# ALASKA RETIREMENT MANAGEMENT BOARD

December 2-3, 2021

BOARD OF TRUSTEES MEETING

Alaska Retirement Management Board

# Board of Trustees Meeting

## Thursday, December 2, 2021

Click here to join the Microsoft Teams meeting or use the options provided below.

| Video conferencing device: | | Call In (Audio Only): | |
|---|---|---|---|
| **Link:** 260748889@t.plcm.vc | **ID:** 115 195 346 8 | Phone: 1-907-202-7104 | **Code:** 438 292 33# |

**I.** **9:00 AM** **Call to Order**

**II.** **Roll Call**

**III.** **Public Meeting Notice**

**IV.** **Approval of Agenda**

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

**VI.** **A. Approval of Minutes – September 23-24, 2021**
**B. Approval of Minutes – October 11, 2021**

**VII.** **Election of Officers**

**VIII.** **9:15 AM** **Staff Reports**

**A. Retirement & Benefits Division Report**

1. Buck Consulting Invoices
2. Membership Statistics
3. DRB Update

*Ajay Desai, Director, Division of Retirement & Benefits*
*Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits*

**B. Treasury Division Report**
*Pamela Leary, Director, Division of Treasury*

**C. Liaison Report**

1. *Disclosures Report*
2. *Communications Report*
3. *Meeting Calendar & ARMB Timeline*

*Alysia Jones, ARMB Liaison*

**D. CIO Report**
*Zachary Hanna, Chief Investment Officer*

**E. Fund Financial Presentation**
*Ryan Kauzlarich, Assistant Comptroller, Division of Treasury*
*Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits*

**IX. 9:45 AM Trustee & Legal Reports**

**A. Chair Report**, *Rob Johnson*

**B. Committee Reports**

1. Audit Committee, *Gayle Harbo, Chair*
2. DC Plan Committee, *Bob Williams, Chair*
3. Actuarial Committee, *Allen Hippler, Chair*
4. Operations Committee, *Rob Johnson, Chair*
5. Alaska Retiree Health Plan Advisory Board, *Lorne Bretz, ARMB Member*

**C. Legal Report**, *Ben Hofmeister, Assistant Attorney General, Dept of Law*

BREAK @ 10:20 am (10 MINUTES)

**X. 10:30 AM Presentations**

**A. KPMG Audit Report**
*Beth Stuart & Melissa Beedle, KPMG*

10:45 – 11:15 **B. Summary of Preliminary 2021 Valuation Results**
*David Kershner & Scott Young, Buck*

11:15 – 12:00 **C. Audit of State's Actuary**
*Paul Wood & Bill Detweiler, Gabriel Roeder Smith & Company*

LUNCH @ 12:00 pm (75 MINUTES)

1:15 – 2:15 **D. Performance Measurement -3rd Quarter**
*Paul Erlendson & Steve Center, Callan LLC*

2:15 – 2:55 **E. Private Equity Annual Plan**
**Action:** Private Equity Annual Plan Resolution 2021-12
*Sean Howard, State Investment Officer*

BREAK @ 2:55 pm (10 MINUTES)

3:05 – 3:45 **F. Private Equity Manager Review**
*Gary Robertson, Callan LLC*

3:45 – 4:15 **G. Cyber Security**
*Paul Wood, Gabriel Roeder Smith & Company*

BREAK @ 4:15 pm (5 MINUTES)

4:20 – 4:40 **H. Executive Session**

RECESS for the DAY @ 4:40 pm

# Friday, December 3, 2021

Click here to join the Microsoft Teams meeting for 9/24/21 or use the options provided below.

| Video conferencing device: | | Call In (Audio Only): | |
|---|---|---|---|
| **Link:** 260748889@t.plcm.vc | **ID:** 114 931 561 7 | Phone: 1-907-202-7104 | **Code:** 863 152 486# |

9:00 – 10:00 **I. JP Morgan Market Insights**
*David Lebovitz, Executive Director*
*Jeff Shields, Executive Director*

10:00 – 10:40 **J. Private Equity/Growth Equity: Introduction to Summit Partners**
*Dave Schiller, Chief Investor Relations Officer*
*Peter Chung, Managing Director and Chief Executive Officer*

BREAK @ 10:40 am (15 MINUTES)

10:55 – 11:35 **K. Private Equity/ Buyout: Introduction to Genstar**
*Tony Salewski, Managing Director*
*Carson Ewanich, Senior Analyst*

11:35 – 12:15 **L. Understanding Returns for Public DB Plans**
*Brady O'Connell, Callan LLC*

| | | |
|---|---|---|
| **XI.** | **12:15 PM** | **Unfinished Business** |
| **XII.** | | **New Business** |
| **XIII.** | | **Other Matters to Properly Come Before the Board** |
| **XIV.** | | **Public/Member Comments** |
| **XV.** | | **Investment Advisory Council Comments** |
| **XVI.** | | **Trustee Comments** |
| **XVII.** | | **Future Agenda Items** |
| **XVIII.** | | **Adjournment** |

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

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

**Videoconference**

**MINUTES OF**
**September 23-24, 2021**

**Thursday, September 23, 2021**

## CALL TO ORDER

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

## ROLL CALL

MS. VRANA noted she was present on behalf of COMMISSIONER HOLLAND; CHAIR JOHNSON said that under the statues regarding the ARM Board, COMMISSIONER HOLLAND could not delegate the authority to vote; MS. VRANA stated that they were aware of that.

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

**Board Members Present**
Robert Johnson, *Chair*
Bob Williams, *Vice-Chair*
Gayle Harbo, *Secretary*
Lorne Bretz
Allen Hippler
Dennis Moen
Donald Krohn

Commissioner Amanda Holland *(joined late on 9/23/2021)*

**Board Members Absent**
Commissioner Lucinda Mahoney *(absent 9/23/2021)*
Commissioner Amanda Holland *(absent 9/24/2021)*

**Investment Advisory Council Members Present**
Dr. William Jennings
Dr. Jerrold Mitchell
Ruth Ryerson

**Department of Revenue Staff Present**

Zachary Hanna, Chief Investment Officer
Pamela Leary, Director, Treasury Division
Brian Fechter, Deputy Commissioner
Kayla Wisner, State Comptroller
Scott Jones, Head of Investment Operations, Performance & Analytics
Michelle Prebula, State Investment Officer
Kevin Elliot, State Investment Officer
Casey Colton, State Investment Officer
Benjamin Garrett, State Investment Officer
Victor Djajalie, State Investment Officer
Shane Carson, State Investment Officer
Mark Moon, State Investment Officer
Sean Howard, State Investment Officer
Steve Sikes, State Investment Officer
Ryan Kauzlarich, Accountant V
Hunter Romberg, Investment Data Analyst
Grant Ficek, Business Analyst
Alysia Jones, Board Liaison

**Department of Administration Staff Present**

Paula Vrana, Deputy Director, Division of Retirement & Benefits
Ajay Desai, Director, Division of Retirement & Benefits
Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits
Kris Humbert, Business Integration Officer, Division of Retirement & Benefits

**ARMB Legal Counsel Present**

Benjamin Hofmeister, Assistant Attorney General, Department of Law
Rob Schmidt, Assistant Attorney General, Department of Law

**Consultants, Invited Participants**

Steve Center, Callan
Avery Robinson, Callan
Jonathan Gould, Callan
David Kershner, Buck
Scott Young, Buck
Paul Wood, Gabriel Roeder Smith
Bill Detweiler, Gabriel Roeder Smith
Steve Zaun, J.P. Morgan
Jeff Shields, J.P. Morgan
Tom Klugherz, J.P. Morgan
Darren Rabenou, UBS Farmland LLC
Jim McCandless, UBS Farmland LLC
Daniel Murray, UBS Farmland LLC

Tom Johnson, Timberland Investment Resources
Chung-Hong Fu, Timberland Investment Resources
Mark Seaman, Timberland Investment Resources
Chris Mathis, Timberland Investment Resources
Julio Garcia, IFM Global Infrastructure Fund
David Altshuler, IFM Global Infrastructure Fund
Nick Siemsen, Pathway
Jonathan Roth, Abbott
Leonard Pangburn, Abbot
Dillon Booth, Abbot

**Others Present**
Elaine Schroeder, Public
Doug Woodby, Public
Diane Graham, Public
Doug Gregg, Public
John Hudson, Public
Jim Simard, Public
Paul Miranda, Public

## PUBLIC MEETING NOTICE

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

## APPROVAL OF AGENDA

MR. HIPPLER moved to approve the agenda. MR. KROHN seconded the motion.

With no objections, the agenda was approved.

## PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS AND APPEARANCES

MS. SCHROEDER, co-chair of 350Juneau noted an op-ed in the ADN by attorney and former state senator Joe Paskvan. She read selections from the piece regarding ExxonMobil and the company's loss of value by 50 percent and Norway's sovereign wealth fund was advised to divest all shares from oil and gas companies into renewable energy companies - Norway's fund rejected the advice and continued ownership in shares of oil and gas companies through 2020 which resulted in an 11 percent loss. She noted that Paskvan's op-ed noted that since 2018 the cost of producing electricity from solar had been lower than that of fossil fuels.

MR. WOODBY noted that he was a state pension beneficiary and a member of 350Juneau and thanked CHAIR JOHNSON and COMMISSIONER MAHONEY for the letter that was published in July on the state website explaining the reasoning for not divesting from fossil fuels, noting that the ARMB's fiduciary duty had more restrictive investor rules than most institutional investors. He went on to explain that they had sampled 10 states randomly to see if they too had prudent investor rules. He noted seven out of 10 had similarly restrictive policies on diversification. He said the diversification requirements had a caveat similar to Alaska's within Statute 13.36.235 which stated, "Unless the trustee reasonably determines that because of special circumstances the purposes of the trust are being served without diversifying." He then asked if a prudent investor looked at losing money on a failing sector, like oil and gas, as a special circumstance?

MR. WOODBY then thanked the staff for the response he received on September 13th to his request for public records regarding holdings information. He said the response indicated that the fossil fuel holdings amount to only 3 percent of the total holdings.

MR. WOODBY said that both New York City and New York State pensions were being divested through a fiduciary analysis approach. He said BlackRock and Leucadia had done the research. He noted that there had been no negative financial impacts but had moderate improvement to returns for institutions that had adopted divestment, and that institutional divestment actions had passed fiduciary prudence tests.

MR. WOODBY closed his discussion by stating that ExxonMobil had returned to the long-term downward trend showing a 31 percent loss over the past five years. He said the prudent approach would be to sell while the industry was enjoying a bounce back which he suggested would be short-lived.

MS. GRAHAM said that she was from Bethel and was concerned about the proposal to reset the market value of the TRS system assets for short-term benefit. She said her and her husband were retired educators that still lived in Bethel and their retirement was dependent upon the TRS being funded in the future.

MR. GREGG reminded the Board of the State Constitution Article 12, Section 7 which concluded with, "The systems shall not be diminished or impaired." He noted that the American Legislative Exchange Council estimate the unfunded liability for TRS and PERS at $33.9 billion and state actuaries with the FY2021 to FY2039 payoff plans estimated the unfunded liability at $8.1 billion. He noted that artificially low contributions during good times were part of the reason for the unfunded liability and that it was not the time to reduce contributions to the retirement systems.

MR. HUDSON of Juneau said that he was a member of 350Juneau and a state pensioner. He noted a signed executive order by Biden titled "Tackling the Climate Crises at Home and Abroad," he said that the consequences of the order would have a negative effect for the value of fossil fuel holdings. He said Biden had ordered the Secretaries of State, Treasury, and Energy to identify steps to end the international financing of fossil fuel-based energy, however the Treasury would advocate for investments that prioritize clean energy innovation and efficiency. He noted the order promoted renewable energy development on public lands and offshore waters with a goal to double offshore wind energy production by 2030. He said the Department of Interior was revising regulations that would lower the cost of wind and solar energy development on federal lands.

MR. HUDSON said that Biden had ordered the Secretary of the Interior to pause new oil and natural gas leases on public lands and offshore waters and consider adjustments to royalties. He noted that a federal judge had lifted the Interior's ban on new oil and gas leases last June, but the department had appealed the ruling. He also noted that Biden had ordered agencies to ensure that federal funding would not directly subsidize fossil fuels and the administration's American Jobs Plan, which was contained in the infrastructure bill, eliminated billions of dollars in subsidies, loopholes, and special foreign tax credits for the fuel industry.

MR. HUDSON said the trillion-dollar infrastructure bill that was moving through Congress would provide $75 billion to clean energy infrastructure, and the budget reconciliation package would provide $200 billion to incentivize clean energy production while penalizing fossil-fuel based energy.

CHAIR JOHNSON thanked the speakers.

**APPROVAL OF MINUTES**

<u>MS. HARBO moved to approve the minutes of the June 17-18, 2021 meeting of the ARM Board. MR. KROHN seconded the motion.</u>

With no objections, the minutes were approved.

**STAFF REPORTS**

**A. Retirement & Benefits Division Report**

**1. Buck Consulting Invoices**

MR. WORLEY noted that on pages 44 to 47 of the Board packet was a summary of the monthly billings request to the Board, that they provide a quarterly update on the billings received from Buck Consulting.

**2. Membership Statistics**

MR. WORLEY referred to pages 48 to 52 of the Board packet which was the report on retirement membership activity through June 30, 2021, summarizing that they've seen a decline in active membership in the DB Plan for PERS and TRS since its closures in 2006 for new members. The number continued to decline while active membership in the DCR Plan continued to increase.

MS. HARBO asked if there was any indication as to why they were leaving; MR. WORLEY said that they do not get specific reasons; MS. HARBO then asked if the DC Committee received feedback on the reasons members were cashing out at the DC Committee level; MR. WORLEY stated that some of the disbursements and reasons that membership checks some of that was covered in the fund financial presentation scheduled later on the agenda.

MR. DESAI referred to page 53 of the Board packet which was a report provided to the DC Committee yesterday. He reminded the Board that for many years the Division had received requests to withdraw funds from the DC Plan, which they could not do according to the plan provisions, but if they were terminated or experiencing a qualified unforeseeable emergency as defined by the IRS code, or to a QDRO or death, they would be able to draw from the DC Plan. Other than the aforementioned situations, the DC account remains unavailable to the members until distribution age of 72. He said that in 2020 Congress passed the SECURE Act which allowed withdrawal provisions for the DC Plan sponsors if they choose to offer it. The Division took the opportunity to amend the plans to adopt the additional features that would help membership.

MR. WILLIAMS asked if it was something the plan had to do and did not need the ARM Board approval for: MR. DESAI confirmed that was the case.

MR. DESAI gave an update on the BEARS project. He said DRB hired Linea Solutions, a project management team in 2019 and an agreement was signed with Sagitec Solutions in April of 2020. He explained the integrated enterprise-wide system supported all the core business functions for pension and health plans for all tiers. He said the system would be a retirement information system and a solution with tools to enable the state to maintain and improve the services to the members. He then introduced KRIS HUMBERT who was overseeing the project.

MS. HUMBERT reported that they were doing very well with the implementation of the project, that they were on time and on budget. She noted that they would have the first pilot implementation review and program testing starting November 8$^{th}$.

**B. Treasury Division Report**

**1. ARMB FY2023 Budget**

MS. LEARY announced that MS. WISNER would be leaving and thanked her for her service and all her work at the Treasury Division.

MS. LEARY then referred to the action memo on page 53 of the packet. She stated that the information had been reviewed and discussed in the Operations Committee and an action memo to recommend the full board to adopt the FY2023 proposed budget was approved.

**2. Action: FY2023 Budget Proposal**

On behalf of the Operations Committee, CHAIR JOHNSON moved to adopt the FY2023 Proposed Budget, with the understanding that components will be subject to appropriation by OMB and the Legislature. A roll call vote was taken, and <u>the motion passed unanimously.</u>

**C. Liaison Report**

**1. Disclosures Report**

MS. JONES noted that the second quarter disclosure memorandum was in the Board packet and that there were no disclosure transactions that required additional review or discussion.

**2. Communication Report**

MS. JONES noted that the communications report contained a list of communications directed to the board since the last meeting, and a summary of public records requests received from May 1 to August 31, 2021.

**3. Meeting Calendar**

MS. JONES then presented the calendar noting the next scheduled Board meeting on October 11$^{th}$ and then the December meeting. She asked if the Board had suggestions as to where they would like the meeting held, given the current meeting had to transition to a virtual meeting.

CHAIR JOHNSON asked the Board for suggestions and stated that he would like it to be in Juneau. MS. HARBO asked if they should consider the outbreak of COVID; CHAIR JOHNSON said that was a consideration, but in the absence of an overwhelming objection, he said they should try to meet in Juneau. As there was no objection voiced, CHAIR JOHNSON asked MS. JONES to check into the logistics.

CHAIR JOHNSON noted that the meeting in October was a special meeting for further discussion on the prospect of changes to the valuation process going forward and that the meeting would most likely be virtual.

MR. WORLEY said that he believed they needed an Actuarial Committee meeting to pass the resolution from the committee before the Board could take it up.

CHAIR JOHNSON disagreed on the necessity of having it go through the Actuarial Committee meeting.

He said he would not propose a committee meeting for the Actuarial Committee, but to have an ARM Board meeting on the subject. He then asked if there were any objections, hearing none he stated that the Audit Committee would meet at 8:00, the ARM Board would meet at 9:00 and would possibly be completed by noon.

**D. CIO Report**

MR. HANNA started with an exhibit from Callan's report that showed the ARM Board returns for the fiscal year. He noted that the last year was very strong with the PERS return of 27.6 percent which was the highest return since they began tracking performance 37 years ago. He said the strong performance put the ARM Board near the top quartile for most time periods, exceeding the performance of 75 percent of peers.

MR. HANNA said MR. SIKES and Callan had put together a complete review of the program, from an asset allocation perspective. He noted that they would hear from real estate, farmland, timberland, and infrastructure managers. They would also hear from Callan on performance, Shane Carson on risk, Pathway on cryptocurrency and blockchain technology, and Abbott Capital would report on their private equity portfolio.

MR. HANNA referenced the response to constituents concerned about the ARM Board's fossil fuel investments referenced earlier in the meeting and commented that within the response their daily holdings showed that public securities were 3.1 percent invested in fossil fuels as of the end of the fiscal year.

MR. HANNA noted that Item 2 of the CIO report was the watch list. He said the Man Group was the only manager on the watch list due to personnel changes and that they expected to continue monitoring that into 2022.

MR. HANNA said that Item 3 were areas where he exercised CIO delegation for contracting. He noted that contracting activity had slowed down modestly over the past several months for everyone except for SEAN HOWARD in private equity, whom had a very busy year.

MR. HANNA said Item 4 was the summary of the portfolio rebalancing that took place between June and August. He said the rebalancing focused on risk management and returning the portfolio back toward the ARM Board's established asset allocation and risk profile on a quarterly and more frequent basis when needed.

**E. Fund Financial Presentation**

MS. WISNER thanked MS. LEARY and MR. WORLEY for their kind words during the meetings and thanked Treasury staff and the Board.

MS. WISNER noted that the financial report for period ending July 31, 2021 started on page 65 of the Board packet. She stated that as of September 22nd for all nonparticipant-directed invested assets, PERS invested assets were 22.8 billion, TRS assets were 10.9 billion, JRS total invested assets were 293.8 million and NGNMRS had a total invested asset balance of $50 million. She said nonparticipant-directed plans had invested assets of $34.1 billion, year-to-date investment income for nonparticipant directed funds through September 22nd was $885 million, with a year-to-date contribution of $9.2 million. She said as September 22nd there was 17.2 billion worth of invested assets under internal management.

MS. HARBO thanked MS. WISNER and wished her the best for the future.

CHAIR JOHNSON also thanked MS. WISNER for her service.

MR. WORLEY noted that his presentation started on page 93 of the Board packet which showed the first month of FY2022. He then referred to page 94 which showed PERS DB Plan, the TRS DB Pension Plan and the Judicial Retirement System Pension Trust received the State of Alaska appropriation for PERS and TRS.

MR. WORLEY said that on page 99 of the packet, was the FY2021 financial report which showed the Board had full financial data and cash flows for the 12 months ending June 30. In response to MS. HARBO's earlier question, he said page 102 showed information provided by Empower for each of the Defined Contribution plans, including what type of payment it relates to.

## TRUSTEE REPORTS & LEGAL REPORTS

**A. Chair Report**

CHAIR JOHNSON noted that they had seen the letter he co-signed with the Commissioner of Revenue responding to the inquiries from beneficiaries. He said that there were document requests and FOIA requests regarding the subject and that the Department of Revenue, through the liaison, had been responding to all of the requests appropriately.

**B. Committee Reports**

**1. Audit Committee**

MS. HARBO said during their meeting of September 22nd, they had a report from KPMG on the financial statements of the ARM Board's invested assets for FY2021. She said it yielded a clean audit with no matters of concern. She noted that MR. WORLEY had given an update on ongoing DRB audits which were a bit behind due to reconciliation of GASB concerns, that had caused a three-day delay because information had to go between Buck and KPMG.

MS. HARBO stated that MR. WORLEY also reported on the internal audits of the 165 PERS employers and the 58 TRS employers, noting that most of the audits in the past two years had been desk audits, but they would do some traveling in the near future for the large employers.

**2. DC Plan Committee**

MR. WILLIAMS said the DC Committee started with a warm welcome to MR. KROHN. He said that MR. WORLEY gave a presentation on membership fees with an overview of the history and the different fees for the different rates, with an overview of how the rates could be changed by MR. DESAI without a lot of process, if they needed to be changed. He noted there would be a follow-up agenda item regarding that at the December meeting.

MR. WILLIAMS reported that they had an update from Retirement and Benefits on the brokerage window implementation, that it was scheduled for November 15th tentatively.

MR. WILLIAMS said they had updates on the Deferred Compensation Plan amendments and an update from MS. DAVIDSEN of Empower regarding the general delivery address for those members in the rural communities and how they had to actual call in to register on the Empower system to have access to their accounts. They are working to get that issue fixed.

MR. WILLIAMS stated that had a Treasury update from MR. HANNA and MS. PREBULA regarding the SmartSpend implementation, which was now known as SmartRetirement, which appeared to be going well.

MR. WILLIAMS said that MR. HANNA reported on the target date fund and three options that they were looking at with T. Rowe Price for DC members and the different ways they could improve what they had and at a better price.

MR. WILLIAMS said there was also a discussion about the glide path and the innovation and changes in some of the glide paths for target date funds.

**3. Actuarial Committee**

MR. HIPPLER said the first topic of discussion was the deviation between fair market value and actuarial value. COMMISSIONER MAHONEY had outlined the impact of a $7 billion increase in assets and noted that they could not combine healthcare trusts and funds with the pension trusts, that if they did and set it at market value, the TRS would be 101 percent funded. That led to a discussion about if it was appropriate for the state to reset fair market value to actuarial value with corresponding impacts on the funding of the state to cover the unfunded liabilities to the pension.

MR. HIPPLER said that the actuary from Buck noted that when that sort of deviation between market value and actuarial value was big enough to address, there would be concerns about increased volatility.

MR. HIPPLER said that they also heard from GRS, their review actuary, who had a different take and more concerns about increasing the volatility of the funds going forward and concerns about consistency, specifically with Practice No. 44. He noted that there had been comments about fiduciary duty as a key driver, concerns over timeliness. He stated that potential overfunding of the plans was also discussed, and more research was needed on the impacts to the plans in the event of overfunding.

MR. HIPPER said they had also discussed resetting actuarial value to fair market value and the additional state contributions for the various plans that might not necessarily be directly impacted by the decision. He noted that the Actuarial Committee did adopt most of the contribution rates and those would be submitted to the Board as action items.

MR. HIPPLER said that at the October 11th meeting they would discuss the resetting of actuarial value to fair market value and would need to understand the statute behind it to successfully explain why they made the decision not to recommend that contribution amount, and what they would suggest happen to amend that statute.

MR. HIPPLER noted that they also discussed the actuarial timelines going forward, that Buck had provided educational materials which were great tools to look at the metrics of the plans and the demographics.

### 4. Operations Committee

CHAIR JOHNSON said they heard reports on Trustee travel and honorarium and meeting costs. The motion regarding the adoption of the budget was approved for recommendation to the Board.

CHAIR JOHNSON stated that they heard the report by MR. JONES regarding a Middle Office update on the logistic issues for Treasury. He said that they had discussed the self-assessment which had also been discussed by the Actuarial Committee. He noted that there was a provision that requires self-assessment by the various committees. He said the Actuarial Committee adopted the process and performed a self-assessment, and the Operations Committee considered if it was a good idea to forward that to the other committees. He said there was a four-question matrix that would be presented at each of the other committees for their consideration.

### 5. Alaska Retiree Health Plan Advisory Board

MR. BRETZ stated that the Health Advisory Board (ARHPAB) had met several times since the last board meeting to add additional preventative services to the plan that differed from the level that active employees receive.

MR. BRETZ noted that there were costs associated with it and that the Board received several expert opinions regarding the costs, The two sets of experts' opinions were drafted into the resolution with two different opinions as to how much it was going to cost. He read excerpts from the resolution that the Board approved.

The evaluations by the independent certified Fellows of the Society of Actuaries for the addition of preventative care breaks down as follows:

Evaluation 1
Anticipated increase to annual plan costs by approximately $3.35 million
Implementation of prior authorization for specialty medications to decrease plan costs by approximately $7.7 million, resulting in a total anticipated decrease to the plan costs by approximately $4.35 million.

Evaluation 2
Anticipated increase to annual plan costs by approximately $28.6 million
Implementation of prior authorization for specialty medications to decrease plan costs by approximately $100.8 million, resulting in a total anticipated decrease to the plan costs by approximately $72.2 million

MR. BRETZ noted the difference of opinion as to how much it was going to cost. He also said that it had not yet been determined if they would see savings in the future. He said that every member of the Board that reviewed the studies had been working on the preventative issue and recommended that the Division implement the changes, so the Division was moving forward with the recommendation.

MR. BRETZ said that there was a public comment period and the majority of the public that commented was in favor of the changes. Several of the retirees were concerned as to how the prior authorization of prescription specialty medications were going to impact them directly and the Division was working to get answers.

MR. BRETZ said that it would not change the desire of the Division to have a Medicare supplement or Advantage Plan, which was still in the process, the preventative services would not be an option but a plan change.

MS. HARBO commented that EMILY RICCI and her team have had two town hall meetings to answer retiree question on the new proposals and had done an excellent job answering the questions of the retirees and anyone else who calls in.

MR. HIPPLER asked if the plan value increase were liabilities or assets; MR. BRETZ said it was accrued liabilities; MR. HIPPLER then asked if the changes would trigger a diminishment of benefits; MR. BRETZ stated they would not.

CHAIR JOHNSON recessed the meeting from 10:30 a.m. until 10:35 a.m.

### C. Legal Report

MR. HOFMEISTER noted that his report had to do with diminution of benefits under Article 12 Section 7 of the Alaska Constitution which states, "accrued benefits of these systems shall not be diminished or impaired."

MR. HOFMEISTER noted that the first of the three cases he would discuss was the Metcalfe case. He said the Alaska Supreme Court had issued a decision holding that the changes in the law eliminating the ability of a state employee to reinstate to a prior service tier after the creation of the Defined Contribution Plan in 2005-2006 was unconstitutional under the diminishment clause. The case returned to the trail courts in May and the state moved for entry of final judgment as there was nothing further to litigate. Plaintiffs moved for a trial claiming they should be allowed to direct how the state imposes the decision. The state opposed that position, there was additional briefing and an oral argument. He said if the court agrees with the state's position, there would be an immediate implementation of Metcalfe which would result in a repeal of the prior amendments and a permanent enjoinment of the state back to that statute. He said if the plaintiffs were successful the outcome was less clear.

MR. HOFMEISTER noted that the impact would mean an increase in membership to the Defined Benefit Plan under PERS and TRS. He noted that the number used in terms of the formation of the class was approximately 78,000 potential prior employees that would be impacted, and cautioned the Board in using that number, stating that it was a theoretical number and in practice thought it was going to be much less.

MR. HOFMEISTER gave an update on the RPEA case filed in 2018. He reminded the Board that the case was about amendments to the Retiree Health Plan in 2014 which coincided with a change in third-party administrators. He said plaintiffs were claiming the changes were causing diminishment of benefits. They were seeking injunctive and declaratory relief and restitution. A 10-day trial was scheduled in Anchorage on January 31st 2022 but could be continued due to COVID and discovery issues.

MR. HOFMEISTER discussed another RPEA case that had not been reported on for some was the Dental/Vision/Audio coverage matter filed in 2016. The case involved a possible diminishment occurrence related to changes to the DVA coverage in 2014. The case focused on whether DVA coverage was a constitutionally protected accrued benefit of state employment. The Superior Court ruled against the state requiring the state provide retirees the option of returning to the 2013 plan. The state complied with the order and appealed the underlying issues to the Supreme Court. He said oral argument occurred on April 1st, 2021, and a decision is expected next spring.

## PRESENTATIONS

### A. Performance Measurement - 2nd Quarter

CHAIR JOHNSON introduced STEVE CENTER from Callan.

MR. CENTER started with the slide located on page 103 of the Board packet. He said slide 2 of their presentation was of the second quarter of 2021 which had continued recovery, consumer sentiment was strong which was driven by the continued vaccine rollout. He noted that GDP growth was quite strong.

MR. CENTER stated that with the rapid decline then the rapid recovery near the end of 2020 and into 2021 would be something they would have to deal with for the next 10 to 15 years.

MR. CENTER noted that the fixed income market yields had fallen during 2021 and had affected the fixed income returns from the expected negative to a positive. He said TIPS on the other had rallied.

MR. CENTER moved on to slide 3 noting the overall market impact and what they had been watching. He stated that GDP had rose to 6.5 percent in the second quarter and the Fed was still anticipating a roughly 7 percent growth for the rest of the year. He noted an increase in consumer spending, nonresidential investment, consumers ramping up spending on food services, accommodations and there had been a return to travel. He noted that unemployment had dropped to 6 percent in March and held steady through June despite a gain of $850,000 jobs.

MR. CENTER noted that from a global standpoint, the Eurozone was up 8.2 percent in the second quarter, the U.K. was up 7.2 percent despite the pandemic and Brexit. He said Japan had slowed down, their vaccine rollout had been slow. He said he thought the end of Q2 they had about 8 percent of their age-eligible population vaccinated.

MR. CENTER said that China's GDP had risen 5.3 percent in the second quarter then slowed to a positive 1.6 percent in Q1. He noted that China was one of the few economies that saw positive GDP growth during 2020.

MR. CENTER noted that slide 4 showed a snapback in many of the sectors that had the biggest negative impact during the pandemic, such as airlines, REITS, travel and leisure.

MR. CENTER then moved on to slide 8 to discuss inflation. He said that the Fed looks at PCE, personal consumption expenditures, which excludes food and energy. He said the Fed targets historically 2 percent PCE over time. He said that data was not signaling a substantial rise in inflation, then noted that when inflation was north of 2 percent following a period where they had low to negative inflation, an increase in prices when there had been a decrease was not as impactful as if there had been a period of sustained inflation. He also noted that the Fed's aim was to achieve an average of 2 percent and that they were in a period where the PCE was north of 2 percent, but the Fed claimed it to be transitory and related to the ongoing economic recovery.

MR. CENTER stated that slide 9 showed the producer price index that tracks the overall cost related to industrial production. He said the PPI was falling pre-pandemic and continued to do so through the beginning of COVID and the onset of the economic slowdown. He said the PPI had spiked from supply chain issues and production issues. He noted that even with the growth of 19.5 percent in the near term, price levels related to 2018 had not hit where they historically had averaged.

MR. CENTER noted that slide 10 touched on the U.S. job market and the claims for unemployment continued to be above historic levels. He said the initial claims for unemployment remained high, north of 700,000 per month. He noted that there were about 9.5 million jobs to be regained in the U.S. market.

MR. CENTER said that slide 11 showed federal intervention within the U.S. system. He explained the Federal Open Market Committee voted to continue to keep the Fed funds rate at zero in June. He said they had heard rumors about the Fed slowing their asset purchasing program which meant they believed the U.S. market had stabilized, so in turn the Fed would potentially continue the asset purchasing program and begin to moderate the market through their ability to move interest rates over time. He said the market predicts the rates to stay steady potentially through the middle of 2022 or approaching 2023.

MR. CENTER referenced slide 12 stating that liquidity was supporting the economy from the consumer side. He said the slide showed the U.S. personal savings rate had been pretty volatile but much higher than the historic average, raising to 34 percent in April of 2020. He said that savings usually fell during a recession. He noted that excess savings above the norm would insulate consumer spending during economic rough patches. He also noted that household financial assets had gone up substantially during the pandemic as well. He said the U.S. real estate market had done quite well during the pandemic, with people looking to buy in areas such as the suburbs where people could work from home.

MR. CENTER moved on to slide 15 which was Callan's periodic table of investment returns. He noted that they show the Board the table every quarter as a reminder of the benefits of diversification and why they create asset investment programs that were invested in equities and fixed income and real assets and alternatives.

MR. CENTER noted that slide 16 showed that the global equity market had continued to surge in the second quarter with the S&P 500 up 41 percent over the last year, emerging market equities up 41 percent, developed market equities were also up more than 30 percent and U.S. small cap stocks represented by the Russell 2000 were up 62 percent over the last 12 months. He said the initial recovery post pandemic was driven by Facebook, Amazon, Apple, Netflix, and Google.

MR. CENTER noted that slide 17 demonstrated the S&P 500 continued to reach record highs in the second quarter, since its low in March 2020 and the S&P was up over 96 percent with all sectors posting positive returns. He said there was an exception with utilities which were down 0.4 percent.

MR. CENTER referenced slide 18 showing outside the U.S. with strong performances despite COVID even though the vaccine rollout was slower. He noted that risk assets lost steam due to the Delta variant, small cap was in line with large cap with the exception of emerging markets where smaller companies had benefited. He said the U.S. dollar was pretty mixed, not a driver of performance for non-U.S. stocks. He said growth also had outperformed value outside the U.S. with the exception of emerging markets where commodity-rich countries rallied.

MR. CENTER moved on to slide 19 showing the U.S. Treasury yield curve had flattened during the quarter. He said the 10-year Treasury closed at 1.45 percent at the end of June with a dip of 29 basis points from the first quarter. He noted that the Bloomberg Barclays Aggregate Bond Index had rallied and was up 1.8 percent for the quarter. He said the high yield rallied and continued during the second quarter, with rates as low as they were, high yield issuers had continued to come into the market and had done very well.

CHAIR JOHNSON asked what exposures the ARM Board had with respect to Chinese investments - the real estate company that had been having problems; MR. CENTER said that the ARM Board did not really have any exposure to non-U.S. fixed income.

MR. HANNA noted that the ARM Board did have a low-level equity exposure since the Chinese company was in the equity indexes at less than a basis point overall.

MR. CENTER noted that he would skip over the real estate slides as his colleagues would be presenting on that topic the next day. He then moved on to Slide 23 which dealt with the private equity market. He noted that it had been a key driver of performance for the Alaska retirement plans and had produced big gains for 2020 and continued into 2021.

MR. CENTER moved on to slide 24 showing market trends that had impacted private equity. He said fundraising had continued to do well but had a slowdown in 2020 due to the pandemic. He said there was a substantial uptick in 2021 with more than $500 billion raised for the year and more than a 1,000 funds already in the market.

MR. CENTER showed Callan's dashboards on slide 26 which he noted had already been shown by MR. HANNA. He noted the returns in the top left-hand corner of the slide showing the performance over the 1, 3, 5 and 10-year periods, that all three plans were at or near the top quartile, ahead of the target over all periods. He noted that standard deviation or risk was in the top right-hand corner and showed no realized standard deviation again over 3, 5, and 10-year period, which was below median over all periods and below the target as well. He said the bottom left showed the maximum drawdown. He said the chart measured the largest loss over any of the individual time periods. He said that over all three time periods the maximum loss had been lower than peers.

MR. CENTER noted that slide 27 which showed the healthcare plans were basically the same story as slide 26 – near the top quartile for performance, below median standard deviation, maximum drawdown above the median, and Sharpe Ratio in the top quartile.

MR. CENTER explained that slide 28 was the military plan which had a lower target risk than the other retirement plans. He noted that its realized standard deviation over time was much lower relative to the peer group, resulting in a lower return profile. He stressed that was by design and directed the Board to look at performance relative to benchmark

MR. CENTER moved on to slide 29 explaining that it dealt with asset allocation. He reminded the Board that the PERS, TRS, and Judicial Retirement System had the same asset allocation targets and similar performance over time, noting that MR. HANNA and his team did a very good job keeping the asset allocation in line with the target asset allocation. He noted no areas of substantial deviation and said there was a slight overallocation to private equity which was a result of a very strong performance.

MR. CENTER displayed slide 30 explaining that one of the reasons they had a strong performance during the quarter and the trailing 12 months from the PERS, TRS, and Judicial plan was driven by the performance from private equity, and the overallocation to other alternatives which included private equity along with real assets. He said PERS had a slightly higher allocation to real estate and other real assets relative to peers which was one of the reasons for the strong performance relative to peers in the near term.

MR. CENTER said that slide 31 showed the historical performance for PERS was strong relative to peers, at or near the top quartile over all time periods shown.

MR. CENTER stated that the Sharpe Ratios were very strong at or near 1 percent with the PERS portfolio over the last 3, 5, and 10 years. He also said the PERS portfolio was in the top quartile with a Sharpe Ratio of 1.04 over the last 5 years and 0.94 over the last 10 years.

MR. CENTER said that slide 35 dealt with attribution, explaining that attribution analysis was to try to determine what the drivers of relative performance were for a plan versus its target benchmark over the given time period. He explained how the data in the columns, when calculated, would come up with two figures known as the manager effect and the asset allocation effect. He noted that if the asset class had outperformed its target, the manager effect would be positive, if it underperformed its target, it would be negative. He further explained that the asset allocation effect was drivers of performance that were created by being overweight or underweight to an asset class.

MR. CENTER said that slide 40 showed that the total domestic equity portfolio lagged during the quarter and year by 45 basis points behind its benchmark for the quarter and 1.5 percent behind over the last year. He noted that most of the underperformance came from the structure of the domestic equity pool, more specifically, the use of the factor-based strategies. He said that they did have slight recovery from those strategies in Q1, Q2 and a slight return towards growth and momentum, and large cap outperforming small cap.

MR. CENTER then displayed slide 41 which showed building blocks of domestic equity portfolio. He said that over the last year the total domestic equity pool had lagged the Russell 3000 index, large cap equity underperformed the Russell 1000 index, but the small cap had a strong performance placing the small cap portfolio up 66.7 percent last year versus the Russell 2000 index up 62 percent.

MR. HIPPLER asked if they had implemented factor-based strategies prior to the date shown on slide 40; MR. CENTER said the factor-based strategies were implemented prior to that; MR. HIPPLER then asked if 25 percent of the portfolio having factoring was enough to pull the total combined return down by 2.5 of 3 percent compared to peers; MR. CENTER stated that was correct as shown on slide 44; MR. HIPPLER then asked if the factors provided additional benefit, in the form of reduced beta; MR. CENTER confirmed that they should, that factor-based strategies historically had resulted in outperformance with slightly lower beta relative to the market. He also said that the way the domestic equity portfolio was structured it should result in outperformance over time with lower risk.

MR. CENTER moved onto slide 47 noting that it was the global equity portfolio. He said that portfolio was ahead of its target over all time periods and the last 12 months had it ahead of its benchmark by 1.3 percent.

MR. CENTER said that slide 48 showed the developed market equity portfolio noting that it did not include the emerging market equity exposure. He noted that the portfolio also had outperformed the benchmark over all time periods, well above median over the last year. He noted that some of the building blocks were shown on slide 49 from the international equity space. He noted a strong performance from all active managers over the last 12 months with Arrowstreet up over 50 percent. He said that Baillie Gifford and Brandes, the large cap growth and value non-U.S. equity managers, both performing over a positive 40 percent.

MR. CENTER said that slide 50 referenced the emerging market equity that had undergone a few changes post 2019 moving away from active managers and towards passive. He said that portfolio consisted of one passive investment in the emerging market index. He noted that portfolio underperformed its benchmark by 1.7 percent last year, but the overall performance was positive, up almost 40 percent.

MR. CENTER said slide 52 consisted of the fixed income portfolio which had a strong performance over the last year, up 2.2 percent relative to the benchmark, the fixed income target down 0.3 percent over the last 12 months and had outperformed its target over all time periods.

MR. CENTER said slide 53 was a snapshot of the underlying fixed income strategies, that the internal aggregate portfolio was down 19 basis points over the last 12 months, the aggregate index was down 33 basis points – the internal portfolio did outperform the aggregate.

MR. CENTER said slide 54 showed the opportunistic portfolio was up 23.4 percent over the last year, in particular the alternative equity strategy with McKinley Healthcare was up 35 percent. The tactical asset allocation strategies were up 28.3 percent.

MR. HIPPLER asked why they had outperformed substantially for the core fixed income; MR. CENTER said the internal fixed income strategy did outperform the aggregate benchmark by 14 basis points. He said the internally managed fixed income team had the ability to actively manage relative to the index, they can overweight or underweight Treasuries versus credit, they can opportunistically buy higher quality or lower quality corporate credit names relative to the index and take on a credit risk by buying more corporates than the benchmark has allowed for an actively managed portfolio to outperform the index.

MR. CENTER noted that slide 57 showed the various plans, starting with the PERS DC plan which ended the second quarter of 2021 with just under $2 billion in assets with two-thirds of the assets invested in the allocation funds.

MR. CENTER explained that slide 58 showed flows on an individual quarterly basis, explained the bars would be similar for each plan.

MR. CENTER noted that they had five consecutive quarters of positive investment gains or losses. He said that slide 59 showed that the DC Plan ended the quarter with $812 million in assets, up two-thirds of the assets invested in the target date funds and was cash flow positive from a contribution versus withdrawal standpoint. He skipped slide 60 and said that slide 61 was the Deferred Comp Plan with 1.2 billion in assets as of June 30. He noted that the plan was cash flow negative and had been historically cash flow negative with about $10 million flowing out rather than in on a quarterly basis.

MR. CENTER showed slide 63 stating that it was the SBS fund that had ended the quarter with just over $5 billion in assets.

MR. CENTER said the active options within the self-directed plans were geared for the benchmarks. He said the three-month T-bill index had underperformed Stable Value, which was a top decile performer relative to peers. He said the T. Rowe Price small cap fund had done well, the international equity fund which was made up of Brandes and Baille Gifford had a very strong performance relative to peers and the benchmark.

**B. Risk Report**

MR. CARSON started his presentation on slide 2 (page 178 of the Board packet). He explained that twice a year a risk analysis was completed by TruView, which takes the ARM Board portfolio as of year-end and again at the half year mark and generates a significant report. The report takes the key charts and tables that are important in reporting to the Board and summarizes the results. He said the retirement system was designed to take risks with the end goal of paying benefits to the participants when due.

MR. CARSON explained that the staff used the tool to answer key questions which include risk positioning compared to the asset allocation that would be approved by the Board, what would be the potential magnitude of losses, how were risks compared to the strategic benchmark, were there areas that were adding or detracting from risks outside of expectations, and were there any unexpected exposures or concentrations of risk? TruView would then model several scenarios and stress-testing analysis.

MR. CARSON said that slide 5 showed volatility decomposition, which he said there was nothing to report. He said for volatility there was little change since December's reporting, public entities continued to contribute the bulk of volatility, that there was an increase in the contribution of volatility from private equity. He said the volatility at the portfolio level remained below expectations from the target asset allocation for FY2021, which was 13.9 percent, and that current volatility was at 12.6 percent. He said that the portfolio level value-at-risk in June was close to December's, so very little change. He noted that domestic and non-U.S. equities contributed the majority of the value-at-risk and was as expected. He said that equity beta on slide 7 was within expectations for the June report. He said the stress test showed relative outcomes compares to the asset class' benchmark.

MR. CARSON summarized the report by saying that everything was within expectations, public equity was the largest driver of portfolio volatility and value-at-risk.

CHAIR JOHNSON recessed the meeting from 11:56 a.m. until 1:15 p.m.

## C. JPM Strategic Property Fund

MR. SIKES introduced MR. JEFF SHIELDS of JP Morgan; MR. KLUGHERZ informed the Board that MR. SHIELDS was having difficulties joining; he started the presentation noting the trends in the real estate market as well as areas of uncertainty. He said the real estate markets recovered quicker than expected due to improving operating fundamentals at the property level and the lower interest rates. He stated there had been a demand from investors that were actively allocating to core for yield in the low interest rate environment. He noted the income returns in the 4 percent range annually for core offered an attractive current return, and longer-term appreciation and diversification. He said industrial and suburban and multifamily properties had experienced a strong recovery, while urban office, retail and urban multifamily were recovering slowly.

MR. KLUGHERZ said the SPF fund had a very diversified portfolio of high-quality assets they believed was well position in the recovery. He also noted they had a strong performance year-to-date and a projected return for 2021 in excess of 10 percent. He said the fund had a strong asset selection that reflected in the fund's performance and would be important going forward as the recover would be uneven in the terms of performance.

MR. KLUGHERZ commented on the size of the fund saying that it was a unique advantage in that they had been able to access investments that were not widely available to other investors such as industrial investments made into several large truck terminal portfolios.

MR. KLUGHERZ noted that page 5 of the presentation discussed Real Estate Americas having a 50-year history in investing in core assets, an experience that was important not only to SPF's portfolio but also how they source and access investments. He said SPF had $40 billion of the firm's $60 billion-plus in asset investments and was the key focus for their organization. He noted that they had over $10 billion in transaction activity every year and they actively see opportunities as they come into the market.

MR. KLUGHERZ provided an overview of the firm, the locations of the offices, and their proximity to the local markets that they invest and manage.

MR. KLUGHERZ moved to page 10 which showed that SPF had delivered returns above the benchmark since inception. He noted that the fund had evolved significantly over the last 3 to 5 years to address the areas of underperformance. He said they were under allocated to industrial but had almost tripled that allocation over the last 5 years and were close to benchmark. He noted that they had in their development pipeline to add 200 to 300 more basis points of exposure to get them closer to benchmark. He said that they had reduced their office investments over the last five years by over $7 billion and narrowed their strategic focus to nine markets that they felt had long-term outperformance for the net operating income. He noted they were continuing to reduce their retail exposure and had only half a billion dollars of retail that was in various stages of disposition.

MR. KLUGHERZ then handed the presentation over to MR. ZAUN.

MR. ZAUN said that it was a great time to be invested in core real estate relative to other classes as it had been hitting fresh highs for the past 12 months. He noted that the return outlook for the next 3 years was in the 8 to 10 percent range, the highest return outlook they have had in the past 10 years.

MR. ZAUN presented slide 12 which showed a reminder of what SPF was and how it fitted into the market. He said SPF was the largest fund in the competitive index at $30 billion of equity and $40 billion of gross assets size and was a collection of several high-quality assets that had been curated over decades. He said the assets had outsized rent growth over cycles, that in good markets they grow rents faster because the tenants want to be in the buildings; he noted that they have renters from top law, financial services, and some entertainment tenants. He said with a down market the rentals they have are a protection because the tenants want to be in the buildings for a long period of time.

MR. ZAUN moved on to slide 13 stating it displayed the outlook for the fund, which they thought was very bright. He said they thought the performance was going to be better that it had been over the past three years with a 9 percent year-to-date or greater through the end of the third quarter.

MR. ZAUN noted that in the past they were a largely overweight office, that as they looked forward, they had narrowed the office overweight, bringing them in line with the index. He said that to date, they had seen appreciation from industrial and suburban multifamily, but they were starting to see appreciation in retail and thought that the current quarter would show about 50 basis points in appreciation from their retail portfolio. He said they were also seeing it from urban apartments, that urban rents had recovered quite quickly. He said they expected the appreciation to be in the 2 to 3 percent range.

MR. ZAUN stated that 5 percent of the fund was allocated to development, that although it was a small percent of the fund, the development pipeline was well positioned with industrial development primarily in Southern California and a single-family for rent product under development which was a hot sector. He also noted a suburban Sun Belt multifamily under development that was doing well. He said they were expecting significant returns from it as the construction projects are completed.

MR. ZAUN said that slide 16 showed how the performance would broaden out. He said it was due to the revitalization of the urban cities. He noted that due to COVID, large cities like New York and San Francisco lost tenants and they thought it would take a couple of years to recover to the pre-COVID occupancy levels, but they had seen a strong recovery within the last six months. He noted that residential was the leading indicator due to its transient nature and were seeing higher occupancy levels across the portfolio than what they had pre-COVID. He also noted that rents were trending higher than they were pre-COVID. He said that with strong fundamentals combined with cheap financing was driving transactions.

MR. ZAUN moved to slide 19 which showed the balance sheet. He said the fund was conservatively leveraged with about 25 percent, they had no redemption queue and had an inbound contribution queue of $500 million. He noted that 93 to 94 percent of the portfolio was stabilized and shy of 5 percent of it was under development and 1.3 percent of it was completed development and was in lease-up.

MR. ZAUN said that he thought that work from home would become evolutionary and would have an impact to the densification that they had seen over the last 10 to 15 years where people had moved from private offices into more dense seating configurations.

MR. ZAUN commented that their positioning would give superior returns relative to the benchmark as it had over the last 5 years. He thought that they had outperformed due to the quality of focus and their positioning as far as the types of the offices they owned as well as the markets they were in. He noted that they were overweight in the San Francisco Bay area, west LA, and Boston which was where a lot of the innovation was taking place.

MR. ZAUN stated that they had designed the portfolio through infill development; that supply and demand dynamics in those infill locations were much better. He noted that they thought they were moving toward a model where same and next day package delivery would be the new norm and owning buildings that were close to the urban centers over time would prove to be much more desirable.

MR. ZAUN moved on to slide 22 to discuss the retail sector which had been out of favor for several years up to the pandemic but had survived and the tenants were still there paying rent. He noted the occupancy across the portfolio was 91 percent and had never dipped below 90 even during the pandemic. He said their average square foot across the mall portfolio was more than $1000 per square foot. He also noted that even in a consolidating market where tenants were downsizing the number of stores in their fleet, they were not going to downside the stores in their location where they had the highest sales.

MR. ZAUN moved on to residential where the last year had been urban versus suburban. He noted that suburban performed well and urban struggled as everyone moved out of the cities into the suburbs, however, urban snapped back and the portfolio was balanced.

MR. ZAUN said that it was a great entry point for core in general and SPF specifically, that they had performed well year-to-date and were excited about where they were headed.

MR. HIPPLER asked how 6 percent IRR for unlevered core compare historically; MR. SHIELDS said that it had been stable over the past 5 years, that the unlevered IRRs had been in that range, a little higher for retail and lower for multifamily, but on average in that range. He said that the debt costs were at 4 percent, with levered IRRs in the 8 percent range and with debt cost at 2 percent it did not take a lot of leverage to get to a 10 percent levered return; MR. HIPPLER then asked if the IRRs were stable over the last 5 years, did that mean cap rates were also stable; MR. SHIELDS said that the IRRs relative to cap rates depended on the variable they were assuming for rent growth, but that cap rates had been stable in the 4 to 5 percent range.

DR. MITCHELL asked about the holding time for the properties in the fund, if most of them were buy-and-hold situations, or did they buy properties and turn them over a year or two after. His second question was what were the sellers' point of view on the economy, interest rates, financing; MR. SHIELDS said for the first question, they tend to underwrite new deals for a 10-year hold and target to turn over about 10 percent of the portfolio each year. He said for the last question, he said that was a tough one to answer because the sellers were all so different, often there were performance fees attached to a lot of the deals that motivated sellers to sell so they could reap the fees.

MR. WILLIAMS asked about urban and retail and the lack of flight and wanted to know if that was because people were locked in for longer periods of time; MR SHIELDS said that for residential, the leases were short-term, typically for one-year. He said for the commercial side, office tenants had long-term leases where they would be locked in. He said the retail side had been promising as the tenants were making money in the locations they were in and were choosing to stay in place.

MR. BRETZ asked if diversity, equity, and inclusion strategy impact the choices that they made for investments and that they had mandated: MR. SHIELDS said no, that if they invested in specific assets, they had not made an impact, that it was more about how they run the platform and more about at JPMorgan Chase that's the platform.

**D. UBS Farmland LLC**

MR. SIKES introduced JIM McCANDLESS from UBS Farmland to review the portfolio and market outlook.

MR. McCANDLESS introduced DARREN RABENOU as head of the newly set up farm and agriculture group.

MR. RABENOU noted that he had recently joined UBS in April but had been consulting with them for a year and a half prior. He said he had experience in permanent crops in California and Portugal. He also said that he was the head of ESG investing which covered real estate, infrastructure, and agriculture.

MR. McCANDLESS presented slides regarding the Midnight Sun part of their business, showing the regional offices that were responsible for the acquisition, asset management and disposition of properties in the portfolio.

MR. McCANDLESS noted that the portfolio that had been transferred to them by the Board last year and had been fully integrated into their management system. He said the portfolio was a little over $900 million in gross asset value, the farmland value in that portfolio was about $895 million with a cost of about $645 million. He noted that there was a significant unrealized gain in that portfolio, and they expected that to increase. He said it was about 145,000 acres in 15 different states with 88 different investments and they were producing over 25 different types of crops. He explained that the target for the portfolio was to have 80 percent in annual crops and 20 percent in permanent crops. He said that the highest concentration of land was in the mountain states and three states in that region that they invest in was Idaho, Colorado, and Arizona. He said in Arizona the properties they invested in were the winter vegetable area down in Yuma, then followed by California which has commodity crops, vegetable crops, and permanent corps. He explained that commodity crops were made up of corn, soybeans, cotton wheat, rice; permanent crops were grapes, apples, nuts, citrus, and vegetable crops were the leafy green items found in the produce department. He then said that they have crops in the delta states and Texas. He said the corn belt was fairly low at 10 percent.

MR. McCANDLESS said they had what they call the Midnight Benchmark which was data supplied by the NCREIF Farmland Index organization. He said the performance of the fund on a property level exceeded that benchmark, as well as the total return level from 3 year to since inception.

MR. McCANDLESS said that since inception they had distributed back to the ARMB $206 million which was a combination of income returns and capital gains on some sales.

MR. MURRAY said that in the last 12 months they had spent less capital on the portfolio than they ordinarily had since the portfolio's inception in 2004. He said one of the major capital projects they had done in the last four quarters was replaced by the majority of the hand and wheel line irrigation system on MSI#67, the Minidoka Farm, allowing them to increase the rent by just under 6 percent which equated to about a 7.4 percent return on the cost of capital to make the improvement.

MR. MURRAY said that an apple orchard in Washington state with two separate Cosmic Crips redevelopment projects was going on, one of the projects started in 2020, the other one had just been approved and would be planting those trees in the spring of 2022.

MR. MURRAY said the Gaver Ranch, which was a vegetable farm in the Salinas Valley in California had large capital projects related to culverts that would be finished this year.

MR. MURRAY said the Northern Ag, the Portage 73, a farm in Wisconsin had all of the pivots replaced as they were fully depreciated, and they were able to configure them in a way that enabled them to achieve six extra acres of irrigated land and increase the rent for the new configuration.

MR. MURRAY explained that if an apple orchard is full of Red Delicious that commands a small premium compared to a Cosmic Crisp apple, they pull the old varieties out and replace them with a more promising variety. They do the same with pears and cherries as well.

MR. MURRAY stated that there had been no acquisitions in the account, but the account just came back into rotation and was in first position in the investment rotation. He said that as far as dispositions, they did dispose of one of the Northern Ag properties, No. 13, Colquitt Omega, a Georgia vegetable farm. They sold it for 4.5 percent over the appraised and book value in March. He said the reason for the sale was it was a highly erodible farm, and they were concerned about its sustainability program. He said the Northern AG takeover of 24 farms for just under $290 million, was transferred on October 1st and fully incorporated into the management and was 100 percent leased.

MR. MURRAY said as to the capital projects in the portfolio, they replaced pivots on Portage 73, removed some almond trees that were damaged in a windstorm in 2019 on the Kern Kraft property and were deciding what to plant next there as the almond market had been challenging over the past number of years. He then said they had finished up a previously approved capital project to improve the potato cellar and updated the irrigation at Fremont 700 N, an irrigated road crop farm in Idaho.

MR. McCANDLESS said that last year they had launched the Leading Harvest sustainability ESG program together with a small working group of peers. He said it had 13 principals and objectives, 33 performance managers, and 77 indicators and it goes into all different aspects of agriculture practices, environmental activities, social and governance issues, like soil and water conservation, farming practices, maintenance of biodiversity, crop rotation use of regional agricultural best management practices, etc. He said they have 88 farms enrolled in the program.

MR. HIPPLER asked if there was any evidence that the sustainability leads to higher returns or better risk-adjusted returns in the future; MR. McCANDLESS said that as it was new, there was no track record. He said they seek out and evaluate the properties to ensure they demonstrate good stewardship. He noted that the program was designed to be audited and had engaged an auditor to measure compliance. He said the first audit would be done next year and were working with the auditor to identify gaps, if any.

MR. MURRAY explained the climate risks as it related to water. He said in California the ground water basins had been over pumped and there was a 20-year program to get them back in balance. He said that 40 percent of the Midnight Sun account would have very little to no impact if any form of groundwater pumping restrictions were in place, and 28 percent of those are located in what was known as Exchange Contractor Districts with the most senior surface water rights that exist in the state of California. He said another 12 percent could receive recycled tertiary wastewater from local municipalities and Midnight Sun No. 60, Carneros Hills Vineyard in Napa County was one of the properties that represents the 12 percent. He said basically it meant that as long as people kept going to the bathroom in Napa and Sonoma, there would not be concern about water for the vineyard. He said 27 percent was primarily vegetable farms in Salinas County which relies on groundwater irrigation wells. He said they felt that was a lower risk to the SGMA restrictions as it was vegetables which does not have the same level of water consumption as trees.

MR. MURRAY said the next 28 percent was a mixture of three orchards and one table grape vineyard that had more than one source of water. He noted there was one farm in the portfolio that was not located in a district, and it relied on its on-site wells for irrigation. He said that 96 percent of the portfolio had almost no SGMA risk, or they had a mitigation strategy that they felt was sufficient to allow the farms to continue to operate.

MR. RABENOU said that the wildfires in California had not been a threat to the north coast or the grapes of any of the other properties because the vineyards act as a fire break during wildfire season because the vineyards are often irrigated and do not contribute to the amount of fuel for the fires. The real issue was the smoke from the wildfires and the Sales Ranch MSI No. 69 was affected, and the grapes were not harvested in that vineyard last year because they had absorbed the smoke and were rendered unharvestable.

MR. WILLIAMS asked if there had been insurance on the crop; MR. MURRAY said because they lease the properties and did not operate them, the risk is with the farmer and in the case of MSI No. 69, the farmer had crop insurance which covers up to 80 percent of their revenue.

CHAIR JOHNSON recessed the meeting from 2:45 p.m. until 2:55 p.m.

### E. Timberland Investment Resources

MR. SIKES introduced MARK SEAMAN, president, and CIO of Timberland Investment Resources.

MR. SEAMAN then introduced TOM JOHNSON of client services, CHRIS MATHIS who heads up the real estate and disposition strategies, and DR. HONG FU, their forest economist had joined him. He then turned the presentation over to MR. JOHNSON.

MR. JOHNSON described the firm as being 100 percent employee owned and had been in business since 2003, founded by MR. SEAMAN. He said they were focused on the middle market with transactions between $10 million and $75 million. He then moved to a map showing the locations of the properties in the Mountainside Timber portfolio. He said they were scattered across the Southeast, from North Carolina to Texas. He also noted properties in New York, the lake states, Wisconsin, Washington, and Oregon totaling 160,000 acres.

MR. JOHNSON noted that the portfolio was unleveraged and also the benchmark they used were the NCREIF Timberland Index, as well as net-of-fee total return for public equities and fixed income, which was a benchmark provided by ARMB.

MR. JOHNSON said they had various species within two broad categories that they managed. He said one of them was softwoods, located in the Southeast and the Pacific Northwest. He said softwoods such as lobllolly pine was grown to make various products; they will sell the timber which would be used to make lumber, newspaper, OSB, poles, shipping boxes and shopping bags. The fibers of the wood were longer and have strength properties that were good for construction and also chipped and turned into pulp or engineered products.

MR. JOHNSON said the Northeast and lake states grow the hardwoods which were used for railroad ties and pallets. The higher quality hardwoods were used for flooring and cabinetry. He said paper products were also being produced from the wood. He said they plant the trees like rows of corn and as they grow and reach the age of 12 or 13, they can recognize the certain trees that would be better crop trees, such as for sawtimber, they can also tell the poorer trees and remove them to allow more space and capacity for the better trees to grow. He said when they remove the poorer trees, they are sold for pulp logs and used to produce paper, packaging, and diapers. The larger of the small trees would be chipped up and turned into OSB and the lower grade would be for biomass and wood fuel. He said pulpwood sells for $10 a ton and $25 a ton for sawtimber.

MR. JOHNSON said that in terms of investing in timberland, it’s the diversification; a strong inflation-hedging property that attracts investors, capital preservation and yield. He said forestry provides well-paying rural jobs, which was important in large parts of the country that depend on forestry as a major income source. He noted that those who were concerned about climate change have been increasingly willing to pay forest owners to grow trees for carbon.

MR. JOHNSON explained that timberland was more highly correlated from an r-squared perspective, versus other real assets such as real estate and farmland. He said that if inflation were a concern, timberland had been a proven inflation hedge and was a property that some investors find as an important attribute.

MR. FU noted that the most important market that had caught the attention of many people for the past year was softwood lumber. He said it was a commodity used in residential construction and whose price over the past 18 months had been a rollercoaster ride. He said that during COVID the mills decided to shut down or they would take a loss and one quarter of all mill capacity was curtailed causing the loss of lumber through the pipeline. He explained that with so many people staying at home, they decided to work on home improvement projects which caused a demand for lumber, which then caused the first wave of lumber prices spiking. He then noted another trend in the fall of last year where people decided to move away from urban centers and into the suburbs resulting in a strong demand for home purchases and new builds and another large wave for lumber and extraordinary prices peaking above $1,500 per thousand board feet in June.

MR. FU explained the charts of the cost to produce lumber from the two major regions, the U.S. South, and the U.S. Pacific Northwest. He said in the South, it takes $260 to produce 1,000 board feet of lumber and they were getting a price of $487 for their product, close to a 50 percent margin, on average for the mills to produce lumber. In the Pacific Northwest, the profit margin was a bit lower at $339. He said that over the past 7 to 8 years there had been more than $4 billion of capital investments that went into the U.S. South to improve, expand, and build new sawmills. The new construction of mill capacity had an effect in the U.S. South with a gain of 35 percent.

MR. FU displayed a chart that showed the historical prices and the forecast for softwood sawtimber for the South and Pacific Northwest over the next 5 years.

MR. WILLIAMS asked how accurate past predictions been for the 5 years out; MR. FU said that 5 years out was a stretch, but what the Board should focus on was the fundamentals driving the forecasts, were the fundamentals going in their favor or against it. He said that if Canada supplied less lumber in the future and capacity had increased in certain regions in the United States, then demand would keep prices from not going any lower.

MR. FU noted that a boost for the Pacific Northwest for pricing was British Columbia which got hit by wildfires with estimates at 1.5 million acres burned in 2021 which would have an impact on supplies, as well as the pine beetle issue - they would be exporting less lumber going into the future. He noted that was an opportunity for the Pacific Northwest to capture the market share and keep prices tight going into the future.

### F. IFM Global Infrastructure Fund

MR. SIKES introduced DAVID ALTSHULER and JULIO GARCIA of IFM Global Infrastructure.

MR. GARCIA introduced himself as the head of the infrastructure equity team in North America. MR. ALTSHULER explained that he was the head of the Global Relationship Group in North America.

MR. ALTSHULER moved to slide 7 which showed their initial open-ended core fund investing in Australia, incepted in 1995 and the global infrastructure fund, incepted in 2004. He then moved on to slide 8 showing the overview of the partners in their funds.

MR. GARCIA said that their focus was to build a portfolio of diversified core infrastructure assets.

He said they focus on three industry segments - transportation which consisted of toll roads, airports, and seaports; utilities which consisted of gas, water, and electric; and midstream energy assets such as pipelines for the LNG processing facilities, and the big tanks at seaports that facilitate the trade of either refined petroleum or crude petroleum.

MR. GARCIA said they invest with open-ended funds which enables them to match the characteristics of the assets in the asset class with the longevity of a fund. He said the fund was well diversified and has an asset value of almost $35 billion with 18 different portfolio companies. He said their strategy was not to add a large amount of risk to the asset class. He noted that infrastructure was considered a defensive asset class with growth characteristics where none of the investments should go out of business. He stated that they had found that if an asset in that sector goes bad, it was due to the investor had added too much leverage to try to add returns and added a level of risk that should not have been part of the asset class.

MR. GARCIA said that they are an open-ended manager, but they do take opportunities as they present themselves to either sell entire exposures or partial exposures when they think they could get a better value by making that sale, or if they find that one part of the portfolio was overly weighted to a particular exposure.

MR. WILLIAMS asked if they were confident that the Colonial Pipeline ransomware type risk had been mitigated so it would not be a repeated event in any other infrastructure projects; MR. GARCIA explained that financially it was not a major hit to the company, but it opened their eyes to the weak points for their infrastructure assets. He said there was a lot of work going on to ensure that they had as strong a system as possible to avoid any future incidents.

MR. GARCIA said that they target an 8 to 12 percent net return after all fees back to the investors, he noted the 8 to 12 percent was due to economic cycles. He said that the assets in the portfolio were highly cash generative but there was also a component of the return coming from capital yield. He said there was over 6 percent return coming back from cash from the investments in the return series. MR. GARCIA said that they use debt in the capital structures due to the relative predictability of cash flows but were cognizant of keeping the levels that were representative of what each asset in the portfolio should be able to handle on an investment grade basis. He said that with utilities, regulators allow about 60 percent leverage, with an airport asset they would have only 20 to 30 percent due to the variable nature of passenger flow.

MR. WILLIAMS asked if the Indiana Toll Road that was divested in 2016 and also in 2021 and was also listed as a new acquisition; MR. GARCIA explained that the toll road was acquired in 2015 at 100 percent of the concession deed with 65 years left in the toll road concession, at $3.3 billion in equity value. They offered a co-investment to qualifying investors at a premium of 20 percent from what they had acquired the company at. Then they went to the government in Indiana and negotiated a deal with their other shareholders to be able to invest an extra billion dollars of capital into the company in return for a modification to the concession terms. He said the Indiana Toll Road was I80 which started in San Francisco and went across the country. The portion that was in Indiana had a much lower tow rate for trucks than the neighboring states. They informed the State of Indiana that they were not getting their fair share of the toll revenue and that IFM would grant the billion-dollar investment if they could put the rates closer to being on par with the neighboring states. They recently sold a 15 percent stake to CDPO of Canada for nearly 50 times multiple to a partner that they had in other assets.

MR. GARCIA noted that the most recent investment was in partnership with Ontario Teachers to make an investment in a Canadian company called Enwave, which operated in the district heating space, both are 50 percent holders of the equity.

MR. GARCIA finished his presentation by explaining the exposures as having 18 individual companies with a few underlying assets such as European airports, seaport facilities, the toll road sector through Aleatica and the Indiana Toll Road, the M6 in Britain, which was the only toll road in Britain.

CHAIR JOHNSON recessed the meeting at 4:17 p.m.

**Friday, September 24, 2021**

## CALL BACK TO ORDER

CHAIR JOHNSON reconvened the meeting at 9:00 a.m. All Board members were present, except COMMISSIONER HOLLAND.

### G. Crypto, Bitcoin, and Blockchain

MR. HANNA introduced the next presentation stating that it was for education purposes, not part of an investment initiative. MR. HANNA introduced NICK SIEMSEN of Pathway.

MR. SIEMSEN explained the different types of digital money, saying that the first was money in bank accounts, then attempts at making digital currencies such as E-gold and Liberty Reserve that were backed by gold but a unit of exchange that could be traded online. He said there were also in-game or in-app currencies that had existed for many years. He said they all had a company behind them keeping track of everyone's balances. Before Bitcoin there was no way to prevent someone from maliciously duplicating the digital funds to double spend money. He said that Bitcoin prevents people from doing that. He explained that Bitcoin was a database that you can only add to, but not delete, and instead of giving one party or company permission to write to that database, everyone gets a chance to do it. He said people who do this are called miners and they are rewarded with freshly minted Bitcoin.

MR. SIEMSEN explained that there was nothing backing Bitcoin in terms of reserves or cash flows. He said it was distributed around the world and keeps partial anonymity to those who have it.

MR. SIEMSEN then showed the price history of Bitcoin. He then explained that a massive hack of a Japanese based company of their Bitcoin with ongoing litigation. He noted that there was a ramp up for Bitcoin in 2017 and 2018 from the ICO (Initial Coin Offering) boom. He said it was like an IPO, but instead of issuing shares, they issued Bitcoins. They would make their own and sell it to fund a company they were starting. He said the companies were blockchain-based business, like decentralized exchanges or decentralized file storage where they would use the money to build their company and the tokens they sold would be used within the company instead of dollars to pay for the service. He said that during that time about $15 billion was raised through ICOs but the funding basically came out of nowhere. Ultimately the ICOs have gone away.

MR. SIEMSEN noted that they were in a new era characterized by retail activity. He said there was a new retail boom not only in Bitcoin and Ethereum, but also in alternatives like NFTs and other sort of tokens. He said recently Dogecoin had become popular. He said it had started out as a joke but went on to have significant market cap and massive amounts of retail trading.

MR. SIEMSEN said that they were seeing a development of real ecosystem around crypto assets such as ETFs available in Canada, U.S. companies holding positions directly in Bitcoin, and increased interest from the institutional investment world. He said MicroStrategy had about $3.6 billion of its balance sheet directly invested in Bitcoin and Tesla has about $1.5 million of Bitcoin on its balance sheet. He said that Visa was investing in Bitcoin as well as companies related to the space, such as CryptoPunk. He also said that traditional investment managers like Grayscale was a trust that holds Bitcoin that could be traded on the U.S. exchanges. The said firms like Galaxy Digital or Pantera were solely set up as regulated investment firms to invest in crypto. He noted that many pensions, insurance companies and endowments had exposure through other means, including the ARMB.

MR. SIEMSEN said that he did not believe that anyone knows why crypto was priced the way it was but there was a theory by a journalist named Matt Levine who coined something he called the boredom markets hypothesis, (BMH) that says people would buy stocks or cryptocurrencies when buying stocks is more fun than other things they could be doing. MR. SIEMSEN said he thought it was a case of fixed supply of Bitcoin versus what is an unknown demand. He said BofA had a report out estimating that under $100 million of buy volume was enough to move the price of Bitcoin up by 1 percent.

MR. SIEMSEN noted that Goldman, Morgan Stanley, J.P. Morgan all had or were developing products to allow their clients to trade cryptocurrencies or to get exposure to the space.

MR. SIEMSEN explained that investing in crypto meant consideration as to custody. He said there were hardware wallets that look like USB drives that hold crypto on it and off of the internet where it would be vulnerable, but that would be prone to human error as well as the risk of having the cryptocurrency hacked. He said that large institutions such as Fidelity had a custody offering.

MR. SIEMSEN said another thing to consider was inflation, that Bitcoin had not performed well against inflation in the past. He said another major consideration was ESG. He said Bitcoin's annual energy consumption by design was staggering and continued to grow. There was also ransomware attached that were paid in cryptocurrencies and other illicit activity that occurs due to the anonymity associated with cryptocurrencies.

MR. SIEMSEN noted another issue with cryptocurrencies was the regulatory space, that it could be regulated out of existence. He also mentioned the volatility or Bitcoin, going from $29,000 up to $53,000 then down to $40,000. He went on to list other cryptocurrencies that were equally volatile.

He noted that slide 13 showed a spectrum of investments from direct to very periphery.

MR. SIEMSEN said that Pathway preferred to get their exposure by investing purely with the best managers. He said they look for the best venture capital managers, many of those had been putting a portion of their portfolio into crypto or crypto-related companies.
MR. HIPPLER asked how effective the governments were in collecting tax on capital gains of cryptocurrency. MR. SIEMSEN said companies like Coinbase, Gemini and Robinhood report the information to the IRS.

**H. Abbott Private Equity Presentation**
MR. HANNA introduced JONATHAN ROTH and LEN PANGBURN of Abbott Capital.

MR. ROTH said that he was the Co-President and had been with Abbott since 1992. He said that MR. PANGBURN was also Co-President and had joined Abbott in 2005. He said they were also joined by DILLON BOOTH, from their client relations support team.

MR. ROTH noted that Abbott had just celebrated 35 years and they exclusively focus on private equity then continued discussing the firm's history and client base. He then turned the presentation over to MR. PANGBURN.

MR. PANGBURN explained that there was a $12 billion customized private equity solution provider that offered multiple ways for investors to access venture capital and private equity and that they work closely with the staff and Callan to ensure all of the plan's objectives and goals were met. He commented on their due diligence process and some of the ways Abbott mitigates risk on top of standard due diligence.

MR. PANGBURN then moved on to a slide that he called their report card which included all investments that Abbott had made since inception. He noted that in 26 of the 31 vintage years Abbott's IRRs had been over 10 percent with only two below 8 percent. He said that over 50 percent of their primary commitments on a dollar-weighted basis since 1987 had been to top quartile managers, almost 80 percent were above the median, and since 1987 their selections had outperformed the median private equity benchmark by over 1,000 basis points.

MR. ROTH displayed a slide with several charts that showed the amount of capital that was coming into investing into U.S. private equity funds, fundraising, and valuations. He noted that they were at very high purchases prices. He noted that they had seen equity firms paying much more than 13 times EBITDA and cash flow because the businesses being purchased were growing faster and had more attractive margins and were worth potentially more than 13 times. He said the ARMB's portfolio had captured the record high gains during the year.

MR. ROTH said that there was a lot of demand for private equity because elsewhere returns were not as attractive, which causes pressures on prices, but exits were being done at very high prices. He said the venture market was very similar; venture capital fundraising market raised $774 billion in the first half of the year. He noted that was due to the exit activity at near records and some had been blow-out returns.

MR. ROTH showed a slide that discussed SPACs. He said that a lot had changed over the course of 2021; that the SPAC market had a precipitous drop off the first quarter. He said that once they merge with their target company, they trade as an operating business and that had been unimpressive. He then moved on to SPVs, special purpose vehicles that had been formed to address end-of-life fund options. He explained a new SPV buys all the remaining companies in an old fund which allows the limited partners in the old fund to have a choice to sell, get cash, or continue in a new fund. He said that it was not all the portfolios' companies but one single portfolio company that goes into a SPV. He said that was how a lot of the capital coming into the private equity system was being absorbed.

MR. ROTH said that a complicating factor with SPV's was the valuation, that they are often times set up by the same GPs who were managing the legacy fund, so the buyer and the seller were one and the same. He said they try to encourage general partners to seek a third-party independent valuation process.

MR. WILLIAMS asked how well would a third-party know the product they set they price for - how would that be addressed; MR. ROTH said they come in with due diligence of the company, they submit term sheets that states that they would invest a certain amount of value in the business at this price.

DR. MITCHELL asked if the greater fundraising was across the board in private equity or was it the largest most successful companies raising larger and larger funds; DR. ROTH confirmed that across the board there was more capital available to all funds.

MR. PANGBURN displayed a slide that showed the ARMB portfolio as of Q1, noting that the plan was in a cash-positive position with $3.1 billion of distributions as of Q1 compared to $2.8 billion in paid capital. He explained their strategy for the ARMB was to commit $5 million to four co-investments each year for approximately $20 million in total, which was equal to one primary buyout fund by size. He said the plan was two-thirds private equity, one-third venture capital and growth equity, that the portfolio NAV was approaching $1.9 billion and that it was very diversified with a little over 2,500 companies.

CHAIR JOHNSON recessed the meeting from 10:30 a.m. until 10:40 a.m.

### I. Real Assets Annual Plan

MR. SIKES said the portfolio was performing consistent with expectations and objectives since the COVID pandemic began, performing between stocks and bonds, and in line with the risk and return parameters of the primarily core portfolio. He noted that the ARMB's investments were all equity, but most of the assets were underpinned by contractual cash flows and the portfolio was well-position to provide an inflation hedge if cost pressures persisted.

MR. SIKES noted that the FY2022 real assets plan reflected a stay-the-course approach, and the recommendations reflected the increase in target asset allocation from 13 to 14 percent as previously approved by the Board during the June meeting. He said that the portfolio was generally in line with targets at the end of the fiscal year; that the underweight to REITs was partially offset with exposures to non-core real estate. He said the underweight to farmland was being address with additional allocation to the sector and that the portfolio had a modest overweight to infrastructure. He said the real assets exposures approximated the Board's 13 percent target weight at the end of fiscal year.

MR. SIKES he explained that as real assets were primarily illiquid sectors that they are not able to quickly increase or decrease exposure to, they allocate any over or under weight at the asset class level to domestic equity and fixed income on a 60/40 basis in managing the plans overall exposure.

MR. SIKES said that applying the target weights to the June 30 plan assets indicated an additional $700 million in real asset investment should be made with $400 million in core real estate and $300 million in farmland based on the June 30 plan assets. He said the overall plan returns in FY2021 were 27.6 percent, much higher than the real assets return of 11.14 percent.

MR. SIKES noted that page 6 of his presentation broke down the performance for the overall real assets portfolio and by category. He said that during FY2021 the real assets portfolio returned 11.4 percent net of fees which compared favorably to the target benchmark return of 8.95 percent. He said for the most part, the portfolio had met or exceeded the target benchmark over the periods show net of fees.

MR. SIKES said that real estate had been a good investment for the ARMB with the core portfolio having delivered 8.73 percent annualized net return over the past 10 years. He said that farmland had delivered results consistent with its benchmark, but a slight underperformance compared to the NCREIF benchmark, which was attributed to the underweight permanent crops. He said timberland results had a strong fiscal year compared to the benchmark with longer-term results in line with the benchmark.

MR. SIKES then moved to page 7 to provide perspective on how real assets compared to domestic equity and fixed income through the six quarters ending June 30. He noted that the chart on page 7 was unconventional, but it gave a sense of the range of the returns of each asset class over the time period. MR. SIKES stated that page 8 summarized the significant portfolio accomplishments in FY2021.

MR. SIKES said that page 9 gave a profile of the current portfolio showing the value of the portfolio at approximately $1.9 billion as of June 30, with 38 percent of the portfolio in core separate accounts representing investments in 15 properties. He said there was an additional 28 percent in core open-end funds which were large, comingled funs that enabled the ARMB to invest in larger assets than it would be able to on a separate account basis.

MR. SIKES said the chart on page 10 was provided by BlackRock Real Estate who managed one of the open-end funds the ARMB was invested in. He said the chart gave a sense of how the main property types had been performing and showed that industrial and apartments had been the outperformers as housing and e-commerce trends provided a lift to those sectors. He noted that office returns had held up well but were in a holding pattern as employers felt more comfortable with returning to work. He said retail continued to feel the negative impacts of the pandemic and the preexisting impact of the migration of the retail economy to e-commerce.

MR. SIKES said that page 11 provided a performance look-back based on unlevered core real estate gathered by NCREIF over the past 40 years. He noted that the COVID related drawdown was nowhere near the GFC move in 2008 as all sectors had responded favorably after the initial markdown. He said that industrial returns were at their highest point over the 40-year time period and the variability in recent sector returns was also interesting, the widest over the 40-year time period with industry being the standout.

MR. SIKES said that page 12 showed various charts, one of them was in regard to the decline in the cap rate variable of real estate returns. He said that as yields dropped across the bond market and other asset classes, real assets had followed suit as investors sought out yield.

MR. SIKES moved on to page 13 which showed the strategies and said that the recommended approach was to stay the course with the primary focus on core real estate and separate accounts in open-end funds and that continuing to diversify the portfolio was an important focus as well as continuing to focus towards industrial and apartment sectors.

MR. SIKES moved to page 14 which showed the ARMB's core portfolio projections by property type, based on expected investments over time. He noted that there was an increase to multifamily driven by additional investment in the Sentinel separate account which was approved by the Board last year.

MR. SIKES stated that the REIT portfolio was a significant part of the ARMB's real asset allocation with a target weight of 15 percent. He said that REITs offer the portfolio liquidity, diversification, and historically attractive returns.

MR. SIKES moved to page 16 saying that the increase to the real asset's allocation, as well as the increase in overall plan assets, creates a need for an additional $400 million in core real estate exposure. The Board would first need to authorize reinvestment of the $140 million allocation that UBS distributed from the proceeds of a mortgage financing transaction during FY2021, which will help improve the diversification of the portfolio. He then explained that Sentinel would implement the use of leverage and increase the diversification of the portfolio due to the $125 million in additional allocation that had been previously authorized by the Board. Third, the Board would need to commit an additional $135 million to core open-ends funds. The staff would work with Callan to evaluate funds to consider the market opportunity for that capital. They would also evaluate transitioning the J.P. Morgan Strategic Property Fund exposure to a nonqualified eligible structure. They would continue to use REITs as a rebalance tool for the asset class and continue to selectively consider non-core strategies that offer alpha opportunities to the portfolio.

MR. HIPPLER asked why MR SIKES anticipated cap rates for industrial properties would continue to decline; MR. SIKES said it was combined with the expectation that rent growth in the industrial sector would continue to increase.

MR. WILLIAMS asked if they had the capacity and performance at the level needed with what was going on internally; MR. SIKES said that he did and explained that the one-year performance for

REITS was 32.49 percent versus the index at 32.8 percent could be attributed to some cash flow friction and was not a reflection of poor management.

DR. JENNINGS asked if he would comment on the overall level of fees relative to the ongoing diversification benefit from real estate; MR. SIKES said that they had been able to achieve some fee savings, opportunistically through an open-end fund and negotiations with the separate account managers.

MR. SIKES then moved on to farmland which also required an additional $300 million of new capital investment based on the June 30 plan asset level to meet target allocations. He noted that the farmland was a leased-based approach comprised of 88 assets with almost 145,000 acres worth $900 million. He said that for FY2022 an additional $100 million in allocation had been previously authorized and waiting activation in the UBS rotation and that staff would work with UBS to monitor investment pace and consider authorizing additional allocation when the opportunities present themselves.

MR. SIKES noted that page 20 involved timberland and that no additional allocation was being recommended for timberland in FY2022.

MR. SIKES state the infrastructure was the final component, and the value of the portfolio was $742 million. He noted that the performance of the infrastructure portfolio had been good, achieving the 8 to 12 percent target return level and exceeding the CPI-plus-four benchmark. He noted that no recommendations were being made for the infrastructure portfolio.

MR. SIKES displayed page 24 of his presentation stating that it was the summary of the FY2022 plan recommendations.

**J. Callan Real Assets Plan/Performance Review**

MR. SIKES introduced MR. AVERY ROBINSON, noting he was the Co-Head of Reals Assets at Callan.

MR. ROBINSON said that he had his colleague MR. JOHNATHAN GOULD who would be covering the ARMB real assets portfolio. He noted that the first two slides were a reminder of why the Board invested in real assets. He said the Board had done well mitigating some of the considerations, particularly with the illiquidity, with structures in separate accounts, and open-ended vehicles that provided liquidity to make decisions.

MR. ROBINSON said the next slide was a reminder of how they categorized the strategies within real assets and what could be expected from appreciation and income return for the various strategies.

MR. ROBINSON said that he thought the managers did a good job at providing an update on the market and how the various property sectors within real estate had diverged. He said that industrial and apartments were doing very well, and that retail and office were the ones surrounded by questions. He said the focus should probably be on the nontraditional property sectors such as lab space, particularly medical office lab space. He said that is a sector that is not amenable to working remotely. He also mentioned self-storage as a sector of growing interest. He noted that the portfolio had the flexibility to look at alternative property sectors and recommended that would be something for consideration.

MR. ROBINSON also said that there was a decrease in capital flows towards real estate, towards real assets, but as the year progressed, capital flows rebounded towards real estate. He said investors were feeling more comfortable moving forward with real estate allocations.

MR. ROBINSON noted that the next few slides provided context as to how the property sectors held up compared to the past. He noted that retail suffered the most during COVID but has been rebounding.

MR. ROBINSON said that the next slide was a snapshot of the performance for private real estate during the past year. He noted that industrial was the outlier, that it benefited from COVID to an extent and was probably one of the safer property sectors to be in. He said that the COVID crisis did not have as big of an impact as some of the other crises seen in the past.

MR. ROBINSON said the next slide showed the market declines during the 90s and during the GFC. He said that compared to the last year, core returns depreciated only about 1.5 percent., compared to the GFC with 20-point declines. He noted that the COVID crisis did not have the impact that was feared.

MR. ROBINSON said that the next slide focused on transaction markets which took a decline during COVID. He said they are seeing a rebound that had been led by industrial and apartment transactions, but office and retail had been slow and led to uncertainty around price discovery.

MR. ROBINSON moved to the next slide which focused on the REIT markets. He said that REITs took a beating but had rebounded the past year.
He highlighted the comparison of how various region and property sectors within the global REIT market were trading compared to their net asst values.

DR. JENNINGS asked MR. ROBINSON to comment on whether global REITs were still real estate; MR. ROBINSON said that various indices were starting to include more sectors that historically have not been real estate, such as tech infrastructures. He said that it was their opinion that it was becoming more of a gray area, but they were comfortable with them being in REITS that may have exposure to nontraditional real estate properties.

MR. ROBINSON said that the next slide was a snapshot of the capital flows for open-end real estate funds. He said they were seeing several of the high-demand real estate funds have considerable entry queues with projections of up to a year and a half before capital gets place into their funds or gets invested.

MR. ROBINSON said Callan created the real estate indicators slide after the GFC. He said that it showed the most advantageous times to buy and sell real estate. He commented that currently it was a mixed bag of metrics, compared to historical marks.

MR. GOULD said that in terms of performance of the portfolio, the real assets portfolio performed well overall, was consistent with the benchmark over the long-term periods.  He noted that public real estate performance over the last year had been a strong driver. He noted that in the real assets, the non-real-estate portion, there were some components of that return that had legacy investments in the composite that were no longer part of the portfolio, which included MLPs that were about 12.5 percent of the portfolio and energy which was still in the portfolio but no longer part of the strategic target.

MR. GOULD said that private real estate had performed very well compared to the NCREIF Total Index with a strong long term and short-term performance.  He noted that the portfolio included core separate accounts, core open-end funds and some non-core that had added to the performance.  He said the income was about 45 percent of the return.

MR. GOULD said that public real estate had a strong performance going back over the last 10 years. He said the portfolio switched from an active strategy to an internally managed passive strategy between 10 and 16 years ago.

MR. GOULD said that infrastructure had a very good net performance across that portfolio since the plan invested in private infrastructure over 6 years ago.  He said there had been an imbalance between the two open-end funds, one of them performed well and the other one did not perform as well but was still performing in line with the benchmark.

MR. GOULD noted that farmland was a bit more of a mix but overall was a steady performer. He said that timber had been challenged but not dramatic negative returns.  He said they had consolidated managers into one account and are looking to see an uplift.

MR. GOULD said that in terms of progress over the last year, they had made a significant amount of progress across each of the components over the last few years and as previously mentioned, they had adopted the ability to use leverage in the core portfolio.

MR. GOULD said that with non-core they had continued to consider re-up opportunities very strategically. with the approvals of KKR and Almanac. He said those had been strong performers and they would continue to look at those at re-up opportunities as well as other strategies that could potentially be a fit.

MR. GOULD said there were no recommendations for changes to the infrastructure portfolio.  He said they do not recommend rebalancing out of it because the funds had a very long deployment path, so their entry queues were quite long.

MR. WILLIAMS asked if they were thinking about getting rid of timber as it is listed at zero to 10 percent or was the focus to keep 10 percent for timber; MR. GOULD said that they thought it would be okay to let timber wind down naturally without having to force an exit if the dynamics of the asset class warranted that.  That if it naturally dips down to a level where it would not be impactful then they could start thinking about letting it go down to zero.

MR. GOULD showed slide 26 which covered core real estate and farmland - the two areas with allocation recommendations to get to the target weights. He said that slide 27 was a recap of the recommendations to continue the course.

**K. Real Assets Action Items - Plan & Guidelines**

MR SIKES referred to page 473 of the Board packet and explained that the staff prepared an annual real assets investment plan to review performance, structure, objectives, and strategy of the portfolio. A real assets investment plan for FY2022 had been developed by the staff with help from Callan. He said that for FY2022 the plan was to make additional investments in core real estate and farmland. The recommendations for FY2022 were to invest $400 million in core real estate over time to meet the allocation requirements; $125 million of allocation had already been approved for Sentinel. He stated that an allocation of an additional $140 million to UBS to reinvest financing proceeds and increase the investments in core open-end funds by $135 million. He said they would explore non-qualified structure for the existing J.P. Morgan Strategic Property Fund, continue to consider non-core investments on a selective basis, and adjust the REIT position as needed during quarterly rebalancing; and invest $300 million in farmland over time to meet the allocation requirements. He recommended the approval of Resolution 2021-11 which would adopt the Real Assets Investment Plan for FY2022.

**Action: Resolution 2021-11**

MS. HARBO so moved. MR. HIPPLER seconded the motion.

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

**L. Actuarial Resolutions - FY2023 Contribution Rate Setting**

MR. HIPPLER explained that there were seven resolutions listed, however 2021-04, 2021-07 and 2021-10 would be discussed at the October 11th meeting.

**1. History of PERS/TRS Employer Contribution Rates**

**Action: Resolution 2021-05**

On behalf of the Actuarial Committee, MR. HIPPLER moved to adopt Resolution 2021-05 regarding setting a contribution rate for the public employees' Defined Contribution Retirement Plan retiree major medical insurance rate FY2023.

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

**Action: Resolution 2021-06**

On behalf of the Actuarial Committee, MR. HIPPLER moved to adopt Resolution 2021-06 relating to the FY2023 employer contribution rate for public employees' Defined Contribution Retirement Plan occupational death and disability benefits.

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

**Action: Resolution 2021-08**

On behalf of the Actuarial Committee, MR. HIPPLER moved to adopt Resolution 2021-08 relating to the FY2023 employer contributions rate for the Teacher's Defined Contribution Retirement Plan retiree major medical insurance rate.

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

**Action: Resolution 2021-09**

On behalf of the Actuarial Committee, MR. HIPPLER moved to adopt Resolution 2021-09 relating to the FY2023 employer contribution rate for the Teachers' Defined Contribution Retirement Plan occupational death and disability benefit rate.

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

**2. JRS Contribution**

MR. HIPPLER noted that the JRS contribution was listed on the agenda but there was no action item associated with it and asked if there were any questions regarding it. As there were none, CHAIR JOHNSON stated that it was a matter of record for information.

**UNFINISHED BUSINESS** - None.

**NEW BUSINESS** - None

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

**PUBLIC/MEMBER COMMENTS**

MR. SIMARD stated that he was a member of the board of 350Juneau and a librarian retired from the State of Alaska. He referenced his previous testimony regarding the risks to the retirement fund investments posed by climate-related litigation against the fossil fuel industry. He said the cases were mostly public nuisance cases that sought reimbursement for damages. He stated that most of the cases have been successful in remaining in the state court systems. He noted that there was a growing amount of human rights cases involving indigenous communities and migrants who were considered to be climate refugees.

MR. SIMARD referred to a case filed in Vermont against ExxonMobil, Shell, and others. The suit would require that oil sold in Vermont be labeled as dangerous to the health of the global climate when it's used as intended. The suit claims that oil producers have waged a disinformation campaign, depriving Vermont consumers of the information needed to make informed choices in the use of the oil products.

MR. SIMARD stated that he would like the Board to protect the investments by divesting from risky and threatened oil stocks and ensure transparency to the public, so Alaskans came educate themselves about the economic risks as well as the ongoing damage to the global climate.

CHAIR JOHNSON thanked MR. SIMARD for his testimony.

**INVESTMENT ADVISORY COUNCIL COMMENTS**

DR. MITCHELL congratulated MR. HANNA on the very excellent performance.

DR. MITCHELL noted that he disagreed with Callan and others on their views of inflation. He said that he thought that inflation will be higher and last longer than the consensus expects and thought it would be interesting for the staff to look at what the portfolio would do in a 4 percent inflation environment. He noted that he liked the presentation on crypto and blockchain and found the presentations to be well done..

DR. MITCHELL commented that real assets was an asset class that was not needed. He said a portfolio could do well without real assets, however they are valuable when other assets were not performing well. He went on to compliment the staff for having real assets and noted the assets were not always easy to get rid of or get into so having a good helmsman like Steve Sikes was very important.

MS. RYERSON echoed the compliments of DR. MITCHELL to MR. HANNA and staff. She noted that there were two pages of the actuarial presentation that were not touched on very much, and those were Scenarios 1 and 2. She noted that Scenario 1 was what the actuaries thought the state contribution would be at 7.38, and Scenario 2 was what it really would be, even with smoothing, at almost 28 percent return. She also noted the savings in state contributions of $59 million, and TRS $34 million, which, over the 5-year period increased to $246 million.

DR. JENNINGS stated that there had been questions about ESG and DEI issues and shared insights that had caught his attention. He noted that women had higher returns that men, that single women were best, single men were worst, and the married couples were in the middle. He quipped that it meant that marriage made men smarter and women dumber.

DR. JENNINGS said that studies found that diversity in teams could lower the risk and emphasized male-female diversity and the generational diversity. He noted that wider the age range, the more impact it had on a reduction.

DR. JENNINGS then complemented MR. HANNA and MR. SIKES on the meeting and how well it went.

**TRUSTEE COMMENTS**

MS. HARBO thanked the staff of Treasury and DRB for the excellent presentations and the work that went into organizing the meeting. She also noted that she agreed with DR. MITCHELL on his inflation prediction.

MR. WILLIAMS complimented staff on the excellent returns and the well-organized meeting. He said he thought the presentations were well aligned with what they were doing. He also noted that he was glad they did not rush to decisions on some of the action items and was glad that the meeting on October 11th would be a much deeper discussion on those items.

MR. HANNA noted that they had 68 days until the next main ARM Board meeting and noted that the December meeting would be focused on private equity, and that Callan and staff would present the annual plan. He also noted that in December the actuaries would begin their experience study, which they complete every 4 years.

**FUTURE AGENDA ITEMS** - None.

**ADJOURNMENT**

There being no objection and no further business to come before the board, the meeting was adjourned at 12:34 p.m. on September 24, 2021, on a motion made by MS. HARBO and seconded by MR. KROHN.

Chair of the Board of Trustees
Alaska Retirement Management Board

**ATTEST:**

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Corporate Secretary

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

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

**Videoconference**

**MINUTES OF**
**October 11, 2021**

**Monday, October 11, 2021**

## I. CALL TO ORDER

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

## II. ROLL CALL

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

**Board Members Present**
Robert Johnson, *Chair*
Bob Williams, *Vice-Chair*
Gayle Harbo, *Secretary*
Lorne Bretz
Allen Hippler
Commissioner Lucinda Mahoney
Dennis Moen
Donald Krohn
Commissioner Paula Vrana

**Board Members Absent**
None.

**Investment Advisory Council Members Present**
Dr. William Jennings
Dr. Jerrold Mitchell
Ruth Ryerson

**Department of Revenue Staff Present**
Zachary Hanna, Chief Investment Officer
Pamela Leary, Director, Treasury Division
Brian Fechter, Deputy Commissioner

Scott Jones, Head of Investment Operations, Performance & Analytics
Ryan Kauzlarich, Accountant V
Alysia Jones, Board Liaison

**Department of Administration Staff Present**
Ajay Desai, Director, Division of Retirement & Benefits
Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits
James Puckett, Deputy Director, Division of Retirement & Benefits
Emily Ricci, Health Care Policy Administrator, Division of Retirement & Benefits

**ARMB Legal Counsel Present**
Benjamin Hofmeister, Assistant Attorney General, Department of Law
Rob Schmidt, Assistant Attorney General, Department of Law

**Consultants, Invited Participants**
Steve Center, Callan
Paul Erlendson, Callan
David Kershner, Buck
Scott Young, Buck
Tonya Manning, Buck
Paul Wood, Gabriel Roeder Smith
Bill Detweiler, Gabriel Roeder Smith

**Others Present**
Randall Burns, RPEA President
Kris Erchinger, Public
John Davies, Public
Douglas Gregg, Public
Bill Hill, Public
Steven Bradford, Public
Melody Douglas, Public
Arthur Allen, Public
Luann McVey, Public
Brad Owen, Public
Wendy Wolfe, Public

## III. PUBLIC MEETING NOTICE

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

## IV. APPROVAL OF AGENDA

<u>MS. HARBO moved to approve the agenda. COMMISSIONER MAHONEY seconded the motion.</u>

## V. PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS AND APPEARANCES

MS. JONES said that they had received 45 written comments related to the meeting topic and all were in opposition to the market value reset. Written testimony had been received from: Randall Burns on behalf of the Executive Board of the Retired Public Employees of Alaska, James Dennis, Joan Williams, Al Setera, Shonti Elder, Nils Andreassen, Ruby Hollembaek, TJ O'Donnell, Arthur Nash, Siri Hari Hari Singh Khalsa, Mary Chouinard, G. Higgins, Tyler Henegan, Joseph Liddle, Heidi Wimmer, Ryan Quigley, Raven Amos, Cheryl Cameron, Brittany Cioni-Haywood, Steve Click, Russ Newell, Barry Johnson, Scott Raygor with the Alaska Professional Firefighters, Nick Clark with the Fairbanks Firefighters Union, Tom Richards, Dan and Randy Busch, Victoria O'Connell, Caroline Venuti, Katherine Peterson, Emily Becker, Representative Zach Fields, Silvia Burford, Tom Klaameyer with NEA-Alaska, Jake Metcalfe with ASEA AFSCME Local 52, Douglas Blockcolsky, Lon Garrison with the Association of Alaska School Boards, Mary Burtness, Kirsten Poss, Alexei Basargin, Duncan Marriott, Sheryl Baechler, Forrest Kuiper, Luann McVey, Pamela Lloyd, and Paul Miranda with the Alaska Professional Firefighters Association.

CHAIR JOHNSON noted that there were six people present to provide testimony and invited MR. RANDALL BURNS to speak.

MR. BURNS said that he was the President of the Retired Public Employees of Alaska and was speaking on behalf of the Executive Board of the Retired Public Employees of Alaska, representing over 4,000 members that take exception to the proposal before the ARM Board.

MR. BURNS said that the RPEA understood the economic pressures on the state's annual operating and capital budgets but given the present difficulties in the increasingly complex economic climate, the RPEA did not feel that the timing was right and that it would never be right to abandon the long-held sound fiscal policy. He said there was a reason why successful fund managers relied upon the actuarial approach to the valuation of assets as opposed to relying on a current market evaluation. He noted that one of the slides at the meeting in September had a slide titled "Why Do We Perform Actuarial Evaluations?" which listed many reasons for that practice. He said they understood that the recent market gains suggested that abandoning the AVA approach and adopting a market valuation of assets would bring substantial short-term gains to the state's general fund balance sheet. He said they also believed that introducing policy changes in the management of the state's retirement funds just to take advantage of recent market gains failed to fully appreciate the current tenuous financial conditions facing global markets.

MR. BURNS said that the RPEA asked that the Board maintain the commitment to well-established actuarial calculations when setting the contribution rates.

MS. ERCHINGER was next and said that she was a former Trustee of the ARMB and thanked the Board for all their hard work. She noted the agenda of the meeting and said that although recent high investment returns offered a tempting opportunity to propose the change, it would reduce required state assistance payments in the current year. She said that the timing of the change did not appear to reflect actuarial best practice. She said the change would run counter to past difficult decisions made by the Board to promote consistency, follow actuarial best practice, reduce rate volatility, smooth investment gains and losses, and minimize long-term plan costs by maximizing investment earnings to fund the majority of the plan benefit payments. She encouraged the committee and the Board to stay the course and maintain the current practice of valuing plan assets using the actuarial value of assets approach.

MR. DAVIES was next to speak saying he was from Fairbanks and a former legislator and North Star Borough Assembly person and currently the Chair of the Audit and Finance Committee of the Board of Regents, but that he was speaking just for himself. He said that he was opposed to the idea without very careful analysis of the risks which he thought were not presented in the proposal. He said he was in the Legislature in the 90's when they made what they thought were modest changes to the contribution rate, which created the huge deficits that they were currently trying to dig out from under. He said the changes were based on consultants that had no skin in the game and that it was up to the ARM Board to make prudent investor decisions that were required. He said it was important that they did not make a decision based on one single good year, but to follow the best actuarial practices of looking at the long-term picture.

MR. GREGG spoke next stating that all investors were aware that the value of the portfolio at the current market did not give accurate information about the true value. He said that they had adopted the asset smoothing method in 2006 and were still with a multibillion unfunded liability. He said that changing from a smoothing method to a point-in-time method was counter to accepted best accounting practices and could result in the lowering of the state's credit rating and was a blatant political maneuver threatening the beneficiaries and the retired employees.

MR. HILL was next, stating that he was with the Bristol Bay School District. He said that they needed to recognize the unfunded liability that continued with the retirement system and not take any action that could potentially cause any further disruption. He urged the Board to maintain a five-year average that would have a positive impact on the state's obligation moving forward.

MR. BRADFORD was next to speak saying that he was from Juneau and that he believed that the CCA PPC white paper published in October of 2014 should be followed, that restarts of smoothing periods should not be used, and the asset smoothing period should not be reduced from five years to three years and urged the Board to vote against the proposal.

MS. DOUGLAS spoke next saying that she was a resident of the Kenai Peninsula and a retired CFO for the Kenai School District. She said that she was the Associate Executive Director for the Alaska Association of School Business Officials and wanted to be on record opposing the proposal before the ARM Board.

MR. ALLEN spoke next stating that he was a TRS and PERS member. He said that he opposed the change of plan for how TRS and PERS was funded. He said he thought it was very shortsighted to move forward on a one-year growth.

MS. MCVEY was next saying she that was from Juneau and had submitted her written testimony.

She noted that she was a 66-year-old retiree and that she had been a teacher and spent 29 years in Juneau paying into the Teachers' Retirement System and had expected to support herself after she retired. She urged the Board to veto the plan.

MS. JONES said there were no further people to give oral testimony but had received five additional comments in opposition to the reset to market value from Tom McKenna, Leon Jaimes, Janice Caulfield, Maureen Conerton, and Linda Schandelmeier.

## VI. FY2023 CONTRIBUTION RATES

### A. Discussion of Resetting to Market Value of Assets at 6/30/2021

CHAIR JOHNSON introduced COMMISSIONER MAHONEY noting that she would be presenting resetting to market value of assets

COMMISSIONER MAHONEY reminded the board the catalyst for this discussion was a $7 billion increase in the asset value in 2021. She reminded the board of the reset to market value implemented with a $3 billion increase in 2014. She said that they had also requested additional analytical data to consider a three-year smoothing as another option, plus an evaluation of the normal cost contribution for the healthcare plans.

COMMISSIONER MAHONEY noted that the proposals that were to be evaluated would not impact the benefits to beneficiaries and there would be no impact to the employers other than the State of Alaska. She said their duty was to manage and invest the assets in a manner to meet the liabilities and obligations of the funds so that the members and beneficiaries received their full benefits. She said that two actuaries had reviewed the data and had a difference in their opinions. She said one actuary thought a reset constituted a bias that would be subject to disclosure, the other did not agree with that. She reminded the Board that the Veterans fund was 191 percent funded and the health plans were 133 percent and144 percent funded.

COMMISSIONER MAHONEY said that on page 51 of the packet, there was forecasted fiscal data from Buck that showed that if the normal cost spending of the health plans were redirected, the forecasted plan would still exceed over 100 percent funded throughout the amortization period in 2039, the last year of payments. She said that in the last year of payments, the health funds were estimated to be at 116 percent for PERS and 148 percent for TRS.

MS. HARBO said that she believed the 2014 reset was a condition of the Legislature, not the Trustees, to reset the value; COMMISSIONER MAHONEY said that MS. HARBO was correct, the Legislature did redirect, and the Board cooperated with the redirection from the Legislature; MS. HARBO said that if they did not cooperate, they would not have received $3 billion.

CHAIR JOHNSON agreed with the discussion of the reasoning behind the reset in 2014 and said that it was a different kind of reset at that time.

MS. HARBO commented on the overfunding of the healthcare stating that prior to 2007 they considered pension and healthcare funds commingled and in 2007 the separate trusts were established.

She said in the late 1990s PERS and TRS were close to 100 percent funded, but currently they were not close to 100 percent funded if they consider the pension and healthcare funds together.

**B. Review Statutes**

CHAIR JOHNSON introduced MR. HOFMEISTER to review the statutes.

MR. HOFMEISTER started with AS 37.10.210(a) which discussed the ARM Board's fiduciary obligation. He said the fiduciary obligation required the ARM Board to make decisions consistent with standards of prudence and to manage and invest assets entrusted to the Board. He said there was a reference to AS 37.10.071 which was the fiduciary obligations for boards that managed state trusts and investments.

MR. HOFMEISTER said the provision of that statute that most captured the precedents for the meeting was that the fiduciary of the state fund, which was the ARM Board, exercises power of an owner in regard to the assets it manages, performing proper acts to administer the assets, and engage in the prudent investor rule. He noted that one member of the Advisory Council filed a written opinion that mentioned that part of AS 37.10.071 that said the fiduciary will exercise the fiduciary duty in the sole financial best interests of the fund entrusted to the fiduciary.

MR. HOFMEISTER noted the statute regarding the setting of the contribution rate was AS 37.10.220(a), specifically (8)(A) and (B). The first part was to set an appropriate contribution rate for normal costs, the second part was to set an appropriate contribution rate for liquidating any past service liability. He said that with normal costs there was discretion of what the ARM Board could do. They had to consider a lot of different factors such as hiring experts, actuaries, accountants, and lawyers to help make the decisions. He said in terms of evaluating any decision the ARM Board needed to make, was consideration of the diminishment clause, found in Article XII, section 7 of the Alaska State Constitution which stated "Membership in employee retirement systems of the state or its political subdivision shall constitute a contractual relationship. Accrued benefits of these systems shall not be diminished or impaired." He went on to discuss the "rules" which came from particular Alaska Supreme Court cases. He listed the rules as the *Hoffbeck* rule, the *Sheffield* rule, and the *Gallion* rule.

MR. HOFMEISTER said that the *Hoffbeck* rule was from the 1981 Alaska Supreme Court Case of *Hoffbeck vs. Hammond*. He explained the *Hoffbeck* rule stated that "The right to benefits vests when the employee enrolls in the retirement system, rather than when the employee is eligible to receive benefits."

MR. HOFMEISTER said the *Sheffield* rule added more to the *Hoffbeck* rule stating, "When we speak of the level of rights and benefits protected by this statute, we mean the practical effect of the whole complex of provision."

MR. HOFMEISTER said the *Gallion* rule would be the most helpful to the Board in making the decision. He explained that this was derived from Gallion *vs. the Municipality of Anchorage*, which involved a police and firefighters pension fund that had three different plans - plan 1, plan 2, and plan 3. He said plans 1 and 2 were over funded, plan 3 was underfunded and each plan was treated separately. He said the municipality decided to get plan 3 to a funded status by combining all three plans. Plan 1 was funded at 130 percent, plan 2 at 112 or 115 percent and plan 3 was funded at 89 percent, the combination of all three would have led to all three plans being between 99 and 102 percent funded. He said members of plans 1 and 2 filed a lawsuit arguing their rights were diminished in terms of the financial integrity of the plans and that the surpluses in their plans were being used to make up for the underfunded plan. He said the rule that came out of that case was, "Members have the vested right to actuarial soundness in their plans."

MR. HOFMEISTER said that one of the questions assigned to him was in regard to the 105 percent issue which came from the application of the Ad-Hoc Post-Retirement Pension Adjustment. He said it only applied to Tier I employees. It was in effect for PERS from 1980-1986 when it was repealed, and for TRS from 1980 to 1990. He said the Ad-Hoc Post-Retirement Pension Adjustment was a cost-of-living adjustment that allowed the administrator of the plan to allow for a cost-of-living increase. He said in 2005 when SB141 was being contemplated, the Legislature amended the repealed statutes to include a provision that stated; "When the administrator determines that the cost of living has increased, and the financial condition of the retirement fund permits, the administrator shall increase benefits to persons receiving benefits under the plan. For purposes of this subsection, the financial condition of the fund would only permit an increase in benefits when the ratio of total fund assets to the accrued liability meets or exceeds 105 percent." He noted that change was not a means of distributing surpluses, the DRB would have to determine whether or not there was a higher cost of living adjustment that could be given under the Ad-Hoc Post-Retirement Adjustment as compared to the current statutory Post-Retirement Adjustment. He stressed that the 105 percent provision was neither a means for distributing surpluses or defining overfunding.

MR. HIPPLER asked if there was a potential obligation for the fund to be forced to distribute an additional payment in the event of the plan exceeding 105 percent; MR. HOFMEISTER said it was not an additional payment, that there would have to be a calculation of what the Ad-Hoc Post-Retirement Pension Adjustment would be and what the current statutory automatic Post-Retirement Pension Adjustment would be, and it would be an either/or option.

COMMISSIONER MAHONEY asked if he would provide a scenario of when an additional payment would be made; MR. HOFMEISTER said that it was not an extra payment, it would be a different way to calculate the payment. He said that between 1980 and 1986 for PERS, and between 1980 and 1990 for TRS was, "The amount of the increase in benefit payments may not exceed the greater of the increase in the cost of living since the date of retirement or 4 percent of the retirement benefit compounded for each year of retirement." So DRB would end up having two calculations, one for the years between 1980 and 1986 and then one for the years between 1980 and 1990. He said what 105 percent does, was to trigger the need to have that calculation done and then there would need to be a comparison between that and the current automatic Post-Retirement Pension Adjustment calculation would be. He explained that it would not result in an extra cost of living increase, but an either/or situation and that would depend on which was greater, and which gave more benefits to the members that were subject to those statutes at those times.

MR. WILLIAMS asked if there was any way the 105 percent rule kicks in on the healthcare side; MR. HOFMEISTER said it was called the Post-Retirement Pension Adjustment and he did not believe it did.

CHAIR JOHNSON asked if the *Gallion* case was saying that it was the integrity of the fund, that if it impacted the possibility of taking care of declines in investment revenues, and that was a concern to the Supreme Court, that they found it a diminution; MR. HOFMEISTER agreed and said the word the Alaska Supreme Court used was "financial" integrity and he said that members in those plans had a right under the diminishment clause, to actuarial soundness and the decisions that were made as to their plan individually, not as a whole between the three plans, even though it was administered by the same board; CHAIR JOHNSON said that the actuarial soundness in that situation was going to be 99 to 102 percent funded with blending, but the Supreme Court said that was still a diminution; MR. HOFMEISTER again agreed and explained there was an argument made by the municipality that came up during the course of the opinion that there would be no actual diminishment to individual members in terms of what they would receive in their benefits. The Alaska Supreme Court said, "We don't need to decide that because we have already decided that each plan member has a right to actuarial soundness in their individual plan."

**C. Discussion of FY2023 PERS/TRS Additional State Contributions**

CHAIR JOHNSON invited MR. WORLEY to speak along with representatives from Buck.

MR. WORLEY said that MR. KERSHNER would walk through the presentation.

MR. KERSHNER started his presentation with page 14 of the Board packet.
He said they were asked to provide a summary that showed all the different scenarios that had been discussed previously, along with some additional scenarios. He said the projections were based on 2020 valuations and did reflect SB55 which went into effect on July 1 for PERS. He noted that under SB55, the state contributes the full actuarially determined contribution rate. He said that not only were the additional state contributions affected, that the state-as-an-employer contribution was affected which was why the slide showed numbers split out separately for PERS, but for TRS it was just the additional state contributions that were affected. He said scenario 1 was to give the Board an idea of where they were and what was being projected to happen based on the 2020 valuations, assuming they earned 7.38 percent return in FY2021. He said scenario 2 reflected the actual FY2021 market return of 28 percent based on the preliminary asset statements. He noted that scenario 2 was the current state of projections going forward and that scenario 3 was exactly the same as scenario 2 except it involved a reset of the actuarial value to the market value effective 6/30/21 and then from that point forward they continue to smooth over five years. He said scenario 4 was compared to scenario 2 because scenario 4 does not involve a reset, that the only thing scenario 4 differs in versus scenario 2 is that going forward beginning in 2021, instead of smoothing over five years, they were going to smooth over three years.

MR. KERSHNER said that the slide showed the three proposals being considered as: Do nothing, as scenario 2 showed; reset the actuarial value to market value and continue the five-year smoothing showed as scenario 3; and no reset but change the smoothing to three years starting in FY2021 shown as scenario 4.

MR. WILLIAMS said if we went to three-year smoothing, it's going to become just a lot more volatile, and there's certain years where it would have been disastrous. He then asked why the adverse returns presented did not consider a negative return like in 2008 when they were down 20 percent; MR. KERSHNER said that a three-year smoothing would introduce more volatility in contributions and they did not recommend a three-year smoothing, that the three-year scenario was shown to illustrate one of the proposals that was brought before the ARM Board. He said their recommendation was to not go to a three-year smoothing because of the risk of increased volatility. Regarding the adverse returns, he said that they were illustrative only to demonstrate what would happen with two years of adverse returns.

COMMISSIONER MAHONEY interjected that they were the ones who requested Buck run an option of three-year smoothing as a comparison point to understand how much volatility a three-year smoothing would have relative to a five-year smoothing.

MR. KERSHNER said that slide 5 was a summary of the projection figures for FY2023 through FY2031 for PERS and slide 6 was the exact same thing for TRS. He said the summary of the state's contributions to PERS through FY2039 in scenario 1 was projecting to be about $7.4 billion based on an assumed return of 7.38 percent for FY2021 and scenario 2 reflected the actual return of 28 percent and a projection of about $4.6 billion in state contributions, so a decrease of $2.8 billion because of favorable returns in FY2021. He reminded the Board that the fundamental principle was that contributions plus investment income, the amounts coming into the trusts have to, over the long term, equal the amounts going out to benefits and expenses. He said if contributions were insufficient, then the asset returns have to make up for the shortfall. But if there were excess investment returns, the contributions come down, which is shown in scenarios 1 and 2.

MR. KERSHNER said scenarios 3 and 4 show a slight decrease of about $62 million in 2 versus 3, and in 3 versus 4, a decrease of about $26 million, assuming that all future returns match the expected return of 7.38 percent.

COMMISSIONER MAHONEY asked if the difference shown on table 2 and table 4, (the difference between a five-year smoothing and a three-year smoothing) was $18 million; MR. KERSHNER said that was correct; COMMISSIONER MAHONEY then asked if he would explain how $18 million was relative to a multibillion-dollar fund; MR. KERSHNER said that it was not significant relative to the size of the fund, but that $18 million was dependent on the adverse return scenario identified as zero percent and 4 percent; COMMISSIONER MAHONEY asked if over the life of the fund was the average return 9.3 percent; MR. KERSHNER said that he did not have the data going back to be able to respond to the question; COMMISSIONER MAHONEY asked when they do the experience study would it be a full Monte Carlo analysis on the likelihood of future returns; MR. KERSHNER stated that they would use the GEMS model which was a Monte Carlo simulation of thousands of possible outcomes of returns and inflation rates going forward.

MR. KERSHNER then moved on to slide 6 which showed the same information previously discussed for PERS, but for TRS.

DR. JENNINGS commented that there were a number of state pensions that use a three-year smoothing and possibly a four-year smoothing. He said there were anecdotes of shorter than five-year smoothing and some use corridors along with their smoothing.

MR. KERSHNER then moved to slide 8 as a graphical representation of PERS state-as-an-employer contributions under seven different scenarios that he previously walked through. He said scenario 1, the red line, was the projected PERS state-as-an-employer contribution's assuming they earn 7.38 percent in FY2021. He directed the board's attention to the line showing the asset gains and losses that were being deferred or smoothed and noted that once they reached the end of the smoothing period, the dollar amount projection increases due to amortization.

MR. KERSHNER said the solid blue line was scenario 2 and commented that it was similar to the red line following the five-year smoothing period. He said the green line (scenario 3) was where they take an immediate reduction due to resetting the actuarial value to market value. He said there were no gains or losses to smooth. He said the green line then blends into the black (scenario 4) and blue lines after FY2026.

MR. KERSHNER said that the black line which was smoothing over three years beginning in FY2021 and continuing with five-year smoothing for the FY2021 asset gains and losses.

CHAIR JOHNSON asked which of the lines would they be operating off of if it were simply a continuation of the status quo; MR. KERSHNER said it would be scenario 2; CHAIR JOHNSON asked if it was because they had to reflect the good earnings that they had; MR. KERSHNER said that was correct.

COMMISSIONER MAHONEY asked if the difference between the status quo (scenario 2) and the reset to fair market value (scenario 3) was $30 million; MR. KERSHNER said that through FY2039 in total state contributions, including the additional state contributions, would be approximately $62 million; COMMISSIONER MAHONEY asked if that included TRS; MR. KERSHNER stated no.

MR. WILLIAMS asked if it was accurate to say that the discussion in terms of using market value or sticking with what they've done was would be that the state contribute $206 million less over the next 3 years?; MR. KERSNHER said that was accurate.

MS. MANNING explained that there were two things to consider. One being the effect on contributions in the short term and also what the effect was on the volatility. She said they were making a decision that had dollar impacts but they also had to consider committing to something that had volatility impacts.

MR. KERSHER referred back to the graph on slide 8 of his presentation and explained that the dotted lines showed adverse return scenarios and were color-coded to match their solid line counterparts. He stated that the savings versus more volatility had to be evaluated as the board decides which option to move forward with.

MR. WOOD asked MR. KERSHNER for clarification. He said his understanding of the discussion was that ultimately they would have to make more contributions over a longer term if they reset the actuarial value of assets. MR. KERSHNER responded that MR. WOOD was generally correct, noting that they were not projecting any additional state contributions after FY2039.

MR. WOOD stated that they were targeting the exact same accrued liability number to reach 100 percent funded, and based on the present value basis, that would not happen unless the projections were extended beyond 2039. MR. KERSHNER said there was a savings through FY2025, and then there was an increase in contributions starting in FY2026 for that very reason. He agreed that by not contributing the higher amounts in FY2023 through FY2025, they would not get the earnings on those higher contributions, that the market value at the end of the period was lower with the lower contributions. He noted there were increases beyond FY2026, but they do not offset the savings from FY2023 to FY2025.

MS. MANNING reiterated that this was a decision where one can look at the short-term cash needs, which were important, but that the longer-term focus should be on the volatility that would be introduced by any decisions being made.

MR. WOOD commented that MR. KERSHNER did a nice job with the presentation and that lines would eventually converge. He said by lowering the contribution today you may end up having future budgetary strain and pressure on that budget to bring the amount back up, versus it already being there if they had stayed the course.

CHAIR JOHNSON recessed the meeting from 10:51 a.m. until 11:01 a.m.

**D. Discussion of NGNMRS and "Normal Cost" & Statutory Requirements**

MR. HOFMEISTER reminded the board of their power and duty under statute AS 37.10.220(a)(8)(A) and (B). He said the definition for normal cost appeared in section (h) of AS 39.35.255 and AS 14.25.070 for both PERS and TRS, and that it was identical for each. He said that in this section, "normal cost" meant the cost of providing the benefits expected to be credited, with respect to service, to all active members of the plan during the year beginning after the last valuation date. He said the military retirement system (NGNMRS) was set out in AS 26.05.226 and the ARM Board needed to fund the system based on actuarial requirements of the system as established by the ARMB and to administer the system. He noted NGNMRS was funded at 191 percent.

MR. HOFMEISTER said that they needed to consider the actuarial soundness and that if it was actuarially sound, to zero out the contribution rate and to have the administration costs come out of the surpluses that already existed, that was something the ARM Board could use to set an appropriate rate for that particular plan. He noted that the definition of normal cost did not exist in the statute that set the contribution rate or gave guidance to the power of setting contribution rates in Title 26.

COMMISSIONER MAHONEY asked if the Trustees could make a decision about whether or not the funding level for the NGNMRS plan was sufficient and could vote to not fund the normal cost; MR. HOFMEISTER said that he thought the ARM Board could set the appropriate contribution rate. He explained that if there was a determination that the plan was managed to a point where it was sufficient to meet all of its liabilities and obligations, then the contribution rate could be changed for that particular plan. He also stated that all of the plans are different and the rule for one plan cannot be transferred to another plan.

CHAIR JOHNSON asked to what degree could they use those same principles to react to the normal funding requirements for the health plan component of PERS and TRS - if the facts were that it was overfunded, and actuarially sound, could they say the appropriate rate was zero or something less than 2.46 percent; MR. HOFMEISTER said that in looking at the history of how SB141 created the Board and the statutes they were talking about, there was an indication that the normal cost for PERS and TRS was to be the baseline, that if there was a situation of overfunding, that might necessarily be a requirement for a statutory change. He noted that the health plan was different than the other pension plans and would require a different kind of analysis based on the volatility of health care costs and an aging membership.

MR. HIPPLER asked if they suggested a zero percent funding of normal cost, they could accompany that with a request for a change in statute because of conflicts with statutes that use normal cost for a baseline; MR. HOFMEISTER said for PERS and TRS, yes.

CHAIR JOHNSON said that as he understood it, they had been setting a rate and then letting the administrator of the system allocate it appropriately; MR. WORLEY said that for the past few years, Buck provided a schedule they would use for the resolution that would show the additional state contribution allocation and last year all of it was included to pension and zero to health. He said initially after the $3 billion infusion, there were allocations made to the pension and health. He said that because the funding levels were rising in the health trust and because of things that the health team within the Division were working on such as EGWP, it was determined that they had great standing for the healthcare trust.

CHAIR JOHNSON asked MR. HOFMEISTER if he saw a problem with that tradition; MR. HOFMEISTER said he did not. He added that it went back to the power and the duty of the Board and was troubled if they were talking about changes to the PERS and TRS because of the mandatory language of the statute. He reminded the Board that the initial discussion was about the NGNMRS plan, and it was under a different set of statutes. He said that the ARM Board could not propose legislation, the governor's office and/or individual legislators can and if any of them wanted to make any statutory change that was recommend by a board or agency, they could do so.

COMMISSIONER MAHONEY stated that Buck had performed an analysis on the forecasted impact of what the fund would look like through FY2039 with and without the normal cost contribution for health and suggested now may be an appropriate time for MR. KERSHNER to present that; MR. KERSHNER said that the chart on page 8, item (b) which was a response to a question of "What would the healthcare -- the PERS and TRS healthcare funded ratios look like going forward if we did contribute the normal cost versus if we did not contribute the normal costs?" MR. KERSHNER directed the board's attention to the two left-hand columns for PERS and TRS and noted that it was the current funded status projections for the healthcare trusts. He said the two right-hand columns were the projections assuming that no money was deposited in those years to the healthcare trust for the normal cost He said the funded ratios in 2039 for PERS would be reduced from 140 percent to 116 percent and for TRS, from 168 percent to 148 percent. He noted that all future experience was matched to the assumption, so there would be no asset gains or losses after FY2021, and no healthcare experience gains or losses after FY2021. He said the predictions assumed no change to the current assumptions. He said that as part of the experience study they were likely to lower the 7.38 percent investment return assumption, and if that was done, it would increase liabilities which would make the projected funded ratios lower than projected in the presentation.

MR. WILLIAMS said that looking at page 8, it appeared they had the capacity to not contribute to normal cost and would still be adequately funded. He then asked MR. HOFMEISTER how much risk could they take if they wanted to not contribute to the normal cost; MR. HOFMEISTER said that it depended on whether or not they were diminishing the benefits. He explained that when he said he was troubled, he said he was troubled by the mandatory provisions of the statute and whether or not the statute in 37.10.220(a)(8) and whether or not the Board had the ability to set an appropriate contribution rate. He said he did not know the answer. He explained that with the numbers presented by the actuary they were in a better position to defend a diminishment claim because underfunding a plan or shifting surpluses was not at issue. The question was whether or not the plan can operate on its own without the need for continued contributions. He further stated that there were many unknowns associated with healthcare costs and that the Board needed to take the information from its actuaries and make a decision.

CHAIR JOHNSON invited MR. YOUNG to speak about the chart located on page 51 of the packet.

MR. YOUNG said that there was more uncertainty with healthcare costs than pension benefits due to several factors that are volatile and beyond their control. He noted that one of the things that had reduced the cost significantly had been the new prescription drug contract negotiated with OptumRx. He said those such contracts are renegotiated periodically with different vendors and are sometimes favorable when the contract is negotiated for the future. He said that for people with Medicare, the plan was secondary and things such as EGWP that was implemented in 2019 created a large reduction in costs.

MR. DESAI said that when they receive the contribution according to the statute, it is for the system, so once the contribution is received they cannot transport the funds from plan to plan. He asked if when funds were received that were not net allocated, were they allowed to allocate the funds appropriately and was there a problem with allocating the funds into the pension fund for the normal cost that they receive from the health contributions; MR. HOFMEISTER said he understood what he was asking and that it went back to the *Gallion* case. He said those contributions were based on the individual plans that would ultimately benefit the members. He explained that when the decision was made to split the plans with SB141 in 2005, they were to be treated differently. He said the funds that go into one, cannot be diverted to another, it would cause a problem with the diminishment clause.

COMMISSIONER MAHONEY asked if a plan was overfunded, which seemed as if it would be a criterion for determining actuarial soundness, would that be considered to be actuarially sound; MR. HOFMEISTER said there was a strong argument for that, but MR. DESAI was asking whether or not one could take the contributions for one plan and apply them to another which would be a different scenario that would violate *Gallion*. He stated that the original scenario raised involved zeroing out the contribution rate and that was a different call.
CHAIR JOHNSON asked about the appropriateness of the administrator allocating as it saw appropriate and fit. MR. HOFMEISTER said that they are separate plans now and that diverting to a different plan would violate *Gallion*.

MR. WILLIAMS referred to the PERS and TRS healthcare funded ratio table, found on page 50 of the packet. He noted that the descriptions listed for the changes in the healthcare funded ratios were not related to market returns. He stated that it appeared to have more volatility than the pension systems and that he might be in favor of zeroing out those normal costs but wanted to hear from MR. HOFMEISTER.

MR. HOFMEISTER responded that he would want to explore the issue more on both a legal level and in terms of actuarial soundness. He re-emphasized that the plans are different and other factors need to be considered in each one of those determinations.

CHAIR JOHNSON acknowledged MR. HOFMEISTER's comments and asked the Board to work towards finding a rate today, and then set the stage for clarification in future years on the normal cost issue.

CHAIR JOHNSON recessed the meeting from 11:53 a.m. until 1:00 p.m.

**E. Review of Trustee Questions and Responses**

CHAIR JOHNSON asked MR. HIPPLER if he would organize the deliberations.

MR. HIPPLER reminded the Board that during an Actuarial Committee meeting they had decided to reconvene to address a reset to fair market value or a change in smoothing, in addition, discuss further changes to normal cost and the funding. Multiple questions from Trustees were collected and some responses from their expert advisors received. He said answers to the questions began on page 38 of their packet..

CHAIR JOHNSON asked representatives from Buck, Callan, GRS, IAC, and Law to deliver any oral presentations that may supplement the written materials they provided previously.

CHAIR JOHNSON asked MR. KERSHNER from Buck if he had any items to elaborate on; MR. KERSNHER said that he did not.

CHAIR JOHNSON asked if anyone had questions or comments for Buck; with no response, he asked MR. CENTER of Callan if he had any additional comments to the materials he provided to discuss; MR. CENTER said that Callen was not currently aware of any other public fund clients that were contemplating similar changes as a result of recent market performance.

CHAIR JOHNSON asked if anyone had projections that would suggest that the upcoming fiscal year would be as good as the last one; MR. CENTER said that he wished he could answer that. He said that the performance experienced in the last fiscal year had far exceeded their projections, which was typically a signal that the next year may not be quite as good.

MS. HARBO asked if he could confirm that there were many other public finds which had returns greater than 30 percent; MR. CENTER said that for the 12-month period ending June 30th, it was not uncommon to see returns north of 25 percent; MS. HARBO asked if any of them had changed their method of market value of assets; MR. CENTER confirmed that none had.

CHAIR JOHNSON asked if MR. WOOD from GRS had additional comments; MR. WOOD said he did not but would be happy to answer any questions.

CHAIR JOHNSON asked if he would elaborate more on the extent to which he saw problems under Accounting Standard 44 that might be implicated by a change of the type proposed.

MR. WOOD clarified that it was the Actuarial Standards of Practice No. 44. He said the concern was the talk of systematic bias in an actuarial valuation method, that this would be the second time they were resetting the actuarial value method. He said it seemed as though the actuarial case for resetting the value was very difficult to make; that it may be more of a political or policy decision, and that the actuarial case was difficult to make. He said the standards of practice did not disallow bias, but they had to disclose that in the reports. He said that it was their opinion that if it did go forward, that Buck have a rationale for the change and they disclose that rationale that there was some form of bias in the method.

DR. JENNINGS said that he thought that moving averages would unambiguously be biased. He said it would be like changing the way they were calculating a moving average, but if they spent less than the portfolio was earning, the portfolio would be growing, and the current market value would be above the moving average. He said that depending on the spending level versus the earnings in a particular year, there would be some bias. He said he would argue that the goal was not to maintain a pure moving average, but to figure out the best way to ensure that the beneficiaries got paid and that it seemed to him that market value was the way to avoid any kind of smoothing bias.

DR. JENNINGS said that in reading the actuarial standard of practice, the norm seemed to be in their standard that deviations from market value had to be justified and explained, that they characterize market value as fair value. He quoted that: The actuary should select a valuation method that's designed to produce actuarial value of assets that bear a reasonable relationship to the corresponding market value. He said the standard also mentioned that actuaries could reasonably incorporate changes in a sponsor's objectives. He said the predecessors used the five-year smoothing, both before and after closing the plan, and that standard of practice mentioned that freezing a plan was explicitly a reason that it could be revisited. He also referenced the NASRA database, noting that it revealed others that have reset a moving average to incorporate market value and that there were precedents for other models.

MR. WOOD commented that a valuation method that bears a reasonable resemblance to the market value does not want to see a method that produced an actuarial value that would always be higher than the market value or vice versa, so with the smoothing method that was being employed, if they got the assumed rate of return for the next four years, the market value and the actuarial values would converge and that's what they wanted to see, convergence over time if they met their assumption. He said the reason they smooth assets was to cut down on volatility. He said if they didn't have any smoothing, and had a poor year next year, they would have to recognize that immediate poor year in one shot which would mean they would have to drop the contributions significantly.

DR. JENNINGS clarified that he was going towards the idea of compounding conservatism and encouraged that it be an element of any continuing conversation on this topic.

MR. WOOD stated that the NASRA database had a wealth of information in it and there was a massive trend of discount rates coming down. He said the median discount rate assumption was 7 percent, and they were at 7.38 percent, a signal that there might be pressure during the experience study to come down. He said the inflation assumption was 2.5 percent. He said that he would not be surprised to see a recommendation to lower the discount rate which would impact contributions in the future. He said if they used the entire gain from this year, there would be nothing left to absorb any of the shock of a lowering of the discount rate.

MR. WILLIAMS said that he wondered if it could be a little reckless because it looked like they had one really good year of returns and in looking at page 48 in the packet, in 2020 they had fluctuated in unfunded liability on PERS between $4 billion and $5.5 billion and TRS from $2.7 billion to $1.9 billion. He said it was his understanding that they were going to hit the 7.38 percent every year, and the state had to chip in on the unfunded liability. He stated that since 2000 their goal has been 7.38%, which they made 12 times and had 10 years where they didn't. He said that he found it troubling that they had one really good year and were now looking at recalibrating everything.

MS. RYERSON said that she agreed with COMMISSIONER MAHONEY about reviewing the practice of continuing to fund overfunded plans, even if it meant clarifying the statute on whether normal cost had to continue to be put in. She suggested that be done in conjunction with the experience study, at least for the healthcare plans, in order to see the impact of potentially changing assumptions.

MR. HOFMEISTER said that it was a question about the methodology that was raised in the very beginning of their conversation. He said *Gallion* required the Board to take into consideration all the experts they heard from. He said the ARM Board's first and foremost obligation was to the assets and to the members that benefitted from those assets.

DR. MITCHELL said that his conclusion after listening to all the comments was that they could do what they want, there was enough wiggle room in actuarial practice and in the statutes and case law of the state to allow for that.

MR. HOFMEISTER said that in terms of the diminishment clause what was required was actuarial soundness, and what the Board needed to do was determine if any of the practices or methodologies were sound or unsound.

MR. HOFMEISTER said that based on the discussion, the standard was the five-year smoothing process without reset and what they were being asked to consider was both the reset and the three-year smoothing process. He said that the five-year smoothing process without reset met the actuarial standards and would be actuarially sound. He said the Board needed to decide that if they change the methodology, do they reach the same level of actuarial soundness as they had with what was traditionally used. He said it was a policy decision the Board had to make based on all the information they were provided.

MR. HANNA said it was good to hear talk about the conjunction of smoothing and amortization and that it was the combined length of those – smoothing plus amortization periods that really control the volatility. He said he thought both the three and five-year smoothing were reasonable, and noted he was not an actuary, but they both seemed actuarially sound. He said that he liked that they treated both positive and negative experience from a return perspective in a symmetrical fashion. He said that if the Board adopted a move from five to three, he thought that it would be supportable and good and bad returns would get treated equally.

MR. HIPPLER thanked COMMISSIONER MAHONEY for bringing the issue to the attention of the Board. He noted that the Actuarial Committee would need to review a couple of other things in the future, the discussion of the 105 percent PRPA was something they needed more information on.

**F. FY2023 Contribution Discussion & Review**

**1. History of PERS/TRS Employer**

COMMISSIONER MAHONEY expressed her appreciation to the board for the time they were spending looking at these issues and suggested that any change to the asset value be deferred till next year and incorporated with the experience study and that they consider any kind of an adjustment to the asset value along with their discussion associated with the rates. CHAIR JOHNSON asked if the form of resolution 2021-04 considered would be the resolution that was contained in the Board packet as Option A, (Scenario 2) and found for PERS at pages 74 and 75 and for TRS at page 95 and 96. The other options being Option B and Option C were being withdrawn for consideration; COMMISSIONER MAHONEY said that was correct, until they do an experience study and look at it together with the rates.

MR. HIPPLER asked if the board would consider the motions slightly out of order.

**2. Action Items**

**Action: Resolution 2021-10**

CHAIR JOHNSON asked for a motion to consider Resolution 2021-10 relating to the NGNMRS Contribution Amount.

<u>MS. HARBO so moved. MR. KROHN seconded the motion.</u>

MR. HIPPLER said that he had a motion to amend the motion as follows: Whereas the June 30, 2020, Alaska National Guard and Naval Militia Retirement System actuarial valuation report determines that the actuarially determined contribution amount is zero dollars, composed of the normal cost of $503,140, past service cost amortization of negative $3,224,638, and administrative expense load of $256,000.

<u>MR. HIPPLER so moved to amend. MR. BRETZ seconded the amendment.</u>

CHAIR JOHNSON asked for a discussion on the amendment.

MR. WORLEY said that he agreed and recommended taking out the last paragraph as well because of a reference to no past service liability.

MR. HIPPLER agreed with the clarification of the amendment, as did MR. BRETZ.

CHAIR JOHNSON asked MR. HOFMEISTER what his observation was; MR. HOFMEISTER said that if the surplus that currently existed could be used to overtake the administrative costs, he did not see a problem with it.

MR. KERSHNER said that contributing zero to the National Guard Plan for FY2023 posed no risk of the plan falling out of the term that it was being used – actuarial soundness. He said the plan would continue to be well-funded and there would be no consequences to beneficiaries or other stakeholders by not contributing anything in FY2023.

CHAIR JOHNSON said they were voting on whether the motion would be amended.

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

CHAIR JOHNSON then asked for a roll call vote on adopting Resolution 2021-10 as amended.

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

**Action: Resolution 2021-04**

CHAIR JOHNSON explained that for PERS, they would be voting on Option A (Scenario 2), found in the board packet at page 74 to 75.

MS. HARBO so moved. MR. KROHN seconded the motion.

CHAIR JOHNSON asked MR. HIPPLER if he wanted to discuss the resolution.

MR. HIPPLER said that he had not made an amendment but would like to discuss page 42 of the packet. He said the chart on page 42 showed the breakdown of the non-state-employer contributions to PERS totaling 22 percent set by the Legislature. He said within the 22 percent was the normal cost for healthcare of 2.84 percent. He said what he was proposing was to reduce the normal cost on the healthcare plan to zero and increase for non-state employers the past service cost by 2.84 percent and the state as an employer by 2.84 percent. He said that would result in an impact of 22 percent for non-state employers remaining unchanged, and the state as an employer at 27.63 percent would be reduced by 2.84 percent.

MR. WORLEY explained that MR. HIPPLER's proposal had been done before SB141, and that a negative past service costs would reduce the normal cost potentially to zero. He noted that with both PERS and TRS being overfunded, the past service costs on both were in an amount that would reduce the normal cost to zero.

MR. HOFMEISTER asked if what they were talking about was zeroing it out, not diverting funds; CHAIR JOHNSON stated that was correct; MR. HOFMEISTER said that in *Gallion*, it suggested that plan members do not have a right to surpluses or overfunding, but once a surplus existed it could only be used to the benefit of the members. He stated there appeared to be a conflict in the statutes, but that zeroing out the contribution rate for healthcare was defensible. He said he would like to hear from MR. KERSHNER as to what the 2.84 percent encompassed and whether or not it would be actuarially sound to eliminate that particular contribution in terms of setting the overall contribution rate.

MR. HIPPLER referenced page 74, which was Option A (Scenario 2) for PERS and said that his motion to amend would read as follows: I move that on the sixth whereas, 18.38 be replaced with 21.22, and 16.01 be replaced with 18.85. And on the seventh whereas, amended to state: Whereas the actuarially appropriate contribution rate for postemployment healthcare benefits is zero percent. And in the final paragraph, that the contribution rate 27.63 percent be replaced with 24.79 percent, and 18.38 percent be replaced with 21.2 percent, and 2.84 percent be replaced with zero percent.

<u>MR. HIPPLER so moved to amend.</u> <u>MS. HARBO seconded the motion.</u>

MR. KERSHNER said that he did not think the numbers were correct in the motion to amend.

MR. HIPPLER said that his intent was to increase the past service from 16.01 to 18.85.

MR. KERSHNER said that he did not believe that was correct and then asked why they wanted to do that; MR. HIPPLER said it was because they were holding the 22 percent constant and if they were reducing 22 percent 2.84 percent it would have to be applied somewhere. MR. KERSHNER said that he had revised the past service rate for the non-state employer in the non-state employer column from 10.38 percent in the August 25th letter to 13.22 to keep line 8 at 22 percent in the non-state employer column. He said the state as an employer was contributing the full actuarial rate as shown in line 1 of 2.37 and a past service cost of 16.01 for a total DB pension plan cost of 18.38.

MR. WORLEY shared his screen and showed what MR. KERSHNER had just explained and noted that the state as an employer was paying the full past service cost of 16.01and the non-state employers, due to the increase and then the cap at 22 percent, were paying 13.22 He explained that the sixth whereas clause would be revised to say: Whereas, the Buck schedule dated October 11th 2021, determines that the actuarially determined contribution rate for pension benefits is 18.38 percent composed of 2.37 normal cost and a past service rate of 16.01 percent.

MR. WORLEY said the seventh whereas read as follows: The Buck schedule dated October 11, 2021, determines that the actuarially determined contribution rate for postemployment healthcare benefits was zero percent, composed of the normal cost rate of 2.84 and a past service rate of negative 2.84.

MR. WORLEY then read the last paragraph as amended: Now therefore, be it resolved by the ARM Board that the Fiscal Year 2023 actuarially determined contribution rate attributable to employers participating in the Public Employees' Retirement System is set at 24.79 percent, composed of the contribution rate for Defined Benefit pension of 18.38, the contribution rate for postemployment healthcare of zero percent, and the contribution rate for the Defined Contribution pension of 6.41.

CHAIR JOHNSON asked MR. WORLEY, MR. HIPPLER, and MR. KERSHNER if the document set forth reflected the intention that they had for an amendment to the resolution; All three confirmed that it did.

MR. HIPPLER said that he did not see a separate resolution for non-state employer contribution calculation; MR. WORLEY said that as part of the attachment for the resolution, it will reflect the non-state employer portion because the resolution shows what the total rates are for DB pension and DB health and then the Defined Contribution Plan. The attachment that appends to it would show the breakdown by non-state employer versus the state as an employer. He explained that the non-state employer rate would be 15.59 percent for DB pension, 6.41 percent of the DCR Plan and then would have a 2.79 percent additional state contribution, for a total of 24.79.

CHAIR JOHNSON asked if there was normally an attachment; MR. WORLEY said that typically there was a letter from Buck with a schedule. CHAIR JOHNSON asked if they would add a sentence to the proposed amendment in the therefore clause that references the attached schedule; MR. HIPPLER said that the final sentence in last paragraph would include the clause, "and the non-state employers' contributions, as defined by the attached schedule."

MR. HIPPLER asked MR. KERSHNER if Buck did not object to using the clause, "and past service rate of negative 2.84 percent."; MR. KERSHNER said the negative is actually 4.94 percent for PERS; MR. HIPPLER said that he would accept that clarification; MR. HIPPLER then asked where the 4.94 percent came from; MR. KERSHNER said that it came for their calculation spreadsheet as the sum of all the layered amortizations for FY2023 for healthcare divided by the total payroll.

CHAIR JOHNSON asked MR. HIPPLER to read the whereas clause with the most recent proposed change; MR. HIPPLER read: Whereas, the Buck schedule dated October 11, 2021, determines that the actuarially determined contribution rate for postemployment healthcare benefits is zero percent, composed of the normal cost rate of 2.84 percent and past service rate of negative 4.94 percent.

MR. HOFMEISTER said that MR. HIPPLER was correct, if something that was negative, it could be set to zero, but could not be set below zero.

CHAIR JOHNSON said that he felt uncomfortable going along with the amendment that was proposed and would be voting against it.

MR. MOEN said that he too was uncomfortable with reducing or eliminating contributions to the healthcare. He noted that it seemed premature to drop that contribution.

MR. BRETZ said that he appreciated the purpose of the motion to allocate contributions to where they were needed rather than not needed. He noted that they were above funding in the healthcare trust.

MS. HARBO said that she was uncomfortable doing amendments or motions on the fly, that she would rather have them before the meeting so she could review them carefully.

MR. WILLIAMS said that he liked the spirit of the amendment but he too would have rather had the information ahead of the meeting so he could review it.

MR. HIPPLER said that the decision they were making about normal cost was not one that would bind the Board other than for the next year, that they determined the rate every year. He noted that at some point it becomes a mandate for the Board to start thinking about the issue and adjusting their behavior accordingly.

A roll call vote was taken, and the amendment passed by a vote of 6 to 3. With MR. KROHN, COMMISSIONER MAHONEY, MR. WILLIAMS, MR. BRETZ, COMMISSIONER VRANA, and MR. HIPPLER voting "Yes" and MR. MOEN, MS. HARBO and CHAIR JOHNON voting "No".

CHAIR JOHNSON said they would consider the adoption of the motion to adopt Resolution 2021-04 relating to PERS as amended and as set forth.

A roll call vote was taken, and the action item was passed by a vote of 8 to 1. With MR. BRETZ, MS. HARBO, MR. HIPPLER, MR. KROHN, COMMISSIONER MAHONEY, MR. MOEN, MR. WILLIAMS, and COMMISSIONER VRANA voting "Yes" and CHAIR JOHNSON voting "No".

**Action: Resolution 2021-07**

CHAIR JOHNSON said they would consider the adoption of the motion to adopt Resolution 2021-07 relating to the TRS contribution rate.

MR. HIPPLER so moved. MR. WILLIAMS seconded the motion.

MR. HIPPLER stated that he would like to amend the motion to reflect the verbiage prepared by MR. WORLEY, displayed on the screen.

MR. HIPPLER so moved to amend. COMMISSIONER MAHONEY seconded the amendment.

CHAIR JOHNSON asked MR. HIPPLER to walk the Board through the changes.

MR. HIPPLER directed the Board to page 95 and noted the contribution rate was 2.72 percent for normal healthcare cost stated that as of June 30th, the TRS healthcare fund is funded at 127 percent for actuarial valuation. He then read the changes to the seventh paragraph: Whereas, the Buck schedule dated October 11, 2021, determines that the actuarially determined contribution rate for postemployment healthcare benefits is zero percent, composed of the normal cost rate of 2.72 percent and past service rate of negative 2.72 percent.

MR. WORLEY asked if the intent was to set the past service rate at the real rate instead of the 2.72, similar to the amendment to Resolution 2021-04. MR. HIPPLER thanked MR. WORLEY for the clarification and confirmed that was the intent. COMMISSIONER MAHONEY concurred.

MR. KERSHNER stated that it was negative 7.93 percent.

CHAIR JOHNSON noted that at least three references to the letter dated August 25, 2021 needed to be changed to reference today's date and asked if there would be an end clause similar to the one for PERS that referred to an attached document. MR. HIPPLER said that was unique to PERS, as TRS did not have state employees.

CHAIR JOHNSON asked MR. HIPPLER to read the amended final clause of the resolution. MR. HIPPLER said: Now therefore, be it resolved by the Alaska Retirement Management Bord that the Fiscal Year 2023 actuarially determined contribution rate attributable to employers participating in the Teachers' Retirement System is set at 24.62 percent, composed of the contribution rate for Define Benefit pension of 17.90 percent, the contribution rate for postemployment healthcare 0.00 percent, and the contribution rate for Defined Contribution pension of 6.72 percent.

MR. HIPPLER stated that the change is that they went from 27.34 percent to 24.62 percent.

MS. HARBO asked why the Defined Contribution percent for TRS was different than the percent listed for PERS. MR. KERSHNER said the primary difference was that the employer DC contribution for PERS was 5 percent and for TRS, 7 percent.

A roll call vote was taken, and <u>the amendment passed by a vote of 6 to 3.</u> With MR. BRETZ, MR. KROHN, MR. HIPPLER, COMMISSIONER MAHONEY, MR. WILLIAMS, and COMMISSIONER VRANA voting "Yes" and MS. HARBO, MR. MOEN, and CHAIR JOHNON voting "No".

CHAIR JOHNSON said they would consider the adoption of the motion to adopt Resolution 2021-07 relating to TRS as amended and as set forth.

A roll call vote was taken, and <u>the action item was passed by a vote of 8 to 1.</u> With MR. MOEN, MR. WILLIAMS, COMMISSIONER VRANA, MR. BRETZ, MS. HARBO, MR. HIPPLER, MR. KROHN, COMMISSIONER MAHONEY, and CHAIR JOHNSON voting "No".

## VII. UNFINISHED BUSINESS – None

## VIII. NEW BUSINESS – None.

## IX. OTHER MATTERS TO PROPERLY COME BEFORE THE BOARD - None.

## X. PUBLIC/MEMBER COMMENTS

MS. JONES stated that she had updated written comments.

CHAIR JOHNSON asked her to summarize the nature of the written comments that had come in during the meeting; MS. JONES said that the comments were all in opposition to the reset to market value and were received from Jane Hanchett, Sue Johnson, Mike and Mariellen Hanchett, Kathleen Oliver, Lili Misel, Hannah Etengoff, Robert McHattie, Shar Fox and Jim Simard, Sally Schlichting, Barbara Ward, Steve Bouta, Shgen George, Dianne Holmes, Dr. Lisa Parady, Linda Kruger, John Klapproth, Margaret Wiedeman, Sharon John, and Tom Reimer.

## XI. INVESTMENT ADVISORY COUNCIL COMMENTS

MS. RYERSON commented that she thought it seemed to be a good solution for one year.

## XII. TRUSTEE COMMENTS

MS. HARBO thanked CHAIR JOHNSON and the Board of Trustees and staff for taking the time to hold the special meeting. She found that it had been a good learning experience.

COMMISSIONER MAHONEY also thanked everyone for the effort and dedication that all had put into evaluating the matter. She said she felt that they had come to a really good result.

CHAIR JOHNSON said that he also appreciated all the hard work put into the meeting. He said he also appreciated COMMISSIONER MAHONEY for presenting the proposal on behalf of the state.

## XIII. FUTURE AGENDA ITEMS - None.

## XIV. ADJOURNMENT

There being no objection and no further business to come before the board, the meeting was adjourned at 3:12 p.m. on October 11, 2021, on a motion made by MS. HARBO and seconded by MR. KROHN.

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.

# ALASKA RETIREMENT MANAGEMENT BOARD
## STAFF REPORT
## Division of Retirement & Benefits Report
## December 2, 2021

### Summary of Monthly Billings / Buck Global LLC

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

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 three months ended September 30, 2021

New for this quarter is the reset actuarial value of assets to market value of assets.

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Summary of Monthly Billings - Buck Global LLC | ACTION: | |
| DATE: | December 2, 2021 | 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 three months ended September 30, 2021.

**Buck**
**Billing Summary**
**For the Three Months Ended September 30, 2021**

| | PERS | TRS | JRS | NGNMRS | EPORS | AHF | RHF | SBS | DCP | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|
| Actuarial valuations | $ 53,466 | 42,561 | 5,457 | 5,457 | 2,184 | - | - | - | - | $ 109,125 |
| KPMG audit information request | 3,142 | 1,278 | 23 | 90 | - | - | - | - | - | 4,533 |
| ARMB presentations and meeting attendance | 3,411 | 3,414 | - | - | - | - | - | - | - | 6,825 |
| FY20 final PERS/TRS contribution rates | 3,411 | 3,414 | - | - | - | - | - | - | - | 6,825 |
| GASB 67/74 | 7,572 | 6,060 | 759 | 759 | - | - | - | - | - | 15,150 |
| GASB 68/75 | 22,722 | 18,180 | 2,274 | 2,274 | - | - | - | - | - | 45,450 |
| Projections | 6,750 | 6,750 | - | - | - | - | - | - | - | 13,500 |
| Estimated funded status of DB plan at 6/30/21 | 7,139 | 2,898 | - | - | - | - | - | - | - | 10,037 |
| 2020 valuation projections - no FY23 ASC and 3-year asset | 25,235 | 9,816 | 26 | - | - | - | 27 | - | - | 35,104 |
| AlaskaCare retiree plan cost study | 6,185 | 2,296 | 22 | - | - | - | 25 | - | - | 8,528 |
| Rest actuarial value of assets to market value of assets | 11,445 | 4,646 | - | - | - | - | - | - | - | 16,091 |
| **TOTAL** | $ 150,478 | 101,313 | 8,561 | 8,580 | 2,184 | - | 52 | - | - | $ 271,168 |
| **For the Three Months Ended September 30, 2020** | $ 101,046 | 81,969 | 8,500 | 8,523 | - | - | - | - | - | $ 200,038 |

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Retirement System Membership Activity as of September 30, 2021 | ACTION: | |
| DATE: | December 2, 2021 | 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 September 30, 2021.

## MEMBERSHIP STATISTICS AS OF JUNE 30, 2021

| | 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 | 655 | 2,243 | 7,168 | 10,066 | 24,481 | 34,547 | 150 | 3,342 | 3,492 | 6,009 | 9,501 | 72 | n/a | 20,745 | 6,770 |
| Terminated Members | | | | | | | | | | | | | | | |
| Entitled to Future Benefits | 250 | 1,675 | 3,187 | 5,112 | 2,082 | 7,194 | 38 | 703 | 741 | 832 | 1,573 | 2 | n/a | 28,807 | 5,684 |
| Other Terminated Members | 997 | 2,006 | 7,363 | 10,366 | 16,249 | 26,615 | 225 | 1,453 | 1,678 | 2,848 | 4,526 | 1 | n/a | n/a | n/a |
| Total Terminated Members | 1,247 | 3,681 | 10,550 | 15,478 | 18,331 | 33,809 | 263 | 2,156 | 2,419 | 3,680 | 6,099 | 3 | n/a | 28,807 | 5,684 |
| Retirees & Beneficiaries | 22,310 | 9,205 | 5,189 | 36,704 | 127 | 36,831 | 9,971 | 3,254 | 13,225 | 30 | 13,255 | 144 | 704 | n/a | n/a |
| Managed Accounts | n/a | n/a | n/a | n/a | 5,968 | 5,968 | n/a | n/a | n/a | 1,506 | 1,506 | n/a | n/a | 3,269 | 3,101 |
| Retirements - 4th QTR FY21 | 66 | 172 | 160 | 398 | 50 | 448 | 12 | 97 | 109 | 7 | 116 | 1 | 15 | n/a | n/a |
| Full Disbursements - 4th QTR FY21 | 8 | 62 | 87 | 157 | 320 | 477 | 2 | 10 | 12 | 55 | 67 | - | n/a | 383 | 121 |
| Partial Disbursements - 4th QTR FY21 | n/a | n/a | n/a | n/a | 64 | 64 | n/a | n/a | n/a | 10 | 10 | n/a | n/a | 1,460 | 593 |

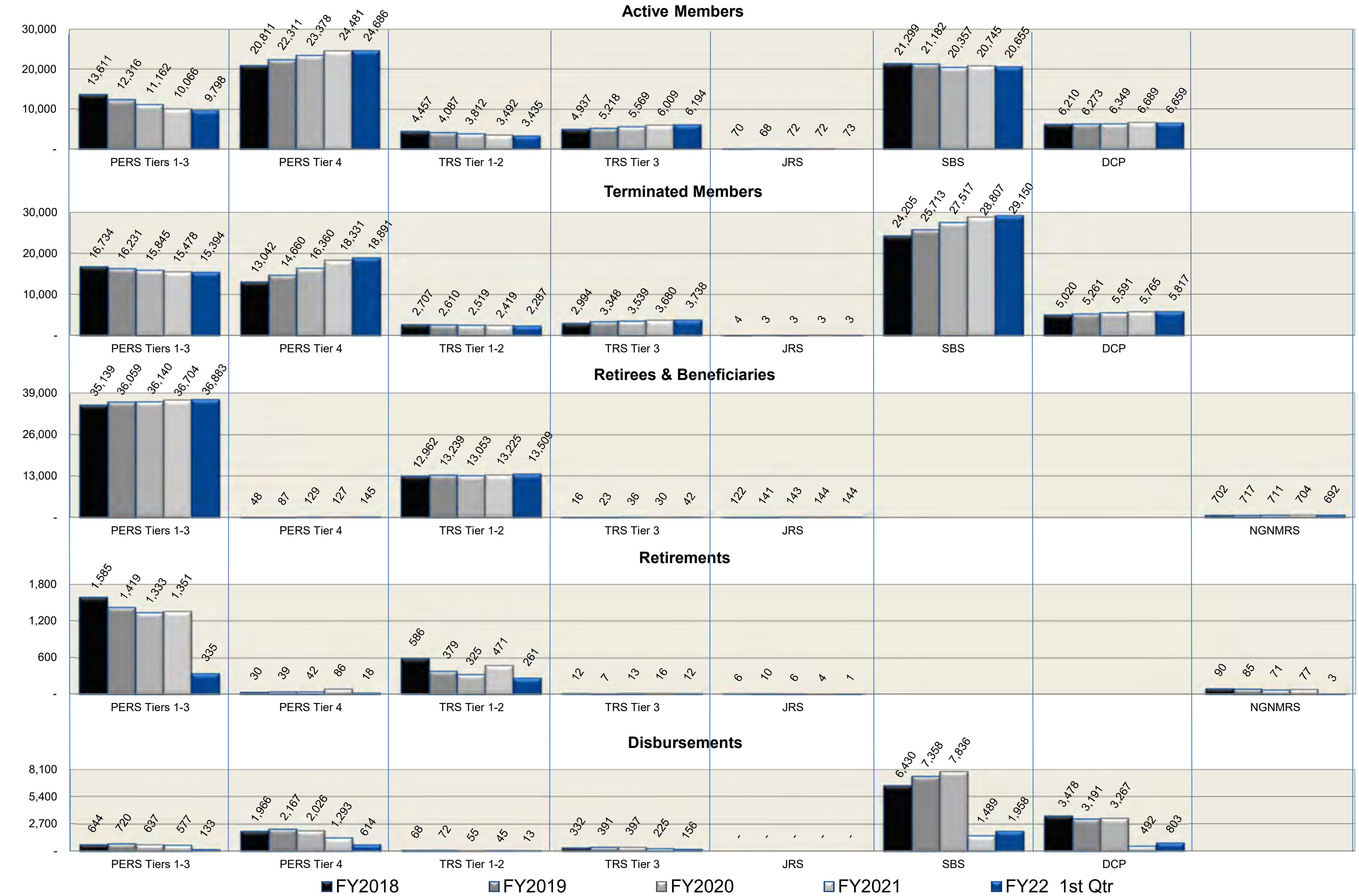
## MEMBERSHIP STATISTICS AS OF SEPTEMBER 30, 2021

| | 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 | 613 | 2,163 | 7,022 | 9,798 | 24,686 | 34,484 | 143 | 3,292 | 3,435 | 6,194 | 9,629 | 73 | n/a | 20,655 | 6,659 |
| Terminated Members | | | | | | | | | | | | | | | |
| Entitled to Future Benefits | 243 | 1,632 | 3,209 | 5,084 | 2,185 | 7,269 | 17 | 613 | 630 | 858 | 1,488 | 2 | n/a | 29,150 | 5,817 |
| Other Terminated Members | 985 | 1,995 | 7,330 | 10,310 | 16,706 | 27,016 | 220 | 1,437 | 1,657 | 2,880 | 4,537 | 1 | n/a | n/a | n/a |
| Total Terminated Members | 1,228 | 3,627 | 10,539 | 15,394 | 18,891 | 34,285 | 237 | 2,050 | 2,287 | 3,738 | 6,025 | 3 | n/a | 29,150 | 5,817 |
| Retirees & Beneficiaries | 22,236 | 9,297 | 5,350 | 36,883 | 145 | 37,028 | 9,966 | 3,543 | 13,509 | 42 | 13,551 | 144 | 692 | n/a | n/a |
| Managed Accounts | n/a | n/a | n/a | n/a | 5,973 | 5,973 | n/a | n/a | n/a | 1,496 | 1,496 | n/a | n/a | 3,354 | 3,171 |
| Retirements - 1st QTR FY22 | 51 | 134 | 150 | 335 | 18 | 353 | 43 | 218 | 261 | 12 | 273 | 1 | 3 | n/a | n/a |
| Full Disbursements - 1st QTR FY22 | 16 | 45 | 72 | 133 | 463 | 596 | 3 | 10 | 13 | 114 | 127 | - | n/a | 580 | 195 |
| Partial Disbursements - 1st QTR FY22 | n/a | n/a | n/a | n/a | 151 | 151 | n/a | n/a | n/a | 42 | 42 | n/a | n/a | 1,378 | 608 |

## Alaska Division of Retirement and Benefits

# FY 2022 QUARTERLY REPORT OF MEMBERSHIP STATISTICS

**Annual & Quarterly Trends as of September 30, 2021**



## 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**

**Disclosure – Communications – Calendar Update**
**December 2, 2021**

The 3rd Quarter Disclosure Memorandum is included in the packet; no disclosure transactions require additional review or discussion.

The Communications Memorandum lists communications directed to and sent on behalf of the Board since the October 11, 2021, meeting, as well as a summary of public records requests received between September 1 and October 31, 2021.

The 2022 ARMB Meeting Calendar approved by the Board at the June meeting is attached.

A timeline showing contract and review deadlines for FY2022 through FY2027 is included to provide trustees with a high-level view of ARMB items and their frequency.

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

To: ARMB Trustees
From: Alysia Jones
Date: November 15, 2021
Subject: Financial Disclosures

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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 July 1, 2021 – September 30, 2021**

| Name | Position Title | Disclosure Type | Disclosure Date |
|---|---|---|---|
| Hunter Romberg | Investment Data Analyst | Equities | 10/01/2021 |
| Jerrold Mitchell | Investment Advisory Council Member | Equities | 10/05/2021 |
| Donald Krohn | ARMB Trustee | Equities/ Options | 10/11/2021 |
| Allen Hippler | ARMB Trustee | Equities | 10/22/2021 |
| Michelle Prebula | State Investment Officer | Equities | 10/25/2021 |

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

To: ARMB Trustees
From: Alysia Jones
Date: November 30, 2021
Subject: Communications & Information Requests

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## Communications to Trustees

The following is a list of communications directed to the Board, that were received since the October 11th Board of Trustees meeting.

| Name | Type | Contact Date | Topic |
|---|---|---|---|
| Linda Baker | Email | 10/11/2021 | Opposition to reset to market value |
| Bridget Preston | Voicemail | 10/11/2021 | Opposition to reset to market value |
| Kathrin McCarthy | Email | 10/11/2021 | Opposition to reset to market value |
| Deborah Jeffery | Email | 10/11/2021 | Opposition to reset to market value |
| Dave and Donna Wilson | Email | 10/12/2021 | Opposition to reset to market value |
| Dermot Cole | Email | 10/12/2021 | Questions re: Financial impact of Board's decision to adopt FY23 employer contribution rates with reduced healthcare funding (PERS & TRS) |
| John Hudson | Email | 11/29/2021 | Fossil Fuel Divestment Report |

## Communications Sent on behalf of the Board

| Name | Type | Date | Topic |
|---|---|---|---|
| Dermot Cole | Email | 10/19/2021 | Response to question noted above. |

## Public Records Requests

*From September 1 – November 15, 2021*

| Topics | # of Requests | Description |
|---|---|---|
| Investment Information | 5 | Alternative commitments, cash flow reports, investment portfolio, fund relationships, ESG |
| Meeting Materials | 9 | Summary of actions, recordings, written public comments, |
| Procurement / Contracts | 1 | Allianz Structured Alpha Funds |
| Other | 1 | Proxy voting guidelines |

## ALASKA RETIREMENT MANAGEMENT BOARD
## 2022 Meeting Calendar

| DATE | LOCATION | DESCRIPTION |
|---|---|---|
| March 16<br>Wednesday | Juneau, AK | Actuarial Committee<br>Audit Committee<br>Operations Committee<br>Defined Contribution Plan Committee |
| **March 17-18**<br>**Thursday-Friday** | **Juneau, AK** | **Board of Trustees Meeting:**<br>*Performance Measurement – 4$^{th}$ Quarter*<br>*Buck Draft Actuarial Report/GRS Draft Actuary Certification*<br>*Capital Markets – Asset Allocation*<br>*Manager Presentations* |
| April 28*<br>Thursday | Videoconference | Actuarial Committee<br>*Follow-up/additional discussion/questions on valuations* |
| **April 29***<br>**Friday** | **Videoconference** | **Board of Trustees Meeting** |
| June 15<br>Wednesday | Anchorage, AK | Actuarial Committee<br>Audit Committee<br>Operations Committee<br>Defined Contribution Plan Committee |
| **June 16-17**<br>**Thursday - Friday** | **Anchorage, AK** | **Board of Trustees Meeting:**<br>*Final Actuary Reports/Adopt Valuation*<br>*Adopt Asset Allocation*<br>*Performance Measurement - 1st Quarter*<br>*Manager Presentations* |
| September 14<br>Wednesday | Anchorage, AK | Actuarial Committee<br>Audit Committee<br>Operations Committee<br>Defined Contribution Plan Committee |
| **September 15-16**<br>**Thursday - Friday** | **Anchorage, 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 11<br>Tuesday (placeholder) | Videoconference | Audit Committee |
| November 30<br>Wednesday | Anchorage, AK | Actuarial Committee<br>Audit Committee<br>Operations Committee<br>Defined Contribution Plan Committee |
| **December 1-2**<br>**Thursday-Friday** | **Anchorage, 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* |

***NOTE: Meeting locations and topics are subject to change.***

**Meetings to be held as necessary*

*Approved: 6/17/2021*

ARMB Timeline of Contract and Review Deadlines FY2022 - FY2027

| FY 2022 | FY 2023 | FY 2024 | FY 2025 | FY 2026 | FY 2027 |
|---|---|---|---|---|---|
| **Trustee Appointments/ Nominations for Terms Ending 3/01/2022**<br>*PERS - R. Johnson*<br>*TRS - G. Harbo* | **Trustee Appointments/ Nominations for Terms Ending 3/01/2023**<br>*Finance Officer - L. Bretz*<br>*Public - A. Hippler* | **Trustee Appointments/ Nominations for Terms Ending 3/01/2024**<br>*Public - D. Krohn*<br>*PERS - D. Moen*<br>*TRS - B. Williams* | | **Trustee Appointments/ Nominations for Terms Ending 3/01/2026**<br>*PERS - TBD*<br>*TRS - TBD* | **Trustee Appointments/ Nominations for Terms Ending 3/01/2027**<br>*Finance Officer - TBD*<br>*Public - TBD* |
| | **IAC Appointments**<br>*Seat 1 - R. Ryerson*<br>Sept 2022 agenda<br>Effective Date: 1/1/2023<br>*Seat 3 - W. Jennings*<br>Mar 2023 agenda<br>Effective Date: 7/01/2023 (FY24) | **IAC Appointments**<br>*Seat 2 - J. Mitchell*<br>March 2024 agenda<br>Effective Date: 7/01/2024 (FY25) | | **IAC Appointments**<br>*Seat 1 - TBD*<br>Sept 2025 agenda<br>Effective Date: 1/01/2026<br>*Seat 2 - TBD*<br>March 2025 agenda<br>Effective Date: 7/01/2026 (FY27) | **IAC Appointments**<br>*Seat 3 - TBD*<br>March 2027 agenda<br>Effective Date: 7/01/207 (FY28) |
| **Performance Measurement - General Consultant Contract**<br>*1st Renewal Option -Callan LLC*<br>March 2022 agenda<br>Effective Date: 7/1/2022 (FY23) | **Performance Measurement (General) Consultant Contract**<br>*2nd Renewal Option - Callan LLC*<br>March 2023 agenda<br>Effective Date: 7/01/2023 (FY24) | **Performance Measurement (General) Consultant Contract**<br>*RFP - March 2024*<br>Effective Date: 7/01/2024 (FY25) | | | **Performance Measurement - General Consultant Contract**<br>*1st Renewal Option or RFP -* TBD<br>March 2027 agenda<br>Effective Date: 7/1/2027 (FY28) |
| | | **Performance Consultant Review**<br>AS 37.10.220(a)(11)<br>*RFP - March 2024*<br>Presentation Sept 2024 (FY25) | | | |
| **Real Assets Consultant Contract**<br>*1st Renewal Option -Callan LLC*<br>March 2022 agenda<br>Effective Date: 7/1/2022 (FY23) | **Real Assets Consultant Contract**<br>*2nd Renewal Option -Callan LLC*<br>March 2023 agenda<br>Effective Date: 7/01/2023 (FY24) | **Real Assets Consultant Contract**<br>*RFP - March 2024*<br>Effective Date: 7/01/2024 (FY25) | | | **Real Assets Consultant Contract**<br>*1st Renewal Option or RFP* - TBD<br>March 2027 agenda<br>Effective Date: 7/1/2027 (FY28) |
| | | **Asset Liability Study**<br>*Recommendation: Every 5 years* | | | |
| | **Actuary Contract (DRB)**<br>AS 37.10.220(a)(8 & 9)<br>*3yr Renewal Option - Buck*<br>March 2023 agenda<br>Effective Date: 7/01/2023 (FY24) | | | **Actuary Contract (DRB)**<br>AS 37.10.220(a)(8 & 9)<br>*2yr Renewal Option - Buck*<br>March 2026 agenda<br>Effective Date: 7/01/2026 (FY27) | |
| **Review Actuary Contract (TRSY)**<br>AS 37.10.220(a)(9)<br>*RFP - March 2022*<br>Effective Date: 7/01/2022 (FY23) | | | **Review Actuary Contract (TRSY)**<br>AS 37.10.220(a)(9)<br>*1st Renewal Option or RFP - TBD*<br>March 2025<br>Effective Date: 7/01/2025 (FY26) | **Review Actuary Contract (TRSY)**<br>AS 37.10.220(a)(9)<br>*2nd Renewal Option or RFP - TBD*<br>March 2026<br>Effective Date: 7/01/2026 (FY27) | **Review Actuary Contract (TRSY)**<br>AS 37.10.220(a)(9)<br>*RFP - March 2027*<br>Effective Date: 7/01/2027 (FY28) |
| | | | **Actuarial Audit RFP (TRSY)**<br>AS 37.10.220(a)(10)<br>RFP March 2025<br>Effective Date: 7/01/2025 (FY26) | | |
| **Actuarial Valuations**<br>AS 37.10.220(a)(8) | **Actuarial Valuations**<br>AS 37.10.220(a)(8) | **Actuarial Valuations**<br>AS 37.10.220(a)(8) | **Actuarial Valuations**<br>AS 37.10.220(a)(8) | **Actuarial Valuations**<br>AS 37.10.220(a)(8) | **Actuarial Valuations**<br>AS 37.10.220(a)(8) |
| **Actuarial Experience Analysis**<br>AS 37.10.220(a)(9) | | | **Actuarial Experience Analysis**<br>AS 37.10.220(a)(9) | | |

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Revenue
ALASKA RETIREMENT MANAGEMENT BOARD
PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.4397

Chief Investment Officer Report

December 2021 - Revised

1. CIO Update

2. Watch List
   a. Existing – Man Group on watch due to personnel turnover
   b. New recommendation – Fidelity Real Estate High Income (REHI) 6-year annualized performance of 3.61% is less than benchmark of 4.58%

| *PERFORMANCE TEST* | *BENCHMARK* | **FAIL CRITERIA** |
|---|---|---|
| Test 1:<br>Trailing 6 year results | Annualized performance relative to the agreed upon market index or performance benchmark. | Fail if net of fee, trailing 6-year annualized performance is less than the agreed upon market index or performance benchmark. |

3. Material contract and investment actions:
   a. 09/09/21 Summit XI $50 million private equity commitment
   b. 09/10/21 Clearlake VII $50 million private equity commitment
   c. 09/21/21 Brandes Amendment

4. Portfolio Transaction Update from September 2021 through October 2021

**Individual Manager Transactions**

September 2021 - October 2021

| Asset Class | Total |
|---|---|
| Fixed Income | 87,250,994 |
| Broad Domestic Equity | (148,246,684) |
| Global Equity Ex-US | 60,995,690 |
| Real Assets | - |
| Opportunistic | - |
| Private Equity | - |
| Net Buys | 148,246,684 |
| Net Sells | (148,246,684) |

| Manager | Total | Fund | Asset Class | Description of Large Transactions |
|---|---|---|---|---|
| ARMB Multi-factor | 100,000,000 | AYK4 | Dom. Equity | Rebalance Factor Allocation |
| Short Term Pool | 70,250,994 | AY70 | Fixed Income | Quarter end rebalance |
| Brandes Investment Partners | 65,000,000 | AY65 | Intl. Equity | Increasing active international equity |
| Ballie Gifford | 61,000,000 | AYLR | Intl. Equity | Increasing active international equity |
| ARMB Barclays Agg Fund | 17,000,000 | AY77 | Fixed Income | Quarter end rebalance |
| SSGA Transition | (48) | AY30 | Dom. Equity | Closed account cleanup |
| International Equity Residual Asset | (4,310) | AY69 | Intl. Equity | Closed account cleanup |
| ARMB Domestic Residual Assets | (246,636) | AY5E | Dom. Equity | Closed account cleanup |
| ARMB S&P 600 | (12,000,000) | AYGA | Dom. Equity | Quarter end rebalance |
| SSGA World ex-US IMI | (65,000,000) | AYL7 | Intl. Equity | Increasing active international equity |
| ARMB S&P 900 | (111,000,000) | AY4L | Dom. Equity | Quarter end rebalance |
| ARMB Scientific Beta | (125,000,000) | AYLM | Dom. Equity | Rebalance Factor Allocation |
| *Total Buys* | *313,250,994* | | | |
| *Total Sells* | *(313,250,994)* | | | |

# ALASKA RETIREMENT MANAGEMENT BOARD

## STAFF REPORT

**Fund Financials – Cash Flow Report**
**December 2, 2021**

**Ryan Kauzlarich, Assistant State Comptroller, Department of Revenue**

As of October 2021 month-end, total plan assets were as follows: PERS - $25.1 billion, TRS - $11.8 billion, JRS - $296.8 million, NGNMRS - $50.2 million, SBS - $5.2 billion, DCP - $1.2 billion. Total non-participant directed plans totaled $34.4 billion, and participant-directed plans totaled $9.3 billion. Total assets were $43.7 billion.

Year-to-date income was $1.7 billion, and the plans experienced a net withdrawal of $254.2 million. Total assets were up 3.47% year-to-date.

Internally managed assets totaled $17.7 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 October 31, 2021.

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 items, as well as benefit payments, refunds & disbursements, and combined administrative & investment expenditures. DRB's supplement report presents cash inflows and outflows for the 4-months ended October 31, 2021 (page 1) and for the month of October 2021 (page 2).

Also presented are participant-directed distributions by plan and by type for the 4-month period on page 3. This page includes 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 October 31, 2021

**ALASKA RETIREMENT MANAGEMENT BOARD**
**Schedule of Investment Income and Changes in Invested Assets by Fund**
**Fiscal Year-to-Date through October 31, 2021**

| | 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 | $ 11,697,812,951 | $ 507,334,476 | $ (77,509,396) | $ 12,127,638,031 | 3.67% | 4.35% |
| Retirement Health Care Trust | 9,655,275,640 | 413,206,176 | (118,076,144) | 9,950,405,672 | 3.06% | 4.31% |
| Total Defined Benefit Plans | 21,353,088,591 | 920,540,652 | (195,585,540) | 22,078,043,703 | 3.40% | 4.33% |
| Defined Contribution Plans: | | | | | | |
| Participant Directed Retirement | 1,964,383,666 | 66,708,372 | 27,133,212 | 2,058,225,250 | 4.78% | 3.37% |
| Health Reimbursement Arrangement | 670,208,687 | 29,154,500 | 15,253,045 | 714,616,232 | 6.63% | 4.30% |
| Retiree Medical Plan | 200,227,739 | 8,725,211 | 5,102,297 | 214,055,247 | 6.91% | 4.30% |
| Defined Benefit Occupational Death and Disability: | | | | | | |
| Public Employees | 41,171,441 | 1,796,939 | 1,224,128 | 44,192,508 | 7.34% | 4.30% |
| Police and Firefighters | 17,708,969 | 770,847 | 408,185 | 18,888,001 | 6.66% | 4.30% |
| Total Defined Contribution Plans | 2,893,700,502 | 107,155,869 | 49,120,867 | 3,049,977,238 | 5.40% | 3.67% |
| **Total PERS** | **24,246,789,093** | **1,027,696,521** | **(146,464,673)** | **25,128,020,941** | 3.63% | 4.25% |
| **Teachers' Retirement System (TRS)** | | | | | | |
| Defined Benefit Plans: | | | | | | |
| Retirement Trust | 6,614,621,768 | 289,046,986 | (16,771,121) | 6,886,897,633 | 4.12% | 4.38% |
| Retirement Health Care Trust | 3,671,369,667 | 157,159,520 | (42,560,086) | 3,785,969,101 | 3.12% | 4.31% |
| Total Defined Benefit Plans | 10,285,991,435 | 446,206,506 | (59,331,207) | 10,672,866,734 | 3.76% | 4.35% |
| Defined Contribution Plans: | | | | | | |
| Participant Directed Retirement | 812,550,138 | 27,379,469 | 1,725,206 | 841,654,813 | 3.58% | 3.37% |
| Health Reimbursement Arrangement | 196,700,402 | 8,522,640 | 2,881,955 | 208,104,997 | 5.80% | 4.30% |
| Retiree Medical Plan | 65,764,221 | 2,849,099 | 900,791 | 69,514,111 | 5.70% | 4.30% |
| Defined Benefit Occupational Death and Disability | 6,479,434 | 280,440 | 77,995 | 6,837,869 | 5.53% | 4.30% |
| Total Defined Contribution Plans | 1,081,494,195 | 39,031,648 | 5,585,947 | 1,126,111,790 | 4.13% | 3.60% |
| **Total TRS** | **11,367,485,630** | **485,238,154** | **(53,745,260)** | **11,798,978,524** | 3.80% | 4.28% |
| **Judicial Retirement System (JRS)** | | | | | | |
| Defined Benefit Plan Retirement Trust | 238,747,285 | 10,497,744 | 3,364,705 | 252,609,734 | 5.81% | 4.37% |
| Defined Benefit Retirement Health Care Trust | 42,511,516 | 1,827,595 | (138,492) | 44,200,619 | 3.97% | 4.31% |
| **Total JRS** | **281,258,801** | **12,325,339** | **3,226,213** | **296,810,353** | 5.53% | 4.36% |
| **National Guard/Naval Militia Retirement System (MRS)** | | | | | | |
| Defined Benefit Plan Retirement Trust | 49,296,334 | 1,483,658 | (586,202) | 50,193,790 | 1.82% | 3.03% |
| **Other Participant Directed Plans** | | | | | | |
| Supplemental Annuity Plan | 5,064,367,505 | 148,353,315 | (43,595,491) | 5,169,125,329 | 2.07% | 2.94% |
| Deferred Compensation Plan | 1,217,085,734 | 43,224,009 | (13,047,231) | 1,247,262,512 | 2.48% | 3.57% |
| **Total All Funds** | **42,226,283,097** | **1,718,320,996** | **(254,212,644)** | **43,690,391,449** | | |
| Total Non-Participant Directed | 33,167,896,054 | 1,432,655,831 | (226,428,340) | 34,374,123,545 | 3.64% | 4.33% |
| Total Participant Directed | 9,058,387,043 | 285,665,165 | (27,784,304) | 9,316,267,904 | 2.85% | 3.16% |
| **Total All Funds** | **$ 42,226,283,097** | **$ 1,718,320,996** | **$ (254,212,644)** | **$ 43,690,391,449** | **3.47%** | **4.08%** |

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://treasury.dor.alaska.gov/armb/Reports-and-Policies/Investment-Performance.aspx

## ALASKA RETIREMENT MANAGEMENT BOARD
### Schedule of Investment Income and Changes in Invested Assets by Fund
### For the Month Ended October 31, 2021

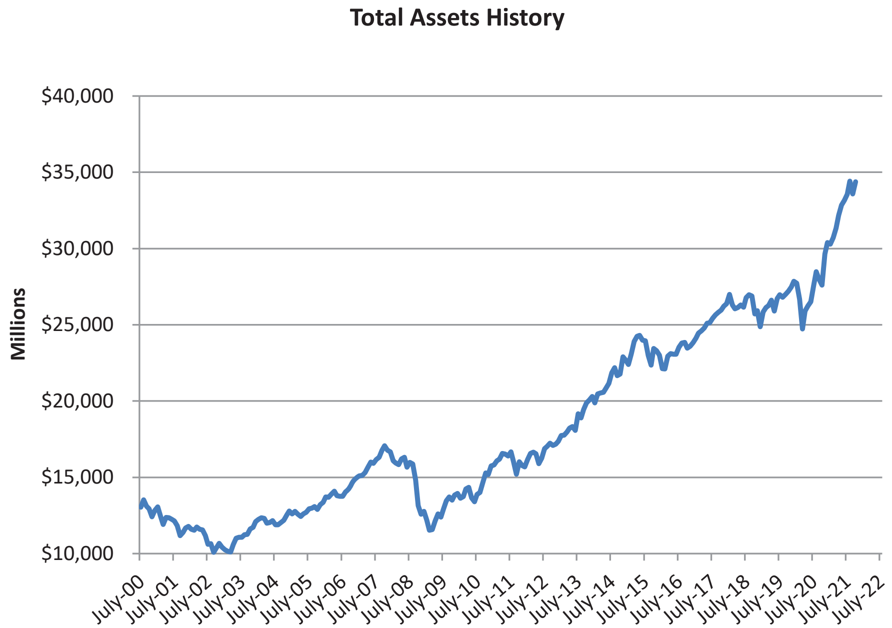
| | Beginning Invested Assets | Investment Income (1) | Net Contributions (Withdrawals) | Ending Invested Assets | % Change in Invested Assets | % Change due to Investment Income (2) |
|---|---|---|---|---|---|---|
| **Public Employees' Retirement System (PERS)** | | | | | | |
| Defined Benefit Plans: | | | | | | |
| Retirement Trust | $ 11,849,755,044 | $ 317,991,513 | $ (40,108,526) | $ 12,127,638,031 | 2.35% | 2.69% |
| Retirement Health Care Trust | 9,724,136,081 | 259,375,980 | (33,106,389) | 9,950,405,672 | 2.33% | 2.67% |
| Total Defined Benefit Plans | 21,573,891,125 | 577,367,493 | (73,214,915) | 22,078,043,703 | 2.34% | 2.68% |
| Defined Contribution Plans: | | | | | | |
| Participant Directed Retirement | 1,968,892,964 | 81,460,684 | 7,871,602 | 2,058,225,250 | 4.54% | 4.13% |
| Health Reimbursement Arrangement | 691,819,580 | 18,495,286 | 4,301,366 | 714,616,232 | 3.30% | 2.67% |
| Retiree Medical Plan | 207,216,480 | 5,540,840 | 1,297,927 | 214,055,247 | 3.30% | 2.67% |
| Defined Benefit Occupational Death and Disability: | | | | | | |
| Public Employees | 42,714,020 | 1,142,584 | 335,904 | 44,192,508 | 3.46% | 2.66% |
| Police and Firefighters | 18,285,512 | 489,055 | 113,434 | 18,888,001 | 3.29% | 2.67% |
| Total Defined Contribution Plans | 2,928,928,556 | 107,128,449 | 13,920,233 | 3,049,977,238 | 4.13% | 3.65% |
| **Total PERS** | **24,502,819,681** | **684,495,942** | **(59,294,682)** | **25,128,020,941** | 2.55% | 2.80% |
| **Teachers' Retirement System (TRS)** | | | | | | |
| Defined Benefit Plans: | | | | | | |
| Retirement Trust | 6,744,298,276 | 180,802,290 | (38,202,933) | 6,886,897,633 | 2.11% | 2.69% |
| Retirement Health Care Trust | 3,697,649,242 | 98,625,634 | (10,305,775) | 3,785,969,101 | 2.39% | 2.67% |
| Total Defined Benefit Plans | 10,441,947,518 | 279,427,924 | (48,508,708) | 10,672,866,734 | 2.21% | 2.68% |
| Defined Contribution Plans: | | | | | | |
| Participant Directed Retirement | 805,272,446 | 33,554,956 | 2,827,411 | 841,654,813 | 4.52% | 4.16% |
| Health Reimbursement Arrangement | 201,626,617 | 5,384,079 | 1,094,301 | 208,104,997 | 3.21% | 2.66% |
| Retiree Medical Plan | 67,403,257 | 1,799,602 | 311,252 | 69,514,111 | 3.13% | 2.66% |
| Defined Benefit Occupational Death and Disability | 6,631,696 | 177,058 | 29,115 | 6,837,869 | 3.11% | 2.66% |
| Total Defined Contribution Plans | 1,080,934,016 | 40,915,695 | 4,262,079 | 1,126,111,790 | 4.18% | 3.78% |
| **Total TRS** | **11,522,881,534** | **320,343,619** | **(44,246,629)** | **11,798,978,524** | 2.40% | 2.79% |
| **Judicial Retirement System (JRS)** | | | | | | |
| Defined Benefit Plan Retirement Trust | 246,530,503 | 6,616,487 | (537,256) | 252,609,734 | 2.47% | 2.69% |
| Defined Benefit Retirement Health Care Trust | 43,071,213 | 1,149,625 | (20,219) | 44,200,619 | 2.62% | 2.67% |
| **Total JRS** | **289,601,716** | **7,766,112** | **(557,475)** | **296,810,353** | 2.49% | 2.68% |
| **National Guard/Naval Militia Retirement System (MRS)** | | | | | | |
| Defined Benefit Plan Retirement Trust | 49,379,491 | 953,152 | (138,853) | 50,193,790 | 1.65% | 1.93% |
| **Other Participant Directed Plans** | | | | | | |
| Supplemental Annuity Plan | 5,008,551,224 | 164,002,584 | (3,428,479) | 5,169,125,329 | 3.21% | 3.28% |
| Deferred Compensation Plan | 1,204,099,917 | 45,849,197 | (2,686,602) | 1,247,262,512 | 3.58% | 3.81% |
| **Total All Funds** | **42,577,333,563** | **1,223,410,606** | **(110,352,720)** | **43,690,391,449** | | |
| Total Non-Participant Directed | 33,590,517,012 | 898,543,185 | (114,936,652) | 34,374,123,545 | 2.33% | 2.68% |
| Total Participant Directed | 8,986,816,551 | 324,867,421 | 4,583,932 | 9,316,267,904 | 3.67% | 3.61% |
| **Total All Funds** | **$ 42,577,333,563** | **$ 1,223,410,606** | **$ (110,352,720)** | **$ 43,690,391,449** | **2.61%** | **2.88%** |

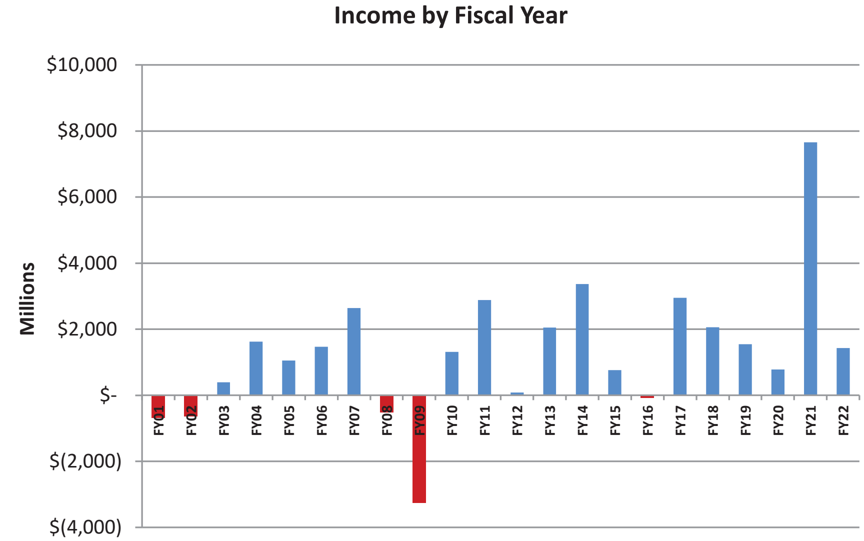
Notes:

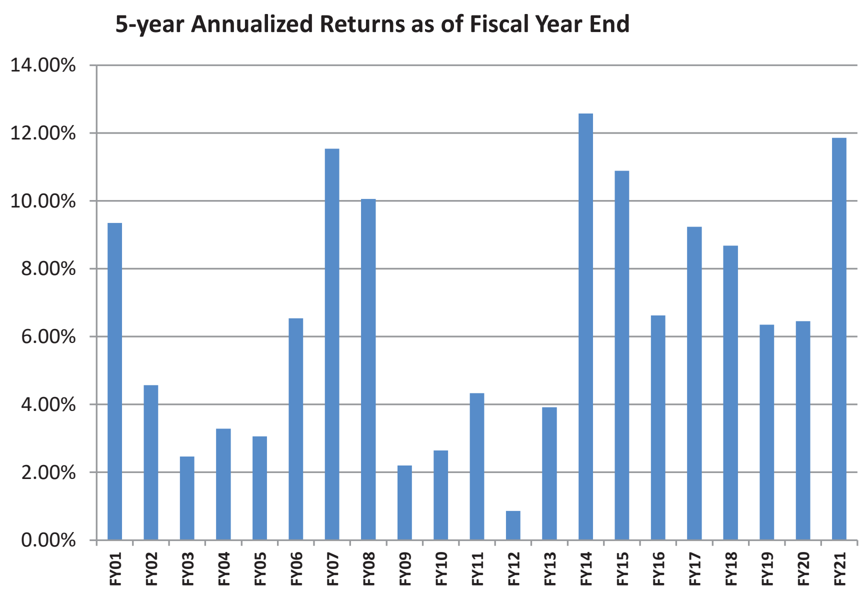
(1) Includes interest, dividends, securities lending, expenses, realized and unrealized gains/losses

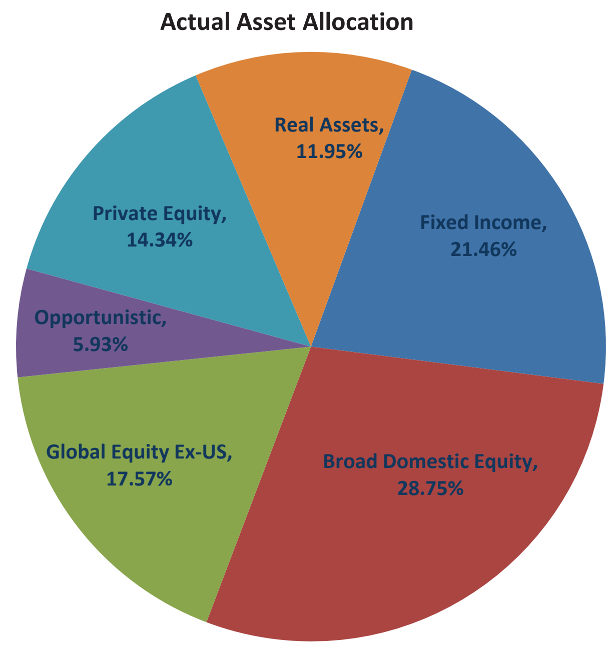
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates and can be found at: http://treasury.dor.alaska.gov/armb/Reports-and-Policies/Investment-Performance.aspx

## Total Non Participant Directed Assets
**As of October 31, 2021**



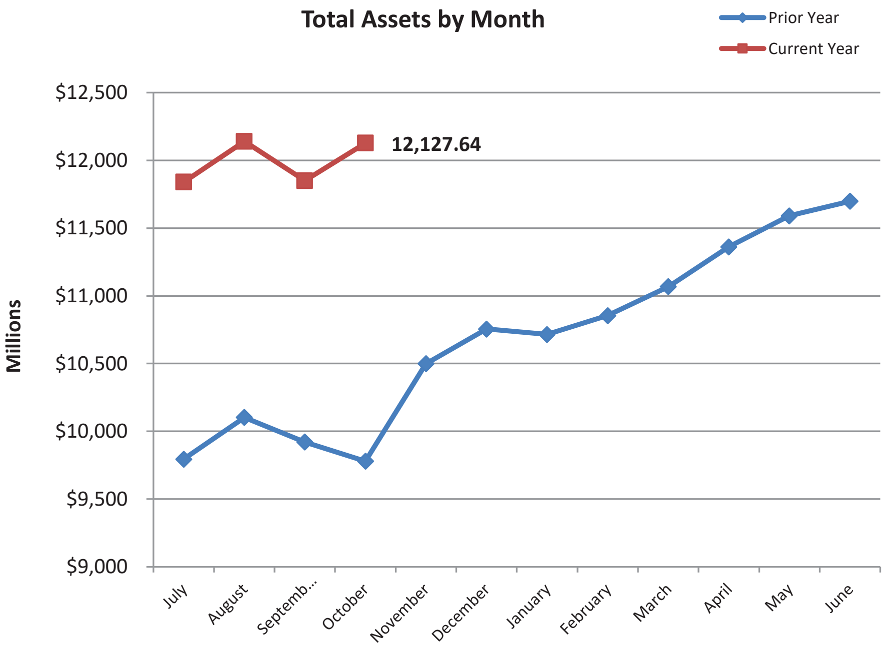



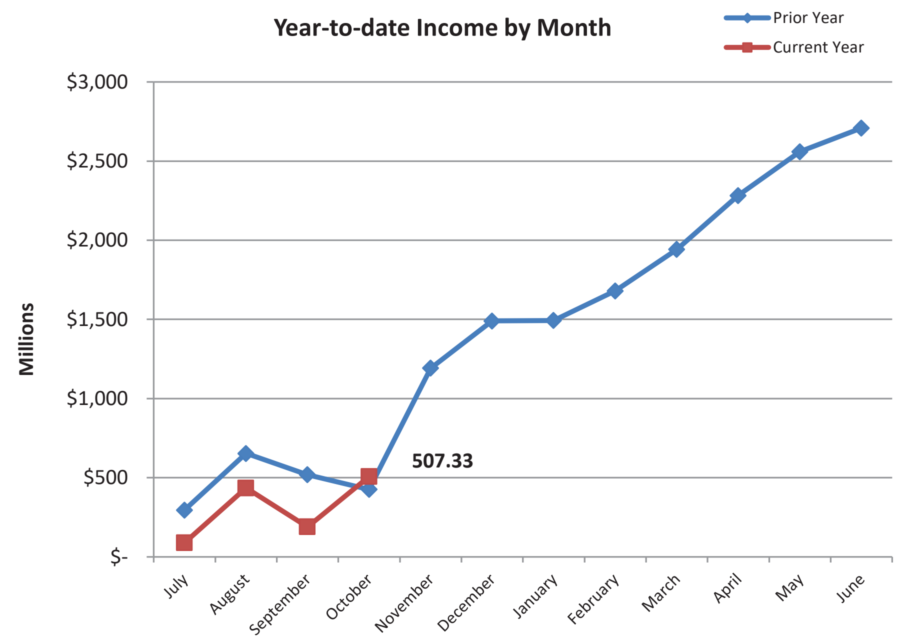



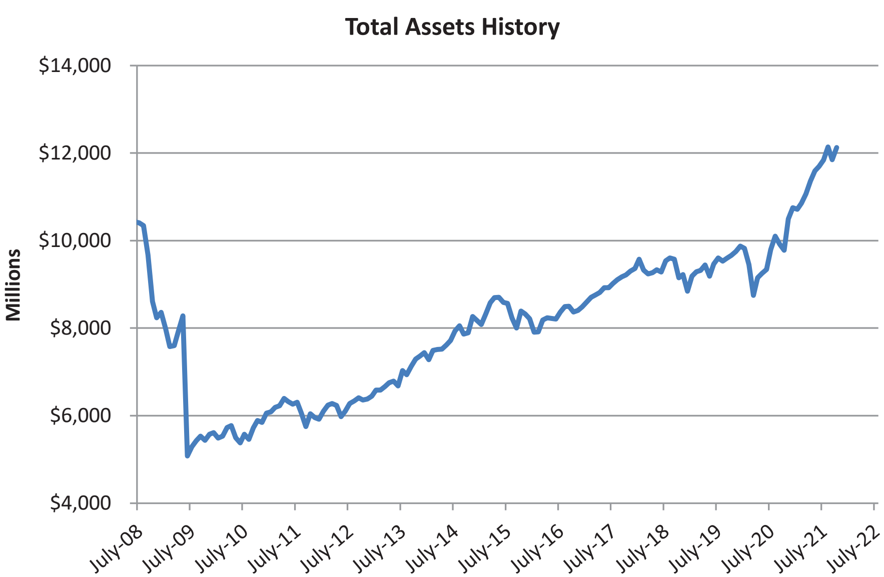



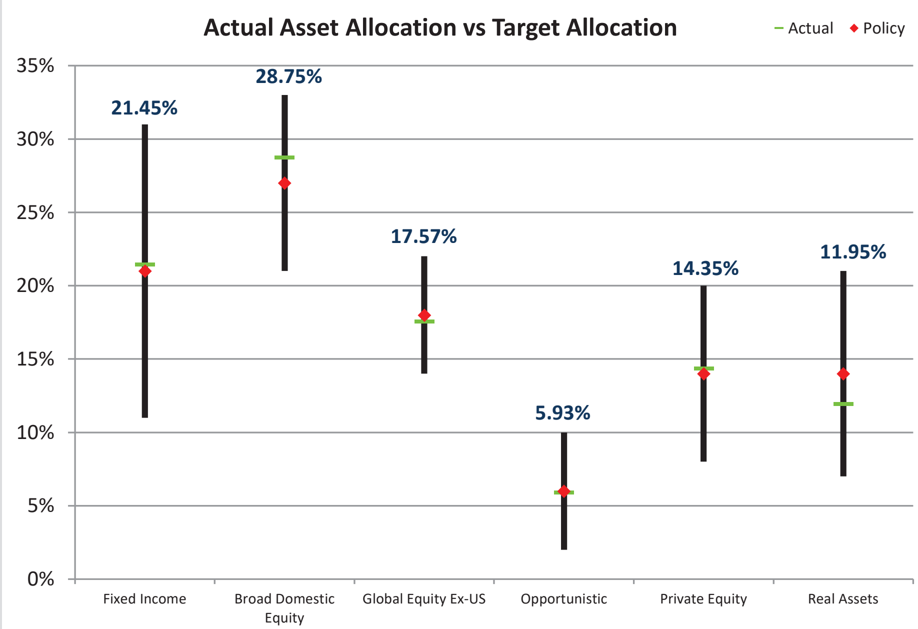
## Public Employees' Retirement Pension Trust Fund

**Fiscal Year-to-Date through October 31, 2021**



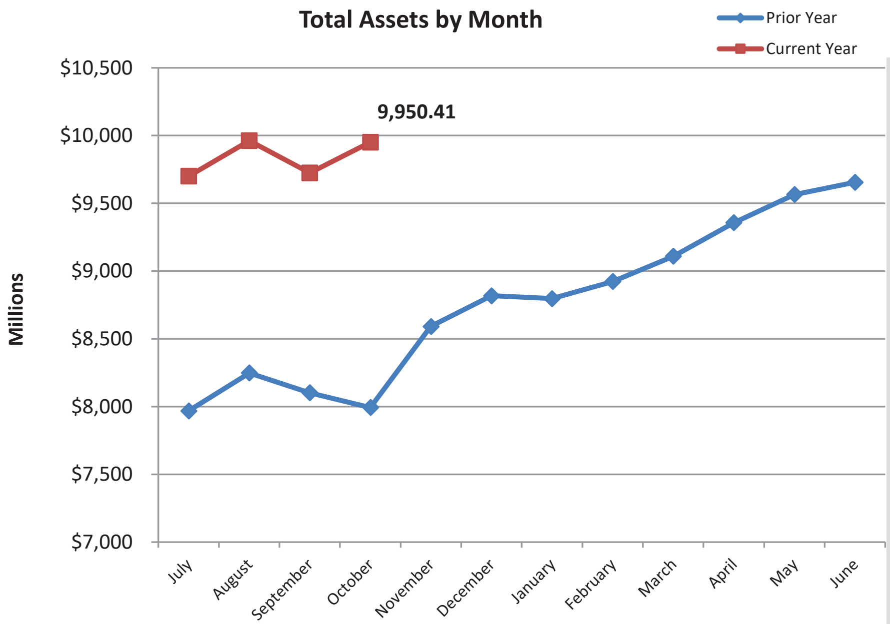



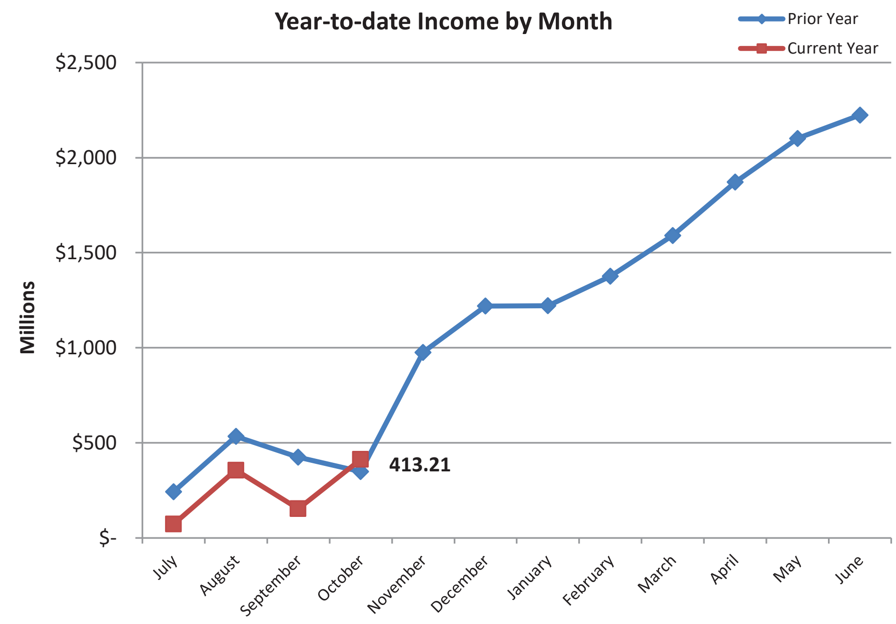



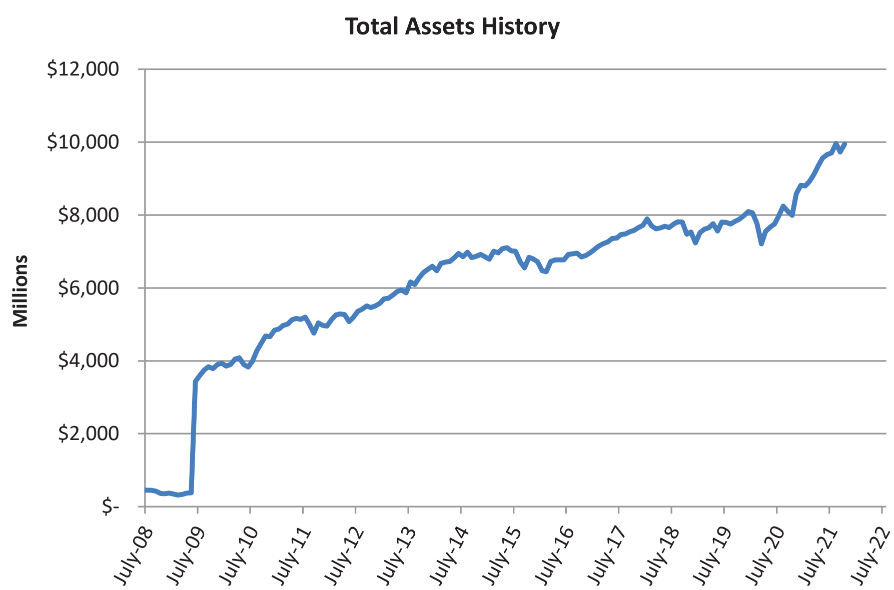



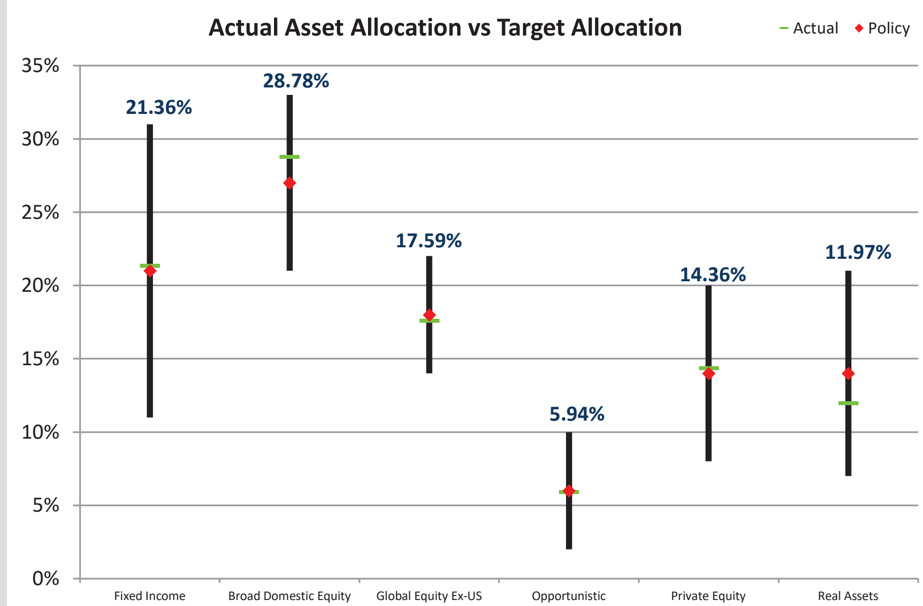
# Public Employees' Retirement Health Care Trust Fund

**Fiscal Year-to-Date through October 31, 2021**



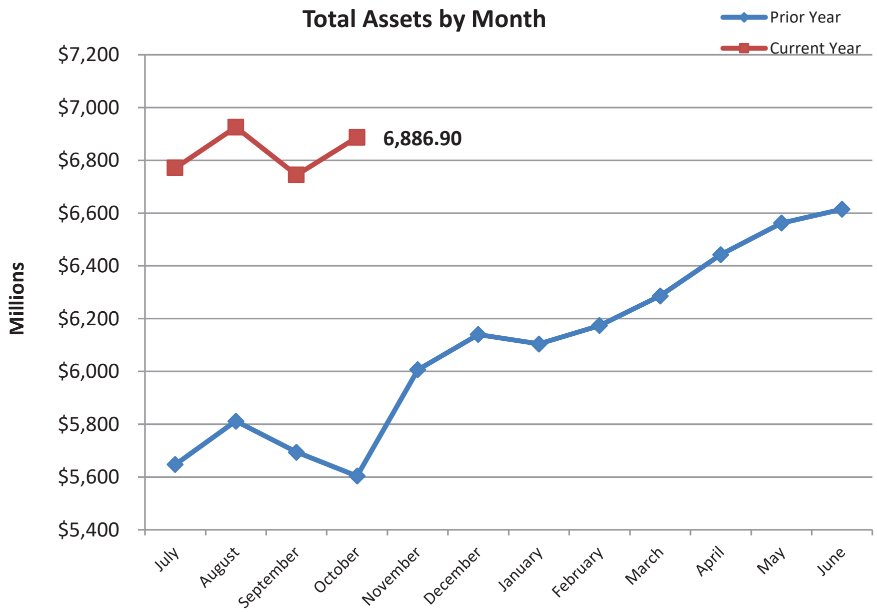



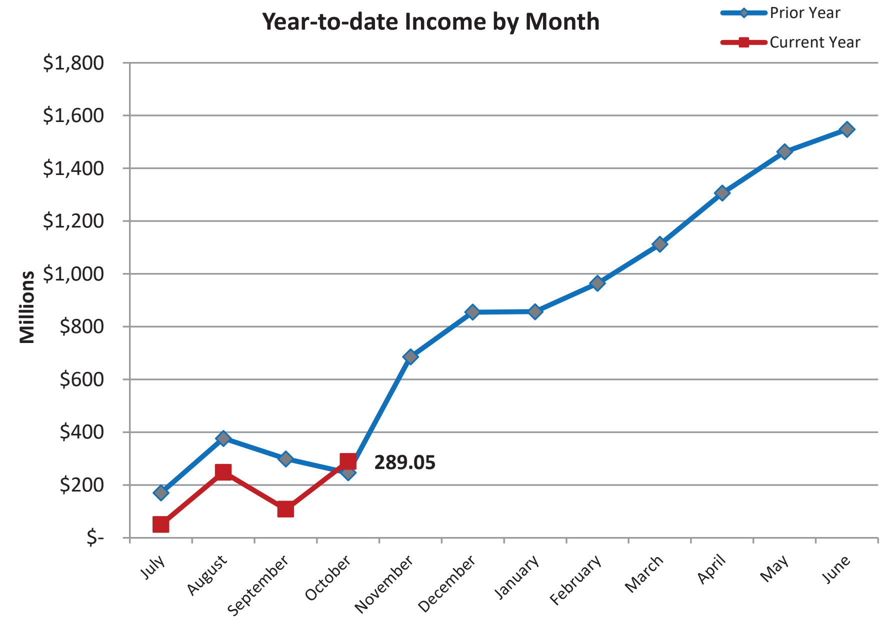



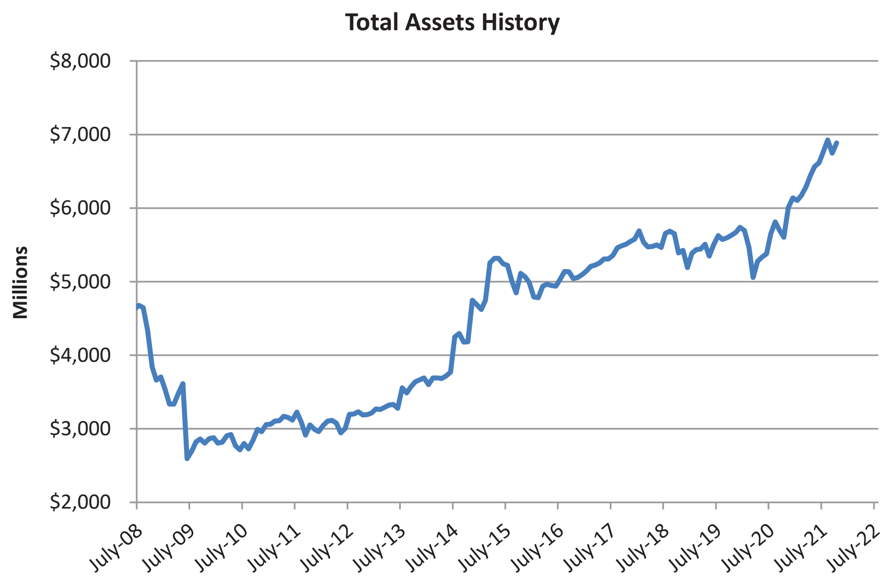



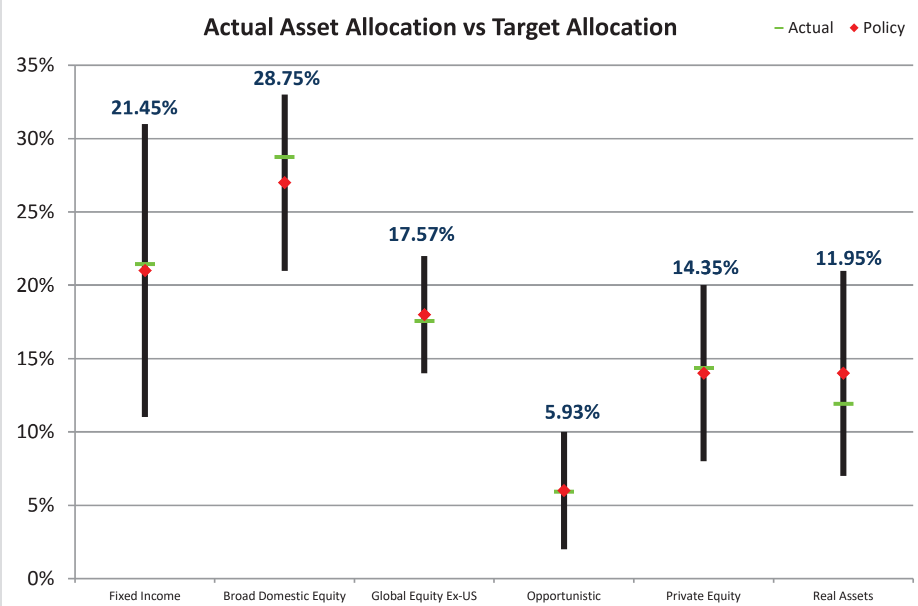
# Teachers' Retirement Pension Trust Fund

**Fiscal Year-to-Date through October 31, 2021**

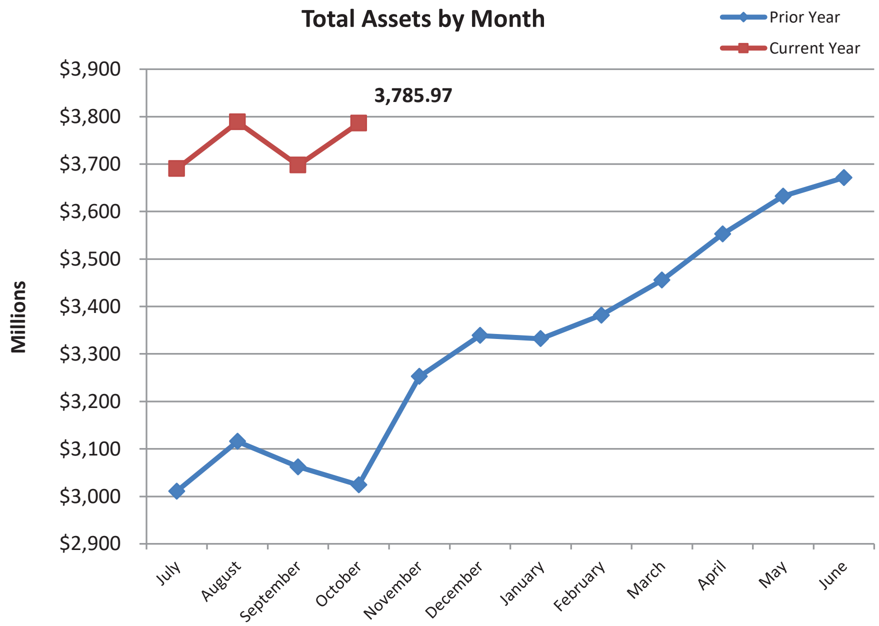


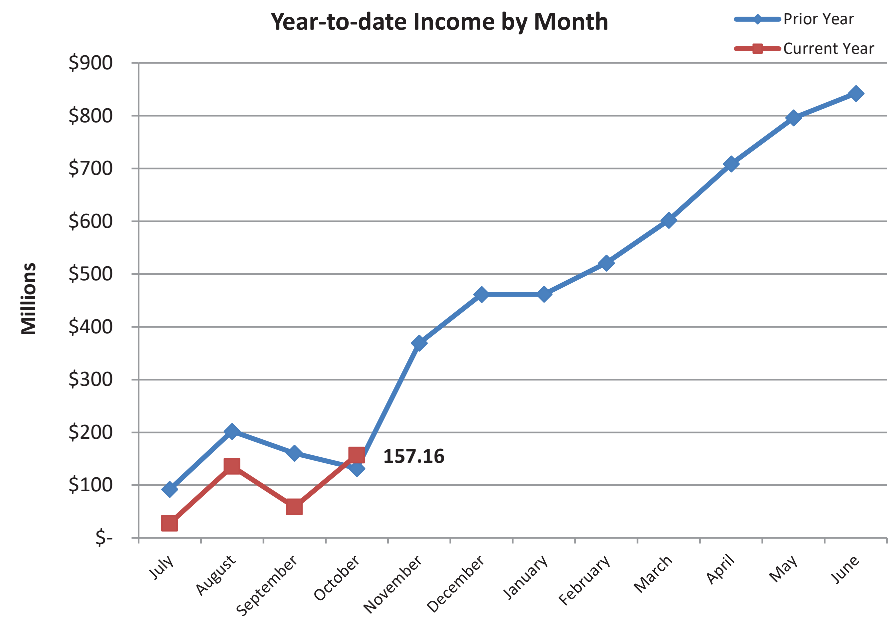



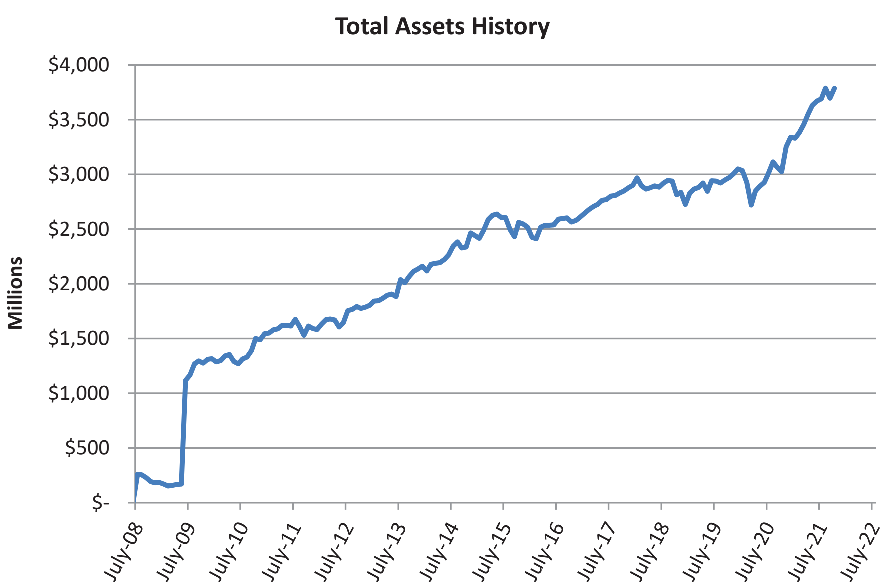



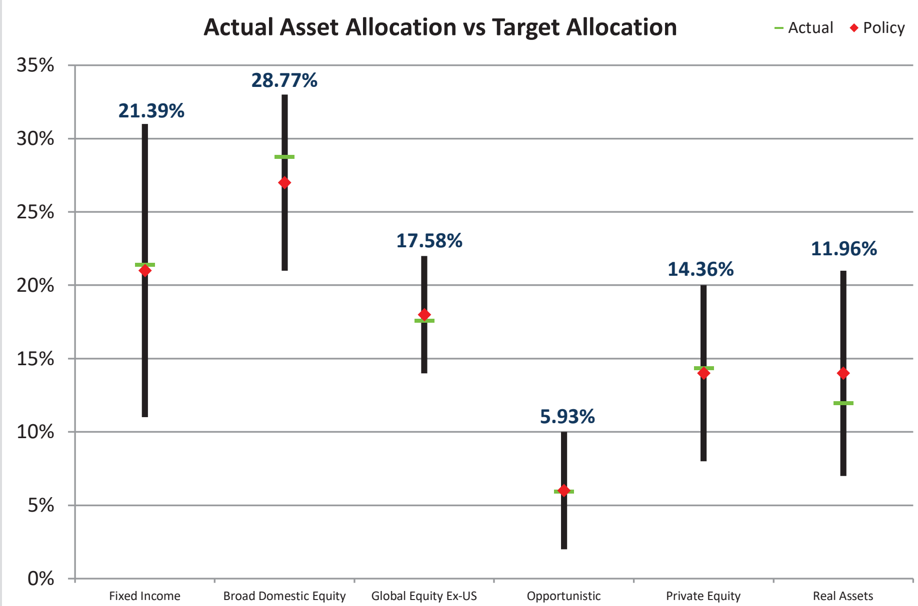



## Teachers' Retirement Health Care Trust Fund
**Fiscal Year-to-Date through October 31, 2021**



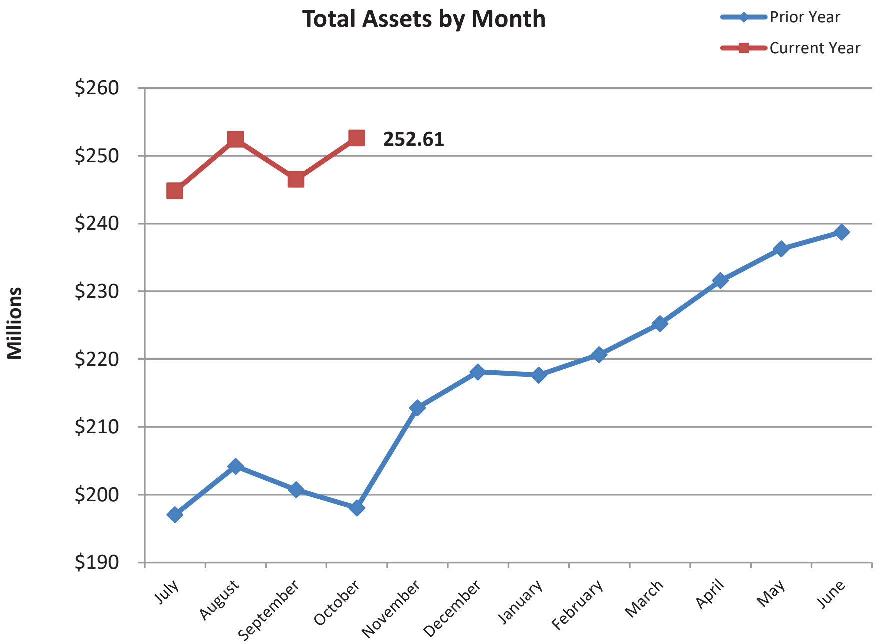



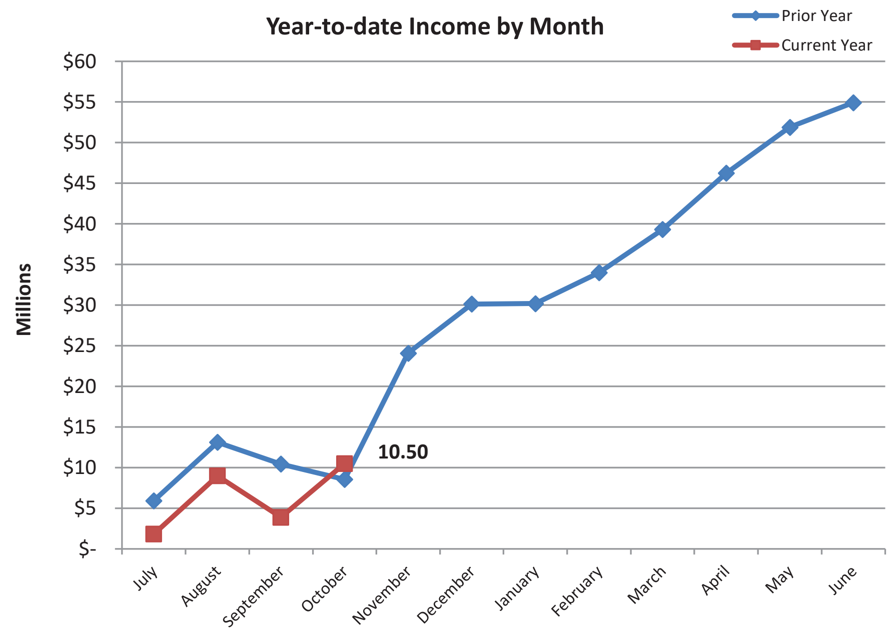
# Judicial Retirement Pension Trust Fund

**Fiscal Year-to-Date through October 31, 2021**

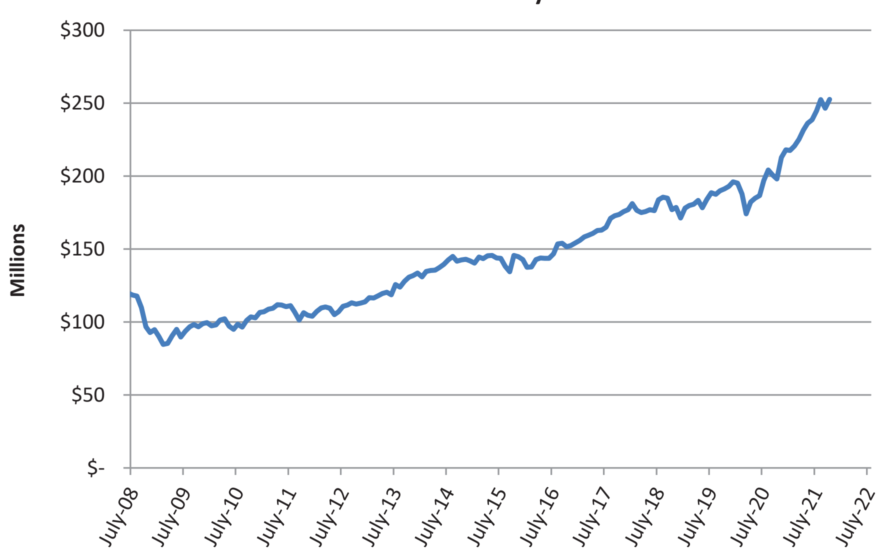
## Total Assets by Month



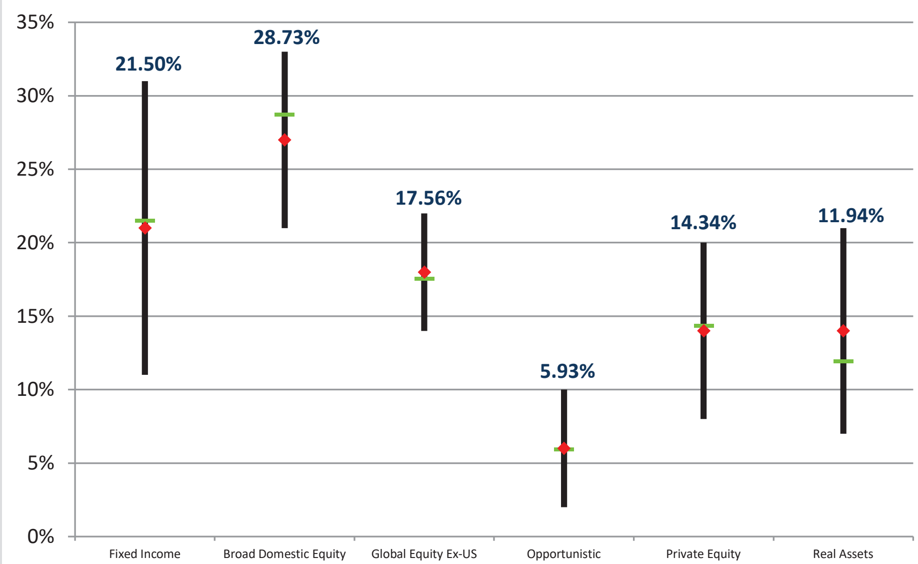

## Year-to-date Income by Month




## Total Assets History

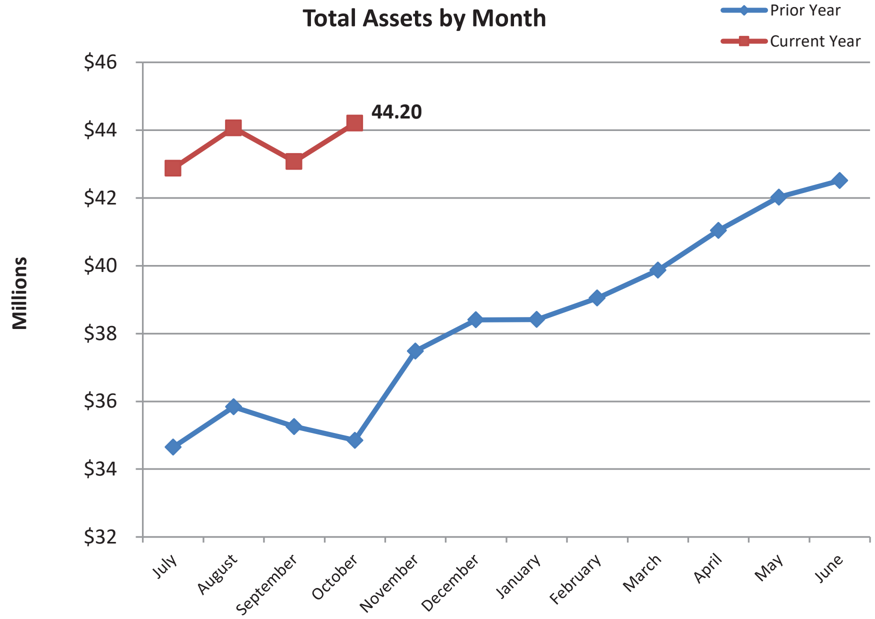


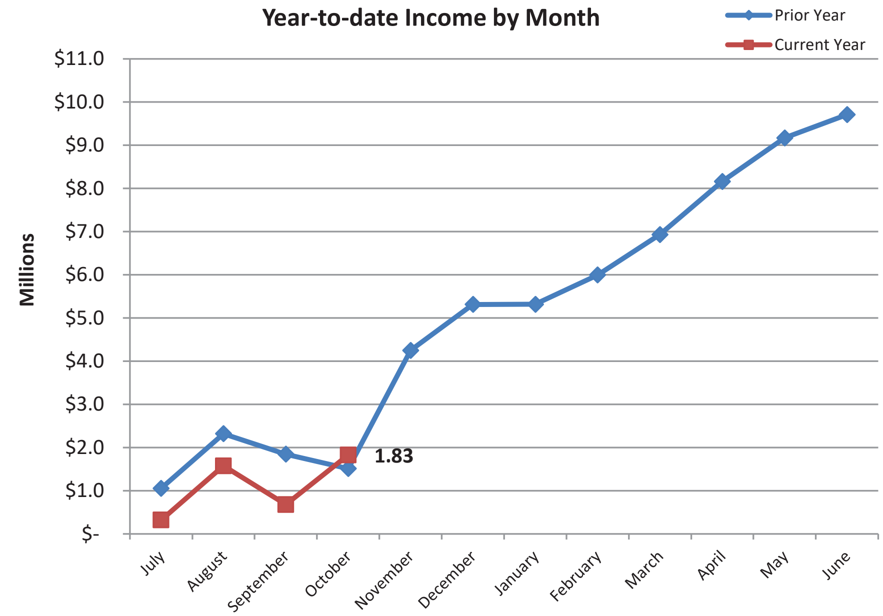

## Actual Asset Allocation vs Target Allocation

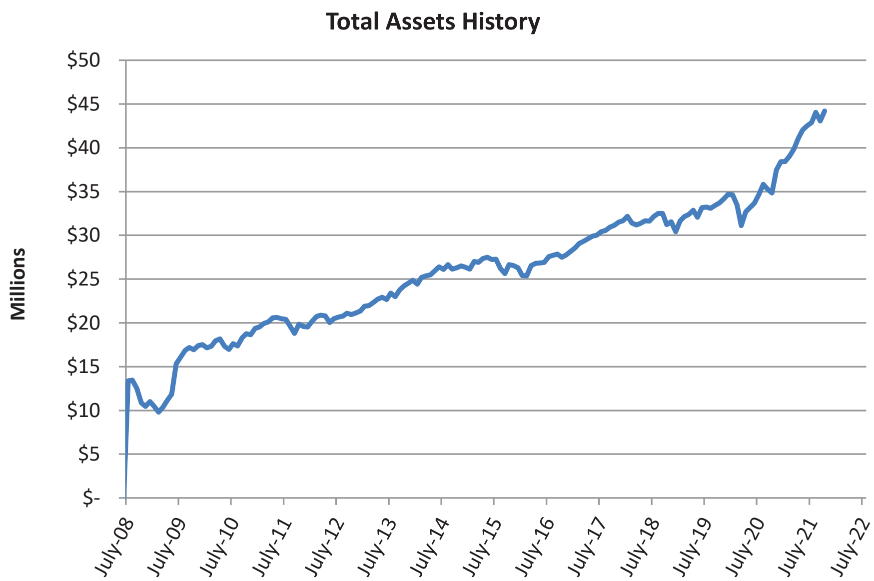


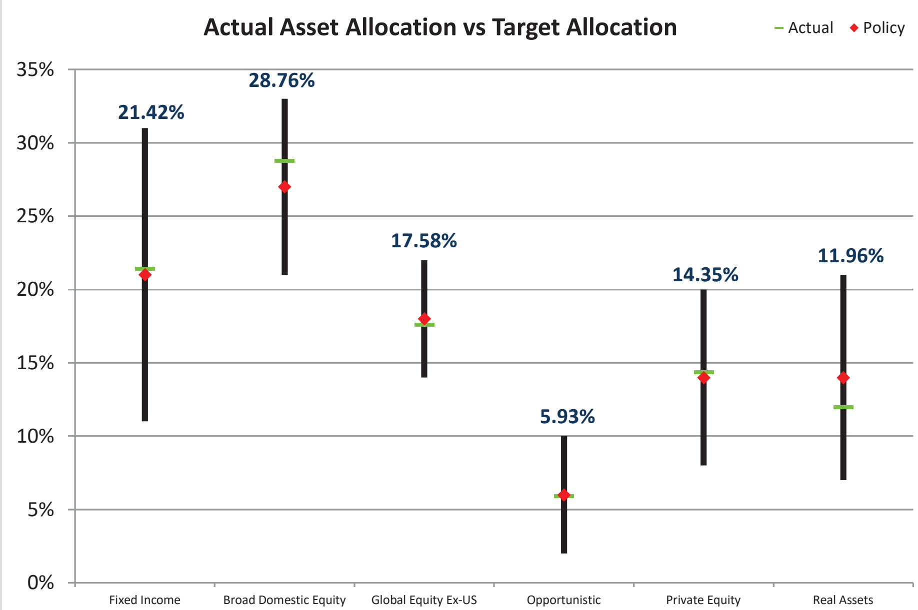
## Judicial Retirement Health Care Trust Fund

**Fiscal Year-to-Date through October 31, 2021**



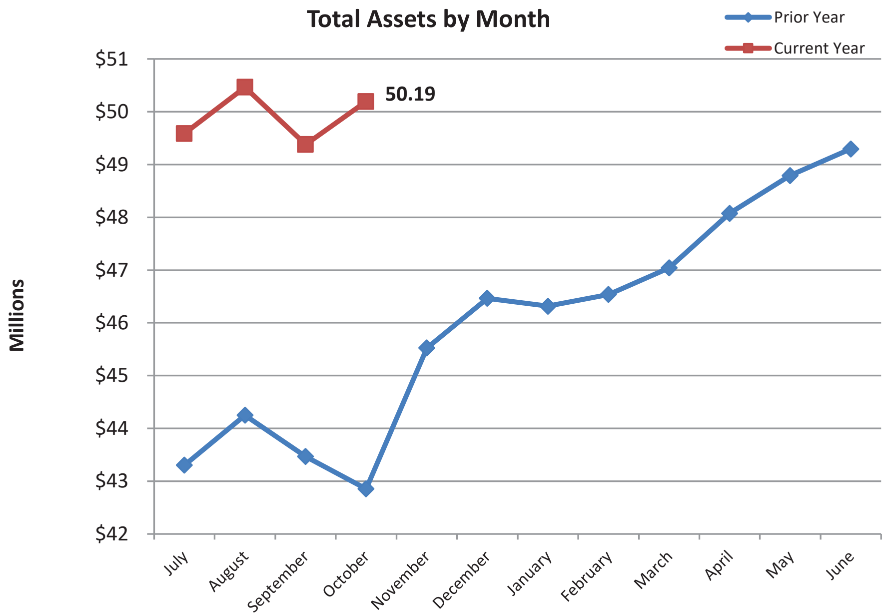



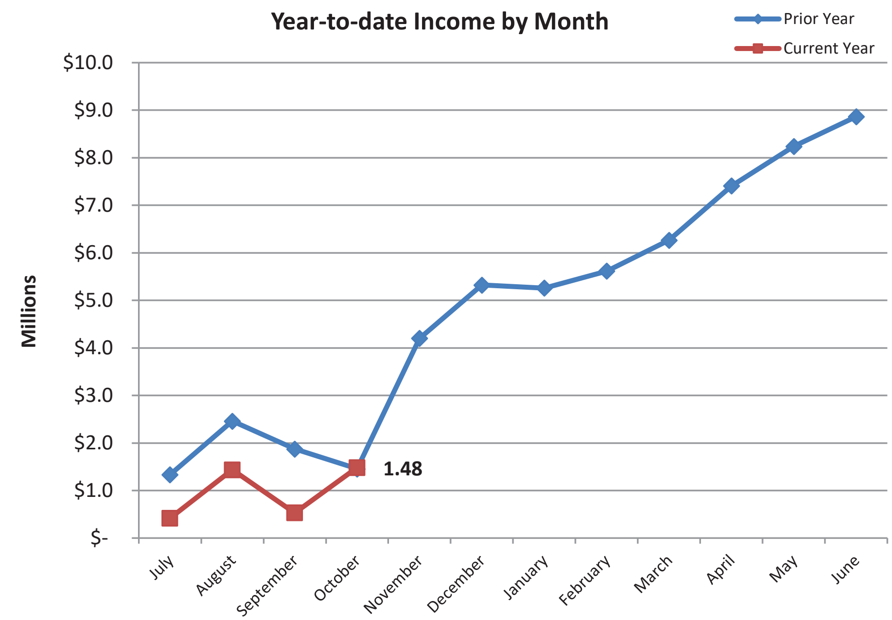



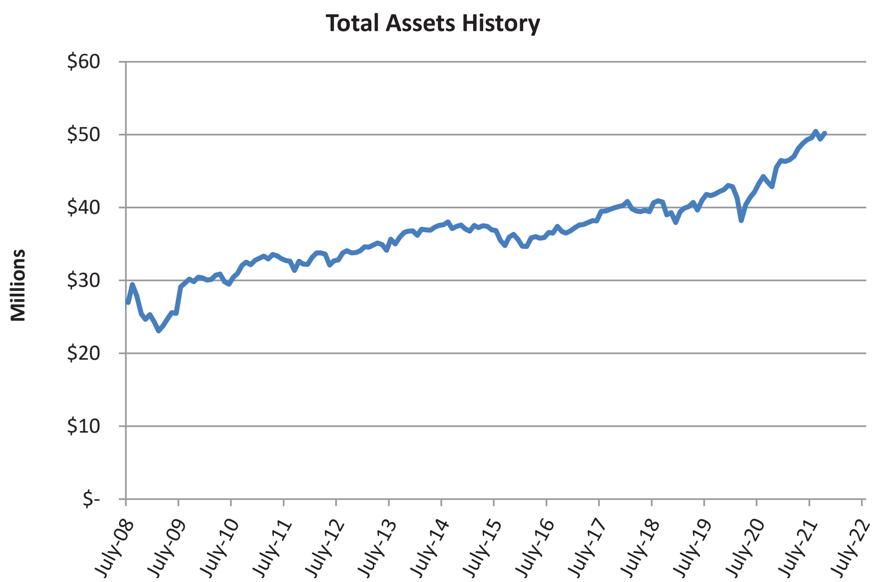



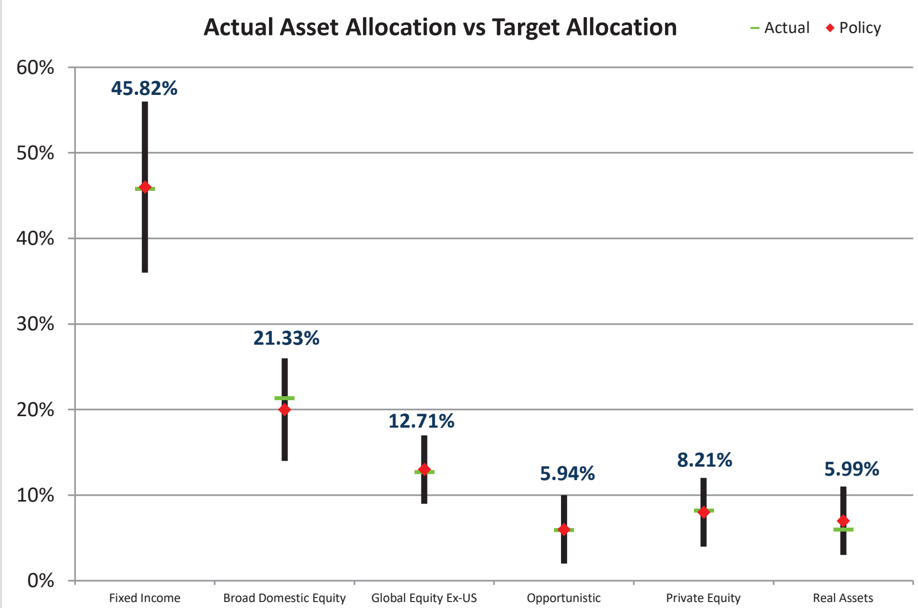
# Military Retirement Trust Fund

**Fiscal Year-to-Date through October 31, 2021**



# 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 October 31, 2021**

| | 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 | $ 411,544,805 | $ (87,838) | $ (26,638,007) | $ 384,818,960 | -6.49% | -0.02% |
| Securities Lending Income Pool | 16,673 | 109,080 | (63,764) | 61,989 | 271.79% | 717.21% |
| **Total Cash** | 411,561,478 | 21,242 | (26,701,771) | 384,880,949 | -6.48% | 0.01% |
| **Fixed Income** | | | | | | |
| Alternative Fixed Income | | | | | | |
| Crestline Investors, Inc. | 650,873,304 | - | (11,873,758) | 638,999,546 | -1.82% | - |
| Prisma Capital Partners | 76,357,543 | 212,453 | (17,500,000) | 59,069,996 | -22.64% | 0.31% |
| Crestline Specialty Fund | 6,647,979 | - | (185,127) | 6,462,852 | -2.78% | - |
| Crestline Specialty Lending Fund II | 48,350,237 | - | (748,986) | 47,601,251 | -1.55% | - |
| Crestline Specialty Lending Fund III | 26,559,420 | - | - | 26,559,420 | - | - |
| Total Alternative Fixed Income | 808,788,483 | 212,453 | (30,307,871) | 778,693,065 | -3.72% | 0.03% |
| Opportunistic Fixed Income | | | | | | |
| Fidelity Inst. Asset Mgmt. High Yield CMBS | 220,151,110 | 375,607 | - | 220,526,717 | 0.17% | 0.17% |
| Fidelity Institutional Asset Management | 992,228,413 | 3,018,312 | - | 995,246,725 | 0.30% | 0.30% |
| MacKay Shields, LLC | 2,144,663 | - | - | 2,144,663 | - | - |
| Total Opportunistic Fixed Income | 1,214,524,186 | 3,393,919 | - | 1,217,918,105 | 0.28% | 0.28% |
| ARMB Barclays Agg Bond Fund | 4,981,767,193 | (4,777,286) | 17,000,000 | 4,993,989,907 | 0.25% | -0.10% |
| **Total Fixed Income** | 7,005,079,862 | (1,170,914) | (13,307,871) | 6,990,601,077 | -0.21% | -0.02% |
| **Domestic Equities** | | | | | | |
| **Small Cap** | | | | | | |
| Passively Managed | | | | | | |
| ARMB S&P 600 | 766,678,044 | 25,962,492 | (12,000,000) | 780,640,536 | 1.82% | 3.41% |
| Total Passive | 766,678,044 | 25,962,492 | (12,000,000) | 780,640,536 | 1.82% | 3.41% |
| Actively Managed | | | | | | |
| Transition Account | - | - | - | - | - | - |
| Total Active | - | - | - | - | - | - |
| **Total Small Cap** | 766,678,044 | 25,962,492 | (12,000,000) | 780,640,536 | 1.82% | 3.41% |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended October 31, 2021**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Large Cap** | | | | | | |
| Passively Managed | | | | | | |
| ARMB S&P 900 | 6,098,377,512 | 417,507,010 | (66,000,000) | 6,449,884,522 | 5.76% | 6.88% |
| Total Passive | 6,098,377,512 | 417,507,010 | (66,000,000) | 6,449,884,522 | 5.76% | 6.88% |
| Actively Managed | | | | | | |
| ARMB Domestic Residual Assets | 249,341 | 5,985 | (246,636) | 8,690 | -96.51% | 4.75% |
| ARMB Large Cap Multi-Factor | 576,900,646 | 34,867,356 | - | 611,768,002 | 6.04% | 6.04% |
| ARMB Scientific Beta | 1,928,912,091 | 111,182,481 | 181,591 | 2,040,276,163 | 5.77% | 5.76% |
| Transition Account | 48 | - | (48) | - | -100.00% | - |
| Total Active | 2,506,062,126 | 146,055,822 | (65,093) | 2,652,052,855 | 5.83% | 5.83% |
| **Total Large Cap** | 8,604,439,638 | 563,562,832 | (66,065,093) | 9,101,937,377 | 5.78% | 6.57% |
| **Total Domestic Equity** | 9,371,117,682 | 589,525,324 | (78,065,093) | 9,882,577,913 | 5.46% | 6.32% |
| | | | | | | |
| **Global Equities** | | | | | | |
| **Large Cap** | | | | | | |
| Arrow Street Capital | 652,506,984 | 2,157,960 | - | 654,664,944 | 0.33% | 0.33% |
| Baillie Gifford Overseas Limited | 393,047,799 | 15,289,842 | 61,397,909 | 469,735,550 | 19.51% | 3.61% |
| Brandes Investment Partners | 465,811,177 | 1,065,464 | 339,456 | 467,216,097 | 0.30% | 0.23% |
| Cap Guardian Trust Co | 586,323,977 | 16,985,760 | - | 603,309,737 | 2.90% | 2.90% |
| Legal & General | 889,686,380 | 19,554,042 | 79,534 | 909,319,956 | 2.21% | 2.20% |
| McKinley Capital Management | 2,790,648 | (35,066) | (4,310) | 2,751,272 | -1.41% | -1.26% |
| SSgA MSCI World Ex-US IMI Index Fund | 1,857,625,224 | 52,351,236 | - | 1,909,976,460 | 2.82% | 2.82% |
| State Street Global Advisors | 201,661 | - | - | 201,661 | - | - |
| **Total Large Cap** | 4,847,993,850 | 107,369,238 | 61,812,589 | 5,017,175,677 | 3.49% | 2.20% |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended October 31, 2021**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Emerging Markets Equity** | | | | | | |
| MSCI Emerging Markets Index Fund | 731,724,030 | 7,189,167 | - | 738,913,197 | 0.98% | 0.98% |
| Legal & General Sci-Beta Emerging Markets | 281,659,458 | 2,008,708 | 25,266 | 283,693,432 | 0.72% | 0.71% |
| **Total Emerging Markets** | 1,013,383,488 | 9,197,875 | 25,266 | 1,022,606,629 | 0.91% | 0.91% |
| **Total Global Equities** | 5,861,377,338 | 116,567,113 | 61,837,855 | 6,039,782,306 | 3.04% | 1.98% |
| | | | | | | |
| **Opportunistic** | | | | | | |
| **Alternative Equity Strategy** | | | | | | |
| Alternative Equity Strategies Transition Account | - | - | - | - | - | - |
| McKinley Global Health Care | 395,919,769 | 19,146,927 | - | 415,066,696 | 4.84% | 4.84% |
| **Total Alternative Equity Strategy** | 395,919,769 | 19,146,927 | - | 415,066,696 | 4.84% | 4.84% |
| | | | | | | |
| **Alternative Beta** | | | | | | |
| Man Group Alternative Risk Premia | 316,985,895 | (1,851,026) | - | 315,134,869 | -0.58% | -0.58% |
| **Total Alternative Beta** | 316,985,895 | (1,851,026) | - | 315,134,869 | -0.58% | -0.58% |
| | | | | | | |
| **Other Opportunities** | | | | | | |
| Project Pearl | 8,340,490 | - | - | 8,340,490 | - | - |
| Schroders Insurance Linked Securities | 9,624,491 | (62,063) | (1,500,000) | 8,062,428 | -16.23% | -0.70% |
| **Total Other Opportunities** | 17,964,981 | (62,063) | (1,500,000) | 16,402,918 | -8.70% | -0.36% |
| | | | | | | |
| **Tactical Allocation Strategies** | | | | | | |
| Fidelity Signals | 626,901,966 | 26,669,360 | - | 653,571,326 | 4.25% | 4.25% |
| PineBridge | 620,911,753 | 18,044,501 | - | 638,956,254 | 2.91% | 2.91% |
| **Total Tactical Allocation Strategies** | 1,247,813,719 | 44,713,861 | - | 1,292,527,580 | 3.58% | 3.58% |
| **Total Opportunistic** | 1,978,684,364 | 61,947,699 | (1,500,000) | 2,039,132,063 | 3.05% | 3.13% |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended October 31, 2021**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Private Equity** | | | | | | |
| Abbott Capital | 1,918,690,981 | 15,277,135 | (20,665,836) | 1,913,302,280 | -0.28% | 0.80% |
| Advent International GPE Fund VIII-B | 36,296,136 | - | - | 36,296,136 | - | - |
| Advent International GPE Fund IX | 24,247,865 | - | 2,100,000 | 26,347,865 | 8.66% | - |
| Angelo, Gordon & Co. | 5,291 | - | - | 5,291 | - | - |
| Clearlake Capital Partners VI | 26,274,941 | 1 | 3,950,243 | 30,225,185 | 15.03% | 0.00% |
| Dyal Capital Partners III | 40,652,934 | - | (916,891) | 39,736,043 | -2.26% | - |
| Dyal Capital Partners IV | 21,940,870 | 2,107 | 622,069 | 22,565,046 | 2.84% | 0.01% |
| Genstar X | - | - | 121,396 | 121,396 | - | - |
| Glendon Opportunities | 26,370,771 | - | - | 26,370,771 | - | - |
| Glendon Opportunities II | 68,669,611 | - | - | 68,669,611 | - | - |
| Insight XII | 9,990,635 | - | 4,000,000 | 13,990,635 | 40.04% | - |
| KKR Lending Partners II | 14,172,469 | - | - | 14,172,469 | - | - |
| Lexington Capital Partners VIII | 36,141,496 | - | (1,492,597) | 34,648,899 | -4.13% | - |
| Lexington Partners VII | 14,482,763 | - | (1,082,127) | 13,400,636 | -7.47% | - |
| Merit Capital Partners | 10,703,892 | - | - | 10,703,892 | - | - |
| NB SOF III | 16,262,417 | - | - | 16,262,417 | - | - |
| NB SOF IV | 39,980,206 | - | - | 39,980,206 | - | - |
| New Mountain Partners IV | 19,077,903 | - | - | 19,077,903 | - | - |
| New Mountain Partners V | 71,251,908 | - | - | 71,251,908 | - | - |
| New Mountain Partners VI | 7,299,287 | - | - | 7,299,287 | - | - |
| NGP XI | 36,707,159 | - | (1,605,892) | 35,101,267 | -4.37% | - |
| NGP XII | 26,064,320 | - | 369,827 | 26,434,147 | 1.42% | - |
| Onex Partnership III | 3,996,328 | - | (120,658) | 3,875,670 | -3.02% | - |
| Pathway Capital Management LLC | 2,161,652,287 | 17,147,004 | (28,500,621) | 2,150,298,670 | -0.53% | 0.80% |
| Resolute Fund III | 11,632,136 | - | (2,980,676) | 8,651,460 | -25.62% | - |
| Resolute Fund IV | 54,367,476 | - | - | 54,367,476 | - | - |
| Resolute Fund V | 10,250,139 | - | 2,110,954 | 12,361,093 | 20.59% | - |
| Summit Partners GE IX | 74,616,605 | - | (8,627,466) | 65,989,139 | -11.56% | - |
| Summit Partners GE X | 21,774,997 | - | 1,624,001 | 23,398,998 | 7.46% | - |
| Warburg Pincus Global Growth Fund | 34,841,749 | - | 2,930,000 | 37,771,749 | 8.41% | - |
| Warburg Pincus X | 733,934 | - | - | 733,934 | - | - |
| Warburg Pincus XI | 16,621,641 | - | - | 16,621,641 | - | - |
| Warburg Pincus XII | 91,241,564 | - | (975,000) | 90,266,564 | -1.07% | - |
| **Total Private Equity** | 4,947,012,711 | 32,426,247 | (49,139,274) | 4,930,299,684 | -0.34% | 0.66% |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended October 31, 2021**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Real Assets** | | | | | | |
| **Farmland** | | | | | | |
| UBS Agrivest, LLC | 898,076,649 | - | - | 898,076,649 | - | - |
| **Total Farmland** | 898,076,649 | - | - | 898,076,649 | - | - |
| | | | | | | |
| **Timber** | | | | | | |
| Timberland Invt Resource LLC | 359,135,894 | - | (3,200,000) | 355,935,894 | -0.89% | - |
| **Total Timber** | 359,135,894 | - | (3,200,000) | 355,935,894 | -0.89% | - |
| | | | | | | |
| **Energy** | | | | | | |
| EIG Energy Fund XIV-A | 4,598,022 | 99,775 | - | 4,697,797 | 2.17% | 2.17% |
| EIG Energy Fund XV | 8,531,587 | 483,662 | - | 9,015,249 | 5.67% | 5.67% |
| EIG Energy Fund XVI | 47,751,113 | 3,233,744 | (2,421,033) | 48,563,824 | 1.70% | 6.95% |
| **Total Energy** | 60,880,722 | 3,817,181 | (2,421,033) | 62,276,870 | 2.29% | 6.40% |
| | | | | | | |
| **REIT** | | | | | | |
| REIT Transition Account | - | - | - | - | - | - |
| ARMB REIT | 593,339,757 | 41,957,994 | - | 635,297,751 | 7.07% | 7.07% |
| **Total REIT** | 593,339,757 | 41,957,994 | - | 635,297,751 | 7.07% | 7.07% |
| | | | | | | |
| **Infrastructure Private** | | | | | | |
| IFM Global Infrastructure Fund-Private | 583,304,161 | 30,082,178 | - | 613,386,339 | 5.16% | 5.16% |
| JP Morgan Infrastructure Fund-Private | 136,111,581 | - | - | 136,111,581 | - | - |
| **Total Infrastructure Private** | 719,415,742 | 30,082,178 | - | 749,497,920 | 4.18% | 4.18% |

**Alaska Retirement Management Board**
**All Non-Participant Directed Plans by Manager**
**Schedule of Investment Income and Changes in Invested Assets**
**For the Month Ended October 31, 2021**

| | | | | | | |
|---|---|---|---|---|---|---|
| **Real Estate** | | | | | | |
| Core Commingled Accounts | | | | | | |
| BlackRock US Core Property Fund | 347,861,850 | 15,620,682 | - | 363,482,532 | 4.49% | 4.49% |
| JP Morgan | 163,567,577 | 5,215,816 | (1,161,861) | 167,621,532 | 2.48% | 3.20% |
| UBS Trumbull Property Fund | 42,232,492 | 2,532,623 | (2,073,366) | 42,691,749 | 1.09% | 6.15% |
| Total Core Commingled | 553,661,919 | 23,369,121 | (3,235,227) | 573,795,813 | 3.64% | 4.23% |
| Core Separate Accounts | | | | | | |
| Sentinel Separate Account | 187,302,349 | - | 270,160 | 187,572,509 | 0.14% | - |
| UBS Realty | 541,236,174 | - | (1,392,451) | 539,843,723 | -0.26% | - |
| Total Core Separate | 728,538,523 | - | (1,122,291) | 727,416,232 | -0.15% | - |
| Non-Core Commingled Accounts | | | | | | |
| Almanac Realty Securities V | 52,214 | - | - | 52,214 | - | - |
| Almanac Realty Securities VII | 25,589,544 | - | 667,308 | 26,256,852 | 2.61% | - |
| Almanac Realty Securities VIII | 15,608,036 | - | 1,607,456 | 17,215,492 | 10.30% | - |
| Clarion Ventures 4 | 27,387,332 | - | - | 27,387,332 | - | - |
| Colony Investors VIII, L.P. | 1,258,497 | - | - | 1,258,497 | - | - |
| ING Clarion Development Ventures III | 1,387,922 | - | - | 1,387,922 | - | - |
| KKR Real Estate Partners Americas II | 21,436,615 | - | - | 21,436,615 | - | - |
| KKR Real Estate Partners Americas L.P. | 4,162,836 | - | (356,711) | 3,806,125 | -8.57% | - |
| Silverpeak Legacy Pension Partners II, L.P. | 1,008,612 | - | - | 1,008,612 | - | - |
| Silverpeak Legacy Pension Partners III, L.P. | 2,565,727 | - | - | 2,565,727 | - | - |
| Tishman Speyer Real Estate Venture VI | 2,028,012 | - | - | 2,028,012 | - | - |
| Tishman Speyer Real Estate Venture VII | 149,024 | - | - | 149,024 | - | - |
| Total Non-Core Commingled | 102,634,371 | - | 1,918,053 | 104,552,424 | 1.87% | - |
| **Total Real Estate** | 1,384,834,813 | 23,369,121 | (2,439,465) | 1,405,764,469 | 1.51% | 1.69% |
| **Total Real Assets** | 4,015,683,577 | 99,226,474 | (8,060,498) | 4,106,849,553 | 2.27% | 2.47% |
| **Total Assets** | $ 33,590,517,012 | $ 898,543,185 | $ (114,936,652) | $ 34,374,123,545 | 2.33% | 2.68% |

# 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**
**October 31, 2021**

| | Beginning Invested Assets | Investment Income | Net Contributions (Withdrawals) | Transfers In (Out) | Ending Invested Assets | % Change in Invested Assets | % Change due to Investment Income (1) |
|---|---|---|---|---|---|---|---|
| **Participant Options** | | | | | | | |
| T. Rowe Price | | | | | | | |
| Stable Value Fund | $ 496,851,035 | $ 706,974 | $ (1,843,545) | $ 707,111 | $ 496,421,575 | -0.09% | 0.14% |
| Small Cap Stock Fund | 267,769,138 | 12,660,400 | (321,927) | (3,925,981) | 276,181,630 | 3.14% | 4.77% |
| Alaska Balanced Trust | 1,200,661,508 | 20,691,649 | (4,577,673) | 1,727,095 | 1,218,502,579 | 1.49% | 1.73% |
| Long Term Balanced Fund | 763,138,299 | 24,049,082 | 842,975 | 739,844 | 788,770,200 | 3.36% | 3.15% |
| AK Target Date 2010 Trust | 10,009,406 | 198,565 | (20,905) | 129,967 | 10,317,033 | 3.07% | 1.97% |
| AK Target Date 2015 Trust | 80,247,596 | 1,822,699 | (1,906,625) | 868,683 | 81,032,353 | 0.98% | 2.29% |
| AK Target Date 2020 Trust | 91,518,194 | 2,551,582 | (288,965) | 616,520 | 94,397,331 | 3.15% | 2.78% |
| AK Target Date 2025 Trust | 116,297,088 | 3,889,596 | 291,363 | 1,559,837 | 122,037,884 | 4.94% | 3.32% |
| AK Target Date 2030 Trust | 96,269,617 | 3,669,714 | 586,913 | 1,404,588 | 101,930,832 | 5.88% | 3.77% |
| AK Target Date 2035 Trust | 98,230,135 | 4,108,155 | 903,507 | (1,022,794) | 102,219,003 | 4.06% | 4.18% |
| AK Target Date 2040 Trust | 93,922,217 | 4,251,211 | 428,222 | (533,477) | 98,068,173 | 4.41% | 4.53% |
| AK Target Date 2045 Trust | 111,827,568 | 5,396,673 | 952,579 | (314,146) | 117,862,674 | 5.40% | 4.81% |
| AK Target Date 2050 Trust | 124,796,951 | 6,118,937 | 1,220,712 | (102,518) | 132,034,082 | 5.80% | 4.88% |
| AK Target Date 2055 Trust | 127,877,194 | 6,271,746 | 1,681,178 | (351,430) | 135,478,688 | 5.94% | 4.88% |
| AK Target Date 2060 Trust | 7,712,195 | 384,513 | 471,344 | (19,988) | 8,548,064 | 10.84% | 4.84% |
| AK Target Date 2065 Trust | 3,006,851 | 143,527 | 197,204 | (137,480) | 3,210,102 | 6.76% | 4.73% |
| Total Investments with T. Rowe Price | 3,690,134,992 | 96,915,023 | (1,383,643) | 1,345,831 | 3,787,012,203 | | |
| JP Morgan | | | | | | | |
| JPMorgan SmartSpending 2015 R6 | 436 | 266 | 290 | 42,651 | 43,643 | 9909.86% | 1.21% |
| JPMorgan SmartSpending 2020 R6 | 2,964 | 328 | 351 | 46,536 | 50,179 | 1592.95% | 1.24% |
| Total Investments with JP Morgan | 3,400 | 594 | 641 | 89,187 | 93,822 | | |
| State Street Global Advisors | | | | | | | |
| Money Market | 67,679,248 | 297 | (181,591) | 1,193,525 | 68,691,479 | 1.50% | 0.00% |
| S&P 500 Stock Index Fund Series A | 516,061,541 | 36,044,585 | (1,014,105) | (3,203,102) | 547,888,919 | 6.17% | 7.01% |
| Russell 3000 Index | 142,405,356 | 9,726,730 | (391,442) | 3,519,736 | 155,260,380 | 9.03% | 6.76% |
| World Equity Ex-US Index | 55,740,087 | 1,616,035 | 3,941 | 3,165,513 | 60,525,576 | 8.59% | 2.82% |
| Total Investments with SSgA | 781,886,232 | 47,387,647 | (1,583,197) | 4,675,672 | 832,366,354 | | |
| BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 185,482,439 | (71,033) | (522,769) | (1,483,543) | 183,405,094 | -1.12% | -0.04% |
| Strategic Completion Fund | 37,017,835 | 1,216,518 | 34,638 | (224,552) | 38,044,439 | 2.77% | 3.29% |
| Total Investments with BlackRock | 222,500,274 | 1,145,485 | (488,131) | (1,708,095) | 221,449,533 | | |
| Brandes and Baillie Gifford | | | | | | | |
| AK International Equity Fund | 147,219,183 | 3,118,379 | 208,424 | (1,242,329) | 149,303,657 | 1.42% | 2.13% |
| Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 166,807,143 | 15,435,456 | (182,573) | (3,160,266) | 178,899,760 | 7.25% | 9.35% |
| **Total All Funds** | $ 5,008,551,224 | $ 164,002,584 | $ (3,428,479) | $ - | $ 5,169,125,329 | 3.21% | 3.28% |

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.

**Supplemental Annuity Plan**
**Schedule of Invested Assets with**
**Schedule of Investment Income and Changes in Invested Assets**
**By Month Through the Month Ended**
**October 31, 2021**
**$ (Thousands)**

| **Invested Assets (at fair value)** | July | August | September | October |
|---|---|---|---|---|
| Investments with T. Rowe Price | | | | |
| Stable Value Fund | $ 488,478 | $ 491,047 | $ 496,851 | $ 496,422 |
| Small Cap Stock Fund | 277,757 | 277,500 | 267,769 | 276,182 |
| Alaska Balanced Trust | 1,223,740 | 1,228,707 | 1,200,662 | 1,218,503 |
| Long Term Balanced Fund | 774,789 | 783,806 | 763,138 | 788,770 |
| AK Target Date 2010 Trust | 10,085 | 10,174 | 10,009 | 10,317 |
| AK Target Date 2015 Trust | 83,324 | 83,550 | 80,248 | 81,032 |
| AK Target Date 2020 Trust | 92,999 | 93,604 | 91,518 | 94,397 |
| AK Target Date 2025 Trust | 116,770 | 119,535 | 116,297 | 122,038 |
| AK Target Date 2030 Trust | 97,336 | 98,709 | 96,270 | 101,931 |
| AK Target Date 2035 Trust | 99,225 | 101,763 | 98,230 | 102,219 |
| AK Target Date 2040 Trust | 94,988 | 96,923 | 93,922 | 98,068 |
| AK Target Date 2045 Trust | 113,224 | 116,158 | 111,828 | 117,863 |
| AK Target Date 2050 Trust | 126,689 | 129,643 | 124,797 | 132,034 |
| AK Target Date 2055 Trust | 128,109 | 131,897 | 127,877 | 135,479 |
| AK Target Date 2060 Trust | 7,336 | 7,669 | 7,712 | 8,548 |
| AK Target Date 2065 Trust | 3,129 | 3,452 | 3,007 | 3,210 |
| Investments with JP Morgan | | | | |
| JPMorgan SmartSpending 2015 R6 | 14 | 0 | 0 | 44 |
| JPMorgan SmartSpending 2020 R6 | 9 | 317 | 3 | 50 |
| Investments with State Street Global Advisors | | | | |
| Money Market | 66,716 | 67,010 | 67,679 | 68,691 |
| S&P 500 Stock Index Fund Series A | 534,147 | 547,482 | 516,062 | 547,889 |
| Russell 3000 Index | 139,778 | 145,498 | 142,405 | 155,260 |
| World Equity Ex-US Index | 53,790 | 54,806 | 55,740 | 60,526 |
| Investments with BlackRock | | | | |
| Passive U.S. Bond Index Fund | 189,913 | 188,612 | 185,482 | 183,405 |
| Strategic Completion Fund | 37,611 | 37,762 | 37,018 | 38,044 |
| Investments with Brandes and Baillie Gifford | | | | |
| AK International Equity Fund | 150,369 | 154,751 | 147,219 | 149,304 |
| Investments with Northern Trust | | | | |
| Environmental, Social, and Governance Fund | 175,596 | 179,135 | 166,807 | 178,900 |
| **Total Invested Assets** | **$ 5,085,920** | **$ 5,149,507** | **$ 5,008,551** | **$ 5,169,125** |
| **Change in Invested Assets** | | | | |
| Beginning Assets | $ 5,064,368 | $ 5,085,920 | $ 5,149,507 | $ 5,008,551 |
| Investment Earnings | 40,530 | 73,949 | (130,128) | 164,003 |
| Net Contributions (Withdrawals) | (18,978) | (10,361) | (10,828) | (3,428) |
| **Ending Invested Assets** | **$ 5,085,920** | **$ 5,149,507** | **$ 5,008,551** | **$ 5,169,125** |



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**
**October 31, 2021**

| 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 | $ 206,300,728 | $ 293,655 | $ (563,767) | $ 248,115 | $ 206,278,731 | -0.01% | 0.14% |
| Small Cap Stock Fund | 149,317,257 | 7,076,823 | (152,485) | (1,581,586) | 154,660,009 | 3.58% | 4.77% |
| Alaska Balanced Trust | 45,772,632 | 792,612 | (72,890) | 745,374 | 47,237,728 | 3.20% | 1.72% |
| Long Term Balanced Fund | 91,456,582 | 2,885,403 | 17,044 | 390,437 | 94,749,466 | 3.60% | 3.15% |
| AK Target Date 2010 Trust | 3,404,177 | 64,110 | (80,902) | (189,567) | 3,197,818 | -6.06% | 1.96% |
| AK Target Date 2015 Trust | 9,823,425 | 225,627 | (4,414) | 13,876 | 10,058,514 | 2.39% | 2.30% |
| AK Target Date 2020 Trust | 25,784,409 | 723,288 | (184,002) | 925,967 | 27,249,662 | 5.68% | 2.77% |
| AK Target Date 2025 Trust | 31,684,026 | 1,051,971 | (196,905) | (78,555) | 32,460,537 | 2.45% | 3.33% |
| AK Target Date 2030 Trust | 18,133,552 | 692,716 | 100,173 | 554,721 | 19,481,162 | 7.43% | 3.75% |
| AK Target Date 2035 Trust | 13,882,783 | 572,860 | 169,808 | (256,766) | 14,368,685 | 3.50% | 4.14% |
| AK Target Date 2040 Trust | 13,198,740 | 593,812 | 116,292 | (167,838) | 13,741,006 | 4.11% | 4.51% |
| AK Target Date 2045 Trust | 10,398,946 | 500,342 | 56,162 | (34,090) | 10,921,360 | 5.02% | 4.81% |
| AK Target Date 2050 Trust | 8,079,255 | 396,958 | 107,725 | 219,089 | 8,803,027 | 8.96% | 4.82% |
| AK Target Date 2055 Trust | 6,473,452 | 316,611 | 42,835 | (37,429) | 6,795,469 | 4.97% | 4.89% |
| AK Target Date 2060 Trust | 1,444,842 | 69,699 | 21,471 | (70,910) | 1,465,102 | 1.40% | 4.91% |
| AK Target Date 2065 Trust | 589,056 | 29,061 | 11,759 | 50,749 | 680,625 | 15.55% | 4.68% |
| Total Investments with T. Rowe Price | 635,743,862 | 16,285,548 | (612,096) | 731,587 | 652,148,901 | | |
| JP Morgan | | | | | | | |
| JPMorgan SmartSpending 2015 R6 | 17 | - | 34 | 1 | 52 | 205.88% | 0.00% |
| JPMorgan SmartSpending 2020 R6 | 12,482 | 214 | 50 | 1 | 12,747 | 2.12% | 1.71% |
| Total Investments with JP Morgan | 12,499 | 214 | 84 | 2 | 12,799 | | |
| State Street Global Advisors | | | | | | | |
| Money Market | 22,466,775 | 95 | (979,555) | 480,317 | 21,967,632 | -2.22% | 0.00% |
| S&P 500 Stock Index | 266,971,578 | 18,633,984 | (374,832) | (1,229,482) | 284,001,248 | 6.38% | 7.00% |
| Russell 3000 Index | 52,307,437 | 3,565,752 | (272,719) | 1,436,528 | 57,036,998 | 9.04% | 6.74% |
| World Equity Ex-US Index | 19,567,483 | 560,817 | (14,138) | 740,445 | 20,854,607 | 6.58% | 2.81% |
| Total Investments with SSgA | 361,313,273 | 22,760,648 | (1,641,244) | 1,427,808 | 383,860,485 | | |
| BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 78,817,706 | (31,069) | (243,996) | (527,593) | 78,015,048 | -1.02% | -0.04% |
| Strategic Completion Fund | 16,195,987 | 526,008 | 8,497 | (295,904) | 16,434,588 | 1.47% | 3.28% |
| Total Investments with BlackRock | 95,013,693 | 494,939 | (235,499) | (823,497) | 94,449,636 | | |
| Brandes and Baillie Gifford | | | | | | | |
| AK International Equity Fund | 56,664,590 | 1,194,823 | (6,952) | (482,092) | 57,370,369 | 1.25% | 2.12% |
| Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 55,352,000 | 5,113,025 | (190,895) | (853,808) | 59,420,322 | 7.35% | 9.33% |
| **Total All Funds** | $ 1,204,099,917 | $ 45,849,197 | $ (2,686,602) | $ - | $ 1,247,262,512 | 3.58% | 3.81% |

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.

**Deferred Compensation Plan**
**Schedule of Invested Assets with**
**Schedule of Investment Income and Changes in Invested Assets**
**By Month Through the Month Ended**
**October 31, 2021**
**$ (Thousands)**

| **Invested Assets (at fair value)** | **July** | **August** | **September** | **October** |
|---|---|---|---|---|
| Investments with T. Rowe Price | | | | |
| Stable Value Fund | $ 204,937 | $ 205,613 | $ 206,301 | $ 206,279 |
| Small Cap Stock Fund | 152,997 | 154,380 | 149,317 | 154,660 |
| Alaska Balanced Trust | 45,949 | 46,782 | 45,773 | 47,238 |
| Long Term Balanced Fund | 91,855 | 93,589 | 91,457 | 94,749 |
| AK Target Date 2010 Trust | 3,367 | 3,400 | 3,404 | 3,198 |
| AK Target Date 2015 Trust | 10,022 | 10,104 | 9,823 | 10,059 |
| AK Target Date 2020 Trust | 26,231 | 26,498 | 25,784 | 27,250 |
| AK Target Date 2025 Trust | 32,470 | 33,030 | 31,684 | 32,461 |
| AK Target Date 2030 Trust | 18,706 | 19,160 | 18,134 | 19,481 |
| AK Target Date 2035 Trust | 14,380 | 14,428 | 13,883 | 14,369 |
| AK Target Date 2040 Trust | 13,562 | 13,793 | 13,199 | 13,741 |
| AK Target Date 2045 Trust | 10,409 | 10,783 | 10,399 | 10,921 |
| AK Target Date 2050 Trust | 8,111 | 8,359 | 8,079 | 8,803 |
| AK Target Date 2055 Trust | 6,422 | 6,636 | 6,473 | 6,795 |
| AK Target Date 2060 Trust | 1,450 | 1,485 | 1,445 | 1,465 |
| AK Target Date 2065 Trust | 629 | 599 | 589 | 681 |
| Investments with JP Morgan | | | | |
| JPMorgan SmartSpending 2015 R6 | 3 | 3 | 0 | 0 |
| JPMorgan SmartSpending 2020 R6 | 3 | 3 | 12 | 13 |
| Investments with State Street Global Advisors | | | | |
| Money Market | 21,081 | 21,454 | 22,467 | 21,968 |
| S&P 500 Stock Index | 275,631 | 281,834 | 266,972 | 284,001 |
| Russell 3000 Index | 52,658 | 54,024 | 52,307 | 57,037 |
| World Equity Ex-US Index | 19,029 | 19,419 | 19,567 | 20,855 |
| Investments with BlackRock | | | | |
| Passive U.S. Bond Index Fund | 80,804 | 80,060 | 78,818 | 78,015 |
| Strategic Completion Fund | 16,889 | 16,832 | 16,196 | 16,435 |
| Investments with Brandes and Baillie Gifford | | | | |
| AK International Equity Fund | 58,826 | 59,613 | 56,665 | 57,370 |
| Investments with Northern Trust | | | | |
| Environmental, Social, and Governance Fund | 57,412 | 58,923 | 55,352 | 59,420 |
| **Total Invested Assets** | **$ 1,223,830** | **$ 1,240,801** | **$ 1,204,100** | **$ 1,247,263** |
| **Change in Invested Assets** | | | | |
| Beginning Assets | $ 1,217,086 | $ 1,223,830 | $ 1,240,801 | $ 1,204,100 |
| Investment Earnings | 10,325 | 20,564 | (33,515) | 45,849 |
| Net Contributions (Withdrawals) | (3,581) | (3,594) | (3,186) | (2,687) |
| **Ending Invested Assets** | **$ 1,223,830** | **$ 1,240,801** | **$ 1,204,100** | **$ 1,247,263** |

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**
**October 31, 2021**

| 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 | $ 120,657,903 | $ 171,576 | $ (132,205) | $ (102,903) | $ 120,594,371 | -0.05% | 0.14% |
| Small Cap Stock Fund | 119,941,106 | 5,668,811 | 79,283 | (2,790,056) | 122,899,144 | 2.47% | 4.78% |
| Alaska Balanced Trust | 49,778,940 | 873,851 | 18,359 | 1,856,582 | 52,527,732 | 5.52% | 1.72% |
| Long Term Balanced Fund | 17,911,878 | 619,814 | (30,114) | 3,406,048 | 21,907,626 | 22.31% | 3.16% |
| AK Target Date 2010 Trust | 3,416,050 | 66,760 | (125,440) | - | 3,357,370 | -1.72% | 1.99% |
| AK Target Date 2015 Trust | 13,269,309 | 307,192 | 10,410 | 547 | 13,587,458 | 2.40% | 2.31% |
| AK Target Date 2020 Trust | 45,731,339 | 1,272,320 | (411,532) | 383,519 | 46,975,646 | 2.72% | 2.78% |
| AK Target Date 2025 Trust | 85,889,659 | 2,848,693 | 235,810 | (143,310) | 88,830,852 | 3.42% | 3.31% |
| AK Target Date 2030 Trust | 96,309,749 | 3,639,350 | 614,970 | (183,295) | 100,380,774 | 4.23% | 3.77% |
| AK Target Date 2035 Trust | 121,832,833 | 5,116,741 | 781,610 | (183,896) | 127,547,288 | 4.69% | 4.19% |
| AK Target Date 2040 Trust | 144,451,025 | 6,551,802 | 669,066 | (132,940) | 151,538,953 | 4.91% | 4.53% |
| AK Target Date 2045 Trust | 187,799,016 | 9,075,286 | 1,298,839 | (863,536) | 197,309,605 | 5.06% | 4.83% |
| AK Target Date 2050 Trust | 224,317,108 | 10,988,759 | 1,285,566 | (305,244) | 236,286,189 | 5.34% | 4.89% |
| AK Target Date 2055 Trust | 239,298,059 | 11,728,026 | 2,158,742 | (447,591) | 252,737,236 | 5.62% | 4.88% |
| AK Target Date 2060 Trust | 8,023,332 | 404,781 | 627,582 | (22,325) | 9,033,370 | 12.59% | 4.86% |
| AK Target Date 2065 Trust | 3,785,085 | 190,411 | 295,036 | (16,876) | 4,253,656 | 12.38% | 4.85% |
| Total Investments with T. Rowe Price | 1,482,412,391 | 59,524,173 | 7,375,982 | 454,724 | 1,549,767,270 | | |
| JP Morgan | | | | | | | |
| JPMorgan SmartSpending 2015 R6 | 61 | 1 | - | - | 62 | 1.64% | 1.64% |
| JPMorgan SmartSpending 2020 R6 | 691 | 28 | 268 | 2,129 | 3,116 | 350.94% | 1.48% |
| Total Investments with JP Morgan | 752 | 29 | 268 | 2,129 | 3,178 | | |
| State Street Global Advisors | | | | | | | |
| Money Market | 15,656,043 | 69 | (30,011) | (54,992) | 15,571,109 | -0.54% | 0.00% |
| S&P 500 Stock Index Fund Series A | 76,541,362 | 5,374,151 | 117,399 | 327,261 | 82,360,173 | 7.60% | 7.00% |
| Russell 3000 Index | 74,804,370 | 5,131,851 | 225,924 | 2,010,028 | 82,172,173 | 9.85% | 6.76% |
| World Equity Ex-US Index | 42,315,943 | 1,211,148 | 111,276 | 941,250 | 44,579,617 | 5.35% | 2.83% |
| Total Investments with SSgA | 209,317,718 | 11,717,219 | 424,588 | 3,223,547 | 224,683,072 | | |
| BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 79,693,118 | (31,506) | (87,576) | (1,812,140) | 77,761,896 | -2.42% | -0.04% |
| Strategic Completion Fund | 5,688,723 | 185,806 | 26,638 | (48,600) | 5,852,567 | 2.88% | 3.27% |
| Total Investments with BlackRock | 85,381,841 | 154,300 | (60,938) | (1,860,740) | 83,614,463 | | |
| Brandes and Baillie Gifford | | | | | | | |
| AK International Equity Fund | 107,693,792 | 2,304,963 | 184,618 | 561,882 | 110,745,255 | 2.83% | 2.13% |
| Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 84,086,470 | 7,760,000 | (52,916) | (2,381,542) | 89,412,012 | 6.33% | 9.36% |
| **Total All Funds** | $ 1,968,892,964 | $ 81,460,684 | $ 7,871,602 | $ - | $ 2,058,225,250 | 4.54% | 4.13% |

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.

**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**
**October 31, 2021**
**$ (Thousands)**

| **Invested Assets (at fair value)** | **July** | **August** | **September** | **October** |
|---|---|---|---|---|
| Investments with T. Rowe Price | | | | |
| Stable Value Fund | $ 118,076 | $ 119,540 | $ 120,658 | $ 120,594 |
| Small Cap Stock Fund | 124,848 | 125,147 | 119,941 | 122,899 |
| Alaska Balanced Trust | 47,383 | 49,356 | 49,779 | 52,528 |
| Long Term Balanced Fund | 13,857 | 15,467 | 17,912 | 21,908 |
| AK Target Date 2010 Trust | 3,467 | 3,515 | 3,416 | 3,357 |
| AK Target Date 2015 Trust | 13,574 | 13,592 | 13,269 | 13,587 |
| AK Target Date 2020 Trust | 46,846 | 47,035 | 45,731 | 46,976 |
| AK Target Date 2025 Trust | 86,710 | 88,196 | 85,890 | 88,831 |
| AK Target Date 2030 Trust | 97,134 | 98,887 | 96,310 | 100,381 |
| AK Target Date 2035 Trust | 123,227 | 125,787 | 121,833 | 127,547 |
| AK Target Date 2040 Trust | 145,065 | 148,749 | 144,451 | 151,539 |
| AK Target Date 2045 Trust | 189,980 | 194,566 | 187,799 | 197,310 |
| AK Target Date 2050 Trust | 226,477 | 231,766 | 224,317 | 236,286 |
| AK Target Date 2055 Trust | 239,429 | 246,604 | 239,298 | 252,737 |
| AK Target Date 2060 Trust | 7,460 | 7,796 | 8,023 | 9,033 |
| AK Target Date 2065 Trust | 3,250 | 3,699 | 3,785 | 4,254 |
| Investments with JP Morgan | | | | |
| JPMorgan SmartSpending 2015 R6 | 5 | 0 | 0 | 0 |
| JPMorgan SmartSpending 2020 R6 | 5 | 0 | 1 | 3 |
| State Street Global Advisors | | | | |
| Money Market | 14,810 | 15,438 | 15,656 | 15,571 |
| S&P 500 Stock Index Fund Series A | 78,578 | 80,615 | 76,541 | 82,360 |
| Russell 3000 Index | 72,802 | 76,379 | 74,804 | 82,172 |
| World Equity Ex-US Index | 42,667 | 42,874 | 42,316 | 44,580 |
| Investments with BlackRock | | | | |
| Passive U.S. Bond Index Fund | 83,219 | 82,134 | 79,693 | 77,762 |
| Strategic Completion Fund | 5,956 | 5,781 | 5,689 | 5,853 |
| Investments with Brandes and Baillie Gifford | | | | |
| AK International Equity Fund | 108,915 | 112,201 | 107,694 | 110,745 |
| Investments with Northern Trust | | | | |
| Environmental, Social, and Governance Fund | 89,553 | 91,018 | 84,086 | 89,412 |
| **Total Invested Assets** | **$ 1,983,291** | **$ 2,026,142** | **$ 1,968,893** | **$ 2,058,225** |
| | | | | |
| **Change in Invested Assets** | | | | |
| Beginning Assets | $ 1,964,384 | $ 1,983,291 | $ 2,026,142 | $ 1,968,893 |
| Investment Earnings | 12,809 | 37,132 | (64,693) | 81,461 |
| Net Contributions (Withdrawals) | 6,098 | 5,720 | 7,443 | 7,872 |
| **Ending Invested Assets** | **$ 1,983,291** | **$ 2,026,142** | **$ 1,968,893** | **$ 2,058,225** |



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**
**October 31, 2021**

| 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 | $ 47,754,104 | $ 67,587 | $ (91,918) | $ (268,715) | $ 47,461,058 | -0.61% | 0.14% |
| Small Cap Stock Fund | 48,156,069 | 2,276,832 | (16,541) | (1,194,368) | 49,221,992 | 2.21% | 4.79% |
| Alaska Balanced Trust | 20,990,101 | 363,782 | (50,178) | 430,604 | 21,734,309 | 3.55% | 1.72% |
| Long Term Balanced Fund | 7,354,371 | 247,340 | 20,241 | 1,306,065 | 8,928,017 | 21.40% | 3.08% |
| AK Target Date 2010 Trust | 1,239,133 | 24,546 | 10,861 | - | 1,274,540 | 2.86% | 1.97% |
| AK Target Date 2015 Trust | 4,112,761 | 94,948 | 30,838 | - | 4,238,547 | 3.06% | 2.30% |
| AK Target Date 2020 Trust | 13,533,562 | 376,996 | (19,424) | - | 13,891,134 | 2.64% | 2.79% |
| AK Target Date 2025 Trust | 26,507,676 | 880,085 | 137,597 | (30,062) | 27,495,296 | 3.73% | 3.31% |
| AK Target Date 2030 Trust | 36,846,758 | 1,389,852 | 264,666 | 173,437 | 38,674,713 | 4.96% | 3.75% |
| AK Target Date 2035 Trust | 51,605,735 | 2,166,620 | 307,089 | 81,878 | 54,161,322 | 4.95% | 4.18% |
| AK Target Date 2040 Trust | 62,218,508 | 2,825,828 | 480,473 | (48,396) | 65,476,413 | 5.24% | 4.53% |
| AK Target Date 2045 Trust | 88,891,036 | 4,295,149 | 507,090 | (134,697) | 93,558,578 | 5.25% | 4.82% |
| AK Target Date 2050 Trust | 124,466,816 | 6,086,153 | 588,320 | (9,634) | 131,131,655 | 5.35% | 4.88% |
| AK Target Date 2055 Trust | 81,075,248 | 3,962,073 | 409,140 | (216,260) | 85,230,201 | 5.12% | 4.88% |
| AK Target Date 2060 Trust | 2,608,510 | 130,972 | 192,735 | - | 2,932,217 | 12.41% | 4.84% |
| AK Target Date 2065 Trust | 395,000 | 20,697 | 57,703 | - | 473,400 | 19.85% | 4.88% |
| Total Investments with T. Rowe Price | 617,755,388 | 25,209,460 | 2,828,692 | 89,852 | 645,883,392 | | |
| JP Morgan | | | | | | | |
| JPMorgan SmartSpending 2015 R6 | - | - | - | - | - | 0.00% | 0.00% |
| JPMorgan SmartSpending 2020 R6 | - | - | - | - | - | 0.00% | 0.00% |
| Total Investments with JP Morgan | - | - | - | - | - | | |
| State Street Global Advisors | | | | | | | |
| Money Market | 4,582,506 | 20 | 12,873 | 31,650 | 4,627,049 | 0.97% | 0.00% |
| S&P 500 Stock Index Fund Series A | 21,051,769 | 1,483,434 | 70,962 | 152,961 | 22,759,126 | 8.11% | 7.01% |
| Russell 3000 Index | 30,379,099 | 2,085,198 | 9,251 | 1,161,059 | 33,634,607 | 10.72% | 6.73% |
| World Equity Ex-US Index | 17,994,974 | 514,188 | 19,785 | 344,336 | 18,873,283 | 4.88% | 2.83% |
| Total Investments with SSgA | 74,008,348 | 4,082,840 | 112,871 | 1,690,006 | 79,894,065 | | |
| BlackRock | | | | | | | |
| Passive U.S. Bond Index Fund | 31,093,410 | (12,694) | (40,453) | (807,551) | 30,232,712 | -2.77% | -0.04% |
| Strategic Completion Fund | 1,521,263 | 50,187 | 2,951 | (3,052) | 1,571,349 | 3.29% | 3.30% |
| Total Investments with BlackRock | 32,614,673 | 37,493 | (37,502) | (810,603) | 31,804,061 | | |
| Brandes and Baillie Gifford | | | | | | | |
| AK International Equity Fund | 45,605,122 | 970,540 | (13,451.00) | 109,435 | 46,671,646 | 2.34% | 2.13% |
| Northern Trust | | | | | | | |
| Environmental, Social, and Governance Fund | 35,288,915 | 3,254,623 | (63,199.00) | (1,078,690) | 37,401,649 | 5.99% | 9.37% |
| **Total All Funds** | $ 805,272,446 | $ 33,554,956 | $ 2,827,411 | $ - | $ 841,654,813 | 4.52% | 4.16% |

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.

**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**
**October 31, 2021**
**$ (Thousands)**

| **Invested Assets (at fair value)** | **July** | **August** | **September** | **October** |
|---|---|---|---|---|
| Investments with T. Rowe Price | | | | |
| Stable Value Fund | $ 46,955 | $ 47,342 | $ 47,754 | $ 47,461 |
| Small Cap Stock Fund | 50,379 | 50,599 | 48,156 | 49,222 |
| Alaska Balanced Trust | 20,063 | 20,970 | 20,990 | 21,734 |
| Long Term Balanced Fund | 5,573 | 6,530 | 7,354 | 8,928 |
| AK Target Date 2010 Trust | 1,196 | 1,256 | 1,239 | 1,275 |
| AK Target Date 2015 Trust | 4,024 | 4,173 | 4,113 | 4,239 |
| AK Target Date 2020 Trust | 14,018 | 13,876 | 13,534 | 13,891 |
| AK Target Date 2025 Trust | 27,427 | 27,347 | 26,508 | 27,495 |
| AK Target Date 2030 Trust | 37,836 | 38,163 | 36,847 | 38,675 |
| AK Target Date 2035 Trust | 52,959 | 53,903 | 51,606 | 54,161 |
| AK Target Date 2040 Trust | 62,818 | 64,059 | 62,219 | 65,476 |
| AK Target Date 2045 Trust | 90,922 | 92,299 | 88,891 | 93,559 |
| AK Target Date 2050 Trust | 126,623 | 129,199 | 124,467 | 131,132 |
| AK Target Date 2055 Trust | 82,393 | 84,076 | 81,075 | 85,230 |
| AK Target Date 2060 Trust | 2,521 | 2,634 | 2,609 | 2,932 |
| AK Target Date 2065 Trust | 365 | 388 | 395 | 473 |
| Investments with JP Morgan | | | | |
| JPMorgan SmartSpending 2015 R6 | 0 | 0 | 0 | 0 |
| JPMorgan SmartSpending 2020 R6 | 0 | 0 | 0 | 0 |
| Investments with State Street Global Advisors | | | | |
| Money Market | 4,501 | 4,754 | 4,583 | 4,627 |
| S&P 500 Stock Index Fund Series A | 22,155 | 22,404 | 21,052 | 22,759 |
| Russell 3000 Index | 29,502 | 30,900 | 30,379 | 33,635 |
| World Equity Ex-US Index | 18,199 | 18,208 | 17,995 | 18,873 |
| Investments with BlackRock | | | | |
| Passive U.S. Bond Index Fund | 32,563 | 32,163 | 31,093 | 30,233 |
| Strategic Completion Fund | 1,591 | 1,549 | 1,521 | 1,571 |
| Investments with Brandes and Baillie Gifford | | | | |
| AK International Equity Fund | 46,757 | 47,935 | 45,605 | 46,672 |
| Investments with Northern Trust | | | | |
| Environmental, Social, and Governance Fund | 38,315 | 38,547 | 35,289 | 37,402 |
| **Total Invested Assets** | **$ 819,656** | **$ 833,273** | **$ 805,272** | **$ 841,655** |
| **Change in Invested Assets** | | | | |
| Beginning Assets | $ 812,550 | $ 819,656 | $ 833,273 | $ 805,272 |
| Investment Earnings | 5,164 | 15,463 | (26,802) | 33,555 |
| Net Contributions (Withdrawals) | 1,942 | (1,845) | (1,199) | 2,827 |
| **Ending Invested Assets** | **$ 819,656** | **$ 833,273** | **$ 805,272** | **$ 841,655** |



Source data provided by the record keeper, Empower Retirement.

# ALASKA RETIREMENT MANAGEMENT BOARD

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

## As of October 31, 2021

## 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 Four Months Ending October 31, 2021

| | **Contributions** | | | | **Expenditures** | | | | **Net** |
|---|---|---|---|---|---|---|---|---|---|
| | Contributions EE and/or 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 Pension Trust | $ 148,343,286 | $ 97,699,500 | $ 51,807 | $ 246,094,593 | $ (316,703,777) | $ (3,344,624) | $ (3,555,588) | $ (323,603,989) | $ (77,509,396) |
| Retirement Health Care Trust | 21,384,029 | - | 18,212,615 | 39,596,644 | (156,446,959) | - | (1,225,829) | (157,672,788) | (118,076,144) |
| Total Defined Benefit Plans | 169,727,315 | 97,699,500 | 18,264,422 | 285,691,237 | (473,150,736) | (3,344,624) | (4,781,417) | (481,276,777) | (195,585,540) |
| Defined Contribution Plans: | | | | | | | | | |
| Participant Directed Retirement | 63,224,176 | - | - | 63,224,176 | - | (32,910,006) | (3,180,958) | (36,090,964) | 27,133,212 |
| Health Reimbursement Arrangement [a] | 15,425,617 | - | - | 15,425,617 | (135,240) | - | (37,332) | (172,572) | 15,253,045 |
| Retiree Medical Plan [a] | 5,536,565 | - | 24,057 | 5,560,622 | (435,983) | - | (22,342) | (458,325) | 5,102,297 |
| Occupational Death and Disability: [a] | | | | | | | | | |
| All Others | 1,263,497 | - | - | 1,263,497 | (36,305) | - | (3,064) | (39,369) | 1,224,128 |
| Peace Officers and Firefighters | 520,767 | - | - | 520,767 | (109,404) | - | (3,178) | (112,582) | 408,185 |
| Total Defined Contribution Plans | 85,970,622 | - | 24,057 | 85,994,679 | (716,932) | (32,910,006) | (3,246,874) | (36,873,812) | 49,120,867 |
| **Total PERS** | **255,697,937** | **97,699,500** | **18,288,479** | **371,685,916** | **(473,867,668)** | **(36,254,630)** | **(8,028,291)** | **(518,150,589)** | **(146,464,673)** |
| **Teachers' Retirement System (TRS)** | | | | | | | | | |
| Defined Benefit Plans: | | | | | | | | | |
| Retirement Pension Trust | 14,318,235 | 142,665,000 | 10,876 | 156,994,111 | (171,405,176) | (795,980) | (1,564,076) | (173,765,232) | (16,771,121) |
| Retirement Health Care Trust | 5,519,748 | - | 6,123,296 | 11,643,044 | (51,720,028) | - | (2,483,102) | (54,203,130) | (42,560,086) |
| Total Defined Benefit Plans | 19,837,983 | 142,665,000 | 6,134,172 | 168,637,155 | (223,125,204) | (795,980) | (4,047,178) | (227,968,362) | (59,331,207) |
| Defined Contribution Plans: | | | | | | | | | |
| Participant Directed Retirement | 16,475,950 | - | - | 16,475,950 | - | (13,652,035) | (1,098,709) | (14,750,744) | 1,725,206 |
| Health Reimbursement Arrangement [a] | 2,929,539 | - | - | 2,929,539 | (36,389) | - | (11,195) | (47,584) | 2,881,955 |
| Retiree Medical Plan [a] | 1,002,485 | - | 1,937 | 1,004,422 | (94,881) | - | (8,750) | (103,631) | 900,791 |
| Occupational Death and Disability [a] | 87,449 | - | - | 87,449 | (8,099) | - | (1,355) | (9,454) | 77,995 |
| Total Defined Contribution Plans | 20,495,423 | - | 1,937 | 20,497,360 | (139,369) | (13,652,035) | (1,120,009) | (14,911,413) | 5,585,947 |
| **Total TRS** | **40,333,406** | **142,665,000** | **6,136,109** | **189,134,515** | **(223,264,573)** | **(14,448,015)** | **(5,167,187)** | **(242,879,775)** | **(53,745,260)** |
| **Judicial Retirement System (JRS)** | | | | | | | | | |
| Defined Benefit Plan Retirement Pension Trust | 4,091,252 | 4,185,000 | 4 | 8,276,256 | (4,868,358) | - | (43,193) | (4,911,551) | 3,364,705 |
| Defined Benefit Plan Retirement Health Care Trust | 270,326 | - | 49,723 | 320,049 | (433,327) | - | (25,214) | (458,541) | (138,492) |
| **Total JRS** | **4,361,578** | **4,185,000** | **49,727** | **8,596,305** | **(5,301,685)** | **-** | **(68,407)** | **(5,370,092)** | **3,226,213** |
| **National Guard/Naval Militia Retirement System (NGNMRS)** | | | | | | | | | |
| Defined Benefit Plan Retirement Pension Trust [a] | - | - | - | - | (442,896) | - | (143,306) | (586,202) | (586,202) |
| **Other Participant Directed Plans** | | | | | | | | | |
| Supplemental Annuity Plan (SBS) | 61,646,167 | - | - | 61,646,167 | - | (102,378,778) | (2,862,880) | (105,241,658) | (43,595,491) |
| Deferred Compensation Plan [b] (DCP) | 15,854,867 | - | - | 15,854,867 | - | (27,978,897) | (923,201) | (28,902,098) | (13,047,231) |
| **Total All Funds** | **377,893,955** | **244,549,500** | **24,474,315** | **646,917,770** | **(702,876,822)** | **(181,060,320)** | **(17,193,272)** | **(901,130,414)** | **(254,212,644)** |
| Total Non-Participant Directed | 220,692,795 | 244,549,500 | 24,474,315 | 489,716,610 | (702,876,822) | (4,140,604) | (9,127,524) | (716,144,950) | (226,428,340) |
| Total Participant Directed | 157,201,160 | - | - | 157,201,160 | - | (176,919,716) | (8,065,748) | (184,985,464) | (27,784,304) |
| **Total All Funds** | **$ 377,893,955** | **$ 244,549,500** | **$ 24,474,315** | **$ 646,917,770** | **$ (702,876,822)** | **$ (181,060,320)** | **$ (17,193,272)** | **$ (901,130,414)** | **$ (254,212,644)** |

(a) Employer only contributions.
(b) Employee only contributions.

# ALASKA RETIREMENT MANAGEMENT BOARD
## SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
## (Supplement to the Treasury Division Report)
## For the Month Ended October 31, 2021

| | Contributions | | | | Expenditures | | | | Net |
|---|---|---|---|---|---|---|---|---|---|
| | Contributions EE and/or 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 Pension Trust | $ 40,263,192 | $ - | $ 311 | $ 40,263,503 | $ (79,275,839) | $ (653,015) | $ (443,175) | $ (80,372,029) | $ (40,108,526) |
| Retirement Health Care Trust | 5,554,741 | - | 1,442,804 | 6,997,545 | (38,287,573) | - | (1,816,361) | (40,103,934) | (33,106,389) |
| Total Defined Benefit Plans | 45,817,933 | - | 1,443,115 | 47,261,048 | (117,563,412) | (653,015) | (2,259,536) | (120,475,963) | (73,214,915) |
| Defined Contribution Plans: | | | | | | | | | |
| Participant Directed Retirement | 16,854,559 | - | - | 16,854,559 | - | (8,214,264) | (768,693) | (8,982,957) | 7,871,602 |
| Health Reimbursement Arrangement [a] | 4,337,734 | - | - | 4,337,734 | (29,480) | - | (6,888) | (36,368) | 4,301,366 |
| Retiree Medical Plan [a] | 1,459,850 | - | 3,466 | 1,463,316 | (159,595) | - | (5,794) | (165,389) | 1,297,927 |
| Occupational Death and Disability: [a] | | | | | | | | | |
| All Others | 345,370 | - | - | 345,370 | (9,076) | - | (390) | (9,466) | 335,904 |
| Peace Officers and Firefighters | 140,952 | - | - | 140,952 | (27,351) | - | (167) | (27,518) | 113,434 |
| Total Defined Contribution Plans | 23,138,465 | - | 3,466 | 23,141,931 | (225,502) | (8,214,264) | (781,932) | (9,221,698) | 13,920,233 |
| **Total PERS** | **68,956,398** | **-** | **1,446,581** | **70,402,979** | **(117,788,914)** | **(8,867,279)** | **(3,041,468)** | **(129,697,661)** | **(59,294,682)** |
| **Teachers' Retirement System (TRS)** | | | | | | | | | |
| Defined Benefit Plans: | | | | | | | | | |
| Retirement Pension Trust | 4,920,225 | - | 4,792 | 4,925,017 | (42,806,512) | (123,091) | (198,347) | (43,127,950) | (38,202,933) |
| Retirement Health Care Trust | 1,820,590 | - | 517,931 | 2,338,521 | (11,983,791) | - | (660,505) | (12,644,296) | (10,305,775) |
| Total Defined Benefit Plans | 6,740,815 | - | 522,723 | 7,263,538 | (54,790,303) | (123,091) | (858,852) | (55,772,246) | (48,508,708) |
| Defined Contribution Plans: | | | | | | | | | |
| Participant Directed Retirement | 5,796,391 | - | - | 5,796,391 | - | (2,635,871) | (333,109) | (2,968,980) | 2,827,411 |
| Health Reimbursement Arrangement [a] | 1,106,281 | - | - | 1,106,281 | (9,956) | - | (2,024) | (11,980) | 1,094,301 |
| Retiree Medical Plan [a] | 334,498 | - | 506 | 335,004 | (22,254) | - | (1,498) | (23,752) | 311,252 |
| Occupational Death and Disability [a] | 31,194 | - | - | 31,194 | (2,025) | - | (54) | (2,079) | 29,115 |
| Total Defined Contribution Plans | 7,268,364 | - | 506 | 7,268,870 | (34,235) | (2,635,871) | (336,685) | (3,006,791) | 4,262,079 |
| **Total TRS** | **14,009,179** | **-** | **523,229** | **14,532,408** | **(54,824,538)** | **(2,758,962)** | **(1,195,537)** | **(58,779,037)** | **(44,246,629)** |
| **Judicial Retirement System (JRS)** | | | | | | | | | |
| Defined Benefit Plan Retirement Pension Trust | 677,193 | - | - | 677,193 | (1,210,123) | - | (4,326) | (1,214,449) | (537,256) |
| Defined Benefit Plan Retirement Health Care Trust | 69,892 | - | 4,742 | 74,634 | (89,154) | - | (5,699) | (94,853) | (20,219) |
| **Total JRS** | **747,085** | **-** | **4,742** | **751,827** | **(1,299,277)** | **-** | **(10,025)** | **(1,309,302)** | **(557,475)** |
| **National Guard/Naval Militia Retirement System (NGNMRS)** | | | | | | | | | |
| Defined Benefit Plan Retirement Pension Trust [a] | - | - | - | - | (131,361) | - | (7,492) | (138,853) | (138,853) |
| **Other Participant Directed Plans** | | | | | | | | | |
| Supplemental Annuity Plan (SBS) | 20,170,846 | - | - | 20,170,846 | - | (22,633,124) | (966,201) | (23,599,325) | (3,428,479) |
| Deferred Compensation Plan [b] (DCP) | 3,929,739 | - | - | 3,929,739 | - | (6,325,712) | (290,629) | (6,616,341) | (2,686,602) |
| **Total All Funds** | **107,813,247** | **-** | **1,974,552** | **109,787,799** | **(174,044,090)** | **(40,585,077)** | **-** | **(220,140,519)** | **(110,352,720)** |
| Total Non-Participant Directed | 61,061,712 | - | 1,974,552 | 63,036,264 | (174,044,090) | (776,106) | (3,152,720) | (177,972,916) | (114,936,652) |
| Total Participant Directed | 46,751,535 | - | - | 46,751,535 | - | (39,808,971) | (2,358,632) | (42,167,603) | 4,583,932 |
| **Total All Funds** | **$ 107,813,247** | **$ -** | **$ 1,974,552** | **$ 109,787,799** | **$ (174,044,090)** | **$ (40,585,077)** | **$ (5,511,352)** | **$ (220,140,519)** | **$ (110,352,720)** |

(a) Employer only contributions.
(b) Employee only contributions.

**ALASKA RETIREMENT MANAGEMENT BOARD**
**SCHEDULE OF NON-INVESTMENT CHANGES BY FUND**
**(Supplement to the Treasury Division Report)**
**For the Four Months Ending October 31, 2021**

## 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 | $ 22,996 | $ - | $ 320,096 | $ 136,630 | $ 479,722 | 0.3% |
| Death Benefit | 411,546 | 341,287 | 4,529,318 | 959,910 | 6,242,061 | 3.5% |
| Disability / Hardship | 37,519 | - | 33,915 | 20,783 | 92,217 | 0.1% |
| Minimum Required Distribution | 48,471 | 25,835 | 3,986,393 | 1,552,981 | 5,613,680 | 3.2% |
| Qualified Domestic Relations Order | 113,518 | 60,669 | 1,918,363 | 243,808 | 2,336,358 | 1.3% |
| Separation from Service / Retirement | 32,275,956 | 13,215,233 | 91,275,255 | 23,811,617 | 160,578,061 | 90.7% |
| Purchase of Service Credit | - | 9,011 | 315,438 | 91,051 | 415,500 | 0.2% |
| 59 1/2 In-service Distribution | - | - | - | 1,162,117 | 1,162,117 | 0.7% |
| TOTAL | $ 32,910,006 | $ 13,652,035 | $ 102,378,778 | $ 27,978,897 | $ 176,919,716 | 100.0% |

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

| Vesting | PERS DCR Plan | TRS DCR Plan | TOTAL | % of Total |
|---|---|---|---|---|
| 100% Vested | $ 29,591,035 | $ 12,273,986 | $ 41,865,021 | 89.9% |
| 75% Vested | 527,179 | 416,736 | 943,915 | 2.0% |
| 50% Vested | 815,420 | 396,727 | 1,212,147 | 2.6% |
| 25% Vested | 908,496 | 243,710 | 1,152,206 | 2.5% |
| 0% Vested | 1,067,876 | 320,876 | 1,388,752 | 3.0% |
| TOTAL | $ 32,910,006 | $ 13,652,035 | $ 46,562,041 | 100.0% |

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

| | PERS DB Pension Plan | | | | TRS DB Pension Plan | | | JRS | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| Contribution Type | Tier 1 | Tier 2 | Tier 3 | Total | Tier 1 | Tier 2 | Total | DB Pension Plan | DB Pension Plan |
| Mandatory Vested | $ 192,799 | $ 919,999 | $ 761,710 | $ 1,874,508 | $ - | $ 196,538 | $ 196,538 | $ - | $ 2,071,046.00 |
| Mandatory Non-Vested | 58,586 | 49,337 | 212,764 | 320,687 | 109,451 | 471,393 | 580,844 | - | 901,531 |
| Geographic Differential | - | 83,161 | 46,669 | 129,830 | - | - | - | - | 129,830 |
| Voluntary Full | 161,859 | 404,513 | 322,394 | 888,766 | - | - | - | - | 888,766 |
| Indebtedness, Lagging & Partial | 3,232 | 12,384 | 115,217 | 130,833 | - | 18,598 | 18,598 | - | 149,431 |
| TOTAL | $ 416,476 | $ 1,469,394 | $ 1,458,754 | $ 3,344,624 | $ 109,451 | $ 686,529 | $ 795,980 | $ - | $ 4,140,604 |

## Notes for the DRB Supplement to the Treasury Report

October 2021

This report is the DRB supplement to the Treasury Division's Financial Report. It expands the "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. This report 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 four months of Fiscal Year 2022, while page two shows only the month of October 2021.

Highlights – On page one, for the four months ending October 31, 2021:

- PERS DB Pension – Average employer and employee contributions of $34.9 million per month; benefit payments of approximately $78.5 million per month; refunds average $812 thousand; and administrative and investment expenditures of $688 thousand per month (DOR and DRB).
- PERS DB Healthcare – Average employer contributions of $5.4 million per month; benefit payments of approximately $38.3 million per month; other income of $5.7 million from OptumRx EGWP Subsidies; $7.1 million from OptumRx pharmacy rebate (most recently received in August for 2nd Qtr 2021); $134 thousand from Aetna pharmacy rebate (most recently received in September for 1st Qtr 2021); $5.2 million from EGWP coverage gap discount plan (CGDP) (most recently received in July for 1st Qtr 2021); and average administrative and investment expenditures of $698 thousand per month (DOR and DRB).
- PERS DC Pension – Average employer and employee contributions of $15.7 million per month; participant disbursements average $7.1 million per month; and average administrative and investment expenditures of $588 thousand per month (DOR and DRB).
- PERS DCR Health – For HRA, RMP, and OD&D, only employer contributions average $5.7 million per month on behalf of participating employees; benefit payments of approximately $157 thousand per month. Currently, 14 benefits are being paid from the Occupational Death & Disability plans, 94 retirees are participating in RMP, and 133 retirees are participating in HRA. Other income of $13 thousand from OptumRx EGWP Subsidies; $11 thousand from OptumRx pharmacy rebate (most recently received in August for 2nd Qtr 2021); $61 thousand from Aetna pharmacy rebate (most recently received in September for 1st Qtr 2021); $4 hundred from EGWP coverage gap discount plan (CGDP) (most recently received in July for 1st Qtr 2021); and administrative and investment expenditures were approximately $15 thousand per month (DOR and DRB).
- TRS DB Pension - Average employer and employee contributions of $4.2 million per month; benefit payments of approximately $42.5 million per month; refunds average $180 thousand; and average administrative and investment expenditures of $305 thousand per month (DOR and DRB).
- TRS DB Healthcare – Average employer contributions of $1.6 million per month; benefit payments of approximately $12.5 million per month; other income of $2.1 million from OptumRx EGWP Subsidies; $2.2 million from OptumRx pharmacy rebate (most recently received in August for 2nd Qtr 2021); $61 thousand from Aetna pharmacy rebate (most recently received in September for 1st Qtr 2021); $1.8 million from EGWP coverage gap discount plan (CGDP) (most recently received in July for 1st Qtr 2021); and average administrative and investment expenditures of $592 thousand per month (DOR and DRB).

- TRS DC Pension – Average employer and employee contributions of $4.7 million per month; participant disbursements average $2.9 million per month; and average administrative and investment expenditures of $206 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 $40 thousand per month. Currently, 1 benefit is being paid from the Occupational Death & Disability plans, 27 retirees are participating in RMP, and 39 retirees are participating in HRA. Other income of $2 thousand was received from monthly OptumRx EGWP Subsidies; $4 hundred from OptumRx pharmacy rebate (most recently received in August for 2nd Qtr 2021); and administrative and investment expenditures were approximately $5 thousand per month (DOR and DRB).
- JRS Pension – Average employer and employee contributions of $793 thousand per month; benefit payments of approximately $1.2 million per month; and average administrative and investment expenditures of $8 thousand per month (DOR and DRB).
- JRS Healthcare – Average employer contributions of $57 thousand per month; benefit payments of approximately $105 thousand per month. Other income of $17 thousand from OptumRx EGWP Subsidies; $13 thousand from OptumRx pharmacy rebate (most recently received in August for 2nd Qtr 2021); $8 dollars from Aetna pharmacy rebate (most recently received in September for 1st Qtr 2021); $18 thousand from EGWP coverage gap discount plan (CGDP) (most recently received in July for 1st Qtr 2021); and average administrative and investment expenditures of $6 thousand per month (DOR and DRB).
- NGNMRS – A combination of lump-sum and monthly benefit payments of $103 thousand per month; and average administrative and investment expenditures of $26 thousand per month (DOR and DRB).
- SBS – Average employer and employee contributions and transfers in of $14.7 million per month. Participant disbursements average of $23.3 million per month; and average administrative and investment expenditures of $623 thousand per month (DOR and DRB).
- Deferred Compensation – Average member-only contributions and transfers in of $3.7 million per month; participant disbursements average of $6.7 million per month; and average administrative and investment expenditures of $207 thousand per month (DOR and DRB).

Highlights – On page two, activity for the one month of October 2021 only:

- PERS DB Healthcare – Other Income of $1.4 million from OptumRx EGWP Subsidy.
- TRS DB Healthcare – Other Income of $518 thousand from OptumRx EGWP Subsidy.
- JRS DB Healthcare – Other Income of $5 thousand from OptumRx EGWP Subsidy.
- All other funds – Nothing significant to report.

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

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Target Date Funds – Building Block Modification | ACTION: | **X** |
| DATE: | December 2-3, 2021 | INFORMATION: | |

BACKGROUND

The participant directed plans under the fiduciary responsibility of Alaska Retirement Management Board (ARMB)—Deferred Compensation Plan, Supplemental Annuity Plan and PERS/TRS Defined Contribution Retirement Plans—offer target date and balanced trusts for the plan participants. The characteristics of the Balanced, Long Term Balanced, and Target Date Trusts are determined by an allocation to underlying building blocks trusts. These building blocks include: U.S. Equity, International Equity (including Emerging Markets), U.S. Bond, and Money Market trusts.

The values of the building block fund trusts, as of September 30, 2021 were:

| | |
|---|---|
| Money Market | $249,046,437 |
| U.S. Bond | $1,630,121,884 |
| U.S. Equity | $2,154,391,180 |
| International Equity | $939,047,288 |
| Total | $4,972,606,789 |

STATUS

The building block trusts are currently managed as enhanced indexes. For the last 10 years, this has resulted in the Alaska Target Date Trusts posting excess returns, net of fees and expenses, between 0 and 7 basis points for all vintages.

Recent negotiations between staff and T. Rowe Price (TRP) have focused on how to offer the least expensive product to participants, with the most potential to outperform, based on TRP's product offerings and extensive knowledge of the industry.

During this analysis, TRP presented several options for reducing costs and providing excess return, and eventually put forward two options for recommended changes to the current structure:

- Option #1, or the T. Rowe Price Building Block Trust (TRP BBT) + Active structure, takes the existing ARMB investment options and implements them using TRP's commingled funds, as well as adding three active TRP funds to the mix. These three funds include the Structured Research Trust, the International Core Equity Trust, and the U.S. High Yield Trust. This structural change will allow for a reduction in weighted average total fees from

10.75bps to 9.92bps. Additional structural changes in this option include the removal of Floating Rate Agreements (FRAs) within the U.S. Bond Trust and moving the Treasury Inflation-Protected Securities (TIPS) allocation out of the U.S. Bond Trust and into the Money Market Trust to use in lieu of the current money market investments.

- Option #2, or the TRP BBT structure, takes the existing ARMB investment options and implements them using TRP's commingled funds, allowing a reduction in total fees from 10.75bps to 5.75bps. The most significant changes in this option include the removal of FRAs within the U.S. Bond Trust and moving the TIPS allocation out of U.S. Bond Trust and into the Money Market Trust to use in lieu of the current money market investments.

Staff recommends Option #1 since it allows TRP to target higher excess returns at a modestly lower cost.

RECOMMENDATION

The Alaska Retirement Management Board direct staff to amend the contract with T. Rowe to implement Option #1, the TRP BBT + Active structure.

# ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Proposed Revisions to the ARMB Investment Policy & Procedures Manual

ACTION: X

DATE: December 2, 2021

INFORMATION: _____

BACKGROUND

The Alaska Retirement Management Board (ARMB) Board of Trustees Investment Policy and Procedures Manual states:

> *ARMB, through the Liaison Officer of the Department of Revenue, shall annually revisit the need to update or supplement provisions contained in this manual. A report at least once a year with regard to updating the manual shall be delivered to ARMB.*

In addition, at the September 16, 2020 Operations Committee meeting, there was a discussion pertaining to trustee travel and honoraria paid for the last five years. At the December 2, 2020 and September 22, 2021 Operations Committee meetings, Director Leary presented a schedule of travel and honoraria payments. The request was made to have the information presented on an annual basis. Chair Johnson directed staff to present a draft of the change to the manual, adding an annual presentation of this data for the Committee and Board's consideration at the next meeting.

STATUS

Staff reviewed the current version of the ARMB Board of Trustees Investment Policy and Procedures Manual and proposes the following edits:

- Add Titles to Appendices.
- Remove Plan Detail, Asset Allocation and Other Information from the front of the manual and add a link to the ARMB webpage which reflects the most current information to the Introduction section.
- Update to III. B. 1. to reflect total amount of investments as of June 30, 2021.
- Remove listing under **III. C. Investment Policies and Guidelines** and add link to ARMB Investment Policies webpage.
- Add the following text under **Education, Training, Travel and Reimbursement**, located under **III. D. Operating Procedures:**

  > *The Board will review travel, honorarium, and meeting costs annually, at the first meeting after fiscal year end.*

RECOMMENDATION

The Alaska Retirement Management Board approve the changes to the Alaska Retirement Management Board of Trustees Investment Policy & Procedures Manual, as indicated in the red-line edits in the attached draft of the manual.


# Alaska Retirement Management Board

# Board of Trustees Investment Policy and Procedures Manual

**~~2020~~2021**

## Table of Contents

~~**Alaska Retirement Management Board**~~
~~**Board of Trustees Investment Policy and Procedures Manual – Plan Details**~~
~~**As of June 30, 2019**~~

~~***Plan Details***~~

| | ~~**Market Value**~~ | ~~**Target Asset Allocation**~~ | ~~**Return Objective**~~ |
|---|---|---|---|
| ~~**Public Employees' Retirement System**~~ | ~~19,064,410,942~~ | ~~A/Participant Directed~~ | ~~7.38%~~ |
| ~~**Teachers' Retirement System**~~ | ~~9,132,996,832~~ | ~~A/Participant Directed~~ | ~~7.38%~~ |
| ~~**Judicial Retirement System**~~ | ~~217,097,648~~ | ~~A~~ | ~~7.38%~~ |
| ~~**Alaska National Guard and Alaska Naval Militia Retirement System**~~ | ~~40,994,203~~ | ~~B~~ | ~~7.00%~~ |
| ~~**Supplemental Benefits System**~~ | ~~4,111,631,106~~ | ~~Participant Directed~~ | ~~Participant Directed~~ |
| ~~**Deferred Compensation Plan**~~ | ~~983,593,517~~ | ~~Participant Directed~~ | ~~Participant Directed~~ |
| ~~**Total**~~ | ~~**33,550,724,248**~~ | | |

~~***Asset Allocation***~~

~~Target Asset Allocation A:~~

| ~~**Asset Class**~~ | ~~**Allocation**~~ | ~~**Range**~~ | ~~**Benchmark**~~ |
|---|---|---|---|
| ~~Broad Domestic Equity~~ | ~~26%~~ | ~~+/- 6%~~ | ~~Russell 3000~~ |
| ~~Global Equity Ex-US~~ | ~~18%~~ | ~~+/- 4%~~ | ~~MSCI ACWI Ex-US MI Net~~ |
| ~~Fixed Income~~ | ~~24%~~ | ~~+/- 6%~~ | ~~BB US Aggregate~~ |
| ~~Opportunistic~~ | ~~8%~~ | ~~+/- 4%~~ | ~~60% Russell 1000~~<br>~~40% BB US Aggregate~~ |
| ~~Real Assets~~ | ~~13%~~ | ~~+/- 7%~~ | ~~45.5% NCREIF Total~~<br>~~25% NCREIF Farmland~~<br>~~10% NCREIF Timberland~~<br>~~17.5% Global Infrastructure~~<br>~~2% FTSE NAREIT All Equity~~ |
| ~~Private Equity~~ | ~~11%~~ | ~~+/- 6%~~ | ~~1/3 S&P 500~~<br>~~1/3 Russell 2000~~<br>~~1/3 MSCI EAFE Net~~ |
| ~~**Total**~~ | ~~**100%**~~ | | |

~~Target Asset Allocation B:~~

| ~~**Asset Class**~~ | ~~**Allocation**~~ | ~~**Range**~~ | ~~**Benchmark**~~ |
|---|---|---|---|
| ~~Broad Domestic Equity~~ | ~~26%~~ | ~~+/- 6%~~ | ~~Russell 3000~~ |
| ~~Global Equity Ex-US~~ | ~~21%~~ | ~~+/- 4%~~ | ~~MSCI ACWI Ex-US MI Net~~ |
| ~~Fixed Income~~ | ~~45%~~ | ~~+/- 10%~~ | ~~BB US Aggregate~~ |

| | | | |
|---|---|---|---|
| ~~Opportunistic~~ | ~~8%~~ | ~~+/- 5%~~ | ~~60% Russell 1000~~<br>~~40% BB US Aggregate~~ |
| ~~Cash Equivalents~~ | ~~0%~~ | ~~+/- 3%~~ | ~~3-Month Treasury Bill~~ |
| ~~**Total**~~ | ~~**100%**~~ | | |

~~***Other information:***~~

- ~~***Custodian*** – State Street Bank~~
- ~~***Auditor*** - KPMG~~
- ~~***Consultants*** – Callan for investment management, Buck and Gabriel, Roeder, Smith & Company for actuarial services~~
- ~~***Record Keeper*** - Empower~~
- ~~***Physical Location*** – 333 Willoughby Avenue, Juneau, Alaska 99811~~
- ~~***Mailing address*** – P.O. Box 110405, Juneau, Alaska 99811-0405~~

# I. Introduction

The purpose of this manual is to provide the Alaska Retirement Management Board (ARMB) with a comprehensive set of guidelines for proper management of its investment decisions. The guidelines set forth are not binding but are intended to provide guidance and consistency when making decisions. ARMB, in its role as a fiduciary, is obligated to follow a procedurally prudent process when investing the trust assets. Fiduciary prudence is based on the conduct of the Trustees in managing the assets and is evaluated by the *process* through which risk is managed, assets are allocated, managers are chosen, and results are supervised and monitored.

Evolving legal standards have made clear the legal responsibility of fiduciaries to manage a plan's assets in a prudent manner, and the guidelines contained in this manual are based on the relevant legislation and regulations confronted by public pension funds. However, the guidelines go beyond simply outlining legally prudent management of investment decisions--they are intended to assist the Trustees with long-term success in investing the plan's assets.

Today's prudence standard places the emphasis on fiduciary responsibility regarding the portfolio and its purpose, rather than on the performance of the plan. Trustees as fiduciaries have the responsibility for the general management of the plan's assets. They are responsible for setting and overseeing the implementation of the fund's investment policy but need not be investment managers or investment specialists and are not responsible for the ultimate investment results. Although it is not possible to guarantee investment success, following the process outlined in this manual will significantly improve the odds of structuring an investment portfolio which will stand up to public scrutiny and benefit the plan's beneficiaries by providing an acceptable long-run return.

This manual, although comprehensive in its coverage, by its very nature does not provide an in-depth analysis of important issues that Trustees must deal with when investing the plan's assets. It therefore should not be viewed as the only "tool" required by the Trustees for prudent investment management, but rather as one component of the Trustees' "educational tool kit," to be used in conjunction with continuing education and the advice and services of staff, investment consultants and investment managers. The ARMB website (https://treasury.dor.alaska.gov/ARMB) contains current and historical information that may provide additional context for investment decisions including asset allocations, monthly financial and quarterly investment reports.

## II. ARMB Statutes
## Fiduciary and General Responsibilities

## II. A. Statutes

The Alaska Retirement Management Board (ARMB) was established by the Legislature in 2005 as the successor to the Alaska State Pension Investment Board (ASPIB) which had been created by the legislature in 1992.

The purpose of ARMB is to serve as the trustee of the assets of the state's retirement systems, the State of Alaska Supplemental Annuity Plan, the deferred compensation program for state employees, and the Alaska retiree health care trusts established under AS 39.30.097. Consistent with standards of prudence and in coordination with the respective funding and benefit policies, the board has the fiduciary obligation to manage and invest these assets in a manner that is sufficient to meet the liabilities and obligations of the systems, plan, program, and trusts.

The Alaska Retirement Management Board consists of nine trustees, as follows: Two members, consisting of the commissioner of administration and the commissioner of revenue; two trustees who are members of the general public (who may not hold another state office, position or employment and may not be members or beneficiaries of the system); one trustee who is employed as a finance officer for a political subdivision participating in either the PERS or TRS system; two trustees who are members of PERS; and two trustees who are members of TRS. The trustees representing PERS and TRS participants are selected from a list of four nominees submitted by the respective bargaining units. The seven trustees other than the two commissioners must meet residency requirements and be professionally credentialed or have recognized competence in investment management, finance, banking, economics, accounting, pension administration, or actuarial analysis.

The operational structure for ARMB is set forth in AS 37.10.210-390. These provisions set forth the powers and duties of ARMB and provide application of other provisions of law to ARMB (such as conflicts of interest), prescribe rules for regulations and open meetings, procurement, compensation, staff, an Investment Advisory Board (IAC), insurance, exemption from taxation, limitations on ARMB activity in the areas of banking or private trust activity and lending, and definitions.

ARMB is charged with fiduciary responsibility for funds held in trust for the beneficiaries of TRS and PERS defined benefit plans and is also charged as fiduciary and investor of funds held in trust for the beneficiaries of the Defined Contribution Retirement Plan, the Health Reimbursement Arrangement Plan, Supplemental Benefit System (SBS), the State's Deferred Compensation System, the Judicial Retirement System, and the Alaska National Guard and Naval Militia Retirement Trust Fund (Military Retirement System). The Department of Revenue, by law, provides staffing for ARMB, and ARMB is placed for purposes of organization in the executive branch within the Department of Revenue. As such, ARMB's annual operating budget is presented by the Department of Revenue to the legislature for appropriation, but ARMB develops that budget in consultation with the Department of Revenue. The Department of Administration operates and administers the retirement systems, SBS and Deferred Compensation Plans.

General provisions and administrative aspects of ARMB are contained in Section 37.10 (Alaska Retirement Management Board), Section 44.25 (Department of Revenue), Section 39.25 (State Personnel Act), Section 14.25 (Teachers' Retirement Plan), Section 22.25 (Judicial Retirement Trust), Section 39.45 (State Deferred Compensation Plan), and Section 39.30 (State Supplemental Benefits System).

## II. B. Fiduciary Responsibilities of the Various Parties

The fiduciary responsibilities of ARMB are prescribed by statute, particularly the provisions set forth in AS 37.10.071:

> *"In exercising investment, custodial or depository powers or duties, ARMB as fiduciary shall apply the prudent investor rule and exercise the fiduciary standard in the sole financial best interest of the funds entrusted to ARMB. Among beneficiaries of a fund, the fiduciaries shall treat beneficiaries with impartiality.*

This statutory standard would likely be applied by the court through the application of principles set forth in the Restatement (Third) of Trusts and in many respects ERISA. As outlined by the Restatement (Third) of Trusts, the fiduciary responsibilities of the ARMB Board of Trustees are the following:

1. All actions are for the sole benefit of the plan participants.

2. Prepare written investment policies and document the process. In doing so the Trustees must:

    - Determine the fund's missions and objectives;
    - Choose an appropriate asset allocation strategy;
    - Establish specific investment policies consistent with the fund's objectives; and
    - Select investment managers to implement the investment policy.

3. Diversify assets with regard to specific risk/return objectives for the participants/beneficiaries.

4. Use "prudent experts" to make investment decisions.

5. Control investment expenses.

6. Monitor the activities of all investment managers and investment consultants.

7. Avoid conflicts of interest.

ARMB and staff should regularly undertake continuing education relevant for their duties. Specifically, all Trustees and key staff should participate in an educational program which provides basic instruction on the four primary components of the investment management process:

- Fiduciary responsibility and procedural process;
- Developing investment policy guidelines and designing optimal investment manager structures;
- Implementing investment policy; and
- Monitoring and controlling an investment program.

Fiduciaries, including investment managers and others who are determined to be fiduciaries, are entitled to certain indemnification by ARMB and the State of Alaska. AS 37.10.071(e) provides that the State shall indemnify such fiduciaries against liability to the extent that the alleged act or omission was performed in good faith and was prudent under the applicable standard of prudence. However, actions which do not fall within the area of good faith and prudent practices are not statutorily entitled to indemnification. Indemnification language consistent with AS 37.10.071(e), as well as the desire of ARMB to hold appointed investment managers and other appointed fiduciaries to high standards, is included in contract language with such retained consultants.

Under AS 37.10.280, ARMB is required to ensure that trust assets and its own services are protected and in that respect ARMB may purchase insurance or provide for self-insurance retention in amounts recommended by the Commissioner of Revenue and approved by ARMB to cover the acts including fiduciary acts, errors and omissions of its Board members and agents. The law requires that insurance must protect ARMB and the State from liability to others and from loss of trust assets due to the acts or omissions of the trustees.

As a general matter, the Attorney General has advised members of boards analogous to that of ARMB that it would act in defense of such board member actions consistent with the provisions of AS 37.10.071(e) or would retain such counsel to act in that regard.

A fiduciary under Alaska law relating to ARMB is the Board, each trustee who serves on ARMB, and "any other person who exercises control or authority with respect to management or disposition of assets for which the Board is responsible or who gives investment advice to the Board". (AS 37.10.071(f)(2)) In this respect, the consultants retained by ARMB are not fiduciaries per se and as such are not entitled to the cross-indemnification for acts which were taken in good faith or within the scope of prudent behavior under AS 37.10.071. However, such consultants would certainly be held to a standard of care applicable to their standards of professional responsibility, and liability and requirement to indemnify ARMB may be built into contracts. Actuaries, auditors, and investment consultants are not fiduciaries within the statutory definition of a fiduciary of ARMB funds because they do not control or have authority with respect to management or disposition of assets or give investment advice. However, a custodial bank may have certain fiduciary obligations to the extent that, for example, it is involved in short-term cash management and securities lending functions if such services are utilized.

## II. C. Code of Ethics and Conflicts of Interest

ARMB and its trustees, and employees of the Department of Revenue, are subject to the Alaska Executive Branch Ethics Act (AS 39.52). In general, the act provides that high moral and ethical standards are essential for the conduct of free government and that a Code of Ethics for the guidance of public officers will discourage those officers from acting upon personal or financial interests in the performance of their public responsibilities~~,~~ and will improve standards for public service and promote and strengthen faith and confidence in public officers.

The Code of Ethics provides that any effort to benefit a personal or financial interest through official action is a violation. The Code details specific prohibitions pertaining to the abuse of official position, acceptance of gifts, improper use of disclosure of information and improper influence. Perhaps the most common potential for a violation of the Ethics Act arises under the improper gift provision which has been interpreted in regulation and attorney general's opinion from time to time. AS 39.52.130 provides:

"***Improper gifts.*** (a) A public officer may not solicit, accept, or receive, directly or indirectly, a gift, whether in the form of money, service, loan, travel, entertainment, hospitality, employment, promise, or in any other form, that is a benefit to the officer's personal or financial interests, under circumstances in which it could reasonably be inferred that the gift is intended to influence the performance of official duties, actions, or judgment. A gift from a person required to register as a lobbyist under AS 24.45.041 to a public officer or a public officer's immediate family member is presumed to be intended to influence the performance of official duties, actions, or judgment unless the giver is an immediate family member of the person receiving the gift.

(b) Notice of the receipt by a public officer of a gift with a value in excess of $150, including the name of the giver and a description of the gift and its approximate value, must be provided to the designated supervisor within 30 days after the date of its receipt

(1) if the public officer may take or withhold official action that affects the giver; or

(2) if the gift is connected to the public officer's governmental status.

(c) In accordance with AS 39.52.240, a designated supervisor may request guidance from the attorney general concerning whether acceptance of a particular gift is prohibited.

(d) The restrictions relating to gifts imposed by this section do not apply to a campaign contribution to a candidate for elective office if the contribution complies with laws and regulations governing elections and campaign disclosure.

(e) A public officer who, on behalf of the state, accepts a gift from another government or from an official of another government shall, within 60 days after its receipt, notify the Office of the Governor in writing. The Office of the Governor shall determine the appropriate disposition of the gift. In this subsection, "another government" means a foreign government or the government of the United States, another state, a municipality, or another jurisdiction.

(f) A public officer who knows or reasonably ought to know that a family member has received a gift because of the family member's connection with the public office held by the public officer shall report the receipt of the gift by the family member to the public officer's designated supervisor if the gift would have to be reported under this section if it had been received by the public officer or if receipt of the gift by a public officer would be prohibited under this section.

The Executive Branch Ethics Act requires disclosure and requires reports of potential violations. ARMB's "designated supervisor" with respect to delivery of notices of potential violation would be the Chair of ARMB.

In addition, transaction disclosure statements are required for all members of ARMB, members of ARMB's IAC, and the Deputy Commissioner for Treasury, the Treasury Division's investment officers in the portfolio management section, the director, and the comptroller. ARMB has in place regulations required by law to restrict trustees from having a substantial interest in any entity or project in which assets under the control of ARMB are invested.

By law, the trustees are subject to conflict-of-interest disclosure requirements of AS 39.50 which includes the delivery of annual reports on financial and business interests to the Alaska Public Officers Commission.

The Department of Revenue has in place policies and procedures which implement the Executive Branch Ethics Act to preclude use of ARMB/Revenue-owned facilities by staff for personal use.

## II. D. General Responsibilities of the Various Parties

The ARMB is the fiduciary responsible for the formulation, implementation, and management of the funds under its supervision. ARMB has broad authority to engage experts and to delegate investment responsibilities as it deems appropriate. ARMB must report periodically to the Governor, the legislature, and employers participating in the retirement systems. ARMB coordinates certain activities with the Department of Administration. ARMB is staffed by the Department of Revenue and may contract for services necessary to carry out its powers and duties.

The principal entities include:
- Board of Trustees
- Investment Advisory Council
- Revenue Staff
- Auditor
- Actuaries
- Legal Counsel
- Bank Custodian(s)
- Investment Consultant(s)
- Investment Managers

**Board of Trustees – Summary of Responsibilities**

- Maintain fiduciary responsibility for the invested assets of the Public Employees', Teachers', Defined Contribution, Judicial, and Military Retirement Systems, the Health Reimbursement Arrangement Plan, Supplemental Benefits System, and the Deferred Compensation Program;
- Establish investment policies;
- Review the performance of each plan;
- Review actuarial assumptions, set contribution rates as required by statute;
- Adopt asset allocations for each plan;
- Conduct an asset/liability study at least every five years or when market conditions, liabilities, or funding assumptions materially change;
- Select consultants, external investment managers, Investment Advisory Council (IAC) members, legal counsel and custodian;
- Discuss and evaluate reports from the IAC;
- Develop annual budget;
- Engage independent certified public accountant to perform annual audit;
- Engage independent actuary to review and certify actuarial and health plan valuations made by the state actuary;
- Engage independent audit of the state actuary;
- Engage independent audit of state's performance consultant;
- Provide training and investment education for trustees;
- Report financial and investment policies and performance to the Governor and participating employees;

- Submit quarterly and long-range investment reports to the Legislative Budget and Audit Committee; and
- Engage in the education of trustees.

**Investment Advisory Council – Summary of Responsibilities**

- Review investment policies, strategies and procedures;
- Make recommendations concerning policies, investment strategies and procedures;
- Advise Board regarding selection of investment consultant and investment managers;
- Provide other advice as requested by ARMB;
- Attend all Board meetings, with individual Council members providing an individual report either on a topic requested or on a topic they feel important to present, at the request of the ARMB or staff; and,
- Engage in education of Trustees.

The Council consists of three members (although more could be appointed); it is desirable to obtain the widest range of viewpoints from the Council. To that end, selection of council members will be made to give preference among the three appointments to the following categories in addition to the statutory required qualifications:

Seat One:
The candidate shall possess experience and expertise in financial investments and management of investment portfolios for public, corporate or union pension benefit funds, foundations, or endowments. Preference will be given to candidates with a minimum of ten years' experience as a manager/director or trustee of a pension or public fund of $10 billion or more in market value.

Seat Two:
The candidate shall possess experience and expertise in financial investments and management of investment portfolios for public, corporate or union pension benefit funds, foundations, or endowments. Preference will be given to candidates with a minimum of two years' experience in portfolio management of a fund of $2 billion or more in market value.

Seat Three:
The candidate shall be a professor (preferably full-time) of investment theory or a closely related discipline at an accredited college or university. The candidate shall possess experience and expertise in financial investments and management of investment portfolios for public, corporate or union pension benefit funds, foundations, or endowments. Preference will be given to candidates who demonstrate significant experience, including a minimum of five (5) years as an academic.

**Department of Revenue Staff – Summary of Responsibilities**

Treasury Division Director

Under the policy and executive direction of the Commissioner of Revenue, and acting as State Treasurer:

- Maintain responsibility for the administration and management of the Treasury Division, including debt, cash, comptroller, and investment functions;
- Ensure Treasury and ARMB compliance with Alaska statutes, Alaska Administrative Code, Federal statutes, policies, and guidelines;
- Recommend and maintain information technology systems adequate to fulfill the accounting, monitoring, investing, cash management and other information needs of the Division;
- Prepare the annual ARMB budget for Board approval, recommend budget strategies and proposals to the Commissioner of Revenue and the ARMB; and
- Present Board approved proposals to the Legislature.

Liaison Officer To ARMB

Under the direction of the Treasury Division Director and, in conjunction with the ARMB or the ARMB Chair, the Liaison Officer to ARMB is responsible for coordinating general administrative functions for ARMB members. Duties include:

- Prepare and distribute agenda packets for Board members;
- Provide administrative assistance as necessary to Board members;
- Act as procurement officer for the board per written delegation;
- Update ARMB website as necessary;
- Coordinate and distribute annual reports, and other types of informational materials to the legislature, beneficiaries, and employees of the various retirement systems;
- Coordinate trustee nominations for the PERS and TRS designated seats with the appropriate bargaining units, ensuring notification and publication in accordance with regulations;
- Coordinate with state and reviewing actuary for completions of valuations and review process for presentation to the Board; and
- Other duties as assigned.

Chief Investment Officer

- Act as “prudent expert” on behalf of ARMB;
- Develop and recommend investment policy and strategy ARMB;
- Implement investment policy and strategy for ARMB;
- Manage specific portfolios with guidelines set by ARMB;
- Evaluate the results of the investment policies and performance of the portfolios;
- Manage investment officers with responsibilities for ARMB portfolios; and

- Manage and coordinate the services provided to the ARMB by consultants, external investment managers, Investment Advisory Council (IAC) members, legal counsel, and custodian.

Comptroller

- Develop, recommend, and implement internal control systems and procedures to ensure all investment assets are safeguarded;
- Account for and report on the investment activity of all funds under the investment responsibility of ARMB;
- Monitor investment managers and custodians for compliance with investment policies established by ARMB;
- Review and coordinate the update of the Departmental investment policy book; and
- Coordinate the annual audits of all funds in accordance with statutory requirements.

**Auditor – Summary of Responsibilities**

- Measure and validate financial statements and management of the plan;
- Work with ARMB Audit Committee in outlining annual audit plan, provide updates and answer any concerns expressed by the committee;
- The auditor is selected by Department of Administration. ARMB does not have a direct say over the work of the auditor; audits are based upon independent review consistent with the standards prescribed by the American Institute of Certified Public Accountants and its statement on auditing standards, and in conformance with generally accepted accounting principles and Government Accounting Standards Board guidelines.

**Bank Custodian – Summary of Responsibilities**

- Custodians are hired by, and responsible to, ARMB;
- Provide safekeeping and custody of all securities purchased by managers on behalf of the ARMB;
- Provide for timely settlement of securities transactions;
- Maintain short-term investment vehicles for investment of cash not invested by managers;
- Check all manager accounts daily to make sure that all available cash is invested;
- Collect interest, dividend, and principal payments on a timely basis;
- Process corporate actions;
- Price all securities at least on a monthly basis, preferably on a daily basis contingent on asset class and types of securities;
- Provide monthly, quarterly, and annual reports;
- Value and monitor derivatives and the trades from which they emanate;
- The Custodians generally are asked to provide data and reports directly to the ARMB and service providers on a regular basis; and
- Provide continuing education programs for the ARMB.

**Investment Consultants – Summary of Responsibilities**

ARMB selects and appoints investment consultants to provide objective, independent third-party advice on specific investment areas including real estate, alternative investments, and other areas where focused attention is needed. Investment consultants do not accept discretionary decision-making authority on behalf of ARMB. Investment consultants function in a research, evaluation, education, and due diligence capacity for ARMB and have fiduciary responsibilities for the quality of the service delivered.

- Investment Consultants are identified and hired by, and provide advice and services to, ARMB and to its staff. However, the investment consultants make no decisions on behalf of ARMB;
- Recommend strategic procedures and process;
- Identify problems, issues and opportunities and makes recommendations;
- Upon the request of ARMB, prepare an asset allocation study together with alternatives;
- Assist with manager structure, selection, monitoring and evaluation;
- Monitor and evaluate the overall performance of the portfolio
- Carry out special projects at the request of ARMB; and
- Provide continuing education to ARMB and staff, as appropriate.

**Investment Managers – Summary of Responsibilities**

- Act as a "prudent expert" on behalf of ARMB;
- Develop a portfolio strategy within the specific mandate and asset size determined by ARMB;
- Manage, purchase, and sell assets for the portfolio;
- The specific relationship (including fees, investment restriction, etc.) between each Manager and ARMB are outlined in the agreement between the Manager and ARMB; and
- Act as a co-fiduciary for assets under its management.

**Actuary**

- ARMB coordinates with the retirement system administrator to have an annual actuarial valuation of each retirement system prepared to determine system assets, accrued liabilities, and funding ratios and to certify to the appropriate budgetary authority of each employer in the system an appropriate contribution rate for normal costs and an appropriate contribution rate for liquidating any past service liability;
- ARMB reviews actuarial assumptions prepared and certified by the actuary and conducts experience analyses of the retirement systems not less than once every four years, except for health cost assumptions, which shall be reviewed annually;
- ARMB contracts with a reviewing actuary to certify the results of all actuarial assumptions prepared by the actuary before presentation to the board; and
- ARMB contracts for an independent audit of the state's actuary not less than once every four years.

**Legal Counsel**

- The Attorney General is legal counsel for ARMB.
- ARMB may retain an independent legal counsel, subject to approval of the Attorney General, to provide legal assistance as required.

# III. ARMB Program Structure

## A. Mission Statement

ARMB has adopted a mission statement and vision. ARMB also has adopted general goals that support fulfillment of the mission. Annually, specific objectives are developed and progress toward achievement of the specific objectives is regularly monitored.

**Mission Statement:** As fiduciaries, we will establish policy, set direction, and provide oversight and stewardship for the prudent investment and management of the fund.

**Vision on Purpose:** To be the best run and managed pension fund in the country.

Definition of "Best run and Managed"

1. Best financial performance: That we achieve superior investment returns on a risk-adjusted basis relative to ARMB's strategic asset allocation benchmark while limiting total risk to that of an average public sector plan over the long term.

2. Best process:

    - Good financial reporting;
    - Good manager selection and evaluation;
    - Asset allocation; and
    - Awareness of new investment alternatives (innovations in industry).

3. Best management:

    - Staff longevity;
    - Independence; and
    - Education and training.

4. Best communications with our constituents and stakeholders.

## B. Investment Policy Statement

### 1. Purpose and background

The Alaska Retirement Management Board (ARMB) was established by the Legislature in 2005 to serve as trustee for the assets of the state's defined benefit and defined contribution retirement systems, the State of Alaska Supplemental Annuity Plan, the deferred compensation program for state employees, and the Alaska retiree health care trusts. Consistent with standards of prudence, the board has the fiduciary obligation to manage and invest these assets in a manner that is sufficient to meet the liabilities and obligations of the systems, plan, program, and trusts.

As of June 30, ~~2019~~2021, the ARMB manages over $~~33~~ 42 billion of investments on behalf of a diverse set of over 16 retirement and benefits accounts, each with unique attributes including funding status and demographic profile. The two biggest defined benefit systems, the Public Employees' Retirement System (PERS) and the Teachers' Retirement System (TRS) are a large majority of the total assets. The funding objective of these plans, as adopted by the ARMB, is to set a contribution rate that will pay the normal cost and amortize the initial unfunded actuarial accrued liability and each subsequent annual change in the unfunded actuarial accrued liability over a rolling 25-year period. This funding objective is currently being met. The State of Alaska is the largest contributor to paying down the unfunded liability and the State is expected to make its contribution payments over the near term planning horizon. The demographics of PERS and TRS are such that over half of the total plan participants are retired and receiving benefits or otherwise no longer active in the system. Without investment gains, distributions out of PERS and TRS are now larger than payments into the systems. Like PERS and TRS, the other accounts that make up the system – the Judicial Retirement System (JRS) and the National Guard Naval Militia System (NGNMRS), have their own unique funding, demographic, and other attributes for the ARMB to consider.

## 2. Statement of Objectives

The ARMB's general investment goals are broad in nature. For the defined benefit plans under its responsibility, the overall objective of the ARMB investment program is to provide members and beneficiaries with benefits as required by law. This will be accomplished through a carefully planned and executed long-term investment program that efficiently and effectively allocates and manages the assets entrusted to the ARMB.

The investment policies have been designed to allow ARMB to seek its expected long-term total return. Reasonable and prudent risk-taking is appropriate within the context of overall diversification to meet ARMB long-term investment objectives. The assets of ARMB will be broadly diversified to reduce the effect of short-term losses within any investment program in a manner that controls the costs of administering and managing the portfolio.

Regarding the defined contribution plans under its responsibility, each participant has his or her own risk tolerance, time horizon, and investment objectives. Participants are responsible for their own investment decisions. To help meet these varying needs, the ARMB seeks to provide participants with an array of investment choices across a range of asset classes, risk levels, and investment strategies so they can construct and/or invest in portfolios that address their individual needs, and do so using investment vehicles and structures that provide competitive risk-adjusted returns at a reasonable cost.

**3. Investment Guidelines**

The ARMB endeavors to achieve its expected long-term total return, as determined by the actuarially-required rate of return, while minimizing risk as determined by the projected standard deviation of the range of potential future returns.

The target allocation of assets among various asset classes shall be approved by the ARMB. The asset allocation policy shall be predicated on the following factors:

- The historical performance and risk measures of capital markets adjusted for expectations of the future long-term capital market performance
- The correlation of returns and risk among the relevant asset classes
- The expectations of future economic conditions, including inflation and interest rate assumptions
- The projected liability stream of benefits and the costs of funding to both covered employees and employers
- The relationship between the current and projected assets of the plan and the projected actuarial liability stream.

This asset allocation policy will identify target allocations to the classes of assets ARMB can utilize and the ranges within which each can fluctuate as a percent of the total portfolio for each plan. At times the asset allocation for a plan may drift beyond the proscribed bands of the target allocation. At such times, staff will consider the costs and benefits of rebalancing the asset allocation to comply with the plan's asset allocation policy.

**4. Securities Guidelines**

The desired attributes of a security vary substantially by asset class. As such, care is taken by the ARMB to identify the types of securities that are allowable when formulating and updating the investment guidelines at the asset class level. Particular care is given when considering the inclusion of guideline language that would allow for leverage, shorting and the use of derivatives.

**5. Selection of Investment Managers**

The ARMB may use internal and external investment managers, subject to the Board's discretion. In selecting external investment managers, the ARMB will engage a consultant to conduct an investment manager search. Investment staff will work with the consultant to construct applicable search criteria which may include, but is not limited to:

- Relevant experience managing investments for institutional clients
- Stability in attracting and retaining high quality investment professionals
- A record of managing asset and client growth and an asset base sufficient to accommodate the ARMB's investment

- Performance reporting compliant with Global Investment Performance Standards (GIPS) where appropriate
- Competitive investment management fees

The consultant will recommend a group of semi-finalist candidates to staff. Staff will engage in additional research and due diligence and will recommend one or more of the semi-finalists to the ARMB for hiring consideration. Under certain circumstances, the ARMB may delegate investment manager hiring authority to staff or use a modified hiring process.

**6. Control procedures**

The ARMB has control procedures in place to monitor compliance with investment policies and objectives. The following parties have responsibility for elements of the investment monitoring and control process:

*Investment Consultant*

The ARMB's general Investment Consultant is a fiduciary and the primary source of asset allocation and investment manager performance information. At least annually, the Consultant will:

- Assist the ARMB in establishing long term goals and objectives that incorporate results from actuarial studies which the ARMB will provide to the Consultant.
- Develop risk guidelines that offer an acceptable likelihood of achieving the objectives.
- Develop forward-looking capital market assumptions.
- Optimize the risk-return characteristics for the funds.
- Document the entire asset allocation in a written formal report and present the report to ARMB at a regular meeting.

At least quarterly, the Consultant will provide the ARMB and Investment Staff with a performance report that, at minimum, includes information on:

- Rates of return presented in tables and graphs for the component portfolios, the asset and sub-asset classes, and the total investments for each of the funds for the past quarter as well as the past one, three, and five year periods.
- Performance comparisons using relevant investment universes and indexes for fund level returns as well as individual investment manager returns.
- Performance attribution analyses; market sensitivity analyses; measures of diversification, capital ratios, price-earnings ratios, turnover; comparisons by style of management and other comparisons or information that is relevant to the particular manager, pool or asset class.

The Consultant will be available regularly to discuss the performance information with the ARMB.

*Chief Investment Officer and Investment Staff*

The ARMB's Chief Investment Officer (CIO) and Investment Staff advise on, implement, and monitor the board's investment program. Investment Staff is responsible for a variety of investment functions and provide the following investment controls that are reported to the ARMB:

- The CIO makes recommendations to the board on asset allocation and periodically rebalances the investment portfolio so that it remains compliant with the ARMB asset allocation. All rebalancing and manager allocation changes are regularly communicated to the ARMB Chair and communicated to the full ARMB at the next regular meeting.
- On an ongoing basis, often daily, the Investment Staff monitors managers using quantitative techniques, consultant information, discussions with managers, on-site due diligence, and other tools to identify potential issues. Issues are communicated through the CIO report to the ARMB at regular meetings. Exceptional issues are communicated to board members between regular meetings.
- The CIO leads a formal annual investment manager review. As part of this process, investment manager questionnaires are provided to the general consultant and the IAC. The CIO provides feedback to the ARMB on special concerns or other issues.
- The CIO and investment staff is responsible for reviewing all ARMB investment policies at least annually and recommending potential changes to the ARMB.

*Comptroller and Accounting Staff*

The State Comptroller is responsible for fund accounting and financial reporting. The State Comptroller and Accounting Staff perform a wide range of accounting functions and provide regular reporting to the ARMB that includes at minimum:

- A monthly financial report for each significant fund and investment manager including account balances and net cash flows.
- A monthly comparison of the target and the actual asset allocation.

*Compliance*

The Department of Revenue has a compliance function with direct reporting authority to the Deputy Commissioner of the Department of Revenue. The Compliance function monitors the ARMB's investment managers and staff to ensure compliance with the ARMB's policies and procedures. Compliance reports are distributed to the ARMB Audit Committee at least monthly on the investment program's adherence to board policies.

*Financial Auditing Firm and ARMB Audit Committee*

Annually, an independent accounting firm audits the financial statements of the pension system. The ARMB has an audit committee charged with overseeing this process and both the audit committee and the full ARMB meets directly with the auditors annually.

*Fiduciary Auditing Firm*

Periodically, the ARMB hires an independent firm to perform a review of the ARMB's investment policies and present their findings to the ARMB.

*Consultant Auditing Firm*

Every four years, the ARMB hires an independent firm to audit the performance reports of the Investment Consultant and present their findings to the ARMB.

*Investment Advisory Council*

The ARMB has an Investment Advisory Council (IAC) composed of up to five investment experts charged with providing advice to the ARMB at board meetings and as requested.

## C. Investment Policies and Guidelines

ARMB has adopted ~~the following~~ specific policies, procedures, and guidelines regarding the investment and management of the assets under its control which can be found on the ARMB website (http://treasury.dor.alaska.gov/armb/Reports-and-Policies/Investment-Policies.aspx) or through the ARMB Liaison Officer.

~~Domestic and International Equity~~
~~Private Equity~~
~~Absolute Return~~
~~Fixed Income~~
~~Domestic, International, Convertible Bonds, Enhanced Cash, High Yield, Inflation Indexed, Intermediate US Treasury, Taxable Municipal Bonds~~
~~Real Assets~~
~~Farmland, Infrastructure, Timber and Real Estate~~
~~Asset Allocation – all trust funds~~
~~Contract Execution~~
~~Divestment in Iran~~
~~Delegation of Authority~~
~~Rebalancing~~
~~Litigation~~
~~Securities Class Action Litigation~~
~~Securities Lending~~
~~Watch List~~

## D. Operating Procedures

**Meetings**

1. The schedule for the regular meetings shall be reviewed by the Trustees at the first meeting of the calendar year.

2. All special meetings shall be on days agreed upon by the Trustees.

3. The final composition of the agenda shall have the approval of the Chair of ARMB.

4. All regular meeting material should be sent to the Trustees no later than seven days prior to the meeting date. To the extent possible, all special meeting material should be sent to the Trustees no later than four days prior to the meeting date.

5. ARMB will look to Robert's Rules of Order as a guide to parliamentary procedure before ARMB.

**Committees**

Standing committees of ARMB are as follows:

- Actuarial Committee
- Audit Committee
- Operations Committee
- Defined Contribution Plan Committee

Standing committees are charged with certain responsibilities set out in a committee charter approved by ARMB; committees may make recommendations to ARMB, but do not make decisions on behalf of ARMB.

Ad hoc committees may be appointed by the chair for temporary specified purposes; the term of the committee shall expire at the conclusion of the matter for which the committee was appointed.

**Education, Training, Travel and Reimbursements**

1. Trustee education will be provided during Board meetings; trustees may also participate in an ARMB Education conference and two additional training or educational opportunities per year.

2. Honorariums will be paid for time expended by trustees in the manner prescribed by law.

3. Reimbursement for travel expenses is outlined in the state travel regulations at AAM.60.

4. Travel Policy. Travel by trustees and travel outside Alaska by staff of Revenue on ARMB-related business shall be subject to approval by the Chair.

The Board will review travel, honorarium, and meeting costs annually, at the first meeting after fiscal year end.

**New Trustee Briefing**

From time to time, new ARMB trustees are elected or appointed. To maintain continuity and expedite familiarity with ARMB business, ARMB will request Revenue to provide an initial briefing to include the following:

1. Department of Revenue Management:
   Personnel introductions and review of the following presentations (Sub-sections of each presentation will be reviewed in-depth):

   - AS 37.10.210 Alaska Retirement Management Board
   - ARMB Investment Policy and Procedures Manual
   - Historical Review
   - ARMB (Trustee Biography)
   - Investment Advisory Council
   - Ethics Video
   - Legal Opinions
   - Alaska Public Officer Commission (APOC)
   - Annual Reports
   - ARMB Web Page
   - Travel Regulations
   - ARMB Meeting Minutes
   - Trustee Disclosure Statements
   - Reference Materials/Training Conferences
   - Robert's Rules of Order
   - Fiduciary Liability Insurance

2. Treasury Division, Portfolio Management:
   Personnel introductions and review of the following presentations:

   - History Investment Management Review (Chronology of Events)
   - Introduction to Management of State Pension Funds
   - Allocation of Assets/Capital Market Assumption
   - Investment Asset Classes

- Managers/Manager Performance
- Information Services (Bloomberg, , Standard & Poor’s, Moody’s, FTSE Russell Yield Book,)

3. Treasury Comptroller Division:
   Personnel introductions and review of the following presentations:

   - Annual Reports (Audited)
   - Financial Statements
   - Budget
   - Custody/Safekeeping
   - Contracts

4. Division of Retirement & Benefits:
   Personnel introductions and review of responsibilities

**Maintenance of Manual**

ARMB, through the Liaison Officer of the Department of Revenue, shall annually revisit the need to update or supplement provisions contained in this manual. A report at least once a year with regard to updating the manual shall be delivered to ARMB.

# Appendix A

## Fiduciary Responsibilities and Prudent Investment Decision Making

Material contained in this Appendix was obtained from two books: Procedural Prudence[1] and The Management of Investment Decisions[2]. The material contained in the Appendix is meant to serve as a general informational framework and is not an integral part of ARMB's policies and procedures.

### A. Fiduciary Responsibilities

### 1. Fiduciary Guidelines

The guidelines set forth in this Appendix A are designed to be a framework for ARMB actions to fulfill its fiduciary responsibilities in the management of funds to which it has been entrusted with fiduciary responsibilities. Fiduciary responsibilities applicable to ARMB are spelled out in AS 37.10.071 and a summary of this provision would state the following:

> *"In exercising investment, custodial or depository powers or duties, ARMB as fiduciary shall apply the prudent investor rule and exercise the fiduciary standard in the sole financial best interest of the funds entrusted to ARMB. Among beneficiaries of a fund, the fiduciaries shall treat beneficiaries with impartiality.*

To the extent that the provisions of law are to be interpreted by the courts, it is highly likely that the courts would look to the requirements and codes of conduct contained in the Restatement (Third) of Trusts and the interpretations of the Employee Retirement Income Security Act of 1974 (ERISA). In this section the most important parts of these are outlined, and the main tasks which a fiduciary should carry out are summarized. Specific administrative tasks which fiduciaries should carry out are contained in Appendix C: Fiduciary Investment Compliance Checklist. ARMB is not bound by these fiduciary guidelines, as ERISA and the Third Restatement apply only to corporate pension plans. However, a number of states have adopted these standards for public pension plans, and the courts have often turned to these standards when asked to rule on "prudent" practices of any pension plan. It is recommended that public pension plans try, as much as is possible, to follow the standards set by ERISA and the Third Restatement, and the guidelines which they imply, for the simple reason that fiduciary responsibility, due diligence, and a procedurally prudent process of investment management should be undertaken by all pension plans, both corporate and public.

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1 *Procedural Prudence for Fiduciaries, The Handbook for The Management of Investment Decisions*, Donald B. Trone/William R. Allbright/Philip R. Taylor (Library of Congress Cataloging -- In Publication -- Date Pending)

2 *The Management of Investment Decisions*, Donald B. Trone/William R. Allbright/Philip R. Taylor (Irwin Professional Publishing, 1996)

**Fiduciary Duty According to ERISA**

ERISA defines the term *fiduciary* as any person who with respect to a plan:

1. Exercises any discretionary authority or discretionary control regarding management of the plan, or

2. Exercises any authority or control (discretionary or otherwise) regarding management or disposition of assets, or

3. Renders investment advice regarding plan assets for a fee or other compensation, direct or indirect, or has any authority or responsibility to do so, or

4. Has any discretionary authority or discretionary responsibility in the administration of such plan.*

ERISA stipulates that a *fiduciary* must act in all matters regarding the pension plan (including its investments):

> "with the care, skill, prudence and diligence under the circumstances then prevailing that a prudent man acting in a like capacity and familiar with such matters would use in the conduct of an enterprise of a like character and with like aims... The fiduciary must diversify the investments of the plan so as to minimize the risk of large losses, unless under the circumstances it is clearly prudent not to do so."**

**Restatement Third, Trusts, (Prudent Investor Rule)**

In 1992 the Third Restatement, Trusts, was adopted by the American Law Institute, providing a set of new and more specific standards for the handling of the investment process by fiduciaries. These standards have brought legal thought closer to modern investment theory, and in essence shift fiduciary responsibility from the standards of a "prudent man" to those of a "prudent investor." The main points embodied in the Third Restatement are:

- The Trustees should construct a portfolio based upon the plan's objectives, specifically incorporating risk and return objectives;
- Prudent investment should be viewed within a total portfolio context, not on an asset-by-asset basis;
- Prudent investing does not call for the avoidance of risk, but rather prudent management of risk;

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**ERISA Sec. 3(21)(A), 29 U.S.C. Sec. 1002 (21) (A) (1985).*
***ERISA Sec. 404 (a) (I) (B), (C).*

- Assets should be diversified unless there is a prudent reason not to do so;
- Trustees must take into account inflation so as to preserve the real value of trust assets and income payments;
- Investment and administrative expenses should be included in the investment decision-making process; and
- Strong consideration should be given to hiring an investment consultant.

**2. Fiduciary Conduct and Primary Duties of the Trustees**

Today's prudence standard places the emphasis on fiduciary responsibility regarding the portfolio and its purpose, rather than on the performance of the plan. Fiduciary prudence is therefore a test of management and conduct, not of performance. A fiduciary will be found to have met the prudence standard by examining the *process* through which risk is managed, assets are allocated, managers are chosen, and results are supervised and monitored. Trustees as fiduciaries have responsibility for the general management of the fund's assets. They are responsible for overseeing the implementation of the fund's investment policy, but need not be investment managers or investment specialists.

As outlined by ERISA and the Third Restatement, the most important tasks which the Trustees should carry out (i.e., should not delegate) in terms of proper fiduciary conduct are the following:

1. Prepare written investment policies and document the process. In doing so, the Trustees must:
   - Determine the fund's missions and objectives;
   - Choose an appropriate asset allocation strategy;
   - Establish specific investment policies consistent with the fund's objectives; and
   - Select investment managers to implement the investment policy.

2. Diversify assets with regard to specific risk/return objectives of the participants/beneficiaries.

3. Use "prudent experts" to make investment decisions.
4. Control investment expenses.
5. Monitor the activities of all investment managers and investment consultants.
6. Avoid conflicts of interest.

ARMB and Staff should regularly undertake continuing education relevant for their duties. Specifically, all Trustees and key Staff should participate in an educational program which provides basic instruction on the four primary components of the investment management process:

- Fiduciary responsibility and procedural process;

- Developing investment policy guidelines and designing optimal investment manager structures;
- Implementing investment policy; and
- Monitoring and controlling an investment program.

**3. General Investment Guidelines for Trustees**

In carrying out a process which fulfills their fiduciary duties, Trustees must make a number of basic decisions regarding investment of the portfolio. In this section the nature of the basic decisions confronted by the Trustees are outlined, and some general investment guidelines are provided. A more precise procedurally prudent process for managing a pension fund is provided on the following pages, and a checklist for fiduciary compliance is contained in Appendix C.

**Basic Decisions which ARMB Must Make**

For reasons to be explained below, the main decisions which must be made are ranked in a hierarchy, starting with the most important and concluding with the least important.

- What is the attitude towards risk?
- How long can the portfolio be committed to a specific investment policy?
- What asset classes will be considered for investing?
- How much of the portfolio will be invested in each asset class?
- Within each specific asset class, what strategies or styles will be used?
- Which and how many manager(s) will be selected to invest for each specific strategy or style?

**Investment Risk Profile**

A critical decision which the Trustees must make is to determine the degree of risk they wish to accept in investing the portfolio's assets. Although there are generally-accepted definitions of risk which are used in quantitative models of asset allocation, Trustees have to determine their attitude towards risk from a practical perspective, recognizing that the term "risk" has many different connotations depending on the investor's frame of reference, circumstances and objectives. It is useful to consider various types of risk to see how each impacts the investment process (formal definitions of each are provided in the glossary).

| | |
|---|---|
| • **Liquidity Risk** | Will there be sufficient cash to meet disbursement and expense requirements? |
| • **Boardroom Risk** | Are decision makers willing to "ride out" short-term volatility in favor of appropriate long-term strategies? |
| • **Purchasing Power Risk** | Has an investment strategy been employed that will, at the very least, keep pace with inflation? |

| | | |
|---|---|---|
| • | **Funding Risk** | What is the probability that anticipated contributions will not be made? |
| • | **Return vs. Risk** | Are expected investment returns consistent with the level of risk taken? |
| • | **Asset Allocation Risk** | Are assets optimally allocated to meet required return and risk parameters? |
| • | **Lost Opportunity Risk** | Have market timing strategies been inappropriately employed, exposing the investor to missed opportunities in the market? |

## Hierarchy of Decisions

An important study (B.G.P. Brinson, B.D. Singer and G.L. Beebower, "Determinants of Portfolio Performance II: An Update," *Financial Analysts Journal*, May-June 1991) has found that the historical return in U.S. capital markets can be broken down into the following components:

- asset allocation 91.5%
- security selection 4.6%
- market timing 1.7%
- other factors 2.2%

In other words, these figures indicate that 91.5% of the historical returns earned in U.S. capital markets results from the allocation of the total assets among different asset classes (e.g. stocks, bonds, real estate, etc.), while only 4.6% of the returns are the result of the selection of specific investments within an asset class. Therefore, the most important decision in determining the return on the total portfolio is allocating the portfolio among different asset classes. The asset allocation, which encompasses the first four of the above "basic decisions," is one of the main responsibilities of ARMB.

The last two decisions which ARMB must make are of much less importance in terms of the ultimate long-run performance of the portfolio. However, a mistake often made by fiduciaries is to reverse the hierarchy of decisions, beginning on the bottom and focusing on choosing specific managers and/or making specific investments.

**4. Fundamental Investment Principles**

There are a number of fundamental investment principles that a Board of Trustees should follow when making the decisions that fall under its responsibility:

1. Trustees should set policy, delegate implementation and monitor the results. Trustees should not focus on individual investment decisions and micro-manage.

2. Keep the plan structure simple.

- Simple asset allocation and simple investment manager structures have been shown to perform the best; complex structures are difficult to control and expensive; and
- The plan structure should be maintained over a long time period.

3. Do not expose the portfolio to more timing risk than is necessary.

- Any changes should evolve over a relatively long time period;
- It is difficult to predict movements of the markets and changes in the performance of managers; and
- The best policy is to average in and out of an investment manager or investment vehicle, as opposed to undertaking a large one-time purchase or sale of securities.

4. Select the appropriate investment managers for the defined roles.

- Most firms are best at managing one or a few type of assets;
- Investment managers should have strength in their designated areas; and
- While a single firm may perform multiple roles, the firm's capability in each must be considered independently.

5. Diversify investment manager styles in order to produce a more stable return and to reduce risk.

6. Cash flow is the best tool for reallocating assets.

- If rebalancing is necessary, the portfolio should be moving towards the target allocation; and
- If the investment policy changes drastically, move gradually towards the new allocation.

7. Investment manager structure should contain capacity for growth.

- Never make an unfavorable allocation because there is no appropriate place to put contributions; and
- Monitor portfolio sizes and the investment managers' ability to manage their allocated assets.

8. Weigh each investment manager based upon their impact on the total portfolio, allocating sufficient funds to each manager so that they can impact overall results.

9. Trustees should always have a plan for contributions, rather than deciding how to allocate contributions as they come in.

**Investment Decision Making: The Procedurally Prudent Process**

## 1. Overview of the Procedurally Prudent Process

Trustees are responsible for following a procedurally prudent process in investing the plan assets. Although it is not possible to guarantee investment success, following the five-step process outlined below will significantly improve the odds of structuring an investment portfolio which will stand up to public scrutiny and provide an acceptable long-run return. In this section the basic elements of this process are outlined. Detailed guidelines for each of the five steps are provided in following sections.

1. Analyze the Current Situation.

   - Conduct a fiduciary audit;
   - Review the legal and administrative constraints;
   - Review the actuarial and accounting assumptions on contributions and disbursements;
   - Review the current investment strategies and policies;
   - Conduct an analysis of the current asset allocation and investment activities; and
   - Review the costs of managing the portfolio.

2. Design the Optimal Portfolio.

   - Propose various optimal asset allocation strategies;
   - Address strategic (long-term) and tactical (short-term) investment strategies against the backdrop of capital markets; and
   - Analyze the investment alternatives based upon the concepts of modern portfolio theory.

3. Formalize the Investment Policy.

   - A critically important function a fiduciary performs is to set investment policy and implementation guidelines in a written Investment Policy Statement (IPS);
   - Once the IPS is prepared, under most circumstances, the portfolio should not deviate from the stated investment guidelines and asset allocation;
   - Any time that the Trustees are contemplating allocating assets to a new investment area, i.e., to an asset class not specified in the IPS, an analysis of the investment should be carried out along the same lines as that performed for the assets which currently are in the portfolio; and
   - If it is decided to invest in a new asset class, the IPS should be rewritten.

4. Implement the Investment Policy.

   - Propose a number of alternative investment manager structures, focusing on styles or strategies within each broad asset class;
   - Select investment managers;
   - Negotiate account size minimums and fees with appropriate investment managers; and

- Coordinate custodial and brokerage services.

5. Monitor and Supervise the Portfolio.

- Provide ongoing supervision of the investment program;
- Prepare a detailed monthly appraisal of consolidated holdings and portfolio transactions;
- Prepare quarterly performance attribution reports comparing the performance of the portfolio against appropriate benchmarks, stated investment objectives and investment managers of similar style;
- Check the asset allocation to make sure that it meets that which is specified in the IPS and rebalance the portfolio if necessary, or change the IPS as appropriate; and
- Monitor and control investment expenses and costs.

**2. Step 1: Analysis of the Current Situation**

The investment management process begins with a thorough understanding of the current situation and future needs. Six main factors should be examined.

1. Conduct a fiduciary audit based upon the checklist contained in Appendix C.

2. Review the legal and administrative constraints.

- Review the local codes and regulations;
- Have any relevant government regulations concerning pension funds changed recently?
- Have there been any changes in legislation which specifically focus on the fund?

3. Review the actuarial and accounting assumptions on contributions and disbursements.

- Has the actuary indicated that important factors have changed since the last actuarial study?
- Has an audit indicated that the accounting and actuarial assumptions should be changed?
- Have the assumptions on contributions and disbursements changed due to either external economic forces or internal changes regarding the participants?

4. Review the current investment strategies and policies. Have any fundamental factors changed, such as:

- The broad asset classes in which the Trustees have identified as appropriate for the Plan;
- Key underlying economic variables;
- Attitude towards risk;
- Time horizon; and
- Expected returns of broad asset classes.

5. Conduct an analysis of the current asset allocation.

- Examine how the current assets are allocated between the broad asset classes: stocks, bonds, cash, and others;
- Examine how the assets are allocated to different styles within each broad asset class (i.e., review the investment manager structure); and
- Verify that the asset allocation complies with the Investment Policy Statement.

6. Review the costs of managing the portfolio, including:

- Custody costs, including transaction fees and annual expenses of money market accounts used for cash sweeps; and
- Brokerage costs, including commission costs and "soft dollar" requirements; and
- Fees of investment managers and/or annual expenses of mutual funds; and
- Consulting fees.

## 3. Step 2: Design the Optimal Portfolio

The goal of this step is to evaluate the projected financial characteristics of the plan and *determine an appropriate investment policy that best meets the needs of the plan and its beneficiaries*. Simply stated, the goal of the plan is to design a portfolio which involves an acceptable level of risk and which produces investment returns which pay a significant portion of member benefits.

In many cases a plan sponsor will turn to an investment consultant to assist with the design of the optimal portfolio, as it relies on a highly technical and quantitative exercise. The purpose of the quantitative modeling of possible investment portfolios is to *assist* the decision-making process. However, the final choice by the Trustees of an optimal portfolio involves both qualitative and quantitative analysis.

The quantitative modeling used in assisting with the design of the optimal portfolio generally follows a three step process:

1. Model the asset side, which involves identifying a set of alternative optimal portfolios tailored to the plan's general constraints.
2. Model the liability projections of the plan.
3. Integrate the first two steps to identify alternative portfolios (with different return/risk characteristics) which are appropriate for the plan.

### Modeling the Asset Side

Although there is no unique methodology for quantitatively analyzing and identifying the set of optimal portfolios, most asset allocation models rely heavily on Modern Portfolio Theory and the accepted financial theory. It is not appropriate in this manual to go into detail concerning the specifics of the basic model. Rather, the general nature of the model is described, the steps are outlined, and key aspects are highlighted. Simply put, based upon historical information on various asset classes and future projections concerning capital markets, the model produces a set of alternative investment portfolios, with each producing the greatest possible expected return for given level of risk, and compares these to the current portfolio.

**a. The plan's general constraints.** The first step in the process is to identify the asset classes in which the plan wishes to invest, and any limits on the allocation to a given asset class. In a strict sense, this decision is independent of the asset allocation modeling process, since an infinite number of different optimal portfolios can be constructed. In addition, the choice of which asset classes to invest in, and the limits on each, often involves non-economic considerations.

In practice, however, the choice of asset classes, and limits on the amount of the investment in each, is often determined as the modeling exercise proceeds, since the asset allocation modeling demonstrates the benefits (and risks) of various asset allocations. For example, many plans have recently decided to increase the size of their investment in the international asset class (relative to their previous investment or a preconceived target) once they have examined the diversification and risk/return benefits of international investments. An additional benefit of the asset allocation modeling process is that it clearly identifies the economic implications of alternative asset allocations. Also, it pinpoints the investment implications of introducing "non-economic" considerations into the asset allocation process, e.g. economically-targeted investments or an aversion to international investments.

**b. Collection of data on the specified asset classes.** Once the plan has specified the asset classes to be modeled, historical data must be collected on these assets, notably:

- average return of each asset class;
- standard deviation (i.e. statistical variation) of each asset class, which is the most commonly used quantitative measure of risk; and
- statistical correlation among the asset classes.

**c. Capital market projections.** Based on a variety of methodologies, projections must be made for the future values of the return, standard deviation and correlation of each asset class over some given time period (e.g. five years). In this step, careful attention is paid to the current and expected values of a number of economic variables, including:

- overall market valuations of each asset class;
- interest rates;
- economic growth;
- inflation;
- employment and productivity growth;
- consumer confidence;
- international economic trends; and
- special factors (e.g. wars).

**d. Results.** The optimization process identifies a number of different *optimal portfolios*. An optimal portfolio is defined as a portfolio which produces the highest expected return for any given level of risk (or, alternatively, minimum risk for a given level of expected return). The set of optimal portfolios form what is called an *efficient frontier* of asset mix alternatives, which can be compared to the current asset mix. Although taking on greater risk does not always guarantee greater return, the asset allocation model makes sure that portfolios are identified only where assuming greater risk does in fact lead to greater expected return.

It is not possible to uniquely identify the single "best" portfolio among the set of optimal portfolios, as each has a different risk/return profile. The ultimate choice of a portfolio will depend upon the liability side of the plan and the Trustees' attitudes towards risk as well as their preferences for investing in different asset classes.

The process of constructing the set of optimal portfolios illustrates a number of important points:

- Once the set of optimal portfolios is identified, greater expected return requires that greater risk be assumed;
- Risk is reduced by diversifying a portfolio among a number of assets;
- Allocating a portion of the portfolio to a "high return, high risk" asset class (e.g. international equity) often increases the overall return and reduces the overall risk of the portfolio;
- By looking at alternative proposals, it is possible to precisely examine the return/risk implications of adding or deleting a particular asset class from the portfolio; and
- The modeling of the optimal portfolios cannot answer a critical question which Trustees must confront: recognizing that greater expected return requires greater risk, how much risk should be taken?

**Modeling the Liability Side**

The second step in the process involves modeling the expected future liabilities of the plan, defined as the expected member benefits earned over a future time horizon. This step paints a general picture of the future of the plan based upon the most likely outcomes. The composition of the projected plan liabilities is also a useful exercise for general planning purposes, as it provides a direct way to evaluate the impact of investment results on the financial composition of the plan.

The actuarial liabilities in each year of the projection horizon are dependent upon a number of key assumptions used in the most recent actuarial valuation, including:

- Contributions;
- existing level of funding;
- actuarial discount rate;
- active workforce growth rates;
- salary scale growth rates;

- membership growth rate;
- COLAs for retiree benefits;
- decrement factors such as mortality, separation, retirement and disability; and
- actuarial funding method.

**Combining Assets and Liabilities**

After separately developing the asset and liability projections, the final stage of the process examines their interaction from a long-term perspective. The main focus of this step is to allow an asset allocation to be chosen by comparing the various possibilities against the plan's liabilities.

Since there are hundreds of possible cases when both the asset and liability sides are considered, a methodology for analyzing their interaction must be developed and a time horizon specified (e.g. five years). Once a method is chosen, a number of key variables and aspects of each portfolio are examined in conjunction with the plan's liabilities. Projections of all the key elements and ranges of conditions which might result from uncertain future conditions should be provided. Given that there is uncertainty of both future returns and liabilities, ranges (e.g., the median value as well as a number of percentiles) of the following variables for a given projection period (e.g. five years) should be examined:

- projected rates of return;
- projected funded status;
- unfunded liability; and
- expected contributions.

In evaluating the results of the simulation in order to determine the appropriate asset allocation for the plan, the Trustees should consider the following:

- How do the optimal portfolios under consideration compare to the current asset mix?
- Which optimal portfolios have five-year returns which equal or exceed the actuarial discount rate?
- What are the implications of various sources of risk, such as poor returns on the portfolio, increased benefit payments, and a reduced actuarial discount rate?
- The baseline results should be examined to see whether these are acceptable.
- The worst case results should be examined, with consideration given as to whether the plan can "survive" these.
- A common rule is to choose the asset mix with the best combination of baseline and worst-case results, which is either:
  -- the best baseline results, provided the associated worst-case is acceptable; or
  -- for the minimum acceptable worst case, the mix with the best baseline results.

Once again, it is important to emphasize that quantitative modeling of possible optimal portfolios can only assist in the final choice of the plan's asset allocation. The benefit of following a transparent and rigorous modeling exercise is that it forces the Trustees to explicitly identify and estimate the key parameters which determine the asset and liability values, as well as providing insights into the implications of various asset allocations.

**4. Step 3: Formalization of the Investment Policy--The Investment Policy Statement**

A critically important function that ARMB performs is to set investment policy and implementation guidelines in a written Investment Policy Statement (IPS). The current Investment Policy Statement approved by ARMB is contained in section III. By having specific policies and guidelines, the Trustees will: (1) have a well-developed investment strategy that is consistently applied; (2) concentrate resources to meet specific goals and objectives of the strategy; and (3) provide continuity to the strategy throughout market cycles.

Any time that the Trustees are contemplating allocating assets to a new investment area, i.e., to an area not specified in the IPS, an analysis of the investment should be carried out along the same lines as that performed for the assets which currently are in the portfolio. If it is decided that the new investment is to be undertaken, the IPS should be rewritten.

ERISA dictates that a strategy and guidelines are required, but does not specifically call for a written IPS: "Every employee benefit plan shall provide a procedure for establishing and carrying out a funding policy..." (Sec. 402 (2)(1)). However, subsequent case law and industry practices have clearly mandated the need for a written IPS as part of a procedurally prudent process. Moreover, the Third Restatement has reinforced the importance of a written IPS: "The Trustee must give reasonably careful consideration to both the formulation and the implementation of an appropriate investment strategy, with investments to be selected and reviewed in a manner reasonably appropriate to the strategy," (Restatement Third, Trusts (Prudent Investor Rule), pg. 14).

The above indicates that existing legislation and regulations require or at least strongly suggest the formulation and adoption of an IPS. Other than the legal requirements for an IPS, *there are five main reasons why an IPS is a necessary part of a procedurally prudent process:*

- The IPS provides a "paper trail" of policies and procedures concerning the plan's investment decisions. The IPS can be important evidence in the case of litigation or accusations of imprudence, and serves as an excellent testimony of compliance to auditors;
- The IPS negates second guessing by new Board members and other interested parties, and provides continuity of the investment strategy during turnover of ARMB;
- The IPS reassures individuals affected by the investment performance that the Trustees are following a prudent investment process;
- The IPS keeps the investment process intact during periods of market upheaval. Trustees may feel pressure to take action during periods of market decline, and the IPS serves to remind them of why the investment strategy was structured in the first place and the risks inherent in the portfolio; and

- The IPS provides a baseline from which to monitor investment performance of the overall portfolio, as well as the performance of individual investment managers. It also allows for proposed changes to the investment process to be evaluated and reviewed against a stated strategic investment policy.

*An IPS consists of six main parts:*

1. Purpose and background, including:

   - An explanation of the purpose of the portfolio;
   - The size of the portfolio, the likelihood and amount of future contributions and a schedule of pending disbursements;
   - Participant demographics, particularly as it impacts the timing of disbursements; and
   - The fiscal health of the plan sponsor.

2. Statement of objectives. Objectives should be set in conjunction with a comprehensive review and assessment of the goals, expectations, investment time horizon, level of risk tolerance, present investment allocation and current projected financial requirements. Standard investment objectives include:

   - Maximizing return within reasonable and prudent levels of risk;
   - Prudent diversification by providing exposure to a wide range of investment opportunities in various markets;
   - Establishing policies based on long-term total return; and
   - Controlling the costs of administering and managing the portfolio.

   There are a number of additional objectives that are relevant for pension plans:

   - To maintain a fully-funded status with regard to Accumulated Benefit Obligations, and to achieve a fully-funded status with regard to the Projected Benefit Obligation;
   - To have the ability to pay all benefit and expense obligations when due;
   - To maintain a funding cushion for unexpected developments, possible future increases in benefit structure and expense levels or a reduction in the expected earnings ratio;
   - To maintain flexibility in determining the future level of contributions; and
   - To exceed actuarial earnings assumptions.

3. Investment guidelines. Guidelines should be established to clearly identify the parameters of the investment strategy. The guidelines should be specific enough to identify the parameters of the desired investment process, yet still provide enough latitude so as to not "micro-manage" the investment process. If properly written, the guidelines should make it easy for a reviewer to reconstruct the process which was used in putting together the portfolio. The following guidelines should be identified:

- risk tolerance;
- time horizon;
- asset class preferences ;
- rebalancing limits; and
- expected or desired rate of return.

4. Securities guidelines. Like the investment guidelines, the securities guidelines must be specific enough to define the boundaries of investment managers, but not so specific that the Trustees are in effect making detailed investment decisions.

5. Selection of investment managers. The IPS should clearly define the way in which investment managers are to be selected. By establishing a very specific asset allocation (number 3 above) and precise guidelines for selecting investment managers, a consistent framework is put into place in order to meet the goals and objectives of the plan.

6. Control procedures. This section delineates the specific duties and responsibilities of all parties involved in the investment management process, as well as the required periodic reviews.

**5. Step 4: Implementation of the Investment Policy--Structure and Selection of Investment Managers**

The fourth step mainly involves determining an investment manager structure and selecting individual investment managers, as well as arranging for low-cost administration of the ultimate investments. In addition, it is in the implementation stage that the specifics of real estate and alternative investments must be considered.

**Fiduciary Responsibility**

In the implementation step, fiduciary responsibility is fulfilled by (1) choosing a manager structure based upon sound investment principles, as dictated by ERISA Sec. 404(a)(1)(B); and (2) making sure that "prudent experts" are hired to make the investment decisions; this part of the fiduciary responsibility is referred to as the "safe harbor rule."

The "safe harbor rule" spelled out in ERISA comes close to providing fiduciaries with protection from liability concerning actual investment results:

> "If an investment manager or managers have been appointed....no Trustee shall be liable for the acts or commissions of such investment manager or managers, or be under any obligation to invest or otherwise manage any asset of the plan which is subject to the management of such investment manager." (ERISA Sec. 405(d)(1))

The "safe harbor rule" underscores the importance which ERISA has placed on having investment decisions made by experienced investment professionals. However, the mere hiring of investment managers does not relieve Trustees from their fiduciary responsibility. The Trustees must still act in a prudent manner in selecting and supervising investment managers. In general, Trustees will fulfill their fiduciary responsibility in identifying investment professionals by fulfilling the following safe harbor rules:

- The selected investment manager must be a bank, an insurance company or a registered investment advisor as defined by the Investment Advisors Act of 1940;
- Due diligence must be undertaken in selecting investment managers, i.e., they must be "prudently selected";
- Investment managers must be given the power to manage, acquire and dispose of plan assets;
- Investment managers must acknowledge co-fiduciary status in writing; and
- Activities of investment managers must be carefully monitored.

**Implementation Steps and Guidelines**

In discussing the implementation of the investment policy, it is convenient to differentiate between (1) traditional financial asset classes, namely stocks, bonds and cash, and (2) real estate and alternative investments, e.g. private placements and venture capital. The first group, which follows a straightforward two-step process, is covered in the present and following sections. The second group is considered separately, as the process by which these investment decisions are made is often different than for stocks, bonds and cash.

**A. Traditional financial asset classes: stocks, bonds and cash**

Implementation of the investment policy for traditional financial asset classes follows a two-step process: first a manager structure is developed, then individual managers are selected. In general, the first step follows the same basic investment principles which are used in determining the asset allocation in the Investment Policy Statement, "Design the Optimal Portfolio." In the second step the Trustees must determine the performance benchmarks, gather and evaluate information on relevant managers, and make a final selection of managers. Basic guidelines for carrying out each step follow.

**Manager Structure (Investment Style Groups)**

The IPS should spell out the portfolio's allocation to broad capital market asset classes (e.g. domestic equities, domestic bonds, international). However, within each of these classes there are a number of more specific allocations which are available. In the implementation step, the Trustees usually decide on how they would like to invest within each of the broad asset classes by drawing up a "manager structure," which identifies the number and types of managers to which they want to allocate assets. This process is referred to as identifying "investment manager styles" or "investment manager strategies" within each broad asset category. Note that this step focuses on types of investment managers, not individual managers themselves. Individual investment managers are chosen only after the manager structure is determined.

The development of a sound investment manager structure is part of the Trustees' fiduciary obligations and is an outgrowth of the asset allocation decision which is determined in drawing up the IPS. Many of the factors considered in the asset allocation step are also brought into the manager structure, such as expected returns, risk tolerances, and diversification benefits of various manager styles. Similar to the asset allocation, the Trustees must decide on what manager styles will be employed as well as the amount of assets which will be allocated to each style.

In order to minimize investment and administrative costs, the manager structure should be as simple as possible in light of the investment goals of the plan.

In designing a manager structure, i.e. in determining the number and types of investment managers, the following factors should be considered:

1. Choice of style groups.

    - The first decision which must be made is the choice between active or passive management;
    - Style groups must be defined and appropriate benchmarks constructed;
    - Expected returns and risk of style groups must be calculated;
    - The impact of diversification within a broad asset class must be assessed; and
    - The overall benefits of style group diversification should be assessed, paying particular attention to whether chosen manager styles are complementary.

2. Cost and administrative concerns.

    - A choice must be made between commingled and separate accounts;
    - Complex structures are difficult to control and are expensive;
    - The active versus passive management decision must be evaluated in light of costs, as in some instances (e.g. international), active management may not be feasible or is too expensive; and
    - The custodian banks and plan staff must be able to effectively monitor the chosen manager styles.

3. Common style groups.

    There are a very large number of style groups which have been defined by firms tracking investment managers. The following general list illustrates the nature of the exercise, but is not meant to be exhaustive; a more complete list and description of styles groups is contained in Appendix D.

    **a. Equity**

    - Core;

- Yield;
- Value;
- Growth;
- Small Cap;
- International; and
- Many of the above can be combined, e.g. small cap growth, international value.

**b. Fixed Income**

* Defensive (short maturity);
* Core (intermediate maturity);
* Active Duration;
* Mortgage-backed;
* High yield;
* Munis; and
* International

**c. Balanced**

* A combination of equities and bonds;
* A decision must be made between strategic and tactical

**d. Cash**

* High quality;
* High yield;
* Tax free

**Selection of Individual Investment Managers**

Once a manager structure is chosen, i.e. specific manager styles have been identified, individual investment managers must be chosen to invest the assets committed to each style. When fiduciaries of institutional-size portfolios conduct a search for a new investment manager, they should undertake a formal search process.

Once the necessary information on investment managers is obtained, the “safe harbor rules” indicate that managers must be “prudently selected.” In analyzing the large universe of investment managers, a number of specific factors should be examined and evaluated.

1. Performance numbers. These should be based upon quarterly results, as too much attention to annual results may hide the volatility of short-term performance. The performance evaluation should examine whether an investment manager’s results are:

- A composite of all portfolios managed, and not just those chosen for evaluation by the investment manager;
- The result of actual management, and not simply historically-tested hypothetical performance;
- Reported gross and net of fees and commissions; and
- Reported on a time-weighted basis versus a dollar-weighted basis. Time-weighted results more accurately reflect the manager's ability to manage the total portfolio as the assets under management change due to contributions and withdrawals.

2. Performance relative to assumed risk.

- An investment manager's performance should not be evaluated in isolation, but must be examined in light of the amount of risk assumed;
- Risk is generally measured by statistics such as standard deviation, alpha, beta and the Sharpe ratio;
- The results of the investment manager's poorest and best quarters should be examined;
- The frequency and amount that an investment manager underperforms or outperforms the appropriate market indices should be examined; and
- Performance should be examined in both rising and falling markets.

3. Investment manager's adherence to the stated investment style.

- Investment managers should have a clearly articulated investment style;
- Investment managers should have a demonstrated discipline to maintain the strategy over time; and
- It is important to independently assess whether the investment manager does indeed fall into the desired manager style (i.e., it cannot be assumed that an investment manager's self-described style accurately reflects that which the plan has selected).

4. Performance among peers.

- An investment manager's performance should be compared to managers of like style or strategy by use of an appropriate benchmark. A common mistake is to compare performance of several managers without taking their styles into consideration;
- The peer style group and benchmark should be chosen by the Trustees, not the investment manager; and
- The choice of the peer style group and benchmark is "objective" in the sense that it comes directly from the manager structure decision. For example, if it is decided to allocate assets to a "small cap value" manager, then for this part of the manager search the peer group and benchmark should be "small cap value";

5. Performance of key decision makers and their organization.

    - Examine whether the key decision makers that produced the performance record are still with the firm;
    - It should be determined whether any changes in the organization may impact the firm's abilities; and
    - Examine whether the firm has experienced a rapid growth in assets, and how this has affected the performance.

6. Subjective factors. ARMB shall utilize the IAC, Board committees, staff, and its consultants to identify those candidates to be interviewed by the full Board.

**B. Real assets and alternative investments**

By their very nature real assets and alternative investments cannot be treated like stocks, bonds and cash for two main reasons: they are a longer term investment and are less liquid. In addition, there are no disclosure requirements or active policing in the private placements arena, so the watch word is "buyer beware."

**1. Real Assets. Annually,** the ARMB adopts by resolution a "Real Assets Investment Policy and Procedures Manual. Given the detailed information contained in that resolution, it is appropriate here only to outline the main responsibilities of each party participating in the real assets investment program.

**Board of Trustees**

- Approve the investment policies and objectives judged to be appropriate and prudent in the context of implementing the strategic investment plan for the portfolio's total assets;
- Review the performance criteria and policy guidelines for the measurement and evaluation of the investment managers of the plans assets;
- Retain qualified investment managers and set investment limits; and
- Supervise the real asset investments to ensure that they remain consistent with the strategic planning and the Investment Policy Statement.

**Staff**

- Coordinate program compliance among all participants and communicate the investment policies, objectives and performance criteria to the managers;
- Coordinate the receipt and distribution of capital; and
- In conjunction with the Investment Consultant, periodically review the managers' and the portfolio's performance in relation to the assigned responsibilities.

**Real Assets Consultant**

- Ensure real assets program compliance in cooperation with the Staff;
- Assist in the implementation of the multiple manager real assets program;
- Review all real assets program documentation and management relationships;
- Conduct manager searches when requested;
- Provide periodic performance measurement analysis of the portfolio; and
- Provide special project research pertaining to technical real assets issues.

**Managers**

- Managers shall acquire and manage (on a non-discretionary basis) real estate and real asset investments on behalf of the plan and in accordance with the guidelines and the agreed upon investment plan.

**2. Alternative investments.** *Alternative investments* refers to institutional blind pool limited partnerships which generally make private debt and equity investments in privately held companies. The most common examples of these limited partnerships are venture capital and leveraged buyout funds, bankruptcy investing, oil and gas partnerships, and investments in subordinated debt.

The hiring of an "oversight advisor" should be seriously considered by any plan which includes alternative investments in its portfolio. Oversight advisors help shoulder the burden of fiduciary responsibility in their role as "prudent experts." These investment management firms assist in security selection, due diligence, negotiation of investments, monitoring and are proactive in value maximization.

The following are general guidelines for alternative investments:

- As with any other asset class, the guidelines, policies and procedures should be explicitly developed and set down in writing;
- Expectations for long-term rates of return and risk, a diversification strategy and appropriate benchmarks should be developed;
- Strategic consultants should be considered to assist with top-down aspects such as designing a program, setting-long term strategy and evaluation of performance; and
- Oversight managers or a fund of funds may provide assistance in bottom-up partnership selection and in-depth investment monitoring.

Once a strategic program is developed, a procedurally prudent process for selecting partnerships includes an examination of the following:

- The general partners should be evaluated based on criteria such as experience and prior achievement, management skills, creativity and integrity;

- The partnership's investment strategy should be assessed, focusing on the reasonableness of the objectives, the likelihood that they can be achieved, and whether the skills of the partners are well-matched with the planned investments;
- A thorough evaluation of the partnership's due diligence process should be undertaken;
- The partnership's monitoring process should be evaluated;
- The partnership's ability to generate a flow of quality investments should be assessed--will they develop deals themselves or participate in deals originated by other parties?
- The ability to structure, negotiate and liquidate investments should be evaluated; and
- Partnership documents should be reviewed to determine:
  -- how profits are split.
  -- the general partners' authority.
  -- fees and expenses.
  -- advisory board rules.
  -- distribution of earnings.
  -- reporting requirements.

## 6. Step 5: Monitoring and Supervising the Portfolio

### Fiduciary Requirements to Monitor and Supervise

A common fiduciary breach is the failure to supervise the activities of an investment manager once the manager has been hired. Both ERISA and the Third Restatement make specific references to this oversight duty of Trustees:

> "...in addition to any liability which he may have under any other provision of this part, a fiduciary with respect to a plan shall be liable for a breach of fiduciary responsibility of another fiduciary with respect to the same plan..." (ERISA Sec. 405(a)); and
>
> "The Trustee is under a duty to deal fairly and to communicate to the beneficiary all material facts the Trustee knows or should know in connection with the transaction." (Restatement Third, Trusts, (Prudent Investor Rule) Sec. 170).

### Main Aspects to be Monitored

There are four broad aspects of the plan which must be monitored:

1. Determine whether the plan achieved its expected return and investment objectives.

    - If the plan has not reached its objectives, additional contributions may be necessary and participants may question the Trustees' prudent handling of the plan assets; and
    - If the plan has underperformed, what was the cause of the shortfall: underexposure to asset classes offering a greater return, market upheaval, manager performance, high administrative and/or investment expenses, or a combination of factors?

2. Determine whether investment managers are abiding by the plan's Investment Policy Statement.

   - Are restrictions and constraints for various asset classes being followed?
   - Is the overall asset allocation being adhered to? If not, rebalancing should be considered (see below).

3. Determine through performance attribution analysis what contributed to the total return of the portfolio. Performance attribution analysis, discussed more extensively below, provides insight into questions such as:

   - What part of the performance is due to the manager structure?
   - What was the value of choosing active versus passive management strategies?
   - What performance can be attributed to the Trustees' selection of individual investment managers?
   - How does the performance of the plan's investment managers compare to their peers?
   - Should an investment manager(s) be terminated?

4. Investment expenses must be monitored and controlled, and the services provided by custodian banks and consultants must be monitored. By their very nature, investment expenses have a direct impact on performance, and an important duty of the Trustees is to control these expenses.

**Steps in Monitoring and Supervision**

**1. Measuring Investment Manager Performance.**

In measuring the performance of investment managers it is necessary to apply consistent standards of measurement so that accurate evaluations and comparisons can be made. On January 1, 1993 a standardized reporting format was instituted by the Association for Investment Management and Research (AIMR). In 1995, AIMR became the CFA Institute, which sponsored and funded the Global Investment Performance Standards (GIPS) to establish global standards for calculating and presenting investment performance. Additional reporting standards have been adopted by the Investment Management Consultants Association (IMCA). In addition, the SEC has issued guidelines on advertising and reporting performance results. Some important guidelines follow, and a more complete treatment is provided in Appendix C: Performance Measurement Checklist and Detailed GIPS Standards.

**A. Performance Calculations.** The investment management industry has adopted certain measurements which should be made when examining and evaluating portfolio performance. Only short explanations of each measurement is provided here; more complete definitions are contained in Appendix E: Glossary of Investment Terms.

- standard deviation -- the most common statistical measure of risk;
- alpha -- measures the performance of the manager assuming the benchmark had no gains or losses;
- beta -- measures performance volatility against the market;
- Sharpe ratio -- measures return per unit of risk (standard deviation);
- geometric returns --calculates returns by linking time periods rather than simply taking a mathematical average;
- total return -- performance results are calculated on all realized and unrealized gains and losses, including accrued income;
- time-weighted -- performance results are calculated on a time-weighted basis (quarterly is required and daily is recommended) rather than dollar-weighted; and
- information ratio -- a mathematical measure of excess return per unit of non-market related risk.

**B. GIPS Standards.** The following is a summary of the main GIPS standards.

- A composite return figure must be calculated that includes all fee-paying discretionary portfolios that represent a specific asset class or similar strategy or investment objective;
- Firm composites must include only the actual assets under management;
- Performance results for accounts are to be asset weighted and not equal-weighted. Equal-weighted results are recommended as an additional measurement, but not required;
- Performance results should be presented by asset class, and include cash equivalents or any other securities held by the manager in place of assets of the particular asset class;
- The composite return results should be calculated for the investment management firm, not the individual manager that produced the return;
- Results should be presented before fees; performance net of fees is permitted as well. In either case, an appropriate fee schedule should be presented;
- Total return is to include both accrued income and capital appreciation;
- Portfolios should be valued at least quarterly;
- External risk measurements are strongly recommended but not mandatory for compliance. Reporting of the dispersion of portfolio returns and standard deviation is strongly recommended, and other measures such as beta and the Sharpe ratio are often useful; and
- Composite results and performance figures should be verified as outlined in Appendix C.

## 2. Performance Attribution Analysis.

Performance attribution analysis consists of two parts: performance measurement and performance evaluation. The performance attribution analysis should be undertaken by the Trustees, or an independent third party such as an investment consultant, and verified against and compared to measurements provided by the investment managers. General guidelines follow for each part of the performance attribution analysis.

*Performance measurement* consists of calculating various statistics concerning the portfolio. For equity portfolios the following averages should be calculated: price/earnings ratio; price/book ratio; yield; market capitalization weighting (small, mid, or large cap companies); industry, sector and country concentrations; trading costs; and turnover.

For fixed income portfolios, the following averages should be calculated: bond duration; bond maturity; quality ratings; sector weights; country weights (for international portfolios); and trading costs.

*Performance evaluation* consists of analyzing the factors that may have affected the performance of each portfolio. The first step is to analyze the capital market and overall economic factors, such as interest rates, economic growth, and market sentiment. Second, factors are examined which provide insights into how the investment decisions, and ultimate performance, of the investment manager compares to other managers following a similar style. This allows the Trustees to see whether the manager is deviating from the stated investment strategy. Also, if a manager's performance has significantly deviated (either positively or negatively) from the peer group, an examination of the portfolio's characteristics should reveal the source of the outlying performance.

Finally, the performance of the investment manager is compared against the benchmarks and security guidelines agreed upon in the IPS or in the written agreement between the plan and the manager. It is important to emphasize that the benchmarks and guidelines should be put in writing at the time the IPS is written and when individual investment managers are hired, not after the fact. A common mistake is to evaluate (either positively or negatively) a manager against other hired managers, rather than against the pre-determined benchmarks.

**3. Rebalancing the Portfolio.**

The third step in monitoring is rebalancing the portfolio back to the strategic asset allocation formalized in the IPS. As the asset mix changes as a result of price fluctuations in the portfolio, there will be times when the asset mix falls outside the limits that were established in the IPS. Once the asset mix has fallen outside of the established limits, steps generally will be taken as outlined in the Investment Policy Statement to return the actual asset allocation to within acceptable boundaries.

Some important general guidelines concerning rebalancing include the following:

- Rebalancing limits in the IPS have to be set realistically wide enough so that frequent readjustments of the portfolio do not occur;
- There are various methodologies which can be employed to rebalance, but a common method is to utilize a sweep account, into which new contributions, stock dividend income and bond interest income is placed;

- When rebalancing takes place, the asset allocation should be returned to within established limits, not necessarily back to the exact target allocation;
- Trustees should not be tempted to forego rebalancing due to its “counter-intuitive” nature, i.e. selling strong performing assets and purchasing weaker assets. It is precisely by selling high and buying low in order to maintain the chosen asset allocation that the portfolio continues to possess the preferred risk/return characteristics; and
- Periodic rebalancing of the portfolio creates additional transaction expenses. However, the benefits of rebalancing (maintaining the strategic asset allocation) outweigh these transactions costs.

## 4. Controlling Investment Expenses

The control of investment expenses is an important duty of the Trustees, since investment costs have a direct impact on performance. Investment expenses should be reviewed and evaluated on an annual basis. This is particularly important as plan assets increase in size, since larger assets increase the negotiating power of the plan. Many expenses remain hidden, and it is the duty of the Trustees to ask probing questions so that all costs are made transparent. There is a significant disparity in fees charged by service providers and investment managers, and through the insistence of full disclosure and the proper management of cost will the Trustees be assured of paying reasonable expenses (and, therefore, fulfilling their fiduciary duty).

A related topic is the monitoring of the services provided by vendors. The Trustees must ensure accountability on the part of the outside service providers which are engaged. Clearly defined authority, duties, expectations and forms of compensation should be put down in writing. Service providers which provide investment advice on a non-discretionary basis should be required to acknowledge fiduciary responsibility in writing.

Portfolio management costs and expenses can be broken down into four categories:

A. brokerage costs, including commissions, execution expenses and soft dollars;
B. custodial charges, including transaction fees and annual expenses of money market funds used for cash sweeps;
C. investment manager fees and/or annual expenses of mutual funds;
D. investment consulting fees;

**A. Brokerage Costs.** Brokerage costs, also referred to as trading costs, are comprised of commissions, and the related concept of soft dollars, and execution costs. Trustees are charged with seeking *best execution*, which means minimizing brokerage costs. Regarding commission costs and soft dollar accounts, the following guidelines should be used.

- The duty of the Trustees is to choose a commission cost structure and to negotiate commissions so that low, “competitive” commissions are paid. The negotiated fees for any manager should be consistent with those paid by the ARMB to other managers providing similar services; and

- If it is decided to place all trades through one broker to benefit from "reduced" commission costs and/or to receive ancillary services, such as investment consulting, it should be determined whether this results in best execution by asking:
  --Is the plan making full use of the ancillary services, or would it be better to purchase these directly?
  --Would total trading costs be lower if hired investment managers had been directed to shop for minimum trading costs?

*Execution costs* are somewhat more complex. The execution cost is defined as the difference between the price actually paid or received and the "fair market price." If the market price changes "immediately" after the trade is executed, the trade was not undertaken at the "fair market price," and therefore an execution cost was incurred. In evaluating execution costs, the following factors should be considered.

- There are various ways to measure execution cost, and it is recommended that the plan hire a vendor which provides trading cost analysis services;
- Best execution is a more important issue in bond trading and thinly-traded securities; and
- If the current policy is to place all trades through one brokerage firm, the alternative of asking hired investment managers to seek best execution should be evaluated.

*Soft dollars* refers to an arrangement where a particular broker is used so that part of the commission costs can be applied to an activity which benefits the plan. The balance of the commission cost is retained by the broker to cover the cost of the trade. A close corollary to soft dollars is the practice of *commission recapture*, in which the paying of commissions earns credits which can be applied for custodial fees or consulting services.

If the plan is using, or considering using, a soft dollar or commission recapture arrangement, best execution indicates that a number of factors should be considered.

- Are the services being provided ones which the plan would purchase if a soft dollar or commission recapture arrangement did not exist?
- How much would it cost to purchase the services directly, and how does this cost compare to the commissions paid under the soft dollar or commission recapture arrangement versus other possibilities?
- It is difficult to precisely equate the value of services received to the dollars "spent" through soft dollar and commission recapture arrangements;
- Trustees should account for all dollars spent for services, whether paid directly from the account or through soft dollar/commission recapture arrangements; and
- Soft dollar and commission recapture arrangements are ultimately paid for by the plan, so they should be transparently disclosed as a plan expense.

**B. Bank Custodial Charges.** A bank custodian serves as an independent third-party intermediary between the investment manager and the plan sponsor, and performs the following tasks: (1) takes custody of securities; (2) provides reports on holdings and transactions; (3) collects interest and dividends; and (4) effectuates trades. Bank custodians may be paid either directly or through soft dollar/commission recapture arrangements.

In evaluating whether a custodian provides the necessary services in a cost-effective manner, a number of factors are important.

- The plan's assets should be held in a separate account;
- The annual charge should be stated in basis points, and can be negotiated to a competitive level;
- Available cash and interest payments should be swept daily into a money market or cash management account. A reasonable annual expense for a money market account used for cash sweeps is less than 40 basis points;
- Dividends should be posted as accrued income on the ex-dividend date;
- Will the account be charged wire redemption fees for incoming interest and dividends?
- What are the transaction costs, if any, for requesting checks for either beneficiaries or service providers?
- In addition to asset-based fees, are there any fixed charges?

C. **Investment Manager Fees.** Investment manager fees, stated in basis points, vary widely depending upon the asset class and the size of the account. Trustees should negotiate the fees, and make sure that they are competitive and in line with the average pattern of fees in the industry.

- Fees generally decrease as the size of the account increases;
- For a given portfolio size, fees for equity portfolios usually exceed those for bond portfolios;
- For a given portfolio size, fees for international portfolios generally exceed those for domestic portfolios;
- Fees for active management always exceed those for passive management;
- Fees are generally less if multiple portfolios are managed by the same organization; and
- Particular attention should be paid to a situation where a manager is being paid an above-average fee but is performing below its performance benchmark.

D. **Investment Consulting Fees.** Investment consultants may be paid either directly or through a soft dollar/commission recapture arrangement. Fees may be quoted on either a project or asset basis. There can be large disparities in the fees charged by consulting firms. In evaluating the costs (and benefits) of an investment consulting firm, the following should be examined.

- Does the investment consulting firm maintain a large support staff, maintain its own data bases, and service its own software? Investment consultants which do not rely on third-party vendors for services will generally charge higher fees, but provide more comprehensive and customized services;

- A good investment consultant should have a positive impact on the total fees paid by assisting with the negotiation of brokerage, custodial and investment manager fees; and
- Fees paid to an investment consultant should be evaluated against the assistance the investment consultant is providing in the management of investment decisions, most importantly contributing to both a procedurally prudent process and better risk control of the portfolio.

**Terminating an Investment Manager**

The monitoring process will eventually lead to a situation in which the Trustees will consider terminating an investment manager. Specific guidelines concerning the possible termination of an investment manager by the ARMB are contained in the watch list resolution. General questions which Trustees should ask when evaluating an investment manager for possible termination include:

- Has there been any change in the investment manager's investment style?
- Have there been any organizational changes or changes in ownership structure?
- Has the investment manager experienced any large increase or decrease in assets or accounts?
- Has there been any personnel turnover, or has a new portfolio manager been assigned?
- Is the investment manager beginning to consistently underperform relative to the peer group?
- Is the investment manager still properly registered with the SEC and State regulators?
- Is the investment manager still adhering to the securities, asset allocation and procedural guidelines established in the IPS?
- Has the investment manager been involved in any litigation, claims, assessments or regulatory investigations?

## Appendix B

The following general principles provide a practical summary of the fiduciary guidelines to be followed by the ARMB.

### FIDUCIARY CODE OF CONDUCT*

If you're going to do it,
do it right.

As you manage the investment decisions ----
document the process,
hire competent professionals,
and always, always remember
you work for the participant/beneficiary.

Never invest in something ----
you don't understand,
offers a below market return,
can't be sold within your own
investment horizon,
is difficult for you to value.

Only pay for what you get.
Don't buy commissioned products when
there are no-load or fee-based alternatives.
Don't hire... "the fox to count the chickens."

Understand that when everyone is talking about
making a killing - the market is already dead.
Believe in the statement ----
"The past is no indication of future performance."
Cautiously approach investments
that promise superior results.

Relish the opportunity to be a steward
of sound investment practices.
For in the end,
it's *procedural prudence*,
not performance, that counts.

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# Appendix C

## Performance Measurement Checklist and Detailed GIPS Standards

### Monthly

1. Review the custodian's appraisal report to:

    - check whether current holdings are consistent with each investment manager's investment strategy and mandate;
    - check whether the asset mix falls within the guidelines, paying particular attention to the cash component of an equity manager's portfolio; and
    - trading costs and custodial transactions.

2. Compare the performance against the relevant benchmarks for outlying performance (i.e., extreme over- or underperformance).

### Quarterly

1. Review the portfolio for compliance with investment guidelines, paying particular attention to the asset mix and guidelines for securities. If rebalancing is required, consider the impact that forthcoming contributions and withdrawals will have on the asset mix.

2. Determine if there are anticipated withdrawals over the forthcoming quarter and insure that there is adequate cash to meet disbursements. If securities have to be liquidated to raise cash, determine which investment managers should be notified. Pay attention to how the liquidation of securities may interact with possible rebalancing.

3. Determine if contributions are going to be made to the portfolio over the forthcoming quarter, and decide how the contribution is to be invested. Pay attention to how the investment of additional contributions relates to possible rebalancing.

4. Review the market values of all securities held in the portfolio, especially those with limited marketability. If the investment manager is providing the market values, conduct periodic audits to ensure accuracy.

5. Resolve any differences that exist between the investment manager's report of holdings and transactions and those contained in the custodian's appraisal report.

6. Calculate the portfolio's rate of return by asset class, by style or strategy (peer group comparison), and on a composite basis.

7. Compare each manager’s results against an appropriate benchmark, and against a performance universe of the manager’s style or peer group.

8. Verify the fee computation of each investment manager and vendor.

**Annually**

1. Review the plan’s short term investment procedures, including cash management.

2. Determine the performance results for short-term investments and cash management.

3. Review the managers’ proxy voting policy and results/issues.

4. Review the managers’ brokerage and trading activities, including:

   - use of soft dollars;
   - clearing arrangements and brokerage firms utilized;
   - quality of the execution of trades;
   - portfolio turnover; and
   - commission costs.

5. Review the investment manager’s organizational structure to determine if significant changes have occurred in the corporate or capital structure, investment style, brokerage affiliation or practices, investment process and professional staff.

**Monitoring the Custodian**

Custodial or brokerage statements should be reviewed at least annually.

1. Check that expenses are as specified and determined in accordance with the custodial or brokerage agreement.

2. Examine the cash management procedures to verify that sweeps and other appropriate accounting methodologies are being utilized.

3. Examine the credits, execution and brokerage costs, and uses of commission dollars.

4. Where appropriate, proxy voting policies and procedures should be determined, particularly if the assets are in a third-party custodian’s name.

5. Check that asset valuation is credible and, where appropriate, has been independently verified.

6. Make sure that income accruals are in place and are valid.

7. Verify that the account reconciles (i.e., that there are no suppressed trades).

**Details of GIPS Performance Reporting Standards for Investment Managers (enacted January 2010)**

The provisions within Chapter I of the GIPS standards are divided into the following nine sections: Fundamentals of Compliance, Input Data, Calculation Methodology, Composite Construction, Disclosure, Presentation and Reporting, Real Estate, Private Equity, and Wrap Fee/Separately Managed Account (SMA) Portfolios.

The provisions for each section are categorized into requirements and recommendations. Firms must meet all the requirements to claim compliance with the GIPS standards. Firms are encouraged to implement as many of the recommendations as possible. These recommended provisions are considered to be industry best practice and assist firms in fully adhering to the spirit and intent of the GIPS standards.

0. **Fundamentals of Compliance:** Several core principles create the foundation for the GIPS standards, including properly defining the firm, providing compliant presentations to all prospective clients, adhering to applicable laws and regulations, and ensuring that information presented is not false or misleading. Two important issues that a firm must consider when becoming compliant with the GIPS standards are the definition of the firm and the firm’s definition of discretion. The definition of the firm is the foundation for firm-wide compliance and creates defined boundaries whereby total firm assets can be determined. The firm’s definition of discretion establishes criteria to judge which portfolios must be included in a composite and is based on the firm’s ability to implement its investment strategy.

1. **Input Data:** Consistency of input data used to calculate performance is critical to effective compliance with the GIPS standards and establishes the foundation for full, fair, and comparable investment performance presentations. For periods beginning on or after 1 January 2011, all portfolios must be valued in accordance with the definition of fair value and the GIPS Valuation Principles in Chapter II.

2. **Calculation Methodology:** Achieving comparability among investment management firms’ performance presentations requires uniformity in methods used to calculate returns. The GIPS standards mandate the use of certain calculation methodologies to facilitate comparability.

3. **Composite Construction:** A composite is an aggregation of one or more portfolios managed according to a similar investment mandate, objective, or strategy. The composite return is the asset-weighted average of the performance of all portfolios in the composite. Creating meaningful composites is essential to the fair presentation, consistency, and comparability of performance over time and among firms.

4. **Disclosure:** Disclosures allow firms to elaborate on the data provided in the presentation and give the reader the proper context in which to understand the performance. To comply with

the GIPS standards, firms must disclose certain information in all compliant presentations regarding their performance and the policies adopted by the firm. Although some disclosures are required for all firms, others are specific to certain circumstances and may not be applicable in all situations. Firms are not required to make negative assurance disclosures (e.g., if the firm does not use leverage in a particular composite strategy, no disclosure of the use of leverage is required). One of the essential disclosures for every firm is the claim of compliance. Once a firm meets all the requirements of the GIPS standards, it must appropriately use the claim of compliance to indicate compliance with the GIPS standards. The 2010 edition of the GIPS standards includes a revised compliance statement that indicates if the firm has or has not been verified.

5. **Presentation and Reporting:** After constructing the composites, gathering the input data, calculating returns, and determining the necessary disclosures, the firm must incorporate this information in presentations based on the requirements in the GIPS standards for presenting investment performance. No finite set of requirements can cover all potential situations or anticipate future developments in investment industry structure, technology, products, or practices. When appropriate, firms have the responsibility to include in GIPS-compliant presentations information not addressed by the GIPS standards.

6. **Real Estate:** Unless otherwise noted, this section supplements all of the required and recommended provisions in Sections 0–5 in Chapter I. Real estate provisions were first included in the 2005 edition of the GIPS standards and became effective 1 January 2006. The 2010 edition of the GIPS standards includes new provisions for closed-end real estate funds. Firms should note that certain provisions of Sections 0–5 in Chapter I of the GIPS standards do not apply to real estate investments or are superseded by provisions within Section 6 in Chapter I. The provisions that do not apply have been noted within Section 6 in Chapter I.

7. **Private Equity:** Unless otherwise noted, this section supplements all of the required and recommended provisions in Sections 0–5 in Chapter I. Private equity provisions were first included in the 2005 edition of the GIPS standards and became effective 1 January 2006. Firms should note that certain provisions in Sections 0–5 in Chapter I of the GIPS standards do not apply to private equity investments or are superseded by provisions within Section 7 in Chapter I. The provisions that do not apply have been noted within Section 7 in Chapter I.

8. **Wrap Fee/Separately Managed Account (SMA) Portfolios:** Unless otherwise noted, this section supplements all of the required and recommended provisions in Sections 0–5 in Chapter I. Firms should note that certain provisions in Sections 0–5 in Chapter I of the GIPS standards do not apply to wrap fee/SMA portfolios or are superseded by provisions within Section 8 in Chapter I. The provisions that do not apply have been noted within Section 8 in Chapter I.

## 0. FUNDAMENTALS OF COMPLIANCE

### Fundamentals of Compliance — Requirements

**0.A.1** Firms must comply with all the requirements of the GIPS standards, including any updates, Guidance Statements, interpretations, Questions & Answers (Q&As), and clarifications published by CFA Institute and the GIPS Executive Committee, which are available on the GIPS standards website (www.gipsstandards.org) as well as in the *GIPS Handbook*.

**0.A.2** Firms must comply with all applicable laws and regulations regarding the calculation and presentation of performance.

**0.A.3** Firms must not present performance or performance-related information that is false or misleading.

**0.A.4** The GIPS standards must be applied on a firm-wide basis.

**0.A.5** Firms must document their policies and procedures used in establishing and maintaining compliance with the GIPS standards, including ensuring the existence and ownership of client assets, and must apply them consistently.

**0.A.6** If the firm does not meet all the requirements of the GIPS standards, the firm must not represent or state that it is "in compliance with the Global Investment Performance Standards except for..." or make any other statements that may indicate partial compliance with the GIPS standards.

**0.A.7** Statements referring to the calculation methodology as being "in accordance," "in compliance," or "consistent" with the Global Investment Performance Standards, or similar statements, are prohibited.

**0.A.8** Statements referring to the performance of a single, existing client portfolio as being "calculated in accordance with the Global Investment Performance Standards" are prohibited, except when a GIPS-compliant firm reports the performance of an individual client's portfolio to that client.

**0.A.9** Firms must make every reasonable effort to provide a compliant presentation to all prospective clients. Firms must not choose to whom they present a compliant presentation. As long as a prospective client has received a compliant presentation within the previous 12 months, the firm has met this requirement.

**0.A.10** Firms must provide a complete list of composite descriptions to any prospective client that makes such a request. Firms must include terminated composites on the firm's list of composite descriptions for at least five years after the composite termination date.

**0.A.11** Firms must provide a compliant presentation for any composite listed on the firm's list of composite descriptions to any prospective client that makes such a request.

**0.A.12** Firms must be defined as an investment firm, subsidiary, or division held out to clients or prospective clients as a distinct business entity.

**0.A.13** For periods beginning on or after 1 January 2011, total firm assets must be the aggregate fair value of all discretionary and non-discretionary assets managed by the firm. This includes both fee-paying and non-fee-paying portfolios.

**0.A.14** Total firm assets must include assets assigned to a sub-advisor provided the firm has discretion over the selection of the sub-advisor.

**0.A.15** Changes in a firm's organization must not lead to alteration of historical composite performance.

**0.A.16** When the firm jointly markets with other firms, the firm claiming compliance with the GIPS standards must be sure that it is clearly defined and separate relative to other firms being marketed, and that it is clear which firm is claiming compliance.

**Fundamentals of Compliance — Recommendations**

**0.B.1** Firms should comply with the recommendations of the GIPS standards, including recommendations in any updates, Guidance Statements, interpretations, Questions & Answers (Q&As), and clarifications published by CFA Institute and the GIPS Executive Committee, which will be made available on the GIPS website (www.gipsstandards.org) as well as in the *GIPS Handbook.*

**0.B.2** Firms should be verified.

**0.B.3** Firms should adopt the broadest, most meaningful definition of the firm. The scope of this definition should include all geographical (country, regional, etc.) offices operating under the same brand name regardless of the actual name of the individual investment management company.

**0.B.4** Firms should provide to each existing client, on an annual basis, a compliant presentation of the composite in which the client's portfolio is included.

**1. INPUT DATA**
**Input Data — Requirements**

**1.A.1** All data and information necessary to support all items included in a compliant presentation must be captured and maintained.

**1.A.2** For periods beginning on or after 1 January 2011, portfolios must be valued in accordance with the definition of fair value and the GIPS Valuation Principles in Chapter II.

**1.A.3** Firms must value portfolios in accordance with the composite-specific valuation policy. Portfolios must be valued:

a. For periods beginning on or after 1 January 2001, at least monthly.

b. For periods beginning on or after 1 January 2010, on the date of all large cash flows. Firms must define large cash flow for each composite to determine when portfolios in that composite must be valued.

c. No more frequently than required by the valuation policy.

**1.A.4** For periods beginning on or after 1 January 2010, firms must value portfolios as of the calendar month end or the last business day of the month.

**1.A.5** For periods beginning on or after 1 January 2005, firms must use trade date accounting.

**1.A.6** Accrual accounting must be used for fixed-income securities and all other investments that earn interest income. The value of fixed-income securities must include accrued income.

**1.A.7** For periods beginning on or after 1 January 2006, composites must have consistent beginning and ending annual valuation dates. Unless the composite is reported on a non-calendar fiscal year, the beginning and ending valuation dates must be at calendar year end or on the last business day of the year.

**Input Data — Recommendations**

**1.B.1** Firms should value portfolios on the date of all external cash flows.

**1.B.2** Valuations should be obtained from a qualified independent third party.

**1.B.3** Accrual accounting should be used for dividends (as of the ex-dividend date).

**1.B.4** Firms should accrue investment management fees.

**2. CALCULATION METHODOLOGY**
**Calculation Methodology — Requirements**

**2.A.1** Total returns must be used.

**2.A.2** Firms must calculate time-weighted rates of return that adjust for external cash flows. Both periodic and sub-period returns must be geometrically linked. External cash flows must be treated according to the firm's composite-specific policy. At a minimum:

a. For periods beginning on or after 1 January 2001, firms must calculate portfolio returns at least monthly.

b. For periods beginning on or after 1 January 2005, firms must calculate portfolio returns that adjust for daily-weighted external cash flows.

**2.A.3** Returns from cash and cash equivalents held in portfolios must be included in all return calculations.

**2.A.4** All returns must be calculated after the deduction of the actual trading expenses incurred during the period. Firms must not use estimated trading expenses.

**2.A.5** If the actual trading expenses cannot be identified and segregated from a bundled fee:

a. When calculating gross-of-fees returns, returns must be reduced by the entire bundled fee or the portion of the bundled fee that includes the trading expenses. Firms must not use estimated trading expenses.

b. When calculating net-of-fees returns, returns must be reduced by the entire bundled fee or the portion of the bundled fee that includes the trading expenses and the investment management fee. Firms must not use estimated trading expenses.

**2.A.6** Composite returns must be calculated by asset-weighting the individual portfolio returns using beginning-of-period values or a method that reflects both beginning-of-period values and external cash flows.

**2.A.7** Composite returns must be calculated:

a. For periods beginning on or after 1 January 2006, by asset-weighting the individual portfolio returns at least quarterly.

b. For periods beginning on or after 1 January 2010, by asset-weighting the individual portfolio returns at least monthly.

**Calculation Methodology — Recommendations**

**2.B.1** Returns should be calculated net of non-reclaimable withholding taxes on dividends, interest, and capital gains. Reclaimable withholding taxes should be accrued.

**2.B.2** For periods prior to 1 January 2010, firms should calculate composite returns by asset-weighting the individual portfolio returns at least monthly.

## 3. COMPOSITE CONSTRUCTION

**Composite Construction — Requirements**

**3.A.1** All actual, fee-paying, discretionary portfolios must be included in at least one composite. Although non-fee-paying discretionary portfolios may be included in a composite (with appropriate disclosure), non-discretionary portfolios must not be included in a firm's composites.

**3.A.2** Composites must include only actual assets managed by the firm.

**3.A.3** Firms must not link performance of simulated or model portfolios with actual performance.

**3.A.4** Composites must be defined according to investment mandate, objective, or strategy. COMPOSITES MUST include all PORTFOLIOS that meet the composite definition. Any change to a composite definition must not be applied retroactively. The composite definition must be made available upon request.

**3.A.5** Composites must include new portfolios on a timely and consistent basis after each portfolio comes under management.

**3.A.6** Terminated portfolios must be included in the historical performance of the composite up to the last full measurement period that each portfolio was under management.

**3.A.7** Portfolios must not be switched from one composite to another unless documented changes to a portfolio's investment mandate, objective, or strategy or the redefinition of the composite makes it appropriate. The historical performance of the portfolio must remain with the original composite.

**3.A.8** For periods beginning on or after 1 January 2010, a carve-out must not be included in a composite unless the carve-out is managed separately with its own cash balance.

**3.A.9** If the firm sets a minimum asset level for portfolios to be included in a composite, the firm must not include portfolios below the minimum asset level in that composite. Any changes to a composite-specific minimum asset level must not be applied retroactively.

**3.A.10** Firms that wish to remove portfolios from composites in cases of significant cash flows must define "significant" on an ex-ante, composite-specific basis and must consistently follow the composite-specific policy.

**Composite Construction — Recommendations**

**3.B.1** If the firm sets a minimum asset level for portfolios to be included in a composite, the firm should not present a compliant presentation of the composite to a prospective client known not to meet the composite's minimum asset level.

**3.B.2** To remove the effect of a significant cash flow, the firm should use a temporary new account.

**4. DISCLOSURE**
**Disclosure — Requirements**

**4.A.1** Once a firm has met all the requirements of the GIPS standards, the firm must disclose its compliance with the GIPS standards using one of the following compliance statements.

The claim of compliance must only be used in a compliant presentation. For firms that are verified: "[Insert name of firm] claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. [Insert name of firm] has been independently verified for the periods [insert dates]. The verification report(s) is/are available upon request. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. Verification does not ensure the accuracy of any specific composite presentation."

For composites of a verified firm that have also had a performance examination:
"[Insert name of firm] claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. [Insert name of firm] has been independently verified for the periods [insert dates]. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The [insert name of composite] composite has been examined for the periods [insert dates]. The verification and performance examination reports are available upon request."

For firms that have not been verified:
"[Insert name of firm] claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS standards. [Insert name of firm] has not been independently verified."

**4.A.2** Firms must disclose the definition of the firm used to determine total firm assets and firm-wide compliance.

**4.A.3** Firms must disclose the composite description.

**4.A.4** Firms must disclose the benchmark description.

**4.A.5** When presenting gross-of-fees returns, firms must disclose if any other fees are deducted in addition to the trading expenses.

**4.A.6** When presenting net-of-fees returns, firms must disclose:

a. If any other fees are deducted in addition to the investment management fees and trading expenses;
b. If model or actual investment management fees are used; and
c. If returns are net of any performance-based fees.

**4.A.7** Firms must disclose the currency used to express performance.

**4.A.8** Firms must disclose which measure of internal dispersion is presented.

**4.A.9** Firms must disclose the fee schedule appropriate to the compliant presentation.

**4.A.10** Firms must disclose the composite creation date.

**4.A.11** Firms must disclose that the firm's list of composite descriptions is available upon request.

**4.A.12** Firms must disclose that policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.

**4.A.13** Firms must disclose the presence, use, and extent of leverage, derivatives, and short positions, if material, including a description of the frequency of use and characteristics of the instruments sufficient to identify risks.

**4.A.14** Firms must disclose all significant events that would help a prospective client interpret the compliant presentation.

**4.A.15** For any performance presented for periods prior to 1 January 2000 that does not comply with the GIPS standards, firms must disclose the periods of non-compliance.

**4.A.16** If the firm is redefined, the firm must disclose the date of, description of, and reason for the redefinition.

**4.A.17** If a composite is redefined, the firm must disclose the date of, description of, and reason for the redefinition.

**4.A.18** Firms must disclose changes to the name of a composite.

**4.A.19** Firms must disclose the minimum asset level, if any, below which portfolios are not included in a composite. firms must also disclose any changes to the minimum asset level.

**4.A.20** Firms must disclose relevant details of the treatment of withholding taxes on dividends, interest income, and capital gains, if material. Firms must also disclose if benchmark returns are net of withholding taxes if this information is available.

**4.A.21** For periods beginning on or after 1 January 2011, firms must disclose and describe any known material differences in exchange rates or valuation sources used among the portfolios within a composite, and between the composite and the benchmark.

**4.A.22** If the compliant presentation conforms with laws and/or regulations that conflict with the requirements of the GIPS standards, firms must disclose this fact and disclose the manner in which the laws and/or regulations conflict with the GIPS standards.

**4.A.23** For periods prior to 1 January 2010, if carve-outs are included in a composite, firms must disclose the policy used to allocate cash to carve-outs.

**4.A.24** If a composite contains portfolios with bundled fees, firms must disclose the types of fees that are included in the bundled fee.

**4.A.25** For periods beginning on or after 1 January 2006, firms must disclose the use of a sub-advisor and the periods a sub-advisor was used.

**4.A.26** For periods prior to 1 January 2010, firms must disclose if any portfolios were not valued at calendar month end or on the last business day of the month.

**4.A.27** For periods beginning on or after 1 January 2011, firms must disclose the use of subjective unobservable inputs for valuing portfolio investments (as described in the GIPS Valuation Principles in Chapter II) if the portfolio investments valued using subjective unobservable inputs are material to the composite.

**4.A.28** For periods beginning on or after 1 January 2011, firms must disclose if the composite's valuation hierarchy materially differs from the recommended hierarchy in the GIPS Valuation Principles in Chapter II.

**4.A.29** If the firm determines no appropriate benchmark for the composite exists, the firm must disclose why no benchmark is presented.

**4.A.30** If the firm changes the benchmark, the firm must disclose the date of, description of, and reason for the change.

**4.A.31** If a custom benchmark or combination of multiple benchmarks is used, the firm must disclose the benchmark components, weights, and rebalancing process.

**4.A.32** If the firm has adopted a significant cash flow policy for a specific composite, the firm must disclose how the firm defines a significant cash flow for that composite and for which periods.

**4.A.33** Firms must disclose if the three-year annualized ex-post standard deviation of the composite and/or benchmark is not presented because 36 monthly returns are not available.

**4.A.34** If the firm determines that the three-year annualized ex-post standard deviation is not relevant or appropriate, the firm must:

a. Describe why ex-post standard deviation is not relevant or appropriate; and
b. Describe the additional risk measure presented and why it was selected.

**4.A.35** Firms must disclose if the performance from a past firm or affiliation is linked to the performance of the firm.

**Disclosure — Recommendations**

**4.B.1** Firms should disclose material changes to valuation policies and/or methodologies.

**4.B.2** Firms should disclose material changes to calculation policies and/or methodologies.

**4.B.3** Firms should disclose material differences between the benchmark and the composite's investment mandate, objective, or strategy.

**4.B.4** Firms should disclose the key assumptions used to value portfolio investments.

**4.B.5** If a parent company contains multiple firms, each firm within the parent company should disclose a list of the other firms contained within the parent company.

**4.B.6** For periods prior to 1 January 2011, firms should disclose the use of subjective unobservable inputs for valuing portfolio investments (as described in the GIPS Valuation Principles in Chapter II) if the portfolio investments valued using subjective unobservable inputs are material to the composite.

**4.B.7** For periods prior to 1 January 2006, firms should disclose the use of a sub-advisor and the periods a sub-advisor was used.

**4.B.8** Firms should disclose if a composite contains proprietary assets.

**5. PRESENTATION AND REPORTING**
**Presentation and Reporting — Requirements**

**5.A.1** The following items must be presented in each compliant presentation:

a. At least five years of performance (or for the period since the firm's inception or the composite inception date if the firm or the composite has been in existence less than five years) that meets the requirements of the GIPS standards. After a firm presents a minimum of five years of GIPS compliant performance (or for the period since the firm's inception or the composite inception date if the firm or the composite has been in existence less than five years), the firm must present an additional year of performance each year, building up to a minimum of 10 years of GIPS compliant performance.

b. Composite returns for each annual period. Composite returns must be clearly identified as gross-of-fees or net-of-fees.

c. For composites with a composite inception date of 1 January 2011 or later, when the initial period is less than a full year, returns from the Composite inception date through the initial annual period end.

d. For composites with a composite termination date of 1 January 2011 or later, returns from the last annual period end through the composite termination date.

e. The total return for the benchmark for each annual period. The benchmark must reflect the investment mandate, objective, or strategy of the composite.

f. The number of portfolios in the composite as of each annual period end. If the composite contains five or fewer portfolios at period end, the number of portfolios is not required.

g. composite assets as of each annual period end.

h. Either total firm assets or composite assets as a percentage of total firm assets, as of each annual period end.

i. A measure of internal dispersion of individual portfolio returns for each annual period. If the composite contains five or fewer portfolios for the full year, a measure of internal dispersion is not required.

**5.A.2** For periods ending on or after 1 January 2011, firms must present, as of each annual period end:

a. The three-year annualized ex-post standard deviation (using monthly returns) of both the composite and the benchmark; and

b. An additional three-year ex-post risk measure for the benchmark (if available and appropriate) and the composite, if the firm determines that the three-year annualized ex-post standard deviation is not relevant or appropriate. The periodicity of the composite and the benchmark must be identical when calculating the ex-post risk measure.

**5.A.3** Firms must not link non-GIPS-compliant performance for periods beginning on or after 1 January 2000 to their GIPS-compliant performance. Firms may link non-GIPS-compliant performance to GIPS-compliant performance provided that only GIPS-compliant performance is presented for periods beginning on or after 1 January 2000.

**5.A.4** Returns for periods of less than one year must not be annualized.

**5.A.5** For periods beginning on or after 1 January 2006 and ending prior to 1 January 2011, if a composite includes carve-outs, the firm must present the percentage of composite assets represented by carve-outs as of each annual period end.

**5.A.6** If a composite includes non-fee-paying portfolios, the firm must present the percentage of composite assets represented by non-fee-paying portfolios as of each annual period end.

**5.A.7** If a composite includes portfolios with bundled fees, the firm must present the percentage of composite assets represented by portfolios with bundled fees as of each annual period end.

**5.A.8** a. Performance of a past firm or affiliation must be linked to or used to represent the historical performance of a new or acquiring firm if, on a composite-specific basis:

i. Substantially all of the investment decision makers are employed by the new or acquiring firm (e.g., research department staff, portfolio managers, and other relevant staff);

ii. The decision-making process remains substantially intact and independent within the new or acquiring firm; and

iii. The new or acquiring firm has records that document and support the performance.

b. If a firm acquires another firm or affiliation, the firm has one year to bring any non-compliant assets into compliance.

**Presentation and Reporting — Recommendations**

**5.B.1** Firms should present gross-of-fees returns.

**5.B.2** Firms should present the following items:

a. Cumulative returns of the composite and the benchmark for all periods;
b. Equal-weighted mean and median composite returns;
c. Quarterly and/or monthly returns; and
d. Annualized composite and benchmark returns for periods longer than 12 months.

**5.B.3** For periods prior to 1 January 2011, firms should present the three-year annualized ex-post standard deviation (using monthly returns) of the composite and the benchmark as of each annual period end.

**5.B.4** For each period for which an annualized ex-post standard deviation of the composite and the benchmark are presented, the corresponding annualized return of the composite and the benchmark should also be presented.

**5.B.5** For each period for which an annualized return of the composite and the benchmark are presented, the corresponding annualized ex-post standard deviation (using monthly returns) of the composite and the benchmark should also be presented.

**5.B.6** Firms should present additional relevant composite-level ex-post risk measures.

**5.B.7** Firms should present more than 10 years of annual performance in the compliant presentation.

**5.B.8** Firms should comply with the GIPS standards for all historical periods.

**5.B.9** Firms should update compliant presentations quarterly.

**6. REAL ESTATE**

Unless otherwise noted, the following real estate provisions supplement the required and recommended provisions of the GIPS standards in Sections 0–5 in Chapter I. real estate provisions were first included in the GIPS standards in 2005 and became effective 1 January 2006. All compliant presentations that included real estate performance for periods beginning on or after 1 January 2006 were required to meet all the requirements of the real estate provisions of the 2005 edition of the GIPS standards.

The following real estate provisions are effective 1 January 2011. All real estate composites that include performance for periods beginning on or after 1 January 2011 must comply with all the requirements and should adhere to the recommendations of the following real estate provisions.

The following investment types are not considered real estate and, therefore, must follow Sections 0–5 in Chapter I:

• Publicly traded real estate securities;

• Commercial mortgage-backed securities (CMBS); and
• Private debt investments, including commercial and residential loans where the expected return is solely related to contractual interest rates without any participation in the economic performance of the underlying real estate.

**REAL ESTATE — REQUIREMENTS**
**Input Data — Requirements (the following provisions do not apply: 1.A.3.a, 1.A.3.b, and 1.A.4)**

**6.A.1** For periods beginning on or after 1 January 2011, real estate investments must be valued in accordance with the definition of fair value and the GIPS Valuation Principles in Chapter II.

**6.A.2** For periods beginning on or after 1 January 2008, real estate investments must be valued at least quarterly.

**6.A.3** For periods beginning on or after 1 January 2010, firms must value portfolios as of each quarter end or the last business day of each quarter.

**6.A.4** Real estate investments must have an external valuation:
a. For periods prior to 1 January 2012, at least once every 36 months.
b. For periods beginning on or after 1 January 2012, at least once every 12 months unless client agreements stipulate otherwise, in which case real estate investments must have an external valuation at least once every 36 months or per the client agreement if the client agreement requires external valuations more frequently than every 36 months.

**6.A.5** External valuations must be performed by an independent external professionally designated, certified, or licensed commercial property valuer/appraiser. In markets where these professionals are not available, the firm must take necessary steps to ensure that only well-qualified independent property valuers or appraisers are used.

**Calculation Methodology — Requirements (the following provisions do not apply: 2.A.2.a, 2.A.4, and 2.A.7)**

**6.A.6** Firms must calculate portfolio returns at least quarterly.

**6.A.7** All returns must be calculated after the deduction of actual transaction expenses incurred during the period.

**6.A.8** For periods beginning on or after 1 January 2011, income returns and capital returns (component returns) MUST be calculated separately using geometrically linked time-weighted rates of return.

**6.A.9** Composite time-weighted rates of return, including component returns, must be calculated by asset-weighting the individual portfolio returns at least quarterly.

**Disclosure — Requirements (the following provisions do not apply: 4.A.5, 4.A.6.a, 4.A.15, 4.A.26, 4.A.33, and 4.A.34)**

**6.A.10** The following items must be disclosed in each compliant presentation:

a. The firm's description of discretion;

b. The internal valuation methodologies used to value real estate investments for the most recent period;

c. For periods beginning on or after 1 January 2011, material changes to valuation policies and/or methodologies;

d. For periods beginning on or after 1 January 2011, material differences between an external valuation and the valuation used in performance reporting and the reason for the differences;

e. The frequency real estate investments are valued by an independent external professionally designated, certified, or licensed commercial property valuer/appraiser;

f. When component returns are calculated separately using geometrically linked time-weighted rates of return; and

g. For periods prior to 1 January 2011, if component returns are adjusted such that the sum of the income return and the capital return equals the total return.

**6.A.11** For any performance presented for periods prior to 1 January 2006 that does not comply with the GIPS standards, firms must disclose the periods of noncompliance.

**6.A.12** When presenting gross-of-fees returns, firms must disclose if any other fees are deducted in addition to the transaction expenses.

**6.A.13** When presenting net-of-fees returns, firms must disclose if any other fees are deducted in addition to the investment management fees and transaction expenses.

**Presentation and Reporting — Requirements (the following provisions do not apply: 5.A.1.i, 5.A.2, and 5.A.3)**

**6.A.14** Firms must present component returns in addition to total returns. Composite component returns must be clearly identified as gross-of-fees or net-of-fees.

**6.A.15** Firms must not link non-GIPS-compliant performance for periods beginning on or after 1 January 2006 to their GIPS-compliant performance. Firms may link non-GIPS-compliant performance to their GIPS-compliant performance provided that only GIPS-compliant performance is presented for periods beginning on or after 1 January 2006.

**6.A.16** The following items must be presented in each compliant presentation:

a. As a measure of internal dispersion, high and low annual time-weighted rates of return for the individual portfolios in the composite. If the composite contains five or fewer portfolios for the full year, a measure of internal dispersion is not required.

b. As of each annual period end, the percentage of composite assets valued using an external valuation during the annual period.

**The following provisions are additional requirements for real estate closed-end fund composites:**

**Calculation Methodology — Requirements**

**6.A.17** Firms must calculate annualized since inception internal rates of return (SI-IRR).

**6.A.18** The SI-IRR must be calculated using quarterly cash flows at a minimum.

**Composite Construction — Requirements**

**6.A.19** Composites must be defined by vintage year and investment mandate, objective, or strategy. The composite definition must remain consistent throughout the life of the composite.

**Disclosure — Requirements**

**6.A.20** Firms must disclose the final liquidation date for liquidated composites.

**6.A.21** Firms must disclose the frequency of cash flows used in the SI-IRR calculation.

**6.A.22** Firms must disclose the vintage year of the composite and how the vintage year is defined.

**Presentation and Reporting — Requirements**

**6.A.23** The following items must be presented in each compliant presentation:

a. Firms must present the net-of-fees SI-IRR of the composite through each annual period end. Firms must initially present at least five years of performance (or for the period since the firm's inception or the composite inception date if the firm or the composite has been in existence less than five years) that meets the requirements of the GIPS standards. Each subsequent year, firms must present an additional year of performance.

b. For periods beginning on or after 1 January 2011, when the initial period is less than a full year, firms must present the non-annualized net-of-fees SI-IRR through the initial annual period end.

c. For periods ending on or after 1 January 2011, firms must present the net-of- fees SI-IRR through the composite final liquidation date.

**6.A.24** If the gross-of-fees SI-IRR of the composite is presented in the compliant presentation, firms must present the gross-of-fees SI-IRR of the composite for the same periods as the net-of-fees SI-IRR is presented.

**6.A.25** Firms must present, as of each annual period end:

a. composite since inception paid-in capital;
b. composite since inception distributions;
c. composite cumulative committed capital;
d. total value to since inception paid-in capital (investment multiple or TVPI);
e. since inception distributions to since inception paid-in capital (realization multiple or DPI);
f. since inception paid-in capital to cumulative committed capital (PIC Multiple); and
g. residual value to since inception paid-in capital (Unrealized Multiple or RVPI).

**6.A.26** Firms must present the SI-IRR of the benchmark through each annual period end. The benchmark must:

a. Reflect the investment mandate, objective, or strategy of the composite;
b. Be presented for the same time period as presented for the composite; and
c. Be the same vintage year as the composite.

**REAL ESTATE — RECOMMENDATIONS**
**Input Data — Recommendations (the following provision does not apply: 1.B.1)**

**6.B.1** For periods prior to 1 January 2012, real estate investments should be valued by an independent external professionally designated, certified, or licensed commercial property valuer/appraiser at least once every 12 months.

**6.B.2** Real estate investments should be valued as of the annual period end by an independent external professionally designated, certified, or licensed commercial property valuer/appraiser.

**Disclosure — Recommendations**

**6.B.3** Firms should disclose the basis of accounting for the portfolios in the composite (e.g., U.S. GAAP, IFRS).

**6.B.4** Firms should explain and disclose material differences between the valuation used in performance reporting and the valuation used in financial reporting as of each annual period end.

**6.B.5** For periods prior to 1 January 2011, firms should disclose material changes to valuation policies and/or methodologies.

**Presentation and Reporting — Recommendations (the following provisions do not apply: 5.B.3, 5.B.4, and 5.B.5)**

**6.B.6** Firms should present both gross-of-fees and net-of-fees returns.

**6.B.7** Firms should present the percentage of the total value of composite assets that are not real estate as of each annual period end.

**6.B.8** Firms should present the component returns of the benchmark, if available.

**The following provision is an additional RECOMMENDATION for REAL ESTATE CLOSED-END FUND COMPOSITES:**

**Calculation Methodology — Recommendations**

**6.B.9** The SI-IRR should be calculated using daily cash flows.

## 7. PRIVATE EQUITY

Unless otherwise noted, the following private equity provisions supplement the required and recommended provisions of the GIPS standards in Sections 0–5 in Chapter I.

Private equity provisions were first included in the GIPS standards in 2005 and became effective 1 January 2006. All compliant presentations that included private equity performance for periods ending on or after 1 January 2006 were required to meet all the requirements of the private equity provisions of the 2005 edition of the GIPS standards.

The following private equity provisions are effective 1 January 2011. All private equity composites that include performance for periods ending on or after 1 January 2011 must comply with all the requirements and should comply with the recommendations of the following private equity provisions.

The following are provisions that apply to the calculation and presentation of private equity investments made by fixed life, fixed commitment private equity investment vehicles including primary funds and funds of funds. These provisions also apply to fixed life, fixed commitment secondary funds, which must apply either the provisions applicable to primary funds or the provisions applicable to funds of funds depending on which form the secondary fund uses to make investments. private equity open-end end evergreen funds must follow Sections 0–5 in Chapter I. real estate closed-end funds must follow Section 6 in Chapter I.

**PRIVATE EQUITY — REQUIREMENTS**

**Input Data — Requirements (the following provisions do not apply: 1.A.3.a, 1.A.3.b, and 1.A.4)**

**7.A.1** For periods ending on or after 1 January 2011, private equity investments must be valued in accordance with the definition of fair value and the GIPS Valuation Principles in Chapter II.

**7.A.2** Private equity investments must be valued at least annually.

**Calculation Methodology — Requirements (the following provisions do not apply: 2.A.2, 2.A.4, 2.A.6, and 2.A.7)**

**7.A.3** Firms must calculate annualized since inception internal rates of return (SI-IRR).

**7.A.4** For periods ending on or after 1 January 2011, the SI-IRR must be calculated using daily cash flows. Stock distributions must be included as cash flows and must be valued at the time of distribution.

**7.A.5** All returns must be calculated after the deduction of actual transaction expenses incurred during the period.

**7.A.6** Net-of-fees returns must be net of actual investment management fees (including carried interest).

**7.A.7** For funds of funds, all returns must be net of all underlying partnership and/or fund fees and expenses, including carried interest.

**Composite Construction — Requirements (the following provision does not apply: 3.A.10)**

**7.A.8** Composite definitions must remain consistent throughout the life of the composite.

**7.A.9** Primary funds must be included in at least one composite defined by vintage year and investment mandate, objective, or strategy.

**7.A.10** Funds of funds must be included in at least one composite defined by vintage year of the fund of funds and/or investment mandate, objective, or strategy.

**Disclosure — Requirements (the following provisions do not apply: 4.A.5, 4.A.6.a, 4.A.6.b, 4.A.8, 4.A.15, 4.A.26, 4.A.32, 4.A.33, and 4.A.34)**

**7.A.11** Firms must disclose the vintage year of the composite and how the vintage year is defined.

**7.A.12** Firms must disclose the final liquidation date for liquidated composites.

**7.A.13** Firms must disclose the valuation methodologies used to value private equity investments for the most recent period.

**7.A.14** For periods ending on or after 1 January 2011, firms must disclose material changes to valuation policies and/or methodologies.

**7.A.15** If the firm adheres to any industry valuation guidelines in addition to the GIPS Valuation Principles, the firm must disclose which guidelines have been applied.

**7.A.16** Firms must disclose the calculation methodology used for the benchmark. If firms present the public market equivalent of a composite as a benchmark, firms must disclose the index used to calculate the public market equivalent.

**7.A.17** Firms must disclose the frequency of cash flows used in the SI-IRR calculation if daily cash flows are not used for periods prior to 1 January 2011.

**7.A.18** For gross-of-fees returns, firms must disclose if any other fees are deducted in addition to the transaction expenses.

**7.A.19** For Net-of-fees returns, firms must disclose if any other fees are deducted in addition to the investment management fees and transaction expenses.

**7.A.20** For any performance presented for periods ending prior to 1 January 2006 that does not comply with the GIPS standards, firms must disclose the periods of non-compliance.

**Presentation and Reporting — Requirements (the following provisions do not apply: 5.A.1.a, 5.A.1.b, 5.A.1.c, 5.A.1.d, 5.A.1.e, 5.A.1.i, 5.A.2, and 5.A.3)**

**7.A.21** The following items must be presented in each compliant presentation:

a. firms must present both the net-of-fees and gross-of-fees SI-IRR of the composite through each annual period end. Firms must initially present at least five years of performance (or for the period since the firm's inception or the composite inception date if the firm or the composite has been in existence less than five years) that meets the requirements of the GIPS standards. Each subsequent year, firms must present an additional year of performance. composite returns must be clearly identified as gross-of-fees or net-of-fees.

b. For periods beginning on or after 1 January 2011, when the initial period is less than a full year, firms must present the non-annualized net-of-fees and gross-of-fees SI-IRR through the initial annual period end.

c. For periods ending on or after 1 January 2011, firms must present the net-of-fees and Gross-of-fees SI-IRR through the composite final liquidation date.

**7.A.22** For periods ending on or after 1 January 2011, for fund of funds composites, if the composite is defined only by investment mandate, objective, or strategy, firms must also present the SI-IRR of the underlying investments aggregated by vintage year as well as other measures as required in 7.A.23. These measures must be presented gross of the fund of funds investment management fees and must be presented as of the most recent annual period end.

**7.A.23** Firms must present as of each annual period end:

a. composite since inception paid-in capital;

b. composite since inception distributions;

c. composite cumulative committed capital;

d. total value to since inception paid-in capital (investment multiple or TVPI);

e. since inception distributions to Since inception paid-in capital (realization multiple or DPI);

f. since inception paid-in capital to cumulative committed capital (PIC multiple); and

g. residual value to since inception paid-in capital (unrealized capital or RVPI).

**7.A.24** Firms must present the SI-IRR for the benchmark through each annual period end. The benchmark must:

a. Reflect the investment mandate, objective, or strategy of the composite;

b. Be presented for the same time periods as presented for the composite; and

c. Be the same vintage year as the composite.

**7.A.25** For fund of funds composites, if the composite is defined only by investment mandate, objective, or strategy and a benchmark is presented for the underlying investments, the benchmark must be the same vintage year and investment mandate, objective, or strategy as the underlying investments.

**7.A.26** For periods ending on or after 1 January 2011, for fund of funds composites, firms must present the percentage, if any, of composite assets that is invested in direct investments (rather than in fund investment vehicles) as of each annual period end.

**7.A.27** For periods ending on or after 1 January 2011, for primary fund composites, firms must present the percentage, if any, of composite assets that is invested in fund investment vehicles (rather than in direct investments) as of each annual period end.

**7.A.28** Firms must not present non-GIPS-compliant performance for periods ending on or after 1 January 2006. For periods ending prior to 1 January 2006, firms may present non-GIPS-compliant performance.

**PRIVATE EQUITY — RECOMMENDATIONS**

**Input Data — Recommendations (the following provision does not apply: 1.B.1)**

**7.B.1** Private equity investments should be valued at least quarterly.

**Calculation Methodology — Recommendations (the following provision does not apply: 2.B.2)**

**7.B.2** For periods ending prior to 1 January 2011, the SI-IRR should be calculated using daily cash flows.

**Composite Construction — Recommendations (the following provision does not apply: 3.B.2)**

**Disclosure — Recommendations**

**7.B.3** Firms should explain and disclose material differences between the valuations used in performance reporting and the valuations used in financial reporting as of each annual period end.

**7.B.4** For periods prior to 1 January 2011, firms should disclose material changes to valuation policies and/or methodologies.

**Presentation and Reporting — Recommendations (the following provisions do not apply: 5.B.2, 5.B.3, 5.B.4, and 5.B.5)**

**7.B.5** For periods ending on or after 1 January 2011, for fund of funds composites, if the composite is defined only by vintage year of the fund of funds, firms should also present the SI-IRR of the underlying investments aggregated by investment mandate, objective, or strategy and other measures as listed in 7.A.23. These measures should be presented gross of the fund of funds investment management fees.

**7.B.6** For periods ending prior to 1 January 2011, for fund of funds composites, firms should present the percentage, if any, of composite assets that is invested in direct investments (rather than in fund investment vehicles) as of each annual period end.

**7.B.7** For periods ending prior to 1 January 2011, for Primary fund composites, firms should present the percentage, if any, of composite assets that is invested in fund investment vehicles (rather than in direct investments) as of each annual period end.

**8. WRAP FEE/SEPARATELY MANAGED ACCOUNT (SMA) PORTFOLIOS**

The following provisions apply to the calculation and presentation of performance when presenting a compliant presentation to a wrap fee/SMA prospective client (which includes prospective wrap fee/SMA sponsors, prospective wrap fee/SMA clients, and existing Wrap fee/SMA sponsors). Unless otherwise noted, the following wrap fee/SMA provisions supplement all the required and recommended provisions of the GIPS standards in Sections 0–5 in Chapter I.

Although there are different types of wrap fee/SMA structures, these provisions apply to all wrap fee/SMA portfolios where there are bundled fees and the wrap fee/SMA sponsor serves as an intermediary between the firm and the end user of the investment services. These provisions are not applicable to portfolios defined as other types of bundled fee Portfolios. These provisions are also not applicable to model portfolios that are provided by a firm to a wrap fee/SMA sponsor if the firm does not have discretionary portfolio management responsibility for the individual wrap fee/SMA portfolios. Similarly, a firm or overlay manager in a Multiple Strategy Portfolio (MSP) or similar program is also excluded from applying these provisions to such portfolios if they do not have discretion.

All wrap fee/SMA Compliant presentations that include performance results for periods beginning on or after 1 January 2006 must meet all the requirements of the following wrap fee/SMA provisions.

**WRAP FEE/SMA REQUIREMENTS**
**Composite Construction — Requirements**

**8.A.1** Firms must include the performance record of actual Wrap fee/SMA portfolios in appropriate composites in accordance with the firm's established portfolio inclusion policies. Once established, these composites (containing actual wrap fee/SMA portfolios) must be used in the firm's compliant presentations presented to wrap fee/SMA prospective clients

**Disclosure — Requirements (the following provision does not apply: 4.A.15)**

**8.A.2** For all wrap fee/SMA compliant presentations that include periods prior to the inclusion of an actual wrap fee/SMA portfolio in the composite, the firm must disclose, for each period presented, that the composite does not contain actual wrap fee/SMA portfolios.

**8.A.3** For any performance presented for periods prior to 1 January 2006 that does not comply with the GIPS standards, firms must disclose the periods of non-compliance.

**8.A.4** When firms present Composite performance to an existing wrap fee/SMA sponsor that includes only that sponsor's wrap fee/SMA portfolios (resulting in a "sponsor-specific composite"):

a. Firms must disclose the name of the wrap fee/SMA sponsor represented by the sponsor-specific composite; and

b. If the sponsor-specific composite compliant presentation is intended for the purpose of generating wrap fee/SMA business and does not include performance net of the entire wrap fee, the compliant presentation must disclose that the named sponsor-specific compliant presentation is only for the use of the named wrap fee/SMA sponsor.

**Presentation and Reporting — Requirements (the following provision does not apply: 5.A.3)**

**8.A.5** When firms present performance to a wrap fee/SMA prospective client, the composite presented must include the performance of all actual wrap fee/SMA portfolios, if any, managed according to the composite investment mandate, objective, or strategy, regardless of the wrap fee/SMA sponsor (resulting in a "style-defined composite").

**8.A.6** When firms present performance to a wrap fee/SMA Prospective client, performance must be presented net of the entire wrap fee.

**8.A.7** Firms must not link non-GIPS-compliant performance for periods beginning on or after 1 January 2006 to their GIPS-compliant performance. firms may link non-GIPS-compliant performance to their GIPS-compliant performance provided that only GIPS-compliant performance is presented for periods beginning on or after 1 January 2006.

## Appendix D

## Callan Manager Style Groups

**<u>Domestic Fixed Income</u>**

**Active Cash**
Managers whose objective is to achieve a maximum return on short-term financial instruments through active management. The average portfolio maturity is typically less than two years.

**Active Duration**
Managers who employ either interest rate anticipation or business cycle timing. Portfolios are actively managed so that wide changes in duration are made in anticipation of interest rate changes and/or business cycle movements.

**Convertible Bond**
Managers who invest in convertible bonds. Convertible bonds offer the downside price floor of a "straight bond" while potentially allowing the holder to share in price appreciation of the underlying common stock.

**Core Bond**
Managers who construct portfolios to approximate the investment results of the Lehman Brothers Government/Corporate Bond Index with a modest amount of variability in duration around the Index. The objective is to achieve value added from sector or issue selection.

**Defensive**
Managers whose objective is to minimize interest rate risk by investing only in short to intermediate-term securities. The average portfolio maturity is typically two to five years.

**Extended Maturity**
Managers whose average portfolio maturity is greater than that of the Lehman Brothers Government/Corporate Bond Index. Variations in bond portfolio characteristics are made to enhance performance results.

**High Yield**
Managers whose investment objective is to obtain high current income by investing in lower-rated, higher default-risk fixed income securities. As a result, security selection focuses on credit risk analysis.

**Intermediate**
Managers whose objective is to lower interest rate risk by investing only in intermediate-term securities. The average portfolio maturity is typically five to seven years.

**Money Market**
Managers who invest mutual funds in low-risk, highly liquid, short-term financial instruments. The average portfolio maturity is typically 30 to 60 days.

**Short-Term Investment Funds**
Managers who invest bank investment funds in low-risk, highly liquid, short-term financial instruments. The average portfolio maturity is typically 30 to 60 days.

## Domestic Equity

**Aggressive Growth**
Managers who invest in growth securities with significantly higher risk/return expectations.

**Contrarian**
Managers who invest in stocks that are out of favor or which have little current market interest. These managers may sell stocks short as well.

**Core Equity**
Managers whose portfolio characteristics are similar to that of the S&P Index, with the objective of adding value over and above the Index, typically from sector or issue selection.

**Growth**
Managers who invest in companies that are expected to have above-average prospects for long-term growth in earnings and profitability.

**Growth (Sector Rotation)**
Growth managers who take advantage of expected changes in the performance of various sectors of the economy. Research is done to identify the sectors that will respond most favorably to emerging growth trends, after which markets and firms are targeted for investment within the selected sectors.

**Growth (Stock Selection)**
Growth managers who perform analysis on individual firms to identify those with favorable earnings growth prospects relative to the price of the stock.

**Middle Capitalization**
Managers who invest primarily in mid-range capitalization companies, defined as those lying between core equity companies and small capitalization companies. The average market capitalization of the companies is approximately $3 billion.

**Sector Rotation**
Managers who identify sectors of the economy that show the best potential for investment, and then target markets and firms for investment within the selected industrial sectors.

**Small Capitalization**
Managers who invest in companies with relatively small capitalization, on average approximately $400 million.

**Small Capitalization (Growth)**
Managers who invest in small capitalization companies that have demonstrated consistently high growth in earnings and profitability.

**Small Capitalization (Value)**
Managers who invest in small capitalization companies that are thought to currently be undervalued, typically due to earnings weakness. These companies are expected to have a near-term earnings rebound.

**Value**
Managers who invest in companies, believed to be undervalued or possessing lower than average price/earnings ratios, based on their potential for capital appreciation.

**Value (Bottom Up)**
Value managers who perform fundamental analysis on individual firms, regardless of which sector of the economy they are in, to identify securities that are underpriced relative to their underlying value.

**Value (Top Down)**
Value managers who first use fundamental industry analysis to identify sectors that show the best potential for investment, after which markets and firms are targeted for investment within the selected sectors.

**Yield**
Managers whose primary objective is a higher than average dividend yield.

## International Fixed Income

**Global Fixed Income**
Managers who invest in both foreign and domestic fixed income securities, excluding regional and index funds. These funds seek to take advantage of international currency and interest rate movements, bond yields, and/or international diversification.

**Non-U.S. Fixed Income**
Managers who invest their assets only in non-U.S. fixed income securities, excluding regional and index funds. These funds seek to take advantage of international currency and interest rate movements, bond yields, and/or international diversification.

## International Equity

**Bottom Up/Stock Selection**
Managers who primarily emphasize stock selection in their portfolio construction. The country selection process is a by-product of the stock selection decision.

**Core**
Managers whose portfolio characteristics are similar to that of an index such as EAFE, with the objective of adding value over and above the index, typically from stock selection and/or changes in country allocation.

**Europe**
Managers who invest exclusively in European securities.

**Global Equity**
Managers who invest in both foreign and domestic equity securities excluding regional and index funds.

**Japan**
Managers who invest exclusively in Japanese equities.

**Non-U.S. Equity**
Managers who invest their assets only in non-U.S. equity securities, excluding regional and index funds.

**Pacific Basin**
Managers who invest exclusively in Pacific Basin countries.

**Pacific Rim**
Managers who invest exclusively in Pacific Basin countries except for Japan.

**Top Down/Country Allocator**
Managers who attempt to add value over an index such as EAFE by emphasizing macroeconomic analysis in setting country allocation policies. Stock selection plays a secondary role in the investment decision making process.

## Domestic Real Estate

**CAI Total Real Estate Funds**
This is not actually a style group. Rather, it consists of 150 open and closed-end commingled funds managed by real estate firms.

## Appendix E

## Glossary of Investment Terms

**Accrual Basis Accounting**
As opposed to cash basis accounting, this values assets based upon accrued changes in values, not actual cash flows. For example, dividends are included in the portfolio value (i.e. accrued) as of the ex-dividend date, rather than the payment date (or the declaration date).

**Active Management**
A form of investment management which involves buying and selling financial assets with the objective of earning positive risk-adjusted returns.

**Alpha**
A mathematical estimate of the amount of return expected from an investment. It is distinct from the amount of return caused by volatility.

**Alternative Investments**
These generally refer to institutional blind pool limited partnerships which make private debt and equity investments in privately held companies, as well as hedge funds and other publicly traded derivatives-based strategies.

**American Depository Receipts (ADRs)**
Financial assets issued by U.S. banks that represent indirect ownership of a certain number of equity shares in a foreign firm. ADRs are held on deposit in a bank in the firm's home country.

**Asset Allocation**
The process of determining the optimal allocation of a fund's portfolio among broad asset classes.

**Asset Allocation Risk**
The risk that a non-optimal asset allocation will be undertaken which does not meet the fund's return and risk targets.

**Balanced Fund**
An investment strategy which is a combination of equities and bonds.

**Basis Point**
1/100th of 1%.

**Benchmark Portfolio**
A portfolio against which the investment performance of an investment manager can be compared for the purpose of determining the value-added of the manager. A benchmark portfolio must be of the same style as the manager, and in particular, similar in terms of risk.

**Best Execution**
This is formally defined as the difference between the strike price (the price at which a security is actually bought or sold) and the "fair market price," which involves calculating opportunity costs by examining the security price immediately after the trade is placed. Best execution occurs when the trade involves no opportunity cost, for example when there is no increase in the price of a security shortly after it is sold.

**Beta**
A mathematical measure of an investment's volatility in relation to the volatility of the market. A beta of 1 is equal to that of the market.

**Boardroom Risk**
The risk that Trustees will not ride out short term volatility (and therefore wind up altering a sound long-term strategy) due to pressure put on them in their role as Trustees.

**Bottom-up Analysis**
An approach to valuing securities which first involves analyzing individual companies, then the industry, and finally the economy and overall capital market.

**Capital Asset Pricing Model**
An equilibrium model of asset pricing which states that the expected return of a security increases as the security's sensitivity to the market (i.e. beta) increases. That is, as the expected return of a security or portfolio increases (decreases), risk increases (decreases) as well.

**Capitalization-weighted Market Index**
A method of calculating a market index where the return of a security (or group of securities) is weighted by the market value of the security (or group of securities) relative to total value of all securities.

**Cash Sweep Accounts**
A money market fund into which all new contributions, stock dividend income and bond interest income is placed ("swept") for a certain period of time. At regular intervals, or when rebalancing is necessary, this cash is invested in assets in line with the asset allocation stipulated in the IPS.

**CFA Institute**
The CFA Institute is a global association of investment professionals. The organization provides continuing education conferences, seminars, webcasts, and publications to allow members and other participants to stay current on developments in the investment industry. It offers the Chartered Financial Analyst (CFA) designation, the Certificate in Investment Performance Measurement (CIPM) designation, and the Investment Foundations Certificate.

**Commingled Fund**
An investment fund which is similar to a mutual fund in that investors purchase and redeem units that represent ownership in a pool of securities.

**Commission Recapture**
An agreement by which a plan sponsor earns credits based upon the amount of brokerage commissions paid. These credits can be used for services which will benefit the plan, such as consulting services, custodial fees, or hardware and software expenses.

**Convertible Bond**
A bond which may, at the holder's option, be exchanged for common stock.

**Core Bond**
A fixed income investment strategy which constructs portfolios to approximate the investment results of the Bloomberg Barclays US Aggregate Bond Index with a modest amount of variability in duration around the index. The objective is to achieve value added from sector or issue selection.

**Core Equity**
An investment strategy where the portfolio's characteristics are similar to that of the S&P 500 Index, with the objective of adding value over and above the index, typically from sector or issue selection.

**Correlation Coefficient**
A statistical measure similar to covariance, in that it measures the mutual variation between two variables. The correlation coefficient is bounded by the values -1 and +1.

**Covariance**
A statistical measure of the mutual variation between two variables.

**Current Yield**
The annual dollar amount of coupon payments made by a bond divided by the bond's current market price.

**Defensive**
A fixed income investment strategy where the objective is to minimize interest rate risk by investing only in short to intermediate term securities. The average portfolio maturity is typically two to five years.

**Derivative**
A financial derivative is security which derives its value from a more fundamental financial security such as a stock or bond. For example, the value of a stock option depends upon the value from the underlying stock. Because the stock option cannot exist without the underlying stock, the stock option is derived from the stock itself.

**Dividend Yield**
The current annualized dividend paid on a share of common stock, expressed as a percentage of the stock's current market price.

**Duration**
A measure of the average maturity of the stream of interest payments of a bond. The value of a given bond is more sensitive to interest rate changes as duration increases, i.e. longer duration bonds have greater interest rate volatility than shorter duration bonds.

**Dollar-weighted Measurement**
In calculating summary statistics, a process by which performance measures are weighted by the dollar amounts of assets in each time period.

**Earnings Per Share**
A firm's reported earnings divided by the number of its common shares outstanding.

**Economically-targeted Investment**
Investments where the goal is to target a certain economic activity, sector or area in order to produce corollary benefits in addition to the main objective of earning a competitive risk-adjusted rate of return.

**Efficient Market**
A theory which claims that a security's market price equals its true investment value at all times since all information is fully and immediately reflected in the market price.

**Efficient Portfolio**
A portfolio which offers maximum expected return for a given level of risk or minimum risk for a given level of expected return.

**ERISA**
The Employee Retirement Security Act, signed into law in September 1974. ERISA established a strict set of fiduciary responsibilities for corporate pension funds, and some states have adopted the ERISA provisions for public plans. It is recommended that public pension plans use the ERISA regulations as guidelines for managing the plan's assets in a procedurally prudent manner.

**Exculpatory**

A clause or set of regulations, for example the “safe harbor rules”, which generally frees Trustees from responsibility and liability.

**Extended Maturity**
A fixed income investment strategy where average portfolio maturity is greater than that of the Bloomberg Barclays US Aggregate Bond Index. Variations in bond portfolio characteristics are made to enhance performance results.

**Fiduciary**
Indicates the relationship of trust and confidence where one person (the fiduciary) holds or controls property for the benefit of another person. For example, the relationship between a Trustee and the beneficiaries of the trust.

**Funding Risk**
The risk that anticipated contributions to the plan will not be made.

**Geometric Returns**
A method of calculating returns which links portfolio results on a quarterly or monthly basis. This method is best illustrated by an example, and a comparison to *arithmetic returns*, which does not utilize a time link. Suppose a $100 portfolio returned +25% in the first quarter (ending value is $125) but lost 20% in the second quarter (ending value is $100). Over the two quarters the return was 0%, and the method of calculating the geometric return would indicate this. However, the arithmetic calculation would simply average the two returns: (25%)(.5) + (20%)(.5) = +2.5%.

**Global Equity**
Managers who invest in both foreign and domestic equity securities but excludes regional and index funds.

**Growth Equity**
Managers who invest in companies that are expected to have above average prospects for long-term growth in earnings and profitability.

**High Yield**
A fixed income investment strategy where the objective is to obtain high current income by investing in lower rated, higher default-risk fixed-income securities. As a result, security selection focuses on credit risk analysis.

**Index Fund**
A passively managed investment in a diversified portfolio of financial assets designed to mimic the performance of a specific market index.

**Interest Rate Risk**
The uncertainty in the return on a bond caused by unanticipated changes in its value due to changes in the market interest rate.

**Intermediate**
A fixed income investment strategy where the objective is to lower interest rate risk by investing only in intermediate-term securities. The average portfolio maturity is typically five to seven years.

**Liquidity**
In general, liquidity refers to the ease by which a financial asset can be converted into cash. Liquidity is often more narrowly defined as the ability to sell an asset quickly without having to make a substantial price concession.

**Liquidity Risk**
The risk that there will be insufficient cash to meet the fund's disbursement and expense requirements.

**Lost Opportunity Risk**
The risk that through inappropriate market timing strategies a fund's portfolio will miss long-run market opportunities.

**Manager Search**
The selection of specific managers following the manager structure.

**Manager Structure**
The identification of the type(s) of managers to be selected within each broad class of assets.

**Marked to the Market**
The daily process of adjusting the value of a portfolio to reflect daily changes in the market prices of the assets held in the portfolio.

**Market Risk**
See Systematic Risk.

**Market Timing**
A form of active management that shifts funds between asset classes based on short-term expectations of movements in the capital markets.

**Money Markets**
Financial markets in which financial assets with a maturity of less than one year are traded.

**Passive Management**
For a given asset class, the process of buying a diversified portfolio which attempts to duplicate the overall performance of the asset class (i.e. the relevant market index).

**Performance Attribution**
The identification of the sources of returns for a security or portfolio over a particular time period.

**Price-earnings Ratio**
A firm's current stock price divided by its earnings per share.

**Private Placement**
The direct sale of a newly issued security to one or a small number of large institutional investors.

**Proxy Voting**
A written authorization given by a shareholder to someone else to vote his or her shares at a stockholders annual or special meeting called to elect directors or for some other corporate purpose.

**Purchasing Power Risk**
The risk that a portfolio will earn a return less than the rate of inflation, i.e., a negative real return.

**Real Estate Investment Trust (REIT)**
An investment fund whose objective is to hold real estate-related assets, either through mortgages, construction and development loans, or equity interests.

**Restatement Third, Trusts (Prudent Investor Rule)**
A set of new and more specific standards for the handling of the investment process by fiduciaries. These standards were adopted in 1992 and rely heavily on modern investment theory.

**Return On Equity**
The earnings per share of a firm divided by the firm's book value per share.

**Risk-adjusted Return**
The return on an asset or portfolio, modified to explicitly account for the risk of the asset or portfolio.

**R-squared ($R^2$)**
Formally called the coefficient of determination, this measures the overall strength or "explanatory power" of a statistical relationship. In general, a higher $R^2$ means a stronger statistical relationship between the variables which have been estimated, and therefore more confidence in using the estimation for decision-making.

**Sharpe Ratio**
This statistic is a commonly used measure of risk-adjusted return. It is calculated by subtracting the "risk-free" return (usually 3 Month Treasury Bill) from the portfolio return and dividing the resulting "excess return" by the portfolio's risk level (standard deviation). The result is a measure of return gained per unit of risk taken. The higher the Sharpe ratio, the better the fund's historical risk-adjusted performance.

**Small Capitalization**
Managers who invest in equities of companies with relatively small capitalization. The cut-off point for small capitalization varies from manager to manager, but on average targets firms with capitalization of between $300 million to $2 billion.

**Socially-targeted Investment**
An investment which is undertaken based upon social, rather than purely financial, guidelines.

**Soft Dollars**
The portion of a plan's commissions expense incurred in the buying and selling of securities that is allocated through a directed brokerage arrangement for the purpose of acquiring goods or services for the benefit of the plan. In many soft dollar arrangements, the payment scheme is effected through a brokerage affiliate of the investment consultant. Broker-investment consultants servicing smaller plans receive commissions directly from the counseled account. Other soft dollar schemes are effected through brokerages that, while acting as the clearing/transfer agent, also serve as the conduit for the payment of fees between the primary parties to the directed fee arrangement.

**Specific Risk**
The part of a security's total risk which is not related to movements in the market and therefore can be diversified away.

**Standard Deviation**
A statistical measure of portfolio risk. It reflects the average deviation of the observations from their sample mean. Standard deviation is used as an estimate of risk since it measures how wide the range of returns typically is. The wider the typical range of returns, the higher the standard deviation of returns, and the higher the portfolio risk. If returns are normally distributed (i.e. has a bell shaped curve distribution) then approximately 2/3 of the returns would occur within plus or minus one standard deviation from the sample mean.

**Strategic Asset Allocation**
Rebalancing back to the normal mix at specified time intervals (quarterly) or when established tolerance bands (e.g., + and - 10%) are violated

**Systematic Risk**
The part of a security's total risk that is related to movements in the market and therefore cannot be diversified away.

**Tactical Asset Allocation**
Closely related to a strategy of market timing, this strategy uses certain indicators to make adjustments in the proportions of a portfolio invested in stocks, bonds, and cash.

**Term-to-maturity**
The time remaining until a bond's maturity date.

**Time-weighted Return**
A method of measuring the performance of a portfolio over a particular period of time. It is the cumulative compounded rate of return of the portfolio, calculated on each date that cash flow moves into or out of the portfolio.

**Top-down Analysis**
An approach to valuing equities which first looks at the economy and overall capital market, then industries, and finally individual firms.

**Treynor Ratio**
The portfolio's average excess return over a specified period divided by the beta relative to its benchmark over the same timeframe. This is used to measure the excess return per unit of systematic risk taken.

**Value Equity**
Managers who invest in companies believed to be undervalued or possessing lower than average price/earnings ratios, based on their potential for capital appreciation.

# Appendix F

## Compendium of Statutes

**Sec. 22.25.048. Accounting and investment.**

(a) The commissioner of administration shall establish a judicial retirement trust fund for the judicial retirement system in which the assets of the system are deposited and held. The commissioner shall maintain accounts and records for the system.

(b) All income of the judicial retirement fund and all disbursements made from the fund shall be credited or charged, whichever is appropriate, to the following accounts:

(1) an individual account that contains the mandatory contributions collected from a person under AS 22.25.011;

(2) an account that is credited with the contributions of the state court system;

(3) a retirement reserve account; and

(4) an expense account for the judicial retirement system that shall be credited with funds transferred from the account described in (2) of this subsection.

(c) The Alaska Retirement Management Board is the fiduciary of the fund and has the same powers and duties under this section in regard to the judicial retirement trust fund as are provided in AS 37.10.220.

(d) Within one year following retirement, an amount actuarially determined as necessary to pay fully for the benefits to be received by a person under this chapter shall be transferred first from the individual account described in (b)(1) of this section and, after the individual contributions have been exhausted, then from the court system account described in (b)(2) of this section, into the retirement reserve account described in (b)(3) of this section.

(e) The contributions of the court system to the retirement reserve account shall contain the actuarially determined amount necessary to fully fund the pension, death benefits, and other benefits paid under the judicial retirement system to a person under this chapter.

(f) The investment income of the judicial retirement fund shall be allocated in proportion to the balances of assets first to the retired reserve account described in (b)(3) of this section and then to the account described in (b)(2) of this section.

(g) The account described in (b)(4) of this section is charged with all disbursements representing the administrative expenses incurred by the judicial retirement system. Expenditures from this account shall be included in the budget of the governor for each fiscal year.

**Sec. 26.05.228. Accounting and investment.**

(a) The commissioner of administration shall establish a military retirement trust fund for the system in which the assets of the system are deposited and held. The commissioner shall maintain accounts and records for the system.

(b) All income of the fund and all disbursements made by the fund shall be credited or charged, whichever is appropriate, to the following accounts:

(1) an individual account for each retired member of the system that records the benefits paid under this system to the member or surviving beneficiary;

(2) a separate account for the Department of Military and Veterans' Affairs' contribution to fund the system based on the actuarial requirements of the system as established by the commissioner of administration under this chapter;

(3) an expense account for the system; this account is charged with all disbursements representing administrative expenses incurred by the system; expenditures from this account are included in the governor's budget for each fiscal year.

(c) The Alaska Retirement Management Board is the fiduciary of the fund and has the same powers and duties under this section in regard to the fund as are provided under AS 37.10.220.

**Sec. 37.10.071. Investment powers and duties.**

(a) In making investments under this section, the fiduciary of a state fund shall

(1) act as official custodian of cash and investments by securing adequate and safe custodial facilities for them;

(2) receive all items of cash and investments;

(3) collect and deposit the principal of and income from owned or acquired investments;

(4) invest and reinvest the assets in accordance with this section;

(5) receive and spend appropriations to cover the cost of the exercise of duties under this section;

(6) exercise the powers of an owner with respect to the assets;

(7) perform all acts, not prohibited by this section, whether or not expressly authorized, that the fiduciary considers necessary or proper in administering the assets;

(8) maintain accounting records in accordance with generally accepted accounting principles;

(9) engage an independent certified public accountant to conduct an annual audit of the financial condition and investment transactions;

(10) enter into and enforce contracts or agreements considered necessary, convenient, or desirable for the investment purposes of this section; and

(11) when choosing to acquire or dispose of investments, secure competitive national or international market rates or prices, or the equivalence of those rates or prices in the judgment of the fiduciary.

(b) Under this section, the fiduciary of a state fund or the fiduciary's designee may

(1) delegate investment, custodial, or depository authority on a discretionary or nondiscretionary basis to officers or employees of the state or to independent firms, banks, financial institutions, or trust companies by designation through appointments, contracts, or letters of authority;

(2) acquire or dispose of investments either directly, indirectly, or through investment pools or trusts, by competitive or negotiated agreements, contracts, or auctions, in public or private markets;

(3) concentrate or diversify investments as the fiduciary considers appropriate to increase the probable total rate of return or to decrease the overall exposure to potentially adverse market value risks;

(4) protect the market value or the rate of return of the investments by entering into forward agreements to buy or sell assets at a future date as a hedge against existing held assets or as a precommitment of future cash flows;

(5) lend assets, under an agreement and for a fee, against deposited collateral of equivalent market value;

(6) borrow assets on a short-term basis, under an agreement and for a fee, against the deposit of collateral consisting of other assets in order to accommodate temporary cash or investment needs;

(7) hold investments in bearer or registered form in the name of the state, a fund, or nominees authorized by the fiduciary;

(8) utilize consultants, advisors, custodians, investment services, and legal counsel for assistance in investment matters on either a continuing or a limited-term basis and with or without compensation;

(9) declare records to be confidential and exempt from AS 40.25.110 and 40.25.120 if the records contain information that discloses the particulars of the business or the affairs of a private enterprise, investor, borrower, advisor, consultant, counsel, or manager.

(c) In exercising investment, custodial, or depository powers or duties under this section, the fiduciary of a state fund shall apply the prudent investor rule and exercise the fiduciary duty in the sole financial best interest of the fund entrusted to the fiduciary. Among beneficiaries of a fund, the fiduciaries shall treat beneficiaries with impartiality.

(d) In exercising investment, custodial, or depository powers or duties under this section, the fiduciary or the fiduciary's designee is liable for a breach of a duty that is assigned or delegated under this section, or under, AS 14.40.255 , 14.40.280(c), 14.40.400(b), AS 37.10.070 , AS 37.14.110 (c), 37.14.160, 37.14.170, or. However, the fiduciary or the designee is not liable for a breach of a duty that has been delegated to another person if the delegation is prudent under the applicable standard of prudence set out in statute or if the duty is assigned by law to another person, except to the extent that the fiduciary or designee [check other statute cites]

(1) knowingly participates in, or knowingly undertakes to conceal, an act or omission of another person knowing that the act or omission is a breach of that person's duties under this chapter;

(2) by failure to comply with this section in the administration of specific responsibilities, enables another person to commit a breach of duty; or

(3) has knowledge of a breach of duty by another person, unless the fiduciary or designee makes reasonable efforts under the circumstances to remedy the breach.

(e) The state shall defend and indemnify the fiduciary or an officer or employee of the state against liability under (d) of this section to the extent that the alleged act or omission was performed in good faith and was prudent under the applicable standard of prudence.

(f) In this section, "fiduciary of a state fund" or "fiduciary" means

(1) the commissioner of revenue for investments under AS 37.10.070;

(2) with respect to the Alaska Retirement Management Board, for investments of the collective funds that it manages and administers,

(A) each trustee who serves on the board of trustees; and

(B) any other person who exercises control or authority with respect to management or disposition of assets for which the board is responsible or who gives investment advice to the board; or

(3) the person or body provided by law to manage the investments for investments not subject to AS 37.10.070.

**Sec. 37.10.210. Alaska Retirement Management Board.**

(a) The Alaska Retirement Management Board is established in the Department of Revenue. The board's primary mission is to serve as the trustee of the assets of the state's retirement systems, the State of Alaska Supplemental Annuity Plan, and the deferred compensation program for state employees, and the Alaska retiree health care trusts established under AS 39.30.097. Consistent with standards of prudence, the board has the fiduciary obligation to manage and invest these assets in a manner that is sufficient to meet the liabilities and pension obligations of the systems, plan, program, and trusts. The board may, with the approval of the commissioner of revenue and upon agreement with the responsible fiduciary, manage and invest other state funds so long as the activity does not interfere with the board's primary mission. In making investments, the board shall exercise the powers and duties of a fiduciary of a state fund under AS 37.10.071.

(b) The Alaska Retirement Management Board consists of nine trustees, as follows:

(1) two members, consisting of the commissioner of administration and the commissioner of revenue;

(2) seven trustees appointed by the governor who meet the eligibility requirements for an Alaska permanent fund dividend and who are professionally credentialed or have recognized competence in investment management, finance, banking, economics, accounting, pension administration, or actuarial analysis as follows:

(A) two trustees who are members of the general public; the trustees appointed under this subparagraph may not hold another state office, position, or employment and may not be members or beneficiaries of a retirement system managed by the board;

(B) one trustee who is employed as a finance officer for a political subdivision participating in either the public employees' retirement system or the teachers' retirement system;

(C) two trustees who are members of the public employees' retirement system, selected from a list of four nominees submitted from among the public employees' retirement system bargaining units;

(D) two trustees who are members of the teachers' retirement system selected from a list of four nominees submitted from among the teachers' retirement system bargaining units;

(E) the lists of the nominees shall be submitted to the governor under (C) and (D) of this paragraph within the time period specified in regulations adopted under AS 37.10.240 (a).

(c) The trustees, other than the two commissioners, shall serve for staggered terms of four years and may be reappointed to the board.

(d) The governor may, by written notice to the trustee, remove an appointed trustee for cause. After an appointed trustee receives written notice of removal, the trustee may not participate in board business and may not be counted for purposes of establishing a quorum.

(e) A vacancy on the board of trustees shall be promptly filled. A person filling a vacancy holds office for the balance of the unexpired term of the person's predecessor. A vacancy on the board does not impair the authority of a quorum of the board to exercise all the powers and perform all the duties of the board.

(f) Five trustees constitute a quorum for the transaction of business and the exercise of the powers and duties of the board.

(g) A trustee may not designate another person to serve on the board in the absence of the trustee.

(h) The board shall provide annual training to its members on the duties and powers of a fiduciary of a state fund and other training as necessary to keep the members of the board educated about pension management and investment.

(i) The board shall elect a trustee to serve as chair and a trustee to serve as vice-chair for one-year terms. A trustee may be reelected to serve additional terms as chair or vice-chair.

Sec. 37.10.215. Attorney general.

The attorney general is the legal counsel for the board and shall advise the board and represent it in a legal proceeding.

Sec. 37.10.220. Powers and duties of the board.

(a) The board shall

(1) hold regular and special meetings at the call of the chair or of at least five members; meetings are open to the public, and the board shall keep a full record of all its proceedings;

(2) after reviewing recommendations from the Department of Revenue, adopt investment policies for each of the funds entrusted to the board;

(3) determine the appropriate investment objectives for the defined benefit plans established under the teachers' retirement system under AS 14.25 and the public employees' retirement system under AS 39.35;

(4) assist in prescribing the policies for the proper operation of the systems and take other actions necessary to carry out the intent and purpose of the systems in accordance with AS 37.10.210 - 37.10.390;

(5) provide a range of investment options and establish the rules by which participants can direct their investments among those options with respect to accounts established under

(A) AS 14.25.340 - 14.25.350 (teachers' retirement system defined contribution individual accounts);

(B) AS 39.30.150 - 39.30.180 (State of Alaska Supplementary Annuity Plan);

(C) AS 39.35.730 - 39.35.750 (public employees' retirement system defined contribution individual accounts); and

(D) AS 39.45.010 - 39.45.060 (public employees' deferred compensation program);

(6) establish the rate of interest that shall be annually credited to each member's individual contribution account in accordance with AS 14.25.145 and AS 39.35.100 and the rate of interest that shall be annually credited to each member's account in the health reimbursement arrangement plan under AS 39.30.300 - 39.30.495; the rate of interest shall be adopted on the basis of the probable effective rate of interest on a long-term basis, and the rate may be changed from time to time;

(7) adopt a contribution surcharge as necessary under AS 39.35.160(c);

(8) coordinate with the retirement system administrator to have an annual actuarial valuation of each retirement system prepared to determine system assets, accrued liabilities, and funding ratios and to certify to the appropriate budgetary authority of each employer in the system

(A) an appropriate contribution rate for normal costs; and

(B) an appropriate contribution rate for liquidating any past service liability; in this subparagraph, the appropriate contribution rate for liquidating the past service liability of the defined benefit retirement plan under AS 14.25.009 – 14.25.220 or the past service liability of the defined benefit retirement plan under AS 39.35.095 – 39.35.680 must be determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years;

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

(10) contract for an independent audit of the state's actuary not less than once every four years;

(11) contract for an independent audit of the state's performance consultant not less than once every four years;

(12) obtain an external performance review to evaluate the investment policies of each fund entrusted to the board and report the results of the review to the appropriate fund fiduciary;

(13) by the first day of each regular legislative session, report to the governor, the legislature, and the individual employers participating in the state's retirement systems on the financial condition of the systems in regard to

(A) the valuation of trust fund assets and liabilities;

(B) current investment policies adopted by the board;

(C) a summary of assets held in trust listed by the categories of investment;

(D) the income and expenditures for the previous fiscal year;

(E) the return projections for the next calendar year;

(F) one-year, three-year, five-year, and 10-year investment performance for each of the funds entrusted to the board; and

(G) other statistical data necessary for a proper understanding of the financial status of the systems;

(14) submit quarterly updates of the investment performance reports to the Legislative Budget and Audit Committee;

(15) develop an annual operating budget; and

(16) administer pension forfeitures required under AS 37.10.310 using the procedures of AS 44.62 (Administrative Procedure Act).

(b) The board may

(1) employ outside investment advisors to review investment policies;

(2) enter into an agreement with the fiduciary of another state fund in order to assume the management and investment of those assets;

(3) contract for other services necessary to execute the board's powers and duties;

(4) enter into confidentiality agreements that would exempt records from AS 40.25.110 and 40.25.120 if the records contain information that could affect the value of investment by the board or that could impair the ability of the board to acquire, maintain, or dispose of investments.

(c) Expenses for the board and the operations of the board shall be paid from the retirement fund.

Sec. 37.10.230. Conflicts of interest.

(a) Trustees are subject to the provisions of AS 39.50.

(b) If a trustee acquires, owns, or controls an interest, direct or indirect, in an entity or project in which assets under the control of the board are invested, the trustee shall immediately disclose the interest to the board. The disclosure is a matter of public record and shall be included in the minutes of the board meeting next following the disclosure. The board shall adopt regulations to restrict trustees from having a substantial interest in an entity or project in which assets under the control of the board are invested.

Sec. 37.10.240. Regulations and open meetings.

(a) The board may adopt regulations to implement AS 37.10.210 - 37.10.390. Regulations adopted by the board are not subject to the Administrative Procedure Act (AS 44.62). The board shall adopt regulations required by AS 36.30.015 (f) relating to procurement. The board shall comply with the requirements of AS 44.62.310 - 44.62.319 (Open Meetings Act).

(b) Notwithstanding (a) of this section, a regulation adopted under AS 37.10.210 - 37.10.390 shall be published in the Alaska Administrative Register and Alaska Administrative Code for informational purposes. A regulation adopted under this section shall conform to the style and format requirements of the drafting manual for administrative regulations that is published under AS 44.62.050 .

(c) At least 30 days before the adoption, amendment, or repeal of a regulation under this chapter, the board shall provide notice of the action that is being considered. The notice must include publication in one or more newspapers of general circulation in each judicial district of the state.

(d) A regulation adopted under this chapter takes effect 30 days after adoption by the board unless a later effective date is stated in the regulation.

(e) Notwithstanding the other provisions of this section, a regulation may be adopted, amended, or repealed, effective immediately, as an emergency regulation. For an emergency regulation to be effective the board must find that the immediate adoption, amendment, or repeal of the regulation is necessary. The board shall, within 10 days after adoption of an emergency regulation, give notice of the adoption under (c) of this section. An emergency regulation adopted under this subsection may not remain in effect past the date of the next regular meeting of the board unless the board complies with the procedures set out in this section and adopts the regulation as a permanent regulation.

(f) In this section, "regulation" has the meaning given in AS 44.62.640(a).

Sec. 37.10.250. Compensation of trustees.

Trustees, other than trustees who are employees of the state, a political subdivision of the state, or a school district or regional educational attendance area in the state, receive an honorarium of $400 for each day spent at a meeting of the board or at a meeting of a subcommittee of the board or at a public meeting as a representative of the board, including a day in which a trustee travels to or from a meeting. Trustees who are state employees are entitled to administrative leave for service as a trustee. Trustees who are employees of a political subdivision of the state or a school district or regional educational attendance area in the state are entitled to leave benefits provided by their employers comparable to those provided to state employees for service as a trustee. Trustees are entitled to per diem and travel expenses authorized for boards and commissions under AS 39.20.180.

Sec. 37.10.260. Staff.

(a) The Department of Revenue shall provide staff for the board.

(b) The board may designate a trustee or an officer or employee of the Department of Revenue to be responsible for signing on behalf of the board a deed, contract, or other document that must be executed by or on behalf of the board.

Sec. 37.10.270. Investment advisory council.

(a) The board may appoint an investment advisory council composed of at least three and not more than five members. Members of the council shall possess experience and expertise in financial investments and management of investment portfolios for public, corporate, or union pension benefit funds, foundations, or endowments.

(b) Members of the council serve at the pleasure of the board for staggered terms of three years.

(c) The board shall establish the compensation of members of the council. Members of the council are entitled to per diem and travel expenses authorized for boards and commissions under AS 39.20.180 .

(d) The council shall

(1) review the investments made by the board;

(2) make recommendations to the board concerning the board's investment policies, investment strategy, and investment procedures;

(3) advise the board on selection of performance consultants and on the form and content of annual reports;

(4) provide other advice as requested by the board.

(e) With approval of the board, the council may contract with other state agencies to provide investment advice.

Sec. 37.10.280. Insurance.

The board shall ensure that trusteed assets and its own services are protected. The board may purchase insurance or provide for self-insurance retention in amounts recommended by the commissioner of revenue and approved by the board to cover the acts, including fiduciary acts, errors, and omissions of its board members and agents. Insurance must protect the board and the state from liability to others and from loss of trusteed assets due to the acts or omissions of the trustees.

Sec. 37.10.290. Exemption from taxation.

Except as provided in AS 29.45.030(a) for property acquired through foreclosure or deed in lieu of foreclosure, the board and all properties at any time owned by it, managed by it, or held by it in trust, and the income from those activities, are exempt from all taxes and assessments in the state. All security instruments issued by the board and income from them are exempt from all taxes and assessments in the state, including transfer taxes.

Sec. 37.10.300. Limitations.

The board may not engage in commercial banking activity or private trust activity. The board may not act as a depository or trustee for a private person, association, or corporation. The board may not act as a lender to a private person, association, or corporation of money from any source except state funds under management by the board.

Sec. 37.10.310. Pension forfeiture by public officers convicted of crimes involving corruption.

(a) A public officer, as defined in AS 39.52.960, a legislator, or a person employed as a legislative director, as that term is defined in AS 24.60.990, who is convicted of a federal or state felony offense of bribery, receiving a bribe, perjury, subornation of perjury, scheme to defraud, fraud, mail fraud, misuse of funds, corruption, or tax evasion may not receive a state pension benefit if the offense was committed on or after July 10, 2007 and was in connection with the person's official duties.

(b) Pension benefits and employee contributions that accrue to a person before the date of the person's commission of the offense described in (a) of this section are not diminished or impaired by that subsection.

(c) A state pension benefit under (a) of this section does not include

(1) insurance, voluntary wage reductions, involuntary wage reductions, or supplemental or health benefits under AS 39.30.090 - 39.30.495 or former AS 39.37.145;

(2) member or employee contributions under AS 14.25.050, 14.25.055, 14.25.075, 14.25.340, 14.25.360(a), AS 22.25.011, AS 39.35.160, 39.35.165(f), 39.35.180, 39.35.730, 39.35.760(a), or former AS 39.37.070.

(d) In a pension forfeiture matter under this section, the board may award to a spouse, dependent, or former spouse of the person governed by the limitations in (a) of this section some or all of the amount that, but for the forfeiture under (a) of this section, may otherwise be payable. In determining whether to make an award under this subsection, the board shall consider the totality of circumstances, including

(1) the role, if any, of the person's spouse, dependent, or former spouse in connection with the illegal conduct for which the person was convicted; and

(2) the degree of knowledge, if any, possessed by the person's spouse, dependent, or former spouse in connection with the illegal conduct for which the person was convicted.

Sec. 37.10.390. Definitions.

In AS 37.10.210 - 37.10.390, unless the context otherwise requires,

(1) "board" means the board of trustees of the Alaska Retirement Management Board;

(2) "fund" means the fund or funds composed of the assets of each of the retirement systems administered and managed by the board;

(3) "recognized competence" means a minimum of 10 years' professional experience working or teaching in the field of investment management, finance, banking, economics, accounting, pension administration, or actuarial analysis;

(4) "retirement systems" or "systems" means the teachers' retirement system, the judicial retirement system, the Alaska National Guard and Alaska Naval Militia retirement system, the public employees' retirement system, the State of Alaska Teachers' and Public Employees' Retiree Health Reimbursement Arrangement Plan, and the elected public officers' retirement system under former AS 39.37.

At the request of the Governor, the 28th Legislature appropriated $3,000,000,000 to the PERS and TRS trust funds through SB119 which included the following intent language:

> (d) It is the intent of the legislature that the Alaska Retirement Management Board and the Department of Administration direct the plans’ actuary to eliminate the two-year rate-setting lag in the public employees’ retirement system and the teachers’ retirement system actuarial valuations.
>
> (e) It is the intent of the legislature that the Alaska Retirement Management Board and the Department of Administration direct the plans’ actuary to eliminate asset value smoothing from the public employees’ retirement system and the teachers’ retirement system actuarial valuations.

**Sec. 39.30.160. Benefits.**

(a) The Department of Administration shall, in accordance with policies prescribed by regulations of the Public Employees Retirement Board, provide to employees for whom special individual employee benefit accounts are established under AS 39.30.150(c) the following benefit options:

(1) supplemental health benefits,

(2) supplemental death benefits,

(3) supplemental disability benefits, and

(4) supplemental dependent care benefits.

(b) An employee may select the types and amounts of supplemental benefits to be purchased with the money deposited in the employee's special individual employee benefit accounts under AS 39.30.150. The selection must be from the benefit options listed in (a) of this section.

(c) [Repealed, sec. 9 ch 55 SLA 1988].

(d) [Repealed, sec. 40 ch 146 SLA 1980].

(e) Regulations adopted by the Public Employees Retirement Board implementing AS 39.30.150 and this section are not subject to AS 44.62 (Administrative Procedure Act).

**Sec. 39.30.175. Investment of benefit program receipts.**

(a) The Board is the fiduciary of the mandatory receipts, under AS 39.30.150 (a), of the employee benefits program established under AS 39.30.150 - 39.30.180 and has the same powers and duties concerning the management and investment in regard to those receipts as are provided under AS 37.10.220.

(b) The board may provide a range of investment options and permit a participant or beneficiary of the program to exercise control over the assets in the individual employee annuity account established under AS 39.30.150(a). If the board offers investment options, and if a participant or beneficiary exercises control over the assets in the individual employee annuity account,

(1) the participant or beneficiary is not considered a fiduciary for any reason on the basis of exercising that control; and

(2) a person who is otherwise a fiduciary is not liable under this section for any loss, or by reason of any breach, that results from the individual's exercise of control.

(c) If the board is considering entering into a contract or modifying an existing contract concerning the management or investment of the mandatory receipts of the supplemental employee benefits program, the board shall consult with the commissioner of administration before making a decision on the issue.

(d) The board shall develop a contingency plan that addresses the board's response to possible future investment problems.

(e) Except to the extent clearly set out in the terms of the plan document offered by the employer to the employee, the employer is not liable to the employee for investment losses if the prudent investment standard has been met.

**Sec. 39.45.020. Administration of program.**

(a) The administration of the deferred compensation program for state employees is under the direction of the Department of Administration. A political subdivision coming under the provisions of this chapter shall designate the office or official to administer its program.

(b) Payroll deductions are authorized by this chapter and shall be made by the appropriate payroll officer.

(c) The administrator of a deferred compensation program may contract with a private person for providing consolidated billing and other administrative services. The administrator may contract with an insurance carrier to reimburse the state or political subdivision of the state for the cost of administering the deferred compensation program.

**Sec. 39.45.030. Investment authority.**

(a) The Alaska Retirement Management Board is authorized, subject to contracts with individual employees, to invest the funds held under a deferred compensation program. The board has the same powers and duties concerning the management and investment in regard to those funds as are provided under AS 37.10.220.

(b) [Repealed, sec. 24 ch 31 SLA 1992].

(c) The board may provide a range of investment options and permit a participant or beneficiary of the program to exercise control over the assets in the individual's account. If the board offers investment options, and if a participant or beneficiary exercises control over the assets in the individual's account,

(1) the participant or beneficiary is not considered a fiduciary for any reason on the basis of exercising that control; and

(2) a person who is otherwise a fiduciary is not liable under this section for any loss, or by reason of any breach, that results from the individual's exercise of control.

(d) If the board is considering entering into a contract or modifying an existing contract concerning the management or investment of funds of the deferred compensation program, the board shall consult with the commissioner of administration before making a decision on the issue.

(e) The board shall develop a contingency plan that addresses the board's response to possible future investment problems.

(f) Except to the extent clearly set out in the terms of the plan document offered by the employer to the employee, the employer is not liable to the employee for investment losses if the prudent investment standard has been met.

(g) In this section, "board" means the Alaska Retirement Management Board.

**Sec. 39.52.130. Improper gifts.**

(a) A public officer may not solicit, accept, or receive, directly or indirectly, a gift, whether in the form of money, service, loan, travel, entertainment, hospitality, employment, promise, or in any other form, that is a benefit to the officer's personal or financial interests, under circumstances in which it could reasonably be inferred that the gift is intended to influence the performance of official duties, actions, or judgment. A gift from a person required to register as a lobbyist under AS 24.45.041 to a public officer or a public officer's immediate family member is presumed to be intended to influence the performance of official duties, actions, or judgment unless the giver is an immediate family member of the person receiving the gift.

(b) Notice of the receipt by a public officer of a gift with a value in excess of $150, including the name of the giver and a description of the gift and its approximate value, must be provided to the designated supervisor within 30 days after the date of its receipt

(1) if the public officer may take or withhold official action that affects the giver; or

(2) if the gift is connected to the public officer's governmental status.

(c) In accordance with AS 39.52.240, a designated supervisor may request guidance from the attorney general concerning whether acceptance of a particular gift is prohibited.

(d) The restrictions relating to gifts imposed by this section do not apply to a campaign contribution to a candidate for elective office if the contribution complies with laws and regulations governing elections and campaign disclosure.

(e) A public officer who, on behalf of the state, accepts a gift from another government or from an official of another government shall, within 60 days after its receipt, notify the Office of the Governor in writing. The Office of the Governor shall determine the appropriate disposition of the gift. In this subsection, "another government" means a foreign government or the government of the United States, another state, a municipality, or another jurisdiction.

(f) A public officer who knows or reasonably ought to know that a family member has received a gift because of the family member's connection with the public office held by the public officer shall report the receipt of the gift by the family member to the public officer's designated supervisor if the gift would have to be reported under this section if it had been received by the public officer or if receipt of the gift by a public officer would be prohibited under this section.

**Sec. 39.52.240. Advisory opinions.**

(a) Upon the written request of a designated supervisor or a board or commission, the attorney general shall issue opinions interpreting this chapter. The requester must supply any additional information requested by the attorney general in order to issue the opinion. Within 60 days after receiving a complete request, the attorney general shall issue an advisory opinion on the question.

(b) The attorney general may offer oral advice if delay would cause substantial inconvenience or detriment to the requesting party.

(c) The designated supervisor or a board or commission shall make a written determination based on the advice of the attorney general. If the advice of the attorney general provides more than one way for a public officer to avoid or correct a problem found under AS 39.52.110 - 39.52.190, the designated supervisor or the board or commission shall, after consultation with the officer, determine the alternative that is most appropriate and advise the officer of any action required of the officer to avoid or correct the problem.

(d) A public officer is not liable under this chapter for any action carried out in accordance with a determination made under AS 39.52.210 - 39.52.240 if the officer fully disclosed all relevant facts reasonably necessary to the determination.

(e) The attorney general may reconsider, revoke, or modify an advisory opinion at any time, including upon a showing that material facts were omitted or misstated in the request for the opinion.

(f) A person may rely on an advisory opinion that is currently in effect.

(g) A request for advice made under (a) of this section is confidential.

(h) The attorney general shall post on the Alaska Online Public Notice System (AS 44.62.175), with sufficient deletions to prevent disclosure of the persons whose identities are confidential under (g) of this section, the advisory opinions issued under this section that the attorney general determines to be of major import because of their general applicability to executive branch officers.

**Sec. 44.25.020. Duties of department.**

The Department of Revenue shall

(1) enforce the tax laws of the state;

(2) collect, account for, have custody of, invest, and manage all state funds and all revenues of the state except revenues incidental to a program of licensing and regulation carried on by another state department, funds managed and invested by the Alaska Retirement Management Board, and as otherwise provided by law;

## Appendix G

## Previous Change Logs

This table lists all changes made in previous revisions of this document, beginning with May 2020. All sections are accurate at the time of the original revision. Some content may shift in future revisions

| **Edits made in 2020** | | |
|---|---|---|
| **Date** | **Section** | **Change** |
| 2020-05-20 | D. Operating Procedures; Education, Training, Travel, and Reimbursements; 2. | For clarification purposes, the following language was removed from the *Education, Training, Travel and Reimbursements* section of the document, "Entitlement to honorariums set by law shall be construed to mean that Board members shall be reimbursed daily honoraria for any day in which attendance is required in person or by teleconferenced Board meetings, committee meetings, or workshops convened by ARMB; while on an ARMB-approved seminar; and while appearing on behalf of ARMB on legislative matters. Attendance shall include time spent in travel to or from a meeting if such travel time is not the same day as the scheduled meeting or gathering. |
| 2020-07-07 | Appendix G | As requested at the May 1, 2020 meeting, a change log has been added to list all new changes to the ARMB Policy and Procedures Manual. |

# Alaska Retirement Management Board

## Discussion with Those Charged with Governance

**Audit results for the year ending June 30, 2021**

December 1, 2021

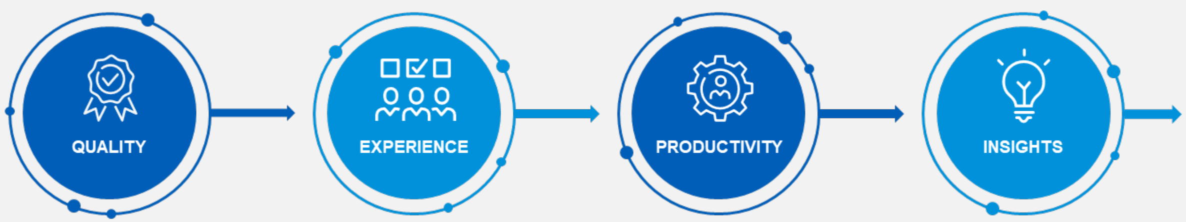
# Our commitment to you

**Delivering a better audit experience drives us.**

With KPMG you can expect an experience that's better for your team, organizations and the capital markets. An experience that's built for a world that demands agility and integrity.

See patterns in what has passed. See where risks may emerge. See opportunities emerge. See opportunities to optimize processes. And see ahead to new possibilities.

**We aim to deliver an exceptional client experience for the Alaska Retirement Management Board by focusing on:**

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# Required Communications to Those Charged with Governance

# Summary: Audit results required communications and other matters

| Audit results | Response |
|---|---|
| Outstanding matters | None. |
| Significant unusual transactions | No significant unusual transactions identified during the audit. |
| Uncorrected audit misstatements | See slide 5 |
| Corrected audit misstatements | See slide 6 |
| Financial presentation and disclosure omissions | No matters to communicate. |
| Non-GAAP policies and practices | No matters to communicate. |
| Auditors' report | See slide 8 |
| Changes to our risk assessment and planned audit strategy | No matters to report |
| Significant accounting policies and practices | No matters to report |
| Significant accounting estimates | See slide 10 |
| Other information | We will review the Annual Comprehensive Financial Reports when they are available for consistency with the financial statements and footnotes. |

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# Summary: Audit results required communications and other matters

| Audit results | | Response |
|---|---|---|
| | Subsequent events | No matters to report |
| | Illegal acts or fraud | No actual or suspected fraud involving management, employees with significant roles in internal control, or where fraud results in a material misstatement in the financial statements were identified during the audit. |
| | Noncompliance with laws and regulations | No matters to report |
| | Significant difficulties encountered during the audit | No matters to report |
| | Significant findings or issues discussed, or the subject of correspondence, with management | No matters to report |
| | Management's consultation with other accountants | No matters to report |
| | Difficult or contentious matters for which the auditor consulted | No matters to report |
| | Disagreements with management | No matters to report |
| | Other significant matters | No matters to report |
| | Written communications | Management representation letters, including summary of uncorrected misstatement to be distributed under separate cover. |

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# Uncorrected audit misstatements

Subsequent to the September 22 meeting, additional information was received related to the remaining private equity investments for which June 30 values had not previously been received and adjusted. The impact of these valuation changes resulted in an unadjusted audit misstatement for the lagged reporting as follows:

| Account | Increase (decrease) to invested assets | Increase (decrease) to investment income | As a % of reported |
|---|---|---|---|
| Private equity investments | $79,917,000 | | 1.5% |
| Private equity investment income | | $79,917,000 | 3.8% |
| Total investment income | | | .8% |

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# Corrected audit misstatements

The National Guard and Naval Militia Retirement System initially used an unsupported 7.0% discount rate to calculate the Total Pension Liability. As a result of our audit, management further evaluated the rate through coordination with Buck and lowered the discount rate to 5.75%. The corrected rate resulted in a $2,573,000 increase to the total pension liability reported in the financial statement disclosure.

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# Material weaknesses and significant deficiencies in internal control

**Material weaknesses**

| Description | Potential effects | Status |
|---|---|---|
| Management does not have adequate processes in place to review the appropriateness of forward-looking assumptions | Total Pension Liability could be materially misstated | Deficiency exists at year end |

**Significant deficiencies**

| Description | Potential effects | Status |
|---|---|---|
| None reported | | |

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# Auditors' report

## Modifications

- We have issued unmodified opinions for the following systems:
  - Public Employees' Retirement System (PERS)
  - Teachers' Retirement System (TRS)
  - Judicial Retirement System (JRS)
  - Deferred Compensation Plan (DCP)
  - Supplemental Benefits System (SBS)
  - Alaska Retirement Management Board Invested Assets

- We plan to issue a qualified opinion for a scope limitation for the following system:
  - National Guard and Naval Militia Retirement System

## Emphasis of matter or other matter paragraphs

- Other matter paragraphs will be added to each System as relevant for:
  - Prior year comparative information
  - Required supplementary information
  - Supplemental schedules

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# Significant accounting policies and practices

| Description of significant accounting policies and practices | Audit findings |
|---|---|
| — The Systems' policies are disclosed in Note 2 to the financial statements.<br>— There were no changes in the selection of accounting policies from prior years. | **Qualitative aspects**<br>— We did not identify indication of significant elements of management bias when reviewing these policies. |

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# Significant accounting estimates

## Description of significant accounting estimates

— The calculation of the Total Pension Liabilities and Total OPEB liabilities are considered significant estimates

## Audit findings

**Management's process used to develop the estimates**

— The ARMB has contracted with Buck to assess the Total Pension and Total OPEB Liabilities based on actuarial methods described in GASB Statements No. 67 and 74 and assumptions adopted by the ARMB.

**Significant assumptions used that have a high degree of subjectivity**

— Rate of return

— Mortality rates

— Retirement rates

— Termination rates

**Indicators of possible management bias**

— None

## Conclusions

— The assumptions used were reasonable and supported, except for NGNMRS, for which we identified a material misstatement.

— The financial statement disclosures related to the Total Pension and Total OPEB liabilities are consistent with prior years and do not have any indication of management bias.

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# An intentional effort to deliver an exceptional audit experience

| Transforming our audit process using data | Contributions and benefit payments | Census data |
|---|---|---|
| Quality | — We analyzed the entirety of contribution and benefit payment data, rather than statistically sampling.<br>— We created visuals of transactions by participant in order to quickly identify outliers or unusual activity. | — We used advanced data analysis to compare the census data year over year, to identify all changes to relevant attributes in the census file. |
| Experience | — We shared our insights with management.<br>— Based on our data analysis, we reduced the number of transactions sampled, resulting in a lesser demand on management. | — We shared our insights with management.<br>— Rather than statistically sampling the census, we focused our work on data changes. |
| Productivity | — We were able to gain evidence over the broad population, with smaller sample sizes.<br>— The audit process was less disruptive to the DRB staff. | — We were able to gain evidence over the broad population, with smaller sample sizes focused on recent transactions, rather than historical information.<br>— The audit process was less disruptive to the DRB staff. |
| Insights | — The next pages show one example of analysis performed. | — We were able to specifically identify all additions to the closed DB pension plans and review the underlying data to determine appropriate eligibility. |

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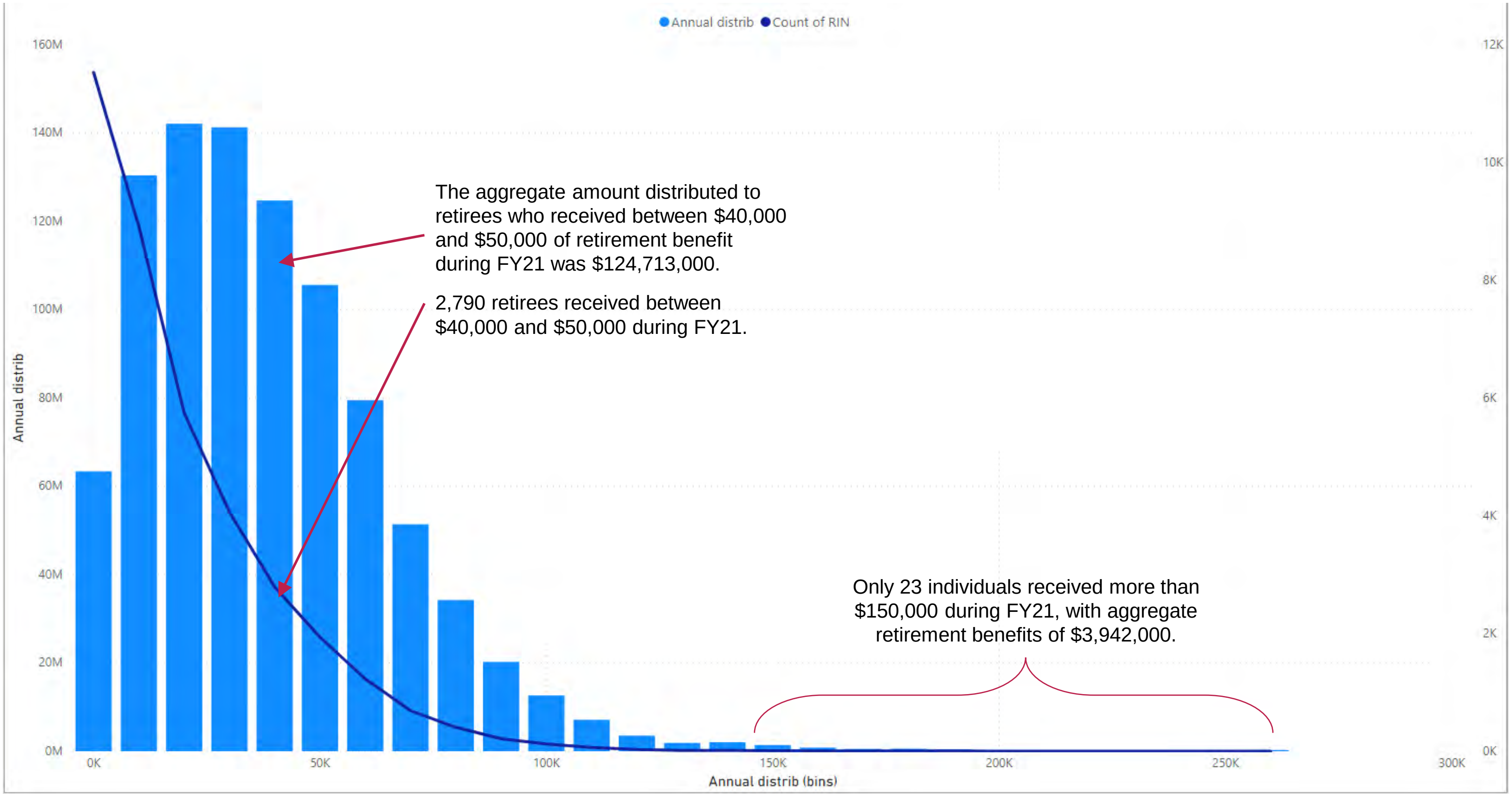
# Pension plan benefit insights - PERS

The distribution information on the following pages reflect System retirement benefit payments, distributed by the amount an individual beneficiary received on an annual basis. The bars represent the total dollars distributed by range (for example, individuals who received less than $10,000, between $10,000 and $20,000, between $20,000 and $30,000). The line represents the number of individuals who received annual benefit payments within that range.

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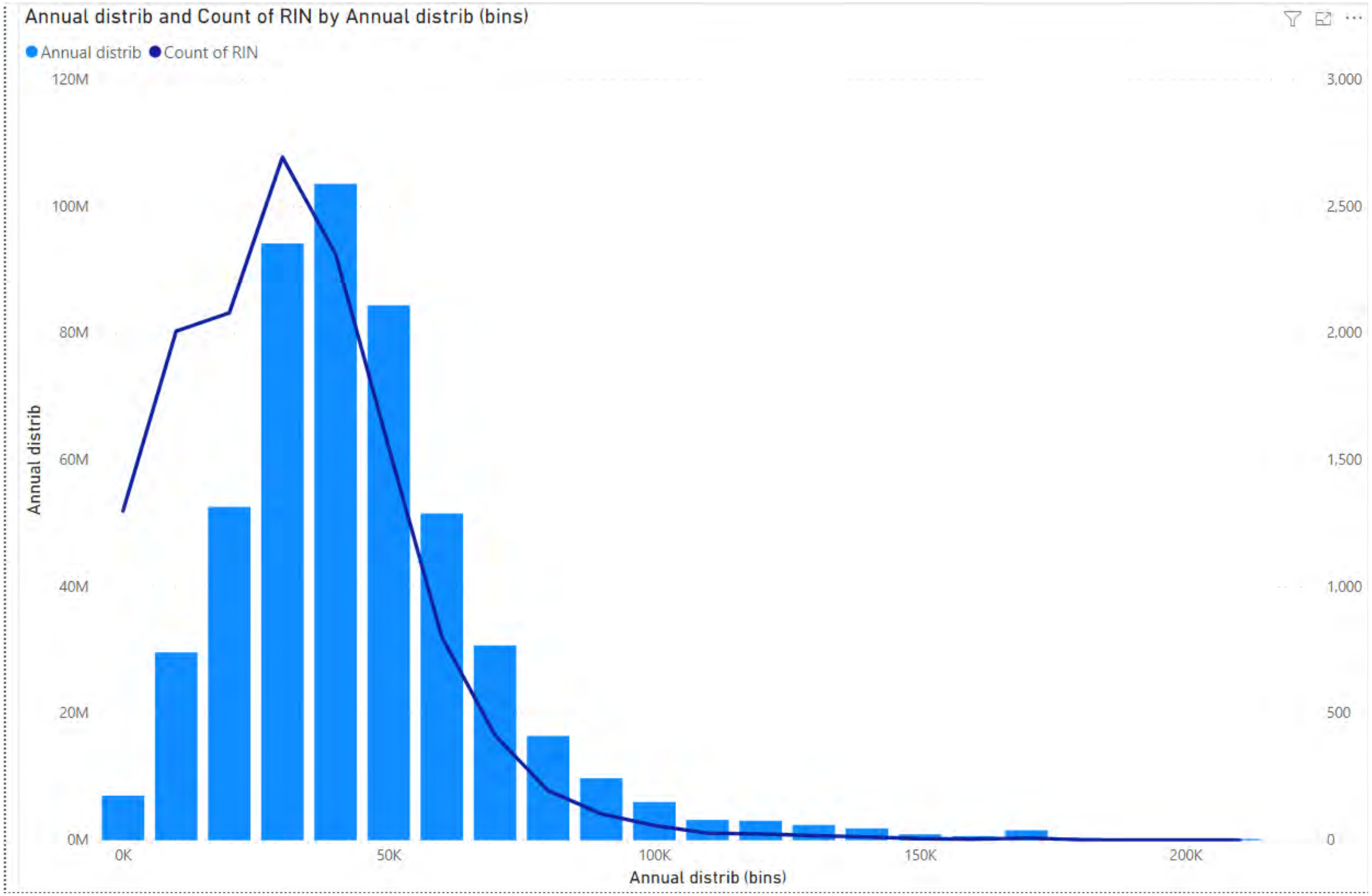
# Pension plan benefit insights - TRS

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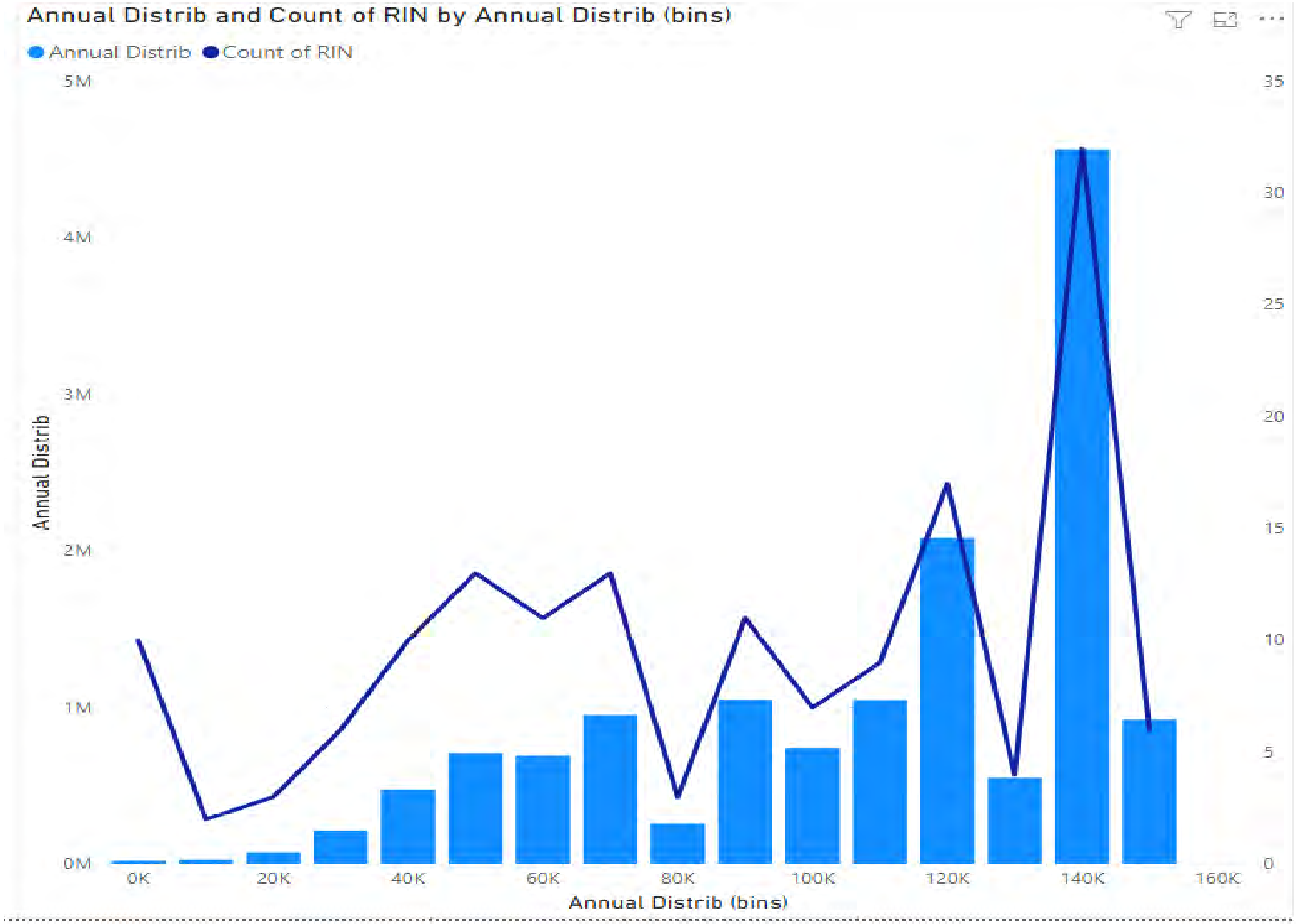
# Pension plan benefit insights - JRS

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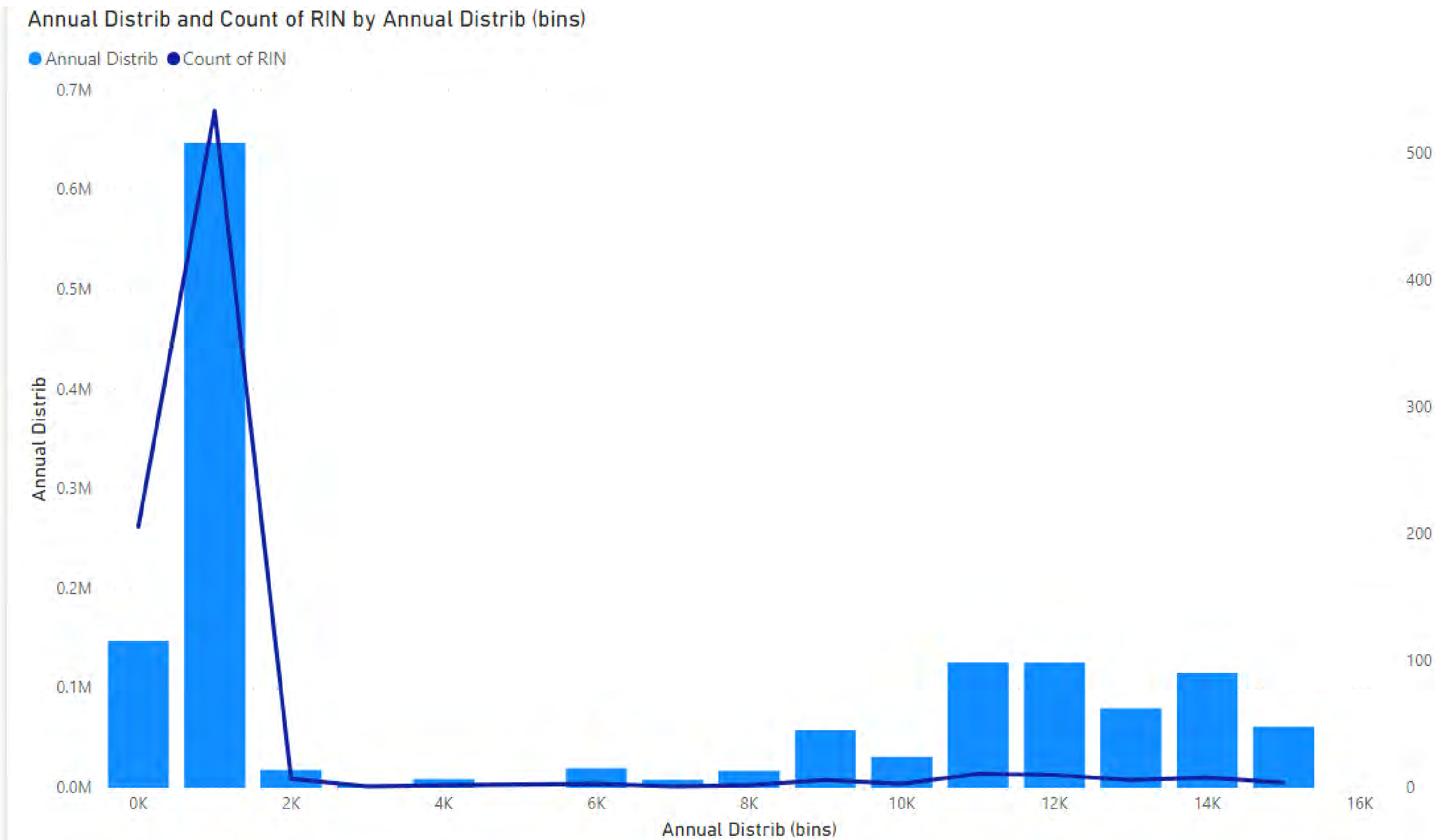
# Pension plan benefit insights - MRS

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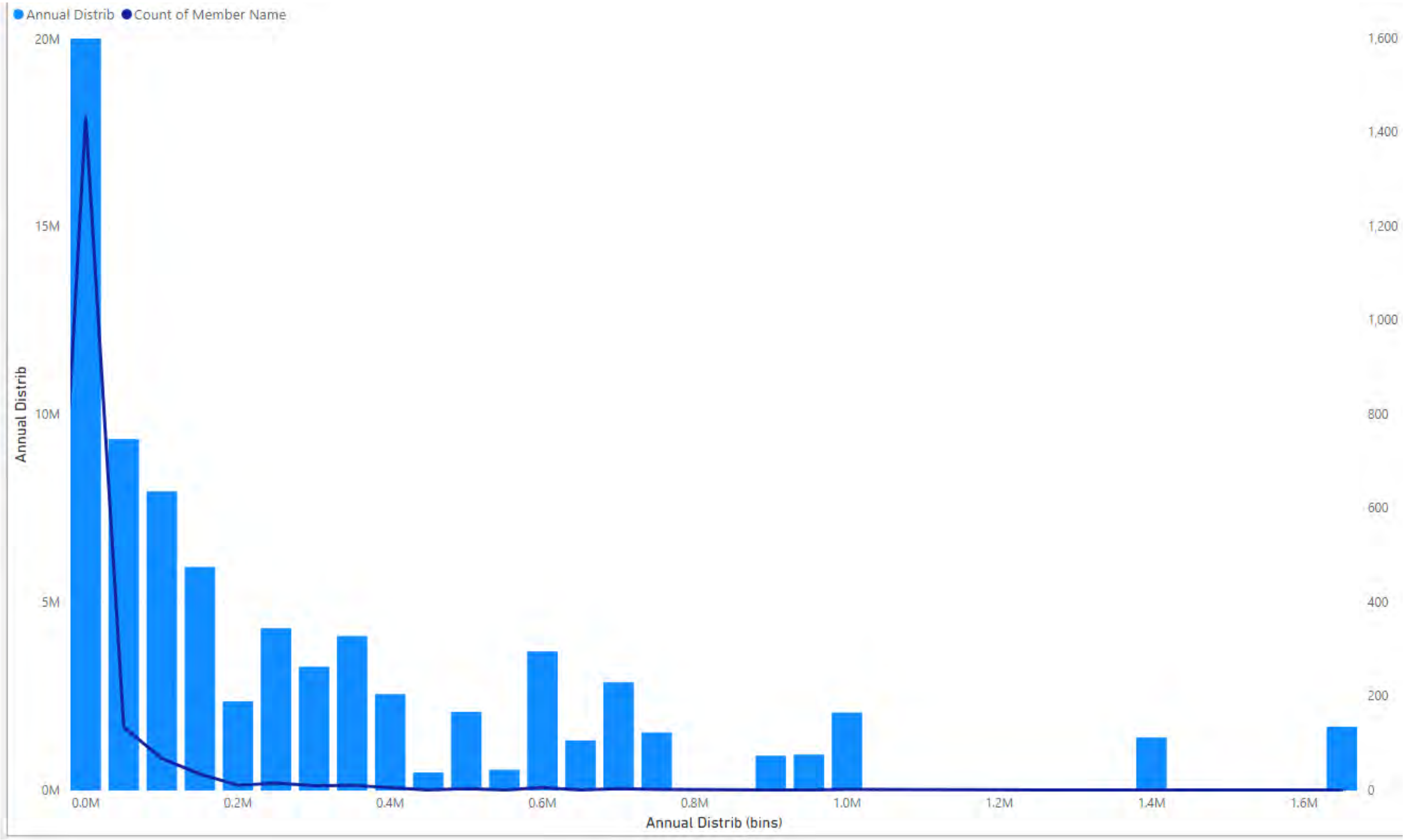
# Plan distribution insights - DCP

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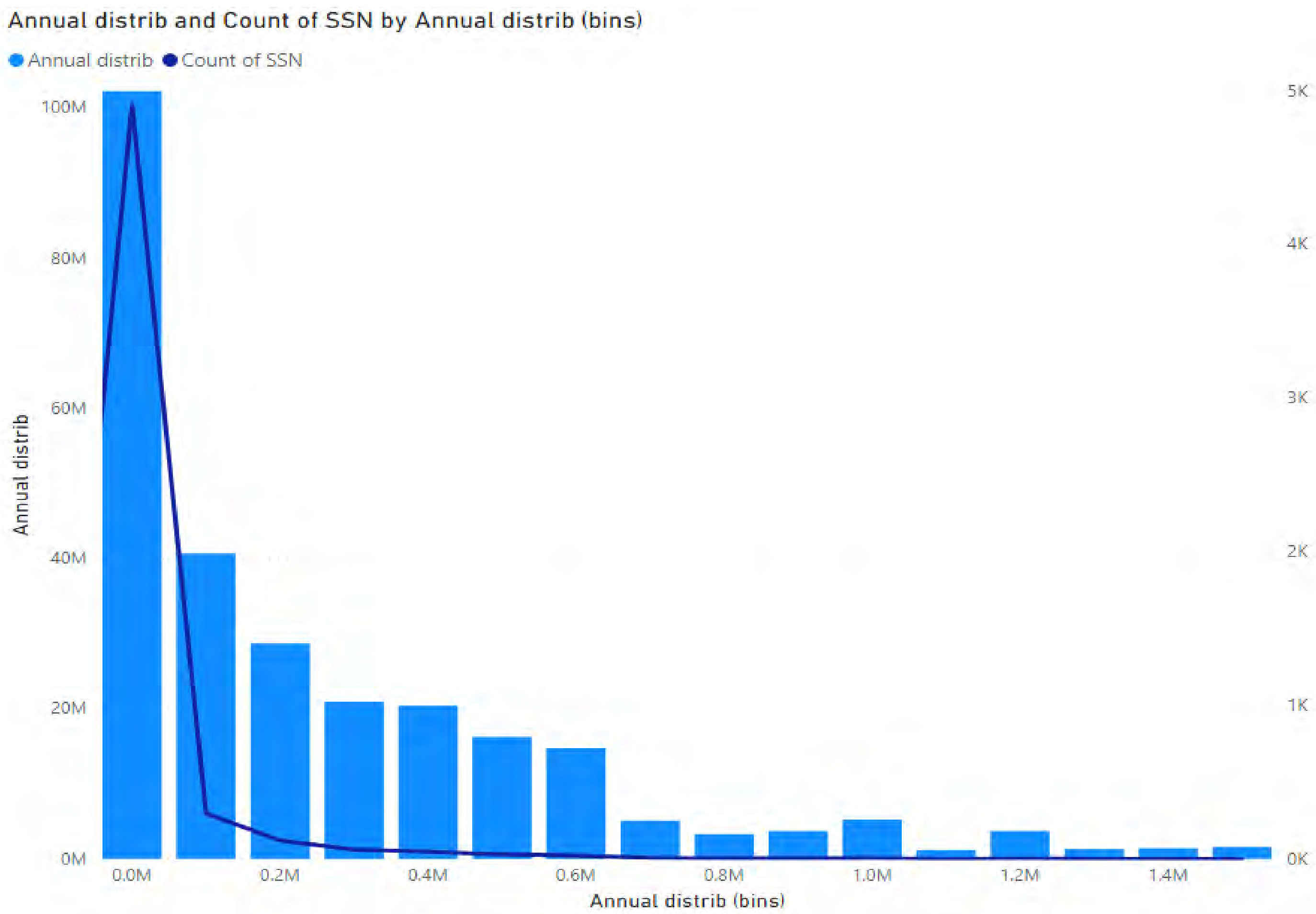
# Plan distribution insights - SBS

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# Questions?

For additional information and audit committee resources, including National Audit Committee Peer Exchange series, a Quarterly webcast, and suggested publications, visit the KPMG Audit Committee Institute (ACI) at www.kpmg.com/ACI

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# State of Alaska Retirement Systems

Presentation to ARMB Actuarial Committee

Preliminary June 30, 2021 Valuation Results – PERS and TRS

December 1, 2021

# Contents

# Purpose of the Valuations

# Purpose of the 2021 Valuations

- Measure each plan's funded status as of June 30, 2021

- Compare *actual* FY21 experience (assets and liabilities) to *expected* experience based on the assumptions used in the 2020 valuations

- Provide the basis for setting FY24 contribution rates

# 2021 Valuation Highlights

# Highlights of 2021 Valuation Results

- Asset performance
  - FY21 asset returns **exceeded** the 7.38% expected return
    - Market returns were approximately 30%
    - Due to 5-year asset smoothing, actuarial returns were approximately 12%
- Liability experience
  - Liabilities are **less** than expected. Overall liability gains/(losses) and the more significant gain/(loss) amounts are:

| Source | PERS | | TRS | |
|---|---|---|---|---|
| | Pension | Healthcare | Pension | Healthcare |
| PRPA/COLA increases | $155M | | $82M | |
| Salary increases | $(17)M | | $(29)M | |
| Per capita claims cost | | $272M | | $97M |
| Plan changes | | $62M | | $22M |
| | | | | |
| Overall gains/(losses) | $162M | $384M | $47M | $135M |
| - as % of 6/30/21 liability | 1.0% | 5.6% | 0.6% | 5.5% |

The result:

- Funded ratios are up
- Contribution rates are down

Note: The PERS liabilities reflect an adjustment for retroactive payments that were included in the data for a group of new retirees.
The final valuation liabilities will reflect an adjustment for retroactive payments that were included in the data for all new retirees.

# Highlights of 2021 Valuation Results (cont'd)

- Key reasons for the $272M (PERS) and $97M (TRS) per capita claims cost gains:
  - o Medical costs are lower than projected (4% lower for Pre-Medicare / 5% lower for Medicare)
  - o EGWP subsidy provided by Optum increased by 16% from $1,003 for 2021 to $1,168 for 2022

| | Medical | | | Prescription Drugs (Rx) | | |
|---|---|---|---|---|---|---|
| | Pre-Medicare | Medicare Parts A & B | Medicare Part B Only | Pre-Medicare | Medicare | EGWP |
| **Fiscal 2022 valuation age 65 per capita cost** | | | | | | |
| - Expected | 16,358 | 1,705 | 5,628 | 3,647 | 3,591 | (1,078) |
| - Actual | 15,708 | 1,619 | 5,341 | 3,695 | 3,560 | (1,168) |
| - Dollar (Gain) / Loss | (650) | (86) | (287) | 48 | (31) | (90) |
| - Percentage (Gain) / Loss | -4.0% | -5.0% | -5.1% | 1.3% | -0.9% | 8.3% |

Note: The actual per capita costs in this table are before reflecting the impact of plan changes shown on the next slide.

# Highlights of 2021 Valuation Results (cont'd)

- Two healthcare plan changes will be effective January 1, 2022:
  - o Preventive benefits are being added for pre-Medicare members
  - o Prior authorization of certain specialty medications is being implemented

- The estimated impact of these changes was provided by Segal

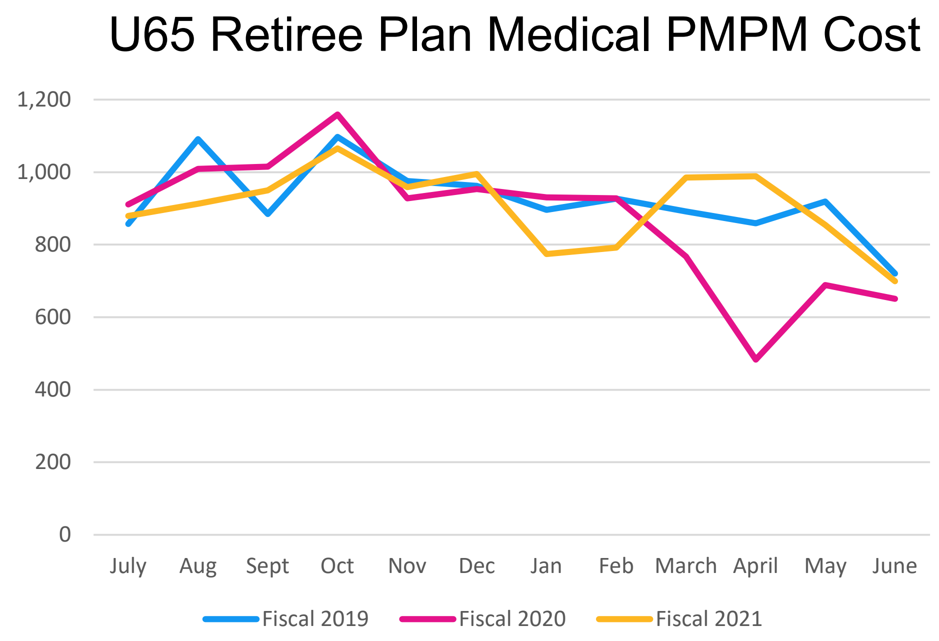
- Adjustments to the 6/30/21 valuation per capita costs to reflect these plan changes are as follows:

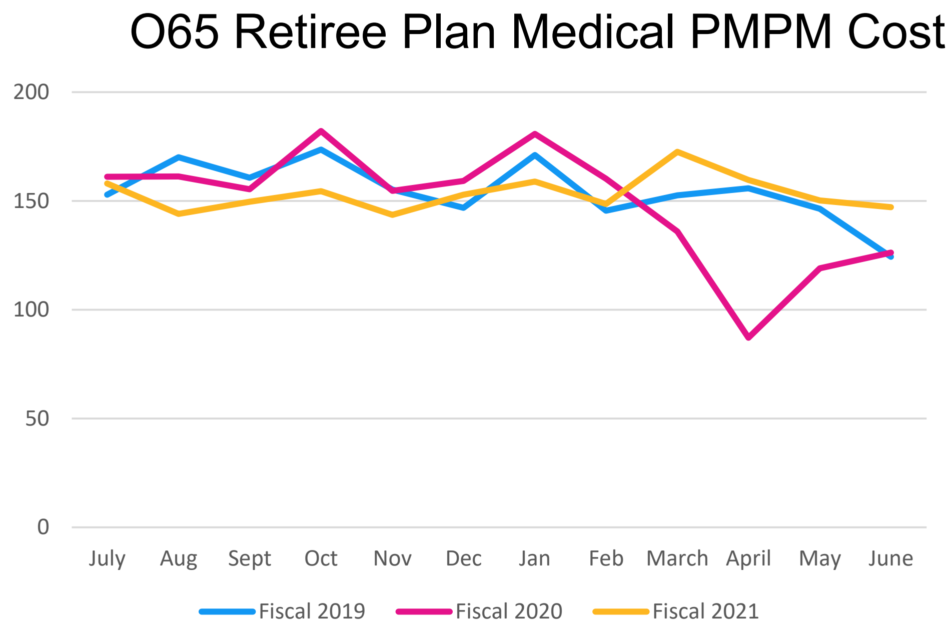
| | Medical | | | Prescription Drugs (Rx) | | |
|---|---|---|---|---|---|---|
| | Pre-Medicare | Medicare Parts A & B | Medicare Part B Only | Pre-Medicare | Medicare | EGWP |
| **Fiscal 2022 valuation age 65 per capita cost** | | | | | | |
| - Prior to plan changes | 15,708 | 1,619 | 5,341 | 3,695 | 3,560 | (1,168) |
| - Impact of plan changes | 1.4% | 0.0% | 0.0% | -8.7% | -2.4% | -3.2% |
| - After plan changes | 15,926 | 1,619 | 5,341 | 3,375 | 3,474 | (1,131) |

Note: Figures in this table may differ due to rounding.

# COVID-19 Impact – Medical Incurred Claims

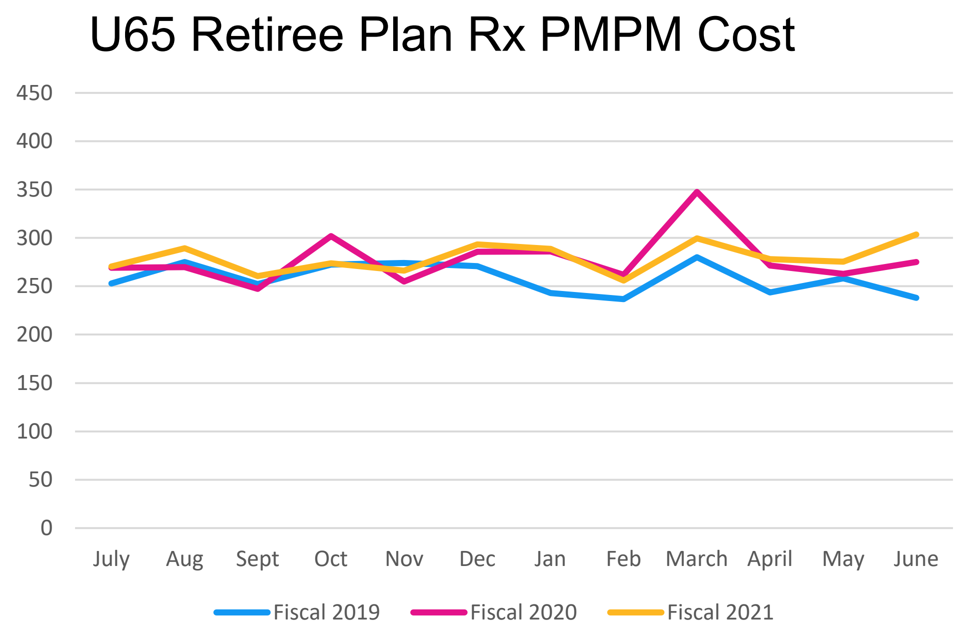
## Per Member Per Month (PMPM)

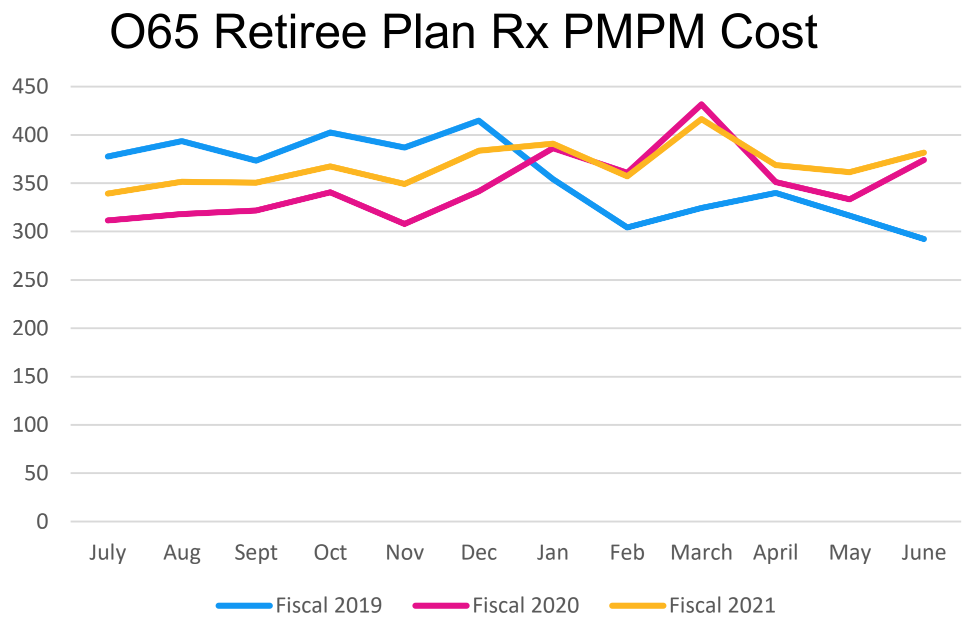



- Material decrease in PMPM cost during March – June of 2020 due to COVID-19
- Fiscal 2021 PMPM medical cost was lower than pre-COVID levels, so a 4% load was added to the Fiscal 2021 medical claims used in the per capita claims cost development to better reflect expected long-term costs

# COVID-19 Impact – Rx Incurred Claims
## Per Member Per Month (PMPM)




- Observed a spike in prescription drug claims in March 2020
- Fiscal 2021 PMPM Rx cost not impacted by COVID like medical

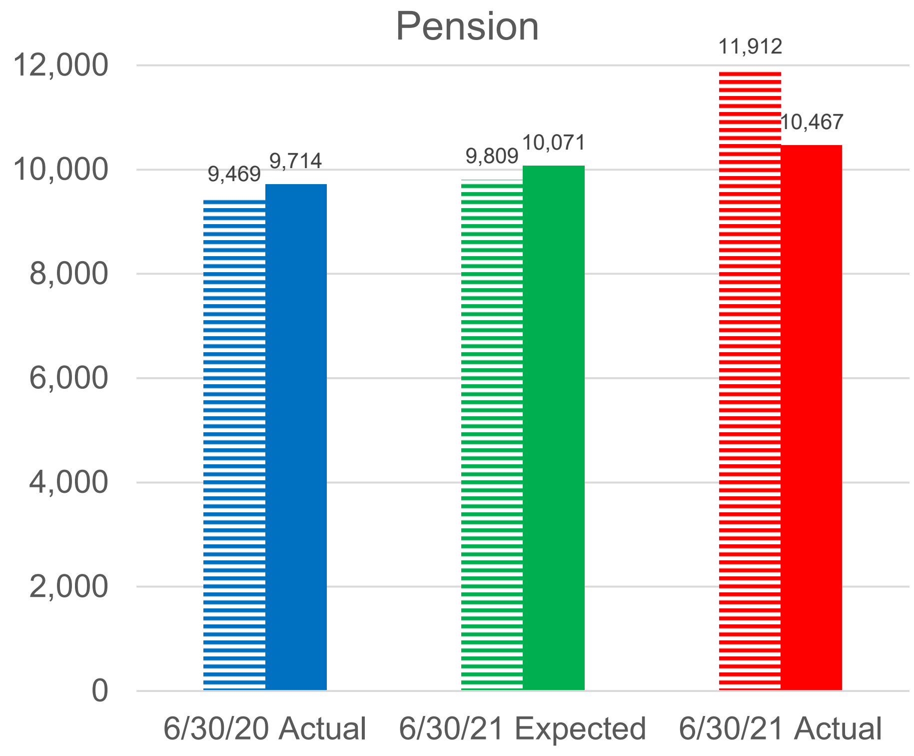
# Preliminary 2021 Valuation Results - PERS

# Explanation of Terms

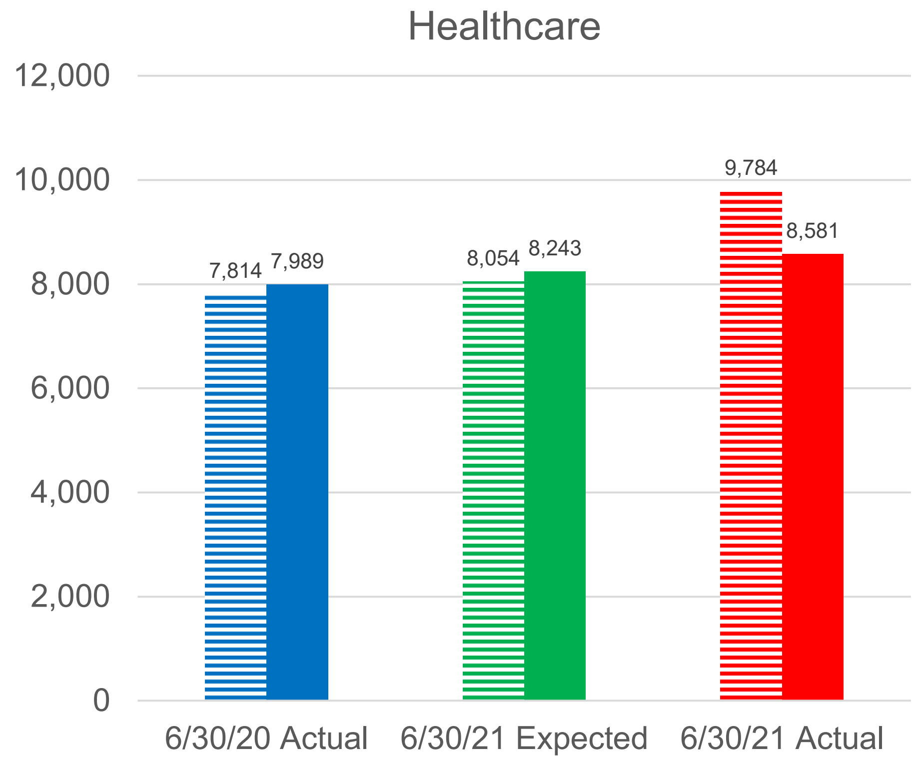
- "6/30/20 Actual"
  - The results from the 6/30/20 valuation
- "6/30/21 Expected"
  - The 6/30/21 valuation results if FY21 experience matched all of the assumptions that were used in the 6/30/20 valuation (e.g., assets earned 7.38%, salaries increased as expected, members retired according to what the retirement assumption predicted, etc.)
- "6/30/21 Actual"
  - The 6/30/21 valuation results reflecting actual FY21 asset performance, and actual changes in the participant data from 6/30/20 to 6/30/21
- Gains and losses are the differences between "6/30/21 Expected" and "6/30/21 Actual"
  - If the difference is *favorable* to the plan, we have a *gain*
  - If the difference is *unfavorable* to the plan, we have a *loss*

# PERS: Assets
## ($millions)

**Market Value (MVA): Striped Bars**
**Actuarial Value (AVA): Solid Bars**



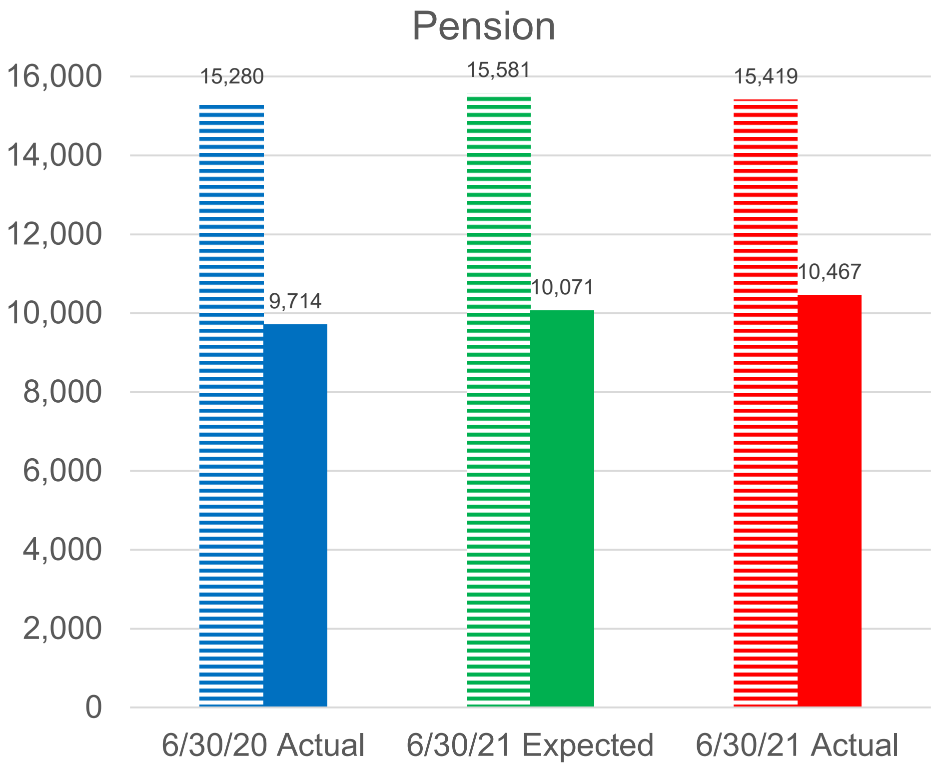

Approximate FY21 return: 30% (MVA); 12% (AVA)
FY21 asset **gain**: $2,103M (MVA); $396M (AVA)



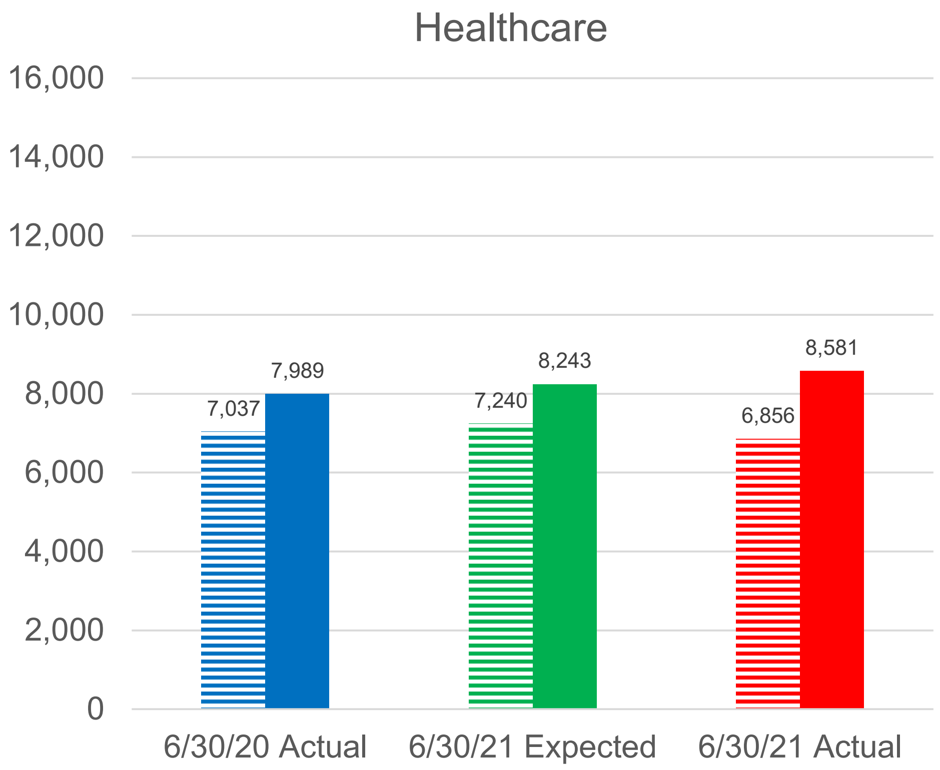

Approximate FY21 return: 30% (MVA); 12% (AVA)
FY21 asset **gain**: $1,730M (MVA); $338M (AVA)

# PERS: Assets vs. Liabilities
($millions)

**Actuarial Accrued Liability (AAL): Striped Bars**
**Actuarial Value of Assets (AVA): Solid Bars**

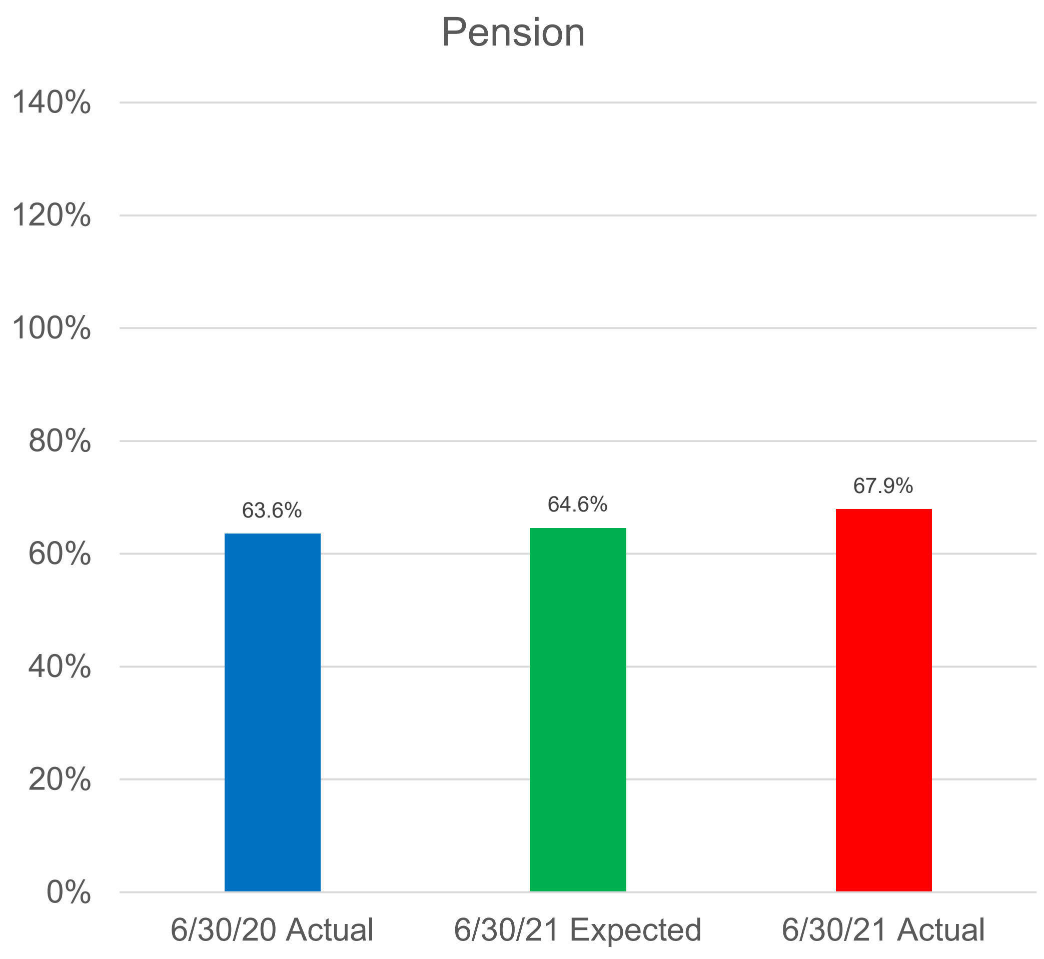


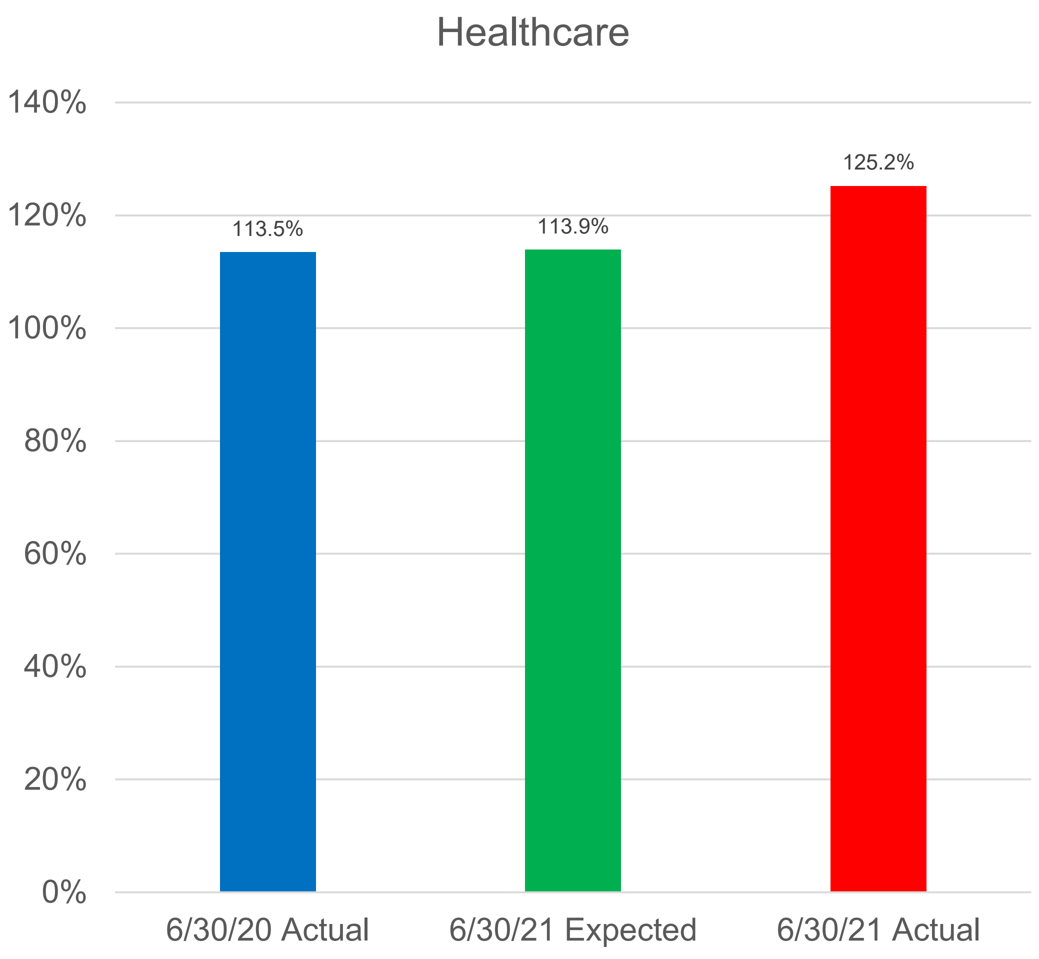

FY21 AAL **gain**: $162M
FY21 AVA **gain**: $396M



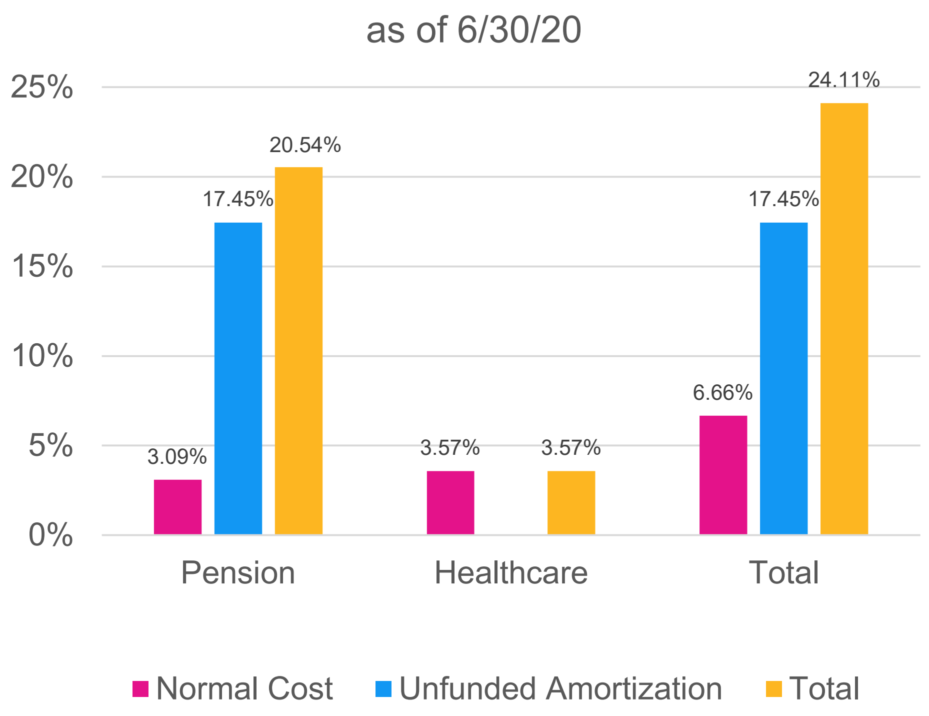

FY21 AAL **gain**: $384M
FY21 AVA **gain**: $338M

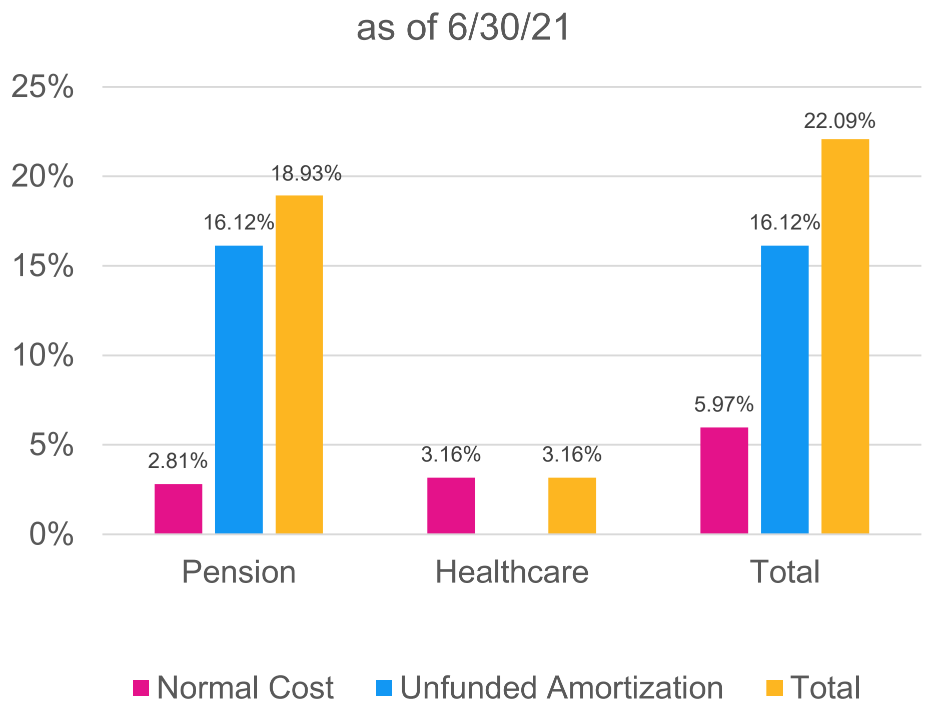
# PERS:  Funded Status (AVA vs. AAL)



# PERS: Employer/State Contribution Rates
## (% of DB/DCR payroll)



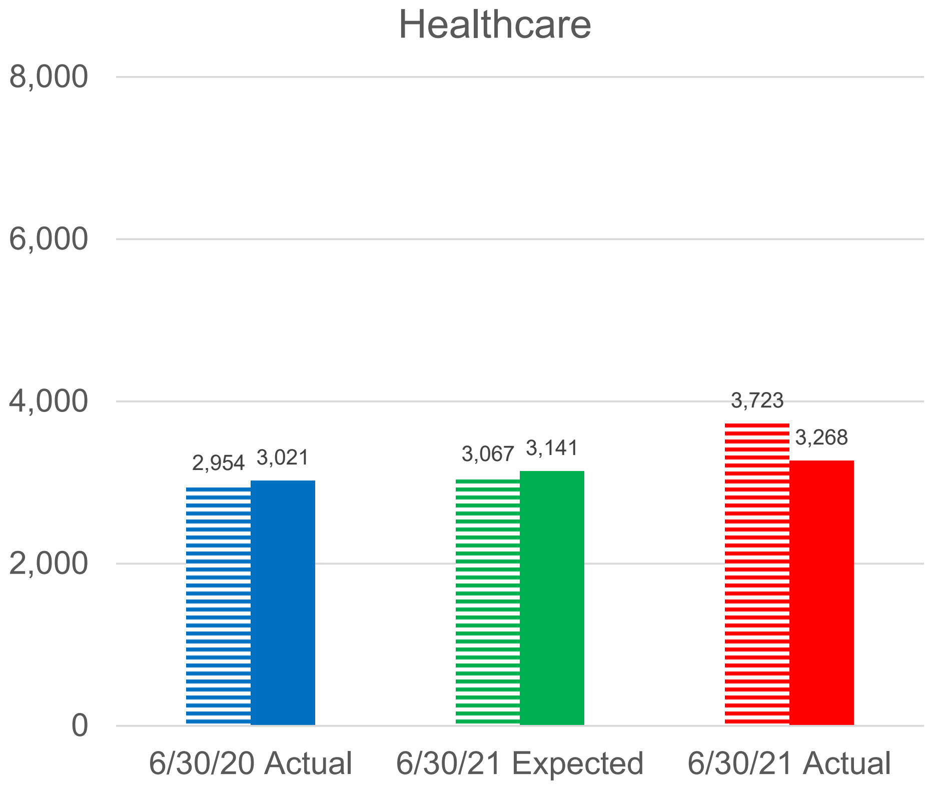



# Preliminary 2021 Valuation Results - TRS

# TRS: Assets
($millions)

**Market Value (MVA): Striped Bars**
**Actuarial Value (AVA): Solid Bars**

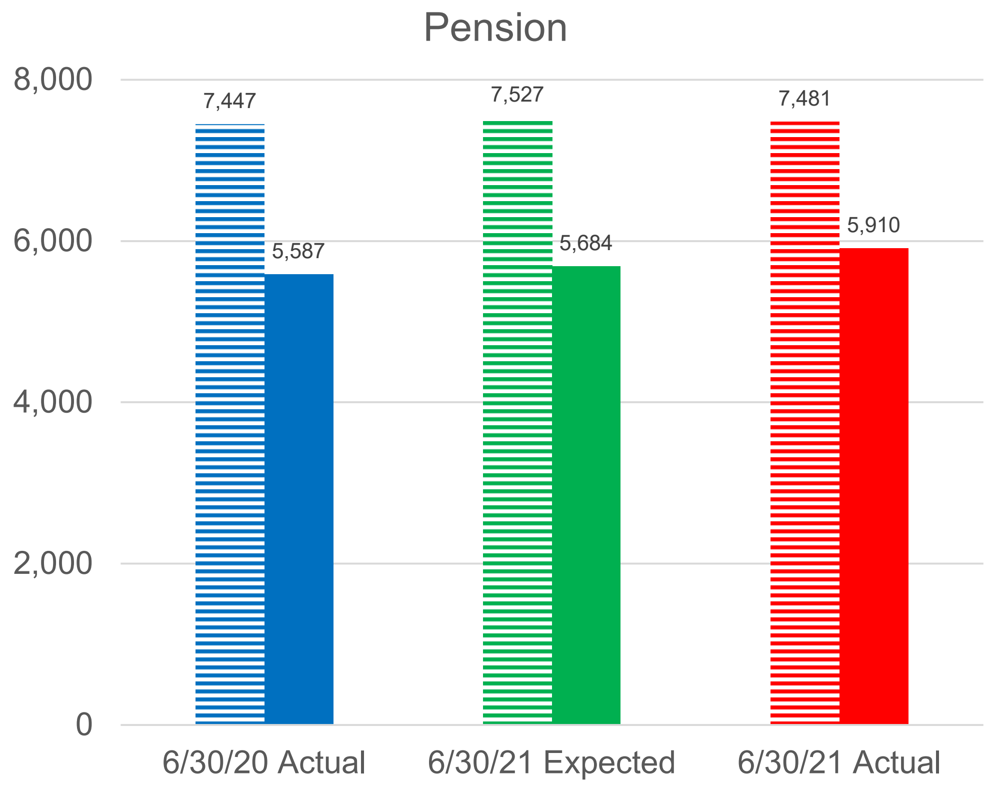

Approximate FY21 return: 30% (MVA); 12% (AVA)
FY21 asset **gain**: $1,200M (MVA); $226M (AVA)



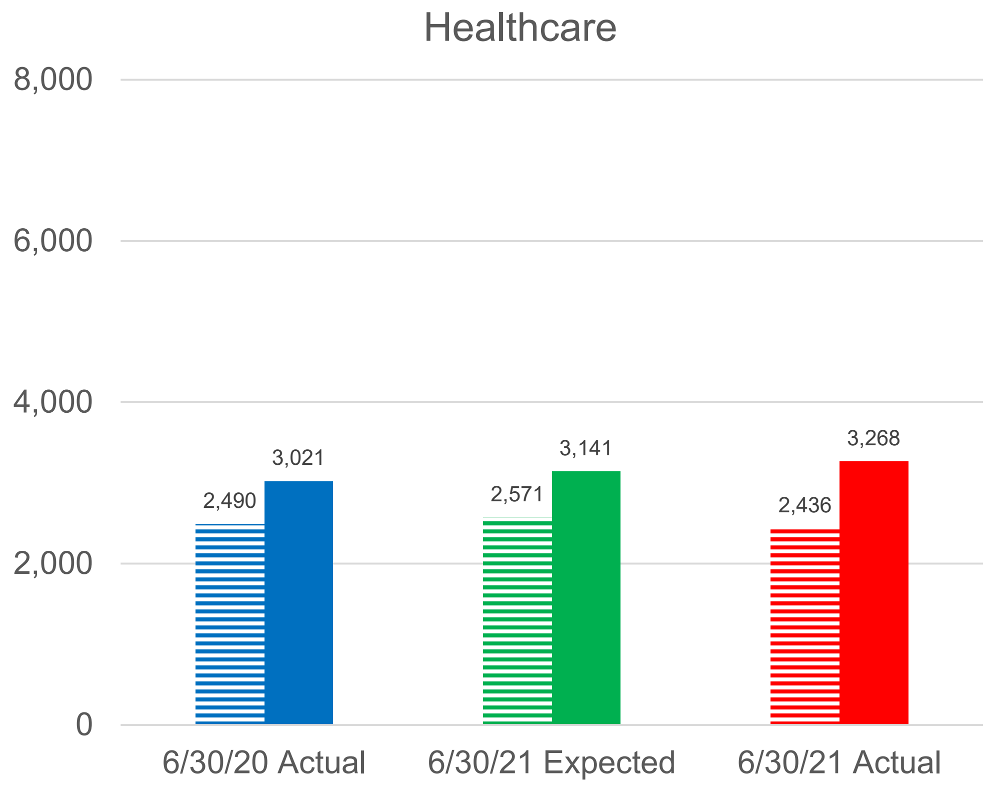

Approximate FY21 return: 30% (MVA); 12% (AVA)
FY21 asset **gain**: $656M (MVA); $127M (AVA)

# TRS: Assets vs. Liabilities
($millions)

**Actuarial Accrued Liability (AAL): Striped Bars**
**Actuarial Value of Assets (AVA): Solid Bars**

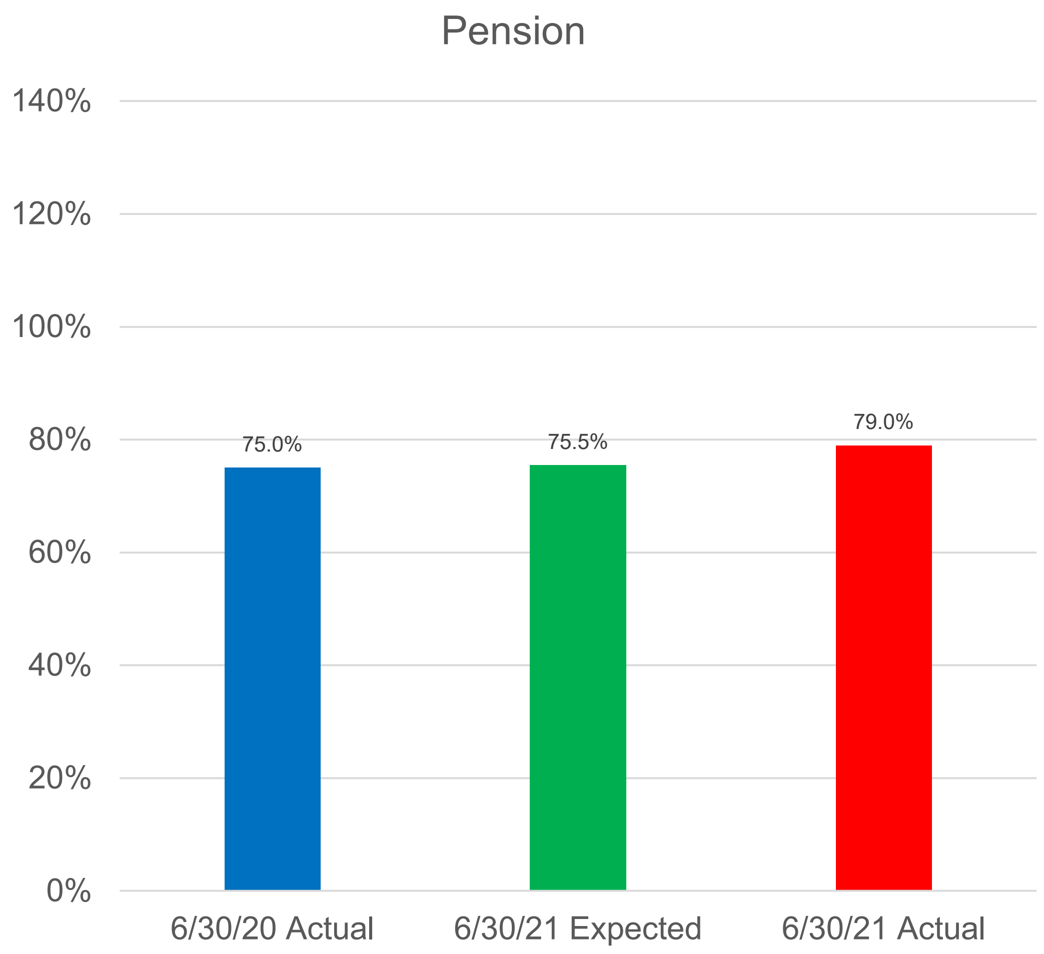


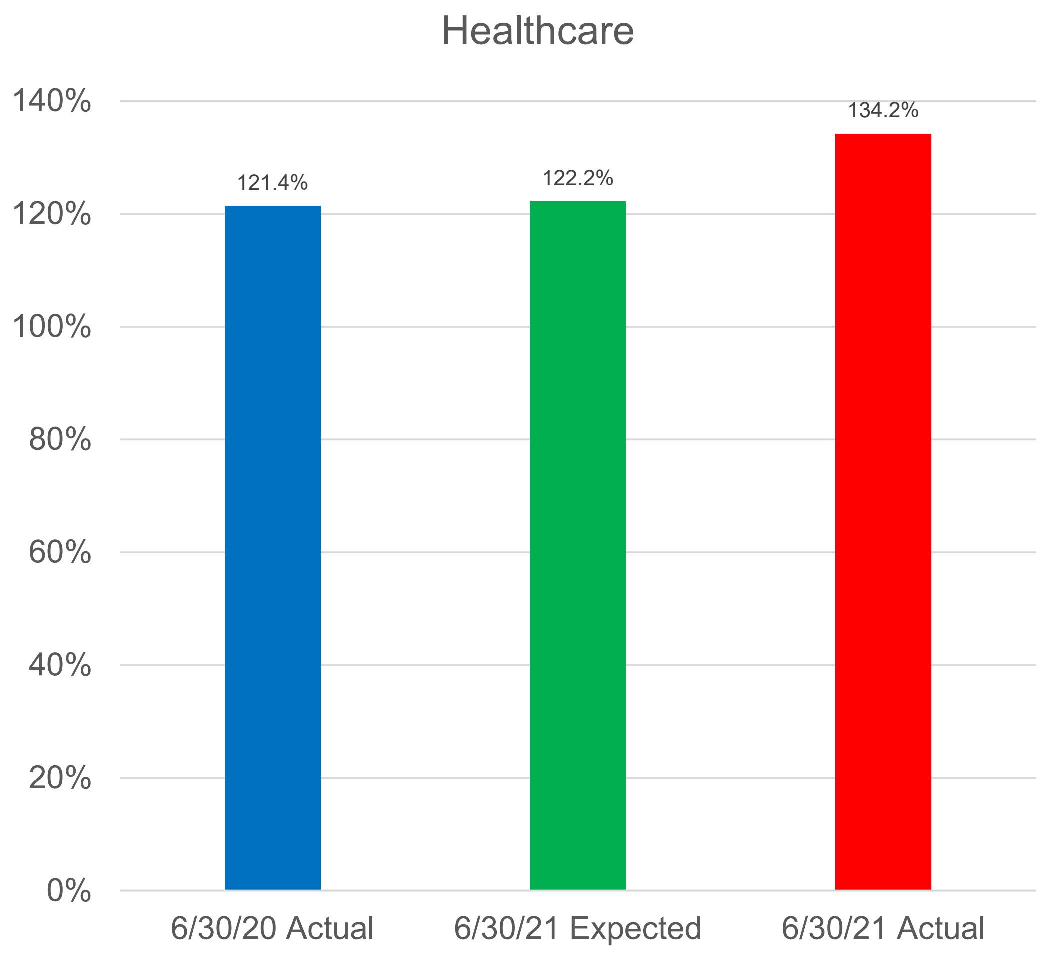

FY21 AAL **gain**: $47M
FY21 AVA **gain**: $226M



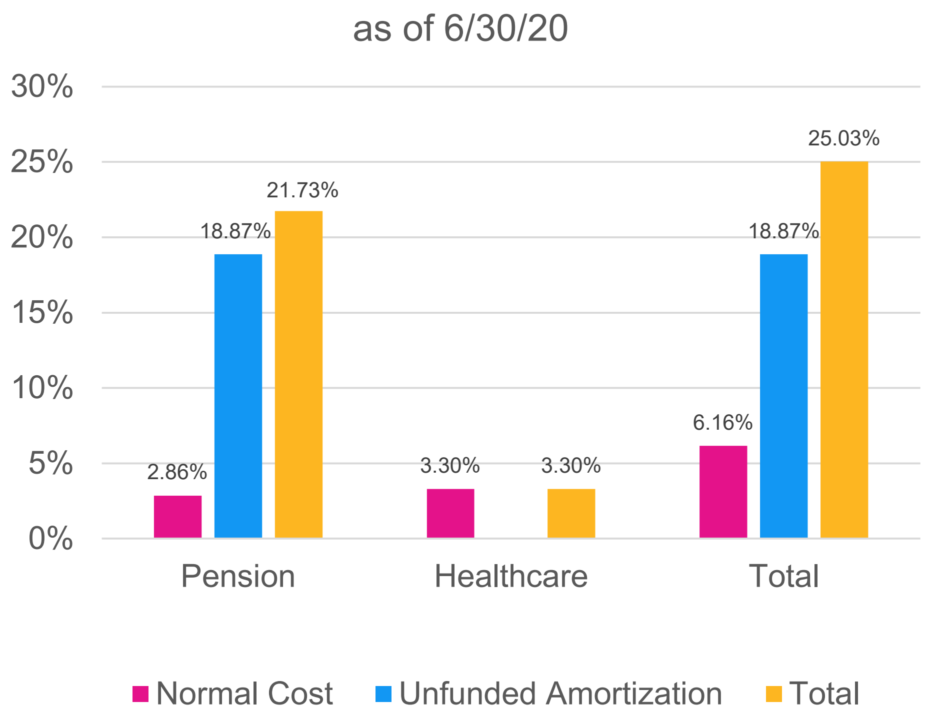

FY21 AAL **gain**: $135M
FY21 AVA **gain**: $127M

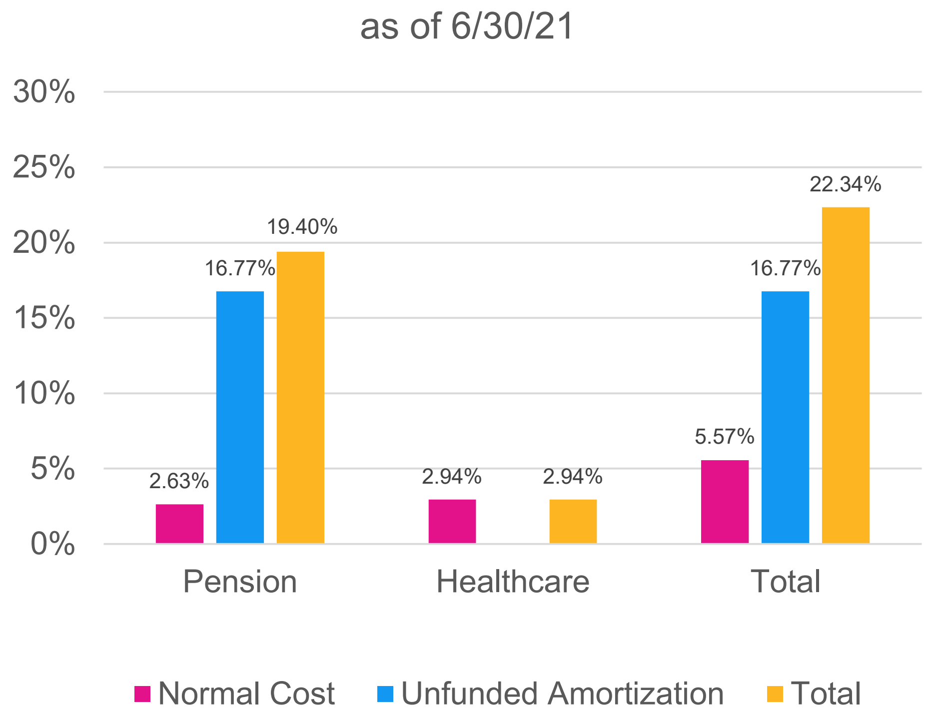
# TRS: Funded Status (AVA vs. AAL)



# TRS: Employer/State Contribution Rates
## (% of DB/DCR payroll)



# Next Steps

# Next Steps

- Complete the DCR valuations and the JRS/NGNMRS roll-forward valuations
- Run projections of assets, liabilities and contributions
- Prepare draft valuation reports
- Discuss these items at the March meeting

# Actuarial Certification

# Actuarial Certification

The purpose of this presentation is to provide the ARMB Actuarial Committee with preliminary June 30, 2021 valuation results for discussion at the December 1, 2021 meeting. More complete valuation results will be presented at the March 16, 2022 meeting. This presentation should be considered part of the June 30, 2021 actuarial valuation report services.

The data, assumptions, methods, and plan provisions used to determine the results shown in this presentation are as shown in the June 30, 2021 actuarial valuation reports (draft reports will be provided within the next couple of months). The June 30, 2021 actuarial valuation reports will include details related to potential risks associated with the plans, and information regarding our use of models.

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

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

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

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

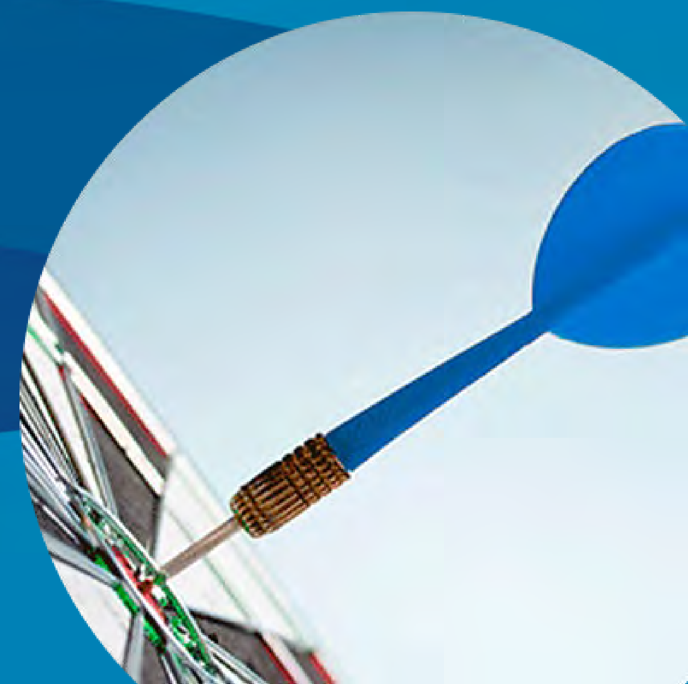
# Replication Audit Preliminary Results

Paul Wood, ASA, FCA, MAAA

Bill Detweiler, ASA, EA, FCA, MAAA

Alaska Retirement Management Board Meeting

December 2, 2021



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# ARMB Replication Audit

*Scope of Services*

- In-depth review of the State's pension plans
- The audit encompasses a full replication of the June 30, 2020 valuations for the following plans:
  - PERS Defined Benefit (DB) Pension & Medical
  - TRS DB Pension & Medical
  - PERS Defined Contribution Retirement (DCR) - Occupational Death & Disability (OD&D) and Medical
  - TRS DCR - OD&D and Medical
  - JRS DB Pension & Medical
  - NGNMRS DB Pension

GRS

# ARMB Replication Audit

## *Scope of Services (cont'd)*

1. Evaluation of the available data for the performance of such valuation
2. Evaluation of recommended economic and non-economic assumptions and all projections as presented in the Primary Actuary's FY2020 Valuation Reports
3. Perform valuation as of June 30, 2020 using the assumptions, methodologies and funding method used by the Primary Actuary in their performance of the June 30, 2020 valuation of the plans
4. Evaluation of the valuation results and reconciliation of any discrepancies between the findings, assumptions, methodology, rates, and or adjustments of the Contractor and Primary Actuary

GRS

# ARMB Replication Audit

## *Scope of Services (cont'd)*

5. Assessment of the conclusions of the valuation report for completeness and accuracy
6. Communication of the peer review audit valuation results and the reconciliation of any discrepancies between the findings, assumptions, methodology, rates, and/or adjustments to the Primary Actuary
7. Review format of the valuation report and offer recommendations
8. Provide a report of the work performed along with any opinions and recommendations for improvement, and present findings to the ARMB.

GRS

# ARMB Replication Audit

## Scope of Services (cont'd)

- This review differs from the test life audit that we perform each year
- In this audit, we coded up all of the benefits and replicated the Present Value of Future Benefits (PVB), the Actuarial Accrued Liability (AAL) and the Actuarial Determined Employer Contribution (ADEC)

GRS

# ARMB Replication Audit

*Data Evaluation*

- Compared Buck’s final data to original data provided by Alaska Division of Retirement and Benefits
  - Confirmed counts are reasonable
  - Confirmed averages and totals of ages, service amounts, salaries, and benefits are reasonable
- Reviewed data questions and responses for reasonability and completeness
- Reviewed data assumptions and disclosures
- For purposes of replication, used Buck’s final data

# ARMB Replication Audit

*Assumption Review*

- Most assumptions used in the June 30, 2020 valuations were based on the June 30, 2017 experience study performed by Buck for PERS, TRS, NGNMRS and JRS
- Experience studies are performed on a reasonable schedule
- Some healthcare assumptions are reviewed on an annual basis

GRS

# ARMB Replication Audit

*Assumption Review – Economic Assumptions*

- Overall, the economic assumptions are reasonable for the purpose of the measurement
  - **Inflation rate** of 2.50%
  - **Nominal investment rate of return/discount rate** of 7.38% - While reasonable a the time of the experience study, there may be pressure to move this rate down in the upcoming experience study
  - **Individual salary increases**
  - **Total payroll growth** of 2.75%
  - **Healthcare cost trend** - The updated Society of Actuaries' Healthcare Cost Trend Model populated with assumptions that are specific to the State of Alaska
  - **EGWP Assumption** – Assumed to continue in perpetuity; while reasonable, there are risks associated with this assumption

GRS

# ARMB Replication Audit

*Assumption Review – Demographic Assumptions*

- Overall, the demographic assumptions are reasonable for the purpose of the measurement
  - Mortality is based on the RP-2014 tables with MP 2017 generational improvement (and with the various credibility adjustments)
  - New public sector specific mortality tables were made available since the last experience study
  - We would expect to see Buck consider the use of these updated tables as well as an update to the generational mortality assumption

GRS

# ARMB Replication Audit

*Replication Results – PERS DB ($ thousands)*

| | Buck | GRS | Difference |
|---|---|---|---|
| PVB - Pension | $ 15,904,744 | $ 15,930,039 | 0.16% |
| PVB - Medical | 7,432,011 | 7,642,583 | 2.83% |
| PVB - Total | 23,336,755 | 23,572,621 | 1.01% |
| AAL | $ 22,316,075 | $ 22,485,572 | 0.76% |
| AVA | 17,703,068 | 17,703,068 | 0.00% |
| UAAL | 4,613,007 | 4,782,504 | |
| Funded Ratio | 79.3% | 78.7% | |
| Normal Cost | $ 222,640 | $ 235,751 | 5.89% |
| ADEC $ | $ 442,053 | $ 443,256 | 0.27% |
| ADEC % | 18.38% | 18.43% | |

# ARMB Replication Audit

*Replication Results – TRS DB ($ thousands)*

| | Buck | | GRS | | Difference |
|---|---|---|---|---|---|
| PVB - Pension | $ | 7,688,262 | $ | 7,696,468 | 0.11% |
| PVB - Medical | | 2,614,021 | | 2,623,060 | 0.35% |
| PVB - Total | | 10,302,283 | | 10,319,527 | 0.17% |
| AAL | $ | 9,936,711 | $ | 9,946,317 | 0.10% |
| AVA | | 8,608,347 | | 8,608,347 | 0.00% |
| UAAL | | 1,328,364 | | 1,337,970 | |
| Funded Ratio | | 86.6% | | 86.5% | |
| Normal Cost | $ | 75,823 | $ | 77,335 | 1.99% |
| ADEC $ | $ | 135,109 | $ | 134,656 | -0.34% |
| ADEC % | | 17.90% | | 17.84% | |

# ARMB Replication Audit

*Replication Results – PERS DCR ($ thousands)*

| | Buck | | GRS | | Difference |
|---|---|---|---|---|---|
| PVB - OD&D | $ | 43,975 | $ | 43,211 | -1.74% |
| PVB - Medical | | 247,650 | | 251,188 | 1.43% |
| PVB - Total | | 291,625 | | 294,399 | 0.95% |
| | | | | | |
| AAL | $ | 161,335 | $ | 160,565 | -0.48% |
| AVA | | 187,776 | | 187,776 | 0.00% |
| UAAL | | (26,441) | | (27,211) | |
| Funded Ratio | | 116.4% | | 116.9% | |
| | | | | | |
| Normal Cost | $ | 20,316 | $ | 20,565 | 1.22% |
| | | | | | |
| ADEC $ | $ | 154,165 | $ | 154,646 | 0.31% |
| ADEC % | | 6.41% | | 6.43% | |

# ARMB Replication Audit

*Replication Results – TRS DCR ($ thousands)*

| | Buck | | GRS | | Difference |
|---|---|---|---|---|---|
| PVB - OD&D | $ | 2,297 | $ | 2,297 | 0.01% |
| PVB - Medical | | 63,321 | | 64,344 | 1.62% |
| PVB - Total | | 65,618 | | 66,641 | 1.56% |
| AAL | $ | 40,857 | $ | 41,172 | 0.77% |
| AVA | | 54,487 | | 54,487 | 0.00% |
| UAAL | | (13,630) | | (13,315) | |
| Funded Ratio | | 133.4% | | 132.3% | |
| Normal Cost | $ | 3,708 | $ | 3,790 | 2.22% |
| ADEC $ | $ | 50,723 | $ | 50,798 | 0.15% |
| ADEC % | | 6.72% | | 6.73% | |

# ARMB Replication Audit

## *Replication Results – JRS*

| | Buck | GRS | Difference |
|---|---|---|---|
| PVB - Pension | $ 249,945,586 | $ 248,823,194 | -0.45% |
| PVB - Medical | 22,457,366 | 22,456,334 | 0.00% |
| PVB - Total | 272,402,952 | 271,279,528 | -0.41% |
| AAL | $ 228,505,813 | $ 224,338,789 | -1.82% |
| AVA | 229,593,682 | 229,593,682 | 0.00% |
| UAAL | (1,087,869) | (5,254,893) | |
| Funded Ratio | 100.5% | 102.3% | |
| Normal Cost | $ 6,787,853 | $ 7,041,874 | 3.74% |
| ADEC $ | $ 9,220,546 | $ 9,367,906 | 1.60% |
| ADEC % | 70.08% | 71.20% | |

GRS

# ARMB Replication Audit

*Replication Results – NGNMRS*

| | Buck | | GRS | | Difference |
|---|---|---|---|---|---|
| PVB | $ | 25,110,009 | $ | 25,202,489 | 0.37% |
| AAL | $ | 22,417,247 | $ | 23,202,753 | 3.50% |
| AVA | | 43,020,393 | | 43,020,393 | 0.00% |
| UAAL | | (20,603,146) | | (19,817,640) | |
| Funded Ratio | | 191.9% | | 185.4% | |
| Normal Cost | $ | 759,140 | $ | 623,872 | -17.82% |
| ADEC $ | $ | 0 | $ | 0 | 0.00% |

# ARMB Replication Audit

## *Evaluation of Results*

- Overall, the replications produced results that were within a reasonable range
- The match on the Present Value of Benefits and Actuarially Accrued Liability is generally within 1%
- This can be considered a highly successful replication of the aggregate results
- This replication of the actuarial accrued liabilities indicates that the liabilities presented in the retained actuary's valuation reports provided a reasonable representation of the AAL based on the assumptions, methods and procedures used by the retained actuary in the actuarial valuation

GRS

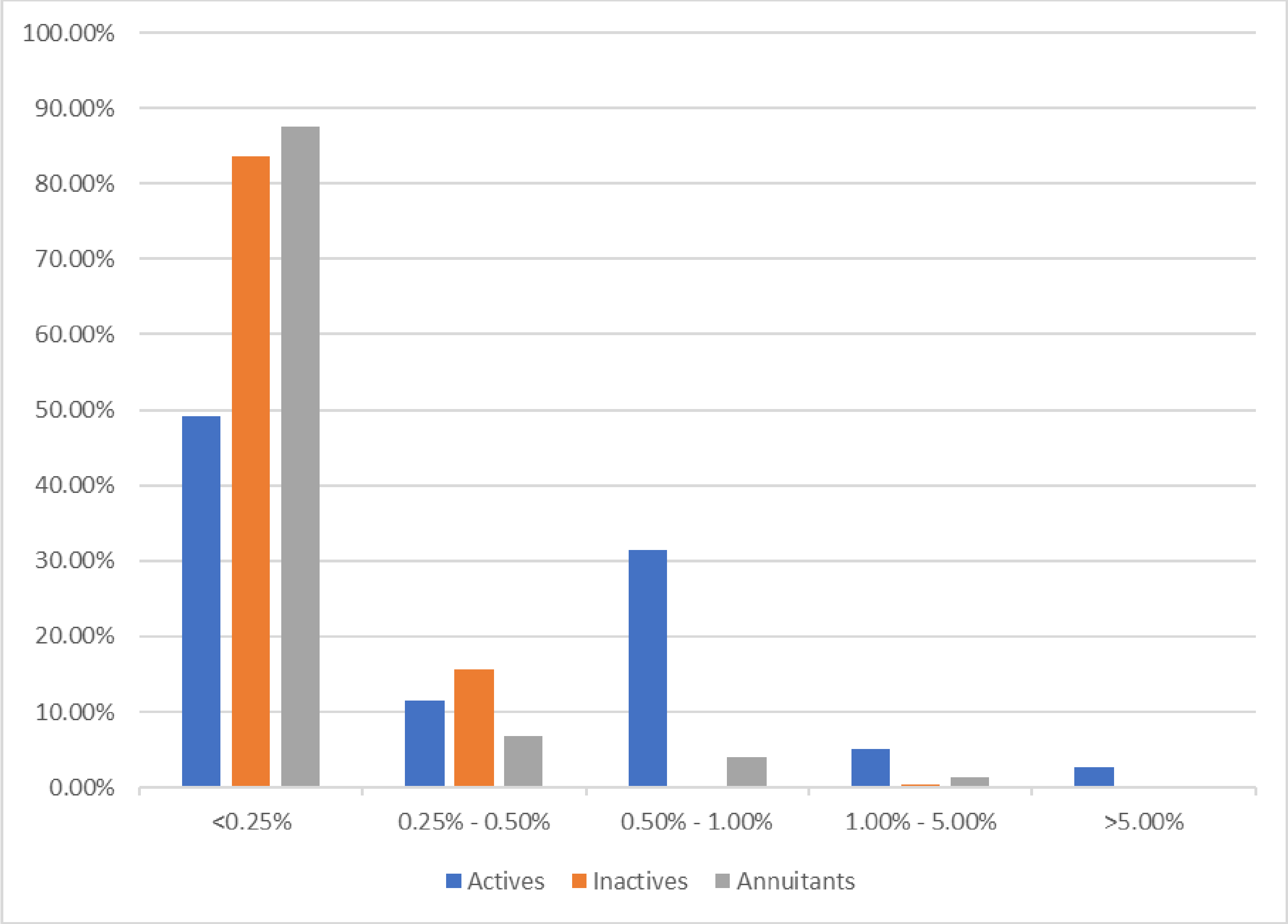
# ARMB Replication Audit

*Evaluation of Results – Individual PVB*

- Buck provided the Present Value of Benefits for all individuals with liabilities under the plan
- GRS was able to compare the results for each individual valued in the liabilities, something which is not considered to be a standard part of an actuarial audit process
- As an example, the chart on the next page shows the distribution of the percent differences in the present value of benefits by individual for the PERS and TRS pension
- This information will be very helpful in future test life audits as it will inform our request for certain types of test lives

# ARMB Replication Audit

## *Evaluation of Results – Individual PVB*



# ARMB Replication Audit

*Conclusions*

- We have performed both a test life audit and a full replication audit
- Our results are within a reasonable range of the Buck valuations
- It is our opinion that the Buck valuation conclusions accurately portray the actuarial status of the systems and are reflected in the required contribution rates

# ARMB Replication Audit

*Next Steps*

- The full replication audit gave us insights into the test lives we should be requesting for the current audit
- We will identify some additional test lives to check to pinpoint any particular issues that can be incorporated into future valuations
- We will issue a report detailing all of our findings and any recommendations

# Questions?

Callan

December 2, 2021

# ARMB Board Meeting

Preliminary Investment Performance
Periods Ended September 30, 2021

**Steve Center, CFA**
Senior Vice President

**Paul Erlendson**
Senior Vice President

# Agenda

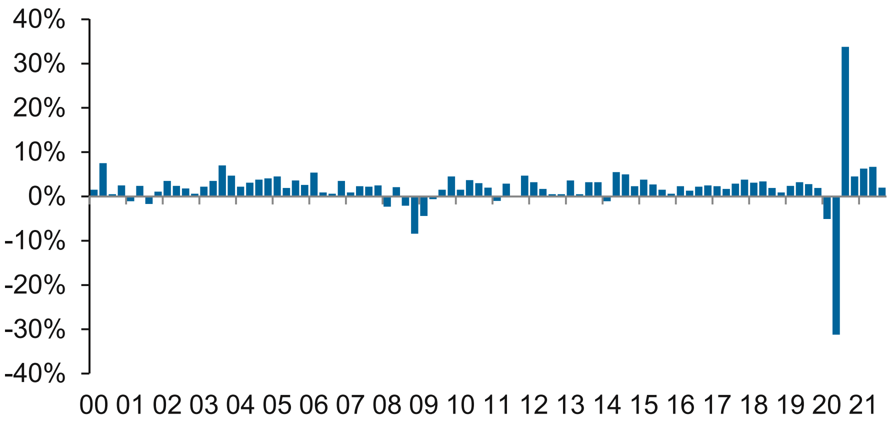
- Market and Economic Environment

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

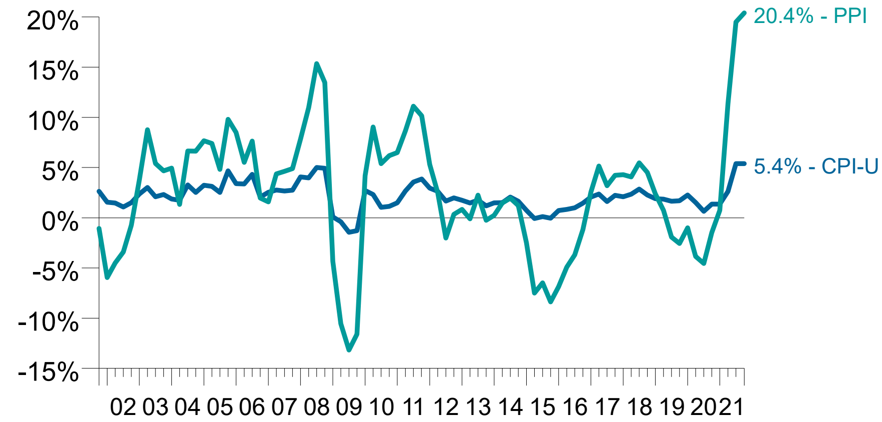
# U.S. Economy—Summary

For periods ended 9/30/21

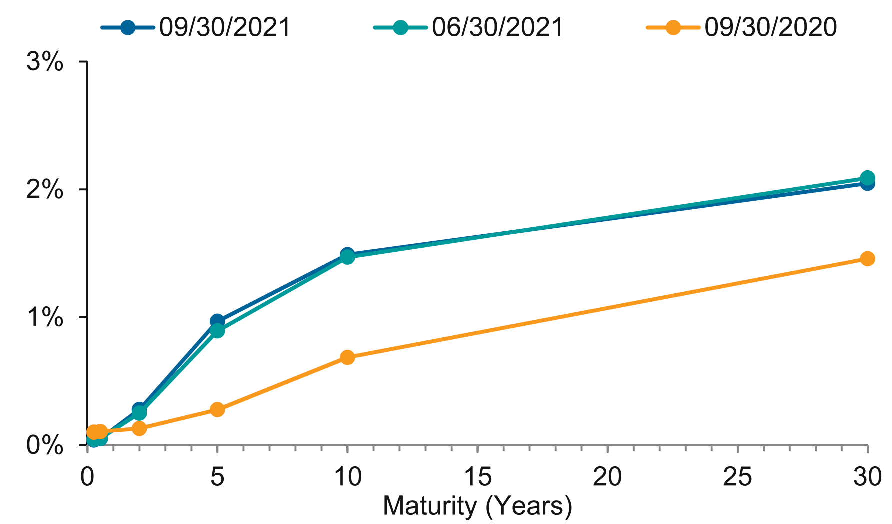
### Quarterly Real GDP Growth



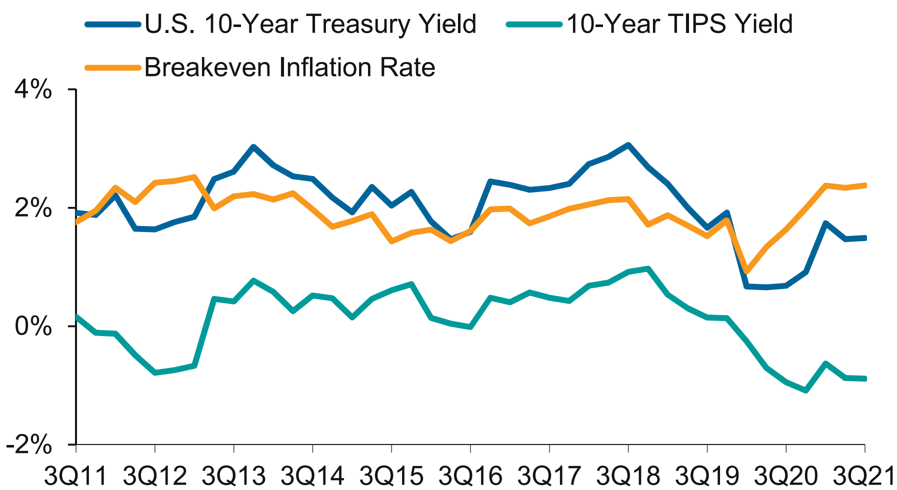

### Inflation Year-Over-Year




### U.S. Treasury Yield Curves




### Historical 10-Year Yields




Sources: Bloomberg, Bureau of Labor Statistics, Callan

# Market Environment: 3Q21

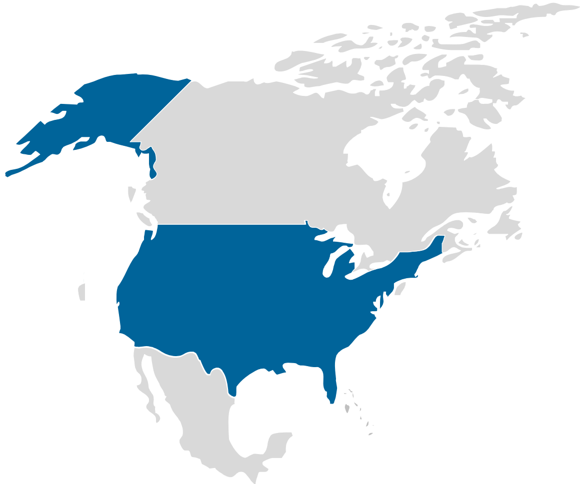
## Strong growth worldwide during the first half of 2021, but slowdown hit in 3Q

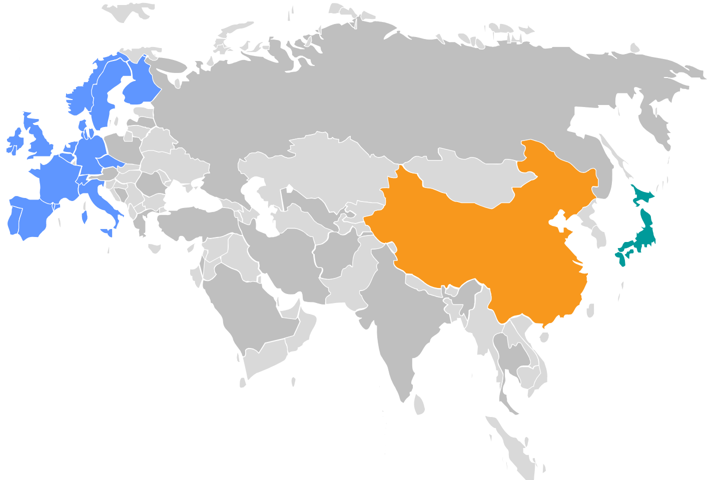
### U.S.

- GDP growth slipped to 2% in 3Q, after a 6.7% gain in 2Q. The Fed now expects 5.9% growth for the year.
- Consumer spending, non-residential investment, and exports drove GDP gains through the first half of the year. But consumers grew cautious in 3Q as the Delta variant fueled a pandemic surge, and both spending and employment disappointed.
- Unemployment dropped to 4.8% in September, but it is still above the pre-COVID rate of 3.5%. The economy added 194,000 jobs in September, down from a monthly average of 560,000 during 2021.

### Global

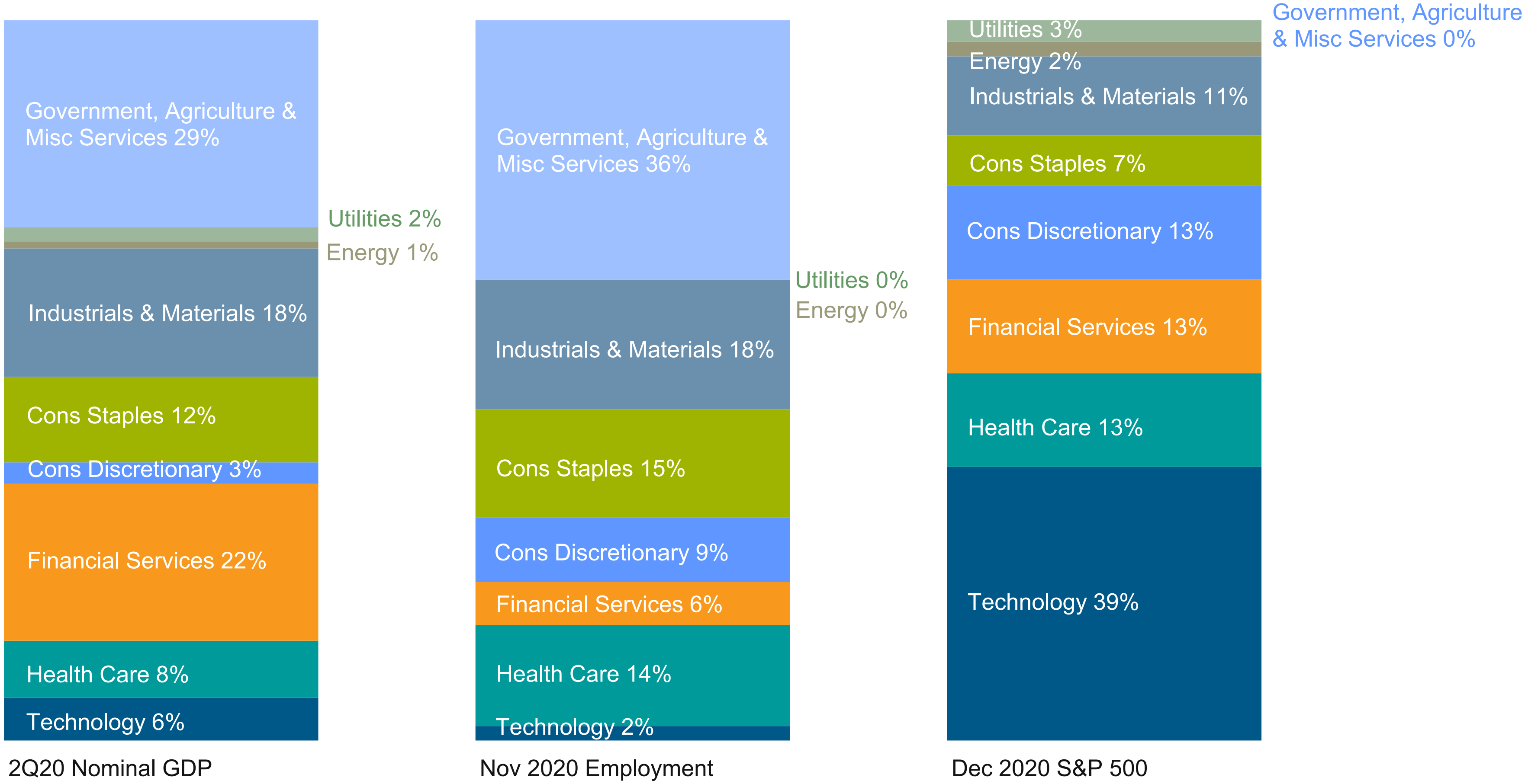
- Euro zone GDP expanded 9.2% in 2Q21, after shrinking in 4Q20 and 1Q21.
- U.K. GDP grew 5.5% in 2Q21, far better than estimates. U.K. may face a longer road to recovery than the euro zone due to the double-whammy of the pandemic and Brexit.
- Japan's economy is expected to grow much more modestly than other developed nations in 2021; 2Q21 GDP grew 1.9%.
- China's GDP rose less than 1% annualized in 3Q21, after recovering to 4.9% in 2Q21. Renewed pandemic restrictions and supply chain issues challenged growth.





# The Stock Market Is Not the Economy

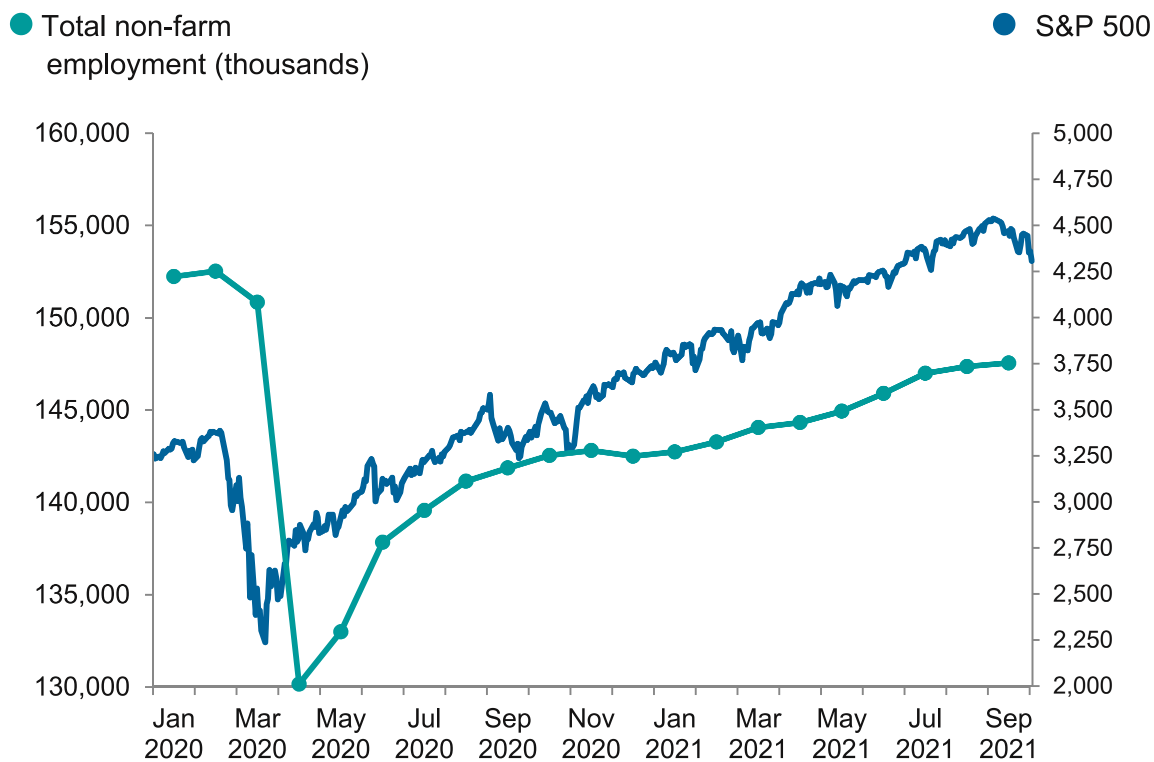
## Sector share of GDP, employment, and S&P 500 at 12/31/20




Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, S&P Dow Jones Indices, J.P. Morgan Asset Management Guide to the Markets – U.S. Data are as of 12/31/20. Technology: information (economy, employment), technology and communication services (S&P 500). Financial services includes real estate (S&P 500). Consumer discretionary: Arts, entertainment, recreation, accommodation, and food services (economy), leisure and hospitality (employment). Consumer staples: wholesale trade and retail trade (economy, employment). Industrials and materials: construction, manufacturing, transportation and warehousing (economy, employment). Energy: mining (economy), mining and logging (employment). Government, agriculture & misc. services: government, other services, professional and business services, education and agriculture, forestry, fishing, and hunting (economy), government, other services, professional and business services, and education (employment).

# The Stock Market Is Not the Economy

- U.S. equity market has already recovered from the March 2020 plunge. Large cap (S&P 500) is up 97% from the bottom.
- U.S. job market created 22.8 million jobs from Feb 2010 – Feb 2020. The job market lost over 22.4 million jobs in March and April and has recovered 17.4 million since the April low.
- GDP regained its pre-pandemic peak in June 2021, just 16 months.
- Steep structural challenges face many job-laden sectors that are underrepresented in the current stock market valuation.
- Containment of COVID-19 and continued increase in the vaccination rate are key to retaining confidence in the recovery.

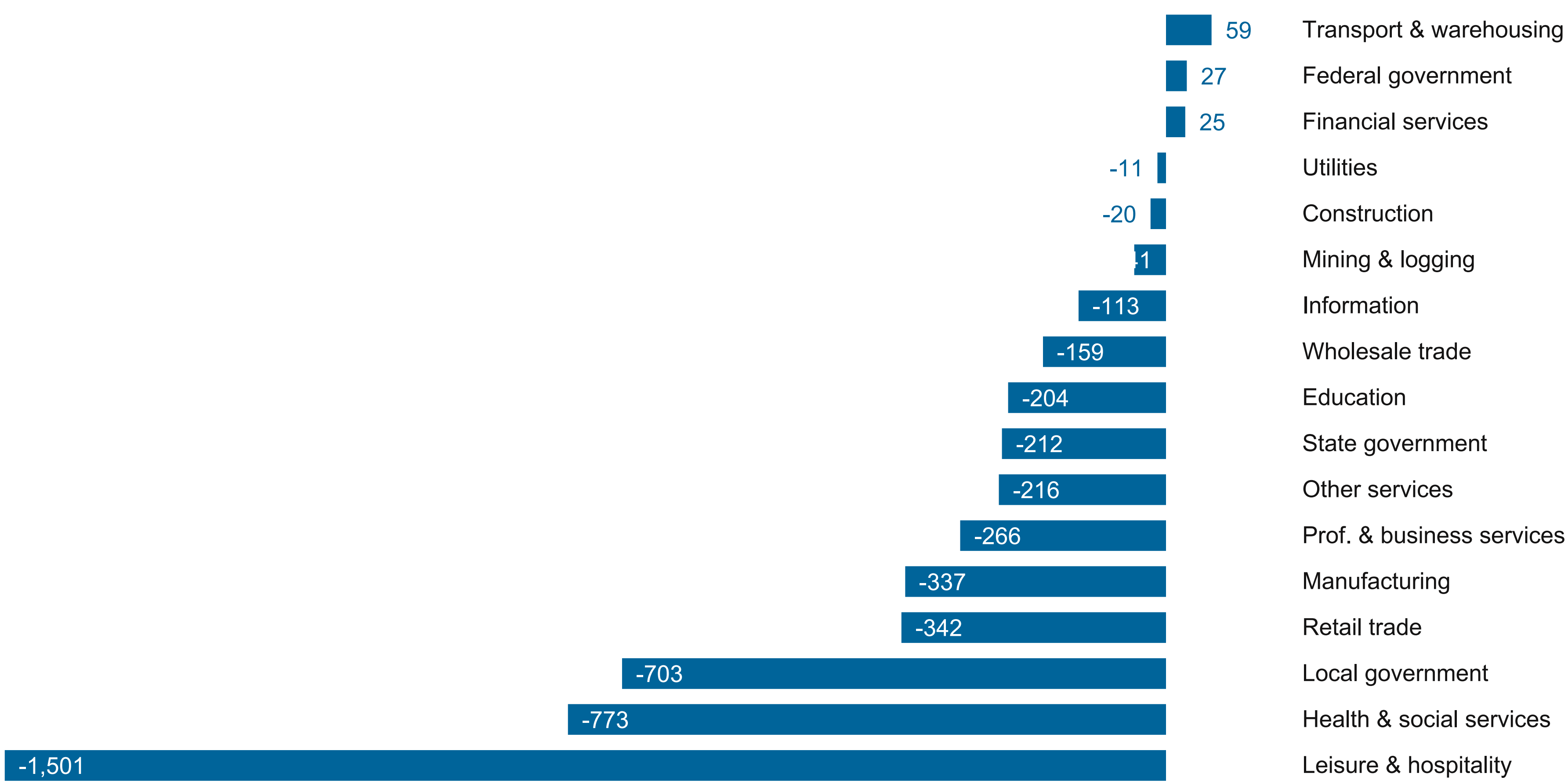



Sources: Federal Reserve Bank of St. Louis, S&P Dow Jones Indices

# While the Recovery Continues, Employment Landscape Remains Depressed

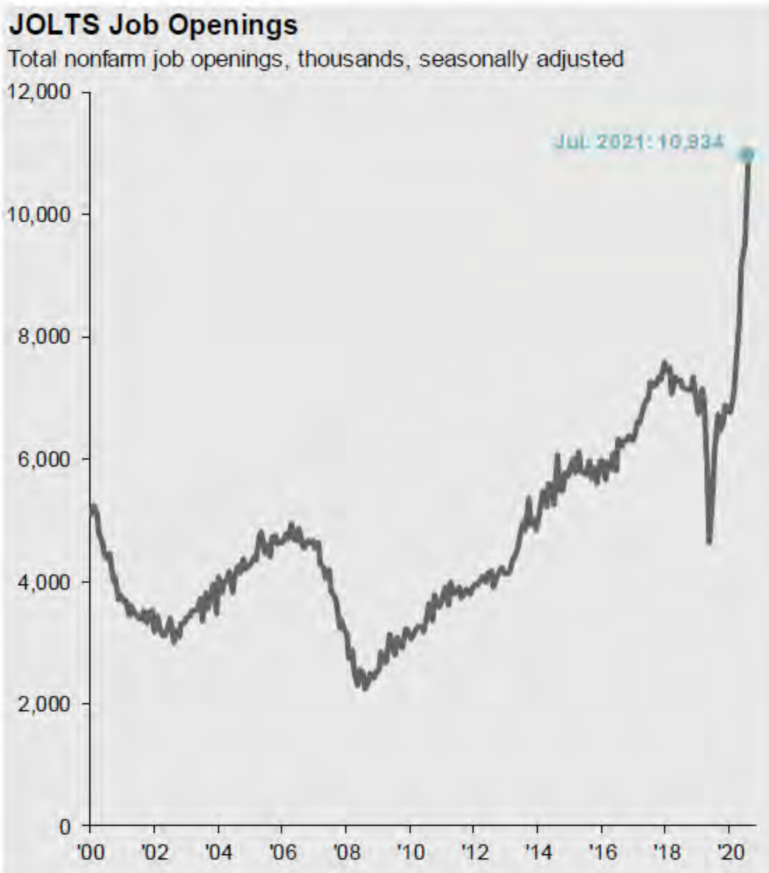
## Leisure/hospitality remains by far the hardest-hit sector for job losses

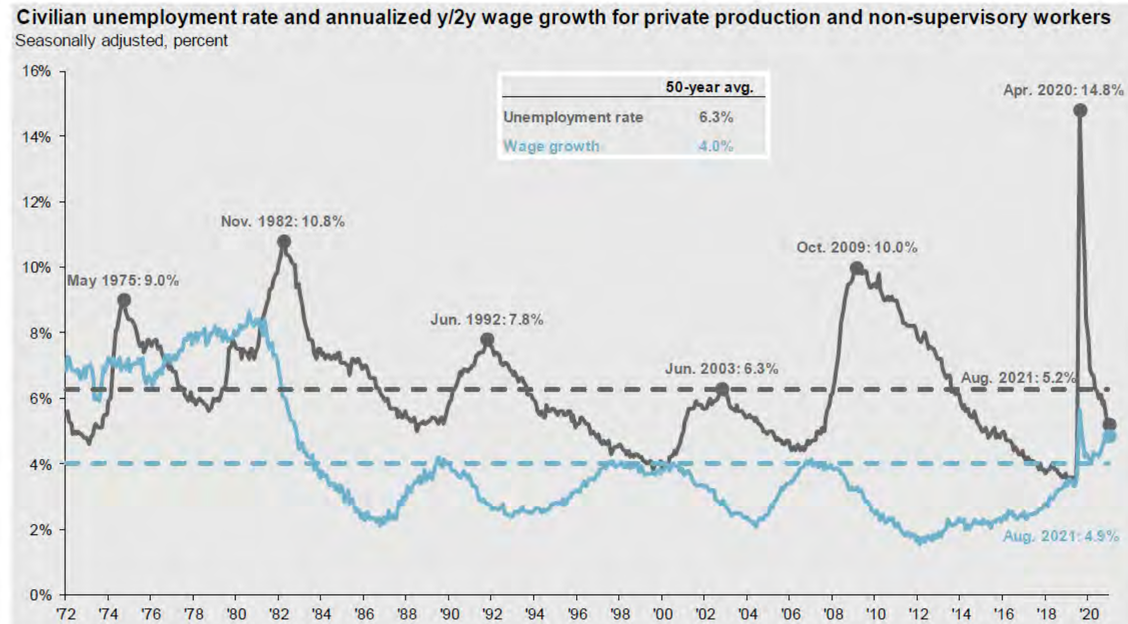
**February 2020-September 2021 Change in Payroll Employment (thousands)**




Sources: IHS Markit, Department of Labor

# Employment and Wage Inflation




Source: BLS, FactSet, J.P. Morgan Asset Management.
*Guide to the Markets – U.S.* Data are as of September 30, 2021.

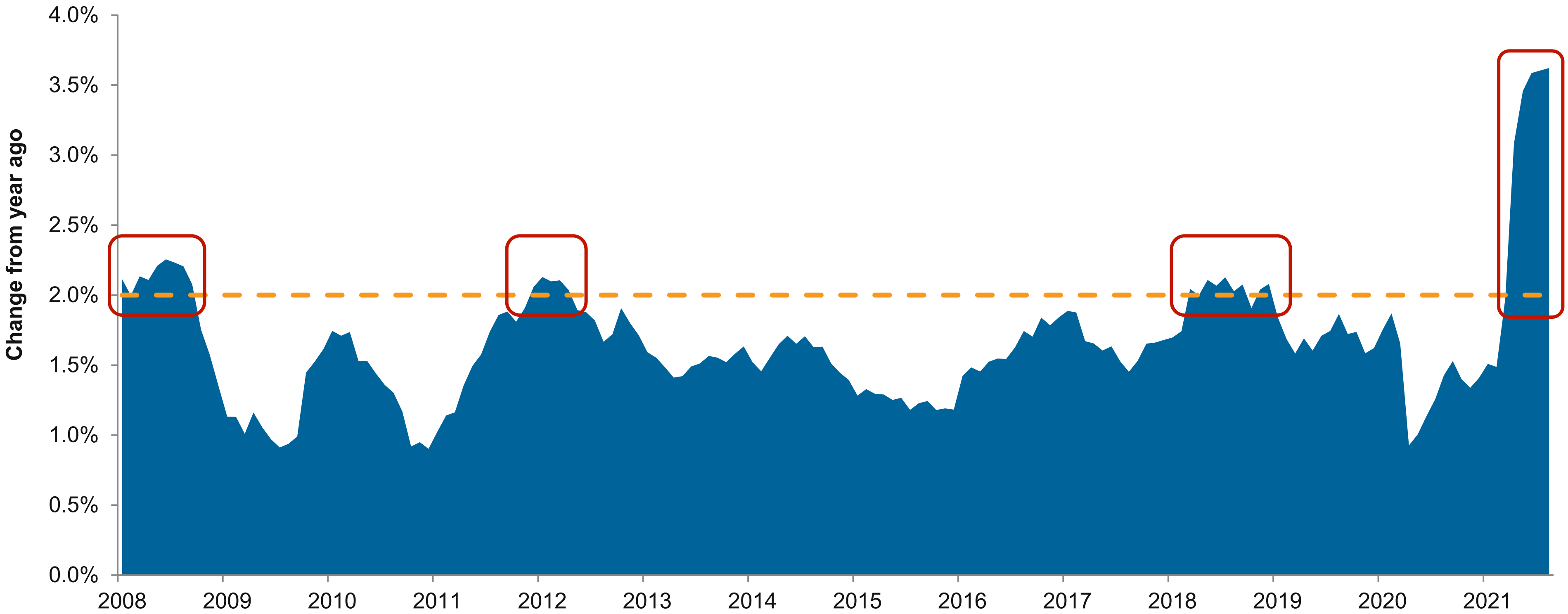
| | 50-yr. avg. | Jul. 2021 | Aug. 2021 |
|---|---|---|---|
| Headline CPI | 3.9% | 5.3% | 5.2% |
| Core CPI | 3.8% | 4.2% | 4.0% |
| Food CPI | 3.9% | 3.4% | 3.7% |
| Energy CPI | 4.5% | 23.6% | 24.9% |
| Headline PCE deflator | 3.4% | 4.2% | 4.3% |
| Core PCE deflator | 3.3% | 3.6% | 3.6% |

- Job openings at all time high, labor force participation falling
- The Great Resignation, quits in August 2.6% of labor force
- Impact of labor-job mismatch is higher wage growth, Employment Cost Index up 4.2% in 3Q (yoy), fastest since 1990

# The Fed's New Inflation Framework

## Targeting core personal consumption expenditures index

**Personal Consumption Expenditures Excluding Food and Energy (Chain-Type Price Index)**




- Inflation worries are in the headlines, but the data are not signaling a rise yet.
- Inflation has consistently undershot the Fed's 2% target, prompting a change in its inflation framework.
- Fed's aim is to achieve an average of 2% inflation over the medium term, which is not specifically defined.
- PCE is the Fed's target, different from and typically lower than CPI-U, which had a year-over-year gain of 5.4% in September 2021.

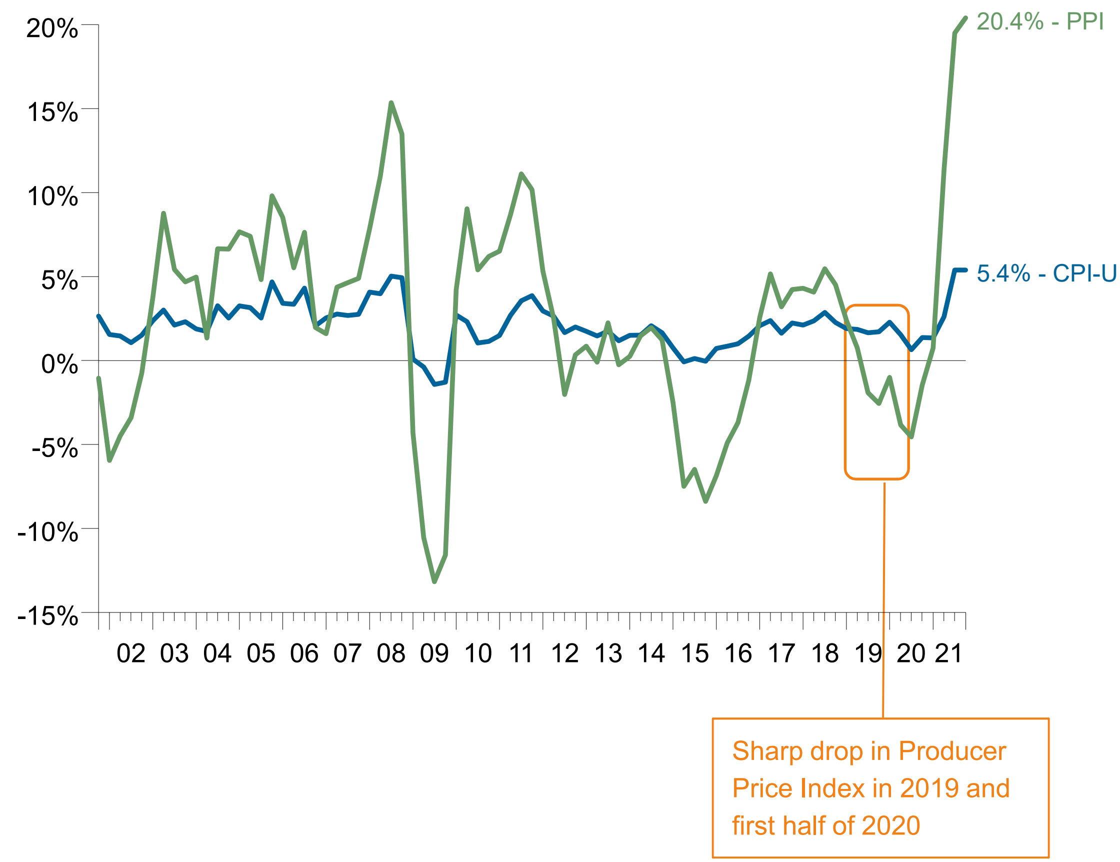
Sources: Federal Reserve Bank of St. Louis, U.S. Bureau of Economic Analysis

# Inflation Rebounds and Spurs Headline Concerns

## CPI and PPI up sharply again in 3Q21

- Inflation fell sharply at the onset of the pandemic, starting in February 2020.
  - The recovery to pre-pandemic levels in the Consumer Price Index required a 2.6% year-over-year change.
  - 5.4% jump in CPI-U represents kinks in supply chains and labor markets after a year of global economic disruption and shutdown.
  - Producer prices had been tumbling for more than a year prior to the pandemic; recovery to 2018 price ***levels*** generated eye-popping year-over-year percent change through 2Q, and the sharp rise continued in 3Q.
  - Driving the PPI's rise in 3Q were prices for energy and food.

**Consumer and Producer Price Indexes – Inflation Year-Over-Year**

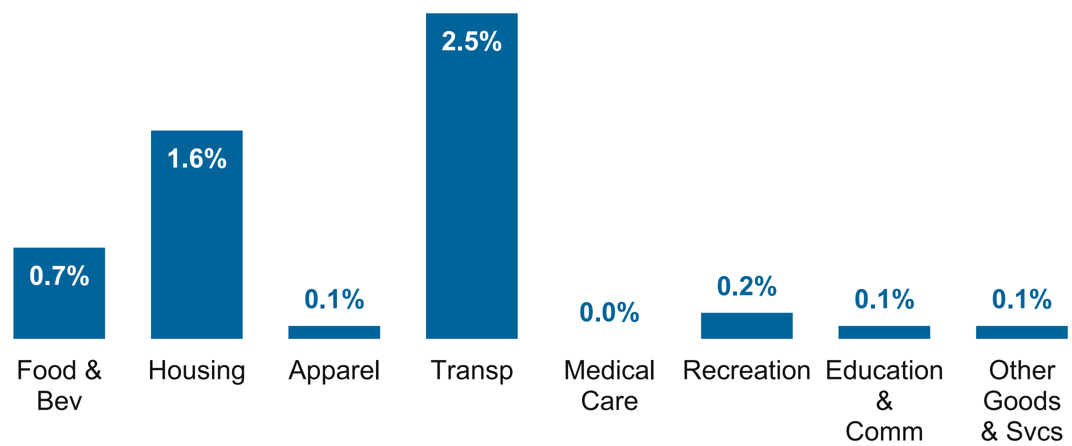



Source: Federal Reserve Bank of St. Louis

# Contributors to Recent Inflation: Primary Categories

- Transportation, including new and used cars, parts, and gasoline, has seen a spike in inflation with year-over-year prints that are more than three times higher than any other category.
  - With a meaningful 15% weight in the index, transportation makes a significant contribution to headline CPI.
- Housing and food and beverage have also seen big inflation increases.
  - While inflation within these categories has been far lower than transportation, their large index weights make them meaningful contributors to overall inflation.

**Contribution to September 2021 YoY Inflation**




| Primary Category | Primary Category Weight | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Year-over-Year Change | | | | | | | | |
| All Items | 100.0% | 1.4% | 1.7% | 2.6% | 4.2% | 4.9% | 5.3% | 5.3% | 5.2% | 5.4% |
| Food & Bev | 15.2% | 3.7% | 3.5% | 3.4% | 2.3% | 2.1% | 2.4% | 3.4% | 3.7% | 4.5% |
| Housing | 42.4% | 1.8% | 1.8% | 2.1% | 2.6% | 2.9% | 3.1% | 3.3% | 3.5% | 3.9% |
| Apparel | 2.7% | -2.6% | -3.6% | -2.5% | 1.9% | 5.6% | 4.9% | 4.2% | 4.2% | 3.4% |
| Transportation | 15.2% | -1.4% | 0.6% | 5.9% | 14.8% | 19.7% | 21.2% | 19.1% | 17.6% | 16.5% |
| Medical Care | 8.9% | 1.9% | 2.0% | 1.8% | 1.5% | 0.9% | 0.4% | 0.3% | 0.4% | 0.4% |
| Recreation | 5.8% | 0.1% | 0.8% | 1.1% | 2.1% | 1.6% | 2.4% | 3.5% | 3.4% | 3.5% |
| Education & Communication | 6.8% | 1.7% | 1.7% | 1.5% | 1.7% | 1.9% | 2.1% | 1.1% | 1.2% | 1.7% |
| Other Goods & Svcs | 3.2% | 2.1% | 2.1% | 2.4% | 2.7% | 2.7% | 2.5% | 2.9% | 3.5% | 3.4% |

Source: U.S. Bureau of Labor Statistics

# Contributors to Recent Inflation: Primary and Subcategories

| Primary Category | Primary Category Weight | Subcategory | Sub-Category Weight | Year-over-Year Change Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Food & Bev | 15.2% | **Food at home** | 7.8% | 3.7% | 3.6% | 3.3% | 1.2% | 0.7% | 0.9% | 2.6% | 3.0% | 4.5% |
| | | **Food away from home** | 6.3% | 3.9% | 3.7% | 3.7% | 3.8% | 4.0% | 4.2% | 4.6% | 4.7% | 4.7% |
| | | Alcoholic beverages | 1.0% | 2.4% | 2.0% | 2.0% | 1.9% | 1.6% | 1.9% | 2.4% | 2.6% | 2.8% |
| Housing | 42.4% | **Shelter** | 33.3% | 1.6% | 1.5% | 1.7% | 2.1% | 2.2% | 2.6% | 2.8% | 2.8% | 3.2% |
| | | **Fuels and utilities** | 4.4% | 2.1% | 3.4% | 4.4% | 5.6% | 6.4% | 6.5% | 7.1% | 8.0% | 8.2% |
| | | **Furnishings & operations** | 4.7% | 2.9% | 2.6% | 3.1% | 3.5% | 4.6% | 4.1% | 3.8% | 4.0% | 5.1% |
| Apparel | 2.7% | Men's and boys' apparel | 0.7% | -2.6% | -4.1% | -2.7% | 2.1% | 4.2% | 2.3% | 3.0% | 3.9% | 4.4% |
| | | Women's and girls' apparel | 1.1% | -3.3% | -4.2% | -4.6% | -0.3% | 4.8% | 5.3% | 4.6% | 3.6% | 0.6% |
| | | Footwear | 0.6% | -2.1% | -2.3% | -0.2% | 3.9% | 7.1% | 6.5% | 4.6% | 5.1% | 6.5% |
| | | Infants' and toddlers' apparel | 0.1% | -5.7% | -6.8% | -4.2% | 1.7% | 3.1% | -0.5% | -1.2% | -1.4% | 3.0% |
| | | Jewelry and watches | 0.2% | 3.9% | 1.2% | 6.7% | 9.5% | 12.4% | 11.2% | 9.5% | 10.7% | 6.8% |
| Transportation | 15.2% | **Private transportation** | 14.1% | -0.2% | 2.2% | 7.1% | 15.5% | 20.0% | 21.6% | 19.5% | 18.3% | 17.7% |
| | | Public transportation | 1.1% | -13.9% | -16.2% | -8.2% | 7.0% | 15.9% | 17.3% | 14.0% | 8.4% | 1.6% |
| Medical Care | 8.9% | Medical care commodities | 1.6% | -2.3% | -2.5% | -2.4% | -1.7% | -1.9% | -2.2% | -2.1% | -2.5% | -1.6% |
| | | Medical care services | 7.3% | 2.9% | 3.0% | 2.7% | 2.2% | 1.5% | 1.0% | 0.8% | 1.0% | 0.9% |
| Recreation | 5.8% | Video and audio | 1.5% | 2.1% | 2.7% | 2.8% | 2.9% | 3.0% | 4.0% | 3.7% | 3.6% | 3.5% |
| | | Pets, pet products and services | 1.2% | 1.1% | 1.1% | 1.5% | 2.4% | 2.5% | 2.9% | 3.2% | 2.4% | 3.3% |
| | | Sporting goods | 0.6% | 2.8% | 4.6% | 4.8% | 7.0% | 9.0% | 7.5% | 5.7% | 7.6% | 7.5% |
| | | Photography | 0.1% | 3.2% | 1.5% | 0.6% | 1.5% | 3.1% | 1.5% | 2.2% | 2.6% | 2.3% |
| | | Other recreational goods | 0.4% | -3.8% | -2.8% | -1.0% | 1.8% | 2.1% | 1.5% | 1.3% | 1.1% | -0.6% |
| | | Other recreation services | 1.9% | -2.5% | -1.6% | -1.3% | -0.2% | -2.4% | -0.5% | 3.5% | 3.2% | 3.1% |
| | | Recreational reading materials | 0.1% | 4.3% | 3.4% | 3.0% | 5.5% | 3.8% | 0.7% | 1.5% | 1.3% | 2.8% |
| Education & Communication | 6.8% | Education | 3.0% | 1.3% | 1.2% | 0.8% | 0.8% | 1.0% | 1.2% | 1.2% | 1.4% | 2.0% |
| | | Communication | 3.8% | 2.1% | 2.2% | 2.1% | 2.4% | 2.6% | 2.8% | 1.1% | 1.1% | 1.5% |
| Other Goods & Svcs | 3.2% | Tobacco and smoking products | 0.6% | 6.7% | 7.0% | 6.3% | 6.8% | 7.3% | 7.0% | 6.4% | 6.3% | 6.7% |
| | | Personal care | 2.6% | 1.1% | 1.0% | 1.5% | 1.7% | 1.6% | 1.5% | 2.1% | 2.8% | 2.6% |

Subcategories highlighted in **blue** have been the biggest contributors to headline CPI for the last three months due to a combination of high index weights and high inflation within the subcategory.

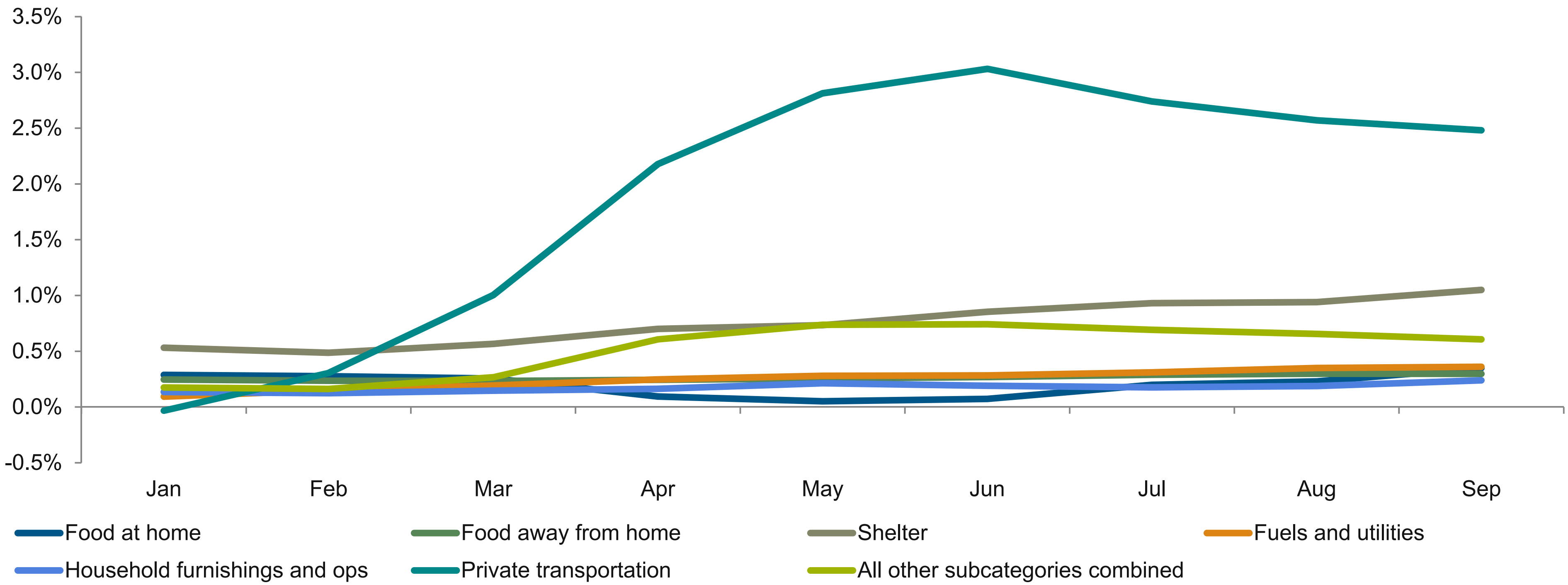
- These components combined make up over 70% of the index weight.

Other subcategories such as footwear, jewelry and watches, sporting goods, and tobacco and smoking products have also seen high inflation but do not contribute as much to headline inflation due to lower index weights.

Source: U.S. Bureau of Labor Statistics

## Contributors to Recent Inflation: Weighted Contribution Over Time

**Contribution to YOY Inflation**
**YTD through September 2021**




Looking at the six subcategories highlighted before, and combining the remaining 20, shows how impactful those few areas have been in driving inflation.

- Combining those 20 subcategories would only make them the third largest contributor to inflation over the last few months even if they were a single category.

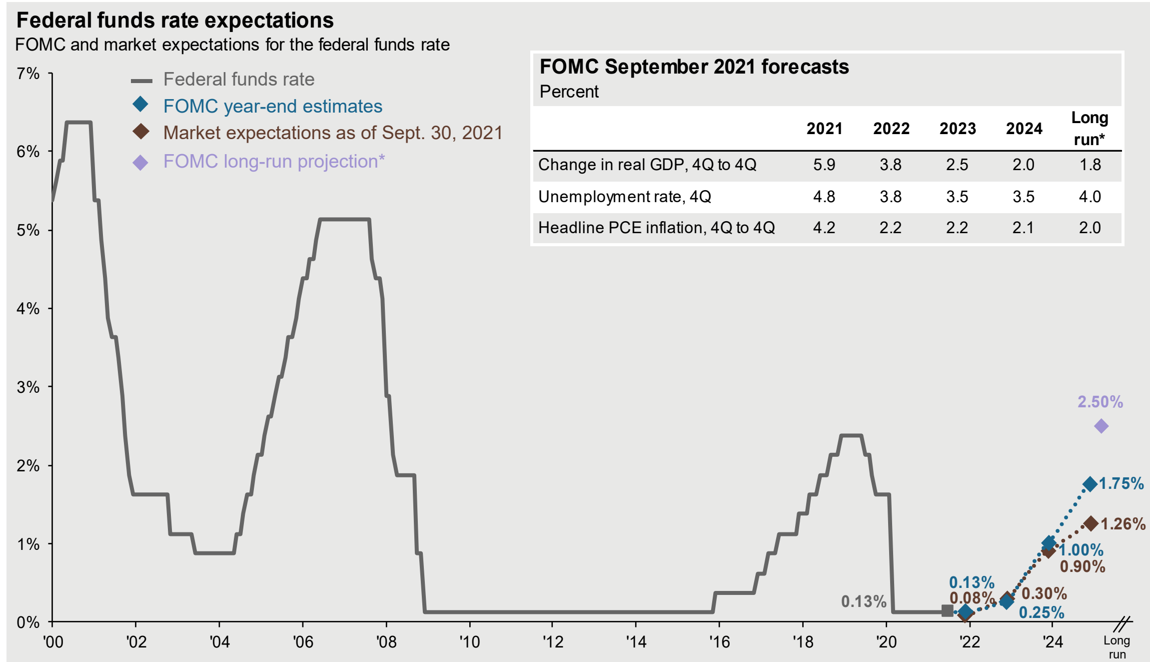
Private transportation stands out because it has not seen inflation readings this high when looking at data back to 2012.

Source: U.S. Bureau of Labor Statistics

## Government Intervention

### Monetary policy expected to remain loose for some time

- The Federal Reserve Open Market Committee voted to continue 0% Fed Funds Rate at September meeting.
- Median FOMC member forecast expects zero interest rate policy through mid-year 2022.
- Fed suggested that tapering of asset purchases may soon be warranted and could begin in 4Q21.
- Despite the softening of the job market in August and September, the FOMC expressed belief that “substantial further progress” has been met for employment. This progress has been used to define the Fed’s position on when to start the taper.
- Fed confirmed a new inflation targeting regime, with willingness to overshoot target to get the desired outcome of 2%. Inflation has also met the test of “substantial further progress,” exceeding the Fed’s expectations for 2021.
- Markets do not expect an increase in the Fed Funds Rate until 2022.
- “Longer run” projection remains at 2.5%, but it has no specific anchor date.




**FOMC September 2021 forecasts**
Percent

| | 2021 | 2022 | 2023 | 2024 | Long run* |
|---|---|---|---|---|---|
| Change in real GDP, 4Q to 4Q | 5.9 | 3.8 | 2.5 | 2.0 | 1.8 |
| Unemployment rate, 4Q | 4.8 | 3.8 | 3.5 | 3.5 | 4.0 |
| Headline PCE inflation, 4Q to 4Q | 4.2 | 2.2 | 2.2 | 2.1 | 2.0 |

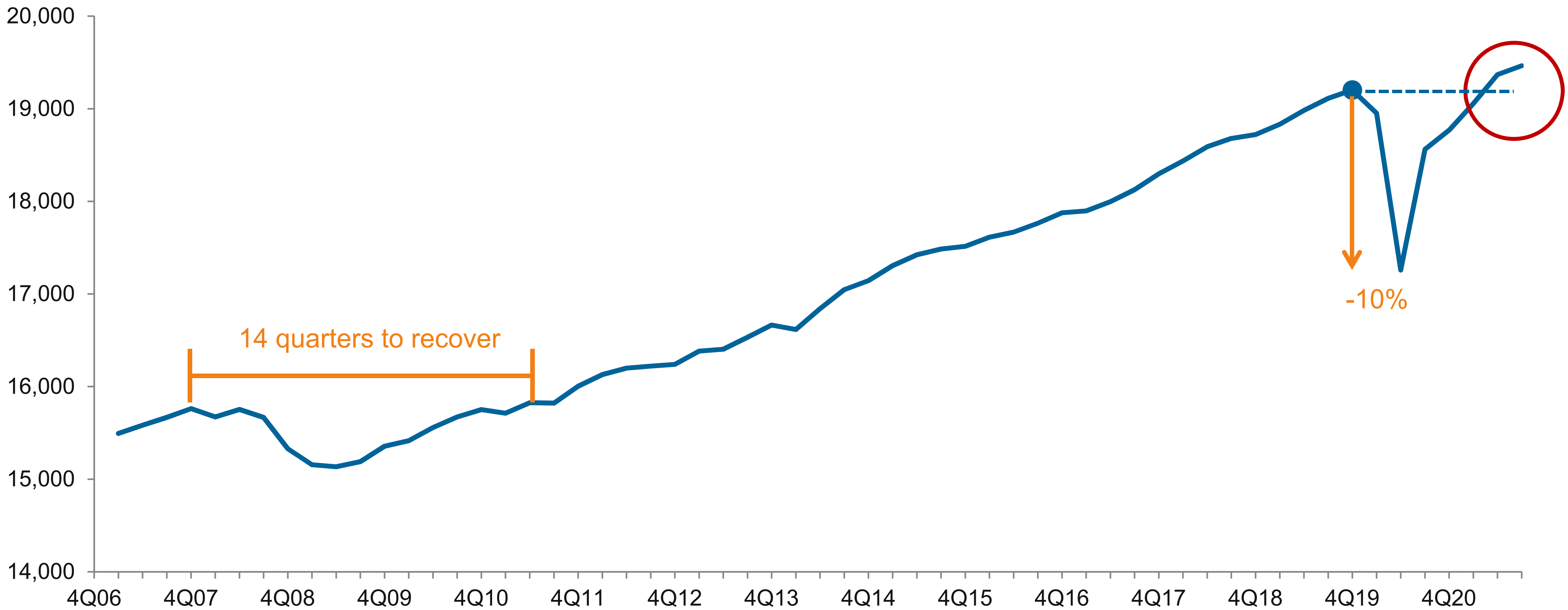
Market expectations are based off of the USD Overnight Index Forward Swap rates. *Long-run projections are the rates of growth, unemployment and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy. Forecasts are not a reliable indicator of future performance. Forecasts, projections, and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections, or other forward-looking statements, actual events, results, or performance may differ materially from those reflected or contemplated.

Guide to the Markets – U.S. Data are as of Sept. 30, 2021.

Sources: Bloomberg, FactSet, Federal Reserve, J.P. Morgan Asset Management.

# GDP Recovered Pre-Pandemic Level in 2Q21 After Deepest Drop in 75 Years

**Seasonally Adjusted Real GDP in Billions of Dollars**



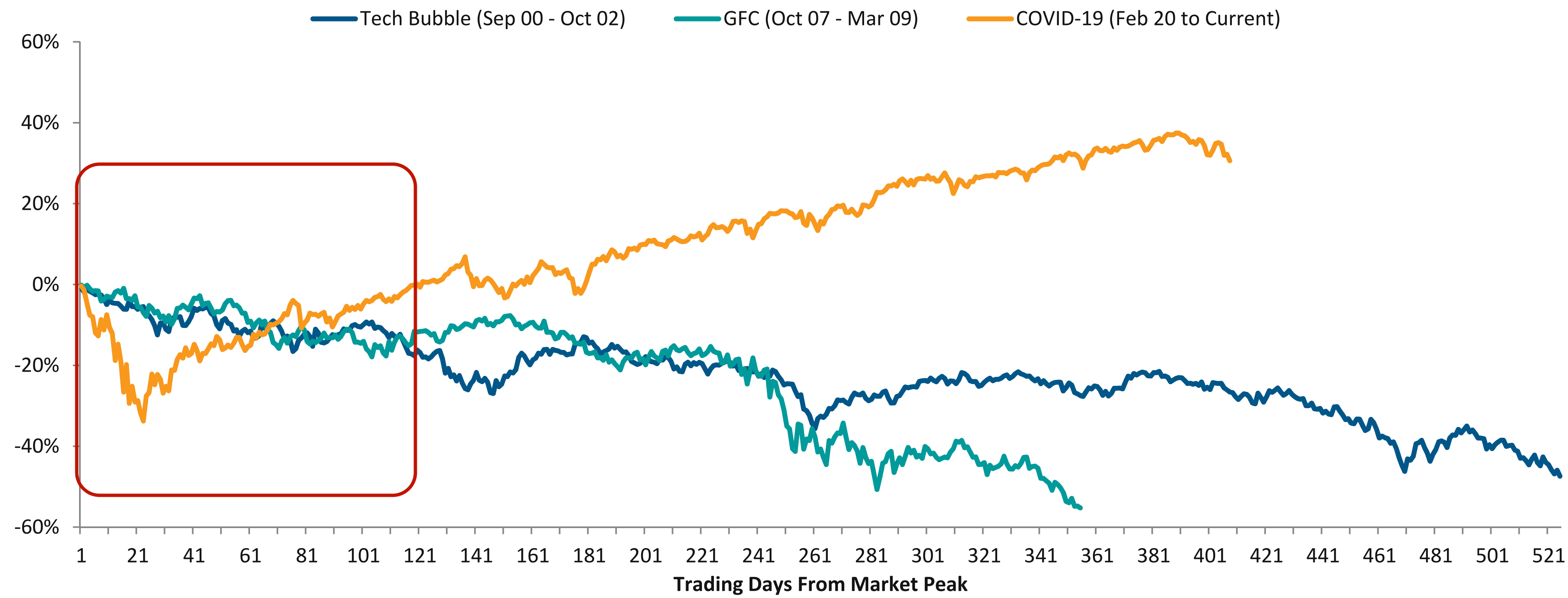

- After the Global Financial Crisis, it took 3.5 years before real GDP reclaimed its pre-recession highs.
  - GFC peak to trough down 4%
- 2Q20 real GDP level was down over 10% from 4Q19; annual GDP declined 3.4% over 2019.
  - Pre-pandemic peak level of GDP reached in 2Q21: $19.368T vs. $19.202T for 4Q19

Source: Federal Reserve Bank of St. Louis

# Unprecedented Shock to Global Capital Markets—But It Was Over in a Flash!

## V-shaped recovery in equity—back in black by mid-August 2020, up 97% from market bottom!

**S&P 500 Cumulative Returns**
**Market Peak-to-Trough for Recent Corrections vs. Current Path of COVID-19 Correction Through 9/30/21**




Sharpest and fastest equity market decline ever: 16 trading days to reach bear market; -33% after just 23 days

– S&P 500 recovered all its pandemic-related losses by Aug. 10, 2020, only 97 days from the bottom.
– S&P 500 up 15.9% YTD.
– **Fun fact:** As of Sept. 30, 2021, or 408 trading days, the S&P is up over 30% from the previous market peak on 2/19/20. In contrast, during the GFC the market was still down 41% from the previous market peak after 408 trading days (May 22, 2009).

Sources: Callan, S&P Dow Jones Indices

# Callan Periodic Table of Investment Returns

| Annual Returns | | | Monthly Returns | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **2018** | **2019** | **2020** | **Jan 2021** | **Feb 2021** | **Mar 2021** | **Apr 2021** | **May 2021** | **Jun 2021** | **Jul 2021** | **Aug 2021** | **Sep 2021** | **YTD 2021** |
| U.S. Fixed Income **0.01%** | Large Cap Equity **31.49%** | Small Cap Equity **19.96%** | Small Cap Equity **5.03%** | Small Cap Equity **6.23%** | Large Cap Equity **4.38%** | Real Estate **6.42%** | Dev ex-U.S. Equity **3.48%** | Large Cap Equity **2.33%** | Real Estate **3.83%** | Large Cap Equity **3.04%** | High Yield **-0.01%** | Large Cap Equity **15.92%** |
| High Yield **-2.08%** | Small Cap Equity **25.52%** | Large Cap Equity **18.40%** | Emerging Market Equity **3.07%** | Real Estate **3.70%** | Real Estate **2.85%** | Large Cap Equity **5.34%** | Emerging Market Equity **2.32%** | Small Cap Equity **1.94%** | Large Cap Equity **2.38%** | Emerging Market Equity **2.62%** | U.S. Fixed Income **-0.87%** | Real Estate **14.46%** |
| Global ex-U.S. Fixed Income **-2.15%** | Dev ex-U.S. Equity **22.49%** | Emerging Market Equity **18.31%** | High Yield **0.33%** | Large Cap Equity **2.76%** | Dev ex-U.S. Equity **2.55%** | Dev ex-U.S. Equity **3.15%** | Real Estate **1.79%** | High Yield **1.34%** | Global ex-U.S. Fixed Income **1.51%** | Small Cap Equity **2.24%** | Global ex-U.S. Fixed Income **-2.45%** | Small Cap Equity **12.41%** |
| Large Cap Equity **-4.38%** | Real Estate **21.91%** | Global ex-U.S. Fixed Income **10.11%** | U.S. Fixed Income **-0.72%** | Dev ex-U.S. Equity **2.55%** | Small Cap Equity **1.00%** | Emerging Market Equity **2.49%** | Global ex-U.S. Fixed Income **1.36%** | Real Estate **0.78%** | U.S. Fixed Income **1.12%** | Dev ex-U.S. Equity **1.60%** | Dev ex-U.S. Equity **-2.87%** | Dev ex-U.S. Equity **9.19%** |
| Real Estate **-5.63%** | Emerging Market Equity **18.44%** | Dev ex-U.S. Equity **7.59%** | Real Estate **-0.81%** | Emerging Market Equity **0.76%** | High Yield **0.15%** | Small Cap Equity **2.10%** | Large Cap Equity **0.70%** | U.S. Fixed Income **0.70%** | Dev ex-U.S. Equity **0.66%** | Real Estate **1.31%** | Small Cap Equity **-2.95%** | High Yield **4.53%** |
| Small Cap Equity **-11.01%** | High Yield **14.32%** | U.S. Fixed Income **7.51%** | Large Cap Equity **-1.01%** | High Yield **0.37%** | U.S. Fixed Income **-1.25%** | Global ex-U.S. Fixed Income **1.62%** | U.S. Fixed Income **0.33%** | Emerging Market Equity **0.17%** | High Yield **0.38%** | High Yield **0.51%** | Emerging Market Equity **-3.97%** | Emerging Market Equity **-1.25%** |
| Dev ex-U.S. Equity **-14.09%** | U.S. Fixed Income **8.72%** | High Yield **7.11%** | Global ex-U.S. Fixed Income **-1.03%** | U.S. Fixed Income **-1.44%** | Emerging Market Equity **-1.51%** | High Yield **1.09%** | High Yield **0.30%** | Dev ex-U.S. Equity **-1.02%** | Small Cap Equity **-3.61%** | U.S. Fixed Income **-0.19%** | Large Cap Equity **-4.65%** | U.S. Fixed Income **-1.55%** |
| Emerging Market Equity **-14.57%** | Global ex-U.S. Fixed Income **5.09%** | Real Estate **-9.04%** | Dev ex-U.S. Equity **-1.07%** | Global ex-U.S. Fixed Income **-1.94%** | Global ex-U.S. Fixed Income **-2.42%** | U.S. Fixed Income **0.79%** | Small Cap Equity **0.21%** | Global ex-U.S. Fixed Income **-2.02%** | Emerging Market Equity **-6.73%** | Global ex-U.S. Fixed Income **-0.61%** | Real Estate **-5.80%** | Global ex-U.S. Fixed Income **-5.94%** |

Sources: ● Bloomberg Aggregate ● Bloomberg Corp High Yield ● Bloomberg Global Aggregate ex US ● FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500

# A Pause in Global Equity Markets in 3Q21

## Flat-to-down returns across all market segments

### Global equity hit the pause button in 3Q

- One-year returns from September 2020 are still eye-popping:
  - S&P 500: +30%
  - MSCI World ex-USA: +27%
  - Emerging Markets: +18%
  - U.S. Small Cap: +48%
- Economic data began to show signs of softening; consumer and business spending hit by the concern over the 3Q surge in the Delta variant of COVID-19.
- 3Q GDP growth dropped sharply to 2% from a robust 6.7% in 2Q, but the economic recovery is still solid. Supply chain issues and sentiment surrounding the end of fiscal stimulus, the Delta variant, and return to a Fed taper slowed economic activity in 3Q.

### Returns for Periods ended 9/30/21

| | 1 Quarter | 1 Year | 5 Years | 10 Years | 25 Years |
|---|---|---|---|---|---|
| **U.S. Equity** | | | | | |
| Russell 3000 | -0.10 | 31.88 | 16.85 | 16.60 | 9.74 |
| S&P 500 | 0.58 | 30.00 | 16.90 | 16.63 | 9.65 |
| Russell 2000 | -4.36 | 47.68 | 13.45 | 14.63 | 9.12 |
| **Global ex-U.S. Equity** | | | | | |
| MSCI World ex USA | -0.66 | 26.50 | 8.88 | 7.88 | 5.34 |
| MSCI Emerging Markets | -8.09 | 18.20 | 9.23 | 6.09 | -- |
| MSCI ACWI ex USA Small Cap | 0.00 | 33.06 | 10.28 | 9.44 | 6.77 |
| **Fixed Income** | | | | | |
| Bloomberg Aggregate | 0.05 | -0.90 | 2.94 | 3.01 | 5.06 |
| 90-day T-Bill | 0.01 | 0.07 | 1.16 | 0.63 | 2.11 |
| Bloomberg Long Gov/Credit | 0.07 | -2.97 | 5.21 | 5.76 | 7.41 |
| Bloomberg Global Agg ex-US | -1.59 | -1.15 | 1.10 | 0.90 | 3.58 |
| **Real Estate** | | | | | |
| NCREIF Property | 5.23 | 12.15 | 6.84 | 8.99 | 9.23 |
| FTSE Nareit Equity | 0.98 | 37.39 | 6.83 | 11.27 | 9.99 |
| **Alternatives** | | | | | |
| CS Hedge Fund | 1.19 | 14.07 | 5.51 | 4.88 | 7.07 |
| Cambridge Private Equity* | 11.52 | 56.87 | 20.97 | 15.81 | 15.62 |
| Bloomberg Commodity | 6.59 | 42.29 | 4.54 | -2.66 | 1.41 |
| Gold Spot Price | -0.82 | -7.31 | 5.93 | 0.80 | 6.31 |
| **Inflation - CPI-U** | 0.96 | 5.39 | 2.59 | 1.92 | 2.23 |

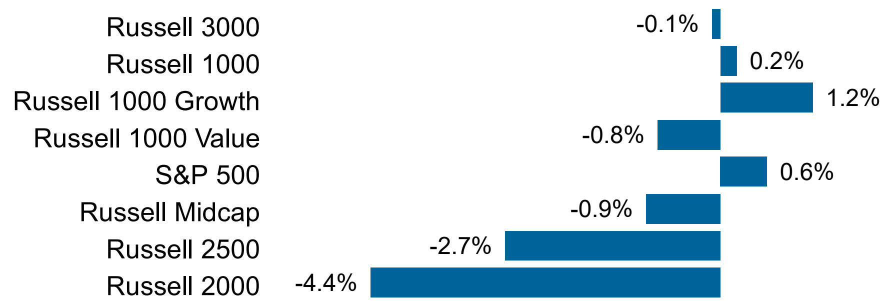
*Cambridge PE data through 06/30/21
Sources: Bloomberg, Callan, Cambridge, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices

# U.S. Equity Performance: 3Q21

## Returns compress over mounting concerns

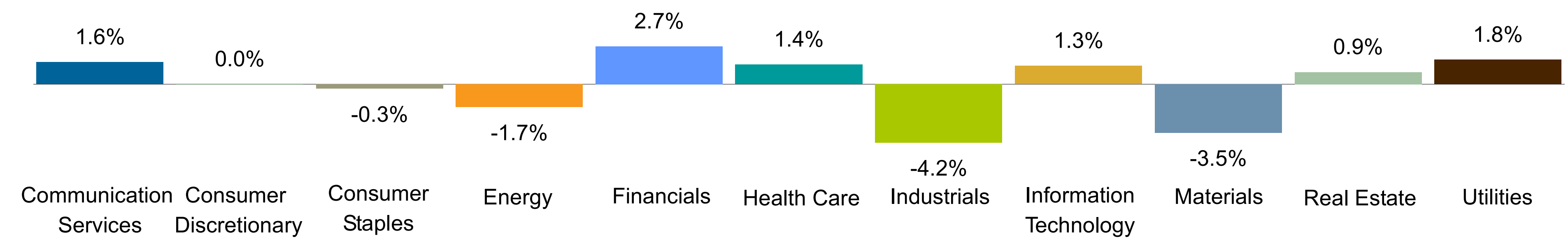
- S&P 500 rose a modest 0.6% in 3Q21, and smaller cap growth indices posted their first negative quarter since the March 2020 low.
- Slowing economic growth, supply chain disruptions, and inflationary pressure, as well as uncertainty around monetary policy, decreased investors' risk appetite.
- In general, high quality topped lower quality in large cap.
- Economically sensitive sectors such as Industrials (-4.2%) and Materials (-3.5%) lagged; Financials (+2.7%) benefited.
- Growth outperformed value in large cap, and value outperformed growth in small cap.
- YTD, small value outperformed small growth by a whopping 2,000 bps (RUS2V 22.9% vs. RUS2G 2.8%), a stark reversal from the prior year and a pattern seen during periods of robust economic growth.

**U.S. Equity: Quarterly Returns**




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


**Industry Sector Quarterly Performance (S&P 500)**




Sources: FTSE Russell, S&P Dow Jones Indices

# Global ex-U.S. Equity Performance: 3Q21

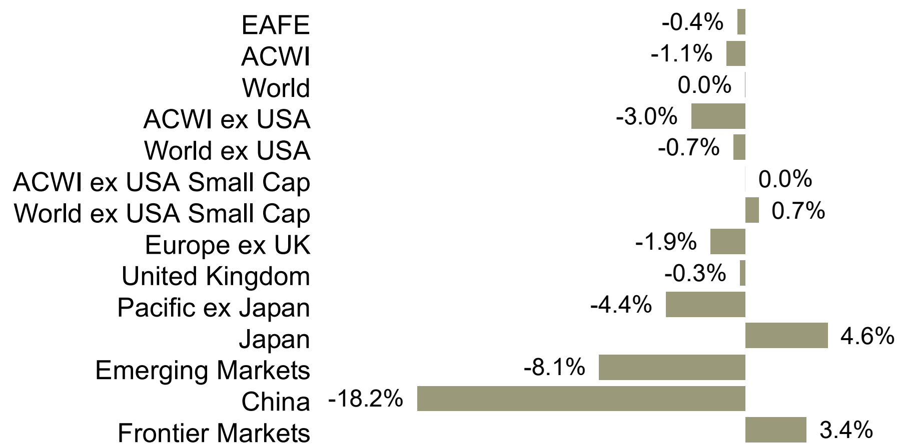
Fears of stagflation stoke market volatility
- Delta variant flare-ups and slowdown in China weighed on the global recovery.
- COVID-driven supply chain disruption continues to push inflation higher.
- Small cap outpaced large as global recovery concerns disproportionately punished large cap companies.
- Emerging markets struggled relative to developed markets as growth prospects were under pressure for China and Brazil.

Market pivots to cyclicals
- Energy crunch fueled the sector to the highest return in the quarter as demand outstripped supply.
- Financials outperformed; Real Estate and Utilities generally underperformed with higher interest rate expectations.
- Sentiment and momentum signals added value in developed markets but not in emerging markets.

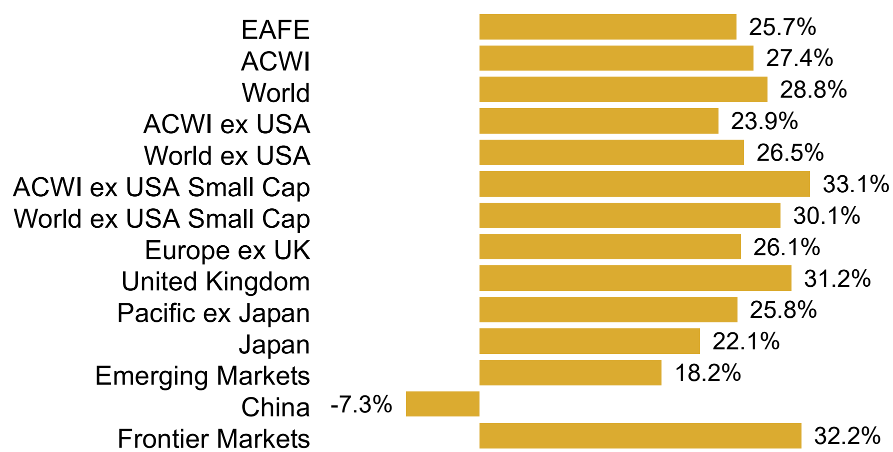
U.S. dollar vs. other currencies
- The U.S. dollar rose against other major currencies as the Fed signaled tapering is imminent, which notably detracted from global ex-U.S. results.

Growth vs. value
- Value outpaced growth in emerging markets due to the Energy rally, while both were relatively flat in developed markets.

**Global Equity: Quarterly Returns**




**Global Equity: One-Year Returns**




Source: MSCI

# U.S. Fixed Income Performance: 3Q21

## Treasury yields largely unchanged from 2Q21

- Yields ended a volatile quarter only slightly higher after the Fed signaled it may soon begin tapering its bond buying program.
- 2-year and 10-year Treasury yields rose 3 and 7 bps, respectively.
- TIPS outperformed nominal Treasuries, and 10-year breakeven spreads widened 5 bps to 2.37%.

## Bloomberg Aggregate flat as spreads widen

- Minor gains in Treasuries and agency MBS were offset by declines in government-related, CMBS, and corporates.
- IG corporates trailed Treasuries by 15 bps (duration-adjusted) as spreads widened within long bonds.

## High yield and leveraged loans continue rally

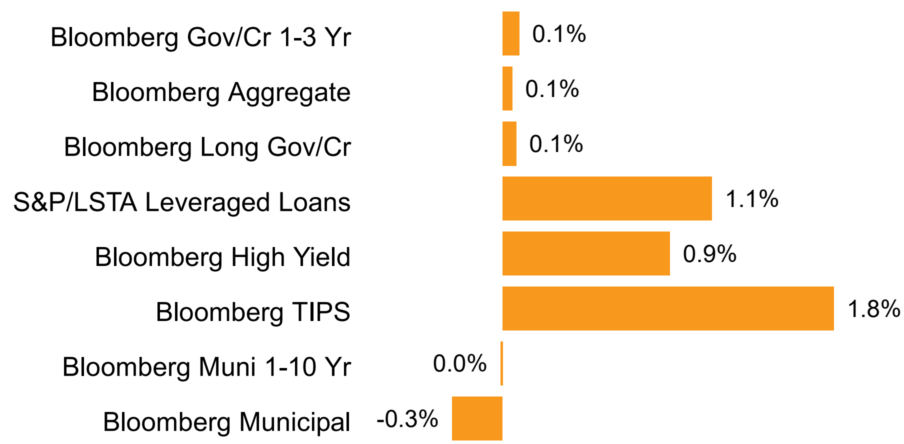
- Leveraged loans (+1.1%) outperformed high yield, driven by favorable supply/demand dynamics.
- High yield issuers' default rate declined to 0.9% in September, the lowest since March 2014.

## Munis underperform Treasuries

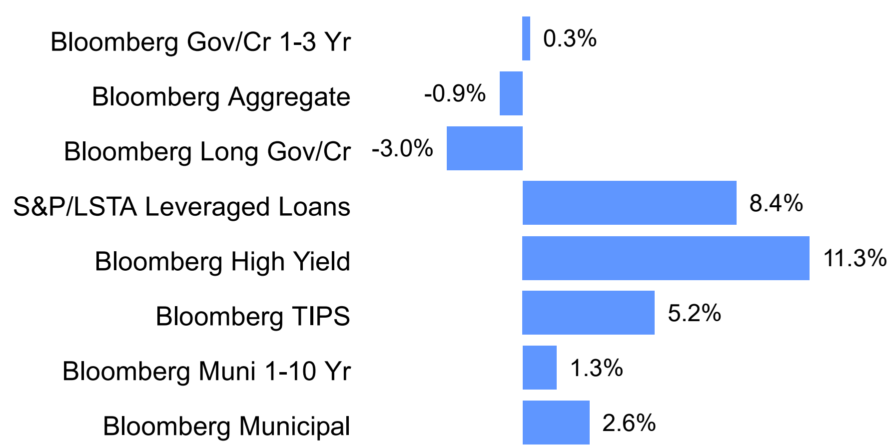
- Supply was modest and demand was fueled by expectations for higher tax rates and strong credit fundamentals.
- Lower-quality bonds continued their trend of outperformance as investors sought yield.

Source: Bloomberg

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




**U.S. Fixed Income: One-Year Returns**



# U.S. Private Real Estate Market Trends

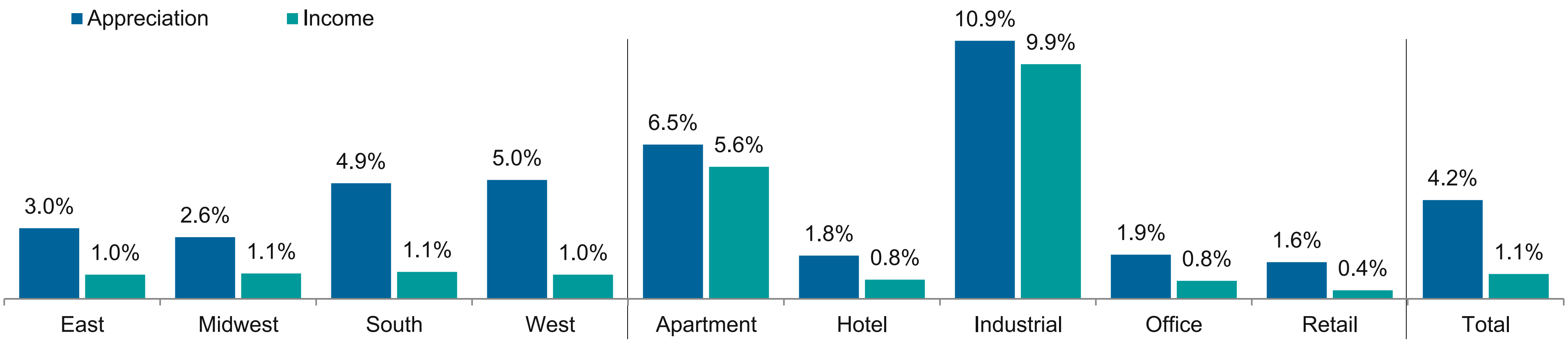
## Continued strong performance across the asset class

Strongest gains for ODCE in history

- ODCE posted best return ever in 3Q21; Industrial the best performer.
- Income returns were positive except in Hotel and Retail sectors.
- Appraisers are pricing in a recovery due to strong fundamentals in Industrial and Multifamily.
- Return dispersion by manager within the ODCE Index was due to the composition of underlying portfolios.
- Niche sectors self-storage and life sciences continued to be accretive.

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| NCREIF ODCE | 6.4% | 13.6% | 6.1% | 6.6% | 8.9% |
| Income | 0.8% | 3.1% | 3.1% | 3.2% | 3.6% |
| Appreciation | 5.6% | 10.4% | 2.9% | 3.3% | 5.2% |
| NCREIF Property Index | 5.2% | 12.2% | 6.7% | 6.8% | 9.0% |
| Income | 1.1% | 4.2% | 4.4% | 4.5% | 4.9% |
| Appreciation | 4.2% | 7.7% | 2.3% | 2.3% | 3.9% |

**NCREIF Property Index Trailing One-Year Returns by Region and Property Type**

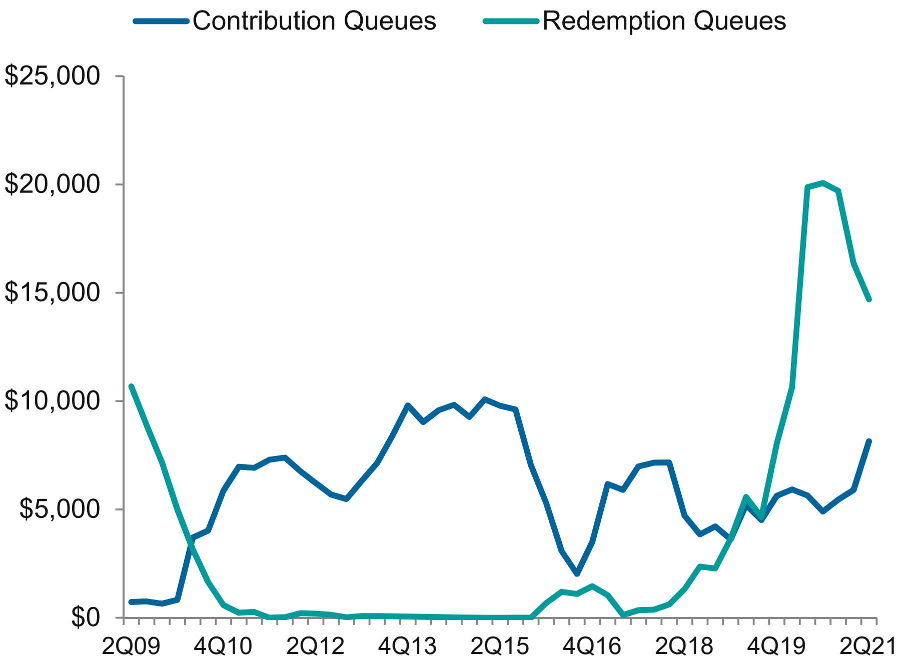



Source: NCREIF, ODCE return is net

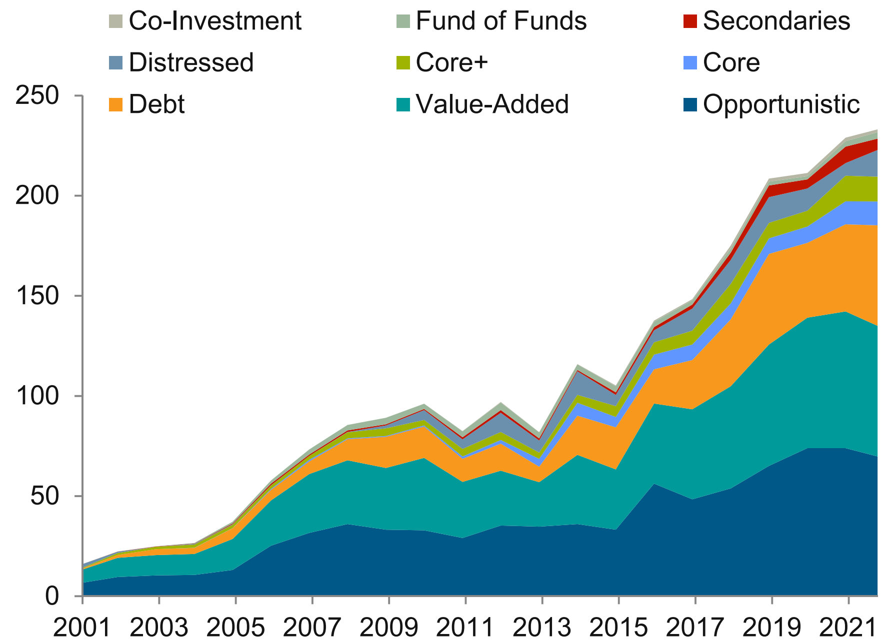
# U.S. Private Real Estate Market Trends

## Dry power increasing and exceeds $200 billion

### Core Fund Contribution/Redemption Queues ($bn)




### Dry Powder Available for CRE investment in North America ($bn)




- Net core activity has rebounded considerably during the past two quarters.
- >$200 billion of capital waiting to be deployed in North America
- Majority of dry powder capital in opportunistic, value-add, and debt funds

Sources: NCREIF, AEW, Preqin

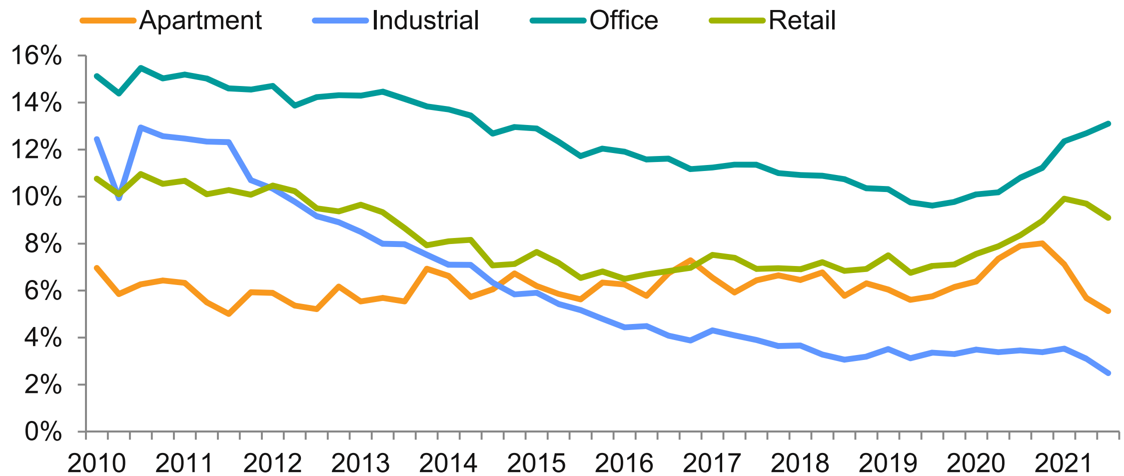
# U.S. Private Real Estate Market Trends

## Signs of recovery in retail (3Q21)

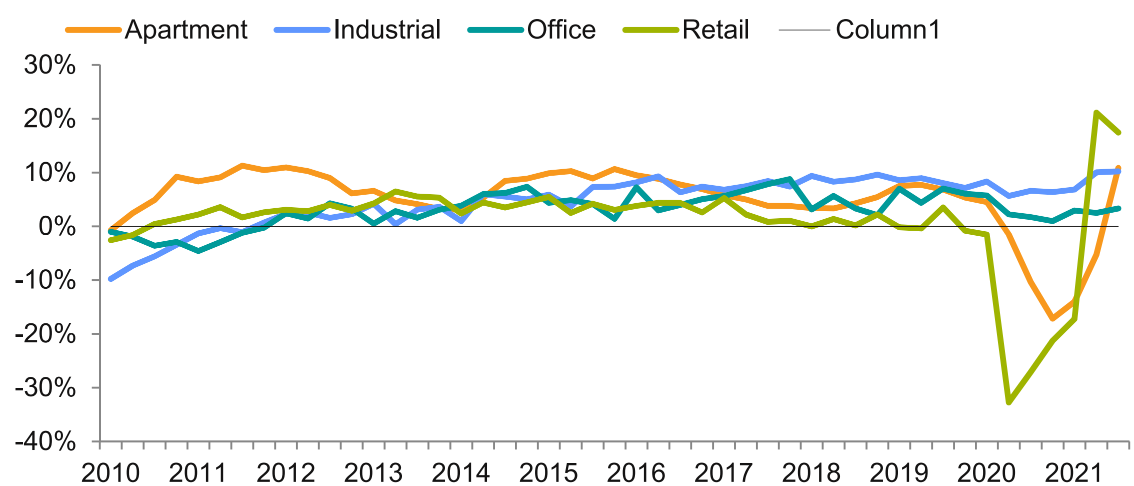
**Compression in vacancy rates**

– Vacancy rates kept compressing in Industrial and Multifamily as demand continued.
– Net operating income remained negative for Retail but the recovery continue; pent-up demand was evident through foot traffic in retail centers.
– 3Q21 rent collections have stabilized across all sectors.
– Demand outpaced supply as new construction of preleased Industrial and Multifamily occurred.

**Vacancy by Property Type**




**Rolling 4-Quarter NOI Growth by Property Type**



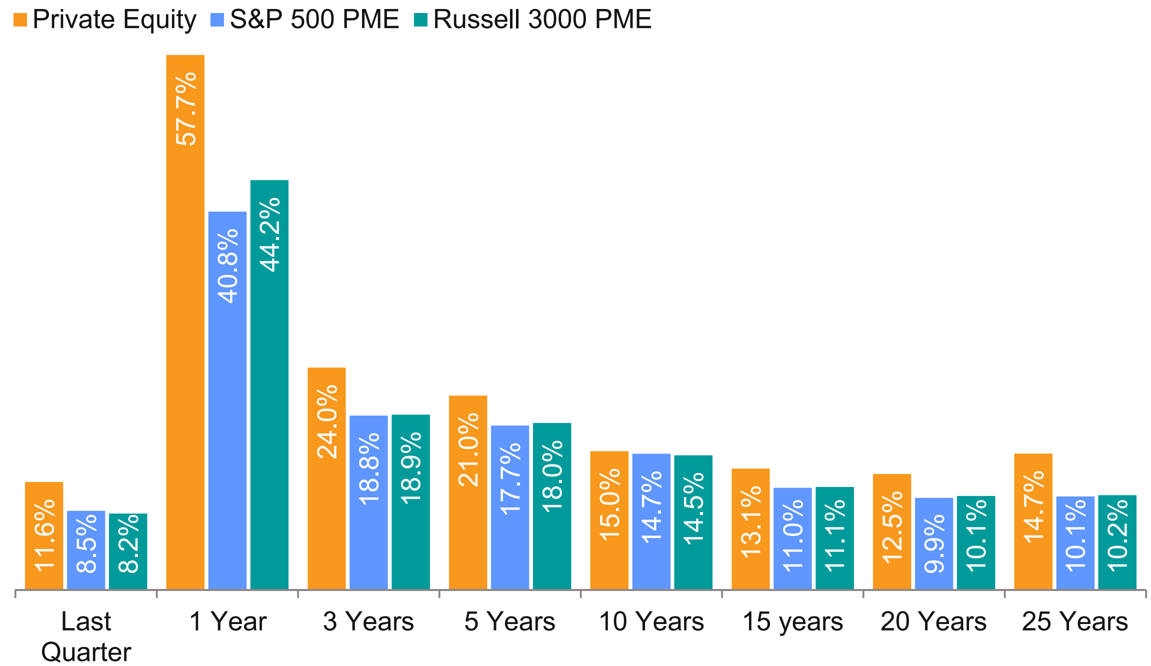

Source: NCREIF

# Private Equity Performance

## Big gains over the last year, outpacing public equity

- One-year private equity return exceeds public equity by 14 to 17 percentage points.
- Private equity 2Q21 gains ahead of those of public equity by 3 percentage points.
- Private equity consistently ahead of public equity by ~2 to 3 percentage points across all longer-term time horizons, although only marginally over the last 10 years

**Net IRRs as of 06/30/21**



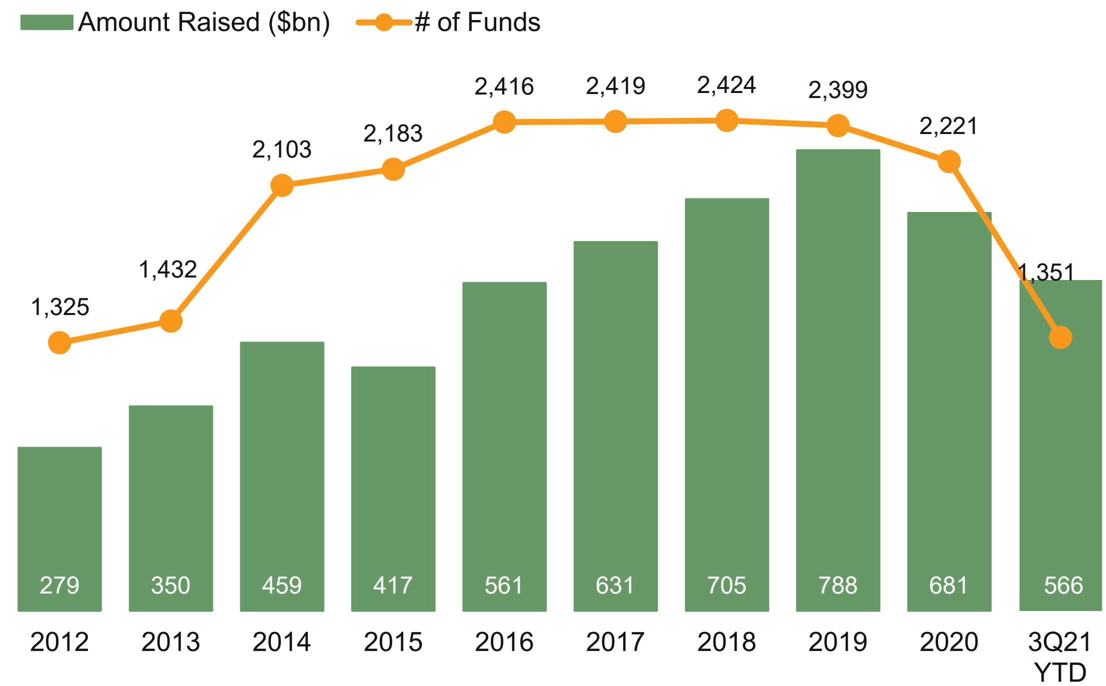

Source: Refinitiv/Cambridge

# Private Equity Global Fundraising

## Surge in 2021

- Fundraising reached a new high YTD through 3Q21, exceeding the same time periods in both 2020 and 2019 by ~30%.
- The accelerated pace of capital deployment in the first half of the year resulted in many funds coming back to market more quickly than expected.
- Fundraising is expected to jump in 1Q22 given many final closes were pushed out to accommodate LP capital budgeting issues as yearend approaches.

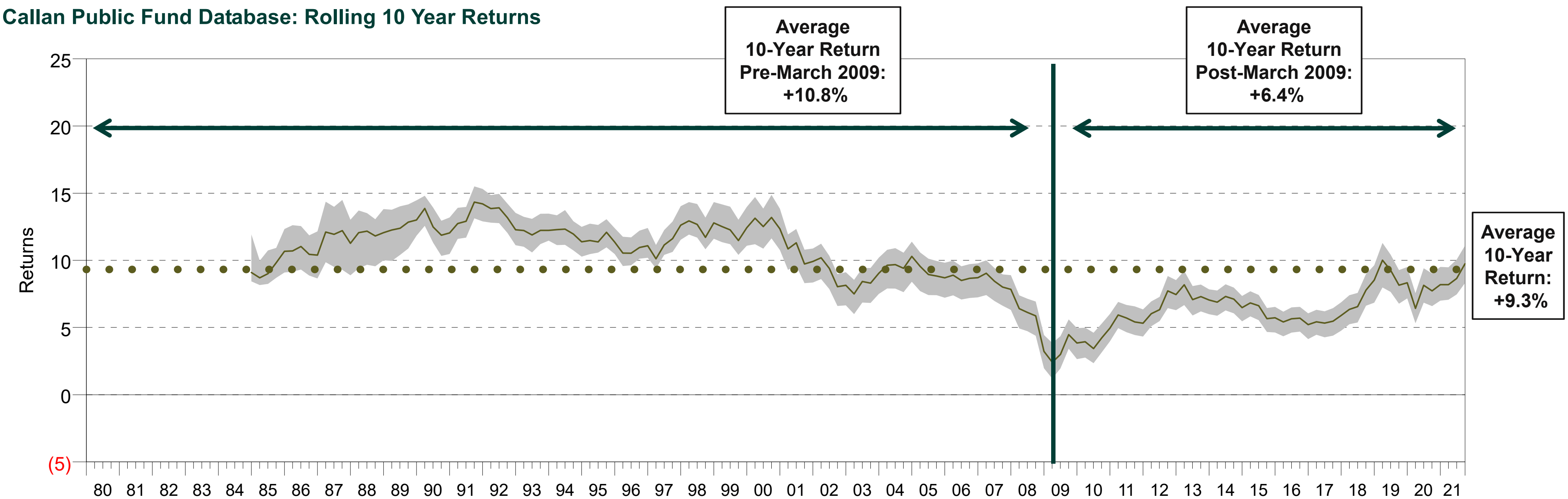
### Annual Fundraising



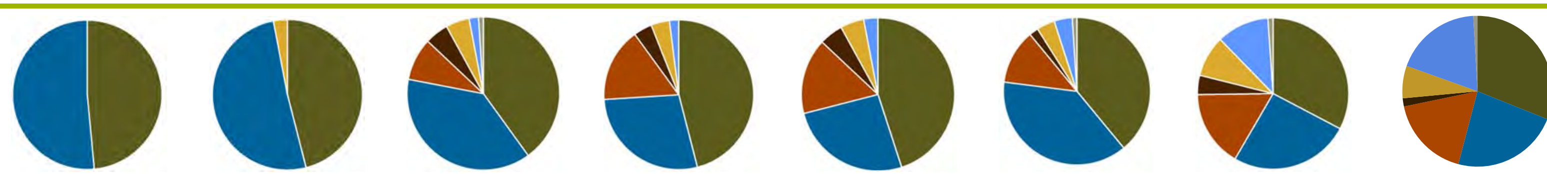

Source: PitchBook, data through 9/30/21; includes private equity and private credit

## Historical Public Fund Asset Allocation and Returns

**Callan Public Fund Database: Rolling 10 Year Returns**




| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 Year Return | 10.7% | 12.0% | 11.4% | 12.4% | 8.7% | 5.0% | 5.7% | 9.7% |



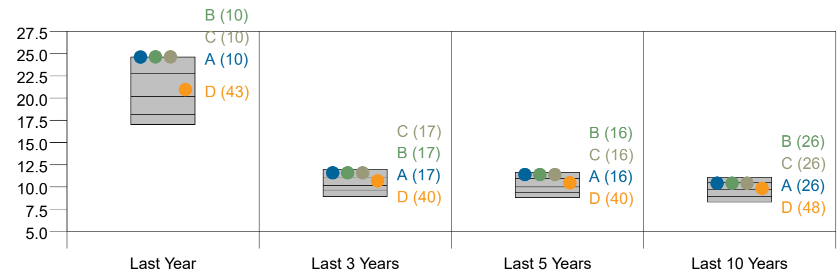
| Asset Class | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2021 |
|---|---|---|---|---|---|---|---|---|
| Domestic Equity | 49% | 46% | 40% | 46% | 45% | 39% | 33% | 31% |
| Domestic Fixed Income | 52% | 51% | 38% | 28% | 26% | 30% | 26% | 23% |
| Non-U.S. Equity | | | 9% | 16% | 16% | 15% | 16% | 18% |
| Non-U.S. Fixed Income | | | 5% | 4% | 5% | 4% | 4% | 2% |
| Real Estate | | 3% | 5% | 4% | 5% | 4% | 9% | 7% |
| Other Alternatives | | | 2% | 2% | 3% | 7% | 11% | 19% |
| Cash Equivalents | | | 1% | | | 1% | 1% | 1% |

Allocations are as of December 31 of the applicable year except the current year which is September 30.

# Pension Plan

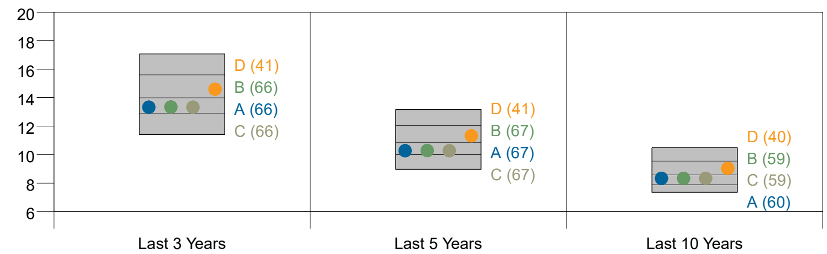
# PERS, TRS, and JRS Performance Dashboard – September 30, 2021

### Returns vs Callan Public Fund Sponsor Database



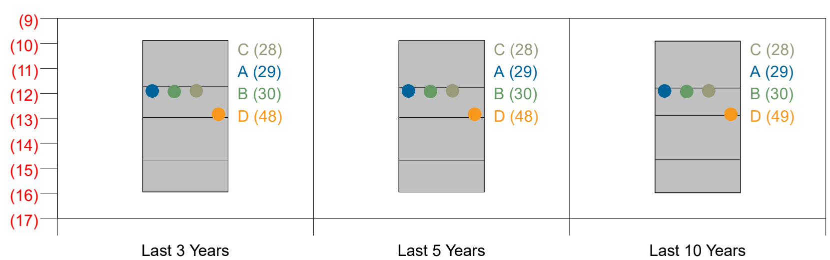

| | | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| 10th Percentile | | 24.62 | 12.01 | 11.67 | 11.10 |
| 25th Percentile | | 22.77 | 11.12 | 10.93 | 10.49 |
| Median | | 20.19 | 10.15 | 10.02 | 9.74 |
| 75th Percentile | | 18.16 | 9.64 | 9.38 | 8.90 |
| 90th Percentile | | 17.02 | 8.94 | 8.80 | 8.31 |
| Member Count | | 205 | 204 | 202 | 191 |
| Employees' Total Plan | A | 24.64 | 11.59 | 11.40 | 10.42 |
| Teachers' Total Plan | B | 24.66 | 11.59 | 11.41 | 10.42 |
| Judicial Total Plan | C | 24.64 | 11.60 | 11.41 | 10.42 |
| Policy Target | D | 20.96 | 10.69 | 10.48 | 9.84 |

### Standard Deviation vs Callan Public Fund Sponsor Database



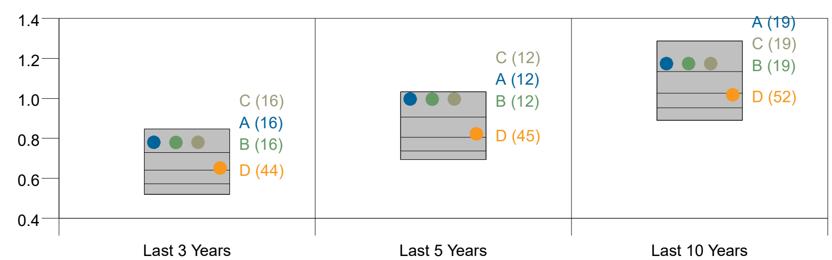

| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | 17.08 | 13.18 | 10.50 |
| 25th Percentile | | 15.61 | 12.06 | 9.54 |
| Median | | 13.99 | 10.87 | 8.58 |
| 75th Percentile | | 12.92 | 10.01 | 7.88 |
| 90th Percentile | | 11.42 | 8.97 | 7.35 |
| Member Count | | 204 | 202 | 191 |
| Employees' Total Plan | A | 13.34 | 10.28 | 8.34 |
| Teachers' Total Plan | B | 13.35 | 10.29 | 8.34 |
| Judicial Total Plan | C | 13.33 | 10.28 | 8.34 |
| Policy Target | D | 14.60 | 11.33 | 9.04 |

### Maximum Drawdown vs Callan Public Fund Sponsor Database




| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | (9.88) | (9.87) | (9.90) |
| 25th Percentile | | (11.73) | (11.77) | (11.78) |
| Median | | (12.96) | (12.96) | (12.88) |
| 75th Percentile | | (14.66) | (14.67) | (14.66) |
| 90th Percentile | | (15.94) | (15.95) | (15.98) |
| Member Count | | 204 | 202 | 191 |
| Employees' Total Plan | A | (11.90) | (11.90) | (11.90) |
| Teachers' Total Plan | B | (11.92) | (11.92) | (11.92) |
| Judicial Total Plan | C | (11.89) | (11.89) | (11.89) |
| Policy Target | D | (12.83) | (12.83) | (12.83) |

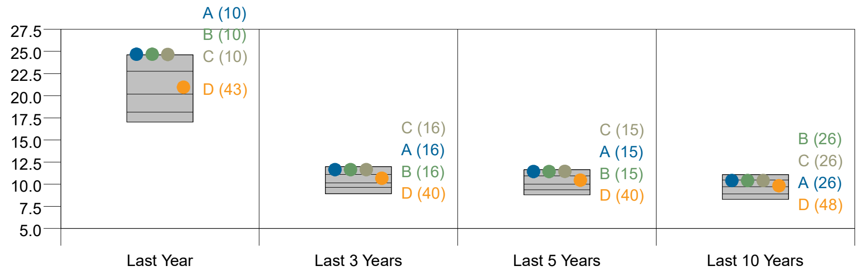
### Sharpe Ratio vs Callan Public Fund Sponsor Database




| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | 0.85 | 1.03 | 1.29 |
| 25th Percentile | | 0.73 | 0.91 | 1.13 |
| Median | | 0.64 | 0.81 | 1.03 |
| 75th Percentile | | 0.57 | 0.74 | 0.95 |
| 90th Percentile | | 0.52 | 0.69 | 0.89 |
| Member Count | | 204 | 202 | 191 |
| Employees' Total Plan | A | 0.78 | 1.00 | 1.17 |
| Teachers' Total Plan | B | 0.78 | 1.00 | 1.17 |
| Judicial Total Plan | C | 0.78 | 1.00 | 1.17 |
| Policy Target | D | 0.65 | 0.82 | 1.02 |

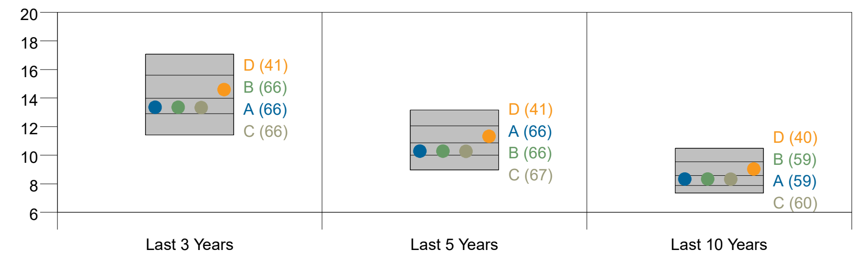
# Health Care Plans Performance Dashboard – September 30, 2021

### Returns vs Callan Public Fund Sponsor Database



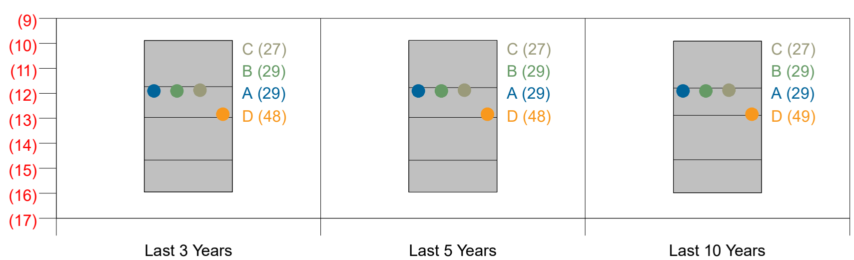

| | | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| 10th Percentile | | 24.62 | 12.01 | 11.67 | 11.10 |
| 25th Percentile | | 22.77 | 11.12 | 10.93 | 10.49 |
| Median | | 20.19 | 10.15 | 10.02 | 9.74 |
| 75th Percentile | | 18.16 | 9.64 | 9.38 | 8.90 |
| 90th Percentile | | 17.02 | 8.94 | 8.80 | 8.31 |
| Member Count | | 205 | 204 | 202 | 191 |
| PERS Health Plan | A | 24.69 | 11.65 | 11.45 | 10.42 |
| TRS Health Plan | B | 24.69 | 11.65 | 11.45 | 10.42 |
| JRS Health Plan | C | 24.68 | 11.66 | 11.46 | 10.42 |
| Policy Target | D | 20.96 | 10.69 | 10.48 | 9.84 |

### Standard Deviation vs Callan Public Fund Sponsor Database



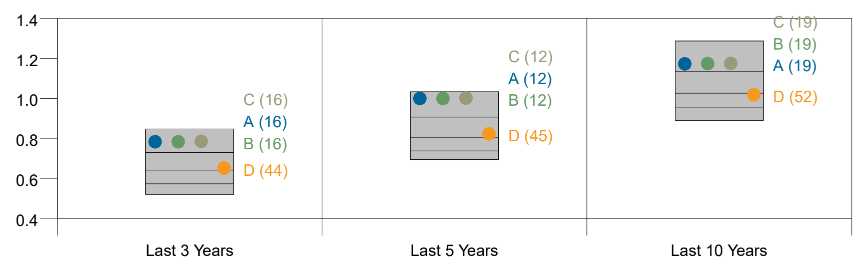

| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | 17.08 | 13.18 | 10.50 |
| 25th Percentile | | 15.61 | 12.06 | 9.54 |
| Median | | 13.99 | 10.87 | 8.58 |
| 75th Percentile | | 12.92 | 10.01 | 7.88 |
| 90th Percentile | | 11.42 | 8.97 | 7.35 |
| Member Count | | 204 | 202 | 191 |
| PERS Health Plan | A | 13.36 | 10.29 | 8.34 |
| TRS Health Plan | B | 13.36 | 10.29 | 8.34 |
| JRS Health Plan | C | 13.34 | 10.28 | 8.33 |
| Policy Target | D | 14.60 | 11.33 | 9.04 |

### Maximum Drawdown vs Callan Public Fund Sponsor Database




| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | (9.88) | (9.87) | (9.90) |
| 25th Percentile | | (11.73) | (11.77) | (11.78) |
| Median | | (12.96) | (12.96) | (12.88) |
| 75th Percentile | | (14.66) | (14.67) | (14.66) |
| 90th Percentile | | (15.94) | (15.95) | (15.98) |
| Member Count | | 204 | 202 | 191 |
| PERS Health Plan | A | (11.90) | (11.90) | (11.90) |
| TRS Health Plan | B | (11.90) | (11.90) | (11.90) |
| JRS Health Plan | C | (11.87) | (11.87) | (11.87) |
| Policy Target | D | (12.83) | (12.83) | (12.83) |

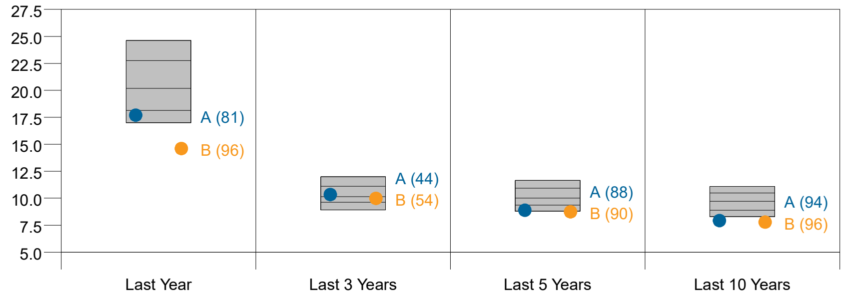
### Sharpe Ratio vs Callan Public Fund Sponsor Database




| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | 0.85 | 1.03 | 1.29 |
| 25th Percentile | | 0.73 | 0.91 | 1.13 |
| Median | | 0.64 | 0.81 | 1.03 |
| 75th Percentile | | 0.57 | 0.74 | 0.95 |
| 90th Percentile | | 0.52 | 0.69 | 0.89 |
| Member Count | | 204 | 202 | 191 |
| PERS Health Plan | A | 0.78 | 1.00 | 1.17 |
| TRS Health Plan | B | 0.78 | 1.00 | 1.17 |
| JRS Health Plan | C | 0.79 | 1.00 | 1.18 |
| Policy Target | D | 0.65 | 0.82 | 1.02 |

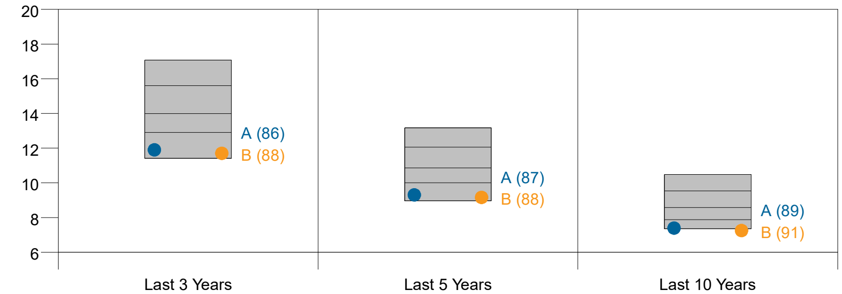
# Military Plan Performance Dashboard – September 30, 2021

### Returns vs Callan Public Fund Sponsor Database



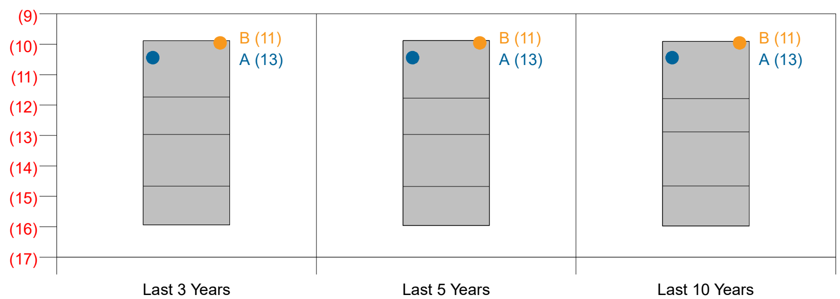

| | | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| 10th Percentile | | 24.62 | 12.01 | 11.67 | 11.10 |
| 25th Percentile | | 22.77 | 11.12 | 10.93 | 10.49 |
| Median | | 20.19 | 10.15 | 10.02 | 9.74 |
| 75th Percentile | | 18.16 | 9.64 | 9.38 | 8.90 |
| 90th Percentile | | 17.02 | 8.94 | 8.80 | 8.31 |
| Member Count | | 205 | 204 | 202 | 191 |
| Military Total Plan | A | 17.70 | 10.35 | 8.90 | 7.94 |
| Military Policy Target | B | 14.62 | 10.00 | 8.76 | 7.80 |

### Standard Deviation vs Callan Public Fund Sponsor Database



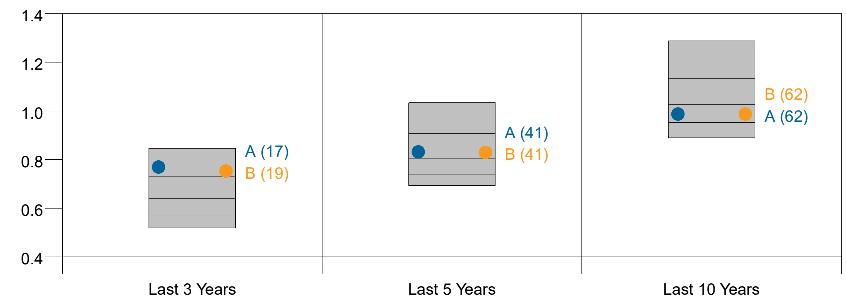

| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | 17.08 | 13.18 | 10.50 |
| 25th Percentile | | 15.61 | 12.06 | 9.54 |
| Median | | 13.99 | 10.87 | 8.58 |
| 75th Percentile | | 12.92 | 10.01 | 7.88 |
| 90th Percentile | | 11.42 | 8.97 | 7.35 |
| Member Count | | 204 | 202 | 191 |
| Military Total Plan | A | 11.91 | 9.31 | 7.40 |
| Military Policy Target | B | 11.71 | 9.17 | 7.25 |

### Maximum Drawdown vs Callan Public Fund Sponsor Database




| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | (9.88) | (9.87) | (9.90) |
| 25th Percentile | | (11.73) | (11.77) | (11.78) |
| Median | | (12.96) | (12.96) | (12.88) |
| 75th Percentile | | (14.66) | (14.67) | (14.66) |
| 90th Percentile | | (15.94) | (15.95) | (15.98) |
| Member Count | | 204 | 202 | 191 |
| Military Total Plan | A | (10.44) | (10.44) | (10.44) |
| Military Policy Target | B | (9.95) | (9.95) | (9.95) |

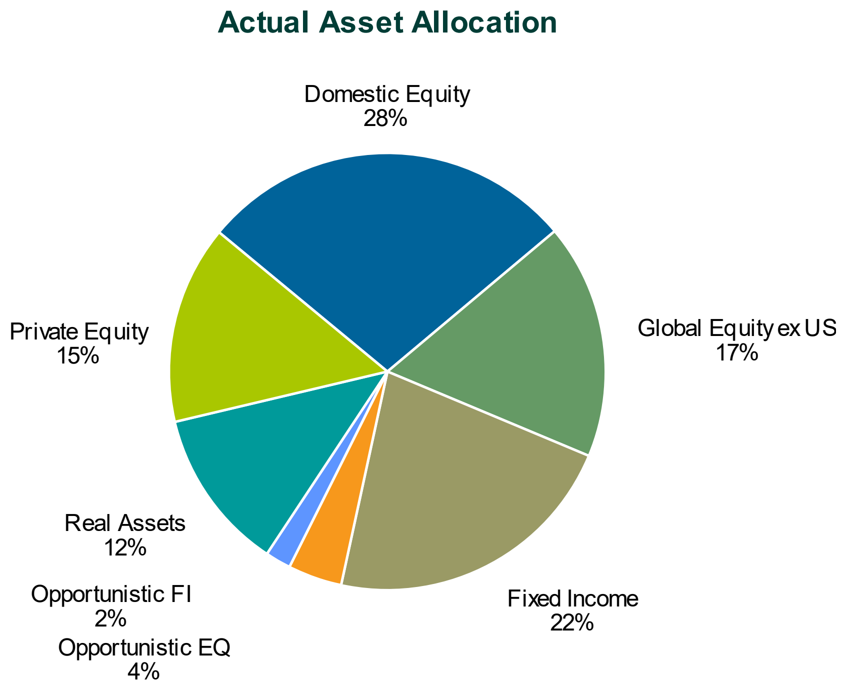
### Sharpe Ratio vs Callan Public Fund Sponsor Database

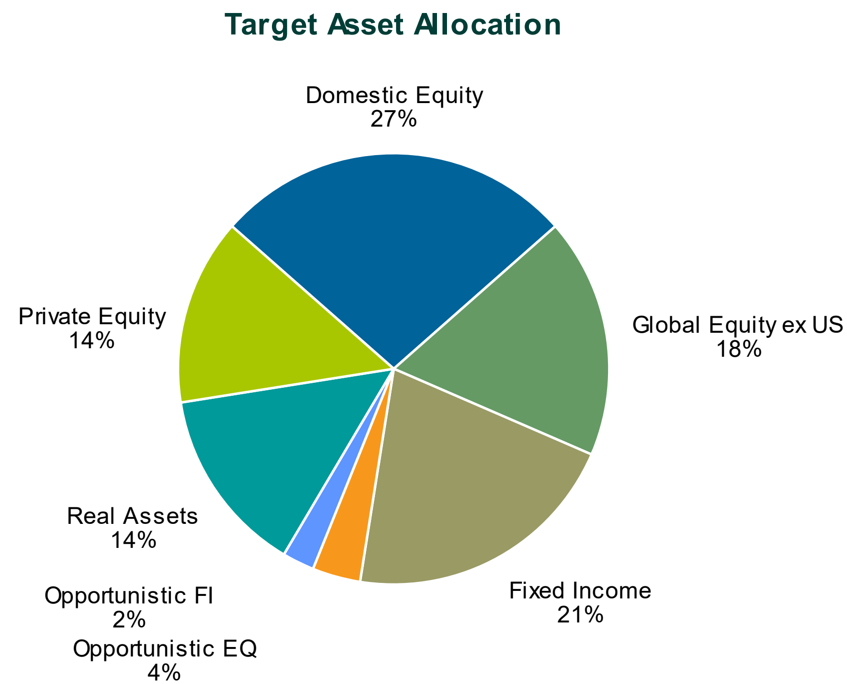



| | | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | | 0.85 | 1.03 | 1.29 |
| 25th Percentile | | 0.73 | 0.91 | 1.13 |
| Median | | 0.64 | 0.81 | 1.03 |
| 75th Percentile | | 0.57 | 0.74 | 0.95 |
| 90th Percentile | | 0.52 | 0.69 | 0.89 |
| Member Count | | 204 | 202 | 191 |
| Military Total Plan | A | 0.77 | 0.83 | 0.99 |
| Military Policy Target | B | 0.75 | 0.83 | 0.99 |

# Asset Allocation – Public Employees' Retirement System

## Quarter Ending September 30, 2021




| Asset Class | $000s Actual | Weight Actual | Target | Percent Difference | $000s Difference |
|---|---|---|---|---|---|
| Domestic Equity | 3,305,206 | 27.9% | 27.0% | 0.9% | 105,774 |
| Global Equity ex US | 2,067,372 | 17.4% | 18.0% | (0.6%) | (65,583) |
| Fixed Income | 2,617,353 | 22.1% | 21.0% | 1.1% | 128,906 |
| Opportunistic EQ | 476,940 | 4.0% | 3.6% | 0.4% | 50,349 |
| Opportunistic FI | 220,679 | 1.9% | 2.4% | (0.5%) | (63,715) |
| Real Assets | 1,416,947 | 12.0% | 14.0% | (2.0%) | (242,018) |
| Private Equity | 1,745,253 | 14.7% | 14.0% | 0.7% | 86,288 |
| Total | 11,849,749 | 100.0% | 100.0% | | |

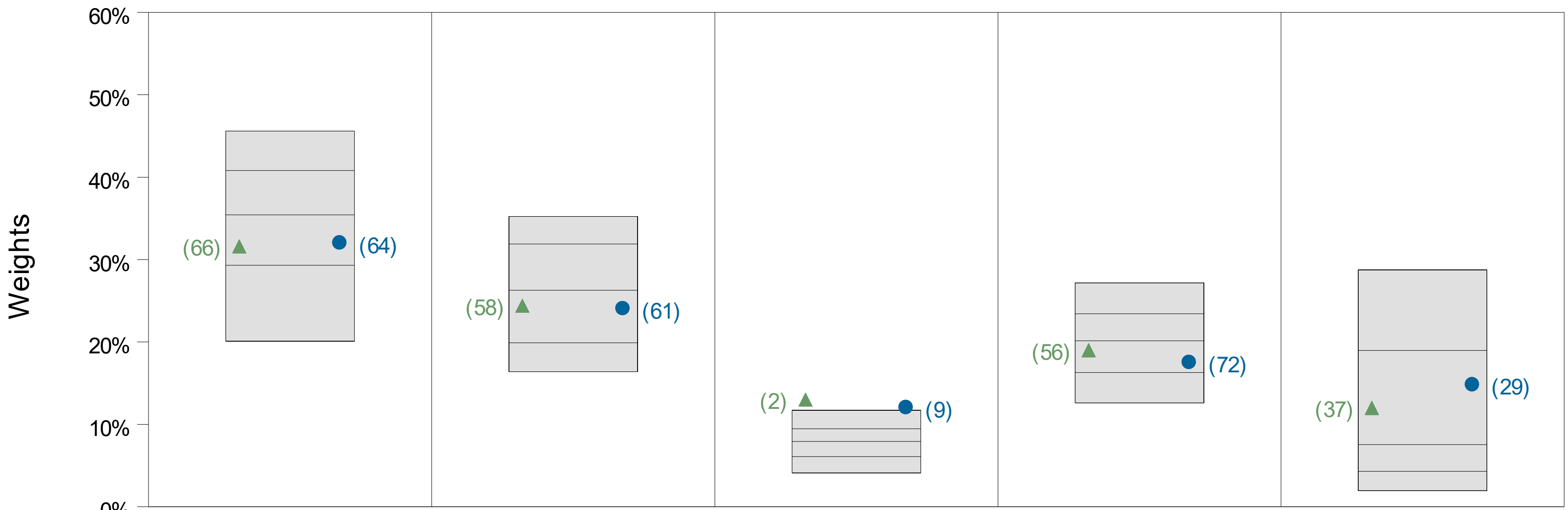
**PERS is used as illustrative throughout the presentation.**

**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 | 45.60 | 35.23 | 11.73 | 27.16 | 28.76 |
| 25th Percentile | 40.82 | 31.88 | 9.46 | 23.42 | 18.96 |
| Median | 35.43 | 26.29 | 7.93 | 20.16 | 7.53 |
| 75th Percentile | 29.30 | 19.90 | 6.10 | 16.30 | 4.30 |
| 90th Percentile | 20.09 | 16.40 | 4.11 | 12.60 | 1.96 |
| **Fund** ● | 31.92 | 23.95 | 11.96 | 17.45 | 14.73 |
| Target ▲ | 31.60 | 24.40 | 13.00 | 19.00 | 12.00 |

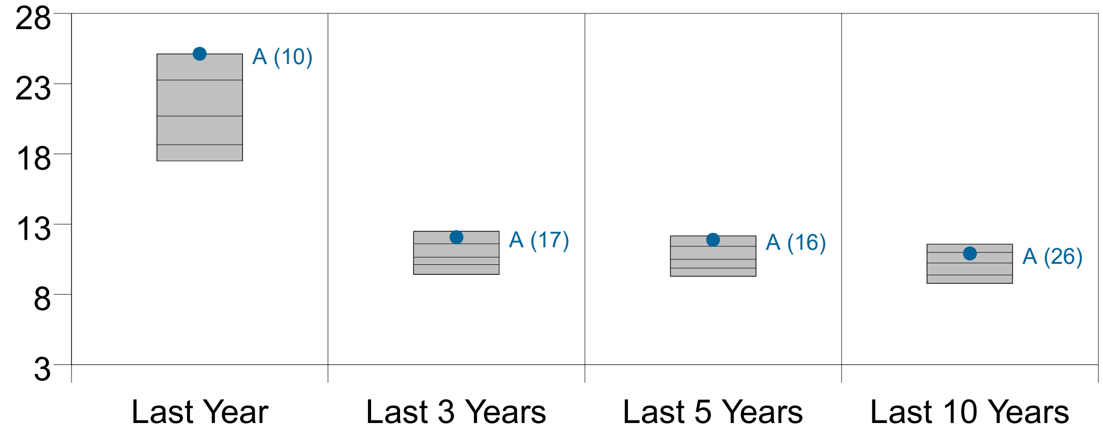
- Asset class allocations are in line with targets after the recent asset allocation update and associated rebalancing.
- Weightings to real assets and alternatives are relatively high in comparison to other public funds.

Notes: Real Assets includes Private Real Estate, REITs, Farmland, Timber, Energy, and Infrastructure. Other Alternatives represents private equity.

# Total Fund Return vs Public Funds (PERS)

## Callan Public Fund Database

Gross of Fee Returns
for Periods Ended September 30, 2021
Group: Callan Public Fund Sponsor Database



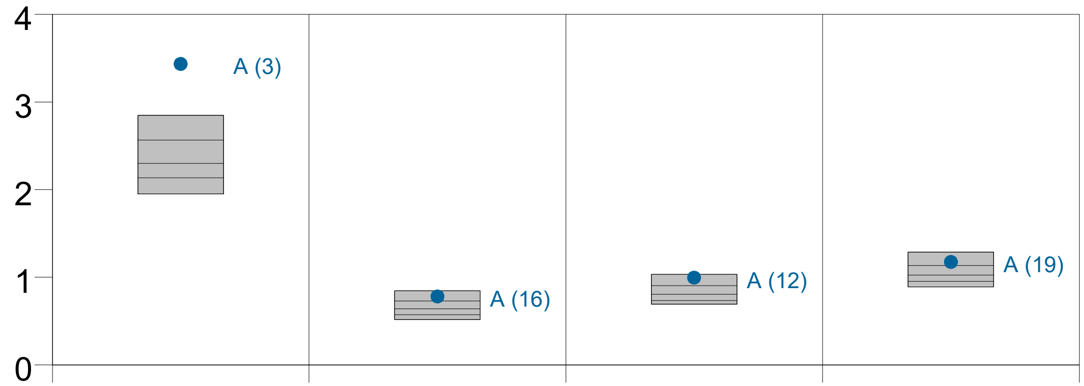

| | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | 24.62 | 12.01 | 11.67 | 11.10 |
| 25th Percentile | 22.77 | 11.12 | 10.93 | 10.49 |
| Median | 20.19 | 10.15 | 10.02 | 9.74 |
| 75th Percentile | 18.16 | 9.64 | 9.38 | 8.90 |
| 90th Percentile | 17.02 | 8.94 | 8.80 | 8.31 |
| Member Count | 205 | 204 | 202 | 191 |
| PERS - Total Fund ● A | 24.64 | 11.59 | 11.40 | 10.42 |

- Despite the recent change to the asset allocation, longer-term performance reflects ARMB's prior orientation toward capital growth as opposed to income generation.
- Performance was above the Public Funds median for the one-, three-, five-, and ten-year periods.

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

## Callan Public Fund Database

Gross of Fee Sharpe Ratio
for Periods Ended September 30, 2021
Group: Callan Public Fund Sponsor Database



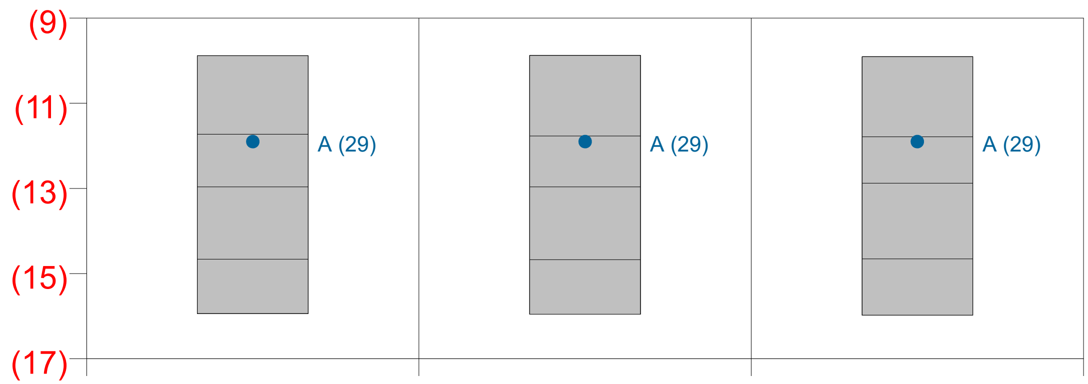

| | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|
| 10th Percentile | 2.85 | 0.85 | 1.03 | 1.29 |
| 25th Percentile | 2.57 | 0.73 | 0.91 | 1.13 |
| Median | 2.30 | 0.64 | 0.81 | 1.03 |
| 75th Percentile | 2.14 | 0.57 | 0.74 | 0.95 |
| 90th Percentile | 1.95 | 0.52 | 0.69 | 0.89 |
| Member Count | 205 | 204 | 202 | 191 |
| PERS - Total Fund ● A | 3.44 | 0.78 | 1.00 | 1.17 |

- “Sharpe ratio” is a risk-adjusted measure of excess return above the risk-free rate.
- ARMB’s risk-adjusted return (Sharpe ratio) was above the Public Funds median for the one-, three-, five-, and 10-year periods.

# Total Maximum Drawdown Rankings vs Public Funds (PERS)

## Callan Public Fund Database

Gross of Fee Maximum Drawdown
for Periods Ended September 30, 2021
Group: Callan Public Fund Sponsor Database



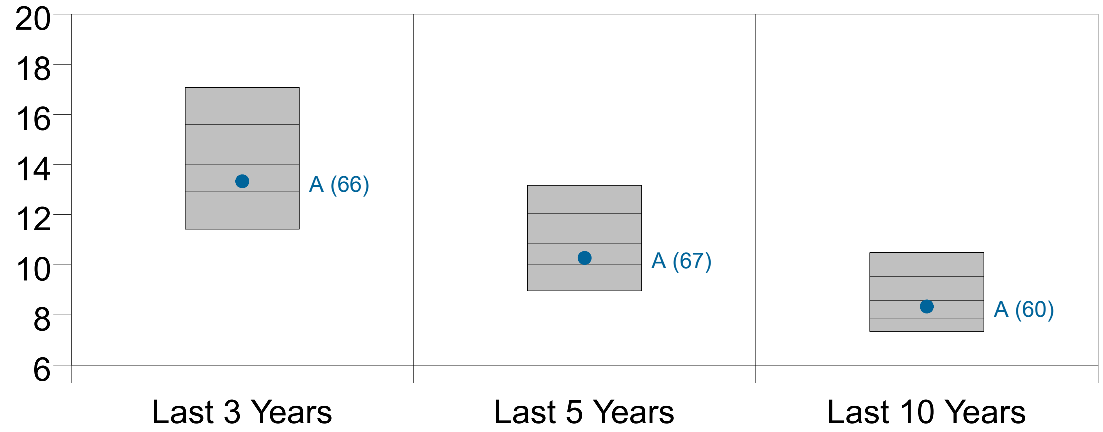

| | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|
| 10th Percentile | (9.88) | (9.87) | (9.90) |
| 25th Percentile | (11.73) | (11.77) | (11.78) |
| Median | (12.96) | (12.96) | (12.88) |
| 75th Percentile | (14.66) | (14.67) | (14.66) |
| 90th Percentile | (15.94) | (15.95) | (15.98) |
| Member Count | 204 | 202 | 191 |
| PERS - Total Fund ● A | (11.90) | (11.90) | (11.90) |

- "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's drawdown rankings for all periods have reflected better than average drawdowns (i.e. lower losses) and have improved over time.
- The drawdown experienced in the first quarter of 2020 is the largest of the last 10 years.

# Standard Deviation Ranking vs Public Funds (PERS)

## Callan Public Fund Database

Gross of Fee Standard Deviation
for Periods Ended September 30, 2021
Group: Callan Public Fund Sponsor Database




| | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|
| 10th Percentile | 17.08 | 13.18 | 10.50 |
| 25th Percentile | 15.61 | 12.06 | 9.54 |
| Median | 13.99 | 10.87 | 8.58 |
| 75th Percentile | 12.92 | 10.01 | 7.88 |
| 90th Percentile | 11.42 | 8.97 | 7.35 |
| Member Count | 204 | 202 | 191 |
| PERS - Total Fund ● A | 13.34 | 10.28 | 8.34 |

- “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 suggests lower variability.
- ARMB’s portfolio diversification has resulted in volatility that is lower than median compared to peers.

# PERS Performance Attribution – 3rd Quarter 2021 & Trailing Year

## Relative Attribution Effects for Quarter ended September 30, 2021

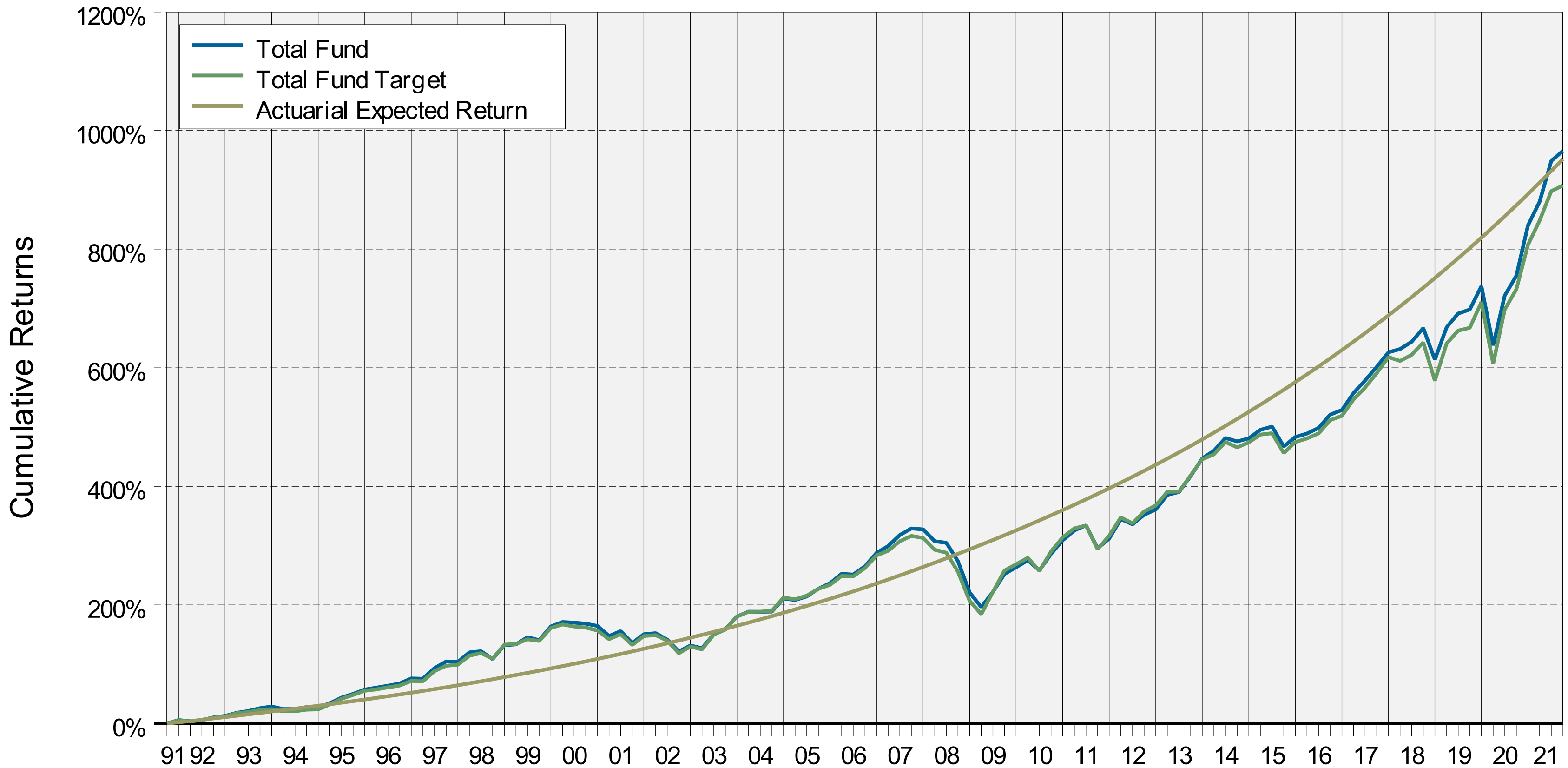
| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|---|---|---|---|---|---|---|---|
| Domestic Equity | 28% | 27% | (0.20%) | (0.10%) | (0.03%) | (0.02%) | (0.04%) |
| Fixed-Income | 22% | 21% | 0.68% | 0.05% | 0.14% | (0.01%) | 0.13% |
| Opportunistic | 6% | 6% | 0.28% | (0.65%) | 0.06% | 0.00% | 0.06% |
| Real Assets | 12% | 14% | 1.81% | 4.28% | (0.31%) | (0.06%) | (0.37%) |
| Global Equity ex US | 18% | 18% | (2.22%) | (2.56%) | 0.06% | (0.01%) | 0.06% |
| Private Equity | 13% | 14% | 12.65% | 6.00% | 0.89% | (0.03%) | 0.86% |
| **Total** | | | **1.62% =** | **0.92% +** | **0.82% +** | **(0.12%)** | **0.69%** |

## One Year Relative Attribution Effects

| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|---|---|---|---|---|---|---|---|
| Domestic Equity | 28% | 28% | 32.13% | 31.88% | 0.07% | (0.02%) | 0.04% |
| Fixed-Income | 22% | 22% | 1.87% | (0.84%) | 0.69% | (0.07%) | 0.62% |
| Opportunistic | 6% | 6% | 17.64% | 16.45% | 0.08% | (0.01%) | 0.07% |
| Real Assets | 13% | 13% | 11.73% | 9.53% | 0.29% | (0.07%) | 0.21% |
| Global Equity ex US | 19% | 19% | 26.49% | 25.16% | 0.24% | (0.01%) | 0.23% |
| Private Equity | 12% | 12% | 69.74% | 45.01% | 2.55% | (0.07%) | 2.47% |
| **Total** | | | **24.64% =** | **20.96% +** | **3.94% +** | **(0.26%)** | **3.68%** |

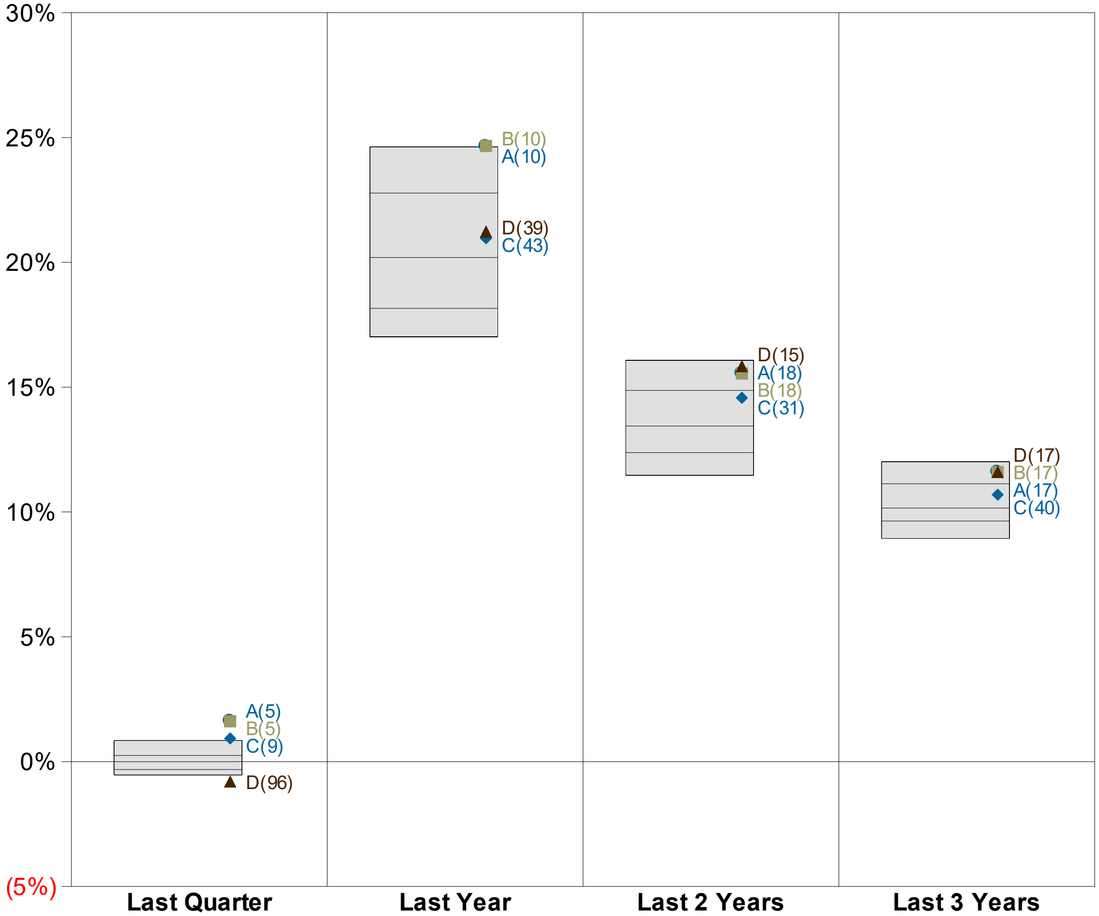
# PERS Long-Term Total Fund Performance as of 09/30/2021

### 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.
- Market correction setbacks in 3Q15, 4Q18, and 1Q20 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 09/30/21

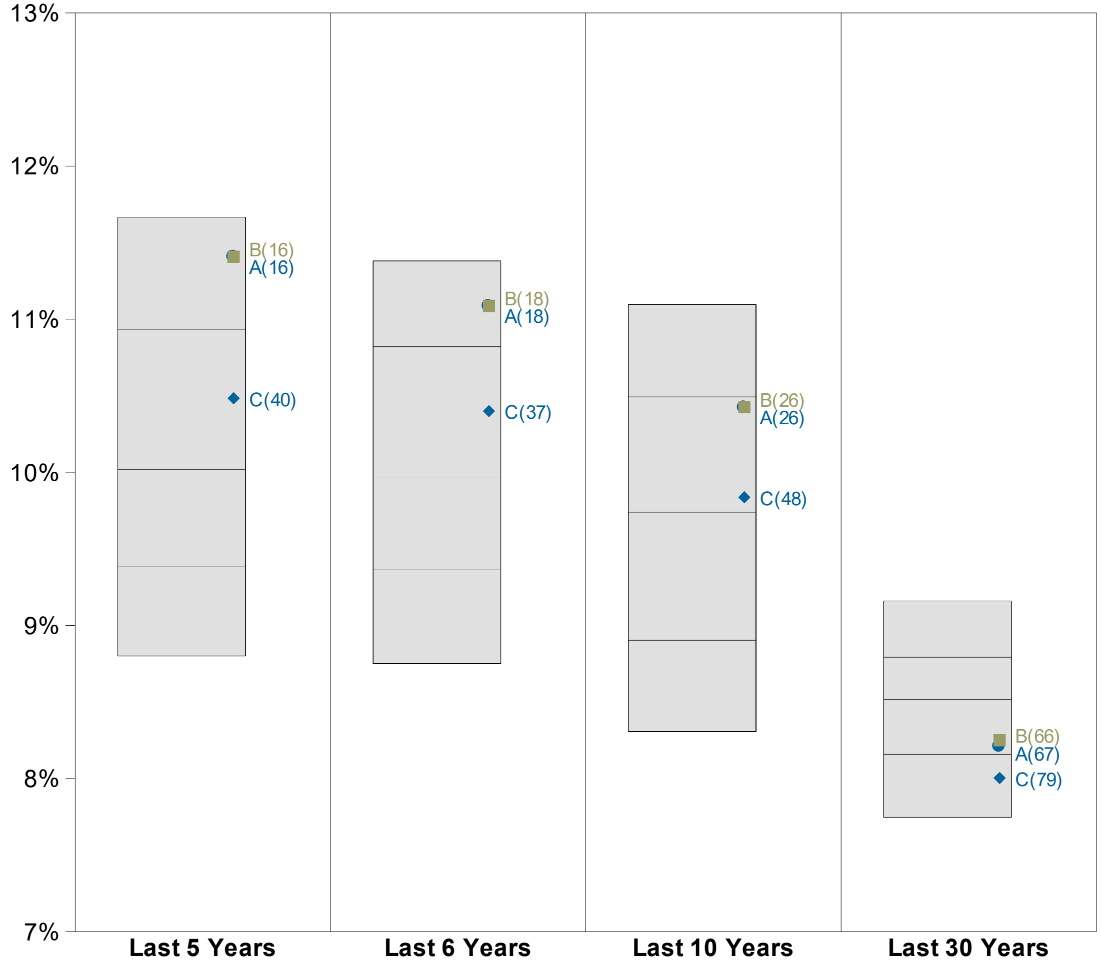



| | Last Quarter | Last Year | Last 2 Years | Last 3 Years |
|---|---|---|---|---|
| 10th Percentile | 0.84 | 24.62 | 16.07 | 12.01 |
| 25th Percentile | 0.24 | 22.77 | 14.87 | 11.12 |
| Median | (0.01) | 20.19 | 13.44 | 10.15 |
| 75th Percentile | (0.32) | 18.16 | 12.38 | 9.64 |
| 90th Percentile | (0.54) | 17.02 | 11.47 | 8.94 |
| PERS Total Plan ● A | 1.62 | 24.64 | 15.55 | 11.59 |
| TRS Total Plan ■ B | 1.62 | 24.66 | 15.55 | 11.59 |
| Target Index ◆ C | 0.92 | 20.96 | 14.57 | 10.69 |
| Public Market Proxy ▲ D | (0.80) | 21.23 | 15.84 | 11.61 |

- PERS and TRS have outperformed their target for the last quarter, one-year, two-year and three-year periods.

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

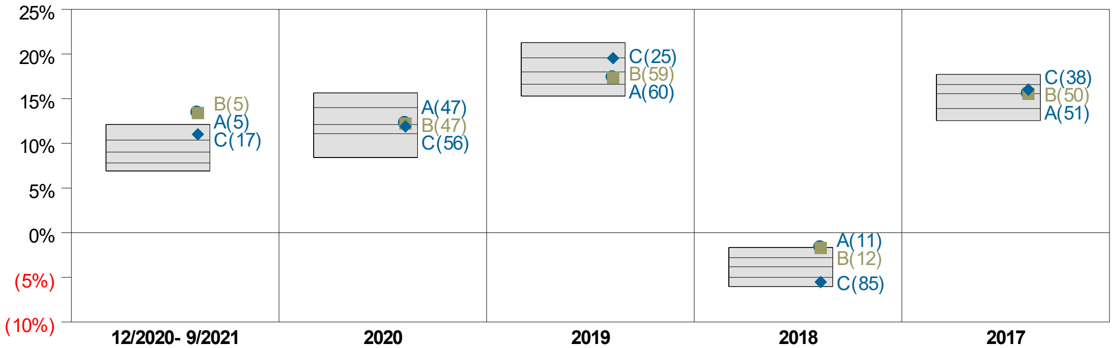
# Longer-Term Total Fund Returns as of 09/30/21



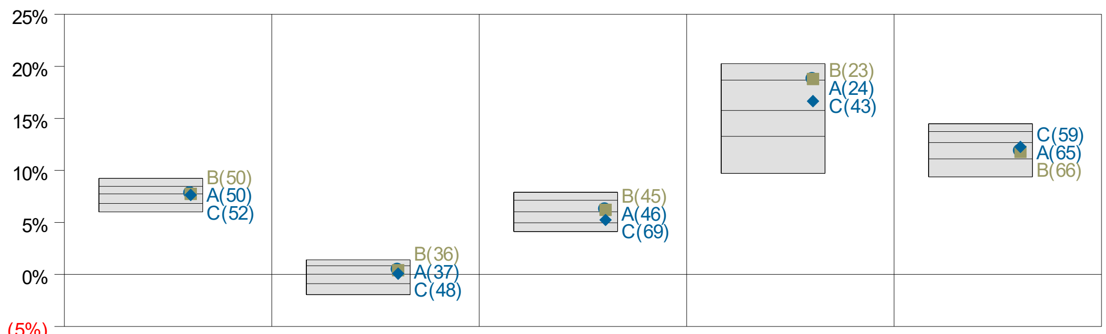

| | Last 5 Years | Last 6 Years | Last 10 Years | Last 30 Years |
|---|---|---|---|---|
| 10th Percentile | 11.67 | 11.38 | 11.10 | 9.16 |
| 25th Percentile | 10.93 | 10.82 | 10.49 | 8.79 |
| Median | 10.02 | 9.97 | 9.74 | 8.52 |
| 75th Percentile | 9.38 | 9.36 | 8.90 | 8.16 |
| 90th Percentile | 8.80 | 8.75 | 8.31 | 7.75 |
| PERS Total Plan ● A | 11.40 | 11.08 | 10.42 | 8.21 |
| TRS Total Plan ■ B | 11.41 | 11.09 | 10.42 | 8.25 |
| Target Index ◆ C | 10.48 | 10.40 | 9.84 | 8.00 |

- Five-, six-, and ten-year performance is above target and median.
- 30 year return for PERS beat the target by 21 basis points.

# Calendar Period Total Fund Performance




| | | 12/2020- 9/2021 | 2020 | 2019 | 2018 | 2017 |
|---|---|---|---|---|---|---|
| 10th Percentile | | 12.12 | 15.65 | 21.28 | (1.64) | 17.73 |
| 25th Percentile | | 10.37 | 14.00 | 19.59 | (2.79) | 16.59 |
| Median | | 9.02 | 12.10 | 18.00 | (3.83) | 15.56 |
| 75th Percentile | | 7.81 | 11.08 | 16.61 | (4.99) | 13.89 |
| 90th Percentile | | 6.92 | 8.41 | 15.29 | (6.05) | 12.54 |
| PERS Total Plan | ● A | 13.38 | 12.23 | 17.34 | (1.70) | 15.52 |
| TRS Total Plan | ■ B | 13.39 | 12.21 | 17.36 | (1.70) | 15.54 |
| Target Index | ◆ C | 11.02 | 11.90 | 19.54 | (5.53) | 16.03 |

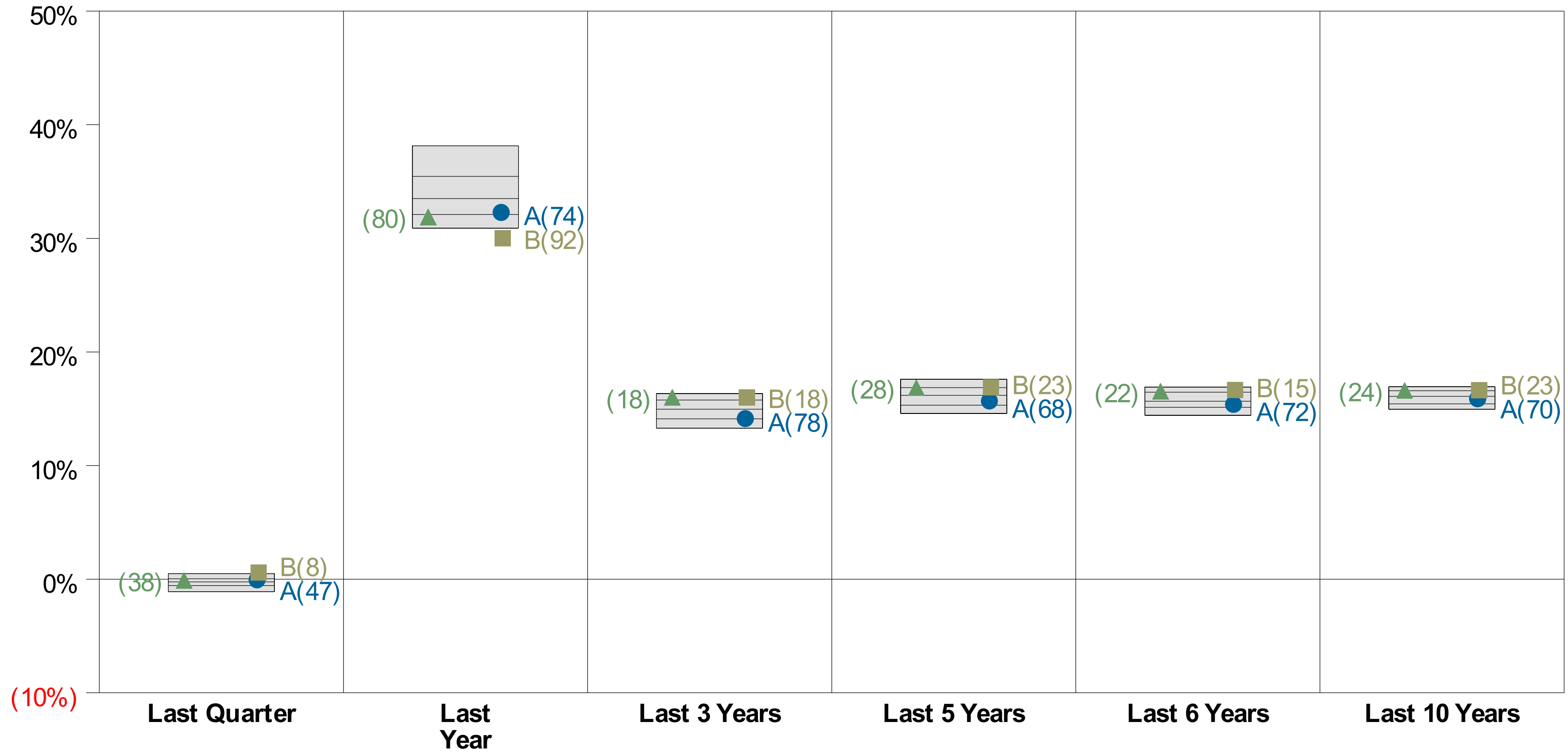



| | | 2016 | 2015 | 2014 | 2013 | 2012 |
|---|---|---|---|---|---|---|
| 10th Percentile | | 9.23 | 1.40 | 7.90 | 20.27 | 14.49 |
| 25th Percentile | | 8.46 | 0.84 | 7.14 | 18.69 | 13.73 |
| Median | | 7.74 | 0.02 | 6.03 | 15.76 | 12.67 |
| 75th Percentile | | 6.82 | (0.88) | 4.96 | 13.28 | 11.11 |
| 90th Percentile | | 6.01 | (1.95) | 4.13 | 9.71 | 9.38 |
| PERS Total Plan | ● A | 7.74 | 0.40 | 6.22 | 18.74 | 11.81 |
| TRS Total Plan | ■ B | 7.74 | 0.41 | 6.22 | 18.79 | 11.79 |
| Target Index | ◆ C | 7.64 | 0.08 | 5.24 | 16.66 | 12.26 |

- PERS and TRS rank at or above median in seven 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 09/30/21

### 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 | | 0.48 | 38.14 | 16.34 | 17.61 | 16.92 | 16.95 |
| 25th Percentile | | 0.04 | 35.46 | 15.77 | 16.87 | 16.45 | 16.58 |
| Median | | (0.25) | 33.50 | 14.96 | 16.18 | 15.67 | 16.09 |
| 75th Percentile | | (0.56) | 32.10 | 14.13 | 15.31 | 15.13 | 15.42 |
| 90th Percentile | | (1.09) | 30.89 | 13.29 | 14.58 | 14.42 | 14.95 |
| Domestic Equity Pool | ● A | (0.20) | 32.13 | 13.99 | 15.54 | 15.23 | 15.73 |
| Standard & Poor's 500 | ■ B | 0.58 | 30.00 | 15.99 | 16.90 | 16.65 | 16.63 |
| Russell 3000 Index | ▲ | (0.10) | 31.88 | 16.00 | 16.85 | 16.53 | 16.60 |

## Domestic Equity Component Returns

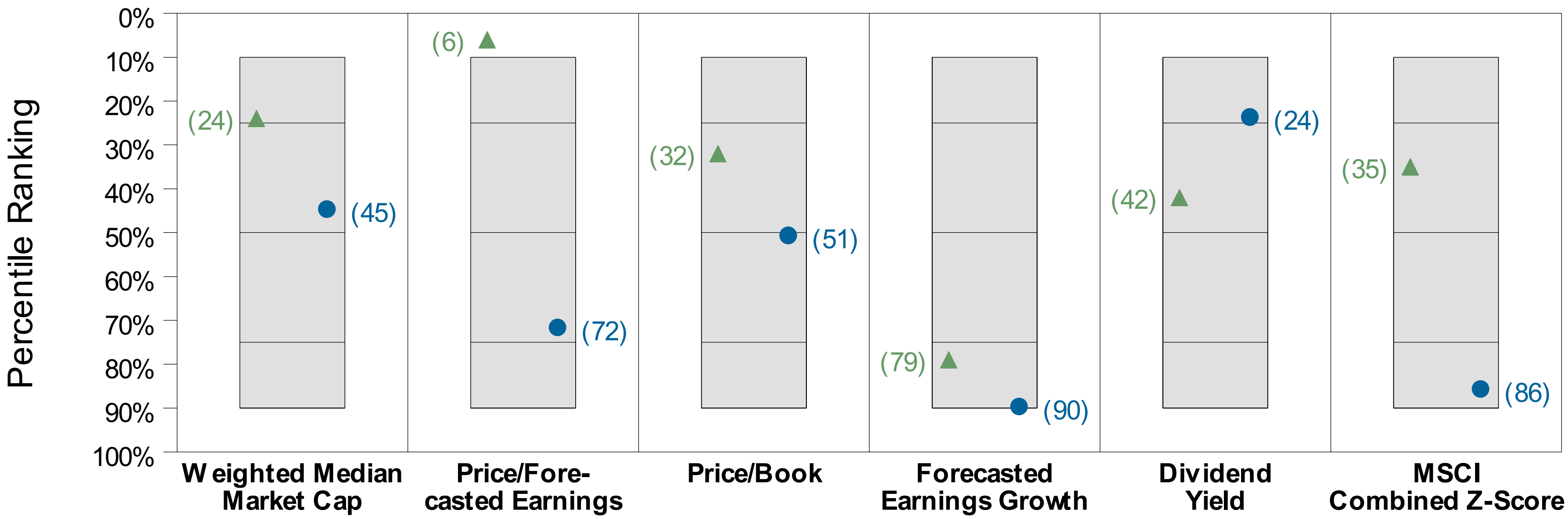
Returns for Periods Ended September 30, 2021

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| Total Dom Equity Pool | (0.20%) | 32.13% | 13.99% | 15.54% | 15.73% |
| Russell 3000 Index | (0.10%) | 31.88% | 16.00% | 16.85% | 16.60% |
| Large Cap Managers | 0.03% | 29.94% | 14.46% | 15.83% | 16.05% |
| Russell 1000 Index | 0.21% | 30.96% | 16.43% | 17.11% | 16.76% |
| Small Cap Managers | (2.87%) | 56.97% | 10.65% | 14.20% | 15.25% |
| Russell 2000 Index | (4.36%) | 47.68% | 10.54% | 13.45% | 14.63% |

- The large cap composite trailed its benchmark (the Russell 1000 Index) over all periods shown in the table.
- The small cap composite has outperformed its benchmark (the Russell 2000 Index) over all periods shown in the the table.

# Domestic Equity Portfolio Characteristics

## Portfolio Characteristics Percentile Rankings
## Rankings Against Public Fund - Domestic Equity
## as of September 30, 2021




| | Weighted Median Market Cap | Price/Fore-casted Earnings | Price/Book | Forecasted Earnings Growth | Dividend Yield | MSCI Combined Z-Score |
|---|---|---|---|---|---|---|
| 10th Percentile | 188.00 | 21.14 | 4.16 | 27.01 | 1.41 | 0.09 |
| 25th Percentile | 122.03 | 20.66 | 4.12 | 26.76 | 1.38 | 0.02 |
| Median | 83.54 | 20.23 | 3.61 | 24.32 | 1.30 | (0.03) |
| 75th Percentile | 63.65 | 18.92 | 3.34 | 22.79 | 1.18 | (0.07) |
| 90th Percentile | 37.81 | 17.73 | 3.01 | 20.13 | 1.12 | (0.13) |
| **Domestic Equity Pool** ● | 87.89 | 19.12 | 3.59 | 20.14 | 1.39 | (0.12) |
| Russell 3000 Index ▲ | 127.52 | 21.19 | 3.96 | 21.45 | 1.32 | 0.00 |

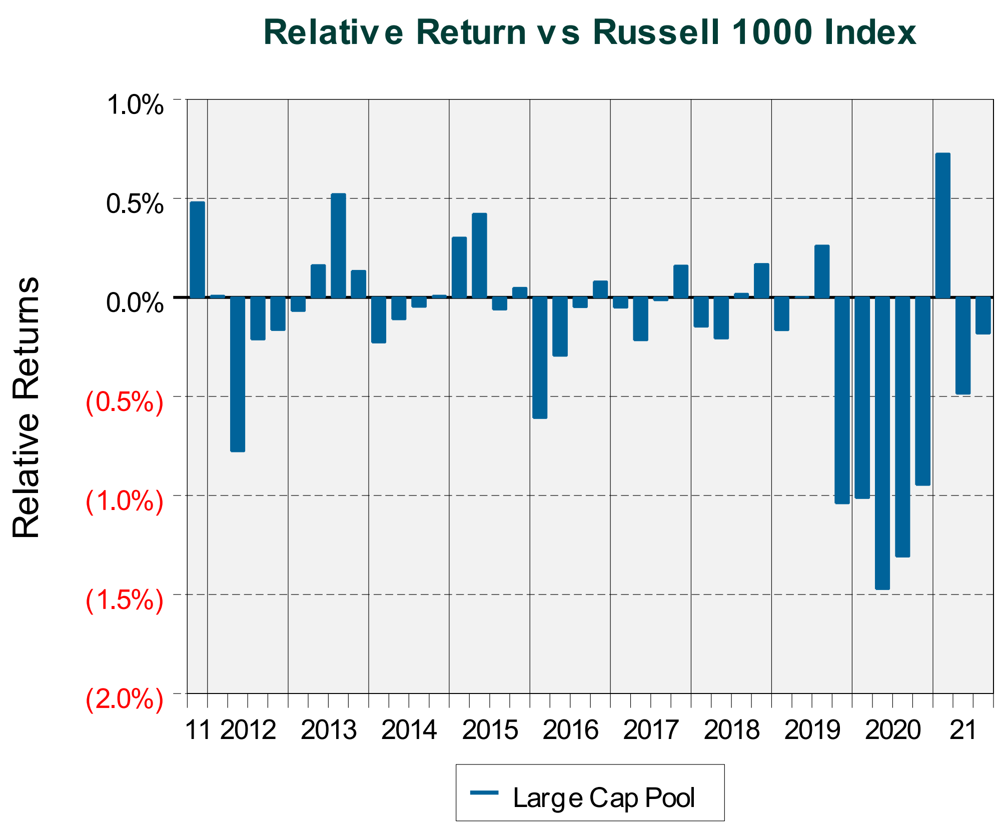
- ARMB's overall domestic equity portfolio's market capitalization is smaller than 45% of public funds (first column).
- Overall, ARMB's domestic equity portfolio tilts decidedly "value" versus peers (last column on right).
  - "MSCI Combined Z-Score" measures Growth and Value characteristics of individual stocks within managers' portfolios.
  - A low Z-Score rank (i.e.– the dot appears towards the top of the floating bar) indicates a Growth bias.
  - A high Z-Score rank (i.e. – the dot appears towards the bottom of the floating bar) indicates a Value bias.

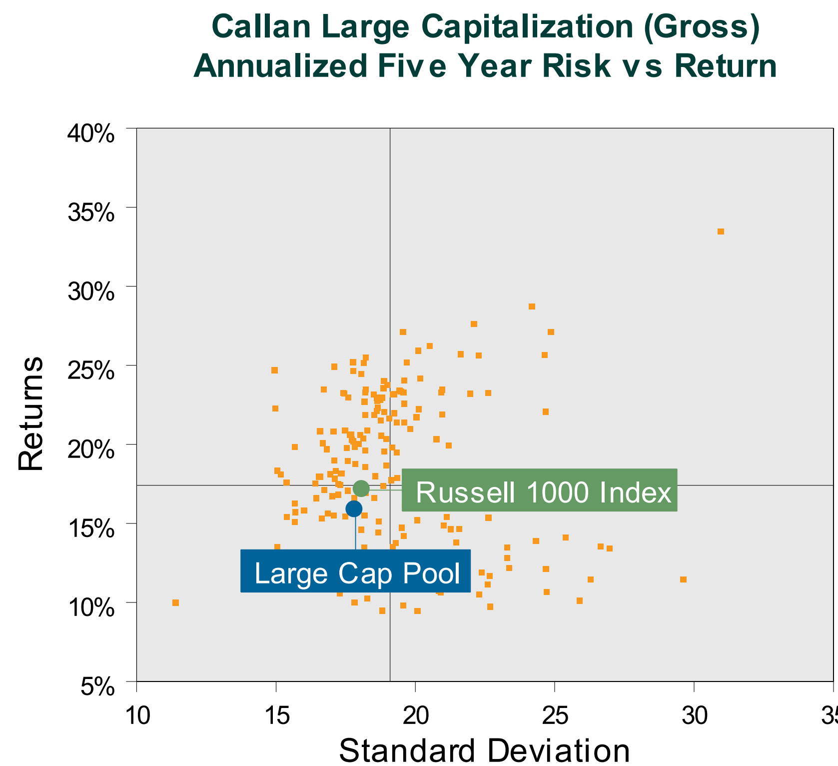
## Large Cap Domestic Equity through 09/30/21

### Performance vs Callan Large Capitalization (Gross)


| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|
| 10th Percentile | 1.72 | 44.69 | 23.12 | 23.83 | 21.67 | 20.37 |
| 25th Percentile | 0.91 | 38.53 | 20.69 | 21.78 | 20.14 | 19.18 |
| Median | 0.15 | 30.35 | 16.73 | 17.41 | 16.67 | 17.00 |
| 75th Percentile | (0.75) | 27.10 | 11.09 | 12.77 | 12.85 | 14.41 |
| 90th Percentile | (1.63) | 23.37 | 8.87 | 11.01 | 11.64 | 13.32 |
| **Large Cap Pool** ● | 0.03 | 29.94 | 14.46 | 15.83 | 15.51 | 16.05 |
| Russell 1000 Index ▲ | 0.21 | 30.96 | 16.43 | 17.11 | 16.75 | 16.76 |

# Large Cap Domestic Equity as of 09/30/21

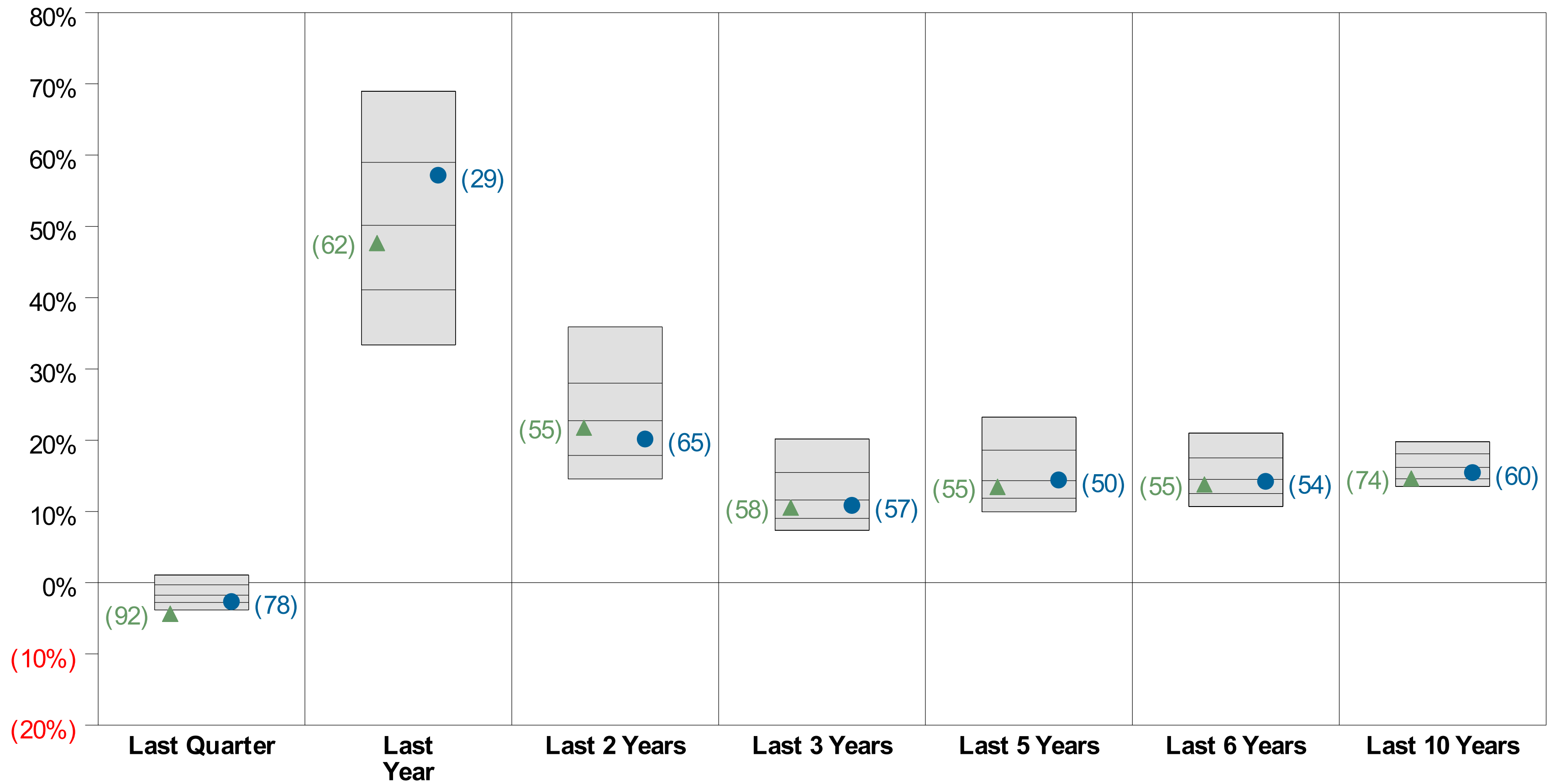



- Large Cap Domestic Equity returns underperformed the Russell 1000 index by 18bps in the third quarter of 2021.
- Long-term performance exhibits market-like returns with similar risk.
- Underperformance vs. the Russell 1000 Index in 4Q19 through 4Q20 was driven by Scientific Beta, which trailed the broad benchmark by between 2% and 4% in each of those quarters.
- Passive implementation also detracted as the S&P 900 Index trailed the Russell 1000 Index by 1.1% in 2Q20, 0.8% in 3Q20, and 0.9% in 4Q20.

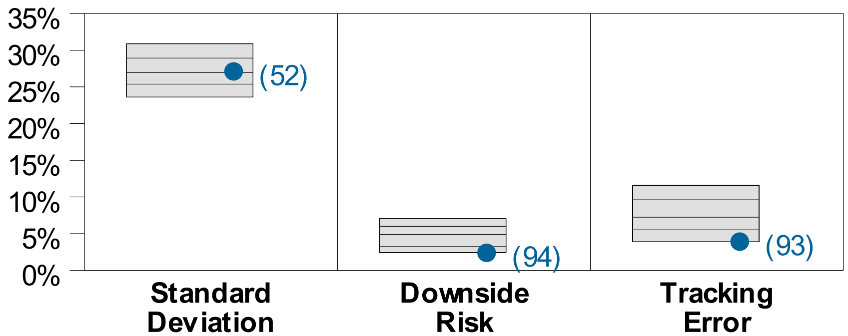
# Small Cap Domestic Equity through 09/30/21

## Performance vs Callan Small Capitalization (Gross)



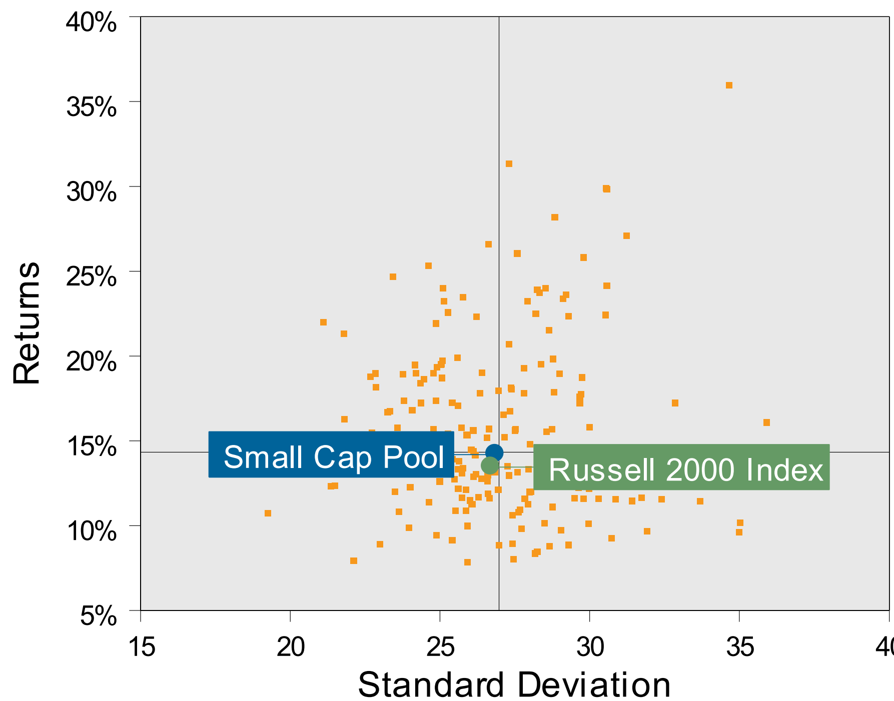

| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | 1.07 | 68.98 | 35.89 | 20.18 | 23.22 | 20.99 | 19.79 |
| 25th Percentile | (0.31) | 58.99 | 28.02 | 15.46 | 18.61 | 17.50 | 18.08 |
| Median | (1.75) | 50.16 | 22.74 | 11.59 | 14.33 | 14.51 | 16.19 |
| 75th Percentile | (2.77) | 41.10 | 17.86 | 9.03 | 11.86 | 12.53 | 14.57 |
| 90th Percentile | (3.82) | 33.39 | 14.54 | 7.36 | 9.96 | 10.69 | 13.51 |
| **Small Cap Pool** ● | (2.87) | 56.97 | 19.94 | 10.65 | 14.20 | 13.99 | 15.25 |
| Russell 2000 Index ▲ | (4.36) | 47.68 | 21.76 | 10.54 | 13.45 | 13.78 | 14.63 |

# Small Cap Domestic Equity through 09/30/21




| | Standard Deviation | Downside Risk | Tracking Error |
|---|---|---|---|
| 10th Percentile | 30.88 | 7.07 | 11.60 |
| 25th Percentile | 28.92 | 6.00 | 9.63 |
| Median | 26.97 | 4.90 | 7.24 |
| 75th Percentile | 25.38 | 3.23 | 5.53 |
| 90th Percentile | 23.63 | 2.45 | 3.90 |
| **Small Cap Equity Pool** ● | 26.87 | 2.15 | 3.69 |

**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 09/30/21

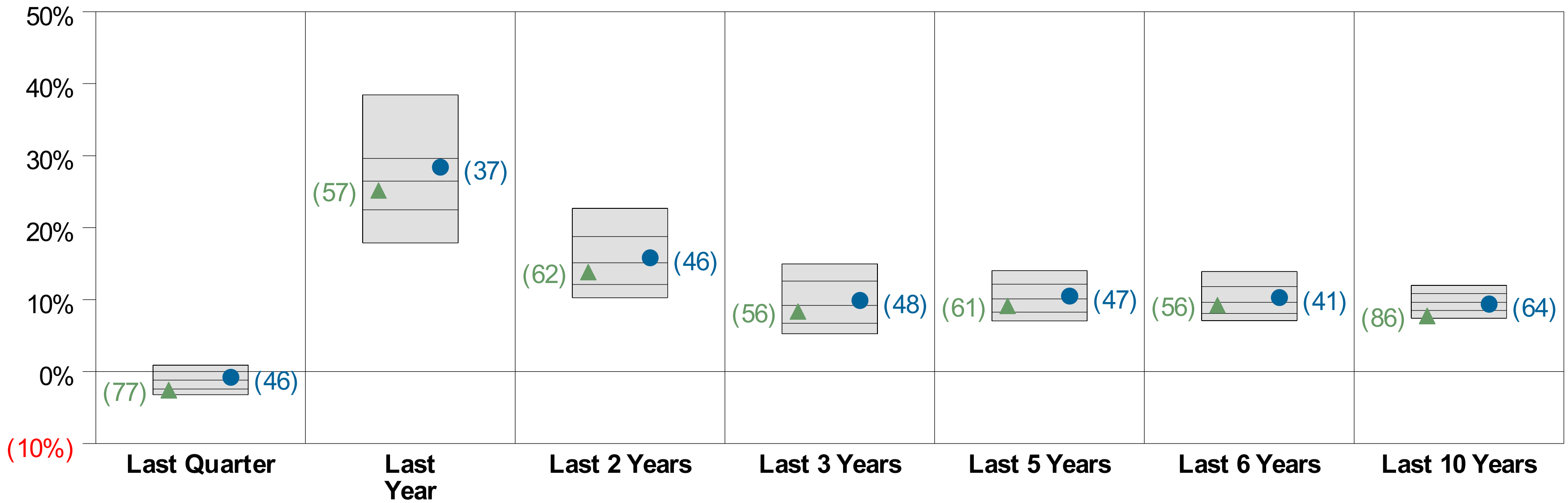
## Performance vs Public Fund - International Equity (Gross)


| | Last Quarter | Last Year | Last 2 Years | Last 3 Years | Last 5 Years | Last 6 Years | Last 10 Years |
|---|---|---|---|---|---|---|---|
| 10th Percentile | (0.56) | 30.66 | 20.23 | 13.07 | 12.46 | 12.38 | 10.39 |
| 25th Percentile | (1.42) | 28.32 | 18.01 | 11.42 | 11.36 | 11.27 | 9.69 |
| Median | (2.42) | 25.89 | 15.85 | 9.75 | 10.22 | 10.09 | 8.63 |
| 75th Percentile | (3.39) | 22.73 | 13.39 | 8.72 | 9.45 | 9.42 | 8.06 |
| 90th Percentile | (6.58) | 19.12 | 11.97 | 6.97 | 8.49 | 8.69 | 7.01 |
| Global Equity ex-US ● A | (2.22) | 26.45 | 15.37 | 9.27 | 9.70 | 9.82 | 8.60 |
| MSCI EAFE Index ■ B | (0.45) | 25.73 | 12.41 | 7.62 | 8.81 | 8.43 | 8.10 |
| Int'l Equity Target ▲ | (2.56) | 25.16 | 13.82 | 8.34 | 9.16 | 9.17 | 7.59 |

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

# International Equity ex Emerging Markets through 09/30/21

## 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 | 0.91 | 38.45 | 22.67 | 14.95 | 14.02 | 13.89 | 11.98 |
| 25th Percentile | 0.01 | 29.61 | 18.78 | 12.57 | 12.16 | 11.81 | 10.85 |
| Median | (1.19) | 26.46 | 15.12 | 9.18 | 10.11 | 9.60 | 9.62 |
| 75th Percentile | (2.41) | 22.48 | 12.10 | 6.69 | 8.25 | 8.08 | 8.49 |
| 90th Percentile | (3.21) | 17.87 | 10.26 | 5.24 | 7.04 | 7.08 | 7.43 |
| **Int'l Equity Pool (ex Emerging. Mkt)** ● | (1.02) | 28.17 | 15.57 | 9.63 | 10.26 | 10.06 | 9.12 |
| MSCI ACWI ex US IMI ▲ | (2.56) | 25.16 | 13.82 | 8.34 | 9.13 | 9.24 | 7.74 |

## International Equity ex Emerging Markets through 09/30/21

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| **Int'l Equity Pool (ex Emerging Market)** | **(1.02%)** | **28.17%** | **9.63%** | **10.26%** | **9.12%** |
| Arrowstreet ACWI ex -US | 0.12% | 39.90% | 15.33% | 14.25% | - |
| Baillie Gifford ACWI ex US | (4.00%) | 20.26% | 16.24% | 13.68% | - |
| Brandes Investment | (1.66%) | 38.82% | 5.00% | 7.40% | 7.86% |
| Capital Guardian | (1.97%) | 23.20% | 14.93% | 14.89% | 11.67% |
| L&G Sci Beta Dev ex US | (1.02%) | 25.25% | - | - | - |
| SSgA World ex US IMI | (0.46%) | 27.11% | - | - | - |
| MSCI EAFE Index | (0.45%) | 25.73% | 7.62% | 8.81% | 8.10% |
| MSCI ACWI ex-US IMI Index | (2.56%) | 25.16% | 8.34% | 9.13% | 7.74% |

# Emerging Markets through 09/30/21

## 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 | (3.68) | 35.99 | 20.59 | 14.94 | 13.48 | 14.95 | 10.07 |
| 25th Percentile | (6.16) | 24.95 | 17.87 | 12.54 | 11.68 | 13.01 | 8.50 |
| Median | (7.69) | 20.27 | 15.05 | 9.65 | 10.18 | 11.41 | 7.61 |
| 75th Percentile | (8.97) | 16.13 | 12.64 | 8.04 | 8.86 | 10.30 | 6.86 |
| 90th Percentile | (10.90) | 13.76 | 10.92 | 6.79 | 7.80 | 9.34 | 5.62 |
| **Emerging Markets Pool** ● | (7.59) | 18.84 | 12.60 | 7.84 | 7.07 | 9.13 | 4.90 |
| MSCI EM ▲ | (8.09) | 18.20 | 14.31 | 8.59 | 9.23 | 10.46 | 6.09 |

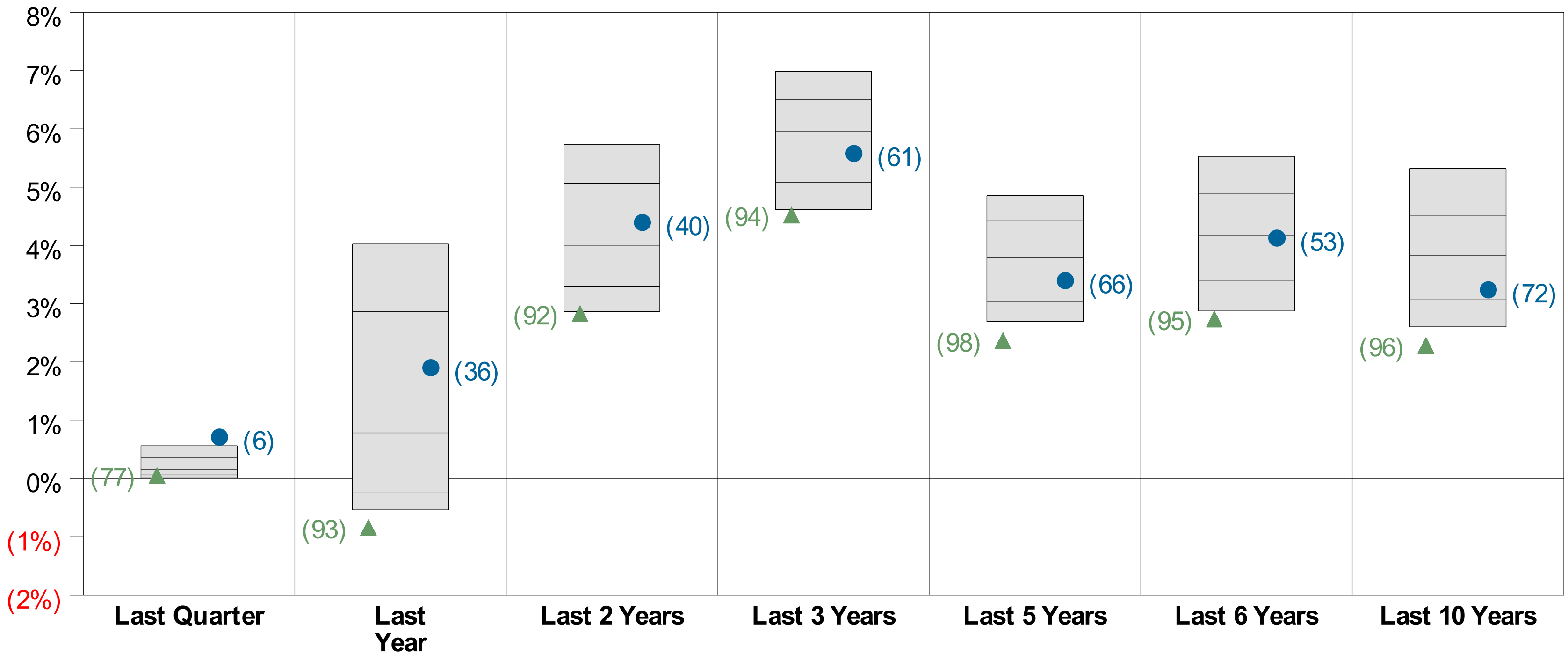
- After underperforming by 3.76% in 2Q17, 1.38% in 3Q17, 1.68% in 4Q17, 4.03% in 2Q18, 1.87% in 1Q19, 1.41% in 4Q19, 0.94% in 1Q21, 0.47% in 2Q21, the Emerging Markets Pool outperformed the benchmark by 0.64% over the last year, 0.50% in 3Q21 and ranks above median over the last quarter.
- DRZ and Lazard were liquidated and L&G Scientific Beta was funded in 4Q19, leaving only passive and smart beta approaches within the emerging markets equity space.

## Emerging Markets Pool through 09/30/21

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| **Emerging Markets Pool** | **(7.59%)** | **18.84%** | **7.84%** | **7.07%** | **4.90%** |
| SSgA Emerging Markets | (8.12%) | 17.73% | - | - | - |
| L&G SciBeta EM | (6.32%) | 21.38% | - | - | - |
| MSCI EM | (8.09%) | 18.20% | 8.59% | 9.23% | 6.09% |

## Total Fixed Income as of 09/30/21

### 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 | 0.56 | 4.02 | 5.74 | 6.99 | 4.85 | 5.53 | 5.32 |
| 25th Percentile | 0.35 | 2.87 | 5.07 | 6.50 | 4.42 | 4.88 | 4.51 |
| Median | 0.15 | 0.78 | 3.99 | 5.95 | 3.80 | 4.17 | 3.83 |
| 75th Percentile | 0.06 | (0.25) | 3.30 | 5.08 | 3.04 | 3.40 | 3.07 |
| 90th Percentile | 0.01 | (0.54) | 2.86 | 4.61 | 2.69 | 2.87 | 2.60 |
| **Total Fixed Income Pool** ● | 0.68 | 1.87 | 4.36 | 5.55 | 3.37 | 4.09 | 3.21 |
| Fixed Income Target ▲ | 0.05 | (0.84) | 2.83 | 4.52 | 2.36 | 2.74 | 2.28 |

- The Total Fixed Income Pool portfolio outperformed the Fixed Income Target in all time periods shown.
- The transition from intermediate Treasury to Aggregate mandates was completed during the fourth quarter of 2019.

# Total Fixed Income through 09/30/21

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| **Fixed Income** | **0.68%** | **1.87%** | **5.55%** | **3.37%** | **3.21%** |
| Fixed Income Target | 0.05% | (0.84%) | 4.52% | 2.36% | 2.28% |
| Blmbg Treasury Intmdt | (0.01%) | (1.38%) | 4.00% | 1.98% | 1.81% |
| | | | | | |
| ARMB US Aggregate | 0.03% | (0.88%) | - | - | - |
| | | | | | |
| **Opportunistic Fixed Income** | **0.61%** | **6.32%** | **5.24%** | **5.33%** | **6.70%** |
| FIAM Tactical Bond | 0.45% | 5.21% | 7.30% | 5.47% | - |
| Blmbg Aggregate | 0.05% | (0.90%) | 5.36% | 2.94% | 3.01% |
| FIAM REHI | 1.30% | 13.68% | 4.44% | 4.53% | - |
| Blmbg:Universal CMBS xAaa | 0.03% | 8.11% | 6.17% | 4.58% | 5.53% |
| | | | | | |
| **Alternative Fixed Income** | **5.60%** | **13.81%** | **-** | **-** | **-** |
| Crestline (Blue Glacier) | 6.35% | 14.29% | 7.05% | 8.25% | 7.29% |
| Prisma Capital (Polar Bear) | 0.66% | 6.31% | 2.45% | 3.60% | 3.50% |
| Crestline Specialty Lending Fund | 6.00% | 25.97% | 17.33% | 15.46% | - |
| Crestline Specialty Lndg Fd II | 4.05% | 19.21% | 12.97% | - | - |
| HFRI Fund of Funds Index | 0.74% | 14.31% | 6.50% | 5.80% | 4.46% |
| T-Bills + 5% | 1.24% | 5.07% | 6.18% | 6.16% | 5.63% |

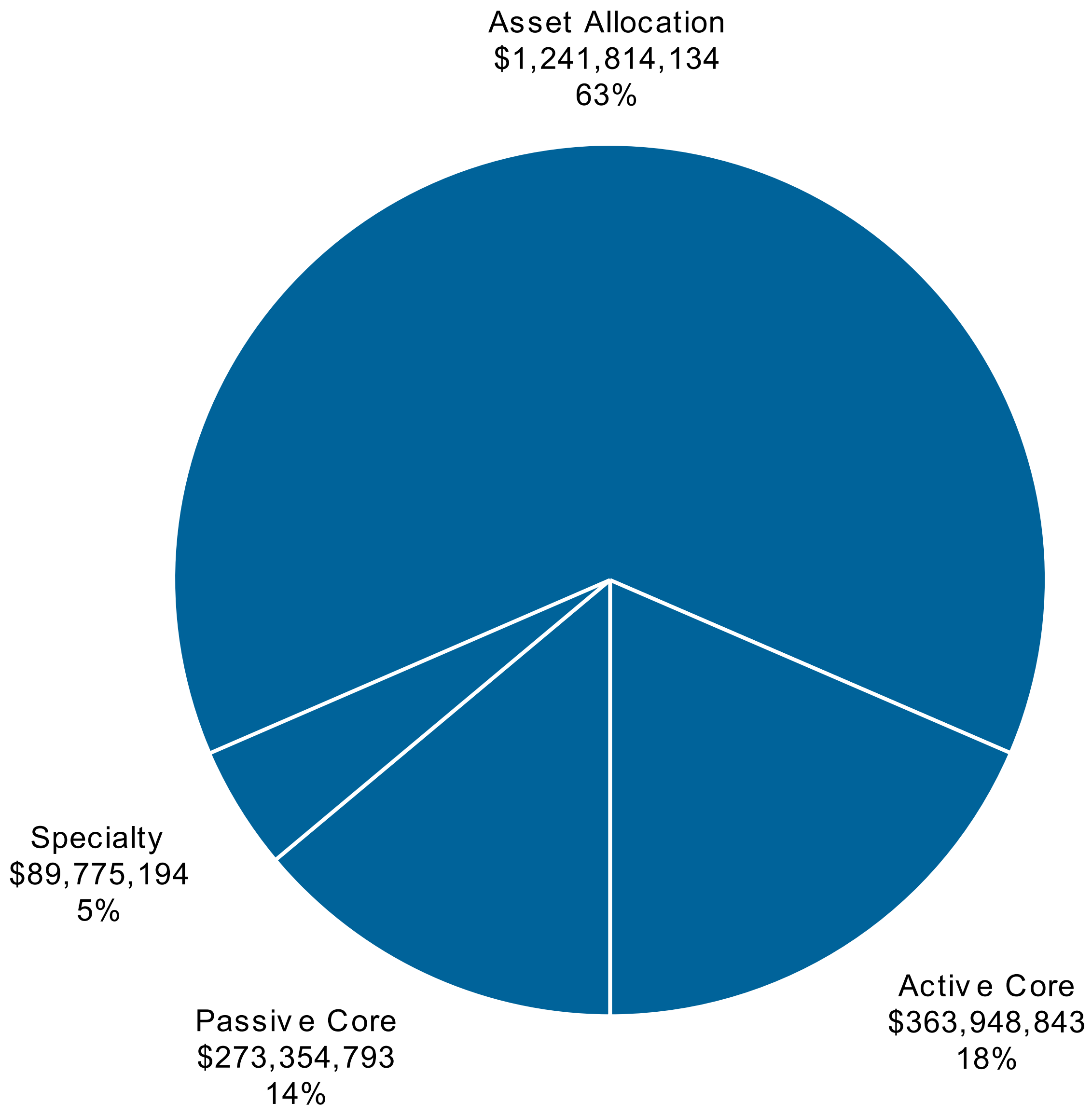
# Opportunistic through 09/30/21

| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| **Opportunistic (T)** | **0.34%** | **17.56%** | **9.08%** | **-** | **-** |
| **Alternative Equity Strategies** | **1.62%** | **25.27%** | **16.62%** | **14.57%** | **12.41%** |
| McKinley Healthcare Transformation | 1.62% | 25.27% | - | - | - |
| MSCI ACWI | (1.05%) | 27.44% | 12.58% | 13.20% | 11.90% |
| **Other Opportunities** | **2.59%** | **(4.74%)** | **(1.31%)** | **0.01%** | **-** |
| Project Pearl | (0.69%) | (13.93%) | - | - | - |
| Schroders Insurance Linked | 5.27% | 2.79% | (0.24%) | (0.15%) | - |
| T-Bills + 6% | 1.48% | 6.07% | 7.18% | 7.16% | 6.63% |
| **Tactical Allocation Strategies** | **(0.33%)** | **20.22%** | **11.71%** | **-** | **-** |
| PineBridge | 0.15% | 21.87% | 10.64% | - | - |
| Pine Bridge Benchmark | (2.22%) | 12.78% | 6.65% | 6.01% | 5.10% |
| Fidelity Signals | (0.80%) | 18.62% | 12.77% | - | - |
| Fidelity Signals Benchmark | (0.63%) | 16.33% | 9.98% | 9.21% | 8.55% |
| **Alternative Beta** | **1.35%** | **4.15%** | **(3.43%)** | **(2.72%)** | **-** |
| Man Group Alternative Risk Premia | 1.35% | 4.15% | (0.94%) | - | - |
| T-Bills + 5% | 1.24% | 5.07% | 6.18% | 6.16% | 5.63% |

# Participant-Directed Plans

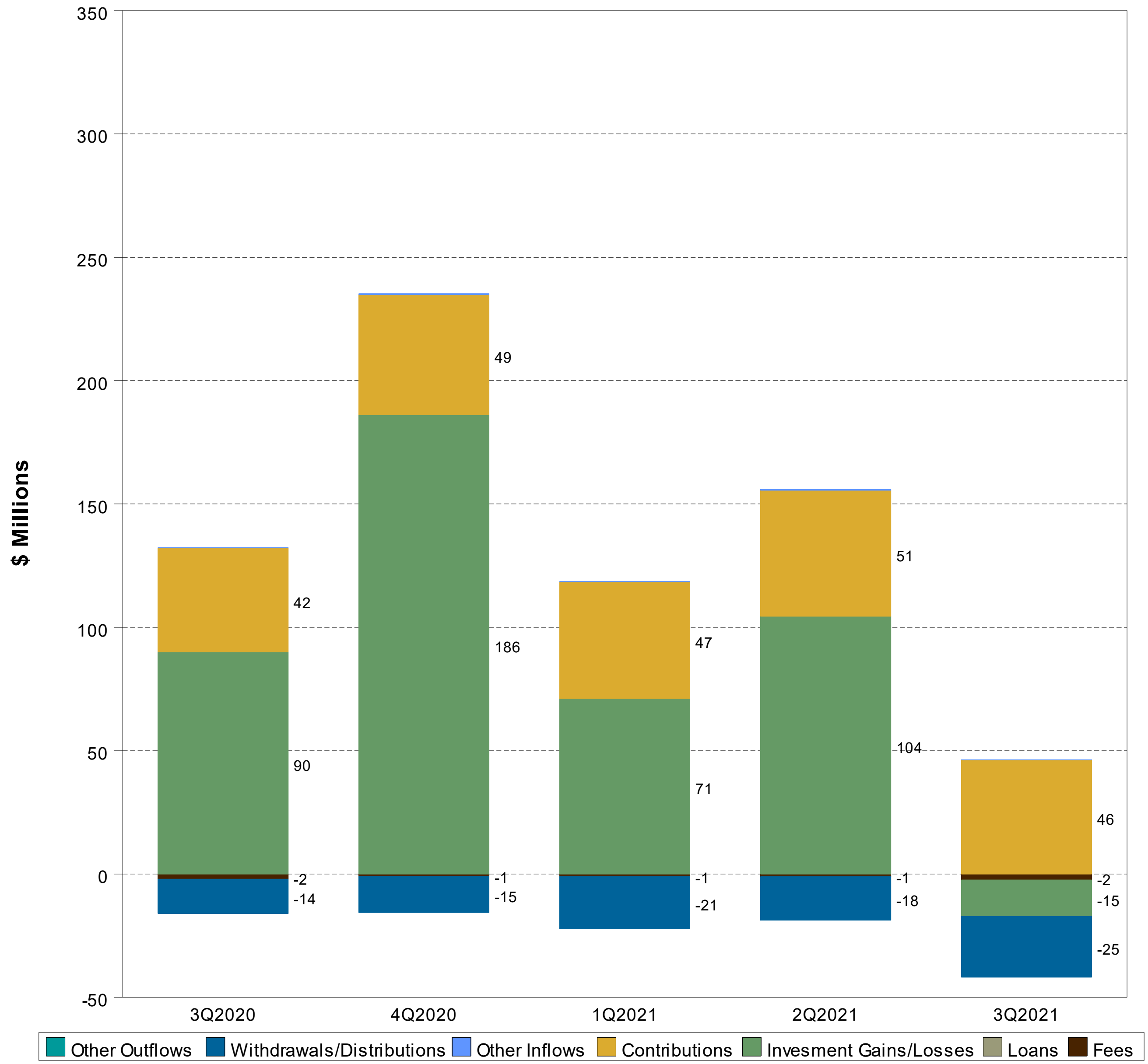
# PERS DC Plan

September 30, 2021



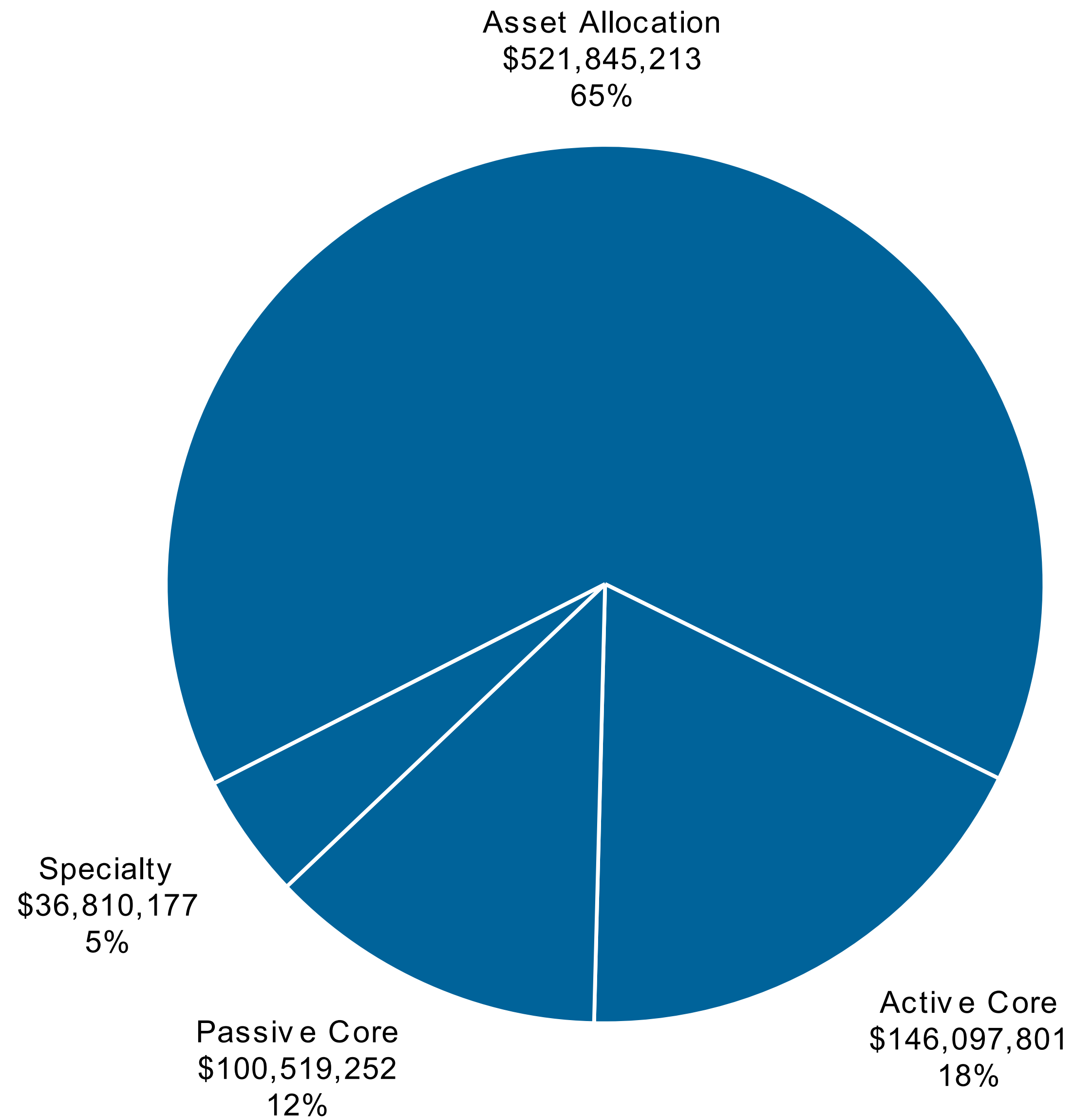
# PERS DC Plan: Asset Changes

September 30, 2021



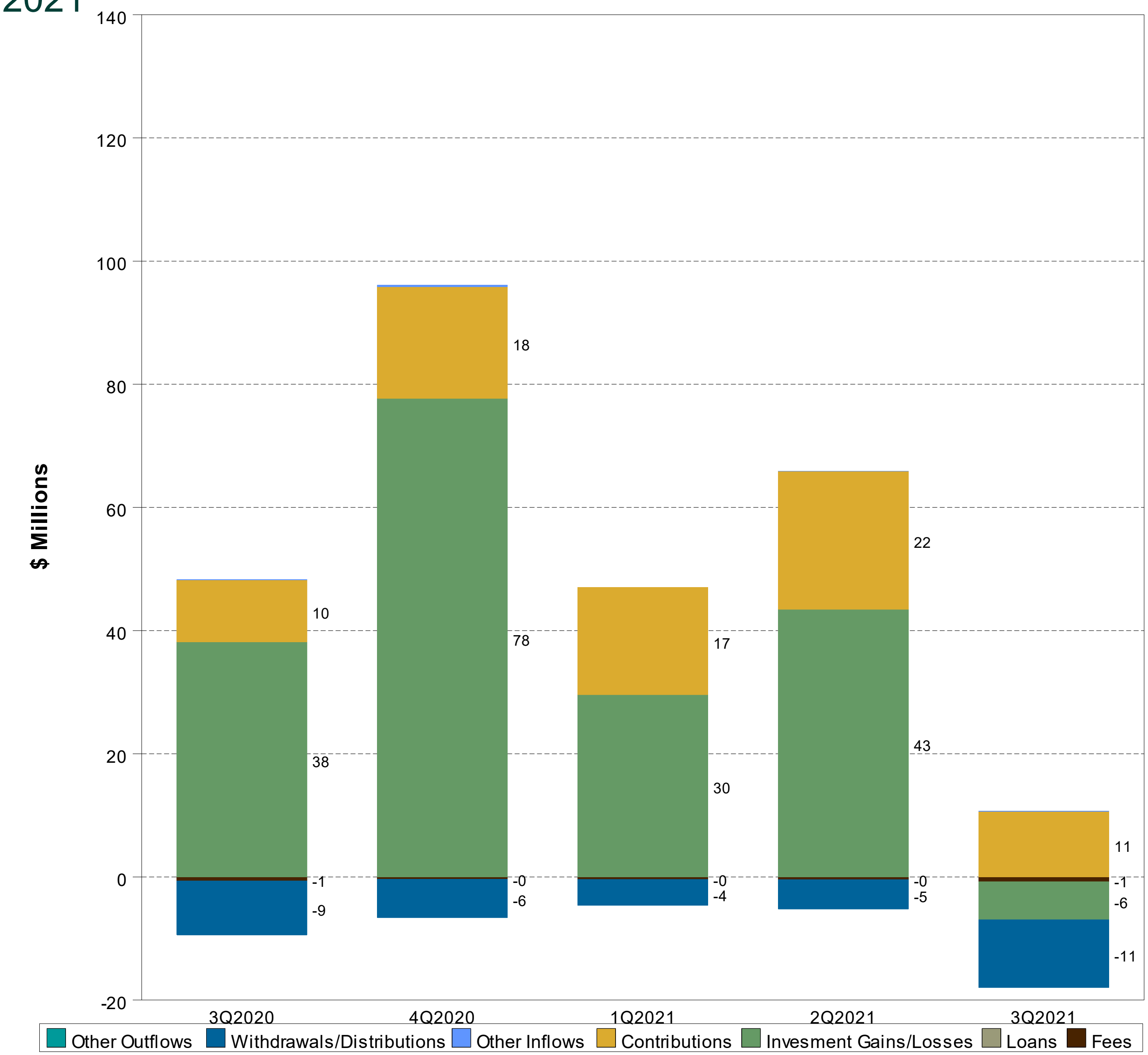
# TRS DC Plan

September 30, 2021



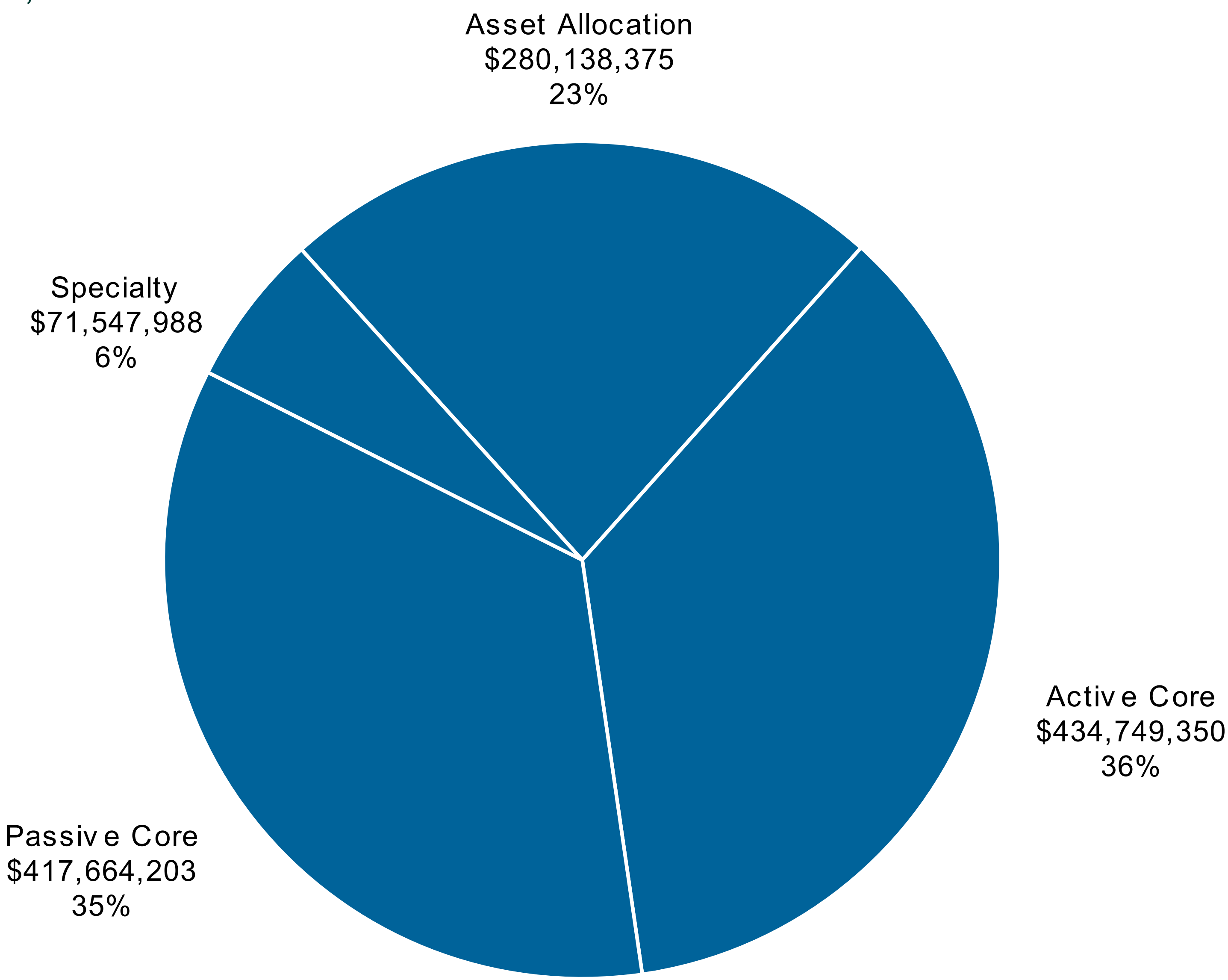
# TRS DC Plan: Asset Changes

September 30, 2021



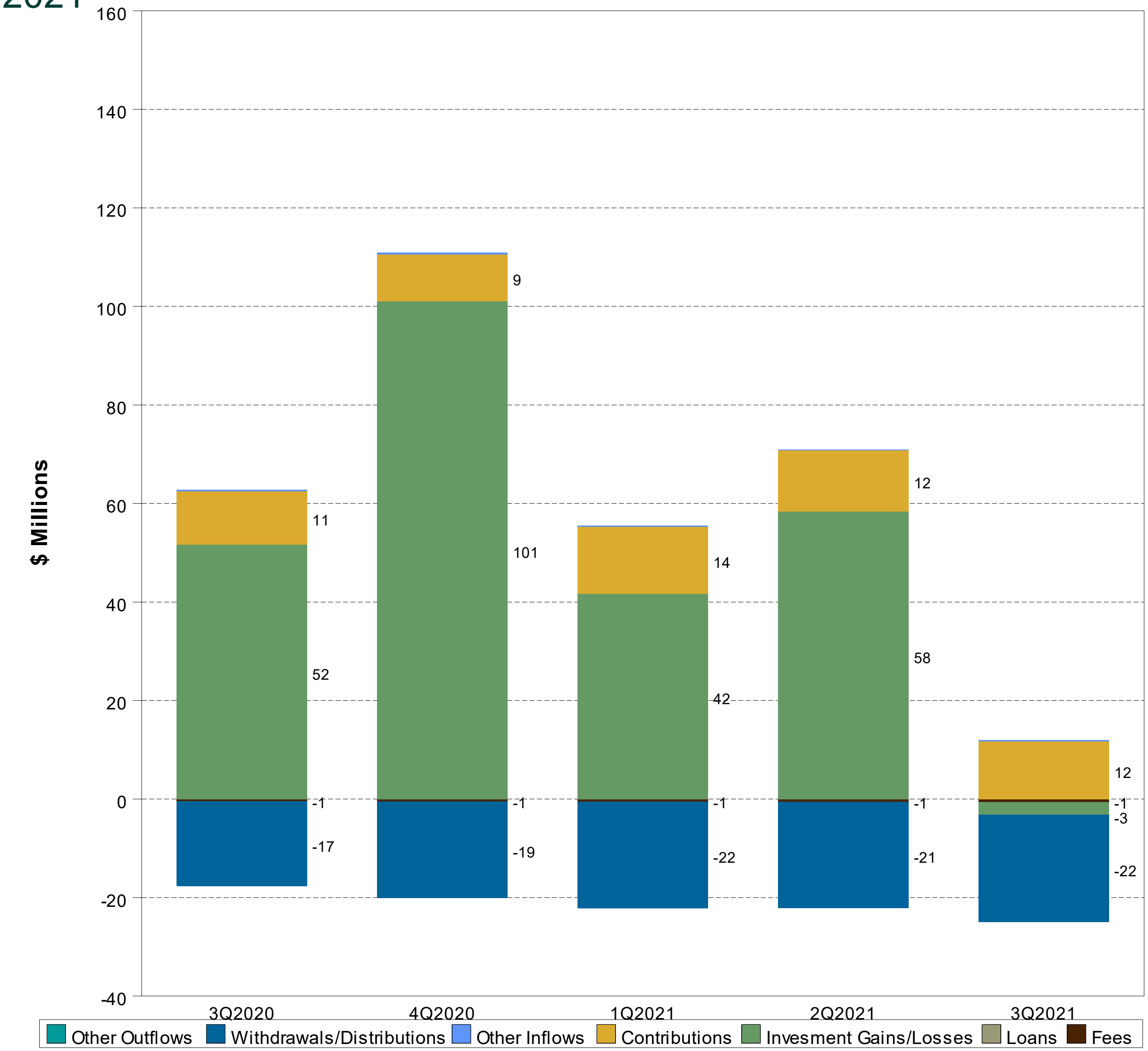
# Deferred Comp Plan

September 30, 2021



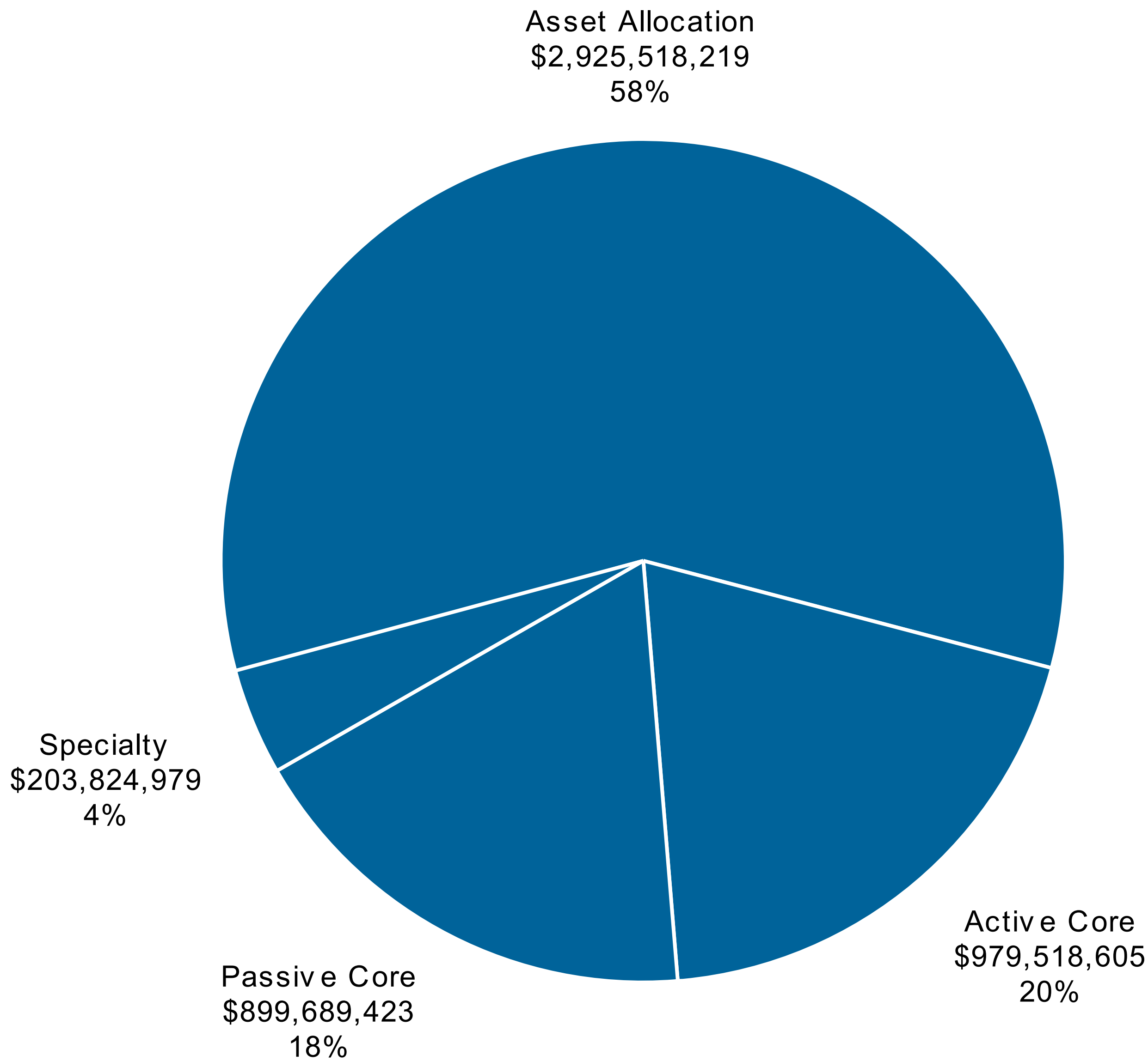
# Deferred Comp Plan: Asset Changes

September 30, 2021



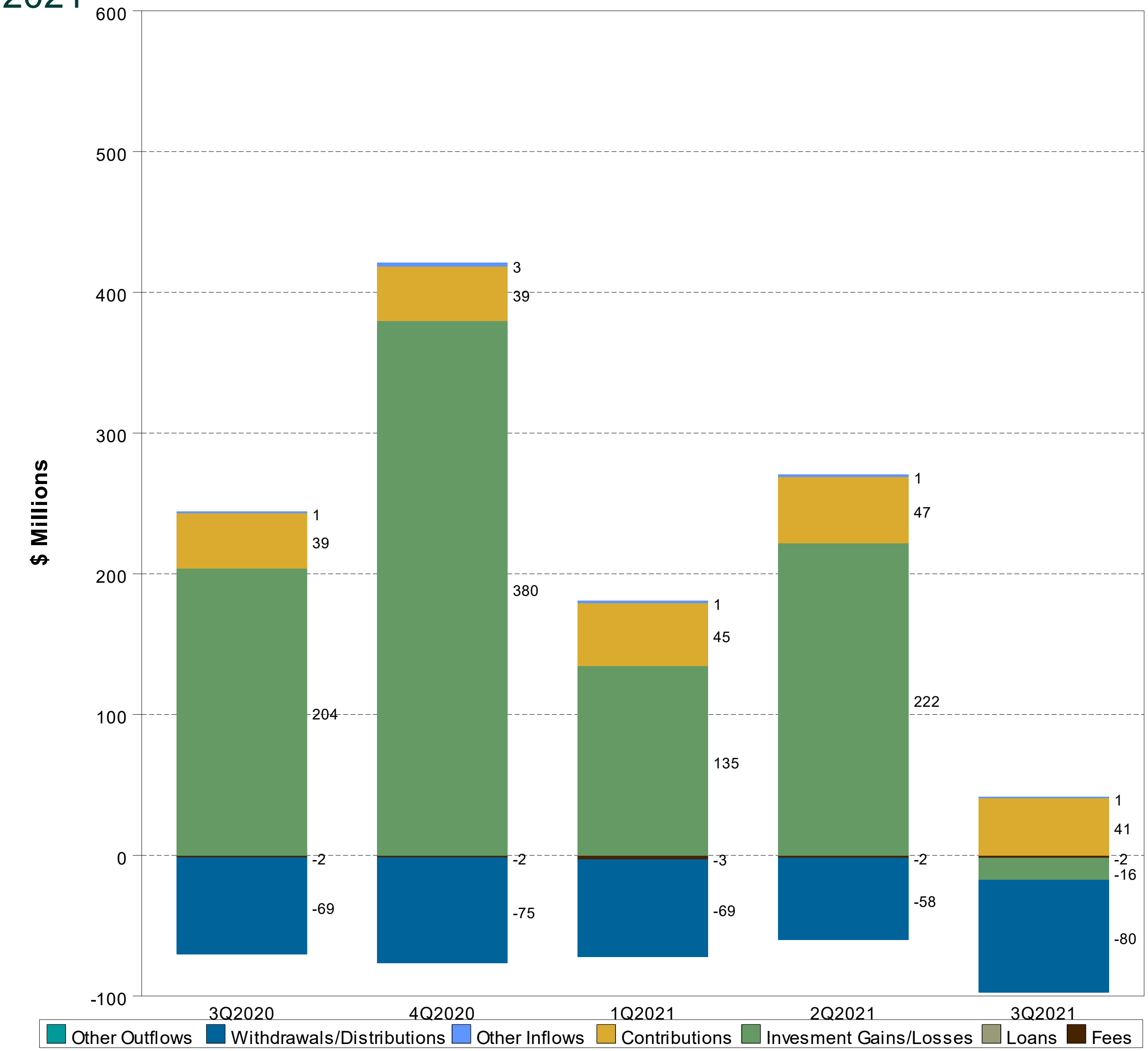
## SBS Fund

September 30, 2021



# SBS Fund: Asset Changes

September 30, 2021



# Individual Account Option Performance: 09/30/21

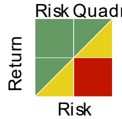
## Balanced & Target Date Funds

| 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**<br>**CAI MA Tgt Alloc Cons MFs** | **-0.2** 49 | **9.5** 54 | **7.9** 20 | **6.8** 23 | **5.9** 19 | **6.4** 69 | | **-0.2** 35 | **0.3** 100 | **0.9** 2 |
| Passive Target | -0.2 44 | 9.7 52 | 7.9 22 | 6.9 21 | 5.9 19 | 6.5 67 | | | | 0.9 3 |
| **Alaska Long-Term Balanced**<br>**CAI MA Tgt Alloc Mod MFs** | **-0.5** 56 | **16.8** 55 | **10.2** 32 | **9.8** 33 | **8.1** 34 | **10.8** 60 | | **-0.6** 56 | **0.3** 100 | **0.8** 24 |
| Passive Target | -0.5 54 | 17.1 53 | 10.3 31 | 9.9 31 | 8.2 31 | 11.0 58 | | | | 0.8 23 |
| **Target 2010 Trust**<br>**CAI Tgt Date 2010** | **-0.3** 76 | **10.9** 49 | **7.7** 78 | **7.3** 42 | **6.2** 47 | **7.4** 52 | | **-0.5** 76 | **0.3** 100 | **0.8** 31 |
| Custom Index | -0.2 64 | 11.1 37 | 7.8 74 | 7.4 39 | 6.3 46 | 7.5 49 | | | | 0.8 32 |
| **Target 2015 Trust**<br>**CAI Tgt Date 2015** | **-0.3** 75 | **12.6** 53 | **8.5** 57 | **8.3** 24 | **7.0** 30 | **8.5** 42 | | **-0.2** 31 | **0.3** 100 | **0.8** 17 |
| Custom Index | -0.3 72 | 12.9 45 | 8.5 53 | 8.4 23 | 7.0 30 | 8.7 41 | | | | 0.8 28 |
| **Target 2020 Trust**<br>**CAI Tgt Date 2020** | **-0.4** 68 | **15.3** 28 | **9.4** 31 | **9.5** 13 | **7.9** 14 | **10.2** 25 | | **-0.2** 18 | **0.3** 100 | **0.8** 22 |
| Custom Index | -0.4 60 | 15.5 26 | 9.4 29 | 9.5 13 | 7.9 15 | 10.4 24 | | | | 0.8 23 |
| **Target 2025 Trust**<br>**CAI Tgt Date 2025** | **-0.6** 67 | **18.0** 22 | **10.3** 26 | **10.5** 7 | **8.7** 8 | **11.8** 18 | | **-0.3** 14 | **0.3** 100 | **0.8** 14 |
| Custom Index | -0.5 61 | 18.2 16 | 10.4 24 | 10.6 7 | 8.7 8 | 12.0 15 | | | | 0.8 15 |
| **Target 2030 Trust**<br>**CAI Tgt Date 2030** | **-0.6** 48 | **20.4** 24 | **11.1** 21 | **11.5** 11 | **9.4** 11 | **13.2** 26 | | **-0.5** 26 | **0.3** 100 | **0.8** 12 |
| Custom Index | -0.6 41 | 20.8 18 | 11.2 19 | 11.6 6 | 9.4 10 | 13.4 25 | | | | 0.8 12 |
| **Target 2035 Trust**<br>**CAI Tgt Date 2035** | **-0.7** 43 | **22.5** 35 | **11.8** 26 | **12.3** 17 | **10.0** 16 | **14.5** 43 | | **-0.4** 26 | **0.3** 100 | **0.8** 6 |
| Custom Index | -0.7 35 | 22.8 32 | 11.9 24 | 12.4 14 | 10.0 16 | 14.7 40 | | | | 0.8 6 |
| **Target 2040 Trust**<br>**CAI Tgt Date 2040** | **-0.8** 34 | **24.4** 47 | **12.3** 25 | **12.9** 17 | **10.4** 14 | **15.5** 52 | | **-0.4** 26 | **0.3** 100 | **0.8** 5 |
| Custom Index | -0.7 25 | 24.7 44 | 12.4 21 | 13.1 13 | 10.5 13 | 15.6 49 | | | | 0.8 5 |
| **Target 2045 Trust**<br>**CAI Tgt Date 2045** | **-0.9** 34 | **26.0** 53 | **12.8** 21 | **13.3** 13 | **10.7** 11 | **16.2** 62 | | **-0.5** 25 | **0.3** 99 | **0.7** 6 |
| Custom Index | -0.8 26 | 26.3 50 | 12.9 19 | 13.5 11 | 10.8 11 | 16.4 58 | | | | 0.8 6 |

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: 09/30/21

## 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** | **-0.9** 29 | **26.0** 65 | **12.8** 28 | **13.3** 12 | **10.7** 14 | **16.2** 74 | | **-0.5** 32 | **0.3** 99 | **0.7** 5 |
| **CAI Tgt Date 2050** Custom Index | -0.8 25 | 26.3 62 | 12.9 19 | 13.5 8 | 10.8 11 | 16.4 71 | | | | 0.8 5 |
| **Target 2055 Trust** | **-0.9** 29 | **26.0** 76 | **12.8** 31 | **13.3** 16 | **10.7** 18 | **16.2** 80 | | **-0.5** 39 | **0.3** 100 | **0.7** 6 |
| **CAI Tgt Date 2055** Custom Index | -0.8 27 | 26.3 72 | 12.9 24 | 13.5 13 | 10.8 17 | 16.4 76 | | | | 0.8 6 |
| **Target 2060 Trust** | **-0.9** 31 | **25.9** 73 | **12.7** 37 | **13.2** 24 | | **16.2** 81 | | **-0.9** 73 | **0.3** 100 | **0.7** 8 |
| **CAI Tgt Date 2060** Custom Index | -0.8 25 | 26.3 71 | 12.9 27 | 13.5 15 | | 16.4 73 | | | | 0.8 7 |
| **Target 2065 Trust** | **-0.8** 19 | **25.9** 65 | | | | | | | | |
| **CAI Tgt Date 2065** Custom Index | -0.8 19 | 26.3 62 | | | | | | | | |

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: 09/30/21

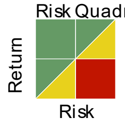
## Passive Strategies

| 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)** | **0.6** 28 | **30.0** 24 | **16.0** 14 | **16.9** 14 | **14.0** 15 | **17.4** 49 | | **-0.9** 11 | **0.0** 79 | **0.9** 13 |
| **Callan S&P 500 Index MFs** | | | | | | | | | | |
| S&P 500 Index | 0.6 5 | 30.0 9 | 16.0 7 | 16.9 9 | 14.0 7 | 17.4 34 | | | | 0.9 8 |
| **SSgA Russell 3000 Index Fund (i)** | **-0.1** 54 | **31.8** 34 | **16.0** 49 | **16.8** 48 | **13.9** 45 | **18.5** 58 | | **-0.5** 62 | **0.0** 100 | **0.8** 51 |
| **CAI Mut Fd: Large Cap Broad Style (Net)** | | | | | | | | | | |
| Russell 3000 Index | -0.1 55 | 31.9 34 | 16.0 49 | 16.9 47 | 13.9 45 | 18.6 56 | | | | 0.8 51 |
| **SSgA World Equity ex-US Index Fund (i)** | **-3.4** 79 | **23.3** 70 | **8.0** 53 | **9.0** 49 | **5.8** 58 | **18.5** 64 | | **0.1** 46 | **0.9** 100 | **0.4** 49 |
| **CAI MF: Non-U.S. Equity Style** | | | | | | | | | | |
| MSCI ACWI x U.S. Index (Net) | -3.0 77 | 23.9 65 | 8.0 53 | 8.9 51 | 5.7 59 | 18.1 77 | | | | 0.4 48 |
| **BlackRock Passive US Bd Index Fund (i)** | **0.1** 58 | **-0.9** 94 | **5.3** 92 | | | | | | **0.0** 99 | |
| **Callan Core Bond MFs** | | | | | | | | | | |
| Blmbg Aggregate | 0.1 65 | -0.9 94 | 5.4 91 | 2.9 92 | 3.3 81 | 3.7 77 | | | | 0.5 91 |

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: 09/30/21

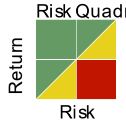
## Active Equity, Stable Value, and Money Market

| 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** | **1.8** 24 | **22.3** 56 | | | | | | | | |
| **Callan Real Assets MFs** | | | | | | | | | | |
| Strategic Completion Custom Index | 1.9 22 | 22.5 55 | | | | | | | | |
| **Northern Trust ESG Fund** | **0.9** 23 | **31.3** 37 | **17.3** 42 | | | | | | **0.1** 100 | |
| **Callan Lg Cap Broad MF** | | | | | | | | | | |
| MSCI USA ESG | 0.9 23 | 31.6 36 | 17.6 41 | 17.2 47 | 13.8 46 | 16.5 92 | | | | 1.0 38 |
| **International Equity Fund** | **-3.6** 80 | **27.3** 33 | **10.5** 35 | **9.5** 45 | | **19.6** 40 | | **0.2** 43 | **3.0** 89 | **0.4** 49 |
| **CAI Mut Fd: Non-U.S. Equity Style** | | | | | | | | | | |
| MSCI ACWI ex US Index | -3.0 77 | 23.9 65 | 8.0 53 | 8.9 51 | 5.7 59 | 18.1 77 | | | | 0.4 48 |
| **T. Rowe Price Small Cap** | **-1.1** 33 | **42.1** 51 | **16.8** 26 | **18.1** 33 | **15.2** 33 | **23.0** 92 | | **0.8** 11 | **6.9** 81 | **0.7** 23 |
| **CAI Mut Fd: Sm Cap Broad Style** | | | | | | | | | | |
| Russell 2000 Index | -4.4 92 | 47.7 36 | 10.5 61 | 13.5 59 | 11.9 56 | 26.7 49 | | | | 0.5 61 |
| **T. Rowe Price Stable Value** | **0.5** 4 | **2.0** 4 | **2.4** 1 | **2.4** 1 | **2.4** 1 | **0.1** 90 | | **3.4** 5 | **0.4** 41 | **10.7** 2 |
| **Callan Stable Value CT** | | | | | | | | | | |
| FTSE 3 Mo T-Bill | 0.0 99 | 0.1 99 | 1.1 98 | 1.1 97 | 0.8 99 | 0.4 1 | | | | -0.1 97 |
| **SSgA Inst Treasury Money Market** | **0.0** 100 | **0.0** 100 | **1.0** 12 | **1.0** 8 | **0.7** 11 | **0.4** 11 | | **-3.1** 28 | **0.0** 95 | **-0.3** 8 |
| **Callan Money Market Funds** | | | | | | | | | | |
| FTSE 3 Mo T-Bill | 0.0 9 | 0.1 7 | 1.1 3 | 1.1 2 | 0.8 2 | 0.4 5 | | | | -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

# Callan Update

# Published Research Highlights from 3Q21

**Comparing Actuarial and Consultant Rates of Return**

**The Role of Target Date Funds in Retirement**

**Infrastructure and Real Estate Debt in Portfolios**

**Research Café: Property Technology**

## Recent Blog Posts

**GPs Take 'Credit' for Higher IRRs**
Jonathan Farr

**Seeking Yield in All the Right Places**
Nathan Wong

**PCE vs. CPI: What's the Difference?**
Fanglue Zhou

### Additional Reading

*Private Equity Trends* quarterly newsletter
Active vs. Passive quarterly charts
*Capital Markets Review* quarterly newsletter
Monthly Updates to the Periodic Table
*Market Pulse Flipbook* quarterly markets update

# Callan Institute Events

## Upcoming conferences, workshops, and webinars

### Callan College

**Intro to Investments - Learn the Fundamentals**

This course is for institutional investors, including trustees and staff members of nonprofits, and public and corporate funds. This session familiarizes trustees and staff with basic investment theory, terminology, and practices.

**Join our next LIVE session in Chicago** (1.5-day session)**:**

**December 1-2, 2021**

**Introductory Workshop for DC Plan Fiduciaries**

This one-day workshop centers on the fundamentals of administering a defined contribution (DC) plan. Designed primarily for ERISA fiduciaries and supporting staff members, attendees will gain a better understanding of the key responsibilities of an ERISA fiduciary and best practices for executing those responsibilities.

**Join our LIVE session in San Francisco:**

**March 23, 2022**

### Mark Your Calendar

**2022 National Conference**

**April 25-27, 2022, in San Francisco**

Palace Hotel
2 New Montgomery St, San Francisco, CA 94105

Watch your email for further details and an invitation.

### Webinars

**Research Café: DOL Cybersecurity Tips**

**Nov. 10, 2021 – 9:30am (PT)**

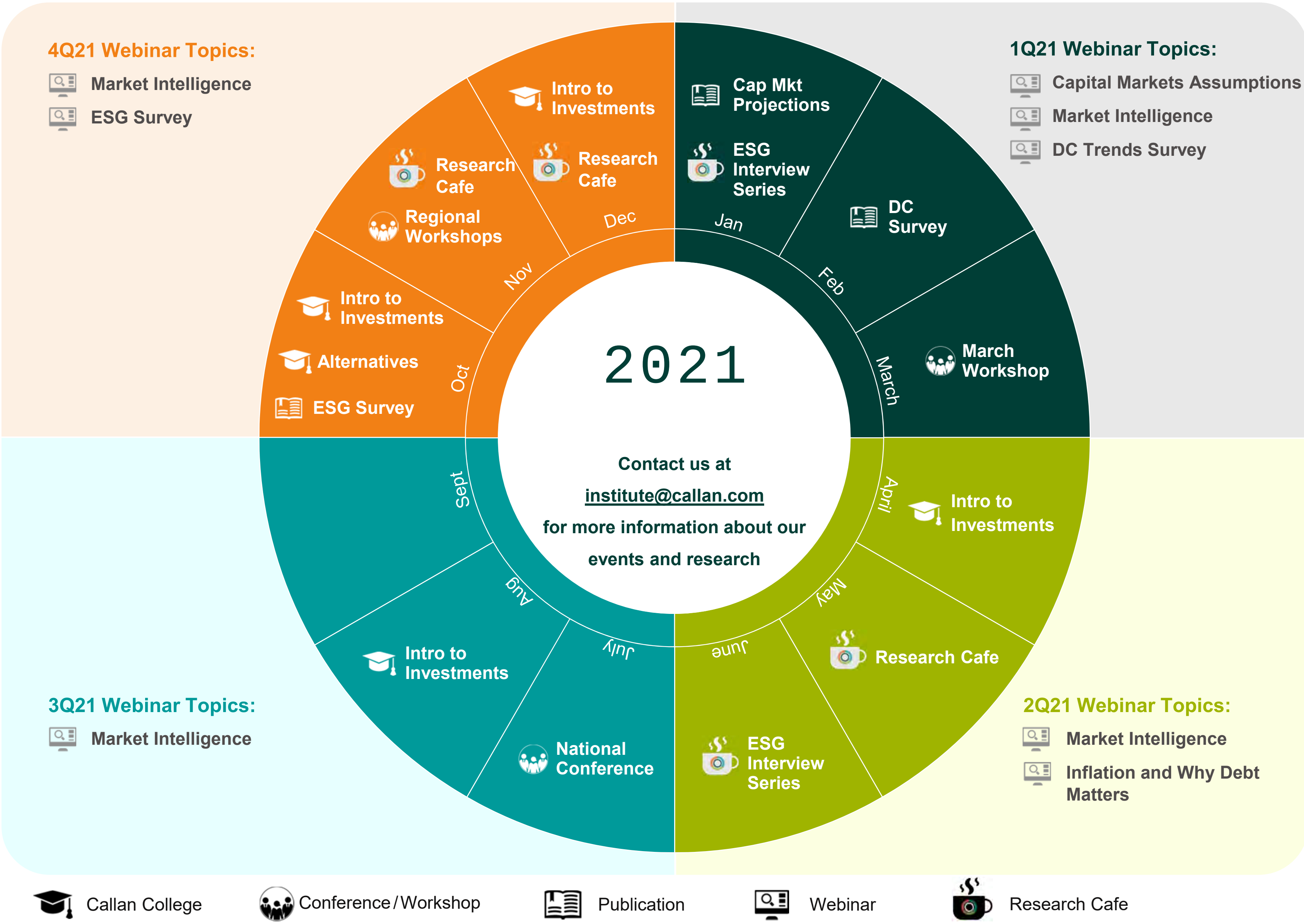
**Research Café: Dissecting the Overlap Between Listed Real Assets Categories and Benchmarks**

**Dec. 8, 2021 – 9:30am (PT)**

**Market Intelligence**

**Jan. 22, 2022 – 9:30am (PT)**

# Content Calendar – Callan Institute



# Callan Updates

## Firm updates by the numbers, as of September 30, 2021

**Total Associates: ~200**

**Ownership**

- 100% employees
- 22 new shareholders in 2021—a firm record
- 55% of shareholders identify as women or minority

**Total General and Fund Sponsor Consultants: more than 55**

**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 $3 trillion**

**"I'm thrilled that nearly two-thirds of our employees are now owners of the firm,"** said Callan CEO and Chief Research Officer Greg Allen**. "This sets us up to maintain our independence and stability as an organization for decades to come. It's good for our clients and empowering for our employees."**

# Disclaimers

This report is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.

This report may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.

Reference to or inclusion in this report of any product, service or entity should not be construed as a recommendation, approval, affiliation or endorsement of such product, service or entity by Callan.

Past performance is no guarantee of future results.

The statements made herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties such that actual results may differ materially from these statements. There is no obligation to update or alter any forward-looking statement, whether as a result of new information, future events or otherwise. Undue reliance should not be placed on forward-looking statements.

# ALASKA RETIREMENT MANAGEMENT BOARD

## Private Equity Annual Tactical Plan

## Staff Summary and Overview

Sean Howard, CFA
State Investment Officer

# Key Board Decisions

### Determine Investment Objective

- Fund's Purpose
- Governance – who makes which decisions?

### Determine Asset Allocation

- Strategic
- Tactical

### Oversee Implementation

- Manager Structure – number and types of manager allocations.
- Manager Selection

### Monitor Results

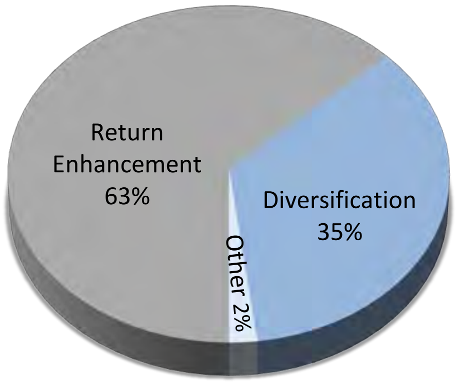
- Are the fund, asset classes and mandates performing as expected?
- Are they achieving objectives?

# ARMB Private Equity Program

- Private Equity Overview
- Market Review
- ARMB Portfolio
- 2020 Commitments
- Pacing Model
- Plan Recommendation
- Summary

# Overview – Private Equity Investment

- Why do fund sponsors invest in private equity?




Source: Goldman Sachs

- Private equity is expected to deliver long-term returns in excess of the public markets.

**Annualized Returns as of June 30, 2021**

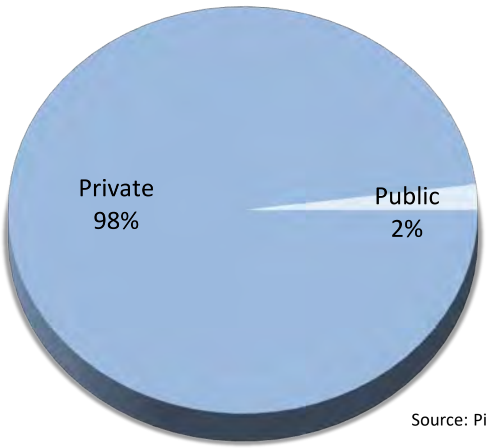
| Investment Type | 5 Year | 10 Year | 20 Year |
|---|---|---|---|
| Cambridge - All Private Equity | 19.7% | 14.1% | 12.3% |
| Public Equity | 15.0% | 11.1% | 8.1% |
| **Difference** | **4.7%** | **3.0%** | **4.2%** |

Source: Refinitiv/Cambridge Associates. Private equity returns are pooled IRR's across all regions and do not represent top quartile returns. The public equity return is an equally weighted blend of the S&P 500, Russell 2000, and MSCI EAFE and is a time-weighted return (TWR) which is not directly comparable to an internal rate of return (IRR).

# Overview – Unique Characteristics

- Positive Characteristics:
  - Larger, more diverse investment universe
  - Less efficient companies – opportunity to create value
  - Less efficient markets – pricing opportunities
  - Control and alignment of interests
  - Managed for long-term value

**Public and Private Companies**

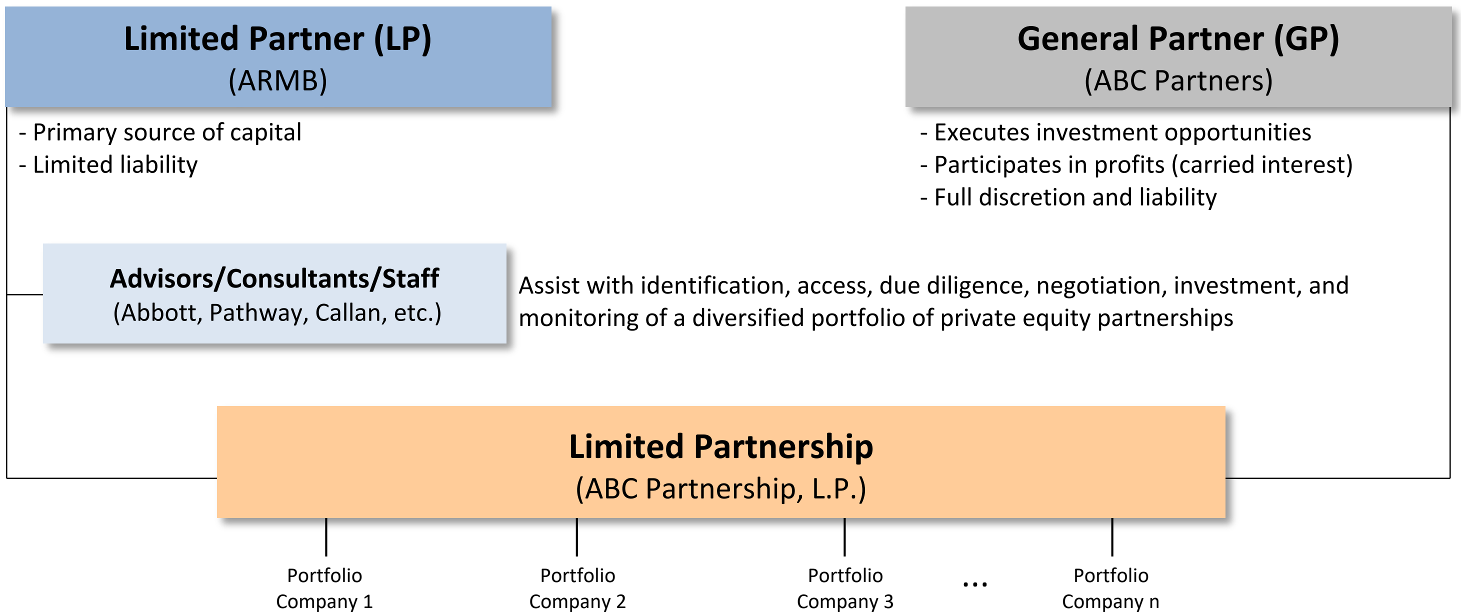



Source: Pitchbook

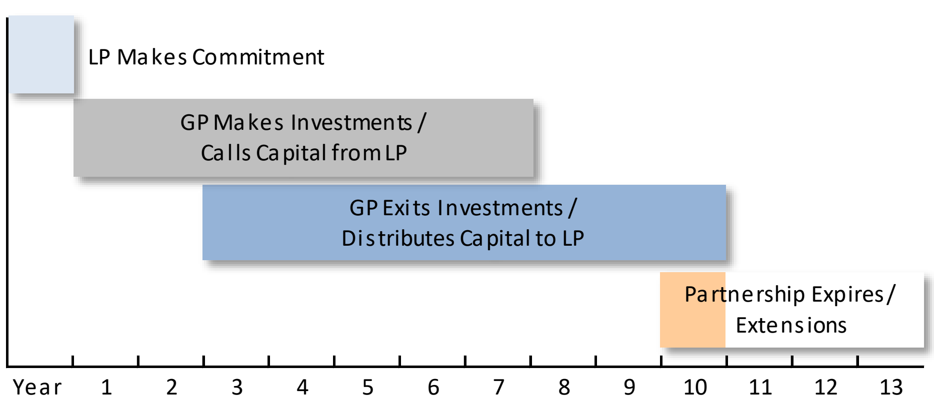
- Other Characteristics:
  - Illiquid, long-term investments
  - High fees and J-curve
  - Potential for high leverage
  - Portfolio transparency and valuation issues
  - Incomplete data and benchmarks

# Overview – Structure

- Private equity investments are typically made through limited partnerships:




- Private equity liquidity and cash flow characteristics:



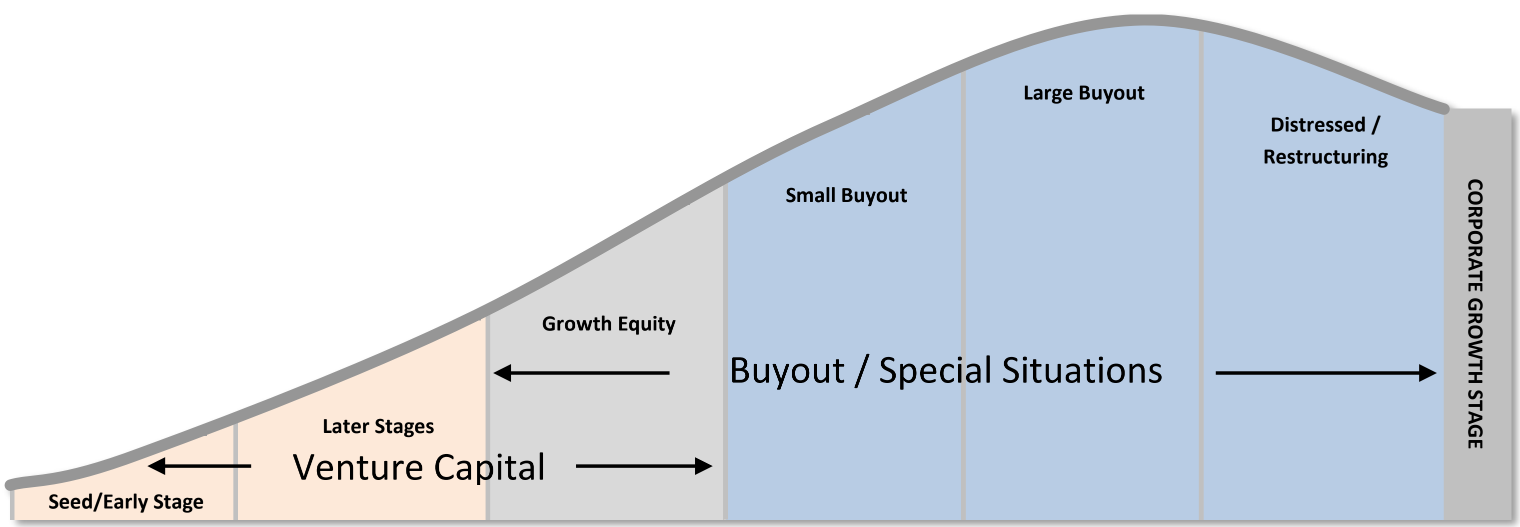
# Overview – Primary Strategies

Private equity partnerships are classified into three primary groups:

**Venture Capital** Investments in companies developing new products and services. Value creation focuses on managing entrepreneurial companies through high growth. Investments are generally riskier, minority positions.

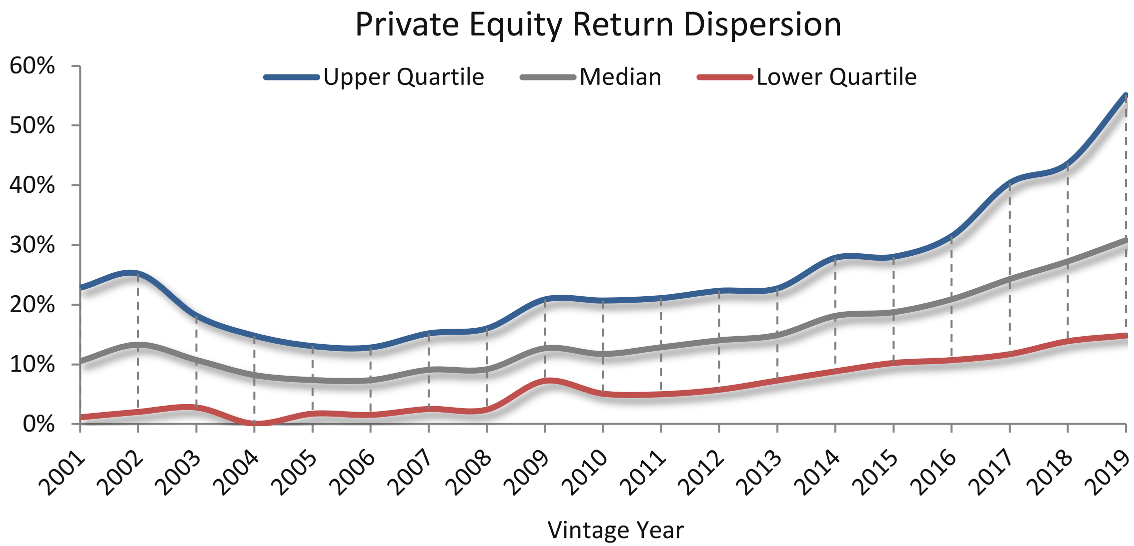
**Buyout** Control investments in more mature operating companies. Value creation generally focuses on driving operational and capital structure efficiency.

**Special Situations** Generally buyout style investments with a specialty focus; including groups that have a specific industry, investment style, or capital structure focus. Value creation focuses on specialized skills and efficiency.



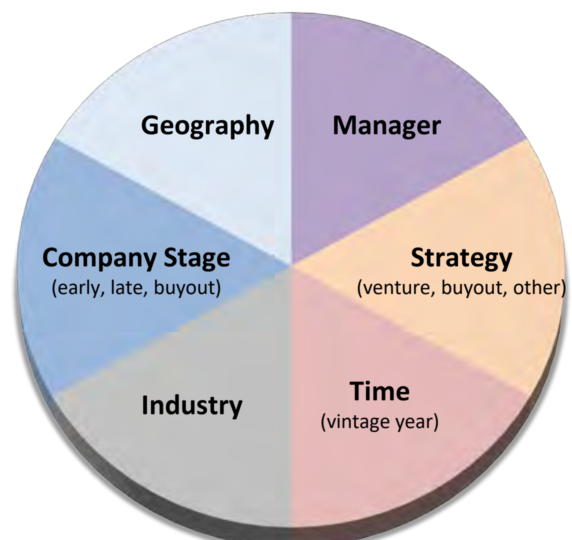
# Overview – Program Implementation

- Wide performance dispersion leads to opportunities but also makes manager access, selection, and due diligence critical. Consistently investing with high quality managers is key.



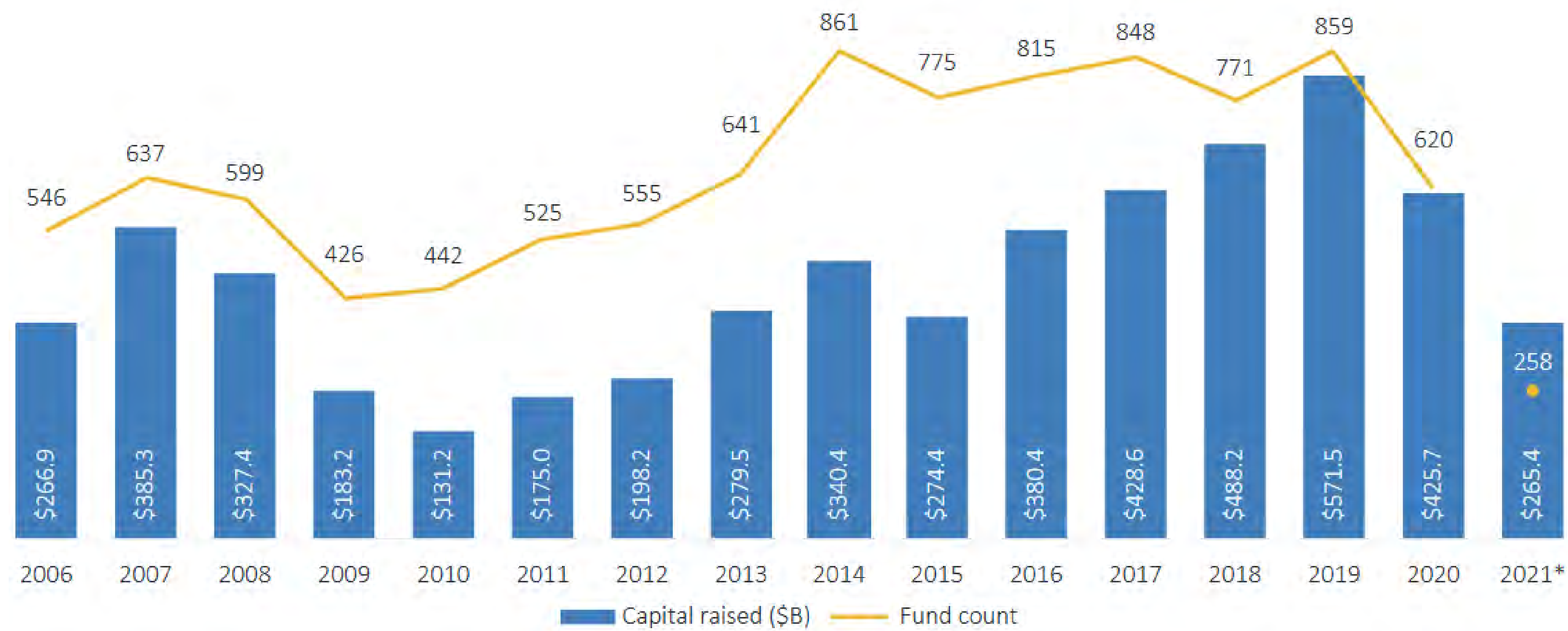

Source: Refinitiv/Cambridge as of June 30, 2021

- The goal is to build a portfolio of quality partnerships diversified by strategy, industry, geography, company stage, manager, and time.



# Market – Fundraising

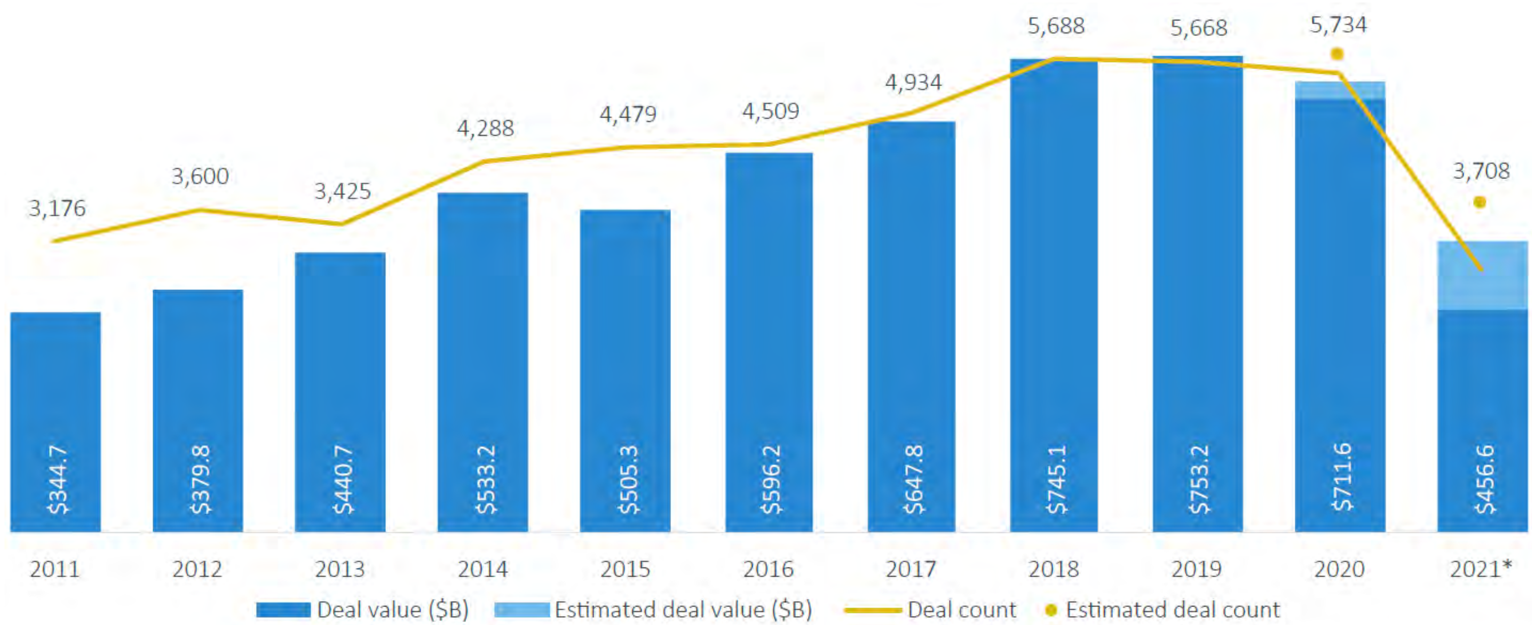
- Fundraising declined in 2020 due to COVID-related uncertainty but quickly rebounded with 2021's fundraising likely to surpass last year's number.
- Due diligence and annual meetings have settled into a virtual format.
- Terms will likely continue to be GP-friendly as demand for private equity increases, with funds closing relatively quickly and oftentimes oversubscribed.




**Source:** PitchBook | **Geography:** Global
*As of June 30, 2021

# Market – Deal Activity

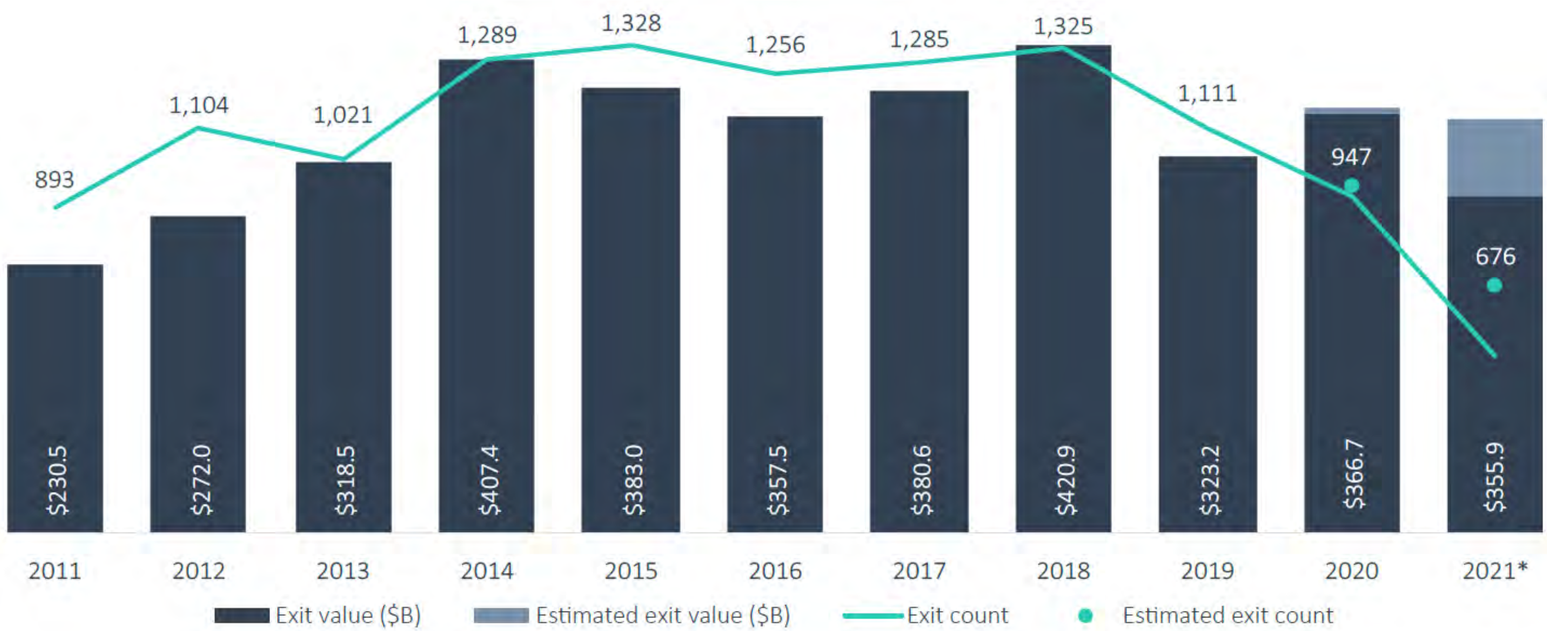
- Investment activity is on track for a record-setting year in 2021.
- The strengthening economic outlook, dry power availability, and accommodative debt markets have resulted in deal activity not seen since before the global financial crisis.
- U.S. buyout deal pricing (11.1x EBITDA) and leverage multiple (5.9x EBITDA) remain elevated but have stabilized.




Source: PitchBook | Geography: US
*As of June 30, 2021

# Market – Exit Activity

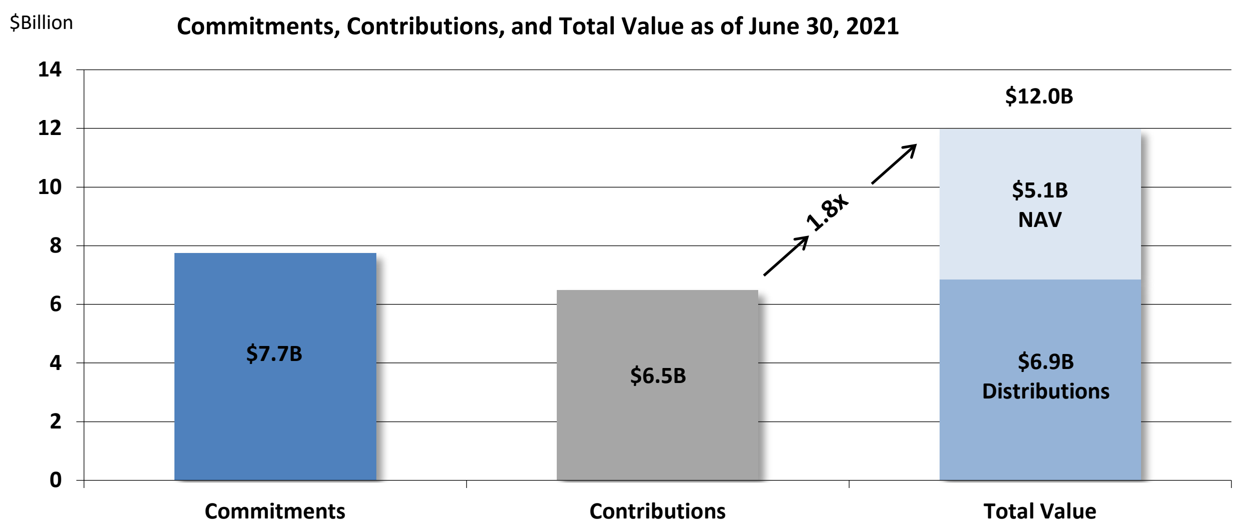
- Private equity exit activity during the first half of 2021 is on a record-setting pace.
- Exit routes have been equally split between public listings, corporate acquisitions, and sponsor-backed acquisitions from a value standpoint.
- The valuation premium currently seen in the public markets has driven public listings as a source of exit to its highest level in the past decade.




Source: PitchBook | Geography: US
*As of June 30, 2021

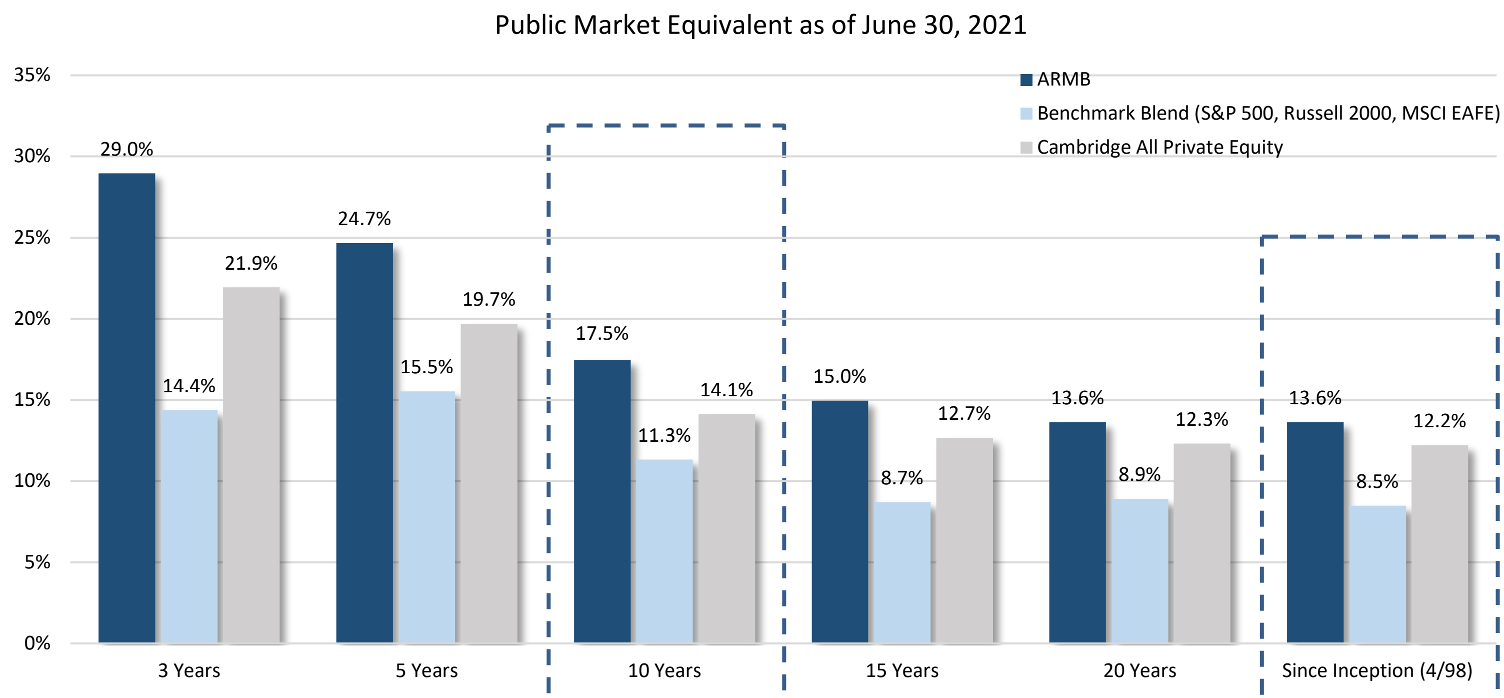
# ARMB Portfolio Performance

- The ARMB directly invests in private equity and uses gatekeepers, Abbott Capital Management (1998) and Pathway Capital Management (2001). The asset allocation began at 3% and has increased over time to the current level of 14%.
- Overall, the program is in the second quartile with a 13.6% internal rate of return (IRR) and 1.8x multiple on invested capital (MOIC) compared to the Cambridge median IRR of 12.2% and 1.5x MOIC.
- The ARMB has three vintage years in the first quartile, twenty in the second quartile, one in the third quartile, and no vintage years in the fourth quartile.
- The 10-year time-weighted return for the private equity portfolio is 18.0% versus 11.1% for the PE benchmark blend (1/3 S&P 500, 1/3 Russell 2000, 1/3 MSCI EAFE).



# ARMB Public Market Equivalent (PME)

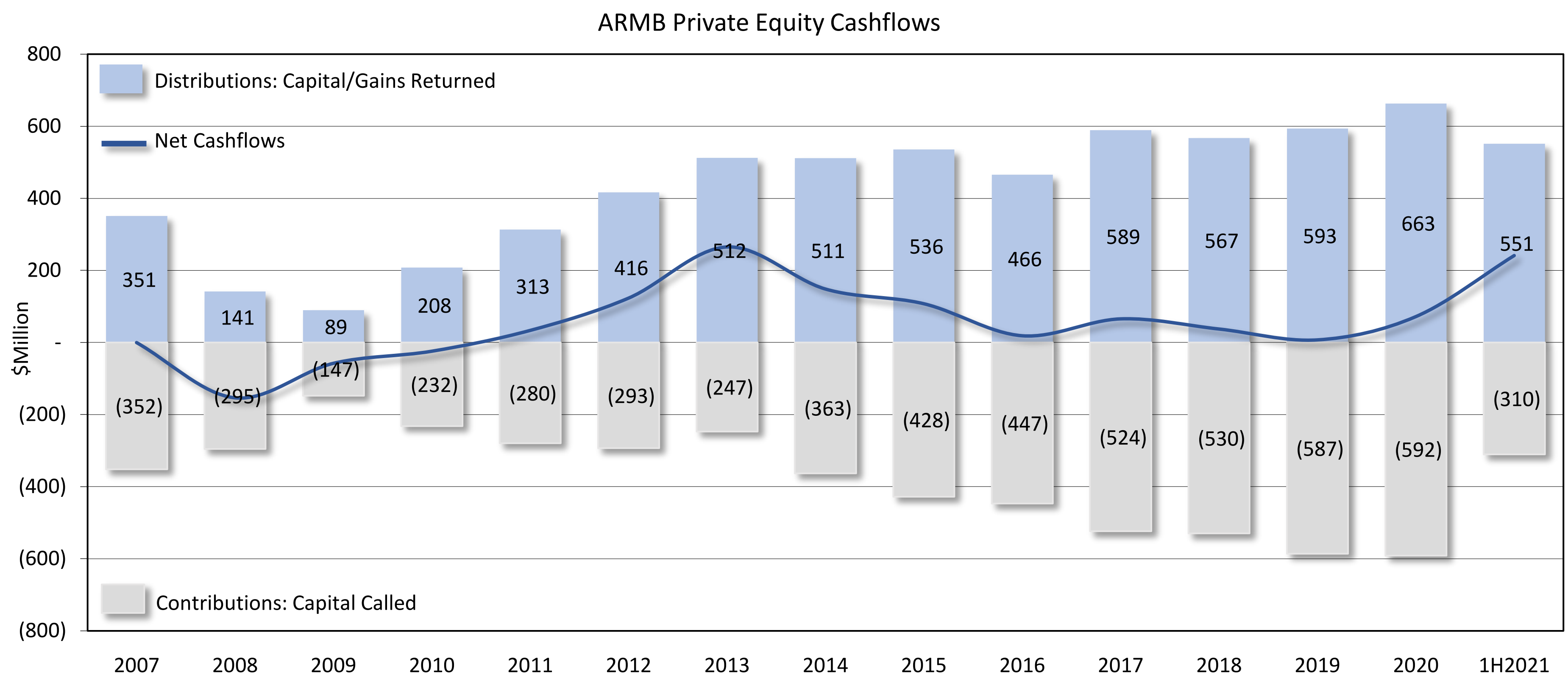
- The ARMB's long-term benchmark for private equity is an equal-weighted blend of the S&P 500, Russell 2000, and MSCI EAFE + 2%.
- Since inception, ARMB's private equity portfolio has generated a 13.6% internal rate of return (IRR) – outperforming the benchmark blend by over 5%.
- Outperformance has generated $3.7 billion in additional fund value compared to investing in the public equity markets alone.
- Over the past 10 years, the portfolio IRR is 17.5%, a greater than 6% outperformance over the benchmark PME.




Source: Refinitiv/Cambridge. Cambridge since inception return only includes vintage years 1998-2021.
Returns are annualized and net of fees.

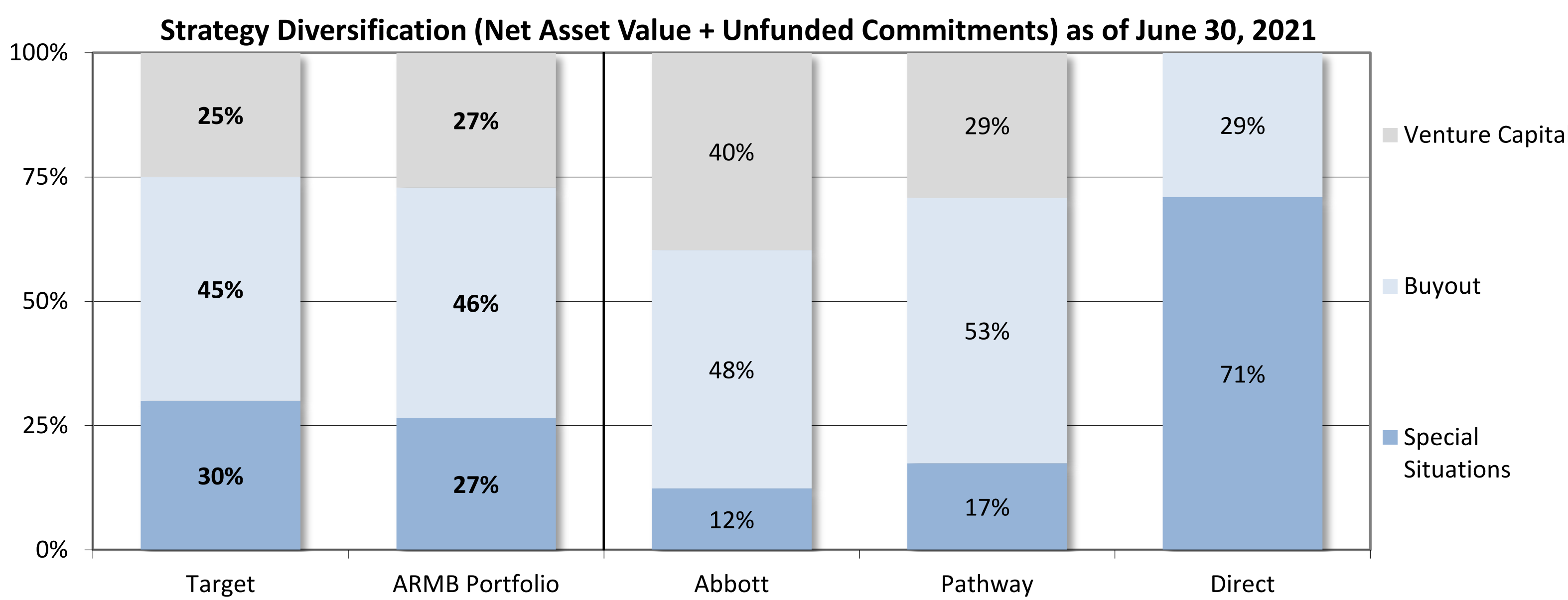
# Portfolio Cash Flows

- Net cash inflows over the past five years were $429 million – largely driven by distributions received during the first half of 2021.
- Contributions and distributions remain steady and elevated over recent years as a result of the growth in allocation to private equity and the maturity of the program.



# Diversification by Strategy

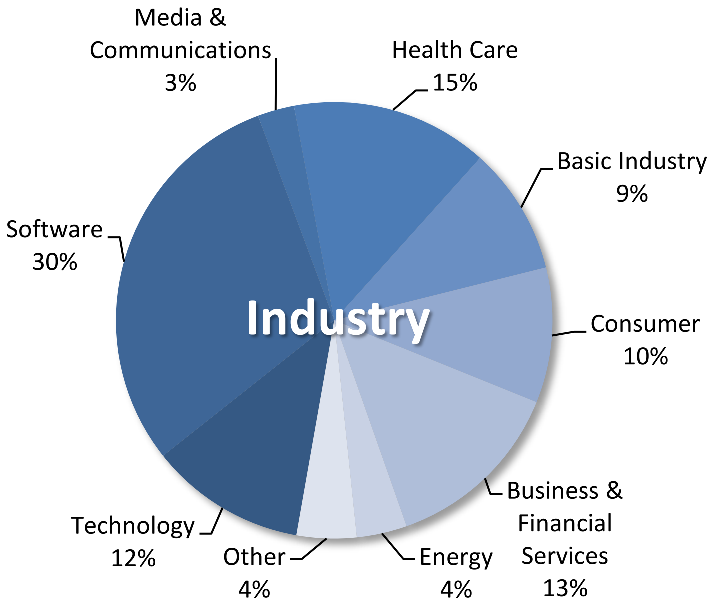
- The portfolio is well-diversified by private equity strategy across venture capital, buyout, and special situations.
- Strategy exposures are within policy bands and near target:
  - Abbott's portfolio is overweight venture capital. Abbott has decreased VC investments in recent years to lower this exposure.
  - The direct partnership portfolio is weighted towards well-diversified special situations investments and has no direct venture capital exposure due, in part, to overweights in the rest of the portfolio.

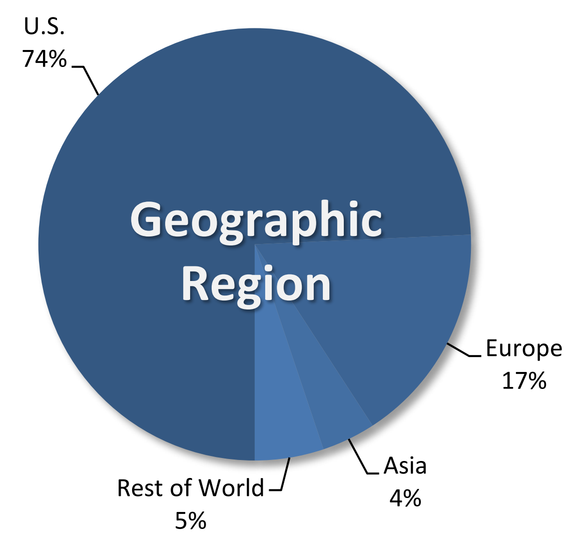


# Diversification by Portfolio Company

The portfolio is well-diversified by underlying portfolio companies:

- Industry exposure is largely reflective of the broader transaction volume within private equity. Software remains the largest industry weight but also has a higher diversification component due to exposure to a variety of end-markets.
- International investments now account for 26% of the portfolio.




Data as of June 30, 2021

# 2020 Commitments

- ARMB's commitment target for 2020 was $600 million.
- $571 million was committed during the year.
- Pathway's co-investment program made ten investments totaling $24 million while Abbott made three co-investments totaling $9 million.
- Commitments were diversified by investment strategy, with venture capital commitments returning to a more normal level after under allocating in recent years.

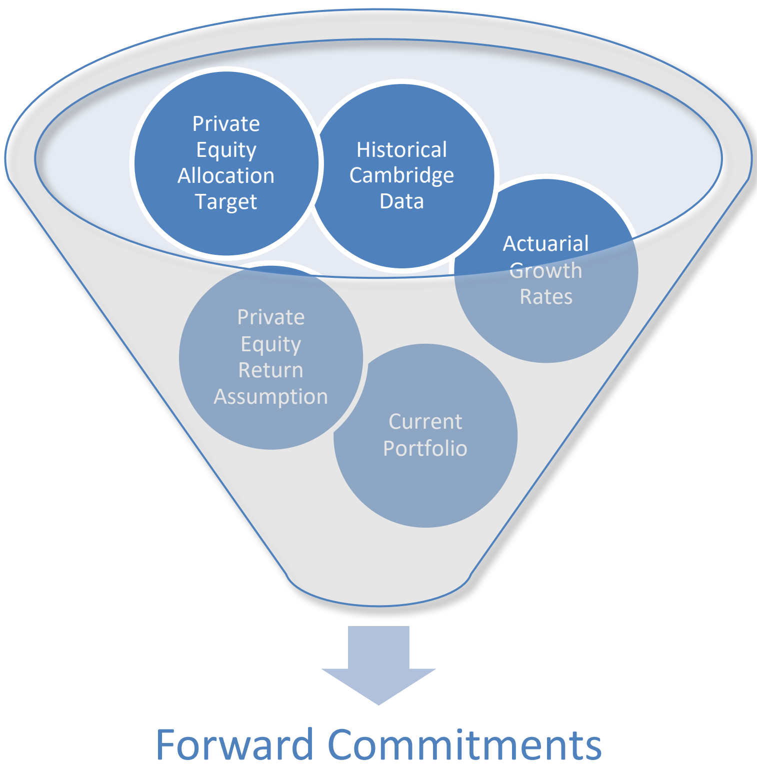
Commitments for 2020 ($millions)

| Manager | Target | Actual | Number of Investments | Investment Strategy | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Venture | % | Buyout | % | Special Situations | % |
| Abbott | $200 | $176 | 23 | $41 | 23% | $115 | 65% | $20 | 11% |
| Pathway | $200 | $195 | 33 | $41 | 21% | $109 | 56% | $45 | 23% |
| Direct | $200 | $200 | 3 | $0 | 0% | $100 | 50% | $100 | 50% |
| **Total** | **$600** | **$571** | **59** | **$82** | **14%** | **$324** | **57%** | **$165** | **29%** |

- Commitments in 2021 are expected to be close to the target of $600 million.

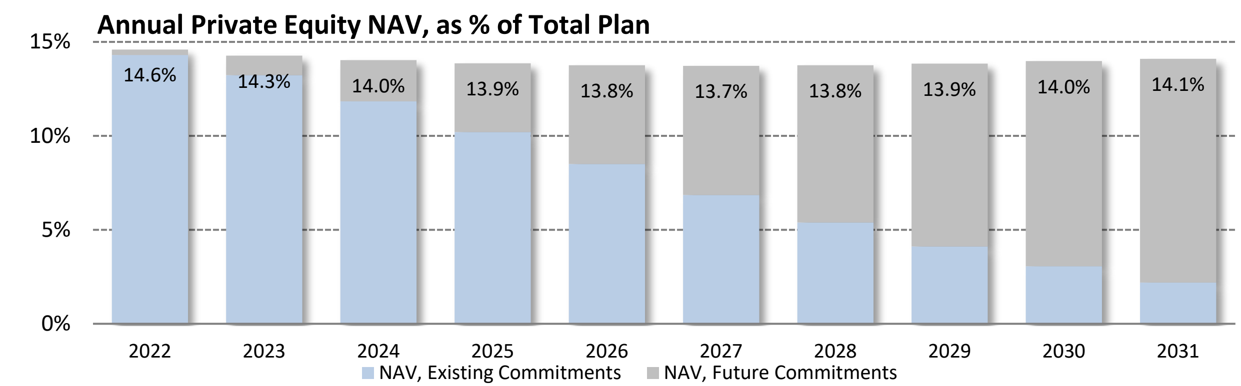
# Pacing Model

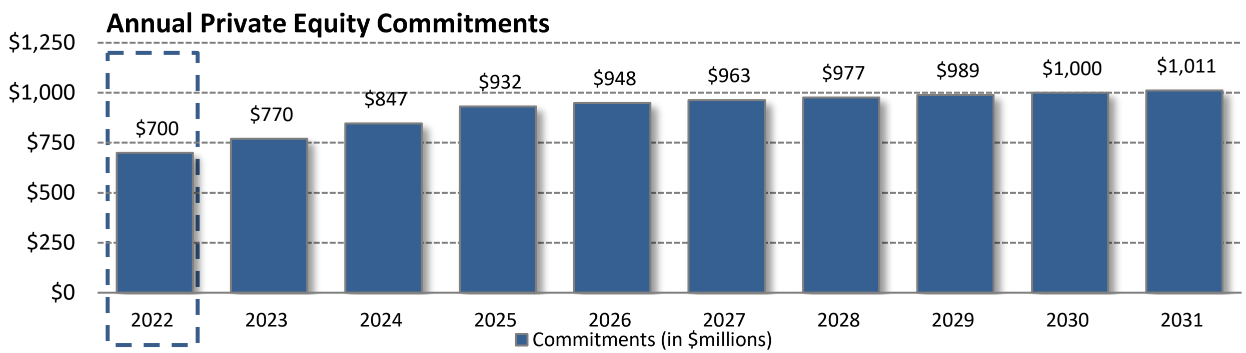
- Staff uses a pacing model to project the forward commitments needed to achieve ARMB's targeted allocation to private equity.
- The illiquid nature and cash flow characteristics of private equity necessitate a forward projection to guide the portfolio towards the target allocation over time.
- Considerations:
  - Denominator effect: sharp declines in liquid asset classes result in over-allocations to illiquid asset classes
  - Annual commitment decisions are long-term decisions
  - Vintage year diversification



# Commitment Pacing Recommendation

- ARMB's long-term allocation target for private equity increased from 12% to 14% at the beginning of FY22.
- Although private equity is slightly above target, an increase in commitment pacing is needed to offset projected distributions and maintain the targeted allocation.
- Staff recommends a 2022 commitment target of $700 million, split equally between Abbott, Pathway, and direct partnership investments.



# Summary

- Private equity’s allocation increase for FY22 reflects the growing role the asset class plays in achieving the plan’s return target.
- Staff expects private equity to continue to deliver a meaningful return premium over public markets as it has done in recent years.
- ARMB has a mature, well-diversified private equity program with performance that has had a significant positive impact on the plan.
- As the asset class grows, staff will continue to evaluate ways to improve the program with a focus on return/cost efficiency.

# Appendix A:
## 2020 Commitments – Buyout 1 of 2

| Strategy | Partnership Fund | Description | Amount | % Total | Date | Manager |
|---|---|---|---|---|---|---|
| Buyouts | Charlesbank Equity Fund X | Strategy focused on relative value investments across five industry verticals: consumer, industrials, business services, tech & tech infrastructure and healthcare. | $24.0 | 4.2% | 11/20/20 | Abbott |
| | Charlesbank Equity Overage Fund X | The fund will have a concentrated portfolio construction consisting of opportunities that exceed the available capacity of Fund X. | $6.0 | 3.7% | 11/20/20 | Abbott |
| | Clearlake - Icon (Sec) | Single-asset continuation vehicle for a provider of mid-market-focused enterprise-grade IT management solutions, led by Clearlake. | $4.0 | 0.7% | 9/14/20 | Pathway |
| | Clearlake - Icon (Sec) | Single-asset continuation vehicle for a provider of mid-market-focused enterprise-grade IT management solutions, led by Clearlake. | $5.0 | 0.9% | 9/14/20 | Abbott |
| | CVC Capital Partners VIII | Control-oriented buyout investments of large-cap European and North American companies across a variety of sectors. | $19.9 | 3.5% | 5/15/20 | Abbott |
| | CVC Capital Partners VIII | Control-oriented buyout investments of large-cap European and North American companies across a variety of sectors. | $10.1 | 1.8% | 5/1/21 | Pathway |
| | Fidentia Fortuna Co-Invest | Follow-on co-investment alongside Centerbridge Capital III in a London-based insurer within the Lloyd's of London market. | $1.1 | 0.2% | 10/29/20 | Pathway |
| | GTCR Fund XIII | Growth investments in financial services, healthcare, technology, media and telecommunications, and business services companies in North America. | $30.0 | 5.3% | 10/27/20 | Abbott |
| | GTCR Fund XIII | Growth investments in financial services, healthcare, technology, media and telecommunications, and business services companies in North America. | $10.0 | 1.8% | 11/2/20 | Pathway |
| | H&F Samson Secondary | SPVs for three portfolio companies from H&F VII. | $4.3 | 0.8% | 12/23/20 | Abbott |
| | H&F Speedster | Co-investment alongside H&F IX in a pan-European automotive online marketplace operator. | $2.4 | 0.4% | 2/27/20 | Pathway |
| | HIG VI | Control investments in lower-middle-market, U.S.- based companies operating in a variety of industries that are undermanaged and/or stressed. | $6.0 | 1.1% | 7/20/20 | Pathway |
| | Insight RF Holdings | Follow-on co-investment alongside Insight X in a provider of SaaS-based cyberthreat intelligence solutions. | $0.0 | 0.0% | 6/30/20 | Pathway |
| | Insight RF Holdings | Follow-on co-investment alongside Insight X in a provider of SaaS-based cyberthreat intelligence solutions. | $0.0 | 0.0% | 6/30/20 | Pathway |
| | Lions Co-Invest | Co-investment alongside Summit GE X in the largest independent integrated care-delivery provider in Miami-Dade County. | $3.2 | 0.6% | 8/21/20 | Pathway |
| | Marlin Heritage Europe II | Control-oriented platform investments in information technology, business services, and healthcare services companies primarily in Europe. | $9.9 | 1.7% | 7/3/20 | Pathway |
| | MDP ACM 2 | Follow-on co-investment alongside Madison CP VII in a market-leading, clinically focused contract development and manufacturing organization. | $0.1 | 0.0% | 2/6/20 | Pathway |
| | MRI | Co-investment alongside Harvest VIII in a global provider of end-to-end real estate management software solutions to owners, managers, and investors. | $2.3 | 0.4% | 2/10/20 | Pathway |

# Appendix A:
## 2020 Commitments – Buyout 2 of 2

| Strategy | Partnership Fund | Description | Amount | % Total | Date | Manager |
|---|---|---|---|---|---|---|
| Buyouts | NC Vinland Co-Invest | Co-investment alongside Nordic IX in a provider of electronic collection services and analysis of critical patient data for pharmaceutical companies operating clinical trials. | $4.0 | 0.7% | 2/4/20 | Pathway |
| | New Mountain Partners VI | Growth-oriented buyout firm focusing on management buyouts, growth equity transactions, build-ups, restructuring and leveraged acquisitions. | $50.0 | 8.8% | 4/10/20 | Direct |
| | Nordic X | Control buyouts of mid-market healthcare, technology and payments, and financial services companies in Northern Europe. | $10.5 | 0.4% | 7/20/20 | Pathway |
| | Odyssey VI | Control buyout investments in established U.S. middle-market companies operating in the industrials and business services sectors. | $15.0 | 2.6% | 2/12/20 | Pathway |
| | Prism | Co-investment alongside Quad-C IX in a New Jersey–based ophthalmology platform. | $2.0 | 0.3% | 6/30/20 | Pathway |
| | Quad-C HSID | Co-investment alongside Quad-C IX in a provider of eDiscovery and managed-review solutions for middle- and large-market corporations and law firms. | $1.8 | 0.3% | 1/31/20 | Pathway |
| | Quad-C HSID | Follow-on co-investment alongside Quad-C IX in a provider of eDiscovery and managed-review solutions for middle- and large-market corporations and law firms. | $0.1 | 0.0% | 7/29/20 | Pathway |
| | REP Coinvest III | Co-investment alongside Ridgemont III in a national provider of mandatory training, certification, and compliance solutions to regulated end-markets. | $2.0 | 0.4% | 6/19/20 | Pathway |
| | REP Coinvest III | Co-investment alongside Ridgemont III in a national provider of mandatory training, certification, and compliance solutions to regulated end-markets. | $4.3 | 0.7% | 6/19/20 | Abbott |
| | Resolute V | Control-oriented buyout investments in middle-market companies operating across a broad range of industries in North America. | $50.0 | 8.8% | 7/27/20 | Direct |
| | STG VI | The firm pursues control buyouts of mid-market software businesses. The team is operationally focused and employs a value-oriented, theme-based approach. | $11.1 | 1.9% | 10/23/20 | Abbott |
| | Thoma Bravo Discover III | Control-oriented buyouts in middle-market software companies in the U.S. with recurring revenues and high retention rates. | $10.0 | 1.8% | 5/29/20 | Pathway |
| | Thoma Bravo XIV | Control-oriented buyouts of large-market software companies in the U.S. with recurring revenues and high retention rates. | $10.0 | 1.8% | 5/29/20 | Pathway |
| | Trident VII Co-Invest A | Follow-on co-investment alongside Trident VII (Stone Point) in a provider of cost containment, return to work, software, and technology-enabled solutions to workers' compensation and auto payors. | $0.0 | 0.0% | 7/29/20 | Pathway |
| | T-VIII Co-Invest | Co-investment alongside Trident VIII (Stone Point) in a provider of diversified professional and business services, including valuation, risk management, and bankruptcy administration. | $4.0 | 0.7% | 3/6/20 | Pathway |
| | Vitruvian Investment Partnership IV | Vitruvian invests in asset light, cash generative businesses with a sector focus on business & consumer services, financial services, life science & healthcare, media and technology, telecoms & internet. | $10.3 | 1.8% | 6/3/20 | Abbott |
| | Welsh, Carson, Anderson & Stowe XI | Buyout strategy focused on information services and healthcare companies in North America. | $0.2 | 0.0% | 5/11/20 | Abbott |
| | ***Buyout Subtotals*** | | ***$323.6*** | ***56.7%*** | | |

# Appendix A:
## 2020 Commitments – Venture and Special Situations

| Strategy | Partnership Fund | Description | Amount | % Total | Date | Manager |
|---|---|---|---|---|---|---|
| Venture Capital | Armis | Co-investment alongside Insight X and XI in a cloud-based cybersecurity platform for managed, unmanaged, and internet of things (IoT) devices. | $1.3 | 0.2% | 1/31/20 | Pathway |
| | Battery Ventures XIII | Multi-stage venture fund with a focus on information technology companies primarily in North America. | $6.0 | 1.1% | 2/11/20 | Abbott |
| | Battery Ventures XIII Side Fund | Side Fund to participate in larger growth an buyout deals alongside main Battery Ventures fund. | $4.0 | 0.7% | 2/11/20 | Abbott |
| | Canaan XII | Seed- and early-stage investments in technology and healthcare companies, primarily in the U.S. | $10.0 | 1.8% | 4/24/20 | Pathway |
| | CRV XVIII | Early-stage venture fund focused on investments in enterprise technology, consumer, and bioengineering/healthcare companies primarily in the U.S. | $10.0 | 1.8% | 7/2/20 | Abbott |
| | GGV Capital VIII | GGV is a multi-stage venture capital firm that invests in technology companies primarily in North America, China, and Southeast Asia (“SEA”). | $6.0 | 1.1% | 10/30/20 | Abbott |
| | GGV Capital VIII Plus | Expansion-stage venture fund focused on technology companies in the U.S. and China. | $1.5 | 0.3% | 10/30/20 | Abbott |
| | GGV Discovery III | Early-stage venture fund that makes seed and Series A investments in technology companies in the U.S. and China, with a particular focus on China. | $2.5 | 0.4% | 10/30/20 | Abbott |
| | Holtzbrinck VIII | Seed- and early-stage investments in digital businesses, primarily in Europe. | $10.8 | 1.9% | 9/16/20 | Pathway |
| | Mayfield Select II | Later-stage financing rounds in existing Mayfield portfolio companies and in new investments in which the main funds have received an appropriate allocation. | $4.9 | 0.8% | 3/17/20 | Pathway |
| | Mayfield XVI | Seed and early-stage investments in consumer and enterprise software companies in the U.S. | $4.5 | 0.8% | 3/17/20 | Pathway |
| | NEA BH SPV II | Health insurance and related services to individuals, families, and Medicare recipients. | $4.9 | 0.9% | 9/2/20 | Abbott |
| | Versant Venture Capital VIII | Global early stage biotechnology fund. | $5.0 | 0.9% | 11/19/20 | Abbott |
| | Versant Voyageurs II | Versant Voyageurs II will co-invest in six to eight Series A companies alongside Versant Ventures Fund VIII. | $1.3 | 0.2% | 11/19/20 | Abbott |
| | YC Early 2020 | Seed-stage investments in various startups made through Y Combinator’s biannual accelerator program. | $3.0 | 0.5% | 8/21/20 | Pathway |
| | YCCF 2020 | Follow-on investments in companies that have completed Y Combinator's accelerator program. | $7.0 | 1.2% | 8/21/20 | Pathway |
| | ***Venture Capital Subtotals*** | | ***$82.6*** | ***14.5%*** | | |
| Special Situations | Fortissimo V | Control and influential minority, equity-related investments in global technology and industrial companies that utilize Israel-related technologies. | $15.0 | 3.3% | 1/30/20 | Pathway |
| | Insight XI | Minority and control investments in growth-oriented software, software-enabled services, and internet businesses, with a primary focus on North America. | $10.0 | 1.8% | 1/21/20 | Pathway |
| | Neuberger Berman Secondary Opportunities Fund V | Invests primarily in North American and Western Europe buyout funds in a variety of industries. | $100.0 | 17.5% | 9/8/20 | Direct |
| | Spectrum IX | Growth equity and buyout investments in high-growth companies in the internet, software, digital media, and information services markets, primarily in the U.S. | $10.0 | 1.8% | 4/9/20 | Pathway |
| | Spectrum IX | Spectrum invests in information services, software and internet companies, both in B2B and consumer primarity in North America. | $20.0 | 3.5% | 4/9/20 | Abbott |
| | TCV XI | Growth equity investments in information technology companies, primarily in the U.S. and Western Europe. | $10.0 | 1.8% | 10/2/20 | Pathway |
| | ***Special Situations Subtotals*** | | ***$165.0*** | ***28.9%*** | | |
| **Abbott Subtotal** | | | **$176.2** | **30.9%** | | |
| **Pathway Subtotal** | | | **$195.0** | **34.1%** | | |
| **Direct Subtotal** | | | **$200.0** | **35.0%** | | |
| **TOTAL ($MM)** | | | **$571.2** | **100.0%** | | |

# ALASKA RETIREMENT MANAGEMENT BOARD

| | | | |
|---|---|---|---|
| SUBJECT: | Private Equity Annual Tactical Plan | ACTION: | X |
| | Resolution 2021-12 | | |
| DATE: | December 2-3, 2021 | INFORMATION: | |

BACKGROUND:

The Alaska Retirement Management Board's (ARMB) "Private Equity Partnerships Portfolio Policies and Procedures" calls for the preparation and adoption of an "Annual Tactical Plan" (Plan).

STATUS:

Staff presented the Plan to the ARMB at the December 2021 board meeting.

The Plan reviewed the status of the portfolio, historical and prospective market conditions, and the annual investment strategy designed to further the ARMB's goals and objectives for the private equity program.

Staff is recommending the Board approve the Plan which includes forward commitment targets starting at $700 million in 2022 and increasing over time to maintain the ARMB's long-term private equity allocation of 14%. The commitments will be allocated equally between Abbott, Pathway, and direct investments.

RECOMMENDATION:

The Alaska Retirement Management Board adopt Resolution 2021-12 approving the 2021 Private Equity Annual Tactical Plan.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD

Relating to Private Equity Annual Tactical Plan
Resolution 2021-12

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for 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 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 established an asset allocation for the funds that considers earnings and liabilities on a current as well as a future basis; and

WHEREAS, the Board has authorized investment in private equity assets for the State of Alaska Retirement and Benefits Plans; and

WHEREAS, the Board will establish, and on an annual basis review, an investment plan for private equity;

NOW THEREFORE, BE IT RESOLVED THAT THE ALASKA RETIREMENT MANAGEMENT BOARD adopts the 2021 Annual Tactical Plan for Private Equity.

DATED at Juneau, Alaska this ______ day of December 2021.

_________________________
Chair

ATTEST:

_________________________
Secretary

Callan

December 2, 2021

# ARMB Private Equity Portfolio

Annual Review and Performance Analysis

**Gary Robertson**
Senior Vice President

# Private Equity Discussion Topics

- ARMB Private Equity Program Overview
- Market Conditions
- ARMB Private Equity Portfolio and Manager Performance
  - Fiscal Year Changes
  - Vintage Year and Strategy Benchmarking
  - Strategy Diversification
- Summary

Appendix

- How Private Equity Works (Cash Flows)

## ARMB Private Equity Program Overview

***Timeline***

- 1998 ARMB initiates a 3% allocation 23 years ago and hires Abbott to invest in partnerships
- 2001 ARMB raises the allocation to 6%
- 2001 Hires Pathway to develop a second partnerships portfolio
- 2006 Private equity allocation raised to 7%
- 2007 ARMB initiates Treasury private equity portfolio
- 2011 Private equity allocation raised to 8%
- 2013 Private equity allocation raised to 9%
- 2016 Corporate governance partnerships exited
- 2019 Private equity allocation raised to 11%
- 2020 Private equity allocation raised to 12% and the Military plan added a new 4% target allocation
- 2021 Private equity allocation increased to 14%

# ARMB Private Equity Program Overview

## Funding

- ARMB's total assets increased $6.9 billion (26%) during the fiscal year 2021
- The private equity target increased by $1.5 billion (47%) due to plan growth and an allocation increase
  - The private equity target was increased from 12% to 14% in 2021
- The total private equity NAV increased by $1.8 billion (53%)
- The private equity funded-level increased by 2.7% during the years, and is 1.2% above the new 14% target, but is well within its range of +/- 6%

***As of June 30, 2021***

| Measure | 2020 | 2021 | % |
|---|---|---|---|
| Total Assets* | 26,827,500,298 | 33,731,468,262 | |
| PE % Target | 12.0% | 14.0% | |
| PE $ Target | 3,219,300,036 | 4,722,405,557 | |
| Abbott | 1,291,512,866 | 2,004,226,492 | 39% |
| Pathway | 1,495,285,369 | 2,236,037,596 | 44% |
| In-House | 572,535,672 | 891,965,852 | 17% |
| Total Private Equity | 3,359,333,907 | 5,132,229,941 | 100% |
| % PE | 12.5% | 15.2% | |
| Difference from Target | 140,033,871 | 409,824,384 | |

* Total Assets value is adjusted for June 30 actual private equity valuations.

- ARMB's uncalled capital is $1.7 billion or 35% of the new 14% target, down from 50% of target last year, which will aid in gradually reducing the NAV toward the mid-range target
- Given asset valuations, Callan is encouraging clients to be mindful of "denominator effects"

# Private Equity Market Conditions

## Virtuous Circle of Rising Valuations and Liquidity

- In the 12-months ended 2Q21, public equity markets rose impressively (R3000 +44.2%) from the depths of the pandemic-induced first-quarter 2020 sell-off with indices exceeding pre-Covid record highs. Private equity also performed strongly during this period with valuations rising more rapidly (Cambridge PE Index +56.0%).
- Fundraising through 3Q21 of $645 billion is up 24% from 1H20, and is expected to rival previous records supported by a strong pace of new investment, significant distributions, and strong total plan valuation increases.
  - While large partnerships dominate fundraising totals, all strategies remain popular and have market shares that reflect their long-term averages, with venture capital regaining popularity (26% of YTD commitments).
- Distributions remained strong for an eighth year, and have accelerated in 2021 fueled by record global M&A, strong IPO markets, and high prices creating a seller's market.
- Average global buyout deal pricing remains high for a sixth year averaging 12.8x in through 3Q21 (flat with 2020). Venture pricing in through 3Q21 is up double digits from 2020 levels.
- Credit is readily available; low interests rates, more covenant-lite debt, and ready supply of buyer capital aid global M&A activity.
  - Non-bank private debt  funds are increasing supply.
  - Equity contributions remain relatively large (average 49% of total purchase price).
- Vast capital markets liquidity is fueling all aspects of private equity investment to record levels: fundraising, new investments, exits and distributions creating a virtual circle for "the least liquid asset class".
- While there is a general sentiment that capital markets are frothy and investment prices are challenging reasonable valuations, economic optimism and global government support indicates continued momentum.

# ARMB Private Equity Performance

## Total Portfolio: 12-Month Changes, June 30, 2021 ($000)

| Year | Committed | Paid-In | Uncalled | Distributed | NAV | DPI | RVPI | TVPI | IRR | %PI |
|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 7,144,484 | 5,877,653 | 1,612,276 | 5,869,140 | 3,359,334 | 1.00 | 0.57 | 1.57 | 11.8% | 77% |
| 2021 | 7,742,237 | 6,479,964 | 1,659,070 | 6,854,860 | 5,132,230 | 1.06 | 0.79 | 1.85 | 13.6% | 79% |
| **Change** | **597,752** | **602,311** | **46,794** | **985,720** | **1,772,896** | **0.06** | **0.22** | **0.28** | **1.8%** | **1%** |
| % Chg | 8% | 10% | 3% | 17% | 53% | 6% | 39% | 18% | 15% | 1% |

All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of ACM, PCM and Treasury fees and expenses
All manager holdings are June 30 actual values and cash flows
Actual uncalled replaced the prior calculation of Committed minus Paid-In in 2019.
NAV differs from Treasury Financials: Table data is June 30, 2021 actuals, Financials figures are 1Q21 NAV adjusted for 2Q21 cash flows
DPI = Distributions as a ratio of (divided by) Paid-In capital
RVPI = Residual Value (Net Asset Value) as a ratio of (divided by) Paid-In Capital
TVPI = Total Value (Distributions + NAV) as a ratio of (divided by) Paid-In Capital
Benchmarks are Refinitiv/Cambridge All Regions 6/30/21

| Key Metrics | |
|---|---|
| $ Gross Distributions | 985,720 |
| Gross Distribution Yield(1) | 29.3% |
| $ Net Distributions | 383,409 |
| Net Distribution Yield(2) | **11.4%** |
| $ NAV Increase | 1,772,896 |
| % NAV Increase | **52.8%** |
| $ Total Increase | 2,156,305 |
| **% Total Increase** | **64.2%** |

(1) Gross Distributions / Starting NAV
(2) Gross Distributions / Starting NAV
(Both include return of capital and gains)

1. Commitments increased by $597 million (8%), up slightly from $454 million (7%) the prior year
2. Paid-in capital increased $602 million (10%) year, and represents 41% of the starting uncalled amount
3. Uncalled capital rose $47 million (3%), up from -$70 million (-4%) last year
4. The portfolio is 79% paid-in (mature), up from last year (Abbott 83%, Pathway 81%, and Treasury 64%)
5. The portfolio distributed $986 million, a 29% gross cash flow return (distributions divided by beginning NAV); up from $515 million (17%) last year
6. Net cash flow to ARMB was $383 million (11%), versus -$87 million (-3%) (ARMB funded the portfolio) last year
7. NAV increased by $1.8 billion (53%), a very large change from $391 million (13%) last year
8. Total portfolio appreciation was $2.2 billion (64%), compared to $304 million (10%) last year
9. The IRR of 13.6% is second quartile versus the Refinitiv/Cambridge All Region composite since 1998, which has a top quartile of 24.3% and a median of 12.2% (47th percentile)
10. The TVPI of 1.85x is second quartile versus the Refinitiv/Cambridge upper quartile of 2.12x and a median of 1.53x (36th percentile)
11. Since inception the private equity IRR of 13.6% outpaces its benchmark IRR of 8.5% on a Public Market Equivalent (PME) basis by a spread of 5.1%. The calculation excludes a stated 2% premium.
    - The custom benchmark indices are is 1/3 each of S&P 500, Russell 2000, and MSCI EAFE.

## ARMB Private Equity Performance

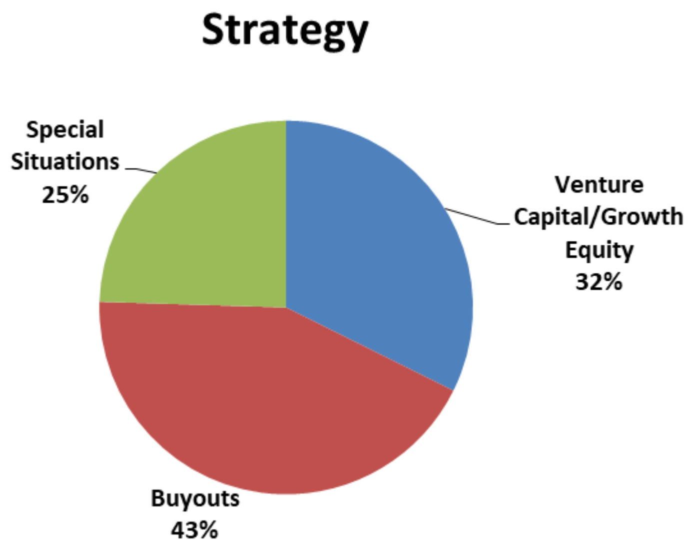
### Total Portfolio: Fiscal 2021 Changes Versus Previous Highs, June 30, 2021 ($000)

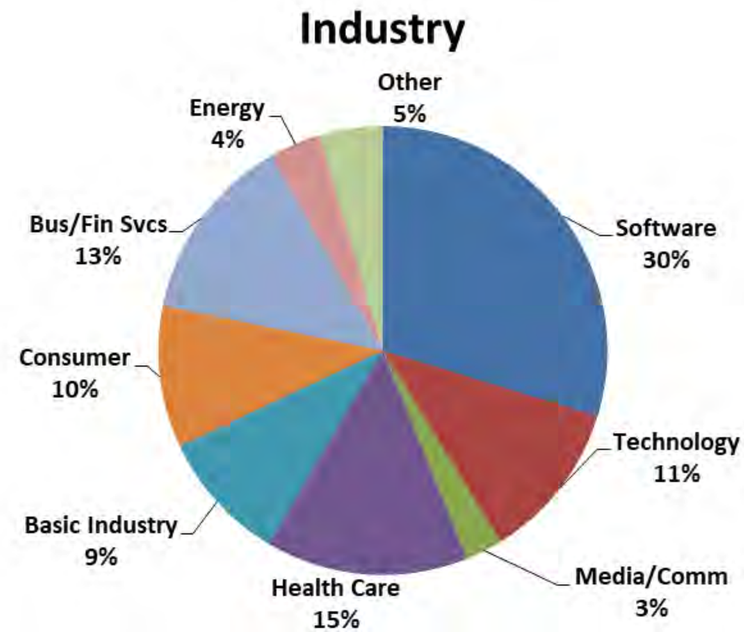
| Change From Previous High | Previous High | Fiscal 2021 | Increase | % Increase |
|---|---|---|---|---|
| $ Gross Distributions vs. 2018 | 596,764 | 909,784 | 313,020 | **52%** |
| $ Net Distributions vs. 2013 | 207,013 | 405,376 | 198,363 | **96%** |
| $ NAV vs. 2017 | 408,795 | 1,772,896 | 1,364,101 | **334%** |
| $ Total Appreciation vs. 2019 | 445,739 | 2,178,272 | 1,732,533 | **389%** |

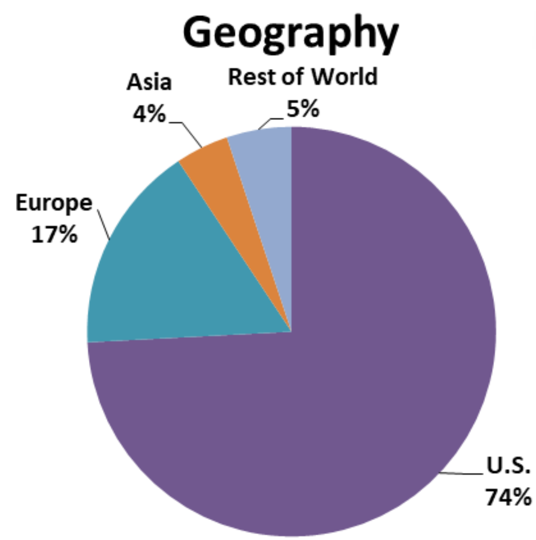
| Change From Previous High | Previous High | Fiscal 2021 | Increase | % Increase |
|---|---|---|---|---|
| % Gross Distributions vs. 2007 | 35% | 27% | -8% | **-23%** |
| % Net Distributions vs. 2013 | 13% | 12% | -1% | **-6%** |
| % NAV vs. 2007 | 23% | 53% | 29% | **125%** |
| % Total Appreciation vs. 2007 | 26% | 65% | 39% | **154%** |

- In the top table, the dollar value comparisons are expected to increase as the portfolio has grown over time, but the percentage increases shown in the bottom table help normalize the comparisons
- Both the dollar and percentage changes in 2021 are instructive to observe regarding the uniqueness of the fiscal year, particularly in the area of unrealized valuation (NAV) increase
- In the bottom table, gross distributions were higher on a percentage basis in 2007, but the plan recycled almost all of the those distributions as paid-in capital
- The 12% percentage of net distributions (bottom table) rival the previous record of 13% in 2013
- Both the percentage increases in NAV and Total Appreciation in 2021 were record-setting by a wide margin

## **ARMB Portfolio Diversification** June 30, 2021




Strategy allocations are based on underlying partnership valuations for ACM, PCM, and Treasury
Industry and Geographic allocations are based on underlying portfolio company valuations for ACM, PCM, and Treasury

## Abbott Capital Management Profile

- Founded in 1986, Abbott Capital Management (ACM) is an independent registered investment advisor and is employee-owned by Abbott's 10 Managing Directors (95%) and one retired co-founder (5%)
- ACM has 13 senior investment professionals, 4 junior investment professionals, and a total staff of 57 employees
- The firm is headquartered in New York and has an additional office in London
- ACM has had a stable team with little unplanned senior professional turnover, but has been having periodic retirements. Abbott has added staff to compensate for the departures.
  - The head of Investor Relations retired at the end of 2018, the head of Secondary Investing retired year-end 2019, and the Chief Operating Officer retired at the end of 2020.
  - A Vice President in Investor Relations departed in 2021 for a position with a larger firm.
  - Jonathan Roth, President, has announced his eventual retirement at the end of 2022, and will remain a Senior Advisor through 2023. Len Pangburn, a long-time Managing Director was selected by the partners to be the succeeding President
- The firm has $13 billion in AUM (Uncalled + NAV), in both fund-of-funds and separate accounts, and has a large established client base. ARMB represents 16% of ACM's AUM
- ACM's ARMB investment program started in mid-1998 and represents 39% of the ARMB's private equity portfolio NAV
- ACM invests in all key private equity strategies, except distressed debt, in a diversified manner. The firm has strong relationships in venture capital and an expertise in non-US investing
- Callan would characterize ACM as a conservative global boutique, with strong historical experience in venture capital and European private equity investing. The firm also has long-standing with highly-developed corporate finance funds

# ARMB Private Equity Performance

## **Abbott Portfolio: 12-Month Changes**, June 30, 2021 ($000)

| Year | Committed | Paid-In | Uncalled | Distributed | NAV | DPI | RVPI | TVPI | IRR | %PI |
|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 3,095,400 | 2,603,240 | 568,205 | 2,837,954 | 1,291,513 | 1.09 | 0.50 | 1.59 | 10.5% | 82% |
| 2021 | 3,300,302 | 2,835,094 | 557,558 | 3,232,505 | 2,004,226 | 1.14 | 0.71 | 1.85 | 12.1% | 83% |
| **Change** | **204,902** | **231,854** | **(10,647)** | **394,551** | **712,714** | **0.05** | **0.21** | **0.26** | **1.5%** | **1%** |
| % Chg | 7% | 9% | -2% | 14% | 55% | 5% | 42% | 16% | 14% | 2% |

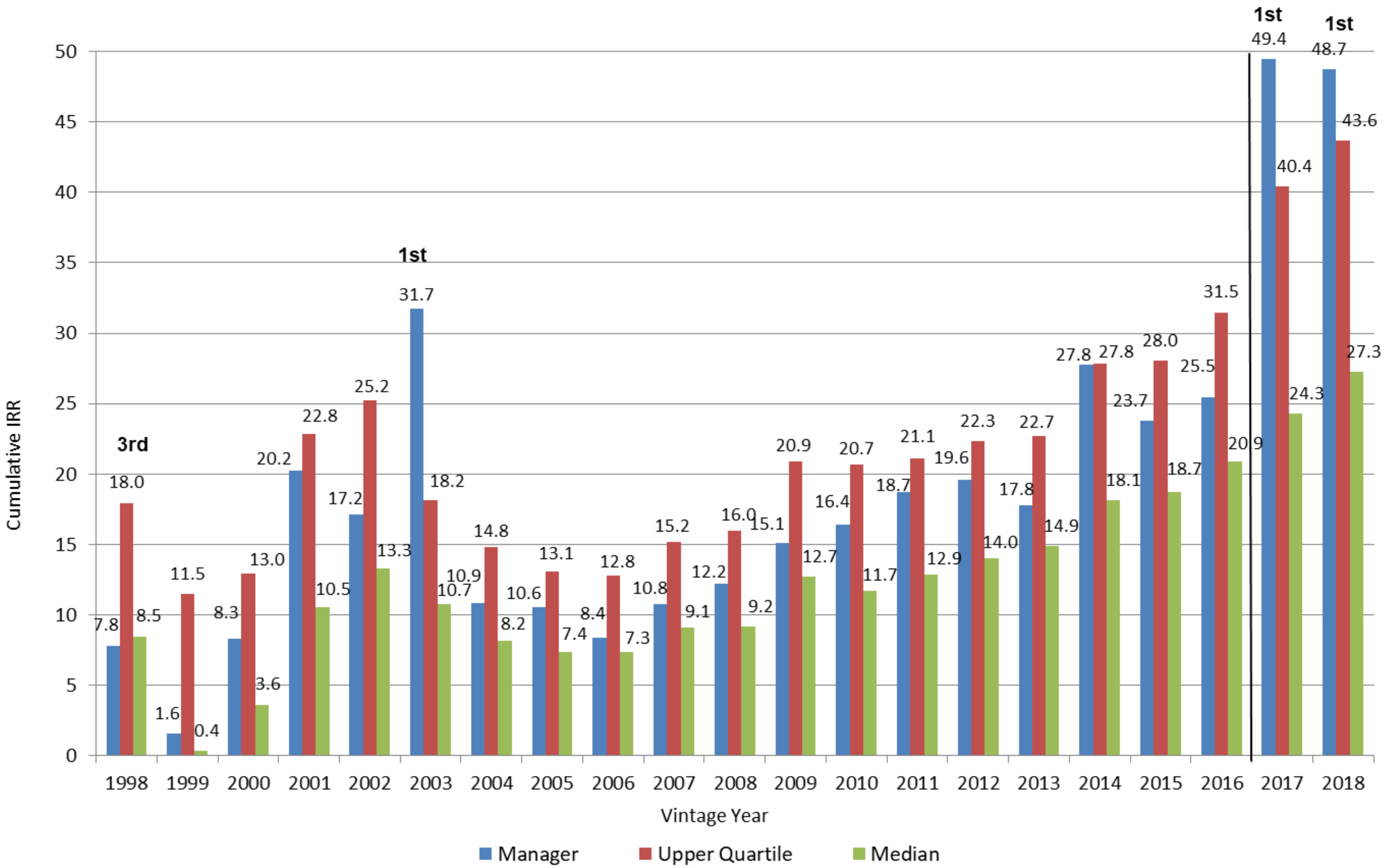
| Key Metrics | |
|---|---|
| $ Gross Distributions | 394,551 |
| Gross Distribution Yield | 30.5% |
| $ Net Distributions | 162,697 |
| Net Distribution Yield | **12.6%** |
| $ NAV Increase | 712,714 |
| % NAV Increase | **55.2%** |
| $ Total Increase | 875,411 |
| **% Total Increase** | **67.8%** |

1. Initiated 24 years ago, invested in 302 investments of which 238 remain active, and 64 have liquidated.
2. Commitments increased $205 million (7%), up from $181 million (6%) last year
3. Paid-in increased $232 million (9%), up from $201 million (8%) last year; and represents 41% of the starting uncalled amount
4. The portfolio is 83% paid-in (*fully* mature), up from 82% last year
5. Uncalled capital decreased $11 million (-2%), up slightly from -$15 million (-2%) last year
6. The portfolio distributed $395 million (31% cash flow yield), up from $179 million (16%)
7. Portfolio net cash flow was $163 million (13%) as more capital was distributed than paid-in, a large increase from a negative $21 million (-2%) in the prior year
8. NAV rose $713 million (55%), a very large change from last year's $142 million (12%) increase
9. Total portfolio appreciation was $875 million (68%), up from $120 million (11%) last year
10. Abbott's 12.1% IRR fell just below median versus the Refinitiv/Cambridge All Region composite since 1998, which has a top quartile of 24.3% and a median of 12.2% (50$^{th}$ percentile)
11. The 1.85x TVPI is second quartile versus a top quartile of 2.12x and a median of 1.53x (36$^{th}$ percentile)

All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of ACM fees and expenses
All manager holdings are June 30 actual values and cash flows
DPI = Distributions as a ratio of (divided by) Paid-In capital
RVPI = Residual Value (Net Asset Value) as a ratio of (divided by) Paid-In Capital
TVPI = Total Value (Distributions + NAV) as a ratio of (divided by) Paid-In Capital
Benchmarks are Refinitiv/Cambridge All Regions 6/30/21

# Abbott: Cambridge Vintage Year Peer Group Benchmark

## IRRs and All Region Benchmarks as of June 30, 2021

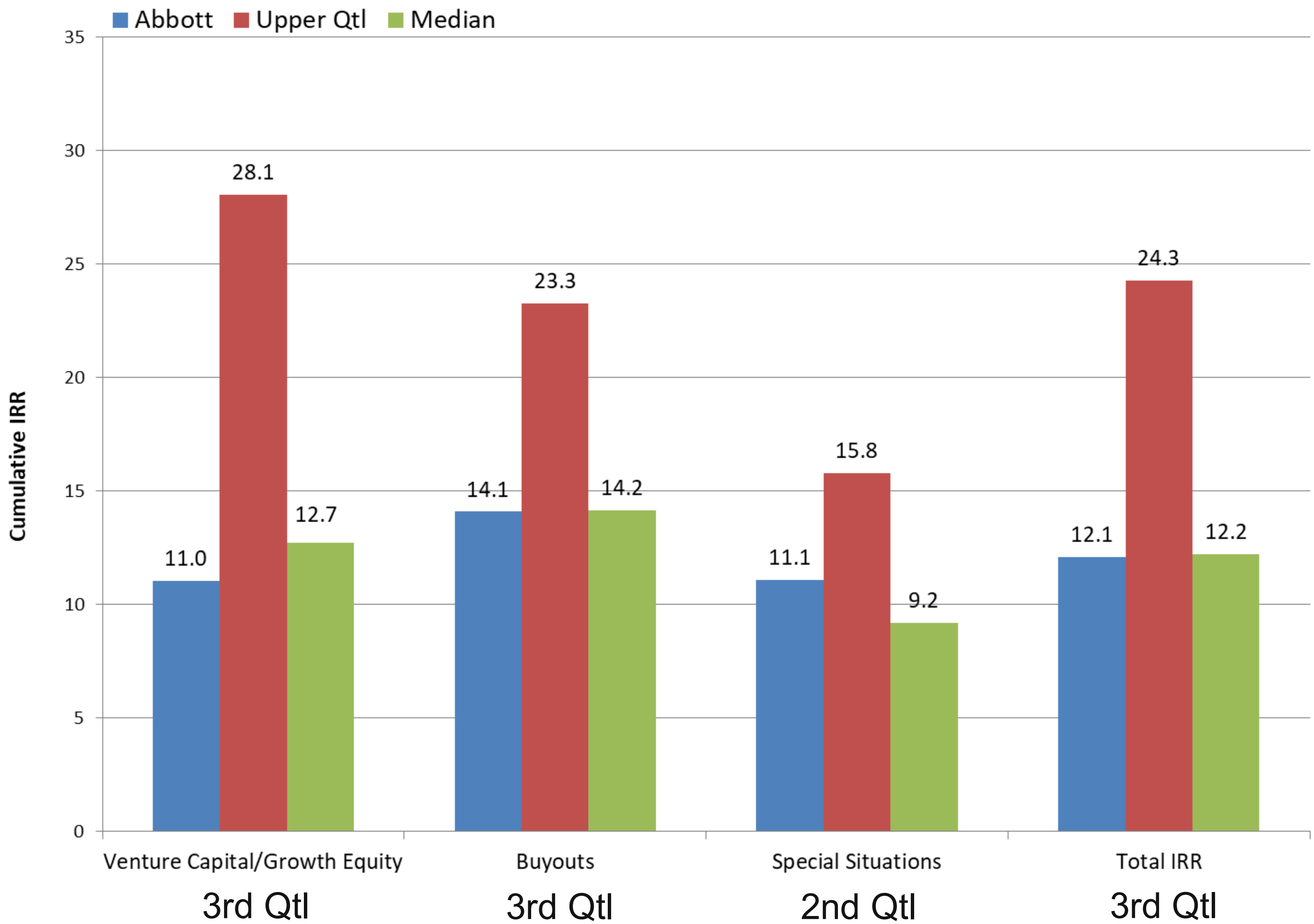



1st Quartile: 4 years 2nd Quartile: 16 years Below Median: 1 years

All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of ACM fees and expenses
Refinitiv/Cambridge Benchmarks: Venture Capital, Growth Equity, Buyouts, Mezzanine, Opportunistic Credit, Control Distressed, Private Energy

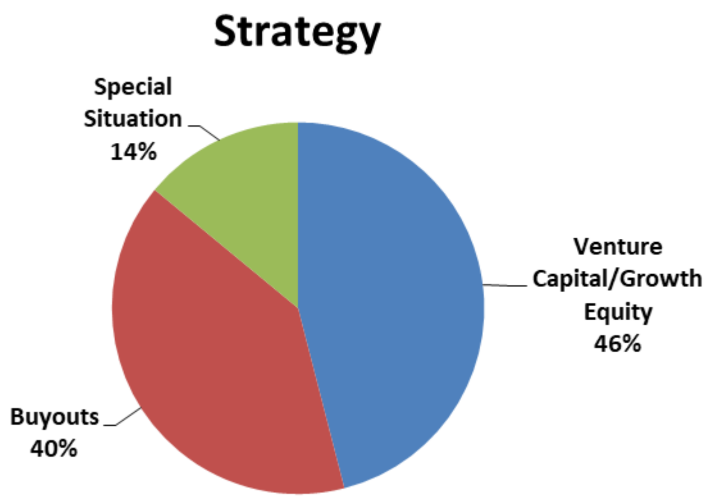
## Abbott: Cambridge Strategy Peer Group Benchmark

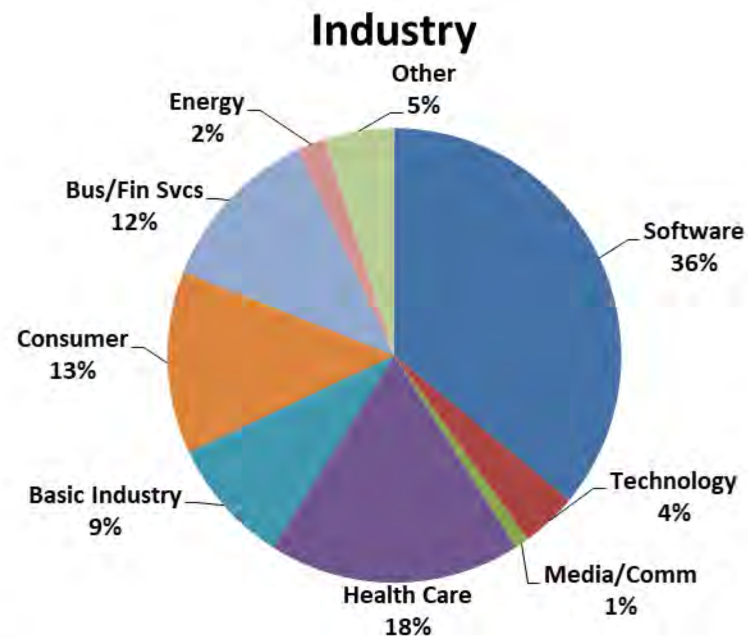
Cumulative Composite Benchmarks Inception through June 30, 2021




All Composites: VY 1998 – 2021
All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of ACM fees and expenses

## **ACM Portfolio Diversification** June 30, 2021





Note: Strategy is based on underlying partnership valuations. Industry, and Geography allocations are based on underlying portfolio company valuations

## Pathway Capital Management Profile

- Founded in 1991, Pathway Capital Management (PCM) is an independent registered investment advisor and is wholly owned by its 21 partners.
- PCM has 19 senior investment professionals, 50 junior investment professionals, and 199 total employees
- The firm is headquartered in Irvine, CA with an additional U.S. office in Providence, RI, and international offices in London, and Hong Kong. PCM also has a Japan-based Pacific Basin alliance with its client Tokyo Marine
- PCM has had a stable team. In the last five years, there have been only five departures of VP and above, of which one was a retirement. The firm maintains a deep staff.
- Total AUM is $65.1 billion (NAV plus uncalled), with a large established client base. ARMB represents 3.4% of PCM's AUM
- Pathway's portfolio initiated in mid-2002 and represents 44% of the ARMB's private equity portfolio NAV
- Pathway states that they use a market-weighting investment strategy and do not tend to overweight particular investment strategies. The investment approach is conservative, investing with highly developed general partners with proven track records and experience investing through market cycles, primarily in developed markets
- Callan would characterize PCM as a conservative global boutique core manager that invests in key private equity strategies, except mezzanine, and has an expertise in non-US investing. The firm's corporate finance investments have a  mid- to large-buyouts orientation

# ARMB Private Equity Performance

## **Pathway Portfolio: 12-Month Changes**, June 30, 2021 ($000)

| Year | Committed | Paid-In | Uncalled | Distributed | NAV | DPI | RVPI | TVPI | IRR | %PI |
|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 2,834,084 | 2,425,448 | 602,877 | 2,497,729 | 1,495,285 | 1.03 | 0.62 | 1.65 | 14.2% | 79% |
| 2021 | 3,051,934 | 2,672,178 | 594,749 | 2,935,736 | 2,236,038 | 1.10 | 0.84 | 1.94 | 16.3% | 81% |
| **Change** | **217,851** | **246,731** | **(8,128)** | **438,007** | **740,752** | **0.07** | **0.22** | **0.29** | **2.0%** | **2%** |
| % Chg | 8% | 10% | -1% | 18% | 50% | 7% | 36% | 18% | 14% | 2% |

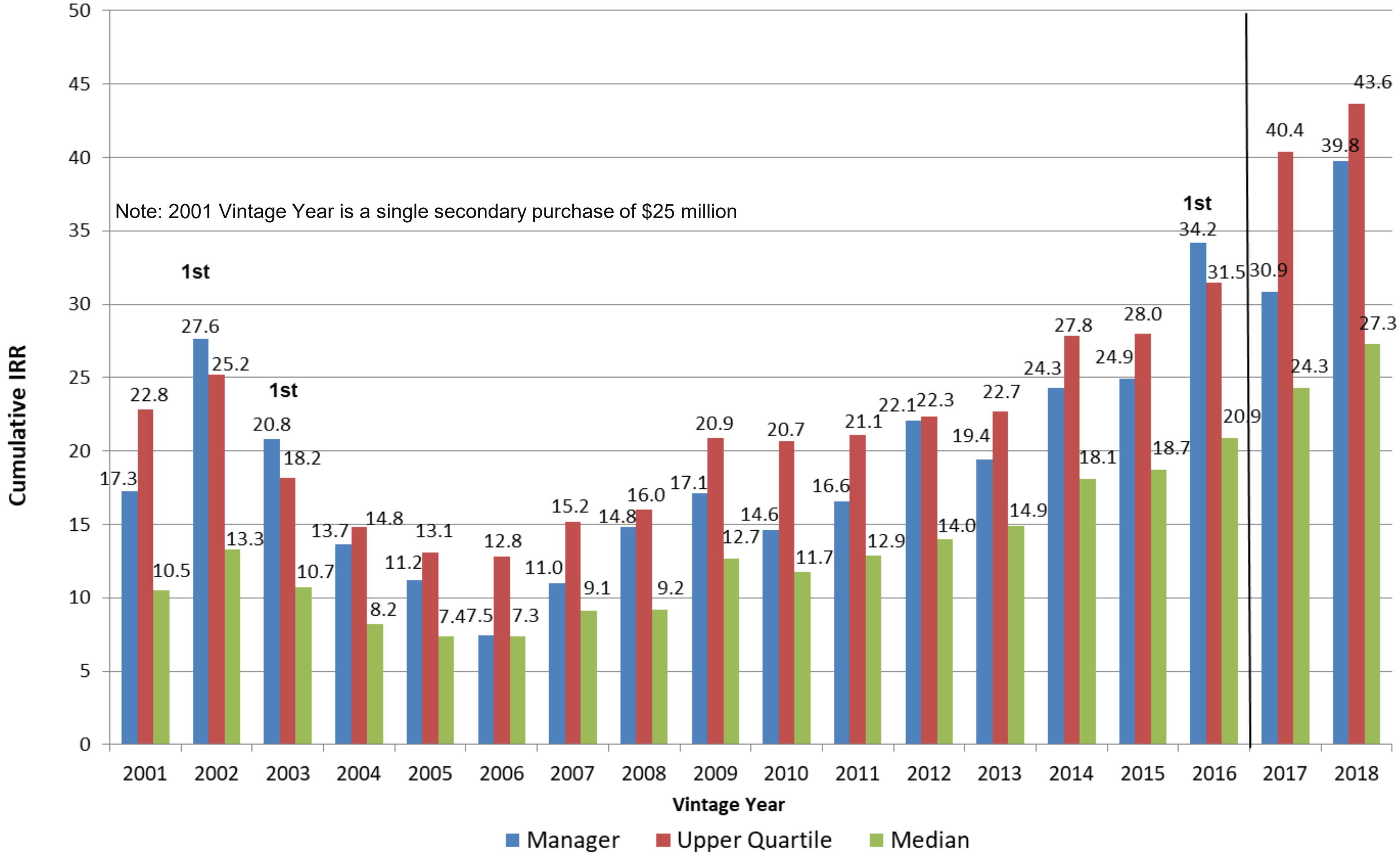
| Key Metrics | |
|---|---|
| $ Gross Distributions | 438,007 |
| Gross Distribution Yield | 29.3% |
| $ Net Distributions | 191,277 |
| Net Distribution Yield | **12.8%** |
| $ NAV Increase | 740,752 |
| % NAV Increase | **49.5%** |
| $ Total Increase | 932,029 |
| **% Total Increase** | **62.3%** |

1. Initiated 20 years ago, invested in 317 investments of which 284 remain active, and 33 have liquidated
2. Commitments increased $217 million (8%), up from $193 million (9%) last year
3. Paid-in increased $246 million (11%), the same as $246 million (11%) last year; and represents 41% of the starting uncalled amount
4. The portfolio is 81% paid-in (*fully* mature), up from 79% last year
5. Uncalled capital declined $8 million (-1%), up from -$31 million (-5%) last year
6. Distributions were $438 million (29% cash flow yield), up from $225 million (18%) last year
7. Portfolio net cash flow was a positive $191 million (13%) as more capital was distributed than paid-in, up from a negative -$31 million (-2%) last year
8. NAV increased $741 million (50%), up from the $209 million (16%) last year
9. Total portfolio appreciation was $932 million (62%), up from the $187 million (15%) last year
10. Pathway's 16.3% IRR is second quartile versus the Refinitiv/Cambridge All Region composite since 2002, which has a top quartile of 25.9% and a median of 13.5% ($44^{th}$ percentile)
11. The 1.94x TVPI is also second quartile versus the top quartile and median of 2.16x and 1.57x ($34^{th}$ percentile)

All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of PCM fees and expenses
All manager holdings are June 30 actual values and cash flows
DPI = Distributions as a ratio of (divided by) Paid-In capital
RVPI = Residual Value (Net Asset Value) as a ratio of (divided by) Paid-In Capital
TVPI = Total Value (Distributions + NAV) as a ratio of (divided by) Paid-In Capital
Benchmarks are Refinitiv/Cambridge All Regions 6/30/21

# Pathway: Cambridge Vintage Year Peer Group Benchmark

## IRRs and All Region Benchmarks as of June 30, 2021



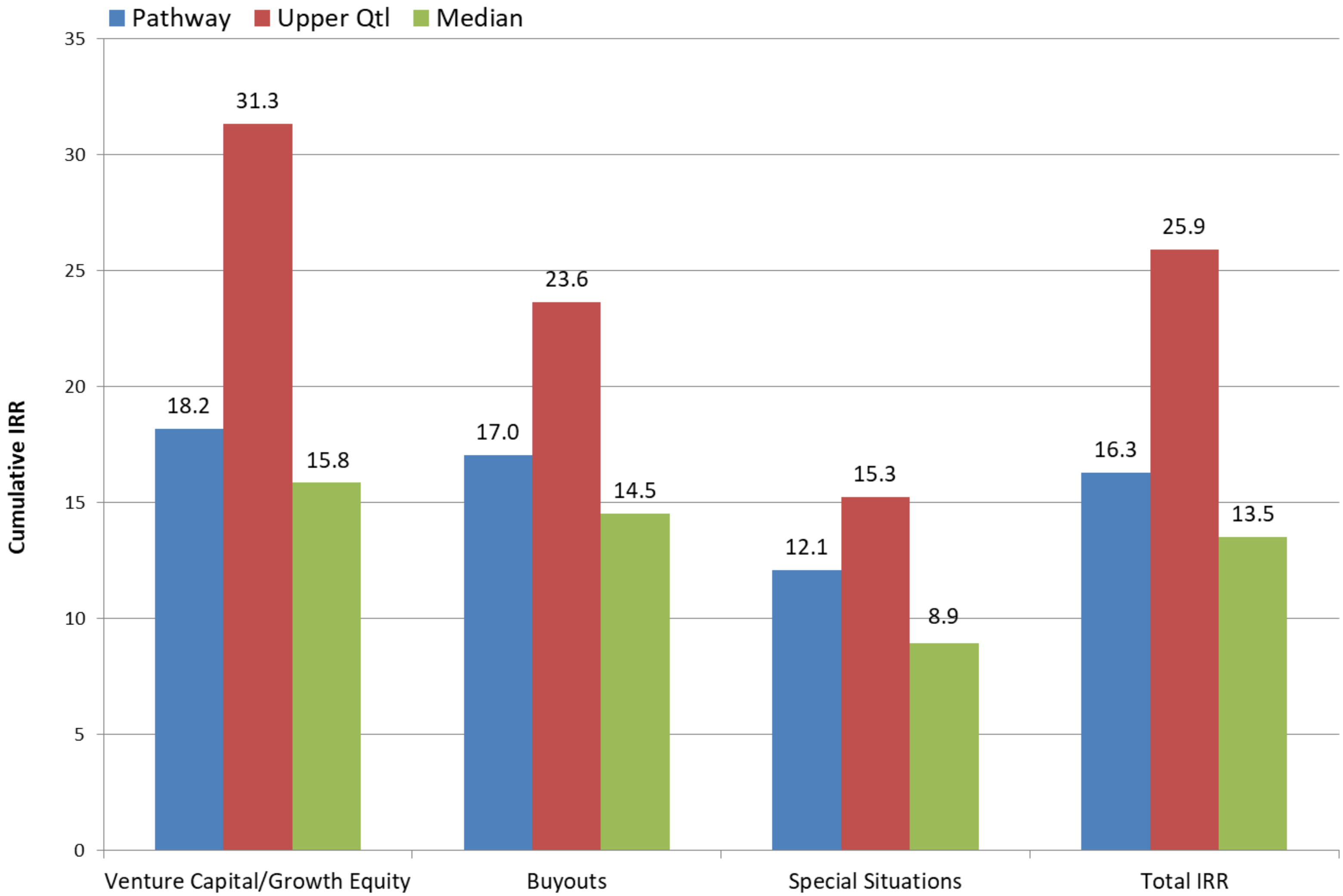

1st Quartile: 3 years     2nd Quartile: 15 years     Below Median: 0 years

All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of PCM fees and expenses

Refinitiv/Cambridge Benchmarks: Venture Capital, Growth Equity, Buyouts, Mezzanine, Opportunistic Credit, Control Distressed , Private Energy

## Pathway: Cambridge Strategy Peer Group Benchmark

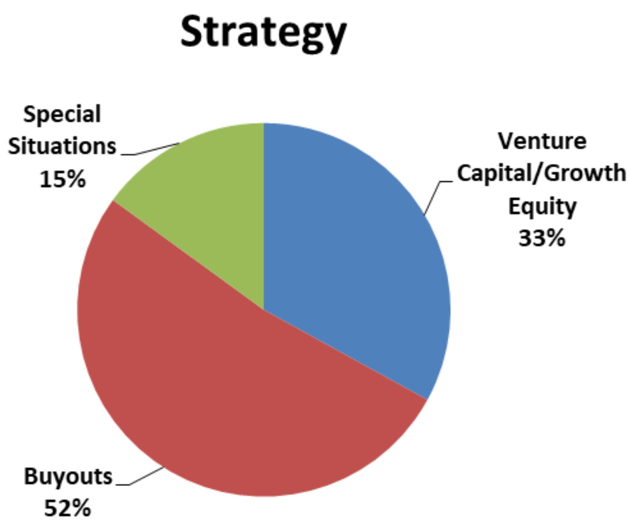
Cumulative Composite Benchmarks Inception through June 30, 2021

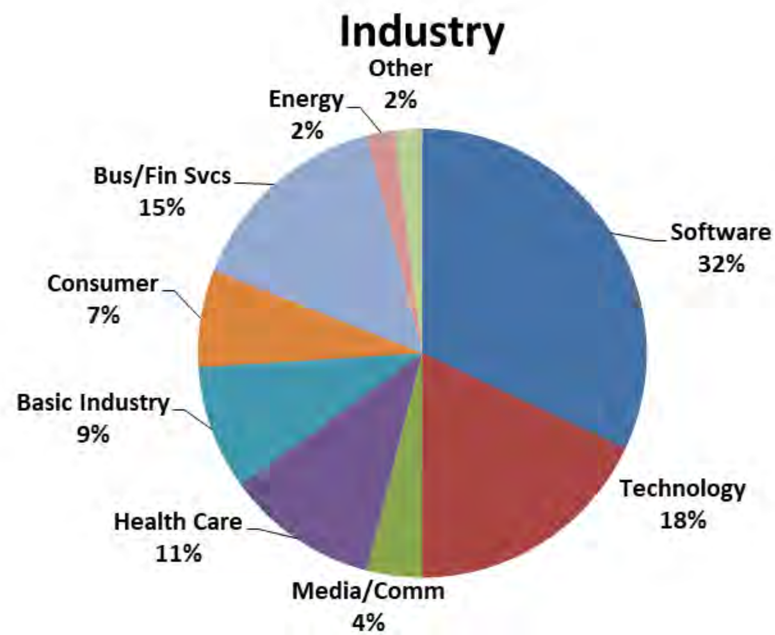


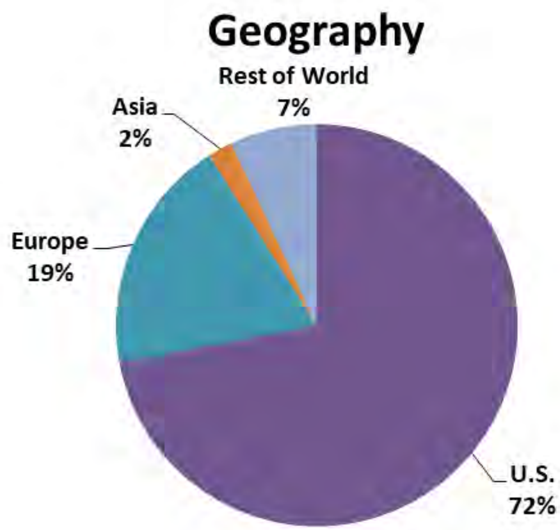

2nd Qtl | 2nd Qtl | 2nd Qtl | 2nd Qtl

All Composites: VY 2002 – 2021
All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of PCM fees and expenses

## **PCM Portfolio Diversification** June 30, 2021




Note: Strategy is based on underlying partnership valuations. Industry, and Geography allocations are based on underlying portfolio company valuations

# ARMB Private Equity Performance

## **Treasury Portfolio: 12-Month Changes**, June 30, 2021 ($000)

| Year | Committed | Paid-In | Uncalled | Distributed | NAV | DPI | RVPI | TVPI | IRR | %PI |
|---|---|---|---|---|---|---|---|---|---|---|
| 2020 | 1,215,000 | 848,965 | 441,194 | 533,457 | 572,536 | 0.63 | 0.67 | 1.30 | 10.4% | 64% |
| 2021 | 1,390,000 | 972,692 | 506,763 | 686,618 | 891,966 | 0.71 | 0.92 | 1.62 | 15.7% | 64% |
| **Change** | **175,000** | **123,726** | **65,569** | **153,161** | **319,430** | **0.08** | **0.24** | **0.32** | **5.3%** | **0%** |
| % Chg | 14% | 15% | 15% | 29% | 56% | 12% | 36% | 25% | 51% | 0% |

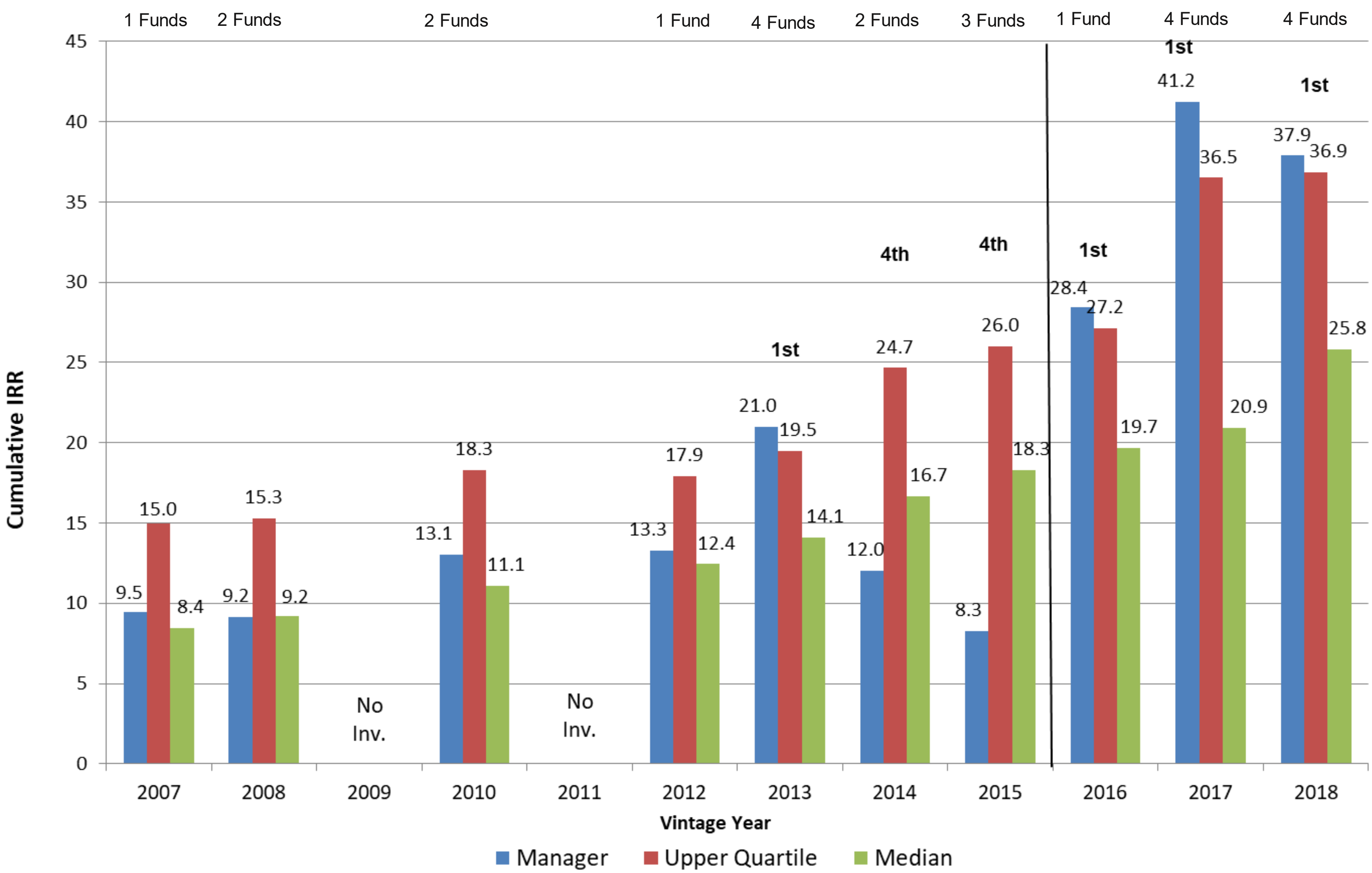
| Key Metrics | |
|---|---|
| $ Gross Distributions | 153,161 |
| Gross Distribution Yield | 26.8% |
| $ Net Distributions | 29,435 |
| Net Distribution Yield | **5.1%** |
| $ NAV Increase | 319,430 |
| % NAV Increase | **55.8%** |
| $ Total Increase | 348,865 |
| **% Total Increase** | **60.9%** |

1. Initiated November 2007, 21 partnerships (+3); 17% of NAV
2. Commitments increased $175 million (+14%), up from $80 million (+7%) last year
3. Paid-in capital increased $124 million (15%), down from $155 million (22%) last year; and represents 28% of the starting uncalled amount
4. Portfolio is 64% paid-in (developing), unchanged from last year
5. Uncalled capital increased $66 million (16%), up from -$24 million (-5%) last year
6. Distributions were $153 million (27% of NAV), up from $111 million (21%) last year
7. Net cash flow was a positive $29 million (5%) as distributions exceeded paid-in, a change from the negative $24 million (-5%) last year
8. NAV increased $319 million (56%), versus from a $40 million (8%) increase last year
9. Total portfolio appreciation was $349 million (61%), up from the $4 million (1%) last year. The portfolio continues to build and remains dynamic, with 51% of commitments occurring since 2017 (the last 4.5 years)
10. The portfolio is still early for benchmarking. Of the 7 vintage years greater than 4 years old, the first four years are second quartile, one is first quartile, and two (2014 and 2015) are currently fourth quartile by TVPI
11. A goal is to gradually increase the number of partnership investments within a vintage year to five or more
12. The 15.7% IRR is second quartile versus a database upper quartile of 25.8% and median of 14.9% (48$^{th}$ percentile)
13. The 1.62x TVPI is second quartile versus an upper quartile of 1.95x and median of 1.51x (44$^{th}$ percentile)

All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of Treasury expenses
Benchmark = VY 2007, 2008, 2010, 2012-2021 for Buyout, Mezzanine, Distressed, Energy, Growth Equity, Secondary

# Treasury: Cambridge Vintage Year Peer Group Benchmark

## IRRs and All Region Benchmarks as of June 30, 2021

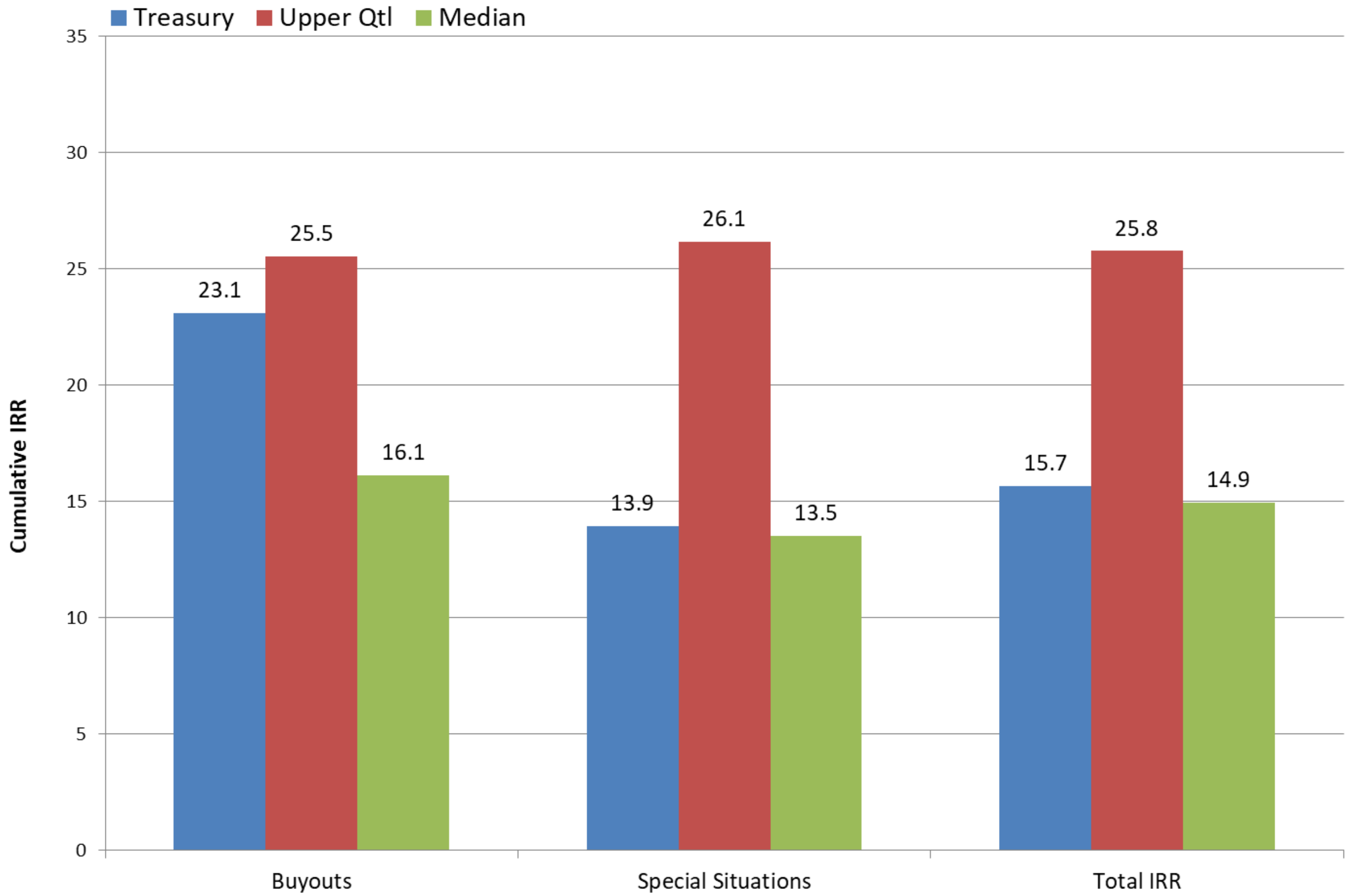



1st Quartile: 4 years 2nd Quartile: 4 years Below Median: 2 years

All returns are net of all underlying partnership fees, carried interest, and expenses, but gross of PCM fees and expenses
Refinitiv/Cambridge Benchmarks: Buyout, Control-Oriented Distressed, Growth Equity, Private Equity Energy, Secondary Funds, Subordinated Capital

# Treasury: Cambridge Strategy Peer Group Benchmark

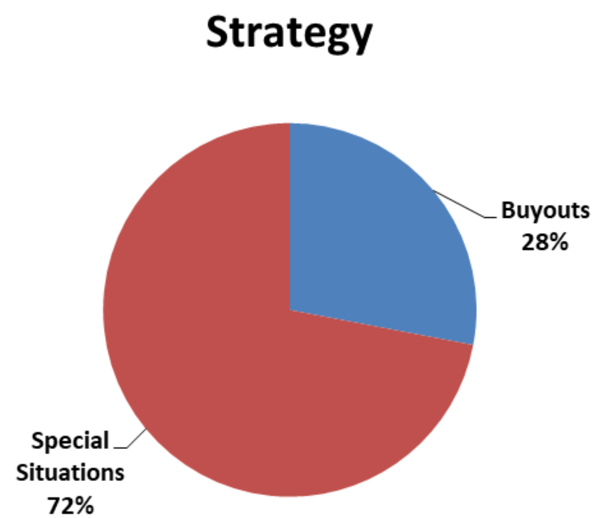
## Cumulative Composite Benchmarks Inception through June 30, 2021




2nd Qtl 2nd Qtl 2nd Qtl

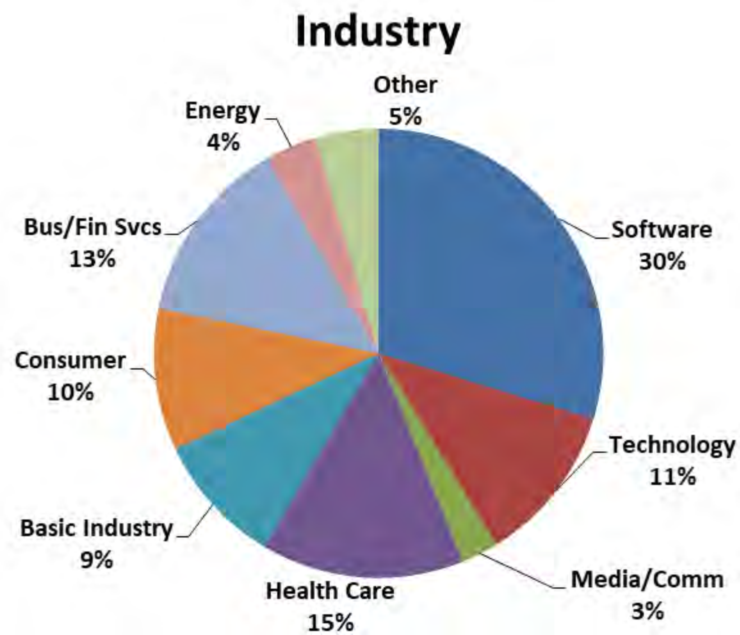
All Composites: VY 2002 – 2021
All returns are net of all underlying partnership fees, carried interest, and expenses

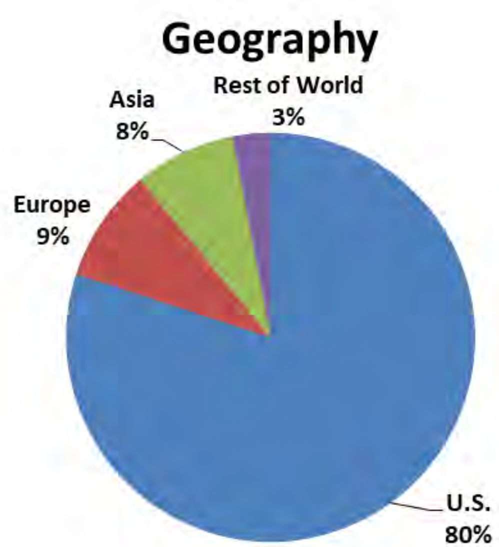
# **Treasury Portfolio Diversification** June 30, 2021




**Special Situation Break-Out**

| | |
|---|---|
| Mult-Strategy | 26% |
| Secondary | 13% |
| Growth Equity | 13% |
| Distressed | 11% |
| Oil & Gas | 7% |
| Credit/Mezzanine | 3% |
| Total SS | 72% |




Note: Strategy is based on underlying partnership valuations. Industry, and Geography allocations are based on underlying portfolio company valuations

# ARMB Summary

*Observations*

- ARMB's private equity portfolio is mature, has provided good performance, and is well-diversified
  - It has overcome initial funding during the tech bubble and weathered continued target increases
  - The portfolio has fully returned cumulative invested capital (DPI 1.06x), and fiscal 2021 produced dollar distributions 52% greater than the previous yearly high of $597 million in 2018
  - Total appreciation (net cash flow + NAV increase) was even stronger being 389% greater than the previous yearly dollar high of $446 million in 2019
  - The private equity allocation is close to the new Fiscal 2021 strategic allocation target of 14% (1.2% above)
  - The uncalled backlog of 35% of the target should help moderate the portfolio slightly toward the mid-point of its strategic range
- Performance is second quartile versus a database of partnerships selected by other professionally-managed programs (~36$^{th}$ percentile)
  - ARMB's performance remains highly competitive relative to its peer group of institutional investors
  - Both external managers are performing well relative to benchmarks and their strategy mixes are complementary
  - The Treasury portfolio is second quartile and is still developing and dynamic
  - The portfolio is composed of tenured, high-quality general partners
  - ARMB has an attractive strategy mix for a large fund, and is well-diversified by other measures

## ARMB Summary

*Observations*

- ARMB's private equity portfolio had an unusually good year—capturing rising prices
  - The fiscal year saw four quarters of strong public equity market increases from the bottom of the pandemic-induced trough in early 2020
  - The portfolio's investment pace, distributions, and particularly unrealized appreciation was very strong, with the overall increase of 64% well ahead of both public equity and private equity indices (which had returns of 44% and 56%, respectively)
  - The 64% increase was supported by net cash flow of 11% and a 53% NAV increase
  - If market prices maintain, voluminous distributions over the next several years are likely
- Looking forward
  - The pandemic's initial market shock was short-lived.
  - Capital markets are in an unusual juxtaposition where prices of all assets appear to be "top of cycle" level, but prospects for economic growth reflect "bottom of recession" strength
  - So far capital market liquidity is continuing and ARMB's portfolio is well-positioned to reap significant distributions based on current unrealized price appreciation
  - ARMB's portfolio is mature, and is well-diversified within the private equity market with meaningful venture, growth, and U.S./developed market exposures
  - Callan is cautioning clients to be mindful of the "denominator effect" if public markets contract from the current notably high equity and debt valuations

# Appendix

# How Private Equity Works

***ARMB invests in all major private corporate finance strategies ("private equity"):***

- **Venture Capital**
  - Smaller technology/medical companies
- **Growth Equity**
  - High growth companies typically in technology, healthcare, consumer
- **Buyouts**
  - Larger company equity, traditional industries
- **Special Situations** (various smaller PE sub-strategies)
  - Debt-related (distressed debt, subordinated debt, Senior debt, opportunistic credit)
  - Energy
  - Hybrid (pursue two or more strategies, or flexible ownership/capital structure investments)
  - Industry-Specific (financial services-only, media-only, software-only, etc.)

* ARMB's strategy targets are governed by the Investment Policy Guidelines and the Annual Tactical Plan

# How Private Equity Works

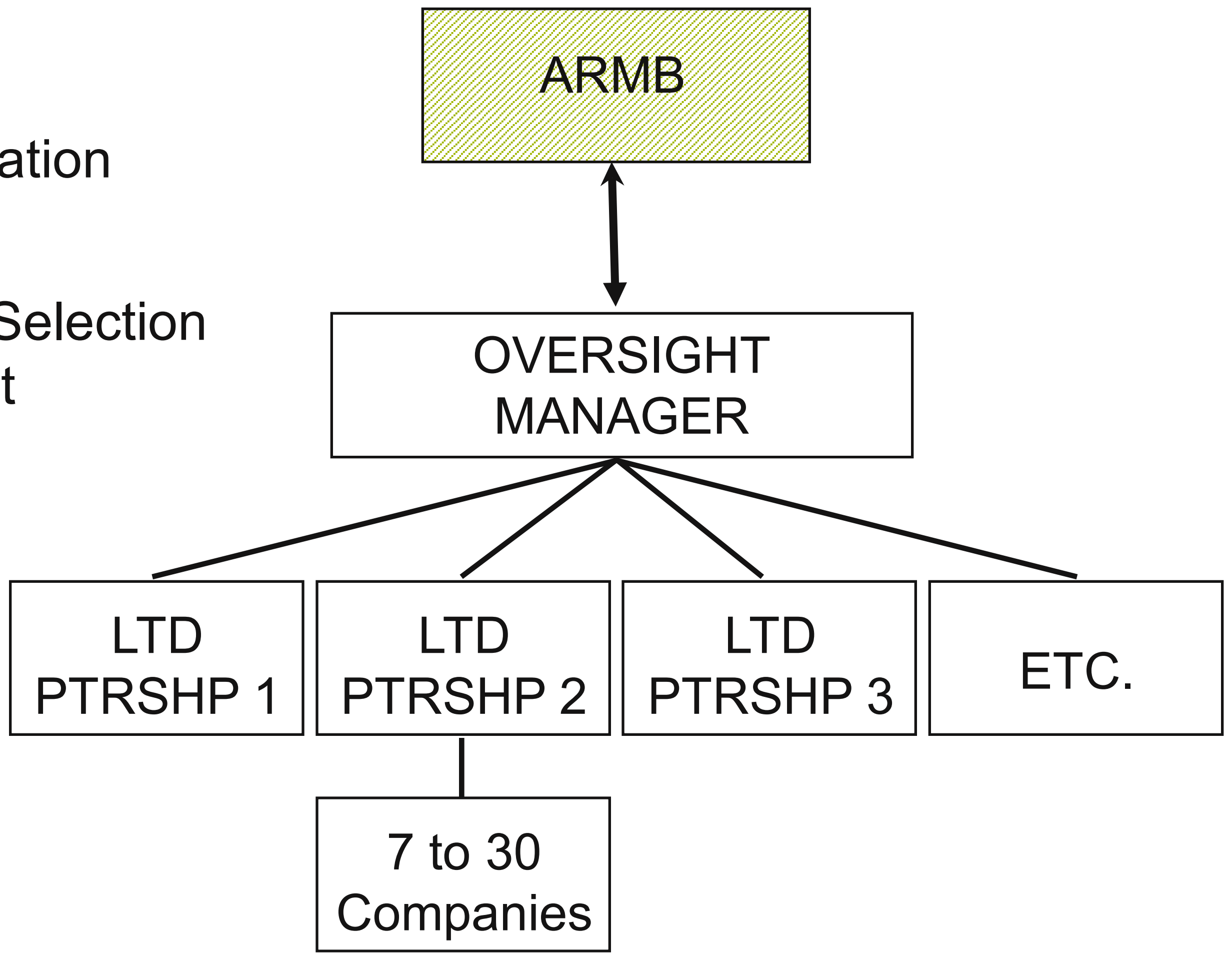
## Private Equity Partnerships Program Structure

Policy
Strategic Planning
Performance Evaluation

Proactive Security Selection
Active Management
Reporting

Mini-Conglomerate
(Security)

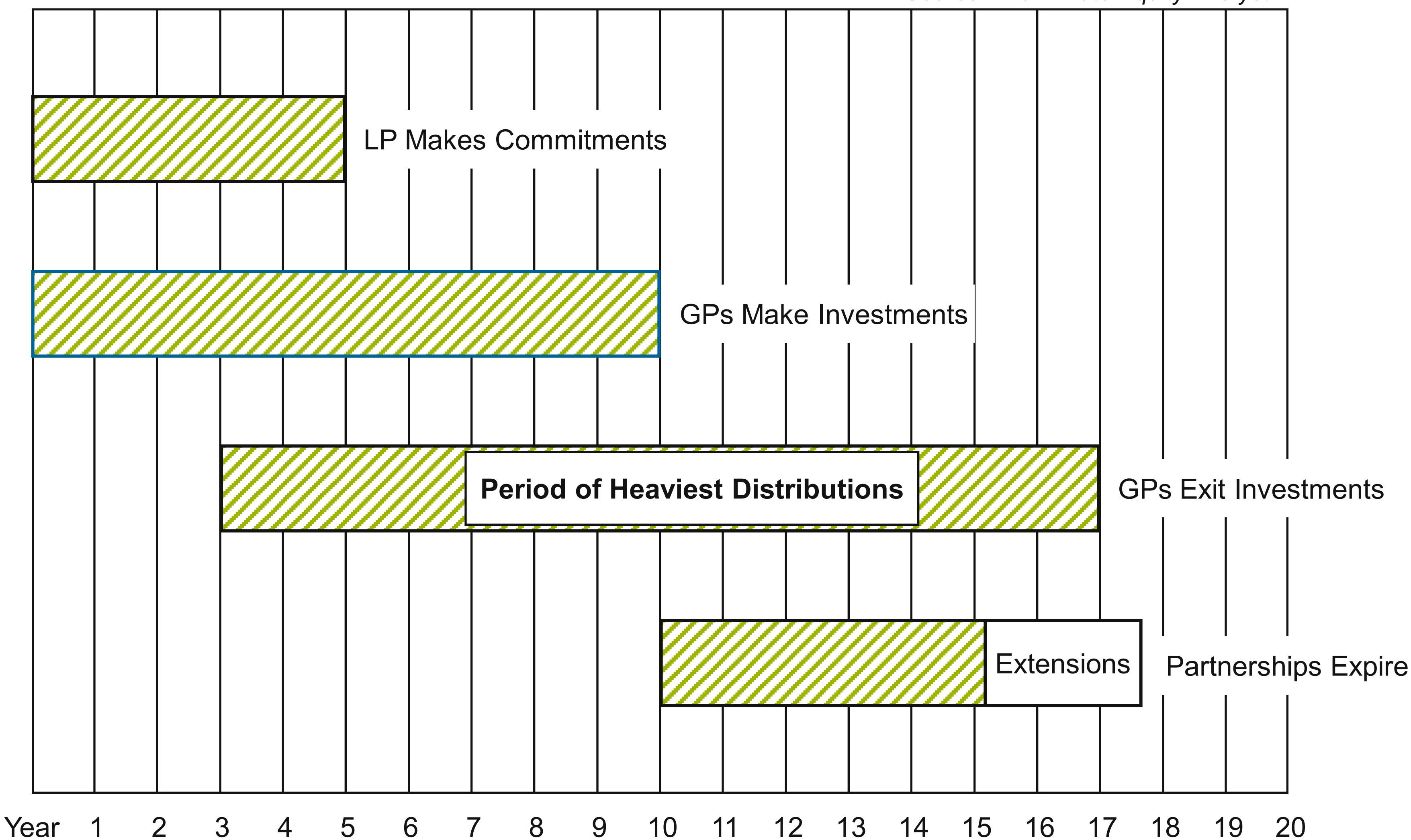
Divisions



# How Private Equity Works

## A Private Equity Investment Program Requires a Long-Term Horizon

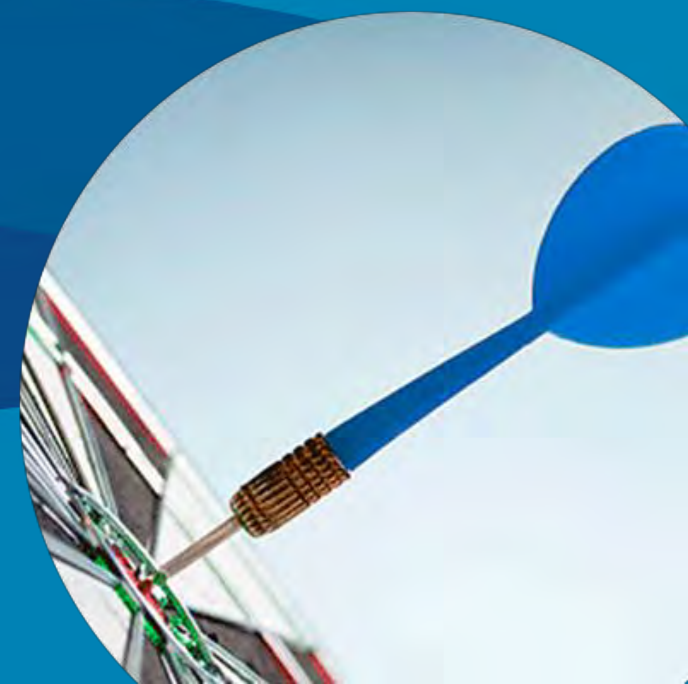
Source: *The Private Equity Analyst*



# Actuarial 007 – Data Security and Your Actuary

Paul Wood, ASA, FCA, MAAA

Alaska Retirement Management Board Meeting
December 2, 2021



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# Focus on Client Data Security

- GRS puts the highest priority on securing our clients' data
- Important Areas Covered Today:
  - Information Security Policies (Disaster and Incident Response, Training, Monitoring, Access Controls)
  - SOC 2 Type II Report
  - GRS Advantage™ Client Portal
  - Remote Work Capabilities

GRS

# Information Security Policies

- GRS Information Security Policies are structured around the following controls:
  - Assets and Data
  - Access Controls
  - Change Management & Configuration Standards
  - Monitoring
  - HIPAA, Risk Assessment & Vendor Management
  - Disaster & Incident Response
  - Training

# Information Security Policies - Disaster & Incident Response

- GRS maintains a Disaster Recovery, Incident Response and Business Resumption Policy that will support continuation of services to GRS clients and provide for an organized approach to addressing and managing a security incident, natural disaster or infrastructure failure.

GRS

# Information Security Policies - Disaster & Incident Response

- GRS will maintain a **Business Resumption Plan (BRP)** that will facilitate communication and remote working arrangements in the event a GRS facility is unavailable. Details of the BRP are reviewed with all GRS employees on hire and at least annually.
- GRS will maintain a documented **Disaster Recovery (DR) Plan** for all infrastructure.
- GRS will maintain an **Incident Response Plan (IRP)** in the event of a security incident. Elements of the IRP are reviewed with all GRS employees on hire and at least annually.

# Information Security Policies - Disaster & Incident Response

- GRS uses an entirely virtualized environment consisting of two data centers located in Michigan and Florida
- Each data center location functions as a recovery site for the peer location for disaster recovery purposes
- A daily, weekly, monthly, and long-term backup schedule and ongoing intra-site and inter-site replication schedule ensures recovery in all situations
- Backups are performed to disk and to tape media
- Backup and restoration testing is performed on a regular basis but not less than annually

# Information Security Policies - Training

- All employees receive the following training at least annually and during the onboarding process:
  - Attend the GRS Consulting Policies and Information Security Policies session(s)
  - Participate in online data security training
  - Participate in online HIPAA training
  - Provide employee policy acknowledgements
  - Other adhoc training or information as needed

GRS

# Information Security Policies - Monitoring

- GRS uses a third party security operations center (SOC) to provide vulnerability management services and 24 x 7 security monitoring
- GRS technology personnel and the SOC monitor for unusual or suspicious activity
- Annually, GRS performs a third party external network penetration test and a social engineering assessment
- All locations are equipped with next generation firewalls
- Antivirus software is required

# Information Security Policies - Monitoring

- GRS uses a third party service provider to monitor the network in the event of a communications or equipment failure
- In the event of a network communication or equipment failure, GRS technology personnel are immediately notified
- GRS maintains a redundant set of WAN and LAN services and equipment in the event of a failure

GRS

# Information Security Policies - Access Controls

- GRS has established Access Control Policies and Procedures (hire/termination/client services)
- Accounts are established by the GRS technology personnel through a series of documented workflows
- All employees or clients must be positively identified before access is granted to GRS system resources
- Positive identification for all VPN involves the use of two factor authentication

# Information Security Policies - Access Controls

- Other Access Controls include:
  - Use of strong passwords
  - Automatically locking personal computers based on user activity
  - Only two locations – Michigan and Florida - permit direct inbound Internet access
  - Individual PCs contain no confidential data and data is contained on the network and secured both physically as well as through standard controls and permissions

GRS

# SOC II Type 2 Report

- A SOC2 Type II report provides a user (GRS client) assurances about the controls and systems a service organization (GRS) uses to process information
- GRS continues to make an investment in the annual SOC 2 Type II reporting process to demonstrate to our clients the importance we place on data security

GRS

# SOC II Type 2 Report

- The GRS annual SOC 2 Type II Report supports the "Suitability of the Design and Operating Effectiveness of Controls Relevant to Security, Availability, and Confidentiality"
- All GRS Information Security Policies are audited during the annual reporting process
- GRS received its third annual SOC 2 Type II report during June 2021 with zero reported deficiencies

# GRS Advantage™ Client Portal

GRS Advantage™

Home


Participants

Plan Sponsors

GRS Associates

### Let's Get Started

Useful links for the GRS Advantage™ Website:

Participants (Perform retirement estimates, view Plan documents, etc.)

- Guide to Participant Registration and Login
- Registration Page
- Login Page

Plan Sponsors (Access GRS research, securely transfer files, etc.)

- GRS Advantage™ User Reference Guide
- Registration Page
- Login Page

### Featured GRS Resources

**GRS News Scan: September 2021** –

*Thursday, September 30, 2021* [View Document]

**This issue includes the following news summaries:**

- NASRA Updates Issue Brief on Employee Contributions to Public Pension Plans
- SSA Releases 2021 Social Security Fast Facts and Figures
- Public Plans Database Finds State and Local Pension Plans' Average Funded Ratio Remains Steady
- American Academy of Actuaries Publishes Issue Brief on the 2021 Social Security Trustees Report
- S&P Global Reports on U.S. States' Risk Reduction in Managing Pension and OPEB Liabilities
- CRR Issues Brief on Social Security's Financial Outlook in 2021
- Commonwealth Fund Analyzes the Coverage and Cost Effects of Proposed Health Insurance Reforms

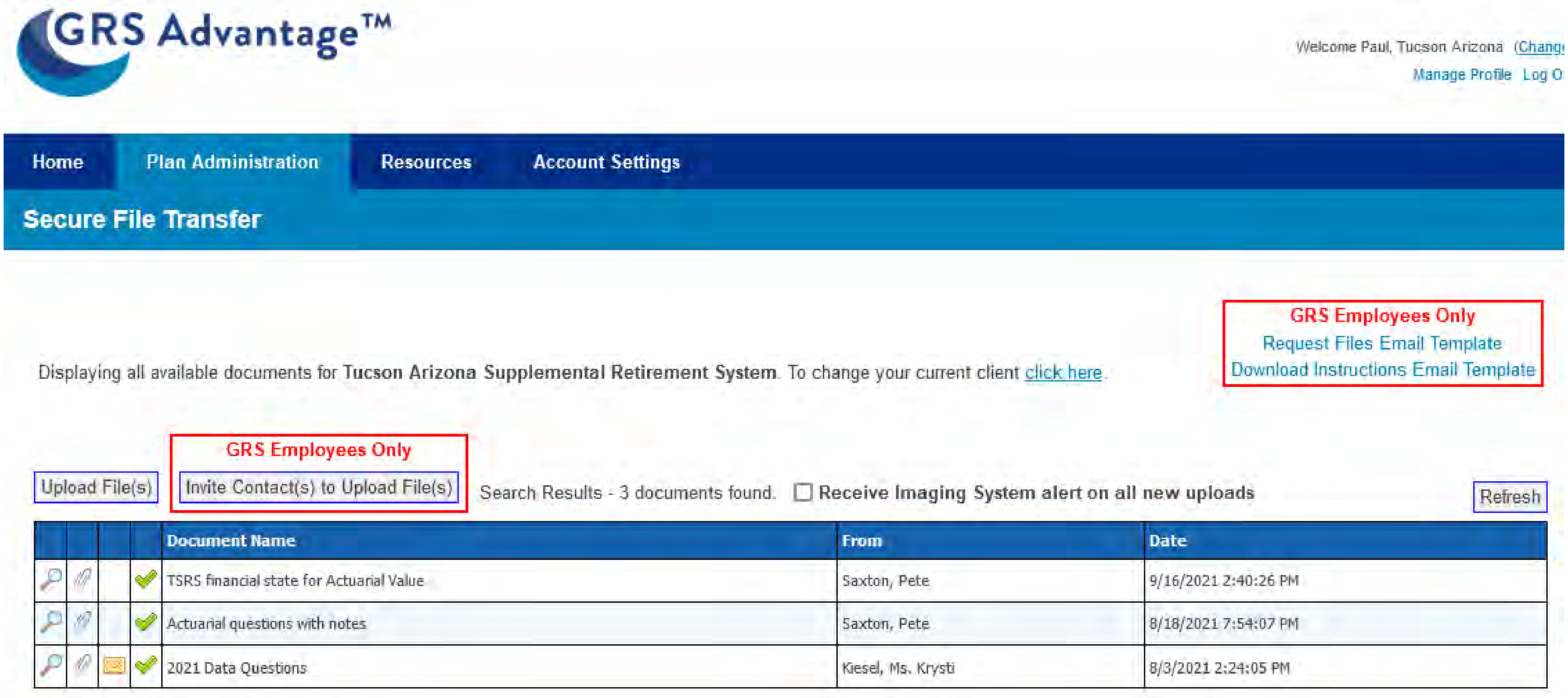
GRS

# GRS Advantage™ Client Portal

- All web traffic is encrypted using SSL certificates
- All web users have accounts with strong passwords
- All web access is limited to US and Canadian traffic; all other traffic to any GRS asset is blocked at the firewall level
- Data is located within the US and maintained in our Michigan and Florida data centers

GRS

# GRS Advantage™ Client Portal - Secure Data Transfer




- Census and asset data is securely transferred through the portal

# GRS Advantage™ Client Portal – Client Resources

- GRS Publications
  - GRS News Scan
  - GRS Insights
  - GRS Perspectives
- GRS TrendLine™
  - GRS' public sector  benefit benchmarking application
  - Provides public employee retirement systems with a variety of statistical information related to assumptions, benefit design, and funding

# Remote Work Capabilities

- Every GRS team member from top to bottom has the ability to work remote
- The ability to work remote allows for uninterrupted service to GRS clients
- The ability to work remote has been in place for many years and transition to full remote work through the pandemic has been seamless

# Remote Work Capabilities

- Access to a secure Virtual Private Network (VPN) application that connects to the company network and enables GRS employees to work outside the office using their own desktop
- Positive identification for all VPN (remote access) involves the use of two factor authentication
- All GRS employees receive ongoing training on the GRS policies related to remote work

GRS

# Questions?

MARKET INSIGHTS

# Guide to the Markets®

U.S.|4Q 2021| As of November 11, 2021

J.P.Morgan
Asset Management

# Agenda

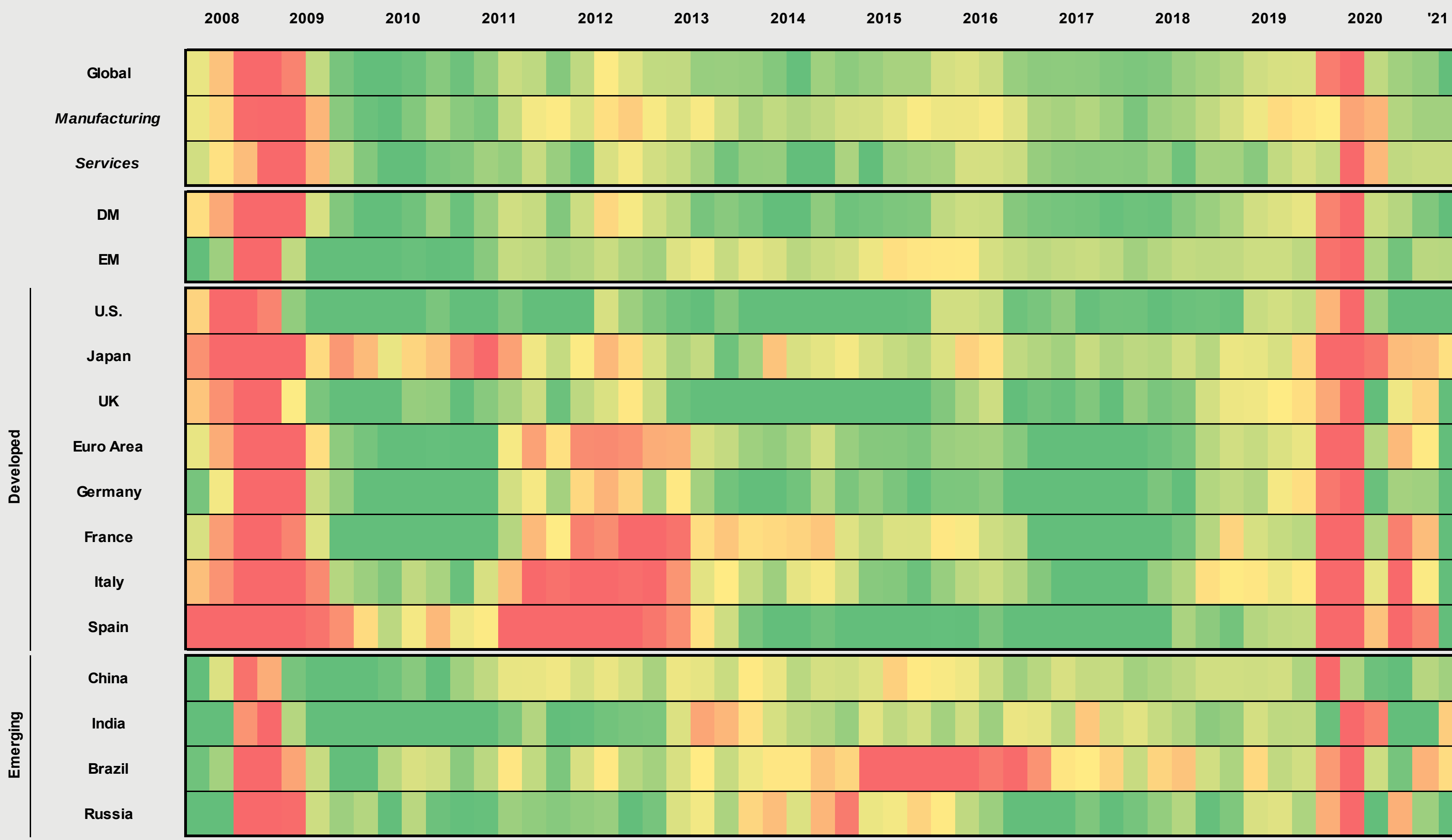
- The global economic rebound, served with a side of inflation
- Income and inflation protection in a low-rate world
- Equity risk in both public and private markets
- Cryptocurrencies and volatility



J.P.Morgan Asset Management

International

## Global Composite (manufacturing & services combined) Purchasing Managers' Index, quarterly




| | 2021 Sep | 2021 Oct |
|---|---|---|
| Global | 53.3 | 54.5 |
| *Manufacturing* | 54.1 | 54.3 |
| *Services* | 53.8 | 55.6 |
| DM | 53.8 | 55.2 |
| EM | 52.3 | 52.8 |
| U.S. | 55.0 | 57.6 |
| Japan | 47.9 | 50.7 |
| UK | 54.9 | 57.8 |
| Euro Area | 56.2 | 54.2 |
| Germany | 55.5 | 52.0 |
| France | 55.3 | 54.7 |
| Italy | 56.6 | 54.2 |
| Spain | 57.0 | 56.2 |
| China | 51.4 | 51.5 |
| India | 55.3 | 58.7 |
| Brazil | 54.7 | 53.4 |
| Russia | 50.5 | 49.5 |

Source: Markit, J.P. Morgan Asset Management.
The Composite PMI includes both manufacturing and services sub-indices. Heatmap colors are based on PMI relative to the 50 level, which indicates acceleration or deceleration of the sector, for the time period shown. Heatmap is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Data for the U.S. are back-tested and filled in from December 2007 to September 2009 due to lack of existing PMI figures. DM and EM represent developed markets and emerging markets, respectively.
*Guide to the Markets – U.S.* Data are as of November 11, 2021.

J.P.Morgan Asset Management

International

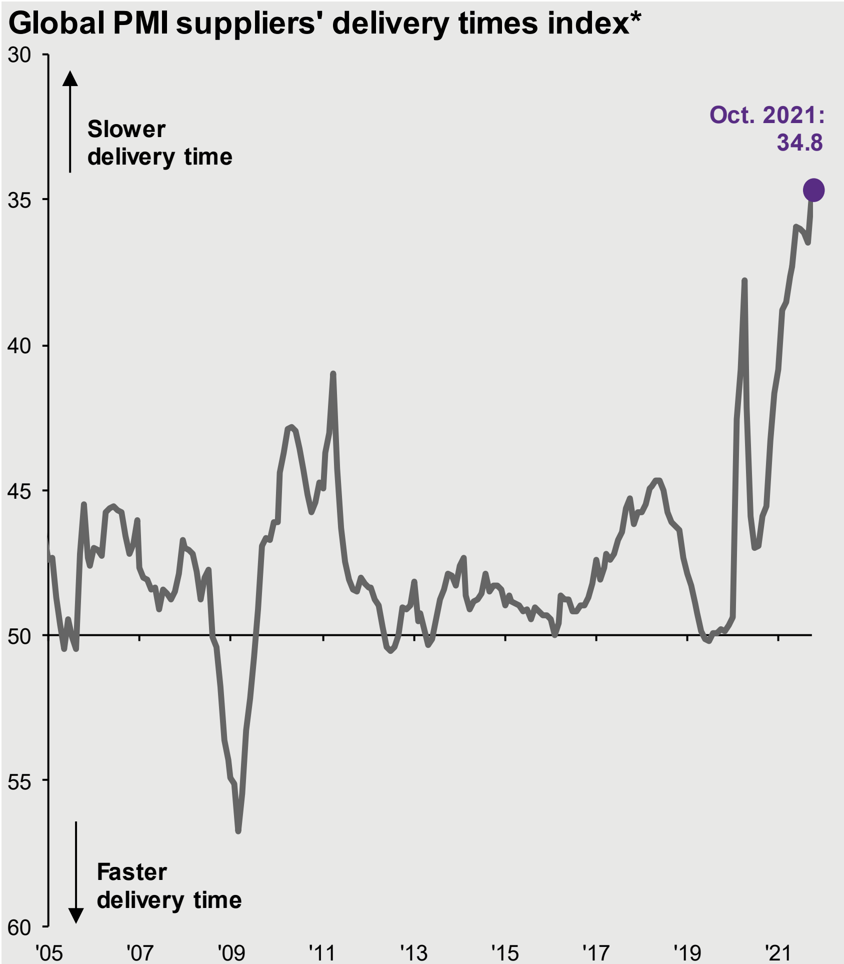
## Year-over-year headline inflation by country and region, quarterly

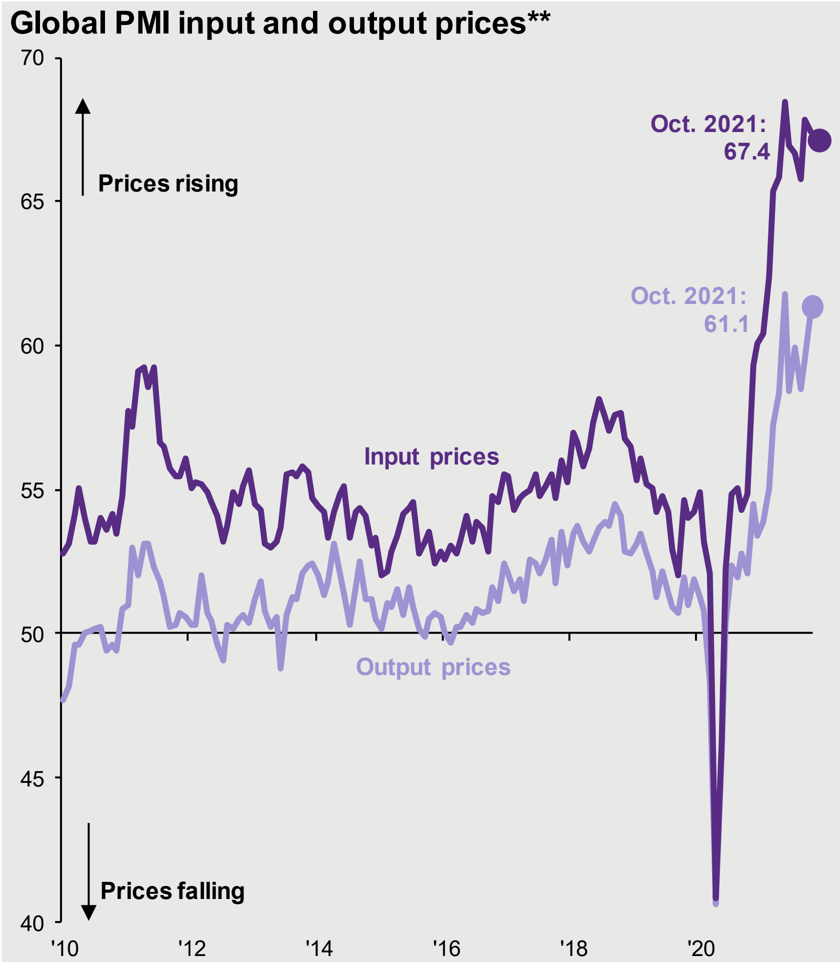

| | 2021 Sep | 2021 Oct |
|---|---|---|
| Global | 3.7% | - |
| DM | 3.7% | - |
| EM | 3.3% | - |
| U.S. | 5.4% | 6.2% |
| Canada | 4.4% | - |
| Japan | 0.2% | - |
| UK | 3.1% | - |
| Euro Area | 3.4% | 4.1% |
| Germany | 4.1% | 4.6% |
| France | 2.7% | 3.2% |
| Italy | 2.9% | 3.1% |
| Spain | 4.0% | 5.4% |
| Greece | 1.9% | 2.8% |
| China | 0.7% | 1.5% |
| Indonesia | 1.6% | 1.7% |
| Korea | 2.5% | 3.2% |
| Taiwan | 2.3% | 2.3% |
| India | 3.7% | - |
| Brazil | 10.2% | 10.7% |
| Mexico | 6.0% | 6.2% |
| Russia | 7.4% | 8.1% |

Source: Bank of Mexico, DGBAS, Eurostat, FactSet, Federal Reserve, Goskomstat of Russia, IBGE, India Ministry of Statistics & Programme Implementation, Japan Ministry of Internal Affairs & Communications, Korean National Statistical Office, Melbourne Institute, National Bureau of Statistics China, Statistics Canada, Statistics Indonesia, UK Office for National Statistics (ONS), J.P. Morgan Asset Management.
Heatmap is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Colors determined by percentiles of inflation values over the time period shown. Deep blue = lowest value, light blue = median, deep red = highest value. DM and EM represent developed markets and emerging markets, respectively.
*Guide to the Markets – U.S.* Data are as of November 11, 2021.

J.P.Morgan Asset Management

International




Source: IHS Markit, J.P. Morgan Asset Management.
*Participants in IHS Markit's PMI business surveys, conducted in 44 countries, are asked: "Are your suppliers' delivery times slower, faster or unchanged on average than one month ago?". Index includes the manufacturing and construction sectors. A reading of 50 = no change, >50 = faster delivery time, <50 = slower delivery time.**Participants are asked: "Are input/output prices the same, higher or lower?". Values shown reflect the composite index which includes both manufacturing and services. A reading of 50 = no change, >50 = price increase, <50= price decrease.
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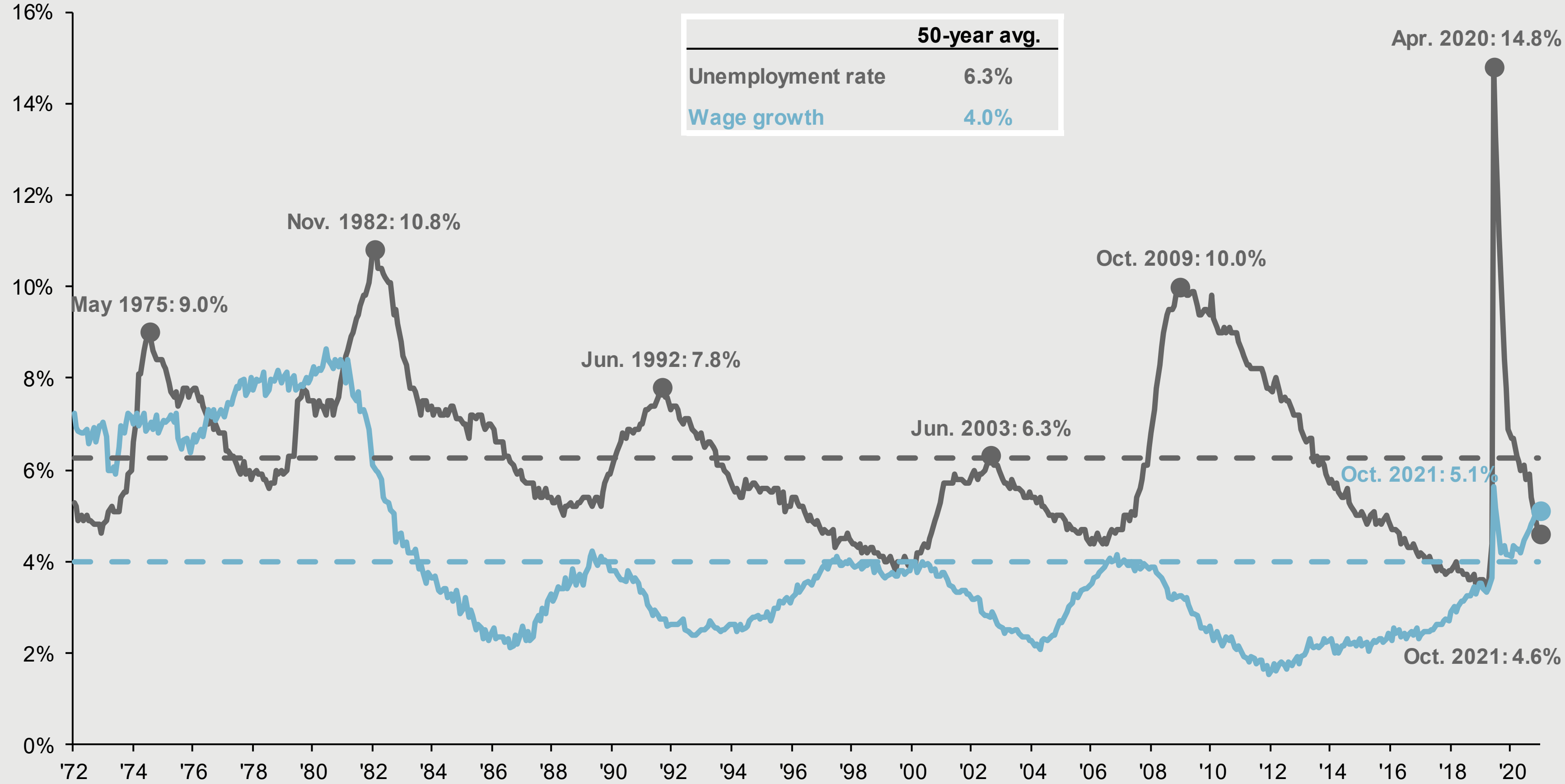
J.P.Morgan
Asset Management

**Civilian unemployment rate and annualized y/2y wage growth for private production and non-supervisory workers**

Seasonally adjusted, percent




| | 50-year avg. |
|---|---|
| Unemployment rate | 6.3% |
| Wage growth | 4.0% |

Source: BLS, FactSet, J.P. Morgan Asset Management.
*Guide to the Markets – U.S.* Data are as of November 11, 2021.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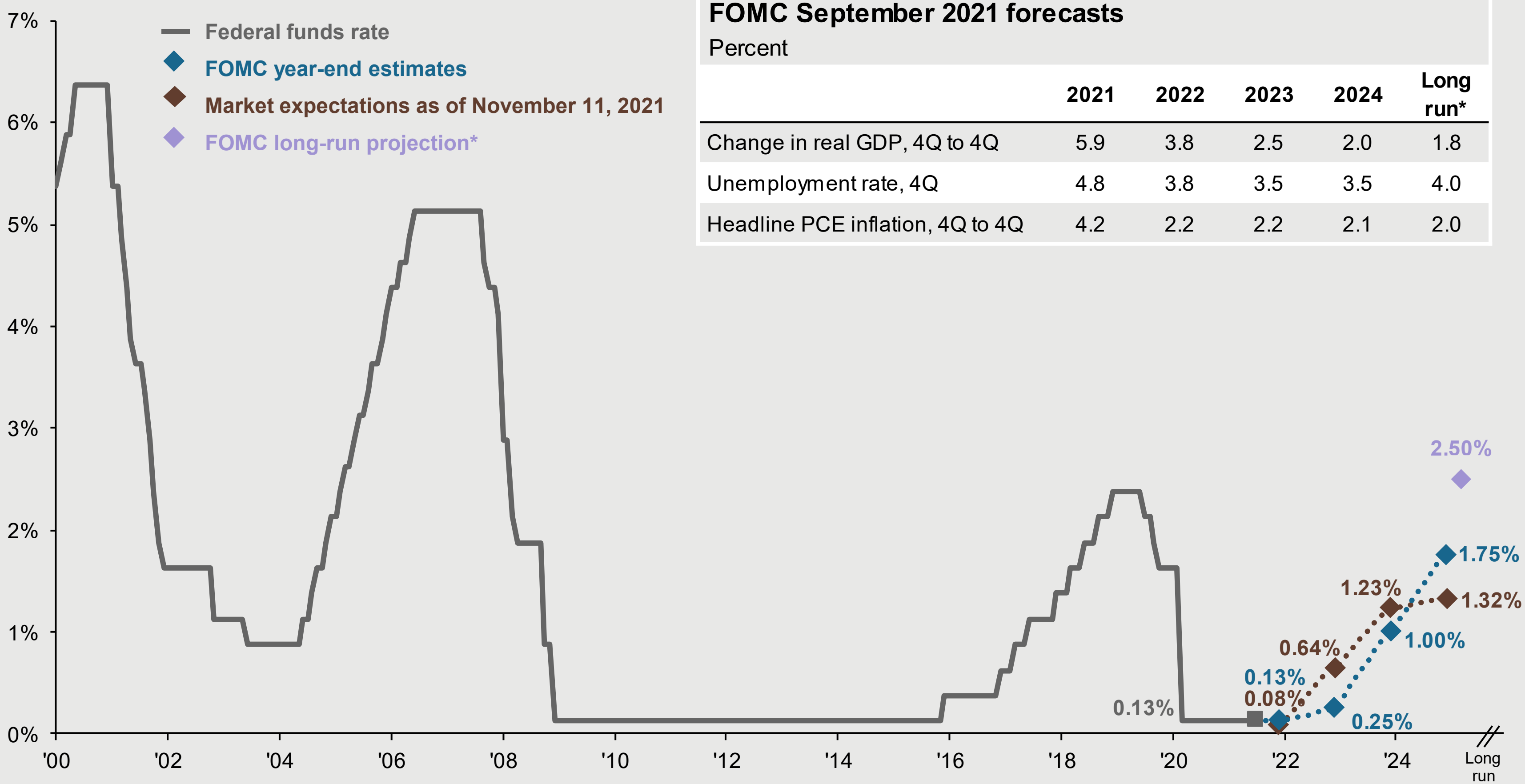
## Federal funds rate expectations

FOMC and market expectations for the federal funds rate




**FOMC September 2021 forecasts**

Percent

| | 2021 | 2022 | 2023 | 2024 | Long run* |
|---|---|---|---|---|---|
| Change in real GDP, 4Q to 4Q | 5.9 | 3.8 | 2.5 | 2.0 | 1.8 |
| Unemployment rate, 4Q | 4.8 | 3.8 | 3.5 | 3.5 | 4.0 |
| Headline PCE inflation, 4Q to 4Q | 4.2 | 2.2 | 2.2 | 2.1 | 2.0 |

Source: Bloomberg, FactSet, Federal Reserve, J.P. Morgan Asset Management.
Market expectations are based off of the USD Overnight Index Forward Swap rates. *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. Forecasts are not a reliable indicator of future performance. Forecasts, projections and other forward-looking statements are based upon current beliefs and expectations. They are for illustrative purposes only and serve as an indication of what may occur. Given the inherent uncertainties and risks associated with forecasts, projections or other forward-looking statements, actual events, results or performance may differ materially from those reflected or contemplated.
*Guide to the Markets – U.S.* Data are as of November 11, 2021.



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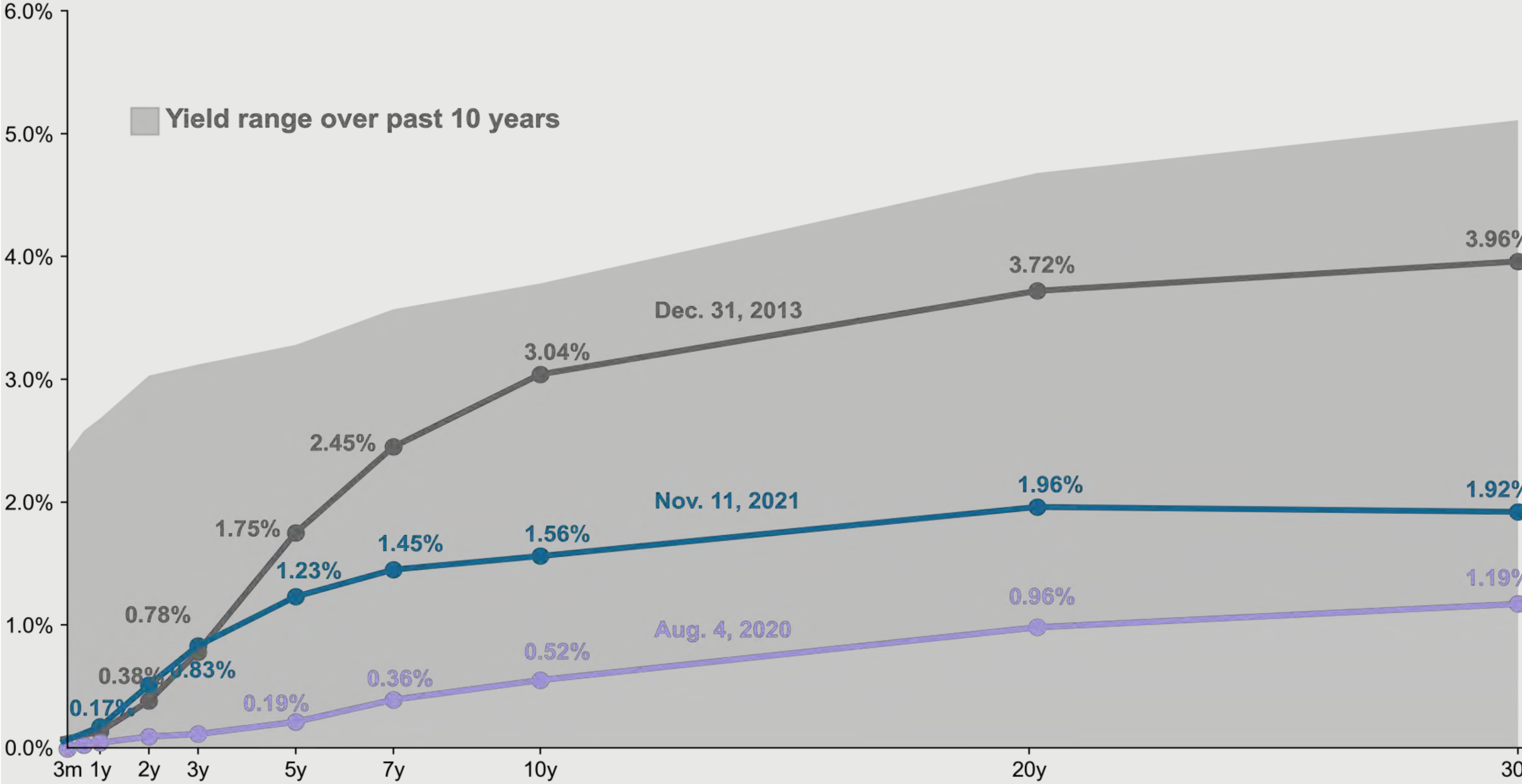
**Yield curve**

U.S. Treasury yield curve




Source: FactSet, Federal Reserve, J.P. Morgan Asset Management. 12/31/2013 is the date the yield curve reached one of its steepest levels in reaction to the Fed announcing it would begin paring down its bond-buying program. 08/04/2020 is the date of a record low on the 10-year, driven by safe haven demand and pessimism around the U.S. pandemic recovery.
*Guide to the Markets – U.S.* Data are as of November 11, 2021.

# Agenda

- The global economic rebound, served with a side of inflation
- Income and inflation protection in a low-rate world
- Equity risk in both public and private markets
- Cryptocurrencies and volatility



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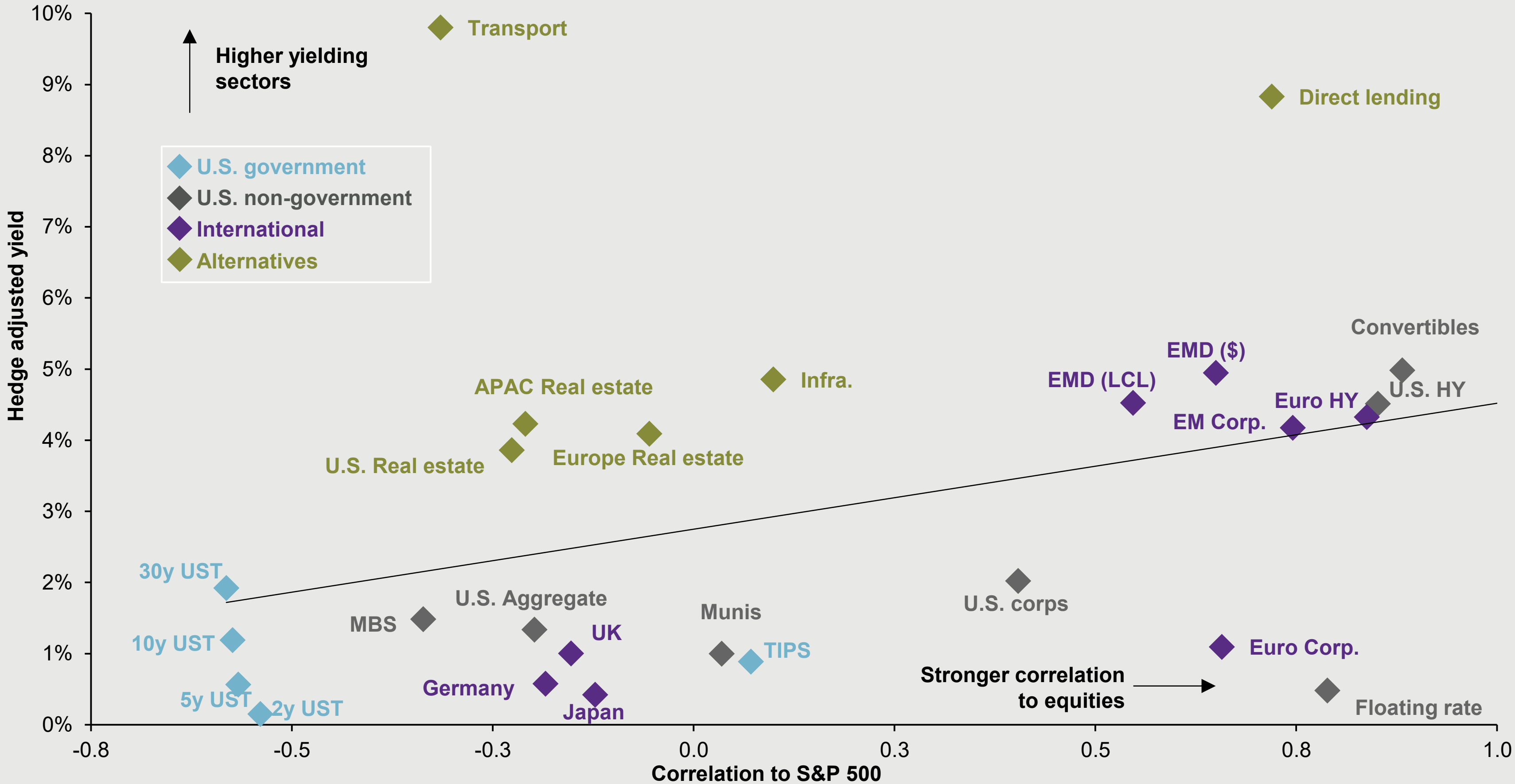
Alts in aggregate

**Equity market correlations and yields**

Hedge adjusted yield, last 12 months



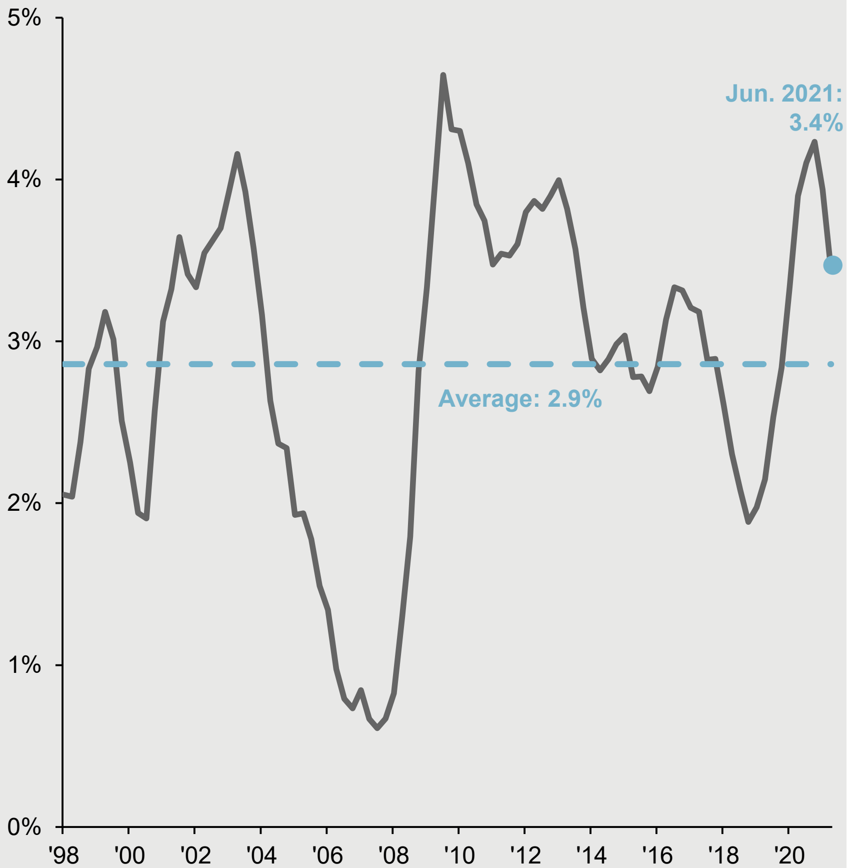

Source: Bloomberg, Barclays, NCREIF, MSCI, FactSet, ICE, J.P. Morgan Asset Management. Fixed income shown above are represented by Bloomberg indices except for EMD and ABS – U.S. Aggregate; MBS: U.S. Aggregate Securitized - MBS; U.S. corps: U.S. Corporates; Munis: Muni Bond 10-year; U.S. HY: Corporate High Yield; TIPS: Treasury Inflation-Protected Securities (TIPS); Floating Rate: U.S. Floating Rate; Convertibles: U.S. Convertibles Composite; ABS: J.P. Morgan ABS Index; EMD ($): J.P. Morgan EMBIG Diversified Index; EMD (LCL): J.P. Morgan GBI EM Global Diversified Index; EM Corp: J.P. Morgan CEMBI Broad Diversified Index; Euro Corp.: Euro Aggregate Corporate Index; Euro HY: Pan-European High Yield Index; U.S. Real Estate: NCREIF Property Index – ODCE ; Europe Real Estate: Market weighted-avg. of MSCI Global Property Fund Indices - U.K. & Cont. Europe; APAC Real Estate: MSCI Global Property Index - Asia-Pacific; Global infra.: MSCI Global Quarterly Infrastructure Asset Index (equal weighted blend; U.S. Direct Lending: Cliffwater Direct Lending Index; Transport returns are derived from a J.P. Morgan Asset Management index; Convertibles yield is based on the U.S. portion of the Bloomberg Barclays Global Convertibles. Country yields are represented by the global aggregate for each country. Yield and return information based on bellwethers for Treasury securities. Correlations are based on quarterly return over the past 10 years through 6/30/2021, except Infra, and U.S., Europe, and APAC Real Estate, which are through 3/31/2021. International fixed income sector correlations are in hedged U.S. dollar returns except EMD local index. Yields for all indices are hedged using three-month LIBOR rates between the U.S. and international LIBOR and are a 12-month average. Alts yields except Transport and Direct Lending are through 3/31/2021. U.S. Real Estate yield is calculated using the MSCI Global Property Fund Index – North America.
Data is based on availability as of August 31, 2021.

J.P.Morgan Asset Management

Real estate

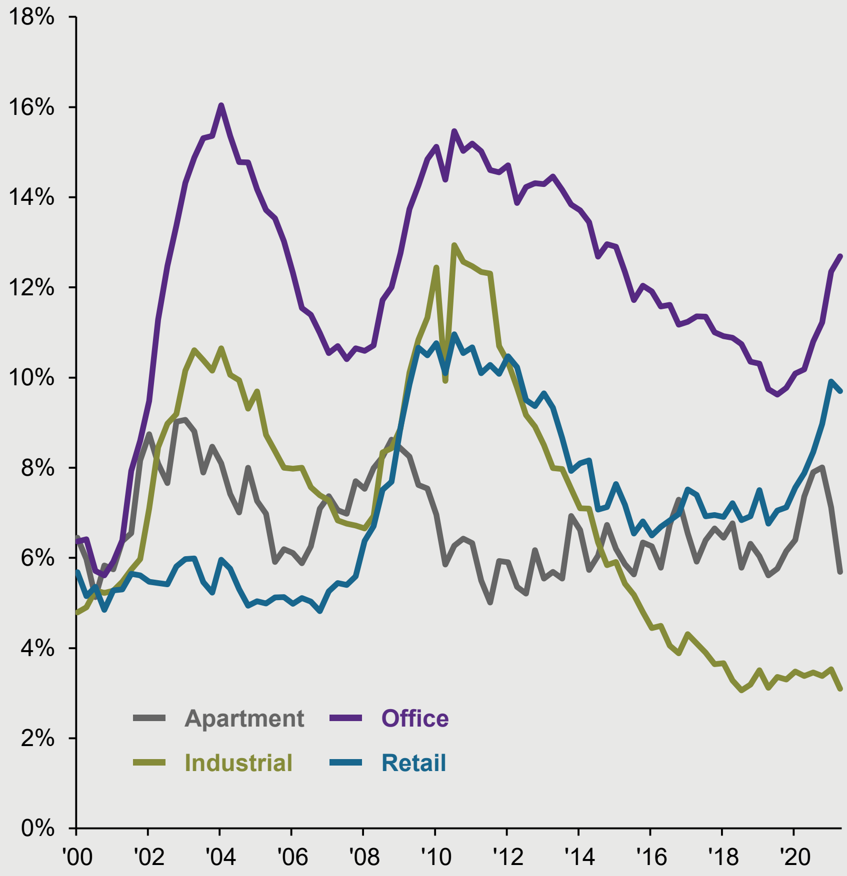
**U.S. real estate cap rate spreads**

Transactions based, spread to 10y UST, 4-quarter rolling average




**U.S. vacancy rates by property type**

Percent




Source: NCREIF, NAREIT, Statista, J.P. Morgan Asset Management.
The cap rate, which is computed as the net operating income over sales price, is the rate of return on a real estate investment property. Vacancy rate data is as of June 30, 2021.
Data is based on availability as of August 31, 2021.

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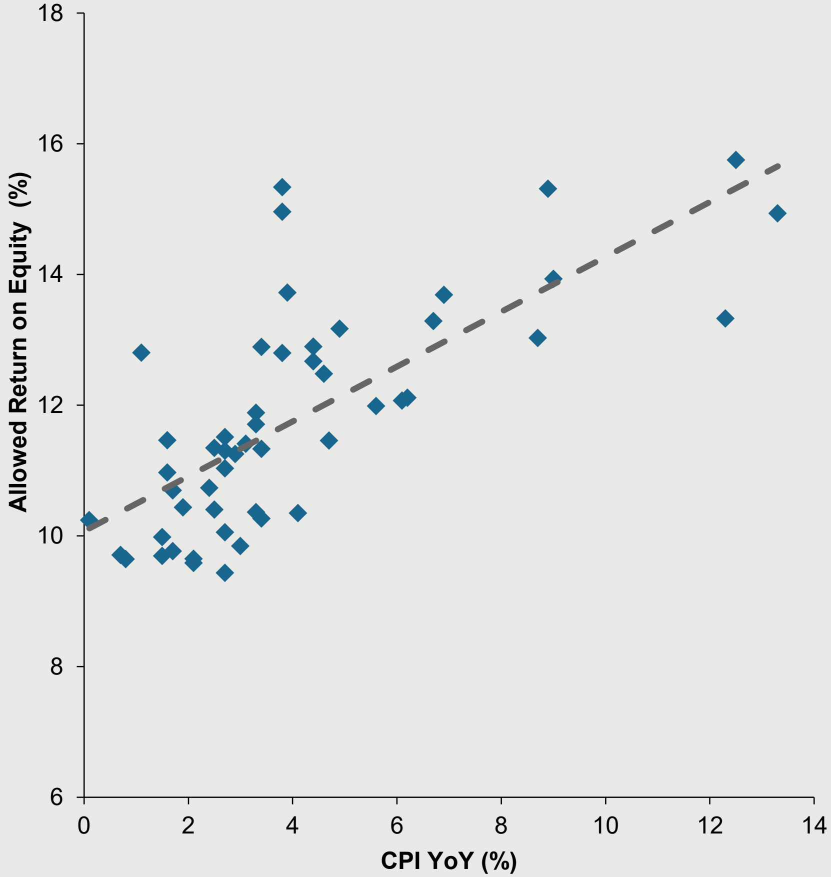
Infrastructure

## U.S. utilities allowed returns versus inflation

Average allowed return on equity




## Household utility spending

Household utility spending % of personal consumption expenditures

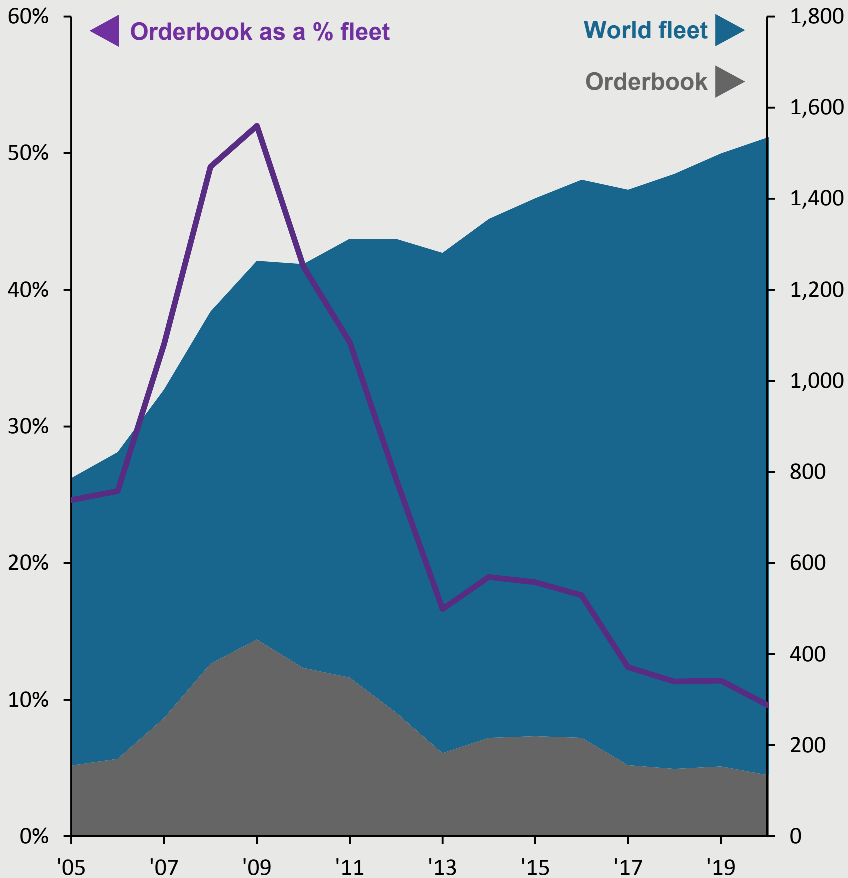

Source: Bloomberg, Bureau of Economic Analysis, SNL, AEU, J.P. Morgan Asset Management. Data represent average allowed return on equities (RoEs) for Electricity and Natural Gas Utilities, from 1970 through December 2020, and annual inflation from 1968 through 2018. Utility spending is as of 6/30/2021.

Data is based on availability as of August 31, 2021.

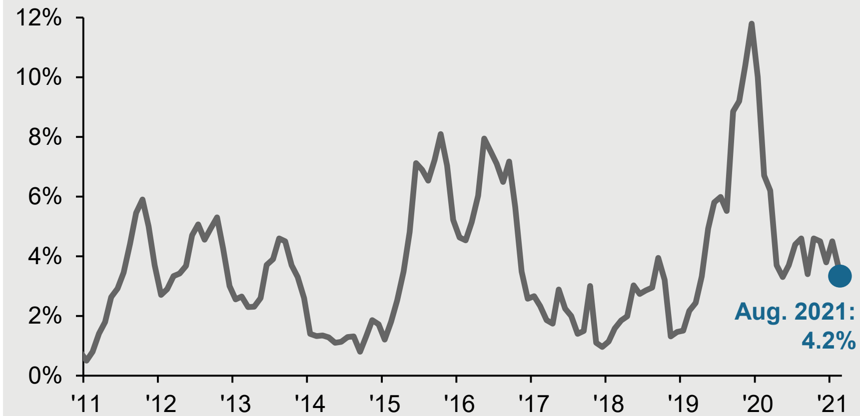
Transport

## Global fleet and orderbook

Gross tonnage

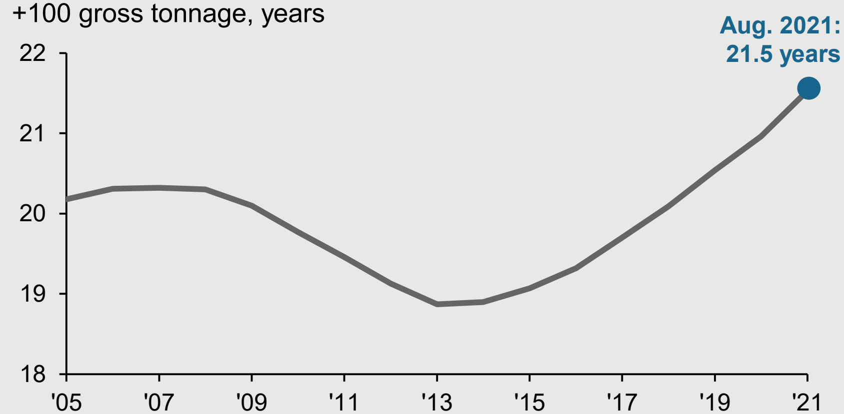



## Idle containership capacity % fleet




## Global fleet age

+100 gross tonnage, years




Source: Clarksons Research, MSI, Sea/net, J.P. Morgan Asset Management. Idle containership capacity, world fleet and orderbook data are as of August 2021.

Data is based on availability as of August 31, 2021.

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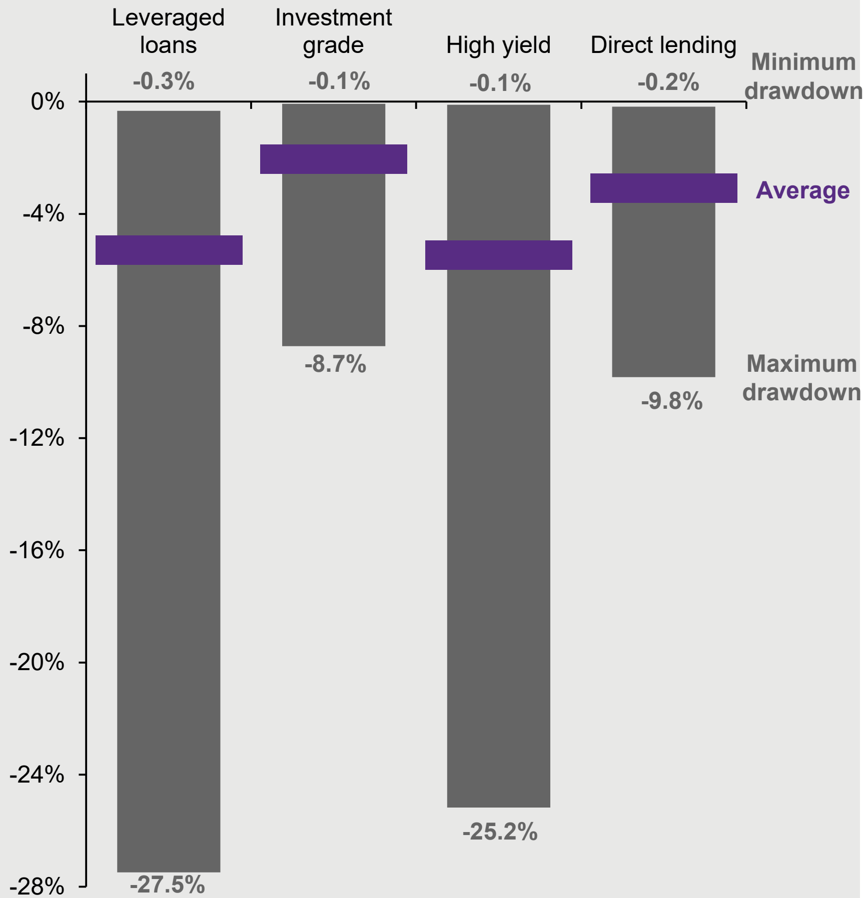
Private markets

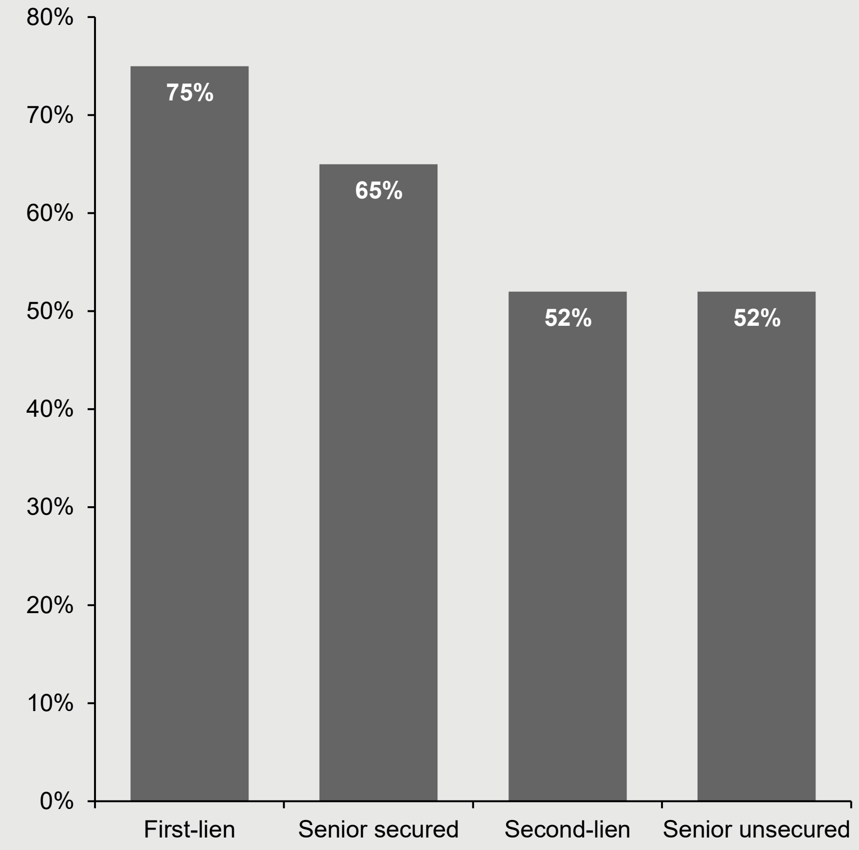
## Public and private credit drawdown dispersion

Maximum – minimum drawdown, December 2004 – June 2021, quarterly




## Corporate debt recovery rates

1987 – 2019, average discounted recovery rates




Source: Federal Reserve, Bloomberg, S&P LCD, J.P. Morgan Asset Management.

Leveraged loans: Credit Suisse Leveraged Loans Total Return Index. Investment grade: Bloomberg Barclays U.S. Corporate Investment Grade Total Return Index. Bloomberg Barclays U.S. Corporate High Yield Total Return Index. Direct Lending: Cliffwater Direct Lending Index. Drawdowns are cumulative.

Data is based on availability as of August 31, 2021.

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# Agenda

- The global economic rebound, served with a side of inflation
- Income and inflation protection in a low-rate world
- Equity risk in both public and private markets
- Cryptocurrencies and volatility



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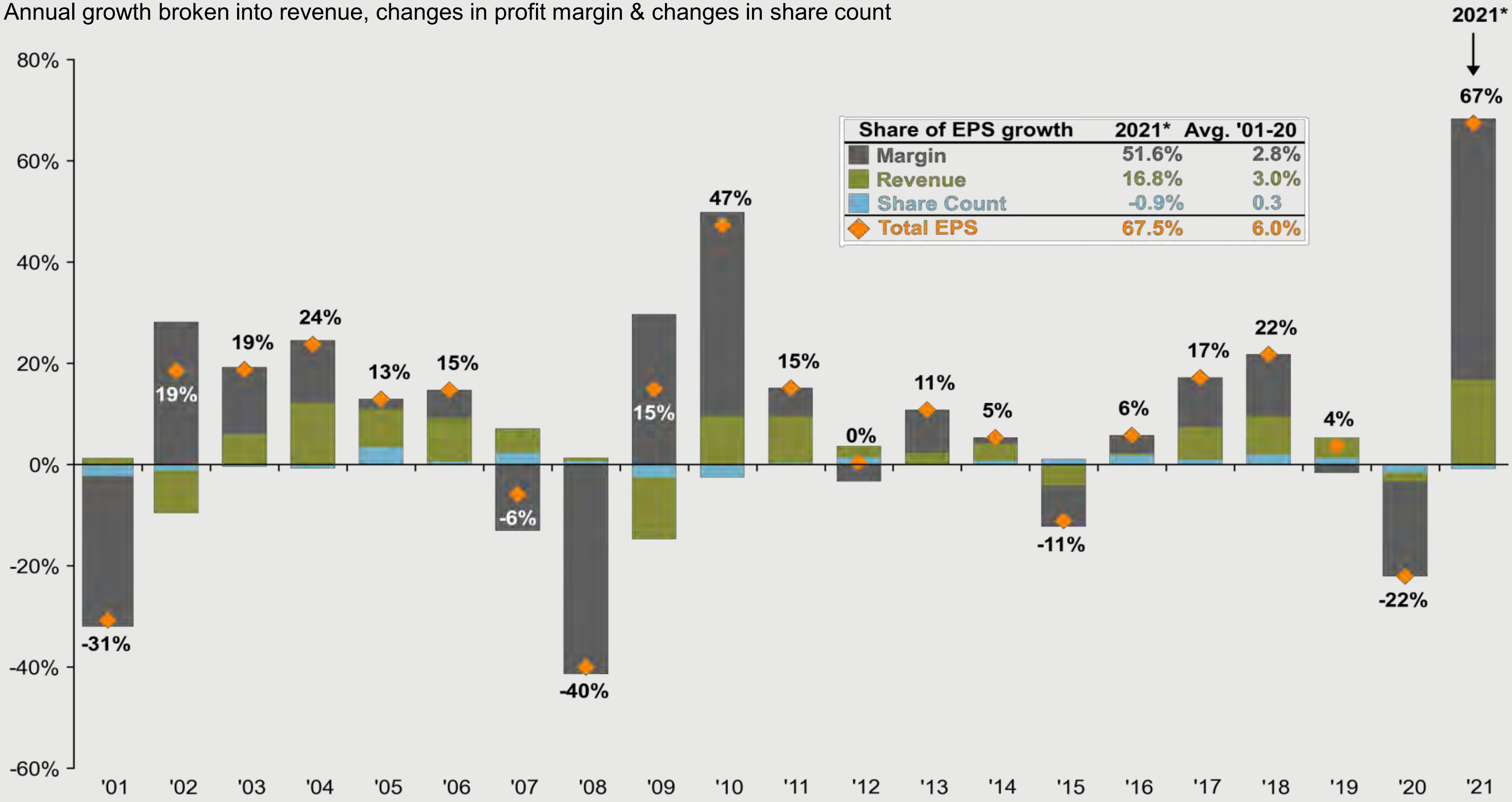
Equities

**S&P 500 year-over-year operating EPS growth**

Annual growth broken into revenue, changes in profit margin & changes in share count




Source: FactSet, Compustat, Standard & Poor's, J.P. Morgan Asset Management.
EPS levels are based on annual operating earnings per share. Percentages may not sum due to rounding. Past performance is not indicative of future returns. *2021 earnings estimates are based on forecasts from FactSet Market Aggregates.
*Guide to the Markets – U.S.* Data are as of November 11, 2021.

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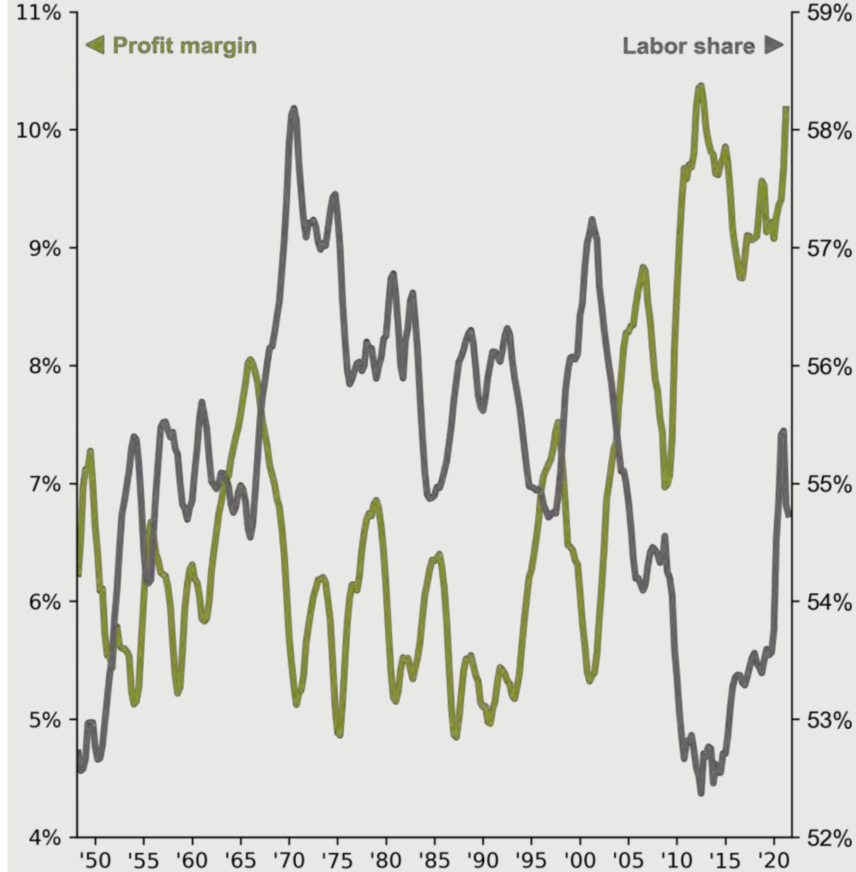
## S&P 500 profit margins
Quarterly operating earnings/sales


## Labor share of income and profit margins*
Compensation and adjusted after-tax corporate profits, SAAR




Source: BEA, Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management. Past performance is not indicative of future returns. *Labor share of income and profit margins are shown on a 4-quarter moving average basis.
*Guide to the Markets – U.S.* Data are as of November 11, 2021

J.P.Morgan Asset Management

# Value vs. Growth

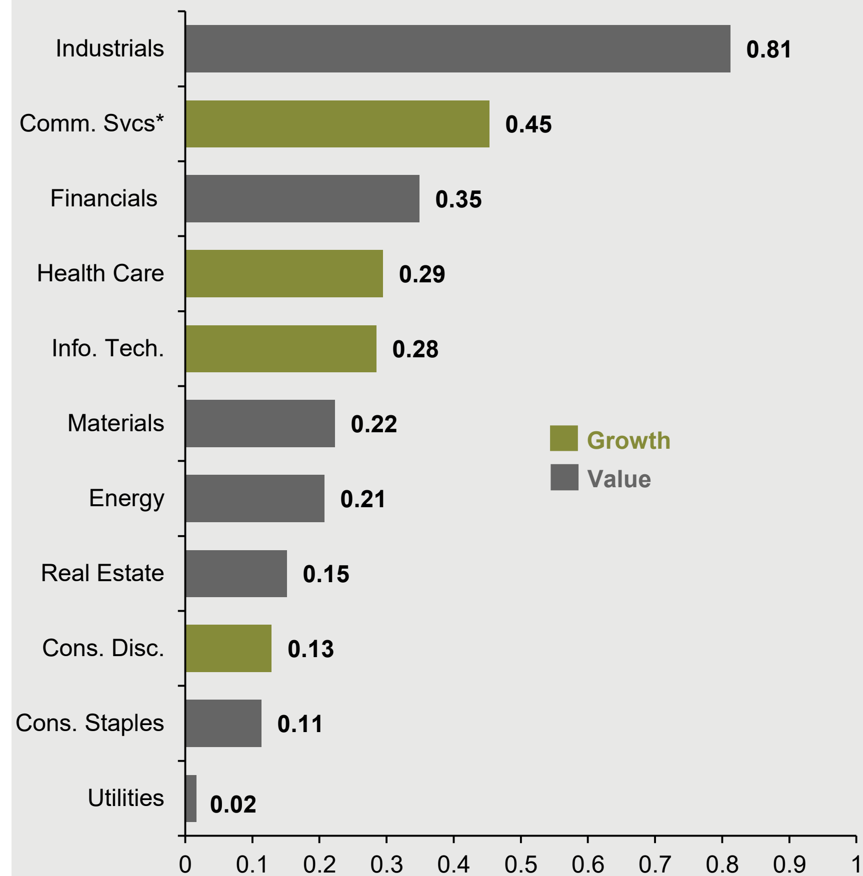


## Value vs. Growth relative valuations

Rel. fwd. P/E ratio of Value vs. Growth, z-score, Dec. 1997 - present


## S&P 500 sector earnings correlation to real GDP

1Q 2009 - 2Q 2021




Source: FactSet, FTSE Russell, NBER, J.P. Morgan Asset Management.
Growth is represented by the Russell 1000 Growth Index and Value is represented by the Russell 1000 Value Index. *Communication services correlation is since 3Q13 and based on backtested data by JPMAM.
*Guide to the Markets – U.S.* Data are as of November 11, 2021.



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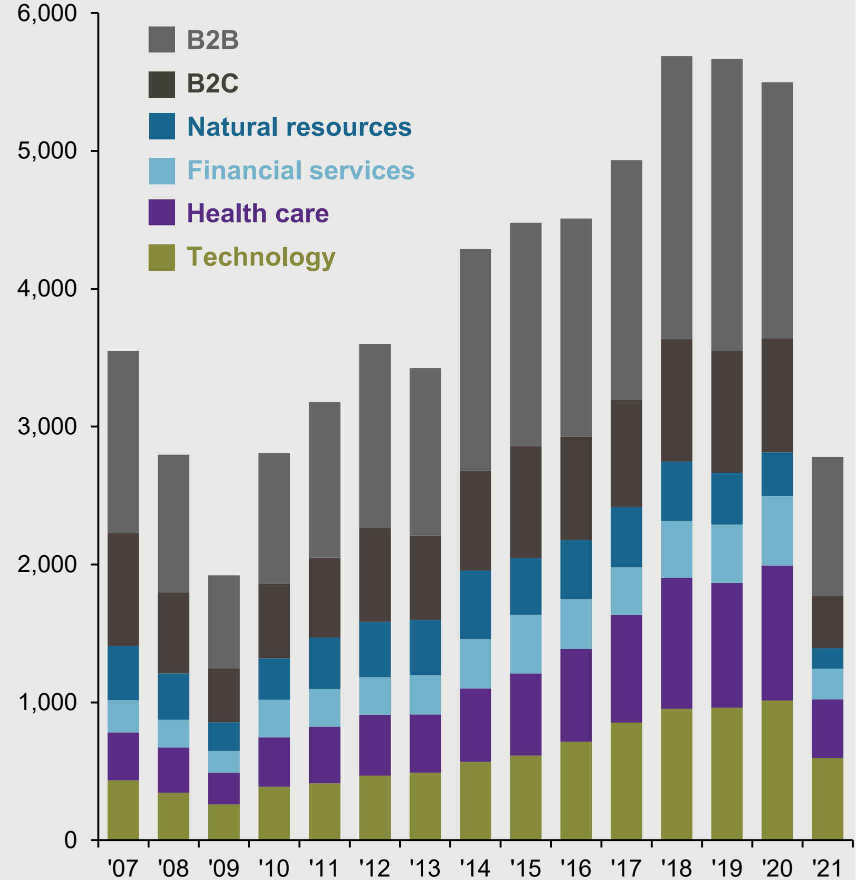
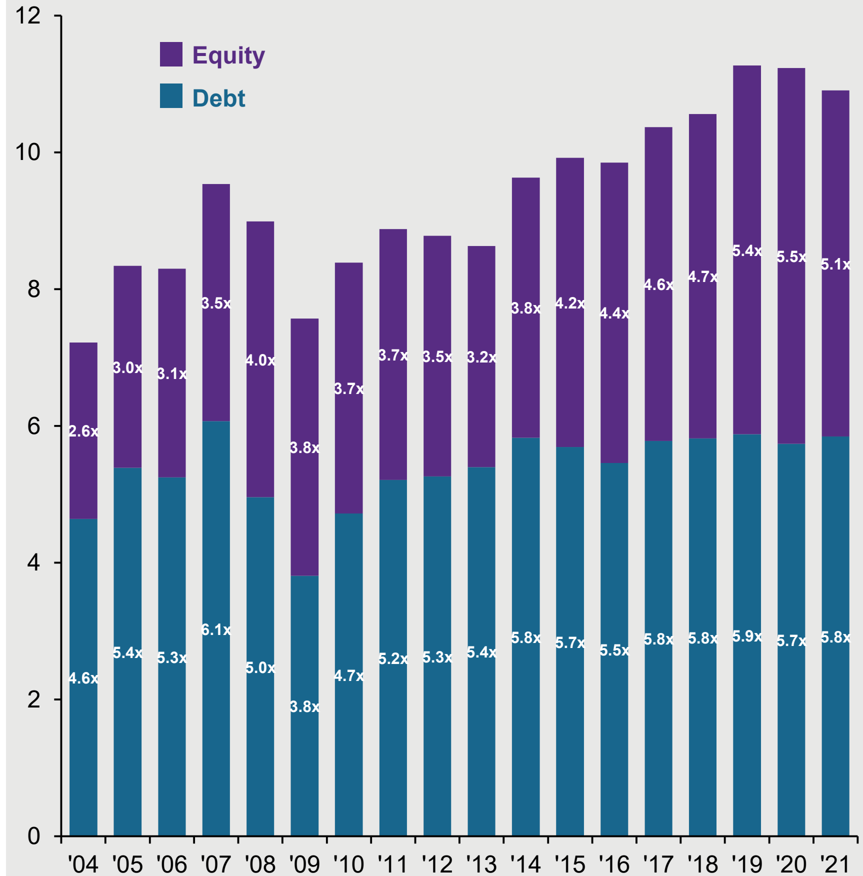
Private markets

## U.S. private equity deals
Number




## U.S. LBOs: purchase price multiples
Equity and debt over trailing EBITDA




Source: Pitchbook, S&P LCD, J.P. Morgan Asset Management.

B2B is business to business. B2C is business to consumer. Natural resources = Materials and resources and energy. Private equity data is as of 6/30/2021. Multiple data is as of 6/30/2021.

Data is based on availability as of August 31, 2021.

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Economy

**The U.S. dollar**

U.S. Dollar Index


**The U.S. trade balance**

Current account balance, % of GDP


**Developed markets interest rate differentials**

Difference between U.S. and international 10-year yields*


Source: J.P. Morgan Asset Management; (Left) FactSet, ICE; (Top right) Bureau of Economic Analysis, FactSet; (Bottom right) Tullett Prebon. Currencies in the DXY Index are: British pound, Canadian dollar, euro, Japanese yen, Swedish krona and Swiss franc. *Interest rate differential is the difference between the 10-year U.S. Treasury yield and a basket of the 10-year yields of each major trading partner (Australia, Canada, Europe, Japan, Sweden, Switzerland and UK). Weights on the basket are calculated using the 10-year average of total government bonds outstanding in each region. Europe is defined as the 19 countries in the euro area.

*Guide to the Markets – U.S.* Data are as of November 11, 2021.

J.P.Morgan
Asset Management

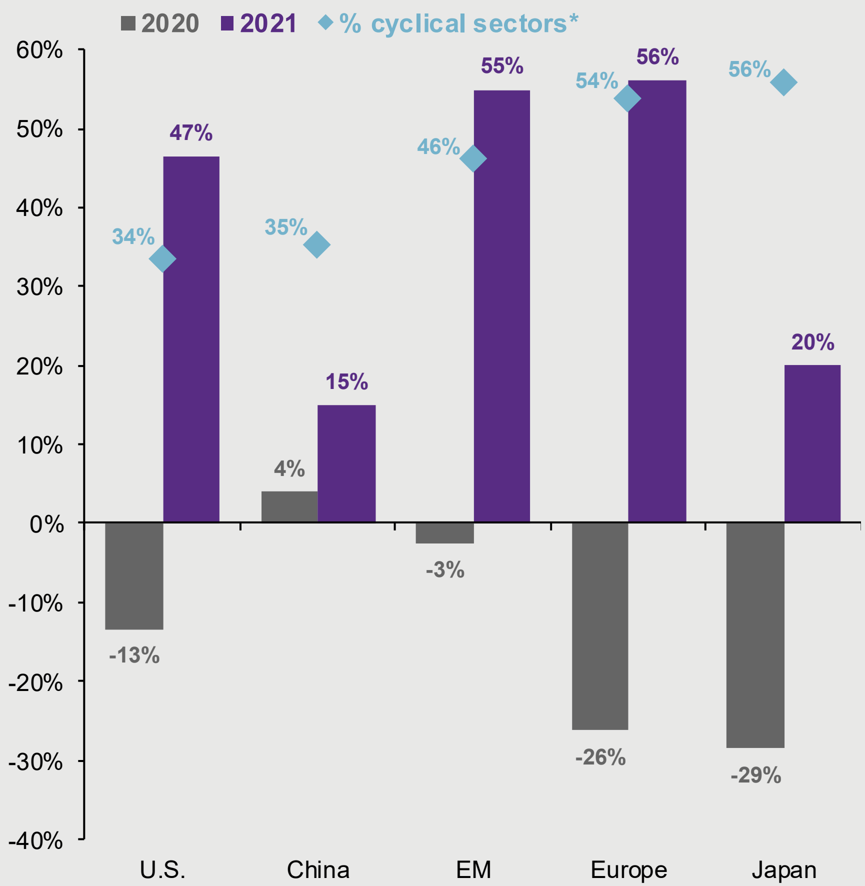
# International equity earnings and valuations





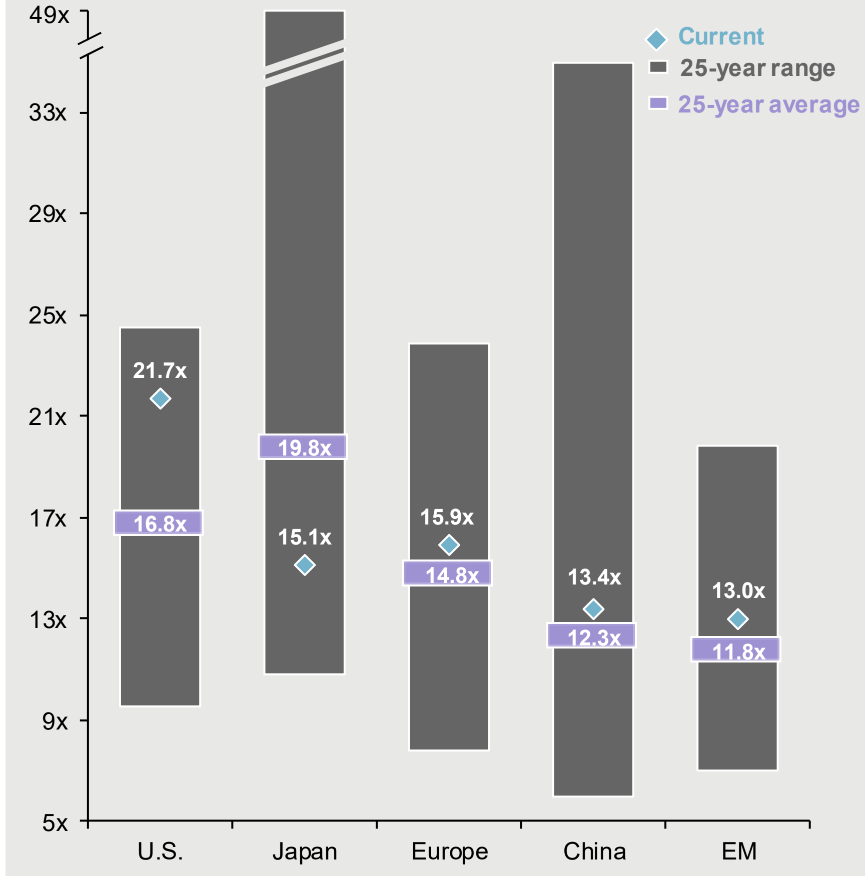
## Global earnings growth

Calendar year consensus estimates




## Global valuations

Current and 25-year next 12 months price-to-earnings ratio




Source: FactSet, MSCI, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management.
*Cyclical sectors include consumer discretionary, financials, industrials, energy and materials. The Internet and direct marketing subsector has been removed from the cyclicals calculation. In our judgement, companies in this space do not yet fit into the cyclical category, as they are still in a transitional growth phase and are not being directly impacted by the business cycle. Valuation and earnings charts use MSCI indices for all regions/countries, except for the U.S., which is the S&P 500. All indices use IBES aggregate earnings estimates, which may differ from earnings estimates used elsewhere in the book. MSCI Europe includes the eurozone as well as countries not in the currency bloc, such as Norway, Sweden, Switzerland and the UK (which collectively make up 44% of the overall index). Past performance is not a reliable indicator of current and future results. *Guide to the Markets – U.S.* Data are as of November 11, 2021.



J.P.Morgan Asset Management

# Agenda

- **The global economic rebound, served with a side of inflation**
- **Income and inflation protection in a low-rate world**
- **Equity risk in both public and private markets**
- **Cryptocurrencies and volatility**



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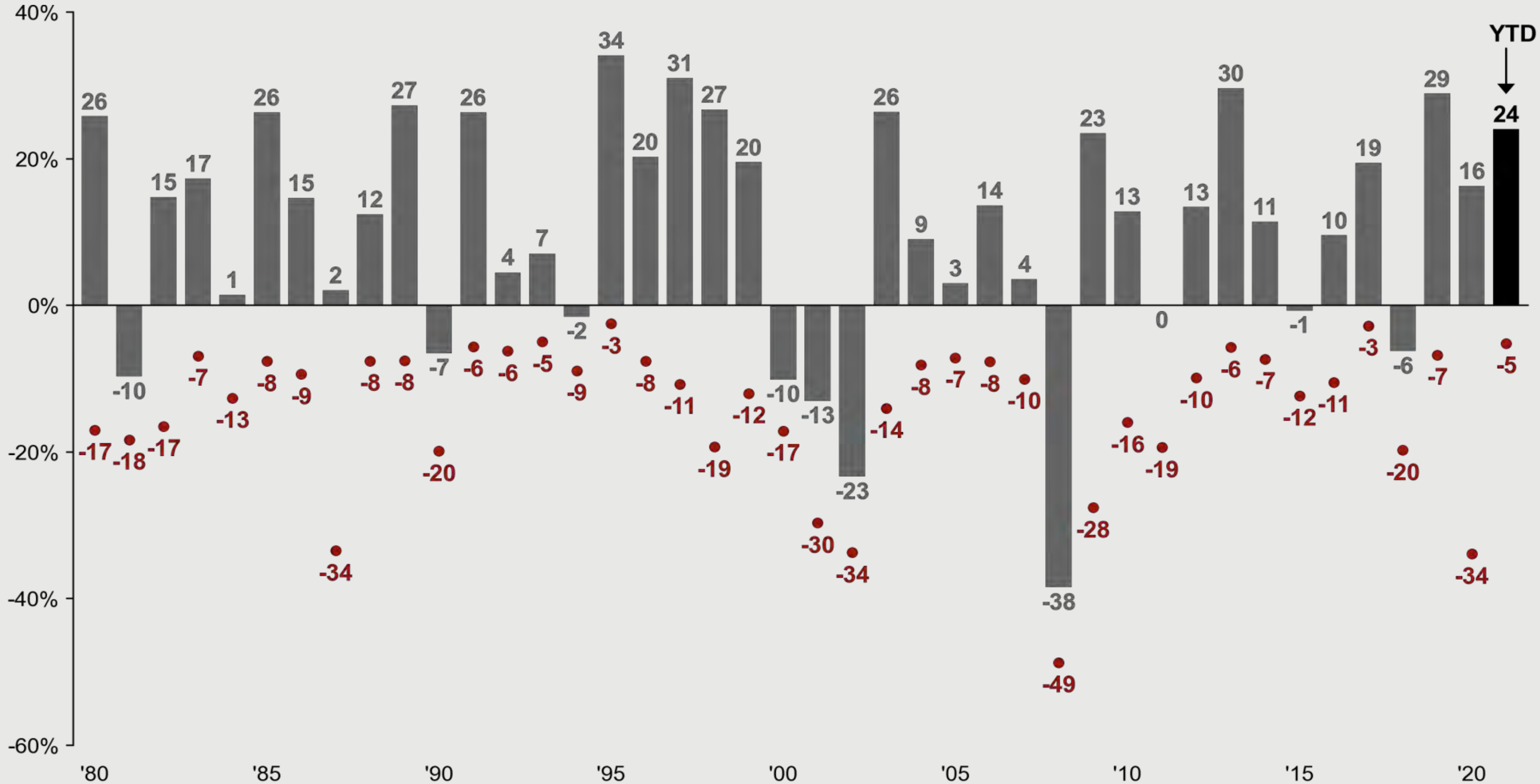
**S&P 500 intra-year declines vs. calendar year returns**

Despite average intra-year drops of 14.3%, annual returns were positive in 31 of 41 years




Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management.
Returns are based on price index only and do not include dividends. Intra-year drops refers to the largest market drops from a peak to a trough during the year. For illustrative purposes only. Returns shown are calendar year returns from 1980 to 2020, over which time period the average annual return was 9.0%.
*Guide to the Markets – U.S.* Data are as of November 11, 2021.

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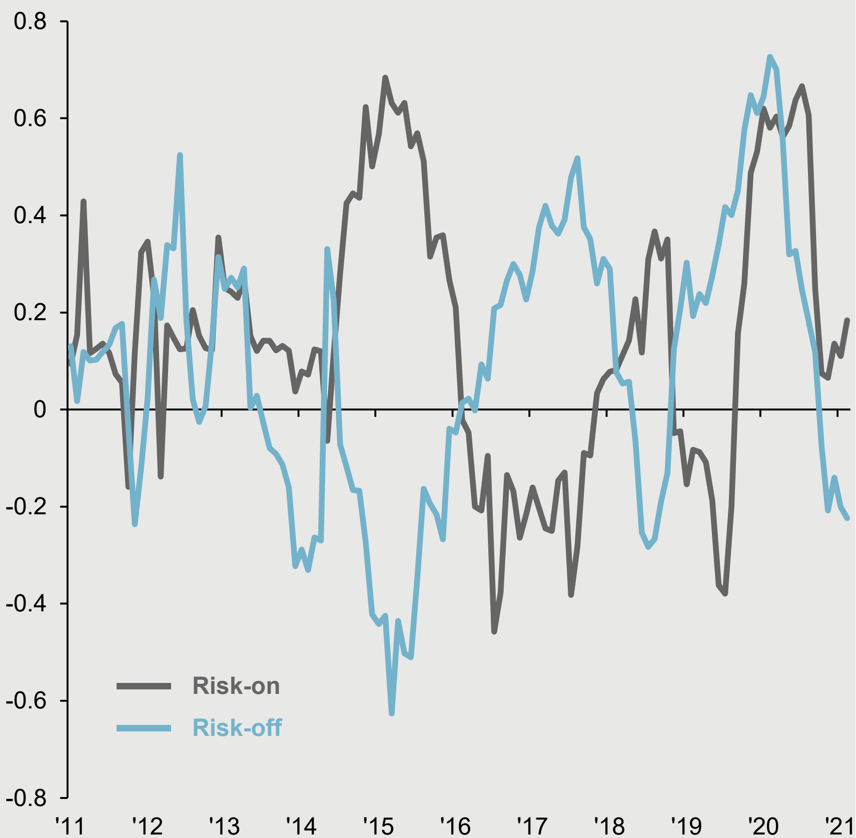
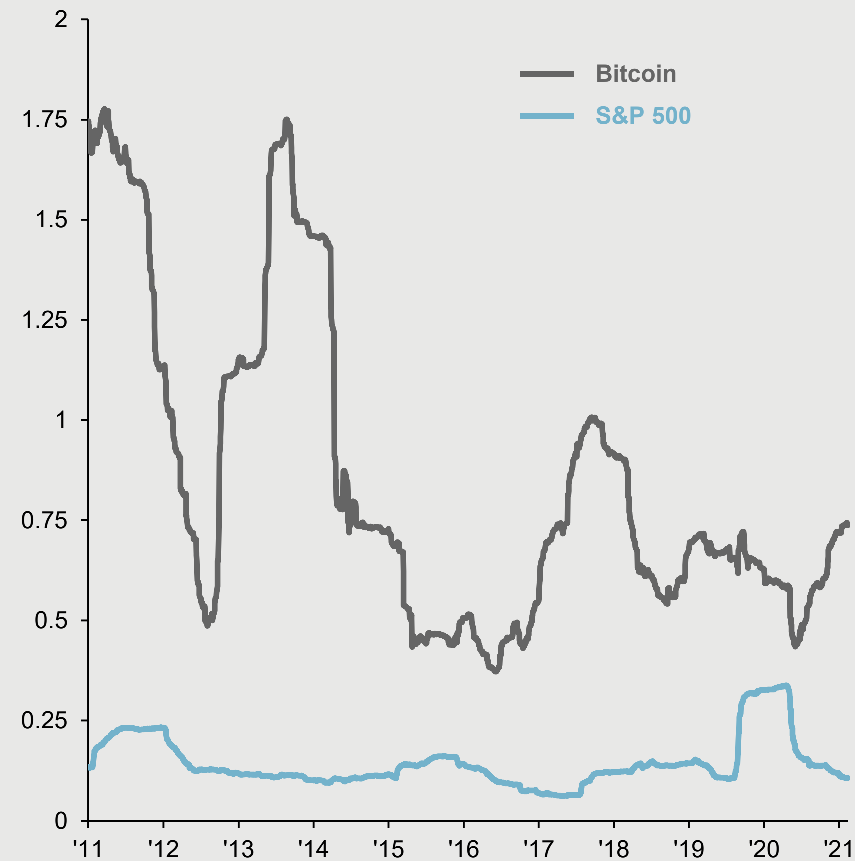
**Risk-on and risk-off assets**
12-month rolling correlations, monthly




**Bitcoin and equities volatility**
252-day trading volatility




Source: Bloomberg, FactSet, J.P. Morgan Asset Management. Risk-on correlations are calculated by taking the average rolling 12-month correlations between Bitcoin and the S&P 500 and 5 year, 5 year forward inflation expectations. Risk-off correlations are calculated by taking the average rolling 12-month correlations between Bitcoin and Gold and the Bloomberg Barclays U.S. Aggregate.

Data is based on availability as of August 31, 2021.

J.P.Morgan Asset Management

All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees or expenses.

*Equities:*

The Dow Jones Industrial Average is a price-weighted average of 30 actively traded blue-chip U.S. stocks.

The MSCI ACWI (All Country World Index) is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.

The MSCI EAFE Index (Europe, Australasia, Far East) is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.

The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets.

The MSCI Europe Index is a free float-adjusted market capitalization index that is designed to measure developed market equity performance in Europe.

The MSCI Pacific Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region.

The Russell 1000 Index® measures the performance of the 1,000 largest companies in the Russell 3000.

The Russell 1000 Growth Index® measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.

The Russell 1000 Value Index® measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.

The Russell 2000 Index® measures the performance of the 2,000 smallest companies in the Russell 3000 Index.

The Russell 2000 Growth Index® measures the performance of those Russell 2000 companies with higher price-to-book ratios and higher forecasted growth values.

The Russell 2000 Value Index® measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower forecasted growth values.

The Russell 3000 Index® measures the performance of the 3,000 largest U.S. companies based on total market capitalization.

The Russell Midcap Index® measures the performance of the 800 smallest companies in the Russell 1000 Index.

The Russell Midcap Growth Index ® measures the performance of those Russell Midcap companies with higher price-to-book ratios and higher forecasted growth values. The stocks are also members of the Russell 1000 Growth index.

The Russell Midcap Value Index ® measures the performance of those Russell Midcap companies with lower price-to-book ratios and lower forecasted growth values. The stocks are also members of the Russell 1000 Value index.

The S&P 500 Index is widely regarded as the best single gauge of the U.S. equities market. The index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. The S&P 500 Index focuses on the large-cap segment of the market; however, since it includes a significant portion of the total value of the market, it also represents the market.

*Fixed income:*

The Bloomberg 1-3 Month U.S. Treasury Bill Index includes all publicly issued zero-coupon US Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade, and have $250 million or more of outstanding face value. In addition, the securities must be denominated in U.S. dollars and must be fixed rate and non convertible.

The Bloomberg Global High Yield Index is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive. Until January 1, 2011, the index also included CMBS high yield securities.

The Bloomberg Municipal Index: consists of a broad selection of investment- grade general obligation and revenue bonds of maturities ranging from one year to 30 years. It is an unmanaged index representative of the tax-exempt bond market.

The Bloomberg US Dollar Floating Rate Note (FRN) Index provides a measure of the U.S. dollar denominated floating rate note market.

The Bloomberg US Corporate Investment Grade Index is an unmanaged index consisting of publicly issued US Corporate and specified foreign debentures and secured notes that are rated investment grade (Baa3/BBB or higher) by at least two ratings agencies, have at least one year to final maturity and have at least $250 million par amount outstanding. To qualify, bonds must be SEC-registered.

The Bloomberg US High Yield Index covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included.

The Bloomberg US Mortgage Backed Securities Index is an unmanaged index that measures the performance of investment grade fixed-rate mortgage backed pass-through securities of GNMA, FNMA and FHLMC.

The Bloomberg US TIPS Index consists of Inflation-Protection securities issued by the U.S. Treasury.

The J.P. Morgan Emerging Market Bond Global Index (EMBI) includes U.S. dollar denominated Brady bonds, Eurobonds, traded loans and local market debt instruments issued by sovereign and quasi-sovereign entities.

The J.P. Morgan Domestic High Yield Index is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.

The J.P. Morgan Corporate Emerging Markets Bond Index Broad Diversified (CEMBI Broad Diversified) is an expansion of the J.P. Morgan Corporate Emerging Markets Bond Index (CEMBI). The CEMBI is a market capitalization weighted index consisting of U.S. dollar denominated emerging market corporate bonds.

The J.P. Morgan Emerging Markets Bond Index Global Diversified (EMBI Global Diversified) tracks total returns for U.S. dollar-denominated debt instruments issued by emerging market sovereign and quasi-sovereign entities: Brady bonds, loans, Eurobonds. The index limits the exposure of some of the larger countries.

The J.P. Morgan GBI EM Global Diversified tracks the performance of local currency debt issued by emerging market governments, whose debt is accessible by most of the international investor base.

The U.S. Treasury Index is a component of the U.S. Government index.

*Other asset classes:*

The Alerian MLP Index is a composite of the 50 most prominent energy Master Limited Partnerships (MLPs) that provides investors with an unbiased, comprehensive benchmark for the asset class.

The Bloomberg Commodity Index and related sub-indices are composed of futures contracts on physical commodities and represents twenty two separate commodities traded on U.S. exchanges, with the exception of aluminum, nickel, and zinc

The Cambridge Associates U.S. Global Buyout and Growth Index® is based on data compiled from 1,768 global (U.S. & ex – U.S.) buyout and growth equity funds, including fully liquidated partnerships, formed between 1986 and 2013.

The CS/Tremont Hedge Fund Index is compiled by Credit Suisse Tremont Index, LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The Index uses the Credit Suisse/Tremont database, which tracks over 4500 funds, and consists only of funds with a minimum of US$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shown net of all performance fees and expenses. It is the exclusive property of Credit Suisse Tremont Index, LLC.

The HFRI Monthly Indices (HFRI) are equally weighted performance indexes, utilized by numerous hedge fund managers as a benchmark for their own hedge funds. The HFRI are broken down into 4 main strategies, each with multiple sub strategies. All single-manager HFRI Index constituents are included in the HFRI Fund Weighted Composite, which accounts for over 2200 funds listed on the internal HFR Database.

The NAREIT EQUITY REIT Index is designed to provide the most comprehensive assessment of overall industry performance, and includes all tax-qualified real estate investment trusts (REITs) that are listed on the NYSE, the American Stock Exchange or the NASDAQ National Market List.

The NFI-ODCE, short for NCREIF Fund Index - Open End Diversified Core Equity, is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. The NFI-ODCE Index is capitalization-weighted and is reported gross of fees. Measurement is time-weighted.

*Definitions:*

Investing in alternative assets involves higher risks than traditional investments and is suitable only for sophisticated investors. Alternative investments involve greater risks than traditional investments and should not be deemed a complete investment program. They are not tax efficient and an investor should consult with his/her tax advisor prior to investing. Alternative investments have higher fees than traditional investments and they may also be highly leveraged and engage in speculative investment techniques, which can magnify the potential for investment loss or gain. The value of the investment may fall as well as rise and investors may get back less than they invested.

Bonds are subject to interest rate risks. Bond prices generally fall when interest rates rise.

Investments in commodities may have greater volatility than investments in traditional securities, particularly if the instruments involve leverage. The value of commodity-linked derivative instruments may be affected by changes in overall market movements, commodity index volatility, changes in interest rates, or factors affecting a particular industry or commodity, such as drought, floods, weather, livestock disease, embargoes, tariffs and international economic, political and regulatory developments. Use of leveraged commodity-linked derivatives creates an opportunity for increased return but, at the same time, creates the possibility for greater loss.

Derivatives may be riskier than other types of investments because they may be more sensitive to changes in economic or market conditions than other types of investments and could result in losses that significantly exceed the original investment. The use of derivatives may not be successful, resulting in investment losses, and the cost of such strategies may reduce investment returns.

Distressed Restructuring Strategies employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings.

Investments in emerging markets can be more volatile. The normal risks of investing in foreign countries are heightened when investing in emerging markets. In addition, the small size of securities markets and the low trading volume may lead to a lack of liquidity, which leads to increased volatility. Also, emerging markets may not provide adequate legal protection for private or foreign investment or private property.

The price of equity securities may rise, or fall because of changes in the broad market or changes in a company's financial condition, sometimes rapidly or unpredictably. These price movements may result from factors affecting individual companies, sectors or industries, or the securities market as a whole, such as changes in economic or political conditions. Equity securities are subject to "stock market risk" meaning that stock prices in general may decline over short or extended periods of time.

Equity market neutral strategies employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.

Global macro strategies trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets.

International investing involves a greater degree of risk and increased volatility. Changes in currency exchange rates and differences in accounting and taxation policies outside the U.S. can raise or lower returns. Some overseas markets may not be as politically and economically stable as the United States and other nations.

There is no guarantee that the use of long and short positions will succeed in limiting an investor's exposure to domestic stock market movements, capitalization, sector swings or other risk factors. Using long and short selling strategies may have higher portfolio turnover rates. Short selling involves certain risks, including additional costs associated with covering short positions and a possibility of unlimited loss on certain short sale positions.

Merger arbitrage strategies which employ an investment process primarily focused on opportunities in equity and equity related instruments of companies which are currently engaged in a corporate transaction.

Mid-capitalization investing typically carries more risk than investing in well-established "blue-chip" companies. Historically, mid-cap companies' stock has experienced a greater degree of market volatility than the average stock.

Price to forward earnings is a measure of the price-to-earnings ratio (P/E) using forecasted earnings. Price to book value compares a stock's market value to its book value. Price to cash flow is a measure of the market's expectations of a firm's future financial health. Price to dividends is the ratio of the price of a share on a stock exchange to the dividends per share paid in the previous year, used as a measure of a company's potential as an investment.

Real estate investments may be subject to a higher degree of market risk because of concentration in a specific industry, sector or geographical sector. Real estate investments may be subject to risks including, but not limited to, declines in the value of real estate, risks related to general and economic conditions, changes in the value of the underlying property owned by the trust and defaults by borrower.

Relative Value Strategies maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy in the relationship between multiple securities.

Small-capitalization investing typically carries more risk than investing in well-established "blue-chip" companies since smaller companies generally have a higher risk of failure. Historically, smaller companies' stock has experienced a greater degree of market volatility than the average stock.

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Unless otherwise stated, all data are as of November 11, 2021 or most recently available.

Guide to the Markets – U.S.

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J.P.Morgan Asset Management

# An Introduction to Summit Partners

As of June 30, 2021

SUMMIT PARTNERS

BOSTON | MENLO PARK | LONDON | LUXEMBOURG

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# Our Competitive Advantage in Growth Equity[A]

| Strong Track Record[B] | Deep Sector Expertise[B] | Proprietary Idea Generation | Differentiated Value Enhancement |
|---|---|---|---|
| **37 years of growth equity industry leadership**<br><br>**$16B+**<br>Invested | **Thought Leadership In:**<br>Technology<br>Healthcare & Life Sciences<br>Growth Products & Services<br><br>**360+**<br>Growth Equity Companies[D]<br><br>**490+**<br>Companies Globally | **Direct Sourcing Leader:**<br>Thematic, Tech-enabled and Thesis-driven<br><br>**94%**<br>of Investments[C] Summit-Sourced | **4**<br>Teams Purpose-built to Serve the Needs of Growth Companies<br><br>Peak Performance Group<br>Talent & Recruiting<br>Capital Markets<br>Technology & Data Science |

[A] Past performance is not a guarantee of or necessarily indicative of future results. It should not be assumed that investments made in the future will be profitable or equal to the performance of these securities. Performance, key differentiators and statistics from prior U.S. Growth Equity Funds discussed herein are illustrative and results of the Partnership should not be expected to be the same.
[B] The cumulative and/or composite investment performance data presented herein does not represent performance or trends achieved by any investor and reflects investments that were made across multiple funds sponsored by Summit Partners, L.P. during different economic cycles. Such stated data reflects neither a specific fund nor a group of investments managed as a single portfolio. Includes Summit Ventures, Summit Ventures II, Summit Ventures III, Summit Ventures IV, Summit Ventures V, Summit Ventures VI, Summit Partners Private Equity Fund VII, Summit Partners Growth Equity Fund VIII, Summit Partners Growth Equity Fund IX and Summit Partners Growth Equity Fund X.
[C] Represents new investments made from Summit Partners Growth Equity Fund VIII, Summit Partners Growth Equity Fund IX and Summit Partners Growth Equity Fund X between January 1, 2013 through June 30, 2021. Information not tracked prior to January 1, 2013.
[D] Includes investments from Summit Ventures, Summit Ventures II, Summit Ventures III, Summit Ventures IV, Summit Ventures V, Summit Ventures VI, Summit Partners Private Equity Fund VII, Summit Partners Growth Equity Fund VIII, Summit Partners Growth Equity Fund IX and Summit Partners Growth Equity Fund X.

# Summit Partners' Definition of Growth Equity[A]

Early Stage Venture | **Growth Equity** | Buyouts

### Strong Company Fundamentals

- Category-leading company
- Established business model
- Record of rapid growth and free cash flow generation
- Attractive unit-level economics
- Strong management team, often founder-led

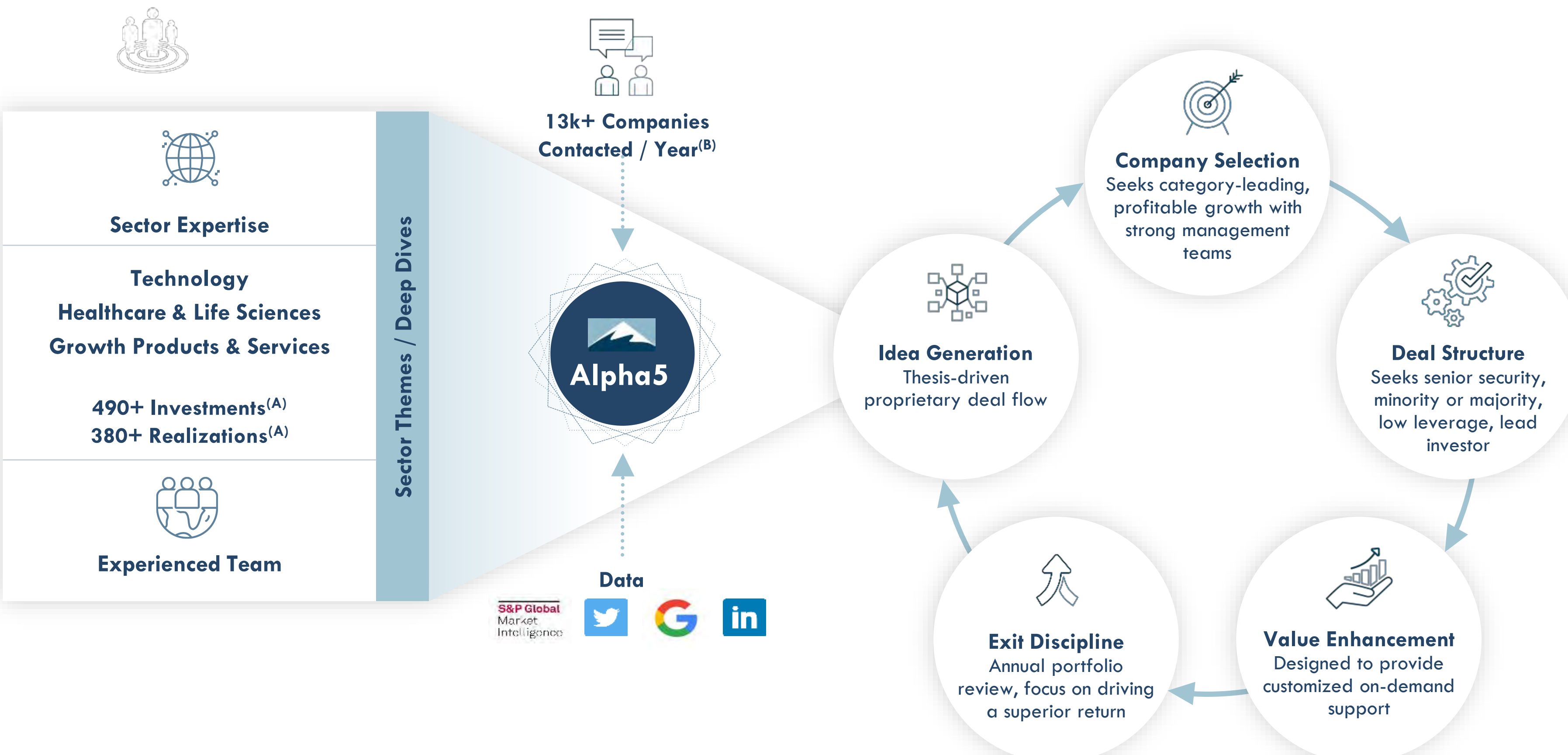
### Flexible Investment Structure

- Senior security
- Control or minority positions
- Low leverage
- Lead investor
- Board representation
- Capital for growth, expansion and shareholder liquidity

[A] For informational purposes only. The descriptions provided herein illustrates Summit's historical criteria, investment attributes and areas of focus, however, Summit is not limited to the descriptions herein and may change them in the future. Summit has discretionary authority for the management of their funds' investments and may change their criteria, attributes and areas of focus at any time. There can be no assurances that the Fund will achieve investments with the criteria, attributes or return profile described herein on an individual or Fund-level basis, and may invest in issuers that do not fit these parameters.

# The Summit Partners Growth Equity Model

Summit has designed a differentiated process to source, structure, enhance and exit investments in what we believe to be category-leading growth companies




(A) Includes all U.S. growth equity, Europe growth equity and venture capital investments from Inception through June 30, 2021.
(B) Represents a five-year average between 2016 and 2020.

# Our Growth Equity Model Applied[(A)]

## Strong Company Fundamentals

- **86%** of portfolio companies profitable at time of initial investment

## Lead Investor

- Lead investor in **93%** of investments
- Board representation in **96%** of investments

## Capital Preservation

- **79%** of investments structured with a Senior Security
- Realized loss ratio of less than **1.4%**[(C)] of invested capital

## Controlled Use of Leverage

- **45%** of portfolio companies had no net senior leverage at time of initial investment[(D)]
- Weighted average net senior leverage ratio of **3.2x** TTM EBITDA[(B)]

[(A)] Past performance is not a guarantee of or necessarily indicative of future results. It should not be assumed that investments made in the future will be profitable or equal to the performance of these securities. Represents all investments made from the Recent Funds since inception except SPGL Acquisition Corporation and a Confidential Portfolio Company as each is newly formed entity that has yet to commence operations. Calculations herein for Profitable, Lead Investor, Board Representation, Senior Security and Net Senior Leverage at time of investment are based on the number of investments. Calculations herein for Weighted Average Net Senior Leverage Ratio are based on invested cost. Recent Funds includes GE X, GE IX and GE VIII.
[(B)] Represents net senior leverage divided by TTM EBITDA at time of investment and weighted by total cost at time of investment for Recent Growth Equity Funds as of June 30, 2021.
[(C)] Loss rates are calculated as total proceeds, not including coupon, plus dividends less invested capital. Funds represented in the historical loss ratio include the Recent Funds.
[(D)] Represents unrealized portfolio companies that have no net senior debt in our Recent Funds.

# Continued Innovation in Value Enhancement

Our purpose-built teams are designed to support the needs of growth companies, and we believe these resources are integral to our investment and value enhancement processes

**Peak Performance Group**
Operational support focused on functional areas of revenue optimization, growth marketing, technology and M&A

**Talent & Recruiting**
Human capital support focused on Quality of Talent assessment, DEI support, and recruiting high-impact executives and directors

**Pre-investment Due Diligence**

**+**

**Post-Investment Value Enhancement**

**Capital Markets**
Experienced team that helps structure capital markets transactions to support growth initiatives

**Technology & Data Science**
Technical support for due diligence, product organization design, data analytics and pattern recognition to help drive growth initiatives

**Free, flexible, on-demand support for portfolio companies**

# Value Enhancement: Evolution and Innovation

## Formation
(2007-2013)

- **Capital Markets**
  - Leveraged finance
- **Peak Performance Group (PPG)**
  - Post-closing focus
  - Generalist model

## Evolution
(2013-2019)

- **Capital Markets**
  - Leveraged finance
  - Fund-level capital call lines of credit
- **Peak Performance Group**
  - Pre- and post-closing involvement
  - 180-day plan process
  - Europe expansion
  - Subject matter experts
- **Talent & Recruiting**
  - Established team in 2014
- **Technology**
  - Established team in 2015
  - Alpha5 Product Team

## Innovation
(2019-2021)

- **Integration of PPG and Talent & Recruiting Teams**
- **Embedded into Investment Committee Process**
- **Additional Subject Matter Experts:**
  - Digital marketing
  - Revenue optimization
  - Data science & analytics

# Experienced Global Investment Team[A]

## Our U.S. Growth Equity investment team is led by 13 Managing Directors who average 17 years with Summit

**Peter Chung**
CEO

| | Technology | Healthcare & Life Sciences | Growth Product & Services |
|---|---|---|---|
| ***U.S. Growth Equity*** Investment Team of **44** | *Technology Team of 20* | *Healthcare Team of 13* | *GPS Team of 11* |
| | **Peter Chung**<br>**Managing Director & CEO**<br>27th year / MP | **Darren Black**<br>**Managing Director**<br>8th year / BOS | **John Carroll**<br>**Managing Director**<br>27th year / BOS |
| | **Scott Collins**<br>**Managing Director & COO**<br>25th year / BOS | **Craig Frances**<br>**Managing Director**<br>19th year / MP | **Christopher Dean**<br>**Managing Director**<br>20th year / BOS |
| | **Leonard Ferrington**<br>**Managing Director**<br>15th year / BOS | **Peter Francis**<br>**Managing Director**<br>10th year / BOS | **Matthew Hamilton**<br>**Managing Director**<br>17th year / BOS |
| | **Michael Medici**<br>**Managing Director**<br>17th year / BOS | **Ross Stern**<br>**Managing Director**<br>11th year / BOS | **Jay Pauley**<br>**Managing Director**<br>12th year / BOS |
| | **Peter Rottier**<br>**Managing Director**<br>16th year / MP | | |
| ***Venture Capital*** Investment Team of **22** | *Technology Team of 15* | *Healthcare Team of 3* | *GPS Team of 4* |
| ***Europe Growth Equity*** Investment Team of **19** | *Technology Team of 9* | *Healthcare Team of 6* | *GPS Team of 4* |

### Value Enhancement *Team of 15*

| | | | |
|---|---|---|---|
| **Dave Averett**<br>**Managing Director**<br>Peak Performance Group<br>12th year / BOS | **Alex Whittemore**<br>**Managing Director**<br>Capital Markets Team<br>15th year / BOS | **Dayton Ogden**<br>**Head of Talent and Recruiting**<br>8th year / BOS | **Neil Roseman**<br>**Technologist-in-Residence**<br>6th year / MP |

### Advisor

**Robert Grady**
**Advisory Partner**
1st year / BOS

(A) As of June 30, 2021.

# Summit Partners Summary[A]

**37 years of growth equity industry leadership**

**Deep and Experienced Team**

- Managing Directors average over 17 years at Summit
- Sector expertise in Technology, Healthcare and Growth Products & Services

**Proprietary Idea Generation and Direct Sourcing**

- Thematic, partner-led idea generation
- Technology-enabled with the Alpha5 platform

**Differentiated Value Enhancement Capabilities**

- Four distinct teams to deliver strategic and operational improvement
- Purpose-built to serve the needs of growth companies

[A] Past performance is not a guarantee of or necessarily indicative of future results. It should not be assumed that investments made in the future will be profitable or equal to the performance of these securities.

GENSTAR CAPITAL

# Genstar Capital

# Alaska Retirement Management Board

Genstar Capital | Four Embarcadero Center, Suite 1900 | San Francisco, CA 94111 | Phone: (415) 834-2350 | Fax: (415) 834-2383 | www.gencap.com

# Executive Summary

| | |
|---|---|
| **EXPERIENCED ORGANIZATION** | • Genstar (the "Company") has been investing in the North American middle-market since 1988 through ten funds managing ~$33 billion of AUM<br>• Managing Partners have been together for 13+ years |
| **VERTICAL FOCUS** | • Sector specialist executing control transactions in Financial Services, Software, Industrials and Healthcare sectors<br>• Genstar team includes 30 Strategic Advisory Board ("SAB") members |
| **CHANGE CAPITAL STRATEGY** | • Talent Management<br>• Go-to-Market and Operational Improvements<br>• M&A |
| **CONSISTENT RETURNS** | • $6.5 billion realized since January 2021[1]<br>• 6 out of 7 funds top quartile[2]<br>• 0% loss ratio over the last decade |
| **STRONG CULTURE** | • One office: San Francisco<br>• One strategy/asset class: One fund at a time<br>• Ownership culture |

***Genstar's approach to investing is centered around driving transformational change in high-quality businesses***

*All figures as of September 30, 2021.*
*(1) Pro forma for the minority sale of Apex (signed June 2021)*
*(2) Preqin Q4 2019 Private Capital Performance Update. Third party ranking is for information and illustrative purposes only, is not investment advice and is no assurance of actual future performance or results of any private equity segment or fund.*

GENSTAR CAPITAL

# Management Company

**Jean-Pierre L. Conte**
Chairman and Managing Director

- Joined 1995
- Board seats: Advarra, ConnectiveRx, Signant (former: Boyd, ERT, Confie Seguros, Netsmart, MW Industries, PRA, Signant, TravelClick)
- The NTC Group, Chase Manhattan Bank
- Harvard Business School, Colgate University

**J. Ryan Clark**
President and Managing Director

- Joined 2004
- Board seats: 2-10 Home Buyers Warranty, Alera, AMBA, All Web Leads, MASA, Obsidian, Worldwide Facilities (former: Acrisure, Confie Seguros, FHG, IAS, Insurity, MidCap, Sphera, Palomar)
- Hellman & Friedman, Morgan Stanley
- Harvard Business School, Harvard University

**Rob S. Rutledge**
Managing Director

- Joined 2003
- Board seats: Arrowhead, BBB, Clarience, OTC, Marcone, Sonny's, Tekni-Plex (former: Boyd, Confie Seguros, ECM Industries, Infinite Electronics, MW Industries, FHG, Tecomet, Woods, Pretium)
- Salomon Smith Barney (Citigroup)
- Stanford Graduate School of Business, Queen's University

**Tony J. Salewski**
Managing Director

- Joined 2007
- Board seats: Apex, Ascensus, Cetera, Foreside, ISS, Mercer Advisors, Orion Advisor Solutions (former: AssetMark, Artivest, Catalent, TravelClick, MidCap)
- Barclays Global Investors, Hellman & Friedman, Morgan Stanley
- Harvard Business School, Harvard University

**Eli P. Weiss**
Managing Director

- Joined 2008
- Board seats: 2020, Community Brands, ConnectiveRx, Daxko, Enverus, insightsoftware, OEConnection, PDI, Prometheus, Stack Sports, Telestream, Vector (former: Accruent, Bullhorn, ConstructConnect, Evolution1, IAS, Insurity)
- Hellman & Friedman, Greenhill & Co.
- Stanford Graduate School of Business, Yale University

# Genstar Capital Team

- **J-P Conte** — Chairman and Managing Director
- **Ryan Clark** — ● President and Managing Director
- **Rob Rutledge** — ● Managing Director
- **Tony Salewski** — ● Managing Director
- **Eli Weiss** — ● Managing Director
- **David Golde** — ● Managing Director
- **Ben Marshall** — ● Director
- **Rob Clark** — ● Director
- **Katie Solomon** — Managing Director, Talent Management
- **Melissa Dickerson** — CFO and Managing Director, Operations
- **Sid Ramakrishnan** — ● Principal
- **Scott Niehaus** — ● Principal
- **Matt McCabe** — ● Principal
- **David Graham** — Managing Director, Debt Capital Markets
- **Dominic Martellaro** — ● Vice President
- **Chong Ni** — ● Vice President
- **Deryn Jakolev** — ● Vice President
- **Chaney Detmer-Lillard** — Senior Associate
- **John Plugge** — Senior Associate
- **Chris Barry** — Associate
- **Harry James** — Associate
- **Martin Urdapilleta** — Associate
- **Andrew Aubry** — Associate
- **Josh Cohen** — Associate
- **Collin McAlmont** — Associate

● **Individuals who have been with Genstar since Vice President or prior**

**2021 Promotions**

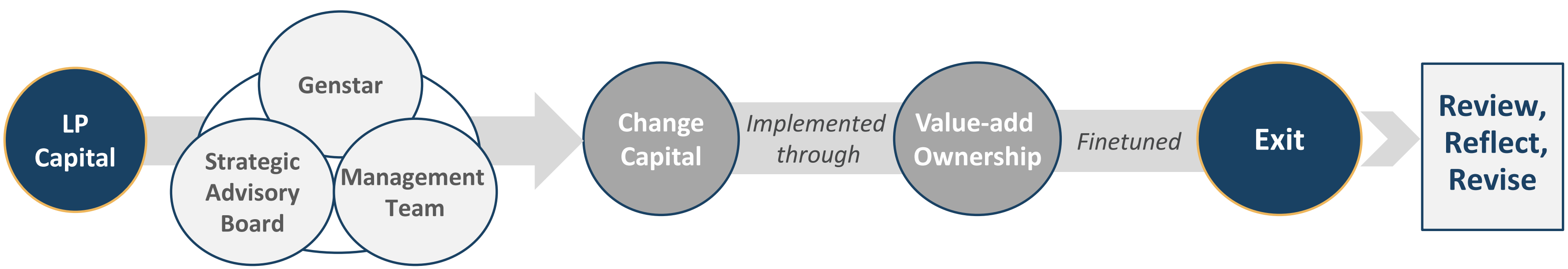
# Strategic Advisory Board Overview

- The SAB is composed of influential senior executives who are current or former leaders of major companies
- The SAB currently comprises 30 members who are all exclusive to Genstar in the middle-market; members of SAB work with the Team to source, diligence and manage companies post-acquisition
- These individuals also serve as board members and advisors to portfolio companies, providing practical insights to management teams in creating strategic plans, developing best practices, expanding market opportunities, sourcing acquisitions, and managing talent

| | SAB Member | Prior Experience |
|---|---|---|
| Software | **Marc Chardon** | CEO, Blackbaud; GM France, CFO of Office products, Microsoft |
| | **Mark Hanson** | SVP Corporate Development, Siebel Systems; President, Visigenic Software |
| | **Steven Mankoff** | SVP Global and Technical Services, Siebel Systems |
| | **Gary Michel (All Verticals)** | CFO, TravelClick; CFO, Register.com; Dun & Bradstreet (multiple roles) |
| | **Larry Park (& Financial Services)** | CEO, WildCard Systems (Fidelity National); CEO, Transglobal |
| | **R. David Schmaier** | President & Chief Product Officer, Salesforce; Founding Member, Siebel |
| | **Bob Solomon** | Founder, Software Platform Consulting; President, ServiceChannel |
| Financial Services | **John Addeo** | CEO, Confie Seguros; CEO, Alliant Insurance Services |
| | **Ben Brigeman** | EVP & Head of Retail business, Charles Schwab & Co.; SVP, Key Bank |
| | **Dennis Chookaszian** | CEO, CNA Insurance; Chairman of FASAC |
| | **Charles Goldman** | CEO, AssetMark |
| | **Lori Hardwick** | Co-Founder & Group President of Advisory Services, Envestnet |
| | **Tom Hutton** | CEO, White Mountains Re; CEO, Risk Management Solutions |
| | **Tony Reisz (& Software)** | CEO, Decision Insight Informational Group; CEO Ontario Systems |
| | **Hal Strong** | Vice Chairman, COO & CFO, Russell Investments |
| | **Rick Taketa** | President and CEO, York Risk Services Group |
| | **Mitch Vernick** | Vice Chairman, Heller Financial; CEO, Transamerica Comm. Fin. |
| | **David Wroe (& Software)** | Chairman and CEO, Agency Management Systems (Vertafore) |
| Industrials | **Mitch Aiello** | CEO, Boyd |
| | **Alan Fortier** | President & Founder, Fortier & Associates |
| | **Jeff Greene** | President & CEO, Consolidated Container Corporation |
| | **Raymond Hoglund** | CEO, Dover Engineered Systems; CEO, Hill |
| | **Michael Hurt** | CEO, Altra; CEO, TB Woods; Ingersoll Rand |
| | **Bill Marcum** | CEO, MW Industries; CEO, Woods Equipment |
| | **David Scheer** | CEO, OTC; CEO, Power Products |
| Healthcare | **Linda Baddour** | CFO, PRA International |
| | **Robert Conway** | CEO, Array BioPharma; COO, Hill Top Research |
| | **John Hubbard** | President & CEO, Bioclinica; SVP & Worldwide Head of DevOps, Pfizer |
| | **Richard Thomas** | President (Tech & Solutions), Quintiles/IQVIA |
| | **Harry Totonis (& Software & FS)** | CEO, ConnectiveRx; President & CEO, Surescripts |

# Genstar's Built a Repeatable Model

| Thesis Driven Approach | Engaged Partnerships with Sector Specialists | Change Capital | Talent Management | Tailored Exit Strategies |
|---|---|---|---|---|
| Deep Vertical Expertise | Proactive Company Outreach<br>30 SAB Members | Operating Improvements<br>M&A Strategy | Human Capital Network | Defined Exit Vision from Day 1 |




*Note: Genstar's allocation strategies and targets depend on a variety of factors. Please refer to disclaimer section for important disclosures and information.*

# Deep Vertical Industry Focus

## Software

- Vertical Market Application Software
- Data and Analytics Solutions
- Software and IT services in Healthcare, Financial Services and Industrials Verticals
- Marketplace or Exchange Software
- Integrated Software and Payment Processing
- Compliance and Risk Management Solutions

## Financial Services

- Insurance Services
- Insurance Distribution
- Specialty Insurance
- Specialty Finance
- Wealth Management / Wealth Advisory
- Electronic Payment Services & Technology
- Financial Technology & Information Services

## Industrials

- Engineered Components
- Specialty Distribution
- Automation Products and Services
- Industrial Services
- Test & Measurement
- Packaging
- Specialty Chemicals
- Industrial Software
- Medical Products
- Auto Aftermarket

## Healthcare

- Life Science Tech
- Pharma Services & Life Science Tools
- Specialized Contract Manufacturing and/or Packaging
- Healthcare IT
- Niche Distribution & Outsourcing Services
- Payer Cost Containment Solutions

*Note: Genstar's allocation strategies and targets depend on a variety of factors. Please refer to disclaimer section for important disclosures and information.*

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- INVESTMENT IN A FUND INVOLVES SIGNIFICANT RISKS, INCLUDING LOSS OF THE ENTIRE INVESTMENT.
- DATA FROM JUNE 30, 2021 IS UNAUDITED AND SUBJECT TO CHANGE.
- UNREALIZED AMOUNTS HAVE BEEN VALUED BY GENSTAR, ARE UNAUDITED, AND MAY NOT BE REALIZED AT THESE VALUES. ACTUAL REALIZED PROCEEDS ON UNREALIZED INVESTMENTS WILL DEPEND ON, AMONG OTHER FACTORS, FUTURE OPERATING RESULTS, THE VALUE OF THE ASSETS AND MARKET CONDITIONS AT THE TIME OF DISPOSITION, ANY RELATED TRANSACTION COSTS AND THE TIMING AND MANNER OF SALE, ALL OF WHICH MAY DIFFER FROM THE ASSUMPTIONS ON WHICH THE VALUATIONS REFLECTED IN THE HISTORICAL INVESTMENT PERFORMANCE DATA CONTAINED HEREIN ARE BASED. ACCORDINGLY, THE ACTUAL REALIZED PROCEEDS ON THESE UNREALIZED INVESTMENTS MAY DIFFER MATERIALLY FROM THE RETURNS INDICATED HEREIN AND THERE CAN BE NO ASSURANCE THAT THESE VALUES WILL ULTIMATELY BE REALIZED UPON DISPOSITION OF THE INVESTMENTS. DIFFERENT METHODS OF VALUING INVESTMENTS AND CALCULATING IRR MAY ALSO PROVIDE MATERIALLY DIFFERENT RESULTS.
- GROSS RETURNS ARE BEFORE THE IMPACT OF CARRIED INTEREST, MANAGEMENT FEES AND OTHER EXPENSES, WHICH WILL REDUCE FUND RETURNS.
- NET RETURNS ARE NOT AVAILABLE FOR INDIVIDUAL INVESTMENTS BECAUSE CARRIED INTEREST, MANAGEMENT FEES AND OTHER EXPENSES ARE CALCULATED BASED ON TOTAL FUND PERFORMANCE.
- GROSS MOIC AND IRR REFLECT THE IMPACT OF RECYCLED CAPITAL.
- EXITS INCLUDE REALIZED AND SIGNIFICANTLY REALIZED INVESTMENTS.
- PORTFOLIO COMPANIES THAT WERE CONSOLIDATED INTO A LARGER PLATFORM ARE COUNTED AS ONE PORTFOLIO COMPANY.
- UNLESS OTHERWISE NOTED, RETURNS SHOWN INCLUDE ALL RETURNS GENERATED BY REINVESTED CAPITAL OR PROFIT. IF SUCH RETURNS WERE NOT INCLUDED, THE RETURNS SHOWN COULD BE LOWER.
- INVESTMENT PERFORMANCE IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY AND SHOULD NOT BE CONSIDERED REPRESENTATIVE OF THE FINAL RETURNS THAT MAY BE ACHIEVED.
- NET RETURNS INCLUDE THE IMPACT OF CARRIED INTEREST, MANAGEMENT FEES AND OTHER EXPENSES.
- FUND COMMITMENTS AND CAPITAL INVESTED REPRESENT THE AGGREGATE CAPITAL COMMITTED AND CONTRIBUTED, RESPECTIVELY, TO A PARTICULAR FUND FAMILY, INCLUDING THE CAPITAL ASSOCIATED WITH (I) ANY PARALLEL FUNDS THAT ARE A PART OF SUCH FUND FAMILY AND (II) BOTH THE GENERAL PARTNER AND THE LIMITED PARTNERS OF THE FUNDS IN SUCH FUND FAMILY.
- FUND SIZE REFERENCED THROUGH THIS PRESENTATION REPRESENT THE AGGREGATE CAPITAL COMMITTED, RESPECTIVELY, TO A PARTICULAR FUND FAMILY, INCLUDING THOSE MADE BY ANY PARALLEL FUNDS THAT ARE A PART OF SUCH FUND FAMILY.
- REALIZED VALUE, UNREALIZED VALUE AND TOTAL REALIZED & UNREALIZED VALUE REPRESENT THE AGGREGATE AMOUNTS ASSOCIATED WITH THE FUND INVESTMENTS MADE BY A PARTICULAR FUND FAMILY, INCLUDING THOSE MADE BY ANY PARALLEL FUNDS THAT ARE A PART OF SUCH FUND FAMILY. TOTAL REALIZED & UNREALIZED VALUE IS THE SUM OF REALIZED VALUE AND UNREALIZED VALUE. REALIZED VALUE IS THE SUM OF ALL AMOUNTS RECEIVED UPON DISPOSITION OF FUND INVESTMENTS PLUS ANY PRIOR AMOUNTS RECEIVED ON THE INVESTMENT. UNREALIZED VALUE IS THE SUM OF THE ESTIMATED FAIR VALUE OF ALL INVESTMENTS HELD BY A FUND AS OF THE DATE INDICATED, AS DETERMINED BY THE FUND'S GENERAL PARTNER AND REFLECTED IN THE FUND'S FINANCIAL STATEMENTS.
- IRR IS A MEASURE OF THE DISCOUNTED CASH FLOWS (INFLOWS AND OUTFLOWS) RELATED TO AN INVESTMENT. SPECIFICALLY, IRR IS THE DISCOUNT RATE AT WHICH (I) THE PRESENT VALUE OF ALL CAPITAL INVESTED IN AN INVESTMENT IS EQUAL TO (II) THE PRESENT VALUE OF ALL CASH FLOWS AND TERMINAL VALUE FROM THE INVESTMENT (WHETHER OR NOT REALIZED).
- NET IRR INCLUDES THE EFFECT OF MANAGEMENT FEES, FUND EXPENSES AND CARRIED INTEREST ALLOCATIONS. NET IRR FOR A PARTICULAR FUND REFLECTS THE CASH FLOWS OF THE FUND FAMILY (AS DEFINED ABOVE) AND IS CALCULATED BASED ON THE DATES THAT LIMITED PARTNERS ARE REQUIRED TO CONTRIBUTE CAPITAL TO THE FUND AND THE DATES THAT THE FUND MAKES DISTRIBUTIONS BACK TO ITS LIMITED PARTNERS.
- IRR CALCULATIONS ARE UNAUDITED.
- GROSS MULTIPLE OF INVESTED CAPITAL ("GROSS MOIC") & GROSS IRR INCLUDE CONTRIBUTIONS MADE BY THE LPS, GP AND GENSTAR'S SIDE-BY-SIDE INVESTMENT VEHICLE. THESE FIGURES DO NOT REFLECT ANY DEDUCTIONS FOR MANAGEMENT FEES, ALLOCABLE EXPENSES OR CARRIED INTEREST.
- NET MULTIPLE OF INVESTED CAPITAL ("NET MOIC") & NET IRR INCLUDE CONTRIBUTIONS MADE BY THE LPS, GP AND GENSTAR'S SIDE-BY-SIDE INVESTMENT VEHICLE. THIS CALCULATION INCLUDES DEDUCTIONS FOR MANAGEMENT FEES AND ALLOCABLE EXPENSES PAID BY THE LIMITED PARTNERS, AS WELL AS ANY CARRIED INTEREST PAID TO THE GP.
- MOIC CALCULATIONS ARE UNAUDITED.

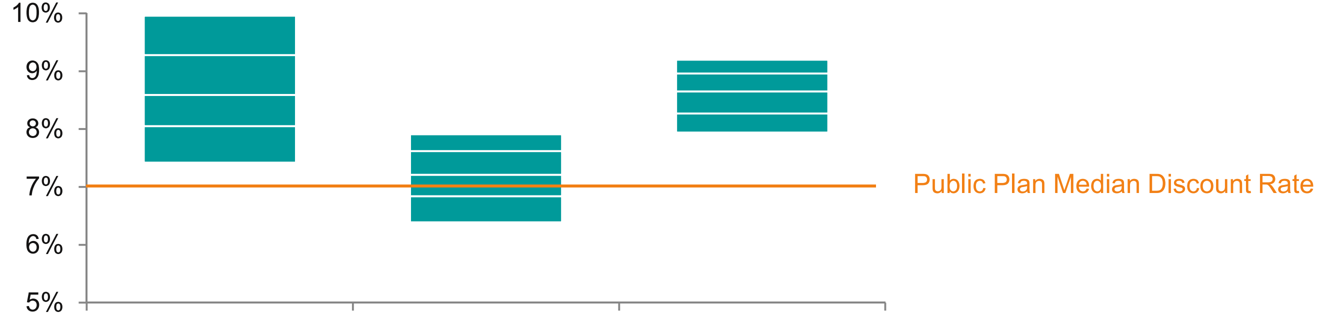
# Understanding Returns for Public DB Plans

**Brady O'Connell, CFA, CAIA**
Senior Vice President

# Public Fund Historical Returns

## 2021 Capped off a strong run of returns for public plans

**Callan Public Fund Sponsor Database Group Returns**



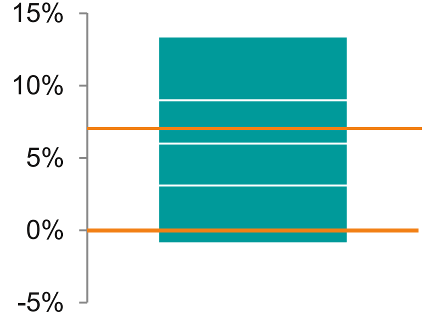

| | Last 10 Years | Last 20 Years | Last 30 Years |
|---|---|---|---|
| 10th percentile | 9.96 | 7.91 | 9.20 |
| 25th percentile | 9.28 | 7.62 | 8.96 |
| Median | 8.59 | 7.21 | 8.65 |
| 75th percentile | 8.05 | 6.84 | 8.27 |
| 90th percentile | 7.42 | 6.39 | 7.94 |

Source: Callan

# Future Outlook is Modest

## Callan capital market projections for typical public plan

**Range of Projected Rates of Return for 10 Years**



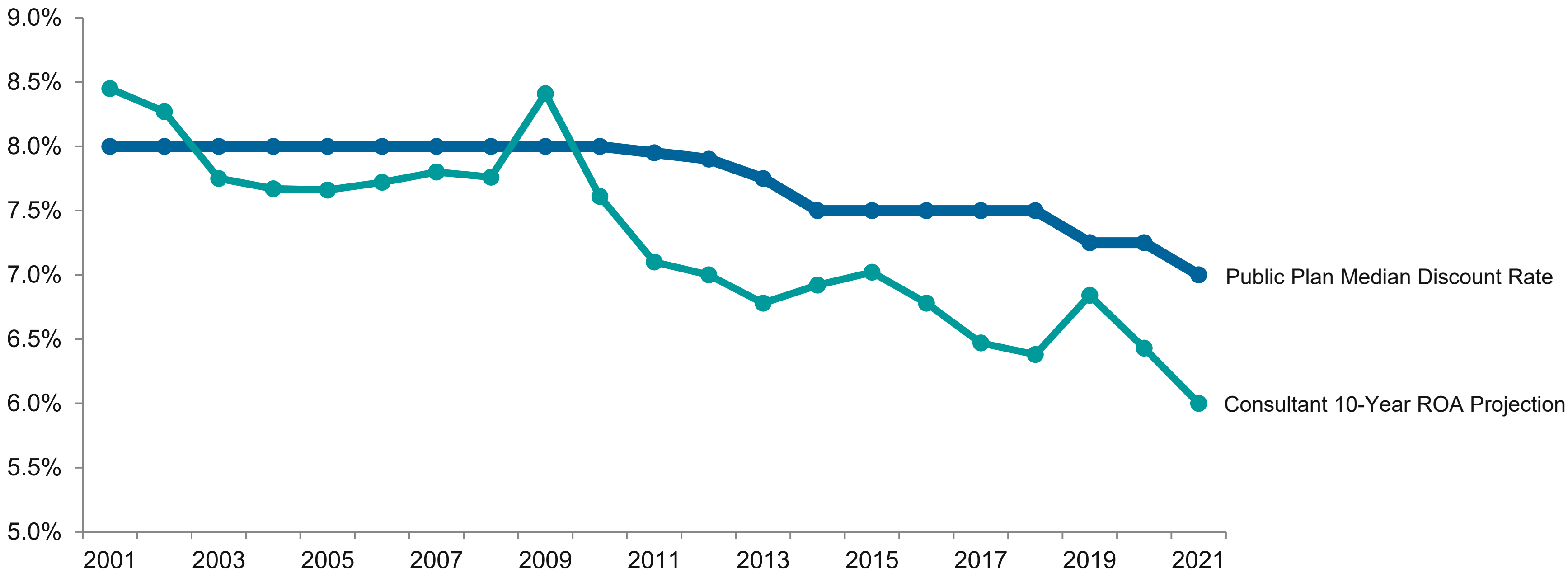

| | |
|---|---|
| 10th percentile | 13.4 |
| 25th percentile | 9.0 |
| Median | 6.0 |
| 75th percentile | 3.1 |
| 90th percentile | -0.9 |
| Probability >7% | 41% |
| Probability >0% | 92% |

- Despite strong recent results, most public DB plans are less than 100% funded.
- Healthy public DB plans need adequate returns as well as reasonable and consistent contributions.
- While past returns have typically exceeded actuarial return assumptions, the future looks fairly bleak.

Source: Callan

# The Challenge

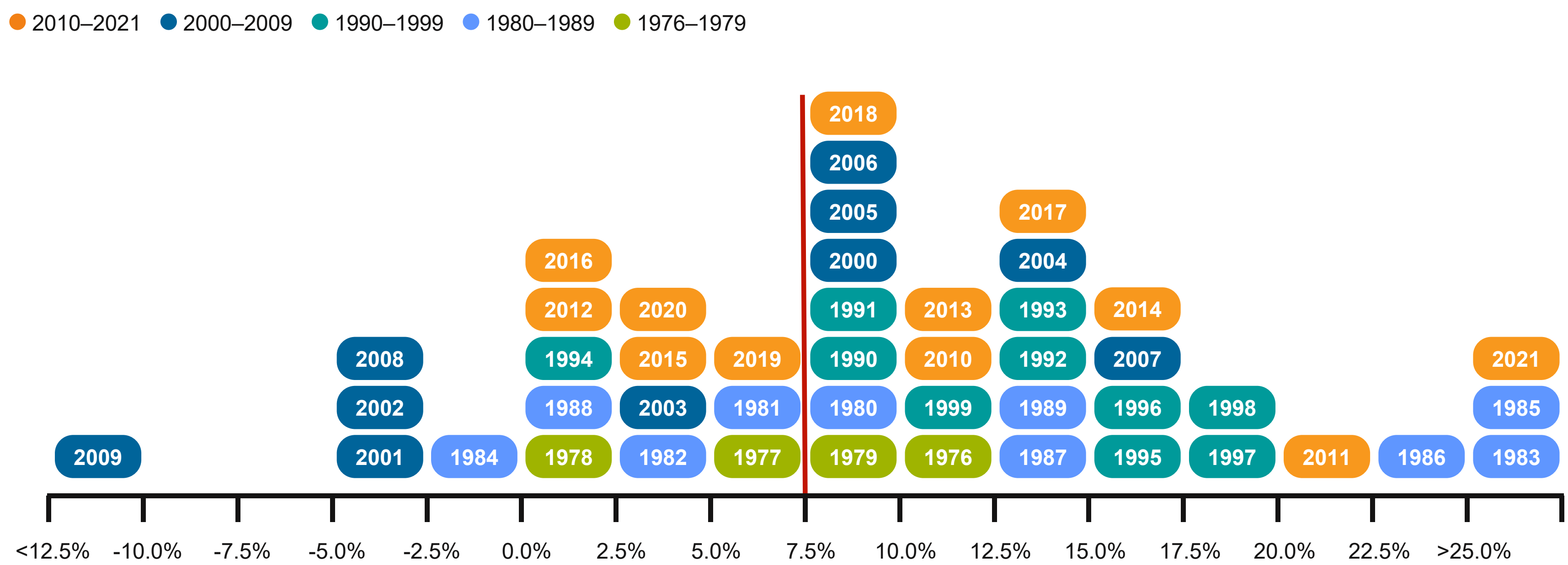
## Actuaries and Consultants Never Agree!




Source: Callan, NASRA

## Medians Mask Great Variability in Annual Returns

Histogram of median public plan fiscal year returns




Red line represents estimate of the average public fund actuarial discount rate for time period shown.

# Considerations for Fiduciaries

Fiduciaries should understand how these return assumptions differ

- **Time horizon**
- **Long-term actual results**
- **Inflation expectations**
- **Discount rate change frequency**
- **Use of active management**

# TAKEAWAYS

- Actuarial discount rates and consultant return forecasts rarely match.
- Modest capital market forecasts mean most investment consultant estimates will lag actuarial assumptions.
- It is important to be able to understand how and why they are different and how these two numbers can co-exist going forward.
- Callan has articulated several considerations for public fund stakeholders to consider when exploring these different figures.

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# Biographies

**Brady O'Connell, CFA, CAIA,** is a senior vice president in Callan's Chicago consulting office. Brady has consulted with a variety of clients, including corporate and public defined benefit plans, defined contribution plans, endowments and foundations. He is a member of Callan's Client Policy Review and Alternatives Review committees, and is a shareholder of the firm. He earned the right to use the Chartered Financial Analyst® designation and earned the right to use the CAIA designation. He is a member of CFA Institute and a member of the board of directors for CFA Society Chicago.

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Research

September 2021

# Understanding Returns for Public DB Plans

## How Actuaries and Consultants Develop Forecasts

### KEY ELEMENTS

- **Public defined benefit plan sponsors should understand that actuaries and investment consultants offer assumptions on expected return that are inherently different and often do not match.**
- **Plan fiduciaries should be comfortable with these differences, because the two assumptions are used for different purposes and are based on different economic and financial inputs.**
- **Setting asset allocation is more complex than just solving for the portfolio that provides the expected return equal to the actuarial discount rate. Changes to actuarial assumptions should be done infrequently because these changes can have major impacts on a plan's funded status and overall health.**

"Consultant expectations today are significantly below actuarial expectations, which will likely drive median actuarial expectations down from their current 7.0% level."

**Brady O'Connell**
**Investment Consulting**

**John Pirone**
**Capital Markets Research**

Public defined benefit (DB) plans face intensifying pressure as modest expectations for future investment returns continue to fall short of actuarial discount rates. While this trend has been playing out for over a decade, post-pandemic market conditions have magnified the challenge as investment consultants continue to lower their capital markets assumptions in the face of steadily declining interest rates and rising equity market valuations, which both point to leaner future returns.

These lower expectations are pressuring public pension fiduciaries to reduce their actuarial investment return assumptions, but that typically translates to higher projected plan liabilities, a lower funded status, and ultimately higher contributions from employers and employees.[1]

As a result, decision makers at public DB plans face a critical dilemma affecting the plan's future financial health: How to distinguish between the actuarial discount rates used to measure plan benefit obligations and the return expectations used to inform decisions on long-term strategic asset allocation. In this discussion, it is important the decision makers understand that actuaries and investment consultants offer assumptions on expected return that are inherently different: Actuarial discount rates assume a static return over time with no variability, whereas investment consultants estimate a median *and* a range of expected returns based on expected risk.

This paper reviews the differences between actuarial discount rates and consultant return forecasts. We remind fiduciaries of the importance of these two assumptions, why the numbers vary in practice and use, and why setting asset-allocation strategy is not simply an act of making the consultant return expectation match the actuarial discount rate. When seeking to understand the differences between these two numbers, fiduciaries should consider several reasons these two figures do not match: the time horizon over which they are used, historical plan returns relative to projections, inflation expectations, the historical context of discount rate changes at the plan, and the plan's use of active vs. passive investment management.

## Economic Assumptions: The Province of Actuaries

Pension plans regularly estimate their future obligations to active and retired beneficiaries by forecasting liabilities. The actuary assigns a value to these future obligations by applying a discount rate to projected payments, establishing their present-day value.

To estimate pension plan liabilities, actuaries employ a series of assumptions to project how a plan is expected to grow:

- "Demographic" assumptions address the characteristics of plan participants, such as life expectancy, and are generally based on plan-specific circumstances and observations about participants' lives and pay.
- "Economic" assumptions include variables like inflation and wage growth that are based on broad market observations.
- The discount rate is often referred to as the return on asset (ROA) assumption. This economic assumption is a critical metric for a present-day estimate of future liabilities. This number is used to

1 Public retirement systems receive contributions from both employees and employers. These contributions combine with investment returns on pension assets to pay for plan benefits and expenses. Contribution levels for public plans are often negotiated, but in some cases they can be fixed (set by statute) or variable (determined by the plan).

calculate the present value of future liability projections. The higher the discount rate, the lower the present value of liabilities, and vice versa.

**Exhibit 1** illustrates the impact of lowering the discount rate on the present value of liabilities for a plan with future annual outflows of $10 million over 30 years. A 1 percentage point decrease in the discount rate results in an approximate 10% increase in the present value of liabilities. Clearly the discount rate has a powerful impact on plan liability projections.

**Exhibit 1**

**Impact of Discount Rate Changes on Present Value of Liabilities**

*30-year Time Horizon*

| Hypothetical Discount Rate | 8.0% | 7.0% | 6.0% |
|---|---|---|---|
| Present Value of Liabilities | $112,577,833 | $124,090,412 | $137,648,312 |
| % Change from Higher Discount Rate | - | +10.2% | +10.9% |

Source: Callan

### How Corporate, Public DB Plans Handle Actuarial Discount Rates

Practices for actuarial discount rates differ meaningfully between corporate and public DB plans. Public plans use an actuarial discount rate informed by their asset-allocation strategy and have more flexibility in setting the rate than corporate plans do. Corporate DB plans follow regulations that require the use of market-observed interest rates, such as a high-quality corporate bond market yield, as their discount rate. This has led to the proliferation of liability-driven investing, in which corporate plans invest in long duration bonds that track their actuarial discount rates so that interest rate changes impacting liabilities also impact the asset portfolios.

### Guidance for Actuaries

In advising public DB plan trustees, actuaries in the U.S. are guided by standards and practices from the Society of Actuaries, a professional trade organization, as well as regulations from government agencies (e.g., the Governmental Accounting Standards Board). Public pension actuaries have increasingly stressed in presentations to public plan boards their professional obligations under the Actuarial Standards of Practice (ASOP) 27 set by the Actuarial Standards Board (ASB), an organization providing guidance to professional actuaries. This obligation requires that actuaries identify any assumptions used by their clients that may “significantly conflict” with what the actuary deems reasonable. Actuarial firms keep a keen eye on return forecasts from investment consultants; these inputs often inform their advice to public plan boards on what range of discount rates strikes the actuary as reasonable.

Actuaries advise public plans on assumptions customized for their specific plans. As with most important fiduciary decisions, public pension boards can solicit advice from specialists, but they are ultimately responsible for adopting the plan’s assumptions. Hence it is essential that public plan board members understand actuarial assumptions and the implications of changing them.

## Investment Consultants’ View of the Future

When setting long-term asset-allocation strategy, pension plan boards often rely on investment consultants or advisers to recommend a mix of assets and risk levels intended to achieve a plan’s targeted long-term return. Consultants’ return expectations for asset classes vary over time based on capital markets conditions. Callan updates our capital markets assumptions annually,[2] and key market inputs include economic data such as interest rate levels, forecasted inflation rates, equity market valuations, and projections for economic growth (such as global and country-specific estimates of GDP). Expectations for asset class returns are used along with two other critical forecasts—correlation of returns and risk or volatility—to identify “efficient” portfolios or combinations of asset classes that provide the highest return per unit of risk. This is a practical application of Modern Portfolio Theory developed by Harry Markowitz in 1952.

Forecasting asset class returns is very difficult over short periods of time, so most asset managers and consultants do so over

2 Find our latest capital markets assumptions here.

some “long-term” horizon. Practically speaking, 5-10 years is the most common, but several market participants also construct 30-year sets of capital markets assumptions. These very-long-term forecasts tend to look a lot like the long-term averages of asset class returns, risk, and correlations, as the time horizon is long enough to mitigate near-term market extremes and allows time for mean reversion. As an example, most consultant 10-year return forecasts for bonds rely upon simulations of the current very low level of interest rates reverting to more normal levels. This is likely to have an adverse impact on bond returns during the next 10 years. For periods beyond 10 years, the impact of this normalization in interest rates on bond returns should be more muted.

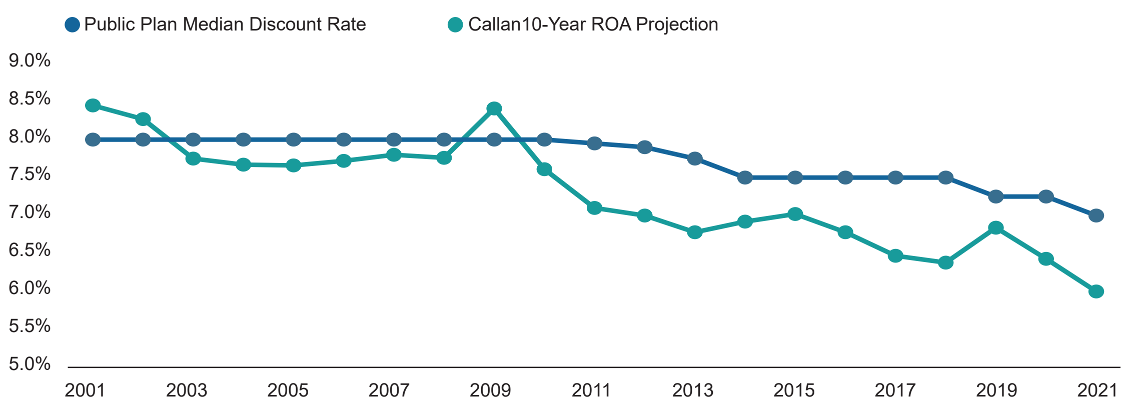
Consultant expected returns are used in asset-allocation and asset/liability studies to guide decisions about long-term asset-allocation strategy. As noted earlier, investment consultants not only establish a *median* future expected return for portfolios, but also a *range* that incorporates volatility and acknowledges the great uncertainty of the capital markets environment. Callan and other investment consultants typically rely on their 5- to 10-year capital markets forecasts in setting asset allocations. We think this time horizon appropriately balances most fiduciaries’ long-term time perspective while appropriately incorporating current market conditions, which are relevant to near-term investing decisions.

## Comparing Actuarial and Consultant Expected Rates of Return

Actuarial discount rates and consultant projected return expectations rarely match. We compare these two rates over the past two decades to more fully understand the dynamics that cause them to change. In **Exhibit 2**, the actuarial rate of return is represented by the median public plan ROA provided by the National Association of State Retirement Administrators (NASRA), and the consultant rate of return is represented by Callan’s 10-year expected return for a consensus public plan asset allocation.[3] Each dataset is updated annually, facilitating apples-to-apples comparisons.

**Exhibit 2**

**Actuarial and Consultant Rates of Return**




Sources: Callan, NASRA

3 Consensus public plan allocation modeled as 60% global equity/30% fixed income/10% real estate from 2001-2011. For 2012-2021, consensus allocation modeled as 60% global equity/25% fixed income/10% real estate/5% private equity to reflect the shift to more aggressive asset mixes over the past decade.

For the first decade, public plan median actuarial discount rates were stable at 8%. Consultant return projections were quite similar to the median discount rate, albeit with modest year-to-year changes reflecting the variability of underlying capital markets dynamics.

After the 2008 Global Financial Crisis (GFC), the Federal Reserve's crisis response of lowering short-term interest rates to zero drastically lowered consultant return projections for fixed income. Fixed income is the risk-mitigating anchor for public pensions, thus this materially reduced consultant expected returns at the total portfolio level as well.

Consultant expectations drove an industry-wide lowering of median actuarial discount rates over the five-year period immediately after the GFC from 8.0% to 7.5% as the gap between consultant and actuarial rates widened. Consultant expectations exerted a "gravitational pull" on actuarial expectations, bringing the median discount rate closer to (though not quite as low as) consultant return projections.

Interest rates slowly reverted upward over the latter part of the 2010s until 2020 when the Federal Reserve's response to the COVID-19 pandemic drove interest rates down to all-time lows. The impact of low interest rates coupled with high equity valuations created during the past decade of strong gains has reduced consultant return expectations to all-time lows, as well. Consultant expectations today are significantly below actuarial expectations, which will likely drive median actuarial expectations down from their current 7.0% level.

## The Differences Between Actuaries and Investment Consultants

Actuarial assumptions and investment consultant capital markets projections are often both used in asset/liability studies. Differences between these figures may need to be addressed through an actuary-led review of plan economic and demographic assumptions called an "experience review" or "experience study."

Pension plan fiduciaries set the actuarial discount rates and asset-allocation strategy, so they need to be comfortable with the assumptions used by both their actuaries and investment consultants. These experts offer assumptions on expected return that inherently differ: actuarial discount rates assume a completely static return over time with no variability, whereas investment consultants estimate a median expected return as well as a range of returns based on expected risk.

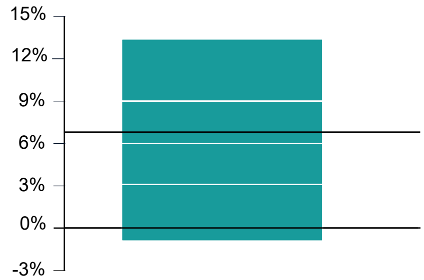
Despite these fundamental differences, many fiduciaries are forced to justify differences between their long-term actuarial discount rate and their expected investment consultant returns. When plan fiduciaries consider whether the consultant's expected return is sufficient relative to the required actuarial rate of return, it is important to note that the median represents a 50% probability of achieving that rate. The range of returns and associated probability are worth considering. The range of the distribution of returns is a function of the volatility of the asset mix.

**Exhibit 3** illustrates Callan's range of returns and associated probabilities for a hypothetical diversified portfolio of assets. In this example, an asset mix with a median expected return of 6.0% and a volatility of 13.3% has a roughly 40% probability of achieving a 7.0% return over a 10-year period. In many cases, it is in the hands of the actuaries to determine what probability of achieving a specific return is adequate to maintain or change the actuarial discount rate assumption.

**Exhibit 3**

**Range of Projected Rates of Return**

*Projection period: 10 years*




| | |
|---|---|
| 10th Percentile | 13.4 |
| 25th Percentile | 9.0 |
| Median | 6.0 |
| 75th Percentile | 3.1 |
| 90th Percentile | -0.9 |
| Prob > 7.0% | 40.8 |
| Prob > 0.0% | 91.9 |

Source: Callan; asset mix is the same as used for Exhibit 2

Setting investment strategy and asset allocation is more complex than just finding the asset allocation with an expected return that matches the actuarial discount rate. This process can be technical, so we articulate factors for fiduciaries to consider when viewing both figures that can support an understanding of why these two numbers do not match.

### Time Horizon

Actuarial discount rates are set for the very long term (typically 30 years). Investment consultants typically focus on 5- to 10-year time periods for projected returns. Investment consultant expectations also factor in current market conditions, a critical investment decision-making input, while actuarial discount rates may not.

*Fiduciary considerations:* Estimates for 10- and 30-year time horizons may not differ by much at times, but given the long-term business cycle, there are periods when expectations for different time horizons can vary meaningfully. Forecast differences between time horizons can be most significant at extremes of capital markets cycles (e.g., after periods of extraordinarily good or bad returns). Now is likely one of those times as interest rates are low and anticipated to revert to higher levels in the coming decade. Returns for risky assets have recently been strong; both actuaries and investment consultants are cautioning that this is likely unsustainable as investment returns typically revert to long-term averages.

### Long-Term Actual Returns

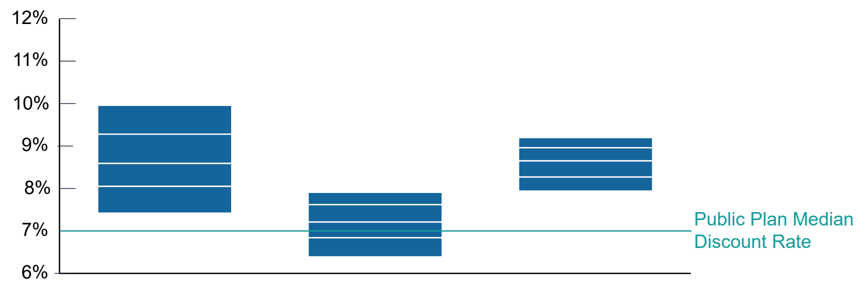
Actuaries often consider a plan's long-term historical return experience when setting future assumptions. Investment consultants do not typically rely on historical returns when creating forecasts, but rather focus on current market conditions and economic forecasts when setting forward-looking capital markets projections.

According to Callan data, public DB plans have generally been successful in exceeding—*on average*—their actuarial return expectations. **Exhibit 4** shows a modest median 20-year return thanks to three equity bear markets: the bursting of the Tech Bubble, the GFC, and the recent pandemic drop. During the past 30 years, however, even the poorest-performing public DB plans—those in the 90th percentile—nearly achieved an 8% return—a discount rate commonly used 30 years ago.

**Exhibit 4**

**Public DB Plan Geometric Returns**

*Periods ended 6/30/21*




| | Last 10 Years | Last 20 Years | Last 30 Years |
|---|---|---|---|
| 10th Percentile | 9.96 | 7.91 | 9.20 |
| 25th Percentile | 9.28 | 7.62 | 8.96 |
| Median | 8.59 | 7.21 | 8.65 |
| 75th Percentile | 8.05 | 6.84 | 8.27 |
| 90th Percentile | 7.42 | 6.39 | 7.94 |
| Member Count | 195 | 137 | 75 |

Source: Callan; data reflect returns of the Callan Public Fund Sponsor Database Group

*Fiduciary considerations:* Long-term investment returns have been a critical source of funds to pay plan liabilities, but investment returns alone are generally insufficient to maintain a healthy funded status. Contributions must be made to fill any gaps. At a very high level, differences between plans with the best and worst funded status often come down to historic contributions and benefits. Funding challenges faced by public plans today are by and large a function of inadequate contributions. Many governments have simply failed to make required contributions to plans even while liabilities have naturally increased due to explicit increases in benefits or the natural growth in liabilities that comes with increased life expectancy.

### Inflation Expectations

Actuaries typically make assumptions about future inflation as a component of their actuarial discount rate and certain benefit calculations. Historically, actuaries have recommended higher inflation assumptions than consultants based on longer time horizon projections, resulting in higher discount rates and lower liability calculations. Recently, actuarial inflation assumptions have been closer to those of consultants. Investment consultants also embed assumptions about future inflation in their forecasts of investment returns. Investment consultant assumptions tend to focus more on current economic conditions and market-based indicators for investor expectations for future inflation (e.g., implied inflation can be observed by comparing interest rates on nominal U.S. Treasuries to the market interest rates for U.S. Treasury Inflation-Protected Securities).

*Fiduciary considerations:* Public pension trustees should review the inflation expectations from both their actuary and investment consultant. They may wish to compare the real (after inflation) investment return expectations from their consultants to the real actuarial discount rate to understand what portion of the gap between their actuarial discount rate and their consultant's projections is driven by differences in inflation expectations.

### Review Intervals

Actuarial discount rates generally change infrequently, perhaps as part of an experience study conducted every three to five years, which formally reviews all actuarial assumptions. Fiduciaries often review their assumptions regularly, but changes are rare, although they have increased in recent years due in part to the significant disparity between the consultants' ROA and the actuarial ROA. Conversely, investment consultant capital markets assumptions generally change annually or more frequently.

*Fiduciary considerations:* Just as boards should be cautious about raising discount rates when market conditions look positive, they should be deliberate about lowering discount rates when conditions are unfavorable. As illustrated earlier, discount rates on average have been coming down over the past 20 years in a much more gradual manner than have Callan's expected return projections. Fiduciaries interested in the smooth management of pension plans need to regularly review these assumptions, but should exercise caution around extreme changes.

### Active vs. Passive

Investment consultant projections typically focus on passive market return estimates (indices) for traditional asset classes and ignore estimated gains (or losses) from active management decisions. Investment consultants focus on passive market forecasts because these have typically been easier to estimate than active manager value added (or lost). Value added from active management is unique to each investor reflecting:

1. The degree of reliance on active vs. passive strategies
2. The historical success in adding value with active management
3. The current portfolio positioning regarding active management and how it differs from historic practices

*Fiduciary considerations:* When weighing the difference in actuarial discount rates and investment consultant return estimates, boards should consider a plan's recent and long-term level of value added from active management, what it currently expects in terms of value added from active management, and the costs involved in the investment program that are largely driven by higher-priced active management.

Plans with a history of successful use of active management may be more comfortable with a larger gap between their actuarial discount rate and their investment consultant's return estimate given the potential to close that gap with returns from active management in traditional asset classes.

## Conclusion

When setting both actuarial discount rates and long-term asset-allocation strategies, public pension fiduciaries should be aware of what drives the differences between their actuarial discount rate and consultant's capital markets assumptions. Callan recommends boards consider the following factors when confronting differences between their actuarial discount rate and investment consultant return expectation:

- **Differences in time horizon:** Investment consultant forecasts generally cover a shorter period than actuarial discount rates do.
- **Long-term actual results:** How has a plan performed relative to both current assumptions as well as potential new discount rates being considered?
- **Inflation expectations:** In addition to nominal comparisons, compare real (after inflation) investment return expectations from their consultants to the real actuarial discount rate to understand what portion is driven by differences in inflation expectations.
- **Discount rate changes:** Consider the timing and magnitude of the last discount rate change. How often are these inputs evaluated?
- **Active management:** Evaluate the plan's success in achieving value-added from active management for traditional asset classes and consider the prospects for continuing to do so.

Setting asset allocation is more complex than just solving for the portfolio that provides the expected return equal to the actuarial discount rate. Changes to actuarial assumptions should be done infrequently and based on expert advice and recommendations because these changes can have major impacts on a plan's funded status and overall health.

In a lower expected return environment, selecting a portfolio to hit an overly aggressive return target can lead to adverse financial outcomes in the event of a material market correction. Fiduciaries should be very cautious about simply taking on more investment risk to achieve a higher return. Investment consultants projecting modest returns for the coming 10 years need to direct fiduciaries' attention to the task of investing through the coming 10-year period so that the pension plan maintains solvency until a future environment offers more favorable investment expectations. Fiduciaries may need to lower their actuarial discount rates to reflect the direction of expected asset return projections from investment consultants, but these two numbers are different and need not match.

## About the Authors

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Brady has over 20 years of investment consulting experience. Prior to joining Callan in 2015, Brady was a partner with Aon Hewitt where he worked with a broad range of institutional investors. During his 18 years at Ennis, Knupp + Associates and subsequently Aon Hewitt, Brady held a number of different roles, including leading public market manager research as well as managing a team of consulting professionals.

Brady received his MBA in finance and marketing from Northwestern University's Kellogg School of Management. He earned a BBA in finance from the University of Michigan in Ann Arbor. He earned the right to use the Chartered Financial Analyst® designation and earned the right to use the CAIA designation. He is a member of CFA Institute and a member of the board of directors for CFA Society Chicago.

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Callan was founded as an employee-owned investment consulting firm in 1973. Ever since, we have empowered institutional clients with creative, customized investment solutions backed by proprietary research, exclusive data, and ongoing education. Today, Callan advises on more than $3 trillion in total fund sponsor assets, which makes it among the largest independently owned investment consulting firms in the U.S. We use a client-focused consulting model to serve pension and defined contribution plan sponsors, endowments, foundations, independent investment advisers, investment managers, and other asset owners. Callan has six offices throughout the U.S. Learn more at www.callan.com.

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