



ARKANSAS PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Quarterly Board Meeting

Date: Wednesday, February 15, 2023

Time: 9:00 A.M.

Location: 124 West Capitol Avenue, Suite 400

Note: The meeting will be held in the APERS conference room located on the 4th floor. The meeting will be a hybrid meeting and can be attended via Zoom. Please contact Linda.Mcgrath@arkansas.gov for video conference details.

AGENDA

1. Call to Order
2. Recognition of the Presence of a Quorum
3. Notification of Meeting to News Media Pursuant to Act 93 of 1967 (A.C.A. § 25-19-101) – Freedom of Information Act
4. **Action Item**: Approval of the Minutes for November 16, 2022 (**Page 3**)
5. **Investments** - –Ms. Brianne Weymouth, Mr. John Jackson, and Mr. Gary Robertson of Callan LLC, and Mr. Carlos Borromeo, Deputy Director of Investments and Finance
 - a. CIO Report (**page 10**)
 - b. Quarterly Report for the Period Ending December 31, 2021 (**Page 14**)
 - c. **Action Item** Asset Allocation and Pacing Study Report (**Page 34**)
 - d. **Action Item** Investment Managers
6. **Finance** – Mr. Mita Drazilov and Ms. Heidi Barry, GRS and Mr. Jason Willett, Chief Financial Officer
 - a. **Action Item** Actuarial Funding Policy (**Page 52**)
 - b. Financial Statements for the Quarter Ending December 31, 2022 (**Page 61**)
7. **Legal** - – Ms. Laura Gilson, Chief Legal Counsel
 - a. Litigation Update (**Page 63**)
8. **Benefits** – Ms. Allison Woods, Deputy Director of Benefits
 - a. Summary of Retirees for the Quarter Ending December 31, 2021 (**Page 65**)
 - b. Medical Review Board Report (**Page 71**)

9. **Executive Report** – Ms. Amy Fecher, Executive Director
 - a. **Action Item:** Set DROP Interest rate for upcoming Fiscal Year (A.C.A. 24-4-803) (**Page 72**)
 - b. **Action Item:** Annual Approval for Board Travel Reimbursement (A.C.A. 25-16-902)
 - c. Class Action Report (**page 73**)
 - d. Board of Trustees Sub-committees
 - e. Session Update
10. Other Business
11. Upcoming Meetings
 - a. Next Quarterly Board Meeting – Wednesday, May 17, 2023, at 9:00 a.m.
12. Adjournment

**MINUTES OF THE QUARTERLY MEETING OF THE BOARD OF TRUSTEES
ARKANSAS PUBLIC EMPLOYEES' RETIREMENT SYSTEM
NOVEMBER 16, 2022**

A regular meeting of the Board of Trustees of the Arkansas Public Employees' Retirement System was held on Wednesday, November 16, 2022, at 9:00 a.m. This hybrid meeting was held via ZOOM remote conferencing in the Conference Room, 124 West Capitol, Little Rock, Arkansas. Ms. Candace Franks presided.

(Remote attendees indicated with an asterisk *).

QUORUM PRESENT:

Ms. Candace Franks recognized the presence of a quorum.

BOARD MEMBERS PRESENT:

Ms. Candace Franks, (State Employee, Retired), Chair, Little Rock, AR
Mr. Larry Walther (Ex-Officio), Vice Chair, Department of Finance and Admin
Judge Barry Moehring (Non-State Employee, County Judge), Bentonville, AR
Mr. Gary Carnahan (Non-State Employee), Hot Springs, AR
Mr. Joe Hurst, (Non-State Employee, Mayor), Van Buren, AR *
Mr. Daryl Bassett (State Employee), Sherwood, AR *
Ms. Kaye Donham, (Retired), Benton, AR *
Mr. Richard Wilson (Retired), Little Rock, AR *
Mr. Gary Wallace (Retired Law Enforcement), Greenbrier, AR
Mr. Russell White (Retired Law Enforcement), Alma, AR
Mr. Jason Brady (State Treasurer's Office) *proxy*
Hon. Andrea Lea (Ex-Officio), State Auditor
Ms. Amy Fecher (Executive Director), APERS

BOARD MEMBERS ABSENT:

Hon. Dennis Milligan, (Ex-Officio), State Treasurer
Mr. Dale Douthit, (State Employee), Russellville, AR

VISITORS PRESENT:

Ms. Brianne Weymouth, Callan LLC
Mr. John Jackson, Callan LLC
Mr. John Pirone, Callan LLC
Mr. Mita Drazilov, GRS
Ms. Heidi Barry, GRS
Mr. John Shelnutt, DF&A
Mr. Michael Knapp, AR Legislative Audit *
Mr. Jack Critcher, AR Municipal League *
Ms. Cindy Frizzell, AR Municipal League *
Mr. Chris Villines, AR Assoc. of Counties
Mr. Mike Wickline, *Arkansas Democrat-Gazette*
Ms. Lauren Albanese, FIN News *
Mr. Marty Ryall, AR PBS *
Ms. Zona Maness, APERS Retired *

Mr. Adam Webb *
Ms. Lindsey Rouff *
Ms. Maddie Sisokin *

STAFF PRESENT:

Ms. Allison Woods, APERS Deputy Director
Ms. Laura Gilson, APERS General Counsel
Mr. Richmond Giles, APERS Staff Attorney
Mr. Carlos Borromeo, APERS Chief Investment Officer
Ms. Usha Doolabh, APERS Investments Manager *
Ms. Jennifer Taylor, APERS Director of Benefits Administration
Ms. Cheryl Wilburn, APERS Benefits Operations Manager
Mr. Jason Willett, APERS Chief Financial Officer
Mr. Phillip Norton, APERS Director of IT
Mr. John Owens, APERS Accounting Operations Manager
Mr. Jon Aucoin, APERS Retirement Section Manager *
Ms. Shelly George, APERS Retirement Coordinator *
Mr. Drake Rodriguez, APERS Member *
Mr. Stefan Melikian, APERS Retirement Coordinator *
Ms. Kristi Brown, APERS Retirement Coordinator *
Ms. Phyllis Franklin, APERS Retirement Coordinator *
Ms. Jacobia Bates, APERS Manager of Education Services
Ms. Linda McGrath, APERS Administrative Specialist

NEWS MEDIA NOTIFIED:

An e-mail with notification of the Arkansas Public Employees' Retirement System Board meeting was sent to the Arkansas Democrat-Gazette, the Associated Press, Television Station KLRT-FOX16, Radio Station KARN, and Radio Station KAAY. This notification is pursuant to A.C.A § 25-19-101 (Act 93 of 1967) as amended, *a.k.a.* the Arkansas Freedom of Information Act.

iPad TRAINING:

Mr. Norton gave the Trustees a quick tutorial on the new meeting technology and how to navigate to the different sections of the board packet.

INTRODUCE APERS' NEW BOARD MEMBER:

Ms. Franks introduced Judge Barry Moehring to everyone at the meeting. Judge Moehring replaces Judge Hudson as the County Judge on the APERS' Board.

MINUTES:

Prior to the Board meeting, copies of the minutes from the August 17 and October 25, 2022, meetings were e-mailed to each APERS Board member for review.

Mr. Walther motioned to accept the minutes as they presented, and he was seconded by Auditor Lea and the motion carried.

INVESTMENTS

QUARTERLY INVESTMENT REPORT FOR THE PERIOD ENDING SEPTEMBER 30, 2022- Presented by Brianne Weymouth and John Jackson of Callan LLC

Mr. Borromeo gave an overview of the capital markets for the first quarter of FY2023. The systems' investments were lower for the first quarter of FY 2023, (-4.41%). This quarter continued the same theme since the beginning of the calendar year with the focus on the Ukraine war's impact on energy, the Federal Reserve hiking interest rates to fight inflation/slow growth, and the market's fear of a recession because the Fed may raise rates too high.

Over the last in quarter in domestic equities, the S&P lost (-4.88%), that is now three quarters in a row, which is the first time it has happened since the Global Financial Crisis in 2008. International equities also dealt with inflation and Central banks raising rates, as well as trade concerns with Russia and China's zero COVID policy. The developed international markets were down (-9.4%) and (-25.1%) for the quarter and 1-year period. In fixed income, the Fed hiked rates twice in the quarter. The new target for the Fed is now 3.75% to 4.00%. However, the markets are pricing in 5.00% by March 2023. The good news was in real estate as the value-add real estate portion of the investment portfolio rose 45% for the 1-year period.

Mr. Borromeo commented the markets did rally in the month of October. The S&P Index was up 8.10% in the month. There is optimism that the Fed will be less aggressive with tightening monetary policy. The value of the APERS investment assets for Sept 30, 2022 was \$9.95 Billion. The month of October saw a positive return for the portfolio. The value of APERS investment assets as of Oct 30, 2022 was \$9.82 Billion. The unaudited number at the close of yesterday was \$10.15 Billion.

Ms. Weymouth detailed the portfolio's performance, noting that the Actual Asset Allocation was very close to the Target Allocation. Virtually every asset class in the APERS' portfolio experienced negative returns for the quarter. She pointed out that APERS' new farmland manager, PGIM, had continued to make capital calls this quarter and will continue to do so until they are fully funded. PGIM has been allotted \$50 million for farmland investments. The Total Fund outperformed its policy target for the last year and ranked at the 61st percentile of its peer group. Over the remaining trailing periods, the fund has beaten the benchmark and ranked in the top half of its peers.

Ms. Weymouth noted that Baillie Gifford continued to struggle through another quarter but rose significantly from the previous quarter. Franklin Templeton had a very rough quarter, finishing near the bottom of International Small Cap performers. Callan will continue to watch them both closely but did not suggest APERS make any changes at this point.

Asset Allocation Study – Presented by Brianne Weymouth, John Jackson, John Pirone and Carlos Borromeo

Mr. Jackson opened with a definition and reviewed the pros and cons of Private Equity. Mr. Brady asked several questions about Private Equity pertaining to liquidity and proposed timelines.

Mr. Pirone reviewed the Expected Return and Risk Assumptions based on Callan's projections over the next 10 years. He assured the Trustees that inflation had been factored into the equation and explained how APERS could increase their expected returns without increasing the risk in the portfolio. He noted that APERS' liquidity profile suggested a 5% to 10% allocation to Private equity (\$500 million to \$1 billion). Mr. Pirone showed several charts detailing the impact of Private Equity on the fund's expected return with both a 5% and a 10% investment. Mr. Borromeo explained it would take approximately five to seven years to get the portfolio totally

realigned. There was an in-depth discussion on the implications of increasing the percentage of illiquid investments in the portfolio.

Auditor Lea motioned to have a pacing study ready for the February 2023 meeting with Mix 2 at 5%. This would change the portfolio target asset allotment to 35% Domestic Equity, 19% International Equity, 0% Convertible Bonds, 20% Fixed Income, 16% Real Assets, 5% Diversified Strategies and 5% Private Equity. Mr. Bassett seconded and after further discussion regarding AR Teacher Retirement's Private Equity return experience, the motioned carried unanimously.

Class Action Settlement Proceeds and Pending Report

Director Fecher referred the Board to the class action settlement proceeds information within the board material. For the first five months of Fiscal Year 2023, over \$90,000 has been collected. There were no questions.

<BREAK>

ACTUARIAL

2022 ANNUAL ACTUARIAL VALUATION RESULTS - Presented by Mita Drazilov and Heidi Barry of Gabriel Roeder Smith

Mr. Drazilov reminded the board that they had established a preliminary Employer Contribution Rate back in August and they would need to confirm that rate today.

Ms. Barry reviewed the results of the 2022 Valuation. She stated that as of June 30, 2022, there were 45,020 active members (36,728 Contributory) and an additional 1426 members in DROP. Ms. Barry discussed the Investment Experience for FY2022 noting it had not been a good year for Investments and the Fund realized a Market Return of (-10.8%). She detailed how GRS used a 4-year smoothing method to reduce the volatility to the system and explained that if the board wanted to maintain the current employer contribution rate, the amortization period would need to be extended. The current amortization period is 14 years.

The Valuation assets total \$10.22 Billion, while the Actuarial Accrued Liabilities total \$12.23 Billion. For FY22, APERS funded ratio is 84% and on a Market Value basis the funded ratio is 79%. The ratios were 84% and 94%, respectively, in the previous valuation. Mr. Drazilov explained this was all addressed in the proposed Actuarial Funding Policy that would be presented to the Trustees later in the meeting.

Recognize Annual Transfers

Ms. Barry showed a breakdown of the recommended reserve account transfers. She explained these were required accounting transfers and did not change any of the amounts previously discussed. Chair Franks recognized the reserve transfers.

Affirm Employer Contribution Rate for FY2025

Mr. Drazilov gave a brief history of the two District Judges divisions that was incorporated into APERS in 2007 and how their employer contributions are calculated. GRS has proposed an 86.42% Employer Rate for the "New Plan and Paid-off Old Plan" and \$582,021 for the "Still-paying Old Plan".

At the August meeting, the board voted to tentatively maintain the APERS Employer Rate at 15.32% through June 30, 2026. After hearing the final Actuarial Report, Mr. Walther motioned to maintain the current APERS employer rate through the Fiscal Year 2025 and adopt the actuarial suggested payments for District Judges. He was seconded by Mr. Wallace and the motion passed unanimously.

Actuarial Funding Policy Statement

Director Fecher reminded the Trustees that the last time an Actuarial Funding Policy had been presented to the entire Board was in February of 2020, and that a vote was never taken to make any edits to the policy. She explained that the Staff and GRS had re-examined the policy and made suggested updates. Mr. Drazilov cautioned the board that if this policy was adopted and followed, it was possible the Employer Rate could be forced higher, if the plan experienced poor market returns. He continued the discussion with other issues that GRS had with the proposed policy.

After further discussion, Mr. Brady motioned to table adopting the proposed Actuarial Funding Policy. He was seconded by Mr. Walther and the motion passed.

ADMINISTRATIVE

SUMMARY OF RETIREES FOR THE QUARTER ENDING SEPTEMBER 30, 2022:

Director Fecher reported APERS had 249 members who retired in July, 178 in August, and 173 more retirees in September, for a total of 600 new retirees over the first three months of FY2023. On September 30, 2022 APERS had 38,313 retirees and beneficiaries receiving monthly benefits from the agency.

APERS PAY OUTS BY COUNTY

Director Fecher directed the Board's attention to a map of Arkansas that showed the dollar amount of benefits APERS had paid out over the last fiscal year to each of the 75 counties.

PUBLIC PENSION COORDINATING COUNCIL AWARD

Included in the Trustee packet was a copy of the 2022 PPCC Award that APERS had received earlier in the month for meeting professional standards in plan funding and administration.

FINANCIAL STATEMENTS FOR THE QUARTER ENDING SEPTEMBER 30, 2022:

Mr. Willett stated the Net Position of the plan at the end of September was just over \$9.24 Billion, down roughly \$500 million since the beginning of the year. Contributions, both employer and employee, were slightly higher due to salary increases and should continue upwards as the mandatory employee contribution rate increases. During the first quarter of the fiscal year, APERS paid out over \$163 million in benefit checks. Negative return on investments is the driving factor in the lower Net Position.

Medical Review Board Results

Director Fecher noted the Medical Review Board met at 9:00 a.m. on Tuesday, November 8, 2022 to discuss the case of APERS Member XXX0526.

- After review and discussion, the Medical Review Board found that XXX0526 was suffering from an illness or injury at the time of their termination which subsequently led to the disability determination.

Motion by Auditor Lea and second by Mr. Walther. Motion passed. With APERS Board approval, in accordance with ACA 24-4-511(e)(3) benefits for the approved member will be effective December 1, 2022.

LEGAL

Litigation Cases

Ms. Gilson introduced herself and noted that before she started, she wished to make a legal distinction about how APERS administers the District Judges plan that the Actuaries recently discussed. She explained that ADJRS was administered as a separate benefit plan from APERS; it was not “folded into” APERS.

Ms. Gilson reported that currently there are currently no new member appeals or active securities litigation cases.

QDRO Approval

Ms. Gilson reminded the Board that A.C.A 9-18-103 requires all Arkansas retirement boards to formally adopt a Qualified Domestic Relations Order (QDRO) which allows the Court to divide a Defined Benefit in the event of a divorce. APERS QDRO has not been amended since 2001 and has separate versions for Active and Retired members. This new QDRO would combine active and retired members and has helpful explanations for the member and their attorney.

Judge Moehring motioned to approve of the new QDRO model, seconded by Mr. White. Motion carried unanimously.

2023 Legislation

Director Fecher and Ms. Gilson noted a draft APERS legislative package for the upcoming 2023 legislative session. APERS considers all proposed bills to be non-controversial, and a technical corrections bill will focus on aligning and cleaning up language in the Arkansas Code for ease of administration. Director Fecher indicated that she had sent the proposed bills to the trustees, and they had also covered legislation at the October Workshop.

OTHER BUSINESS:

Upcoming Board Meetings

Director Fecher explained the need to move the August meeting to September. With the newer investment sectors, it was becoming more difficult for Staff to report the final investment numbers by mid-August.

It had been proposed to push the August meeting back a month to September.

Mr. Brady motioned to approve the change in dates. Mr. Walther seconded and motion carried.

The next quarterly Board Meeting is scheduled for Wednesday, February 15, 2023, at 9:00 a.m.

Review Current Actuarial and Investment Consultant Teams

Mr. Brady suggested the Board look at performing an RFP for both the Actuarial Team and the Investment Consultant Team. He noted that the agency had recently had three different directors and the state was looking at a new Governor and administration taking office and it might be a good time to review the current teams.

Director Fecher stated that she would work with the Treasurer's Office to see what the most appropriate path and report back at the next meeting.

Ms. Lea Retiring

Ms. Lea announced that she was retiring at the end of year, and this would be her last APERS meeting as a Trustee.

ADJOURNMENT:

There being no further business, the meeting was adjourned.

Ms. Candace Franks, Chair

Ms. Amy Fecher, APERS Executive Director

Chief Investment Officer Report

For the Quarter Ending December 31, 2022

Q4 2022 Summary

- 2022 can be summarized in three words, “inflation” and “rate hikes.”
- Inflation hit its highest rate in decades. CPI-U was +6.50% for the year ending Dec. 31, 2022
- The Fed raised rates 7 times in 2022, from 0.25%-0.50% up to 4.25%-4.50%
- The U.S. Treasury 10-year note rose from 1.48% in Jan. up to as high as 4.32% in Oct.
- Notable Headlines:
 - Early Oct., UK Pound and Gilts fall as UK PM Liz Truss holds firm on tax cuts.
 - 10/14 Putin says direct clash with NATO troops would be catastrophic.
 - 10/20 UK PM Liz Truss resigns.
 - 10/24 Chinese Pres. Xi Jinping stacks leadership rank with loyalists. The Hang Sen fell 7.3%.
 - 10/31 New Brazilian Pres. Lula defeats Bolsonaro
 - 11/09 Meta begins cutting 11,000 jobs.
 - 11/28 DJIA falls 516 points as supply chain concerns mount amid China protests.
 - 12/06 Putin: Risk of nuclear war in world is rising. Will defend ourselves with all means necessary.
 - 12/15 DJIA falls 764 points on weaker retail sales as inflation takes its toll on consumers and fears of a recession.
 - 12/26 China reopens borders to world removing last COVID curb.

Q4 2022 Summary

- The Bloomberg Agg (fixed income benchmark) had its worst year ever, -13.01% for the year.
- Most major indices posted a positive Q4, but for the calendar year, they were all lower.
- “Value” stocks outperformed “Growth” stocks. Large cap outperformed small cap.

	Q4 2022	Fiscal Year	Calendar Year
U.S. Equity			
S&P 500	7.56%	2.31%	-18.11%
Russell 2000 Growth	4.13%	4.38%	-26.36%
Russell 3000	7.18%	2.40%	-19.21%
International Equity			
MSCI EAFE	16.18%	6.36%	-14.29%
MSCI ACWI xUS	14.37%	3.16%	-19.97%
Fixed Income			
Bloomberg Agg	1.87%	-2.97%	-13.01%

	Q4 2022	Fiscal Year	Calendar Year	31-Dec-22	
Domestic Equity	6.49%	2.45%	-19.10%	\$ 3,688,917,840	36.85%
International Equity	15.31%	4.51%	-17.63%	\$ 2,464,699,071	24.62%
Diversified Strategy	3.34%	1.29%	-5.26%	\$ 497,809,270	4.97%
Fixed Income	2.25%	-2.32%	-13.79%	\$ 1,830,977,089	18.29%
Real Assets	-4.27%	-3.49%	9.39%	\$ 1,528,886,132	15.27%
APERS Total Portfolio	5.73%	1.07%	-13.74%	\$ 10,011,289,402	
				\$ 10,042,629,672	FY2022
				\$ 11,602,695,185	FY2021
				\$ 9,093,497,703	FY2020

Things I worry about

Possible/Potential Shocks	Impact	Probability	Change
Expanded and intensified war in Ukraine	Medium	Medium	Rising
The new phrase "tactical nuclear weapons"	Medium	Low	Rising
Escalation of US-China economic conflict	High	Medium	Rising
The "Trio" friendship (Putin, Xi, MBS)	Medium	Medium	Rising
Military Confrontation in Taiwan	High	Low	Rising
Major/further curtailment of Russian gas/oil flow	High	Medium	Rising
Iran develops nuclear bomb	Medium	Medium	Rising
Firing of an ICBM by North Korea	Medium	Medium	Rising
Return to full-scale lockdowns in China	High	Medium	Stable
Major cyber attack in US or NATO	High	Low	Stable
Dissolution of G20	Medium	Low	Stable
Conflict between Italy and the EA	High	Low	Stable
Uncontrolled China property meltdown	High	Low	Falling



Executive Summary Fourth Quarter 2022

Arkansas Public Employees
Retirement System

Brianne Weymouth, CAIA
Senior Vice President

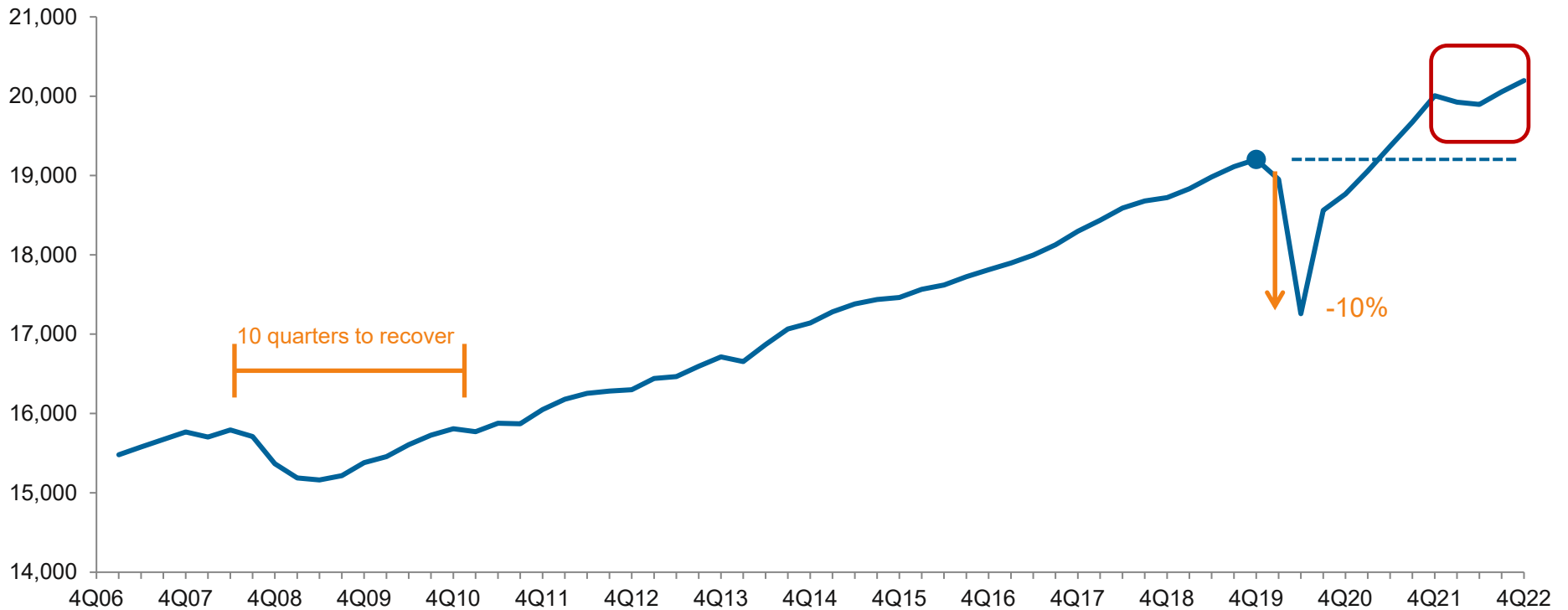
John Jackson, CFA
Senior Vice President

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GDP Dropped for Two Straight Quarters in 1Q and 2Q, but Rebounded in 3Q and 4Q

Recovered pre-pandemic level in 2Q21 after deepest drop in 75 years

Seasonally Adjusted Real GDP in Billions of Dollars Through 12/31/22



GDP growth in 2022 slowed compared to 2021 but rebounded after declines in the first two quarters of last year.

- ▶ 4Q22 GDP rose 2.9%, after a 3.2% rise in 3Q, a 0.6% drop in 2Q, and a 1.6% decline in 1Q.
- ▶ Loss of business and consumer confidence followed the start of the conflict in Ukraine.
- ▶ Consumer wealth hit by stock and bond market drop, and now a sharp slowdown in residential housing, as mortgage rates doubled from the start of the year.

Source: Federal Reserve Bank of St. Louis

Equity and Fixed Income Markets Down Together in 2022

Declines for both stocks and bonds for three straight quarters are extremely unusual

Global equity markets down sharply in 2022 despite rebound in 4Q

- Similar impact across all equity market segments: developed, emerging, small cap

Fixed income down with sharply higher inflation and interest rates

- Bloomberg Aggregate: -13% for the year, worst year ever for the index by a wide margin
- CPI-U: +6.5% for the year ended Dec. 2022
- ▶ Number of times stocks and bonds have been down together
 - 38 quarters in almost 100 years, about 10% of the quarters
 - But just twice on annual basis
- ▶ Inflation at highest rate in decades
- ▶ Economic data show growth hit ‘pause’
 - GDP rose 2.9% in 4Q22, after a 3.2% rise in 3Q, a 0.6% drop in 2Q, and a 1.6% decline in 1Q.

Returns for Periods ended 12/31/22

	Quarter	Year to Date	1 Year	5 Years	10 Years	25 Years
U.S. Equity						
Russell 3000	7.18	-19.21	-19.21	8.79	12.13	7.68
S&P 500	7.56	-18.11	-18.11	9.42	12.56	7.64
Russell 2000	6.23	-20.44	-20.44	4.13	9.01	7.13
Global ex-U.S. Equity						
MSCI World ex USA	16.18	-14.29	-14.29	1.79	4.59	4.65
MSCI Emerging Markets	9.70	-20.09	-20.09	-1.39	1.44	--
MSCI ACWI ex USA Small Cap	13.31	-19.97	-19.97	0.67	5.24	6.87
Fixed Income						
Bloomberg Aggregate	1.87	-13.01	-13.01	0.02	1.06	3.97
90-day T-Bill	0.84	1.46	1.46	1.26	0.76	1.91
Bloomberg Long Gov/Credit	2.61	-27.09	-27.09	-1.21	1.57	5.38
Bloomberg Global Agg ex-US	6.81	-18.70	-18.70	-3.07	-1.64	2.71
Real Estate						
NCREIF:NFI-ODCE Eq Wt Net	-5.08	7.56	7.56	8.31	9.46	7.77
FTSE Nareit Equity	5.24	-24.37	-24.37	3.68	6.53	7.87
Alternatives						
CS Hedge Fund Index	0.92	1.06	1.06	4.25	4.24	5.81
Cambridge Private Equity*	-1.84	-3.77	-3.77	16.84	15.31	14.31
Bloomberg Commodity	2.22	16.09	16.09	6.44	-1.28	1.87
Gold Spot Price	9.22	-0.13	-0.13	6.88	0.86	7.64
Inflation - CPI-U	0.00	6.45	6.45	3.78	2.60	2.47

*Cambridge PE data through 09/30/22.

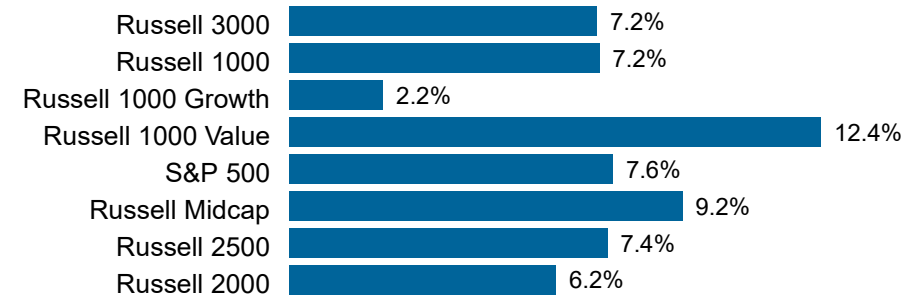
Sources: Bloomberg, Callan, Cambridge, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices

U.S. Equity Performance: 4Q22

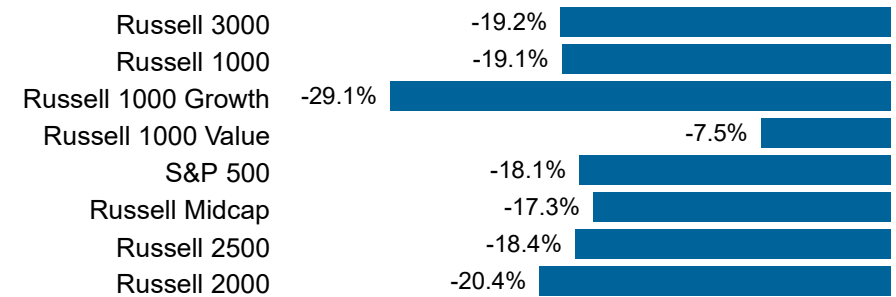
Markets retrace in December after gains in the prior two months

- ▶ The S&P 500 Index posted positive returns in both October and November but fell in December. The index was up 7.6% during 4Q22 but ended 2022 down 18.1%.
- ▶ Energy was the best-performing sector during the quarter and 2022, returning 23% and 66% respectively. Consumer Discretionary and Communication Services were the only two sectors that posted negative returns in 4Q.
- ▶ Value stocks outperformed growth across the market capitalization spectrum, and for both 4Q and the full year.
- ▶ Large cap stocks (Russell 1000) outperformed small caps (Russell 2000) last quarter and for the year.
- ▶ Continued macroeconomic concerns (e.g., inflation, potential recession, geopolitical issues) led to higher volatility and a down-year for U.S. equities.

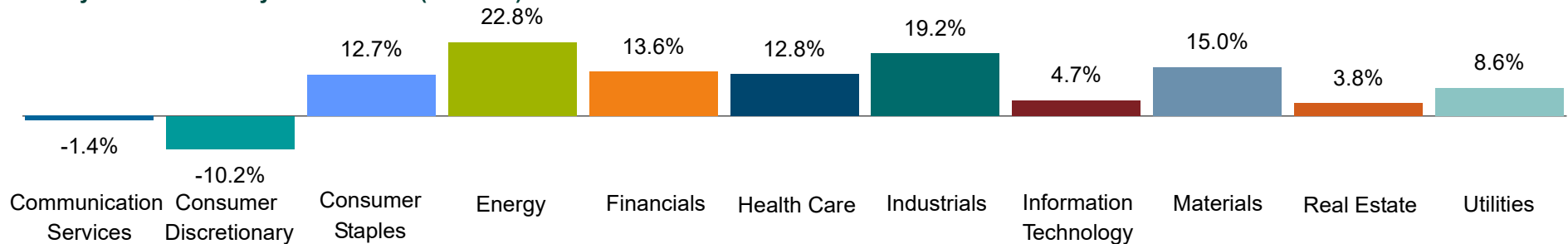
U.S. Equity Returns: Quarter Ended 12/31/22



U.S. Equity Returns: One Year Ended 12/31/22



Industry Sector Quarterly Performance (S&P 500) as of 12/31/22



Sources: FTSE Russell, S&P Dow Jones Indices

Global/Global ex-U.S. Equity Performance: 4Q22

Ending on a high note

4Q22 was a bright spot during a tough calendar year in global and global ex-U.S. equity markets.

Encouraging signs

- ▶ Lower-than-expected U.S. inflation data buoyed market optimism at the end of the year.
- ▶ The Fed slowed its pace of tightening with further slowing expected in 2023.
- ▶ China reversed its zero-COVID policies, prompting exuberance from investors.

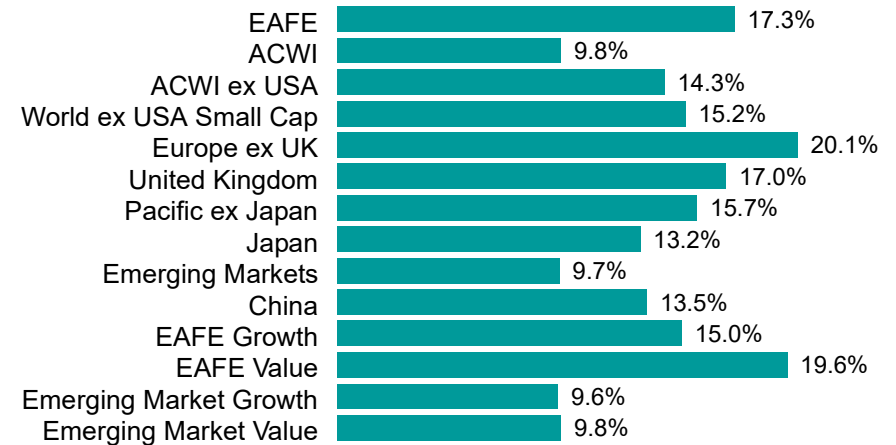
Growth vs. value

- ▶ Value outpaced growth across developed and emerging markets.
 - Economically sensitive sectors (e.g., Financials and Industrials) benefited from the anticipation of improved growth; Energy was the largest outperformer.

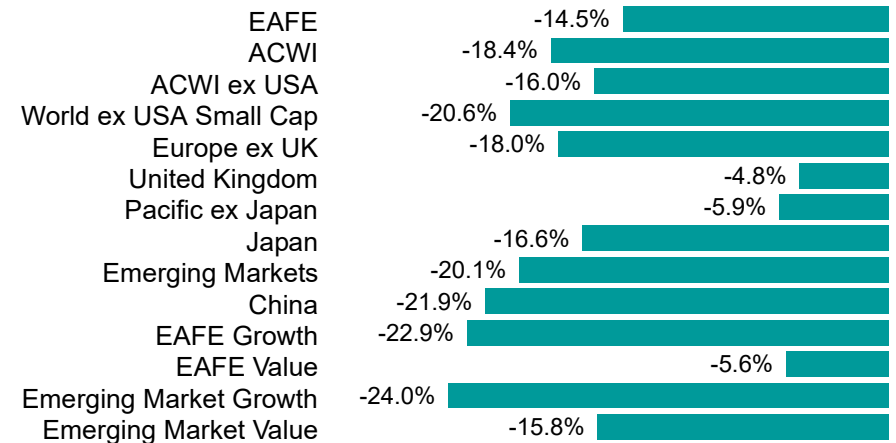
U.S. dollar vs. other currencies

- ▶ After reaching a multi-decade high, the dollar fell against all major currencies with signs of inflation easing.
 - Despite the 7.7% decline in 4Q22, the dollar still gained nearly 8% over the full year.

Global Equity Returns: Quarter Ended 12/31/22



Global Equity Returns: One Year Ended 12/31/22



Source: MSCI

U.S. Fixed Income Performance: 4Q22

Bonds were up in 4Q but 2022 results remain negative

- ▶ Aggregate: positive return driven by coupon income and spread tightening; interest rates rose modestly
- ▶ Rates were volatile intra-quarter
 - UST 10-year yield: high 4.22% on 11/7; low 3.42% on 12/7
 - Curve remained inverted at quarter-end; 10-year yield 3.88% and 2-year yield 4.41%; most since 1981
- ▶ Fed raised rates, bringing target to 4.25%-4.50%
 - Median expectation from Fed is 5.1% for year-end 2023
 - Inflation showed signs of moderating but job market remained tight with solid wage growth

Corporates and mortgages outperformed Treasuries in 4Q but underperformed for the year

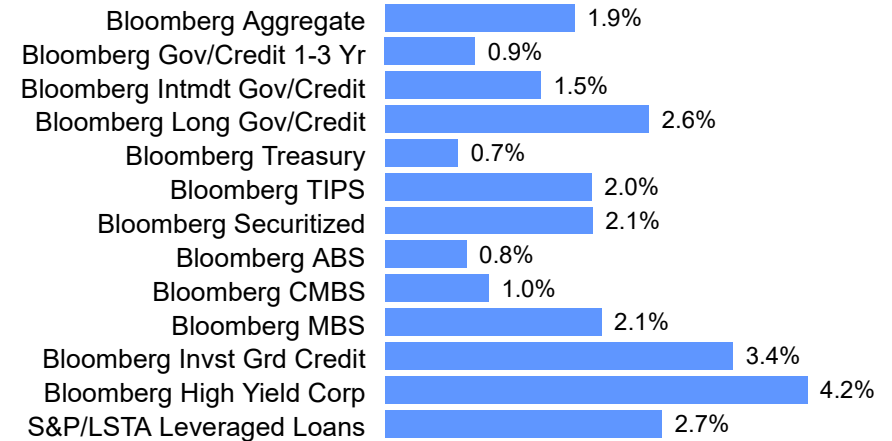
- ▶ 4Q: Corporates +289 bps excess return; MBS +110 bps
- ▶ 2022: Corporates -125 bps excess return; MBS -223 bps
- ▶ MBS had worst month ever (September: -191 bps) and best month ever (November: +135 bps) in excess returns.

Valuations fair

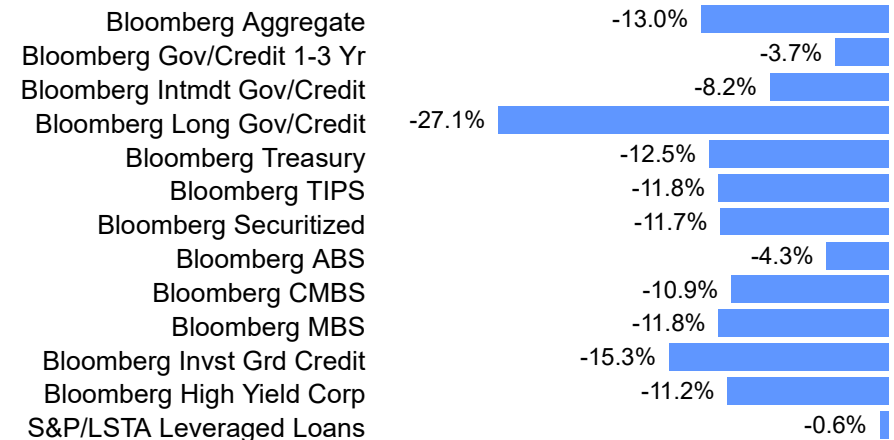
- ▶ While absolute yields are higher, spreads have not widened materially and most are close to historical averages.
- ▶ An economic slowdown/recession could impact credit spreads.
- ▶ Higher yields boosting forward-looking return outlooks across sectors

Sources: Bloomberg, S&P Dow Jones Indices

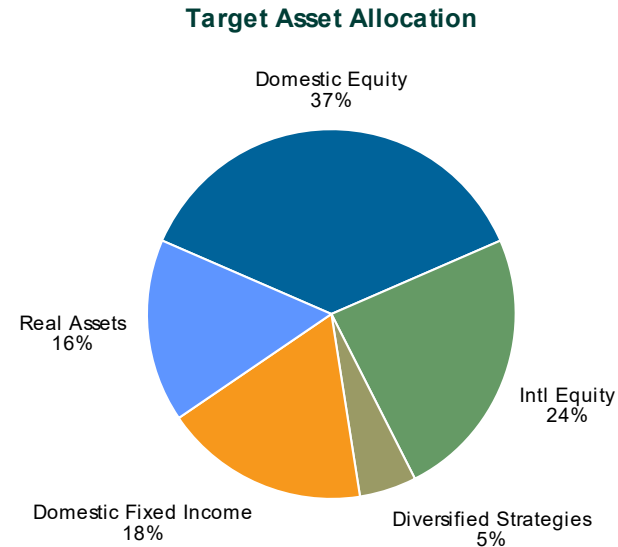
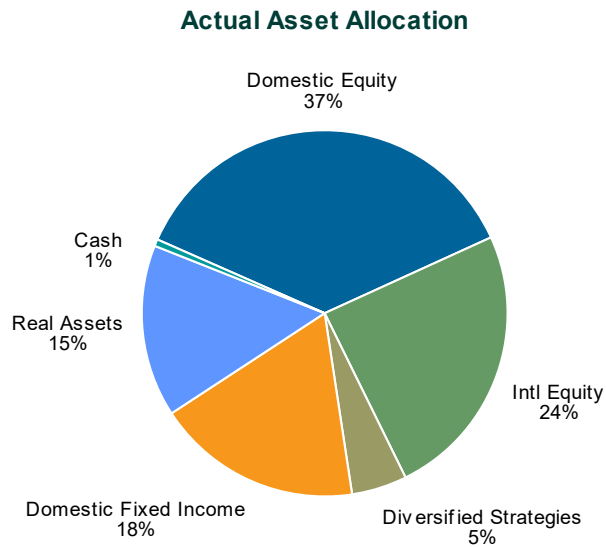
U.S. Fixed Income Returns: Quarter Ended 12/31/22



U.S. Fixed Income Returns: One Year Ended 12/31/22



Actual vs. Target Asset Allocation



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	3,688,918	36.6%	37.0%	(0.4%)	(38,924)
Intl Equity	2,464,699	24.5%	24.0%	0.5%	46,640
Diversified Strategies	497,809	4.9%	5.0%	(0.1%)	(5,953)
Domestic Fixed Income	1,830,977	18.2%	18.0%	0.2%	17,432
Real Assets	1,528,886	15.2%	16.0%	(0.8%)	(83,154)
Cash	63,959	0.6%	0.0%	0.6%	63,959
Total	10,075,248	100.0%	100.0%		

- The APERS Investment Policy states that rebalancing to the target asset allocation should take place when the actual asset allocation falls outside of a +/- 5% range from the target asset allocation. All asset classes are within their allowable ranges.

Investment Manager Asset Allocation

	December 31, 2022			September 30, 2022		
	Market Value	Weight	Net New Inv.	Inv. Return	Market Value	Weight
Domestic Equity	\$3,688,917,840	36.61%	\$(65,892,289)	\$229,880,182	\$3,524,929,947	36.74%
Lazard Asset Mgmt	444,750,488	4.41%	(313,092)	27,433,370	417,630,211	4.35%
CastleArk Mgmt. LLC	456,428,811	4.53%	(364,347)	24,299,525	432,493,634	4.51%
Mellon S&P 500 Index Fd	572,175,693	5.68%	(37,769,328)	43,122,053	566,822,969	5.91%
Horrell Capital Passive	194,838,596	1.93%	(72,471)	18,236,023	176,675,043	1.84%
Wellington Management	468,843,189	4.65%	(12,584,487)	54,181,790	427,245,886	4.45%
Intech	382,996,223	3.80%	(13,297,603)	(2,391,493)	398,685,318	4.16%
LSV Asset Management	342,450,915	3.40%	(435,811)	41,707,271	301,179,455	3.14%
Stephens Investment Mgmt.	420,900,601	4.18%	(658,771)	14,429,830	407,129,542	4.24%
Froley Rev y Investment	405,533,323	4.03%	(396,379)	8,861,813	397,067,889	4.14%
International Equity	\$2,464,699,071	24.46%	\$(2,059,341)	\$327,285,227	\$2,139,473,185	22.30%
Artisan Partners	600,217,955	5.96%	(683,349)	94,222,226	506,679,078	5.28%
Mellon ACWI ex US Fund	553,262,024	5.49%	(79,321)	69,212,844	484,128,501	5.05%
Baillie Gifford Overseas	484,200,614	4.81%	(438,171)	62,056,105	422,582,679	4.40%
Lazard Asset Mgmt.	509,111,149	5.05%	(346,379)	62,732,054	446,725,475	4.66%
Acadian ACW ex US SmallCap	176,322,498	1.75%	(276,214)	20,365,554	156,233,157	1.63%
Franklin Templeton Intl SmallCap	141,312,901	1.40%	(235,908)	18,674,128	122,874,682	1.28%
Manning & Napier Advisors	271,930	0.00%	0	22,316	249,614	0.00%
Diversified Strategies	\$497,809,270	4.94%	\$(723,159)	\$16,098,522	\$482,433,907	5.03%
AQR Capital	145,007,782	1.44%	0	7,151,116	137,856,666	1.44%
Blackstone Alt. Asset Mgmt.	215,176,098	2.14%	(538,975)	5,090,201	210,624,872	2.20%
Newton Capital	137,625,390	1.37%	(184,185)	3,857,206	133,952,369	1.40%
Domestic Fixed Income	\$1,830,977,089	18.17%	\$(897,592)	\$40,248,597	\$1,791,626,083	18.67%
DoubleLine Capital	581,995,904	5.78%	(272,686)	9,124,267	573,144,323	5.97%
MacKay Shields	620,529,428	6.16%	(299,993)	16,639,065	604,190,355	6.30%
PGIM	628,451,757	6.24%	(324,913)	14,485,265	614,291,405	6.40%
Real Assets	\$1,528,886,132	15.17%	\$42,711,176	\$(68,185,076)	\$1,554,360,032	16.20%
Energy	\$14,929	0.00%	\$0	\$79	\$14,849	0.00%
CastleArk Glob Energy Fd	14,929	0.00%	0	79	14,849	0.00%
REITS	\$21,122,545	0.21%	\$(42,570,576)	\$4,283,960	\$59,409,161	0.62%
MCM EB DV Non-SL REIT Fd	21,122,545	0.21%	(42,570,576)	4,283,960	59,409,161	0.62%
Core Real Estate	\$1,007,474,229	10.00%	\$(4,394,324)	\$(55,104,611)	\$1,066,973,164	11.12%
Invesco Real Estate	619,681,632	6.15%	(867,256)	(32,079,112)	652,628,000	6.80%
Heitman Real Estate Trust LP	387,792,597	3.85%	(3,527,068)	(23,025,499)	414,345,164	4.32%
Value Add Real Estate	\$334,805,293	3.32%	\$34,788,395	\$(17,996,508)	\$318,013,406	3.31%
Clarion Lion Industrial Trust	41,555,525	0.41%	42,500,000	(944,475)	-	-
Harrison Street Fund VIII	32,723,324	0.32%	2,312,500	(73,813)	30,484,637	0.32%
Heitman Value Partners IV	56,213,363	0.56%	(705,117)	580,148	56,338,332	0.59%
LaSalle Inc & Growth VI LP	5,900,685	0.06%	(6,203)	(1,663,794)	7,570,682	0.08%
LaSalle Inc & Growth VII LP	35,392,235	0.35%	1,869,693	(655,724)	34,178,267	0.36%
Starwood SOF XII	17,257,629	0.17%	(236,882)	77,617	17,416,894	0.18%
TA Associates Realty Fund X	34,987	0.00%	(891)	6,093	29,785	0.00%
TA Associates Realty Fund XI	33,287,242	0.33%	(11,739,338)	(9,948,015)	54,974,595	0.57%
TA Associates Realty Fund XII	112,440,303	1.12%	794,633	(5,374,544)	117,020,214	1.22%
Farmland	\$78,503,965	0.78%	\$55,583,511	\$6,584	\$22,913,870	0.24%
IFC Core Farmland Fund	50,000,000	0.50%	30,011,700	0	19,988,300	0.21%
PGIM Agriculture	28,503,965	0.28%	25,571,811	6,584	2,925,570	0.03%
Timber	\$86,965,172	0.86%	\$(695,830)	\$625,420	\$87,035,582	0.91%
Pinnacle	86,965,172	0.86%	(695,830)	625,420	87,035,582	0.91%
Cash	\$63,958,611	0.63%	\$(38,120,644)	\$263,933	\$101,815,322	1.06%
Total Fund	\$10,075,248,013	100.0%	\$(64,981,850)	\$545,591,386	\$9,594,638,477	100.0%

Asset Class Performance and Market Values

	Market Value \$(Dollars)	Ending Weight	Last Quarter	Fiscal YTD	Last Year	Last 3 Years	Last 5 Years
Domestic Equity Russell 3000 Index	\$3,688,917,840 -	36.85% -	6.49% 7.18%	2.45% 2.40%	(19.10%) (19.21%)	7.42% 7.07%	8.76% 8.79%
International Equity Benchmark****	\$2,464,699,071 -	24.62% -	15.31% 14.15%	4.51% 3.09%	(17.63%) (16.58%)	1.45% (0.80%)	2.34% 0.53%
Diversified Strategies Diversified Strategy Trgt**	\$497,809,270 -	4.97% -	3.34% 6.61%	1.29% 0.62%	(5.26%) (15.90%)	2.56% 2.43%	4.49% 4.14%
Domestic Fixed Income Blmbg Aggregate	\$1,830,977,089 -	18.29% -	2.25% 1.87%	(2.32%) (2.97%)	(13.79%) (13.01%)	(2.14%) (2.71%)	0.64% 0.02%
Real Assets CPIU + 4%	\$1,528,886,132 -	15.27% -	(4.27%) 0.98%	(3.49%) 2.14%	9.39% 10.46%	11.13% 8.92%	8.71% 7.78%
REITS S&P DJ US Select REIT	\$21,122,545 -	0.21% -	4.42% 4.76%	(6.39%) (6.11%)	(26.26%) (25.96%)	(1.79%) (1.37%)	- 2.50%
Core Real Estate NFI-ODCE Eq Wt Net	\$1,007,474,229 -	10.06% -	(5.18%) (5.08%)	(3.73%) (4.35%)	12.12% 7.56%	9.55% 9.72%	8.23% 8.31%
Value Add Real Estate NCREIF Total Index	\$334,805,293 -	3.34% -	(5.06%) (3.50%)	(3.13%) (2.95%)	19.52% 5.53%	19.61% 8.06%	17.35% 7.46%
Farmland NCREIF Farmland Index	\$78,503,965 -	0.78% -	0.03% 1.98%	0.03% 4.00%	- 9.54%	- 6.78%	- 6.38%
Timber NCREIF Timberland Index	\$86,965,172 -	0.87% -	0.72% 4.89%	5.75% 7.39%	15.53% 12.90%	6.78% 7.51%	3.49% 5.37%
Total Fund*** Benchmark*	\$10,011,289,402 -	100.00% -	5.73% 6.88%	1.07% 1.61%	(13.74%) (12.59%)	4.59% 4.09%	5.59% 5.30%

- **Domestic Equity** underperformed the benchmark in the fourth quarter and has kept pace with the benchmark over the last 5-year period.
- **International Equity** outperformed the benchmark in the fourth quarter and leads its benchmark over the last 3- and 5-year periods.
- **Diversified Strategies** underperformed the target return in the fourth quarter but leads the target over longer time periods shown above.
- **Domestic Fixed Income** outperformed the benchmark in the fourth quarter and leads the index over longer trailing time periods due to its Core Plus orientation.
- **Real Assets** trailed the benchmark in the fourth quarter but has outperformed over longer periods.

* Benchmark consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

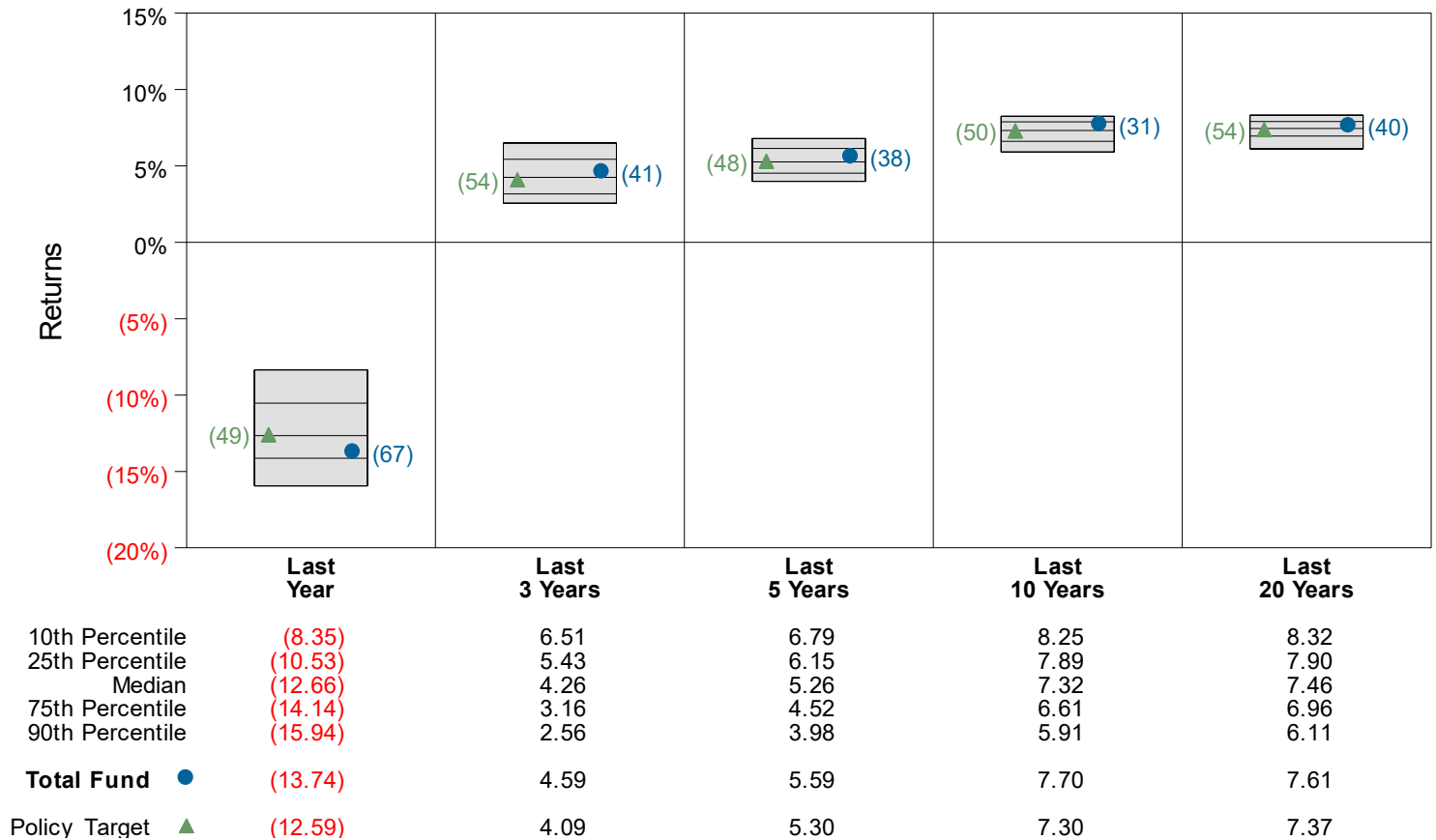
** 60% MSCI World and 40% Bloomberg Aggregate.

*** Performance excludes In-House Cash Accounts.

**** MSCI EAFE through 12/31/2020; MSCI ACWI ex US IMI (Net) thereafter

Total Fund Performance

Callan Public Fund Sponsor Database



The Total Fund underperformed its policy target for the last year and ranked at the 67th percentile of its peer group. Over the remaining trailing periods, the fund has outpaced the benchmark return and ranked in the top half of peers.

Policy Target consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

Investment Manager Returns and Peer Group Rankings

	Last Quarter		Fiscal YTD		Last Year		Last 3 Years		Last 5 Years	
Total Domestic Equity	6.49%	93	2.45%	72	(19.10%)	72	7.42%	35	8.76%	32
Russell 3000 Index	7.18%	71	2.40%	74	(19.21%)	76	7.07%	46	8.79%	32
Pub Pln- Dom Equity	7.62%		2.85%		(18.16%)		7.00%		8.40%	
Lazard Asset Mgmt.	6.57%	71	(0.16%)	77	(18.59%)	67	4.41%	84	8.07%	65
Russell 3000 Index	7.18%	69	2.40%	67	(19.21%)	71	7.07%	56	8.79%	44
Callan All Cap Broad	10.33%		4.25%		(14.08%)		7.91%		8.56%	
CastleArk	5.62%	72	1.91%	68	(22.29%)	73	10.73%	13	11.22%	10
Russell 3000 Growth Index	2.31%	90	(1.13%)	86	(28.97%)	83	7.32%	55	10.45%	25
Callan All Cap Broad	10.33%		4.25%		(14.08%)		7.91%		8.56%	
Mellon S&P 500 Index Fd	7.56%	57	2.32%	56	(18.11%)	61	7.15%	72	9.12%	52
S&P 500 Index	7.56%	57	2.31%	56	(18.11%)	61	7.66%	63	9.42%	43
Callan Large Cap Core	7.71%		2.47%		(17.42%)		7.96%		9.24%	
Horrell Capital - Passive	10.32%	50	8.83%	18	(7.86%)	31	11.25%	11	10.64%	23
Bloomberg Arkansas Index	7.72%	67	9.83%	10	(1.40%)	17	17.63%	2	13.86%	1
S&P 500 Index	7.56%	68	2.31%	67	(18.11%)	63	7.66%	53	9.42%	35
Callan All Cap Broad	10.33%		4.25%		(14.08%)		7.91%		8.56%	
Wellington Management	12.58%	66	6.07%	68	(6.90%)	73	6.97%	67	7.34%	54
Russell 1000 Value Index	12.42%	67	6.11%	67	(7.54%)	80	5.96%	93	6.67%	71
Callan Large Cap Value	13.33%		6.90%		(4.92%)		7.79%		7.55%	
INTECH	(0.77%)	90	(4.61%)	90	(33.20%)	76	3.88%	76	7.78%	90
Russell 1000 Growth Index	2.20%	67	(1.48%)	57	(29.14%)	42	7.79%	29	10.96%	25
Callan Large Cap Growth	3.59%		(1.13%)		(29.99%)		6.21%		9.95%	
LSV Asset Management	13.85%	13	9.44%	13	(4.22%)	13	8.30%	38	4.83%	63
Russell 2000 Value Index	8.42%	91	3.42%	78	(14.48%)	83	4.70%	77	4.13%	84
Callan Small Cap Value	10.92%		5.36%		(10.56%)		7.24%		5.28%	
Stephens Investment Mgmt.	3.54%	57	2.10%	64	(27.17%)	51	5.19%	41	8.58%	44
Russell 2000 Growth Index	4.13%	45	4.38%	27	(26.36%)	45	0.65%	90	3.51%	95
Callan Small Cap Growth	3.89%		3.15%		(27.01%)		4.94%		8.44%	
SSI Investment Mgmt	2.23%	85	1.45%	79	(19.41%)	87	7.72%	24	8.79%	22
ML All Conv	1.59%	92	1.88%	71	(18.71%)	82	8.12%	21	9.29%	12
Callan Convert Bonds DB	3.97%		2.54%		(12.44%)		5.08%		5.90%	

- Total **Domestic Equity** trailed the Russell 3000 Index in the fourth quarter and ranked at the 93rd percentile of peers. The asset class is in line with its benchmark over the last 5-year period, and it ranks ahead of its peer group median over the trailing 3- and 5-year periods.
- LSV led its benchmark and ranked ahead of its peer group median for the quarter and has outperformed the benchmark over the trailing 1-, 3-, and 5-year periods.
- CastleArk, Wellington, and Froyley Revy (formerly SSI) beat their respective benchmarks but ranked in the bottom half of peers for the quarter. CastleArk and Wellington lead their benchmarks over longer periods. Froyley Revy (formerly SSI) has underperformed the benchmark but ranks in the top quartile of peers over the last 3- and 5-year periods.
- Stephens and Intech lagged their respective benchmarks for the quarter and ranked below median of peers. Stephens has outperformed over longer periods while Intech lags the benchmark and peers.

Investment Manager Returns and Peer Group Rankings

	Last Quarter		Fiscal YTD		Last Year		Last 3 Years		Last 5 Years	
International Equity	15.31%	47	4.51%	39	(17.63%)	72	1.45%	42	2.34%	30
Benchmark(1)	14.15%	79	3.09%	75	(16.58%)	43	(0.80%)	86	0.53%	91
Pub Pln- Intl Equity	15.14%		3.95%		(16.88%)		1.14%		1.94%	
Artisan Partners	18.61%	16	7.95%	8	(5.53%)	3	6.76%	1	5.52%	4
MSCI EAFE	17.34%	30	6.36%	28	(14.45%)	42	0.87%	60	1.54%	63
Callan NonUS Eq	16.03%		5.35%		(15.29%)		1.39%		1.99%	
Mellon ACWI ex US Fund	14.30%	77	3.04%	85	(15.83%)	52	0.37%	69	1.19%	71
MSCI ACWI ex US	14.28%	77	2.96%	86	(16.00%)	53	0.07%	73	0.88%	77
Callan NonUS Eq	16.03%		5.35%		(15.29%)		1.39%		1.99%	
Baillie Gifford Overseas	14.70%	70	4.55%	66	(31.98%)	98	(1.86%)	94	1.14%	71
MSCI ACWIxUS Gross	14.37%	76	3.16%	84	(15.57%)	51	0.53%	66	1.36%	67
Callan NonUS Eq	16.03%		5.35%		(15.29%)		1.39%		1.99%	
Lazard Asset Mgmt.	14.05%	78	2.89%	86	(15.38%)	50	(0.16%)	77	1.58%	62
MSCI ACWIxUS Gross	14.37%	76	3.16%	84	(15.57%)	51	0.53%	66	1.36%	67
Callan NonUS Eq	16.03%		5.35%		(15.29%)		1.39%		1.99%	
Acadian ACW ex US SmallCap	13.05%	86	4.72%	45	(13.50%)	13	-	-	-	-
MSCI ACWI ex US Small Cap	13.31%	83	3.83%	70	(19.97%)	43	1.07%	34	0.67%	40
Callan Intl Small Cap	16.02%		4.52%		(20.64%)		0.14%		0.06%	
Franklin Templeton Intl SmallCap	15.22%	66	1.79%	92	(22.27%)	60	-	-	-	-
MSCI ACWI ex US Small Cap	13.31%	83	3.83%	70	(19.97%)	43	1.07%	34	0.67%	40
Callan Intl Small Cap	16.02%		4.52%		(20.64%)		0.14%		0.06%	
Diversified Strategies	3.34%		1.29%		(5.26%)		2.56%		4.49%	
Diversified Strategy Trgt**	6.61%		0.62%		(15.90%)		2.43%		4.14%	
AQR Capital	5.19%	63	(0.48%)	66	(15.36%)	72	(1.81%)	81	2.11%	59
Diversified Strategy Trgt**	6.61%	37	0.62%	52	(15.90%)	78	2.43%	42	4.14%	26
Intl/Global Balanced DB	5.75%		0.68%		(11.87%)		1.61%		2.56%	
Blackstone Alt. Asset Mgmt.	2.42%	87	3.69%	16	4.81%	3	5.23%	15	5.82%	13
T-Bills + 4%	1.80%	88	3.26%	18	5.46%	2	4.72%	20	5.26%	16
Intl/Global Balanced DB	5.75%		0.68%		(11.87%)		1.61%		2.56%	
Newton Capital	2.88%	86	(0.47%)	66	(7.61%)	19	3.59%	30	5.15%	17
LIBOR + 4%	1.95%	88	3.51%	17	5.80%	2	4.84%	19	5.37%	16
Intl/Global Balanced DB	5.75%		0.68%		(11.87%)		1.61%		2.56%	

- Total International Equity outperformed the benchmark and ranked at the 47th percentile of peers for the quarter. Artisan, Baillie Gifford, and Franklin Templeton led their benchmarks, while Lazard and Acadian underperformed.
- Over the last 3- and 5-year periods, Total International Equity leads the benchmark and ranks in the top half of peers.
- Diversified Strategies lagged its target in the fourth quarter. AQR trailed its target return and ranked in the third quartile of peers. BAAM and Newton outperformed their respective targets but ranked in the fourth quartile of peers for the quarter.
- The Diversified Strategies portfolio beat its benchmark over the last 3- and 5-year periods.

(1) MSCI EAFE through 12/31/2020; MSCI ACWI ex US IMI (Net) thereafter

**60% MSCI World/40% Blmbg Aggregate

Investment Manager Returns and Peer Group Rankings

	Last Quarter		Fiscal YTD		Last Year		Last 3 Years		Last 5 Years	
Domestic Fixed Income	2.25%	30	(2.32%)	57	(13.79%)	80	(2.14%)	69	0.64%	56
Blmbg Aggregate Index	1.87%	61	(2.97%)	78	(13.01%)	70	(2.71%)	95	0.02%	97
Pub Pln- Dom Fixed	1.98%		(2.21%)		(12.05%)		(1.44%)		0.79%	
DoubleLine Capital	1.59%	83	(2.48%)	60	(12.47%)	25	(2.48%)	89	0.23%	94
MacKay Shields	2.76%	13	(2.29%)	51	(14.47%)	88	(1.58%)	31	0.91%	30
PGIM	2.36%	31	(2.20%)	46	(14.32%)	87	(2.41%)	87	0.73%	51
Blmbg Aggregate Index	1.87%	66	(2.97%)	84	(13.01%)	42	(2.71%)	93	0.02%	96
Callan Core Plus FI	2.09%		(2.27%)		(13.28%)		(1.90%)		0.74%	
Real Assets	(4.27%)		(3.49%)		9.39%		11.13%		8.71%	
CPIU + 4%	0.98%		2.14%		10.46%		8.92%		7.78%	
REITS	4.42%		(6.39%)		(26.26%)		(1.79%)			
S&P DJ US Select REIT	4.76%		(6.11%)		(25.96%)		(1.37%)		2.50%	
MCM EB DV Non-SL REIT Fd	4.42%	42	(6.39%)	56	(26.26%)	74	(1.79%)	92	-	
S&P DJ US Select REIT	4.76%	28	(6.11%)	46	(25.96%)	63	(1.37%)	88	2.50%	91
Callan Real Estate REIT	4.26%		(6.14%)		(24.92%)		1.05%		4.96%	
Core Real Estate	(5.18%)		(3.73%)		12.12%		9.55%		8.23%	
NCREIF NFI-ODCE Eq Wt Net	(5.08%)		(4.35%)		7.56%		9.72%		8.31%	
Invesco Real Estate	(4.92%)	73	(3.58%)	74	7.72%	67	8.68%	60	8.39%	33
Heitman Real Estate Trust LP***	(5.61%)	84	(3.97%)	75	19.74%	9	10.97%	27	8.51%	33
NFI-ODCE Equal Weight Net	(5.08%)	75	(4.35%)	84	7.56%	68	9.72%	44	8.31%	33
Callan OE Core Cmngld RE	1.21%		0.76%		8.33%		9.11%		8.11%	
Value Add Real Estate	(5.06%)		(3.13%)		19.52%		19.61%		17.35%	
NCREIF Total Index	(3.50%)		(2.95%)		5.53%		8.06%		7.46%	
Harrison Street Fund VIII	(0.23%)		0.06%		4.32%		-		-	
Heitman Value Partners IV	1.04%		6.10%		25.61%		19.18%		-	
LaSalle Inc & Growth VI LP	(21.99%)		(27.39%)		(25.95%)		(11.74%)		(5.51%)	
LaSalle Inc & Growth VII LP	(1.85%)		(3.11%)		4.92%		11.63%		11.95%	
Starwood SOF XII	0.45%		7.66%		-		-		-	
TA Associates Realty Fund X	20.53%		26.67%		56.92%		15.82%		19.75%	
TA Associates Realty Fund XI	(19.21%)		(20.06%)		10.03%		22.95%		19.25%	
TA Associates Realty Fund XII	(4.59%)		(1.37%)		32.23%		-		-	
NCREIF Total Index	(3.50%)		(2.95%)		5.53%		8.06%		7.46%	
Farmland	0.03%		0.03%		-		-		-	
IFC Core Farmland Fund	0.00%		-		-		-		-	
PGIM Agriculture	0.17%		0.17%		-		-		-	
NCREIF Farmland Index	1.98%		4.00%		9.54%		6.78%		6.38%	
Timber	0.72%		5.75%		15.53%		6.78%		3.49%	
Pinnacle	0.72%		5.75%		15.53%		6.78%		3.49%	
NCREIF Timberland Index	4.89%		7.39%		12.90%		7.51%		5.37%	
Total Fund	5.73%	50	1.07%	54	(13.74%)	67	4.59%	41	5.59%	38
Benchmark*	6.88%	18	1.61%	33	(12.59%)	49	4.09%	54	5.30%	48
Callan Public Fund Spr DB	5.72%		1.18%		(12.66%)		4.26%		5.26%	

- **Domestic Fixed Income** outperformed the Bloomberg Aggregate Index in the fourth quarter and ranked in the top third of peers. MacKay Shields and PGIM finished ahead of the benchmark, while DoubleLine underperformed. The Fixed Income composite leads the index over longer periods.
- The **Real Assets** composite trailed its real return benchmark during the quarter. The REITS, Value-Add Real Estate, Core Real Estate, Farmland, and Timber allocations underperformed their respective benchmarks. The composite leads the benchmark over longer periods.
- The **Total Fund** underperformed its benchmark and finished at the 50th percentile of peers for the quarter. The Fund has delivered excess returns versus the benchmark and ranks in the top half of peers over the last 3- and 5-year periods.

*Policy Target consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

*** Funded July 8, 2015. Performance prior to October 1, 2015 represents fund composite returns.

Organizational Developments

PGIM Fixed Income – On January 11th, 2023, PGIM Fixed Income (PGIM FI) announced three retirements and appointments which will take place over the next 12 months across senior leadership, multi-sector, and U.S. investment grade credit teams.

Michael Lillard, Head of Fixed Income, will retire in April 2024 and John Vibert, President of PGIM FI, will assume Lillard's responsibilities as CEO and President of PGIM FI effective January 1, 2024. In Vibert's current role he works with Lillard on the strategic direction and overall management of the firm. He also oversees the global CLO business and will continue to upon his appointment to CEO. Craig Dewling and Greg Peters will remain co-chief investment officers and report to Vibert when he assumes the role of CEO. Lillard will serve as an adviser to the firm for the period from January through April 2024.

Michael Collins, Senior PM on multi-sector products, will retire in April 2024. Multi-sector portfolios will continue to be led by Portfolio Managers Greg Peters, Rich Piccirillo, Robert Tipp, and Lindsay Rosner. They do not currently plan on adding additional resources.

Terrence Wheat, Co-Head of Investment Grade Corporate Bonds, will retire in April 2024. Current Co-Head David Del Vecchio will maintain his responsibilities, and Rajat Shah, Senior Portfolio Manager, U.S. Investment Grade Corporate Bonds will be appointed as co-head effective January 1, 2024. As co-heads, they maintain responsibility for day-to-day decisions for the U.S. Investment Grade Corporate bond portfolios and U.S. corporate relative-value decisions. They will continue to report to Richard Greenwood, Head of Credit.

Organizational Developments

Franklin Templeton Investments – Alan Bartlett, Chief Investment Officer of Templeton Global Equity Group (TGEG), has indicated his intention to leave Franklin Templeton to move on to the next phase of his career. Alan will transition his existing responsibilities as of March 31, 2023.

In early 2022, Manraj Sekhon was named head of Templeton Global Equity Investments (TGEI) which combined the businesses of Franklin Templeton Emerging Markets Equity (FT EME) and Templeton Global Equity Group (TGEG) under a single umbrella, retaining the integrity of their respective investment philosophies and processes while continuing to share best practices. Following Alan's departure, Manraj will assume the role of CIO for TGEI as of March 31, 2023. Manraj is a seasoned investor and investment executive, having been leading FT EME since 2018, and with more than 25 years of experience researching and investing in global and international markets and managing investment teams and processes. Manraj will continue to report to Terrence Murphy, Head of Public Markets.

Newton Investment Management – Newton Global Real Return PM Suzanne Hutchins passed away suddenly of natural causes on December 13th, 2022. While Hutchins was an important lead portfolio manager for the fund, the strategy has always utilized a team-based approach to making investment decisions. Suzanne was one of three key portfolio managers on the strategy alongside Aron Pataki and Andy Warwick. While Warwick is a relatively newer addition to Newton, as of 2018, both are seasoned professionals.

Newton announced that Andy Warwick and Aron Pataki will lead the Global Real Return team as co-heads. The team consists of eight people and the team is not planning to hire a new person. However, they've attempted to redistribute her responsibilities among the team. Warwick will be leading when it comes to investment decisions regarding equities, quantitative strategies, and complex derivatives. Pataki will be leading when it comes to investment decisions regarding currencies, commodities, and fixed income.

Work Plan Update

Asset Liability Study

- Completed in February 2019. The Board decided to keep the current asset allocation unchanged

Investment Policy Review and Update – Completed in August 2019

Non-US Equity Structure Study

- The Board reviewed the Non-US Equity Structure Study at the November 2019 Board Meeting
- The Board selected a structure which included a new allocation to Non-US Small Cap Equity
- The Non-US Small Cap Equity search was concluded in November 2020 with the selection of Acadian Asset Management and Franklin Templeton Investments

Real Assets Structure Study

- The Board reviewed the Real Assets Structure at the February 2021 meeting. The Board chose to eliminate the Energy equity allocation, in favor of additional Core and Core Plus real estate, and Farmland. Additional Allocations to Value-add real estate were also approved
- At the May 2021 Board Meeting, the Board approved the Real Estate Pacing Study and new commitments to Starwood and Harrison Street Partners
- At the November 2021 Board Meeting, Farmland managers were interviewed and both IFC and PGIM were allocated \$50 million.
- Core Plus Real Estate Manager Interviews occurred at the February Board Meeting, all three managers, Carlyle, Principal, and Clarion, were hired to manage \$85 million.

Domestic Equity Structure Study

- Presented at the August 2022 Board Meeting. The Board decided to maintain the current Domestic Equity Structure.

Private Equity Education and Total Fund Asset Allocation Review

- Private equity education was provided at the Trustee Workshop in October 2022. In the November 2022 meeting the Board received an asset allocation review which included portfolios containing private equity.
- The Board requested that Callan complete a Private Equity pacing analysis using a 5% private equity target allocation for the Fund.

Work Plan Update

Total Fund Asset Allocation Review Update and Private Equity Pacing Study Analysis

- Presented at the February 2023 meeting

Upcoming Projects:

- **Potential Searches and additional work on Private Equity**
- **Investment Policy Review**
- **Fixed Income Structure Study**

Total Fund Relative Attribution

Relative Attribution Effects for Quarter ended December 31, 2022

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	37%	37%	6.49%	7.18%	(0.25%)	(0.00%)	(0.25%)
Domestic Fixed-Income	19%	18%	2.25%	1.87%	0.07%	(0.05%)	0.03%
International Equity	23%	24%	15.31%	14.15%	0.26%	(0.11%)	0.15%
Diversified Strategies	5%	5%	3.34%	6.61%	(0.17%)	(0.00%)	(0.17%)
Real Assets	17%	16%	(4.27%)	0.98%	(0.87%)	(0.04%)	(0.91%)
Total			5.73%	= 6.88%	+ (0.96%)	+ (0.19%)	(1.15%)

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	39%	37%	(19.10%)	(19.21%)	0.03%	(0.22%)	(0.19%)
Domestic Fixed-Income	18%	18%	(13.79%)	(13.01%)	(0.15%)	(0.04%)	(0.19%)
International Equity	24%	24%	(17.63%)	(16.58%)	(0.28%)	(0.10%)	(0.38%)
Diversified Strategies	5%	5%	(5.26%)	(15.90%)	0.48%	0.01%	0.49%
Real Assets	14%	16%	9.39%	10.46%	(0.17%)	(0.71%)	(0.88%)
Total			(13.74%)	= (12.59%)	+ (0.09%)	+ (1.06%)	(1.15%)

Five Year Annualized Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	40%	37%	8.76%	8.79%	(0.02%)	0.06%	0.04%
Domestic Fixed-Income	17%	18%	0.64%	0.02%	0.07%	(0.04%)	0.03%
International Equity	25%	24%	2.34%	0.53%	0.46%	(0.08%)	0.38%
Diversified Strategies	5%	5%	4.49%	4.14%	0.01%	0.00%	0.02%
Real Assets	14%	16%	8.71%	7.78%	(0.02%)	(0.15%)	(0.17%)
Total			5.59%	= 5.30%	+ 0.50%	+ (0.21%)	0.29%

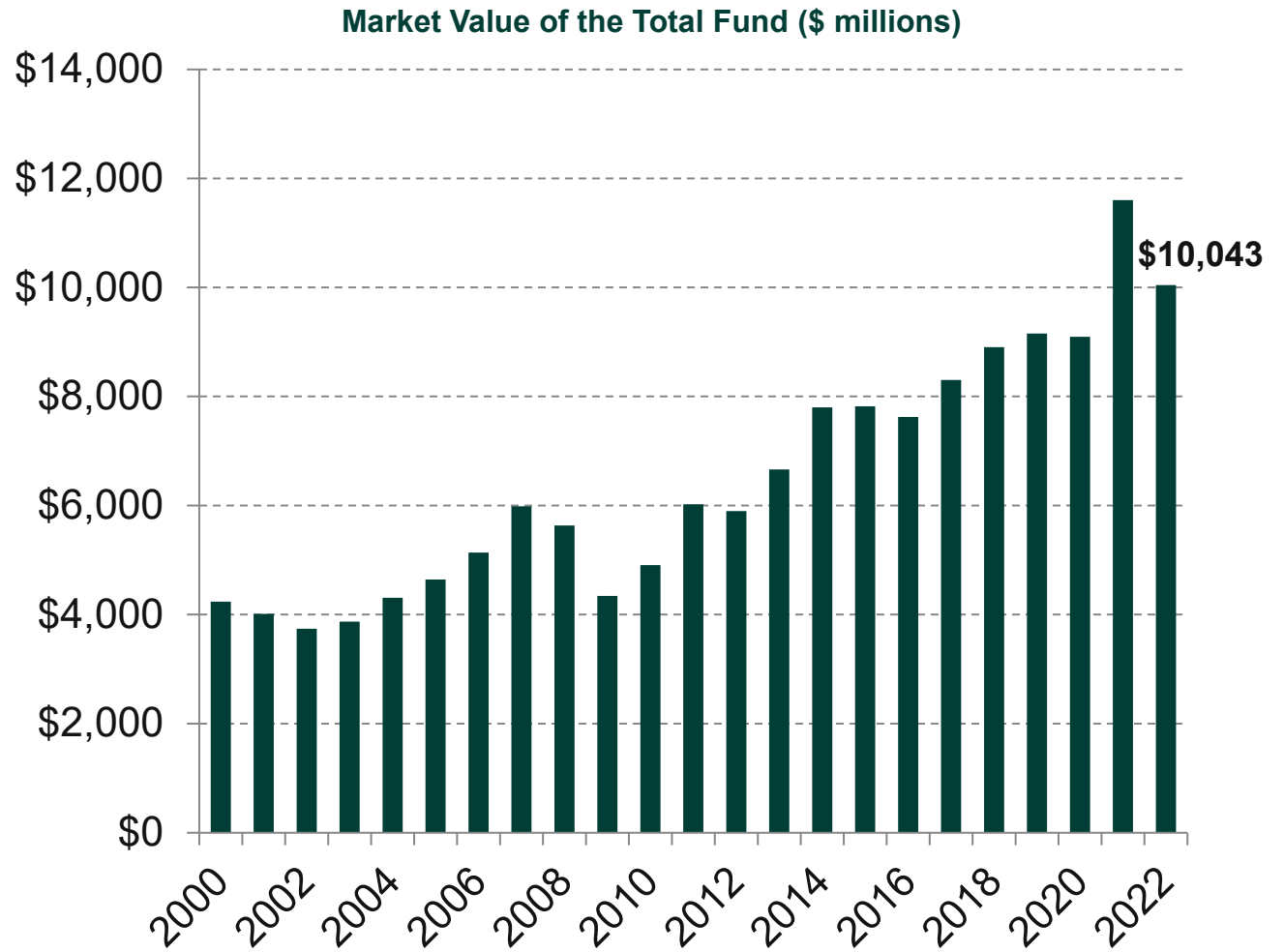
- Active management and variance from policy weights were negative overall for the quarter. Real Assets, Domestic Equity, and Diversified Strategies managers detracted for the quarter, while International Equity and Fixed Income managers added value.
- Over the last year, active management detracted overall. Managers within Diversified Strategies added the most value for the period, but Fixed Income, International Equity, and Real Assets managers detracted. Variance from policy weights detracted, driven by an underweight to Real Assets and an overweight to Domestic Equity.
- Outperformance over the last five years is attributable to positive active management. Fixed Income, International Equity, and Diversified Strategies managers added value during the period. An underweight to Real Assets was the largest detractor, as variance from policy weights was a headwind to relative results.

Policy Target consists of 37% Russell 3000 Index, 24% MSCI ACWI ex US IMI Index, 18% Blmbg Aggregate Index, 16% CPI All Urban Cons +4%, 3% MSCI World Index and 2% Blmbg Aggregate Index

Historical Market Values of the Total Fund

Fiscal Year-End Market Values

Fiscal Year Ending	Market Value
2000	\$4,236,749,732
2001	\$4,012,745,608
2002	\$3,739,381,695
2003	\$3,869,787,673
2004	\$4,307,589,827
2005	\$4,642,924,118
2006	\$5,136,985,259
2007	\$5,985,111,493
2008	\$5,633,155,289
2009	\$4,341,419,711
2010	\$4,907,734,835
2011	\$6,022,965,592
2012	\$5,896,862,618
2013	\$6,662,631,673
2014	\$7,800,291,923
2015	\$7,820,289,128
2016	\$7,624,665,446
2017	\$8,301,352,120
2018	\$8,904,393,859
2019	\$9,153,121,783
2020	\$9,093,497,703
2021	\$11,602,695,185
2022	\$10,042,629,672



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February 15, 2023



**APERS Asset Allocation,
Diversified Strategies and
Private Equity Pacing Study**

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Senior Vice President

Gary Robertson
Senior Vice President

John Pirone, CFA, FSAA, CAIA
Senior Vice President

Introduction

At the November meeting, the asset allocation was reviewed and evaluated for the possible addition of private equity. The Board requested that an Investment Pacing Analysis with a 5% allocation to private equity be generated for review.

The Convertible Bond strategy was initially identified as a source of funding for private equity. In the attached, you will find an additional funding approach for your consideration.

This presentation will provide the following information:

- An updated Asset Allocation review
- An implementation summary for the proposed Private Equity allocation, including an Investment Pacing Analysis

Implementation *Asset Allocation*

Proposed Mix with 5% Private Equity

	Current Policy	Nov 16 Board Meeting: 5% PE (Mix 2)	Change	Today's proposal: 5% PE, 3%Converts	Change
Domestic Equity	33%	35%	2%	36%	3%
International Equity	24%	19%	-5%	17%	-7%
Convertible Bonds	4%	0%	-4%	3%	-1%
Fixed Income	18%	20%	2%	21%	3%
Real Assets	16%	16%	0%	16%	0%
Diversified Strategies	5%	5%	0%	2%	-3%
Private Equity	<u>0%</u>	<u>5%</u>	5%	<u>5%</u>	5%
	100%	100%		100%	
Portfolio Characteristics:					
Expected Return	7.00%	7.07%	0.07%	7.08%	0.08%
Risk	12.60%	12.63%	0.03%	12.65%	0.05%
Sharpe Ratio	0.317	0.322	0.005	0.323	0.006
% Domestic Equity of Public Equity	58%	65%	7%	68%	10%

Domestic Equity Market Cap as % of Global Public Equity Market Cap is 60% (as of December 31, 2022)

Relative to the current policy:

Today's proposal (with 5% private equity) has a higher expected return and similar risk

Increases proportion of US equity, retains convertible bonds at 3%, and lowers diversified strategies to 2%

Real asset allocation modeled as 90% private real estate, 5% timber, and 5% farmland. Sharpe Ratio defined as (portfolio expected return minus 2.75% projected cash rate) divided by portfolio risk.

Callan 2023 Expected Return and Risk Assumptions

Asset Class	2023 Expected Return	2022 Expected Return	Change in Expected Return	Risk
Domestic Equity	7.35%	6.60%	0.75%	18.05%
International Equity	7.45%	6.80%	0.65%	21.25%
Convertible Bonds	7.15%	6.25%	0.90%	14.25%
Fixed Income	4.25%	1.75%	2.50%	4.10%
Real Assets	6.40%	5.80%	0.60%	13.80%
<i>Real Estate</i>	5.75%	5.75%	0.00%	14.20%
<i>Timber</i>	5.40%	5.40%	0.00%	15.60%
<i>Farmland</i>	5.55%	5.50%	0.05%	15.95%
Diversified Strategies	5.55%	4.10%	1.45%	8.45%
Private Equity	8.50%	8.00%	0.50%	27.60%
Cash	2.75%	1.20%	1.55%	0.90%
<i>Inflation (CPI-U)</i>	2.50%	2.25%	0.25%	

Fixed income expected returns increased by 2.50% for 2023, driven by materially higher yields resulting from the Federal Reserve raising interest rates.

Equity expected returns increased by roughly 0.75% for 2023, driven by the combination of lower valuations, higher dividend yields, and a 0.25% increase in expected inflation

Expected return forecasts are annualized over a 10-year horizon. These are Callan's finalized 2023 assumptions, some forecasts modestly differ the forecasts shown at the Nov 16 meeting.

Implementation *Pacing Analysis*

Commitment Pacing and Implementation

Private Equity Commitment Pacing Requirements

- Private equity commitments are invested over multiple years; therefore, it is necessary to create a forecast of the timing of cash inflows, outflows, and the invested value of the portfolio in the future.
- The projection determines the appropriate amount and sequencing of investments to achieve a strategic target and maintain the targeted exposure throughout.
- Because private equity assets cannot be easily rebalanced, a strong pacing discipline is important to avoid being over- or under-allocated to the asset class.
- Pacing analyses should be refreshed annually to monitor portfolio development and make appropriate future commitment refinements as market conditions vary.

Implementation

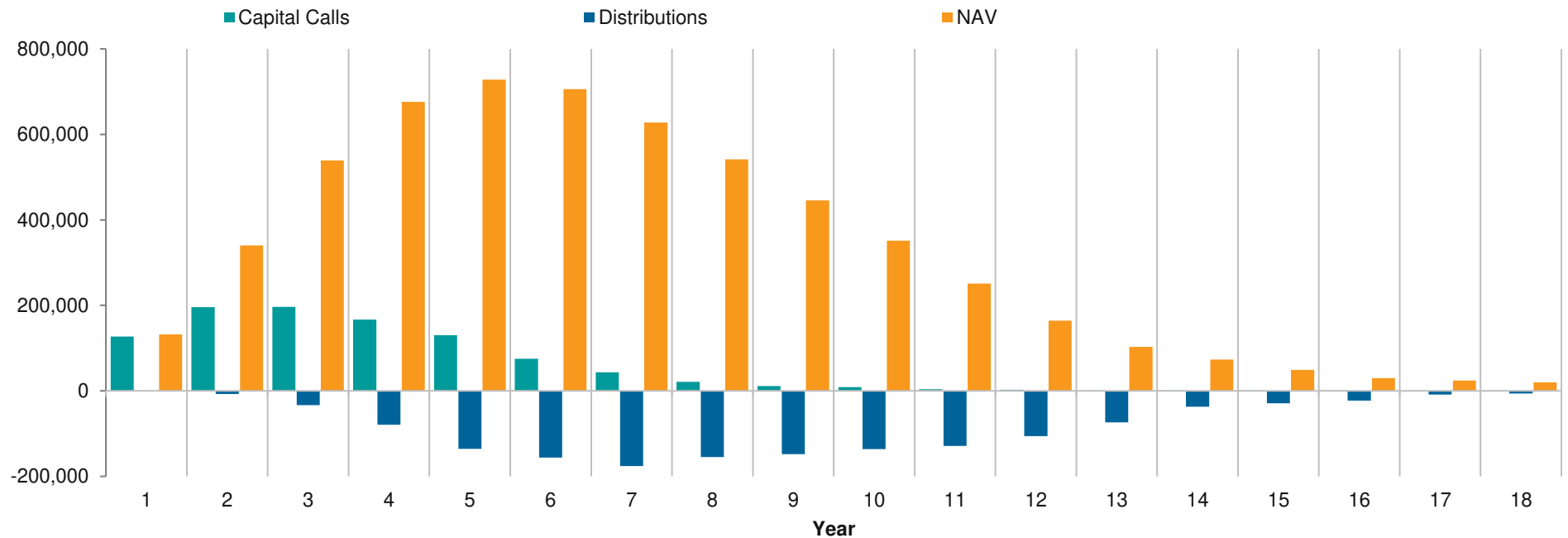
- With direction from Staff, the implementation will target an allocation of 75% of commitments to *secondary investments*, and 25% of commitments to *primary investments* employing fund-of-funds vehicles.
- The 75% in secondary investments is intended to achieve more rapid development of private equity invested net asset value (NAV) and generate accelerated distributions relative to primary investments.
- It is expected that the 25% in primary investments fund-of-funds will provide long-term return enhancement.
- Callan expects two separate searches will be necessary and recommends first conducting the *Secondaries* search followed by the *Primary* Fund of Fund search.

Sample Timeline of a Private Equity Fund – *Primary Strategy*

A Finite Life

The net asset value (NAV) builds as capital is called from LPs and then declines as capital and earnings are distributed back to them.

Annual Cash Flows of a \$1 Million Commitment



- Please note that a Secondary Strategy would occur approximately in year 3-5 of the life cycle of a private equity investment.

Model Assumptions

The private equity pacing model takes multiple factors into consideration:

- Market Value of the Fund
- Total Fund Expected Return
- Total Fund Cash Flows
- Total Fund Growth Rate
- Proposed private equity target allocation of 5% of Fund assets
- Historical private equity industry average cash flows from the Refinitiv/Cambridge private equity database

The pacing model does not specify which managers will be hired, but provides a framework for implementing the private equity allocation.

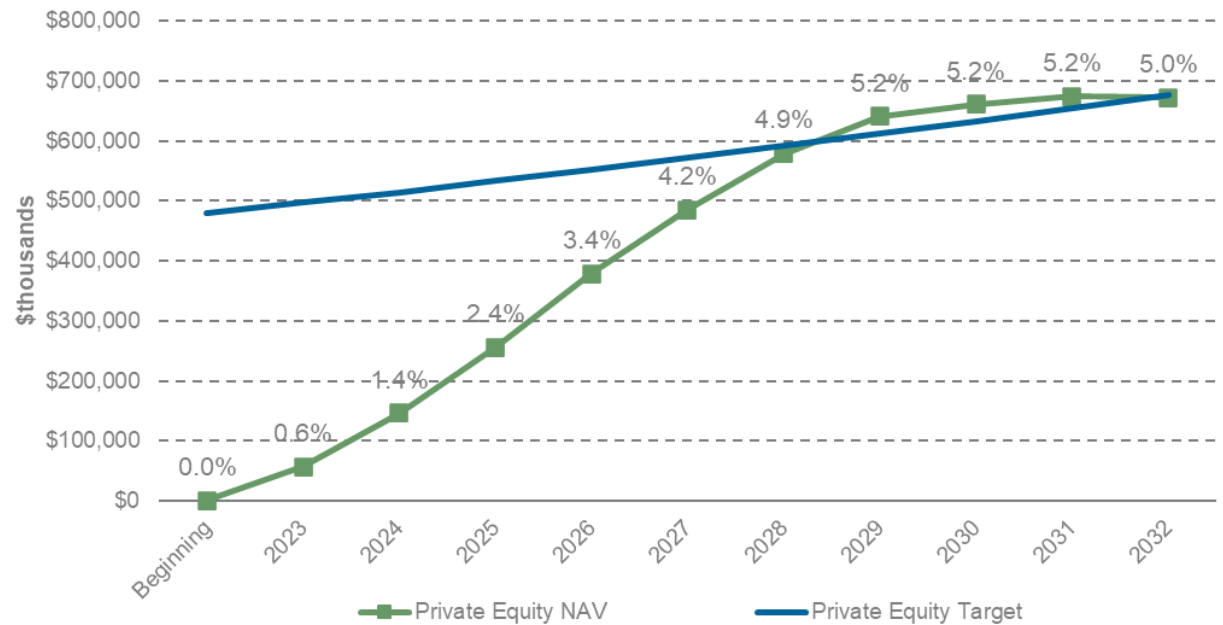
- Once specific managers are selected, the pacing model will be further refined, as necessary, to match the managers' expected investment timing.

Future Commitments and Private Equity NAV Growth

5% Allocation - Projected Future Commitments (\$ millions)

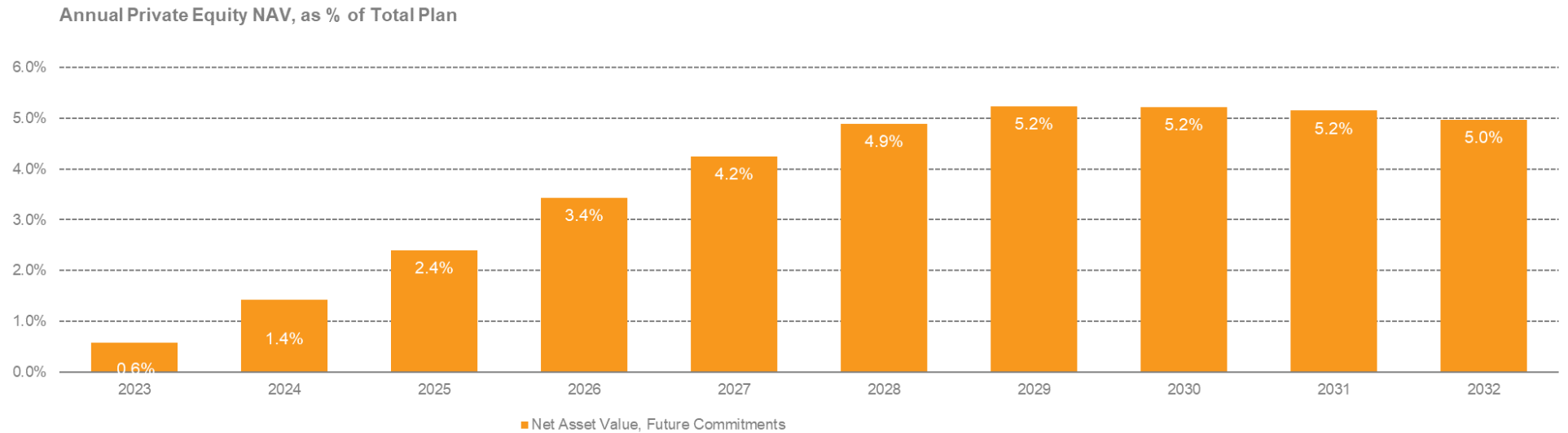
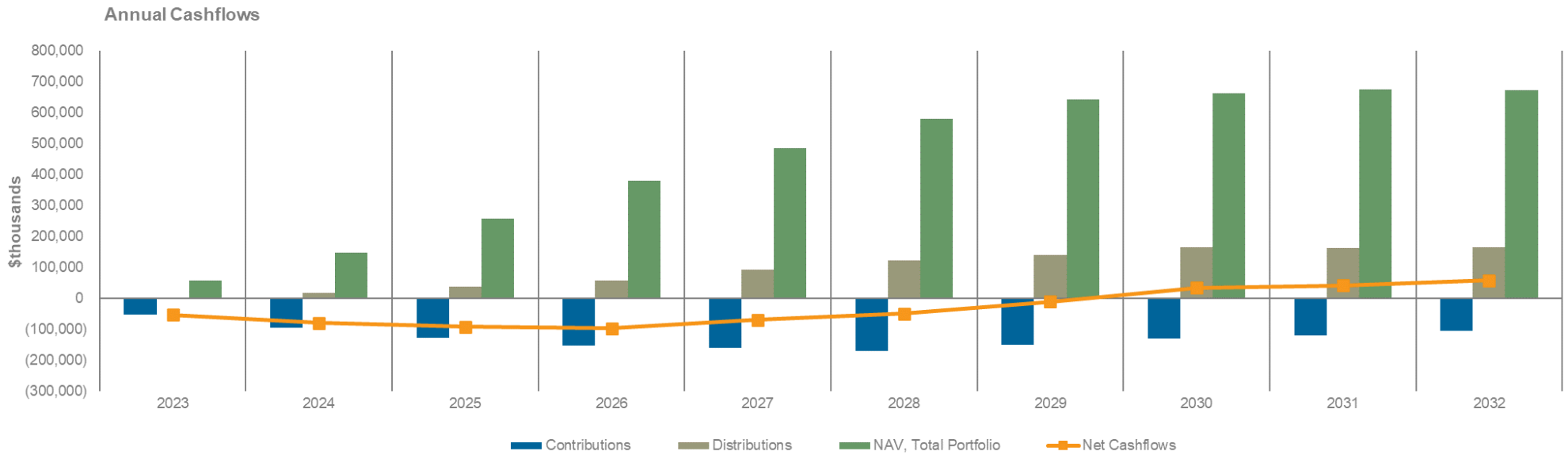
Year	Secondary	Primary FOF	Total
2023	\$500,000	\$75,000	\$575,000
2024	\$0	\$50,000	\$50,000
2025	\$0	\$50,000	\$50,000
2026	\$450,000	\$50,000	\$500,000
2027	\$0	\$50,000	\$50,000
2028	\$0	\$50,000	\$50,000
2029	\$200,000	\$50,000	\$250,000
2030	\$0	\$25,000	\$25,000
2031	\$0	\$25,000	\$25,000
2032	\$200,000	\$25,000	\$225,000
\$ Total	\$1,350,000	\$450,000	\$1,800,000
% Total	75%	25%	100%

Private Equity NAV vs. Target, \$



- The left table shows the expected future commitments to secondaries and fund-of-funds (FOFs) for APERS to achieve a proposed 5% private equity target as seen in the right graph.
 - The graph indicates APERS should approach being fully funded in the 2029 timeframe.
 - Secondaries will be invested in the underlying partnerships more quickly than commitments to Primary fund-of-funds.
- The larger initial commitments will help bridge the gap to full funding, and commitments are then reduced as the portfolio approaches its target.
- Patience is required for private equity portfolios to achieve full funding, as committing more capital in the early years will compromise vintage year diversification.

APERS Private Equity Expected Annual Cash-Flows and Allocation



Summary

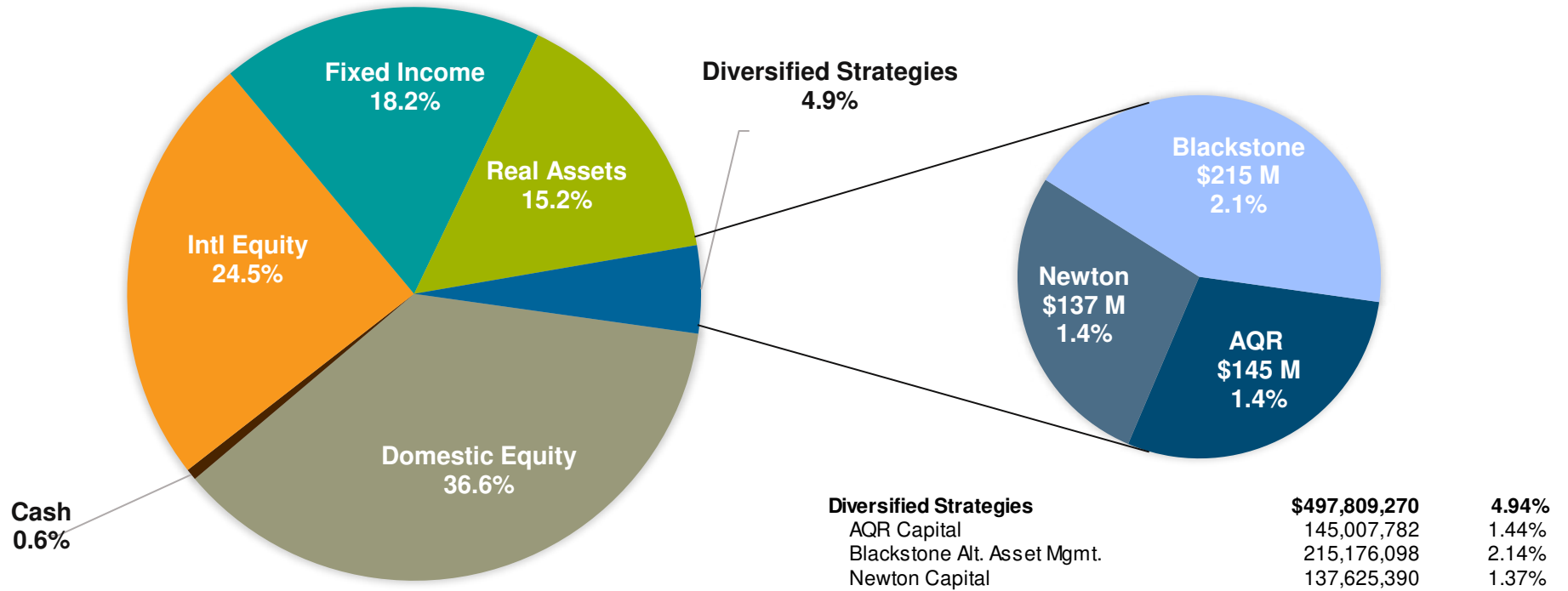
Pacing Analysis

- If APERS implements a private equity program, it is anticipated that a proposed 5% target exposure could be achieved in the 2029 timeframe.
- Private equity investment requires patience as committing too much too soon will negate the benefits of vintage year diversification.
- The commitments to fund-of-funds will be partly dependent on the selected manager's method of raising and deploying its fund-of-funds vehicles.
- Commitments will gradually decline as the allocation approaches its target.

Appendix

Diversified Strategies Current Structure

APERS TOTAL FUND ASSET ALLOCATION
AS OF 12/31/2022



Current Total Fund Market Value: \$10.1 Billion

Diversified Strategies Performance Review

December 31, 2022

	Returns						Standard Deviation		Sharpe Ratio	
	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 5 Years	Last 10 Years	Last 5 Years	Last 10 Years	
Diversified Strategies	3.34%	(5.26%)	2.56%	4.49%	5.32%	8.52	6.83	0.38	0.67	
Diversified Strategy Trgt**	6.61%	(15.90%)	2.43%	4.14%	5.97%					
AQR Capital	5.19% 63	(15.36%) 72	(1.81%) 81	2.11% 59	3.97% 60	14.20	12.55	0.06	0.26	
Diversified Strategy Trgt**	6.61% 37	(15.90%) 78	2.43% 42	4.14% 26	5.97% 36					
Intl/Global Balanced DB	5.75%	(11.87%)	1.61%	2.56%	4.54%					
Blackstone Alt. Asset Mgmt.	2.42% 87	4.81% 3	5.23% 15	5.82% 13	6.83% 14	5.63	4.42	0.81	1.37	
T-Bills + 4%	1.80% 88	5.46% 2	4.72% 20	5.26% 16	4.76% 49					
Intl/Global Balanced DB	5.75%	(11.87%)	1.61%	2.56%	4.54%					
Newton Capital	2.88% 86	(7.61%) 19	3.59% 30	5.15% 17	4.62% 50	8.43	6.71	0.46	0.57	
LIBOR + 4%	1.95% 88	5.80% 2	4.84% 19	1.37% 16	4.90% 49					
Intl/Global Balanced DB	5.75%	(11.87%)	1.61%	2.56%	4.54%					

- **AQR** has trailed its benchmark over the last three-, five- and ten-year periods.
- **Blackstone** had outperformed its benchmark over the last three-, five- and ten-year periods and has posted the strongest risk-return of the strategies appearing above.
- **Newton** has experienced mixed performance: trailing its benchmark in the three- and ten-year periods and outperforming in the five-year period.

** 60% MSCI World and 40% Bloomberg Aggregate

Diversified Strategies

AQR Global Risk Premium

The AQR Global Risk Premium Tactical (GRPT) strategy is a risk parity strategy whose objective is to generate excess returns from a broad, risk diversified, long-only portfolio of liquid global asset classes. Over the long-term, GRPT strategically targets equal risk contributions from four major risk categories: equities, nominal bonds, inflation and credit/currency.

Observation

Performance for the strategy has lagged the other Diversified Strategies over trailing time periods.

Newton Global Real Return

The Newton Global Real Return strategy implements an unconstrained approach that will invest in direct investments in a combination of assets with different investment characteristics. Portfolios in this strategy are constructed on a holistic basis, using a single-portfolio approach.

Observation

On December 13th, 2022, Global Real Return team head, Suzanne Hutchins, passed away suddenly of natural causes. The team consists of eight people that is looking to absorb Hutchins' responsibilities. Team members, Andy Warwick and Aron Pataki, will lead the Global Real Return team as co-heads.

Blackstone Partners Investment Fund L.P

BAAM's Partners LP Fund targets attractive risk-adjusted returns through investments in a well-diversified group of managers that employ a variety of unique investment strategies including Interest Rate-Driven, Credit-Driven, Commodities, Event-Driven, Equity, Managed Futures, and Global Macro. Partners LP targets low volatility and low correlation to traditional asset classes.

Observation

Performance on an absolute and risk-adjusted basis has been strong.

Model Assumptions (Private Equity) - Detailed

- Total Plan Value: June 30, 2022
- Total Plan Expected Median Return of 6.9% approximating Callan's current Capital Market Assumptions
- Total Plan Cash Flows: Based on 2017 previous Asset/Liability through 2028, then extrapolated
- Combined return and outflow result in a projected net 3.5% annual plan growth rate which declines slightly
- Private Equity Unrealized Appreciation Return of 8.5% based on Callan's current Capital Market Assumptions
- No Current Private Equity Assets
- Proposed Private Equity target of 5%
- The pacing model's projections are based on historical private equity industry average cash flows from the Refinitiv/Cambridge private equity database.
- Assumes an implementation with commitments allocated 75% to secondary investment vehicles, 25% to primary partnership fund-of-funds vehicles.
- Assumes that the secondary manager selected will raise a new vehicle every three years.
- Assumes that the fund-of-funds manager selected raises a new vehicle annually, and commits the fund to partnerships over a three-year period.
- Once specific managers are selected, the pacing model will be further refined, as necessary, to match the managers' expected investment timing.

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Arkansas Public Employees Retirement System
Board of Trustees

ACTUARIAL FUNDING POLICY – DRAFT

February 15, 2023 ~~19, 2020~~

Arkansas Public Employees Retirement System Board of Trustees

Actuarial Funding Policy

Table of Contents

Introduction	3
Funding Objectives	3
Elements of Actuarial Funding Policy	4
1. Actuarial Cost Method	4
2. Actuarial (Funding) Value of Assets Method	4
3. Amortization Method	4
4. Funding Target and Computed Employer Contribution Rate	<u>56</u>
5. Risk Management	<u>56</u>
Glossary.....	<u>78</u>
Revised.....	<u>89</u>

Actuarial Funding Policy

Introduction

The purpose of this Actuarial Funding Policy is to record the funding objectives and policy set by the Board of Trustees (Board) for the Arkansas Public Employees Retirement System (APERS). The Board establishes this Funding Policy to help ensure the systematic accumulation of assets needed to pay future benefits for members of APERS.

In 2012, the Governmental Accounting Standards Board (GASB) approved two new financial reporting standards. GASB Statement No. 67, “Financial Reporting for Pension Plans” replaced~~s~~ the requirements of Statement No. 25. GASB Statement No. 68, “Accounting and Financial Reporting for Pensions” replaced~~s~~ the requirements of Statements No. 27 and No. 50. The new GASB statements separate accounting cost (expense) from funding cost (contributions), necessitating the creation of this funding policy.

The APERS Board of Trustees adopted this Funding Policy in ~~February, 2023~~^{August, 2014}~~February, 2020~~. This funding policy shall be reviewed by the Board ~~annually through the completion of the first next experience study after adoption of this Funding Policy. Subsequently, it shall be reviewed periodically,~~ but at least every five years in conjunction with the experience study.

Funding Objectives

1. Maintain adequate assets so that current plan assets plus future contributions and investment earnings should be sufficient to fund all benefits expected to be paid to members and their beneficiaries.
2. Maintain stability of employer contribution rates, consistent with other funding objectives.
3. Maintain public policy goals of accountability and transparency. Each policy element is clear in intent and effect, and each should allow an assessment of whether, how and when the funding requirements of the plan will be met.
4. Monitor material risks to assist in any risk management strategies the Board deems appropriate.
5. Promote intergenerational equity. Each generation of members and employers should incur the cost of benefits for the employees who provide services to them, rather than deferring those costs to future members and employers.
6. Provide a reasonable margin for adverse experience to help offset risks.
7. Review investment return assumption in conjunction with the periodic asset liability study and in consideration of the Board’s risk profile.
8. Continue progress of systematic reduction of the Unfunded Actuarial Accrued Liabilities (UAAL).

Elements of Actuarial Funding Policy

1. Actuarial Cost Method

The Individual Entry Age Normal actuarial cost method of valuation shall be used in determining Actuarial Accrued Liability (AAL) and Normal Cost for all benefits. Differences in the past between assumed experience and actual experience (“actuarial gains and losses”) shall become part of the AAL. The Normal Cost shall be determined on an individual basis for each active member.

2. Actuarial (Funding) Value of Assets Method

The investment gains or losses of each valuation period, resulting from the difference between actual investment return and assumed investment return, shall be recognized annually in level amounts over 4 years in calculating the Funding Value of Assets. Regardless of the results obtained from the smoothing method described above, the Funding Value of Assets shall not diverge from the Market Value of Assets by more than 25%. For the District Judges Old Plan Still Paying, the market value of assets shall be used as the Funding Value of Assets.

3. Amortization Method

For APERS:

- a. A level percent of payroll amortization method shall be used to systematically pay off the UAAL over a closed period of years.
 - ~~b. Beginning with the 2015 annual actuarial valuation, once APERS reached a 20-year amortization period, the amortization period will remain closed and the remaining UAAL will be amortized over that period.~~
 - ~~a.c. Each year, changes in the UAAL due to the actuarial gains or losses for each annual actuarial valuation or from changes to the actuarial assumptions will be amortized over a closed 20-year period.~~
 - ~~b. Beginning with the 2015 annual actuarial valuation, once APERS reached a 20-year amortization period, the amortization period will remain closed and the remaining UAAL will be amortized over that period.~~
 - ~~c. Each year, changes in the UAAL due to actuarial gains or losses for each annual actuarial valuation or from changes to actuarial assumptions will be amortized over a closed 20-year period.~~
 - d. Changes in the UAAL due to changes in benefit provisions that would result in an increase in the employer contribution rate ~~will~~ shall be amortized over a closed 15-year period for active members and a closed 5-year period for non-active members (i.e., retired members and deferred members).
 - e. Changes in the UAAL due to changes in benefit provisions that would result in a decrease in the employer contribution rate shall be amortized over a closed 30-year period for active members and a closed 15-year period for non-active members (i.e., retired members and deferred members).
 - f. The maximum amortization period to finance the total UAAL shall not exceed 30 years.
- ~~The UAAL amortization period may be adjusted to maintain the employer contribution rate as described in Element 4.~~

~~The amortization period shall not be greater than 30 years.~~

d. _____

For District Judges:

- a. A level dollar amortization method shall be used to systematically pay off the UAAL over a closed period of years.
- b. A closed ~~5~~¹⁵-year period (as of the June 30, 20~~22~~¹³ valuation) shall be used for the New Plan and Paid-Off Old Plan.
- c. A closed ~~13~~²²-year period (as of the June 30, 20~~22~~¹³ valuation) shall be used for the Still Paying Old Plan.

4. Funding Target and Computed Employer Contribution Rate

- a. The targeted funded ratio shall be 100%.
- b. The employer contribution rate for APERS shall at least be equal to the employer normal cost unless the funded ratio exceeds 120%. If the funded ratio exceeds 120%, the amount of the actuarial value of assets in excess of 120% of the actuarial accrued liability shall be amortized over a 30-year period to reduce the normal cost contribution.
- c. The employer contribution rate for APERS shall not be less than the Contributory Group member contribution rate.
- d. The Board may establish a minimum employer contribution rate for APERS. The employer contribution rate shall not be less than the Board established minimum employer contribution rate in effect as of the adoption date of this policy (i.e., 15.32% of payroll) until such time as it is prudent to consider an employer contribution rate lower than this amount. The Board has the discretion to establish, change or remove the minimum employer contribution rate at any time.

~~—The employer contribution rate shall not be allowed to decrease as a result of benefit changes.~~

~~—For these valuations, the UAAL amortization period may be adjusted to align to the corresponding employer contribution rate.~~

- e. The Board may establish a maximum employer contribution rate for APERS. The employer contribution rate shall not be greater than the Board established maximum employer contribution rate, with one exception. If the Board established maximum employer contribution rate results in a total UAAL amortization period greater than that presented in 3.f., the employer contribution rate will be based upon the total UAAL amortized over the period presented in 3.f. unless the amortization period exceeds the number of years as determined by the Board in 5.b. The Board has the discretion to establish, change or remove the maximum employer contribution rate at any time.

~~e.f.~~ The employer contribution rate for APERS and District Judges shall be for the fiscal year beginning two years after the actuarial valuation date.

~~d.—For the 2015, 2016 and 2017 annual actuarial valuations, the computed employer contribution rate shall not decrease by more than 0.25% of payroll from the previous valuation's computed employer contribution rate. For these valuations, the UAAL amortization period may be adjusted to determine the corresponding employer contribution rate.~~

~~e.g.~~ Once the District Judges New Plan and Paid Off Old Plan achieve a funded ratio of 100% or greater, the UAAL contribution for this portion of District Judges will become part of the APERS overall contribution rate.

5. Risk Management

- a. Assumption Changes
 - i. The actuarial assumptions used shall be those last adopted by the Board based on the most recent experience study and upon the advice of the actuary. The actuary shall conduct an experience study at least every five years. The results of the study shall be the basis for the actuarial assumption changes adopted by the Board.

- ii. The actuarial assumptions can be updated during the five-year period if significant plan design changes or other significant events occur, as advised by the actuary.

b. Amortization Method

The amortization method, Level Percent Closed, will ensure full payment of the UAAL over a finite reasonable period of ~~systematically decreasing period not to exceed 30~~ years.

c. Risk Measures

The following risk measures will be annually determined to provide quantifiable measurements of risk and their movement over time.

i. Classic Measures Currently Determined

- A. Funded ratio (actuarial value of assets / actuarial accrued liability)
- B. UAAL amortization period (years required to pay down the UAAL based on current funding rates)

ii. Dollar Standard Deviation of Investment Return / Total Payroll

- A. Measures the risk associated with negative asset returns relative impact on the funded status of the plan. A decrease in this measure indicates a decrease in investment risk.

iii. Total UAAL / Total Payroll

- A. Measures the risk associated with contribution decreases relative impact on the ability to fund the UAAL. A decrease in this measure indicates a decrease in contribution risk.

iv. Total Actuarial Value of Assets / Total Payroll

- A. Measures the risk associated with the ability to respond to asset experience through adjustments in contributions. A decrease in this measure indicates a decrease in asset risk.

v. Total AAL / Total Payroll

- A. Measures the risk associated with the ability to respond to liability experience through adjustments in contributions. A decrease in this measure indicates a decrease in experience risk. This also provides a long-term measure of the asset risk in situations where the System has a funded ratio below 100%.

d. Risk Control

The Board shall carefully monitor the risk measures above and shall consider steps to mitigate risk, particularly as the funded ratio increases. Risk mitigation may involve a reduction in the assumed rate of investment return. Examples of risk mitigating techniques include, but are not limited to:

- i. Review asset allocation with a goal of reducing the standard deviation of the portfolio return
- ii. Reduce asset-liability mismatching

Glossary

1. **Actuarial Accrued Liability (AAL):** The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability.”
2. **Actuarial Assumptions:** Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
3. **Actuarial Cost Method:** A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method.”
4. **Actuarial Gain (Loss):** A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used. For example, if during a given year the assets earn more than the investment return assumption, the amount of earnings above the assumption will cause an unexpected reduction in UAAL, or “actuarial gain” as of the next valuation. These include contribution gains and losses that result from actual contributions made being greater or less than the level determined under the policy.
5. **Actuary:** A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries (MAAA). The Society of Actuaries is an international research, education and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. It administers a series of examinations leading initially to Associateship and the designation ASA and ultimately to Fellowship with the designation FSA.
6. **Amortization:** Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.
7. **Asset Liability Study:** A comprehensive strategic asset allocation review designed to assess the continuing appropriateness of the Investment Objectives and Asset Allocation Policy. It includes a study of future benefit payments, liabilities, required funding, the appropriateness of the actuarial interest rate assumption and the prospective funded status of liabilities. It may also include a study of portfolio design for optimal diversification and comparisons with peer practices.
8. **Entry Age Normal Actuarial Cost Method:** A funding method that calculates the Normal Cost as a level percentage of pay over the working lifetime of the plan’s members.
9. **Experience Study:** An actuarial investigation of demographic and economic experiences of the system during the period studied. The investigation is made for the purpose of updating the actuarial assumptions used in valuing the actuarial liabilities.

10. **Funding Value of Assets:** The value of current plan assets recognized for valuation purposes. Generally based on a phased-in recognition of all or a portion of market related investment return. Sometimes referred to as Actuarial Value of Assets.
11. **Market Value of Assets:** The fair value of plan assets as reported in the plan’s financial statements.
12. **Normal Cost (NC):** The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost.” Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.
13. **Unfunded Actuarial Accrued Liability (UAAL):** The difference, if any, between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability.”

Revised

August 15, 2014

February ~~15, 2023~~ ~~19, 2020~~

ARKANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
STATEMENT OF FIDUCIARY NET POSITION
AS OF DECEMBER 31, 2022

ASSETS	
Cash and Cash Equivalents	\$ 62,342,057
Receivables	
Dec 2004 Actuarial Liability Receivable	4,764,431
Contributions Receivable	13,060,271
Overpayment Receivable	863,720
Allowance for Doubtful Accounts	(850,604)
Total Receivables	17,837,818
Investments at Fair Value	
Investment Assets	9,639,959,203
Securities Lending Collateral	552,355,151
Total Investments	10,192,314,354
Fixed Assets (Net)	11,520,541
Prepays and Other Assets	656,073
TOTAL ASSETS	10,284,670,843
LIABILITIES	
Securities Lending Liability	554,112,356
Accrued Expense and Other Liabilities	12,742,386
Other Post Employment Benefits	4,872,673
TOTAL LIABILITIES	571,727,415
NET POSITION RESTRICTED FOR PENSION BENEFITS	\$ 9,712,943,428

Unaudited
2/2/2023

ARKANSAS PUBLIC EMPLOYEES RETIREMENT SYSTEM
STATEMENT OF CHANGES IN FIDUCIARY NET POSITION
FOR THE PERIOD ENDING DECEMBER 31, 2022

ADDITIONS

Contributions

Employer	\$ 169,351,467
Employee	45,913,649
Total Contributions	215,265,116

Investment Income

Investment Income	105,105,650
Less: Investment Expense	(8,254,580)
Net Investment Income	96,851,070

Other Additions

Transfers from Teachers and Highway	1,671,818
Miscellaneous Additions	387,842
Miscellaneous Administrative Transfers	410,815
Total Other Additions	2,470,475

TOTAL ADDITIONS 314,586,661

DEDUCTIONS

Benefits	324,227,929
Refund of Contributions	8,833,987
Administrative Expense	2,966,834
TOTAL DEDUCTIONS	336,028,750

NET INCREASE/(DECREASE) (21,442,089)

ADJUSTMENTS

Actuarial Adjustment to DJ Unfunded Liability 546,886

NET POSITION RESTRICTED FOR PENSION BENEFITS

Beginning of Year	9,733,838,631
End of 2nd Quarter	\$ 9,712,943,428

Arkansas Public Employees' Retirement System
LEGAL REPORT
February 15, 2023

ADMINISTRATIVE MEMBER APPEALS

Nita Murray

Member appeals the decision of the Executive Director dated April 8, 2022, denying the member's request to recharacterize her employment to receive additional service credit. **No appeal date set.**

APPEAL FROM ADMINISTRATIVE MEMBER APPEAL - LITIGATION

None pending

RULES PROMULGATION

No current rule promulgation. There will be multiple rule promulgations following the legislative session to address changes in the law.

SECURITIES LITIGATION CASES

U.S. cases with APERS as Lead Plaintiff

Company name	Case Caption	Date Case Filed	Lead Plaintiff Status	Firm
*Lobstein, pro se	Lobstein v. Washington Mutual, et al.	07/24/2020	Case dismissed. Plaintiff appealed. Counsel filed response to appeal. 3/1/2021	Cohen Milstein

There are no active securities litigation cases with APERS as lead plaintiff.

* For background, this is not a securities litigation case, rather a *pro se* complaint loosely based upon a securities litigation case settled in 2015. The lawsuit by Lobstein regards the foreclosure of property that is part of a mortgage backed securities trust lawsuit that APERS participated in. This lawsuit is considered a frivolous lawsuit by APERS' securities litigation counsel. The *pro se* complaint included all of the plaintiff pension funds who were involved in the original securities litigation, including APERS.

ARKANSAS PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Board Report

New Retirees Summary for Month of 10/2022

	No. of Retirees Contributory	No. of Retirees Non - Contributory	Total No. of Retirees	Monthly Benefit Contributory	Monthly Benefit Non - Contributory	Total Benefit	Average Benefit Contributory	Average Benefit Non - Contributory
County	23	33	56	\$11,158.12	\$38,111.75	\$49,269.87	\$485.14	\$1,154.90
Municipality	15	9	24	\$6,677.50	\$16,439.24	\$23,116.74	\$445.17	\$1,826.58
School	1	11	12	\$666.97	\$5,971.99	\$6,638.96	\$666.97	\$542.91
State	43	57	100	\$39,676.43	\$79,140.23	\$118,816.66	\$922.71	\$1,388.43
TOTAL	82	110	192	\$58,179.02	\$139,663.21	\$197,842.23	\$709.50	\$1,269.67

ARKANSAS PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Board Report

New Termination Refunds Summary for Month of 10/2022

	No. of Payees	Total Benefit	Total Service Credit	Average Benefit	Average Service Credit
County	70	\$326,046.47	181 Y(s) 11.25 M(s)	\$4,657.81	2 Y(s) 7.19 M(s)
Municipality	38	\$236,196.85	144 Y(s) 8.50 M(s)	\$6,215.71	3 Y(s) 9.70 M(s)
Non-State	1	\$9,214.28	5 Y(s) 3.00 M(s)	\$9,214.28	5 Y(s) 3.00 M(s)
State	151	\$902,285.28	466 Y(s) 6.50 M(s)	\$5,975.40	3 Y(s) 1.08 M(s)
TOTAL	260	\$1,473,742.88	798 Y(s) 5.25 M(s)	\$5,668.24	3 Y(s) 0.85 M(s)

ARKANSAS PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Board Report

New Retirees Summary for Month of 11/2022

	No. of Retirees Contributory	No. of Retirees Non - Contributory	Total No. of Retirees	Monthly Benefit Contributory	Monthly Benefit Non - Contributory	Total Benefit	Average Benefit Contributory	Average Benefit Non - Contributory
County	16	21	37	\$8,156.39	\$20,823.87	\$28,980.26	\$509.77	\$991.61
Municipality	6	5	11	\$3,476.77	\$6,499.01	\$9,975.78	\$579.46	\$1,299.80
Municipality-Non- Participating	1	0	1	\$399.09	\$0.00	\$399.09	\$399.09	\$0.00
Non-State	0	1	1	\$0.00	\$822.70	\$822.70	\$0.00	\$822.70
School	0	2	2	\$0.00	\$2,309.62	\$2,309.62	\$0.00	\$1,154.81
State	25	43	68	\$31,109.09	\$60,329.37	\$91,438.46	\$1,244.36	\$1,403.01
TOTAL	48	72	120	\$43,141.34	\$90,784.57	\$133,925.91	\$898.78	\$1,260.90

ARKANSAS PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Board Report

New Termination Refunds Summary for Month of 11/2022

	No. of Payees	Total Benefit	Total Service Credit	Average Benefit	Average Service Credit
County	78	\$531,190.81	294 Y(s) 0.75 M(s)	\$6,810.14	3 Y(s) 9.24 M(s)
Municipality	19	\$116,412.17	57 Y(s) 11.50 M(s)	\$6,126.96	3 Y(s) 0.61 M(s)
Non-State	3	\$13,445.85	7 Y(s) 0.50 M(s)	\$4,481.95	2 Y(s) 4.17 M(s)
State	152	\$706,384.31	368 Y(s) 11.00 M(s)	\$4,647.27	2 Y(s) 5.13 M(s)
TOTAL	252	\$1,367,433.14	727 Y(s) 11.75 M(s)	\$5,426.32	2 Y(s) 10.67 M(s)

ARKANSAS PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Board Report

New Retirees Summary for Month of 12/2022

	No. of Retirees Contributory	No. of Retirees Non - Contributory	Total No. of Retirees	Monthly Benefit Contributory	Monthly Benefit Non - Contributory	Total Benefit	Average Benefit Contributory	Average Benefit Non - Contributory
County	14	22	36	\$6,851.17	\$24,602.66	\$31,453.83	\$489.37	\$1,118.30
Municipality	4	8	12	\$2,535.87	\$8,261.92	\$10,797.79	\$633.97	\$1,032.74
Non-State	0	1	1	\$0.00	\$1,333.74	\$1,333.74	\$0.00	\$1,333.74
School	0	6	6	\$0.00	\$4,300.57	\$4,300.57	\$0.00	\$716.76
State	26	49	75	\$21,466.41	\$60,937.55	\$82,403.96	\$825.63	\$1,243.62
TOTAL	44	86	130	\$30,853.45	\$99,436.44	\$130,289.89	\$701.21	\$1,156.24

ARKANSAS PUBLIC EMPLOYEES' RETIREMENT SYSTEM

Board Report

New Termination Refunds Summary for Month of 12/2022

	No. of Payees	Total Benefit	Total Service Credit	Average Benefit	Average Service Credit
County	60	\$319,365.03	180 Y(s) 10.25 M(s)	\$5,322.75	3 Y(s) 0.17 M(s)
Municipality	29	\$204,553.77	110 Y(s) 6.00 M(s)	\$7,053.58	3 Y(s) 9.72 M(s)
Non-State	2	\$7,461.77	4 Y(s) 3.25 M(s)	\$3,730.89	2 Y(s) 1.63 M(s)
State	119	\$628,967.29	331 Y(s) 11.00 M(s)	\$5,285.44	2 Y(s) 9.47 M(s)
TOTAL	210	\$1,160,347.86	627 Y(s) 6.50 M(s)	\$5,525.47	2 Y(s) 11.86 M(s)

MINUTES

MEDICAL REVIEW BOARD MEETING

124 West Capitol Avenue, Suite 400

Little Rock, Arkansas 72201

FEBRUARY 7, 2023 – 9:00 a.m.

MEDICAL REVIEW BOARD MEMBERS:

Dr. Kay Cogbill

Dr. James Hazelwood

Dr. David L. Hicks

STAFF PRESENT:

Ms. Jennifer Taylor, APERS Director of Benefits Administration

Ms. Cheryl Wilburn, APERS Benefits Operations Manager

MEDICAL REVIEW BOARD RESULTS:

The Medical Review Board met to discuss the disability case of APERS Member XXXXX23.

- After review and discussion, the Medical Review Board was unable to determine if the former member was suffering from an illness or injury at the time of termination, which led to a disability.
- The board requested records of past and current data regarding the diagnoses.
- The case is pended until additional medical records are received.

ADJOURNMENT: There being no other business, the meeting was adjourned.

APERS DROP Interest Rate

Summary:

Each year the Board sets the interest rate which will be paid on the balances in a member's DROP account for the next fiscal year, pursuant to ACA 24-4-803. In recent years, the Board has used the 10-year U.S. Treasury Note rate as a benchmark in setting the DROP Interest rate. It is APERS Staff recommendation that the Board set the fiscal year rate using the 1-year U.S. Treasury Bill yield as a comparison.

Historical 1-year and 10-Year Treasury Yields and DROP Interest Rates

Board Meeting Date February of	Setting Rate for Fiscal year	1-year Treasury Bill Yield	10-Year U.S. Treasury Yield	DROP Interest Rate Established
2014	2015	0.11%	2.71%	2.50%
2015	2016	0.23%	1.98%	2.50%
2016	2017	0.53%	1.74%	2.50%
2017	2018	0.86%	2.43%	2.50%
2018	2019	1.98%	2.85%	2.75%
2019	2020	2.54%	2.38%	2.50%
2020	2021	1.47%	1.56%	2.00%
2021	2022	0.07%	1.18%	2.00%
2022	2023	1.09%	1.92%	2.00%
2023	2024	4.64%	3.38%	

* as of 02/02/2023

Class Action Settlement Proceeds

Fiscal		
Year		Total Proceeds
2009	\$	2,808,033.51
2010	\$	2,333,548.87
2011	\$	1,222,467.30
2012	\$	734,293.86
2013	\$	501,060.63
2014	\$	1,034,993.49
2015	\$	499,547.35
2016	\$	1,367,167.89
2017	\$	354,154.24
2018	\$	801,714.62
2019	\$	1,442,809.72
2020	\$	1,319,992.13
2021	\$	575,013.13
2022	\$	553,429.10
2023	\$	182,972.07
	\$	<u>15,731,197.91</u>

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
TRITERRAS INC., Securities Litigation (20-CV-10795-CS)		N/A	08/16/2022	09/01/2022	06/29/2020	01/14/2021	USD	9,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
BLACKBERRY LIMITED Securities Litigation (13CV07060)		N/A	09/07/2022	09/07/2022	03/28/2013	09/20/2013	USD	165,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
BLACKBERRY LIMITED Securities Litigation (13CV07060)		N/A	09/07/2022	09/07/2022	03/28/2013	09/20/2013	USD	165,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
Airbus SE : American Depositary Shares, Securities Litigation		N/A	09/09/2022	09/13/2022	02/24/2016	07/30/2020	USD	5,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
Airbus SE : American Depositary Shares, Securities Litigation		N/A	09/09/2022	09/13/2022	02/24/2016	07/30/2020	USD	5,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
NISSAN MOTOR CO., LTD., Securities Litigation		N/A	08/29/2022	09/14/2022	05/11/2014	11/16/2018	USD	36,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
NISSAN MOTOR CO., LTD., Securities Litigation		N/A	08/29/2022	09/14/2022	05/11/2014	11/16/2018	USD	36,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
LIBERTY OILFIELD SERVICES INC Securities Litigation		N/A	09/16/2022	09/16/2022	01/11/2018	04/03/2020	USD	3,900,000.0000
NO SELECTED ACCOUNTS AFFECTED								
CANADIAN IMPERIAL BANK OF COMMERCE Securities Litigation (Canada)		N/A	01/03/2017	09/16/2022	05/31/2007	02/28/2008	CAD	97,945,000.0000

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
NO SELECTED ACCOUNTS AFFECTED								
LIBERTY OILFIELD SERVICES INC	Securities Litigation	N/A	09/16/2022	09/16/2022	01/11/2018	04/03/2020	USD	3,900,000.0000
NO SELECTED ACCOUNTS AFFECTED								
CANADIAN IMPERIAL BANK OF COMMERCE	Securities Litigation (Canada)	N/A	01/03/2017	09/16/2022	05/31/2007	02/28/2008	CAD	97,945,000.0000
NO SELECTED ACCOUNTS AFFECTED								
TESLA, INC. SEC FAIR FUND		N/A	N/A	09/17/2022	08/07/2018	08/08/2018	USD	20,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
TESLA, INC. SEC FAIR FUND		N/A	N/A	09/17/2022	08/07/2018	08/08/2018	USD	20,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
CBS CORPORATION, Securities Litigation (18CV07796)		N/A	09/19/2022	09/19/2022	11/29/2017	07/27/2018	USD	14,750,000.0000
965672	ARKANSAS ROBECO BOSTON PRTNRS	11/16/2016	09/16/2022	OPEN	FILED			
CBS CORPORATION, Securities Litigation (18CV07796)		N/A	09/19/2022	09/19/2022	11/29/2017	07/27/2018	USD	14,750,000.0000
NO SELECTED ACCOUNTS AFFECTED								
CBS CORPORATION, Securities Litigation (18CV07796)		N/A	09/19/2022	09/19/2022	11/29/2017	07/27/2018	USD	14,750,000.0000
965702	ARKANSAS PERS INTECH	11/16/2016	09/16/2022	OPEN	FILED			
RCI HOSPITALITY HOLDINGS, INC., Securities Litigation		N/A	07/22/2022	09/23/2022	12/13/2016	07/18/2019	USD	2,200,000.0000
NO SELECTED ACCOUNTS AFFECTED								

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
RCI HOSPITALITY HOLDINGS, INC., Securities Litigation								
		N/A	07/22/2022	09/23/2022	12/13/2016	07/18/2019	USD	2,200,000.0000
NO SELECTED ACCOUNTS AFFECTED								
AMNEAL PHARMACEUTICALS, INC., Securities Litigation								
		N/A	07/25/2022	09/26/2022	05/07/2018	05/05/2021	USD	25,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
CPI AEROSTRUCTURES, INC Securities Litigation								
		N/A	08/19/2022	09/26/2022	03/22/2018	02/14/2020	USD	3,600,000.0000
NO SELECTED ACCOUNTS AFFECTED								
AMNEAL PHARMACEUTICALS, INC., Securities Litigation								
965701	ARKANSAS PERS WELLINGTON MGMT	11/16/2016	10/27/2022	OPEN	FILED			25,000,000.0000
MINDBODY, INC., Securities Litigation								
		N/A	09/27/2022	09/27/2022	11/06/2018	02/15/2019	USD	9,750,000.0000
NO SELECTED ACCOUNTS AFFECTED								
MINDBODY, INC., Securities Litigation								
		N/A	09/27/2022	09/27/2022	11/06/2018	02/15/2019	USD	9,750,000.0000
NO SELECTED ACCOUNTS AFFECTED								
GOGO INC., Securities Litigation (18CV04473)								
		N/A	08/09/2022	09/29/2022	02/27/2017	05/04/2018	USD	17,300,000.0000
NO SELECTED ACCOUNTS AFFECTED								
GOGO INC., Securities Litigation (18CV04473)								
		N/A	08/09/2022	09/29/2022	02/27/2017	05/04/2018	USD	17,300,000.0000
NO SELECTED ACCOUNTS AFFECTED								
SUNDIAL GROWERS INC., Securities Litigation								
		N/A	09/21/2022	10/05/2022	08/01/2019	10/31/2019	USD	7,000,000.0000

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
NO SELECTED ACCOUNTS AFFECTED								
BANK OZK, Securities Litigation		N/A	08/29/2022	10/06/2022	02/19/2016	10/18/2018	USD	45,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
BANK OZK, Securities Litigation		N/A	08/29/2022	10/06/2022	02/19/2016	10/18/2018	USD	45,000,000.0000
AR4F1001602	CASTLEARK MGMT	09/05/2008	10/04/2022	CLOSED	FILED			
AR2F1001202	QS INVESTORS	09/03/2008	10/04/2022	CLOSED	FILED			
965704	ARKANSAS PERS HORRELL STOCK INDEX	11/16/2016	10/04/2022	OPEN	FILED			
AKAZOO S.A. Securities Litigation (Crowe Settlement)		N/A	09/07/2022	10/07/2022	01/24/2019	05/21/2020	USD	1,610,000.0000
NO SELECTED ACCOUNTS AFFECTED								
RECRO PHARMA, INC., Securities Litigation		N/A	10/05/2022	10/08/2022	07/17/2017	05/23/2018	USD	1,400,000.0000
NO SELECTED ACCOUNTS AFFECTED								
RECRO PHARMA, INC., Securities Litigation		N/A	10/05/2022	10/08/2022	07/17/2017	05/23/2018	USD	1,400,000.0000
NO SELECTED ACCOUNTS AFFECTED								
BOFI HOLDING, INC., Securities Litigation (17CV00667)		N/A	09/02/2022	10/13/2022	03/14/2016	10/24/2017	USD	900,000.0000
NO SELECTED ACCOUNTS AFFECTED								
BOFI HOLDING, INC., Securities Litigation (17CV00667)		N/A	09/02/2022	10/13/2022	03/14/2016	10/24/2017	USD	900,000.0000
NO SELECTED ACCOUNTS AFFECTED								

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
FLUOR CORPORATION, Securities Litigation (18CV01338)								
965708	ARKANSAS PERS GOLDEN CAPITAL	11/16/2016	10/11/2022	OPEN	FILED		USD	33,000,000.0000
FLUOR CORPORATION, Securities Litigation (18CV01338)								
NO SELECTED ACCOUNTS AFFECTED								
FLUOR CORPORATION, Securities Litigation (18CV01338)								
AR2F1001002	ROBECO BOSTON PRTNRS	09/08/2008	10/11/2022	CLOSED	FILED		USD	33,000,000.0000
VENATOR MATERIALS PLC, Securities Litigation								
NO SELECTED ACCOUNTS AFFECTED								
FUNKO, INC Securities Litigation								
NO SELECTED ACCOUNTS AFFECTED								
FUNKO, INC Securities Litigation								
NO SELECTED ACCOUNTS AFFECTED								
General Electric Company Fair Fund								
AR4F1001502	INTECH	09/05/2008	12/13/2022	CLOSED	FILED		USD	200,000,000.0000
965708	ARKANSAS PERS GOLDEN CAPITAL	11/16/2016	12/13/2022	OPEN	FILED		USD	200,000,000.0000
965701	ARKANSAS PERS WELLINGTON MGMT	11/16/2016	12/13/2022	OPEN	FILED		USD	200,000,000.0000
General Electric Company Fair Fund								
NO SELECTED ACCOUNTS AFFECTED								

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
NO SELECTED ACCOUNTS AFFECTED								
AEGEAN MARINE PETROLEUM NETWORK INC., Securities Litigation (18-CV-04993)		N/A	08/23/2022	10/22/2022	02/27/2014	11/05/2018	USD	29,800,000.0000
NO SELECTED ACCOUNTS AFFECTED								
AEGEAN MARINE PETROLEUM NETWORK INC., Securities Litigation (18-CV-04993)		N/A	08/23/2022	10/22/2022	02/27/2014	11/05/2018	USD	29,800,000.0000
NO SELECTED ACCOUNTS AFFECTED								
DAKOTA PLAINS HOLDINGS, INC., Securities Litigation (16CV09727)		N/A	N/A	10/25/2022	03/23/2012	08/16/2016	USD	13,950,000.0000
NO SELECTED ACCOUNTS AFFECTED								
AMYRIS, INC., Securities Litigation		N/A	10/18/2022	10/25/2022	03/15/2018	03/19/2019	USD	13,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								
AMYRIS, INC., Securities Litigation		N/A	10/18/2022	10/25/2022	03/15/2018	03/19/2019	USD	13,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								
DAKOTA PLAINS HOLDINGS, INC., Securities Litigation (16CV09727)		N/A	N/A	10/25/2022	03/23/2012	08/16/2016	USD	13,950,000.0000
NO SELECTED ACCOUNTS AFFECTED								
MALLINCKRODT PLC, Securities Litigation		N/A	06/28/2022	10/27/2022	10/06/2015	11/06/2017	USD	65,750,000.0000
NO SELECTED ACCOUNTS AFFECTED								
MALLINCKRODT PLC, Securities Litigation		N/A	06/28/2022	10/27/2022	10/06/2015	11/06/2017	USD	65,750,000.0000
AR4F1001502	INTECH	09/05/2008	10/27/2022	CLOSED	FILED			

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
694609	ARKANSAS PERS LSV ASSET MANAGEMENT	08/28/2017	10/27/2022	OPEN	FILED			
AR4F1001202	LAZARD ASSET MGMT	09/04/2008	10/27/2022	CLOSED	FILED			
RE 2U, INC. Securities Litigation		N/A	11/18/2022	10/29/2022	02/26/2018	07/30/2019	USD	37,000,000.0000
965705	ARKANSAS PERS STEPHENS CAPITAL MGT	11/16/2016	12/06/2022	OPEN	FILED			
RE 2U, INC. Securities Litigation		N/A	11/18/2022	10/29/2022	02/26/2018	07/30/2019	USD	37,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
INTRUSION INC., Security Litigation		N/A	11/09/2022	10/31/2022	10/14/2020	08/26/2021	USD	3,250,000.0000
NO SELECTED ACCOUNTS AFFECTED								
WALGREEN COMPANY Securities Litigation (15CV03187)		N/A	09/16/2022	11/05/2022	04/17/2014	08/05/2014	USD	105,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
WALGREEN COMPANY Securities Litigation (15CV03187)		N/A	09/16/2022	11/05/2022	04/17/2014	08/05/2014	USD	105,000,000.0000
AR4F1001502	INTECH	09/05/2008	11/02/2022	CLOSED	FILED			
AR4F1001702	HORRELL - ARKANSAS STOCK INDEX	09/08/2008	11/02/2022	CLOSED	FILED			
AR4F1001402	WELLINGTON MGMT	09/04/2008	11/02/2022	CLOSED	FILED			
PIVOTAL SOFTWARE, INC. SERCURITES AND LITIGATION		N/A	11/01/2022	11/07/2022	03/23/2018	04/27/2018	USD	2,750,000.0000
NO SELECTED ACCOUNTS AFFECTED								
BOFI HOLDINGS, INC., Securities Litigation (15CV02324GPCKSC)		N/A	08/08/2022	11/07/2022	09/04/2013	10/13/2015	USD	14,100,000.0000

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
NO SELECTED ACCOUNTS AFFECTED								
BOFI HOLDINGS, INC., Securities Litigation (15CV02324GPCKSC)		N/A	08/08/2022	11/07/2022	09/04/2013	10/13/2015	USD	14,100,000.0000
AR2F1001202	QS INVESTORS	09/03/2008	11/24/2022	CLOSED	FILED			
SOS LIMITED., Securities Litigation		N/A	11/08/2022	11/08/2022	07/22/2020	02/26/2021	USD	5,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
S&P Dow Jones Indices LLC Fair Fund		N/A	N/A	11/09/2022	02/05/2018	02/05/2018	USD	9,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
S&P Dow Jones Indices LLC Fair Fund		N/A	N/A	11/09/2022	02/05/2018	02/05/2018	USD	9,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
PERFORMANCE SPORTS GROUP LTD., Securities Litigation (16CV03591GHW)		N/A	10/28/2022	11/14/2022	01/15/2015	10/28/2016	USD	13,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
PERFORMANCE SPORTS GROUP LTD., Securities Litigation (16CV03591GHW)		N/A	10/28/2022	11/14/2022	01/15/2015	10/28/2016	USD	13,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
TWITTER, INC., Securities Litigation		N/A	05/23/2019	11/23/2022	02/06/2015	07/28/2015	USD	809,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								
TWITTER, INC., Securities Litigation		N/A	05/23/2019	11/23/2022	02/06/2015	07/28/2015	USD	809,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
Facebook Fair Fund		N/A	N/A	11/30/2022	01/28/2016	03/19/2018	USD	100,000,000.0000
965708	ARKANSAS PERS GOLDEN CAPITAL	11/16/2016	11/24/2022	OPEN	FILED			
965702	ARKANSAS PERS INTECH	11/16/2016	11/24/2022	OPEN	FILED			
965701	ARKANSAS PERS WELLINGTON MGMT	11/16/2016	11/24/2022	OPEN	FILED			
Facebook Fair Fund		N/A	N/A	11/30/2022	01/28/2016	03/19/2018	USD	100,000,000.0000
								NO SELECTED ACCOUNTS AFFECTED
GROUPON, INC Securities Litigation		N/A	09/22/2022	12/01/2022	07/30/2019	02/18/2020	USD	13,500,000.0000
								NO SELECTED ACCOUNTS AFFECTED
UNITI GROUP INC. SECURITIES LITIGATION		N/A	10/14/2022	12/01/2022	04/24/2015	06/24/2019	USD	38,875,000.0000
965704	ARKANSAS PERS HORRELL STOCK INDEX	11/16/2016	11/29/2022	OPEN	FILED			
UNITI GROUP INC. SECURITIES LITIGATION		N/A	10/14/2022	12/01/2022	04/24/2015	06/24/2019	USD	38,875,000.0000
								NO SELECTED ACCOUNTS AFFECTED
GROUPON, INC Securities Litigation		N/A	09/22/2022	12/01/2022	07/30/2019	02/18/2020	USD	13,500,000.0000
								NO SELECTED ACCOUNTS AFFECTED
HARMAN INTERNATIONAL INDUSTRIES, INC., Securities Litigation (17CV00246)		N/A	10/20/2022	12/01/2022	01/10/2017	03/12/2017	USD	28,000,000.0000
								NO SELECTED ACCOUNTS AFFECTED
UNITI GROUP INC. SECURITIES LITIGATION		N/A	10/14/2022	12/01/2022	04/24/2015	06/24/2019	USD	38,875,000.0000

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
694609	ARKANSAS PERS LSV ASSET MANAGEMENT	08/28/2017	11/29/2022	OPEN	FILED			
HARMAN INTERNATIONAL INDUSTRIES, INC., Securities Litigation (17CV00246)		N/A	10/20/2022	12/01/2022	01/10/2017	03/12/2017	USD	28,000,000.0000
		NO SELECTED ACCOUNTS AFFECTED						
CREDIT ACCEPTANCE CORPORATION, Securities Litigation		N/A	11/16/2022	12/02/2022	05/04/2018	08/28/2020	USD	12,000,000.0000
		NO SELECTED ACCOUNTS AFFECTED						
CREDIT ACCEPTANCE CORPORATION, Securities Litigation		N/A	11/16/2022	12/02/2022	05/04/2018	08/28/2020	USD	12,000,000.0000
		NO SELECTED ACCOUNTS AFFECTED						
COVETRUS, INC., Securities Litigation		N/A	10/04/2022	12/03/2022	02/08/2019	08/12/2019	USD	35,000,000.0000
		NO SELECTED ACCOUNTS AFFECTED						
COVETRUS, INC., Securities Litigation		N/A	10/04/2022	12/03/2022	02/08/2019	08/12/2019	USD	35,000,000.0000
965705	ARKANSAS PERS STEPHENS CAPITAL MGT	11/16/2016	12/01/2022	OPEN	FILED			
IMMUNOMEDICS, INC., Securities Litigation (16CV03335KSHCLW)		N/A	12/29/2022	12/06/2022	05/02/2016	06/24/2016	USD	4,000,000.0000
		NO SELECTED ACCOUNTS AFFECTED						
JIAYIN GROUP INC., Securities Litigation		N/A	11/11/2022	12/09/2022	12/19/2018	09/02/2020	USD	2,000,000.0000
		NO SELECTED ACCOUNTS AFFECTED						
AMTRUST FINANCIAL SERVICES, INC., Securities Litigation		N/A	10/26/2022	12/13/2022	01/22/2018	01/18/2019	USD	13,000,000.0000
		NO SELECTED ACCOUNTS AFFECTED						

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
NN, Inc., Securities Litigation								
		N/A	11/15/2022	12/15/2022	09/10/2018	09/21/2018	USD	9,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								
EVOLENT HEALTH, INC., Securities Litigation								
		N/A	10/28/2022	12/16/2022	01/10/2018	05/28/2019	USD	23,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								
EVOLENT HEALTH, INC., Securities Litigation								
		N/A	10/28/2022	12/16/2022	01/10/2018	05/28/2019	USD	23,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								
INOVIO PHARMACEUTICALS, INC Securities Litigation								
		N/A	11/23/2022	12/19/2022	02/14/2020	08/10/2020	USD	30,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
INOVIO PHARMACEUTICALS, INC Securities Litigation								
		N/A	11/23/2022	12/19/2022	02/14/2020	08/10/2020	USD	30,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
SEALED AIR CORPORATION, Securities Litigation								
		N/A	12/30/2022	12/27/2022	11/17/2014	06/20/2019	USD	12,500,000.0000
AR4F1001602	CASTLEARK MGMT	09/05/2008	12/19/2022	CLOSED	FILED			
AR4F1001502	INTECH	09/05/2008	12/19/2022	CLOSED	FILED			
AR2F1001002	ROBECO BOSTON PRTNRS	09/08/2008	12/19/2022	CLOSED	FILED			
SEALED AIR CORPORATION, Securities Litigation								
		N/A	12/30/2022	12/27/2022	11/17/2014	06/20/2019	USD	12,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								
YELP, INC., Securities Litigation (18CV00400EMC)								
		N/A	01/09/2023	12/27/2022	02/10/2017	05/09/2017	USD	22,250,000.0000

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
NO SELECTED ACCOUNTS AFFECTED								
BENEFITFOCUS, INC., Securities Litigation		N/A	11/10/2022	12/27/2022	02/26/2019	11/05/2020	USD	11,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
YELP, INC., Securities Litigation (18CV00400EMC)		N/A	01/09/2023	12/27/2022	02/10/2017	05/09/2017	USD	22,250,000.0000
AR4F1001602	CASTLEARK MGMT	09/05/2008	01/13/2023	CLOSED	FILED			
BENEFITFOCUS, INC., Securities Litigation		N/A	11/10/2022	12/27/2022	02/26/2019	11/05/2020	USD	11,000,000.0000
303802	ARKANSAS JUD RE SY ARISTOTLE CAP	09/23/2019	12/19/2022	OPEN	FILED			
DOUYU INTERNATIONAL HOLDINGS LIMITED Securities litigation		N/A	11/01/2022	12/28/2022	07/16/2019	01/22/2020	USD	15,000,000.0000
NO SELECTED ACCOUNTS AFFECTED								
Vanda Pharms Inc. Securities Litigation		N/A	12/15/2022	12/28/2022	11/04/2015	02/11/2019	USD	11,500,000.0000
NO SELECTED ACCOUNTS AFFECTED								
Vanda Pharms Inc. Securities Litigation		N/A	12/15/2022	12/28/2022	11/04/2015	02/11/2019	USD	11,500,000.0000
AR4F1001602	CASTLEARK MGMT	09/05/2008	12/19/2022	CLOSED	FILED			
965673	ARKANSAS PERS QS INVESTORS	11/16/2016	12/19/2022	CLOSED	FILED			
UGI CORPORATION SECURITIES LITIGATION		N/A	11/09/2022	12/30/2022	04/02/2019	08/22/2019	USD	10,250,000.0000
NO SELECTED ACCOUNTS AFFECTED								
UGI CORPORATION SECURITIES LITIGATION		N/A	11/09/2022	12/30/2022	04/02/2019	08/22/2019	USD	10,250,000.0000

Claims Filing Deadline Date between 09/01/2022 and 12/30/2022

Class Action Account Number	Account Name	Notice Date Account Open	Exclusion Date Status Date	Claim Due Account	Period Begin Claim Status	Period End Comments	Currency	Gross Settlement
694609	ARKANSAS PERS LSV ASSET MANAGEMENT	08/28/2017	12/28/2022	OPEN	FILED			
965701	ARKANSAS PERS WELLINGTON MGMT	11/16/2016	12/28/2022	OPEN	FILED			