medicare | 8.0% | 50% |
| FY19 to FY20 | 7.3% Pre-Medicare / 4.6% Medicare | 1.2% | 50% |

Trend assumptions used for rate development are assessed annually and as additional/improved reporting becomes available, we will incorporate into rate development as appropriate.

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

### Healthcare Reform

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

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

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

The Further Consolidated Appropriations Act, 2020 passed in December 2019 repealed several healthcare-related taxes, including the Cadillac Tax. The valuation results included in the report reflect the repeal of this tax. The removal of the Cadillac Tax created an actuarial gain of approximately $36.3M.

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

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

### Data

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

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

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

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

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

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

| | Medical | | Prescription Drugs (Rx) | |
|---|---|---|---|---|
| | Pre-Medicare | Medicare | Pre-Medicare | Medicare |
| **A. Fiscal 2018** | | | | |
| 1. Incurred Claims | $ 228,572,782 | $ 72,875,570 | $ 65,406,973 | $ 178,763,430 |
| 2. Adjustments for Rx Rebates | 0 | 0 | (7,848,837) | (21,451,612) |
| 3. Net incurred claims | $ 228,572,782 | $ 72,875,570 | $ 57,558,136 | $ 157,311,819 |
| 4. Average Enrollment | 21,920 | 40,560 | 21,920 | 40,560 |
| 5. Claim Cost Rate (3) / (4) | 10,428 | 1,797 | 2,626 | 3,878 |
| 6. Trend to Fiscal 2020 | 1.140 | 1.088 | 1.093 | 1.093 |
| 7. Fiscal 2020 Incurred Cost Rate (5) x (6) | $ 11,883 | $ 1,955 | $ 2,870 | $ 4,239 |
| **B. Fiscal 2019** | | | | |
| 1. Incurred Claims | $ 230,731,518 | $ 80,855,220 | $ 63,846,605 | $ 183,281,273 |
| 2. Adjustments for Rx Rebates | 0 | 0 | (10,853,923) | (31,157,816) |
| 3. Net incurred claims | $ 230,731,518 | $ 80,855,220 | $ 52,992,682 | $ 152,123,456 |
| 4. Average Enrollment | 20,625 | 42,843 | 20,625 | 42,843 |
| 5. Claim Cost Rate (3) / (4) | 11,187 | 1,887 | 2,569 | 3,551 |
| 6. Trend to Fiscal 2020 | 1.073 | 1.046 | 1.012 | 1.012 |
| 7. Fiscal 2020 Incurred Cost Rate (5) x (6) | $ 12,003 | $ 1,974 | $ 2,600 | $ 3,593 |

| | Medical | | Prescription Drugs (Rx) | |
|---|---|---|---|---|
| | Pre-Medicare | Medicare | Pre-Medicare | Medicare |
| **C. Incurred Cost Rate by Fiscal Year** | | | | |
| 1. Fiscal 2018 A.(7) | 11,883 | 1,955 | 2,870 | 4,239 |
| 2. Fiscal 2019 B.(7) | 12,003 | 1,974 | 2,600 | 3,593 |
| **D. Weighting by Fiscal Year** | | | | |
| 1. Fiscal 2018 | 50% | 50% | 50% | 50% |
| 2. Fiscal 2019 | 50% | 50% | 50% | 50% |
| **E. Fiscal 2020 Incurred Cost Rate** | | | | |
| 1. Rate at Average Age C x D | $ 11,943 | $ 1,964 | $ 2,735 | $ 3,916 |
| 2. Average Aging Factor | 0.826 | 1.256 | 0.838 | 1.119 |
| 3. Rate at Age 65 (1) / (2) | $ 14,464 | $ 1,564 | $ 3,263 | $ 3,501 |
| **F. Development of Part A&B and Part B Only Cost from Pooled Rate Above** | | | | |
| 1. Part A&B Average Enrollment | | 42,469 | | |
| 2. Part B Only Average Enrollment | | 374 | | |
| 3. Total Medicare Average Enrollment B(4) | | 42,843 | | |
| 4. Cost ratio for those with Part B only to those with Parts A&B | | 3.180 | | |
| 5. Factor to determine cost for those with Parts A&B (2) / (3) x (4) + (1) / (3) x 1.00 | | 1.019 | | |
| 6. Medicare per capita cost for all participants: E(3) | | $ 1,564 | | |
| 7. Cost for those eligible for Parts A&B: (6) / (5) | | $ 1,534 | | |
| 8. Cost for those eligible for Part B only: (7) x (4) | | $ 4,880 | | |

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

Below are the results of this analysis:

**Distribution of Per Capita Claims Cost by Age**
**for the Period July 1, 2019 through June 30, 2020**

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

## Section 6.3: Summary of Actuarial Assumptions

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

**Investment Return**

7.38% per year, net of investment expenses.

**Salary Scale**

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

Inflation – 2.50% per year.

Productivity – 0.25% per year.

**Payroll Growth**

2.75% per year. (Inflation + Productivity)

**Total Inflation**

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

**Mortality (Pre-termination)**

Mortality rates based upon the 2013-2017 actual experience.

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

**Mortality (Post-termination)**

Mortality rates based upon the 2013-2017 actual experience.

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

**Turnover**

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

**Disability**

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

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

### Retirement

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

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

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

### Spouse Age Difference

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

### Percent Married for Pension

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

### Dependent Spouse Medical Coverage Election

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

### Dependent Children

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

### Contribution Refunds

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

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

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

### Imputed Data

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

### Active Rehire Assumption

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

- Pension: 18.77%
- Healthcare: 17.09%

### Active Data Adjustment

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, 2019 was increased by the following amounts for administrative expenses (for projections, the % increase was assumed to remain constant in future years):

- Pension: $6,839,000
- Healthcare: $3,744,000

### Part-Time Status

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

### Final Average Earnings

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

### Per Capita Claims Cost

Sample claims cost rates adjusted to age 65 for FY20 medical and prescription drugs are shown below:

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

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

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

### Third Party Administrator Fees

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

### Medicare Part B Only

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

### Healthcare Cost Trend

The table below shows the rate used to project the cost from the shown fiscal year to the next fiscal year. For example, 7.0% is applied to the FY20 pre-Medicare medical claims costs to get the FY21 medical claims costs.

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

For the June 30, 2014 valuation and later, the updated Society of Actuaries' Healthcare Cost Trend Model is used to project medical and prescription drug costs. This model estimates trend amounts that are projected out for 80 years. The model has been populated with assumptions that are specific to the State of Alaska.

**Aging Factors**

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

**Retired Member Contributions for Medical Benefits**

Currently contributions are required for 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 FY20 contributions based on monthly rates shown below for calendar 2020 are assumed based on the coverage category for current retirees. The composite rate shown is used for current active and inactive members in Tier 2 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 2020 Annual Contribution | Calendar 2020 Monthly Contribution | Calendar 2019 Monthly Contribution |
|---|---|---|---|
| Retiree Only | $ 8,892 | $ 741 | $ 823 |
| Retiree and Spouse | $ 17,784 | $ 1,482 | $ 1,647 |
| Retiree and Child(ren) | $ 12,564 | $ 1,047 | $ 1,163 |
| Retiree and Family | $ 21,456 | $ 1,788 | $ 1,987 |
| Composite | $ 13,212 | $ 1,101 | $ 1,223 |

**Trend Rate for Retired Member Medical Contributions**

The table below shows the rate used to project the retired member medical contributions from the shown fiscal year to the next fiscal year. For example, 0.0% is applied to the FY20 retired member medical contributions to get the FY21 retired member medical contributions.

| Trend Assumptions | |
|---|---|
| FY20 | 0.0% |
| FY21 | 0.0% |
| FY22 | 0.0% |
| FY23 | 4.0% |

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

### Healthcare Participation

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

### Changes in Assumptions Since the Prior Valuation

Healthcare claim costs are updated annually as described in Section 6.2. Retired member contribution trend rates were updated to reflect the ongoing shift in population from pre-Medicare to Medicare-eligible and a projection of expected future retiree contributions reflecting the 10% decrease from 2019 to 2020. The Further Consolidated Appropriations Act, 2020 that was signed in December 2019 made several changes, including the repeal of the Cadillac Tax. The repeal of the Cadillac Tax reduced the plan's liabilities as of June 30, 2019 by approximately $36.3M. The amounts included in the Normal Cost for administrative expenses were changed to $6,839,000 for pension and $3,744,000 for healthcare (based on the most recent two years of actual administrative expenses paid from plan assets). No adjustment was made to reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date.

## Table 1: Alaska PERS Salary Scale

| Peace Officer / Firefighter | | Others | |
|---|---|---|---|
| Service | % Increase | Service | % 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% |
| 19 | 2.75% | 19 | 2.75% |
| 20+ | 2.75% | 20+ | 2.75% |

## Table 2: Alaska PERS Peace Officer / Firefighter Turnover Table

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

**Members with 5 or more years of service**

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

## Table 3: Alaska PERS Others Turnover Table

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

**Members with 5 or more years of service**

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

## Table 4: Alaska PERS Disability Table

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

**Table 5: Alaska PERS Peace Officer / Firefighter Retirement Table**

| Age at | Reduced | | Unreduced | |
|---|---|---|---|---|
| Retirement | Male | Female | Male | Female |
| < 47 | N/A | N/A | 0.8800 | 0.0600 |
| 47 | N/A | N/A | 0.8800 | 0.1500 |
| 48 | N/A | N/A | 0.1430 | 0.1500 |
| 49 | N/A | N/A | 0.1430 | 0.1500 |
| 50 | 0.0500 | 0.0500 | 0.1650 | 0.1500 |
| 51 | 0.0500 | 0.0700 | 0.1650 | 0.1500 |
| 52 | 0.0700 | 0.0700 | 0.2035 | 0.1500 |
| 53 | 0.0700 | 0.0700 | 0.2035 | 0.1500 |
| 54 | 0.0700 | 0.3500 | 0.2035 | 0.2500 |
| 55 | 0.0700 | 0.0800 | 0.2750 | 0.2000 |
| 56 | 0.0700 | 0.0800 | 0.2750 | 0.1500 |
| 57 | 0.0700 | 0.0800 | 0.2750 | 0.1500 |
| 58 | 0.0700 | 0.0800 | 0.2750 | 0.1500 |
| 59 | 0.2000 | 0.2000 | 0.2750 | 0.1500 |
| 60 | N/A | N/A | 0.3300 | 0.2500 |
| 61 | N/A | N/A | 0.2750 | 0.2000 |
| 62 | N/A | N/A | 0.2750 | 0.3000 |
| 63 | N/A | N/A | 0.2750 | 0.5000 |
| 64 | N/A | N/A | 0.2200 | 0.5000 |
| 65 | N/A | N/A | 0.2200 | 0.5000 |
| 66 | N/A | N/A | 0.2750 | 0.5000 |
| 67 | N/A | N/A | 0.5500 | 0.5000 |
| 68 | N/A | N/A | 0.5500 | 0.5000 |
| 69 | N/A | N/A | 0.5500 | 0.5000 |
| 70 | N/A | N/A | 1.0000 | 1.0000 |
| 71 | N/A | N/A | 1.0000 | 1.0000 |
| 72 | N/A | N/A | 1.0000 | 1.0000 |
| 73 | N/A | N/A | 1.0000 | 1.0000 |
| 74 | N/A | N/A | 1.0000 | 1.0000 |
| 75 | N/A | N/A | 1.0000 | 1.0000 |

## Table 6: Alaska PERS Others Retirement Table

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

# Section 7: Actuarial Standard of Practice No. 51

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

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

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

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

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

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

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

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 recommended amount differ.

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

### Long-Term Return on Investment Risk

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

- Under a lower long-term return on investment assumption, less investment return is available to pay plan benefits. This may lead to a need for increased employer contributions.
- The liabilities will be higher at a lower assumed rate of return because future benefits will have a lower discount rate applied when calculating the present value.
- A 1% decrease in the long-term return on investment assumption will increase actuarial accrued liability by approximately 12%.
- This risk may be increased due to the plan being closed to new entrants. As the plan continues to mature, the magnitude of negative cash flow discussed in the Plan Maturity Measures later in this section will grow, thereby creating a need for more liquid assets that may not garner the same long-term return as currently assumed.

### Longevity Risk

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

- Benefits are paid over a longer lifetime when life expectancy is expected to increase. The longer duration of payments leads to higher liabilities.
- Health care has been improving, which affects the life expectancy of participants. As health care improves, leading to longer life expectancies, costs to the plan will increase.
- The mortality assumption for the plan mitigates this risk by assuming future improvement in mortality. However, any improvement in future mortality greater than that expected by the current mortality assumption would lead to increased costs for the plan.

- The Postretirement Pension Adjustments and Alaska Cost of Living Allowance increase longevity risk because members who live longer than expected will incur more benefit payment increases than expected and therefore increase costs.

**Salary Increase Risk**

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

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

**Inflation Risk**

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

- Retirement benefits will be greater than expected if the CPI is greater than the assumed rate, which will increase costs.
- This risk is mitigated by the 75% and 50% of CPI provisions and the 9% and 6% maximums.
- This risk is also mitigated by the age/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 stand alone assumption and therefore is considered as part of the associated assumption risk instead of discussed here.

**Other Demographic Risk**

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

## Historical Information

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

- Funded Ratio History shown on page 3 shows the plan's funded status (comparison of actuarial accrued liabilities to actuarial value of assets) over time.
- Section 1.6 shows historical analysis of financial experience including how contribution rates have changed over time.
- Section 2.4 shows the volatility of asset returns over time.
- Section 5 includes various historical information showing how member census data has changed over time.

## Plan Maturity Measures

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

| Ratio of Retired Liability to Total Liability ($'s in $000's) | June 30, 2018 | June 30, 2019 |
|---|---|---|
| 1. Retiree and Beneficiary Accrued Liability | $ 9,591,758 | $ 10,076,528 |
| 2. Total Accrued Liability | $ 14,606,033 | $ 15,039,180 |
| 3. Ratio, (1) ÷ (2) | 65.7% | 67.0% |

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

| Ratio of Cash Flow to Assets ($'s in $000's) | FYE June 30, 2018 | FYE June 30, 2019 |
|---|---|---|
| 1. Contributions | $ 457,339 | $ 498,067 |
| 2. Benefit Payments | $ 812,877 | $ 848,019 |
| 3. Cash Flow, (1) – (2) | $ (355,538) | $ (349,952) |
| 4. Fair Value of Assets | $ 9,306,675 | $ 9,489,405 |
| 5. Ratio, (3) ÷ (4) | (3.8%) | (3.7%) |

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

| Contribution Volatility ($'s in $000's) | June 30, 2018 | June 30 2019 |
|---|---|---|
| 1. Fair Value of Assets | $ 9,306,675 | $ 9,489,405 |
| 2. DB/DCR Payroll | $ 2,267,338 | $ 2,347,306 |
| 3. Asset to Payroll Ratio, (1) ÷ (2) | 410.5% | 404.3% |
| 4. Accrued Liability | $ 14,606,033 | $ 15,039,180 |
| 5. Liability to Payroll Ratio, (4) ÷ (2) | 644.2% | 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.

**Annual Required Contribution (ARC)**

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

**GASB 25 and 27**

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

**GASB 43 and 45**

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

**GASB 67 and 68**

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

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

**GASB 74 and 75**

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

**Liquidity Factor**

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

**Maturity Ratio**

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

**Normal Cost**

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

**Rate Payroll**

Members' earnings used to determine contribution rates.

**Unfunded Actuarial Accrued Liability (UAAL)**

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

**Valuation Payroll**

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

**Vested Benefits**

Benefits which are unconditionally guaranteed regardless of employment.

# State of Alaska

## Teachers' Retirement System

Actuarial Valuation Report

As of June 30, 2019

February 2020

BUCK

February 6, 2020

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

**Certification of Actuarial Valuation**

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

This report summarizes the annual actuarial valuation results of the State of Alaska Teachers' Retirement System (TRS) as of June 30, 2019 performed by Buck Global, LLC (Buck).

The actuarial valuation is based on financial information provided in the financial statements audited by KPMG LLP, member data provided by the Division of Retirement and Benefits, and medical enrollment data provided by the healthcare claims administrator (Aetna), as summarized in this report. The benefits considered are those delineated in Alaska statutes effective June 30, 2019. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under TRS were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Buck is solely responsible for the actuarial data and actuarial results presented in this report. This report fully and fairly discloses the actuarial position of TRS as of June 30, 2019.

TRS is funded by Employer, State, and Member Contributions in accordance with the funding policy adopted by the Alaska Retirement Management Board (Board) and as required by Alaska state statutes. The funding objective for TRS is to pay required contributions that remain level as a percent of total TRS compensation. The Board has also established a funding policy objective that the required contributions be sufficient to pay the Normal Costs of active plan members, plan expenses, and amortize the Unfunded Actuarial Accrued Liability (UAAL) as a level percentage of total TRS compensation over a closed 25-year period as required by Alaska state statutes. The closed 25-year period was originally established effective June 30, 2014. Effective June 30, 2018, the Board adopted a 25-year layered UAAL amortization method as described in Section 6.2. The UAAL amortization continues to be on a level percent of pay basis. The compensation used to determine required contributions is the total compensation of all active members in TRS, including those hired after July 1, 2006 who are members of the Defined Contribution Retirement (DCR) Plan. This objective is currently being met and is projected to continue to be met. Absent future gains/losses, actuarially determined contributions are expected to remain level as a percent of pay and the overall funded status is expected to increase to 100% after 25 years.

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

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. In particular, retiree group benefits models necessarily rely on the use of approximations and estimates and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. An analysis of the potential range of such future differences is beyond the scope of this valuation.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the plan. The actuary performs an analysis of plan experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. The last full experience analysis was performed for the period July 1, 2013 to June 30, 2017. Based on that experience study, the Board adopted new assumptions effective beginning with the June 30, 2018 valuation to better reflect expected future experience. Based on our annual analysis of recent claims experience, changes were made to the per capita claim cost rates effective June 30, 2019 to better reflect expected future healthcare experience. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Sections 6.2 and 6.3.

Governmental Accounting Standards Board (GASB) Statement No. 67 (GASB 67) was effective for TRS beginning with fiscal year ending June 30, 2014, and Statement No. 74 (GASB 74) was effective for TRS beginning with fiscal year ending June 30, 2017. Separate GASB 67 and GASB 74 reports as of June 30, 2019 have been prepared. Section 3 of this report contains accounting information previously disclosed under GASB 25 for fiscal years 2007 through 2013 and accounting information previously disclosed under GASB 43 for fiscal years 2007 through 2016. We have also prepared the member data tables shown in Section 5 of this report for the Statistical Section of the CAFR, and the summary of actuarial assumptions, solvency test, and analysis of financial experience for the Actuarial Section of the CAFR. Please see our separate GASB 67 and GASB 74 reports for other information needed for the CAFR.

**Assessment of Risks**

Actuarial Standard of Practice No. 51 (“ASOP 51”) applies to actuaries performing funding calculations related to a pension plan. ASOP 51 does not apply to actuaries performing services in connection with other post-employment benefits, such as medical benefits. Accordingly, ASOP 51 does not apply to the retiree medical portion of TRS. See Section 7 of this report for further details regarding ASOP 51.

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

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

Respectfully submitted,

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

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

Scott Young, FSA, EA, MAAA
Director
Buck

# 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, 2019.

### Purpose

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

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

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

Actuarial projections are also performed to provide a long-term view of the expected future funded status and contribution patterns (see Section 4). The future funded status and contribution patterns would be different than those shown in Section 4 if future experience does not match the actuarial assumptions used in the projections.

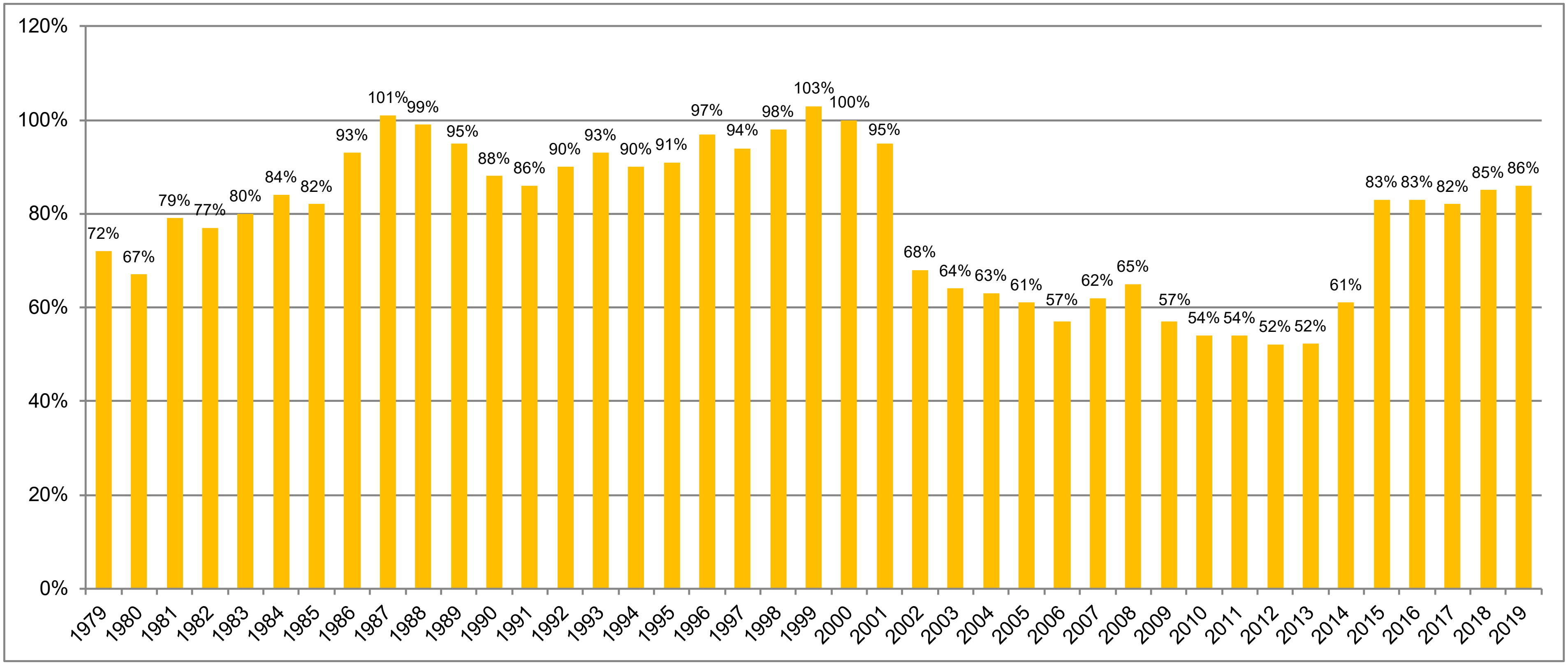
Retiree group benefits models necessarily rely on the use of approximations and estimates, and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements.

## Funded Status

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

| Funded Status as of June 30 ($’s in 000’s) | | 2018 | 2019 |
|---|---|---|---|
| **Pension** | | | |
| a. | Actuarial Accrued Liability | $ 7,276,290 | $ 7,388,020 |
| b. | Valuation Assets | 5,541,600 | 5,563,931 |
| c. | Unfunded Actuarial Accrued Liability, (a) - (b) | $ 1,734,690 | $ 1,824,089 |
| d. | Funded Ratio based on Valuation Assets, (b) ÷ (a) | 76.2% | 75.3% |
| e. | Fair Value of Assets | $ 5,472,727 | $ 5,511,929 |
| f. | Funded Ratio based on Fair Value of Assets, (e) ÷ (a) | 75.2% | 74.6% |
| **Healthcare** | | | |
| a. | Actuarial Accrued Liability | $ 2,684,150 | $ 2,518,644 |
| b. | Valuation Assets | 2,898,709 | 2,947,562 |
| c. | Unfunded Actuarial Accrued Liability, (a) - (b) | $ (214,559) | $ (428,918) |
| d. | Funded Ratio based on Valuation Assets, (b) ÷ (a) | 108.0% | 117.0% |
| e. | Fair Value of Assets | $ 2,870,134 | $ 2,929,319 |
| f. | Funded Ratio based on Fair Value of Assets, (e) ÷ (a) | 106.9% | 116.3% |
| **Total** | | | |
| a. | Actuarial Accrued Liability | $ 9,960,440 | $ 9,906,664 |
| b. | Valuation Assets | 8,440,309 | 8,511,493 |
| c. | Unfunded Actuarial Accrued Liability, (a) - (b) | $ 1,520,131 | $ 1,395,171 |
| d. | Funded Ratio based on Valuation Assets, (b) ÷ (a) | 84.7% | 85.9% |
| e. | Fair Value of Assets | $ 8,342,861 | $ 8,441,248 |
| f. | Funded Ratio based on Fair Value of Assets, (e) ÷ (a) | 83.8% | 85.2% |

**TRS Funded Ratio History (Based on Valuation Assets)**



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

1. **Investment Experience**

   The actuarial asset value was reinitialized to equal fair value of assets as of June 30, 2014. Beginning in FY15, the asset valuation method recognizes 20% of the investment gain or loss each year, for a period of five years. The FY19 investment return based on fair value of assets was approximately 5.9% compared to the expected investment return of 7.38% (net of investment expenses of approximately 0.04%). This resulted in a market asset loss of approximately $121 million. Due to the recognition of investment gains and losses over a 5-year period, the FY19 investment return based on actuarial value of assets was approximately 5.5%, which resulted in an actuarial asset loss of approximately $155 million.

2. **Salary Increases**

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

3. **Demographic Experience**

   Section 5 provides statistics on active and inactive participants. The number of active participants decreased 8.5% from 4,418 at June 30, 2018 to 4,044 at June 30, 2019 due to active members exiting the plan during the year (due to retirement, termination, death and disability) and the closure of the plan to new entrants as of July 1, 2006. The average age of active participants increased from 51.13 to 51.48 and average credited service increased from 18.62 to 19.21 years.

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

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

4. **COLA / PRPA Experience**

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

5. **Medical Claims Experience and Assumptions**

   As described in Section 6.2, recent medical claims experience and changes in healthcare enrollment data provided to us for the June 30, 2019 valuation generated a liability gain of approximately $246 million (this amount includes a $20 million gain due to the Cadillac Tax).

6. **Changes in Methods Since the Prior Valuation**

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

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

7. **Changes in Assumptions Since the Prior Valuation**

Healthcare claim costs are updated annually as described in Section 6.2. Retired member contribution trend rates were updated to reflect the ongoing shift in population from pre-Medicare to Medicare-eligible and a projection of expected future retiree contributions reflecting the 10% decrease from 2019 to 2020. The Further Consolidated Appropriations Act, 2020 that was signed in December 2019 made several changes, including the repeal of the Cadillac Tax. The repeal of the Cadillac Tax reduced the plan's liabilities as of June 30, 2019 by approximately $14 million. The amounts included in the Normal Cost for administrative expenses were updated based on the most recent two years of actual administrative expenses paid from plan assets.

8. **Changes in Benefit Provisions Since the Prior Valuation**

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

**Comparative Summary of Key Actuarial Valuation Results**

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

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

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

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

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

The following table summarizes the sources of change in the total Employer/State contribution rate as of June 30, 2018 and June 30, 2019 based on DB and DCR payroll combined:

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

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

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

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

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

3 Added Part D benefits for deferred retirees.

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

The rehire gain/(loss) amount shown on the previous page is the difference between (i) the increase in Actuarial Accrued Liability at June 30, 2019 due to rehires during the most recent plan year, and (ii) the load that was added to the June 30, 2018 Normal Cost based on the rehire load assumption used in the June 30, 2018 valuation. The development of the FY19 rehire gain/(loss) amount is shown in the table below ($'s in 000's):

| | Pension | Healthcare | Total |
|---|---|---|---|
| 1. Increase in Actuarial Accrued Liability at June 30, 2019 due to Rehires | $ 5,733 | $ 1,547 | $ 7,280 |
| 2. June 30, 2018 Normal Cost Rehire Load, with interest to June 30, 2019 | $ 7,881 | $ 3,257 | $ 11,138 |
| 3. Rehire Gain/(Loss), (2) - (1) | $ 2,148 | $ 1,710 | $ 3,858 |

# Section 1: Actuarial Funding Results

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Section 1.3: Roll Forward Contribution Rate Calculation for FY20 ($'s in 000's)

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Section 1.6: Analysis of Financial Experience

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

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

* Expected rate. Actual rate to be determined

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

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

* Expected rate. Actual rate to be determined

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

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

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

* Expected rate. Actual rate to be determined

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

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

| Valuation Date | Total Actuarial Accrued Liability | Valuation Assets | Assets as a Percent of Actuarial Accrued Liability | Unfunded Actuarial Accrued Liability (UAAL) |
|---|---|---|---|---|
| June 30, 2003 | $ 5,835,609 | $ 3,752,285 | 64.3% | $ 2,083,324 |
| June 30, 2004 | 6,123,600 | 3,845,370 | 62.8% | 2,278,230 |
| June 30, 2005 | 6,498,556 | 3,958,939 | 60.9% | 2,539,617 |
| June 30, 2006 | 7,229,851 | 4,141,700 | 57.3% | 3,088,151 |
| June 30, 2007 | 7,189,403 | 4,424,399 | 61.5% | 2,765,004 |
| June 30, 2008 | 7,619,178 | 4,936,976 | 64.8% | 2,682,202 |
| June 30, 2009 | 7,847,514 | 4,472,958 | 57.0% | 3,374,556 |
| June 30, 2010 | 8,847,788 | 4,739,128 | 53.6% | 4,108,660 |
| June 30, 2011 | 9,128,795 | 4,937,937 | 54.1% | 4,190,858 |
| June 30, 2012 | 9,346,444 | 4,869,154 | 52.1% | 4,477,290 |
| June 30, 2013 | 9,592,107 | 4,974,076 | 51.9% | 4,618,031 |
| June 30, 2014 | 9,841,032 | 6,019,274 | 61.2% | 3,821,758 |
| June 30, 2015 | 9,729,117 | 8,108,923 | 83.3% | 1,620,194 |
| June 30, 2016 | 9,907,624 | 8,200,391 | 82.8% | 1,707,233 |
| June 30, 2017 | 10,144,618 | 8,313,637 | 82.0% | 1,830,981 |
| June 30, 2018 | 9,960,440 | 8,440,309 | 84.7% | 1,520,131 |
| June 30, 2019 | 9,906,664 | 8,511,493 | 85.9% | 1,395,171 |

# Section 2: Plan Assets

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

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

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

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

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

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

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

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

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

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

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

## Section 2.4: Historical Asset Rates of Return

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

* Cumulative since fiscal year ending June 30, 2005

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

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

**Schedule of Employer Contributions**

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

| Fiscal Year Ended June 30 | Total Annual Required Contribution | Percentage Contributed | | |
|---|---|---|---|---|
| | | By Employer | By State | Total |
| 2013 | $ 259,786 | 14.4% | 75.8% | 90.2% |
| 2012 | 229,509 | 16.6% | 68.6% | 85.2% |
| 2011 | 167,978 | 19.5% | 65.1% | 84.6% |
| 2010 | 170,788 | 19.8% | 58.8% | 78.6% |
| 2009 | 94,388 | 28.7% | 110.6% | 139.3% |
| 2008 | 134,544 | 23.3% | 82.7% | 106.0% |
| 2007 | 169,974 | 62.2% | 0.00% | 62.2% |

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

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

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

| Valuation Date | Total Actuarial Accrued Liability | Valuation Assets | Assets as a Percent of Actuarial Accrued Liability | Unfunded Actuarial Accrued Liability (UAAL) | Annual Active Member Payroll | UAAL as a Percent of Annual Active Member Payroll |
|---|---|---|---|---|---|---|
| June 30, 2005 | $ 6,498,556 | $ 3,958,939 | 60.9% | $ 2,539,617 | $ 535,837 | 474.0% |
| June 30, 2004 [2] | 6,123,600 | 3,845,370 | 62.8% | 2,278,230 | 522,421 | 436.1% |
| June 30, 2003 | 5,835,609 | 3,752,285 | 64.3% | 2,083,324 | 532,630 | 391.1% |
| June 30, 2002 [1 2 3] | 5,411,642 | 3,689,036 | 68.2% | 1,722,606 | 509,437 | 338.1% |
| June 30, 2001 | 4,603,147 | 4,372,229 | 95.0% | 230,918 | 496,188 | 46.5% |
| June 30, 2000 [1 2 3] | 4,198,868 | 4,184,015 | 99.6% | 14,853 | 482,571 | 3.1% |
| June 30, 1999 | 3,720,954 | 3,815,633 | 102.5% | N/A | 466,414 | N/A |
| June 30, 1998 | 3,528,757 | 3,446,070 | 97.7% | 82,687 | 469,433 | 17.6% |
| June 30, 1997 | 3,320,069 | 3,120,044 | 94.0% | 200,025 | 466,455 | 42.9% |

1 Change in Asset Valuation Method
2 Change of Assumptions
3 Change in Methods

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

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

| Valuation Date | Total Actuarial Accrued Liability | Valuation Assets | Assets as a Percent of Actuarial Accrued Liability | Unfunded Actuarial Accrued Liability (UAAL) | Annual Active Member Payroll[1] | UAAL as a Percent of Annual Active Member Payroll |
|---|---|---|---|---|---|---|
| June 30, 2016 – 4.43% | $ 4,898,395 | $ 2,836,802 | 57.9% | $ 2,061,593 | $ 474,291 | 434.7% |
| June 30, 2015 – 4.31% | 4,840,935 | 2,686,272 | 55.5% | 2,154,663 | 503,163 | 428.2% |
| June 30, 2014[2] – 4.25% | 5,373,322 | 2,248,135 | 41.8% | 3,125,187 | 523,580 | 596.9% |
| June 30, 2013 – 5.08% | 5,002,345 | 1,803,763 | 36.1% | 3,198,582 | 550,044 | 581.5% |
| June 30, 2012[2] – 5.01% | 5,046,942 | 1,674,160 | 33.2% | 3,372,782 | 561,971 | 600.2% |
| June 30, 2011 – 7.08% | 3,635,492 | 1,591,988 | 43.8% | 2,043,504 | 584,068 | 349.9% |
| June 30, 2010[2] – 8.00% | 3,076,388 | 1,479,260 | 48.1% | 1,597,128 | 564,887 | 282.7% |
| June 30, 2009 – 4.50% | 4,604,820 | 1,357,239 | 29.5% | 3,247,581 | 557,026 | 583.0% |
| June 30, 2008[2] – 4.50% | 4,648,055 | 1,266,890 | 27.3% | 3,381,165 | 549,148 | 615.7% |
| June 30, 2007 – 4.50% | 4,059,573 | 982,532 | 24.2% | 3,077,041 | 554,245 | 552.2% |

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

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

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

| Fiscal Year Ended June 30 | Total Annual Required Contribution | Percentage Contributed | | |
|---|---|---|---|---|
| | | By Employer | By State | Total |
| 2016 | 336,595 | 7.9% | 11.8% | 19.7% |
| 2015 | 352,417 | 7.6% | 100.1% | 107.7% |
| 2014 | 320,797 | 10.0% | 35.6% | 45.6% |
| 2013 | 330,411 | 10.7% | 33.3% | 44.0% |
| 2012 | 192,700 | 18.8% | 46.6% | 65.4% |
| 2011 | 167,686 | 25.8% | 51.5% | 77.3% |
| 2010* | 312,922 | 13.6% | 38.8% | 52.4% |
| 2009 | 164,171 | 28.7% | 62.1% | 90.8% |
| 2008 | 185,271 | 23.6% | 85.7% | 109.3% |
| 2007 | 76,879 | 62.2% | 0.00% | 62.2% |

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

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

| ARC (% of Pay) | | | |
|---|---|---|---|
| Valuation Date | Fiscal Year | Healthcare | Healthcare Discount Rate |
| June 30, 2005 | FY08 | 54.45% | 4.50% |
| June 30, 2006 | FY09 | 52.20% | 4.50% |
| June 30, 2007 | FY10 | 52.42% | 4.50% |
| June 30, 2008 | FY11 | 28.71% | 8.25% |
| June 30, 2009 | FY12 | 34.29% | 7.08% |
| June 30, 2010* | FY13 | 60.07% | 5.01% |
| June 30, 2011 | FY14 | 61.27% | 5.08% |
| June 30, 2012 | FY15 | 70.04% | 4.25% |
| June 30, 2013 | FY16 | 70.97% | 4.31% |

* Change in discount rate assumptions effective June 30, 2010

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

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

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

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

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

| | Pension Actuarial Accrued Liability (AAL) | | | | Portion of AAL Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | | | | |
| **Valuation Date** | **Active Member Contributions** | **Inactive Members** | **Active Members (Employer-Financed Portion)** | **Pension Valuation Assets** | **(1)** | **(2)** | **(3)** |
| June 30, 2016 | $ 709,903 | $ 5,329,673 | $ 1,120,212 | $ 5,428,687 | 100.0% | 88.5% | 0.0% |
| June 30, 2015 | 714,422 | 5,192,935 | 1,144,367 | 5,422,651 | 100.0% | 90.7% | 0.0% |
| June 30, 2014 [1 2] | 718,694 | 5,042,250 | 1,160,418 | 3,771,139 | 100.0% | 60.5% | 0.0% |
| June 30, 2013 | 726,139 | 4,726,282 | 1,137,132 | 3,170,313 | 100.0% | 51.7% | 0.0% |
| June 30, 2012 | 727,435 | 4,532,982 | 1,139,360 | 3,194,994 | 100.0% | 54.4% | 0.0% |
| June 30, 2011 | 717,819 | 4,352,035 | 1,126,250 | 3,345,949 | 100.0% | 60.4% | 0.0% |
| June 30, 2010 [1] | 716,675 | 4,153,119 | 1,137,187 | 3,259,868 | 100.0% | 61.2% | 0.0% |
| June 30, 2009 | 692,105 | 3,815,020 | 956,862 | 3,115,719 | 100.0% | 63.5% | 0.0% |
| June 30, 2008 | 654,662 | 3,700,812 | 876,180 | 3,670,086 | 100.0% | 81.5% | 0.0% |
| June 30, 2007 | 638,420 | 3,567,894 | 837,134 | 3,441,867 | 100.0% | 78.6% | 0.0% |
| June 30, 2006 [1 2] | 615,207 | 3,432,703 | 811,426 | 3,296,934 | 100.0% | 78.1% | 0.0% |
| June 30, 2005 | 589,169 | 3,200,339 | 545,077 | 3,184,976 [3] | 100.0% | 81.1% | 0.0% |

[1] Change in Assumptions
[2] Change in Methods
[3] The pension and postemployment healthcare valuation assets were allocated using a ratio of fair value of assets as of June 30, 2005.

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

| | Postemployment Healthcare Actuarial Accrued Liability (AAL) | | | | Portion of AAL Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | | | | |
| **Valuation Date** | **Active Member Contributions** | **Inactive Members** | **Active Members (Employer-Financed Portion)** | **Postemployment Healthcare Valuation Assets** | **(1)** | **(2)** | **(3)** |
| June 30, 2016 | $ 0 | $ 1,853,084 | $ 894,752 | $ 2,771,704 | 100.0% | 100.0% | 100.0% |
| June 30, 2015 | 0 | 1,870,987 | 806,406 | 2,686,272 | 100.0% | 100.0% | 100.0% |
| June 30, 2014 [1 2] | 0 | 2,008,223 | 911,447 | 2,248,135 | 100.0% | 100.0% | 26.3% |
| June 30, 2013 | 0 | 2,012,114 | 990,440 | 1,803,763 | 100.0% | 89.6% | 0.0% |
| June 30, 2012 | 0 | 1,933,288 | 1,013,379 | 1,674,160 | 100.0% | 86.6% | 0.0% |
| June 30, 2011 | 0 | 1,879,564 | 1,053,127 | 1,591,988 | 100.0% | 84.7% | 0.0% |
| June 30, 2010 [1] | 0 | 1,755,961 | 1,084,846 | 1,479,260 | 100.0% | 84.2% | 0.0% |
| June 30, 2009 | 0 | 1,477,788 | 905,739 | 1,357,239 | 100.0% | 91.8% | 0.0% |
| June 30, 2008 [1] | 0 | 1,480,864 | 906,660 | 1,266,890 | 100.0% | 85.6% | 0.0% |
| June 30, 2007 | 0 | 1,344,131 | 801,824 | 982,532 | 100.0% | 73.1% | 0.0% |
| June 30, 2006 [1 2] | 0 | 1,493,219 | 877,296 | 844,766 | 100.0% | 56.6% | 0.0% |
| June 30, 2005 | 0 | 1,493,837 | 670,134 | 773,963 [3] | 100.0% | 51.8% | 0.0% |

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

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1 Change in Assumptions
2 Change in Methods
3 The pension and postemployment healthcare valuation assets were allocated using a ratio of fair value of assets as of June 30, 2005.

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

| | Actuarial Accrued Liability (AAL) | | | | Portion of AAL Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | | | | |
| Valuation Date | Active Member Contributions | Inactive Members | Active Members (Employer-Financed Portion) | Valuation Assets | (1) | (2) | (3) |
| June 30, 2010 [1] | $ 716,875 | $ 5,909,080 | $ 2,222,033 | $ 4,739,128 | 100.0% | 68.1% | 0.0% |
| June 30, 2009 | 692,105 | 5,292,808 | 1,862,601 | 4,472,958 | 100.0% | 71.4% | 0.0% |
| June 30, 2008 [1] | 654,662 | 5,181,676 | 1,782,840 | 4,936,976 | 100.0% | 82.6% | 0.0% |
| June 30, 2007 | 638,420 | 4,912,025 | 1,638,958 | 4,424,399 | 100.0% | 77.1% | 0.0% |
| June 30, 2006 [1 2] | 615,207 | 4,925,922 | 1,688,722 | 4,141,700 | 100.0% | 71.6% | 0.0% |
| June 30, 2005 | 589,169 | 4,694,176 | 1,215,211 | 3,958,939 | 100.0% | 71.8% | 0.0% |
| June 30, 2004 [1] | 569,435 | 4,423,036 | 1,131,129 | 3,845,370 | 100.0% | 74.1% | 0.0% |
| June 30, 2003 | 548,947 | 4,105,445 | 1,181,217 | 3,752,285 | 100.0% | 78.0% | 0.0% |
| June 30, 2002 [1 2 3] | 523,142 | 3,755,882 | 1,132,618 | 3,689,036 | 100.0% | 84.3% | 0.0% |
| June 30, 2001 | 533,752 | 3,213,431 | 855,964 | 4,372,229 | 100.0% | 100.0% | 73.0% |

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

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[1] Change in Assumptions
[2] Change in Methods
[3] Change in Asset Valuation Method

# Section 4: Projections

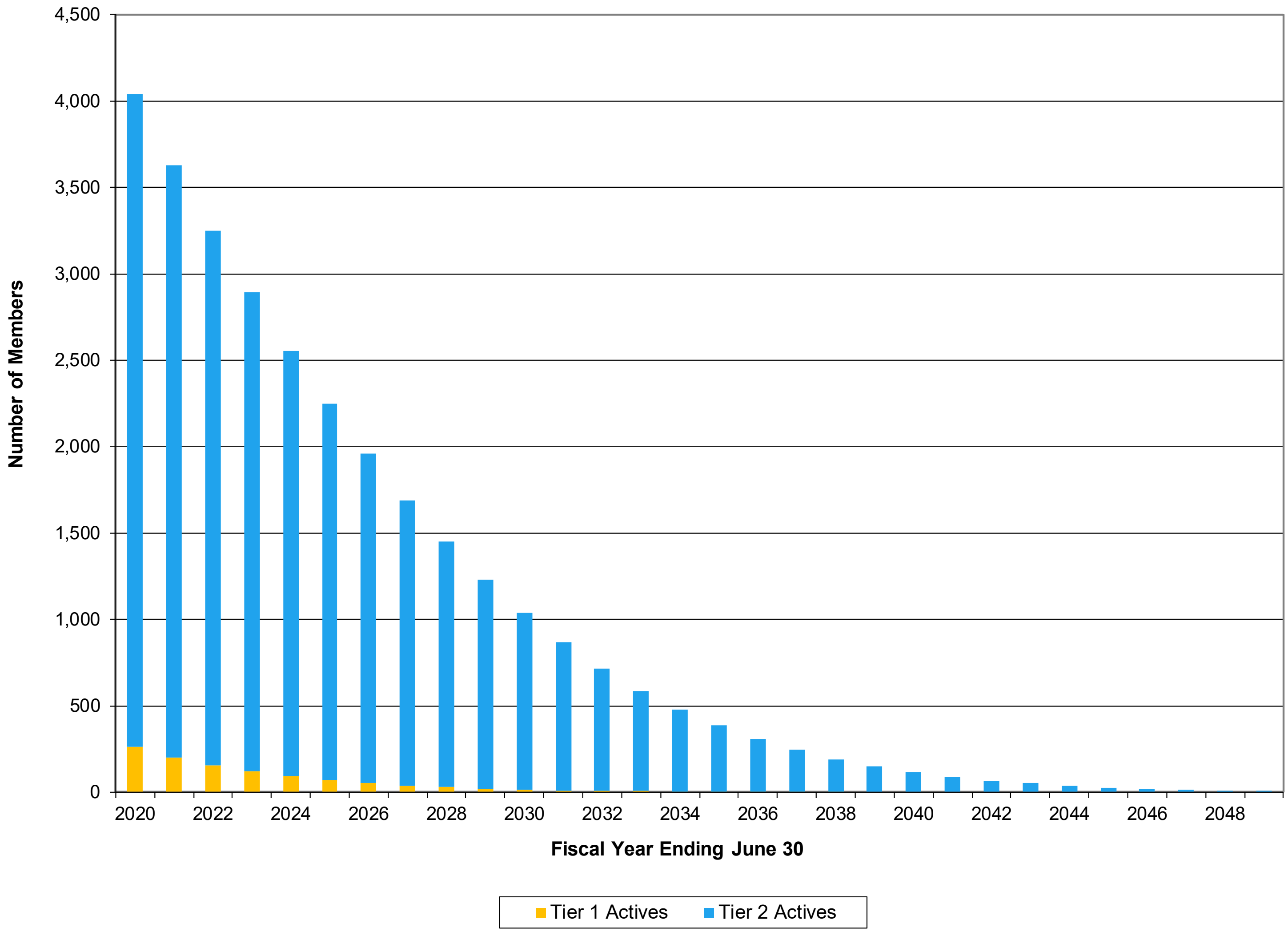
## Section 4.1: Projection Assumptions and Methods

**Key Assumptions**

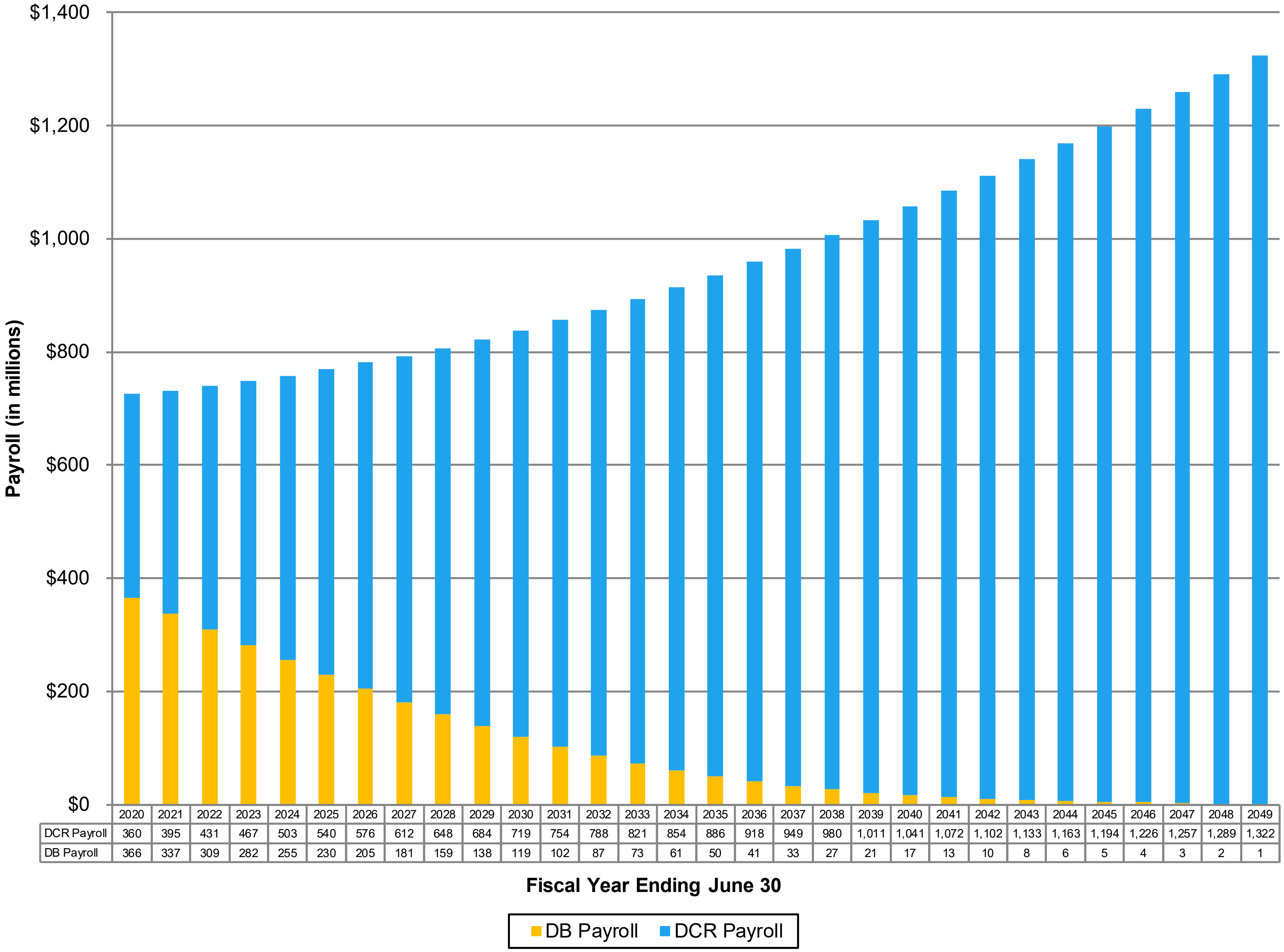
- 7.38% investment return (net of investment expenses) on the Fair Value of Assets in all future years.
- The Actuarial Value of Assets was re-initialized to Fair Value as of June 30, 2014. The Actuarial Value of Assets after June 30, 2014 reflects the deferred gains and losses generated by the smoothing method. The current deferred amount is recognized in the first four years of the projections.
- Actuarial assumptions and methods as described in Section 6. No actuarial gains/losses are assumed after June 30, 2019.
- The actuarially calculated contribution rate using a two-year roll-forward approach is adopted each year.
- Projections assume a 0% increase in the total active member population. All new members are expected to enter the DCR plan.
- Contribution rates are determined as a percent of total DB and DCR payroll, combined.
- The DCR contribution rate determined as of June 30, 2019 is assumed to remain constant in all future years.
- The active rehire assumption shown in Section 6 is assumed to grade to zero on a uniform basis over 20 years.

## Section 4.2: Membership Projection

**Projected Active Member Count**



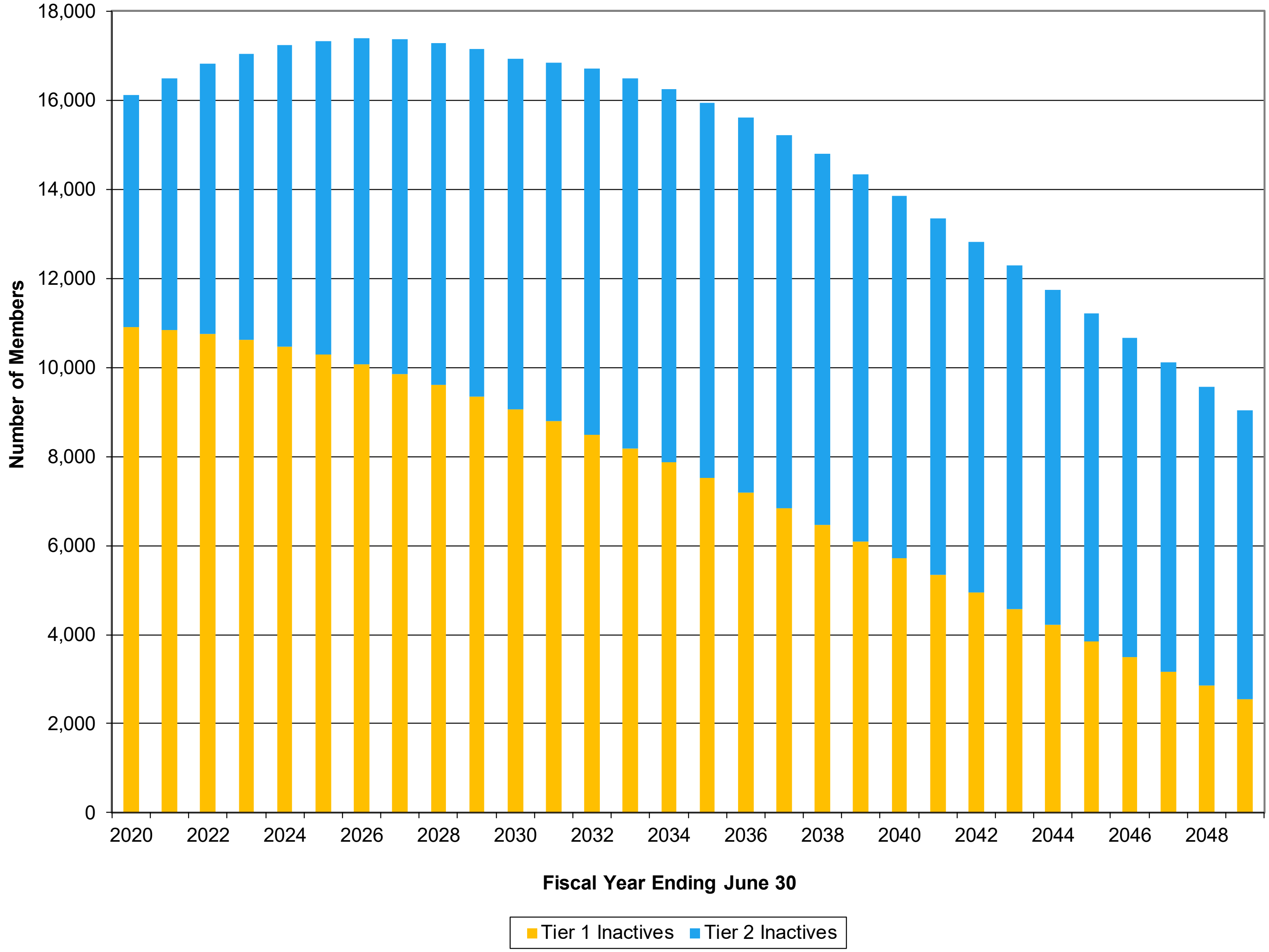
## Projected DB and DCR Payroll




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

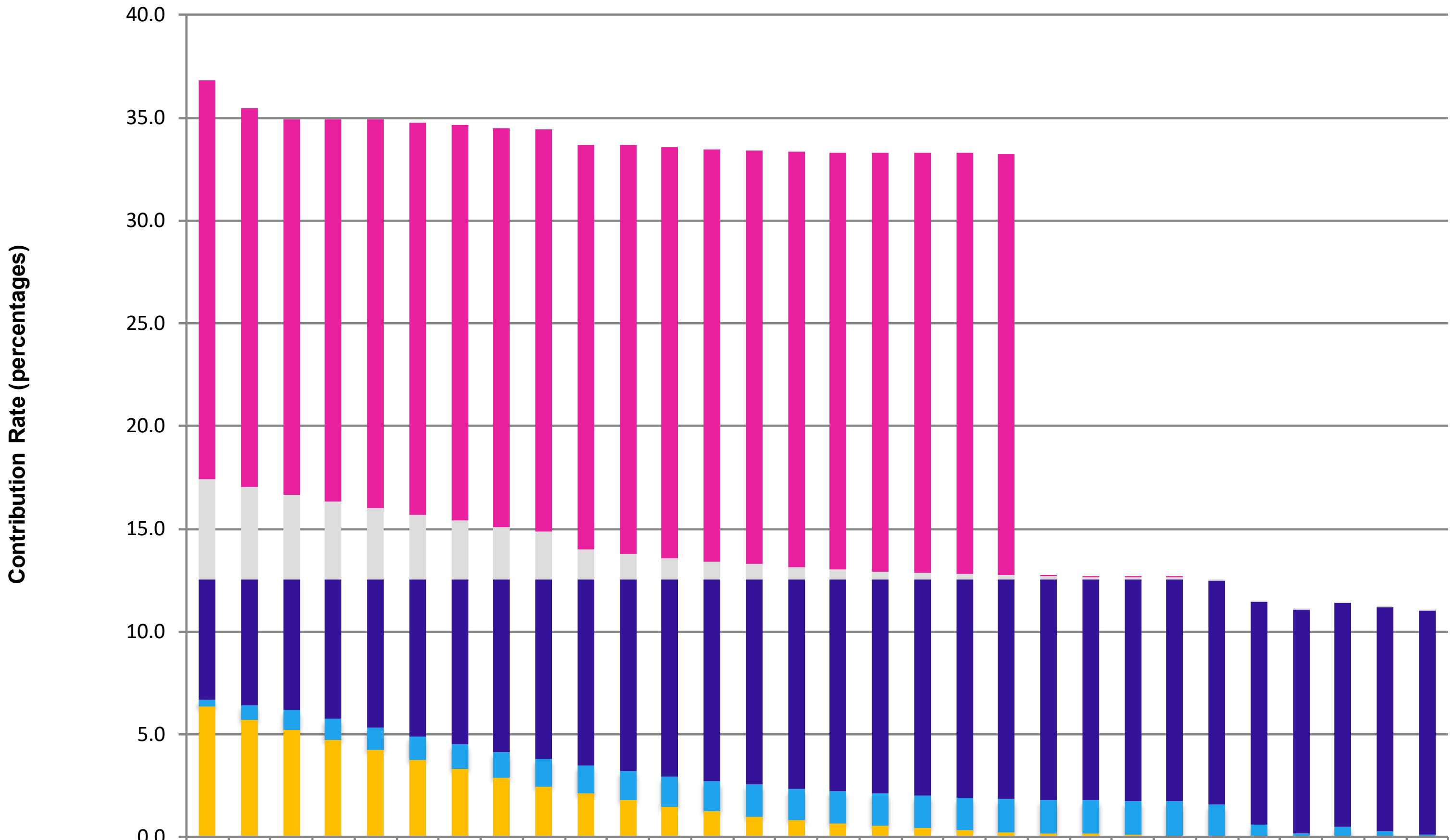
| | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCR Payroll | 886 | 918 | 949 | 980 | 1,011 | 1,041 | 1,072 | 1,102 | 1,133 | 1,163 | 1,194 | 1,226 | 1,257 | 1,289 | 1,322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

**Projected Inactive Member Count**



# Section 4.3: Projected Employer/State Contribution Rates

**Based on Total DB and DCR Payroll**



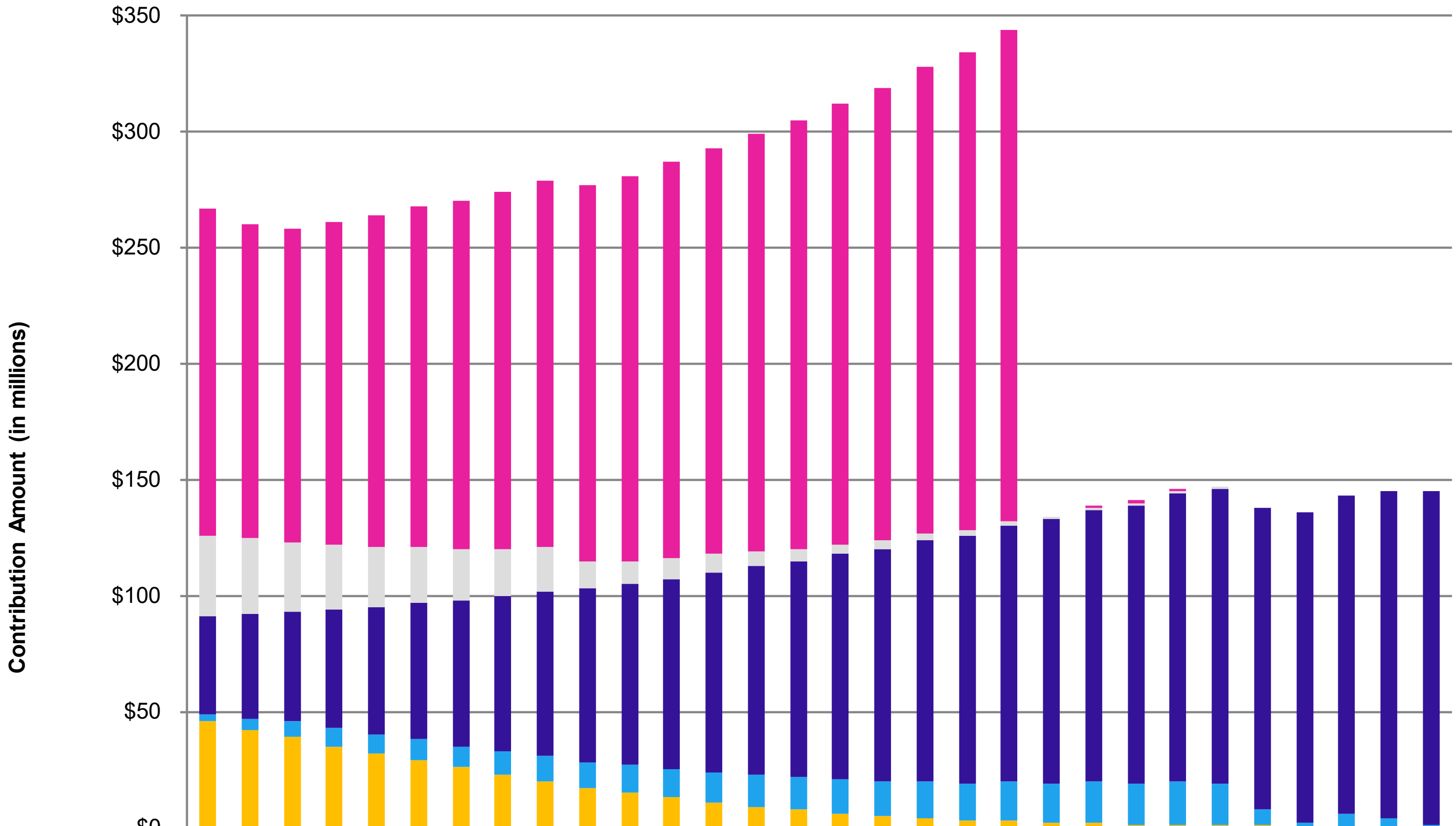

| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State Assistance | 19.45 | 18.44 | 18.26 | 18.60 | 18.92 | 19.08 | 19.25 | 19.40 | 19.56 | 19.68 | 19.86 | 19.96 | 20.05 | 20.13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

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

**Fiscal Year Ending June 30**

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

## Section 4.4: Projected Employer/State Contribution Amounts



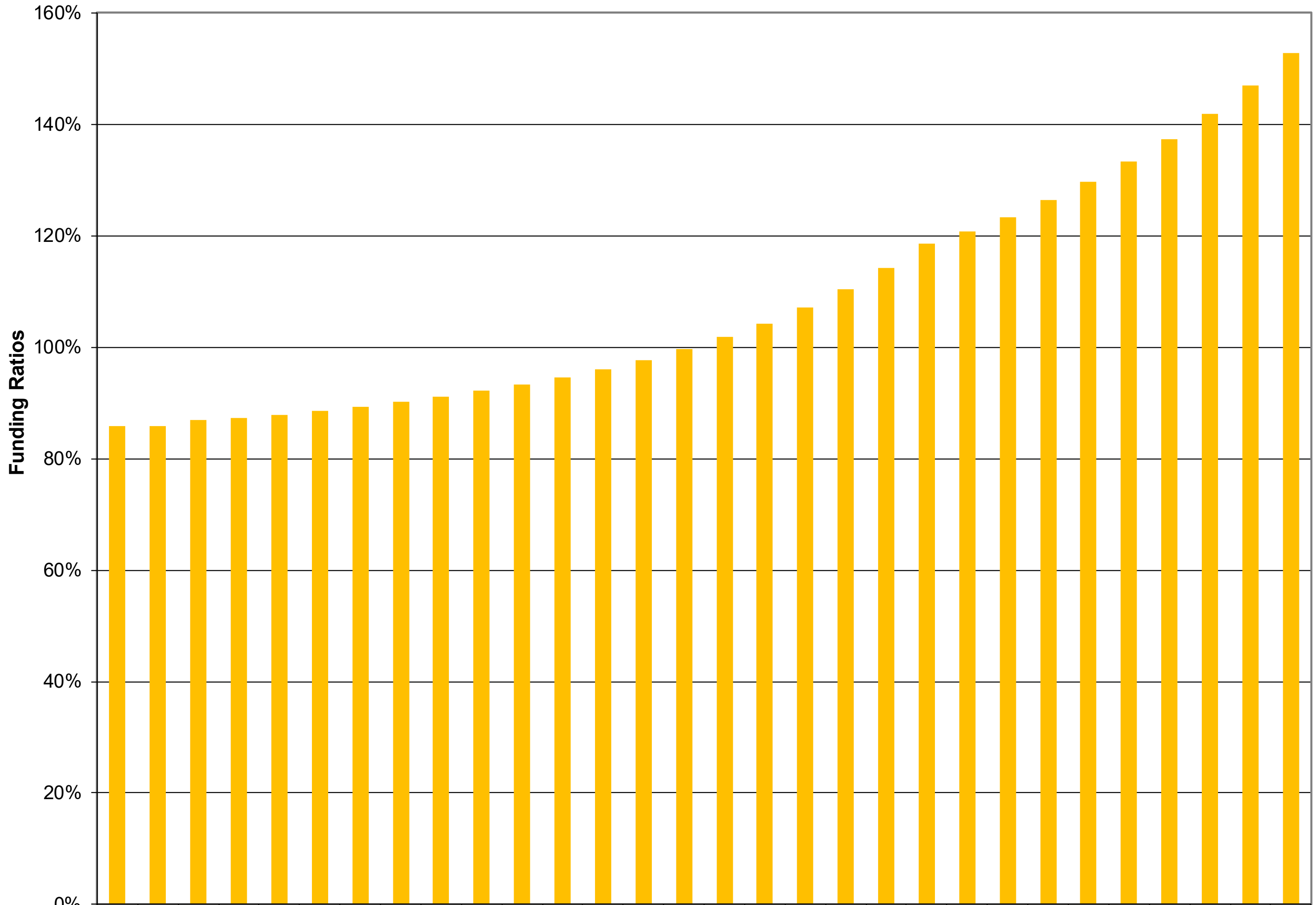

| | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| State Assistance | 141 | 135 | 135 | 139 | 143 | 147 | 150 | 154 | 158 | 162 | 166 | 171 | 175 | 180 | 185 |
| DB EE Contributions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

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

**Fiscal Year Ending June 30**

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

## Section 4.5: Projection of Funded Ratios




| | 2020 | 2021 | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Funding Ratios | 86% | 86% | 87% | 87% | 88% | 89% | 89% | 90% | 91% | 92% | 93% | 95% | 96% | 98% | 100% | 102% | 104% | 107% | 110% | 114% | 119% | 121% | 123% | 126% | 130% | 133% | 137% | 142% | 147% | 153% |

**Fiscal Year Ending June 30**

# Section 4.6: Table of Projected Actuarial Results

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

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

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

## Section 4.6: Table of Projected Actuarial Results (continued)

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

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

# Section 5: Member Data

## Section 5.1: Summary of Members Included

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

[1] 33 members who were terminated before the valuation date were subsequently rehired, per census data as of October 1, 2018. These members were valued as active as of the valuation date.

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

### Summary of Members Included

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

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

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

## Summary of Members Included

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

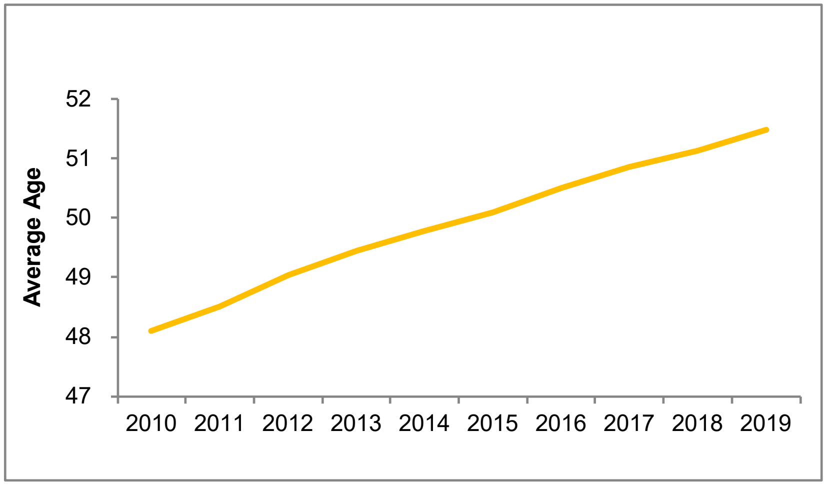
**Retiree Medical Participants as of June 30, 2019**

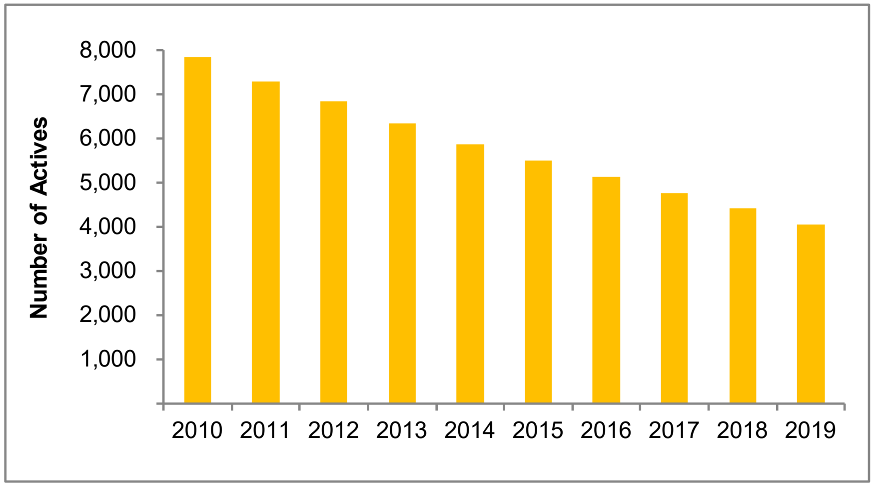
| | Retirees | Covered Spouses | Covered Children / Dependents | Deferred | Total Inactive Members |
|---|---|---|---|---|---|
| Pre-Medicare | 2,554 | 1,435 | 717 | 976 | 5,682 |
| Medicare Part A & B | 9,151 | 2,751 | 0 | 15 | 11,917 |
| Medicare Part B Only | 209 | 26 | 0 | 0 | 235 |
| Total | 11,914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

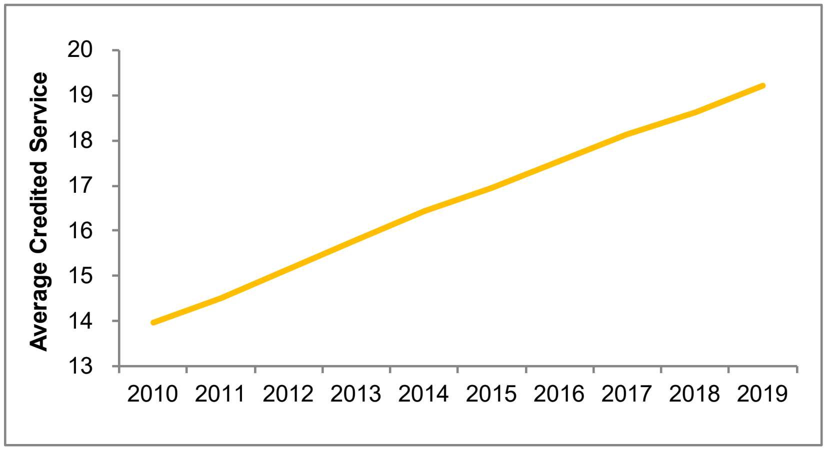
| As of June 30, 2019 | Retirees |
|---|---|
| **Summary of Retiree Medical Data Received** | |
| 1. Retiree records on pension data | 13,491 |
| 2. Remove duplicates on pension data | (394) |
| 3. Records valued in a different retiree healthcare plan[1] | (784) |
| 4. Records without medical coverage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

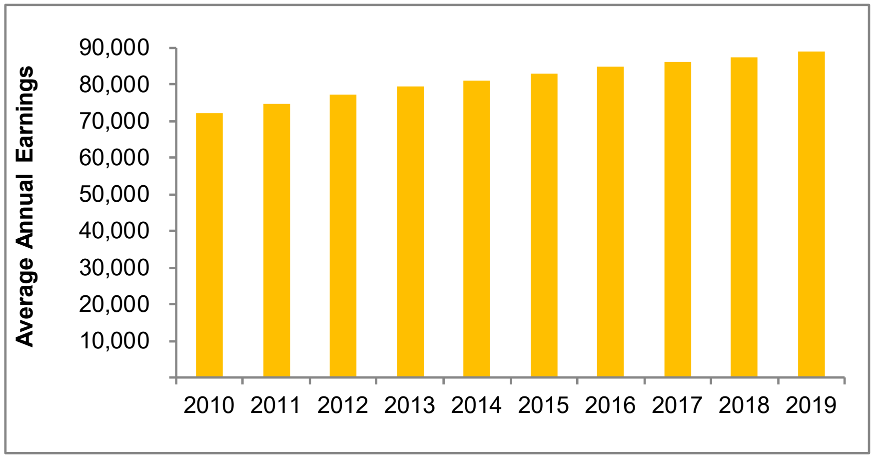
[1] Each member's retiree medical benefits are valued in the plan indicated in the data from Aetna

**Summary of Members Included - Active Members at June 30**




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

## Section 5.2: Age and Service Distribution of Active Members

**Annual Earnings by Age**

| Age | Number | Total Annual Earnings | Average Annual Earnings |
|---|---|---|---|
| 0 – 19 | 0 | $ 0 | $ 0 |
| 20 – 24 | 0 | 0 | 0 |
| 25 – 29 | 0 | 0 | 0 |
| 30 – 34 | 0 | 0 | 0 |
| 35 – 39 | 198 | 15,743,124 | 79,511 |
| 40 – 44 | 666 | 56,627,944 | 85,027 |
| 45 – 49 | 1,019 | 89,981,229 | 88,303 |
| 50 – 54 | 892 | 80,646,548 | 90,411 |
| 55 – 59 | 700 | 63,277,633 | 90,397 |
| 60 – 64 | 357 | 32,750,323 | 91,738 |
| 65 – 69 | 141 | 13,365,556 | 94,791 |
| 70 – 74 | 55 | 5,372,289 | 97,678 |
| 75+ | 16 | 1,660,983 | 103,811 |
| Total | 4,044 | $ 359,425,629 | $ 88,879 |

**Annual Earnings by Credited Service**

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

**Years of Credited Service by Age**

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

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

## Section 5.3: Member Data Reconciliation

**Pension**

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

* Pickup beneficiaries are primarily new DROs.

## Healthcare

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

## Section 5.4: Schedule of Active Member Data

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

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

## Section 5.5: Active Member Payroll Reconciliation

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

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

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

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

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

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

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

## Section 5.6: Summary of New Pension Benefit Recipients

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

**Summary of New Pension Benefit Recipients**

**Average Pension Benefit Payments**

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

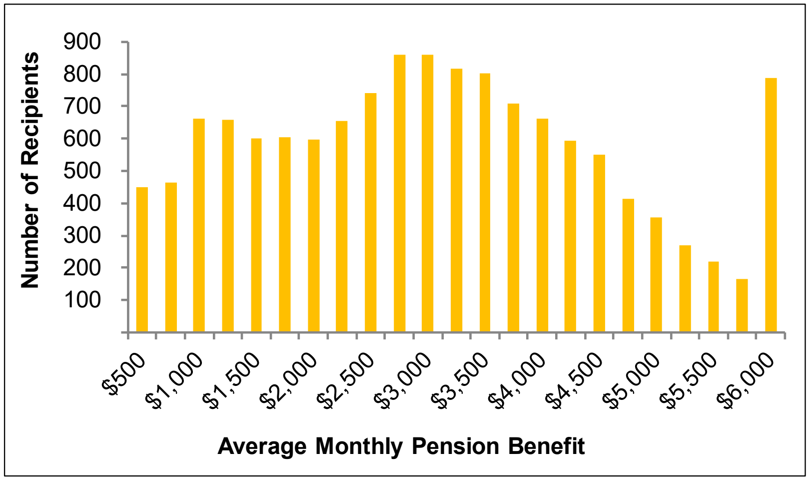
"Average Monthly Pension Benefit" includes postretirement pension adjustments and cost-of-living increases.

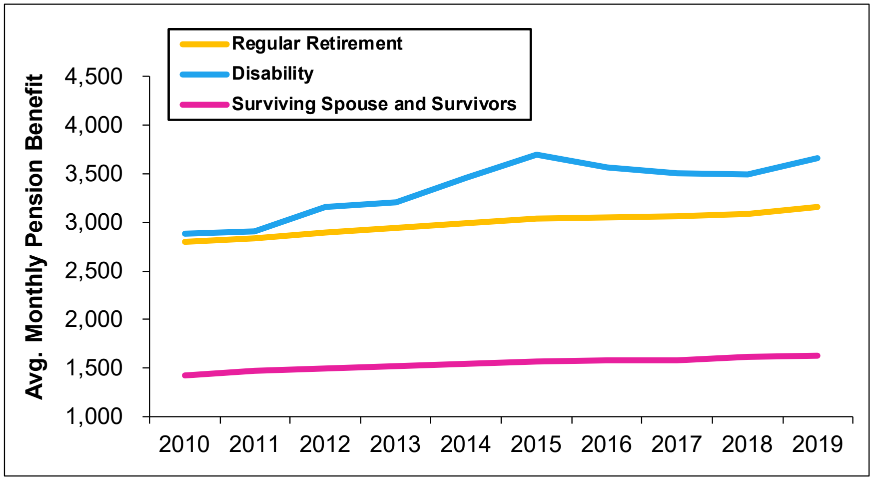
Beneficiaries are not included in the table above.

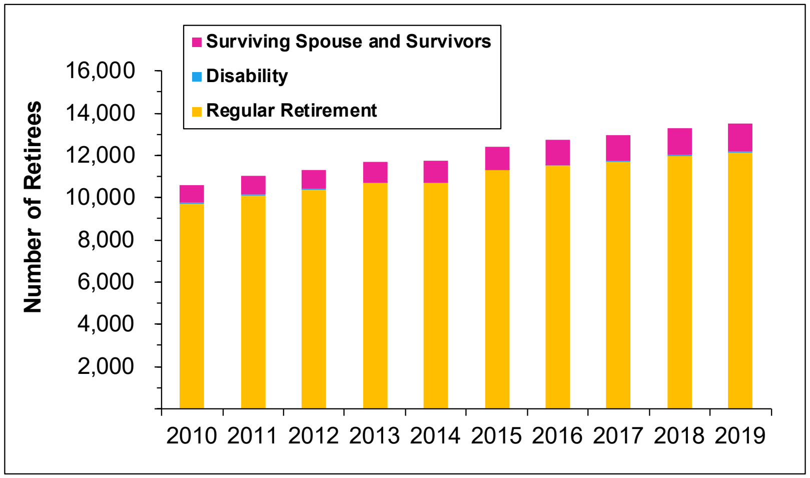
## Section 5.7: Summary of All Pension Benefit Recipients

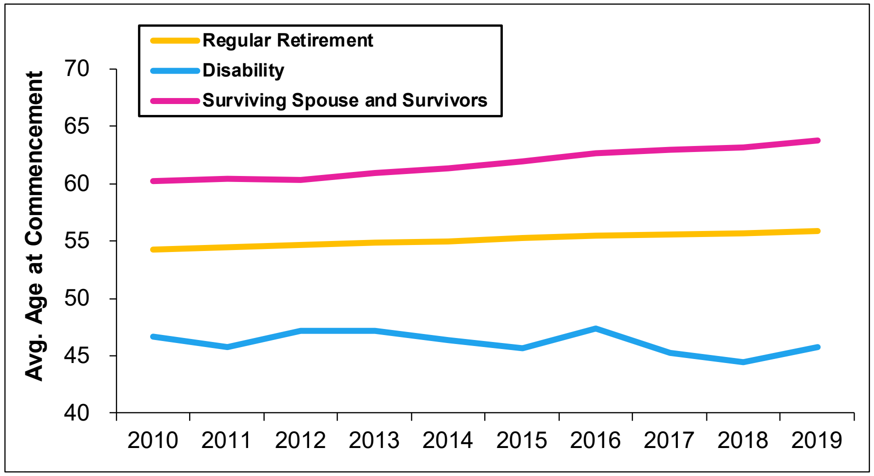
| As of June 30 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| **Service** | | | | | |
| 1. Number, Fiscal Year Start | 10,681 | 11,287 | 11,527 | 11,716 | 11,988 |
| 2. Net Change | 606 | 240 | 189 | 272 | 159 |
| 3. Number, Fiscal Year End | 11,287 | 11,527 | 11,716 | 11,988 | 12,147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

## Summary of All Pension Benefit Recipients



## Summary of All Pension Benefit Recipients

## Distribution of Annual Pension Benefits for Benefit Recipients

**Annual Pension Benefit by Age**

| Age | Number | Total Annual Pension Benefit | Average Annual Pension Benefit |
|---|---|---|---|
| 0 – 19 | 0 | $ 0 | $ 0 |
| 20 – 24 | 0 | 0 | 0 |
| 25 – 29 | 0 | 0 | 0 |
| 30 – 34 | 0 | 0 | 0 |
| 35 – 39 | 0 | 0 | 0 |
| 40 – 44 | 15 | 543,005 | 36,200 |
| 45 – 49 | 46 | 1,441,585 | 31,339 |
| 50 – 54 | 284 | 12,009,895 | 42,288 |
| 55 – 59 | 740 | 29,984,537 | 40,520 |
| 60 – 64 | 1,919 | 66,806,946 | 34,813 |
| 65 – 69 | 3,098 | 105,932,078 | 34,194 |
| 70 – 74 | 3,130 | 109,484,756 | 34,979 |
| 75+ | 4,259 | 161,428,701 | 37,903 |
| Total | 13,491 | $ 487,631,503 | $ 36,145 |

**Annual Pension Benefit by Years Since Commencement**

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

**Years Since Commencement by Age**

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

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

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

**Type of Pension Benefit**

1. Regular Retirement
2. Survivor Payment
3. Disability

**Option Selected**

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

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

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

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

# Section 6: Basis of the Actuarial Valuation

## Section 6.1: Summary of Plan Provisions

### Effective Date

July 1, 1955, with amendments through June 30, 2019. Chapter 97, 1990 Session Laws of Alaska, created a two-tier retirement system. Members who were first hired under TRS before July 1, 1990 (Tier 1) are eligible for different benefits than members hired after June 30, 1990 (Tier 2). Chapter 9, 2005 Session Laws of Alaska, closed the plan to new members hired after June 30, 2006.

### Administration of Plan

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

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

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

### Employers Included

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

### Membership

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

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

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

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

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

**Credited Service**

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

Members may claim other types of service, including:

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

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

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

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

**Employer Contributions**

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

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

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

Employer rates cannot be less than the normal cost rate.

**Additional State Contributions**

Pursuant to AS14.25.070 effective July 1, 2008, the State shall contribute an amount (in addition to the State contribution as an employer) that when combined with the employer contribution (12.56%) will be sufficient to pay the total contribution rate adopted by The State of Alaska Retirement Management Board.

## Member Contributions

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

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

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

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

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

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

## Retirement Benefits

### Eligibility

a. Members, including deferred vested members, are eligible for normal retirement at age 55 or early retirement at age 50 if they were hired before July 1, 1990 (Tier 1) and age 60 or early retirement at age 55 if they were hired on or after July 1, 1990 (Tier 2). Additionally, they must have at least:
   - (i) eight years of paid-up membership service;
   - (ii) 15 years of paid-up creditable service, the last five years of which are membership service, and they were first hired under TRS before July 1, 1975;
   - (iii) five years of paid-up membership service and three years of paid-up Alaska Bureau of Indian Affairs service;
   - (iv) 12 years of combined part-time and full-time paid-up membership service;
   - (v) two years of paid-up membership service if they are vested in PERS; or
   - (vi) one year of paid-up membership service if they are retired from PERS.

b. Members may retire at any age when they have:
   - (i) 25 years of paid-up creditable service, the last five years of which are membership service;
   - (ii) 20 years of paid-up membership service;
   - (iii) 20 years of combined paid-up membership and Alaska Bureau of Indian Affairs service, the last five years of which are membership service; or
   - (iv) 20 years of combined paid-up part-time and full-time membership service.

**Benefit Type**

Lifetime benefits are paid to members. Eligible members may receive normal, unreduced benefits when they (1) reach normal retirement age and complete the service required; or (2) satisfy the minimum service requirements to retire at any age under (b) above. Members may receive early, actuarially reduced benefits when they reach early retirement age and complete the service required.

Members may select joint and survivor options and a last survivor option. Under those options and early retirement, benefits are actuarially adjusted so that members receive the actuarial equivalents of their normal benefit amounts.

**Benefit Calculations**

Retirement benefits are calculated by multiplying the average base salary (ABS) times the total TRS service times the percentage multiplier. The ABS is determined by averaging the salaries earned during the three highest school years. Members must earn at least 115 days of credit in a school year to include it in the ABS calculation. TRS pays a minimum benefit of $25.00 per month for each year of service when the calculated benefit is less.

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

**Indebtedness**

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

**Reemployment of Retired Members**

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

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

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

a. forfeit the three years of incentive credits that they received;
b. owe TRS 110% of the benefits that they received under the RIP, which may include costs for health insurance, excluding amounts that they paid to participate; and
c. be charged 7% interest from the date that they are reemployed until their indebtedness is paid in full or they retire again. If the indebtedness is not completely paid, future benefits will be actuarially reduced for life.

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

### Postemployment Healthcare Benefits

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

Medical, prescription drug, dental, vision and audio coverage is provided through the AlaskaCare Retiree Health Plan. Health plan provisions do not vary by retirement tier or age, except for Medicare coordination. Participants in dental, vision, and audio coverage pay a full self-supporting rate and those benefits are not included in this valuation.

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

Where premiums are required prior to age 60 (Tier 2), the valuation bases this payment upon the age of the retiree.

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

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

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

### Disability Benefits

Monthly disability benefits are paid to permanently disabled members until they die, recover, or become eligible for normal retirement. To be eligible, members must have at least five years of paid-up membership service.

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

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

## Death Benefits

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

### Occupational Death

When an active member dies from occupational causes, a monthly survivor's pension may be paid to the spouse, unless benefits are payable under the supplemental contributions provision (below). The pension equals 40% of the member's base salary on the date of death or disability, if earlier. If there is no spouse, the pension may be paid to the member's dependent children. On the member's normal retirement date, the benefit converts to a normal retirement benefit. The normal benefit is based on the member's average base salary on the date of death and service, including service accumulated from the date of the member's death to the normal retirement date.

### Non-Occupational Death

When a vested member dies from non-occupational causes, the surviving spouse may elect to receive a monthly 50% joint and survivor benefit or a lump sum benefit, unless benefits are payable under the supplemental contributions provision (below). The monthly benefit is calculated on the member's average base salary and TRS service accrued at the time of death.

### Lump Sum Benefit

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

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

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

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

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

### Postretirement Pension Adjustments

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

a. 75% of the CPI increase in the preceding calendar year or 9%, whichever is less, if the recipient is at least age 65 or on TRS disability; or
b. 50% of the CPI increase in the preceding calendar year or 6%, whichever is less, if the recipient is at least age 60, or under age 60 if the recipient has been receiving benefits for at least eight years.

Ad hoc PRPAs, up to a maximum of 4%, may be granted to eligible recipients who were first hired before July 1, 1990 (Tier 1) if the CPI increases and the funded ratio is at least 105%.

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

### Alaska Cost-of-Living Allowance (COLA)

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

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

### Changes in Benefit Provisions Valued Since the Prior Valuation

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

## Section 6.2: Description of Actuarial Methods and Valuation Procedures

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

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

### Actuarial Method

Entry Age Normal Cost.

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

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

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

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

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

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

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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 value method recognizes 20% of the gain or loss each year, for a period of 5 years. All assets are valued at fair value. Assets are accounted for on an accrued basis and are taken directly from financial statements audited by KPMG LLP.

### Changes in Methods Since the Prior Valuation

There have been no changes in the asset or valuation methods since the prior valuation.

### Valuation of Retiree Medical and Prescription Drug Benefits

This section outlines the detailed methodology used to develop the initial per capita claims cost rates for the TRS postemployment healthcare plan. Note that the methodology reflects the results of our annual experience rate update for the period from July 1, 2018 to June 30, 2019.

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

<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 2017 through June 2019 (FY18 through FY19) were provided by the State of Alaska from reports extracted from their data warehouse, which separated claims by Medicare status. Monthly enrollment data for the same period was provided by Aetna.

Aetna also provided census information identifying Medicare Part B only participants. These participants are identified when hospital claims are denied by Medicare; Aetna then flags that participant as a Part B only participant. Buck added newly identified participants to our list of Medicare Part B only participants. Buck assumes that once identified as Part B only, that participant remains in that status until we are notified otherwise.

Aetna provided a snapshot file as of July 1, 2019 of retirees and dependents that included a coverage level indicator. The monthly enrollment data includes double coverage participants. These are participants whereby both the retiree and spouse are retirees from the State and both are reflected with Couple coverage in the enrollment. In this case, such a couple would show up as four members in the monthly enrollment (each would be both a retiree and a spouse). As a result, the snapshot census file was used to adjust the total member counts in the monthly enrollment reports to estimate that number of unique participants enrolled in coverage. Based on the snapshot files from the last two valuations, the total member count in the monthly enrollment reports needs to be reduced by approximately 13% to account for the number of participants with double coverage.

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

Methodology

Buck projected historical claim data to FY20 for retirees using the following summarized steps:

1. Develop historical annual incurred claim cost rates – an analysis of medical costs was completed based on claims information and enrollment data provided by the State of Alaska and Aetna for each year in the experience period of FY18 through FY19.
   - Costs for medical services and prescriptions were analyzed separately, and separate trend rates were developed to project expected future medical and prescription costs for the valuation year (e.g. from the experience period up through FY20).
   - Because the reports provided this year reflected incurred claims, no additional adjustment was needed to determine incurred claims to be used in the valuation.
   - An offset for costs expected to be reimbursed by Medicare was incorporated beginning at age 65. Alaska retirees who do not have 40 quarters of Medicare-covered compensation do not qualify for Medicare Part A coverage free of charge. This is a relatively small and closed group. Medicare was applied to State employment for all employees hired after March 31, 1986. For the "no-Part A" individuals who are required to enroll in Medicare Part B, the State is the primary payer for hospital bills and other Part A services. Claim experience is not available separately for participants with both Medicare Parts A and B and those with Part B only. For Medicare Part B only participants, a lower average claims cost was applied to retirees covered by both Medicare Part A and B vs. retirees covered only by Medicare Part B based upon manual rate models that estimate the Medicare covered proportion of medical costs. To the extent that no-Part A claims can be isolated and applied strictly to the appropriate closed group, actuarial accrued liability will be more accurate.
   - Based on census data received from Aetna, less than 1% of the current retiree population was identified as having coverage only under Medicare Part B. We assume that 5% of actives hired before April 1, 1986 and current retirees who are not yet Medicare eligible will not be eligible for Medicare Part A.
   - Based upon a reconciliation of valuation census data to the snapshot eligibility files provided by Aetna as of July 1, 2018, and July 1, 2019, Buck adjusted member counts used for duplicate records where participants have double coverage; i.e. primary coverage as a retiree and secondary coverage as the covered spouse of another retiree. This is to reflect the total cost per distinct individual/member which is then applied to distinct members in the valuation census.
   - Buck understands that pharmacy claims reported do not reflect rebates. Based on actual pharmacy rebate information provided by Aetna for years through 2018 and Optum for January-June 2019, rebates were assumed to be 12% of prescription drug claims for FY18 and 17% of prescription drug claims for FY19.
2. Develop estimated EGWP reimbursements – Segal provided estimated 2019 EGWP subsidies, developed with the assistance of OptumRx. These amounts are applicable only to Medicare-eligible participants.
3. Adjust for claim fluctuation, anomalous experience, etc. – explicit adjustments are often made for anticipated large claims or other anomalous experience. Due to group size and demographics, we did not make any large claim adjustments. We do blend both Alaska plan-specific and national trend

factors as described below. Buck compared data utilized to lag reports and quarterly plan experience presentations provided by the State and Aetna to assess accuracy and reasonableness of data.

4. Trend all data points to the projection period – project prior years' experience forward to FY20 for retiree benefits on an incurred claim basis. Trend factors derived from historical Alaska-specific experience and national trend factors are shown in the table in item 5 below.
5. Apply credibility to prior experience – adjust prior year's data by assigning weight to recent periods, as shown at the right of the table below. The Board approved a change in the weighting of experience periods beginning with the June 30, 2017 valuation as outlined below. Note also that we averaged projected plan costs using Alaska-specific trend factors and national trend factors, assigning 75% weight to Alaska-specific trends and 25% to national trends:

| Alaska-Specific and National Average Weighted Trend from Experience Period to Valuation Year | | | |
|---|---|---|---|
| **Experience Period** | **Medical** | **Prescription** | **Weighting Factors** |
| FY18 to FY19 | 6.2% Pre-Medicare / 4.0% Medicare | 8.0% | 50% |
| FY19 to FY20 | 7.3% Pre-Medicare / 4.6% Medicare | 1.2% | 50% |

Trend assumptions used for rate development are assessed annually and as additional/improved reporting becomes available, we will incorporate into rate development as appropriate.

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

**Healthcare Reform**

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

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

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

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

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

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

### Data

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

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

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

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

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

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

| | Medical | | Prescription Drugs (Rx) | |
|---|---|---|---|---|
| | Pre-Medicare | Medicare | Pre-Medicare | Medicare |
| **A. Fiscal 2018** | | | | |
| 1. Incurred Claims | $ 228,572,782 | $ 72,875,570 | $ 65,406,973 | $ 178,763,430 |
| 2. Adjustments for Rx Rebates | 0 | 0 | (7,848,837) | (21,451,612) |
| 3. Net incurred claims | $ 228,572,782 | $ 72,875,570 | $ 57,558,136 | $ 157,311,819 |
| 4. Average Enrollment | 21,920 | 40,560 | 21,920 | 40,560 |
| 5. Claim Cost Rate (3) / (4) | 10,428 | 1,797 | 2,626 | 3,878 |
| 6. Trend to Fiscal 2020 | 1.140 | 1.088 | 1.093 | 1.093 |
| 7. Fiscal 2020 Incurred Cost Rate (5) x (6) | $ 11,883 | $ 1,955 | $ 2,870 | $ 4,239 |
| **B. Fiscal 2019** | | | | |
| 1. Incurred Claims | $ 230,731,518 | $ 80,855,220 | $ 63,846,605 | $ 183,281,273 |
| 2. Adjustments for Rx Rebates | 0 | 0 | (10,853,923) | (31,157,816) |
| 3. Net incurred claims | $ 230,731,518 | $ 80,855,220 | $ 52,992,682 | $ 152,123,456 |
| 4. Average Enrollment | 20,625 | 42,843 | 20,625 | 42,843 |
| 5. Claim Cost Rate (3) / (4) | 11,187 | 1,887 | 2,569 | 3,551 |
| 6. Trend to Fiscal 2020 | 1.073 | 1.046 | 1.012 | 1.012 |
| 7. Fiscal 2020 Incurred Cost Rate (5) x (6) | $ 12,003 | $ 1,974 | $ 2,600 | $ 3,593 |

| | Medical | | Prescription Drugs (Rx) | |
|---|---|---|---|---|
| | Pre-Medicare | Medicare | Pre-Medicare | Medicare |
| **C. Incurred Cost Rate by Fiscal Year** | | | | |
| 1. Fiscal 2018 A.(7) | 11,883 | 1,955 | 2,870 | 4,239 |
| 2. Fiscal 2019 B.(7) | 12,003 | 1,974 | 2,600 | 3,593 |
| **D. Weighting by Fiscal Year** | | | | |
| 1. Fiscal 2018 | 50% | 50% | 50% | 50% |
| 2. Fiscal 2019 | 50% | 50% | 50% | 50% |
| **E. Fiscal 2020 Incurred Cost Rate** | | | | |
| 1. Rate at Average Age C x D | $ 11,943 | $ 1,964 | $ 2,735 | $ 3,916 |
| 2. Average Aging Factor | 0.826 | 1.256 | 0.838 | 1.119 |
| 3. Rate at Age 65 (1) / (2) | $ 14,464 | $ 1,564 | $ 3,263 | $ 3,501 |
| **F. Development of Part A&B and Part B Only Cost from Pooled Rate Above** | | | | |
| 1. Part A&B Average Enrollment | | 42,469 | | |
| 2. Part B Only Average Enrollment | | 374 | | |
| 3. Total Medicare Average Enrollment B(4) | | 42,843 | | |
| 4. Cost ratio for those with Part B only to those with Parts A&B | | 3.180 | | |
| 5. Factor to determine cost for those with Parts A&B (2) / (3) x (4) + (1) / (3) x 1.00 | | 1.019 | | |
| 6. Medicare per capita cost for all participants: E(3) | | $ 1,564 | | |
| 7. Cost for those eligible for Parts A&B: (6) / (5) | | $ 1,534 | | |
| 8. Cost for those eligible for Part B only: (7) x (4) | | $ 4,880 | | |

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

Below are the results of this analysis:

**Distribution of Per Capita Claims Cost by Age**
**for the Period July 1, 2019 through June 30, 2020**

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

## Section 6.3: Summary of Actuarial Assumptions

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

**Investment Return**

7.38% per year, net of investment expenses.

**Salary Scale**

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

Inflation – 2.50% per year.

Productivity – 0.25% per year.

**Payroll Growth**

2.75% per year (inflation + productivity).

**Total Inflation**

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

**Mortality (Pre-Termination)**

Mortality rates based upon the 2013-2017 actual experience.

100% of RP-2014 white-collar employee table with MP-2017 generational improvement.

**Mortality (Post-Termination)**

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 with MP-2017 generational improvement.

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

**Turnover**

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

**Disability**

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

Post-disability mortality in accordance with the RP-2014 disabled table with MP-2017 generational improvement. Deaths are assumed to be from non-occupational causes 85% of the time.

**Retirement**

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

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

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

**Spouse Age Difference**

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

**Percent Married for Pension**

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

**Dependent Spouse Medical Coverage Election**

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

**Dependent Children**

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

**Contribution Refunds**

0% of terminating members with vested benefits are assumed to have their contributions refunded. 100% of those with non-vested benefits are assumed to have their contributions refunded.

**Imputed Data**

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

**Active Rehire Assumption**

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

- Pension: 15.57%
- Healthcare: 12.03%

### Active Data Adjustment

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

### Alaska Cost-of-Living Adjustments (COLA)

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

### Sick Leave

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

### Postretirement Pension Adjustment (PRPA)

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

### Expenses

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

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

### Part-Time Status

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

### Re-Employment Option

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

### Service

Total credited service is provided by the State. This service is assumed to be the only service that should be used to calculate benefits. Additionally, the State provides claimed service (including Bureau of Indian Affairs Service). Claimed service is used for vesting and eligibility purposes as described in Section 6.1.

### Final Average Earnings

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

### Per Capita Claims Cost

Sample claims cost rates adjusted to age 65 for FY20 medical and prescription drugs are shown below:

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

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

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

### Third Party Administrator Fees

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

### Medicare Part B Only

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

**Healthcare Cost Trend**

The table below shows the rate used to project the cost from the shown fiscal year to the next fiscal year. For example, 7.0% is applied to the FY20 pre-Medicare medical claims costs to get the FY21 medical claims costs.

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

For the June 30, 2014 valuation and later, the updated Society of Actuaries' Healthcare Cost Trend Model is used to project medical and prescription drug costs. This model estimates trend amounts that are projected out for 80 years. The model has been populated with assumptions that are specific to the State of Alaska.

**Aging Factors**

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

**Retired Member Contributions for Medical Benefits**

Currently contributions are required for TRS members who are under age 60 and have less than 25 years of service. Eligible Tier 1 members are exempt from contribution requirements. Annual FY20 contributions based on monthly rates shown below for calendar 2020 are assumed based on the coverage category for current retirees. The composite rate shown is used for current active and inactive members in Tier 2 who are assumed to retire prior to age 60 with less than 25 years of service and who are not disabled. For dependent children, we value 1/3 of the annual retiree contribution to estimate the per child rate based upon the assumed number of children in rates where children are covered.

| Coverage Category | Calendar 2020 Annual Contribution | Calendar 2020 Monthly Contribution | Calendar 2019 Monthly Contribution |
|---|---|---|---|
| Retiree Only | $ 8,892 | $ 741 | $ 823 |
| Retiree and Spouse | $ 17,784 | $ 1,482 | $ 1,647 |
| Retiree and Child(ren) | $ 12,564 | $ 1,047 | $ 1,163 |
| Retiree and Family | $ 21,456 | $ 1,788 | $ 1,987 |
| Composite | $ 13,212 | $ 1,101 | $ 1,223 |

**Trend Rate for Retired Member Medical Contributions**

The table below shows the rate used to project the retired member medical contributions from the shown fiscal year to the next fiscal year. For example, 0.0% is applied to the FY20 retired member medical contributions to get the FY21 retired member medical contributions.

| Trend Assumptions | |
|---|---|
| FY20 | 0.0% |
| FY21 | 0.0% |
| FY22 | 0.0% |
| FY23 | 4.0% |

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

### Healthcare Participation

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

### Changes in Assumptions Since the Prior Valuation

Healthcare claim costs are updated annually as described in Section 6.2. Retired member contribution trend rates were updated to reflect the ongoing shift in population from pre-Medicare to Medicare-eligible and a projection of expected future retiree contributions reflecting the 10% decrease from 2019 to 2020. The Further Consolidated Appropriations Act, 2020 that was signed in December 2019 made several changes, including the repeal of the Cadillac Tax. The repeal of the Cadillac Tax reduced the plan’s liabilities as of June 30, 2019 by approximately $14 million. The amounts included in the Normal Cost for administrative expenses were changed to $3,034,000 for pension and $1,439,000 for healthcare (based on the most recent two years of actual administrative expenses paid from plan assets). No adjustment was made to reflect participants who terminate employment before the valuation date and are subsequently rehired after the valuation date.

## Table 1: Salary Scale

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

## Table 2: Turnover Rates

### Select Rates during the First 8 Years of Employment

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

### Ultimate Rates after the First 8 Years of Employment

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

## Table 3: Disability Rates

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

## Table 4: Retirement Rates

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

# Section 7: Actuarial Standard of Practice No. 51

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

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

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

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

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

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

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

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

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

## Assessment of Risks

### Investment Risk

Plan costs are very sensitive to the market return.

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

### Contribution Risk

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

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

### Long-Term Return on Investment Risk

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

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

**Longevity Risk**

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

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

**Salary Increase Risk**

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

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

**Inflation Risk**

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

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

**Other Demographic Risk**

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

## Historical Information

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

- Funded Ratio History shown on page 3 shows the plan's funded status (comparison of actuarial accrued liabilities to actuarial value of assets) over time.
- Section 1.6 shows historical analysis of financial experience including how contribution rates have changed over time.
- Section 2.4 shows the volatility of asset returns over time.
- Section 5 includes various historical information showing how member census data has changed over time.

## Plan Maturity Measures

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

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

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

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

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

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

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

# Glossary of Terms

**Actuarial Accrued Liability**

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

**Actuarial Cost Method**

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

**Actuarial Present Value of Projected Benefits**

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

**Actuarial Valuation**

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

**Actuary**

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

**Annual Required Contribution (ARC)**

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

**GASB 25 and 27**

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

**GASB 43 and 45**

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

**GASB 67 and 68**

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

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

### GASB 74 and 75

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

### 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

## Public Employees' Retirement System Defined Contribution Retirement Plan

For Occupational Death and Disability and Retiree Medical Benefits

Actuarial Valuation Report

As of June 30, 2019

January 2020

BUCK

January 22, 2020

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

**Certification of Actuarial Valuation**

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

This report summarizes the annual actuarial valuation results of the State of Alaska Public Employees' Retirement System Defined Contribution Retirement (PERS DCR) Plan as of June 30, 2019 performed by Buck Global, LLC (Buck).

The actuarial valuation is based on financial information provided in the financial statements audited by KPMG LLP, member data provided by the Division of Retirement and Benefits, and medical enrollment data provided by the healthcare claims administrator (Aetna), as summarized in this report. The benefits considered are those delineated in Alaska statutes effective June 30, 2019. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under 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, 2019.

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 economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. In particular, retiree group benefits models necessarily rely on the use of approximations and estimates and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. An analysis of the potential range of such future differences is beyond the scope of this valuation.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the plan. The actuary performs an analysis of plan experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. The last full experience analysis was performed for the period July 1, 2013 to June 30, 2017. Based on that experience study, the Board adopted new assumptions effective beginning with the June 30, 2018 valuation to better reflect expected future experience. Based on our annual analysis of recent claims experience, changes were made to the per capita claims cost rates effective June 30, 2019 to better reflect expected future healthcare experience. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Sections 5.2 and 5.3.

Governmental Accounting Standards Board (GASB) Statement No. 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. Section 3 of this report contains accounting information previously disclosed under GASB 25 for fiscal years 2007 through 2013 and accounting information previously disclosed under GASB 43 for fiscal years 2007 through 2016.

**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 and 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 and disability benefits provided by this 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 herby affirms his qualification to render opinions in such matters in accordance with the Qualification Standards of the American Academy of Actuaries.

Scott Young, FSA, EA, MAAA
Director
Buck

# 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, 2019.

### Purpose

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

1. To determine the Employer 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) | 2018 | 2019 |
|---|---|---|
| a. Actuarial Accrued Liability | $ 126,311 | $ 134,720 |
| b. Valuation Assets | 131,058 | 155,484 |
| c. Unfunded Actuarial Accrued Liability, (a) – (b) | $ (4,747) | $ (20,764) |
| d. Funded Ratio based on Valuation Assets, (b) ÷ (a) | 103.8% | 115.4% |
| e. Fair Value of Assets | $ 130,820 | $ 154,763 |
| f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a) | 103.6% | 114.9% |

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 FY19 investment return based on fair value of assets was 6.2% compared to the expected investment return of 7.38% (net of investment expenses of approximately 0.04%). This resulted in a loss of approximately $1,582,000 to the plan from investment experience. The asset valuation method recognizes 20 percent of this loss ($316,000) this year and an additional 20 percent in each of the next 4 years. In addition, 20 percent of the FY15 investment loss, 20 percent of the FY16 investment loss, 20 percent of the FY17 investment gain and 20 percent of the FY18 investment loss were recognized this year. The approximate FY19 asset return based on actuarial value of assets was 6.6% compared to the expected asset return of 7.38% (net of investment expenses).

2. **Salary Increases**

   Salary increases for continuing active members during FY19 were higher than anticipated based on the valuation assumptions, resulting in a liability loss of approx. $80,000.

3. **Demographic Experience**

   The number of active members increased 7.5% from 20,378 at June 30, 2018 to 21,902 at June 30, 2019. The average age of active members increased from 40.80 to 40.96 and average credited service increased from 4.15 to 4.33 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, 2019 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 5.2 of this report (Section 6.2 of the PERS report) created an actuarial gain of approximately $15,366,000.

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 5.2. The Further Consolidated Appropriations Act, 2020 that was signed in December 2019 made several changes, including the repeal of the Cadillac Tax. The repeal of the Cadillac Tax reduced the plan's liabilities as of June 30, 2019 by approximately $925,000. 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**

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

**Comparative Summary of Key Actuarial Valuation Results**

| Total Employer Contribution Rates for Occupational Death & Disability for Fiscal Year: | | 2021 | 2022 |
|---|---|---|---|
| **Peace Officer/Firefighter** | | | |
| a. | Employer Normal Cost Rate | 0.70% | 0.68% |
| b. | Past Service Cost Rate | (0.22)% | (0.18)% |
| c. | Total Employer Contribution Rate, (a) + (b), not less than (a) | 0.70% | 0.68% |
| **Others** | | | |
| a. | Employer Normal Cost Rate | 0.31% | 0.31% |
| b. | Past Service Cost Rate | (0.13)% | (0.14)% |
| c. | Total Employer Contribution Rate, (a) + (b), not less than (a) | 0.31% | 0.31% |

| Total Employer Contribution Rates for Retiree Medical for Fiscal Year: | | 2021 | 2022 |
|---|---|---|---|
| a. | Employer Normal Cost Rate | 1.15% | 1.02% |
| b. | Past Service Cost Rate | 0.12% | 0.05% |
| c. | Total Employer Contribution Rate, (a) + (b), not less than (a) | 1.27% | 1.07% |

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 |
| N/A | FY07 | 0.40% / 0.30% | 1.75% |
| N/A | FY08 | 1.33% / 0.58% | 0.99% |
| N/A | FY09 | 1.33% / 0.58% | 0.99% |
| June 30, 2007 | FY10 | 1.33% / 0.30% | 0.83% |
| June 30, 2008 | FY11 | 1.18% / 0.31% | 0.55% |
| June 30, 2009 | FY12 | 0.97% / 0.11% | 0.51% |
| June 30, 2010 | FY13 | 0.99% / 0.14% | 0.48% |
| June 30, 2011 | FY14 | 1.14% / 0.20% | 0.48% |
| June 30, 2012 | FY15 | 1.06% / 0.22% | 1.66% |
| June 30, 2013 | FY16 | 1.05% / 0.22% | 1.68% |
| June 30, 2014 | FY17 | 0.49% / 0.17% | 1.18% |
| June 30, 2015 | FY18 | 0.43% / 0.16% | 1.03% |
| June 30, 2016 | FY19 | 0.76% / 0.26% | 0.94% |
| June 30, 2017 | FY20 | 0.72% / 0.26% | 1.32% |
| June 30, 2018 | FY21 | 0.70% / 0.31% | 1.27% |
| June 30, 2019 | FY22 | TBD | TBD |

**Summary of Actuarial Accrued Liability Gain/(Loss)**

The following table shows the FY19 gain/(loss) on actuarial accrued liability as of June 30, 2019 ($'s in 000's):

| | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| Retirement Experience | $ 0 | $ 1,220 | $ 1,220 |
| Termination Experience | 12 | 1,567 | 1,579 |
| Active Mortality Experience | 1,639 | 12 | 1,651 |
| Inactive Mortality Experience | (55) | (399) | (454) |
| Disability Experience | 1,379 | 317 | 1,696 |
| New Entrants | (117) | (1,476) | (1,593) |
| Rehires | (41) | (2,630) | (2,671) |
| Salary Increases | (80) | N/A | (80) |
| Medical Claims Costs | N/A | 15,366 | 15,366 |
| Cadillac Tax – Medical Claims Costs | N/A | 1,233 | 1,233 |
| Cadillac Tax – Repeal | N/A | 925 | 925 |
| Miscellaneous | 80 | 1,181 | 1,261 |
| Total | $ 2,817 | $ 17,316 | $ 20,133 |

# Section 1: Actuarial Funding Results

## Section 1.1: Actuarial Liabilities and Normal Cost

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

| As of June 30, 2019 | Present Value of Projected Benefits | Actuarial Accrued (Past Service) Liability |
|---|---|---|
| **Active Members** | | |
| Occupational Death Benefits | $ 3,147 | $ 26 |
| Occupational Disability Benefits | 9,620 | 2,632 |
| Medical and Prescription Drug Benefits | 32,014 | 15,448 |
| Medicare Part D Subsidy | (5,797) | (2,823) |
| Subtotal | $ 38,984 | $ 15,283 |
| **Benefit Recipients** | | |
| Survivor Benefits | $ 651 | $ 651 |
| Disability Benefits | 3,753 | 3,753 |
| Medical and Prescription Drug Benefits | 484 | 484 |
| Medicare Part D Subsidy | (78) | (78) |
| Subtotal | $ 4,810 | $ 4,810 |
| **Total** | **$ 43,794** | **$ 20,093** |
| **Total Occupational Death & Disability** | **$ 17,171** | **$ 7,062** |
| **Total Medical, Net of Part D Subsidy** | **$ 26,623** | **$ 13,031** |
| **Total Medical, Gross of Part D Subsidy** | **$ 32,498** | **$ 15,932** |

| As of June 30, 2019 | Normal Cost |
|---|---|
| **Active Members** | |
| Occupational Death Benefits | $ 400 |
| Occupational Disability Benefits | 828 |
| Medical and Prescription Drug Benefits | 1,851 |
| Medicare Part D Subsidy | (334) |
| Subtotal | $ 2,745 |
| **Administrative Expense Load** | |
| Occupational Death & Disability | $ 0 |
| Retiree Medical | 2 |
| Subtotal | $ 2 |
| **Total** | **$ 2,747** |
| **Total Occupational Death & Disability** | **$ 1,228** |
| **Total Medical, Net of Part D Subsidy** | **$ 1,519** |
| **Total Medical, Gross of Part D Subsidy** | **$ 1,853** |

## Section 1.1: Actuarial Liabilities and Normal Cost

**Others ($'s in 000's)**

| As of June 30, 2019 | Present Value of Projected Benefits | Actuarial Accrued (Past Service) Liability |
|---|---|---|
| **Active Members** | | |
| Occupational Death Benefits | $ 8,235 | $ 525 |
| Occupational Disability Benefits | 14,495 | 1,241 |
| Medical and Prescription Drug Benefits | 228,344 | 136,686 |
| Medicare Part D Subsidy | (44,892) | (27,012) |
| Subtotal | $ 206,182 | $ 111,440 |
| **Benefit Recipients** | | |
| Survivor Benefits | $ 276 | $ 276 |
| Disability Benefits | 670 | 670 |
| Medical and Prescription Drug Benefits | 2,796 | 2,796 |
| Medicare Part D Subsidy | (555) | (555) |
| Subtotal | $ 3,187 | $ 3,187 |
| **Total** | **$ 209,369** | **$ 114,627** |
| **Total Occupational Death & Disability** | **$ 23,676** | **$ 2,712** |
| **Total Medical, Net of Part D Subsidy** | **$ 185,693** | **$ 111,915** |
| **Total Medical, Gross of Part D Subsidy** | **$ 231,140** | **$ 139,482** |

| As of June 30, 2019 | Normal Cost |
|---|---|
| **Active Members** | |
| Occupational Death Benefits | $ 1,317 |
| Occupational Disability Benefits | 2,263 |
| Medical and Prescription Drug Benefits | 15,203 |
| Medicare Part D Subsidy | (2,973) |
| Subtotal | $ 15,810 |
| **Administrative Expense Load** | |
| Occupational Death & Disability | $ 1 |
| Retiree Medical | 6 |
| Subtotal | $ 7 |
| **Total** | **$ 15,817** |
| **Total Occupational Death & Disability** | **$ 3,581** |
| **Total Medical, Net of Part D Subsidy** | **$ 12,236** |
| **Total Medical, Gross of Part D Subsidy** | **$ 15,209** |

## Section 1.1: Actuarial Liabilities and Normal Cost

**All Members ($'s in 000's)**

| As of June 30, 2019 | | Present Value of Projected Benefits | | Actuarial Accrued (Past Service) Liability |
|---|---|---|---|---|
| **Active Members** | | | | |
| Occupational Death Benefits | $ | 11,382 | $ | 551 |
| Occupational Disability Benefits | | 24,115 | | 3,873 |
| Medical and Prescription Drug Benefits | | 260,358 | | 152,134 |
| Medicare Part D Subsidy | | (50,689) | | (29,835) |
| Subtotal | $ | 245,166 | $ | 126,723 |
| **Benefit Recipients** | | | | |
| Survivor Benefits | $ | 927 | $ | 927 |
| Disability Benefits | | 4,423 | | 4,423 |
| Medical and Prescription Drug Benefits | | 3,280 | | 3,280 |
| Medicare Part D Subsidy | | (633) | | (633) |
| Subtotal | $ | 7,997 | $ | 7,997 |
| **Total** | **$** | **253,163** | **$** | **134,720** |
| **Total Occupational Death & Disability** | **$** | **40,847** | **$** | **9,774** |
| **Total Medical, Net of Part D Subsidy** | **$** | **212,316** | **$** | **124,946** |
| **Total Medical, Gross of Part D Subsidy** | **$** | **263,638** | **$** | **155,414** |

| As of June 30, 2019 | | Normal Cost |
|---|---|---|
| **Active Members** | | |
| Occupational Death Benefits | $ | 1,717 |
| Occupational Disability Benefits | | 3,091 |
| Medical and Prescription Drug Benefits | | 17,054 |
| Medicare Part D Subsidy | | (3,307) |
| Subtotal | $ | 18,555 |
| **Administrative Expense Load** | | |
| Occupational Death & Disability | $ | 1 |
| Retiree Medical | | 8 |
| Subtotal | $ | 9 |
| **Total** | **$** | **18,564** |
| **Total Occupational Death & Disability** | **$** | **4,809** |
| **Total Medical, Net of Part D Subsidy** | **$** | **13,755** |
| **Total Medical, Gross of Part D Subsidy** | **$** | **17,062** |

## Section 1.2: Actuarial Contributions as of June 30, 2019

**Actuarial Contributions as of June 30, 2019 - Peace Officer/Firefighter ($'s in 000's)**

| Normal Cost Rate | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| 1. Total Normal Cost | $ 1,228 | $ 1,519 | $ 2,747 |
| 2. DCR Plan Rate Payroll Projected for FY2020 | 180,262 | 180,262 | 180,262 |
| 3. Employer Normal Cost Rate, (1) / (2) | 0.68% | 0.84% | 1.52% |
| **Past Service Rate** | | | |
| 1. Actuarial Accrued Liability | $ 7,062 | $ 13,031 | $ 20,093 |
| 2. Valuation Assets | 11,520 | 12,388 | 23,908 |
| 3. Unfunded Actuarial Accrued Liability, (1) - (2) | $ (4,458) | $ 643 | $ (3,815) |
| 4. Funded Ratio, (2) / (1) | 163.1% | 95.1% | 119.0% |
| 5. Past Service Cost Amortization Payment | (330) | 71 | (259) |
| 6. DCR Plan Rate Payroll Projected for FY2020 | 180,262 | 180,262 | 180,262 |
| 7. Past Service Cost Rate, (5) / (6) | (0.18%) | 0.04% | (0.14%) |
| **Total Employer Contribution Rate, not less than Normal Cost Rate** | **0.68%** | **0.88%** | **1.56%** |

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 | $ 1,228 | $ 1,519 | $ 2,747 |
| 2. Total DB and DCR Plan Rate Payroll Projected for FY2020 | 350,211 | 350,211 | 350,211 |
| 3. Employer Normal Cost Rate, (1) / (2) | 0.35% | 0.43% | 0.78% |
| 4. Past Service Cost Amortization Payment | (330) | 71 | (259) |
| 5. Past Service Cost Rate, (4) / (2) | (0.09%) | 0.02% | (0.07%) |
| **Total Employer Contribution Rate, not less than Normal Cost Rate** | **0.35%** | **0.45%** | **0.80%** |

**Schedule of Past Service Cost Amortizations - Peace Officer/Firefighter Occupational Death & Disability ($'s in 000's)**

| Layer | Amortization Period | | Balances | | Beginning-of-Year Payment |
|---|---|---|---|---|---|
| | Date Created | Years Remaining | Initial | Outstanding | |
| Initial Unfunded Liability | 06/30/2007 | 13 | $ (100) | $ (100) | $ (10) |
| FY08 Gain | 06/30/2008 | 14 | (586) | (590) | (55) |
| Change in Assumptions | 06/30/2009 | 15 | (104) | (106) | (9) |
| FY09 Loss | 06/30/2009 | 15 | 446 | 455 | 41 |
| Change in Assumptions | 06/30/2010 | 16 | 79 | 81 | 7 |
| FY10 Gain | 06/30/2010 | 16 | (282) | (291) | (25) |
| FY11 Loss | 06/30/2011 | 17 | 73 | 72 | 6 |
| FY12 Gain | 06/30/2012 | 18 | (349) | (362) | (28) |
| FY13 Gain | 06/30/2013 | 19 | (204) | (212) | (16) |
| Change in Assumptions | 06/30/2014 | 20 | (1,274) | (1,320) | (97) |
| PRPA Modification | 06/30/2014 | 20 | (91) | (94) | (7) |
| FY14 Gain | 06/30/2014 | 20 | (95) | (98) | (7) |
| FY15 Gain | 06/30/2015 | 21 | (664) | (684) | (49) |
| FY16 Loss | 06/30/2016 | 22 | 4 | 4 | 0 |
| FY17 Gain | 06/30/2017 | 23 | (525) | (533) | (36) |
| FY18 Gain | 06/30/2018 | 24 | (262) | (263) | (17) |
| Change in Assumptions | 06/30/2018 | 24 | (633) | (636) | (42) |
| FY19 Loss | 06/30/2019 | 25 | 219 | 219 | 14 |
| **Total** | | | | **$ (4,458)** | **$ (330)** |

**Schedule of Past Service Cost Amortizations - Peace Officer/Firefighter 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 | 13 | $ (21) | $ (23) | $ (2) |
| Change In Assumptions | 06/30/2008 | 14 | 17 | 16 | 1 |
| FY08 Gain | 06/30/2008 | 14 | (62) | (63) | (6) |
| Change In Assumptions | 06/30/2009 | 15 | (8) | (8) | (1) |
| FY09 Gain | 06/30/2009 | 15 | (38) | (39) | (3) |
| Change In Assumptions | 06/30/2010 | 16 | 41 | 41 | 3 |
| FY10 Gain | 06/30/2010 | 16 | (46) | (44) | (4) |
| FY11 Loss | 06/30/2011 | 17 | 70 | 70 | 6 |
| Change In Assumptions | 06/30/2012 | 18 | 3,085 | 3,200 | 252 |
| FY12 Gain | 06/30/2012 | 18 | (273) | (282) | (22) |
| FY13 Loss | 06/30/2013 | 19 | 880 | 913 | 69 |
| Change In Assumptions | 06/30/2014 | 20 | (3,034) | (3,141) | (231) |
| FY14 Loss | 06/30/2014 | 20 | 1,213 | 1,256 | 92 |
| FY15 Gain | 06/30/2015 | 21 | (712) | (733) | (52) |
| EGWP Gain | 06/30/2016 | 22 | (1,675) | (1,716) | (119) |
| FY16 Loss | 06/30/2016 | 22 | 1,116 | 1,144 | 79 |
| Change In Assumptions | 06/30/2017 | 23 | 2,244 | 2,278 | 154 |
| FY17 Gain | 06/30/2017 | 23 | (50) | (52) | (4) |
| FY18 Gain | 06/30/2018 | 24 | (231) | (232) | (15) |
| Change In Assumptions | 06/30/2018 | 24 | (649) | (651) | (43) |
| FY19 Gain | 06/30/2019 | 25 | (1,291) | (1,291) | (83) |
| **Total** | | | | **$ 643** | **$ 71** |

**Schedule of Past Service Cost Amortizations - Peace Officer/Firefighter 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 | 13 | $ (121) | $ (123) | $ (12) |
| Change In Assumptions | 06/30/2008 | 14 | 17 | 16 | 1 |
| FY08 Gain | 06/30/2008 | 14 | (648) | (653) | (61) |
| Change In Assumptions | 06/30/2009 | 15 | (112) | (114) | (10) |
| FY09 Gain | 06/30/2009 | 15 | 408 | 416 | 38 |
| Change In Assumptions | 06/30/2010 | 16 | 120 | 122 | 10 |
| FY10 Gain | 06/30/2010 | 16 | (328) | (335) | (29) |
| FY11 Loss | 06/30/2011 | 17 | 143 | 142 | 12 |
| Change In Assumptions | 06/30/2012 | 18 | 3,085 | 3,200 | 252 |
| FY12 Gain | 06/30/2012 | 18 | (622) | (644) | (50) |
| FY13 Loss | 06/30/2013 | 19 | 676 | 701 | 53 |
| Change In Assumptions | 06/30/2014 | 20 | (4,308) | (4,461) | (328) |
| PRPA Modification | 06/30/2014 | 20 | (91) | (94) | (7) |
| FY14 Loss | 06/30/2014 | 20 | 1,118 | 1,158 | 85 |
| FY15 Gain | 06/30/2015 | 21 | (1,376) | (1,417) | (101) |
| EGWP Gain | 06/30/2016 | 22 | (1,675) | (1,716) | (119) |
| FY16 Loss | 06/30/2016 | 22 | 1,120 | 1,148 | 79 |
| Change In Assumptions | 06/30/2017 | 23 | 2,244 | 2,278 | 154 |
| FY17 Gain | 06/30/2017 | 23 | (575) | (585) | (40) |
| FY18 Gain | 06/30/2018 | 24 | (493) | (495) | (32) |
| Change In Assumptions | 06/30/2018 | 24 | (1,282) | (1,287) | (85) |
| FY19 Gain | 06/30/2019 | 25 | (1,072) | (1,072) | (69) |
| **Total** | | | | **$ (3,815)** | **$ (259)** |

**Actuarial Contributions as of June 30, 2019 - Others ($'s in 000's)**

| Normal Cost Rate | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| 1. Total Normal Cost | $ 3,581 | $ 12,236 | $ 15,817 |
| 2. DCR Plan Rate Payroll Projected for FY2020 | 1,162,577 | 1,162,577 | 1,162,577 |
| 3. Employer Normal Cost Rate, (1) / (2) | 0.31% | 1.05% | 1.36% |
| **Past Service Rate** | | | |
| 1. Actuarial Accrued Liability | $ 2,712 | $ 111,915 | $ 114,627 |
| 2. Valuation Assets | 25,181 | 106,395 | 131,576 |
| 3. Unfunded Actuarial Accrued Liability, (1) - (2) | $ (22,469) | $ 5,520 | $ (16,949) |
| 4. Funded Ratio, (2) / (1) | 928.5% | 95.1% | 114.8% |
| 5. Past Service Cost Amortization Payment | (1,639) | 651 | (988) |
| 6. DCR Plan Rate Payroll Projected for FY2020 | 1,162,577 | 1,162,577 | 1,162,577 |
| 7. Past Service Cost Rate, (5) / (6) | (0.14%) | 0.06% | (0.08%) |
| **Total Employer Contribution Rate, not less than Normal Cost Rate** | **0.31%** | **1.11%** | **1.42%** |

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 | $ 3,581 | $ 12,236 | $ 15,817 |
| 2. Total DB and DCR Plan Rate Payroll Projected for FY2020 | 1,997,095 | 1,997,095 | 1,997,095 |
| 3. Employer Normal Cost Rate, (1) / (2) | 0.18% | 0.61% | 0.79% |
| 4. Past Service Cost Amortization Payment | (1,639) | 651 | (988) |
| 5. Past Service Cost Rate, (4) / (2) | (0.08%) | 0.03% | (0.05%) |
| **Total Employer Contribution Rate, not less than Normal Cost Rate** | **0.18%** | **0.64%** | **0.82%** |

**Schedule of Past Service Cost Amortizations - Others 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 | 13 | $ (40) | $ (41) | $ (4) |
| FY08 Gain | 06/30/2008 | 14 | (318) | (321) | (30) |
| Change in Assumptions | 06/30/2009 | 15 | (92) | (94) | (9) |
| FY09 Loss | 06/30/2009 | 15 | (1,924) | (1,960) | (175) |
| Change in Assumptions | 06/30/2010 | 16 | 24 | 25 | 2 |
| FY10 Gain | 06/30/2010 | 16 | (994) | (1,022) | (87) |
| FY11 Loss | 06/30/2011 | 17 | (1,184) | (1,221) | (100) |
| FY12 Gain | 06/30/2012 | 18 | (1,233) | (1,278) | (101) |
| FY13 Gain | 06/30/2013 | 19 | (779) | (808) | (62) |
| Change in Assumptions | 06/30/2014 | 20 | (51) | (52) | (4) |
| PRPA Modification | 06/30/2014 | 20 | (27) | (28) | (2) |
| FY14 Gain | 06/30/2014 | 20 | (2,003) | (2,073) | (153) |
| FY15 Gain | 06/30/2015 | 21 | (1,850) | (1,906) | (136) |
| FY16 Loss | 06/30/2016 | 22 | (2,361) | (2,418) | (168) |
| FY17 Gain | 06/30/2017 | 23 | (2,377) | (2,412) | (163) |
| FY18 Gain | 06/30/2018 | 24 | (2,590) | (2,602) | (172) |
| Change in Assumptions | 06/30/2018 | 24 | (272) | (274) | (18) |
| FY19 Loss | 06/30/2019 | 25 | (3,984) | (3,984) | (257) |
| **Total** | | | | **$ (22,469)** | **$ (1,639)** |

**Schedule of Past Service Cost Amortizations - Others 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 | 13 | $ (335) | $ (332) | $ (33) |
| Change In Assumptions | 06/30/2008 | 14 | 165 | 167 | 16 |
| FY08 Gain | 06/30/2008 | 14 | (702) | (705) | (66) |
| Change In Assumptions | 06/30/2009 | 15 | (122) | (124) | (11) |
| FY09 Gain | 06/30/2009 | 15 | (438) | (446) | (40) |
| Change In Assumptions | 06/30/2010 | 16 | (572) | (586) | (49) |
| FY10 Gain | 06/30/2010 | 16 | 579 | 591 | 51 |
| FY11 Loss | 06/30/2011 | 17 | 820 | 850 | 69 |
| Change In Assumptions | 06/30/2012 | 18 | 25,180 | 26,119 | 2,056 |
| FY12 Gain | 06/30/2012 | 18 | 1,451 | 1,503 | 118 |
| FY13 Loss | 06/30/2013 | 19 | 9,974 | 10,351 | 787 |
| Change In Assumptions | 06/30/2014 | 20 | (21,822) | (22,596) | (1,663) |
| FY14 Loss | 06/30/2014 | 20 | 7,002 | 7,251 | 534 |
| FY15 Gain | 06/30/2015 | 21 | (8,726) | (8,996) | (643) |
| EGWP Gain | 06/30/2016 | 22 | (17,884) | (18,308) | (1,272) |
| FY16 Loss | 06/30/2016 | 22 | 10,367 | 10,613 | 738 |
| Change In Assumptions | 06/30/2017 | 23 | 21,288 | 21,607 | 1,462 |
| FY17 Gain | 06/30/2017 | 23 | (1,658) | (1,682) | (113) |
| FY18 Gain | 06/30/2018 | 24 | 118 | 118 | 7 |
| Change In Assumptions | 06/30/2018 | 24 | (8,993) | (9,034) | (597) |
| FY19 Gain | 06/30/2019 | 25 | (10,841) | (10,841) | (700) |
| **Total** | | | | **$ 5,520** | **$ 651** |

**Schedule of Past Service Cost Amortizations - Others 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 | 13 | $ (375) | $ (373) | $ (37) |
| Change In Assumptions | 06/30/2008 | 14 | 165 | 167 | 16 |
| FY08 Gain | 06/30/2008 | 14 | (1,020) | (1,026) | (96) |
| Change In Assumptions | 06/30/2009 | 15 | (214) | (218) | (20) |
| FY09 Gain | 06/30/2009 | 15 | (2,362) | (2,406) | (215) |
| Change In Assumptions | 06/30/2010 | 16 | (548) | (561) | (47) |
| FY10 Gain | 06/30/2010 | 16 | (415) | (431) | (36) |
| FY11 Loss | 06/30/2011 | 17 | (364) | (371) | (31) |
| Change In Assumptions | 06/30/2012 | 18 | 25,180 | 26,119 | 2,056 |
| FY12 Gain | 06/30/2012 | 18 | 218 | 225 | 17 |
| FY13 Loss | 06/30/2013 | 19 | 9,195 | 9,543 | 725 |
| Change In Assumptions | 06/30/2014 | 20 | (21,873) | (22,648) | (1,667) |
| PRPA Modification | 06/30/2014 | 20 | (27) | (28) | (2) |
| FY14 Loss | 06/30/2014 | 20 | 4,999 | 5,178 | 381 |
| FY15 Gain | 06/30/2015 | 21 | (10,576) | (10,902) | (779) |
| EGWP Gain | 06/30/2016 | 22 | (17,884) | (18,308) | (1,272) |
| FY16 Loss | 06/30/2016 | 22 | 8,006 | 8,195 | 570 |
| Change In Assumptions | 06/30/2017 | 23 | 21,288 | 21,607 | 1,462 |
| FY17 Gain | 06/30/2017 | 23 | (4,035) | (4,094) | (276) |
| FY18 Gain | 06/30/2018 | 24 | (2,472) | (2,484) | (165) |
| Change In Assumptions | 06/30/2018 | 24 | (9,265) | (9,308) | (615) |
| FY19 Gain | 06/30/2019 | 25 | (14,825) | (14,825) | (957) |
| **Total** | | | | **$ (16,949)** | **$ (988)** |

**Actuarial Contributions as of June 30, 2019 - All Members ($'s in 000's)**

| Normal Cost Rate | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| 1. Total Normal Cost | $ 4,809 | $ 13,755 | $ 18,564 |
| 2. DCR Plan Rate Payroll Projected for FY2020 | 1,342,839 | 1,342,839 | 1,342,839 |
| 3. Employer Normal Cost Rate, (1) / (2) | 0.36% | 1.02% | 1.38% |

| Past Service Rate | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| 1. Actuarial Accrued Liability | $ 9,774 | $ 124,946 | $ 134,720 |
| 2. Valuation Assets | 36,701 | 118,783 | 155,484 |
| 3. Unfunded Actuarial Accrued Liability, (1) - (2) | $ (26,927) | $ 6,163 | $ (20,764) |
| 4. Funded Ratio, (2) / (1) | 375.5% | 95.1% | 115.4% |
| 5. Past Service Cost Amortization Payment | (1,969) | 722 | (1,247) |
| 6. DCR Plan Rate Payroll Projected for FY2020 | 1,342,839 | 1,342,839 | 1,342,839 |
| 7. Past Service Cost Rate, (5) / (6) | (0.15%) | 0.05% | (0.09%) |
| **Total Employer Contribution Rate,** | | | |
| **not less than Normal Cost Rate** | **0.36%** | **1.07%** | **1.43%** |

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 | $ 4,809 | $ 13,755 | $ 18,564 |
| 2. Total DB and DCR Plan Rate Payroll Projected for FY2020 | 2,347,306 | 2,347,306 | 2,347,306 |
| 3. Employer Normal Cost Rate, (1) / (2) | 0.20% | 0.59% | 0.79% |
| 4. Past Service Cost Amortization Payment | (1,969) | 722 | (1,247) |
| 5. Past Service Cost Rate, (4) / (2) | (0.08%) | 0.03% | (0.05%) |
| **Total Employer Contribution Rate,** | | | |
| **not less than Normal Cost Rate** | **0.20%** | **0.62%** | **0.82%** |

**Schedule of Past Service Cost Amortizations - All Members Occupational Death & Disability ($'s in 000's)**

| Layer | Amortization Period | | Balances | | Beginning-of-Year Payment |
|---|---|---|---|---|---|
| | Date Created | Years Remaining | Initial | Outstanding | |
| Initial Unfunded Liability | 06/30/2007 | 13 | $ (140) | $ (141) | $ (14) |
| FY08 Gain | 06/30/2008 | 14 | (904) | (911) | (85) |
| Change in Assumptions | 06/30/2009 | 15 | (196) | (200) | (18) |
| FY09 Loss | 06/30/2009 | 15 | (1,478) | (1,505) | (134) |
| Change in Assumptions | 06/30/2010 | 16 | 103 | 106 | 9 |
| FY10 Gain | 06/30/2010 | 16 | (1,276) | (1,313) | (112) |
| FY11 Loss | 06/30/2011 | 17 | (1,111) | (1,149) | (94) |
| FY12 Gain | 06/30/2012 | 18 | (1,582) | (1,640) | (129) |
| FY13 Gain | 06/30/2013 | 19 | (983) | (1,020) | (78) |
| Change in Assumptions | 06/30/2014 | 20 | (1,325) | (1,372) | (101) |
| PRPA Modification | 06/30/2014 | 20 | (118) | (122) | (9) |
| FY14 Gain | 06/30/2014 | 20 | (2,098) | (2,171) | (160) |
| FY15 Gain | 06/30/2015 | 21 | (2,514) | (2,590) | (185) |
| FY16 Loss | 06/30/2016 | 22 | (2,357) | (2,414) | (168) |
| FY17 Gain | 06/30/2017 | 23 | (2,902) | (2,945) | (199) |
| FY18 Gain | 06/30/2018 | 24 | (2,852) | (2,865) | (189) |
| Change in Assumptions | 06/30/2018 | 24 | (905) | (910) | (60) |
| FY19 Loss | 06/30/2019 | 25 | (3,765) | (3,765) | (243) |
| **Total** | | | | **$ (26,927)** | **$ (1,969)** |

**Schedule of Past Service Cost Amortizations - All Members 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 | 13 | $ (356) | $ (355) | $ (35) |
| Change In Assumptions | 06/30/2008 | 14 | 182 | 183 | 17 |
| FY08 Gain | 06/30/2008 | 14 | (764) | (768) | (72) |
| Change In Assumptions | 06/30/2009 | 15 | (130) | (132) | (12) |
| FY09 Gain | 06/30/2009 | 15 | (476) | (485) | (43) |
| Change In Assumptions | 06/30/2010 | 16 | (531) | (545) | (46) |
| FY10 Gain | 06/30/2010 | 16 | 533 | 547 | 47 |
| FY11 Loss | 06/30/2011 | 17 | 890 | 920 | 75 |
| Change In Assumptions | 06/30/2012 | 18 | 28,265 | 29,319 | 2,308 |
| FY12 Gain | 06/30/2012 | 18 | 1,178 | 1,221 | 96 |
| FY13 Loss | 06/30/2013 | 19 | 10,854 | 11,264 | 856 |
| Change In Assumptions | 06/30/2014 | 20 | (24,856) | (25,737) | (1,894) |
| FY14 Loss | 06/30/2014 | 20 | 8,215 | 8,507 | 626 |
| FY15 Gain | 06/30/2015 | 21 | (9,438) | (9,729) | (695) |
| EGWP Gain | 06/30/2016 | 22 | (19,559) | (20,024) | (1,391) |
| FY16 Loss | 06/30/2016 | 22 | 11,483 | 11,757 | 817 |
| Change In Assumptions | 06/30/2017 | 23 | 23,532 | 23,885 | 1,616 |
| FY17 Gain | 06/30/2017 | 23 | (1,708) | (1,734) | (117) |
| FY18 Gain | 06/30/2018 | 24 | (113) | (114) | (8) |
| Change In Assumptions | 06/30/2018 | 24 | (9,642) | (9,685) | (640) |
| FY19 Gain | 06/30/2019 | 25 | (12,132) | (12,132) | (783) |
| **Total** | | | | **$ 6,163** | **$ 722** |

**Schedule of Past Service Cost Amortizations - All Members 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 | 13 | $ (496) | $ (496) | $ (49) |
| Change In Assumptions | 06/30/2008 | 14 | 182 | 183 | 17 |
| FY08 Gain | 06/30/2008 | 14 | (1,668) | (1,679) | (157) |
| Change In Assumptions | 06/30/2009 | 15 | (326) | (332) | (30) |
| FY09 Gain | 06/30/2009 | 15 | (1,954) | (1,990) | (177) |
| Change In Assumptions | 06/30/2010 | 16 | (428) | (439) | (37) |
| FY10 Gain | 06/30/2010 | 16 | (743) | (766) | (65) |
| FY11 Loss | 06/30/2011 | 17 | (221) | (229) | (19) |
| Change In Assumptions | 06/30/2012 | 18 | 28,265 | 29,319 | 2,308 |
| FY12 Gain | 06/30/2012 | 18 | (404) | (419) | (33) |
| FY13 Loss | 06/30/2013 | 19 | 9,871 | 10,244 | 778 |
| Change In Assumptions | 06/30/2014 | 20 | (26,181) | (27,109) | (1,995) |
| PRPA Modification | 06/30/2014 | 20 | (118) | (122) | (9) |
| FY14 Loss | 06/30/2014 | 20 | 6,117 | 6,336 | 466 |
| FY15 Gain | 06/30/2015 | 21 | (11,952) | (12,319) | (880) |
| EGWP Gain | 06/30/2016 | 22 | (19,559) | (20,024) | (1,391) |
| FY16 Loss | 06/30/2016 | 22 | 9,126 | 9,343 | 649 |
| Change In Assumptions | 06/30/2017 | 23 | 23,532 | 23,885 | 1,616 |
| FY17 Gain | 06/30/2017 | 23 | (4,610) | (4,679) | (316) |
| FY18 Gain | 06/30/2018 | 24 | (2,965) | (2,979) | (197) |
| Change In Assumptions | 06/30/2018 | 24 | (10,547) | (10,595) | (700) |
| FY19 Gain | 06/30/2019 | 25 | (15,897) | (15,897) | (1,026) |
| **Total** | | | | **$ (20,764)** | **$ (1,247)** |

## Section 1.3: Actuarial Gain/(Loss) for FY 2019 ($'s in 000's)

| | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| **1. Expected Actuarial Accrued Liability** | | | |
| a. Actuarial Accrued Liability as of June 30, 2018 | $ 7,713 | $ 118,598 | $ 126,311 |
| b. Normal Cost | 4,396 | 13,973 | 18,369 |
| c. Interest on (a) and (b) at 7.38% | 894 | 9,784 | 10,678 |
| d. Medicare Part D Subsidy and EGWP | 0 | 19 | 19 |
| e. Benefit Payments | (398) | (109) | (507) |
| f. Interest on (d) at 7.38%, adjusted for timing | (14) | (3) | (17) |
| g. Assumptions/Method Changes | 0 | 0 | 0 |
| h. Expected Actuarial Accrued Liability as of June 30, 2019<br>(a) + (b) + (c) + (d) + (e) + (f) | $ 12,591 | $ 142,262 | $ 154,853 |
| 2. Actual Actuarial Accrued Liability as of June 30, 2019 | 9,774 | 124,946 | 134,720 |
| **3. Liability Gain/(Loss), (1)(h) - (2)** | **$ 2,817** | **$ 17,316** | **$ 20,133** |
| 4. Expected Actuarial Asset Value | | | |
| a. Actuarial Value of Assets as of June 30, 2018 | $ 30,961 | $ 100,097 | $ 131,058 |
| b. Interest on (a) at 7.38% | 2,285 | 7,387 | 9,672 |
| c. Employer Contributions | 4,083 | 11,736 | 15,819 |
| d. Interest on (c) at 7.38%, adjusted for timing | 148 | 425 | 573 |
| e. Medicare Part D Subsidy and EGWP | 0 | 19 | 19 |
| f. Benefit Payments | (398) | (109) | (507) |
| g. Admin Expenses | (1) | (14) | (15) |
| h. Interest on (e), (f) and (g) at 7.38%, adjusted for timing | (14) | (4) | (18) |
| i. Expected Actuarial Asset Value as of June 30, 2019<br>(a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) | $ 37,064 | $ 119,537 | $ 156,601 |
| 5. Actual Actuarial Asset Value as of June 30, 2019 | 36,701 | 118,783 | 155,484 |
| **6. Actual Asset Value Gain/(Loss), (5) - (4)(k)** | **$ (363)** | **$ (754)** | **$ (1,117)** |
| **7. Total Actuarial Gain/(Loss), (3) + (6)** | **$ 2,454** | **$ 16,562** | **$ 19,016** |
| **8. Contribution Gain/(Loss)** | **$ 1,302** | **$ (4,424)** | **$ (3,122)** |
| **9. Administrative Expense Gain/(Loss)** | **$ 9** | **$ (6)** | **$ 3** |
| **10. FY 2019 Gain/(Loss), (7) + (8) + (9)** | **$ 3,765** | **$ 12,132** | **$ 15,897** |

## 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) |

# Section 2: Plan Assets

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

| As of June 30, 2019 | Occupational Death & Disability | Retiree Medical | Total Fair Value | Allocation Percent |
|---|---|---|---|---|
| Cash and Short-Term Investments | | | | |
| - Cash and Cash Equivalents | $ 740 | $ 2,399 | $ 3,139 | 2.0% |
| - Subtotal | $ 740 | $ 2,399 | $ 3,139 | 2.0% |
| Fixed Income Investments | | | | |
| - Domestic Fixed Income Pool | $ 3,803 | $ 12,324 | $ 16,127 | 10.5% |
| - 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 | $ 3,803 | $ 12,324 | $ 16,127 | 10.5% |
| Equity Investments | | | | |
| - Domestic Equity Pool | $ 8,376 | $ 27,144 | $ 35,520 | 23.1% |
| - International Equity Pool | 6,645 | 21,533 | 28,178 | 18.3% |
| - Private Equity Pool | 3,816 | 12,368 | 16,184 | 10.5% |
| - Emerging Markets Equity Pool | 1,308 | 4,238 | 5,546 | 3.6% |
| - Alternative Equity Strategies | 3,524 | 11,422 | 14,946 | 9.7% |
| - Subtotal | $ 23,669 | $ 76,705 | $ 100,374 | 65.2% |
| Other Investments | | | | |
| - Real Estate Pool | $ 2,456 | $ 7,959 | $ 10,415 | 6.8% |
| - Other Investments Pool | 3,531 | 11,443 | 14,974 | 9.7% |
| - Absolute Return Pool | 2,089 | 6,768 | 8,857 | 5.8% |
| - Other Assets | 0 | 0 | 0 | 0.0% |
| - Subtotal | $ 8,076 | $ 26,170 | $ 34,246 | 22.3% |
| Total Cash and Investments | $ 36,288 | $ 117,598 | $ 153,886 | 100.0% |
| Net Accrued Receivables | 237 | 640 | 877 | |
| Net Assets | $ 36,525 | $ 118,238 | $ 154,763 | |
| | | | | |
| Peace Officer / Firefighter | $ 11,465 | N/A | N/A | |
| Others | 25,060 | N/A | N/A | |
| All Members | $ 36,525 | $ 118,238 | $ 154,763 | |

## Section 2.2: Changes in Fair Value of Assets During FY 2019 ($'s in 000's)

| As of June 30, 2019 | Occupational Death & Disability | Retiree Medical | Total Fair Value |
|---|---|---|---|
| 1. Fair Value of Assets as of June 30, 2018 | $ 30,805 | $ 100,015 | $ 130,820 |
| 2. Additions: | | | |
| a. Employee Contributions | $ 0 | $ 0 | $ 0 |
| b. Employer Contributions | 4,083 | 11,736 | 15,819 |
| c. Interest and Dividend Income | 601 | 1,948 | 2,549 |
| d. Net Appreciation / Depreciation | | | 0 |
| in Fair Value of Investments | 1,448 | 4,686 | 6,134 |
| e. Medicare Part D Subsidy | 0 | 19 | 19 |
| f. Other | 0 | 0 | 0 |
| g. Total Additions | $ 6,132 | $ 18,389 | $ 24,521 |
| 3. Deductions: | | | |
| a. Medical Benefits | $ 0 | $ 109 | $ 109 |
| b. Death & Disability Benefits | 398 | 0 | 398 |
| c. Investment Expenses | 12 | 41 | 53 |
| d. Administrative Expenses | 1 | 14 | 15 |
| e. Securities Expenses | 1 | 2 | 3 |
| f. Total Deductions | $ 412 | $ 166 | $ 578 |
| 4. Fair Value of Assets as of June 30, 2019 | $ 36,525 | $ 118,238 | $ 154,763 |
| Approximate Fair Value Investment Return Rate During FY 2019 Net of All Expenses | 6.2% | 6.2% | 6.2% |

## 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. Deferral of Investment Gain / (Loss) for FY 2019 | | | |
| a. Fair Value of Assets as of June 30, 2018 | $ 30,805 | $ 100,015 | $ 130,820 |
| b. Contributions | 4,083 | 11,736 | 15,819 |
| c. Medicare Part D Subsidy | 0 | 19 | 19 |
| d. Benefit Payments | 398 | 109 | 507 |
| e. Administrative Expenses | 1 | 14 | 15 |
| f. Actual Investment Return (net of expenses) | 2,036 | 6,591 | 8,627 |
| g. Expected Return Rate (net of expenses) | 7.38% | 7.38% | 7.38% |
| h. Expected Return - Weighted for Timing | 2,406 | 7,803 | 10,209 |
| i. Investment Gain / (Loss) for the Year, (f) - (h) | (370) | (1,212) | (1,582) |
| 2. Actuarial Value as of June 30, 2019 | | | |
| a. Fair Value as of June 30, 2019 | $ 36,525 | $ 118,238 | $ 154,763 |
| b. Deferred Investment Gain / (Loss) | (176) | (545) | (721) |
| c. Preliminary Actuarial Value as of June 30, 2019, (a) - (b) | 36,701 | 118,783 | 155,484 |
| d. Upper Limit: 120% of Fair Value, June 30, 2019 | 43,830 | 141,886 | 185,716 |
| e. Lower Limit: 120% of Fair Value, June 30, 2019 | 29,220 | 94,590 | 123,810 |
| f. Actuarial Value, June 30, 2019(c), limited by (d) and (e) | 36,701 | 118,783 | 155,484 |
| 3. Ratio of Actuarial Value of Assets to Fair Value of Assets | 100.5% | 100.5% | 100.5% |
| 4. Approximate Actuarial Value Investment Return Rate During FY 2019 Net of All Expenses | 6.3% | 6.6% | 6.6% |
| 5. Actuarial Value Allocation[1] | | | |
| a. Peace Officer/Firefighter | $ 11,520 | $ 12,388 | $ 23,908 |
| b. Others | 25,181 | 106,395 | 131,576 |
| c. All Members | $ 36,701 | $ 118,783 | $ 155,484 |

[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, 2015 | $ (841) | $ (672) | $ (169) | $ 0 |
| June 30, 2016 | (1,649) | (990) | (330) | (329) |
| June 30, 2017 | 1,090 | 436 | 218 | 436 |
| June 30, 2018 | 23 | 5 | 5 | 13 |
| June 30, 2019 | (370) | 0 | (74) | (296) |
| **Total** | **$ (1,747)** | **$ (1,221)** | **$ (350)** | **$ (176)** |

| 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, 2015 | $ (1,608) | $ (1,288) | $ (320) | $ 0 |
| June 30, 2016 | (4,028) | (2,418) | (806) | (804) |
| June 30, 2017 | 3,156 | 1,262 | 631 | 1,263 |
| June 30, 2018 | (58) | (12) | (12) | (34) |
| June 30, 2019 | (1,212) | 0 | (242) | (970) |
| **Total** | **$ (3,750)** | **$ (2,456)** | **$ (749)** | **$ (545)** |

| 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, 2015 | $ (2,449) | $ (1,960) | $ (489) | $ 0 |
| June 30, 2016 | (5,677) | (3,408) | (1,136) | (1,133) |
| June 30, 2017 | 4,246 | 1,698 | 849 | 1,699 |
| June 30, 2018 | (35) | (7) | (7) | (21) |
| June 30, 2019 | (1,582) | 0 | (316) | (1,266) |
| **Total** | **$ (5,497)** | **$ (3,677)** | **$ (1,099)** | **$ (721)** |

## Section 2.4: Historical Asset Rates of Return

| | Actuarial Value | | Fair Value | |
|---|---|---|---|---|
| Year Ending | Annual | Cumulative* | Annual | 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% |

# Section 3: Accounting Information[1]

## Section 3.1: Schedule of Funding Progress ($'s in 000's)

**Schedule of Funding Progress**

The exhibit below shows the death and disability plan disclosure under GASB No. 25 for fiscal years 2007 through 2013.

| | Actuarial Accrued Liabilities (AAL) | Actuarial Value of Assets | Funded Ratio | Unfunded AAL (UAAL) | Covered Payroll | UAAL as a Percentage of Covered Payroll |
|---|---|---|---|---|---|---|
| June 30, 2013 | $ 3,603 | $ 11,373 | 315.7% | $ (7,770) | $ 590,380 | (1.3)% |
| June 30, 2012 | 2,412 | 9,142 | 379.0% | (6,730) | 558,760 | (1.2)% |
| June 30, 2011 | 1,949 | 7,049 | 361.7% | (5,100) | 459,521 | (1.1)% |
| June 30, 2010 | 853 | 4,801 | 562.8% | (3,948) | 421,187 | (0.9)% |
| June 30, 2009 | 403 | 3,138 | 778.7% | (2,735) | 314,118 | (0.9)% |
| June 30, 2008 | 242 | 1,288 | 532.2% | (1,046) | 203,955 | (0.5)% |
| June 30, 2007 | 48 | 188 | 391.7% | (140) | 105,611 | (0.1)% |

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

| | Actuarial Accrued Liabilities (AAL) | Actuarial Value of Assets | Funded Ratio | Unfunded AAL (UAAL) | Covered Payroll | UAAL as a Percentage of Covered Payroll |
|---|---|---|---|---|---|---|
| June 30, 2016[2] | 160,884 | 63,851 | 39.7% | 97,033 | 867,000 | 11.2% |
| June 30, 2015 | 124,660 | 44,188 | 35.4% | 80,472 | 778,980 | 10.3% |
| June 30, 2014 | 56,819 | 26,466 | 46.6% | 30,353 | 678,840 | 4.5% |
| June 30, 2013 | 69,144 | 20,336 | 29.4% | 48,808 | 590,380 | 8.3% |
| June 30, 2012 | 51,798 | 15,773 | 30.5% | 36,025 | 558,760 | 6.4% |
| June 30, 2011 | 13,142 | 12,009 | 91.4% | 1,133 | 459,521 | 0.2% |
| June 30, 2010 | 8,370 | 8,767 | 104.7% | (397) | 421,187 | (0.1)% |
| June 30, 2009 | 4,594 | 5,475 | 119.2% | (881) | 314,118 | (0.3)% |
| June 30, 2008 | 2,123 | 2,719 | 128.1% | (596) | 203,955 | (0.3)% |
| June 30, 2007 | 803 | 1,067 | 132.9% | (264) | 105,611 | (0.2)% |

[1] Figures for fiscal years after 2016 are contained in separate GASB 74 reports.
[2] Based on the partially funded discount rate of 5.4%. As of June 30, 2016, neither EGWP (adopted July 1, 2017 effective January 1, 2019) nor RDS are reflected for GASB 43.

## Section 3.2: Schedule of Employer Contributions ($'s in 000's)

### Schedule of Employer Contributions

The following shows the death and disability disclosure under GASB No. 25 for fiscal years ending 2007 through 2013.

| Fiscal Year Ending | Annual Required Contribution (ARC) | Percentage of ARC Contributed |
|---|---|---|
| June 30, 2013 | $ 1,328 | 116% |
| June 30, 2012 | 1,085 | 146% |
| June 30, 2011 | 1,852 | 100% |
| June 30, 2010 | 1,495 | 100% |
| June 30, 2009 | 1,787 | 100% |
| June 30, 2008 | 1,063 | 100% |
| June 30, 2007 | 181 | 100% |

The following shows the retiree medical disclosure without regard to Medicare Part D subsidy under GASB No. 43 for fiscal years 2007 through 2016.

| Fiscal Year Ending | Annual Required Contribution (ARC) | Percentage of ARC Contributed |
|---|---|---|
| June 30, 2016 | 16,907 | 96% |
| June 30, 2015 | 15,190 | 96% |
| June 30, 2014 | 3,937 | 94% |
| June 30, 2013 | 3,365 | 95% |
| June 30, 2012 | 3,464 | 82% |
| June 30, 2011 | 3,229 | 78% |
| June 30, 2010 | 3,469 | 87% |
| June 30, 2009 | 3,152 | 85% |
| June 30, 2008 | 1,845 | 85% |
| June 30, 2007 | 1,028 | 100% |

The exhibit below shows the annual required contribution (ARC) as a percentage of pay for fiscal years 2007 through 2016.

| | | Total Employer Contribution Rate | | |
|---|---|---|---|---|
| **Valuation Date** | **Fiscal Year** | **Occupational Death & Disability (PF / Others)** | **Retiree Medical** | **Total (PF / Others)** |
| N/A | FY07 | 0.40% / 0.30% | 1.75% | 2.15% / 2.05% |
| N/A | FY08 | 1.33% / 0.58% | 1.17% | 2.50% / 1.75% |
| N/A | FY09 | 1.33% / 0.58% | 1.17% | 2.50% / 1.75% |
| June 30, 2007 | FY10 | 1.33% / 0.30% | 0.95% | 2.28% / 1.25% |
| June 30, 2008 | FY11 | 1.18% / 0.31% | 0.68% | 1.86% / 0.99% |
| June 30, 2009 | FY12 | 0.97% / 0.11% | 0.62% | 1.59% / 0.73% |
| June 30, 2010 | FY13 | 0.99% / 0.14% | 0.57% | 1.56% / 0.71% |
| June 30, 2011 | FY14 | 1.14% / 0.20% | 0.58% | 1.72% / 0.78% |
| June 30, 2012 | FY15 | 1.06% / 0.22% | 1.95% | 3.01% / 2.17% |
| June 30, 2013 | FY16 | 1.05% / 0.22% | 1.95% | 3.00% / 2.17% |

GASB 74 accounting is effective beginning in FY17 and is provided in a separate report.

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

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

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

The exhibit below shows the combined occupational death & disability and retiree medical solvency test for valuation dates June 30, 2010 and before.

| | Actuarial Accrued Liability For: | | | | Portion of Actuarial Accrued Liability Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| Valuation Date | (1) Active Member Contributions | (2) Inactive Members | (3) Active Members (Employer-Financed Portion) | Valuation Assets | (1) | (2) | (3) |
| June 30, 2010[1] | $ 0 | $ 0 | $ 8,038 | $ 13,568 | 100.0% | 100.0% | 100.0% |
| June 30, 2009[1] | 0 | 0 | 4,316 | 8,613 | 100.0% | 100.0% | 100.0% |
| June 30, 2008[1] | 0 | 0 | 2,018 | 4,007 | 100.0% | 100.0% | 100.0% |
| June 30, 2007 | 0 | 0 | 759 | 1,255 | 100.0% | 100.0% | 100.0% |
| June 30, 2006 | 0 | 0 | 0 | 0 | N/A | N/A | N/A |

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

[1] Change in Assumptions

The exhibit below shows the occupational death & disability solvency test for valuation dates June 30, 2006 through June 30, 2016.

| | Occupational Death & Disability Actuarial Accrued Liability For: | | | | Portion of Actuarial Accrued Liability Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| Valuation Date | (1) Active Member Contributions | (2) Inactive Members | (3) Active Members (Employer-Financed Portion) | Occupational Death & Disability Valuation Assets | (1) | (2) | (3) |
| June 30, 2016 | 0 | 0 | 6,763 | 23,176 | 100.0% | 100.0% | 100.0% |
| June 30, 2015 | 0 | 0 | 5,049 | 19,014 | 100.0% | 100.0% | 100.0% |
| June 30, 2014[1] | 0 | 0 | 3,627 | 14,995 | 100.0% | 100.0% | 100.0% |
| June 30, 2013 | 0 | 0 | 3,603 | 11,373 | 100.0% | 100.0% | 100.0% |
| June 30, 2012 | 0 | 0 | 2,412 | 9,142 | 100.0% | 100.0% | 100.0% |
| June 30, 2011 | 0 | 0 | 1,949 | 7,049 | 100.0% | 100.0% | 100.0% |
| June 30, 2010[1] | 0 | 0 | 853 | 4,801 | 100.0% | 100.0% | 100.0% |
| June 30, 2009[1] | 0 | 0 | 403 | 3,138 | 100.0% | 100.0% | 100.0% |
| June 30, 2008 | 0 | 0 | 242 | 1,288 | 100.0% | 100.0% | 100.0% |
| June 30, 2007 | 0 | 0 | 48 | 188 | 100.0% | 100.0% | 100.0% |
| June 30, 2006 | 0 | 0 | 0 | 0 | N/A | N/A | N/A |

[1] Change in Assumptions

The exhibit below shows the retiree medical solvency test for valuation dates June 30, 2006 through June 30, 2016.

| | Retiree Medical Actuarial Accrued Liability For: | | | | Portion of Actuarial Accrued Liability Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| Valuation Date | (1) Active Member Contributions | (2) Inactive Members | (3) Active Members (Employer-Financed Portion) | Retiree Medical Valuation Assets | (1) | (2) | (3) |
| June 30, 2016 | 0 | 0 | 70,289 | $ 63,851 | 100.0% | 100.0% | 90.8% |
| June 30, 2015 | 0 | 0 | 58,683 | $ 44,188 | 100.0% | 100.0% | 75.3% |
| June 30, 2014[1] | 0 | 0 | 50,217 | $ 26,466 | 100.0% | 100.0% | 52.7% |
| June 30, 2013 | 0 | 0 | 60,282 | $ 20,336 | 100.0% | 100.0% | 33.7% |
| June 30, 2012[1] | 0 | 0 | 44,509 | $ 15,773 | 100.0% | 100.0% | 35.4% |
| June 30, 2011 | 0 | 0 | 11,302 | $ 12,009 | 100.0% | 100.0% | 100.0% |
| June 30, 2010[1] | 0 | 0 | 7,185 | $ 8,767 | 100.0% | 100.0% | 100.0% |
| June 30, 2009[1] | 0 | 0 | 3,913 | $ 5,475 | 100.0% | 100.0% | 100.0% |
| June 30, 2008[1] | 0 | 0 | 1,776 | $ 2,719 | 100.0% | 100.0% | 100.0% |
| June 30, 2007 | 0 | 0 | 711 | $ 1,067 | 100.0% | 100.0% | 100.0% |
| June 30, 2006 | 0 | 0 | 0 | 0 | N/A | N/A | N/A |

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

[1] Change in Assumptions

# Section 4: Member Data

## Section 4.1: Summary of Members Included

| As of June 30 | 2015 | 2016 | 2017 | 2018[1] | 2019 |
|---|---|---|---|---|---|
| **Peace Officer/Firefighter – Active Members** | | | | | |
| 1. Number | 1,438 | 1,605 | 1,701 | 1,905 | 2,038 |
| 2. Average Age | 34.93 | 35.17 | 35.59 | 35.63 | 35.76 |
| 3. Average Credited Service | 3.71 | 4.12 | 4.65 | 4.83 | 5.09 |
| 4. Average Entry Age | 31.22 | 31.05 | 30.94 | 30.80 | 30.67 |
| 5. Average Annual Earnings | $ 71,839 | $ 76,213 | $ 77,800 | $ 78,603 | $ 84,593 |
| **Others – Active Members** | | | | | |
| 1. Number | 15,660 | 16,610 | 17,470 | 18,473 | 19,864 |
| 2. Average Age | 40.54 | 40.90 | 41.22 | 41.34 | 41.49 |
| 3. Average Credited Service | 3.24 | 3.51 | 3.83 | 4.08 | 4.25 |
| 4. Average Entry Age | 37.30 | 37.39 | 37.39 | 37.26 | 37.24 |
| 5. Average Annual Earnings | $ 53,780 | $ 55,335 | $ 56,100 | $ 57,349 | $ 58,223 |
| **Total – Active Members** | | | | | |
| 1. Number | 17,098 | 18,215 | 19,171 | 20,378 | 21,902 |
| 2. Average Age | 40.07 | 40.39 | 40.72 | 40.80 | 40.96 |
| 3. Average Credited Service | 3.28 | 3.56 | 3.90 | 4.15 | 4.33 |
| 4. Average Entry Age | 36.79 | 36.83 | 36.82 | 36.65 | 36.63 |
| 5. Average Annual Earnings | $ 55,299 | $ 57,175 | $ 58,025 | $ 59,336 | $ 60,676 |
| **Disabilitants and Beneficiaries (Occupational Death & Disability)** | | | | | |
| 1. Number | 12 | 12 | 14 | 15 | 16 |
| 2. Average Age | 43.19 | 44.19 | 42.37 | 43.66 | 42.28 |
| 3. Average Monthly Death & Disability Benefit | $ 2,399 | $ 2,442 | $ 2,199 | $ 2,285 | $ 2,404 |
| **Retirees, Surviving Spouses, and Dependent Spouses (Retiree Medical)** | | | | | |
| 1. Number | 0 | 0 | 9 | 23 | 43 |
| 2. Average Age | N/A | N/A | 70.76 | 69.97 | 69.72 |
| **Total Number of Members** | **17,100** | **18,227** | **19,194** | **20,416** | **21,961** |

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

[1] 4 members who were terminated before the valuation date were subsequently rehired, per client data as of October 1, 2018. These members were valued as active as of 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 | 99 | 4,317,310 | 43,609 |
| 20 – 24 | 1,273 | 59,896,179 | 47,051 |
| 25 – 29 | 3,038 | 167,256,749 | 55,055 |
| 30 – 34 | 3,808 | 238,434,861 | 62,614 |
| 35 – 39 | 3,341 | 217,132,738 | 64,990 |
| 40 – 44 | 2,652 | 168,439,475 | 63,514 |
| 45 – 49 | 2,315 | 142,276,247 | 61,458 |
| 50 – 54 | 1,964 | 121,337,963 | 61,781 |
| 55 – 59 | 1,763 | 106,888,595 | 60,629 |
| 60 – 64 | 1,142 | 70,975,462 | 62,150 |
| 65 – 69 | 383 | 25,161,499 | 65,696 |
| 70 – 74 | 99 | 5,660,947 | 57,181 |
| 75+ | 25 | 1,156,422 | 46,257 |
| Total | 21,902 | 1,328,934,447 | 60,676 |

| Annual Earnings by Credited Service | | | |
|---|---|---|---|
| Years of Service | Number | Total Annual Earnings | Average Annual Earnings |
| 0 | 4,443 | 215,796,164 | 48,570 |
| 1 | 3,144 | 165,298,056 | 52,576 |
| 2 | 2,298 | 130,194,774 | 56,656 |
| 3 | 2,031 | 121,264,760 | 59,707 |
| 4 | 1,818 | 114,118,868 | 62,772 |
| 0 – 4 | 13,734 | 746,672,622 | 54,367 |
| 5 – 9 | 6,224 | 427,017,115 | 68,608 |
| 10 – 14 | 1,940 | 154,914,035 | 79,853 |
| 15 – 19 | 4 | 330,675 | 82,669 |
| 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 | 21,902 | 1,328,934,447 | 60,676 |

| 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 | 99 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 99 |
| 20 – 24 | 1,263 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,273 |
| 25 – 29 | 2,632 | 402 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 3,038 |
| 30 – 34 | 2,442 | 1,165 | 201 | 0 | 0 | 0 | 0 | 0 | 0 | 3,808 |
| 35 – 39 | 1,876 | 1,085 | 380 | 0 | 0 | 0 | 0 | 0 | 0 | 3,341 |
| 40 – 44 | 1,496 | 814 | 341 | 1 | 0 | 0 | 0 | 0 | 0 | 2,652 |
| 45 – 49 | 1,281 | 765 | 268 | 1 | 0 | 0 | 0 | 0 | 0 | 2,315 |
| 50 – 54 | 1,035 | 678 | 251 | 0 | 0 | 0 | 0 | 0 | 0 | 1,964 |
| 55 – 59 | 879 | 642 | 242 | 0 | 0 | 0 | 0 | 0 | 0 | 1,763 |
| 60 – 64 | 522 | 438 | 180 | 2 | 0 | 0 | 0 | 0 | 0 | 1,142 |
| 65 – 69 | 153 | 174 | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 383 |
| 70 – 74 | 41 | 43 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 99 |
| 75+ | 15 | 8 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 25 |
| Total | 13,734 | 6,224 | 1,940 | 4 | 0 | 0 | 0 | 0 | 0 | 21,902 |

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

| | Actives | Retirees and Surviving Spouses | Dependent Spouses | OD&D Disabilitants | OD&D Beneficiaries | Total |
|---|---|---|---|---|---|---|
| As of June 30, 2018[1] | 20,378 | 19 | 4 | 12 | 3 | 20,416 |
| Vested Termination | (521) | 0 | 0 | (1) | 0 | (522) |
| Non-vested Termination | (2,019) | 0 | 0 | 0 | 0 | (2,019) |
| Refund of Contributions | (663) | 0 | 0 | 0 | 0 | (663) |
| Converted To/From DB Plan | 0 | 0 | 0 | 0 | 0 | 0 |
| Transfer In | 74 | 1 | 0 | 0 | 0 | 75 |
| Transfer Out | (69) | 0 | 0 | 0 | 0 | (69) |
| Disabled | (2) | 0 | 0 | 2 | 0 | 0 |
| Retired | (15) | 15 | 5 | 0 | 0 | 5 |
| Deceased, No Beneficiary | (16) | (1) | 0 | 0 | 0 | (17) |
| Deceased, With Beneficiary | 0 | 0 | 0 | (1) | 1 | 0 |
| Return to Active | 614 | 0 | 0 | 0 | 0 | 614 |
| Data Adjustment | 0 | 0 | 0 | 0 | 0 | 0 |
| New Entrant | 4,141 | N/A | N/A | N/A | N/A | 4,141 |
| As of June 30, 2019[2] | 21,902 | 34 | 9 | 12 | 4 | 21,961 |

[1] 112 participants are expected to receive retiree medical benefits in a different plan and are included for OD&D benefits only.
[2] 101 participants are expected to receive retiree medical benefits in a different plan and are included for OD&D benefits only.

## Section 4.4: Schedule of Active Member Valuation Data

| Valuation Date | Number | Annual Earnings (000's) | Annual Average Earnings | Percent Increase/ (Decrease) in Average Earnings | Number of Participating Employers |
|---|---|---|---|---|---|
| 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 |
| June 30, 2011 | 10,965 | 524,088 | 47,796 | 4.8% | 160 |
| June 30, 2010 | 9,232 | 421,187 | 45,622 | 5.4% | 160 |
| June 30, 2009 | 7,256 | 314,118 | 43,291 | 7.2% | 160 |
| June 30, 2008 | 5,052 | 203,955 | 40,371 | 8.1% | 159 |
| June 30, 2007 | 2,827 | 105,611 | 37,358 | 0.0% | 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 (000s) |
|---|---|---|
| a) | DRB actual reported salaries FY19 – employer list | $ 1,217,156 |
| b) | DRB actual reported salaries FY19 – valuation data | 1,158,637 |
| c) | Annualized valuation data | 1,328,934 |
| d) | Valuation payroll as of June 30, 2019 | 1,397,451 |
| e) | Rate payroll for FY20 | 1,342,839 |

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

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

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

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

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

# Section 5: Basis of the Actuarial Valuation

## Section 5.1: Summary of Plan Provisions

**Effective Date**

July 1, 2006, with amendments through June 30, 2019.

**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 155 employers participating in PERS DCR, including the State of Alaska, and 154 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 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 | $300 / $600 |
| Medical services (participant share) | 20% | 40% |
| Emergency Room Copay (non-emergent use) | $100 | $100 |
| Medical Out-of-Pocket Maximum (single / family, after deductible) | $1,200 / $2,400 | $2,400 / $4,800 |
| 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 | $1,000 / $2,000 |
| Medicare Pharmacy Arrangement | Retiree Drug Subsidy / Employer Group Waiver Plan effective 1/1/2019 | |
| Wellness / Preventative | 100%, Not subject to deductible | |

[1] Assumed to increase annually to mitigate impact of healthcare cost trend
[2] OON applies only to non-Medicare eligible participants.

- Buck used its manual rate models to determine relative plan values for the defined benefit (DB) retiree medical plan and the adopted 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 adopted DCR retiree medical plan design. These factors are noted in Section 5.3. We further adjusted the Medicare medical manual rate to reflect the Medicare coordination method adopted. The estimated 2020 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.
- The retiree medical plan's coverage is supplemental to Medicare. Medicare coordination is described in the 2019 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 |
|---|---|
| Less than 15 years | 30% |
| 15 – 19 | 25% |
| 20 – 24 | 20% |
| 25 – 29 | 15% |
| 30 years or more | 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 dual coverage members.
- 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.
- 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).
- 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**

- There have been no changes in PERS DCR benefit provisions valued 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, 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 Method

Entry Age Normal Cost.

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method. Each year's increase/decrease in funding surplus or unfunded actuarial accrued liability is amortized over 25 years as a level percentage of expected payroll. However, in keeping with GASB requirements in effect when the plan was adopted, the net amortization period will not exceed 30 years. Under the new accounting standards (GASB 74 and 75), the GASB requirements will not directly control amortization periods used for funding of the plan.

Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year for death and 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 6.2 of the State of Alaska Public Employees' Retirement System Defined Benefit Plan Actuarial Valuation Report as of June 30, 2019.

Due to the lack of experience for the DCR retiree medical plan only, base claims costs are based on those described in the actuarial valuation as of June 30, 2019 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 FY20 claims costs were reduced 2.1% for medical claims, and 10.4% for prescription drugs. In addition, to account for the difference in Medicare coordination, projected FY20 medical claims costs for Medicare eligible retirees were further reduced 29.3%. The medical and prescription drug percentages mentioned above were reduced 0.2% in each future year for the DCR medical benefits to reflect the fact that the medical benefit to be offered to DCR members will have annual indexing of member cost sharing features such as deductibles and out-of-pocket amounts.

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 2020 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 valuation results included in the report reflect the repeal of this tax. The removal of the Cadillac Tax created an actuarial gain of approximately $925,000.

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 5.3 Summary of Actuarial Assumptions

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

**Investment Return**

7.38% per year, net of investment expenses.

**Salary Scale**

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

Inflation – 2.50% per year.

Productivity – 0.25% per year.

**Payroll Growth**

2.75% per year. (Inflation + Productivity)

**Total Inflation**

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

**Mortality (Pre-termination)**

Mortality rates based upon the 2013-2017 actual experience.

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

**Mortality (Post-termination)**

Mortality rates based upon the 2013-2017 actual experience.

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

**Turnover**

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).

Post-disability mortality in accordance with the RP-2014 disabled table with MP-2017 generational improvement.

Disabilities are assumed to be occupational 75% of the time for Peace Officer/Firefighters, 40% of the time for Others.

For Peace Officer/Firefighters, members are assumed to take the monthly annuity 100% of the time.

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

### Dependent Spouse Medical Coverage Election

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

### 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 and 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 FY20 medical and prescription drugs are shown below:

| | Medical | Prescription Drugs |
|---|---|---|
| Pre-Medicare | $ 14,464 | $ 3,263 |
| Medicare Parts A & B | $ 1,564 | $ 3,501 |
| Medicare Part D – EGWP | N/A | $ 1,044 |

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

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

**Third Party Administrator Fees**

$348 per person per year; assumed trend rate of 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:

- 0.979 for the pre-Medicare plan.
- 0.686 for both the Medicare medical plan and Medicare coordination method (2.1% reduction for the medical plan and 29.3% reduction for the coordination method).
- 0.896 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, 2019 Normal Cost, which are based on the average of actual administrative expenses during the last two fiscal years, are $600 for occupational death & disability and $8,750 for retiree medical.

**Health Cost Trend**

The table below shows the rates used to project the cost from the shown fiscal year to the next fiscal year. For example, 7.0% is applied to the FY20 pre-Medicare medical claims cost to get the FY21 medical claims cost.

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

For the June 30, 2014 valuations 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 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**

| Decrement Due to Disability | | Decrement Due to Retirement | | |
|---|---|---|---|---|
| **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 to $600 for occupational death & disability and $8,750 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. Trend rates are no longer loaded to reflect the Cadillac Tax, which was repealed in December, 2019.

## Table 1: Alaska PERS DCR Plan Salary Scale

| Peace Officer / Firefighter | | Others | |
|---|---|---|---|
| Service | % Increase | Service | % 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% |
| 19 | 2.75% | 19 | 2.75% |
| 20+ | 2.75% | 20+ | 2.75% |

## Table 2: Alaska PERS DCR Plan Peace Officer / Firefighter Turnover Table

Select Rates of Turnover During the First 5 Years of Employment

| Service | Male | Female |
|---|---|---|
| 0 | 18.9% | 20.6% |
| 1 | 14.2% | 16.5% |
| 2 | 10.5% | 13.8% |
| 3 | 9.5% | 12.4% |
| 4 | 8.4% | 11.3% |

**Ultimate Rates of Turnover After the First 5 Years of Employment**

| Age | Male | Female | Age | Male | Female |
|---|---|---|---|---|---|
| 20 | 5.52% | 11.97% | 45 | 5.71% | 11.03% |
| 21 | 5.52% | 11.97% | 46 | 5.64% | 10.98% |
| 22 | 5.52% | 11.97% | 47 | 5.57% | 10.92% |
| 23 | 5.65% | 11.97% | 48 | 6.01% | 10.84% |
| 24 | 5.78% | 11.97% | 49 | 6.45% | 10.75% |
| 25 | 5.91% | 11.97% | 50 | 6.89% | 10.67% |
| 26 | 6.04% | 11.97% | 51 | 7.32% | 10.58% |
| 27 | 6.16% | 11.97% | 52 | 7.76% | 10.50% |
| 28 | 6.16% | 11.94% | 53 | 7.97% | 10.66% |
| 29 | 6.15% | 11.91% | 54 | 8.18% | 10.82% |
| 30 | 6.14% | 11.88% | 55 | 8.38% | 10.98% |
| 31 | 6.14% | 11.84% | 56 | 8.59% | 11.15% |
| 32 | 6.12% | 11.81% | 57 | 8.80% | 11.31% |
| 33 | 6.11% | 11.79% | 58 | 9.03% | 11.47% |
| 34 | 6.09% | 11.77% | 59 | 9.25% | 11.63% |
| 35 | 6.08% | 11.75% | 60 | 9.48% | 11.79% |
| 36 | 6.07% | 11.72% | 61 | 9.71% | 11.95% |
| 37 | 6.05% | 11.70% | 62 | 9.94% | 12.12% |
| 38 | 6.03% | 11.60% | 63 | 12.37% | 12.28% |
| 39 | 6.00% | 11.50% | 64 | 14.81% | 12.44% |
| 40 | 5.98% | 11.40% | 65+ | 17.25% | 12.60% |
| 41 | 5.95% | 11.30% | | | |
| 42 | 5.90% | 11.20% | | | |
| 43 | 5.85% | 11.14% | | | |
| 44 | 5.78% | 11.09% | | | |

## Table 2: Alaska PERS DCR Plan Others Turnover Table

Select Rates of Turnover During the First 5 Years of Employment

| Service | Male | Female |
|---|---|---|
| 0 | 24.4% | 28.0% |
| 1 | 21.0% | 22.3% |
| 2 | 16.8% | 17.9% |
| 3 | 13.4% | 14.3% |
| 4 | 9.5% | 12.3% |

**Ultimate Rates of Turnover After the First 5 Years of Employment**

| Age | Male | Female | Age | Male | Female |
|---|---|---|---|---|---|
| 20 | 13.71% | 16.50% | 45 | 7.72% | 7.90% |
| 21 | 13.71% | 16.50% | 46 | 7.60% | 7.58% |
| 22 | 13.71% | 16.50% | 47 | 7.48% | 7.26% |
| 23 | 13.71% | 16.51% | 48 | 7.68% | 7.23% |
| 24 | 13.71% | 16.51% | 49 | 7.87% | 7.20% |
| 25 | 13.71% | 16.52% | 50 | 8.07% | 7.17% |
| 26 | 13.71% | 16.53% | 51 | 8.26% | 7.14% |
| 27 | 13.71% | 16.54% | 52 | 8.46% | 7.11% |
| 28 | 13.41% | 15.94% | 53 | 8.46% | 7.26% |
| 29 | 13.21% | 15.34% | 54 | 8.47% | 7.42% |
| 30 | 12.82% | 17.75% | 55 | 8.48% | 7.57% |
| 31 | 12.52% | 14.15% | 56 | 8.48% | 7.72% |
| 32 | 12.22% | 13.55% | 57 | 8.49% | 7.88% |
| 33 | 11.65% | 12.90% | 58 | 8.77% | 8.15% |
| 34 | 11.09% | 12.24% | 59 | 9.08% | 8.42% |
| 35 | 10.52% | 11.58% | 60 | 9.32% | 8.69% |
| 36 | 9.95% | 10.92% | 61 | 9.60% | 8.96% |
| 37 | 9.39% | 10.26% | 62 | 9.88% | 9.24% |
| 38 | 9.12% | 9.98% | 63 | 10.28% | 10.51% |
| 39 | 8.86% | 9.70% | 64 | 10.68% | 11.78% |
| 40 | 8.60% | 9.42% | 65+ | 11.08% | 13.05% |
| 41 | 8.32% | 9.14% | | | |
| 42 | 8.07% | 8.86% | | | |
| 43 | 7.95% | 8.54% | | | |
| 44 | 7.83% | 8.22% | | | |

## Table 3: Alaska PERS DCR Plan Disability Table

| | Peace Officer / Firefighter | | Others | |
|---|---|---|---|---|
| Age | Male | Female | Male | Female |
| 20 | 0.0179% | 0.0112% | 0.0327% | 0.0376% |
| 21 | 0.0179% | 0.0112% | 0.0327% | 0.0376% |
| 22 | 0.0179% | 0.0112% | 0.0327% | 0.0376% |
| 23 | 0.0244% | 0.0153% | 0.0360% | 0.0400% |
| 24 | 0.0310% | 0.0194% | 0.0392% | 0.0424% |
| 25 | 0.0374% | 0.0234% | 0.0425% | 0.0448% |
| 26 | 0.0440% | 0.0275% | 0.0456% | 0.0472% |
| 27 | 0.0505% | 0.0316% | 0.0489% | 0.0496% |
| 28 | 0.0526% | 0.0329% | 0.0501% | 0.0510% |
| 29 | 0.0548% | 0.0343% | 0.0513% | 0.0524% |
| 30 | 0.0570% | 0.0356% | 0.0524% | 0.0538% |
| 31 | 0.0591% | 0.0370% | 0.0536% | 0.0554% |
| 32 | 0.0612% | 0.0383% | 0.0548% | 0.0568% |
| 33 | 0.0634% | 0.0397% | 0.0566% | 0.0586% |
| 34 | 0.0657% | 0.0411% | 0.0584% | 0.0606% |
| 35 | 0.0679% | 0.0425% | 0.0602% | 0.0624% |
| 36 | 0.0702% | 0.0439% | 0.0620% | 0.0644% |
| 37 | 0.0724% | 0.0453% | 0.0638% | 0.0662% |
| 38 | 0.0757% | 0.0473% | 0.0669% | 0.0696% |
| 39 | 0.0789% | 0.0493% | 0.0701% | 0.0728% |
| 40 | 0.0822% | 0.0514% | 0.0734% | 0.0762% |
| 41 | 0.0854% | 0.0534% | 0.0765% | 0.0794% |
| 42 | 0.0887% | 0.0554% | 0.0797% | 0.0826% |
| 43 | 0.0977% | 0.0611% | 0.0879% | 0.0908% |
| 44 | 0.1066% | 0.0667% | 0.0962% | 0.0990% |
| 45 | 0.1157% | 0.0723% | 0.1043% | 0.1072% |
| 46 | 0.1247% | 0.0780% | 0.1125% | 0.1154% |
| 47 | 0.1337% | 0.0836% | 0.1208% | 0.1236% |
| 48 | 0.1462% | 0.0914% | 0.1329% | 0.1360% |
| 49 | 0.1588% | 0.0993% | 0.1451% | 0.1484% |
| 50 | 0.1714% | 0.1071% | 0.1572% | 0.1608% |
| 51 | 0.1839% | 0.1150% | 0.1694% | 0.1734% |
| 52 | 0.1965% | 0.1228% | 0.1815% | 0.1858% |
| 53 | 0.2294% | 0.1434% | 0.2132% | 0.2168% |
| 54 | 0.2624% | 0.1640% | 0.2450% | 0.2478% |

**Table 4: Alaska PERS DCR Plan Retirement Table**

| Age at Retirement | Unisex Rate |
|---|---|
| <=50 | 2.0% |
| 51 | 2.0% |
| 52 | 2.0% |
| 53 | 2.0% |
| 54 | 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.

**Annual Required Contribution (ARC)**

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

**GASB 25 and 27**

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

**GASB 43 and 45**

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

**GASB 67 and 68**

Governmental Accounting Standards Board Statement Number 67 amends Number 25 effective for the fiscal year beginning after June 15, 2013, and defines new financial reporting requirements for public pension plans.  Governmental Accounting Standards Board Statement Number 68 amends Number 27 effective for fiscal years beginning after June 15, 2014 and defines new accounting and financial reporting requirements for employers sponsoring public pension plans.

### GASB 74 and 75

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

### 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 Defined Contribution Retirement Plan

### For Occupational Death and Disability and Retiree Medical Benefits

Actuarial Valuation Report

As of June 30, 2019

January 2020

BUCK

January 22, 2020

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

**Certification of Actuarial Valuation**

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

This report summarizes the annual actuarial valuation results of the State of Alaska Teachers' Retirement System Defined Contribution Retirement (TRS DCR) Plan as of June 30, 2019 performed by Buck Global, LLC (Buck).

The actuarial valuation is based on financial information provided in the financial statements audited by KPMG LLP, member data provided by the Division of Retirement and Benefits, and medical enrollment data provided by the healthcare claims administrator (Aetna), as summarized in this report. The benefits considered are those delineated in Alaska statutes effective June 30, 2019. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under TRS 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, 2019.

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 economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law. In particular, retiree group benefits models necessarily rely on the use of approximations and estimates and are sensitive to changes in these approximations and estimates. Small variations in these approximations and estimates may lead to significant changes in actuarial measurements. An analysis of the potential range of such future differences is beyond the scope of this valuation.

In our opinion, the actuarial assumptions used are reasonable, taking into account the experience of the plan and reasonable long-term expectations, and represent our best estimate of the anticipated long-term experience under the plan. The actuary performs an analysis of plan experience periodically and recommends changes if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. The last full experience analysis was performed for the period July 1, 2013 to June 30, 2017. Based on that experience study, the Board adopted new assumptions effective beginning with the June 30, 2018 valuation to better reflect expected future experience. Based on our annual analysis of recent claims experience, changes were made to the per capita claims cost rates effective June 30, 2019 to better reflect expected future healthcare experience. A summary of the actuarial assumptions and methods used in this actuarial valuation is shown in Sections 5.2 and 5.3.

Governmental Accounting Standards Board (GASB) Statement No. 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. Section 3 of this report contains accounting information previously disclosed under GASB 25 for fiscal years 2007 through 2013 and accounting information previously disclosed under GASB 43 for fiscal years 2007 through 2016.

**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 and 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 and disability benefits provided by this 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 herby affirms his qualification to render opinions in such matters in accordance with the Qualification Standards of the American Academy of Actuaries.

Scott Young, FSA, EA, MAAA
Director
Buck

# 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, 2019.

### Purpose

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

1. To determine the Employer 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) | 2018 | 2019 |
|---|---|---|
| a. Actuarial Accrued Liability | $ 32,459 | $ 33,221 |
| b. Valuation Assets | 40,621 | 46,666 |
| c. Unfunded Actuarial Accrued Liability, (a) - (b) | $ (8,162) | $ (13,445) |
| d. Funded Ratio based on Valuation Assets, (b) ÷ (a) | 125.1% | 140.5% |
| e. Fair Value of Assets | $ 40,461 | $ 46,395 |
| f. Funded Ratio based on Fair Value of Assets, (e) ÷ (a) | 124.7% | 139.7% |

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 FY19 investment return based on fair value of assets was 6.2% compared to the expected investment return of 7.38% (net of investment expenses of approximately 0.04%). This resulted in a loss of approximately $508,000 to the plan from investment experience. The asset valuation method recognizes 20 percent of this loss ($102,000) this year and an additional 20 percent in each of the next 4 years. In addition, 20 percent of the FY15 investment loss, 20 percent of the FY16 investment loss, 20 percent of the FY17 investment gain and 20 percent of the FY18 investment loss were recognized this year. The approximate FY19 asset return based on actuarial value of assets was 6.4% compared to the expected asset return of 7.38% (net of investment expenses).

**2. Salary Increases**

Salary increases for continuing active members during FY19 were less than anticipated based on the valuation assumptions, resulting in a very small liability gain of approximately $1,000.

**3. Demographic Experience**

The number of active members increased 1.7% from 4,915 at June 30, 2018 to 4,998 at June 30, 2019. The average age of active members increased from 40.64 to 41.06 and average credited service increased from 5.30 to 5.67 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, 2019 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 5.2 of this report (Section 6.2 of the TRS report) created an actuarial gain of approximately $4,135,000.

**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 5.2. The Further Consolidated Appropriations Act, 2020 that was signed in December 2019 made several changes, including the repeal of the Cadillac Tax. The repeal of the Cadillac Tax reduced the plan's liabilities as of June 30, 2019 by approximately $286,000. 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**

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

**Comparative Summary of Key Actuarial Valuation Results**

| Total Employer Contribution Rates for Occupational Death & Disability for Fiscal Year: | 2021 | 2022 |
|---|---|---|
| a. Employer Normal Cost Rate | 0.08% | 0.08% |
| b. Past Service Cost Rate | (0.09)% | (0.09)% |
| c. Total Employer Contribution Rate, (a) + (b), not less than (a) | 0.08% | 0.08% |

| Total Employer Contribution Rates for Retiree Medical for Fiscal Year: | 2021 | 2022 |
|---|---|---|
| a. Employer Normal Cost Rate | 0.93% | 0.83% |
| b. Past Service Cost Rate | (0.07)% | (0.15)% |
| c. Total Employer Contribution Rate, (a) + (b), not less than (a) | 0.93% | 0.83% |

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 |
| N/A | FY07 | N/A | 1.75% | 1.75% |
| N/A | FY08 | 0.56% | 0.99% | 1.55% |
| N/A | FY09 | 0.62% | 0.99% | 1.61% |
| June 30, 2007 | FY10 | 0.32% | 1.03% | 1.35% |
| June 30, 2008 | FY11 | 0.28% | 0.68% | 0.96% |
| June 30, 2009 | FY12 | 0.00% | 0.58% | 0.58% |
| 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 | TBD | TBD | TBD |

**Summary of Actuarial Accrued Liability Gain/(Loss)**

The following table shows the FY19 gain/(loss) on actuarial accrued liability as of June 30, 2019 ($'s in 000's):

| | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| Retirement Experience | $ 0 | $ 218 | $ 218 |
| Termination Experience | (5) | 1,926 | 1,921 |
| Active Mortality Experience | 108 | (43) | 65 |
| Inactive Mortality Experience | 0 | 58 | 58 |
| Disability Experience | 191 | (20) | 171 |
| New Entrants | (208) | (600) | (808) |
| Rehires | (1) | (873) | (874) |
| Salary Increases | 1 | N/A | 1 |
| Medical Claims Costs | N/A | 4,135 | 4,135 |
| Cadillac Tax – Medical Claims Costs | N/A | 389 | 389 |
| Cadillac Tax – Repeal | N/A | 286 | 286 |
| Miscellaneous | (27) | (222) | (249) |
| Total | $ 59 | $ 5,254 | $ 5,313 |

# Section 1: Actuarial Funding Results

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

| As of June 30, 2019 | Present Value of Projected Benefits | Actuarial Accrued (Past Service) Liability |
|---|---|---|
| **Active Members** | | |
| Occupational Death Benefits | $ 731 | $ 78 |
| Occupational Disability Benefits | 1,211 | (47) |
| Medical and Prescription Drug Benefits | 65,464 | 40,417 |
| Medicare Part D Subsidy | (13,089) | (8,083) |
| Subtotal | $ 54,317 | $ 32,365 |
| **Benefit Recipients** | | |
| Survivor Benefits | $ 0 | $ 0 |
| Disability Benefits | 209 | 209 |
| Medical and Prescription Drug Benefits | 807 | 807 |
| Medicare Part D Subsidy | (160) | (160) |
| Subtotal | $ 856 | $ 856 |
| **Total** | **$ 55,173** | **$ 33,221** |
| **Total Occupational Death & Disability** | **$ 2,151** | **$ 240** |
| **Total Retiree Medical, Net of Part D Subsidy** | **$ 53,022** | **$ 32,981** |
| **Total Retiree Medical, Gross of Part D Subsidy** | **$ 66,271** | **$ 41,224** |

| As of June 30, 2019 | Normal Cost |
|---|---|
| **Active Members** | |
| Occupational Death Benefits | $ 101 |
| Occupational Disability Benefits | 183 |
| Medical and Prescription Drug Benefits | 3,708 |
| Medicare Part D Subsidy | (741) |
| Subtotal | $ 3,251 |
| **Administrative Expense Load** | |
| Occupational Death & Disability | $ 0 |
| Retiree Medical | 5 |
| Subtotal | $ 5 |
| **Total** | **$ 3,256** |
| **Total Occupational Death & Disability** | **$ 284** |
| **Total Retiree Medical, Net of Part D Subsidy** | **$ 2,972** |
| **Total Retiree Medical, Gross of Part D Subsidy** | **$ 3,713** |

## Section 1.2: Actuarial Contributions as of June 30, 2019 for FY22 ($'s in 000's)

| Normal Cost Rate | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| 1. Total Normal Cost | $ 284 | $ 2,972 | $ 3,256 |
| 2. DCR Plan Rate Payroll Projected for FY20 | 359,622 | 359,622 | 359,622 |
| 3. Employer Normal Cost Rate, (1) ÷ (2) | 0.08% | 0.83% | 0.91% |

| Past Service Cost Rate | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| 1. Actuarial Accrued Liability | $ 240 | $ 32,981 | $ 33,221 |
| 2. Valuation Assets | 4,359 | 42,307 | 46,666 |
| 3. Unfunded Actuarial Accrued Liability, (1) - (2) | $ (4,119) | $ (9,326) | $ (13,445) |
| 4. Funded Ratio based on Valuation Assets | 1,816.3% | 128.3% | 140.5% |
| 5. Past Service Cost Amortization Payment | (326) | (555) | (881) |
| 6. DCR Plan Rate Payroll Projected for FY20 | 359,622 | 359,622 | 359,622 |
| 7. Past Service Cost Rate, (5) ÷ (6) | (0.09%) | (0.15%) | (0.24%) |
| **Total Employer Contribution Rate, not less than Normal Cost Rate** | **0.08%** | **0.83%** | **0.91%** |

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 | $ 284 | $ 2,972 | $ 3,256 |
| 2. Total DB and DCR Plan Rate Payroll Projected for FY20 | 725,659 | 725,659 | 725,659 |
| 3. Employer Normal Cost Rate, (1) ÷ (2) | 0.04% | 0.41% | 0.45% |
| 4. Past Service Cost Amortization Payment | (326) | (555) | (881) |
| 5. Past Service Cost Rate, (4) ÷ (2) | (0.04%) | (0.08%) | (0.12%) |
| **Total Employer Contribution Rate, not less than Normal Cost Rate** | **0.04%** | **0.41%** | **0.45%** |

**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 | 13 | $ 16 | $ 15 | $ 1 |
| FY08 Gain | 06/30/2008 | 14 | (392) | (391) | (37) |
| Change in Assumptions | 06/30/2009 | 15 | (82) | (82) | (7) |
| FY09 Gain | 06/30/2009 | 15 | (594) | (605) | (54) |
| Change in Assumptions | 06/30/2010 | 16 | (7) | (8) | (1) |
| FY10 Gain | 06/30/2010 | 16 | (479) | (492) | (42) |
| FY11 Gain | 06/30/2011 | 17 | (560) | (578) | (47) |
| FY12 Gain | 06/30/2012 | 18 | (129) | (135) | (11) |
| FY13 Gain | 06/30/2013 | 19 | (149) | (154) | (12) |
| Change in Assumptions | 06/30/2014 | 20 | (50) | (53) | (4) |
| PRPA Modification | 06/30/2014 | 20 | (25) | (25) | (2) |
| FY14 Gain | 06/30/2014 | 20 | (255) | (263) | (19) |
| FY15 Gain | 06/30/2015 | 21 | (275) | (283) | (20) |
| FY16 Gain | 06/30/2016 | 22 | (209) | (215) | (15) |
| FY17 Gain | 06/30/2017 | 23 | (251) | (254) | (17) |
| Change in Assumptions[1] | 06/30/2018 | 24 | 0 | 0 | 0 |
| FY18 Gain | 06/30/2018 | 24 | (257) | (258) | (17) |
| FY19 Gain | 06/30/2019 | 25 | (338) | (338) | (22) |
| **Total** | | | | **$ (4,119)** | **$ (326)** |

[1] The net effect of changing assumptions was less than $1,000.

**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 | 13 | $ (239) | $ (238) | $ (24) |
| Change in Assumptions | 06/30/2008 | 14 | 84 | 88 | 8 |
| FY08 Gain | 06/30/2008 | 14 | (393) | (391) | (37) |
| Change in Assumptions | 06/30/2009 | 15 | (69) | (68) | (6) |
| FY09 Gain | 06/30/2009 | 15 | (281) | (288) | (26) |
| Change in Assumptions[1] | 06/30/2010 | 16 | 0 | 0 | 0 |
| FY10 Gain | 06/30/2010 | 16 | (545) | (559) | (48) |
| FY11 Gain | 06/30/2011 | 17 | (94) | (96) | (8) |
| Change in Assumptions | 06/30/2012 | 18 | 11,518 | 11,948 | 941 |
| FY12 Gain | 06/30/2012 | 18 | (60) | (59) | (5) |
| FY13 Loss | 06/30/2013 | 19 | 3,439 | 3,571 | 271 |
| Change in Assumptions | 06/30/2014 | 20 | (9,736) | (10,082) | (742) |
| FY14 Loss | 06/30/2014 | 20 | 1,616 | 1,672 | 123 |
| FY15 Gain | 06/30/2015 | 21 | (3,485) | (3,592) | (257) |
| EGWP Impact | 06/30/2016 | 22 | (6,400) | (6,552) | (455) |
| FY16 Loss | 06/30/2016 | 22 | 958 | 983 | 68 |
| Change in Assumptions | 06/30/2017 | 23 | 7,645 | 7,759 | 525 |
| FY17 Gain | 06/30/2017 | 23 | (1,451) | (1,473) | (100) |
| Change in Assumptions/Methods | 06/30/2018 | 24 | (9,505) | (9,547) | (631) |
| FY18 Loss | 06/30/2018 | 24 | 2,491 | 2,502 | 165 |
| FY19 Gain | 06/30/2019 | 25 | (4,904) | (4,904) | (317) |
| **Total** | | | | **$ (9,326)** | **$ (555)** |

[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 | 13 | $ (223) | $ (223) | $ (23) |
| Change in Assumptions | 06/30/2008 | 14 | 84 | 88 | 8 |
| FY08 Gain | 06/30/2008 | 14 | (785) | (782) | (74) |
| Change in Assumptions | 06/30/2009 | 15 | (151) | (150) | (13) |
| FY09 Gain | 06/30/2009 | 15 | (875) | (893) | (80) |
| Change in Assumptions | 06/30/2010 | 16 | (7) | (8) | (1) |
| FY10 Gain | 06/30/2010 | 16 | (1,024) | (1,051) | (90) |
| FY11 Gain | 06/30/2011 | 17 | (654) | (674) | (55) |
| Change in Assumptions | 06/30/2012 | 18 | 11,518 | 11,948 | 941 |
| FY12 Gain | 06/30/2012 | 18 | (189) | (194) | (16) |
| FY13 Loss | 06/30/2013 | 19 | 3,290 | 3,417 | 259 |
| Change in Assumptions | 06/30/2014 | 20 | (9,786) | (10,135) | (746) |
| PRPA Modification | 06/30/2014 | 20 | (25) | (25) | (2) |
| FY14 Loss | 06/30/2014 | 20 | 1,361 | 1,409 | 104 |
| FY15 Gain | 06/30/2015 | 21 | (3,760) | (3,875) | (277) |
| EGWP Impact | 06/30/2016 | 22 | (6,400) | (6,552) | (455) |
| FY16 Loss | 06/30/2016 | 22 | 749 | 768 | 53 |
| Change in Assumptions | 06/30/2017 | 23 | 7,645 | 7,759 | 525 |
| FY17 Gain | 06/30/2017 | 23 | (1,702) | (1,727) | (117) |
| Change in Assumptions/Methods | 06/30/2018 | 24 | (9,505) | (9,547) | (631) |
| FY18 Loss | 06/30/2018 | 24 | 2,234 | 2,244 | 148 |
| FY19 Gain | 06/30/2019 | 25 | (5,242) | (5,242) | (339) |
| **Total** | | | | **$ (13,445)** | **$ (881)** |

## Section 1.3: Actuarial Gain/(Loss) for FY19 ($'s in 000's)

| | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| **1. Expected Actuarial Accrued Liability** | | | |
| a. Actuarial Accrued Liability as of June 30, 2018 | $ 30 | $ 32,429 | $ 32,459 |
| b. Normal Cost | 272 | 3,209 | 3,481 |
| c. Interest on (a) and (b) at 7.38% | 22 | 2,630 | 2,652 |
| d. Medicare Part D Subsidy and EGWP | 0 | 3 | 3 |
| e. Benefit Payments | (24) | (35) | (59) |
| f. Interest on (d) and (e) at 7.38%, adjusted for timing | (1) | (1) | (2) |
| g. Assumption/Method Changes | 0 | 0 | 0 |
| h. Expected Actuarial Accrued Liability as of June 30, 2019 (a) + (b) + (c) + (d) + (e) + (f) + (g) | $ 299 | $ 38,235 | $ 38,534 |
| 2. Actual Actuarial Accrued Liability as of June 30, 2019 | 240 | 32,981 | 33,221 |
| **3. Liability Gain/(Loss), (1)(h) - (2)** | **$ 59** | **$ 5,254** | **$ 5,313** |
| 4. Expected Actuarial Asset Value | | | |
| a. Actuarial Asset Value as of June 30, 2018 | $ 3,845 | $ 36,776 | $ 40,621 |
| b. Interest on (a) at 7.38% | 284 | 2,714 | 2,998 |
| c. Employer Contributions | 312 | 3,085 | 3,397 |
| d. Medicare Part D Subsidy and EGWP | 0 | 3 | 3 |
| e. Interest on (c) and (d) at 7.38%, adjusted for timing | 11 | 112 | 123 |
| f. Benefit Payments | (24) | (35) | (59) |
| g. Administrative Expenses | 0 | (6) | (6) |
| h. Interest on (f) and (g) at 7.38%, adjusted for timing | (1) | (1) | (2) |
| i. Expected Actuarial Asset Value as of June 30, 2019, (a) + (b) + (c) + (d) + (e) + (f) + (g) + (h) | $ 4,427 | $ 42,648 | $ 47,075 |
| 5. Actuarial Asset Value as of June 30, 2019 | 4,359 | 42,307 | 46,666 |
| **6. Actuarial Asset Gain/(Loss), (5) - (4)(i)** | **$ (68)** | **$ (341)** | **$ (409)** |
| **7. Total Actuarial Gain/(Loss), (3) + (6)** | **$ (9)** | **$ 4,913** | **$ 4,904** |
| **8. Contribution Gain/(Loss)** | **$ 341** | **$ (11)** | **$ 330** |
| **9. Administrative Expense Gain/(Loss)** | **$ 6** | **$ 2** | **$ 8** |
| **10. FY19 Gain/(Loss), (7) + (8) + (9)** | **$ 338** | **$ 4,904** | **$ 5,242** |

Section 1.4: History of Unfunded Liability and Funded Ratio ($'s in 000's)

| Valuation Date | 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) |

# Section 2: Plan Assets

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

| As of June 30, 2019 | Occupational Death & Disability | Retiree Medical | Total | Allocation Percent |
|---|---|---|---|---|
| Cash and Short-Term Investments | | | | |
| - Cash and Cash Equivalents | $ 88 | $ 853 | $ 941 | 2.0% |
| - Subtotal | $ 88 | $ 853 | $ 941 | 2.0% |
| Fixed Income Investments | | | | |
| - Domestic Fixed Income Pool | $ 451 | $ 4,381 | $ 4,832 | 10.5% |
| - International Fixed Income Pool | 0 | 0 | 0 | 0.0% |
| - Tactical Fixed Income Pool | 117 | 1,133 | 1,250 | 2.7% |
| - High Yield Pool | 0 | 0 | 0 | 0.0% |
| - Treasury Inflation Protection Pool | 0 | 0 | 0 | 0.0% |
| - Emerging Debt Pool | 0 | 0 | 0 | 0.0% |
| - Subtotal | $ 568 | $ 5,514 | $ 6,082 | 13.2% |
| Equity Investments | | | | |
| - Domestic Equity Pool | $ 992 | $ 9,648 | $ 10,640 | 23.1% |
| - International Equity Pool | 788 | 7,654 | 8,442 | 18.3% |
| - Private Equity Pool | 452 | 4,396 | 4,848 | 10.5% |
| - Emerging Markets Equity Pool | 155 | 1,506 | 1,661 | 3.6% |
| - Alternative Equity | 301 | 2,927 | 3,228 | 7.0% |
| - Subtotal | $ 2,688 | $ 26,131 | $ 28,819 | 62.5% |
| Other Investments | | | | |
| - Real Estate Pool | $ 291 | $ 2,829 | $ 3,120 | 6.8% |
| - Other Investments Pool | 418 | 4,068 | 4,486 | 9.7% |
| - Absolute Return Pool | 248 | 2,406 | 2,654 | 5.8% |
| - Other Assets | 0 | 0 | 0 | 0.0% |
| - Subtotal | $ 957 | $ 9,303 | $ 10,260 | 22.3% |
| Total Cash and Investments | $ 4,301 | $ 41,801 | $ 46,102 | 100.0% |
| Net Accrued Receivables | 27 | 266 | 293 | |
| Net Assets | $ 4,328 | $ 42,067 | $ 46,395 | |

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

| Fiscal Year 2019 | Occupational Death & Disability | Retiree Medical | Total |
|---|---|---|---|
| 1. Fair Value of Assets as of June 30, 2018 | $ 3,797 | $ 36,664 | $ 40,461 |
| 2. Additions: | | | |
| a. Member Contributions | $ 0 | $ 0 | $ 0 |
| b. Employer Contributions | 312 | 3,085 | 3,397 |
| c. Interest and Dividend Income | 72 | 700 | 772 |
| d. Net Appreciation/(Depreciation) in Fair Value of Investments | 172 | 1,671 | 1,843 |
| e. Medicare Part D Subsidy | 0 | 3 | 3 |
| f. Other | 0 | 0 | 0 |
| g. Total Additions | $ 556 | $ 5,459 | $ 6,015 |
| 3. Deductions: | | | |
| a. Medical Benefits | $ 0 | $ 35 | $ 35 |
| b. Death & Disability Benefits | 24 | 0 | 24 |
| c. Investment Expenses | 1 | 15 | 16 |
| d. Administrative Expenses | 0 | 6 | 6 |
| e. Total Deductions | $ 25 | $ 56 | $ 81 |
| 4. Fair Value of Assets as of June 30, 2019 | $ 4,328 | $ 42,067 | $ 46,395 |
| Approximate Fair Value Investment Return Rate during FY19 Net of Investment Expenses | 6.17% | 6.17% | 6.17% |

## 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 FY19 | | | |
| a. Fair Value as of June 30, 2018 | $ 3,797 | $ 36,664 | $ 40,461 |
| b. Contributions | 312 | 3,085 | 3,397 |
| c. Medicare Part D Subsidy | 0 | 3 | 3 |
| d. Benefit Payments | 24 | 35 | 59 |
| e. Administrative Expenses | 0 | 6 | 6 |
| f. Actual Investment Return (net of investment expenses) | 243 | 2,356 | 2,599 |
| g. Expected Return Rate (net of investment expenses) | 7.38% | 7.38% | 7.38% |
| h. Expected Return | 291 | 2,816 | 3,107 |
| i. Investment Gain/(Loss) for the Year (f) - (h) | (48) | (460) | (508) |
| 2. Actuarial Value as of June 30, 2019 | | | |
| a. Fair Value as of June 30, 2019 | $ 4,328 | $ 42,067 | $ 46,395 |
| b. Deferred Investment Gain/(Loss) | (31) | (240) | (271) |
| c. Preliminary Actuarial Value as of June 30, 2019, (a) - (b) | 4,359 | 42,307 | 46,666 |
| d. Upper Limit: 120% of Fair Value as of June 30, 2019 | 5,193 | 50,480 | 55,673 |
| e. Lower Limit: 80% of Fair Value as of June 30, 2019 | 3,463 | 33,654 | 37,117 |
| f. Actuarial Value as of June 30, 2019, (c) limited by (d) and (e) | 4,359 | 42,307 | 46,666 |
| 3. Ratio of Actuarial Value of Assets to Fair Value of Assets | 100.7% | 100.6% | 100.6% |
| 4. Approximate Actuarial Value Investment Return Rate during FY19 Net of Investment Expenses | 5.67% | 6.49% | 6.40% |

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, 2015 | $ (168) | $ (136) | $ (32) | $ 0 |
| June 30, 2016 | (269) | (162) | (54) | (53) |
| June 30, 2017 | 143 | 58 | 29 | 56 |
| June 30, 2018 | 8 | 2 | 2 | 4 |
| June 30, 2019 | (48) | 0 | (10) | (38) |
| **Total** | **$ (334)** | **$ (238)** | **$ (65)** | **$ (31)** |

| 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, 2015 | $ (694) | $ (556) | $ (138) | $ 0 |
| June 30, 2016 | (1,674) | (1,005) | (335) | (334) |
| June 30, 2017 | 1,184 | 474 | 237 | 473 |
| June 30, 2018 | (19) | (4) | (4) | (11) |
| June 30, 2019 | (460) | 0 | (92) | (368) |
| **Total** | **$ (1,663)** | **$ (1,091)** | **$ (332)** | **$ (240)** |

| 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, 2015 | $ (862) | $ (692) | $ (170) | $ 0 |
| June 30, 2016 | (1,943) | (1,167) | (389) | (387) |
| June 30, 2017 | 1,327 | 532 | 266 | 529 |
| June 30, 2018 | (11) | (2) | (2) | (7) |
| June 30, 2019 | (508) | 0 | (102) | (406) |
| **Total** | **$ (1,997)** | **$ (1,329)** | **$ (397)** | **$ (271)** |

## Section 2.4: Historical Asset Rates of Return

| Year Ending | Actuarial Value | | Fair Value | |
|---|---|---|---|---|
| | Annual | Cumulative[1] | Annual | Cumulative[1] |
| 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% |

[1] Cumulative since FYE June 30, 2008

# Section 3: Accounting Information[1]

## Section 3.1: Schedule of Funding Progress ($'s in 000's)

### Schedule of Funding Progress

The exhibit below shows the death and disability plan disclosure under GASB No. 25 for fiscal years 2007 through 2013.

| Fiscal Year Ending | Actuarial Accrued Liabilities (AAL) | Actuarial Value of Assets | Funded Ratio | Unfunded AAL (UAAL) | Covered Payroll | UAAL as a Percentage of Covered Payroll |
|---|---|---|---|---|---|---|
| June 30, 2013 | $ 80 | $ 2,532 | 3,165.0% | $ (2,452) | $ 206,771 | (1.2)% |
| June 30, 2012 | 63 | 2,348 | 3,727.0% | (2,285) | 200,043 | (1.1)% |
| June 30, 2011 | 57 | 2,193 | 3,847.4% | (2,136) | 170,606 | (1.3)% |
| June 30, 2010 | 18 | 1,577 | 8,761.1% | (1,559) | 118,813 | (1.3)% |
| June 30, 2009 | 14 | 1,071 | 7,650.0% | (1,057) | 89,708 | (1.2)% |
| June 30, 2008 | 44 | 420 | 954.5% | (376) | 56,369 | (0.7)% |
| June 30, 2007 | 16 | 0 | 0.0% | 16 | 28,410 | 0.1% |

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

| Fiscal Year Ending | Actuarial Accrued Liabilities (AAL) | Actuarial Value of Assets | Funded Ratio | Unfunded AAL (UAAL) | Covered Payroll | UAAL as a Percentage of Covered Payroll |
|---|---|---|---|---|---|---|
| June 30, 2016[2] | $ 53,070 | $ 25,410 | 47.9% | $ 27,660 | $ 289,714 | 9.5% |
| June 30, 2015 | 42,743 | 17,733 | 41.5% | 25,010 | 255,186 | 9.8% |
| June 30, 2014 | 18,290 | 10,791 | 59.0% | 7,499 | 229,971 | 3.3% |
| June 30, 2013 | 25,152 | 8,614 | 34.2% | 16,538 | 206,771 | 8.0% |
| June 30, 2012 | 19,427 | 6,937 | 35.7% | 12,490 | 200,043 | 6.2% |
| June 30, 2011 | 4,386 | 5,373 | 122.5% | (987) | 170,606 | (0.6)% |
| June 30, 2010 | 2,809 | 3,895 | 138.7% | (1,086) | 118,813 | (0.9)% |
| June 30, 2009 | 1,690 | 2,353 | 139.2% | (663) | 89,708 | (0.7)% |
| June 30, 2008 | 899 | 1,308 | 145.5% | (409) | 56,369 | (0.7)% |
| June 30, 2007 | 403 | 597 | 148.1% | (194) | 28,410 | (0.7)% |

[1] Figures for fiscal years after 2016 are contained in separate GASB 74 reports.
[2] Based on the partially funded discount rate of 5.5%. As of June 30, 2016, neither EGWP (adopted July 1, 2017 effective January 1, 2019) nor RDS are reflected for GASB 43.

## Section 3.2: Schedule of Employer Contributions ($'s in 000's)

**Schedule of Employer Contributions**

The following shows the death and disability disclosure under GASB No. 25 for fiscal years ending 2007 through 2013.

| Fiscal Year Ending | Annual Required Contribution (ARC) | Percentage of ARC Contributed |
|---|---|---|
| June 30, 2013 | $ 0 | 100% |
| June 30, 2012 | 0 | 100% |
| June 30, 2011 | 474 | 100% |
| June 30, 2010 | 442 | 100% |
| June 30, 2009 | 623 | 100% |
| June 30, 2008 | 408 | 100% |
| June 30, 2007 | 72 | 0% |

The following shows the retiree medical disclosure without regard to Medicare Part D subsidy under GASB No. 43 for fiscal years 2007 through 2016.

| Fiscal Year Ending | Annual Required Contribution (ARC) | Percentage of ARC Contributed |
|---|---|---|
| June 30, 2016 | $ 6,837 | 92% |
| June 30, 2015 | 6,099 | 93% |
| June 30, 2014 | 1,334 | 89% |
| June 30, 2013 | 1,241 | 89% |
| June 30, 2012 | 1,420 | 82% |
| June 30, 2011 | 1,422 | 81% |
| June 30, 2010 | 1,628 | 87% |
| June 30, 2009 | 1,162 | 85% |
| June 30, 2008 | 763 | 85% |
| June 30, 2007 | 575 | 100% |

The exhibit below shows the annual required contribution (ARC) as a percentage of pay for fiscal years 2007 through 2016.

| | | Total Employer Contribution Rate | | |
|---|---|---|---|---|
| **Valuation Date** | **Fiscal Year** | **Occupational Death & Disability** | **Retiree Medical** | **Total** |
| N/A | FY07 | N/A | 1.75% | 1.75% |
| N/A | FY08 | 0.56% | 1.16% | 1.72% |
| N/A | FY09 | 0.62% | 1.16% | 1.78% |
| June 30, 2007 | FY10 | 0.32% | 1.18% | 1.50% |
| June 30, 2008 | FY11 | 0.28% | 0.84% | 1.12% |
| June 30, 2009 | FY12 | 0.00% | 0.71% | 0.71% |
| June 30, 2010 | FY13 | 0.00% | 0.60% | 0.60% |
| June 30, 2011 | FY14 | 0.00% | 0.58% | 0.58% |
| June 30, 2012 | FY15 | 0.00% | 2.39% | 2.39% |
| June 30, 2013 | FY16 | 0.00% | 2.36% | 2.36% |

GASB 74 accounting is effective beginning in FY17 and is provided in a separate report.

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

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

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

The exhibit below shows the combined occupational death & disability and retiree medical solvency test for valuation dates June 30, 2010 and before.

| | Actuarial Accrued Liability For: | | | | Portion of Actuarial Accrued Liability Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | | | | |
| Valuation Date | Active Member Contributions | Inactive Members | Active Members (Employer-Financed Portion) | Valuation Assets | (1) | (2) | (3) |
| June 30, 2010[1] | $ 0 | $ 0 | $ 2,448 | $ 5,472 | 100.0% | 100.0% | 100.0% |
| June 30, 2009[1] | 0 | 0 | 1,460 | 3,424 | 100.0% | 100.0% | 100.0% |
| June 30, 2008[1] | 0 | 0 | 801 | 1,728 | 100.0% | 100.0% | 100.0% |
| June 30, 2007 | 0 | 0 | 374 | 597 | 100.0% | 100.0% | 100.0% |
| June 30, 2006 | 0 | 0 | 0 | 0 | 100.0% | 100.0% | 100.0% |

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

[1] Change in Assumptions

The exhibit below shows the occupational death & disability solvency test for valuation dates June 30, 2006 through June 30, 2016.

| | Occupational Death & Disability Actuarial Accrued Liability For: | | | | Portion of Actuarial Accrued Liability Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| Valuation Date | (1) Active Member Contributions | (2) Inactive Members | (3) Active Members (Employer-Financed Portion) | Occupational Death & Disability Valuation Assets | (1) | (2) | (3) |
| June 30, 2016 | $ 0 | $ 0 | $ 19 | $ 3,323 | 100.0% | 100.0% | 100.0% |
| June 30, 2015 | 0 | 0 | 29 | 3,114 | 100.0% | 100.0% | 100.0% |
| June 30, 2014[1] | 0 | 0 | 23 | 2,820 | 100.0% | 100.0% | 100.0% |
| June 30, 2013 | 0 | 0 | 80 | 2,532 | 100.0% | 100.0% | 100.0% |
| June 30, 2012 | 0 | 0 | 63 | 2,348 | 100.0% | 100.0% | 100.0% |
| June 30, 2011 | 0 | 0 | 57 | 2,193 | 100.0% | 100.0% | 100.0% |
| June 30, 2010[1] | 0 | 0 | 18 | 1,577 | 100.0% | 100.0% | 100.0% |
| June 30, 2009[1] | 0 | 0 | 14 | 1,071 | 100.0% | 100.0% | 100.0% |
| June 30, 2008 | 0 | 0 | 44 | 420 | 100.0% | 100.0% | 100.0% |
| June 30, 2007 | 0 | 0 | 16 | 0 | 100.0% | 100.0% | 0.0% |
| June 30, 2006 | 0 | 0 | 0 | 0 | N/A | N/A | N/A |

[1] Change in Assumptions

The exhibit below shows the retiree medical solvency test for valuation dates June 30, 2006 through June 30, 2016.

| | Retiree Medical Actuarial Accrued Liability For: | | | | Portion of Actuarial Accrued Liability Covered by Assets | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | | | | |
| **Valuation Date** | **Active Member Contributions** | **Inactive Members** | **Active Members (Employer-Financed Portion)** | **Retiree Medical Valuation Assets** | **(1)** | **(2)** | **(3)** |
| June 30, 2016 | $ 0 | $ 0 | $ 21,988 | $ 25,410 | 100.0% | 100.0% | 100.0% |
| June 30, 2015 | 0 | 0 | 19,768 | 17,733 | 100.0% | 100.0% | 89.7% |
| June 30, 2014[1] | 0 | 0 | 16,273 | 10,791 | 100.0% | 100.0% | 66.3% |
| June 30, 2013 | 0 | 0 | 22,058 | 8,614 | 100.0% | 100.0% | 39.1% |
| June 30, 2012[1] | 0 | 0 | 16,811 | 6,937 | 100.0% | 100.0% | 41.3% |
| June 30, 2011 | 0 | 0 | 3,801 | 5,373 | 100.0% | 100.0% | 100.0% |
| June 30, 2010[1] | 0 | 0 | 2,430 | 3,895 | 100.0% | 100.0% | 100.0% |
| June 30, 2009[1] | 0 | 0 | 1,446 | 2,353 | 100.0% | 100.0% | 100.0% |
| June 30, 2008[1] | 0 | 0 | 757 | 1,308 | 100.0% | 100.0% | 100.0% |
| June 30, 2007 | 0 | 0 | 358 | 597 | 100.0% | 100.0% | 100.0% |
| June 30, 2006 | 0 | 0 | 0 | 0 | N/A | N/A | N/A |

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

[1] Change in Assumptions

# Section 4: Member Data

## Section 4.1: Summary of Members Included

| As of June 30 | 2015 | 2016 | 2017[1] | 2018[2] | 2019 |
|---|---|---|---|---|---|
| **Active Members** | | | | | |
| 1. Number | 4,095 | 4,383 | 4,694 | 4,915 | 4,998 |
| 2. Average Age | 39.15 | 39.57 | 40.21 | 40.64 | 41.06 |
| 3. Average Credited Service | 4.19 | 4.50 | 4.88 | 5.30 | 5.67 |
| 4. Average Entry Age | 34.96 | 35.07 | 35.33 | 35.34 | 35.39 |
| 5. Average Annual Earnings | $ 63,635 | $ 65,219 | $ 66,542 | $ 68,119 | $ 69,619 |
| **Disabilitants and Beneficiaries (Occupational Death & Disability)** | | | | | |
| 1. Number | 0 | 0 | 0 | 0 | 1 |
| 2. Average Age | N/A | N/A | N/A | N/A | 53.45 |
| 3. Average Monthly Death & Disability Benefit | N/A | N/A | N/A | N/A | $ 2,024 |
| **Retirees, Surviving Spouses, and Dependent Spouses (Retiree Medical)** | | | | | |
| 1. Number | 0 | 0 | 4 | 9 | 12 |
| 2. Average Age | N/A | N/A | 69.72 | 68.59 | 68.54 |
| **Total Number of Members** | **4,095** | **4,383** | **4,698** | **4,924** | **5,011** |

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

[1] 142 members who were terminated before the valuation date were subsequently rehired, per client data as of October 1, 2017. These members were valued as active as of the valuation date.
[2] 153 members who were terminated before the valuation date were subsequently rehired, per client data as of October 1, 2018. These members were valued as active as of 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 | 110 | 5,714,336 | 51,949 |
| 25 – 29 | 615 | 36,103,284 | 58,705 |
| 30 – 34 | 967 | 63,160,186 | 65,316 |
| 35 – 39 | 990 | 69,936,641 | 70,643 |
| 40 – 44 | 696 | 50,135,546 | 72,034 |
| 45 – 49 | 549 | 40,465,559 | 73,708 |
| 50 – 54 | 421 | 31,650,984 | 75,180 |
| 55 – 59 | 371 | 28,697,381 | 77,351 |
| 60 – 64 | 199 | 15,715,932 | 78,975 |
| 65 – 69 | 67 | 5,346,876 | 79,804 |
| 70 – 74 | 12 | 921,140 | 76,762 |
| 75+ | 1 | 108,962 | 108,962 |
| Total | 4,998 | $ 347,956,827 | $ 69,619 |

| Annual Earnings by Credited Service | | | |
|---|---|---|---|
| Years of Service | Number | Total Annual Earnings | Average Annual Earnings |
| 0 | 119 | $ 6,379,869 | $ 53,612 |
| 1 | 678 | 41,455,358 | 61,144 |
| 2 | 520 | 32,546,568 | 62,590 |
| 3 | 514 | 33,615,328 | 65,399 |
| 4 | 453 | 30,343,848 | 66,984 |
| 0 – 4 | 2,284 | $ 144,340,971 | $ 63,197 |
| 5 – 9 | 1,804 | 130,675,916 | 72,437 |
| 10 – 14 | 908 | 72,754,196 | 80,126 |
| 15 – 19 | 2 | 185,744 | 92,872 |
| 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 | 4,998 | $ 347,956,827 | $ 69,619 |

| 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 | 110 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 110 |
| 25 – 29 | 514 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 615 |
| 30 – 34 | 454 | 437 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 967 |
| 35 – 39 | 324 | 421 | 245 | 0 | 0 | 0 | 0 | 0 | 0 | 990 |
| 40 – 44 | 265 | 242 | 188 | 1 | 0 | 0 | 0 | 0 | 0 | 696 |
| 45 – 49 | 219 | 196 | 134 | 0 | 0 | 0 | 0 | 0 | 0 | 549 |
| 50 – 54 | 158 | 162 | 101 | 0 | 0 | 0 | 0 | 0 | 0 | 421 |
| 55 – 59 | 129 | 140 | 102 | 0 | 0 | 0 | 0 | 0 | 0 | 371 |
| 60 – 64 | 73 | 83 | 42 | 1 | 0 | 0 | 0 | 0 | 0 | 199 |
| 65 – 69 | 30 | 20 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 67 |
| 70 – 74 | 7 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| 75+ | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 2,284 | 1,804 | 908 | 2 | 0 | 0 | 0 | 0 | 0 | 4,998 |

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

| | Actives | Retirees and Surviving Spouses | Dependent Spouses | OD&D Disabilitants | OD&D Beneficiaries | Total |
|---|---|---|---|---|---|---|
| As of June 30, 2018[1] | 4,915 | 7 | 2 | 0 | 0 | 4,924 |
| Vested Termination | (257) | 0 | 0 | 0 | 0 | (257) |
| Non-vested Termination | (456) | 0 | 0 | 0 | 0 | (456) |
| Refund of Contributions | (31) | 0 | 0 | 0 | 0 | (31) |
| Disabled | 0 | 0 | 0 | 0 | 0 | 0 |
| Retired | (3) | 3 | 1 | 0 | 0 | 1 |
| Deceased, No Beneficiary | 0 | 0 | (1) | 0 | 0 | (1) |
| Deceased, With Beneficiary | 0 | 0 | 0 | 0 | 0 | 0 |
| Return to Active | 109 | 0 | 0 | 0 | 0 | 109 |
| Data Adjustment | 3 | 0 | 0 | 1 | 0 | 4 |
| New Entrant | 718 | 0 | 0 | 0 | 0 | 718 |
| As of June 30, 2019[2] | 4,998 | 10 | 2 | 1 | 0 | 5,011 |

[1] 133 participants are expected to receive retiree medical benefits in a different plan and are included for OD&D benefits only.
[2] 117 participants are expected to receive retiree medical benefits in a different plan and are included for OD&D benefits only.

## Section 4.4: Schedule of Active Member Valuation Data

| Valuation Date | Number | Annual Earnings (000's) | Annual Average Earnings | Percent Increase/ (Decrease) in Average Earnings | Number of Participating Employers |
|---|---|---|---|---|---|
| June 30, 2019 | 4,998 | $ 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 |
| June 30, 2011 | 2,708 | 151,269 | 55,860 | 5.6% | 58 |
| June 30, 2010 | 2,246 | 118,813 | 52,900 | 5.7% | 58 |
| June 30, 2009 | 1,792 | 89,708 | 50,061 | 6.4% | 58 |
| June 30, 2008 | 1,198 | 56,369 | 47,053 | 6.2% | 58 |

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

## Section 4.5: Active Member Payroll Reconciliation

| Payroll Field | | Payroll Data (000’s) |
|---|---|---|
| a) | DRB actual reported salaries FY19 – employer list | $ 392,494 |
| b) | DRB actual reported salaries FY19 – valuation data | 340,363 |
| c) | Annualized valuation data | 347,957 |
| d) | Valuation payroll as of June 30, 2019 | 364,235 |
| e) | Rate payroll for FY20 | 359,622 |

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

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

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

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

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

# Section 5: Basis of the Actuarial Valuation

## Section 5.1: Summary of Plan Provisions

### Effective Date

July 1, 2006, with amendments through June 30, 2019.

### 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 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 | $300 / $600 |
| Medical services (participant share) | 20% | 40% |
| Emergency Room Copay (non-emergent use) | $100 | $100 |
| Medical Out-of-Pocket Maximum (single / family, after deductible) | $1,200 / $2,400 | $2,400 / $4,800 |
| 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 | $1,000 / $2,000 |
| Medicare Pharmacy Arrangement | Retiree Drug Subsidy / Employer Group Waiver Plan effective 1/1/2019 | |
| Wellness / Preventative | 100%, Not subject to deductible | |

[1] Assumed to increase annually to mitigate impact of healthcare cost trend.
[2] OON applies only to non-Medicare eligible participants.

- Buck used its manual rate models to determine relative plan values for the defined benefit (DB) retiree medical plan and the adopted 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 adopted DCR retiree medical plan design. These factors are noted in Section 5.3. We further adjusted the Medicare medical manual rate to reflect the Medicare coordination method adopted. The estimated 2020 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.
- The retiree medical plan's coverage is supplemental to Medicare. Medicare coordination is described in the 2019 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 dual coverage members.
- 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

There have been no changes in TRS DCR benefit provisions valued 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, 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 Method

Entry Age Normal Cost.

Liabilities and contributions shown in the report are computed using the Entry Age Normal Actuarial Cost Method. Each year's increase/decrease in funding surplus or unfunded actuarial accrued liability is amortized over 25 years as a level percentage of expected payroll. However, in keeping with GASB requirements in effect when the plan was adopted, the net amortization period will not exceed 30 years. Under the new accounting standards (GASB 74 and 75), the GASB requirements will not directly control amortization periods used for funding of the plan.

Cost factors designed to produce annual costs as a constant percentage of each member's expected compensation in each year for death and 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 6.2 of the State of Alaska Teachers' Retirement System Defined Benefit Plan Actuarial Valuation Report as of June 30, 2019.

Due to the lack of experience for the DCR retiree medical plan only, base claims costs are based on those described in the actuarial valuation as of June 30, 2019 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 FY20 claims costs were reduced 2.1% for medical claims, and 10.4% for prescription drugs. In addition, to account for the difference in Medicare coordination, projected FY20 medical claims costs for Medicare eligible retirees were further reduced 29.3%. The medical and prescription drug percentages mentioned above were reduced 0.2% in each future year for the DCR medical benefits to reflect the fact that the medical benefit to be offered to DCR members will have annual indexing of member cost sharing features such as deductibles and out-of-pocket amounts.

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 2020 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 valuation results included in the report reflect the repeal of this tax. The removal of the Cadillac Tax created an actuarial gain of approximately $286,000.

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 5.3: Summary of Actuarial Assumptions

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

**Investment Return**

7.38% per year, net of investment expenses.

**Salary Scale**

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

Inflation – 2.50% per year.

Productivity – 0.25% per year.

**Payroll Growth**

2.75% per year (inflation + productivity).

**Total Inflation**

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

**Mortality (Pre-Termination)**

Mortality rates based upon the 2013-2017 actual experience.

RP-2014 white-collar employee table with MP-2017 generational improvement.

**Mortality (Post-Termination)**

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 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).

Disabilities are assumed to be occupational 15% of the time.

Post-disability mortality in accordance with the RP-2014 disabled table 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% female members are assumed to be married at termination from active service.

### Dependent Spouse Medical Coverage Election

Applies to members who do not have dual medical coverage. 65% of male members and 60% 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 FY20 medical and prescription drugs are shown below:

| | Medical | Prescription Drugs |
|---|---|---|
| Pre-Medicare | $ 14,464 | $ 3,263 |
| Medicare Parts A & B | $ 1,564 | $ 3,501 |
| Medicare Part D – EGWP | N/A | $ 1,044 |

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

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

### Third Party Administrator Fees

$348 per person per year; assumed trend rate of 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:

- 0.979 for the pre-Medicare plan.
- 0.686 for both the Medicare medical plan and Medicare coordination method (2.1% reduction for the medical plan and 29.3% reduction for the coordination method).
- 0.896 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, 2019 Normal Cost, which are based on the average of actual administrative expenses during the last two fiscal years, are $0 for occupational death & disability and $4,700 for retiree medical.

### Health Cost Trend

The table below shows the rates used to project the cost from the shown fiscal year to the next fiscal year. For example, 7.0% is applied to the FY20 pre-Medicare medical claims cost to get the FY21 medical claims cost.

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

For the June 30, 2014 valuations 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 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 |
|---|---|---|
| < 45 | 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**

| Decrement Due to Disability | | Decrement Due to Retirement | | |
|---|---|---|---|---|
| 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 to $0 for occupational death & disability and $4,700 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. Trend rates are no longer loaded to reflect the Cadillac Tax, which was repealed in December, 2019.

**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% |
| 50 | 0.0601% | 0.1093% |
| 51 | 0.0634% | 0.1152% |
| 52 | 0.0666% | 0.1211% |
| 53 | 0.0746% | 0.1356% |
| 54 | 0.0826% | 0.1501% |

**Table 4: Retirement Rates**

| 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.

**Annual Required Contribution (ARC)**

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

**GASB 25 and 27**

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

**GASB 43 and 45**

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

**GASB 67 and 68**

Governmental Accounting Standards Board Statement Number 67 amends Number 25 effective for the fiscal year beginning after June 15, 2013, and defines new financial reporting requirements for public pension plans. Governmental Accounting Standards Board Statement Number 68 amends Number 27 effective for fiscal years beginning after June 15, 2014 and defines new accounting and financial reporting requirements for employers sponsoring public pension plans.

### GASB 74 and 75

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

### 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

Timeline for June 30, 2019 Valuations (PERS/TRS, DB and DCR)

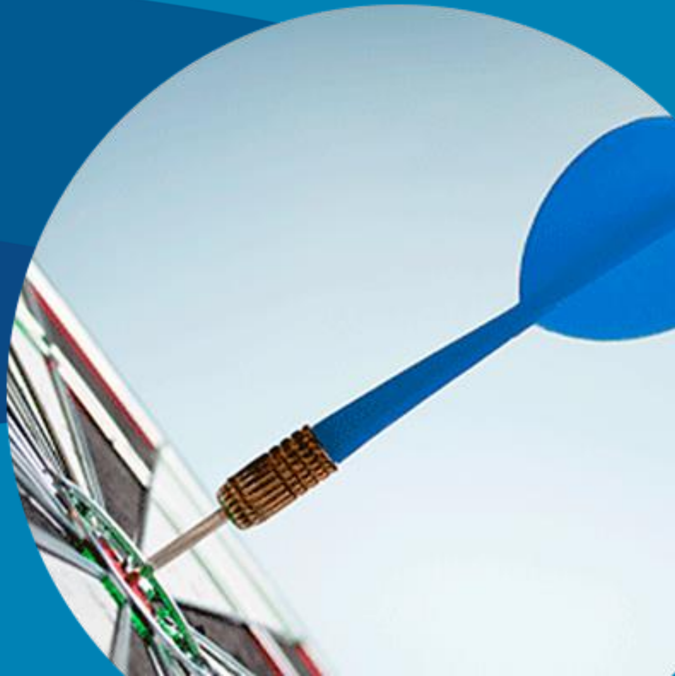
| Item # | Task | Original Deadline | Revised Deadline | Date Completed | Team Responsible | Comments / Notes |
|---|---|---|---|---|---|---|
| 1 | Valuation Data Request to DRB | July 15 | | July 11 | Buck | |
| 2 | Enrollment Data Request to Aetna | July 15 | | July 15 | Buck | Request was sent to Daniel Dudley at Aetna |
| 3 | Claims Data Request to DRB | July 15 | | July 15 | Buck | |
| 4 | Preliminary 6/30/2019 Assets to Buck | September 6 | | August 16 | DRB | |
| 5 | Valuation Data to Buck | September 9 | September 3 | August 30 | DRB | |
| 6 | Audit Data and Sample Lives Request to Buck | September 15 | | October 7 | GRS | |
| 7 | Monthly Audit Discussion with GRS / Buck | September 16 | | September 16 | GRS / Buck | |
| 8 | Actuarial Committee Meeting - FY21 Contribution Rates | September 18 | | September 18 | All | Juneau (FY21 contribution rates are based on 6/30/18 valuations and FY19 asset performance) |
| 9 | Data Questions to DRB | September 30 | | October 1 | Buck | |
| 10 | Data Answers to Buck | October 11 | | October 14 | DRB | Follow-up data questions were sent to DRB on 10/18 |
| 11 | Claims Data to Buck | October 15 | | October 22 | DRB/Segal | To includes claims through 6/30/19 that are paid through 9/30/19 |
| 12 | Monthly Audit Discussion with GRS / Buck | October 21 | | October 21 | GRS / Buck | |
| 13 | TRS (and selected school districts in PERS) updated active listing at 10/1/19 to capture term/rehires since 6/30/19 | October 18 | | November 22 | DRB | On 7/31 AC call it was agreed to eliminate this added step for the 6/30/19 valuations. DRB will still provide Buck with the 10/1 file so we can track how many terms/rehires there are for each plan. |
| 14 | 6/30/2019 Valuation Data to GRS | November 1 | | November 22 | Buck | Also provide GRS with data questions that were sent to DRB. Data files were provided to GRS on 11/4, 11/20, 11/21, and 11/22. |
| 15 | Monthly Audit Discussion with GRS / Buck | November 18 | November 20 | November 20 | GRS / Buck | |
| 16 | Sample Life Information to GRS | November 22 | | November 25 | Buck | TRS/TRS DCR sample lives were provided on 11/22; PERS/PERS DCR sample lives were provided on 11/25. OPEB sample lives were provided on 11/25. OPEB sample lives reflecting the repeal of the Cadillac Tax were provided on 1/31. |
| 17 | Final 6/30/2019 Assets to Buck | November 22 | September 13 | September 24 | DRB | Final audit reports to be issued by 10/15 |
| 18 | Preliminary Valuation Results and PVB's by individual to GRS | December 2 | | December 4 | Buck | |
| 19 | Actuarial Committee Meeting - 6/30/19 valuation results (preliminary) | December 11 | | December 11 | All | Juneau. Also include "trustee education" materials. |
| 20 | Monthly Audit Discussion with GRS / Buck | December 16 | | December 16 | GRS / Buck | |
| 21 | Actuarial Committee Meeting - 6/30/19 valuation results (full) | TBD (Jan) | | no meeting | All | Teleconference |
| 22 | Draft DCR Valuation Reports to GRS | January 10 | | January 10 | Buck | Updated draft DCR reports reflecting the repeal of the Cadillac Tax were provided on 1/23 |
| 23 | Monthly Audit Discussion with GRS / Buck | January 20 | January 22 | January 22 | GRS / Buck | |
| 24 | Draft DB Valuation Reports to GRS | January 24 | | February 14 | Buck | Draft PERS report was provided on 1/31 (updated draft provided on 2/14). Draft TRS report was provided on 2/6. |
| 25 | Monthly Audit Discussion with GRS / Buck | February 17 | February 19 | February 19 | GRS / Buck | |
| 26 | Actuarial Committee Meeting - draft valuation reports | TBD (Mar) | March 18 | | All | Juneau. Include roll-forward valuation results for JRS and NGNMRS. |
| 27 | Monthly Audit Discussion with GRS / Buck | March 16 | | | GRS / Buck | |
| 28 | Draft Actuarial Review Report to Buck | March 27 | | | GRS | |
| 29 | Monthly Audit Discussion with GRS / Buck | April 20 | | | GRS / Buck | |
| 30 | Final DB and DCR valuation reports reflecting GRS comments | April 30 | | | Buck | |
| 31 | Monthly Audit Discussion with GRS / Buck | May 18 | | | GRS / Buck | |
| 32 | Actuarial Committee Meeting - final valuation reports | TBD (June) | | | All | Juneau |

# Alaska Retirement Management Board Actuarial Committee

## Update of the 2019 Actuarial Review

**Paul Wood, ASA, FCA, MAAA**

**March 18, 2020**



# Progress Report on the Review of the June 30, 2019 Actuarial Valuation

- Test Life Review
- Claims and Enrollment Review
- Report Review

Draft

# Test Life Review

- For a sample group we examine the following:
  - Data inputs
  - Benefit amounts
  - Liability calculations
- The sample lives tell us if the assumptions are correctly employed
- They tell us if the plan provisions are valued correctly
- Second year with the updated assumption set

GRS

# Test Life Review - Findings

- Materiality Standards
  - Actuaries look to the Actuarial Standards of Practice
    - “An item or a combination of related items is material if its omission or misstatement could influence a decision of an intended user”
  - Relies heavily on the professional judgement of the actuary

# Test Life Review - Findings

- The test lives chosen this year had some unique characteristics
- Also, we fine tuned some of the methodology for verifying the annuity factors used by Buck
- As a results, we were able to identify some minor findings related to the valuation of certain ancillary benefits

# Test Life Review - Findings

- Pre and Post Commencement Mortality Rates
  - Slight inconsistency with how mortality rates are being applied for members who have commenced their retirement benefit, but not their Alaska COLA (tier 2 and tier 3 members under age 65 who have commenced their retirement benefit)
  - We recommend the mortality rates be applied consistently between these different benefit pieces and that it is disclosed appropriately in the assumptions section of the reports
- Timing of PRPA for Occupation Disability
  - The 75% PRPA assumption should be applied immediately to all members on disability, but it is not being applied immediately to occupational disability benefits in PERS or deferred disability benefits in TRS

Draft

# Test Life Review - Findings

- Disability Benefit Conversion
  - Disability benefits are currently assumed to convert to a normal retirement benefit at each member's earliest unreduced retirement age
  - After reviewing the statutes, regulations, and handbooks, it's not clear if members can convert at that time, or if they have to wait until they reach different eligibility requirements
  - We recommend verifying with Alaska staff when members are eligible to convert their disability benefit to a normal retirement benefit
- Retiree Medical Participation Rates
  - It appears that retiree medical participation rates are based on credited service, rather than eligibility service
  - For a select number of employees, these service amounts are different
  - We recommend retiree medical participation rates always be based on eligibility service

GRS

Draft

# Test Life Review – Summary
## *PERS DB Pension*

| PERS DB - Active Test Case 1 - Others Tier 3 | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Gender |
| | 41.6 | 13.6 | Female |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *Total Retirement PVB* | 107,095 | 107,095 | 0.0% |
| *Total Withdrawal PVB* | 44,389 | 44,402 | 0.0% |
| *Total Death PVB* | 2,061 | 2,076 | -0.7% |
| *Total Disability PVB* | 3,162 | 3,162 | 0.0% |
| **GRAND TOTAL PVB** | **156,706** | **156,736** | **0.0%** |

| PERS DB - Active Test Case 2 - Others Tier 3 | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Gender |
| | 31.4 | 8.6 | Male |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *Total Retirement PVB* | 92,982 | 92,982 | 0.0% |
| *Total Withdrawal PVB* | 46,293 | 46,286 | 0.0% |
| *Total Death PVB* | 2,395 | 2,463 | -2.8% |
| *Total Disability PVB* | 3,171 | 3,226 | -1.7% |
| **GRAND TOTAL PVB** | **144,841** | **144,957** | **-0.1%** |

| PERS DB - Active Test Case 1 - P/F Tier 3 | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Gender |
| | 45.5 | 21.1 | Male |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *Total Retirement PVB* | 758,847 | 758,847 | 0.0% |
| *Total Withdrawal PVB* | - | - | 0.0% |
| *Total Death PVB* | 6,749 | 6,766 | -0.2% |
| *Total Disability PVB* | - | - | 0.0% |
| **GRAND TOTAL PVB** | **765,596** | **765,612** | **0.0%** |

| PERS DB - Inactive Test Cases | | | |
|---|---|---|---|
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *PERS Peace Officer/Firefighter - Retiree* | 894,486 | 893,816 | 0.1% |
| *PERS Peace Officer/Firefighter - Disable* | 760,267 | 791,514 | -3.9% |
| *PERS Peace Officer/Firefighter - DV* | 35,894 | 35,574 | 0.9% |
| *PERS Peace Officer/Firefighter - Retiree 2* | 396,905 | 396,904 | 0.0% |
| *PERS Others - Retiree* | 269,092 | 269,092 | 0.0% |
| *PERS Others - DV* | 221,735 | 220,050 | 0.8% |

GRS

Draft

# Test Life Review – Summary

## *TRS DB Pension*

| TRS DB - Active Test Case 1 - Tier 1 | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Gender |
| | 64.7 | 32.0 | Male |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *Total Retirement PVB* | 1,084,447 | 1,084,447 | 0.0% |
| *Total Withdrawal PVB* | - | - | 0.0% |
| *Total Death PVB* | 18,016 | 18,014 | 0.0% |
| *Total Disability PVB* | - | - | 0.0% |
| **GRAND TOTAL PVB** | **1,102,463** | **1,102,461** | **0.0%** |

| TRS DB - Active Test Case 2 - Tier 2 | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Gender |
| | 37.1 | 15.0 | Female |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *Total Retirement PVB* | 305,049 | 305,049 | 0.0% |
| *Total Withdrawal PVB* | 12,548 | 12,545 | 0.0% |
| *Total Death PVB* | 1,679 | 1,679 | 0.0% |
| *Total Disability PVB* | 1,452 | 1,452 | 0.0% |
| **GRAND TOTAL PVB** | **320,728** | **320,725** | **0.0%** |

| TRS DB - Active Test Case 1 - Tier 2 | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Gender |
| | 51.4 | 21.0 | Female |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *Total Retirement PVB* | 512,864 | 512,864 | 0.0% |
| *Total Withdrawal PVB* | - | - | 0.0% |
| *Total Death PVB* | 2,445 | 2,449 | -0.2% |
| *Total Disability PVB* | - | - | 0.0% |
| **GRAND TOTAL PVB** | **515,310** | **515,313** | **0.0%** |

| TRS DB - Inactive Test Cases | | | |
|---|---|---|---|
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *TRS DB - Retiree - Female, Tier 1* | 1,153,834 | 1,149,377 | 0.4% |
| *TRS DB - DV - Female, Tier 2* | 33,968 | 34,019 | -0.2% |
| *TRS DB - Beneficiary - Female, Tier 1* | 282,572 | 281,789 | 0.3% |

GRS

# Test Life Review – Summary

## *PERS Retiree Health*

| ***Actives*** | **Test Case 1 - Other Tier 1** | | | **Test Case 2 - Other Tier 2** | | | **Test Case 3 - PF Tier 3** | | |
|---|---|---|---|---|---|---|---|---|---|
| *Basic Data:* | | | | | | | | | |
| Sex | Female | | | Active | | | Active | | |
| Current Age | 41.57 | | | 31.41 | | | 45.54 | | |
| Current Credited Service | 52353.11 | | | 8.6 | | | 24.10 | | |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** | **GRS** | **Buck** | **% Diff** | **GRS*** | **Buck** | **% Diff** |
| *Retirement:* | | | | | | | | | |
| Tier x <Member> | 57,974.88 | 58,675.31 | -1.2% | 42,213.84 | 42,204.39 | 0.0% | 230,633.66 | 229,343.65 | 0.6% |
| Tier x <Spouse> | 28,986.51 | 28,713.64 | 1.0% | 31,181.48 | 30,874.68 | 1.0% | 164,025.31 | 161,172.77 | 1.8% |
| Contrib Tier x <Member> | 256.43 | 256.37 | 0.0% | 3,067.14 | 3,066.52 | 0.0% | 742.89 | 745.86 | -0.4% |
| Contrib Tier x <Spouse> | 153.21 | 189.62 | -19.2% | 1,946.95 | 1,947.00 | 0.0% | 3,704.14 | 3,720.42 | -0.4% |
| Post 65 Part D Tier x <Member> | 6,963.39 | 6,962.29 | 0.0% | - | - | 0.0% | 14,001.44 | 13,800.90 | 1.5% |
| Post 65 Part D Tier x <Spouse> | 4,118.95 | 4,118.26 | 0.0% | - | - | 0.0% | 10,407.14 | 10,297.58 | 1.1% |
| ***Total Retirement PVB*** | **75,469.40** | **75,862.41** | **-0.5%** | **68,381.23** | **68,065.55** | **0.5%** | **365,803.36** | **361,951.66** | **1.1%** |

| ***Inactives - PVB*** | **GRS** | **Buck** | **% Diff** |
|---|---|---|---|
| Vested Termination - Other Tier 2 - Female | 200,741 | 201,926 | -0.6% |
| Vested Termination - P/F Tier 3 - Male | 13,295 | 13,455 | -1.2% |
| Disabled - PF Tier 2 - Male | 201,666 | 201,618 | 0.0% |
| Retiree - Other Tier 2 - Female | 160,828 | 160,813 | 0.0% |
| Retiree - Other Tier 1 - Female | 72,734 | 72,729 | 0.0% |
| Retiree - PF Tier 2 - Male | 182,939 | 191,858 | -4.6% |

# Test Life Review – Summary

## *TRS Retiree Health*

| ***Actives*** | **Test Case 1 - Tier 2** | | | **Test Case 2 - Tier 2** | | | **Test Case 3 - Tier 2** | | |
|---|---|---|---|---|---|---|---|---|---|
| *Basic Data:* | | | | | | | | | |
| Sex | Male | | | Female | | | Female | | |
| Current Age | 64.67 | | | 51.43 | | | 37.11 | | |
| Current Credited Service | 32.00 | | | 21.00 | | | 15.00 | | |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** | **GRS** | **Buck** | **% Diff** | **GRS** | **Buck** | **% Diff** |
| *Retirement:* | | | | | | | | | |
| Tier x <Member> | 99,953.71 | 99,975.62 | 0.0% | 175,923.43 | 175,889.13 | 0.0% | 148,433.60 | 148,570.90 | -0.1% |
| Tier x <Spouse> | 82,703.24 | 82,563.07 | 0.2% | 88,094.77 | 87,729.91 | 0.4% | 80,579.17 | 79,857.33 | 0.9% |
| Post 65 Part D Tier x <Member> | (19,000.17) | (19,003.60) | 0.0% | (17,440.43) | (17,437.44) | 0.0% | (10,598.12) | (10,608.67) | -0.1% |
| Post 65 Part D Tier x <Spouse> | (13,533.92) | (13,536.85) | 0.0% | (10,245.58) | (10,243.85) | 0.0% | (6,311.58) | (6,315.41) | -0.1% |
| Contrib <Member> | - | - | 0.0% | (3,851.58) | (3,850.69) | 0.0% | (2,051.69) | (2,059.43) | -0.4% |
| Contrib <Spouse> | - | - | 0.0% | (2,298.86) | (2,298.31) | 0.0% | (1,223.45) | (1,227.71) | -0.3% |
| ***Total Retirement PVB*** | **150,122.86** | **149,998.24** | **0.1%** | **230,181.75** | **229,788.75** | **0.2%** | **208,827.94** | **208,217.01** | **0.3%** |

| ***Inactives - PVB*** | **GRS** | **Buck** | **% Diff** |
|---|---|---|---|
| Vested Termination - Female | 163,265 | 162,794 | 0.3% |
| Retiree - Female | 405,887 | 405,591 | 0.1% |
| Retiree - Female | 173,659 | 173,182 | 0.3% |

# Test Life Review – Summary

## *DCR PERS and TRS Pension*

| DCR Active Test Case 1 PERS Other | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Sex |
| | 28.93 | 5.21 | Female |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *Total Disability PVB* | 173.18 | 172.54 | 0.4% |
| *Total Death PVB* | 61.19 | 61.60 | -0.7% |
| **GRAND TOTAL PVB** | **234.37** | **234.14** | **0.1%** |

| DCR Active Test Case 2 PERS P/F | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Sex |
| | 51.33 | 6.00 | Female |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** |
| *Total Disability PVB* | 8,817.08 | 8,687.18 | 1.5% |
| *Total Death PVB* | 4,299.35 | 4,299.09 | 0.0% |
| **GRAND TOTAL PVB** | **13,116.44** | **12,986.27** | **1.0%** |

| DCR Active Test Case 3 TRS | | | |
|---|---|---|---|
| *Basic Data:* | Current Age | Credited Service | Sex |
| | 54.61 | 8.00 | Female |
| ***Present Value of Benefits (PVB)*** | **GRS** | **Buck** | **% Diff** |
| *Total Disability PVB* | 470.07 | 469.78 | 0.1% |
| *Total Death PVB* | 286.44 | 286.42 | 0.0% |
| **GRAND TOTAL PVB** | **756.50** | **756.20** | **0.0%** |

| DCR Inactive Test Cases | | | |
|---|---|---|---|
| ***Present Value of Benefits (PVB)*** | **GRS** | **Buck** | **% Diff** |
| *PERS Other - Disability* | 119,415.56 | 119,200.00 | 0.2% |
| *PERS P/F - Disability* | 651,786.89 | 645,411.00 | 1.0% |

# Test Life Review – Summary

## *DCR PERS and TRS Retiree Health*

| *Actives* | Test Case 1 - PERS Other | | | Test Case 2 - PERS PF | | | Test Case 3 - TRS | | |
|---|---|---|---|---|---|---|---|---|---|
| *Basic Data:* | | | | | | | | | |
| Sex | Female | | | Male | | | Female | | |
| Current Age | 28.93 | | | 51.33 | | | 54.6093 | | |
| Current Credited Service | 5.21 | | | 6.00 | | | 8.00 | | |
| **Present Value of Benefits (PVB)** | **GRS** | **Buck** | **% Diff** | **GRS** | **Buck** | **% Diff** | **GRS** | **Buck** | **% Diff** |
| *Retirement:* | | | | | | | | | |
| Post 65 DCR <Member> | 2,273.30 | 2,286.38 | -0.6% | 11,360.70 | 11,378.73 | -0.2% | 25,337.55 | 25,487.33 | -0.6% |
| Post 65 DCR <Spouse> | 1,246.18 | 1,253.16 | -0.6% | 10,777.43 | 10,792.34 | -0.1% | 13,559.57 | 13,640.36 | -0.6% |
| Contrib DCR <Member> | (227.33) | (228.64) | -0.6% | (2,116.61) | (2,119.23) | -0.1% | (5,742.76) | (5,557.68) | 3.3% |
| Contrib DCR <Spouse> | (124.62) | (125.32) | -0.6% | (2,023.37) | (2,025.52) | -0.1% | (3,076.27) | (2,976.93) | 3.3% |
| Post 65 Part D DCR <Member> | 418.70 | 421.10 | -0.6% | 2,038.09 | 1,902.57 | 7.1% | 4,003.08 | 4,071.49 | -1.7% |
| Post 65 Part D DCR <Spouse> | 229.05 | 230.33 | -0.6% | 1,648.72 | 1,527.19 | 8.0% | 2,139.18 | 2,175.93 | -1.7% |
| ***Total Retirement PVB*** | **3,815.28** | **3,837.01** | **-0.6%** | **21,684.95** | **21,456.08** | **1.1%** | **36,220.34** | **36,840.50** | **-1.7%** |

| *Inactives - PVB* | GRS | Buck | % Diff |
|---|---|---|---|
| PERS Other - Disability | 75,974.87 | 75,999.00 | 0.0% |
| PERS P/F - Disability | 56,356.16 | 57,245.00 | -1.6% |

Draft

# Claims and Enrollment Review

- Buck provided a PowerPoint that showed the development of the Per Capita Claims Costs (PCCC)
- Overall, based on the data in the PowerPoint, there was favorable claims experience meaning the PCCC did not increase quite as much as was expected

GRS

Draft

# Claims and Enrollment Review

## *PCCC Claims Development*

- Overall, we found the development of the PCCC to be reasonable
- The table below shows the final PCCC used in the valuation, as confirmed through test life checking
- It also compares the PCCC used this year to those used last year

| Per Capita Claims Cost | | | | | | |
|---|---|---|---|---|---|---|
| | Medical | | | Prescription Drugs | | |
| | June 30, 2018 Valaution | June 30, 2019 Valaution | Change | June 30, 2018 Valaution | June 30, 2019 Valaution | Change |
| Pre-Medicare | $ 13,535 | $ 14,464 | 6.9% | $ 3,360 | $ 3,263 | -2.9% |
| Medicare Parts A & B | $ 1,468 | $ 1,534 | 4.5% | $ 3,764 | $ 3,501 | -7.0% |
| Medicare Part B Only | $ 4,667 | $ 4,880 | 4.6% | $ 3,764 | $ 3,501 | -7.0% |
| Medicare Part D – EGWP | N/A | N/A | N/A | $ 1,039 | $ 1,044 | 0.5% |

GRS

Draft

# Claims and Enrollment Review

## *Claims Gain Explanation*

- At the December ARMB Actuarial Committee meeting, we asked if Buck could isolate how much of the actuarial claims gains were due exclusively to the change from Aetna to Optum (which was effective January 1, 2019)
- Scott provided a detailed and reasonable analysis to conclude that a majority of the gain was due to the new Optum contract and rebates

| Prescription Drug (gain)/loss | Pre-Medicare | Medicare |
|---|---|---|
| Current (reflecting Optum) | (10.5%) | (14.3%) |
| Exclude Optum Impact | (0.2%) | (2.8%) |

GRS

# Draft Reports

- We are in the midst of the review of the draft reports and thus far only have minor comments that we have or will provide to Buck
- Summary of these comments will be included in the final audit report

GRS

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Investment Advisory Council Member Contract Expiration | ACTION: | X |
| | | INFORMATION: | |
| DATE: | March 19-20, 2020 | | |

BACKGROUND:

AS 37.10.270 provides that the Alaska Retirement Management Board (Board) may appoint an investment advisory council (IAC) composed of at least three and not more than five members. Members shall possess experience and expertise in financial investments and management of investment portfolios for public, corporate, or union pension benefit funds, foundations or endowments. Currently, three IAC members are under contract to provide advisory services to the board and its staff. The three advisory positions are designated by areas of expertise: an academic advisor, an advisor with experience as trustee/manager of a public fund or endowment, and an advisor with experience as a portfolio manager. IAC members currently attend Board meetings, an annual manager review meeting, and annually participate in evaluating and recommending the strategic asset allocation for the plans.

STATUS:

Dr. William Jennings holds the seat designated for the academic advisor. Dr. Jennings has been an IAC member for ASPIB and the Board since 2003. In recent years, Dr. Jennings was the successful applicant in searches conducted in 2011 and in 2014, and was re-appointed in 2017.

RECOMMENDATION:

That the Board reappoint Dr. Jennings to a three-year term on the Investment Advisory Council beginning July 1, 2020 and ending June 30, 2023.

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Asset Allocations | ACTION: | X |
| | Resolution 2020-01 | | |
| DATE: | March 19-20, 2020 | INFORMATION: | |

BACKGROUND:

The Alaska Retirement Management Board (ARMB) sets and reviews the asset allocations on behalf of all plans over which it has fiduciary responsibility.

At the December 2019 board meeting, ARMB approved expanding the Fixed Income allocation band for the PERS, TRS, and JRS plans from +/- 6% to +/- 10% for fiscal year 2020.

The revised December 2019 asset allocation (Resolution 2019-17) unintentionally omitted changes to the Real Assets policy benchmark which had been adopted at the September 2019 board meeting (Resolution 2019-16). The purpose of this action item is to correct for that oversight.

STATUS:

No changes are being made to the target asset allocation.

The policy benchmark is being changed as described below, effective January 1, 2020, to reflect changes to the Real Assets policy benchmark adopted at the September 2019 board meeting.

| Policy Benchmark for Real Assets | |
|---|---|
| Current | Proposed (Board approved September 2019) |
| 45.5% NCREIF Total<br>25% NCREIF Farmland customized to 80% row, 20% permanent<br>10% NCREIF Timberland<br>17.5% Global Infrastructure<br>2% FTSE NAREIT All Equity | 37.5% NFI-ODCE<br>10% FTSE-NAREIT<br>25% NCREIF Farmland<br>10% NCREIF Timberland<br>17.5% CPI+4 |

RECOMMENDATION:

The Alaska Retirement Management Board adopt Resolution 2020-01, incorporating Real Assets policy benchmark changes into the approved asset allocation effective January 1, 2020.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Asset Allocation for the Funds of the
Public Employees' Retirement System Defined Benefit and Defined Contribution Plans,
Teachers' Retirement System Defined Benefit and Defined Contribution Plans, and
Judicial Retirement System Defined Benefit Plans

Resolution 2020-01~~2019-17~~

WHEREAS, the Alaska Retirement Management Board (Board) was established by law to serve as trustee of 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 policies for each of the funds entrusted to it; 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, the Board contracts with an independent consultant to provide experience and expertise in asset allocation and other investment matters to come before the Board; and

WHEREAS, the Board has reviewed the actuarial assumptions; and

WHEREAS, the Board has reviewed the asset allocation set forth in the study prepared by the external investment consulting firm of Callan Associates, Inc.; and

WHEREAS, a prudent, diversified portfolio reduces risk and volatility and considers short term and long term earnings requirements for the Funds; and

WHEREAS, the Board shall continue to review, evaluate and make appropriate adjustments to asset allocation for the retirement plans on a periodic basis;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD that effective January 1, 2020, the following Policy Benchmark be established for the following funds:

(1) Public Employees' Retirement System
- Defined Benefit Plans
  - Retirement Trust
  - Retirement Health Care Trust
- Defined Contribution Plans
  - Health Reimbursement Arrangement Plan Trust Fund
  - Retiree Medical Plan
  - Defined Benefit Occupational Death and Disability
    - Public Employees All Other

- Peace Officers and Firefighters

(2) Teachers' Retirement System
- Defined Benefit Plans
  - Retirement Trust
  - Retirement Health Care Trust
- Defined Contribution Plans
  - Health Reimbursement Arrangement Plan Trust Fund
  - Retiree Medical Plan
  - Defined Benefit Occupational Death and Disability

(3) Judicial Retirement System
- Retirement Trust
- Retirement Health Care Trust

Target Asset Allocation

| Asset Class | Allocation | Range |
|---|---|---|
| Broad Domestic Equity | 26% | ± 6% |
| Global Equity Ex-US | 18% | ± 4% |
| Fixed Income | 24% | ± 10% |
| Opportunistic | 8% | ± 4% |
| Real Assets | 13% | ± 7% |
| Private Equity | 11% | ± 6% |
| Total | 100% | |
| | | |
| Expected Return – 20 Year Geometric Mean | 7.13% | |
| Projected Standard Deviation | 13.8% | |

Policy Benchmarks

| Asset Class | Benchmark |
|---|---|
| Broad Domestic Equity | Russell 3000 |
| Global Equity Ex-US | MSCI ACWI Ex-US IMI Net |
| Fixed Income | 95% BB US Aggregate<br>5% 3-Month Treasury Bill |
| Opportunistic | 60% Russell 1000<br>40% BB US Aggregate |
| Real Assets | ~~45.5% NCREIF Total~~<br>~~25% NCREIF Farmland customized to 80% row, 20% permanent~~<br>~~10% NCREIF Timberland~~<br>~~17.5% Global Infrastructure~~<br>~~2% FTSE NAREIT All Equity~~37.5% NFI-ODCE<br>10% FTSE-NAREIT<br>25% NCREIF Farmland<br>10% NCREIF Timberland |

| | |
|---|---|
| | <u>17.5% CPI+4%</u> |
| Private Equity | 1/3 S&P 500<br>1/3 Russell 2000<br>1/3 MSCI EAFE Net |

Public Market Proxy Portfolio

| | |
|---|---|
| Total Fund Proxy Expectations:<br>20 Year Geometric Return: 6.9%<br>Standard Deviation: 13.8% | 45% Russell 3000<br>30% MSCI ACWI Ex-US IMI Net<br>25% BB US Aggregate |

This resolution repeals and replaces Resolution 2019-~~03~~<u>17</u>.

DATED at Juneau, Alaska this ____ day of <u>March</u>~~December~~, 20<u>20</u>~~19~~.

___________________________________

Chair

ATTEST:

________________________

Secretary

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Asset Allocation for the Funds of the
Public Employees' Retirement System Defined Benefit and Defined Contribution Plans,
Teachers' Retirement System Defined Benefit and Defined Contribution Plans, and
Judicial Retirement System Defined Benefit Plans

Resolution 2020-01

WHEREAS, the Alaska Retirement Management Board (Board) was established by law to serve as trustee of 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 policies for each of the funds entrusted to it; 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, the Board contracts with an independent consultant to provide experience and expertise in asset allocation and other investment matters to come before the Board; and

WHEREAS, the Board has reviewed the actuarial assumptions; and

WHEREAS, the Board has reviewed the asset allocation set forth in the study prepared by the external investment consulting firm of Callan Associates, Inc.; and

WHEREAS, a prudent, diversified portfolio reduces risk and volatility and considers short term and long term earnings requirements for the Funds; and

WHEREAS, the Board shall continue to review, evaluate and make appropriate adjustments to asset allocation for the retirement plans on a periodic basis;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD that effective January 1, 2020, the following Policy Benchmark be established for the following funds:

(1) Public Employees' Retirement System
- Defined Benefit Plans
    - Retirement Trust
    - Retirement Health Care Trust
- Defined Contribution Plans
    - Health Reimbursement Arrangement Plan Trust Fund
    - Retiree Medical Plan
    - Defined Benefit Occupational Death and Disability
        - Public Employees All Other

- Peace Officers and Firefighters

(2) Teachers' Retirement System
- Defined Benefit Plans
  - Retirement Trust
  - Retirement Health Care Trust
- Defined Contribution Plans
  - Health Reimbursement Arrangement Plan Trust Fund
  - Retiree Medical Plan
  - Defined Benefit Occupational Death and Disability

(3) Judicial Retirement System
- Retirement Trust
- Retirement Health Care Trust

Target Asset Allocation

| Asset Class | Allocation | Range |
|---|---|---|
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| Fixed Income | 24% | ± 10% |
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| Real Assets | 13% | ± 7% |
| Private Equity | 11% | ± 6% |
| Total | 100% | |
| | | |
| Expected Return – 20 Year Geometric Mean | 7.13% | |
| Projected Standard Deviation | 13.8% | |

Policy Benchmarks

| Asset Class | Benchmark |
|---|---|
| Broad Domestic Equity | Russell 3000 |
| Global Equity Ex-US | MSCI ACWI Ex-US IMI Net |
| Fixed Income | 95% BB US Aggregate<br>5% 3-Month Treasury Bill |
| Opportunistic | 60% Russell 1000<br>40% BB US Aggregate |
| Real Assets | 37.5% NFI-ODCE<br>10% FTSE-NAREIT<br>25% NCREIF Farmland<br>10% NCREIF Timberland<br>17.5% CPI+4% |
| Private Equity | 1/3 S&P 500<br>1/3 Russell 2000<br>1/3 MSCI EAFE Net |

Public Market Proxy Portfolio

| | |
|---|---|
| Total Fund Proxy Expectations:<br>20 Year Geometric Return: 6.9%<br>Standard Deviation: 13.8% | 45% Russell 3000<br>30% MSCI ACWI Ex-US IMI Net<br>25% BB US Aggregate |

This resolution repeals and replaces Resolution 2019-17.

DATED at Juneau, Alaska this 19th day of March, 2020.

____________________________________
Chair

ATTEST:

__________________________
Secretary

# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: J.P. Morgan Systematic Alpha Termination

ACTION: X

DATE: March 19, 2020

INFORMATION:

BACKGROUND:

The Alaska Retirement Management Board hired J.P. Morgan Systematic Alpha at the June 2017 board meeting following a Callan search for alternative beta managers. J.P. Morgan is one of two alternative beta managers hired. The ARMB added an allocation to alternative beta to provide another source of transparent and uncorrelated returns. Alternative beta is a sleeve within the Opportunistic asset class.

STATUS:

As of February 29, 2020, J.P. Morgan manages $159.7 million for ARMB in their Systematic Alpha strategy. Since ARMB's investment, J.P. Morgan's approach has experienced difficult headwinds which has resulted in performance that has fallen short of expectations over various upward and downward market movements when compared to traditional asset classes and other alternative beta strategies.

Annualized Performance (%) as of February 29, 2020

| | MTD | QTD | YTD | One year | Since inception |
|---|---|---|---|---|---|
| Alaska Retirement Management Board – Net | -5.5 | -5.6 | -5.6 | -10.4 | -9.7 |
| ICE BofA Merrill Lynch 3 Month TB benchmark | 0.2 | 0.3 | 0.3 | 2.2 | 2.0 |
| **Excess return** | **-5.7** | **-5.9** | **-5.9** | **-12.6** | **-11.7** |

The fund has fallen further in March and is not providing the returns or expected diversification. As a result, staff recommends removing the Systematic Alpha strategy from the ARMB's portfolio.

RECOMMENDATION:

The Alaska Retirement Management Board direct staff to terminate J.P. Morgan Systematic Alpha.

# PUBLIC COMMENT LETTERS ATTACHED:

**Public Comment was given by the following people:**

1. Mr. Robert Schoeder (Letter Attached)
2. Mr. Elaine Schroeder (Letter Attached)
3. Ms. Katie Mckenna (Letter Attached)
4. Mr. Michael Tobin (Letter Attached)
5. Mr. Doug Woodby (Letter Attached)

Alaska Retirement and Benefits Board, Mar 19, 2020 testimony

My name is Bob Schroeder. I am presently retired after working as a cultural anthropologist with ADFG for 20 years with an additional decade plus working for the Department of Agriculture Forestry Sciences Lab and the Tongass National Forest. I live in Juneau Alaska. My retirement income as a former tier 1 employee provides a major part of my income.

I testified at your December 2019 meeting in Juneau and urged the Board to divest from risky fossil fuel energy investments and from financial instruments that support fossil fuel exploration, development, and infrastructure. My rationale has been that, not only are such investments ethically challenged since they support unmitigated carbon dioxide emissions and further exacerbate the climate emergency and that the same companies continue to mount a disinformation propaganda campaign to foster their economic interests, but such investments are bad bets at this time.

Overall fossil fuel investments have markedly underperformed the general market for the past 10 years. S&P SPN covering the energy sector shows an annualized return of -8.42% while the S&P 500 gave a return of 9.74% for the same period. I expect future performance to also lag way behind other investment sectors because of existing stranded assets and projected deceased demand for fossil fuels as we transition to a carbon free economy. Under UN IPCC estimates reported in the Financial Times, over 80% of existing fossil fuel reserves cannot be burned if we are to stay at or under a temperature increase of 1.5 degrees. Even at a 2 degree increase, 59% of existing reserves cannot be burned. In this context, oil development companies plans to further invest $1 trillion in finding new reserves are not only unconscionable, but they are really dumb financial bets.

And that was without the double wammy of covid 19 reducing world wide demand for fossil fuels and the current oil price war. Over the past year Exxon stock is down from a high of 83 to the present level of 33, BP from a high of 45 to the current level of 15.  Furthermore, financing big energy has become a chancy bet, with the likelihood that many existing loans will default without massive government bailouts.

Gosh, I wish that the Board could assure this pensioner that my retirement funds were safe.

To figure out how heavily the funds you manage are invested in these industries I submitted a Public Records Request on Feb. 2, 2020.  I am still waiting to get the information I need to know how the funds you manage are positioned.  I would like to thank Ms. Stephanie Alexander for working on this request; Ms. Alexander told me that I can expect information in April., 2020.  I have to admit to some surprise that the Board does not appear to closely track its exposure to the risks of investment in the energy sector.

Thank you for the opportunity to testify and for your work as stewards of the Alaska retirement funds upon which so many of us depend.

To: Alaska Retirement Management Board of Trustees

From: Elaine Schroeder 1706 Willow Dr. Juneau, AK 99801

My name is Elaine Schroeder and I have lived in Alaska for almost 40 years. My husband's career was at the Ak Dept of Fish and Game. As retirees, we are dependent on his pension.

My request is very simple and straight forward. I'd like to direct my question to Board Chairman, Robert Johnson. My question to you, is: What are your plans to respond to the worldwide trend among pension funds and investment institutions to divest from fossil fuels because they are rapidly losing value and are among the riskiest of investments. What are you doing to address this? Do you have a climate risk assessment process in place and would you let us know what it is? I thank you in advance for your answer. You can reach me at eschroederjnu@gmail.com.

Hello,

My name is Katie McKenna. I am a high school senior here in Juneau. I'm from a family of educators who have spent their entire careers in Alaska. My father is a retired educator and administrator, who relies on TRS benefits. He supports my testimony. While I may not yet be a beneficiary, I do see the injustices of investing in the fossil fuel industry. As a young adult, I am trying to view my circumstances with a long term view, especially in our current times. I would encourage you to do the same and divest from fossil fuels. I understand that our state's economy is highly dependent on oil, but in Standard & Poor's 2018 assessment of 500 different sectors, the energy sector's (excluding renewable energy) performance has finished dead last. In 1980, seven of the top 10-ranked companies in Standard & Poor's index were oil companies. To put it simply, fossil fuel companies are a misguided and unsustainable long-term investment. (I don't think I need to remind you about today's oil prices.) My generation wants to come back to our state as adults and join a system that supports us, but with an unrelenting focus on fossil fuels--and repeated failures to diversify our economy--, our fates seem to be ignored.

I do want to thank you for the work you've done, especially supporting my dad and other educators in my life. My father worked for a modest income for almost thirty years in the field, and he is exempt from social security. Likewise, my mother passed away with only a nominal social security benefit from a couple of years teaching out of state. I urge you to move forward with transparency about your fossil fuel investments. From my perspective, they don't make sense ethically or economically. Investments in fossil fuels ignore the fiscal and environmental realities my generation is saddled with. Hopefully, inspired by recent events, we can all begin to shift our perspective to look long term, and for the benefit of all groups of people, especially the more vulnerable.

My name is Michael Tobin. I live in Juneau. I am a retired emergency physician.

I am not here to tell you how to do your jobs for Alaska's retirees. I respect your technical expertise and thank you for your work.

I would like to comment on the changing meaning of fiduciary responsibility in this era of climate instability. Your fiduciary duty demands prudence, that is to act in a way that would best serve a careful investor, that you don't self deal and that you treat all your beneficiaries equitably. And that includes beneficiaries decades from now whose world will be experiencing the ravages of climate change destabilization if we keep propping up the fossil fuel industry by investing in it.

What best serves a careful investor in this era of climate change tipping points? Of ocean acidification? sea level rise? extensive burning of boreal forests? disappearance of fisheries?.......the list goes on.

Short answer: not the fossil fuel industry.

Because, fiduciaries are discovering a parallel set of tipping points. Big institutional investors are pulling back rapidly from the fossil fuel sector, which has fallen in relative value on the S and P Index from 28% of total in 1980 to about 4% today. But a bigger factor, a social one, was referred to by Jim Cramer of CNBC, "I'm done with fossil fuels. They are just done. This has to do with new kinds of money managers that just want to appease younger people." Those "younger people" are concerned about climate change which will affect them more than you, their elders. Jim Cramer again, "We are starting to see divestment all over the world….it's going to be a parade.

In this time of extraordinary change, the discharge of fiduciary duty is changing also. Part of fiduciary duty is to treat your beneficiaries equitably. Investments in the fossil fuel sector, which produces the planetary level toxin, carbon dioxide, that is driving global heating and climate instability, discriminate against your younger beneficiaries who will survive deeper into the crisis. As fiduciaries how will you adjust your portfolios to protect your younger beneficiaries?

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March 17, 2020

To: Members of the Alaska Retirement Management Board

From: Doug Woodby.

Thank you for this opportunity to provide comments.

I serve as co-chair of 350Juneau - Climate Action for Alaska. I have a request:

Please explain to myself and other beneficiaries how the Alaska Retirement Management Board is dealing with the substantial financial risk created by the climate crisis.

The fossil fuel related sectors of our economy have underperformed for years. And now, the financial news is full of stories about the accelerating move away from coal, oil, and gas related investments. You have probably heard announcements such as the following:

- The Royal Bank of Scotland announced that by next year it will stop financing major oil and gas producers that lack a Paris-aligned transition plan.
- A similar announcement by Goldman Sachs in December that it would no longer finance arctic oil development, an announcement that prompted retaliation by our Governor.
- The European Investment Bank also announced that it will end financing for fossil fuel projects after next year. This follows a similar announcement by Barclays a year ago.
- BlackRock's annual letter to CEO's in January stated:
  "Climate change is driving a profound reassessment of risk and we anticipate a significant reallocation of capital"
- CNBC's Mad Money host Jim Cramer said on January 31:
  "I'm done with fossil fuel stocks…They're tobacco" meaning that oil stocks are being shunned in the way that tobacco stocks were.
- On February 3rd, Goldman Sachs downgraded Exxon to "sell" status, and
- Most recently, Wells Fargo bank said it will not invest in oil and gas projects in the Arctic.

These announcements are in addition to a number of large pension funds that are divesting from fossil fuels because those funds have been dragging down returns for years.

Is the ARMB pursuing divestment of fossil fuel related assets, and if so, to what degree?

Thank you for considering my concerns.

*The number 350 in my group's name refers to the concentration of carbon dioxide in the atmosphere in parts per million that scientists tell us is an upper limit, above which life as we know it is not sustainable. The atmospheric level of $CO_2$ is now over that limit at about 415 ppm and rising.*