ALASKA RETIREMENT MANAGEMENT BOARD

BOARD of TRUSTEES MEETING

September 15 & 16, 2022

Atwood Conference Center, Anchorage

Alaska Retirement Management Board

Board of Trustees Meeting

Thursday, September 15, 2022

I. 9:00 AM Call to Order

II. Roll Call

III. Public Meeting Notice

IV. Approval of Agenda

V. Public/Member Participation, Communications, and Appearances
*(Three Minute Limit. Callers may need to press *6 to unmute)*

VI. Approval of Minutes – June 16-17, 2022

VII. 9:15 AM Staff Reports

A. Liaison Report

1. Disclosures Report
2. Communication Report
3. Meeting Calendars
4. Contract Review & Deadlines Timeline

Alysia Jones, Board Liaison

B. Fund Financial Presentation

Ryan Kauzlarich, Assistant Comptroller, Division of Treasury
Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits

C. Retirement & Benefits Division Report

1. Buck Consulting Invoices
2. Member Statistics
3. BEARS Project Update

Ajay Desai, Director, Division of Retirement & Benefits
Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits
Kris Humbert, BEARS Project Manager, Division of Retirement & Benefits

D. Treasury Division Report

1. ARMB FY2024 Budget
   Action: *FY2024 Budget Proposal*
2. Staffing

Pamela Leary, Director, Division of Treasury

E. CIO Report

Zachary Hanna, Chief Investment Officer

F. Legal Report

Ben Hofmeister, Assistant Attorney General, Department of Law

VIII. 9:55 AM **Trustee Reports**

A. Chair Report, *Bob Williams*

B. Committee Reports

1. Audit Committee, *Michael Williams, Chair*
2. DC Plan Committee, *Bob Williams, Chair*
3. Actuarial Committee, *Allen Hippler, Chair*
4. Operations Committee, *Dennis Moen, Chair*
   Action: *IAC Re-Appointment*
5. Alaska Retiree Health Plan Advisory Board, *Lorne Bretz, ARMB Member*

IX. 10:05 AM **Actuarial Resolutions – FY2024 Contribution Rate Setting**
Allen Hippler, Chair, Actuarial Committee

A. Employer Contribution Rates/Amount

Action: Resolution 2022-04 - FY24 PERS Contribution Rate
Action: Resolution 2022-05 - FY24 PERS RMMI Contribution Rate
Action: Resolution 2022-06 - FY24 PERS ODD Contribution Rate
Action: Resolution 2022-07 - FY24 TRS Contribution Rate
Action: Resolution 2022-08 - FY24 TRS RMMI Contribution Rate
Action: Resolution 2022-09 - FY24 TRS ODD Contribution Rate
Action: Resolution 2022-10 - FY24 NGNMRS Contribution Amount

B. JRS Contribution

BREAK @ 10:15 am (15 MINUTES)

X. 10:30 AM **Presentations**

10:30 – 11:30 **A. Performance Measurement – 2nd Quarter**
Steve Center, Senior Vice President, Callan
Ivan "Butch" Cliff, Executive Vice President and Director of Research

11:30 – 12:00 **B. Risk Report**
Shane Carson, State Investment Officer

LUNCH @ 12:00 pm (90 MINUTES)

1:30 – 2:15 **C. BlackRock US Core Property Fund**
Ben Young, Managing Director, Head of BlackRock's US Real Estate Private Equity Platform
Lizzy Kurz, Director, Lead Portfolio Manager, BlackRock US Core Property Fund
Laura Champion, Director, BlackRock Institutional Client Business

2:15 – 3:00 **D. UBS Real Estate Separate Account**
Jeffrey G. Maguire, Lead Portfolio Manager
Peter J. Gilbertie, Manager Portfolio Operations
Thomas O'Shea, Head of Portfolio and Client Service Unit

BREAK @ 3:10 pm (10 MINUTES)

3:20 – 4:00 **E. Timberland Investment Resources**
Mark Seaman, Chief Investment Officer
Tom Johnson, Managing Director, Client Relationship Management
Hong Fu, Managing Director, Economic Research and Analysis
Chris Mathis, Managing Director, Real Estate and Corporate Development

BREAK @ 4:00 pm (5 MINUTES)

4:05 – 4:40 **F. Executive Session**

Friday, September 16, 2022

9:00 – 9:45 **G. Sentinel Real Estate Separate Account**
George Tietjen, Managing Director and Portfolio Manager
Greg Macchia, Portfolio Associate

9:45 – 10:25 **H. UBS Farmland**
Jim McCandless, Managing Director, Co-CIO, Senior Portfolio Manager
Dan Murray, Executive Director, Co-CIO, CFO and Head of Asset Management

BREAK @ 10:25 am (10 MINUTES)

10:35 – 11:20 **I. JPM Asset Management Infrastructure Investment Fund**
Nicholas Moller, Managing Director
Jeffrey Shields, Executive Director

11:20 – 12:05 **J. IFM Global Infrastructure Fund**
Julio Garcia, Head of Infrastructure, North America
David Altshuler, Head of Global Relationship Group, North America

LUNCH @ 12:05 pm (75 MINUTES)

1:20 – 2:05 **K. Real Assets Annual Plan**
Stephen Sikes, State Investment Officer

2:05 – 2:35 **L. Callan Real Assets Plan/ Performance Review**
Jonathan Gould, Senior Vice President
Avery Robinson, Senior Vice President

2:35 – 2:50 **M. Real Assets Action Items – Plans & Guidelines**
Stephen Sikes, State Investment Officer

Action: *Resolution 2022-11 Real Assets Annual Investment Plan*
Action: *Resolution 2022-12 Real Estate Investment Guidelines*
Action: *Resolution 2022-13 Farmland Investment Guidelines*
Action: *Resolution 2022-14 Timberland Investment Guidelines*
Action: *Resolution 2022-15 Infrastructure Investment Guidelines*

XI. 2:50 PM Unfinished Business
XII. New Business
XIII. Other Matters to Properly Come Before the Board
XIV. Public/Member Comments
*(Callers may need to press *6 to unmute.)*
XV. Investment Advisory Council Comments
XVI. Trustee Comments
XVII. Future Agenda Items
XIII. 3:03 PM Adjournment

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
MEETING

Videoconference

MINUTES OF
June 16-17, 2022

Thursday, June 16, 2022

CALL TO ORDER

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

ROLL CALL

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

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

Board Members Absent
None

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

Sean Howard, State Investment Officer
Mark Moon, State Investment Officer
Stephanie Pham, State Investment Officer
Michelle Prebula, State Investment Officer
Hunter Romberg, Investment Data Analyst

Department of Administration Staff Present
Ajay Desai, Director, Division of Retirement & Benefits
Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits
Roberto Aceveda, Benefits and Counseling Manager
Emily Ricci, Health Care Policy Administrator, Division of Retirement & Benefits
Jim Puckett, Chief Pension Officer, Division of Retirement & Benefits
Andrea Mueca, Health Operations Manager, Division of Retirement & Benefits
Traci Walther, Accountant V, Division of Retirement & Benefits
Hans Zigmund, Deputy Commissioner
Amanda Pillifant, Executive Secretary, Commissioner's Office

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

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

Consultants, Invited Participants
Steve Center, Callan
Paul Erlendson, Callan
Peter Keliuotis, Callan
Catherine Beard, Callan
Jay Kloepfer, Callan
David Kershner, Buck
Steve Oats, Buck
Brett Hunter, Buck
Paul Wood, Gabriel Roeder Smith
Doug Bratton, Crestline
Keith Williams, Crestline
Frank Ramos-Smith, Crestline
Robert Gillam, McKinley Capital
Renee Marsjanik, McKinley Capital
Forest Badgley, McKinley Capital
John Reynolds, McKinley Capital

Others Present
Mike Tobin, Public

Elaine Schroeder, Public
Rob Johnson, Public
Tom Klaameyer, NEA, Alaska, Public

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

APPROVAL OF AGENDA
CHAIR WILLIAMS made a change under IX. Actuarial items, Item B moved to June 17th after the asset allocation decision.

MR. WILLIAMS moved to approve the agenda. MS. RYAN seconded the motion.

With no objections, the agenda was approved.

PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS AND APPEARANCES
MR. TOBIN with 350 Juneau spoke regarding fossil fuel divestment.

MRS. SCHROEDER, with 350 Juneau spoke regarding Russian oil.

APPROVAL OF MINUTES – March 17 – 18, 2022 and APPROVAL OF MINUTES – May 4, 2022

MR. WILLIAMS moved to approve the minutes of the March 17 - 18, 2022 as amended, and May 4, 2022, meeting of the ARM Board. MS. RYAN seconded the motion.

With no objection, the motion was approved.

STAFF REPORTS

A. Liaison Report

MS. JONES presented the first quarter financial disclosure report, communications report, 2022 and 2023 calendars, and an updated version of the ARMB Timeline of Contract and Review Deadlines for FY22-FY27.

MR. MOEN moved to adopt the 2023 meeting calendar MR. KROHN seconded the motion.

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

B. Fund Financial Presentation

MR. KAUZLARICH presented the financials as of April 30th and shared the figures as of May 31st, noting a decrease.

MR. WORLEY shared the Alaska Retirement Management Board Financial report as well as the operating bill.

C. Retirement & Benefits Division Report

1. Buck Consulting Invoices

MR. WORLEY presented a summary of the monthly billing for Buck. MS. MAHONEY asked about the anticipated full year cost for Buck. MR. WORLEY said he would get back to her on total fiscal year cost.

2. Member Statistics

MR. WORLEY presented member statistics for quarter ending March 31st, 2022 noting decreases in membership for DB membership for PERS and TRS, an increase in DCR membership for PERS and TRS and an increase in retirees for PERS with a decrease for TRS.

3. Legislative Summary

MR. DESAI reported no significant updates since the last report in May.

4. BEARS Project Update

MR. DESAI provided an update for the project discussing the different phases and noting the implementation had been pushed from December 2023 to the end of March of 2024.

D. Treasury Division Report

MS. LEARY reported that the ARM Board budget had moved through the legislature and was with the governor.

E. CIO Report

MR. HANNA discussed asset allocation and the unique environment created by not only the pandemic but also the global conflict in the Ukraine.

MR. HANNA discussed the watch list and requested a motion to remove Man Group..

MS. RYAN moved to adopt MR. HANNA'S recommendations to take Man Group off the ARM Board manager watch list. MR. KROHN seconded the motion.

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

F. Legal Report

MR. HOFMEISTER said that he had nothing to report.

TRUSTEE REPORTS

A. Chair Report

CHAIR WILLIAMS noted that he had thoughtful conversations with Department of Administration and Department of Revenue staff in planning for the meeting.

B. Committee Reports

1. Audit Committee

MR. WILLIAMS reported that KPMG presented the timeline for the current fiscal year's audit. He said that they had also reviewed the Division of Retirement & Benefits internal audits and audits of employers and staffing changes. He said they had also discussed with KPMG and the Division of Retirement and Benefits the service organization controls and reports.

2. DC Plan Committee

CHAIR WILLIAMS reported that T. Rowe Price had presented on the structures of the Stable Value Fund and received an update on the fund restructuring. MR. PUCKETT presented a legislative update and reported on the work the Division was doing. MR. WORLEY announced that the fee for the deferred compensation rate was going to change from 17 basis points to 11 basis points. MR. DESAI reported that there would be an extension of the contract with Empower for at least a year. MS. DAVIDSEN of Empower presented on fee transparency.

3. Operations Committee

MR. MOEN reported that MS. LEARY and her team got the ARM Board budget passed. He said they also reviewed examples of more summarized minutes and considered the possibility of a Trustee 101 training. MR. JONES discussed vender files, reconciliations, and interfaces, and said that cyber security was ongoing.

4. Actuarial Committee

MR. HIPPLER reported that they had reviewed and approved the actuarial review conducted by GRS on the actuary's findings on the plan. He noted that most of the discussion was spent reviewing the experience analysis and the assumptions that would be adopted for the next few years. He reported the committee had recommended a reduction in the real rate of return of 13 basis point relative to a higher rate of return, noting there would be additional discussion following tomorrow's presentations on asset allocation.

5. Alaska Retiree Health Plan Advisory Board

MR. BRETZ reported on the settlement agreement in regard to the litigation with RPEA and changes made in the 2014 Alaska Care defined benefit retirement plan and the dental, vision, and audio plans.

ACTUARIAL ACTION ITEMS

A. Certification of FY 2021 Review Reports & Valuations

MR. HIPPLER presented an action item to accept GRS' review and certification of Buck's actuarial valuations, and the actuarial valuation reports themselves prepared by Buck.

CHAIR WILLIAMS confirmed that the motion was the ARM Board accept the review and certification of the FY 2021 actuarial reports by GRS and the actuarial valuation report prepared by Buck for the Public Employees' Teachers', Public Employees Defined Contribution for Occupational Death and Disability and Retiree Medical Benefits, Teachers Defined Contribution for Occupational Death and Disability and Retiree Medical Benefits and the roll-forward actuarial valuation reports for the Judicial and National Guard and Naval Militia Retirement Systems as of June 30th 2021.

MR. HIPPLER motioned to accept the FY 2021 review reports and valuations.

CHAIR WILLIAMS stated that it was a motion coming from the Actuarial Committee with no need for a second.

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

B.* Acceptance of Experience Study for July 1, 2017, to June 30, 2021 *(Moved to Friday, June 17, 2022) (PAGE 106 OF THE PACKET)

C. Acceptance of Actuarial Audit

MR. HIPPLER presented an action item with the recommendation to accept the actuarial audit of pension and post-employment healthcare plans dated May 20, 2022, by GRS.

MR. HIPPLER motioned to accept GRS' actuarial audit report.

CHAIR WILLIAMS stated that it was a motion coming from the Actuarial Committee with no need for a second.

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

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

PRESENTATIONS

A. Performance Measurement – 1st Quarter

MR. ERLENDSON gave a presentation on the market and economic environment and discussed how the returns had been fantastic, and how the state of the economy was causing negative returns and suggested to stay the course of the long-term strategic plan.

MR. CENTER presented the performance of the PERS, TRS, and JRS pension plans as of March 31, 2022. He noted that asset class allocations were in line with targets after the asset allocation update and associated rebalancing and the weightings to real assets and alternatives were high in comparison to other public funds. MR. CENTER presented the Participant Directed Plans noting that PERS DC was cash-flow positive as was the TRS plan, but TRS DC plan was cash-flow negative as was the SBS fund.

MR. ERLENDSON announced his retirement, stating that his last attendance of an ARM Board meeting would be in December and noted their proposed new team member was Butch Cliff who had been with Callan for 30 years as the Director of Research.

CHAIR WILLIAMS recessed the meeting from 11:54 a.m. until 1:15 p.m.

B. ARMB Domestic, International Equity

MR. MOON discussed the reset of 2019 and the reasons behind the decisions made to consolidate

various domestic large cap strategies and portfolios, and making the overall exposures reoriented to: passive, factor-tilted, and active.

MS. PREBULA explained the current structure to international equities, noting that the factor and passive strategies were segregated into developed and emerging markets and that the active strategies were a mix of developed and emerging markets.

In response to CHAIR WILLIAMS' question regarding the search for additional managers, MS PREBULA said they had in mind adding a maximum of three.

MS PREBULA recommended the Alaska Retirement Management board direct the staff to engage Callan and Associates to conduct a search for one or more Global Ex U. S. investment managers.

MS. MAHONEY motioned to accept the recommendation to engage Callan to conduct a search for one or more Global Ex. U.S. investment manager(s). MR. WILLIAMS seconded the motion.

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

C. Opportunistic/Multi-Asset

MR. CARSON discussed the history, structure, performance, managers, underlying strategies, and proposed changes to the opportunistic asset class. He also recommended renaming the asset class to Multi-Asset, refining the purpose statement, and transitioning the alternative fixed income mandates into Multi-Asset.

D. McKinley Healthcare Transformation

MR. GILLAM presented healthcare transformation strategies and updates, noting they had designed the strategy to address the growing costs of healthcare. He also introduced new team member, MS. RENNE MARSJANIK, Director of Client Solutions.

CHAIR WILLIAMS recessed the meeting from 3:25 p.m. until 3:30 p.m.

E. Executive Session

CHAIR WILLIAMS asked for a motion for the Alaska Retirement Management Board to go into Executive Session to consider a matter related to a specific manager, the immediate knowledge of which may harm the character or reputation of the persons discussed.

CHAIR WILLIAMS invited IAC members, Treasury staff, and ARM Board legal counsel to join the Board in executive session.

MR. MOEN motioned to go into executive session. MR. BRETZ seconded the motion.

The Board went off the record at 3:48 p.m., recessing the public portion of the meeting until Friday morning.

Friday, June 17, 2022

CALL BACK TO ORDER

CHAIR WILLIAMS stated that Thursday's executive session ended at 4:21 p.m. and that no action was taken by the board. He then reconvened the meeting at 9:00 a.m.

F. Private Credit Education and Implementation

MR. KELIUTOIS' presentation consisted of a review of private credit as an asset class, how they selected the manager, the due diligence involved, and the implementation of the portfolio.

MS. BEARD continued the presentation and explained the history of private credit, the program design, and private credit strategies.

G. Crestline

MR. BRATTON presented an overview of Crestline and the employees. He discussed the multi-strategies in which the ARM Board invests.

MR. WILLIAMS discussed their approach to capital preservation, direct lending strategies, specialty lending strategies, and opportunistic strategies. He then discussed Blue Glacier Fund Class D, describing it as the most recent vintage.

H. Opportunistic/Multi-Asset Wrap-up

MR. CARSON noted that the staff believed the risk, return, and diversified benefits and characters would be additive o the overall ARMB Board portfolio; he explained that if they did not continue to make commitments to private debt they would eventually wind down by 2027. He suggested the Board continue to bring capital to the space and consider expanding investments and the manager set.

MR. HIPPLER motioned that the Alaska Retirement Board direct staff to engage Callan to conduct a search for private debt managers and delegate authority to staff to contract and invest with up to two managers for up to a hundred million each, subject to successful due diligence and contract negotiation. MR. MOEN seconded the motion.

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

CHAIR WILLIAMS recessed the meeting from 10:43 a.m. until 11:00 a.m.

I. ARMB 2022 Asset Allocation Strategy

MR. KLOEPFER presented the ARMB 2022 asset allocation strategy. He discussed the 2022 10-year assumptions versus the 2021 standard set, he also summarized the important changes for 2022 capital markets assumptions.

J. Asset Allocation Discussion and Action

MR. HANNA reviewed the ARMB's asset allocation process and explained that the goal was to balance investment objectives, risk tolerance, and other attributes.

He then discussed time horizon, liquidity needs, rebalancing, peer assumptions, and risk posture, noting that the ARMB had a shorter time horizon and slightly riskier portfolio compared to peers. MR. HANNA presented four asset allocation mixes for PERS, TRS and Judicial, and stated that staff recommended Mix 2 as the closest to the actuarial target.

MR. HANNA stated that for National Guard and Naval, staff recommended a portfolio that targets the 5.75 % actuarially expected return and had an 8% allocation to Multi-Asset.

MS. RYERSON noted that they were focusing on a number, 4.57, but that there's likely a range of 4.3 to 4.7 because of the estimates and assumptions being considered. She commended MR. HANNA and MR. KLOEPFER on their presentations and noted that staff has returned that excess return.

DR. JENNINGS concurred with MS. RYERSON. He added that they are a long-term investor, meaning they can take equity risk and supported staff's recommendation of Mix 2.

DR. MITCHELL complimented Callan and staff on their thoughtful process.

Action: Resolution 2022-02 Asset Allocation for PERS DB & DC, TRS DB & DC, and JRS (Mix 2)
MR. BRETZ moved to adopt Resolution 2022-02. MR. KROHN seconded the motion.

MR. HIPPLER suggested they were overestimating the value of fixed income to provide a hedge and underestimating fixed incomes' level of risk with respect to inflation and increasing interest rates.

MR. HIPPLER moved to amend the motion to reflect Mix 3. MS. MAHONEY seconded the motion.

MS. MAHONEY commented that her concern with Mix 2 was that de-risking was a reflection of where they were today versus 20 years down the road.

MR. HIPPLER commented that they were coming off a real rate of return target of 4.88, that 4.65 would be a compromise between the various real rates of return.

MR. WILLIAMS stated that he was hesitant to support the amendment given that it was contrary to staff, Callan, and IAC recommendation.

MR. HANNA clarified that his recommendation was to modestly de-risk given where the ARMB is compared to peers. He added that there was a strong recommendation not to move to Mix 4, but that there was not a huge distinction between Mix 2 and Mix 3.

A roll call vote was taken on the amendment (Mix 3), the motion passed with 6 yeas and 3 nays.

Action: Resolution 2022-02 Asset Allocation for PERS DB & DC, TRS DB & DC and JRS (Amendment Mix 3)

A roll call vote was taken, and the motion passed with 8 yeas and 1 nay.

Action: Resolution 2022-03 Asset Allocation for NGNMRS
MR. HIPPLER moved the motion as presented. MR. BRETZ seconded the motion.

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

Action: Resolution 2022-01 Acceptance of Experience Analysis

MR. HIPPLER motioned to accept the experience analysis prepared by Buck as well as the assumption and methods changes recommended therein as Proposed Option #2.

CHAIR WILLIAMS stated that it did not need a second as it came from the Actuarial Committee.

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

UNFINISHED BUSINESS - None

NEW BUSINESS – None

OTHER MATTERS TO PROPERLY COME BEFORE THE BOARD - None

PUBLIC/MEMBER COMMENTS
MS. JONES stated that written comments regarding equity options and SBS, had been received and forwarded to the DC Plan Committee in early May.

INVESTMENT ADVISORY COUNCIL COMMENTS
MS. RYERSON commented that it was a really good process and was refreshing to see a board consider all the different options and have thorough discussions and come up with good solutions.

DR. JENNINGS and DR. MITCHELL had no further comments.

TRUSTEE COMMENTS - None

FUTURE AGENDA ITEMS – None

ADJOURNMENT

There being no objection and no further business to come before the board, the meeting was adjourned at 12:48 p.m. on June 17, 2022, on a motion made by MS. RYAN and seconded by MR. HIPPLER.

Chair of the Board of Trustees
Alaska Retirement Management Board

ATTEST:

Michael Williams

Corporate Secretary

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

ALASKA RETIREMENT MANAGEMENT BOARD

STAFF REPORT

Disclosure – Communications - Calendar Update
September 15, 2022

The 2nd Quarter Financial Disclosure Memorandum is included in the packet; no disclosure transactions require additional review or discussion.

The Communications Memorandum lists communications directed to and sent on behalf of the Board since the June 16-17, 2022 meeting, as well as a summary of public records request received between June 1 and August 31, 2022

The remaining 2022 meeting calendar is attached, along with the 2023 meeting calendar, approved in June.

A timeline showing contract and review deadlines for FY2023 through FY2028 is also included in the packet, for trustee reference.

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

To: ARMB Trustees
From: Alysia Jones
Date: 8/09/2022
Subject: Financial Disclosures

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

2nd Quarter April 1, 2022 – June 30, 2022

Name	Position Title	Disclosure Type	Disclosure Date
Donald Krohn	ARMB Trustee	Equities/ Options	7/05/2022
Jerrold Mitchell	Investment Advisory Council Member	Equities	7/05/2022
Allen Hippler	ARMB Trustee	Equities	9/12/2022

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

To: ARMB Trustees
From: Alysia Jones
Date: August 31, 2022
Subject: Communications & Information Requests

Communications to Trustees
There are no communications to report since the ARMB's June 16-17, 2022 meeting.

Communications Sent on behalf of the Board
There are no communications to report since the ARMB's June 16-17, 2022 meeting.

Public Records Requests
From June 1 – August 31, 2022

Topics	# of Requests	Description
Quarterly Investment Info.	5	Investment pools, hedge funds/absolute return, real estate, private debt
Meeting Materials	7	Summary of Board Actions, Resolutions
Procurement / Contracts	5	Contract expirations
Other	2	Diversity Initiatives, Investment Management

ALASKA RETIREMENT MANAGEMENT BOARD
Remaining 2022 Meeting Calendar

DATE	LOCATION	DESCRIPTION
October 10 Monday	Videoconference	Audit Committee
November 30 Wednesday	Anchorage, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
December 1-2 Thursday-Friday	**Anchorage, AK**	**Board of Trustees Meeting:** *Audit Report - DRB Auditor* *Performance Measurement – 3rd Quarter* *Manager Review (FY23 Questionnaire)* *Private Equity Evaluation - Callan LLC* *Review Private Equity Annual Plan* *Cybersecurity* *Manager Presentations*

NOTE: Meeting locations and topics are subject to change.

Updated: 8/26/2022

ALASKA RETIREMENT MANAGEMENT BOARD
2023 Meeting Calendar

DATE	LOCATION	DESCRIPTION
March 15 Wednesday	Juneau, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
March 16-17 Thursday-Friday	**Juneau, AK**	**Board of Trustees Meeting:** *Performance Measurement – 4th Quarter* *Buck Draft Actuarial Report/GRS Draft Actuary Certification* *Capital Markets – Asset Allocation* *Manager Presentations*
April 27* Thursday	Videoconference	Actuarial Committee *Follow-up/additional discussion/questions on valuations*
April 28* Friday	**Videoconference**	**Board of Trustees Meeting**
June 14 Wednesday	Anchorage, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
June 15-16 Thursday - Friday	**Anchorage, AK**	**Board of Trustees Meeting:** *Final Actuary Reports/Adopt Valuation* *Adopt Asset Allocation* *Performance Measurement - 1st Quarter* *Manager Presentations*
September 13 Wednesday	Anchorage, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
September 14-15 Thursday - Friday	**Anchorage, AK**	**Board of Trustees Meeting:** *Set Contribution Rates* *Audit Results/Assets – Auditor* *Approve Budget* *Performance Measurement – 2nd Quarter* *Real Estate Annual Plan* *Real Assets Evaluation – Callan LLC* *Manager Presentations*
October 10 Tuesday *(placeholder)*	Videoconference	Audit Committee
December 6 Wednesday	Anchorage, AK	Actuarial Committee Audit Committee Operations Committee Defined Contribution Plan Committee
December 7-8 Thursday-Friday	**Anchorage, AK**	**Board of Trustees Meeting:** *Audit Report - DRB Auditor* *Performance Measurement – 3rd Quarter* *Manager Review (Questionnaire)* *Private Equity Evaluation - Callan LLC* *Review Private Equity Annual Plan* *Cybersecurity* *Manager Presentations*

NOTE: Meeting locations and topics are subject to change.

**Meetings to be held as necessary*

Approved 6/16/2022

ARMB Timeline of Contract and Review Deadlines FY2023 - FY2028

FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Trustee Appointments/ Nominations for Terms Ending 3/01/2023 *Finance Officer - L. Bretz* *Public - A. Hippler*	**Trustee Appointments/ Nominations for Terms Ending 3/01/2024** *Public - D. Krohn* *PERS - D. Moen* *TRS - B. Williams*		**Trustee Appointments/ Nominations for Terms Ending 3/01/2026** *PERS - M. Williams* *TRS - S. Ryan*	**Trustee Appointments/ Nominations for Terms Ending 3/01/2027** *Finance Officer - TBD* *Public - TBD*	**Trustee Appointments/ Nominations for Terms Ending 3/01/2028** *Public - TBD* *PERS - TBD* *TRS - TBD*
IAC Appointments *Seat 1 - R. Ryerson* Sept 2022 agenda Effective Date: 1/1/2023 *Seat 3 - W. Jennings* Mar 2023 agenda Effective Date: 7/01/2023 (FY24)	**IAC Appointments** *Seat 2 - J. Mitchell* March 2024 agenda Effective Date: 7/01/2024 (FY25)	**IAC Appointments*** *Seat 1 - TBD* March 2025 agenda Effective Date: 7/01/2025 (FY26) **Above schedule is tenative and dependent on discussion at 9/14 Ops Cmte*	**IAC Appointments** *Seat 3 - TBD* March 2025 agenda Effective Date: 7/01/2026 (FY27)	**IAC Appointments** *Seat 2 - TBD* March 2027 agenda Effective Date: 7/01/2027 (FY28)	**IAC Appointments** *Seat 1 - TBD* March 2028 agenda Effective Date: 7/01/2028 (FY29)
Performance Measurement (General) Consultant Contract (TRSY) *2nd Renewal Option - Callan LLC* March 2023 agenda Effective Date: 7/01/2023 (FY24)	**Performance Measurement (General) Consultant Contract (TRSY)** *RFP - March 2024* Effective Date: 7/01/2024 (FY25)			**Performance Measurement - General Consultant Contract (TRSY)** *1st Renewal Option or RFP -* TBD March 2027 agenda Effective Date: 7/1/2027 (FY28)	**Performance Measurement - General Consultant Contract (TRSY)** *2nd Renewal Option or RFP -* TBD March 2028 agenda Effective Date: 7/1/2028 (FY29)
	Performance Consultant Review (TRSY) AS 37.10.220(a)(11) *RFP - March 2024* Presentation Sept 2024 (FY25)				**Performance Consultant Review (TRSY)** AS 37.10.220(a)(11) *RFP - March 2028* Presentation Sept 2028 (FY29)
Real Assets Consultant Contract (TRSY) *2nd Renewal Option -Callan LLC* March 2023 agenda Effective Date: 7/01/2023 (FY24)	**Real Assets Consultant Contract (TRSY)** *RFP - March 2024* Effective Date: 7/01/2024 (FY25)			**Real Assets Consultant Contract** *1st Renewal Option or RFP* - TBD March 2027 agenda Effective Date: 7/1/2027 (FY28)	**Real Assets Consultant Contract** *2nd Renewal Option or RFP* - TBD March 2028 agenda Effective Date: 7/1/2028 (FY29)
	Asset Liability Study (TRSY) *Recommendation: Every 5 years*				
Actuary Contract (DRB) AS 37.10.220(a)(8 & 9) *3yr Renewal Option - Buck* March 2023 agenda Effective Date: 7/01/2023 (FY24)			**Actuary Contract (DRB)** AS 37.10.220(a)(8 & 9) *2yr Renewal Option - Buck* March 2026 agenda Effective Date: 7/01/2026 (FY27)		**Actuary Contract (DRB)** AS 37.10.220(a)(8 & 9) *RFP* March 2028 agenda Effective Date: 7/01/2028 (FY29)
		Review Actuary Contract (TRSY) AS 37.10.220(a)(9) *2yr Renewal Option* March 2025 agenda Effective Date: 7/01/2025 (FY26)		**Review Actuary Contract (TRSY)** AS 37.10.220(a)(9) *2 yr Renewal Option* March 2027 *agenda* Effective Date: 7/01/2027 (FY28)	
		Actuarial Audit RFP (TRSY) AS 37.10.220(a)(10) RFP March 2025 Effective Date: 7/01/2025 (FY26)			**Actuarial Audit RFP (TRSY)** AS 37.10.220(a)(10) *2 yr Reneawal Option* Effective Date: 7/01/2028 (FY29)
Actuarial Valuations AS 37.10.220(a)(8)	**Actuarial Valuations** AS 37.10.220(a)(8)	**Actuarial Valuations** AS 37.10.220(a)(8)	**Actuarial Valuations** AS 37.10.220(a)(8)	**Actuarial Valuations** AS 37.10.220(a)(8)	
		Actuarial Experience Analysis AS 37.10.220(a)(9)			**Actuarial Experience Analysis** AS 37.10.220(a)(9)
Recordkeeper RFP (DRB) *2 yr Extension Approved - Empower* Effective Date: 7/01/2023 (F24)		**Recordkeeper RFP (DRB)** RFP Effective Date: 7/01/2025 (FY26)			
	Auditor (DRB) *2nd Renewal Option - KPMG* Effective Date: 7/01/2024 (FY25)				**Auditor (DRB)** *RFP* Effective Date: 7/01/2028 (FY29)

Updated: 8/31/2022

ALASKA RETIREMENT MANAGEMENT BOARD

STAFF REPORT

Fund Financials – Cash Flow Report
September 15, 2022

Ryan Kauzlarich, Assistant State Comptroller, Department of Revenue

As of July 2022 month-end, total plan assets were as follows: PERS - $23.4 billion, TRS - $10.9 billion, JRS - $279.3 million, NGNMRS - $45.6 million, SBS - $4.6 billion, DCP - $1.1 billion. Total non-participant directed plans totaled $31.9 billion, and participant-directed plans totaled $8.4 billion. Total assets were $40.4 billion.

Year-to-date income was $1.6 billion, and the plans experienced a net contribution of $18.3 million. Total assets were down 4.38% year-to-date.

Internally managed assets totaled $15.6 billion.

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

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

Presented is the Division of Retirement and Benefits (DRB) Supplement to the Treasury Division's Financial Report as of July 31, 2022.

DRB's supplement report expands on the ARMB Financial Report column "Net Contributions (Withdrawals)" located on pages 1 and 2. DRB reports the summary totals of actual employee and employer, State of Alaska, and other revenue items, as well as benefit payments, refunds & disbursements, and combined administrative & investment expenditures. DRB's supplement report presents cash inflows and outflows for the 1-month ended July 31, 2022 (page 1) and for the month of July 2022 (page 2).

Also presented are participant-directed distributions by plan and by type for the 1-month period on page 3. This page includes Tier information on the defined benefit refunds, and vested percentage on defined contribution distributions.

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

ALASKA RETIREMENT MANAGEMENT BOARD
FINANCIAL REPORT

As of July 31, 2022

ALASKA RETIREMENT MANAGEMENT BOARD
Schedule of Investment Income and Changes in Invested Assets by Fund
Fiscal Year-to-Date through July 31, 2022

	Beginning Invested Assets	Investment Income [1]	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income [2]
Public Employees' Retirement System (PERS)						
Defined Benefit Plans:						
Retirement Trust	$ 10,837,529,623	$ 406,435,201	$ (13,740,654)	$ 11,230,224,170	3.62%	3.75%
Retirement Health Care Trust	8,933,550,736	334,002,357	(29,526,869)	9,238,026,224	3.41%	3.74%
Total Defined Benefit Plans	19,771,080,359	740,437,558	(43,267,523)	20,468,250,394	3.53%	3.75%
Defined Contribution Plans:						
Participant Directed Retirement	1,797,124,735	106,296,832	5,530,522	1,908,952,089	6.22%	5.91%
Health Reimbursement Arrangement	689,783,476	25,888,952	4,058,173	719,730,601	4.34%	3.74%
Retiree Medical Plan	207,591,164	7,798,942	1,708,718	217,098,824	4.58%	3.74%
Defined Benefit Occupational Death and Disability:						
Public Employees	43,232,741	1,623,246	313,124	45,169,111	4.48%	3.74%
Police and Firefighters	18,163,141	681,991	104,984	18,950,116	4.33%	3.74%
Total Defined Contribution Plans	2,755,895,257	142,289,963	11,715,521	2,909,900,741	5.59%	5.15%
Total PERS	**22,526,975,616**	**882,727,521**	**(31,552,002)**	**23,378,151,135**	3.78%	3.92%
Teachers' Retirement System (TRS)						
Defined Benefit Plans:						
Retirement Trust	6,044,974,411	228,734,616	52,848,424	6,326,557,451	4.66%	3.77%
Retirement Health Care Trust	3,414,090,333	127,717,415	(7,285,857)	3,534,521,891	3.53%	3.74%
Total Defined Benefit Plans	9,459,064,744	356,452,031	45,562,567	9,861,079,342	4.25%	3.76%
Defined Contribution Plans:						
Participant Directed Retirement	742,357,878	44,277,029	4,369,915	791,004,822	6.55%	5.95%
Health Reimbursement Arrangement	200,887,593	7,552,774	1,432,888	209,873,255	4.47%	3.75%
Retiree Medical Plan	66,714,952	2,508,019	467,840	69,690,811	4.46%	3.75%
Defined Benefit Occupational Death and Disability	6,540,428	245,812	42,566	6,828,806	4.41%	3.75%
Total Defined Contribution Plans	1,016,500,851	54,583,634	6,313,209	1,077,397,694	5.99%	5.35%
Total TRS	**10,475,565,595**	**411,035,665**	**51,875,776**	**10,938,477,036**	4.42%	3.91%
Judicial Retirement System (JRS)						
Defined Benefit Plan Retirement Trust	226,351,741	8,568,233	2,393,881	237,313,855	4.84%	3.77%
Defined Benefit Retirement Health Care Trust	40,479,282	1,515,596	(2,006)	41,992,872	3.74%	3.74%
Total JRS	**266,831,023**	**10,083,829**	**2,391,875**	**279,306,727**	4.68%	3.76%
National Guard/Naval Militia Retirement System (MRS)						
Defined Benefit Plan Retirement Trust	44,237,906	1,528,246	(163,906)	45,602,246	3.08%	3.46%
Other Participant Directed Plans						
Supplemental Annuity Plan	4,412,830,900	217,056,494	(3,102,329)	4,626,785,065	4.85%	4.92%
Deferred Compensation Plan	1,052,309,932	57,737,624	(1,150,593)	1,108,896,963	5.38%	5.49%
Total All Funds	**38,778,750,972**	**1,580,169,379**	**18,298,821**	**40,377,219,172**		
Total Non-Participant Directed	30,774,127,527	1,154,801,400	12,651,306	31,941,580,233	3.79%	3.75%
Total Participant Directed	8,004,623,445	425,367,979	5,647,515	8,435,638,939	5.38%	5.31%
Total All Funds	**$ 38,778,750,972**	**$ 1,580,169,379**	**$ 18,298,821**	**$ 40,377,219,172**	**4.12%**	**4.07%**

Notes:

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

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

ALASKA RETIREMENT MANAGEMENT BOARD
Schedule of Investment Income and Changes in Invested Assets by Fund
For the Month Ended July 31, 2022

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Notes:

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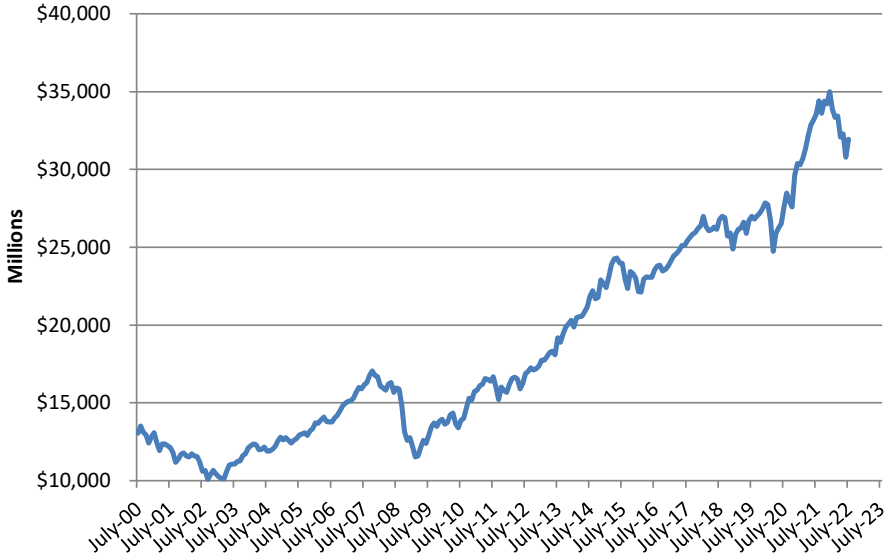
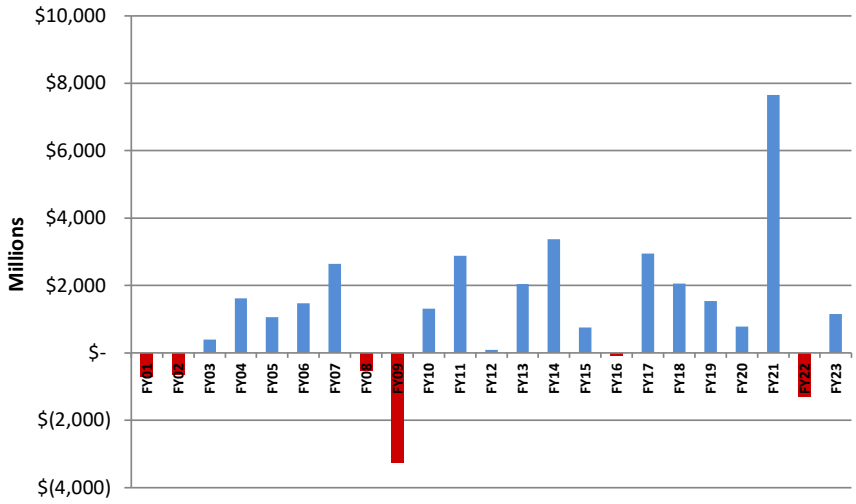
Total Non Participant Directed Assets

As of July 31, 2022

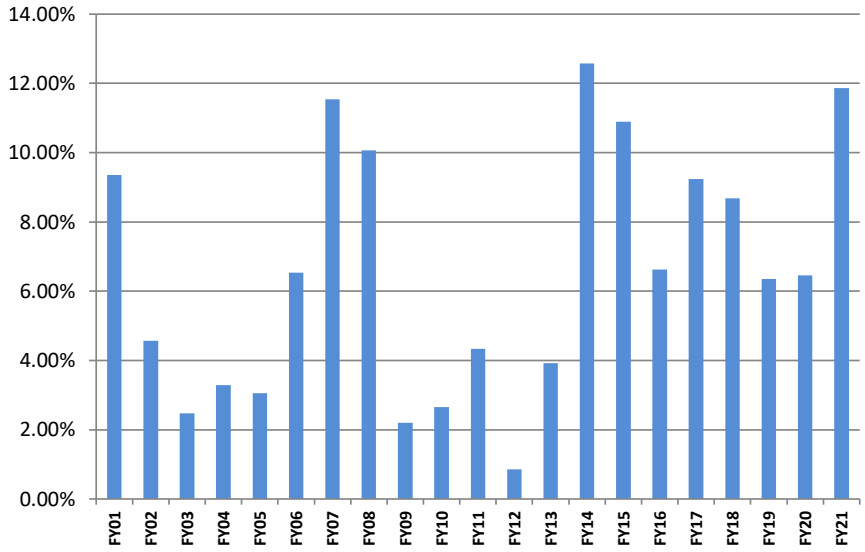
Total Assets History



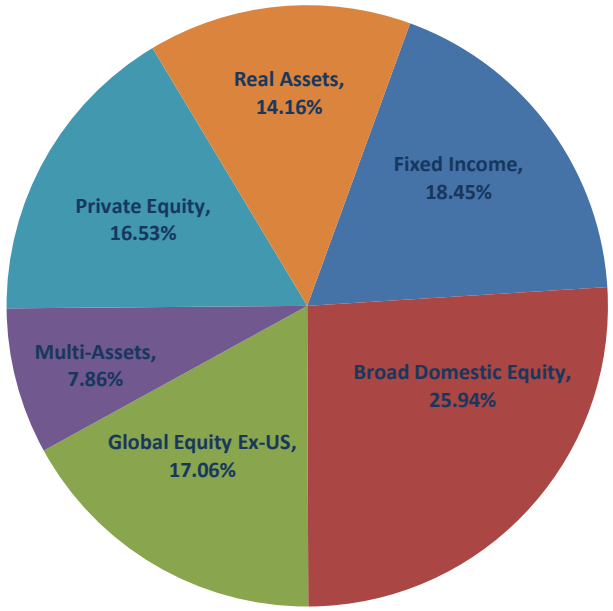
Income by Fiscal Year



5-year Annualized Returns as of Fiscal Year End

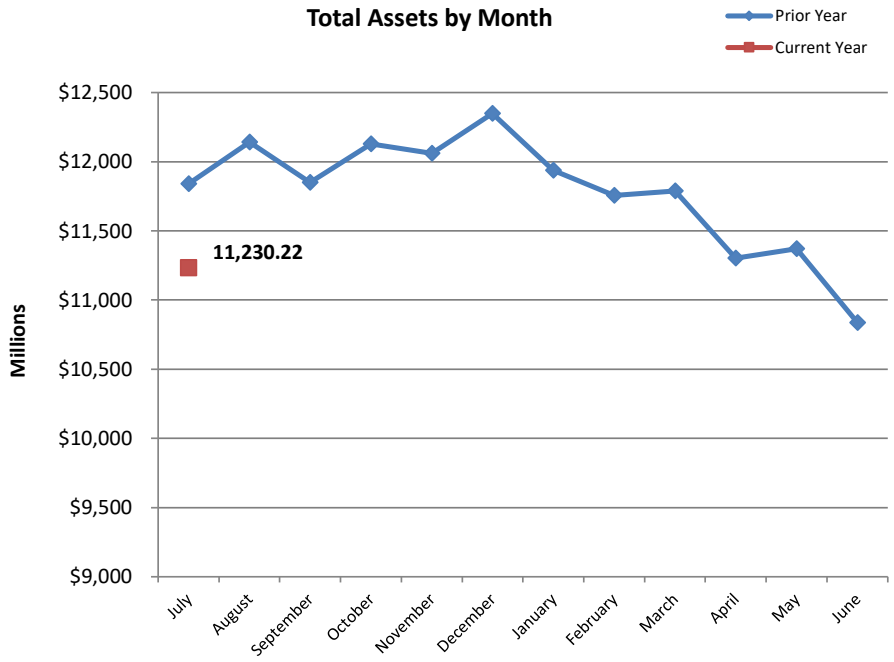


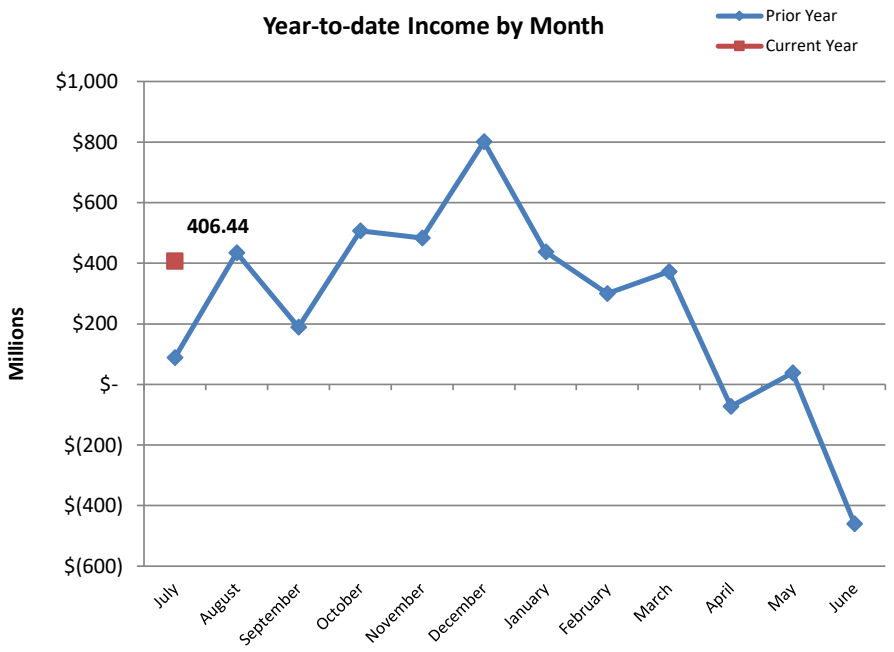
Actual Asset Allocation

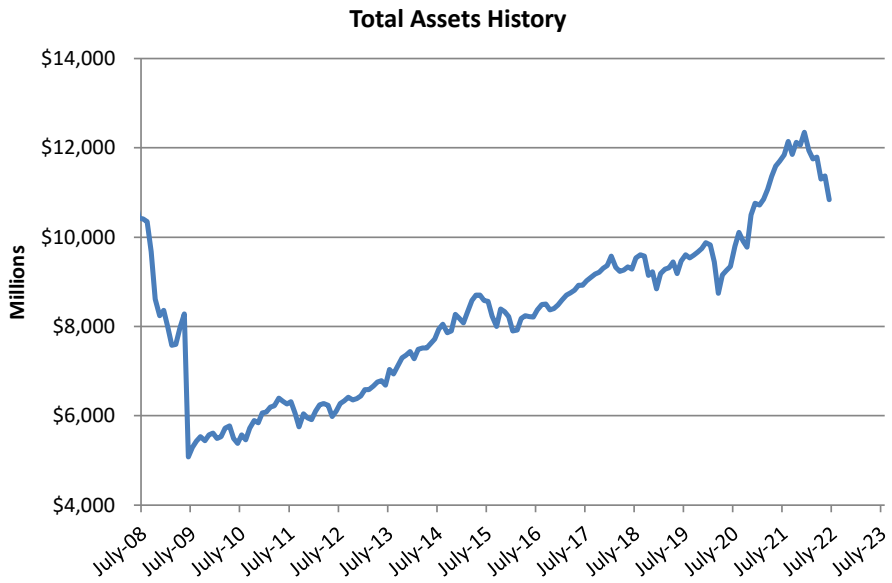


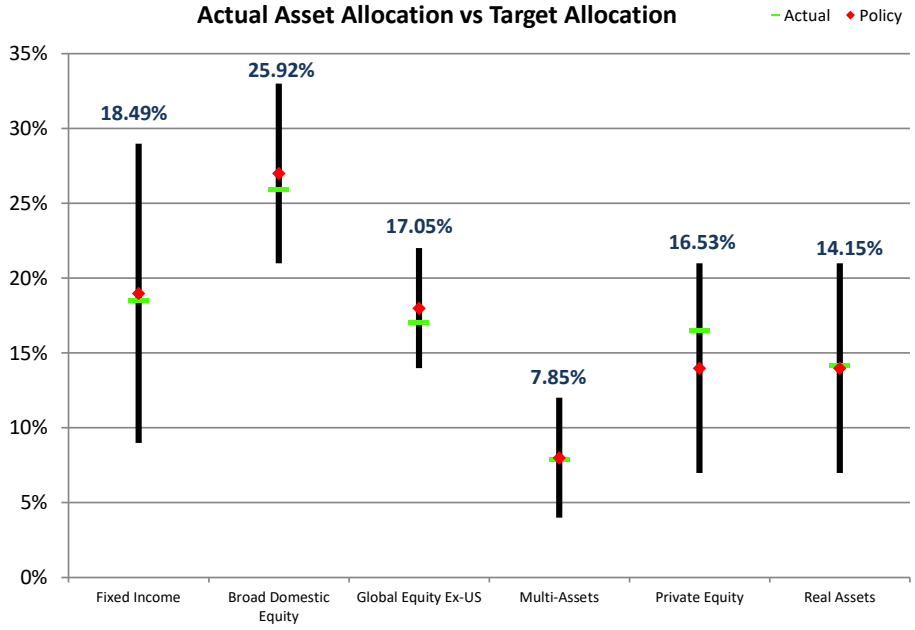
Public Employees' Retirement Pension Trust Fund

Fiscal Year-to-Date through July 31, 2022



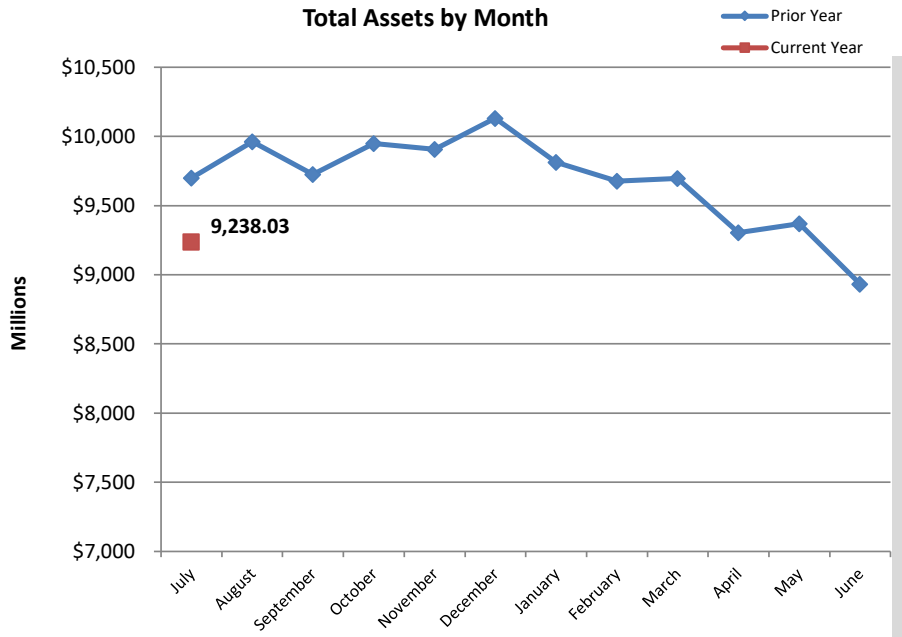


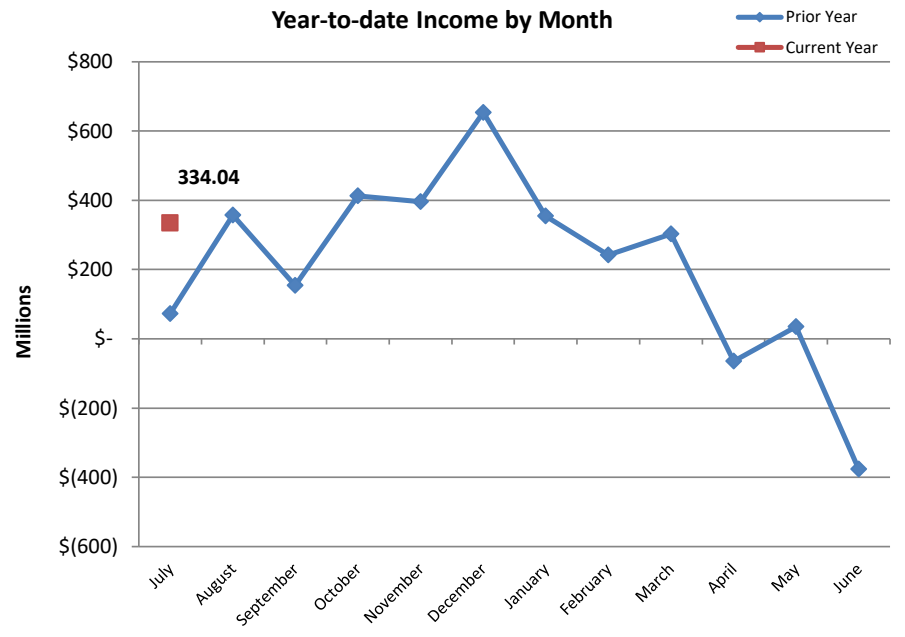


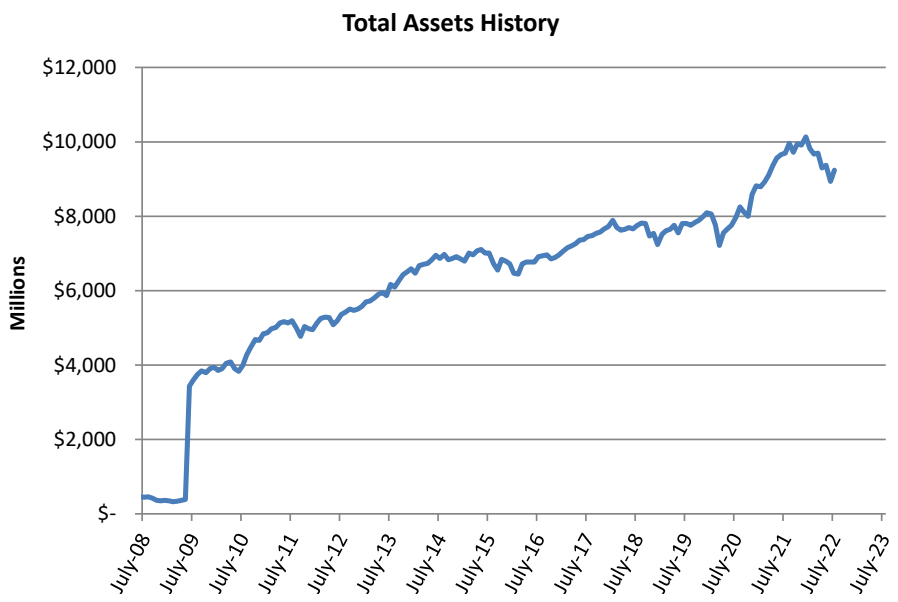


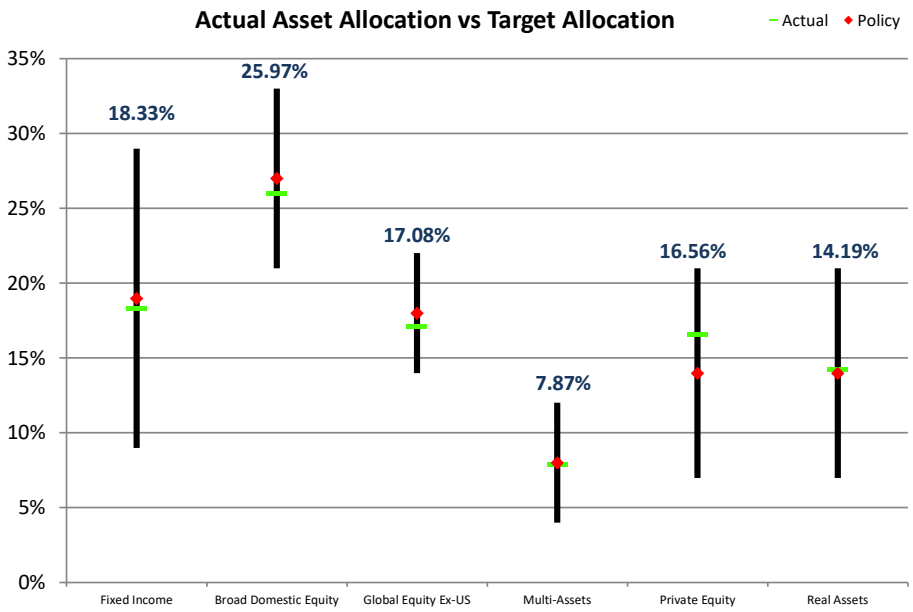
Public Employees' Retirement Health Care Trust Fund

Fiscal Year-to-Date through July 31, 2022



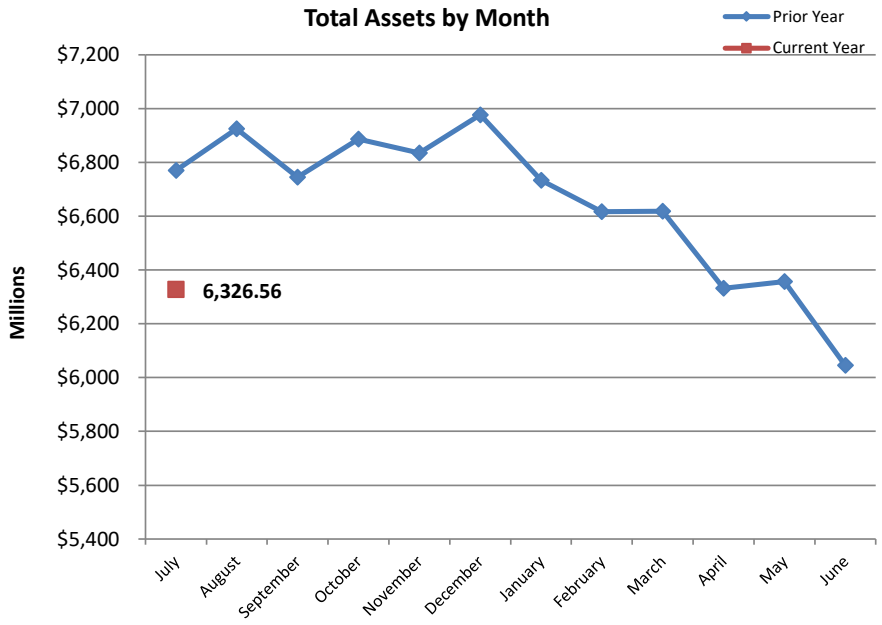


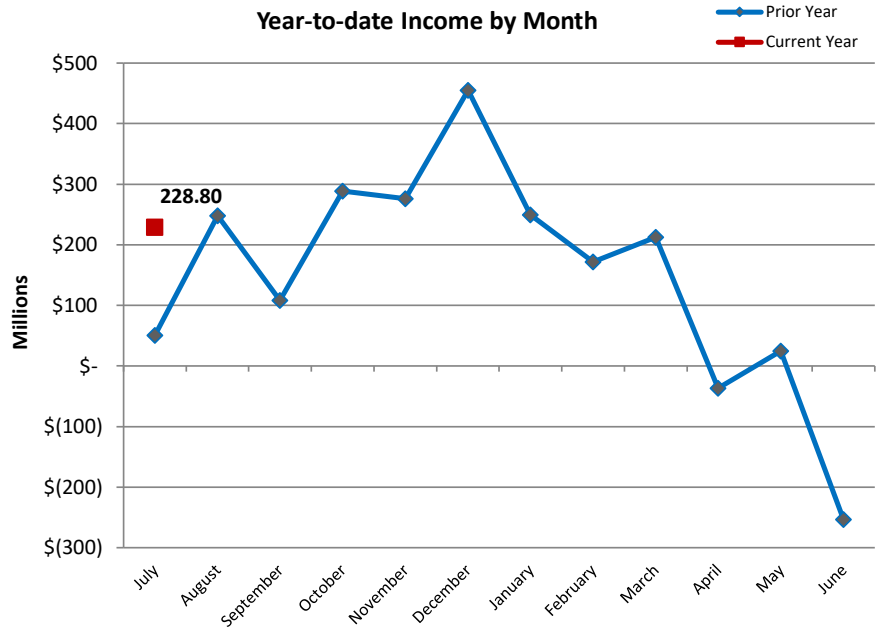


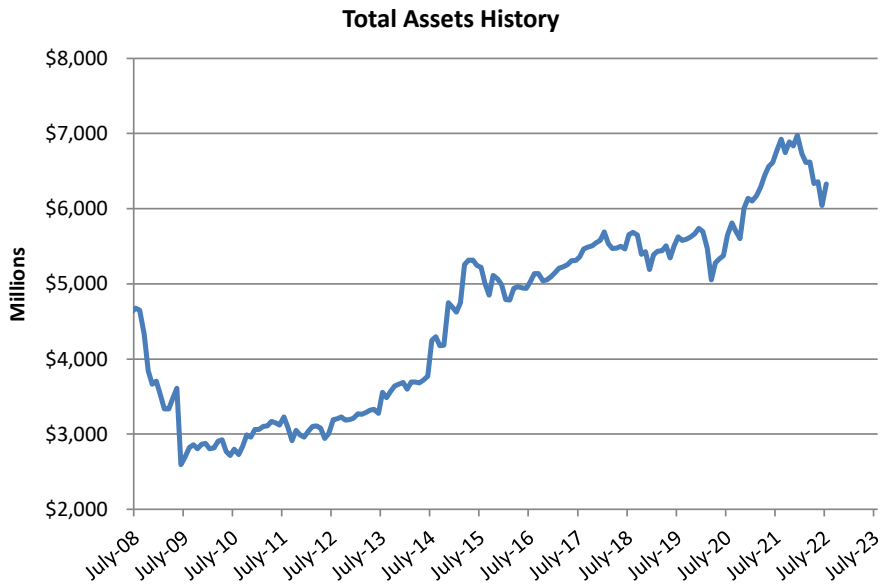


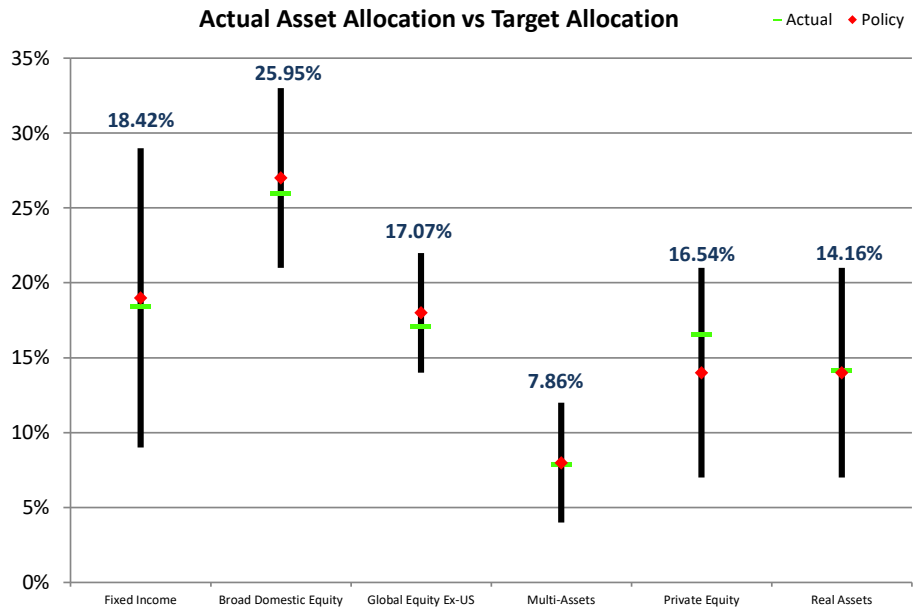
Teachers' Retirement Pension Trust Fund

Fiscal Year-to-Date through July 31, 2022



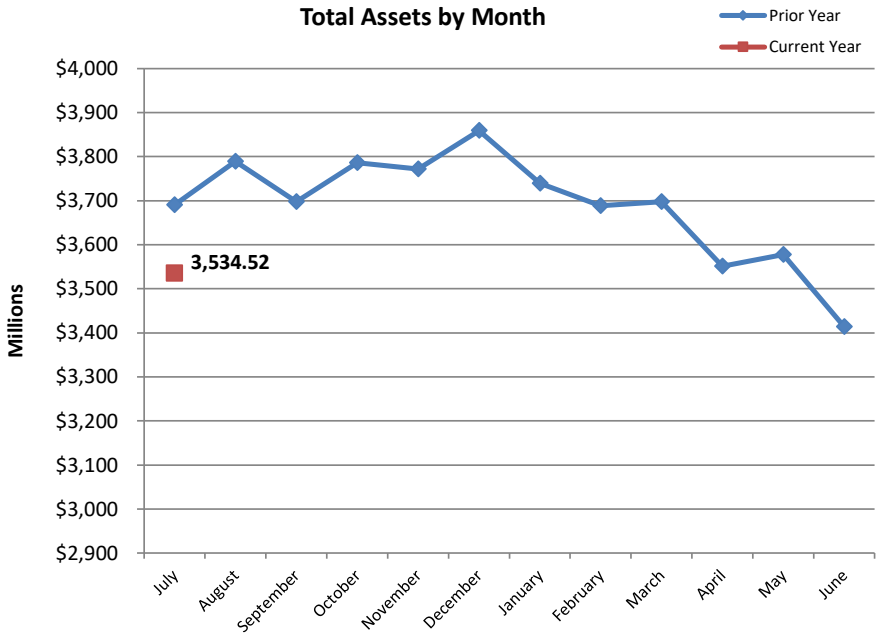


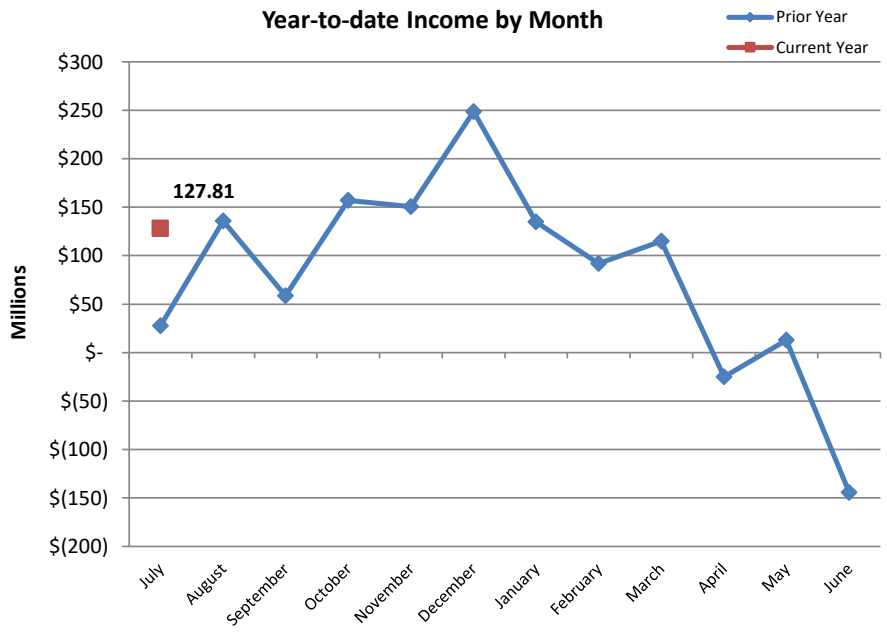


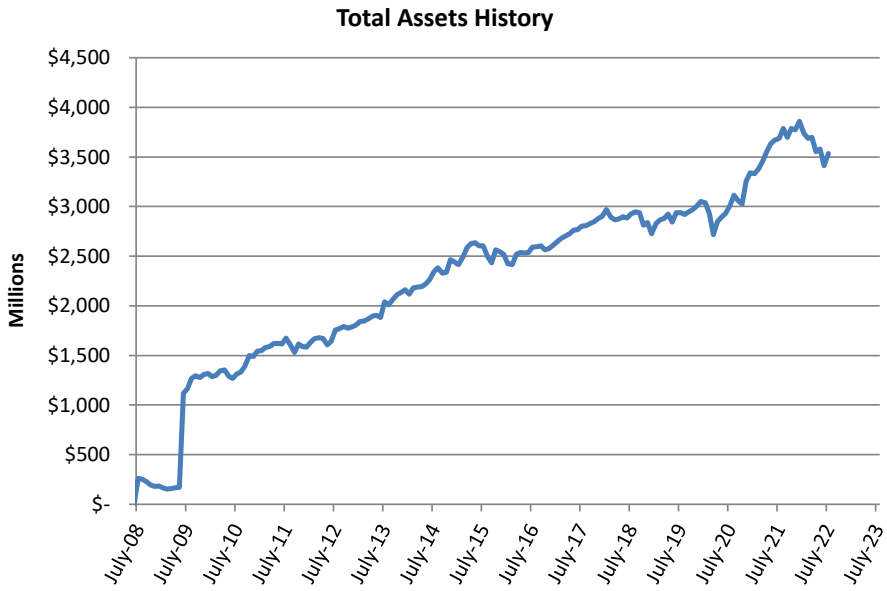


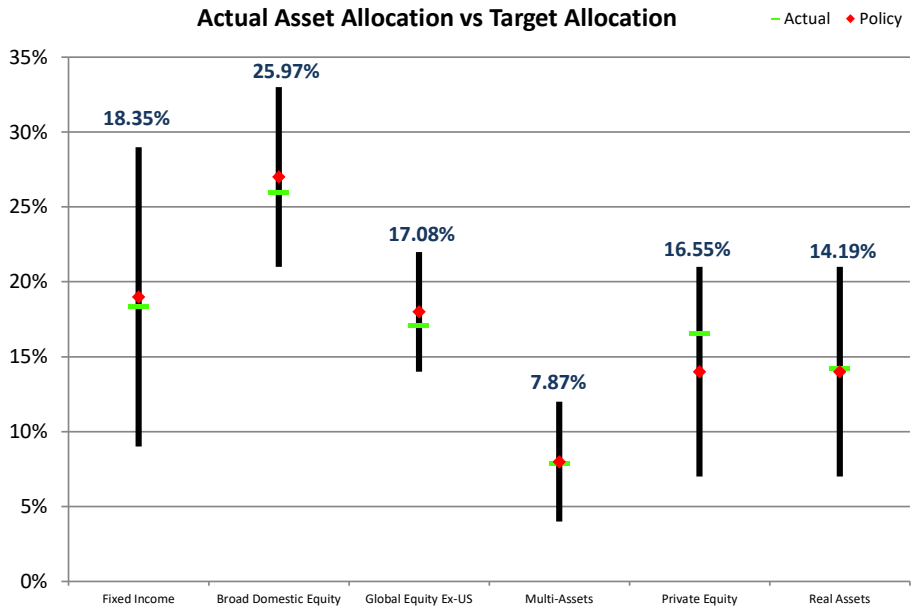
Teachers' Retirement Health Care Trust Fund

Fiscal Year-to-Date through July 31, 2022



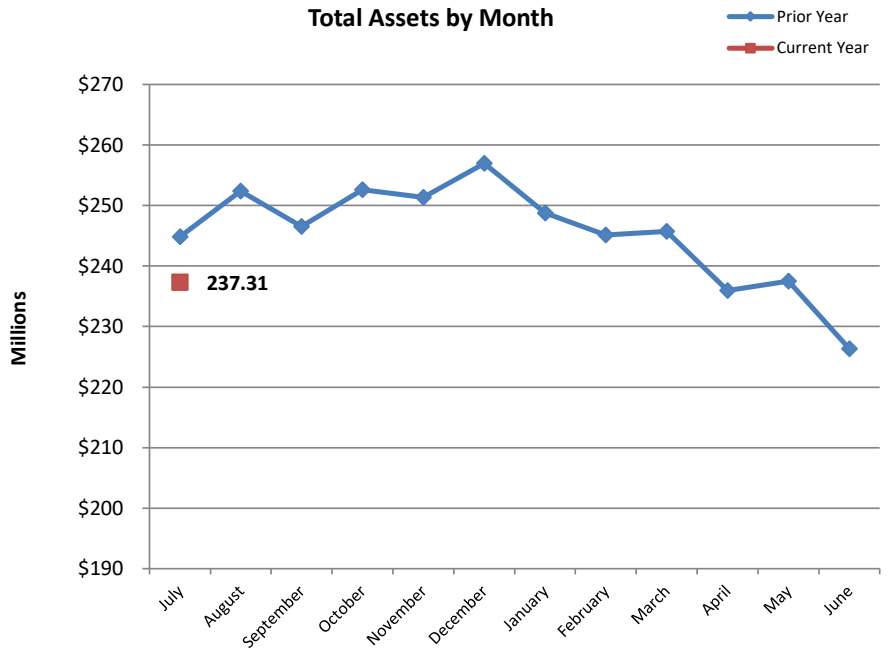


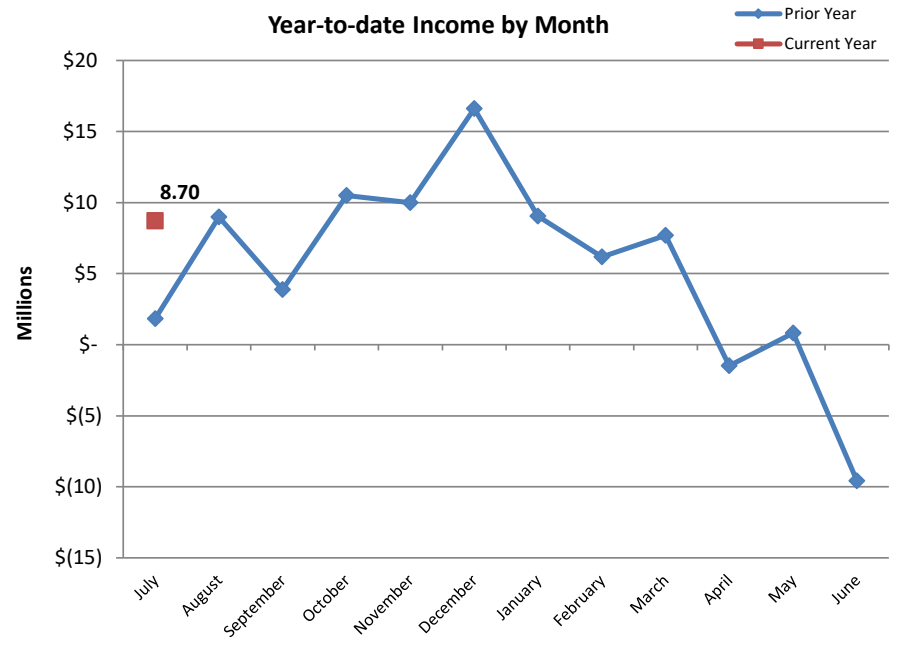


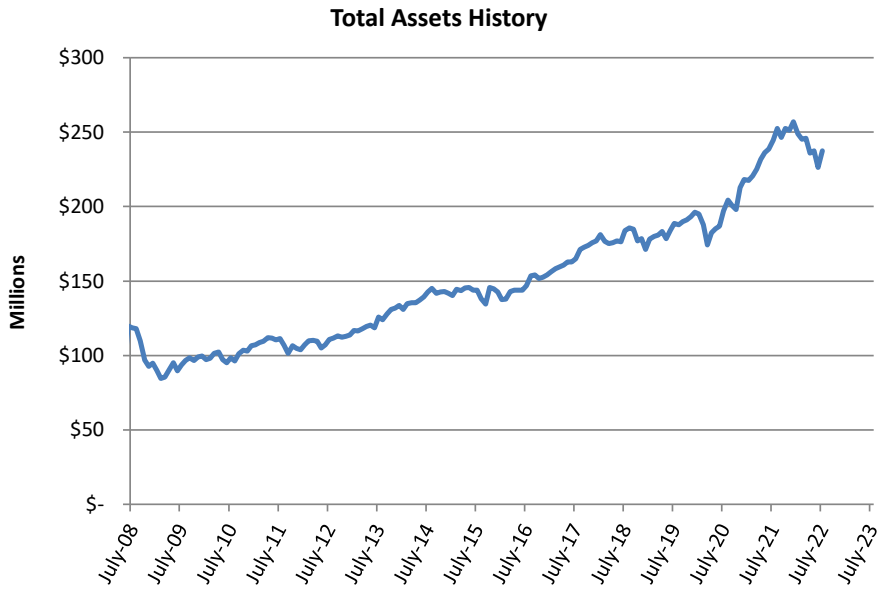


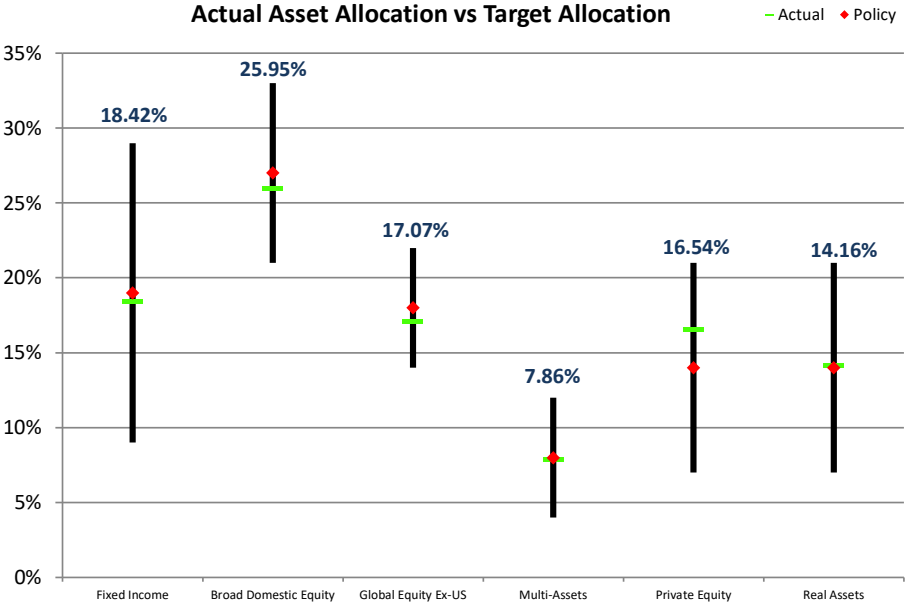
Judicial Retirement Pension Trust Fund

Fiscal Year-to-Date through July 31, 2022



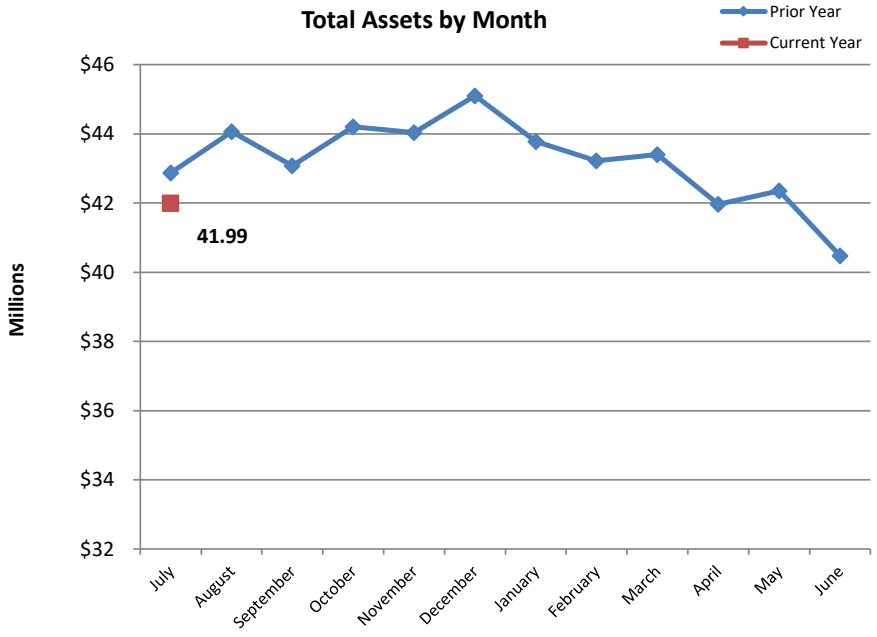


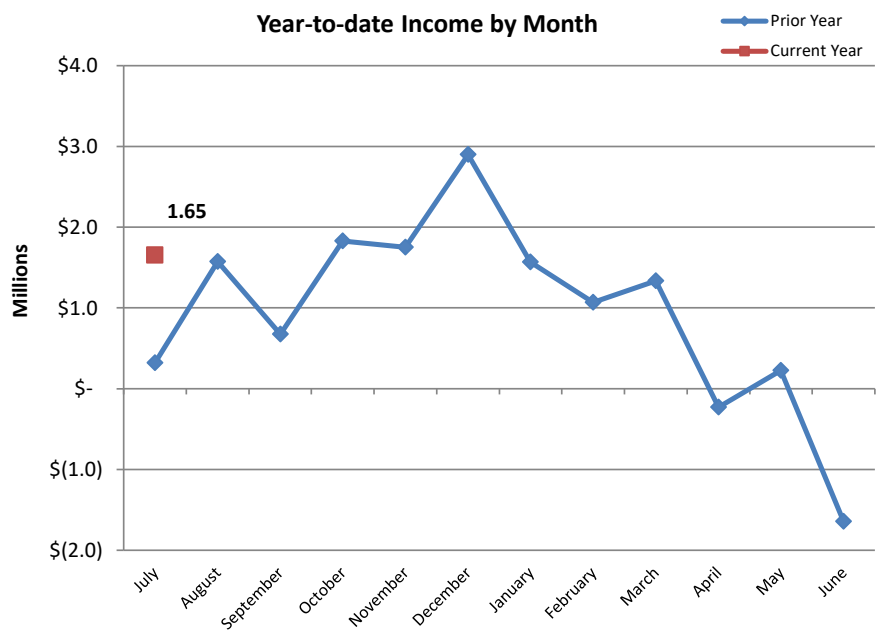


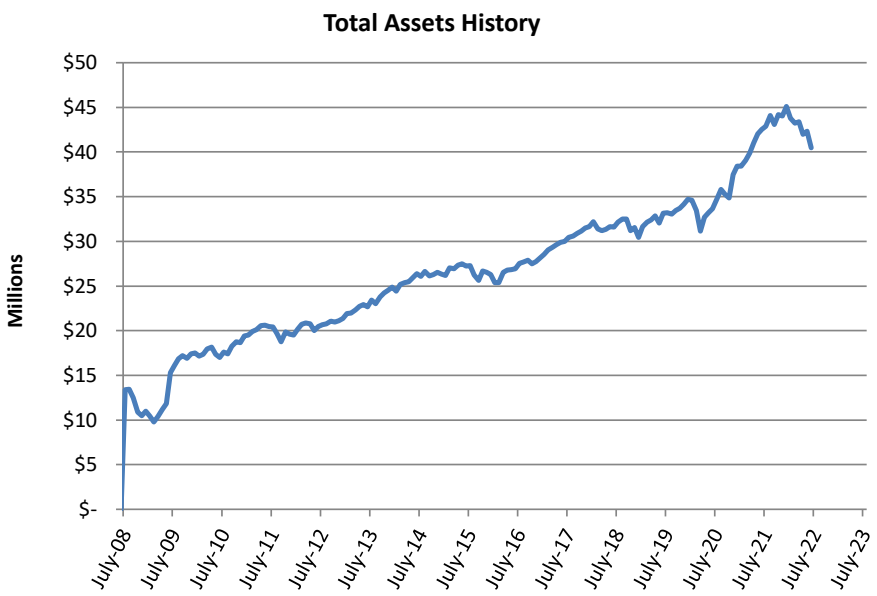


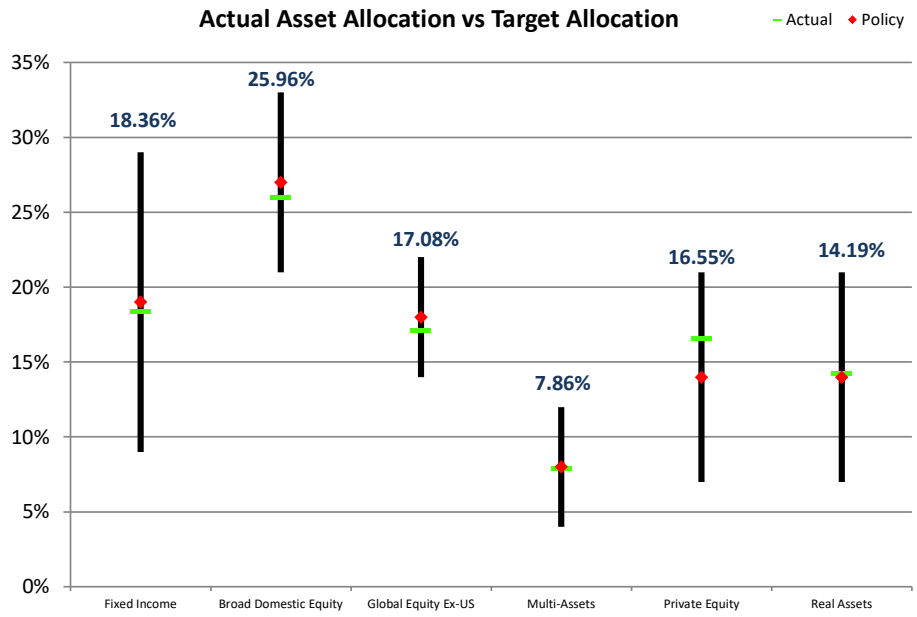
Judicial Retirement Health Care Trust Fund

Fiscal Year-to-Date through July 31, 2022



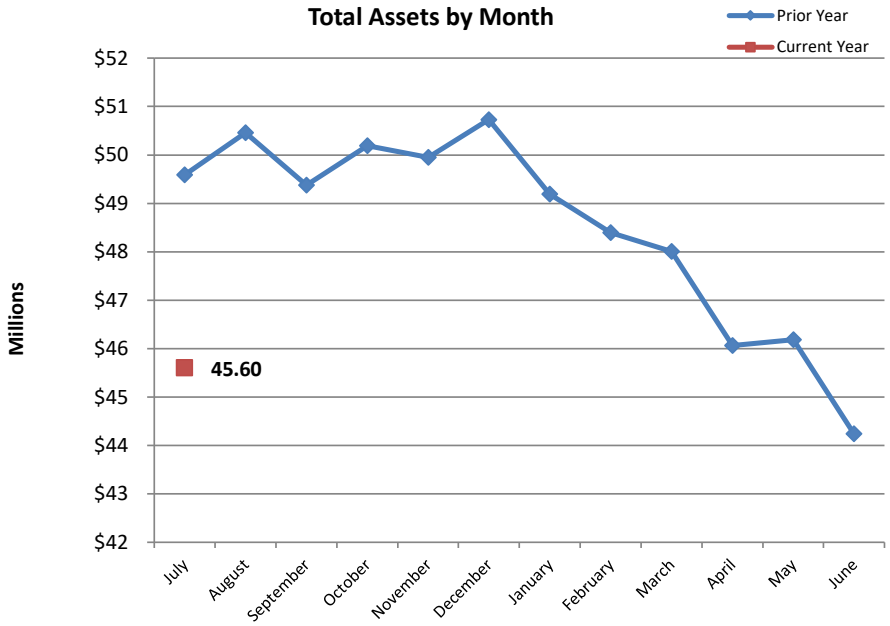


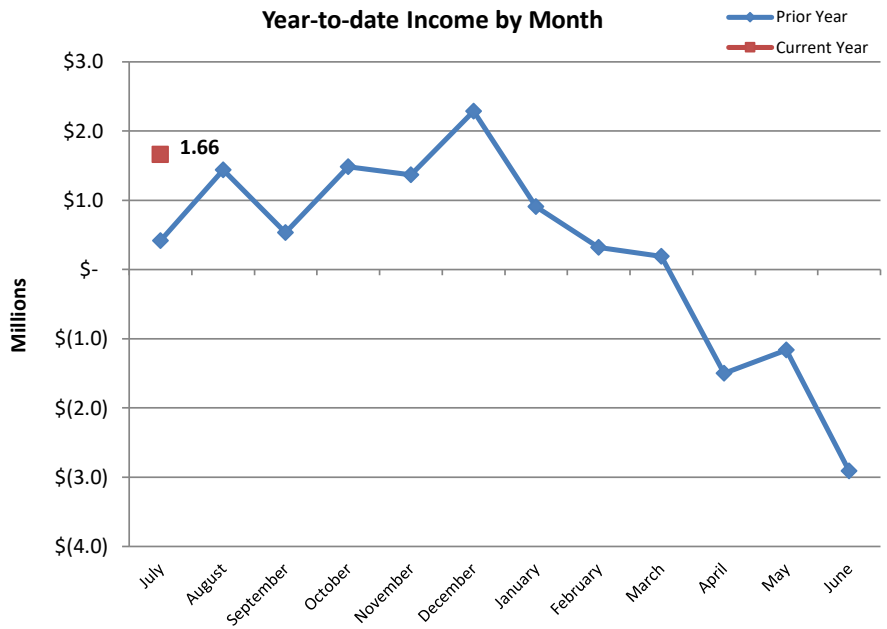


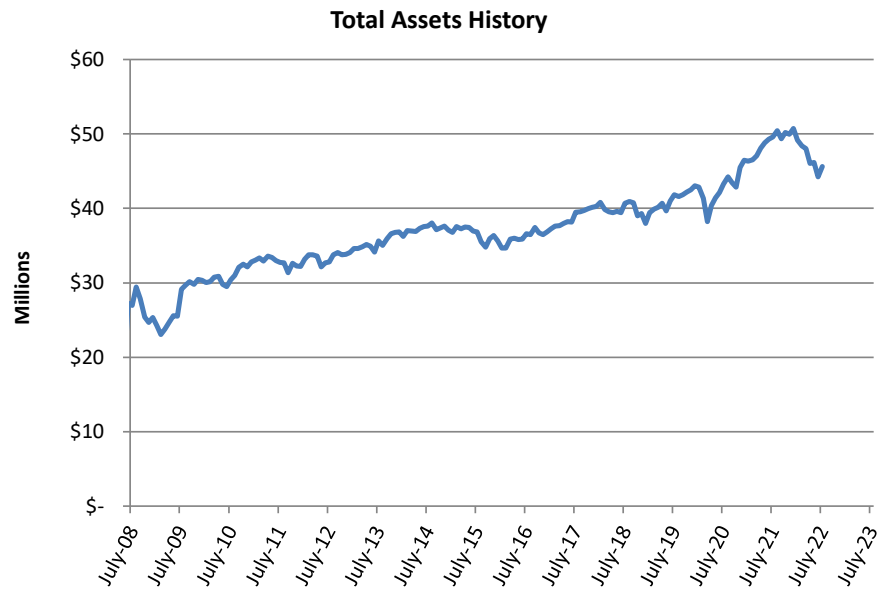


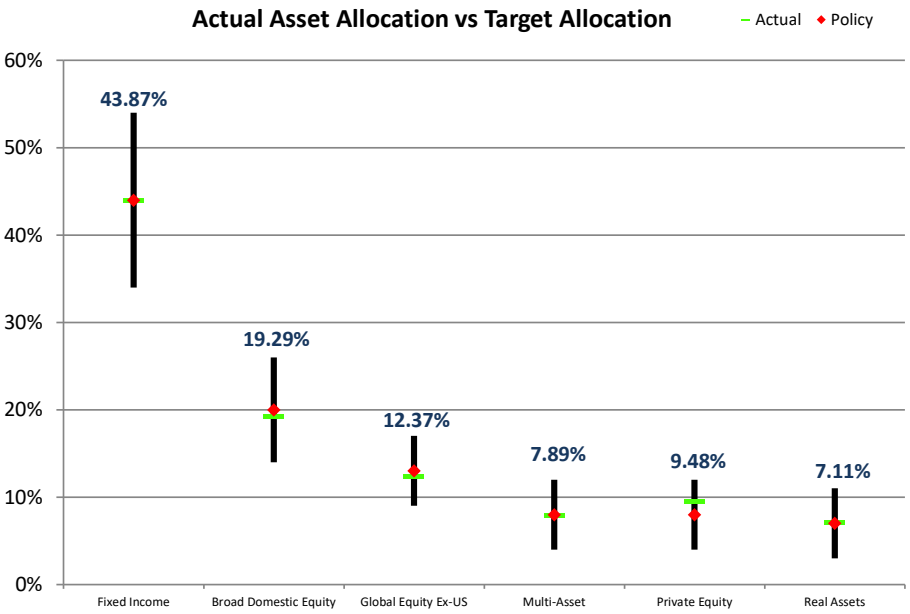
Military Retirement Trust Fund

Fiscal Year-to-Date through July 31, 2022









ALASKA RETIREMENT MANAGEMENT BOARD

Reporting of Funds by Manager

All Non-Participant Directed Plans

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended July 31, 2022

	Beginning Invested Assets	Investment Income	Net Contributions and (Withdrawals)	Ending Invested Assets	% increase (decrease)	% Change due to Investment Income
Cash						
Short-Term Fixed Income Pool	$ 356,322,321	$ 480,513	$ 33,472,438	$ 390,275,272	9.53%	0.13%
Securities Lending Income Pool	86,942	57,002	(86,689)	57,255	-34.15%	130.75%
Total Cash	356,409,263	537,515	33,385,749	390,332,527	9.52%	0.14%
Fixed Income						
Fidelity Inst. Asset Mgmt. High Yield CMBS	206,168,792	1,882,038	-	208,050,830	0.91%	0.91%
Fidelity Institutional Asset Management	891,774,790	28,675,082	-	920,449,872	3.22%	3.22%
MacKay Shields, LLC	1,591,520	178	-	1,591,698	0.01%	0.01%
Total Opportunistic Fixed Income	1,099,535,102	30,557,298	-	1,130,092,400	2.78%	2.78%
ARMB Barclays Agg Bond Fund	4,614,491,986	103,901,322	(345,000,000)	4,373,393,308	-5.22%	2.34%
Total Fixed Income	5,714,027,088	134,458,620	(345,000,000)	5,503,485,708	-3.68%	2.43%
Domestic Equities						
Small Cap						
Passively Managed						
ARMB S&P 600	602,343,171	64,975,123	46,000,000	713,318,294	18.42%	10.39%
Total Passive	602,343,171	64,975,123	46,000,000	713,318,294	18.42%	10.39%
Actively Managed						
Transition Account	-	-	-	-	-	-
Total Active	-	-	-	-	-	-
Total Small Cap	602,343,171	64,975,123	46,000,000	713,318,294	18.42%	10.39%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended July 31, 2022

Large Cap						
Passively Managed						
ARMB S&P 900	4,811,928,225	457,069,224	114,000,000	5,382,997,449	11.87%	9.39%
Total Passive	4,811,928,225	457,069,224	114,000,000	5,382,997,449	11.87%	9.39%
Actively Managed						
ARMB Domestic Residual Assets	133,342	19,346	(128,251)	24,437	-81.67%	27.95%
ARMB Large Cap Multi-Factor	787,060,587	66,349,630	-	853,410,217	8.43%	8.43%
ARMB Scientific Beta	1,237,169,100	97,479,169	127,566	1,334,775,835	7.89%	7.88%
Transition Account	34	-	(34)	-	-100.00%	-
Total Active	2,024,363,063	163,848,145	(719)	2,188,210,489	8.09%	8.09%
Total Large Cap	6,836,291,288	620,917,369	113,999,281	7,571,207,938	10.75%	9.01%
Total Domestic Equity	7,438,634,459	685,892,492	159,999,281	8,284,526,232	11.37%	9.12%
Global Equities						
Large Cap						
Arrow Street Capital	505,683,166	11,186,142	93,000,000	609,869,308	20.60%	2.03%
Baillie Gifford Overseas Limited	411,929,840	38,261,440	-	450,191,280	9.29%	9.29%
Brandes Investment Partners	537,528,583	10,818,783	93,428,767	641,776,133	19.39%	1.85%
Cap Guardian Trust Co	443,445,179	23,635,961	-	467,081,140	5.33%	5.33%
Legal & General	780,445,308	40,678,652	93,143,223	914,267,183	17.15%	4.92%
ARMB Int'l Residual Assets	2,846,278	(63,255)	(201,752)	2,581,271	-9.31%	-2.30%
SSgA MSCI World Ex-US IMI Index Fund	1,355,923,350	71,330,229	-	1,427,253,579	5.26%	5.26%
State Street Global Advisors	-	-	-	-	-	-
Total Large Cap	4,037,801,704	195,847,952	279,370,238	4,513,019,894	11.77%	4.69%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended July 31, 2022

Emerging Markets Equity						
MSCI Emerging Markets Index Fund	642,067,136	(2,114,168)	-	639,952,968	-0.33%	-0.33%
Legal & General Sci-Beta Emerging Markets	261,556,727	4,057,633	31,072,556	296,686,916	13.43%	1.46%
Total Emerging Markets	903,623,863	1,943,465	31,072,556	936,639,884	3.65%	0.21%
Total Global Equities	4,941,425,567	197,791,417	310,442,794	5,449,659,778	10.29%	3.88%
Multi-Asset						
Alternative Equity Strategy						
Alternative Equity Strategies Transition Account	-	-	-	-	-	-
McKinley Global Health Care	316,439,805	23,199,457	-	339,639,262	7.33%	7.33%
Total Alternative Equity Strategy	316,439,805	23,199,457	-	339,639,262	7.33%	7.33%
Alternative Fixed Income						
Crestline Investors, Inc.	671,682,791	5,031,658	(5,478,160)	671,236,289	-0.07%	0.75%
Prisma Capital Partners	65,219,680	6,579	-	65,226,259	0.01%	0.01%
Crestline Specialty Fund	7,715,534	-	(2,835,646)	4,879,888	-36.75%	-
Crestline Specialty Lending Fund II	49,502,869	-	-	49,502,869	-	-
Crestline Specialty Lending Fund III	40,293,869	-	-	40,293,869	-	-
Total Alternative Fixed Income	834,414,743	5,038,237	(8,313,806)	831,139,174	-0.39%	0.61%
Alternative Beta						
Man Group Alternative Risk Premia	350,244,096	1	(75,000,000)	275,244,097	-21.41%	0.00%
Total Alternative Beta	350,244,096	1	(75,000,000)	275,244,097	-21.41%	0.00%
Other Opportunities						
Schroders Insurance Linked Securities	4,305,089	(1,097)	-	4,303,992	-0.03%	-0.03%
Total Other Opportunities	4,305,089	(1,097)	-	4,303,992	-0.03%	-0.03%
Tactical Allocation Strategies						
Fidelity Signals	555,138,056	28,785,304	(50,000,000)	533,923,360	-3.82%	5.43%
PineBridge	565,397,717	10,730,854	(50,000,000)	526,128,571	-6.95%	1.99%
Total Tactical Allocation Strategies	1,120,535,773	39,516,158	(100,000,000)	1,060,051,931	-5.40%	3.69%
Total Multi-Asset	2,625,939,506	67,752,756	(183,313,806)	2,510,378,456	-4.40%	2.67%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended July 31, 2022

Private Equity						
Abbott Capital	2,068,076,220	(1,430,361)	13,747,529	2,080,393,388	0.60%	-0.07%
Advent International GPE Fund VIII-B	32,452,629	-	-	32,452,629	-	-
Advent International GPE Fund IX	40,382,791	-	2,850,273	43,233,064	7.06%	-
Battery Ventures XIV	-	(38,262)	1,000,000	961,738	-	-7.65%
Clearlake Capital Partners VI	41,915,511	-	2,399,977	44,315,488	5.73%	-
Clearlake Capital Partners VII	15,639,855	(516,714)	1,600,225	16,723,366	6.93%	-3.14%
Dyal Capital Partners III	39,077,661	924,529	-	40,002,190	2.37%	2.37%
Dyal Capital Partners IV	32,857,421	425,721	-	33,283,142	1.30%	1.30%
Genstar X	5,452,843	1	1,438,843	6,891,687	26.39%	0.00%
Glendon Opportunities	13,009,087	-	(1,080,317)	11,928,770	-8.30%	-
Glendon Opportunities II	83,150,529	-	3,750,000	86,900,529	4.51%	-
Insight XII	20,622,181	-	-	20,622,181	-	-
KKR Lending Partners II	10,040,986	-	-	10,040,986	-	-
Lexington Capital Partners VIII	36,880,784	-	(195,397)	36,685,387	-0.53%	-
Lexington Partners VII	12,501,476	(139,335)	(528,768)	11,833,373	-5.34%	-1.14%
Merit Capital Partners	11,015,471	-	-	11,015,471	-	-
NB SOF III	14,178,261	(1)	(441,298)	13,736,962	-3.11%	0.00%
NB SOF IV	37,258,975	-	-	37,258,975	-	-
Neuberger Berman Secondary Opportunities Fund V	9,040,512	-	-	9,040,512	-	-
New Mountain Partners IV	10,954,864	-	(80,255)	10,874,609	-0.73%	-
New Mountain Partners V	74,915,527	-	76,782	74,992,309	0.10%	-
New Mountain Partners VI	23,659,725	-	186,402	23,846,127	0.79%	-
NGP XI	43,072,582	-	(885,121)	42,187,461	-2.05%	-
NGP XII	32,231,078	-	-	32,231,078	-	-
Onex Partnership III	4,261,713	-	-	4,261,713	-	-
Pathway Capital Management LLC	2,170,631,959	(13,173,177)	16,590,403	2,174,049,185	0.16%	-0.60%
Resolute Fund III	9,009,247	-	-	9,009,247	-	-
Resolute Fund IV	68,738,054	-	226,817	68,964,871	0.33%	-
Resolute Fund V	44,799,754	-	2,094,049	46,893,803	4.67%	-
Summit Partners GE IX	64,069,052	-	-	64,069,052	-	-
Summit Partners GE X	33,004,587	(2)	27,999	33,032,584	0.08%	0.00%
Warburg Pincus Global Growth Fund	46,943,286	-	-	46,943,286	-	-
Warburg Pincus X	652,985	(1)	-	652,984	0.00%	0.00%
Warburg Pincus XI	14,170,695	-	-	14,170,695	-	-
Warburg Pincus XII	88,056,126	-	(1,256,450)	86,799,676	-1.43%	-
Total Private Equity	5,252,724,427	(13,947,602)	41,521,693	5,280,298,518	0.52%	-0.26%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended July 31, 2022

Real Assets						
Farmland						
UBS Farmland Investors LLC	958,848,621	-	-	958,848,621	-	-
Total Farmland	958,848,621	-	-	958,848,621	-	-
Timber						
Project Pearl	7,024,320	-	-	7,024,320	-	-
Timberland Invt Resource LLC	376,059,884	-	(4,500,000)	371,559,884	-1.20%	-
Total Timber	383,084,204	-	(4,500,000)	378,584,204	-1.17%	-
Energy						
EIG Energy Fund XIV-A	3,760,187	(14,816)	-	3,745,371	-0.39%	-0.39%
EIG Energy Fund XV	8,100,557	368,257	-	8,468,814	4.55%	4.55%
EIG Energy Fund XVI	50,232,946	1,261,871	-	51,494,817	2.51%	2.51%
Total Energy	62,093,690	1,615,312	-	63,709,002	2.60%	2.60%
REIT						
REIT Transition Account	-	-	-	-	-	-
ARMB REIT	504,912,553	43,274,266	-	548,186,819	8.57%	8.57%
Total REIT	504,912,553	43,274,266	-	548,186,819	8.57%	8.57%
Infrastructure Private						
IFM Global Infrastructure Fund-Private	635,969,047	15,635,355	-	651,604,402	2.46%	2.46%
JP Morgan Infrastructure Fund-Private	145,853,745	-	-	145,853,745	-	-
Total Infrastructure Private	781,822,792	15,635,355	-	797,458,147	2.00%	2.00%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended July 31, 2022

Real Estate						
Core Commingled Accounts						
BlackRock US Core Property Fund	422,035,838	17,158,557	-	439,194,395	4.07%	4.07%
JP Morgan	195,212,814	3,223,640	(1,093,710)	197,342,744	1.09%	1.66%
UBS Trumbull Property Fund	40,232,794	1,532,354	(1,422,392)	40,342,756	0.27%	3.88%
Total Core Commingled	657,481,446	21,914,551	(2,516,102)	676,879,895	2.95%	3.34%
Core Separate Accounts						
Sentinel Separate Account	312,834,978	-	(811,939)	312,023,039	-0.26%	-
UBS Realty	664,740,752	-	879,792	665,620,544	0.13%	-
Total Core Separate	977,575,730	-	67,853	977,643,583	0.01%	-
Non-Core Commingled Accounts						
Almanac Realty Securities V	49,779	-	-	49,779	-	-
Almanac Realty Securities VII	30,851,084	-	(822,224)	30,028,860	-2.67%	-
Almanac Realty Securities VIII	26,081,527	-	543,619	26,625,146	2.08%	-
Almanac Realty Securities IX	741,505	(123,282)	3,710,470	4,328,693	483.77%	-4.75%
Clarion Ventures 4	16,555,502	-	-	16,555,502	-	-
Colony Investors VIII, L.P.	83,615	-	-	83,615	-	-
ING Clarion Development Ventures III	1,006,886	-	-	1,006,886	-	-
KKR Real Estate Partners Americas L.P.	3,717,791	-	-	3,717,791	-	-
KKR Real Estate Partners Americas II	8,629,980	-	-	8,629,980	-	-
KKR Real Estate Partners Americas III	28,242,438	-	(868,021)	27,374,417	-3.07%	-
Silverpeak Legacy Pension Partners II, L.P.	892,937	-	-	892,937	-	-
Silverpeak Legacy Pension Partners III, L.P.	2,145,563	-	-	2,145,563	-	-
Tishman Speyer Real Estate Venture VI	5,723	-	-	5,723	-	-
Tishman Speyer Real Estate Venture VII	143,851	-	-	143,851	-	-
Total Non-Core Commingled	119,148,181	(123,282)	2,563,844	121,588,743	2.05%	-0.10%
Total Real Estate	1,754,205,357	21,791,269	115,595	1,776,112,221	1.25%	1.24%
Total Real Assets	4,444,967,217	82,316,202	(4,384,405)	4,522,899,014	1.75%	1.85%
Total Assets	$ 30,774,127,527	$ 1,154,801,400	$ 12,651,306	$ 31,941,580,233	3.79%	3.75%

ALASKA RETIREMENT MANAGEMENT BOARD

Reporting of Funds by Manager

Participant Directed Plans

Supplemental Annuity Plan
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
July 31, 2022

Participant Options	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (1)
T. Rowe Price							
Stable Value Fund	$ 510,407,996	$ 731,276	$ (1,689,035)	$ 132,532	$ 509,582,769	-0.16%	0.14%
Small Cap Stock Fund	197,175,055	18,546,704	(789,607)	1,820,846	216,752,998	9.93%	9.38%
Alaska Balanced Trust	1,046,166,484	37,377,158	(2,462,607)	(3,675,253)	1,077,405,782	2.99%	3.58%
Long Term Balanced Fund	678,647,273	33,946,299	(1,491,776)	2,379,914	713,481,710	5.13%	5.00%
AK Target Date 2010 Trust	9,088,820	312,524	(45,050)	320	9,356,614	2.95%	3.45%
AK Target Date 2015 Trust	66,991,557	2,548,072	(174,338)	(94,990)	69,270,301	3.40%	3.81%
AK Target Date 2020 Trust	77,642,642	3,353,528	(305,112)	(191,357)	80,499,701	3.68%	4.33%
AK Target Date 2025 Trust	100,684,027	5,029,886	315,078	73,345	106,102,336	5.38%	4.99%
AK Target Date 2030 Trust	89,771,386	4,934,444	387,631	(250,006)	94,843,455	5.65%	5.49%
AK Target Date 2035 Trust	89,117,020	5,336,988	455,432	111,941	95,021,381	6.63%	5.97%
AK Target Date 2040 Trust	83,464,519	5,287,175	390,225	(298,905)	88,843,014	6.44%	6.33%
AK Target Date 2045 Trust	101,237,406	6,712,208	558,072	36,509	108,544,195	7.22%	6.61%
AK Target Date 2050 Trust	111,621,526	7,523,692	833,232	(230,910)	119,747,540	7.28%	6.72%
AK Target Date 2055 Trust	117,453,228	7,942,560	1,293,451	(142,244)	126,546,995	7.74%	6.73%
AK Target Date 2060 Trust	9,485,756	656,884	426,886	(41,001)	10,528,525	10.99%	6.79%
AK Target Date 2065 Trust	4,570,200	322,278	278,990	(44,147)	5,127,321	12.19%	6.88%
Total Investments with T. Rowe Price	3,293,524,895	140,561,676	(2,018,528)	(413,406)	3,431,654,637		
JP Morgan							
JPMorgan SmartRetirement Blend 2015 R6	922,081	38,675	1,586	(1,926)	960,416	4.16%	4.20%
JPMorgan SmartRetirement Blend 2020 R6	135,021	5,687	705	-	141,413	4.73%	4.20%
Total Investments with JP Morgan	1,057,102	44,362	2,291	(1,926)	1,101,829		
State Street Global Advisors							
Money Market	69,734,701	80,847	(243,905)	678,105	70,249,748	0.74%	0.12%
S&P 500 Stock Index	434,903,642	40,293,029	(137,705)	3,797,136	478,856,102	10.11%	9.23%
Russell 3000 Index	131,132,146	12,245,429	(8,546)	(785,642)	142,583,387	8.73%	9.37%
World Equity Ex-US Index	72,688,073	2,844,474	9,339	3,806,192	79,348,078	9.16%	3.81%
Total Investments with SSgA	708,458,562	55,463,779	(380,817)	7,495,791	771,037,315		
BlackRock							
Passive U.S. Bond Index Fund	141,740,974	3,409,722	(357,085)	(2,334,715)	142,458,896	0.51%	2.43%
Strategic Completion Fund	37,325,465	2,014,525	(255,756)	266,715	39,350,949	5.43%	5.40%
Total Investments with BlackRock	179,066,439	5,424,247	(612,841)	(2,068,000)	181,809,845		
Brandes and Baillie Gifford							
AK International Equity Fund	95,881,572	4,528,573	5,168	(2,851,201)	97,564,112	1.75%	4.79%
Northern Trust							
Environmental, Social, and Governance Fund	134,842,330	11,033,857	(97,602)	(2,161,258)	143,617,327	6.51%	8.25%
Total All Funds	$ 4,412,830,900	$ 217,056,494	$ (3,102,329)	$ -	$ 4,626,785,065	4.85%	4.92%

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

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

Supplemental Annuity Plan
Schedule of Invested Assets with
Schedule of Investment Income and Changes in Invested Assets
By Month Through the Month Ended
July 31, 2022
$ (Thousands)

Invested Assets (at fair value)		**July**
Investments with T. Rowe Price		
Stable Value Fund	$	509,583
Small Cap Stock Fund		216,753
Alaska Balanced Trust		1,077,406
Long Term Balanced Fund		713,482
AK Target Date 2010 Trust		9,357
AK Target Date 2015 Trust		69,270
AK Target Date 2020 Trust		80,500
AK Target Date 2025 Trust		106,102
AK Target Date 2030 Trust		94,843
AK Target Date 2035 Trust		95,021
AK Target Date 2040 Trust		88,843
AK Target Date 2045 Trust		108,544
AK Target Date 2050 Trust		119,748
AK Target Date 2055 Trust		126,547
AK Target Date 2060 Trust		10,529
AK Target Date 2065 Trust		5,127
Investments with JP Morgan		
JPMorgan SmartRetirement Blend 2015 R6		960
JPMorgan SmartRetirement Blend 2020 R6		141
Investments with State Street Global Advisors		
Money Market		70,250
S&P 500 Stock Index		478,856
Russell 3000 Index		142,583
World Equity Ex-US Index		79,348
Investments with BlackRock		
Passive U.S. Bond Index Fund		142,459
Strategic Completion Fund		39,351
Investments with Brandes and Baillie Gifford		
AK International Equity Fund		97,564
Investments with Northern Trust		
Environmental, Social, and Governance Fund		143,617
Total Invested Assets	**$**	**4,626,785**

Change in Invested Assets		
Beginning Assets	$	4,412,831
Investment Earnings		217,056
Net Contributions (Withdrawals)		(3,102)
Ending Invested Assets	**$**	**4,626,785**

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

Deferred Compensation Plan
Schedule of Invested Assets and Changes in Invested Assets
for the Month Ended
July 31, 2022

Participant Options	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (1)
T. Rowe Price							
Stable Value Fund	$ 205,515,129	$ 294,422	$ (1,007,658)	$ (74,317)	$ 204,727,576	-0.38%	0.14%
Small Cap Stock Fund	110,195,614	10,332,386	(172,500)	130,736	120,486,236	9.34%	9.38%
Alaska Balanced Trust	42,522,659	1,508,556	(10,880)	(714,347)	43,305,988	1.84%	3.58%
Long Term Balanced Fund	82,616,737	4,147,831	(189,608)	791,975	87,366,935	5.75%	5.00%
AK Target Date 2010 Trust	3,134,006	107,063	7,117	(141,106)	3,107,080	-0.86%	3.49%
AK Target Date 2015 Trust	8,814,601	336,556	5,157	-	9,156,314	3.88%	3.82%
AK Target Date 2020 Trust	21,429,344	921,636	(201,014)	31,779	22,181,745	3.51%	4.32%
AK Target Date 2025 Trust	26,370,168	1,316,812	94,162	(58,105)	27,723,037	5.13%	4.99%
AK Target Date 2030 Trust	17,323,696	955,254	103,972	60,060	18,442,982	6.46%	5.49%
AK Target Date 2035 Trust	13,152,410	787,070	117,393	(70,772)	13,986,101	6.34%	5.97%
AK Target Date 2040 Trust	12,100,233	766,961	107,925	(57,667)	12,917,452	6.75%	6.33%
AK Target Date 2045 Trust	9,302,838	620,928	121,709	12,742	10,058,217	8.12%	6.63%
AK Target Date 2050 Trust	7,531,422	511,359	121,231	(2,246)	8,161,766	8.37%	6.74%
AK Target Date 2055 Trust	6,078,156	412,092	98,879	(12,468)	6,576,659	8.20%	6.73%
AK Target Date 2060 Trust	1,408,421	95,332	18,305	(3,265)	1,518,793	7.84%	6.73%
AK Target Date 2065 Trust	760,825	52,331	13,974	18,532	845,662	11.15%	6.73%
Total Investments with T. Rowe Price	568,256,259	23,166,589	(771,836)	(88,469)	590,562,543		
JP Morgan							
JPMorgan SmartRetirement Blend 2015 R6	6,165	264	210	-	6,639	7.69%	4.21%
JPMorgan SmartRetirement Blend 2020 R6	85,620	3,596	2,898	(2,079)	90,035	5.16%	4.18%
Total Investments with JP Morgan	91,785	3,860	3,108	(2,079)	96,674		
State Street Global Advisors							
Money Market	20,414,399	23,773	(52,002)	207,647	20,593,817	0.88%	0.12%
S&P 500 Stock Index	229,832,246	21,236,939	(295,071)	755,454	251,529,568	9.44%	9.23%
Russell 3000 Index	48,068,148	4,508,012	51,213	(74,565)	52,552,808	9.33%	9.38%
World Equity Ex-US Index	23,035,205	897,745	27,508	1,182,859	25,143,317	9.15%	3.80%
Total Investments with SSgA	321,349,998	26,666,469	(268,352)	2,071,395	349,819,510		
BlackRock							
Passive U.S. Bond Index Fund	64,136,060	1,550,499	(138,698)	(659,568)	64,888,293	1.17%	2.43%
Strategic Completion Fund	15,310,527	817,079	(261)	(109,227)	16,018,118	4.62%	5.36%
Total Investments with BlackRock	79,446,587	2,367,578	(138,959)	(768,795)	80,906,411		
Brandes and Baillie Gifford							
AK International Equity Fund	37,486,539	1,787,075	118,216	(727,416)	38,664,414	3.14%	4.81%
Northern Trust							
Environmental, Social, and Governance Fund	45,678,764	3,746,053	(92,770)	(484,636)	48,847,411	6.94%	8.25%
Total All Funds	$ 1,052,309,932	$ 57,737,624	$ (1,150,593)	$ -	$ 1,108,896,963	5.38%	5.49%

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

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

Deferred Compensation Plan
Schedule of Invested Assets with
Schedule of Investment Income and Changes in Invested Assets
By Month Through the Month Ended
July 31, 2022
$ (Thousands)

Invested Assets (at fair value)		**July**
Investments with T. Rowe Price		
Stable Value Fund	$	204,728
Small Cap Stock Fund		120,486
Alaska Balanced Trust		43,306
Long Term Balanced Fund		87,367
AK Target Date 2010 Trust		3,107
AK Target Date 2015 Trust		9,156
AK Target Date 2020 Trust		22,182
AK Target Date 2025 Trust		27,723
AK Target Date 2030 Trust		18,443
AK Target Date 2035 Trust		13,986
AK Target Date 2040 Trust		12,917
AK Target Date 2045 Trust		10,058
AK Target Date 2050 Trust		8,162
AK Target Date 2055 Trust		6,577
AK Target Date 2060 Trust		1,519
AK Target Date 2065 Trust		846
Investments with JP Morgan		
JPMorgan SmartRetirement Blend 2015 R6		7
JPMorgan SmartRetirement Blend 2020 R6		90
Investments with State Street Global Advisors		
Money Market		20,594
S&P 500 Stock Index		251,530
Russell 3000 Index		52,553
World Equity Ex-US Index		25,143
Investments with BlackRock		
Passive U.S. Bond Index Fund		64,888
Strategic Completion Fund		16,018
Investments with Brandes and Baillie Gifford		
AK International Equity Fund		38,664
Investments with Northern Trust		
Environmental, Social, and Governance Fund		48,847
Total Invested Assets	**$**	**1,108,897**

Change in Invested Assets		
Beginning Assets	$	1,052,310
Investment Earnings		57,738
Net Contributions (Withdrawals)		(1,151)
Ending Invested Assets	**$**	**1,108,897**

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

Defined Contribution Retirement - Participant Directed PERS
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
July 31, 2022

Participant Options	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (1)
T. Rowe Price							
Stable Value Fund	$ 119,504,550	$ 169,277	$ (195,411)	$ (2,511,660)	$ 116,966,756	-2.12%	0.14%
Small Cap Stock Fund	90,666,191	8,569,004	(18,102)	1,356,123	100,573,216	10.93%	9.38%
Alaska Balanced Trust	51,959,727	1,829,637	(101,083)	(1,226,296)	52,461,985	0.97%	3.57%
Long Term Balanced Fund	32,487,255	1,711,875	3,470	2,494,008	36,696,608	12.96%	5.07%
AK Target Date 2010 Trust	2,870,244	99,280	(3,945)	1,833	2,967,412	3.39%	3.46%
AK Target Date 2015 Trust	10,864,659	415,630	28,489	1	11,308,779	4.09%	3.82%
AK Target Date 2020 Trust	39,936,665	1,704,960	(758,984)	(195,267)	40,687,374	1.88%	4.32%
AK Target Date 2025 Trust	76,747,407	3,819,670	54,042	(147,910)	80,473,209	4.85%	4.98%
AK Target Date 2030 Trust	88,782,081	4,888,415	244,556	29,492	93,944,544	5.81%	5.50%
AK Target Date 2035 Trust	111,129,443	6,642,912	725,393	(127,789)	118,369,959	6.52%	5.96%
AK Target Date 2040 Trust	131,878,500	8,344,326	611,491	(458,674)	140,375,643	6.44%	6.32%
AK Target Date 2045 Trust	171,152,232	11,345,435	931,032	(33,493)	183,395,206	7.15%	6.61%
AK Target Date 2050 Trust	203,126,317	13,675,161	1,098,175	(325,725)	217,573,928	7.11%	6.72%
AK Target Date 2055 Trust	220,286,239	14,843,111	1,216,166	(363,656)	235,981,860	7.13%	6.73%
AK Target Date 2060 Trust	12,352,943	860,034	656,496	(55,913)	13,813,560	11.82%	6.80%
AK Target Date 2065 Trust	6,752,507	474,790	419,959	16,445	7,663,701	13.49%	6.81%
Total Investments with T. Rowe Price	1,370,496,960	79,393,517	4,911,744	(1,548,481)	1,453,253,740		
JP Morgan							
JPMorgan SmartRetirement Blend 2015 R6	3,956	179	376	-	4,511	14.03%	4.32%
JPMorgan SmartRetirement Blend 2020 R6	42,865	1,820	749	-	45,434	5.99%	4.21%
Total Investments with JP Morgan	46,821	1,999	1,125	-	49,945		
State Street Global Advisors							
Money Market	17,630,888	20,015	(51,358)	(509,096)	17,090,449	-3.07%	0.12%
S&P 500 Stock Index	77,149,704	7,403,167	178,483	4,748,619	89,479,973	15.98%	9.30%
Russell 3000 Index	75,091,196	6,933,409	258,634	(2,359,908)	79,923,331	6.44%	9.36%
World Equity Ex-US Index	55,538,620	2,229,398	54,879	4,619,506	62,442,403	12.43%	3.85%
Total Investments with SSgA	225,410,408	16,585,989	440,638	6,499,121	248,936,156		
BlackRock							
Passive U.S. Bond Index Fund	59,453,692	1,417,271	(72,030)	(1,754,463)	59,044,470	-0.69%	2.42%
Strategic Completion Fund	5,245,744	308,235	(16,520)	434,730	5,972,189	13.85%	5.65%
Total Investments with BlackRock	64,699,436	1,725,506	(88,550)	(1,319,733)	65,016,659		
Brandes and Baillie Gifford							
AK International Equity Fund	74,515,011	3,521,961	185,935	(2,356,039)	75,866,868	1.81%	4.80%
Northern Trust							
Environmental, Social, and Governance Fund	61,956,099	5,067,860	79,630	(1,274,868)	65,828,721	6.25%	8.26%
Total All Funds	$ 1,797,124,735	$ 106,296,832	$ 5,530,522	$ -	$ 1,908,952,089	6.22%	5.91%

Notes: Source data provided by the record keeper, Empower Retirement.
(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

Defined Contribution Retirement - Participant Directed PERS
Schedule of Invested Assets with
Schedule of Investment Income and Changes in Invested Assets
By Month Through the Month Ended
July 31, 2022
$ (Thousands)

Invested Assets (at fair value)		**July**
Investments with T. Rowe Price		
Stable Value Fund	$	116,967
Small Cap Stock Fund		100,573
Alaska Balanced Trust		52,462
Long Term Balanced Fund		36,697
AK Target Date 2010 Trust		2,967
AK Target Date 2015 Trust		11,309
AK Target Date 2020 Trust		40,687
AK Target Date 2025 Trust		80,473
AK Target Date 2030 Trust		93,945
AK Target Date 2035 Trust		118,370
AK Target Date 2040 Trust		140,376
AK Target Date 2045 Trust		183,395
AK Target Date 2050 Trust		217,574
AK Target Date 2055 Trust		235,982
AK Target Date 2060 Trust		13,814
AK Target Date 2065 Trust		7,664
Investments with JP Morgan		
JPMorgan SmartRetirement Blend 2015 R6		5
JPMorgan SmartRetirement Blend 2020 R6		45
State Street Global Advisors		
Money Market		17,090
S&P 500 Stock Index		89,480
Russell 3000 Index		79,923
World Equity Ex-US Index		62,442
Investments with BlackRock		
Passive U.S. Bond Index Fund		59,044
Strategic Completion Fund		5,972
Investments with Brandes and Baillie Gifford		
AK International Equity Fund		75,867
Investments with Northern Trust		
Environmental, Social, and Governance Fund		65,829
Total Invested Assets	**$**	**1,908,952**

Change in Invested Assets		
Beginning Assets	$	1,797,125
Investment Earnings		106,297
Net Contributions (Withdrawals)		5,531
Ending Invested Assets	**$**	**1,908,952**

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

Defined Contribution Retirement - Participant Directed TRS
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
July 31, 2022

Participant Options	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (1)
T. Rowe Price							
Stable Value Fund	$ 47,694,837	$ 66,409	$ (166,641)	$ (1,953,465)	$ 45,641,140	-4.31%	0.14%
Small Cap Stock Fund	36,663,897	3,488,235	61,375	562,821	40,776,328	11.22%	9.43%
Alaska Balanced Trust	22,029,925	773,413	(78,641)	(511,615)	22,213,082	0.83%	3.56%
Long Term Balanced Fund	13,987,778	744,678	28,230	1,112,530	15,873,216	13.48%	5.12%
AK Target Date 2010 Trust	1,201,739	50,007	(1,196)	281,809	1,532,359	27.51%	3.73%
AK Target Date 2015 Trust	3,686,138	139,927	(157,851)	-	3,668,214	-0.49%	3.88%
AK Target Date 2020 Trust	11,606,160	502,920	51,734	(54,225)	12,106,589	4.31%	4.33%
AK Target Date 2025 Trust	24,644,559	1,235,153	225,242	(523)	26,104,431	5.92%	4.99%
AK Target Date 2030 Trust	34,444,007	1,905,017	256,869	44,302	36,650,195	6.41%	5.51%
AK Target Date 2035 Trust	48,112,459	2,881,970	277,280	-	51,271,709	6.57%	5.97%
AK Target Date 2040 Trust	57,999,637	3,674,150	536,039	(281,808)	61,928,018	6.77%	6.32%
AK Target Date 2045 Trust	82,074,710	5,464,383	783,239	190,169	88,512,501	7.84%	6.62%
AK Target Date 2050 Trust	113,264,769	7,625,801	823,648	(337,245)	121,376,973	7.16%	6.72%
AK Target Date 2055 Trust	76,812,904	5,204,458	1,062,051	(131,870)	82,947,543	7.99%	6.73%
AK Target Date 2060 Trust	4,311,557	306,207	324,541	(7,054)	4,935,251	14.47%	6.85%
AK Target Date 2065 Trust	837,026	60,868	94,914	(1)	992,807	18.61%	6.88%
Total Investments with T. Rowe Price	579,372,102	34,123,596	4,120,833	(1,086,175)	616,530,356		
State Street Global Advisors							
Money Market	5,394,536	6,465	(79,807)	261,653	5,582,847	3.49%	0.12%
S&P 500 Stock Index	21,286,567	2,151,340	102,987	2,567,458	26,108,352	22.65%	9.51%
Russell 3000 Index	30,985,654	2,815,868	100,461	(1,393,413)	32,508,570	4.91%	9.28%
World Equity Ex-US Index	23,066,209	979,746	41,501	3,035,259	27,122,715	17.59%	3.98%
Total Investments with SSgA	80,732,966	5,953,419	165,142	4,470,957	91,322,484		
BlackRock							
Passive U.S. Bond Index Fund	22,530,469	528,281	52,678	(1,253,178)	21,858,250	-2.98%	2.41%
Strategic Completion Fund	1,676,299	88,449	10,212	(29,725)	1,745,235	4.11%	5.31%
Total Investments with BlackRock	24,206,768	616,730	62,890	(1,282,903)	23,603,485		
Brandes and Baillie Gifford							
AK International Equity Fund	32,472,126	1,516,859	63,871.00	(1,298,778)	32,754,078	0.87%	4.76%
Northern Trust							
Environmental, Social, and Governance Fund	25,573,916	2,066,425	(42,821.00)	(803,101)	26,794,419	4.77%	8.22%
Total All Funds	$ 742,357,878	$ 44,277,029	$ 4,369,915	$ -	$ 791,004,822	6.55%	5.95%

Notes: Source data provided by the record keeper, Empower Retirement.
(1) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.

Defined Contribution Retirement - Participant Directed TRS
Schedule of Invested Assets with
Schedule of Investment Income and Changes in Invested Assets
By Month Through the Month Ended
July 31, 2022
$ (Thousands)

Invested Assets (at fair value)		**July**
Investments with T. Rowe Price		
Stable Value Fund	$	45,641
Small Cap Stock Fund		40,776
Alaska Balanced Trust		22,213
Long Term Balanced Fund		15,873
AK Target Date 2010 Trust		1,532
AK Target Date 2015 Trust		3,668
AK Target Date 2020 Trust		12,107
AK Target Date 2025 Trust		26,104
AK Target Date 2030 Trust		36,650
AK Target Date 2035 Trust		51,272
AK Target Date 2040 Trust		61,928
AK Target Date 2045 Trust		88,513
AK Target Date 2050 Trust		121,377
AK Target Date 2055 Trust		82,948
AK Target Date 2060 Trust		4,935
AK Target Date 2065 Trust		993
Investments with State Street Global Advisors		
Money Market		5,583
S&P 500 Stock Index		26,108
Russell 3000 Index		32,509
World Equity Ex-US Index		27,123
Investments with BlackRock		
Passive U.S. Bond Index Fund		21,858
Strategic Completion Fund		1,745
Investments with Brandes and Baillie Gifford		
AK International Equity Fund		32,754
Investments with Northern Trust		
Environmental, Social, and Governance Fund		26,794
Total Invested Assets	**$**	**791,005**
Change in Invested Assets		
Beginning Assets	**$**	742,358
Investment Earnings		44,277
Net Contributions (Withdrawals)		4,370
Ending Invested Assets	**$**	**791,005**

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

ALASKA RETIREMENT MANAGEMENT BOARD

FINANCIAL REPORT
(Supplement to the Treasury Division Report)

As of July 31, 2022

Prepared by the Division of Retirement & Benefits

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the One Month Ending July 31, 2022

	Contributions				Expenditures				Net
	Contributions EE and/or ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	Contributions/ (Withdrawals)
Public Employees' Retirement System (PERS)									
Defined Benefit Plans:									
Retirement Pension Trust	$ 37,012,759	$ 33,933,000	$ 20,068	$ 70,965,827	$ (84,055,615)	$ (382,200)	$ (268,666)	$ (84,706,481)	$ (13,740,654)
Retirement Health Care Trust	3,221,496	-	9,450,930	12,672,426	(42,015,945)	-	(183,350)	(42,199,295)	(29,526,869)
Total Defined Benefit Plans	40,234,255	33,933,000	9,470,998	83,638,253	(126,071,560)	(382,200)	(452,016)	(126,905,776)	(43,267,523)
Defined Contribution Plans:									
Participant Directed Retirement	15,319,830	-	-	15,319,830	-	(7,737,760)	(2,051,548)	(9,789,308)	5,530,522
Health Reimbursement Arrangement [(a)]	4,117,439	-	-	4,117,439	(51,612)	-	(7,654)	(59,266)	4,058,173
Retiree Medical Plan [(a)]	1,435,559	-	32,838	1,468,397	243,560	-	(3,239)	240,321	1,708,718
Occupational Death and Disability: [(a)]									
All Others	328,181	-	-	328,181	(13,952)	-	(1,105)	(15,057)	313,124
Peace Officers and Firefighters	132,270	-	-	132,270	(26,862)	-	(424)	(27,286)	104,984
Total Defined Contribution Plans	21,333,279	-	32,838	21,366,117	151,134	(7,737,760)	(2,063,970)	(9,650,596)	11,715,521
Total PERS	**61,567,534**	**33,933,000**	**9,503,836**	**105,004,370**	**(125,920,426)**	**(8,119,960)**	**(2,515,986)**	**(136,556,372)**	**(31,552,002)**
Teachers' Retirement System (TRS)									
Defined Benefit Plans:									
Retirement Pension Trust	6,766,451	91,029,000	3,789	97,799,240	(44,717,212)	(102,935)	(130,669)	(44,950,816)	52,848,424
Retirement Health Care Trust	2,371,103	-	3,193,271	5,564,374	(12,778,925)	-	(71,306)	(12,850,231)	(7,285,857)
Total Defined Benefit Plans	9,137,554	91,029,000	3,197,060	103,363,614	(57,496,137)	(102,935)	(201,975)	(57,801,047)	45,562,567
Defined Contribution Plans:									
Participant Directed Retirement	8,139,285	-	-	8,139,285	-	(3,167,838)	(601,532)	(3,769,370)	4,369,915
Health Reimbursement Arrangement [(a)]	1,444,424	-	-	1,444,424	(9,306)	-	(2,230)	(11,536)	1,432,888
Retiree Medical Plan [(a)]	480,164	-	8,656	488,820	(19,293)	-	(1,687)	(20,980)	467,840
Occupational Death and Disability [(a)]	45,071	-	-	45,071	(2,171)	-	(334)	(2,505)	42,566
Total Defined Contribution Plans	10,108,944	-	8,656	10,117,600	(30,770)	(3,167,838)	(605,783)	(3,804,391)	6,313,209
Total TRS	**19,246,498**	**91,029,000**	**3,205,716**	**113,481,214**	**(57,526,907)**	**(3,270,773)**	**(807,758)**	**(61,605,438)**	**51,875,776**
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Pension Trust	490,588	3,225,000	-	3,715,588	(1,317,872)	-	(3,835)	(1,321,707)	2,393,881
Defined Benefit Plan Retirement Health Care Trust	60,679	-	32,965	93,644	(94,629)	-	(1,021)	(95,650)	(2,006)
Total JRS	**551,267**	**3,225,000**	**32,965**	**3,809,232**	**(1,412,501)**	**-**	**(4,856)**	**(1,417,357)**	**2,391,875**
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Pension Trust [(a)]	-	-	-	-	(158,777)	-	(5,129)	(163,906)	(163,906)
Other Participant Directed Plans									
Supplemental Annuity Plan (SBS)	14,009,658	-	-	14,009,658	-	(16,215,832)	(896,155)	(17,111,987)	(3,102,329)
Deferred Compensation Plan [(b)] (DCP)	3,848,556	-	-	3,848,556	-	(4,731,168)	(267,981)	(4,999,149)	(1,150,593)
Total All Funds	**99,223,513**	**128,187,000**	**12,742,517**	**240,153,030**	**(185,018,611)**	**(32,337,733)**	**(4,497,865)**	**(221,854,209)**	**18,298,821**
Total Non-Participant Directed	57,906,184	128,187,000	12,742,517	198,835,701	(185,018,611)	(485,135)	(680,649)	(186,184,395)	12,651,306
Total Participant Directed	41,317,329	-	-	41,317,329	-	(31,852,598)	(3,817,216)	(35,669,814)	5,647,515
Total All Funds	**$ 99,223,513**	**$ 128,187,000**	**$ 12,742,517**	**$ 240,153,030**	**$ (185,018,611)**	**$ (32,337,733)**	**$ (4,497,865)**	**$ (221,854,209)**	**$ 18,298,821**

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

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Month Ended July 31, 2022

	Contributions				Expenditures				Net
	Contributions EE and/or ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	Contributions/ (Withdrawals)
Public Employees' Retirement System (PERS)									
Defined Benefit Plans:									
Retirement PensionsTrust	$ 37,012,759	$ 33,933,000	$ 20,068	$ 70,965,827	$ (84,055,615)	$ (382,200)	$ (268,666)	$ (84,706,481)	$ (13,740,654)
Retirement Health Care Trust	3,221,496	-	9,450,930	12,672,426	(42,015,945)	-	(183,350)	(42,199,295)	(29,526,869)
Total Defined Benefit Plans	40,234,255	33,933,000	9,470,998	83,638,253	(126,071,560)	(382,200)	(452,016)	(126,905,776)	(43,267,523)
Defined Contribution Plans:									
Participant Directed Retirement	15,319,830	-	-	15,319,830	-	(7,737,760)	(2,051,548)	(9,789,308)	5,530,522
Health Reimbursement Arrangement [(a)]	4,117,439	-	-	4,117,439	(51,612)	-	(7,654)	(59,266)	4,058,173
Retiree Medical Plan [(a)]	1,435,559	-	32,838	1,468,397	243,560	-	(3,239)	240,321	1,708,718
Occupational Death and Disability: [(a)]				$97.70					
All Others	328,181	-	-	328,181	(13,952)	-	(1,105)	(15,057)	313,124
Peace Officers and Firefighters	132,270	-	-	132,270	(26,862)	-	(424)	(27,286)	104,984
Total Defined Contribution Plans	21,333,279	-	32,838	21,366,215	151,134	(7,737,760)	(2,063,970)	(9,650,596)	11,715,521
Total PERS	**61,567,534**	**33,933,000**	**9,503,836**	**105,004,468**	**(125,920,426)**	**(8,119,960)**	**(2,515,986)**	**(136,556,372)**	**(31,552,002)**
Teachers' Retirement System (TRS)									
Defined Benefit Plans:									
Retirement PensionsTrust	6,766,451	91,029,000	3,789	97,799,240	(44,717,212)	(102,935)	(130,669)	(44,950,816)	52,848,424
Retirement Health Care Trust	2,371,103	-	3,193,271	5,564,374	(12,778,925)	-	(71,306)	(12,850,231)	(7,285,857)
Total Defined Benefit Plans	9,137,554	91,029,000	3,197,060	103,363,614	(57,496,137)	(102,935)	(201,975)	(57,801,047)	45,562,567
Defined Contribution Plans:									
Participant Directed Retirement	8,139,285	-	-	8,139,285	-	(3,167,838)	(601,532)	(3,769,370)	4,369,915
Health Reimbursement Arrangement [(a)]	1,444,424	-	-	1,444,424	(9,306)	-	(2,230)	(11,536)	1,432,888
Retiree Medical Plan [(a)]	480,164	-	8,656	488,820	(19,293)	-	(1,687)	(20,980)	467,840
Occupational Death and Disability [(a)]	45,071	-	-	45,071	(2,171)	-	(334)	(2,505)	42,566
Total Defined Contribution Plans	10,108,944	-	8,656	10,117,600	(30,770)	(3,167,838)	(605,783)	(3,804,391)	6,313,209
Total TRS	**19,246,498**	**91,029,000**	**3,205,716**	**113,481,214**	**(57,526,907)**	**(3,270,773)**	**(807,758)**	**(61,605,438)**	**51,875,776**
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Pension Trust	490,588	3,225,000	-	3,715,588	(1,317,872)	-	(3,835)	(1,321,707)	2,393,881
Defined Benefit Plan Retirement Health Care Trust	60,679	-	32,965	93,644	(94,629)	-	(1,021)	(95,650)	(2,006)
Total JRS	**551,267**	**3,225,000**	**32,965**	**3,809,232**	**(1,412,501)**	**-**	**(4,856)**	**(1,417,357)**	**2,391,875**
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Pension Trust [(a)]	-	-	-	-	(158,777)	-	(5,129)	(163,906)	(163,906)
Other Participant Directed Plans									
Supplemental Annuity Plan (SBS)	14,009,658	-	-	14,009,658	-	(16,215,832)	(896,155)	(17,111,987)	(3,102,329)
Deferred Compensation Plan [(b)] (DCP)	3,848,556	-	-	3,848,556	-	(4,731,168)	(267,981)	(4,999,149)	(1,150,593)
Total All Funds	**99,223,513**	**128,187,000**	**12,742,517**	**240,153,128**	**(185,018,611)**	**(32,337,733)**	**(4,497,865)**	**(221,854,209)**	**18,298,821**
Total Non-Participant Directed	57,906,184	128,187,000	12,742,517	198,835,701	(185,018,611)	(485,135)	(680,649)	(186,184,395)	12,651,306
Total Participant Directed	41,317,329	-	-	41,317,329	-	(31,852,598)	(3,817,216)	(35,669,814)	5,647,515
Total All Funds	**$ 99,223,513**	**$ 128,187,000**	**$ 12,742,517**	**$ 240,153,030**	**$ (185,018,611)**	**$ (32,337,733)**	**$ (4,497,865)**	**$ (221,854,209)**	**$ 18,298,821**

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

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the One Months Ending July 31, 2022

PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND TYPE

Type	PERS DCR Plan	TRS DCR Plan	Supplemental Annuity Plan	Deferred Compensation	TOTAL	% of Total
Payment to Beneficiary	$ 6,146	$ -	$ 49,322	$ 15,242	$ 70,710	0.2%
Death Benefit	132,676	25,256	1,746,432	357,930	2,262,294	7.1%
Disability / Hardship	-	-	10,324	8,652	18,976	0.1%
Minimum Required Distribution	3,589	9,373	878,975	300,247	1,192,184	3.7%
Deminimus Acct Balance Distribution	-	-	-	-	-	0.0%
Qualified Domestic Relations Order	-	-	274,178	20,648	294,826	0.9%
Separation from Service / Retirement	6,941,523 [a]	3,133,209 [a]	13,178,501	3,871,201	27,124,434	85.2%
Purchase of Service Credit	398,362 [a]	- [a]	78,100	-	476,462	1.5%
59-½ In-service Distribution	-	-	-	152,248	152,248	0.5%
Qualified Birth / Adoption Expense	-	-	-	5,000	5,000	0.0%
CARES Act Distributions	-	-	-	-	-	0.0%
DCR to DB Conversion	255,464 [a]	- [a]	-	-	255,464	0.8%
TOTAL	$ 7,737,760	$ 3,167,838	$ 16,215,832	$ 4,731,168	$ 31,852,598	100.0%

[a] Employer distributions sent to the DB plan are shown as "DCR to DB Conversion". Employee funds sent to the DB plan are included with "Purchase of Service Credit". Excess employee money sent to employee after conversion are included in "Separation from Service".

PERS & TRS PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND VESTED PERCENTAGE

Vesting	PERS DCR Plan	TRS DCR Plan	TOTAL	% of Total
100% Vested	$ 6,851,395	$ 106,491	$ 6,957,886	63.8%
75% Vested	169,705	784,454	954,159	8.7%
50% Vested	252,310	709,417	961,727	8.8%
25% Vested	152,766	627,609	780,375	7.2%
0% Vested	311,584	939,867	1,251,451	11.5%
TOTAL	$ 7,737,760	$ 3,167,838	$ 10,905,598	100.0%

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

	PERS DB Pension Plan				TRS DB Pension Plan			JRS	TOTAL
Contribution Type	Tier 1	Tier 2	Tier 3	Total	Tier 1	Tier 2	Total	DB Pension Plan	DB Pension Plan
Mandatory Vested	$ 15,024	$ -	$ 125,564	$ 140,588	$ -	$ 83,462	$ 83,462	$ -	$ 224,050.00
Mandatory Non-Vested	4,380	1,392	48,232	54,004	709	-	709	-	54,713
Geographic Differential	-	22,042	-	22,042	-	-	-	-	22,042
Voluntary Full	-	79,429	157,330	236,759	-	-	-	-	236,759
Indebtedness, Lagging & Partial	1	(89,018)	17,824	(71,193)	-	18,764	18,764	-	(52,429)
TOTAL	$ 19,405	$ 13,845	$ 348,950	$ 382,200	$ 709	$ 102,226	$ 102,935	$ -	$ 485,135

Notes for the DRB Supplement to the Treasury Report

July 2022

This report is the DRB supplement to the Treasury Division's Financial Report. It expands the "Net Contributions/(Withdrawals)" column into contributions and expenditures. It shows contributions received from both employees and employers, contributions from the State of Alaska, and other non-investment income. This report also expands expenditures into benefits, refunds & disbursements, and administrative & investment expenditures.

The net amount of total contributions and total expenditures, presented as "Net Contributions/(Withdrawals)", agrees with the same column in the Treasury Division's Report. Page one shows the year-to-date totals for the first one month of Fiscal Year 2023, while page two shows only the month of July 2022.

Highlights – On page one, for the one month ending July 31, 2022:

- PERS DB Pension – Average employer and employee contributions of $37 million per month, benefit payments of approximately $84.1 million per month, refunds average $382 thousand, and administrative and investment expenditures of $269 thousand per month (DOR and DRB).
- PERS DB Healthcare – Average employer contributions of $3.2 million per month, and benefit payments of approximately $42 million per month. Other income of $2 million from OptumRx EGWP subsidies (most recently received in July for July 2022), $333 thousand from OptumRx pharmacy rebates (most recently received in July for CY2019-Audit), $5.6 million from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in July for 1st Qtr 2022), and average administrative and investment expenditures of $183 thousand per month (DOR and DRB).
- PERS DC Pension – Average employer and employee contributions of $15.3 million per month, participant disbursements average $7.7 million per month, and average administrative and investment expenditures of $2.1 million per month (DOR and DRB).
- PERS DCR Health – For HRA, RMP, and OD&D only, employer contributions average $6 million per month on behalf of participating employees, and benefit payments of approximately $336 thousand per month. Currently, 16 benefits are being paid from the Occupational Death & Disability plans, 126 retirees are participating in RMP, and 185 retirees are participating in HRA. Other income of $6 thousand from OptumRx EGWP subsidies (most recently received in July for July 2022), $285 dollars from OptumRx pharmacy rebates (most recently received in July for CY2019-Audit), $20 thousand from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in July for 1st Qtr 2022), and administrative and investment expenditures were approximately $12 thousand per month (DOR and DRB).
- TRS DB Pension – Average employer and employee contributions of $6.8 million per month, benefit payments of approximately $44.7 million per month, refunds average $103 thousand, and average administrative and investment expenditures of $131 thousand per month (DOR and DRB).
- TRS DB Healthcare – Average employer contributions of $2.4 million per month, and benefit payments of approximately $12.8 million per month. Other income of $726 thousand from OptumRx EGWP subsidies (most recently received in July for July 2022), $107 thousand from OptumRx pharmacy rebates (most recently received in July for CY2019-Audit), $1.8 million from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in July for 1st Qtr 2022), and average administrative and investment expenditures of $71 thousand per month (DOR and DRB).
- TRS DC Pension – Average employer and employee contributions of $8.1 million per month, participant disbursements average $3.2 million per month, and average administrative and investment expenditures of $602 thousand per month (DOR and DRB).

- TRS DCR Health – Average employer contributions of $2 million per month, and benefit payments of approximately $31 thousand per month. Other income of $1 thousand from OptumRx EGWP subsidies (most recently received in July for July 2022), $9 dollars from OptumRx pharmacy rebates (most recently received in July for CY2019-Audit), $6 thousand from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in July for 1st Qtr 2022), and average administrative and investment expenditures of $4 thousand per month (DOR and DRB).
- JRS Pension – Average employer and employee contributions of $491 thousand per month, benefit payments of approximately $1.3 million per month, and average administrative and investment expenditures of $4 thousand per month (DOR and DRB).
- JRS Healthcare – Average employer contributions of $61 thousand per month, and benefit payments of approximately $95 thousand per month. Other income of $7 thousand from OptumRx EGWP subsidies (most recently received in July for July 2022), $925 dollars from OptumRx pharmacy rebates (most recently received in July for CY2019-Audit), $20 thousand from EGWP coverage gap discount program (CGDP) (most recently received in July for 1st Qtr 2022), and average administrative and investment expenditures of $1 thousand per month (DOR and DRB).
- NGNMRS – A combination of lump-sum and monthly benefit payments of $159 thousand per month, and average administrative and investment expenditures of $5 thousand per month (DOR and DRB).
- SBS – Average employer and employee contributions and transfers in of $14 million per month. Participant disbursements average of $16.2 million per month, and average administrative and investment expenditures of $896 thousand per month (DOR and DRB).
- Deferred Compensation – Average employer and employee contributions and transfers in of $3.8 million per month, participant disbursements average of $4.7 million per month, and average administrative and investment expenditures of $268 thousand per month (DOR and DRB).

Highlights – On page two, activity for the one month of July 2022 only:

- PERS DB Pension – State of Alaska additional contributions of $33.4 million.
- PERS DB Healthcare – Other income of $9.5 million from OptumRx EGWP subsidies, pharmacy rebates, and coverage gap discount plan.
- PERS DC Healthcare – Other income of $32 thousand from OptumRx EGWP subsidies, pharmacy rebates, and coverage gap discount plan.
- TRS DB Pension – State of Alaska additional contributions of $90.8 million.
- TRS DB Healthcare – Other income of $3.2 million from OptumRx EGWP subsidies, pharmacy rebates, and coverage gap discount plan.
- TRS DC Healthcare – Other income of $9 thousand from OptumRx EGWP subsidies, pharmacy rebates, and coverage gap discount plan.
- JRS DB Healthcare – Other income of $33 thousand from OptumRx EGWP subsidies, pharmacy rebates, and coverage gap discount plan.
- All other funds – Nothing significant to report.

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

ALASKA RETIREMENT MANAGEMENT BOARD

FINANCIAL REPORT
(Supplement to the Treasury Division Report)

As of June 30, 2022

Prepared by the Division of Retirement & Benefits

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Twelve Months Ending June 30, 2022

	Contributions				Expenditures				Net
	Contributions EE and/or ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	Contributions/ (Withdrawals)
Public Employees' Retirement System (PERS)									
Defined Benefit Plans:									
Retirement Pension Trust	$ 477,312,021	$ 97,699,500	$ 187,407	$ 575,198,928	$ (957,917,117)	$ (9,292,284)	$ (8,506,914)	$ (975,716,315)	$ (400,517,387)
Retirement Health Care Trust	66,401,949	-	92,340,733	158,742,682	(487,623,380)	-	(16,176,602)	(503,799,982)	(345,057,300)
Total Defined Benefit Plans	543,713,970	97,699,500	92,528,140	733,941,610	(1,445,540,497)	(9,292,284)	(24,683,516)	(1,479,516,297)	(745,574,687)
Defined Contribution Plans:									
Participant Directed Retirement	206,264,188	-	-	206,264,188	-	(99,224,284)	(5,882,550)	(105,106,834)	101,157,354
Health Reimbursement Arrangement [(a)]	50,606,526	-	16,395	50,622,921	(515,513)	-	(203,155)	(718,668)	49,904,253
Retiree Medical Plan [(a)]	17,655,952	-	186,778	17,842,730	(1,198,307)	-	(144,697)	(1,343,004)	16,499,726
Occupational Death and Disability: [(a)]									
All Others	4,145,757	-	-	4,145,757	(139,491)	-	(31,420)	(170,911)	3,974,846
Peace Officers and Firefighters	1,601,371	-	-	1,601,371	(330,689)	-	(19,532)	(350,221)	1,251,150
Total Defined Contribution Plans	280,273,794	-	203,173	280,476,967	(2,184,000)	(99,224,284)	(6,281,354)	(107,689,638)	172,787,329
Total PERS	**823,987,764**	**97,699,500**	**92,731,313**	**1,014,418,577**	**(1,447,724,497)**	**(108,516,568)**	**(30,964,870)**	**(1,587,205,935)**	**(572,787,358)**
Teachers' Retirement System (TRS)									
Defined Benefit Plans:									
Retirement Pension Trust	59,033,766	142,665,000	35,624	201,734,390	(512,440,077)	(1,304,901)	(4,117,428)	(517,862,406)	(316,128,016)
Retirement Health Care Trust	22,369,902	-	30,454,037	52,823,939	(157,922,779)	-	(7,944,187)	(165,866,966)	(113,043,027)
Total Defined Benefit Plans	81,403,668	142,665,000	30,489,661	254,558,329	(670,362,856)	(1,304,901)	(12,061,615)	(683,729,372)	(429,171,043)
Defined Contribution Plans:									
Participant Directed Retirement	72,540,413	-	-	72,540,413	-	(28,811,326)	(2,205,534)	(31,016,860)	41,523,553
Health Reimbursement Arrangement [(a)]	13,194,124	-	(15,316)	13,178,808	(164,881)	-	(59,845)	(224,726)	12,954,082
Retiree Medical Plan [(a)]	4,182,470	-	18,196	4,200,666	(275,646)	-	(74,337)	(349,983)	3,850,683
Occupational Death and Disability [(a)]	384,180	-	-	384,180	(26,733)	-	(12,543)	(39,276)	344,904
Total Defined Contribution Plans	90,301,187	-	2,880	90,304,067	(467,260)	(28,811,326)	(2,352,259)	(31,630,845)	58,673,222
Total TRS	**171,704,855**	**142,665,000**	**30,492,541**	**344,862,396**	**(670,830,116)**	**(30,116,227)**	**(14,413,874)**	**(715,360,217)**	**(370,497,821)**
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Pension Trust	8,028,912	4,185,000	4	12,213,916	(14,790,261)	-	(163,696)	(14,953,957)	(2,740,041)
Defined Benefit Plan Retirement Health Care Trust	679,235	-	437,317	1,116,552	(1,341,676)	-	(85,748)	(1,427,424)	(310,872)
Total JRS	**8,708,147**	**4,185,000**	**437,321**	**13,330,468**	**(16,131,937)**	**-**	**(249,444)**	**(16,381,381)**	**(3,050,913)**
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Pension Trust [(a)]	-	-	-	-	(1,746,794)	-	(321,352)	(2,068,146)	(2,068,146)
Other Participant Directed Plans									
Supplemental Annuity Plan (SBS)	177,176,239	-	-	177,176,239	-	(300,088,351)	(9,028,520)	(309,116,871)	(131,940,632)
Deferred Compensation Plan [(b)] (DCP)	51,131,863	-	-	51,131,863	-	(84,923,678)	(2,518,106)	(87,441,784)	(36,309,921)
Total All Funds	**1,232,708,868**	**244,549,500**	**123,661,175**	**1,600,919,543**	**(2,136,433,344)**	**(523,644,824)**	**(57,496,166)**	**(2,717,574,334)**	**(1,116,654,791)**
Total Non-Participant Directed	725,596,165	244,549,500	123,661,175	1,093,806,840	(2,136,433,344)	(10,597,185)	(37,861,456)	(2,184,891,985)	(1,091,085,145)
Total Participant Directed	507,112,703	-	-	507,112,703	-	(513,047,639)	(19,634,710)	(532,682,349)	(25,569,646)
Total All Funds	**$ 1,232,708,868**	**$ 244,549,500**	**$ 123,661,175**	**$ 1,600,919,543**	**$ (2,136,433,344)**	**$ (523,644,824)**	**$ (57,496,166)**	**$ (2,717,574,334)**	**$ (1,116,654,791)**

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

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Month Ended June 30, 2022

	Contributions				Expenditures				Net
	Contributions EE and/or ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	**Contributions/ (Withdrawals)**
Public Employees' Retirement System (PERS)									
Defined Benefit Plans:									
Retirement Pension Trust	$ 47,546,260	$ -	$ 22,880	$ 47,569,140	$ (80,886,209)	$ (658,875)	$ (360,498)	$ (81,905,582)	$ (34,336,442)
Retirement Health Care Trust	6,277,661	-	15,103,486	21,381,147	(43,553,310)	-	(1,708,022)	(45,261,332)	(23,880,185)
Total Defined Benefit Plans	53,823,921	-	15,126,366	68,950,287	(124,439,519)	(658,875)	(2,068,520)	(127,166,914)	(58,216,627)
Defined Contribution Plans:									
Participant Directed Retirement	17,815,349	-	-	17,815,349	-	(7,673,263)	(190,006)	(7,863,269)	9,952,080
Health Reimbursement Arrangement [(a)]	4,849,707	-	-	4,849,707	(61,491)	-	(14,571)	(76,062)	4,773,645
Retiree Medical Plan [(a)]	1,741,326	-	30,230	1,771,556	(67,201)	-	(12,180)	(79,381)	1,692,175
Occupational Death and Disability: [(a)]									
All Others	412,301	-	-	412,301	(13,449)	-	(1,669)	(15,118)	397,183
Peace Officers and Firefighters	147,210	-	-	147,210	(25,989)	-	(714)	(26,703)	120,507
Total Defined Contribution Plans	24,965,893	-	30,230	24,996,123	(168,130)	(7,673,263)	(219,140)	(8,060,533)	16,935,590
Total PERS	**78,789,814**	**-**	**15,156,596**	**93,946,410**	**(124,607,649)**	**(8,332,138)**	**(2,287,660)**	**(135,227,447)**	**(41,281,037)**
Teachers' Retirement System (TRS)									
Defined Benefit Plans:									
Retirement Pension Trust	9,415,589	-	3,767	9,419,356	(42,539,211)	(61,483)	(185,878)	(42,786,572)	(33,367,216)
Retirement Health Care Trust	3,470,816	-	4,642,176	8,112,992	(14,156,381)	-	(609,507)	(14,765,888)	(6,652,896)
Total Defined Benefit Plans	12,886,405	-	4,645,943	17,532,348	(56,695,592)	(61,483)	(795,385)	(57,552,460)	(40,020,112)
Defined Contribution Plans:									
Participant Directed Retirement	11,741,449	-	-	11,741,449	-	(2,390,262)	(72,681)	(2,462,943)	9,278,506
Health Reimbursement Arrangement [(a)]	1,950,745	-	-	1,950,745	(19,439)	-	(4,208)	(23,647)	1,927,098
Retiree Medical Plan [(a)]	648,295	-	2,602	650,897	(15,293)	-	(8,712)	(24,005)	626,892
Occupational Death and Disability [(a)]	61,193	-	-	61,193	(2,092)	-	(791)	(2,883)	58,310
Total Defined Contribution Plans	14,401,682	-	2,602	14,404,284	(36,824)	(2,390,262)	(86,392)	(2,513,478)	11,890,806
Total TRS	**27,288,087**	**-**	**4,648,545**	**31,936,632**	**(56,732,416)**	**(2,451,745)**	**(881,777)**	**(60,065,938)**	**(28,129,306)**
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Pension Trust	498,071	-	-	498,071	(1,248,427)	-	(7,384)	(1,255,811)	(757,740)
Defined Benefit Plan Retirement Health Care Trust	52,337	-	50,029	102,366	(117,572)	-	(5,493)	(123,065)	(20,699)
Total JRS	**550,408**	**-**	**50,029**	**600,437**	**(1,365,999)**	**-**	**(12,877)**	**(1,378,876)**	**(778,439)**
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Pension Trust [(a)]	-	-	-	-	(176,312)	-	(25,304)	(201,616)	(201,616)
Other Participant Directed Plans									
Supplemental Annuity Plan (SBS)	14,006,461	-	-	14,006,461	-	(24,598,191)	(442,022)	(25,040,213)	(11,033,752)
Deferred Compensation Plan [(b)] (DCP)	4,357,499	-	-	4,357,499	-	(5,292,397)	(157,276)	(5,449,673)	(1,092,174)
Total All Funds	**124,992,269**	**-**	**19,855,170**	**144,847,439**	**(182,882,376)**	**(40,674,471)**	**-**	**(227,363,763)**	**(82,516,324)**
Total Non-Participant Directed	77,071,511	-	19,855,170	96,926,681	(182,882,376)	(720,358)	(2,944,931)	(186,547,665)	(89,620,984)
Total Participant Directed	47,920,758	-	-	47,920,758	-	(39,954,113)	(861,985)	(40,816,098)	7,104,660
Total All Funds	**$ 124,992,269**	**$ -**	**$ 19,855,170**	**$ 144,847,439**	**$ (182,882,376)**	**$ (40,674,471)**	**$ (3,806,916)**	**$ (227,363,763)**	**$ (82,516,324)**

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

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Twelve Months Ending June 30, 2022

PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND TYPE

Type	PERS DCR Plan	TRS DCR Plan	Supplemental Annuity Plan	Deferred Compensation	TOTAL	% of Total
Payment to Beneficiary	$ 328,125	$ 1,013,249	$ 73,115	$ -	$ 1,414,489	0.3%
Death Benefit	4,887,754	14,705,119	2,195,569	1,021,358	22,809,800	4.4%
Disability / Hardship	75,714	56,634	37,519	-	169,867	0.0%
Minimum Required Distribution	5,085,058	13,351,195	200,506	47,223	18,683,982	3.6%
Deminimus Acct Balance Distribution	3,372	-	-	-	3,372	0.0%
Qualified Domestic Relations Order	458,336	6,178,578	964,121	230,978	7,832,013	1.5%
Separation from Service / Retirement	84,508,355	(7,835,741)	296,617,521	83,615,108	456,905,243	89.2%
Purchase of Service Credit	169,147	1,342,292	-	9,011	1,520,450	0.3%
59-½ In-service Distribution	3,669,035	-	-	-	3,669,035	0.7%
Qualified Birth / Adoption Expense	39,388	-	-	-	39,388	0.0%
TOTAL	$ 99,224,284	$ 28,811,326	$ 300,088,351	$ 84,923,678	$ 513,047,639	100.0%

PERS & TRS PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND VESTED PERCENTAGE

Vesting	PERS DCR Plan	TRS DCR Plan	TOTAL	% of Total
100% Vested	$ 88,925,561	$ 25,749,979	$ 114,675,540	89.6%
75% Vested	2,248,530	784,454	3,032,984	2.4%
50% Vested	2,024,398	709,417	2,733,815	2.1%
25% Vested	2,570,161	627,609	3,197,770	2.5%
0% Vested	3,455,634	939,867	4,395,501	3.4%
TOTAL	$ 99,224,284	$ 28,811,326	$ 128,035,610	100.0%

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

	PERS DB Pension Plan				TRS DB Pension Plan			JRS	TOTAL
Contribution Type	Tier 1	Tier 2	Tier 3	Total	Tier 1	Tier 2	Total	DB Pension Plan	DB Pension Plan
Mandatory Vested	$ 365,641	$ 1,095,854	$ 2,222,174	$ 3,683,669	$ -	$ 196,538	$ 196,538	$ -	$ 3,880,207.00
Mandatory Non-Vested	161,345	331,420	655,344	1,148,109	191,898	821,994	1,013,892	-	2,162,001
Geographic Differential	-	281,018	193,045	474,063	-	-	-	-	474,063
Voluntary Full	379,885	1,097,505	1,458,384	2,935,774	-	-	-	-	2,935,774
Indebtedness, Lagging & Partial	(78,310)	319,529	809,450	1,050,669	176	94,295	94,471	-	1,145,140
TOTAL	$ 828,561	$ 3,125,326	$ 5,338,397	$ 9,292,284	$ 192,074	$ 1,112,827	$ 1,304,901	$ -	$ 10,597,185

Notes for the DRB Supplement to the Treasury Report

June 2022

This report is the DRB supplement to the Treasury Division's Financial Report. It expands the "Net Contributions/(Withdrawals)" column into contributions and expenditures. It shows contributions received from both employees and employers, contributions from the State of Alaska, and other non-investment income. This report also expands expenditures into benefits, refunds & disbursements, and administrative & investment expenditures.

The net amount of total contributions and total expenditures, presented as "Net Contributions/(Withdrawals)", agrees with the same column in the Treasury Division's Report. Page one shows the year-to-date totals for the first twelve months of Fiscal Year 2022, while page two shows only the month of June 2022.

Highlights – On page one, for the twelve months ending June 30, 2022:

- PERS DB Pension – Average employer and employee contributions of $39.8 million per month; benefit payments of approximately $79.8 million per month; refunds average $774 thousand; and administrative and investment expenditures of $709 thousand per month (DOR and DRB).
- PERS DB Healthcare – Average employer contributions of $5.5 million per month; benefit payments of approximately $40.6 million per month; other income of $24.4 million from OptumRx EGWP subsidies (most recently received in June for June 2022); $38.5 million from OptumRx pharmacy rebates (most recently received in June for 1st Qtr 2022); $1.1 million from Aetna pharmacy rebates (most recently received in June for 4th Qtr 2021); $29.3 million from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in April for 4th Qtr 2021); $594 thousand from CMS retiree drug subsidies (RDS); and average administrative and investment expenditures of $1.3 million per month (DOR and DRB).
- PERS DC Pension – Average employer and employee contributions of $17.2 million per month; participant disbursements average $8.3 million per month; and average administrative and investment expenditures of $490 thousand per month (DOR and DRB).
- PERS DCR Health – For HRA, RMP, and OD&D, only employer contributions average $6.2 million per month on behalf of participating employees; benefit payments of approximately $182 thousand per month. Currently, 15 benefits are being paid from the Occupational Death & Disability plans, 120 retirees are participating in RMP, and 169 retirees are participating in HRA. Other income of $65 thousand from OptumRx EGWP subsidies (most recently received in June for June 2022), $73 thousand from OptumRx pharmacy rebates (most recently received in June for 1st Qtr 2022), $54 thousand from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in April for 4th Qtr 2021); and administrative and investment expenditures were approximately $33 thousand per month (DOR and DRB).
- TRS DB Pension – Average employer and employee contributions of $4.9 million per month; benefit payments of approximately $42.7 million per month; refunds average $109 thousand; and average administrative and investment expenditures of $343 thousand per month (DOR and DRB).
- TRS DB Healthcare – Average employer contributions of $1.9 million per month; benefit payments of approximately $13.2 million per month; other income of $8.6 million from OptumRx EGWP subsidies (most recently received in June for June 2022), $11.8 million from OptumRx pharmacy rebates (most recently received in June for 1st Qtr 2022), $429 thousand from Aetna pharmacy rebates (most recently received in June for 4th Qtr 2021), $9.9 million from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in April for 4th Qtr 2021), $312 thousand from CMS retiree drug subsidies (RDS); and average administrative and investment expenditures of $662 thousand per month (DOR and DRB).

- TRS DC Pension – Average employer and employee contributions of $6 million per month; participant disbursements average $2.4 million per month; and average administrative and investment expenditures of $184 thousand per month (DOR and DRB).
- TRS DCR Health – Average employer contributions of $1.5 million per month; benefit payments of approximately $39 thousand per month; other income of $8 thousand from OptumRx EGWP subsidies (most recently received in June for June 2022), $6 thousand from OptumRx pharmacy rebates (most recently received in June for 1st Qtr 2022), $842 dollars from Aetna pharmacy rebates (most recently received in June for 4th Qtr 2021), $4 thousand from OptumRx EGWP coverage gap discount program (CGDP) (most recently received in April for 4th Qtr 2021), and average administrative and investment expenditures of $12 thousand per month (DOR and DRB).
- JRS Pension – Average employer and employee contributions of $669 thousand per month; benefit payments of approximately $1.2 million per month; and average administrative and investment expenditures of $14 thousand per month (DOR and DRB).
- JRS Healthcare – Average employer contributions of $57 thousand per month; benefit payments of approximately $112 thousand per month. Other income of $73 thousand from OptumRx EGWP subsidies (most recently received in June for June 2022), $97 thousand from OptumRx pharmacy rebates (most recently received in June for 1st Qtr 2022); $90 thousand from EGWP coverage gap discount program (CGDP) (most recently received in April for 4th Qtr 2021), $179 thousand from CMS retiree drug subsidies (RDS); and average administrative and investment expenditures of $7 thousand per month (DOR and DRB).
- NGNMRS – A combination of lump-sum and monthly benefit payments of $146 thousand per month; and average administrative and investment expenditures of $27 thousand per month (DOR and DRB).
- SBS – Average employer and employee contributions and transfers in of $14.8 million per month. Participant disbursements average of $25 million per month; and average administrative and investment expenditures of $752 thousand per month (DOR and DRB).
- Deferred Compensation – Average employer and employee contributions and transfers in of $4.3 million per month; participant disbursements average of $7.1 million per month; and average administrative and investment expenditures of $210 thousand per month (DOR and DRB).

Highlights – On page two, activity for the one month of June 2022 only:

- PERS DB Healthcare – Other income of $14.8 million from OptumRx EGWP subsidies, Pharmacy rebates and $317 thousand from Aetna Pharmacy rebates
- PERS DC Healthcare – Other income of $30 thousand from Optum Pharmacy rebates
- TRS DB Healthcare – Other income of $4.5 million from OptumRx EGWP subsidies, Pharmacy rebates and $145 thousand from Aetna Pharmacy rebates
- TRS DC Healthcare – Other income of $3 thousand from Optum Pharmacy rebates
- JRS DB Healthcare – Other income of $50 thousand from OptumRx EGWP subsidies, Pharmacy rebates and Aetna Pharmacy rebates
- All other funds – Nothing significant to report.

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

ALASKA RETIREMENT MANAGEMENT BOARD
STAFF REPORT
Division of Retirement & Benefits Report
September 15, 2022

Summary of Monthly Billings – Buck Global LLC

Attached is the requested summary schedule of invoices by quarter related to actuarial services provided by the Division's consulting actuary, Buck Global LLC.

Included on this schedule is the quarters ended September 30, 2021, December 31, 2021, March 31, 2022, and June 30, 2022.

Items listed on the left side of the schedule represent regular and non-regular services provided under our current contract.

The associated costs of each service are charged to the System or Plan noted on the column headings.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Summary of Monthly Billings - Buck Global LLC

DATE: September 15, 2022

ACTION: _____

INFORMATION: X

BACKGROUND:

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

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

STATUS:

Attached are the summary totals for the twelve months ended June 30, 2022 with comparative totals from the prior fiscal year.

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

	PERS	TRS	JRS	NGNMRS	EPORS	TOTAL
Actuarial valuations	$ 53,466	42,561	5,457	5,457	2,184	$ 109,125
KPMG audit information request	3,142	1,278	23	90	-	4,533
ARMB presentations and meeting attendance	3,411	3,414	-	-	-	6,825
FY20 final PERS/TRS contribution rates	3,411	3,414	-	-	-	6,825
GASB 67/74	7,572	6,060	759	759	-	15,150
GASB 68/75	22,722	18,180	2,274	2,274	-	45,450
Projections	6,750	6,750	-	-	-	13,500
Estimated funded status of DB plan at 6/30/21	7,139	2,898	-	-	-	10,037
2020 valuation projections - no FY23 ASC and 3-year asset smoothing	25,235	9,816	26	-	-	35,077
AlaskaCare retiree plan cost study	6,185	2,296	22	-	-	8,503
Reset actuarial value of assets to market value of assets	11,445	4,646	-	-	-	16,091
TOTAL	$ 150,478	101,313	8,561	8,580	2,184	$ 271,116
For the Three Months Ended September 30, 2020	$ 101,046	81,969	8,500	8,523	-	$ 200,038

For the Three Months Ended December 31, 2021

	PERS	TRS	JRS	NGNMRS	EPORS	TOTAL
Actuarial valuations	$ 53,466	42,561	5,457	5,457	2,184	$ 109,125
KPMG audit information request	6,332	2,574	46	181	-	9,133
ARMB presentations and meeting attendance	39,467	18,075	266	1,030	-	58,838
FY20 final PERS/TRS contribution rates	3,411	3,414	-	-	-	6,825
GASB 67/74	7,572	6,060	759	759	-	15,150
GASB 68/75	22,722	18,180	2,274	2,274	-	45,450
Projections	6,750	6,750	-	-	-	13,500
Meeting materials	3,285	1,335	23	94	-	4,737
TOTAL	$ 143,005	98,949	8,825	9,795	2,184	$ 262,758
For the Three Months Ended December 31, 2020	$ 101,334	82,634	8,512	8,570	-	$ 201,050

For the Three Months Ended March 31, 2022

	PERS	TRS	JRS	NGNMRS	EPORS	TOTAL
Actuarial valuations	$ 17,823	14,190	1,818	1,818	726	$ 36,375
ARMB presentations and meeting attendance	1,125	1,125	-	-	-	2,250
FY20 final PERS/TRS contribution rates	1,125	1,125	-	-	-	2,250
JRS salary increase study	-	-	5,855	-	-	5,855
Projections	2,325	2,325	-	-	-	4,650
Meeting materials	5,140	2,089	36	147	-	7,412
Senate Finance Committee preparation	8,179	3,319	-	-	-	11,498
TOTAL	$ 35,717	24,173	7,709	1,965	726	$ 70,290
For the Three Months Ended March 31, 2021	$ 45,797	28,340	4,669	1,818	-	$ 80,624

For the Three Months Ended June 30, 2022

	PERS	TRS	JRS	NGNMRS	EPORS	TOTAL
Actuarial valuations	$ 18,023	14,190	1,818	1,818	726	$ 36,575
ARMB presentations and meeting attendance	1,125	1,125	-	-	-	2,250
FY20 final PERS/TRS contribution rates	1,125	1,125	-	-	-	2,250
Metcalfe decision	28,506	11,313	-	-	-	39,819
Proposed scenario #3 for ARM Board	5,240	2,133	38	150	-	7,561
Projections	2,325	2,325	-	-	-	4,650
Meeting materials	4,367	1,775	32	125		6,299
TOTAL	$ 60,711	33,986	1,888	2,093	726	$ 99,404
For the Three Months Ended June 30, 2021	$ 78,357	40,565	17,532	2,302	-	$ 138,756

Summary through the Twelve Months Ended June 30, 2022

	PERS	TRS	JRS	NGNMRS	EPORS	TOTAL
Actuarial valuations	$ 142,778	113,502	14,550	14,550	5,820	$ 291,200
KPMG audit information request	10,599	4,977	69	271	-	15,916
ARMB presentations and meeting attendance	44,003	22,614	266	1,030	-	67,913
FY20 final PERS/TRS contribution rates	9,072	9,078	-	-	-	18,150
GASB 67/74	15,144	12,120	1,518	1,518	-	30,300
GASB 68/75	45,444	36,360	4,548	4,548	-	90,900
JRS salary increase study	-	-	5,855	-	-	5,855
Metcalfe decision	28,506	11,313	-	-	-	39,819
Proposed scenario #3 for ARM Board	5,240	2,133	38	150	-	7,561
Projections	18,150	18,150	-	-	-	36,300
Meeting materials	12,792	5,199	91	366	-	18,448
Estimated funded status of DB plan at 6/30/21	7,139	2,898	-	-	-	10,037
2020 valuation projections - no FY23 ASC and 3-year asset smoothing	25,235	9,816	26	-	-	35,077
AlaskaCare retiree plan cost study	6,185	2,296	22	-	-	8,503
Reset actuarial value of assets to market value of assets	11,445	4,646	-	-	-	16,091
Senate Finance Committee preparation	8,179	3,319	-	-	-	11,498
TOTAL	$ 389,911	258,421	26,983	22,433	5,820	$ 703,568
Summary through the Twelve Months Ended June 30, 2021	$ 326,534	233,508	39,213	21,213	-	$ 620,468

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Retirement System Membership Activity as of June 30, 2022

ACTION: _____

DATE: September 15, 2022

INFORMATION: **X**

BACKGROUND:

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

STATUS:

Membership information as of June 30, 2022.

ALASKA RETIREMENT MANAGEMENT BOARD

STAFF REPORT

Division of Retirement & Benefits Report
September 15, 2022

Retirement System Membership Activity as of June 30, 2022

Attached are the membership statistics for the quarter ending

- June 30, 2022

There is a net decrease in active members from last quarter, spread across PERS and TRS members:

- PERS Tier 1-3 active members decreased from 9,454 to 8,996 or a decrease of 458.
- PERS DCR active members decreased from 25,609 to 25,405, or a decrease of 204.
- PERS active members had a net decrease of 662.

- TRS Tier 1-2 active members decreased from 3,415 to 3,190, or a decrease of 225.
- TRS DCR active members decreased from 6,649 to 6,304, or a decrease of 345.
- TRS active members had a net decrease of 570.

Retiree counts have changed in the following manner:

- PERS retirees increased from 37,194 to 37,449, or an increase of 255 (all tiers).
- TRS retirees decreased from 13,491 to 13,462, or a decrease of 29 (all tiers).

MEMBERSHIP STATISTICS AS OF SEPTEMBER 30, 2021

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

MEMBERSHIP STATISTICS AS OF DECEMBER 31, 2021

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB				DCR	SYSTEM	DB			DCR	SYSTEM				
	Tier I	Tier II	Tier III	Total	Tier IV	TOTAL	Tier I	Tier II	Total	Tier III	TOTAL				
Active Members	586	2,100	6,900	9,586	25,388	34,974	155	3,294	3,449	6,622	10,071	73	n/a	19,882	6,645
Terminated Members															
Entitled to Future Benefits	239	1,568	3,166	4,973	2,215	7,188	16	600	616	829	1,445	1	n/a	30,450	5,942
Other Terminated Members	976	1,972	7,283	10,231	17,106	27,337	217	1,423	1,640	2,832	4,472	1	n/a	n/a	n/a
Total Terminated Members	1,215	3,540	10,449	15,204	19,321	34,525	233	2,023	2,256	3,661	5,917	2	n/a	30,450	5,942
Retirees & Beneficiaries	22,104	9,382	5,485	36,971	152	37,123	9,916	3,555	13,471	40	13,511	145	685	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	5,980	5,980	n/a	n/a	n/a	1,501	1,501	n/a	n/a	3,410	3,257
Retirements - 2nd QTR FY22	37	136	149	322	7	329	5	21	26	-	26	1	19	n/a	n/a
													11		
Full Disbursements - 2nd QTR FY22	11	43	91	145	483	628	2	9	11	80	91	-	n/a	547	167
Partial Disbursements - 2nd QTR FY22	n/a	n/a	n/a	n/a	166	166	n/a	n/a	n/a	48	48	n/a	n/a	1,697	757

MEMBERSHIP STATISTICS AS OF MARCH 31, 2022

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB				DCR	SYSTEM	DB			DCR	SYSTEM				
	Tier I	Tier II	Tier III	Total	Tier IV	TOTAL	Tier I	Tier II	Total	Tier III	TOTAL				
Active Members	563	2,069	6,822	9,454	25,609	35,063	143	3,272	3,415	6,649	10,064	74	n/a	19,845	6,748
Terminated Members															
Entitled to Future Benefits	236	1,533	3,132	4,901	2,260	7,161	16	587	603	817	1,420	1	n/a	30,350	5,874
Other Terminated Members	968	1,953	7,255	10,176	17,548	27,724	215	1,411	1,626	2,827	4,453	2	n/a	n/a	n/a
Total Terminated Members	1,204	3,486	10,387	15,077	19,808	34,885	231	1,998	2,229	3,644	5,873	3	n/a	30,350	5,874
Retirees & Beneficiaries	22,008	9,441	5,579	37,028	166	37,194	9,870	3,582	13,452	39	13,491	146	682	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	6,016	6,016	n/a	n/a	n/a	1,514	1,514	n/a	n/a	3,472	3,320
Retirements - 3rd QTR FY22	35	83	112	230	14	244	-	29	29	-	29	2	35	n/a	n/a
Full Disbursements - 3rd QTR FY22	15	50	108	173	512	685	1	11	12	87	99	-	n/a	555	182
Partial Disbursements - 3rd QTR FY22	n/a	n/a	n/a	n/a	173	173	n/a	n/a	n/a	58	58	n/a	n/a	1,492	632

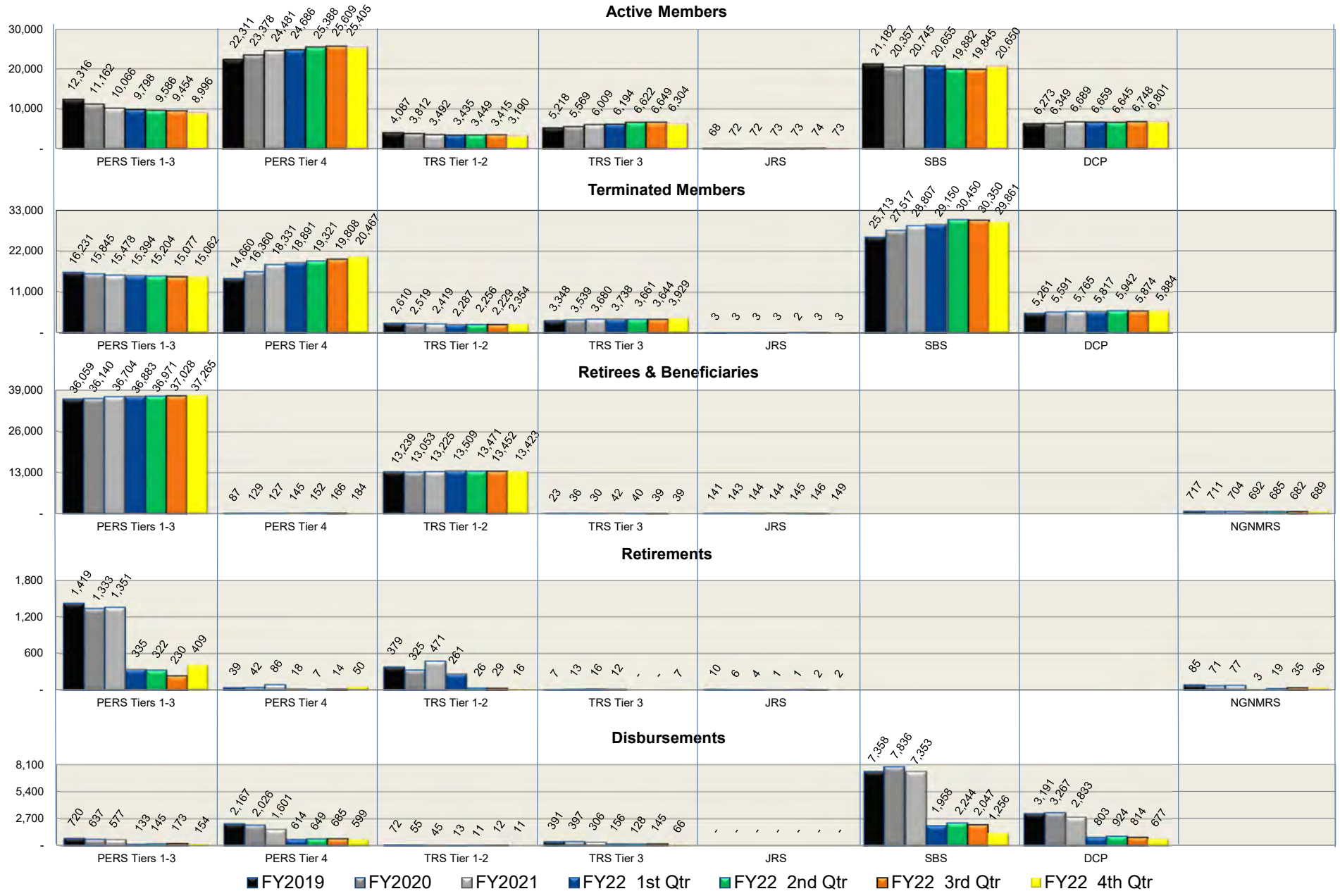
MEMBERSHIP STATISTICS AS OF JUNE 30, 2022

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB				DCR	SYSTEM	DB			DCR	SYSTEM				
	Tier I	Tier II	Tier III	Total	Tier IV	TOTAL	Tier I	Tier II	Total	Tier III	TOTAL				
Active Members	505	1,922	6,569	8,996	25,405	34,401	131	3,059	3,190	6,304	9,494	73	n/a	20,650	6,801
Terminated Members															
Entitled to Future Benefits	236	1,514	3,174	4,924	2,423	7,347	25	713	738	944	1,682	1	n/a	29,861	5,884
Other Terminated Members	962	1,936	7,240	10,138	18,044	28,182	212	1,404	1,616	2,985	4,601	2	n/a	n/a	n/a
Total Terminated Members	1,198	3,450	10,414	15,062	20,467	35,529	237	2,117	2,354	3,929	6,283	3	n/a	29,861	5,884
Retirees & Beneficiaries	21,915	9,584	5,766	37,265	184	37,449	9,825	3,598	13,423	39	13,462	149	689	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	6,028	6,028	n/a	n/a	n/a	1,513	1,513	n/a	n/a	3,517	3,433
Retirements - 4th QTR FY22	51	160	198	409	50	459	-	16	16	7	23	2	36	n/a	n/a
Full Disbursements - 4th QTR FY22	9	60	85	154	474	628	1	10	11	35	46	-	n/a	269	156
Partial Disbursements - 4th QTR FY22	n/a	n/a	n/a	n/a	125	125	n/a	n/a	n/a	31	31	n/a	n/a	987	521

Alaska Division of Retirement and Benefits

FY 2022 QUARTERLY REPORT OF MEMBERSHIP STATISTICS

Annual & Quarterly Trends as of June 30, 2022



LEGEND

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

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

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

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

Retirements - The number of retirement applications processed.

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

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

ALASKA RETIREMENT MANAGEMENT BOARD
STAFF REPORT

Division of Retirement & Benefits (DRB) Report - IT Modernization
September 15, 2022 (Thru MS Teams Meeting)

The report intends to offer a status update on the DRB's IT modernization project:

Status Update:

- Since the May 2022 update, DRB has had changes in project scope and cost, several accomplishments, and met a number of milestones.
  - As previously reported verbally, a number value-add changes were reviewed at all levels and deemed necessary to achieve the best possible outcome. With these changes, BEARS is expected to be implemented in March 2024 with an additional cost of $504,012.
  - Accomplishments during this period include:
    - Change Requests: 6 of 13 change requests contained in the scope increase mentioned above have been fully designed and 4 of those are fully developed.
    - Program Modules: 11 modules have been fully designed and 8 of those modules have completed the development phase and will be included in Pilot 2.
    - Data Conversion: 3 of 11 modules are 100% mapped, 9 modules are over 60% complete, and 2 remaining modules are over 30% mapped.
- Budget and Spending by Vendors (as of 8/25/2022):
- Sagitec – Program design, development, and implementation: Authorized – $25,566,097; Spend to Date – $13,574,523; Balance Remaining – $11,991,574
- Linea – Program management: Authorized – $3,270,858; Spend to Date – $2,449,224; Balance Remaining – $821,634

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY2024 ARMB Budget Proposal

ACTION: X

DATE: September 15, 2022

INFORMATION: _____

BACKGROUND:
The Alaska Retirement Management Board (ARMB) meets annually to review the actual expenditures in the immediately preceding fiscal year, the current fiscal year budget as approved by the legislature; and the proposed budget for the next fiscal year to be adopted by the Board. The ARMB budget is presented in the Alaska Budget System in two budget components: ARMB Operations component and the ARMB Custody and Management component. For presentation purposes, the attached schedule combines these into one schedule and provides greater detail for the board to have a better understanding of expenses. FY2019 through FY2022 actuals are presented, along with FY23 and FY2024 projected and proposed amounts. All costs are allocated to individual funds based on the federally approved cost allocation plan discussed in prior Audit committees.

STATUS:

Personal Services Costs

The ARMB purchases personal services from the Treasury division each year. The FY2023 legislatively approved budget includes approximately $7 million for personal services. The FY2024 proposed amount includes an increase of $270,000 in authorization to accommodate potential salary increases funded by ARMB plans.

Investment Management Fees

Total investment management fees decreased from FY2019 due to transferring assets managed by external firms to internally managed mandates and through consolidating external mandates. Fees have gone from over $100 million to between $65 -$75 million since FY2020, and in FY2022, represented 23 basis points (.23%). The custody and management fee component for FY2023 continues to authorize up to $35 million for public fees that managers do not net from managed funds. Private investment fee authorization continues to be $50 million. These fees are netted from investments by the manger and historically are not included in budget appropriations, although disclosed in presentations to the legislature for transparency. FY2024 amounts are proposed to be the same to ensure adequate authorization for increases due to changes in investment mandates and/or investment growth. A summary of actual management fees for FY2012-2021 is attached.

Other Budgeted Costs

Other costs reflected in the attached working budget are based on prior year amounts and expected increases or decreases that are currently known. Sufficient FY2023 budget authority exists for these costs. Similar amounts are anticipated to be included in the FY2024 budget proposal during discussions with the OMB and Legislature.

RECOMMENDATION:
That the Alaska Retirement Management Board adopt the FY2024 Proposed Budget as attached, with the understanding that components will be subject to appropriation by OMB and the Legislature.

Attachments: ARMB Working FY24 Budget and Investment Management Fee Summary 2012-2022.

State of Alaska

FY24 ARMB Working Budget

		FY19 Actuals	FY20 Actuals	FY21 Actuals	FY22 Actuals	FY22 Authorized	FY23 Projected	FY24 Proposed
Personal Services	ARMB Personal Services	$6,049,367.12	$5,978,892.75	$5,501,551.39	5,649,758.72	6,545,000.00	6,914,100.00	7,190,664.00
	Board Honorarium	$74,058.92	$46,528.56	$33,170.28	44,000.00	75,000.00	75,000.00	75,000.00
		6,123,426.04	**6,025,421.31**	**5,534,721.67**	**5,693,758.72**	**6,620,000.00**	**6,989,100.00**	**7,265,664.00**
Travel	Travel Costs	$136,045.86	$26,525.32	$14,697.08	41,783.46	134,100.00	134,100.00	134,100.00
		136,045.86	**26,525.32**	**14,697.08**	**41,783.46**	**134,100.00**	**134,100.00**	**134,100.00**
Management & Custody Fees	Custody Fees	$1,454,177.77	$1,468,319.47	$1,502,242.37	1,470,086.38	1,500,000.00	1,500,000.00	1,500,000.00
	External Public Investment Fees	$34,357,984.48	$23,653,586.33	$23,644,485.37	26,472,583.95	32,650,000.00	32,650,000.00	32,650,000.00
	Investment/Performance Consultant	$871,300.84	$736,695.00	$695,250.00	716,106.84	850,000.00	850,000.00	850,000.00
	Unbudgeted Private Investment Fees	$65,099,787.96	$46,015,032.83	$43,539,233.46	45,382,425.88	50,000,000.00	50,000,000.00	50,000,000.00
		101,783,251.05	**71,873,633.63**	**69,381,211.20**	**74,041,203.05**	**85,000,000.00**	**85,000,000.00**	**85,000,000.00**
Investment Information Systems	Bloomberg	$506,871.45	$420,960.46	$455,536.89	546,934.53	675,000.00	675,000.00	675,000.00
	CreditSights	$36,556.76	$13,347.00	$14,805.00	15,545.25	15,000.00	17,000.00	17,000.00
	ISS Proxy Voting	$48,110.40	$48,110.40	$48,110.40	48,110.40	51,000.00	51,000.00	51,000.00
	Moodys	$40,396.60	$70,805.86	$82,203.00	94,533.45	85,000.00	100,000.00	100,000.00
	Other Investment Costs	$41,966.21	$10,324.20	$5,194.25	5,583.91	60,000.00	30,000.00	40,000.00
	PITCHBOOK DATA INC	$0.00	$0.00	$20,000.00	22,500.00	20,000.00	25,000.00	25,000.00
	Risk Management Products	$95,017.50	$59,618.77	$100,843.04	102,815.25	100,000.00	120,000.00	120,000.00
	Standard and Poors Financial Services	$402,067.08	$423,194.99	$403,778.03	428,776.86	450,000.00	450,000.00	450,000.00
	SWIFT	$0.00	$0.00	$3,404.71	16,743.48	35,000.00	35,000.00	35,000.00
	TradeWeb	$10,401.12	$17,084.16	$18,048.00	17,664.00	20,000.00	20,000.00	20,000.00
	Yieldbook	$38,633.15	$68,600.28	$73,889.67	80,045.23	75,000.00	85,000.00	85,000.00
		1,220,020.27	**1,132,046.12**	**1,225,812.99**	**1,379,252.36**	**1,586,000.00**	**1,608,000.00**	**1,618,000.00**
Other Professional Services	Actuarial Services	$221,085.25	$235,707.09	$205,449.77	270,710.15	340,000.00	250,000.00	250,000.00
	DOA Finance (IRIS, ALDER, ADA, INS)	$33,888.11	$37,214.04	$20,332.34	14,497.82	40,000.00	30,000.00	30,000.00
	DOA Human Resources	$22,275.41	$22,905.12	$16,837.58	15,840.49	21,000.00	20,000.00	20,000.00
	DOR ASD Support Services/OOC Support Services	$244,898.42	$110,923.00	$116,671.45	99,305.21	150,000.00	110,000.00	110,000.00
	Financial Audit	$95,831.74	$192,000.00	$101,056.00	110,000.00	100,000.00	100,000.00	100,000.00
	International Tax Preparation	$13,000.00	$6,000.00	$27,621.00	32,894.00	25,000.00	25,000.00	25,000.00
	Investment Advisory Council	$108,673.37	$58,455.63	$78,845.63	91,196.98	100,000.00	100,000.00	100,000.00
	IT Support/Software	$146,191.98	$151,550.07	$197,011.92	117,307.52	280,000.00	235,000.00	235,000.00
	Legal	$132,370.33	$100,505.88	$55,770.34	58,632.77	150,000.00	70,000.00	70,000.00
	Other Professional Services	$5,204.00	$936.00	$5,612.39	936.73	6,500.00	6,500.00	6,500.00
		1,023,418.61	**916,196.83**	**825,208.42**	**811,321.67**	**1,212,500.00**	**946,500.00**	**946,500.00**
Subscriptions and Training	Books and Educational Supplies	$3,484.03	$1,876.53	$959.00	1,958.17	1,000.00	5,000.00	5,000.00
	Memberships	$12,402.21	$6,698.00	$9,518.00	9,583.49	15,000.00	15,000.00	15,000.00
	News and Magazine Subscriptions	$6,406.44	$8,528.90	$8,676.00	4,941.30	10,000.00	10,000.00	10,000.00
	Training and Conferences	$9,466.96	$2,823.50	$2,008.20	15,621.33	10,000.00	15,000.00	15,000.00
		31,759.64	**19,926.93**	**21,161.20**	**32,104.29**	**36,000.00**	**45,000.00**	**45,000.00**
General Office Expenses	Building Related Expenses	$161,207.20	$157,342.31	$148,618.93	147,596.99	165,000.00	454,300.00	500,000.00
	Business Supplies	$3,648.44	$2,277.98	$1,496.61	3,318.29	7,000.00	7,000.00	7,000.00
	Equipment and Machinery	$17,946.15	$27,241.71	$6,446.34	9,399.68	30,000.00	30,000.00	30,000.00
	Mail/Courier Services	$5,028.28	$3,113.90	$1,608.59	1,496.01	7,500.00	5,000.00	5,000.00
	Public Notices	$2,775.00	$1,683.32	$2,182.75	1,695.48	5,000.00	3,000.00	3,000.00
	Telecommunications	$43,673.90	$37,665.89	$18,866.14	14,805.66	50,000.00	15,000.00	15,000.00
		234,278.97	**229,325.11**	**179,219.36**	**178,312.11**	**264,500.00**	**514,300.00**	**560,000.00**
Board Meeting Expenses	Board Meeting Expenses	$58,508.53	$20,770.60	$43,082.14	42,735.02	75,000.00	45,000.00	45,000.00
		$58,508.53	**$20,770.60**	**$43,082.14**	**42,735.02**	**75,000.00**	**45,000.00**	**45,000.00**
Total		**$110,610,708.97**	**$80,264,663.78**	**77,268,196.20**	**82,263,205.70**	**95,003,100.00**	**95,282,000.00**	**95,614,264.00**

Historic ARMB Manager Fees Paid, FY12 to FY22

	FY12	FY13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22
Broad Domestic Equity	$10,043,289	$11,559,501	$13,243,266	$12,654,891	$11,730,056	$14,459,724	$12,319,726	$8,387,794	$1,163,922	$1,058,327	$976,863
Global Equity Ex-US	$15,814,643	$14,688,634	$17,142,130	$21,381,074	$20,815,819	$22,460,312	$23,094,420	$18,572,009	$10,402,732	$8,541,227	$9,492,443
Alternative Equity/Opportunistic	$3,796,483	$3,454,480	$1,512,333	$3,012,605	$2,055,605	$2,162,504	$9,094,818	$7,633,781	$7,733,434	$6,845,528	$7,706,581
Private Equity	$7,666,847	$6,653,443	$7,453,571	$7,793,757	$9,328,973	$11,765,183	$12,260,133	$14,350,011	$14,277,305	$15,460,744	$18,125,230
Real Assets	$19,100,864	$23,608,330	$24,670,853	$25,175,085	$27,820,023	$28,648,117	$29,761,682	$30,083,965	$24,764,107	$22,768,170	$22,565,457
Absolute Return	$6,056,485	$5,176,521	$5,985,676	$11,487,059	$23,558,243	$21,731,258	$18,287,912	$20,428,820	$0	$0	$0
Fixed Income	$3,335,470	$3,685,272	$4,143,522	$5,010,475	$5,928,825	$7,390,994	$0	$1,386	$11,327,119	$12,509,723	$12,988,437
Total Fees	$65,814,081	$68,826,182	$74,151,352	$86,514,945	$101,237,544	$108,618,092	$104,818,690	$99,457,766	$69,668,619	$67,183,719	$71,855,010
Year End Total Assets	$16,242,119,030	$18,075,627,711	$21,171,071,086	$23,989,926,930	$23,068,284,972	$25,122,989,358	$26,161,838,719	$26,719,147,591	$26,517,235,705	$33,167,896,054	$30,774,127,526
Total Fees as a % of Assets	0.41%	0.38%	0.35%	0.36%	0.44%	0.43%	0.40%	0.37%	0.26%	0.20%	0.23%

THE STATE of ALASKA
GOVERNOR MIKE DUNLEAVY

Department of Revenue

ALASKA RETIREMENT MANAGEMENT BOARD

PO Box 110405
Juneau, Alaska 99811-0405
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Chief Investment Officer Report

September 2022

1. CIO Update

2. Watch List:
   a. Existing – Fidelity Real Estate High Income, performance, 12/21
   b. Existing – Fidelity Signals, personnel turnover, 3/22
   c. Existing – Blackrock Real Estate, personnel turnover, 3/22
   d. Existing – Brandes International, performance, 3/22
   e. Addition – Baillie Gifford due to performance

3. Material contract and investment actions:
   a. 07/11/22 Sentinel Capital Partners VII $40 million private equity commitment
   b. 07/29/22 Glendon Opportunities III $40 million private equity commitment
   c. 08/11/22 Mass Mutual Stable Value Wrap Contract Update for T.Rowe/DC
   d. 08/11/22 New York Life Stable Value Wrap Contract Update for T.Rowe/DC
   e. 08/31/22 T.Rowe Price Target/Balanced Fund Amendment

4. Portfolio Transaction Update from May 2022 through August 2022

Individual Manager Transactions

May - August 2022

Asset Class	Total
Fixed Income	(111,169,963)
Broad Domestic Equity	109,871,715
Global Equity Ex-US	229,798,248
Real Assets	(50,000,000)
Multi-asset	(178,500,000)
Private Equity	-
Net Buys	339,669,963
Net Sells	(339,669,963)

Manager	Total	Fund	Asset Class	Description
Short Term Fixed Income Pool	485,830,037	AY70	Fixed Income	Rebalancing
ARMB Multi-factor	100,000,000	AYK4	Dom. Equity	Rebalancing
LGIMA Sci Beta Developed Non-US	93,000,000	AYLS	Intl. Equity	Rebalancing
Brandes Investment Partners	93,000,000	AY65	Intl. Equity	Rebalancing
Arrowstreet Capital	93,000,000	AYLQ	Intl. Equity	Rebalancing
ARMB S&P 900	64,000,000	AY4L	Dom. Equity	Rebalancing
ARMB S&P 600	46,000,000	AYGA	Dom. Equity	Rebalancing
LGIMA Sci Beta Emerging Markets	31,000,000	AYLH	Intl. Equity	Rebalancing
SSGA Transition	(34)	AY30	Dom. Equity	Closed Account Cleanup
ARMB Domestic Residual Assets	(128,251)	AY5E	Dom. Equity	Closed Account Cleanup
International Equity Residual Asset	(201,752)	AY69	Intl. Equity	Closed Account Cleanup
Schroders Advanced ILS Fund	(3,500,000)	AY1H	Multi-Asset	Closed Account Cleanup
ARMB REIT	(50,000,000)	AY9H	Real Assets	Rebalancing
PineBridge	(50,000,000)	AY1X	Multi-Asset	Rebalancing
Fidelity Portfolio Signaling	(50,000,000)	AY1W	Multi-Asset	Rebalancing
Fidelity Tactical Bond	(55,000,000)	AY1F	Fixed Income	Rebalancing
Man Group Alternative Risk Premia	(75,000,000)	AYL2	Multi-Asset	Rebalancing
SSGA World ex-US IMI	(80,000,000)	AYL7	Intl. Equity	Rebalancing
ARMB Scientific Beta	(100,000,000)	AYLM	Dom. Equity	Rebalancing
ARMB Aggregate Bond Fund	(542,000,000)	AY77	Fixed Income	Rebalancing

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Investment Advisory Council Member Contract Expiration

ACTION: X

INFORMATION: _____

DATE: September 15-16, 2022

BACKGROUND:

AS 37.10.270 provides that the Alaska Retirement Management Board (Board) may appoint an investment advisory council (IAC) composed of at least three and not more than five members to advise the Board on investment policies, strategy, and procedure and to perform such other actions as specified by law or are requested by the Board, including providing advisory services to other state fiduciaries approved by the Board.

IAC members shall possess experience and expertise in financial investments and management of investment portfolios for public, corporate, or union pension benefit funds, foundations, or endowments. Currently, three IAC members are under contract to provide advisory services to the Board and other approved fiduciaries. The three advisory positions are designated by areas of expertise: an academic advisor, an advisor with experience as trustee/manager of a public fund or endowment, and an advisor with experience as a portfolio manager. IAC members currently attend Board meetings, State Investment Review meetings, an annual manager review meeting, and annually participate in evaluating and recommending the strategic asset allocation for the plans.

STATUS:

Ruth Ryerson holds the seat designated for an advisor with experience as a trustee/manager of a public fund or endowment. Ms. Ryerson was the successful applicant in a search conducted in late 2019, and appointed to the IAC for a three-year term, effective January 1, 2020 – December 31, 2022.

AS 37.10.270 provides that members of the council serve at the pleasure of the board for staggered terms of three years. Contract periods for the other two IAC members are on a fiscal year schedule (July to June), which more appropriately aligns with Treasury's accounting processes.

RECOMMENDATION:

That the Alaska Retirement Management Board reappoint Ms. Ryerson to the Investment Advisory Council and adjust the contract period to two and a half years (January 1, 2023 – June 30, 2025) to realign with the fiscal year.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: History of PERS / TRS Employer Contribution Rates

ACTION: _____

DATE: September 15, 2022

INFORMATION: X

Below is a history of employer contribution rates adopted by the Alaska Retirement Management Board for Fiscal Years 2015 through 2023, as well as the proposed FY 2024 contribution rates:

ARM BOARD ADOPTED RATES													
	FY15 (a)	FY15 (b)	FY16	FY17	FY18	FY19 (c)	FY20	FY21	FY22	FY23	PROPOSED FY24 (1)	PROPOSED FY24 (2)	PROPOSED FY24 (3)
Public Employees' Retirement System (PERS)													
Total Employer Contribution Rate	44.03%	31.90%	27.19%	26.14%	25.01%	27.58%	28.62%	30.85%	30.11%	24.79%	27.60%	25.10%	26.35%
- DB Employer Contribution Rate	39.85%	27.72%	22.58%	21.78%	20.38%	22.64%	23.18%	24.93%	24.01%	18.38%	20.97%	18.47%	19.72%
- DCR Employer Contribution Rate	4.18%	4.18%	4.61%	4.36%	4.63%	4.94%	5.44%	5.92%	6.10%	6.41%	6.63%	6.63%	6.63%
DCR - Retiree Medical Plan	1.66%	1.66%	1.68%	1.18%	1.03%	0.94%	1.32%	1.27%	1.07%	1.10%	1.01%	1.01%	1.01%
DCR - OD&D - All Others	0.22%	0.22%	0.22%	0.17%	0.16%	0.26%	0.26%	0.31%	0.31%	0.30%	0.30%	0.30%	0.30%
DCR - OD&D - P/F	1.06%	1.06%	1.05%	0.49%	0.43%	0.76%	0.72%	0.70%	0.68%	0.68%	0.68%	0.68%	0.68%
Teachers' Retirement System (TRS)													
Total Employer Contribution Rate	70.75%	48.69%	29.27%	28.02%	26.78%	28.90%	30.47%	30.47%	31.85%	24.62%	27.93%	25.52%	26.73%
- DB Employer Contribution Rate	66.31%	44.25%	24.48%	23.40%	21.75%	23.56%	24.62%	24.34%	25.49%	17.90%	20.90%	18.49%	19.70%
- DCR Employer Contribution Rate	4.44%	4.44%	4.79%	4.62%	5.03%	5.34%	5.85%	6.13%	6.36%	6.72%	7.03%	7.03%	7.03%
DCR - Retiree Medical Plan	2.04%	2.04%	2.04%	1.05%	0.91%	0.79%	1.09%	0.93%	0.83%	0.87%	0.82%	0.82%	0.82%
DCR - OD&D	0.00%	0.00%	0.00%	0.00%	0.00%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%	0.08%

(a) As noted in the June 30, 2012 actuarial valuation reports, "The Board changed the amortization method used for funding from the level percentage of payroll method to the level dollar method in June 2012, effective June 30, 2012."

(b) During the FY 2014 legislative session, HB 385 enacted certain changes into law. In AS 37.10.220(a), item (a)(8)(B) was amended to define that "an appropriate contribution rate for liquidating the past service liability of the defined benefit retirement plan under AS 14.25.009 - 14.25.220 or the past service liability of the defined benefit retirement plan under AS 39.35.095 - 39.35.680 must be determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years;"
The PERS DB and TRS DB Employer Contribution Rates for FY 2015 were updated to the level percentage of pay methodology from the previously determined rates that were prepared using the level dollar methodology, and have been done so going forward.

(c) Beginning in Fiscal Year 2019, employer contribution rates for plans which have no past service liability as determined by the actuarial valuation process will not reflect a contribution rate for liquidating past service liability under AS 37.10.220(a)(8)(B).

(1) Proposed FY24 rates are based on Buck letter dated September 1, 2022 with liabilities rolled forward two years and assets rolled forward one year and smoothed. Portion of FY24 healthcare normal cost contributed to healthcare trust is 100%.

(2) Proposed FY24 rates are based on Buck letter dated September 1, 2022 with liabilities rolled forward two years and assets rolled forward one year and smoothed. Portion of FY24 healthcare normal cost contributed to healthcare trust is 0%.

(3) Proposed FY24 rates are based on Buck letter dated September 1, 2022 with liabilities rolled forward two years and assets rolled forward one year and smoothed. Portion of FY24 healthcare normal cost contributed to healthcare trust is 50%.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT:	FY 24 PERS Employer Contribution Rate Tier I - III	ACTION:	X
DATE:	September 15, 2022	INFORMATION:	

BACKGROUND:

AS 37.10.220(a)(8) sets forth the responsibility of the Alaska Retirement Management Board (Board) to annually certify to each employer in the system contribution rates for normal costs and for liquidating any past service liability:

> *(8) coordinate with the retirement system administrator to have an annual actuarial valuation of each retirement system prepared to determine system assets, accrued liabilities, and funding ratios and to certify to the appropriate budgetary authority of each employer in the system*
>
> *(A) an appropriate contribution rate for normal costs; and*
>
> *(B) an appropriate contribution rate for liquidating any past service liability; in this subparagraph, the appropriate contribution rate for liquidating the past service liability of the defined benefit retirement plan under AS 14.25.009 - 14.25.220 or the past service liability of the defined benefit retirement plan under AS 39.35.095 - 39.35.680 must be determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years;*

AS 39.35.270 requires that the amount of each Public Employees' Retirement System (PERS) employer's contribution to the system shall be determined by applying the employer's contribution rate, as certified by the Board, to the total compensation paid to the active employee. Statutory employer contribution and additional state contribution are established under the following two sections of Alaska Statute:

Sec. 39.35.255. Contributions by employers. (a) Each employer shall contribute to the system every payroll period an amount calculated by applying a rate of 22 percent of the greater of the total of all base salaries

(1) paid by the employer to employees who are active members of the system, including any adjustments to contributions required by AS 39.35.520; or

(2) paid by the employer to employees who were active members of the system during the corresponding payroll period for the fiscal year ending June 30, 2008."

(i) The State as an employer shall contribute to the system every payroll period an amount sufficient to pay the actuarially determined employer normal cost, all contributions required under AS 39.30.370 and AS 39.35.750, and all past service cost for members at the contribution rate adopted by the board under AS 37.10.220 for the fiscal year for that payroll period.

and:

Sec. 39.35.280. Additional state contributions. In addition to the contributions that the state is required to make under AS 39.35.255 as an employer, the state shall contribute to the plan each July 1 or, if funds are not available on July 1, as soon after July 1 as funds become available, an amount for the ensuing fiscal year that, when combined with the total employer contributions that the administrator estimates will be allocated under AS 39.35.255(c), is sufficient to pay the plan's past service liability at the contribution rate adopted by the board under AS 37.10.220 for that fiscal year.

STATUS:

The Division of Retirement & Benefits' (Division) actuary, Buck, has completed the allocation of projected FY 24 employer and additional state contributions as shown in their letter dated September 1, 2022 based on the June 30, 2021 valuation report, except the results for PERS reflect FY 22 asset performance as shown in the preliminary June 30, 2022 asset statements provided by the Division on August 31, 2022. The PERS June 30, 2021 valuation report has been reviewed by the Board's actuary, Gabriel, Roeder, Smith & Co. (GRS) and then certified and accepted by the Board.

The Actuarial Committee met September 14, 2022 and passed a motion recommending that the Board adopt Resolution 2022-04.

RECOMMENDATION:

That the Alaska Retirement Management Board set the Fiscal Year 2024 PERS actuarially determined contribution rate attributable to employers consistent with its fiduciary duty, as set out in the attached form of Resolution 2022-04.

September 1, 2022

Mr. Ajay Desai
Director
Alaska Department of Administration
Division of Retirement & Benefits
PO Box 110203
Juneau, AK 99811-0203

Dear Ajay,

As requested, we have calculated the allocation between the pension and healthcare trusts of the FY24 Additional State Contributions for the State of Alaska Public Employees' Retirement System (PERS), Teachers' Retirement System (TRS), and Judicial Retirement System (JRS).

All results are based on the June 30, 2021 valuation reports, except the results for PERS and TRS reflect FY22 asset performance as shown in the preliminary June 30, 2022 asset statements that were provided to us on August 31.

Summary of Results

For PERS and TRS, the FY24 Additional State Contributions are allocated 100% to pension since the healthcare trusts are projected to be more than 100% funded at June 30, 2023. Similarly, we assumed the FY23 Additional State Contributions were made 100% to pension because the healthcare trusts were projected to be more than 100% funded at June 30, 2022.

Attached to this letter are three exhibits. Each exhibit is the same except for the portion of the FY24 healthcare Normal Cost that is assumed to be deposited to the healthcare trust[1].

- Exhibit 1 – **100%** of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.
- Exhibit 2 – **0%** of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.
- Exhibit 3 – **50%** of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.

[1] In Exhibits 2 and 3, the portion of the FY24 healthcare Normal Cost not contributed to the healthcare trust was added to the pension Past Service Cost in order to keep the total employer contribution rate at 22% (PERS non-State employers) and 12.56% (TRS).

For all three exhibits:

- Liabilities as of June 30, 2021 were rolled forward two years based on the June 30, 2021 valuation projections. For FY22, actual (pension) and expected (healthcare) benefit payments were used in the liability roll-forward. For FY23, expected benefit payments (pension and healthcare) were used in the liability roll-forward.

- Assets as of June 30, 2021 were rolled forward one year using actual FY22 investment return, contributions, subsidies, benefit payments, and administrative expenses based on the preliminary June 30, 2022 asset statements. Assets as of June 30, 2022 were rolled forward one year based on the expected FY23 investment return and cash flows from the June 30, 2021 valuation projections.

- The Unfunded Actuarial Accrued Liability is amortized under the 25-year layered approach adopted by the Alaska Retirement Management Board (ARMB) effective June 30, 2018.

- Investment gains and losses are recognized over 5 years beginning June 30, 2014.

- All contribution rates are based on total payroll of Defined Benefit (DB) and Defined Contribution Retirement (DCR) combined.

- For PERS, contributions were allocated between non-State employers and the State as an employer per the provisions of SB 55. The payroll of the State's PERS employees was assumed to be 49.79% of total PERS payroll based on the June 30, 2021 valuation data.

For JRS, the allocation of the FY24 past service cost rate between pension and healthcare is shown below. The FY24 past service cost rate is based on the June 30, 2021 valuation, but not less than zero.

JRS			
	Projected Pay	FY24 Past Service Cost Rate	FY24 Past Service Contribution Amount
Pension	$ 13,157,000	19.71%	$ 2,593,000
Healthcare	$ 13,157,000	0.00%	$ 0
Total		19.71%	$ 2,593,000

Data, Provisions, Assumptions, and Methods

The data, plan provisions, actuarial assumptions, and methods used for the PERS, TRS, and JRS plan costs are described in the June 30, 2021 actuarial valuation reports. These reports include detailed information related to potential risks associated with funding of the plans (ASOP 51), as well as information regarding our use of models (ASOP 56).

Preliminary June 30, 2022 asset statements for PERS and TRS were reflected as noted above.

Actuarial Standards of Practice No. 27 (ASOP 27) and No. 35 (ASOP 35) require the actuary to disclose the information and analysis used to support the actuary's determination that the assumptions selected by the plan sponsor do not significantly conflict with what, in the actuary's professional judgment, are reasonable for the purpose of the measurement. In the case of the ARMB's selection of the expected return on assets (EROA), the signing actuary has used economic information and tools provided by Buck's Financial Risk Management (FRM) practice. A spreadsheet tool created by the FRM practice converts averages, standard deviations, and correlations from Buck's Capital Markets Assumptions that are used for stochastic forecasting into approximate percentile ranges for the arithmetic and geometric average returns. It is intended to suggest possible reasonable ranges for EROA without attempting to predict or select a specific best estimate rate of return. It takes into account the duration (horizon) of investment and the target allocation of assets in the portfolio to various asset classes. Based on the actuary's analysis, including consistency with other assumptions used in the valuation and the percentiles generated by the spreadsheet tool described above, the actuary believes the EROA does not significantly conflict with what, in the actuary's professional judgment, is reasonable for the purpose of the measurement.

Please call me at 602-803-6174 if you have any questions.

Sincerely,

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

Attachments

cc: Mr. Jim Puckett, State of Alaska
Mr. Kevin Worley, State of Alaska

BUCK

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BUCK

Exhibit 1

State of Alaska
Allocation of Projected FY24 Employer and Additional State Contributions

Based on June 30, 2021 Valuations
with Liabilities Rolled Forward Two Years and
Assets Rolled Forward One Year and Smoothed

Portion of FY24 Healthcare Normal Cost Contributed to Healthcare Trust: 100%

	PERS					TRS	
	Non-State Employers		State as an Employer		All Employers		
Projected FY24 DB Payroll		$ 357,303,000		$ 354,314,000	$ 711,617,000		$ 270,617,000
Projected FY24 DCR Payroll		866,626,000		859,376,000	1,726,002,000		491,467,000
Projected FY24 Total Payroll		$ 1,223,929,000		$ 1,213,690,000	$ 2,437,619,000		$ 762,084,000
	Percent of Total Payroll	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**
Employer Contributions							
DB Pension Plan							
1. Normal Cost	2.14%		2.14%			2.05%	
2. Past Service Cost	10.73%		16.33%			1.07%	
3. Total: (1) + (2)	12.87%	$ 157,520,000	18.47%	$ 224,169,000	$ 381,689,000	3.12%	$ 23,777,000
DB Healthcare Plan							
4. Normal Cost	2.50%		2.50%			2.41%	
5. Past Service Cost	0.00%		0.00%			0.00%	
6. Total: (4) + (5)	2.50%	30,598,000	2.50%	30,342,000	60,940,000	2.41%	18,366,000
7. DCR Plan	6.63%	81,146,000	6.63%	80,468,000	161,614,000	7.03%	53,575,000
8. Total: (3) + (6) + (7)	22.00%	$ 269,264,000	27.60%	$ 334,979,000	$ 604,243,000	12.56%	$ 95,718,000
Additional State Contributions to DB							
9. DB Pension Plan	5.60%	$ 68,540,000	0.00%	$ 0	$ 68,540,000	15.37%	$ 117,132,000
10. DB Healthcare Plan	0.00%	0	0.00%	0	0	0.00%	0
11. Total: (9) + (10)	5.60%	$ 68,540,000	0.00%	$ 0	$ 68,540,000	15.37%	$ 117,132,000
Total DB							
12. DB Pension Plan: (3) + (9)	18.47%	$ 226,060,000	18.47%	$ 224,169,000	$ 450,229,000	18.49%	$ 140,909,000
13. DB Healthcare Plan: (6) + (10)	2.50%	30,598,000	2.50%	30,342,000	60,940,000	2.41%	18,366,000
14. Total: (12) + (13)	20.97%	$ 256,658,000	20.97%	$ 254,511,000	$ 511,169,000	20.90%	$ 159,275,000
Total DB and DCR: (7) + (14)	27.60%	$ 337,804,000	27.60%	$ 334,979,000	$ 672,783,000	27.93%	$ 212,850,000

Notes:

1. Projected FY24 payroll is based on the June 30, 2021 valuation projections assuming 0% population growth.
2. Additional State Contributions for FY23 were assumed to be made 100% to pension.
3. All contribution rates are expressed as a percentage of total payroll of DB and DCR combined.
4. FY22 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on preliminary June 30, 2022 asset statements provided by the State. FY23 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on the June 30, 2021 valuation projections assuming 0% population growth. Investment gains and losses are recognized over 5 years beginning June 30, 2014.
5. Total contribution rates for pension and healthcare are not less than the Normal Cost rates.
6. For PERS under SB 55, payroll for the State's PERS employees was assumed to be 49.79% of total PERS payroll based on the June 30, 2021 valuation data.
7. Data, plan provisions, assumptions, and methods are as described in the June 30, 2021 actuarial valuation reports, except as noted above.

BUCK

Exhibit 2

State of Alaska
Allocation of Projected FY24 Employer and Additional State Contributions

Based on June 30, 2021 Valuations
with Liabilities Rolled Forward Two Years and
Assets Rolled Forward One Year and Smoothed

Portion of FY24 Healthcare Normal Cost Contributed to Healthcare Trust: 0%

	PERS					TRS	
	Non-State Employers		State as an Employer		All Employers		
Projected FY24 DB Payroll		$ 357,303,000		$ 354,314,000	$ 711,617,000		$ 270,617,000
Projected FY24 DCR Payroll		866,626,000		859,376,000	1,726,002,000		491,467,000
Projected FY24 Total Payroll		$ 1,223,929,000		$ 1,213,690,000	$ 2,437,619,000		$ 762,084,000
	Percent of Total Payroll	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**
Employer Contributions							
DB Pension Plan							
1. Normal Cost	2.14%		2.14%			2.05%	
2. Past Service Cost	13.23%		16.33%			3.48%	
3. Total: (1) + (2)	15.37%	$ 188,118,000	18.47%	$ 224,169,000	$ 412,287,000	5.53%	$ 42,143,000
DB Healthcare Plan							
4. Normal Cost	0.00%		0.00%			0.00%	
5. Past Service Cost	0.00%		0.00%			0.00%	
6. Total: (4) + (5)	0.00%	0	0.00%	0	0	0.00%	0
7. DCR Plan	6.63%	81,146,000	6.63%	80,468,000	161,614,000	7.03%	53,575,000
8. Total: (3) + (6) + (7)	22.00%	$ 269,264,000	25.10%	$ 304,637,000	$ 573,901,000	12.56%	$ 95,718,000
Additional State Contributions to DB							
9. DB Pension Plan	3.10%	$ 37,942,000	0.00%	$ 0	$ 37,942,000	12.96%	$ 98,766,000
10. DB Healthcare Plan	0.00%	0	0.00%	0	0	0.00%	0
11. Total: (9) + (10)	3.10%	$ 37,942,000	0.00%	$ 0	$ 37,942,000	12.96%	$ 98,766,000
Total DB							
12. DB Pension Plan: (3) + (9)	18.47%	$ 226,060,000	18.47%	$ 224,169,000	$ 450,229,000	18.49%	$ 140,909,000
13. DB Healthcare Plan: (6) + (10)	0.00%	0	0.00%	0	0	0.00%	0
14. Total: (12) + (13)	18.47%	$ 226,060,000	18.47%	$ 224,169,000	$ 450,229,000	18.49%	$ 140,909,000
Total DB and DCR: (7) + (14)	25.10%	$ 307,206,000	25.10%	$ 304,637,000	$ 611,843,000	25.52%	$ 194,484,000

Notes:

1. Projected FY24 payroll is based on the June 30, 2021 valuation projections assuming 0% population growth.
2. Additional State Contributions for FY23 were assumed to be made 100% to pension.
3. All contribution rates are expressed as a percentage of total payroll of DB and DCR combined.
4. FY22 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on preliminary June 30, 2022 asset statements provided by the State. FY23 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on the June 30, 2021 valuation projections assuming 0% population growth. Investment gains and losses are recognized over 5 years beginning June 30, 2014.
5. Total contribution rates for pension and healthcare are not less than the Normal Cost rates.
6. For PERS under SB 55, payroll for the State's PERS employees was assumed to be 49.79% of total PERS payroll based on the June 30, 2021 valuation data.
7. Healthcare past service rates are allowed to reduce the total Healthcare rates to zero. The Pension past service rates are adjusted to keep the total contribution rates at 22% (PERS non-State employers) and 12.56% (TRS).
8. Data, plan provisions, assumptions, and methods are as described in the June 30, 2021 actuarial valuation reports, except as noted above.

BUCK

Exhibit 3

State of Alaska
Allocation of Projected FY24 Employer and Additional State Contributions

Based on June 30, 2021 Valuations
with Liabilities Rolled Forward Two Years and
Assets Rolled Forward One Year and Smoothed

Portion of FY24 Healthcare Normal Cost Contributed to Healthcare Trust: 50%

	PERS						TRS	
	Non-State Employers		State as an Employer		All Employers			
Projected FY24 DB Payroll		$ 357,303,000		$ 354,314,000		$ 711,617,000		$ 270,617,000
Projected FY24 DCR Payroll		866,626,000		859,376,000		1,726,002,000		491,467,000
Projected FY24 Total Payroll		$ 1,223,929,000		$ 1,213,690,000		$ 2,437,619,000		$ 762,084,000
	Percent of Total Payroll	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**	**Estimated Dollar Amount**		**Percent of Total Payroll**	**Estimated Dollar Amount**
Employer Contributions								
DB Pension Plan								
1. Normal Cost	2.14%		2.14%				2.05%	
2. Past Service Cost	11.98%		16.33%				2.27%	
3. Total: (1) + (2)	14.12%	$ 172,819,000	18.47%	$ 224,169,000	$ 396,988,000		4.32%	$ 32,922,000
DB Healthcare Plan								
4. Normal Cost	1.25%		1.25%				1.21%	
5. Past Service Cost	0.00%		0.00%				0.00%	
6. Total: (4) + (5)	1.25%	15,299,000	1.25%	15,171,000	30,470,000		1.21%	9,221,000
7. DCR Plan	6.63%	81,146,000	6.63%	80,468,000	161,614,000		7.03%	53,575,000
8. Total: (3) + (6) + (7)	22.00%	$ 269,264,000	26.35%	$ 319,808,000	$ 589,072,000		12.56%	$ 95,718,000
Additional State Contributions to DB								
9. DB Pension Plan	4.35%	$ 53,241,000	0.00%	$ 0	$ 53,241,000		14.17%	$ 107,987,000
10. DB Healthcare Plan	0.00%	0	0.00%	0	0		0.00%	0
11. Total: (9) + (10)	4.35%	$ 53,241,000	0.00%	$ 0	$ 53,241,000		14.17%	$ 107,987,000
Total DB								
12. DB Pension Plan: (3) + (9)	18.47%	$ 226,060,000	18.47%	$ 224,169,000	$ 450,229,000		18.49%	$ 140,909,000
13. DB Healthcare Plan: (6) + (10)	1.25%	15,299,000	1.25%	15,171,000	30,470,000		1.21%	9,221,000
14. Total: (12) + (13)	19.72%	$ 241,359,000	19.72%	$ 239,340,000	$ 480,699,000		19.70%	$ 150,130,000
Total DB and DCR: (7) + (14)	26.35%	$ 322,505,000	26.35%	$ 319,808,000	$ 642,313,000		26.73%	$ 203,705,000

Notes:

1. Projected FY24 payroll is based on the June 30, 2021 valuation projections assuming 0% population growth.
2. Additional State Contributions for FY23 were assumed to be made 100% to pension.
3. All contribution rates are expressed as a percentage of total payroll of DB and DCR combined.
4. FY22 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on preliminary June 30, 2022 asset statements provided by the State. FY23 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on the June 30, 2021 valuation projections assuming 0% population growth. Investment gains and losses are recognized over 5 years beginning June 30, 2014.
5. Total contribution rates for pension and healthcare are not less than the Normal Cost rates.
6. For PERS under SB 55, payroll for the State's PERS employees was assumed to be 49.79% of total PERS payroll based on the June 30, 2021 valuation data.
7. Healthcare past service rates are allowed to reduce the total Healthcare rates by half. The Pension past service rates are adjusted to keep the total contribution rates at 22% (PERS non-State employers) and 12.56% (TRS).
8. Data, plan provisions, assumptions, and methods are as described in the June 30, 2021 actuarial valuation reports, except as noted above.

The following version of Resolution 2022-04 reflects **Exhibit 1** - 100% of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate
For the Public Employees' Retirement System

Resolution 2022-04

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220(a)(8) requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios, and to certify to the appropriate budgetary authority of each employer in the system an appropriate contribution rate for normal costs and an appropriate contribution rate for liquidating any past service liability determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years; and

WHEREAS, AS 39.35.255 establishes a statutory non-State employer contribution rate of 22.00 percent and the actuarially determined contribution rate for the State as an employer, and AS 39.35.280 requires additional state contribution to make up the difference between 22.00 percent for non-State employers and the actuarially determined contribution rate; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for pension benefits is 18.47 percent composed of the normal cost rate of 2.14 percent and past service rate of 16.33 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for postemployment healthcare benefits is 2.50 percent composed of the normal cost rate of 2.50 percent and past service rate of negative 5.83 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 presents the employer rate incorporating the total cost of the Defined Contribution Retirement Plan of 6.63 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2024 actuarially determined contribution rate attributable to employers participating in the Public Employees' Retirement System is set at 27.60 percent, composed of the contribution rate for defined benefit pension of 18.47 percent, the contribution rate for postemployment healthcare of 2.50 percent, and the contribution rate for defined contribution pension of 6.63 percent and the non-state employer contribution per the attached Buck schedule dated September 1, 2022.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

The following version of Resolution 2022-04 reflects **Exhibit 2 -** 0% of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.
APPROVED by the BOARD 9/15/22.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate
For the Public Employees' Retirement System

Resolution 2022-04

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220(a)(8) requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios, and to certify to the appropriate budgetary authority of each employer in the system an appropriate contribution rate for normal costs and an appropriate contribution rate for liquidating any past service liability determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years; and

WHEREAS, AS 39.35.255 establishes a statutory non-State employer contribution rate of 22.00 percent and the actuarially determined contribution rate for the State as an employer, and AS 39.35.280 requires additional state contribution to make up the difference between 22.00 percent for non-State employers and the actuarially determined contribution rate; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for pension benefits is 18.47 percent composed of the normal cost rate of 2.14 percent and past service rate of 16.33 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for postemployment healthcare benefits is 2.50 percent composed of the normal cost rate of 2.50 percent and past service rate of negative 5.83 percent; and

WHEREAS, due to the funded status of the postemployment healthcare trust, the Board has the authority under AS 37.10.220(a)(8) to adopt a rate that is appropriate, and the Board has determined that the appropriate contribution rate for the postemployment healthcare benefits is 0.00 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 presents the employer rate incorporating the total cost of the Defined Contribution Retirement Plan of 6.63 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2024 actuarially determined contribution rate attributable to employers participating in the Public Employees' Retirement System is set at 25.10 percent, composed of the contribution rate for defined benefit pension of 18.47 percent, the contribution rate for postemployment healthcare of 0.00 percent, and the contribution rate for defined contribution pension of 6.63 percent and the non-state employer contribution per the attached Buck schedule dated September 1, 2022.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

The following version of Resolution 2022-04 reflects **Exhibit 3** - 50% of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate
For the Public Employees' Retirement System

Resolution 2022-04

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220(a)(8) requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios, and to certify to the appropriate budgetary authority of each employer in the system an appropriate contribution rate for normal costs and an appropriate contribution rate for liquidating any past service liability determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years; and

WHEREAS, AS 39.35.255 establishes a statutory non-State employer contribution rate of 22.00 percent and the actuarially determined contribution rate for the State as an employer, and AS 39.35.280 requires additional state contribution to make up the difference between 22.00 percent for non-State employers and the actuarially determined contribution rate; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for pension benefits is 18.47 percent composed of the normal cost rate of 2.14 percent and past service rate of 16.33 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for postemployment healthcare benefits is 2.50 percent composed of the normal cost rate of 2.50 percent and past service rate of negative 5.83 percent; and

WHEREAS, due to the funded status of the postemployment healthcare trust, the Board has the authority under AS 37.10.220(a)(8) to adopt a rate that is appropriate, and the Board has determined that the appropriate contribution rate for the postemployment healthcare benefits is 1.25 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 presents the employer rate incorporating the total cost of the Defined Contribution Retirement Plan of 6.63 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2024 actuarially determined contribution rate attributable to employers participating in the Public Employees' Retirement System is set at 26.35 percent, composed of the contribution rate for defined benefit pension of 18.47 percent, the contribution rate for postemployment healthcare of 1.25 percent, and the contribution rate for defined contribution pension of 6.63 percent and the non-state employer contribution per the attached Buck schedule dated September 1, 2022.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 24 PERS Retiree Major Medical and Occupational Death & Disability

ACTION: X

DATE: September 15, 2022

INFORMATION: _____

BACKGROUND:

The Alaska Retirement Management Board (Board) establishes rates for the Public Employees' Retirement System (PERS) Defined Contribution Retirement Plan for the following plans: 1) Retiree Major Medical Insurance and 2) Occupational Death & Disability under the following two sections in Alaska Statute:

Retiree Major Medical Insurance
AS 39.35.750 (b) requires that "An employer shall also contribute an amount equal to a percentage, as adopted by the board, of each member's compensation from July 1 to the following June 30 to pay for retiree major medical insurance."

Occupational Death & Disability
AS 39.35.750 (e) requires that "An employer shall make annual contributions to the plan in an amount determined by the board to be actuarially required to fully fund the cost of providing occupational disability and occupational death benefits under AS 39.35.890 and 39.35.892. The contribution required under this subsection for peace officers and fire fighters and the contribution required under this subsection for other employees shall be separately calculated based on the actuarially calculated costs for each group of employees."

STATUS:

The Division of Retirement & Benefits' actuary, Buck, has completed the actuarial valuation of the PERS DCR Plan as of June 30, 2021. The valuation has been reviewed by the Board's actuary, Gabriel, Roeder, Smith & Co. (GRS) and then certified and accepted by the Board.

According to the PERS Defined Contribution Retirement Plan actuarial valuation report, and confirmed by GRS, the Fiscal Year 2024 actuarially determined contribution rates attributable to employers for the Retiree Major Medical Insurance should be 1.01 percent; for the peace officer/firefighter Occupational Death & Disability benefit should be 0.68 percent; and for "all other" Occupational Death & Disability benefit should be 0.30 percent.

The Actuarial Committee met September 14, 2022, and passed a motion recommending that the Board adopt Resolutions 2022-05 and 2022-06.

RECOMMENDATION:

That the Alaska Retirement Management Board set Fiscal Year 2024 PERS Defined Contribution Retirement Retiree Major Medical Insurance and Occupational Death & Disability Benefit rates as set out in the following resolutions:

1. Resolution 2022-05: Public Employees' Defined Contribution Retirement Plan Retiree Major Medical Insurance Rate

2. Resolution 2022-06: Public Employees' Defined Contribution Retirement Plan Occupational Death & Disability Benefit Rates

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate For
Public Employees' Defined Contribution Retirement Plan Retiree
Major Medical Insurance Rate

Resolution 2022-05

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220 requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios; and

WHEREAS, AS 39.35.750(b) requires the Board to approve an amount equal to a percentage of each member's compensation from July 1 to the following June 30 to pay for retiree major medical insurance; and

WHEREAS, the June 30, 2021 PERS Defined Contribution actuarial valuation report determines that the actuarially determined contribution rate for retiree major medical insurance is 1.01 percent, which is the normal cost rate; and

WHEREAS, there is no past service liability as determined by the annual actuarial valuation of the PERS Defined Contribution retiree major medical insurance, so no contribution rate for liquidating past service liability is appropriate under AS 37.10.220(a)(8)(B);

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, the Fiscal Year 2024 employer contribution rate for the retiree major medical insurance for the Public Employees' Defined Contribution Retirement Plan is set at 1.01 percent.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate
For Public Employees' Defined Contribution Retirement Plan
Occupational Death & Disability Benefit Rates

Resolution 2022-06

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220 requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios; and

WHEREAS, AS 39.35.750(e) requires the Board to determine an actuarially sound amount required to fully fund the cost of providing occupational disability and occupational death benefits under AS 39.35.890 and 39.35.892, and that such contribution for peace officers and fire fighters, and the contribution for other employees shall be calculated separately; and

WHEREAS, the June 30, 2021 PERS Defined Contribution actuarial valuation report determines that the actuarially determined contribution rate for peace officer / firefighter occupational death & disability is 0.68 percent, which is the normal cost rate, and the actuarially determined contribution rate for "all other" is 0.30 percent, which is the normal cost rate; and

WHEREAS, there is no past service liability as determined by the annual actuarial valuation of the PERS Defined Contribution occupational death & disability, so no contribution rate for liquidating past service liability is appropriate under AS 37.10.220(a)(8)(B);

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, the Fiscal Year 2024 employer contribution rate for public employees' occupational death and disability benefit rate is set at 0.68 percent for peace officers / fire fighters, and at 0.30 percent for all other Public Employees' Defined Contribution Retirement Plan employees.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT:	FY 24 TRS Employer Contribution Rate Tier I - II	ACTION:	X
DATE:	September 15, 2022	INFORMATION:	

BACKGROUND:

AS 37.10.220(a)(8) sets forth the responsibility of the Alaska Retirement Management Board (Board) to annually certify to each employer in the system contribution rates for normal costs and for liquidating any past service liability:

> *(8) coordinate with the retirement system administrator to have an annual actuarial valuation of each retirement system prepared to determine system assets, accrued liabilities, and funding ratios and to certify to the appropriate budgetary authority of each employer in the system*
>
> *(A) an appropriate contribution rate for normal costs; and*
>
> *(B) an appropriate contribution rate for liquidating any past service liability; in this subparagraph, the appropriate contribution rate for liquidating the past service liability of the defined benefit retirement plan under AS 14.25.009 - 14.25.220 or the past service liability of the defined benefit retirement plan under AS 39.35.095 - 39.35.680 must be determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years;*

AS 14.25.070 requires that the amount of each Teachers' Retirement System (TRS) employer's contribution to the system shall be determined by applying the employer's contribution rate, as certified by the Board, to the total compensation paid to the active employee. Statutory employer contribution and additional state contribution are established under the following two sections of Alaska Statute:

Sec. 14.25.070. Contributions by employers. (a) Each employer shall contribute to the system every payroll period an amount calculated by applying a rate of 12.56 percent to the total of all base salaries paid by the employer to active members of the system, including any adjustments to contributions required by AS 14.25.173(a).

and:

Sec. 14.25.085. Additional state contributions. In addition to the contributions that the state is required to make under AS 14.25.070 as an employer, the state shall contribute to the plan each July 1 or, if funds are not available on July 1, as soon after July 1 as funds become available, an amount for the ensuing fiscal year that, when combined with the total employer contributions that the administrator estimates will be allocated under AS 14.25.070(c), is sufficient to pay the plan's past service liability at the contribution rate adopted by the board under AS 37.10.220 for that fiscal year.

STATUS:

The Division of Retirement & Benefits' (Division) actuary, Buck, has completed the allocation of projected FY 24 employer and additional state contributions as shown in their letter dated September 1, 2022 based on the June 30, 2021 valuation report, except the results for TRS reflect FY 22 asset performance as shown in the preliminary June 30, 2022 asset statements provided by the Division on August 31, 2022. The TRS June 30, 2021 valuation report has been reviewed by the Board's actuary, Gabriel, Roeder, Smith & Co. (GRS) and then certified and accepted by the Board.

The Actuarial Committee met September 14, 2022 and passed a motion recommending that the Board adopt Resolution 2022-07.

RECOMMENDATION:

That the Alaska Retirement Management Board set the Fiscal Year 2024 TRS actuarially determined contribution rate attributable to employers consistent with its fiduciary duty, as set out in the attached form of Resolution 2022-07.

September 1, 2022

Mr. Ajay Desai
Director
Alaska Department of Administration
Division of Retirement & Benefits
PO Box 110203
Juneau, AK 99811-0203

Dear Ajay,

As requested, we have calculated the allocation between the pension and healthcare trusts of the FY24 Additional State Contributions for the State of Alaska Public Employees' Retirement System (PERS), Teachers' Retirement System (TRS), and Judicial Retirement System (JRS).

All results are based on the June 30, 2021 valuation reports, except the results for PERS and TRS reflect FY22 asset performance as shown in the preliminary June 30, 2022 asset statements that were provided to us on August 31.

Summary of Results

For PERS and TRS, the FY24 Additional State Contributions are allocated 100% to pension since the healthcare trusts are projected to be more than 100% funded at June 30, 2023. Similarly, we assumed the FY23 Additional State Contributions were made 100% to pension because the healthcare trusts were projected to be more than 100% funded at June 30, 2022.

Attached to this letter are three exhibits. Each exhibit is the same except for the portion of the FY24 healthcare Normal Cost that is assumed to be deposited to the healthcare trust[1].

- Exhibit 1 – **100%** of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.
- Exhibit 2 – **0%** of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.
- Exhibit 3 – **50%** of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.

[1] In Exhibits 2 and 3, the portion of the FY24 healthcare Normal Cost not contributed to the healthcare trust was added to the pension Past Service Cost in order to keep the total employer contribution rate at 22% (PERS non-State employers) and 12.56% (TRS).

For all three exhibits:

- Liabilities as of June 30, 2021 were rolled forward two years based on the June 30, 2021 valuation projections. For FY22, actual (pension) and expected (healthcare) benefit payments were used in the liability roll-forward. For FY23, expected benefit payments (pension and healthcare) were used in the liability roll-forward.

- Assets as of June 30, 2021 were rolled forward one year using actual FY22 investment return, contributions, subsidies, benefit payments, and administrative expenses based on the preliminary June 30, 2022 asset statements. Assets as of June 30, 2022 were rolled forward one year based on the expected FY23 investment return and cash flows from the June 30, 2021 valuation projections.

- The Unfunded Actuarial Accrued Liability is amortized under the 25-year layered approach adopted by the Alaska Retirement Management Board (ARMB) effective June 30, 2018.

- Investment gains and losses are recognized over 5 years beginning June 30, 2014.

- All contribution rates are based on total payroll of Defined Benefit (DB) and Defined Contribution Retirement (DCR) combined.

- For PERS, contributions were allocated between non-State employers and the State as an employer per the provisions of SB 55. The payroll of the State's PERS employees was assumed to be 49.79% of total PERS payroll based on the June 30, 2021 valuation data.

For JRS, the allocation of the FY24 past service cost rate between pension and healthcare is shown below. The FY24 past service cost rate is based on the June 30, 2021 valuation, but not less than zero.

JRS			
	Projected Pay	FY24 Past Service Cost Rate	FY24 Past Service Contribution Amount
Pension	$ 13,157,000	19.71%	$ 2,593,000
Healthcare	$ 13,157,000	0.00%	$ 0
Total		19.71%	$ 2,593,000

Data, Provisions, Assumptions, and Methods

The data, plan provisions, actuarial assumptions, and methods used for the PERS, TRS, and JRS plan costs are described in the June 30, 2021 actuarial valuation reports. These reports include detailed information related to potential risks associated with funding of the plans (ASOP 51), as well as information regarding our use of models (ASOP 56).

Preliminary June 30, 2022 asset statements for PERS and TRS were reflected as noted above.

Actuarial Standards of Practice No. 27 (ASOP 27) and No. 35 (ASOP 35) require the actuary to disclose the information and analysis used to support the actuary's determination that the assumptions selected by the plan sponsor do not significantly conflict with what, in the actuary's professional judgment, are reasonable for the purpose of the measurement. In the case of the ARMB's selection of the expected return on assets (EROA), the signing actuary has used economic information and tools provided by Buck's Financial Risk Management (FRM) practice. A spreadsheet tool created by the FRM practice converts averages, standard deviations, and correlations from Buck's Capital Markets Assumptions that are used for stochastic forecasting into approximate percentile ranges for the arithmetic and geometric average returns. It is intended to suggest possible reasonable ranges for EROA without attempting to predict or select a specific best estimate rate of return. It takes into account the duration (horizon) of investment and the target allocation of assets in the portfolio to various asset classes. Based on the actuary's analysis, including consistency with other assumptions used in the valuation and the percentiles generated by the spreadsheet tool described above, the actuary believes the EROA does not significantly conflict with what, in the actuary's professional judgment, is reasonable for the purpose of the measurement.

Please call me at 602-803-6174 if you have any questions.

Sincerely,

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

Attachments

cc: Mr. Jim Puckett, State of Alaska
Mr. Kevin Worley, State of Alaska

BUCK

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BUCK

Exhibit 1

State of Alaska
Allocation of Projected FY24 Employer and Additional State Contributions

Based on June 30, 2021 Valuations
with Liabilities Rolled Forward Two Years and
Assets Rolled Forward One Year and Smoothed

Portion of FY24 Healthcare Normal Cost Contributed to Healthcare Trust: 100%

	PERS					TRS	
	Non-State Employers		State as an Employer		All Employers		
Projected FY24 DB Payroll		$ 357,303,000		$ 354,314,000	$ 711,617,000		$ 270,617,000
Projected FY24 DCR Payroll		866,626,000		859,376,000	1,726,002,000		491,467,000
Projected FY24 Total Payroll		$ 1,223,929,000		$ 1,213,690,000	$ 2,437,619,000		$ 762,084,000
	Percent of Total Payroll	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**
Employer Contributions							
DB Pension Plan							
1. Normal Cost	2.14%		2.14%			2.05%	
2. Past Service Cost	10.73%		16.33%			1.07%	
3. Total: (1) + (2)	12.87%	$ 157,520,000	18.47%	$ 224,169,000	$ 381,689,000	3.12%	$ 23,777,000
DB Healthcare Plan							
4. Normal Cost	2.50%		2.50%			2.41%	
5. Past Service Cost	0.00%		0.00%			0.00%	
6. Total: (4) + (5)	2.50%	30,598,000	2.50%	30,342,000	60,940,000	2.41%	18,366,000
7. DCR Plan	6.63%	81,146,000	6.63%	80,468,000	161,614,000	7.03%	53,575,000
8. Total: (3) + (6) + (7)	22.00%	$ 269,264,000	27.60%	$ 334,979,000	$ 604,243,000	12.56%	$ 95,718,000
Additional State Contributions to DB							
9. DB Pension Plan	5.60%	$ 68,540,000	0.00%	$ 0	$ 68,540,000	15.37%	$ 117,132,000
10. DB Healthcare Plan	0.00%	0	0.00%	0	0	0.00%	0
11. Total: (9) + (10)	5.60%	$ 68,540,000	0.00%	$ 0	$ 68,540,000	15.37%	$ 117,132,000
Total DB							
12. DB Pension Plan: (3) + (9)	18.47%	$ 226,060,000	18.47%	$ 224,169,000	$ 450,229,000	18.49%	$ 140,909,000
13. DB Healthcare Plan: (6) + (10)	2.50%	30,598,000	2.50%	30,342,000	60,940,000	2.41%	18,366,000
14. Total: (12) + (13)	20.97%	$ 256,658,000	20.97%	$ 254,511,000	$ 511,169,000	20.90%	$ 159,275,000
Total DB and DCR: (7) + (14)	27.60%	$ 337,804,000	27.60%	$ 334,979,000	$ 672,783,000	27.93%	$ 212,850,000

Notes:

1. Projected FY24 payroll is based on the June 30, 2021 valuation projections assuming 0% population growth.
2. Additional State Contributions for FY23 were assumed to be made 100% to pension.
3. All contribution rates are expressed as a percentage of total payroll of DB and DCR combined.
4. FY22 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on preliminary June 30, 2022 asset statements provided by the State. FY23 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on the June 30, 2021 valuation projections assuming 0% population growth. Investment gains and losses are recognized over 5 years beginning June 30, 2014.
5. Total contribution rates for pension and healthcare are not less than the Normal Cost rates.
6. For PERS under SB 55, payroll for the State's PERS employees was assumed to be 49.79% of total PERS payroll based on the June 30, 2021 valuation data.
7. Data, plan provisions, assumptions, and methods are as described in the June 30, 2021 actuarial valuation reports, except as noted above.

BUCK

Exhibit 2

State of Alaska
Allocation of Projected FY24 Employer and Additional State Contributions

Based on June 30, 2021 Valuations
with Liabilities Rolled Forward Two Years and
Assets Rolled Forward One Year and Smoothed

Portion of FY24 Healthcare Normal Cost Contributed to Healthcare Trust: 0%

	PERS					TRS	
	Non-State Employers		State as an Employer		All Employers		
Projected FY24 DB Payroll		$ 357,303,000		$ 354,314,000	$ 711,617,000		$ 270,617,000
Projected FY24 DCR Payroll		866,626,000		859,376,000	1,726,002,000		491,467,000
Projected FY24 Total Payroll		$ 1,223,929,000		$ 1,213,690,000	$ 2,437,619,000		$ 762,084,000
	Percent of Total Payroll	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**
Employer Contributions							
DB Pension Plan							
1. Normal Cost	2.14%		2.14%			2.05%	
2. Past Service Cost	13.23%		16.33%			3.48%	
3. Total: (1) + (2)	15.37%	$ 188,118,000	18.47%	$ 224,169,000	$ 412,287,000	5.53%	$ 42,143,000
DB Healthcare Plan							
4. Normal Cost	0.00%		0.00%			0.00%	
5. Past Service Cost	0.00%		0.00%			0.00%	
6. Total: (4) + (5)	0.00%	0	0.00%	0	0	0.00%	0
7. DCR Plan	6.63%	81,146,000	6.63%	80,468,000	161,614,000	7.03%	53,575,000
8. Total: (3) + (6) + (7)	22.00%	$ 269,264,000	25.10%	$ 304,637,000	$ 573,901,000	12.56%	$ 95,718,000
Additional State Contributions to DB							
9. DB Pension Plan	3.10%	$ 37,942,000	0.00%	$ 0	$ 37,942,000	12.96%	$ 98,766,000
10. DB Healthcare Plan	0.00%	0	0.00%	0	0	0.00%	0
11. Total: (9) + (10)	3.10%	$ 37,942,000	0.00%	$ 0	$ 37,942,000	12.96%	$ 98,766,000
Total DB							
12. DB Pension Plan: (3) + (9)	18.47%	$ 226,060,000	18.47%	$ 224,169,000	$ 450,229,000	18.49%	$ 140,909,000
13. DB Healthcare Plan: (6) + (10)	0.00%	0	0.00%	0	0	0.00%	0
14. Total: (12) + (13)	18.47%	$ 226,060,000	18.47%	$ 224,169,000	$ 450,229,000	18.49%	$ 140,909,000
Total DB and DCR: (7) + (14)	25.10%	$ 307,206,000	25.10%	$ 304,637,000	$ 611,843,000	25.52%	$ 194,484,000

Notes:

1. Projected FY24 payroll is based on the June 30, 2021 valuation projections assuming 0% population growth.
2. Additional State Contributions for FY23 were assumed to be made 100% to pension.
3. All contribution rates are expressed as a percentage of total payroll of DB and DCR combined.
4. FY22 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on preliminary June 30, 2022 asset statements provided by the State. FY23 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on the June 30, 2021 valuation projections assuming 0% population growth. Investment gains and losses are recognized over 5 years beginning June 30, 2014.
5. Total contribution rates for pension and healthcare are not less than the Normal Cost rates.
6. For PERS under SB 55, payroll for the State's PERS employees was assumed to be 49.79% of total PERS payroll based on the June 30, 2021 valuation data.
7. Healthcare past service rates are allowed to reduce the total Healthcare rates to zero. The Pension past service rates are adjusted to keep the total contribution rates at 22% (PERS non-State employers) and 12.56% (TRS).
8. Data, plan provisions, assumptions, and methods are as described in the June 30, 2021 actuarial valuation reports, except as noted above.

BUCK

Exhibit 3

State of Alaska
Allocation of Projected FY24 Employer and Additional State Contributions

Based on June 30, 2021 Valuations
with Liabilities Rolled Forward Two Years and
Assets Rolled Forward One Year and Smoothed

Portion of FY24 Healthcare Normal Cost Contributed to Healthcare Trust: 50%

	PERS						TRS	
	Non-State Employers		State as an Employer		All Employers			
Projected FY24 DB Payroll		$ 357,303,000		$ 354,314,000		$ 711,617,000		$ 270,617,000
Projected FY24 DCR Payroll		866,626,000		859,376,000		1,726,002,000		491,467,000
Projected FY24 Total Payroll		$ 1,223,929,000		$ 1,213,690,000		$ 2,437,619,000		$ 762,084,000
	Percent of Total Payroll	**Estimated Dollar Amount**	**Percent of Total Payroll**	**Estimated Dollar Amount**	**Estimated Dollar Amount**		**Percent of Total Payroll**	**Estimated Dollar Amount**
Employer Contributions								
DB Pension Plan								
1. Normal Cost	2.14%		2.14%				2.05%	
2. Past Service Cost	11.98%		16.33%				2.27%	
3. Total: (1) + (2)	14.12%	$ 172,819,000	18.47%	$ 224,169,000	$ 396,988,000		4.32%	$ 32,922,000
DB Healthcare Plan								
4. Normal Cost	1.25%		1.25%				1.21%	
5. Past Service Cost	0.00%		0.00%				0.00%	
6. Total: (4) + (5)	1.25%	15,299,000	1.25%	15,171,000	30,470,000		1.21%	9,221,000
7. DCR Plan	6.63%	81,146,000	6.63%	80,468,000	161,614,000		7.03%	53,575,000
8. Total: (3) + (6) + (7)	22.00%	$ 269,264,000	26.35%	$ 319,808,000	$ 589,072,000		12.56%	$ 95,718,000
Additional State Contributions to DB								
9. DB Pension Plan	4.35%	$ 53,241,000	0.00%	$ 0	$ 53,241,000		14.17%	$ 107,987,000
10. DB Healthcare Plan	0.00%	0	0.00%	0	0		0.00%	0
11. Total: (9) + (10)	4.35%	$ 53,241,000	0.00%	$ 0	$ 53,241,000		14.17%	$ 107,987,000
Total DB								
12. DB Pension Plan: (3) + (9)	18.47%	$ 226,060,000	18.47%	$ 224,169,000	$ 450,229,000		18.49%	$ 140,909,000
13. DB Healthcare Plan: (6) + (10)	1.25%	15,299,000	1.25%	15,171,000	30,470,000		1.21%	9,221,000
14. Total: (12) + (13)	19.72%	$ 241,359,000	19.72%	$ 239,340,000	$ 480,699,000		19.70%	$ 150,130,000
Total DB and DCR: (7) + (14)	26.35%	$ 322,505,000	26.35%	$ 319,808,000	$ 642,313,000		26.73%	$ 203,705,000

Notes:

1. Projected FY24 payroll is based on the June 30, 2021 valuation projections assuming 0% population growth.
2. Additional State Contributions for FY23 were assumed to be made 100% to pension.
3. All contribution rates are expressed as a percentage of total payroll of DB and DCR combined.
4. FY22 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on preliminary June 30, 2022 asset statements provided by the State. FY23 investment return, contributions, subsidies, benefit payments, and administrative expenses are based on the June 30, 2021 valuation projections assuming 0% population growth. Investment gains and losses are recognized over 5 years beginning June 30, 2014.
5. Total contribution rates for pension and healthcare are not less than the Normal Cost rates.
6. For PERS under SB 55, payroll for the State's PERS employees was assumed to be 49.79% of total PERS payroll based on the June 30, 2021 valuation data.
7. Healthcare past service rates are allowed to reduce the total Healthcare rates by half. The Pension past service rates are adjusted to keep the total contribution rates at 22% (PERS non-State employers) and 12.56% (TRS).
8. Data, plan provisions, assumptions, and methods are as described in the June 30, 2021 actuarial valuation reports, except as noted above.

The following version of Resolution 2022-07 reflects **Exhibit 1** - 100% of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate
For the Teachers' Retirement System

Resolution 2022-07

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220(a)(8) requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios, and to certify to the appropriate budgetary authority of each employer in the system an appropriate contribution rate for normal costs and an appropriate contribution rate for liquidating any past service liability determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years; and

WHEREAS, AS 14.25.070 establishes a statutory employer contribution rate of 12.56 percent and AS 14.25.085 requires additional state contribution to make up the difference between 12.56 percent and the actuarially determined contribution rate; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for pension benefits is 18.49 percent composed of the normal cost rate of 2.05 percent and past service rate of 16.44 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for postemployment healthcare benefits is 2.41 percent composed of the normal cost rate of 2.41 percent and past service rate of negative 9.08 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 presents the employer rate incorporating the total cost of the Defined Contribution Retirement Plan of 7.03 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2024 actuarially determined contribution rate attributable to employers participating in the Teachers' Retirement System is set at 27.93 percent, composed of the contribution rate for defined benefit pension of 18.49 percent, the contribution rate for postemployment healthcare of 2.41 percent, and the contribution rate for defined contribution pension of 7.03 percent.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

The following version of Resolution 2022-07 reflects **Exhibit 2 -** 0% of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.
APPROVED by the BOARD 9/15/2022.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate
For the Teachers' Retirement System

Resolution 2022-07

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220(a)(8) requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios, and to certify to the appropriate budgetary authority of each employer in the system an appropriate contribution rate for normal costs and an appropriate contribution rate for liquidating any past service liability determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years; and

WHEREAS, AS 14.25.070 establishes a statutory employer contribution rate of 12.56 percent and AS 14.25.085 requires additional state contribution to make up the difference between 12.56 percent and the actuarially determined contribution rate; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for pension benefits is 18.49 percent composed of the normal cost rate of 2.05 percent and past service rate of 16.44 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for postemployment healthcare benefits is 2.41 percent composed of the normal cost rate of 2.41 percent and past service rate of negative 9.08 percent; and

WHEREAS, due to the funded status of the postemployment healthcare trust, the Board has the authority under AS 37.10.220(a)(8) to adopt a rate that is appropriate, and the Board has determined that the appropriate contribution rate for the postemployment healthcare benefits is 0.00 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 presents the employer rate incorporating the total cost of the Defined Contribution Retirement Plan of 7.03 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2024 actuarially determined contribution rate attributable to employers participating in the Teachers' Retirement System is set at 25.52 percent, composed of the contribution rate for defined benefit pension of 18.49 percent, the contribution rate for postemployment healthcare of 0.00 percent, and the contribution rate for defined contribution pension of 7.03 percent.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

The following version of Resolution 2022-07 reflects Exhibit 3 - 50% of the FY24 healthcare Normal Cost is assumed to be deposited to the healthcare trust.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate
For the Teachers' Retirement System

Resolution 2022-07

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220(a)(8) requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios, and to certify to the appropriate budgetary authority of each employer in the system an appropriate contribution rate for normal costs and an appropriate contribution rate for liquidating any past service liability determined by a level percent of pay method based on amortization of the past service liability for a closed term of 25 years; and

WHEREAS, AS 14.25.070 establishes a statutory employer contribution rate of 12.56 percent and AS 14.25.085 requires additional state contribution to make up the difference between 12.56 percent and the actuarially determined contribution rate; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for pension benefits is 18.49 percent composed of the normal cost rate of 2.05 percent and past service rate of 16.44 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 determines that the actuarially determined contribution rate for postemployment healthcare benefits is 2.41 percent composed of the normal cost rate of 2.41 percent and past service rate of negative 9.08 percent; and

WHEREAS, due to the funded status of the postemployment healthcare trust, the Board has the authority under AS 37.10.220(a)(8) to adopt a rate that is appropriate, and the Board has determined that the appropriate contribution rate for the postemployment healthcare benefits is 1.21 percent; and

WHEREAS, the Buck schedule dated September 1, 2022 presents the employer rate incorporating the total cost of the Defined Contribution Retirement Plan of 7.03 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2024 actuarially determined contribution rate attributable to employers participating in the Teachers' Retirement System is set at 26.73 percent, composed of the contribution rate for defined benefit pension of 18.49 percent, the contribution rate for postemployment healthcare of 1.21 percent, and the contribution rate for defined contribution pension of 7.03 percent.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 24 TRS Retiree Major Medical and Occupational Death & Disability

ACTION: X

DATE: September 15, 2022

INFORMATION: _____

BACKGROUND:

The Alaska Retirement Management Board (Board) establishes rates for the Teachers' Retirement System (TRS) Defined Contribution Retirement Plans for the following plans: 1) Retiree Major Medical Insurance and 2) Occupational Death & Disability under the following two sections in Alaska Statute:

Retiree Major Medical Insurance
AS 14.25.350 (b) requires that "An employer shall also contribute an amount equal to a percentage, as approved by the board, of each member's compensation from July 1 to the following June 30 to pay for retiree major medical insurance."

Occupational Death & Disability
AS 14.25.350 (e) requires that "An employer shall make annual contributions to a trust account in the plan, applied as a percentage of each member's compensation from July 1 to the following June 30, in an amount determined by the board to be actuarially required to fully fund the cost of providing occupational disability and occupational death benefits under AS 14.25.310 - 14.25.590."

STATUS:

The Division of Retirement & Benefits' actuary, Buck, has completed the actuarial valuation of the TRS Defined Contribution Retirement Plan as of June 30, 2021. The valuation has been reviewed by the Board's actuary, Gabriel, Roeder, Smith & Co. (GRS) and then certified and accepted by the Board.

According to the TRS Defined Contribution Retirement Plan actuarial valuation report, and confirmed by GRS, the Fiscal Year 2024 actuarially determined contribution rate attributable to employers for the Retiree Major Medical Insurance should be 0.82 percent and for the Occupational Death & Disability Benefit should be 0.08 percent.

The Actuarial Committee met September 14, 2022 and passed a motion recommending that the Board adopt Resolutions 2022-08 and 2022-09.

RECOMMENDATION:

That the Alaska Retirement Management Board set Fiscal Year 2024 TRS Defined Contribution Retirement Plan Retiree Major Medical Insurance and Occupational Death & Disability Benefit rates as set out in the following resolutions:

1. Resolution 2022-08: Teachers' Defined Contribution Retirement Plan Retiree Major Medical Insurance Rate

2. Resolution 2022-09: Teachers' Defined Contribution Retirement Plan Occupational Death & Disability Benefit Rate

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate
For Teachers' Defined Contribution Retirement Plan
Retiree Major Medical Insurance Rate

Resolution 2022-08

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220 requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios; and

WHEREAS, AS 14.25.350(b) requires the Board to approve an amount equal to a percentage of each member's compensation from July 1 to the following June 30 to pay for retiree major medical insurance; and

WHEREAS, the June 30, 2021 TRS Defined Contribution actuarial valuation report determines that the actuarially determined contribution rate for retiree major medical insurance is 0.82 percent, which is the normal cost rate; and

WHEREAS, there is no past service liability as determined by the annual actuarial valuation of the TRS Defined Contribution retiree major medical insurance, so no contribution rate for liquidating past service liability is appropriate under AS 37.10.220(a)(8)(B);

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, the Fiscal Year 2024 employer contribution rate for the retiree major medical insurance for the Teachers' Defined Contribution Retirement Plan is set at 0.82 percent.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Employer Contribution Rate For
Teachers' Defined Contribution Retirement Plan Occupational
Death & Disability Benefit Rate

Resolution 2022-09

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, AS 37.10.220 requires the Board to coordinate with the retirement system administrator to conduct an annual actuarial valuation of each retirement system to determine system assets, accrued liabilities and funding ratios; and

WHEREAS, AS 14.25.350 (e) requires the Board to determine an actuarially sound amount required to fully fund the cost of providing occupational disability and occupational death benefits under AS 14.25.310 – 14.25.590; and

WHEREAS, the June 30, 2021 TRS Defined Contribution actuarial valuation report determines that the actuarially determined contribution rate for occupational death & disability is 0.08 percent, which is the normal cost rate; and

WHEREAS, there is no past service liability as determined by the annual actuarial valuation of the TRS Defined Contribution occupational death & disability, so no contribution rate for liquidating past service liability is appropriate under AS 37.10.220(a)(8)(B);

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, the Fiscal Year 2024 employer contribution rate for teachers' occupational death and disability benefit rate is set at 0.08 percent for all Teachers' Defined Contribution Retirement Plan employees.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 24 Alaska National Guard and Naval Militia Contribution Amount

ACTION: X

DATE: September 15, 2022

INFORMATION: _____

BACKGROUND:

AS 26.05.226 requires that "(a) The Department of Military and Veterans' Affairs (DMVA) shall contribute to the Alaska National Guard and Alaska Naval Militia retirement system the amounts determined by the Alaska Retirement Management Board as necessary to (1) fund the system based on the actuarial requirements of the system as established by the Alaska Retirement Management Board; and (2) administer the system. (b) The amount required for contributions from the Department of Military and Veterans' Affairs under (a) of this section shall be included in the annual appropriations made to the Department of Military and Veterans' Affairs."

STATUS:

The Division of Retirement & Benefits' (Division's) actuary, Buck, has completed the roll-forward actuarial valuation of the Alaska National Guard and Naval Militia Retirement System (NGNMRS) as of June 30, 2021. The roll-forward actuarial valuation has been reviewed by the Alaska Retirement Management Board's (Board's) actuary, Gabriel, Roeder, Smith & Co. (GRS) and then certified and accepted by the Board.

According to the NGNMRS June 30, 2021 roll-forward actuarial valuation report, and confirmed by GRS, the Fiscal Year 2024 actuarially determined contribution amount should be $0, consisting of the normal cost of $503,140, past service cost of negative $3,486,009, and administrative expense load of $268,000.

The Actuarial Committee met September 14, 2022 and passed a motion recommending that the Board adopt Resolution 2020-10 setting the FY 2024 NGNMRS contribution amount at $0.

RECOMMENDATION:

That the Alaska Retirement Management Board set the Fiscal Year 2024 NGNMRS annual contribution amount consistent with its fiduciary duty, as set out in the attached form of Resolution 2022-10.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2024 Contribution Amount
For the Alaska National Guard and Naval Militia Retirement System

Resolution 2022-10

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

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

WHEREAS, the June 30, 2021 Alaska National Guard and Naval Militia Retirement System roll-forward actuarial valuation report determines that the actuarially determined contribution amount is $771,140, composed of the normal cost of $503,140, past service cost amortization of ($3,486,009) and administrative expense load of $268,000; and

WHEREAS, due to the funded status of the pension trust, the Board has the authority under AS 37.10.220(a)(8) to adopt an amount that is appropriate, and the Board has determined that the appropriate contribution amount for the pension benefits is $0; and

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2024 contribution amount for the State of Alaska, Department of Military and Veterans' Affairs to the Alaska National Guard and Naval Militia Retirement System is set at $0.

DATED at Anchorage, Alaska this 15th day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT:	FY 24 JRS Employer Contribution Rate	ACTION:	
DATE:	September 15, 2022	INFORMATION:	X

BACKGROUND:

AS 22.25.046 states in part that:

(a) The state court system shall contribute to the judicial retirement system at the rate established by the commissioner of administration. The contribution rate shall be based on the results of an actuarial valuation of the judicial retirement system. The results of the actuarial valuation shall be based on actuarial methods and assumptions adopted by the commissioner of administration.

(b) The contribution rate shall be a percentage which, when applied to the covered compensation of all active members of the judicial retirement system, will generate sufficient money to support, along with contributions from members, the benefits of the judicial retirement system.

(c) Employer contributions shall be separately computed for benefits provided by AS 22.25.090 and shall be deposited in the Alaska retiree health care trust established under AS 39.30.097(a)."

STATUS:

The Division of Retirement & Benefits' (Division's) actuary, Buck, has completed the roll-forward actuarial valuation of the Alaska Judicial Retirement System (JRS) as of June 30, 2021. The roll-forward actuarial valuation has been reviewed by the Alaska Retirement Management Board's (Board's) actuary, Gabriel, Roeder, Smith & Co. (GRS) and then certified and accepted by the Board.

According to page 5 of the JRS roll-forward actuarial valuation as of June 30, 2021, the recommended Fiscal Year 2024 employer contribution rate is 65.24 percent based on the following table:

	Pension	Post-employment Health Care	Total
Normal Cost Rate	38.99%	6.54%	45.53%
Past Service Cost Rate	19.71%	-9.33%	19.71%
Total Employer Contribution Rate	58.70%	6.54%	65.24%

The Alaska Legislature has established operating budget language that explicitly addresses JRS past service costs separate from the normal costs. Normal costs as a percentage are charged to the Alaska Court System's operating budget and past service cost in dollars is funded separately in retirement section language like PERS and TRS.

The computed JRS Past Service Cost contribution amount is $2,593,000 as shown on page 2 of the Buck letter dated September 1, 2022. The contribution amount should be reflected in the operating budget language section and should be deposited in the JRS pension benefit trust during FY 2024.

Callan

September 14, 2022

ARMB Board Meeting

Preliminary Investment Performance

Periods Ended June 30, 2022

Steve Center, CFA
Senior Vice President

Ivan "Butch" Cliff, CFA
Executive Vice President and Director of Research

Paul Erlendson
Senior Vice President

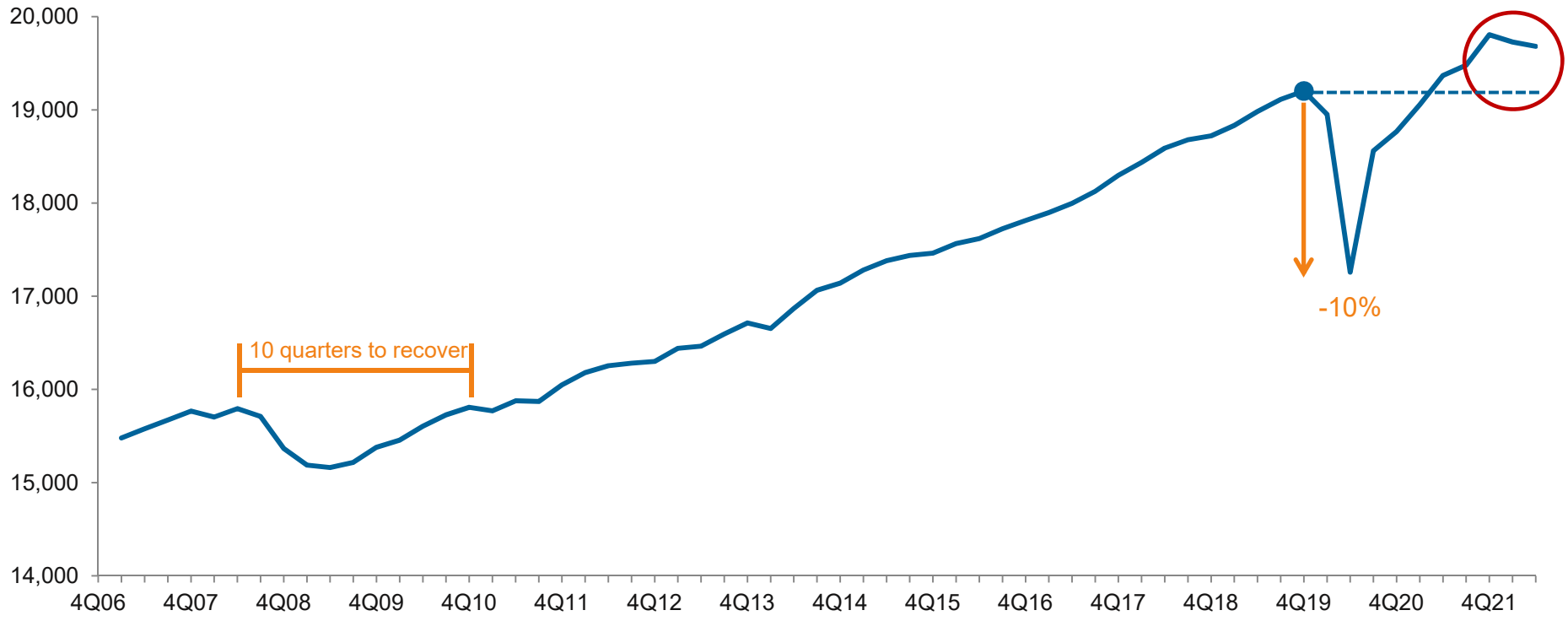
Agenda

- Market and Economic Environment
- Total Fund Performance
  - Participant-Directed Plans
  - Defined Benefit Plans
  - DB Plans Major Asset Classes

GDP Dropped for Two Consecutive Quarters in 2022

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

Seasonally Adjusted Real GDP in Billions of Dollars

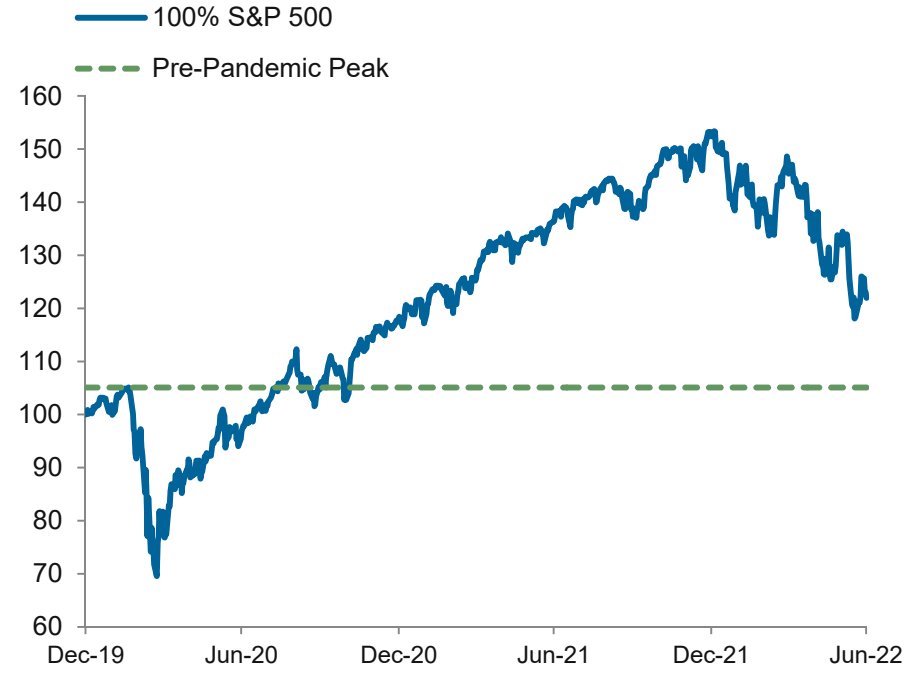


- Consensus estimates for GDP growth in 2022 have been scaled back, from north of 4% at the start of the year to 0%, or lower
  - 1Q22 GDP fell 1.6% in U.S., followed by a 0.9% drop in 2Q22.
  - Loss of business and consumer confidence followed the start of the conflict in Ukraine.
  - Consumer wealth 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.

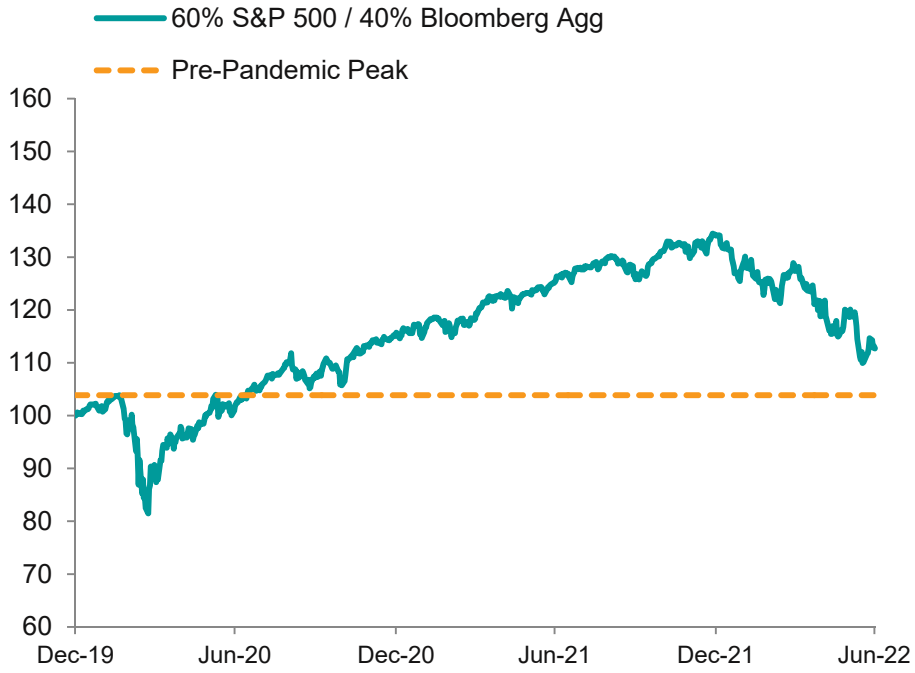
Source: Federal Reserve Bank of St. Louis

Post-Pandemic Market Performance

Growth of $100 Invested on 12/31/2019



Growth of $100 Invested on 12/31/2019

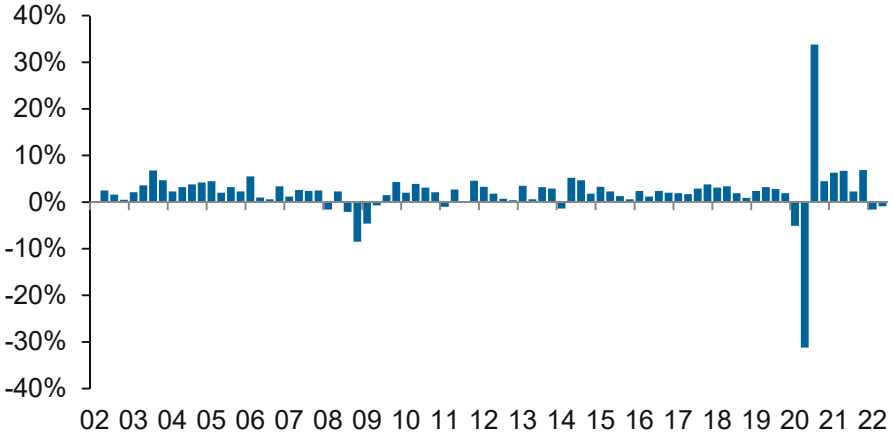


	Investment in S&P 500	Investment in 60% S&P 500 / 40% Bloomberg Agg
Gain from pre-pandemic peak to post-pandemic peak	45.9%	29.4%
Gain over pre-pandemic peak as of 6/30/22	16.1%	8.5%
Loss from post-pandemic peak as of 6/30/22	-20.5%	-16.2%
Further loss needed to return to pre-pandemic peak	-13.8%	-7.9%
Total loss if markets decline from post-pandemic peak to pre-pandemic peak	-31.5%	-22.7%

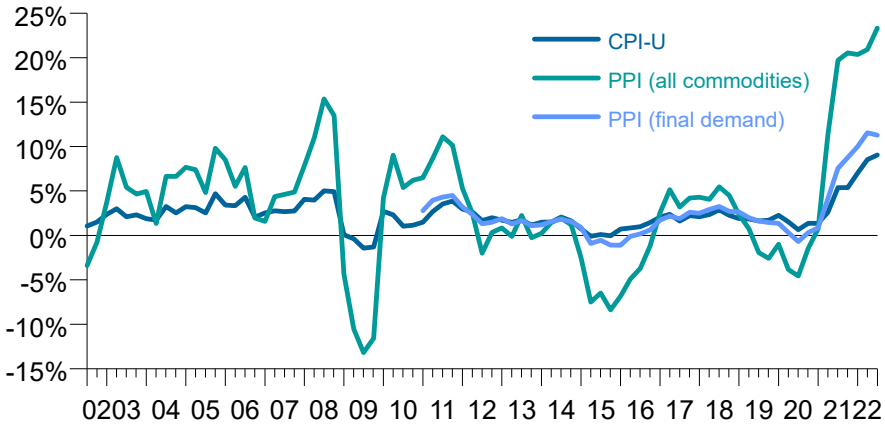
U.S. Economy—Summary

For periods ended 6/30/22

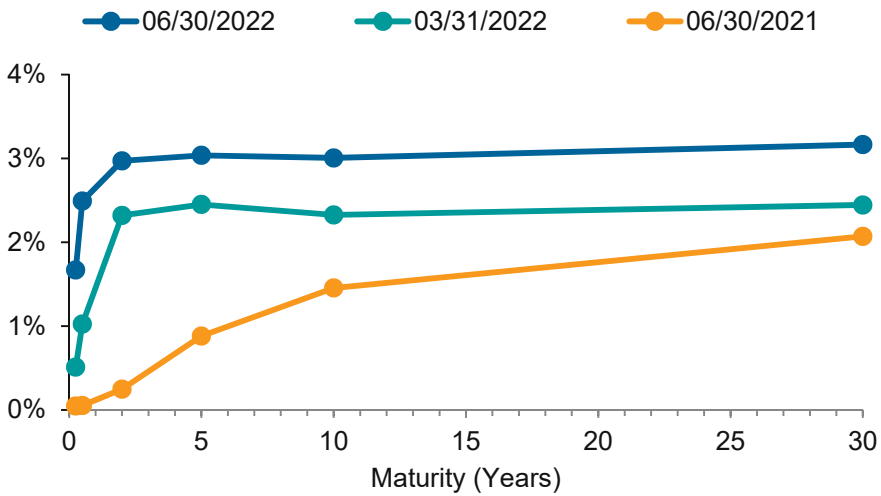
Quarterly Real GDP Growth



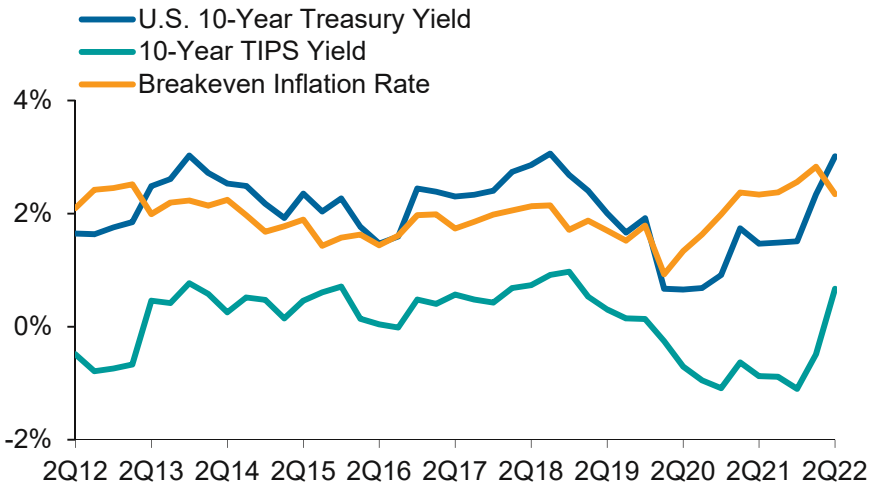
Inflation Year-Over-Year



U.S. Treasury Yield Curves



Historical 10-Year Yields

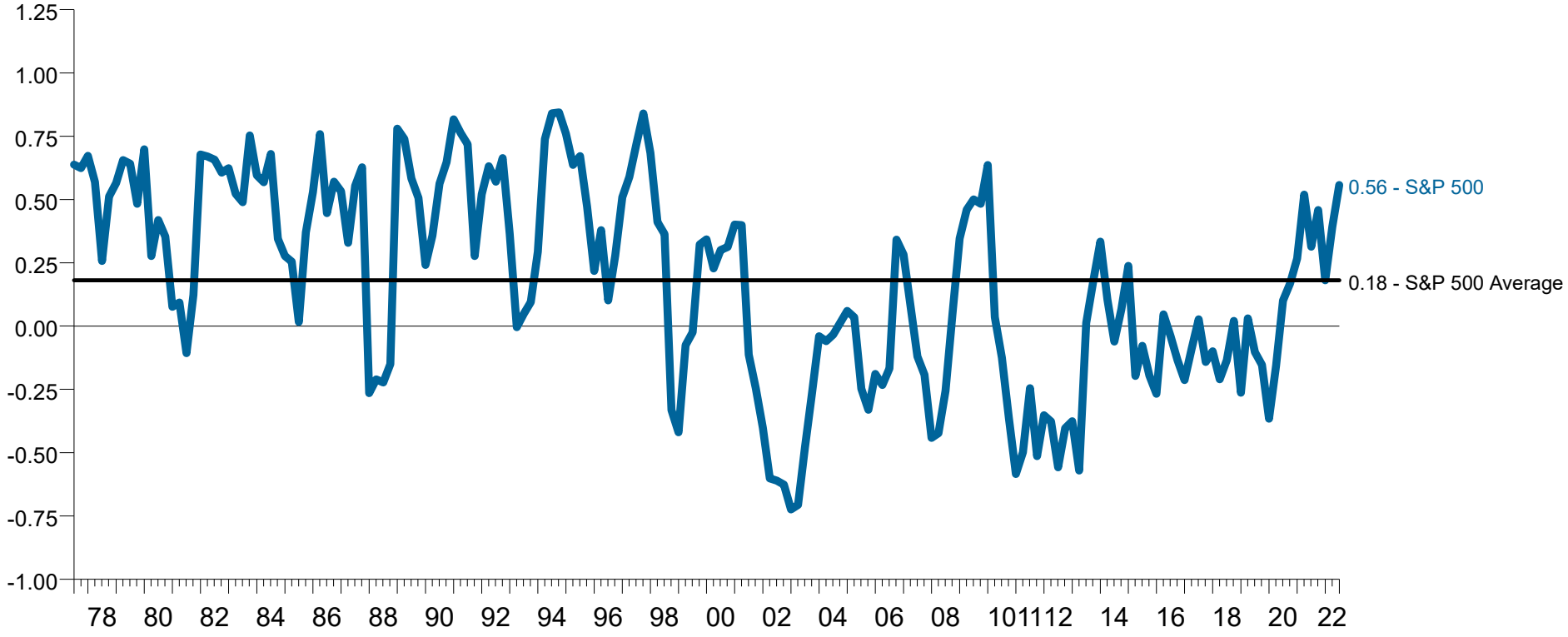


Sources: Bloomberg, Bureau of Labor Statistics, Callan

Did Diversification Fail in 2022?

Stocks and bonds down together In 1Q and 2Q

Rolling 12 Month Correlation of S&P 500 to Bloomberg Aggregate for 45 Years Ended June 30, 2022



Are we seeing a return to a regime of higher correlation between stocks and bonds, potentially lessening the diversification benefit of bonds to stocks?

Source: Callan

Recession Watch

Common definition of recession: two consecutive quarters of decline in GDP

- Actual definition: The National Bureau of Economic Research (NBER) Business Cycle Dating Committee defines a recession as “a significant decline in economic activity that is spread across the economy and that lasts more than a few months.”

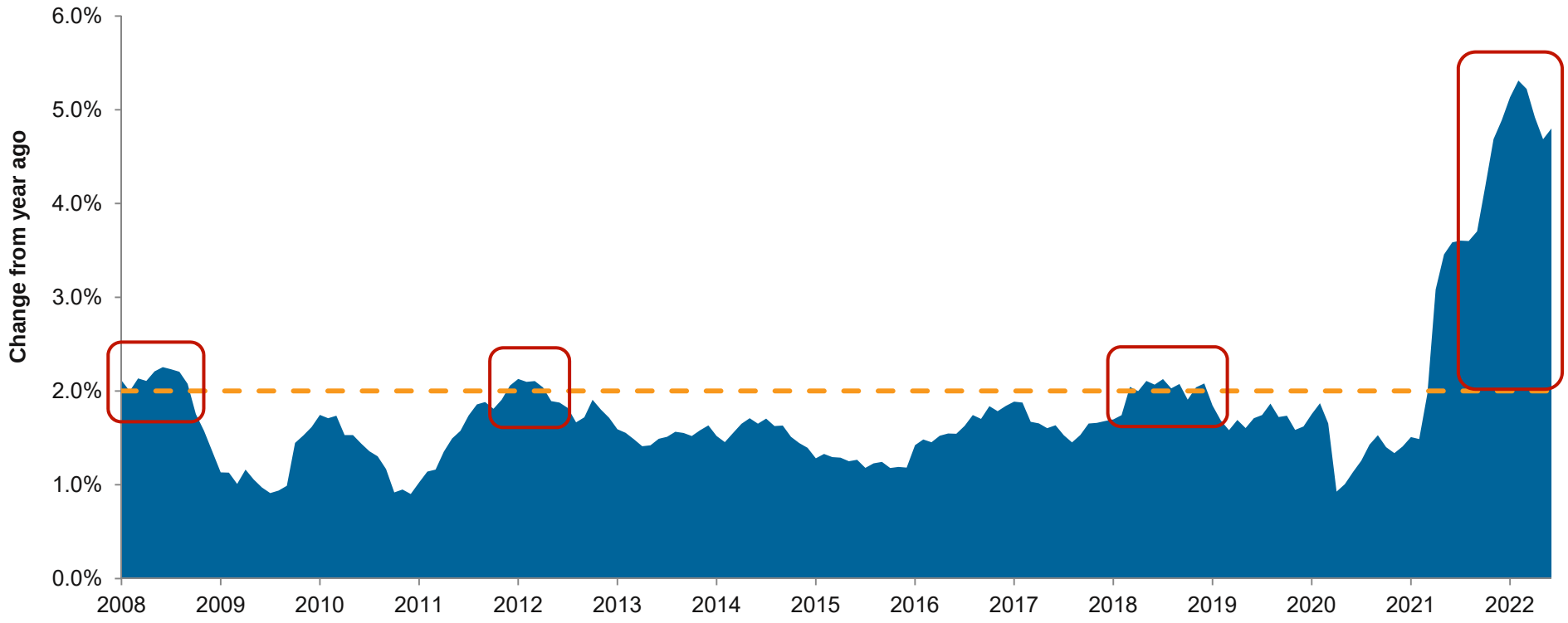
Indicators to watch

- GDP declined in 1Q and 2Q22.
- Housing market is weakening with higher mortgage rates.
- Job market remains strong, with substantial job creation year to date; job listings remain larger than the number of seekers.
  - *Initial unemployment claims are creeping up: a leading indicator.*
- PMI is showing initial signs of recession in the Business Activity and Output indexes; PMI is also a leading indicator.
- Exports have weakened with slowing growth overseas, geopolitical uncertainty, and a strong dollar.
- Inflation remains historically high, sapping purchasing power and eroding confidence.
- Federal Reserve is committed to raising interest rates to combat inflation; median Fed Funds projection is 3.4% by end of 2022.
- Fed’s resolve may be tested if economy slows sharply in the second half of the year.

The Fed's New Inflation Framework

Targeting core Personal Consumption Expenditures Index

PCE Excluding Food and Energy (Chain-Type Price Index)

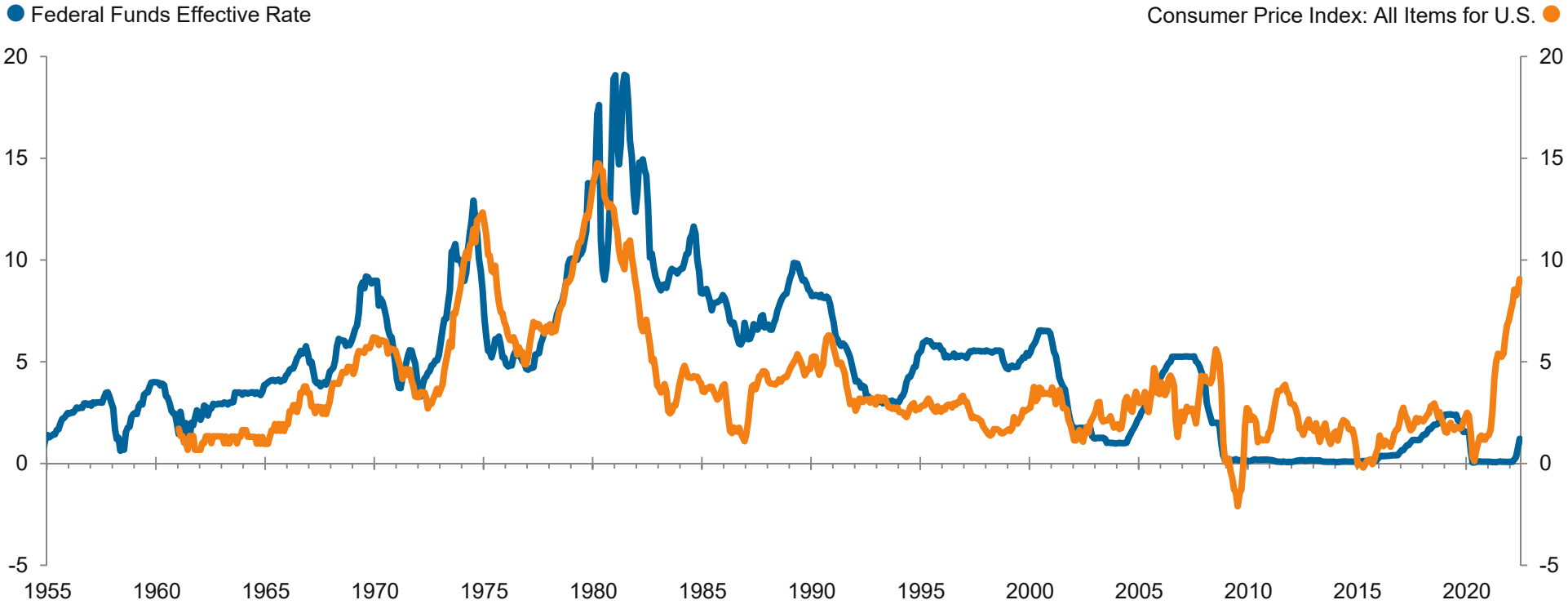


- Inflation worries are in the headlines, and the data are challenging the Fed's dual mandate to manage inflation and unemployment.
- Inflation had consistently undershot the Fed's 2% target, prompting the Fed to change its inflation framework.
- Fed's aim is to achieve an average of 2% inflation over the medium term, which is not specifically defined.
- Personal Consumption Expenditures (PCE) Index is the Fed's target, different from and typically lower than CPI-U, which had a year-over-year gain of 9.1% as of June 30.

Sources: Federal Reserve Bank of St. Louis, U.S. Bureau of Economic Analysis

Inflation vs. Interest Rates Over the Long Term

Federal Funds vs. Consumer Price Index



- We are now looking at an inflation spike that is above the last rise in inflation from 2005–08.
- The gap between inflation and the Fed Funds rate is larger than that seen just before the GFC.
  - History suggests that the Fed Funds rate is typically above inflation, not below it.
- This gap of 9.1% CPI vs. 150 bps Fed Funds rate is unprecedented in the history of the CPI, going back to 1961
  - Resolution to the historic relationship requires the Fed Funds rate to rise and inflation to fall.

Source: Federal Reserve Bank of St. Louis

Callan Periodic Table of Investment Returns – Trailing Year

Monthly Returns												Trailing Year
Aug 2021	Sep 2021	Oct 2021	Nov 2021	Dec 2021	Jan 2022	Feb 2022	Mar 2022	Apr 2022	May 2022	Jun 2022	Jul 2021	Last 12 Mos.
Large Cap Equity 3.04%	High Yield -0.01%	Large Cap Equity 7.01%	U.S. Fixed Income 0.30%	Real Estate 6.33%	Emerging Market Equity -1.89%	Small Cap Equity 1.07%	Real Estate 4.47%	High Yield -3.56%	Dev ex-U.S. Equity 0.83%	U.S. Fixed Income -1.57%	Small Cap Equity 10.44%	Large Cap Equity -4.64%
Emerging Market Equity 2.62%	U.S. Fixed Income -0.87%	Real Estate 5.98%	Large Cap Equity -0.69%	Dev ex-U.S. Equity 5.08%	Global ex-U.S. Fixed Income -1.96%	High Yield -1.03%	Large Cap Equity 3.71%	U.S. Fixed Income -3.79%	U.S. Fixed Income 0.64%	Global ex-U.S. Fixed Income -4.50%	Large Cap Equity 9.22%	High Yield -8.02%
Small Cap Equity 2.24%	Global ex-U.S. Fixed Income -2.45%	Small Cap Equity 4.25%	Global ex-U.S. Fixed Income -0.72%	Large Cap Equity 4.48%	U.S. Fixed Income -2.15%	Global ex-U.S. Fixed Income -1.11%	Small Cap Equity 1.24%	Real Estate -5.48%	Emerging Market Equity 0.44%	Emerging Market Equity -6.64%	Real Estate 7.96%	U.S. Fixed Income -9.12%
Dev ex-U.S. Equity 1.60%	Dev ex-U.S. Equity -2.87%	Dev ex-U.S. Equity 2.98%	High Yield -0.97%	Small Cap Equity 2.23%	High Yield -2.73%	U.S. Fixed Income -1.12%	Dev ex-U.S. Equity 1.16%	Emerging Market Equity -5.56%	High Yield 0.25%	High Yield -6.73%	High Yield 5.90%	Real Estate -10.01%
Real Estate 1.31%	Small Cap Equity -2.95%	Emerging Market Equity 0.99%	Real Estate -2.24%	Emerging Market Equity 1.88%	Dev ex-U.S. Equity -4.41%	Dev ex-U.S. Equity -1.56%	High Yield -1.15%	Dev ex-U.S. Equity -6.57%	Large Cap Equity 0.18%	Small Cap Equity -8.22%	Dev ex-U.S. Equity 4.97%	Dev ex-U.S. Equity -13.20%
High Yield 0.51%	Emerging Market Equity -3.97%	U.S. Fixed Income -0.03%	Emerging Market Equity -4.08%	High Yield 1.87%	Large Cap Equity -5.17%	Real Estate -2.47%	Emerging Market Equity -2.26%	Global ex-U.S. Fixed Income -6.83%	Small Cap Equity 0.15%	Large Cap Equity -8.25%	U.S. Fixed Income 2.44%	Small Cap Equity -14.29%
U.S. Fixed Income -0.19%	Large Cap Equity -4.65%	High Yield -0.17%	Small Cap Equity -4.17%	Global ex-U.S. Fixed Income -0.07%	Real Estate -5.75%	Emerging Market Equity -2.99%	U.S. Fixed Income -2.78%	Large Cap Equity -8.72%	Global ex-U.S. Fixed Income 0.01%	Real Estate -8.69%	Global ex-U.S. Fixed Income 1.92%	Global ex-U.S. Fixed Income -18.45%
Global ex-U.S. Fixed Income -0.61%	Real Estate -5.80%	Global ex-U.S. Fixed Income -0.39%	Dev ex-U.S. Equity -4.68%	U.S. Fixed Income -0.26%	Small Cap Equity -9.63%	Large Cap Equity -2.99%	Global ex-U.S. Fixed Income -3.20%	Small Cap Equity -9.91%	Real Estate -4.35%	Dev ex-U.S. Equity -9.41%	Emerging Market Equity -0.25%	Emerging Market Equity -20.09%

Sources: ● Bloomberg Aggregate ● Bloomberg Corp High Yield ● Bloomberg Global Aggregate ex US ● FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500

Callan Periodic Table of Investment Returns – Trailing Fiscal Years

Fiscal Year Returns – Ending June 30									
06/2013	06/2014	06/2015	06/2016	06/2017	06/2018	06/2019	06/2020	06/2021	06/2022
Small Cap Equity 24.21%	Large Cap Equity 24.61%	Large Cap Equity 7.42%	Real Estate 11.58%	Small Cap Equity 24.60%	Small Cap Equity 17.57%	Large Cap Equity 10.42%	U.S. Fixed Income 8.74%	Small Cap Equity 62.03%	U.S. Fixed Income -10.29%
Large Cap Equity 20.60%	Dev ex-U.S. Equity 23.83%	Small Cap Equity 6.49%	Global ex-U.S. Fixed Income 11.24%	Emerging Market Equity 23.75%	Large Cap Equity 14.37%	U.S. Fixed Income 7.87%	Large Cap Equity 7.51%	Emerging Market Equity 40.90%	Large Cap Equity -10.62%
Dev ex-U.S. Equity 17.07%	Small Cap Equity 23.64%	U.S. Fixed Income 1.86%	U.S. Fixed Income 6.00%	Dev ex-U.S. Equity 19.49%	Emerging Market Equity 8.20%	Real Estate 7.68%	Global ex-U.S. Fixed Income 0.71%	Large Cap Equity 40.79%	High Yield -12.81%
Real Estate 13.50%	Emerging Market Equity 14.31%	Real Estate -0.36%	Large Cap Equity 3.99%	Large Cap Equity 17.90%	Dev ex-U.S. Equity 7.04%	High Yield 7.48%	High Yield 0.03%	Dev ex-U.S. Equity 33.60%	Real Estate -13.45%
High Yield 9.49%	Real Estate 13.55%	High Yield -0.40%	High Yield 1.62%	High Yield 12.70%	Real Estate 5.64%	Global ex-U.S. Fixed Income 4.10%	Emerging Market Equity -3.39%	Real Estate 33.55%	Dev ex-U.S. Equity -16.76%
Emerging Market Equity 2.87%	High Yield 11.73%	Emerging Market Equity -5.12%	Small Cap Equity -6.73%	Real Estate 0.21%	Global ex-U.S. Fixed Income 2.78%	Dev ex-U.S. Equity 1.29%	Dev ex-U.S. Equity -5.42%	High Yield 15.37%	Global ex-U.S. Fixed Income -18.78%
U.S. Fixed Income -0.69%	Global ex-U.S. Fixed Income 9.42%	Dev ex-U.S. Equity -5.28%	Dev ex-U.S. Equity -9.84%	U.S. Fixed Income -0.31%	High Yield 2.62%	Emerging Market Equity 1.22%	Small Cap Equity -6.63%	Global ex-U.S. Fixed Income 4.60%	Small Cap Equity -25.20%
Global ex-U.S. Fixed Income -3.40%	U.S. Fixed Income 4.37%	Global ex-U.S. Fixed Income -13.19%	Emerging Market Equity -12.05%	Global ex-U.S. Fixed Income -3.80%	U.S. Fixed Income -0.40%	Small Cap Equity -3.31%	Real Estate -16.25%	U.S. Fixed Income -0.33%	Emerging Market Equity -25.28%

Sources: ● Bloomberg Aggregate ● Bloomberg Corp High Yield ● Bloomberg Global Aggregate ex US ● FTSE EPRA Nareit Developed ● MSCI World ex USA ● MSCI Emerging Markets ● Russell 2000 ● S&P 500

Equity and Fixed Income Markets Both Fell in 2Q22

Negative returns for stocks and bonds at the same time are unusual

Global equity markets down sharply following the invasion of Ukraine

- Similar impact across developed markets
- Greater impact on small cap and emerging markets

Fixed income down with sharply higher inflation and interest rates

- Bloomberg Aggregate: -10.4% year-to-date
- CPI-U: +9.1% for the year ended 2Q22

Number of times stocks and bonds have been down together

- 37 quarters in almost 100 years, about 10% of the quarters
- But just twice on annual basis

Inflation spiked to highest rate in decades

Economic data show growth hit "pause"

- GDP fell 0.9% in 2Q22, after dropping 1.6% in 1Q22
- Forecasters have cut growth estimates for 2022 to 0%, or lower, and to 1.5% for 2023.

Returns for Periods ended 6/30/22

	1 Quarter	Year to Date	1 Year	5 Years	10 Years	25 Years
U.S. Equity						
Russell 3000	-16.70	-21.10	-13.87	10.60	12.57	8.06
S&P 500	-16.10	-19.96	-10.62	11.31	12.96	7.97
Russell 2000	-17.20	-23.43	-25.20	5.17	9.35	7.41
Global ex-U.S. Equity						
MSCI World ex USA	-14.66	-18.76	-16.76	2.66	5.37	4.07
MSCI Emerging Markets	-11.45	-17.63	-25.28	2.18	3.07	--
MSCI ACWI ex USA Small Cap	-17.55	-22.92	-22.45	2.55	6.22	5.68
Fixed Income						
Bloomberg Aggregate	-4.69	-10.35	-10.29	0.88	1.54	4.36
90-day T-Bill	0.10	0.14	0.17	1.11	0.64	1.96
Bloomberg Long Gov/Credit	-12.27	-21.88	-20.14	1.03	2.63	6.14
Bloomberg Global Agg ex-US	-11.01	-16.49	-18.78	-1.75	-1.06	2.83
Real Estate						
NCREIF Property	5.33	10.94	23.91	9.30	9.89	9.61
FTSE Nareit Equity	-17.00	-20.20	-6.27	5.30	7.39	8.67
Alternatives						
CS Hedge Fund	-2.30	-0.21	1.92	4.83	4.65	6.26
Cambridge Private Equity*	-1.51	3.61	22.01	20.68	16.50	15.43
Bloomberg Commodity	-5.66	18.44	24.27	8.39	-0.82	1.81
Gold Spot Price	-7.51	-1.16	2.02	7.79	1.20	6.97
Inflation - CPI-U	3.06	6.28	9.06	3.88	2.59	2.49

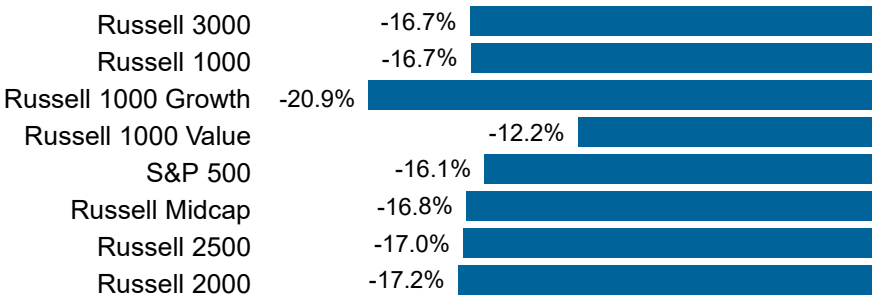
*Cambridge PE data through 03/31/22.
Sources: Bloomberg, Callan, Cambridge, Credit Suisse, FTSE Russell, MSCI, NCREIF, S&P Dow Jones Indices

U.S. Equity Performance: 2Q22

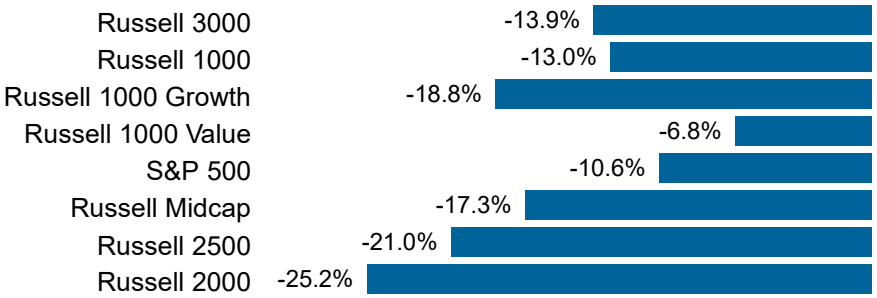
Worst first half since 1970

- The S&P 500 dropped by 16.1% in 2Q22; all major U.S. indices across styles and market cap ranges were negative in the quarter.
- All sectors posted negative returns over the quarter. Energy continues to be the best-performing sector, and it is the only sector that has posted positive returns YTD 2022.
- Large cap stocks nominally outpaced smaller cap stocks in the quarter. The performance spread between the Russell 1000 and the Russell 2000 Index was around 50 basis points.
- Value stocks have outperformed growth stocks across the market capitalization spectrum.
- Consumer Discretionary (-26%), Communication Services (-21%), and Information Technology (-20%) were the worst-performing sectors.
- Rising interest rates and inflation along with geopolitical headlines all contributed to a volatile and risk-averse environment.

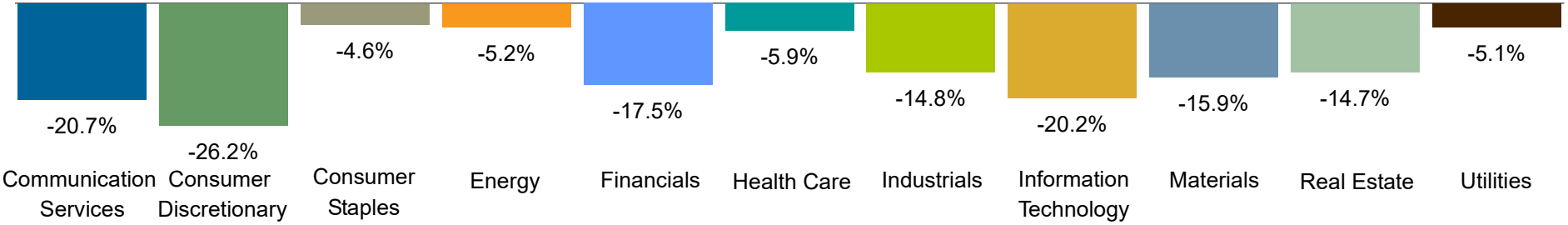
U.S. Equity: Quarterly Returns



U.S. Equity: One-Year Returns



Industry Sector Quarterly Performance (S&P 500)



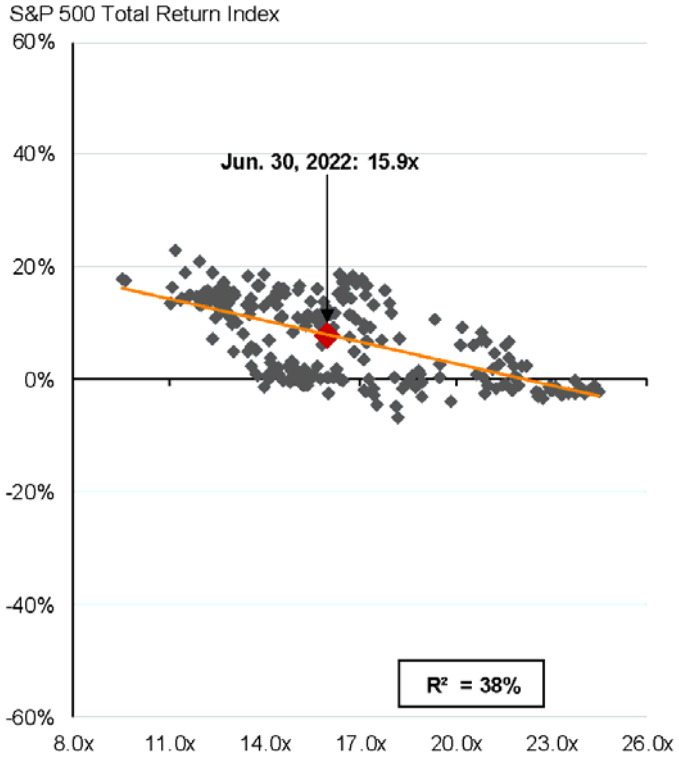
Sources: FTSE Russell, S&P Dow Jones Indices

U.S. Equity Key Theme

Market valuations

- Against the backdrop of a potential economic slow-down, sell side analysts have been revising corporate earnings lower.
- Longer-duration growth assets, such as growth stocks, are vulnerable during periods of high inflation because of higher interest rates discounting way-out future earnings.

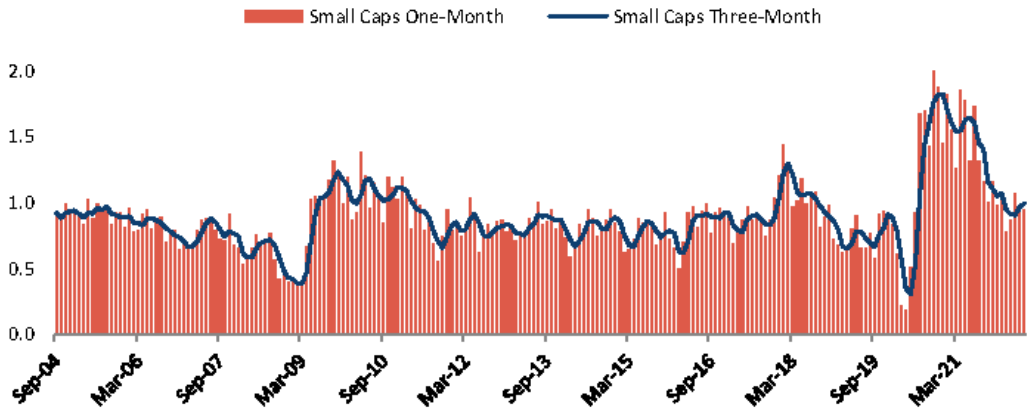
Forward P/E and Subsequent 5-year Annualized Returns



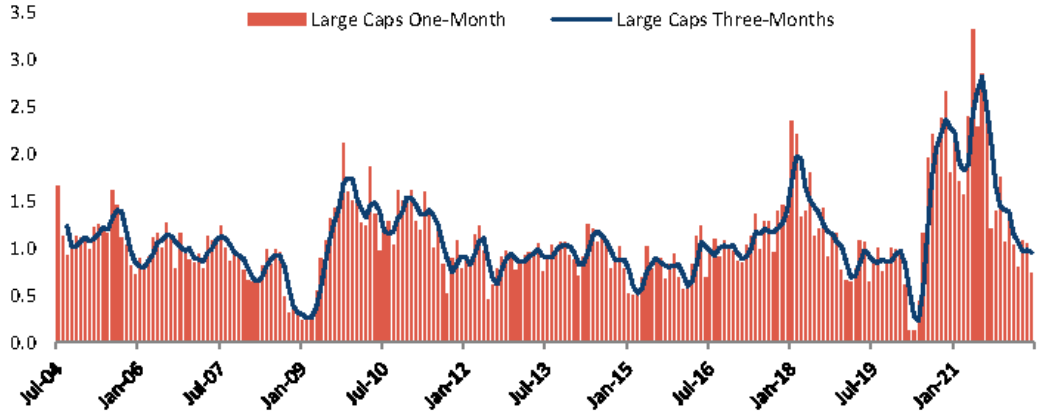
Source: Jefferies and J.P. Morgan

Earnings Revisions Have Drifted Lower for Both Small and Large Caps

Small Cap Earnings Revision Ratio



Large Cap Earnings Revision Ratio



Global/Global ex-U.S. Equity Performance: 2Q22

Fears of recession

- The war in Ukraine pushed an already fragile supply chain, energy demand/supply imbalances, and inflationary environment into fears of a recession.
- Slowing global growth and recession risk became clearer toward quarter-end, leading investors toward higher-quality and lower-volatility areas of the market to offer protection.

Wide divergence in country returns

- Optimism that the worst is behind China's COVID-19 lockdown buoyed the country to the only positive return in the quarter.
- Meanwhile Japan suffered from a weak yen, slowing growth, and continued supply chain disruptions.

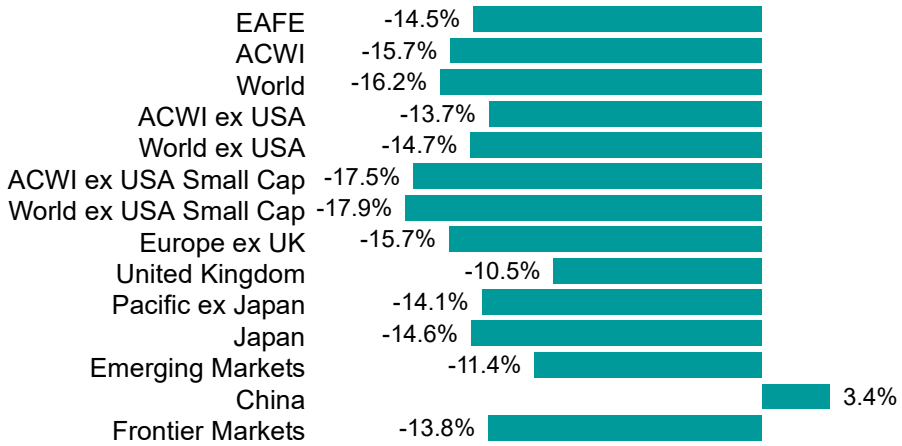
Growth vs. value

- Value continues to outperform growth as most monetary policies focus on tightening.
  - Energy was the only sector with positive year-to-date results.
- Information Technology had the worst sector return as interest rate increases dampened long duration growth attractiveness.

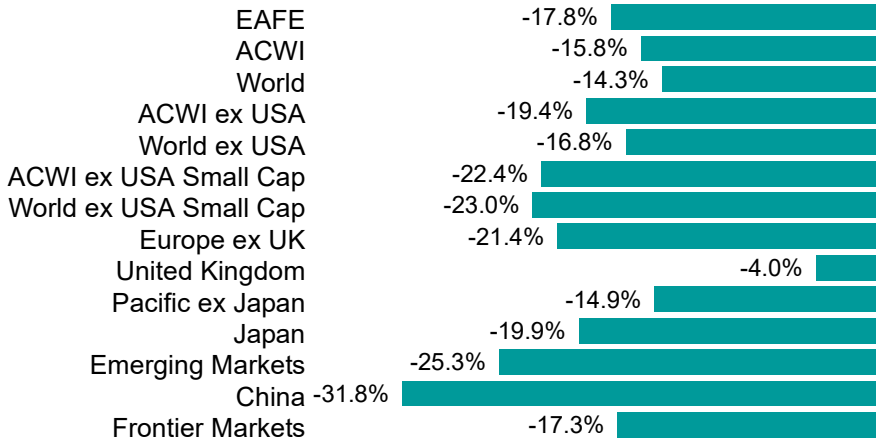
U.S. dollar vs. other currencies

- The U.S. dollar strengthened further against other major currencies given its global dominance and perceived safety.

Global Equity: Quarterly Returns



Global Equity: One-Year Returns



Source: MSCI

U.S. Fixed Income Performance: 2Q22

Bonds hit hard as rates rose sharply (again)

- Worst six-month return for Bloomberg US Aggregate in history
- Yield curve flirted with inversion but 2-year/10-year yield spread was slightly positive at quarter-end.
- TIPS underperformed nominal Treasuries, and 10-year breakeven spreads fell to 2.33% from 2.84% at 3/31/22.
- Fed raised rates by 75 bps, the largest increase since 1994, with further hikes expected.
  - Market pricing reflects Fed Funds rate of 3.4% at year-end.

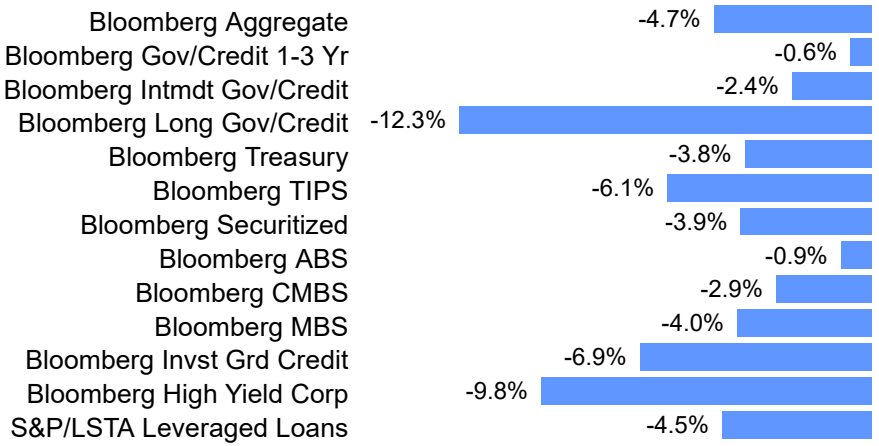
Spread sectors underperformed

- Investment grade corporates underperformed like-duration U.S. Treasuries by 205 bps, RMBS by 98 bps.
- High yield underperformed as spreads widened; excess return vs. U.S. Treasuries was -792 bps.
  - Hurt by equity market performance and worries over the impact of higher rates on the economy
  - Yield-to-worst 8.9%
- Leveraged loans held up relatively well with lower-quality credits generally underperforming.

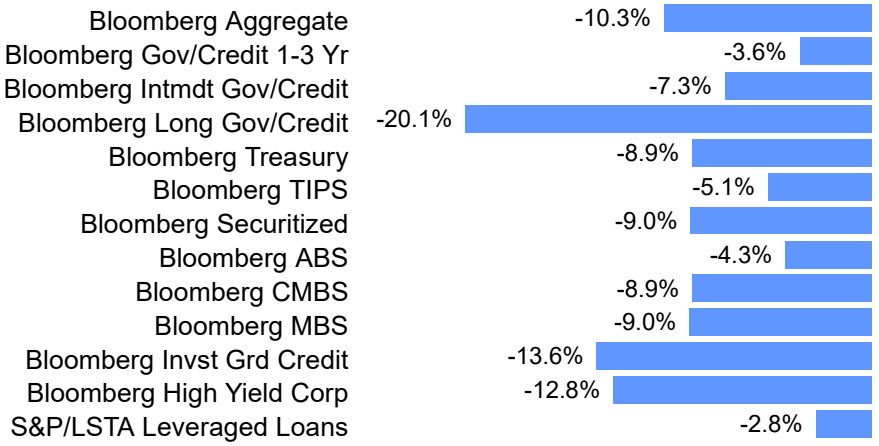
Securitized sectors continue to hang in

- Agency RMBS spreads widened in response to increased rate volatility.
- ABS spreads tightened, led by credit cards.

U.S. Fixed Income: Quarterly Returns



U.S. Fixed Income: One-Year Returns

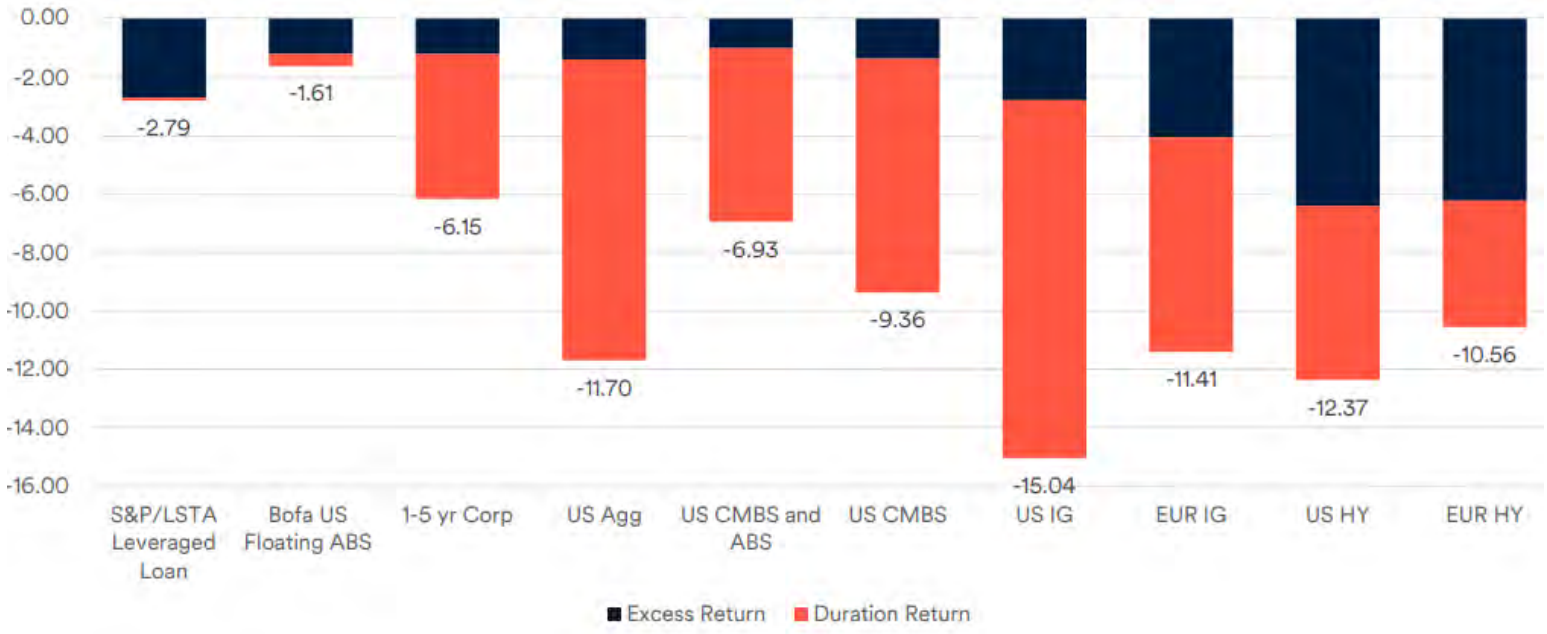


Sources: Bloomberg, S&P Dow Jones Indices

Fixed Income Overview

Returns have been predominately driven by rates

YTD Returns (as of 6/15/2022)



Interest rates significantly increased

- First-half returns worst since inflation of 1970s
- Global phenomenon driven by recent inflationary pressure
- All fixed income asset classes have been negatively impacted.
- Developed market duration becoming more compelling after broad repricing

Source: Schroders

U.S. Private Real Estate Performance: 2Q22

Positive returns across sectors

Another strong quarter for real estate

- Income returns were positive across sectors.
- Valuations are reflective of strong fundamentals in Industrial and Apartment and continued uncertainty despite a modest recovery in Office and Retail.
- Return dispersion by manager within the ODCE Index was due to the composition of underlying portfolios, and increased borrowing costs are impacting values.
- Niche sectors such as self-storage and life sciences continued to be accretive.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
NCREIF ODCE	4.5%	28.3%	11.7%	9.6%	10.2%
Income	0.6%	2.9%	3.0%	3.1%	3.5%
Appreciation	3.9%	25.0%	8.4%	6.3%	6.5%
NCREIF Property Index	3.2%	21.5%	10.2%	8.9%	9.7%
Income	1.0%	4.1%	4.2%	4.4%	4.8%
Appreciation	2.3%	16.9%	5.8%	4.4%	4.7%

Returns are geometrically linked

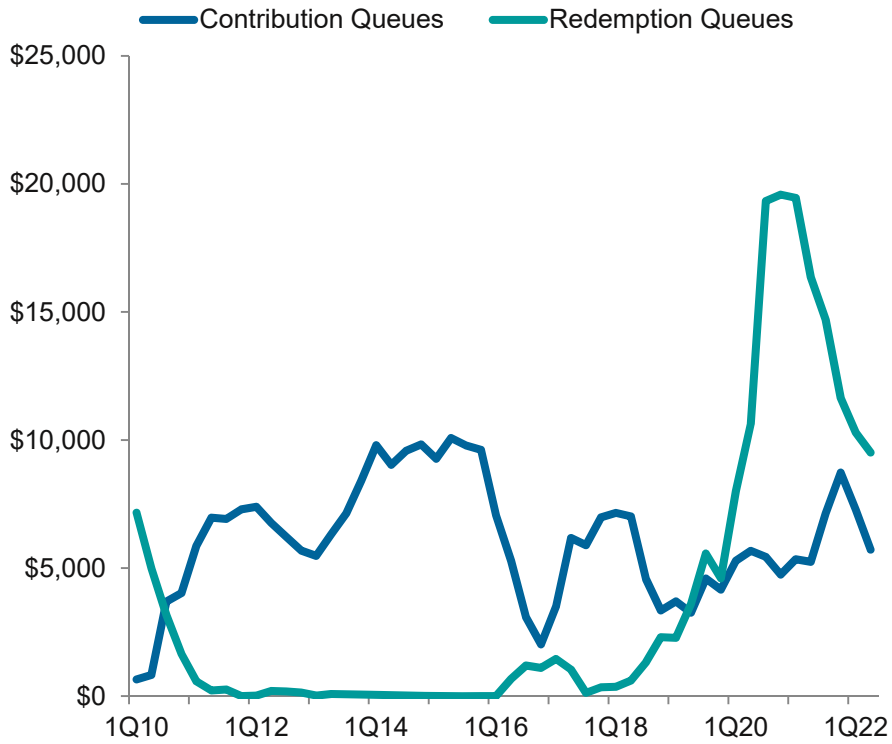
NCREIF Property Index Quarterly Returns by Region and Property Type

Source: NCREIF, ODCE return is net

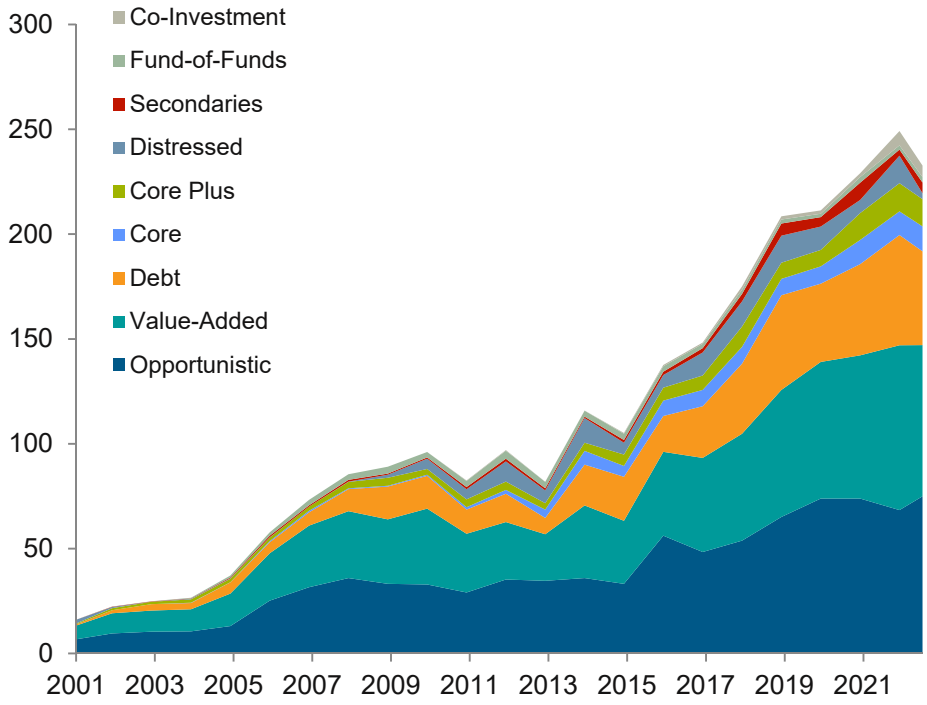
U.S. Private Real Estate Market Trends

Dry powder exceeds $200 billion

Core Fund Contribution/Redemption Queues ($mm)*



Dry Powder for CRE Investment in North America ($bn)



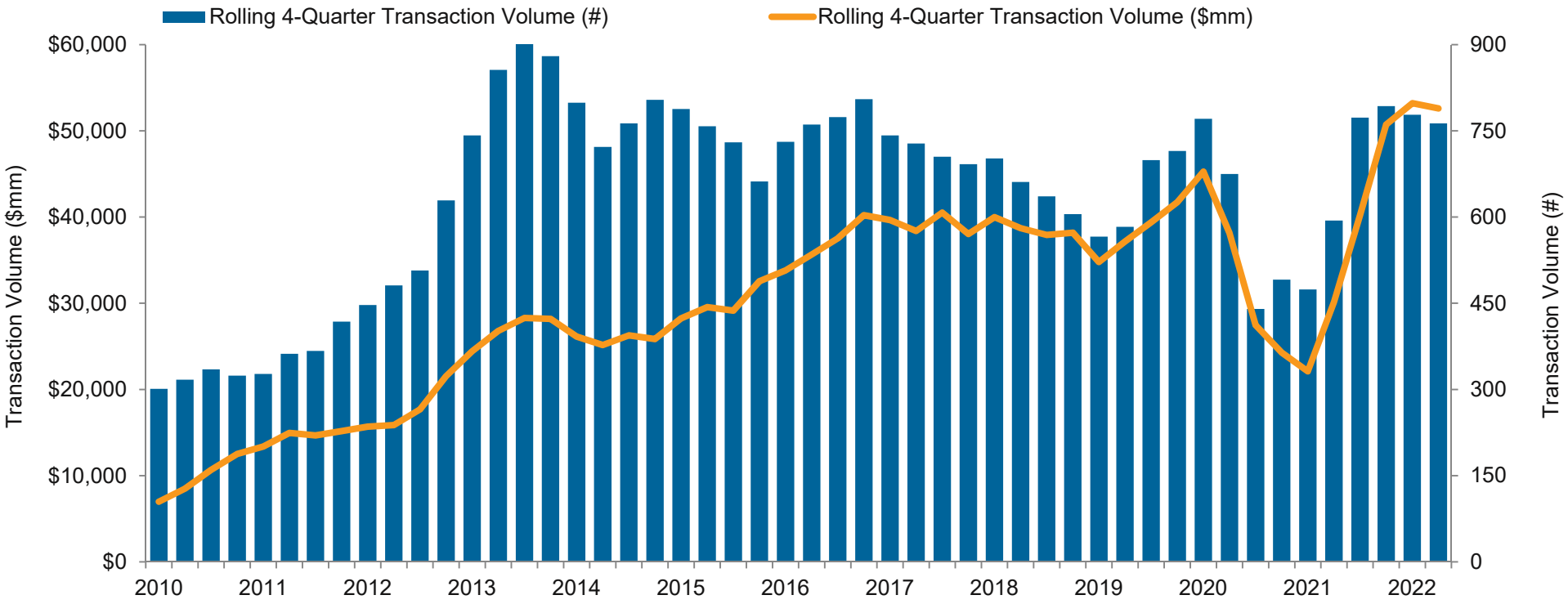
- Net core activity has decreased in back-to-back quarters. Investors are rebalancing due to the denominator effect.
- >$200 billion of capital waiting to be deployed in North America
- Majority of dry powder capital in opportunistic, value-add, and debt funds

Sources: AEW, NCREIF, Preqin
*Queue data as of 1Q22

U.S. Private Real Estate Market Trends

Pricing and transaction volumes fell slightly in 2Q22

NCREIF Rolling 4-Quarter Transaction Totals



- Transaction volume decreased slightly and continues to be led by Multifamily and Industrial assets with strong credit tenants, which are trading at well above pre-COVID-19 levels.
- Some re-trades of assets are occurring due to volatility in capital markets causing increased borrowing costs and in some cases resulting in lower values in transactions.
- Rise in interest rates may create repricing in sectors with weaker overall fundamentals (Office, Retail, Hotel).

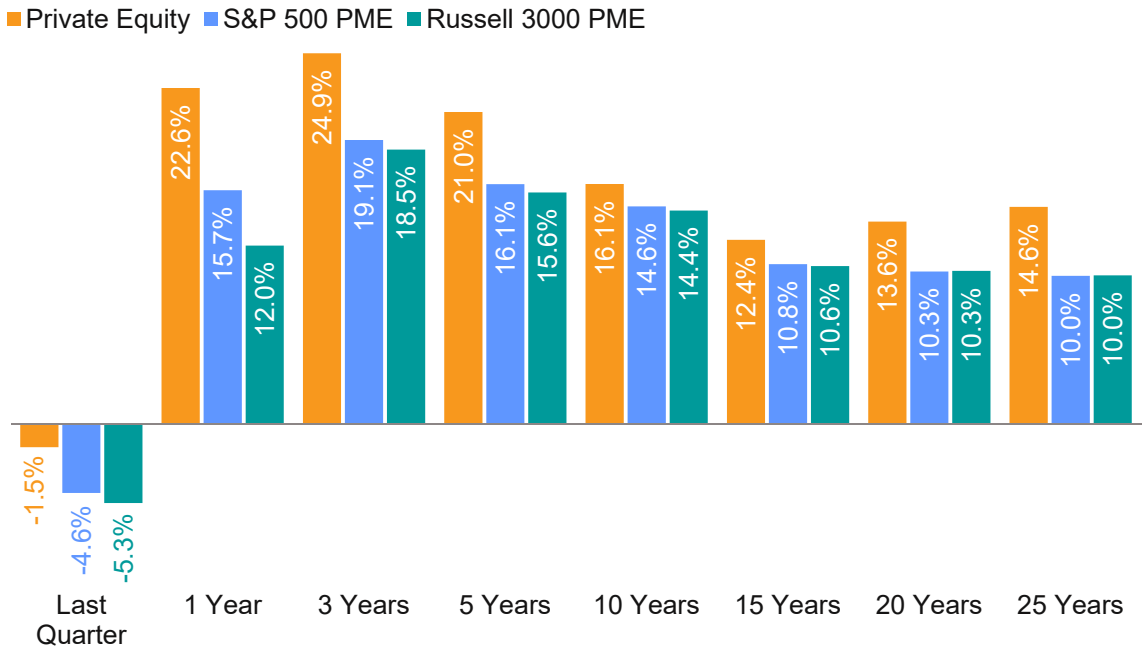
Source: NCREIF

Private Equity Performance

Smoothing effect in 1Q22 private equity returns

- After experiencing severe declines in public equity performance, investors were bracing for 1Q22 private equity returns. While private equity was down by 1.5%, the decline was muted compared to the public markets.
- Private equity returns often exhibit a smoothing effect, where declines are not as sharp as those experienced in the public markets.
- Venture capital and growth equity experienced the sharpest drops this quarter, given their technology focus as well as post-IPO public equity holdings.
- Buyouts were nearly flat for the quarter, while credit-oriented strategies saw modest gains.

Net IRRs as of 03/31/22



1Q22 Returns by Strategy Type	
Venture Capital	-3.6%
Growth Equity	-3.9%
Buyout	-0.5%
Control-oriented Distressed	1.5%
Subordinated Capital	2.0%
Credit Opportunities	3.0%

Source: Refinitiv/Cambridge

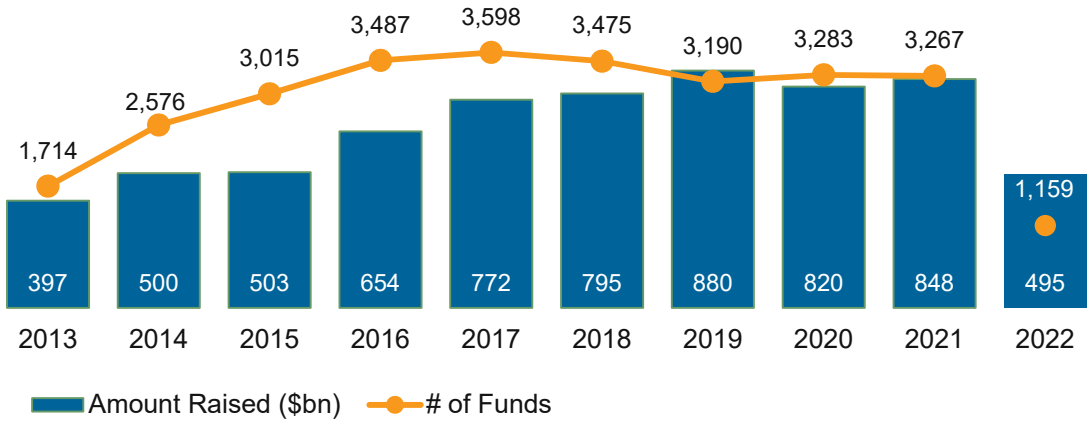
Private Equity Overview

Fundraising slows and timelines become extended

Fundraising

- Despite the pandemic, annual fundraising consistent from 2019-2021
- 1H22 fundraising behind 1H21 by 13%, but may catch up in the second half of the year
- Fundraising timelines extending due to so many funds in the market and constrained LP commitment budgets because of the "denominator effect," delaying many final closes

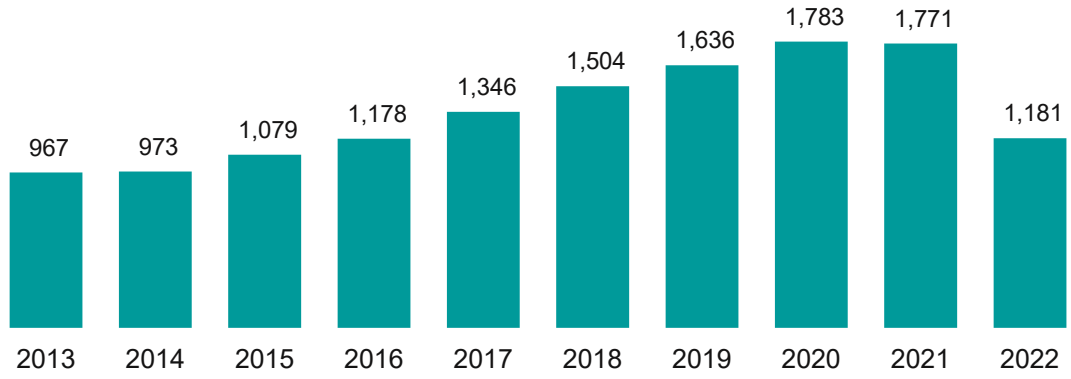
Annual Fundraising



Dry powder

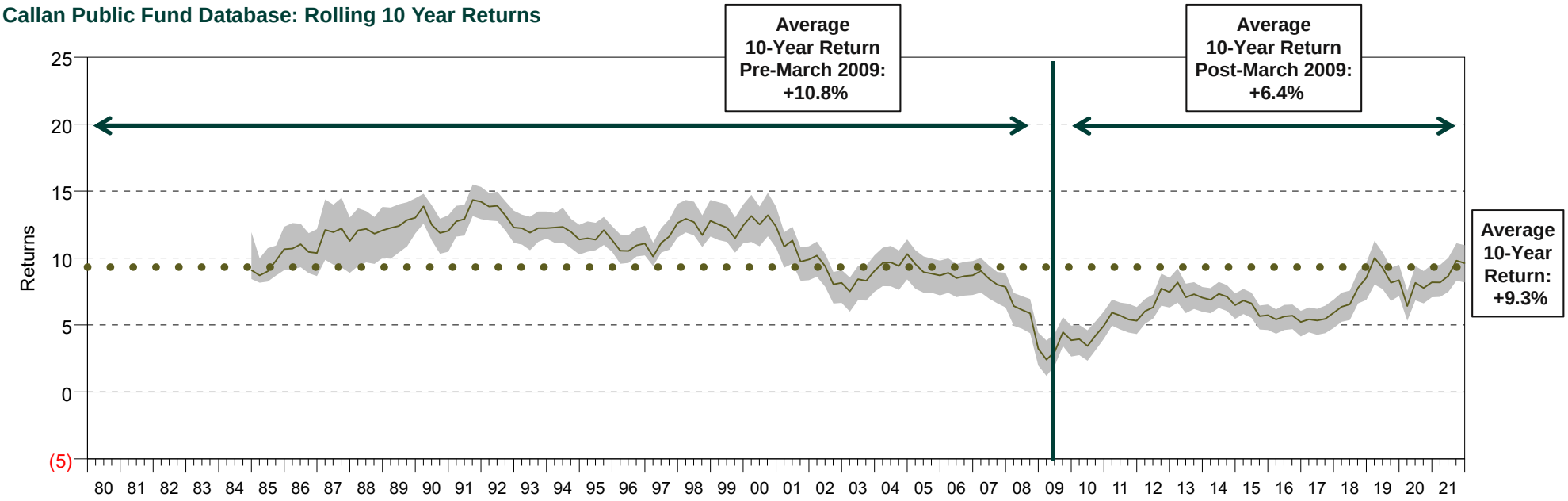
- Level of dry powder influenced by two factors: fundraising and capital deployment
- Dry powder around $1.8 trillion in 2020 and 2021 due to consistent annual fundraising levels
- Dry powder not yet finalized for 2022, but may drop due to the slower fundraising environment

Dry Powder ($bn)
Cumulative as of Year-end

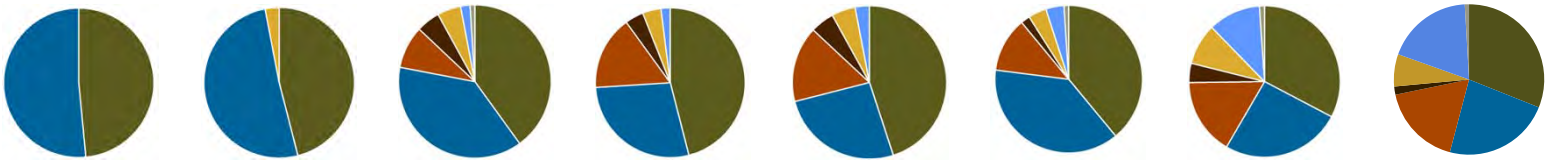


Historical Public Fund Asset Allocation and Returns

Callan Public Fund Database: Rolling 10 Year Returns



10 Year Return	10.7%	12.0%	11.4%	12.4%	8.7%	5.0%	5.7%	9.7%



Asset Class	1985	1990	1995	2000	2005	2010	2015	2021
Domestic Equity	49%	46%	40%	46%	45%	39%	33%	31%
Domestic Fixed Income	52%	51%	38%	28%	26%	30%	26%	23%
Non-U.S. Equity			9%	16%	16%	15%	16%	18%
Non-U.S. Fixed Income			5%	4%	5%	4%	4%	2%
Real Estate		3%	5%	4%	5%	4%	9%	7%
Other Alternatives			2%	2%	3%	7%	11%	19%
Cash Equivalents			1%			1%	1%	1%

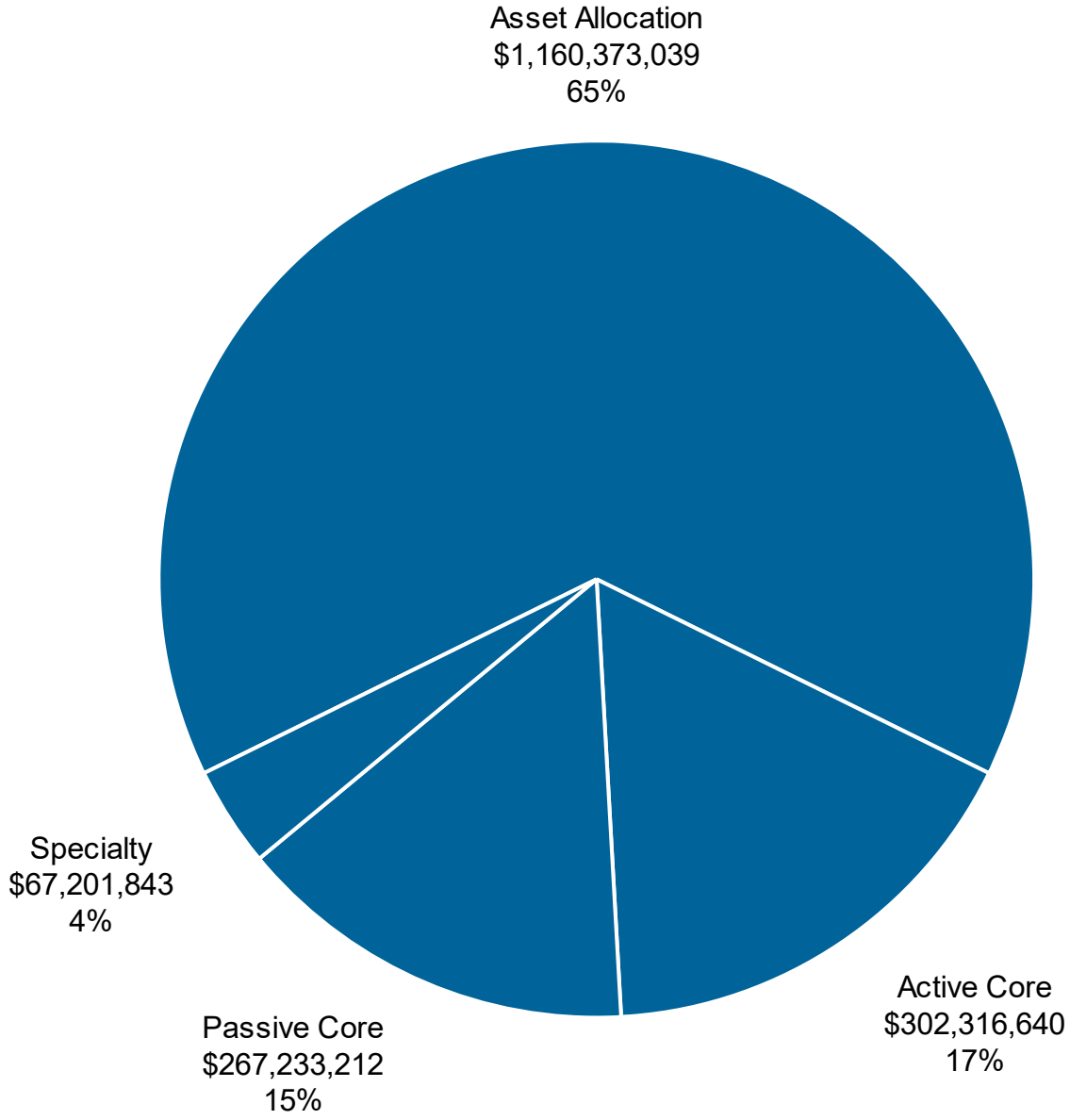
Allocations are as of December 31 of the applicable year except the current year which is September 30.

Callan

Participant-Directed Plans

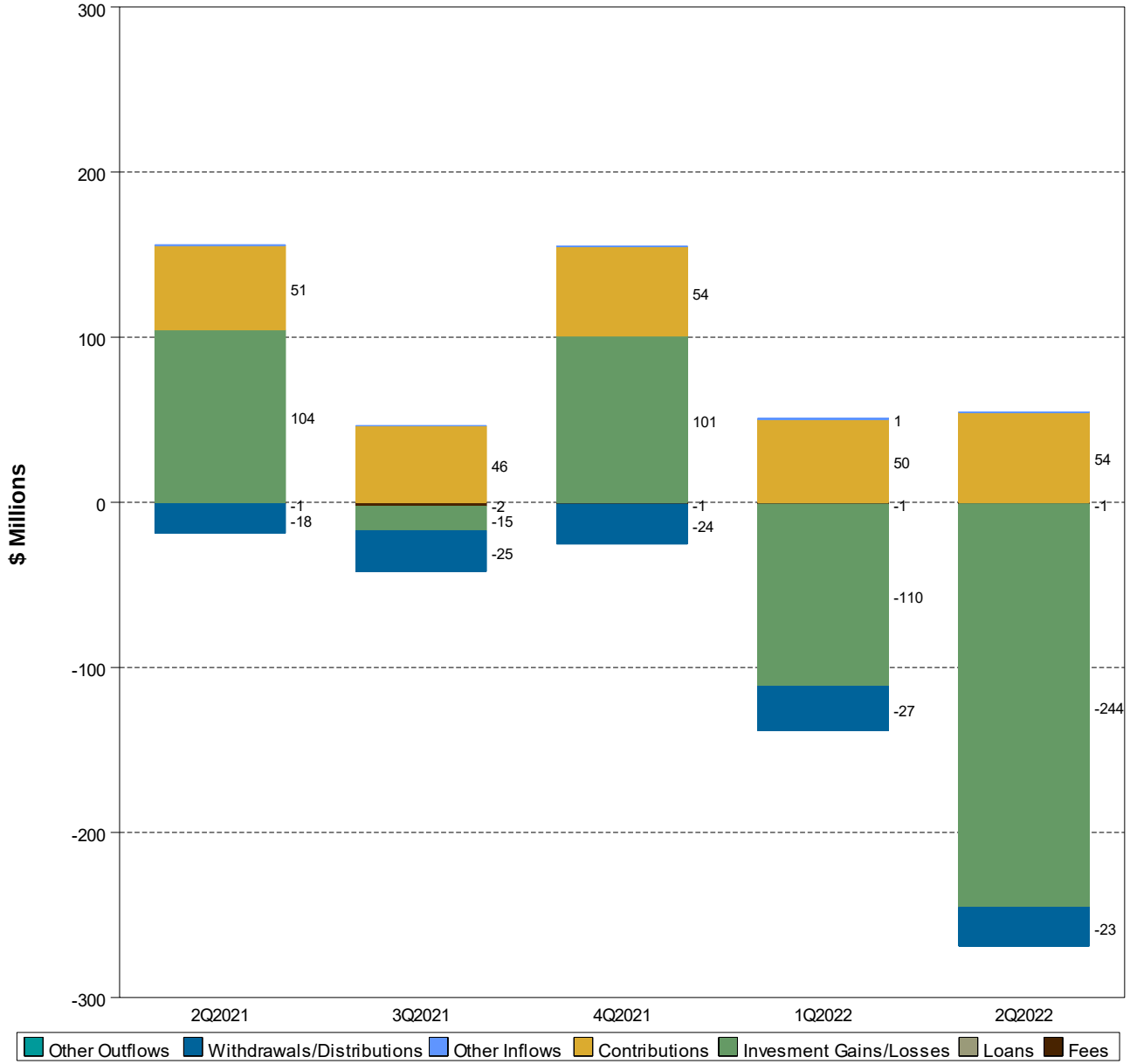
PERS DC Plan

June 30, 2022



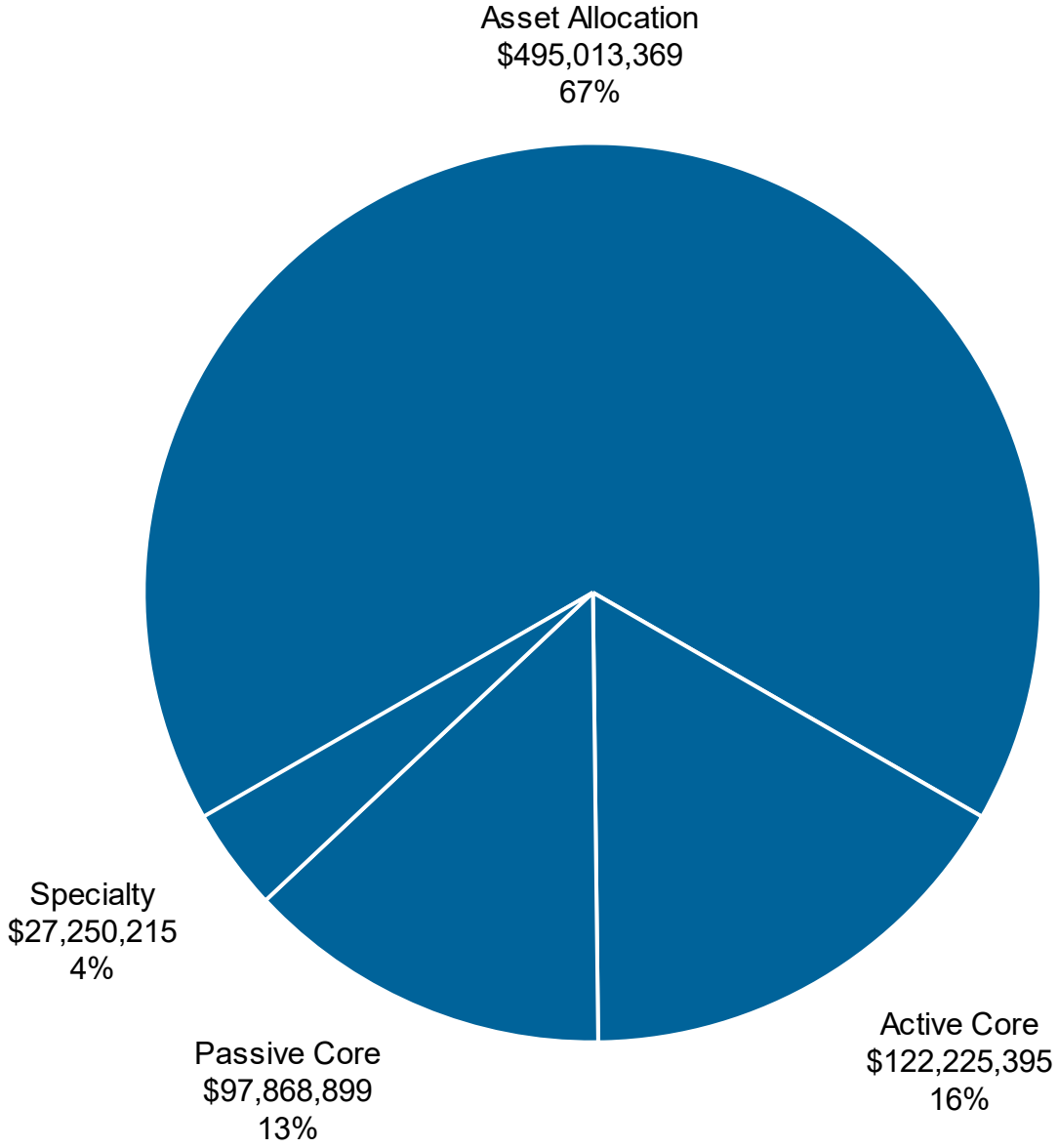
PERS DC Plan: Asset Changes

June 30, 2022



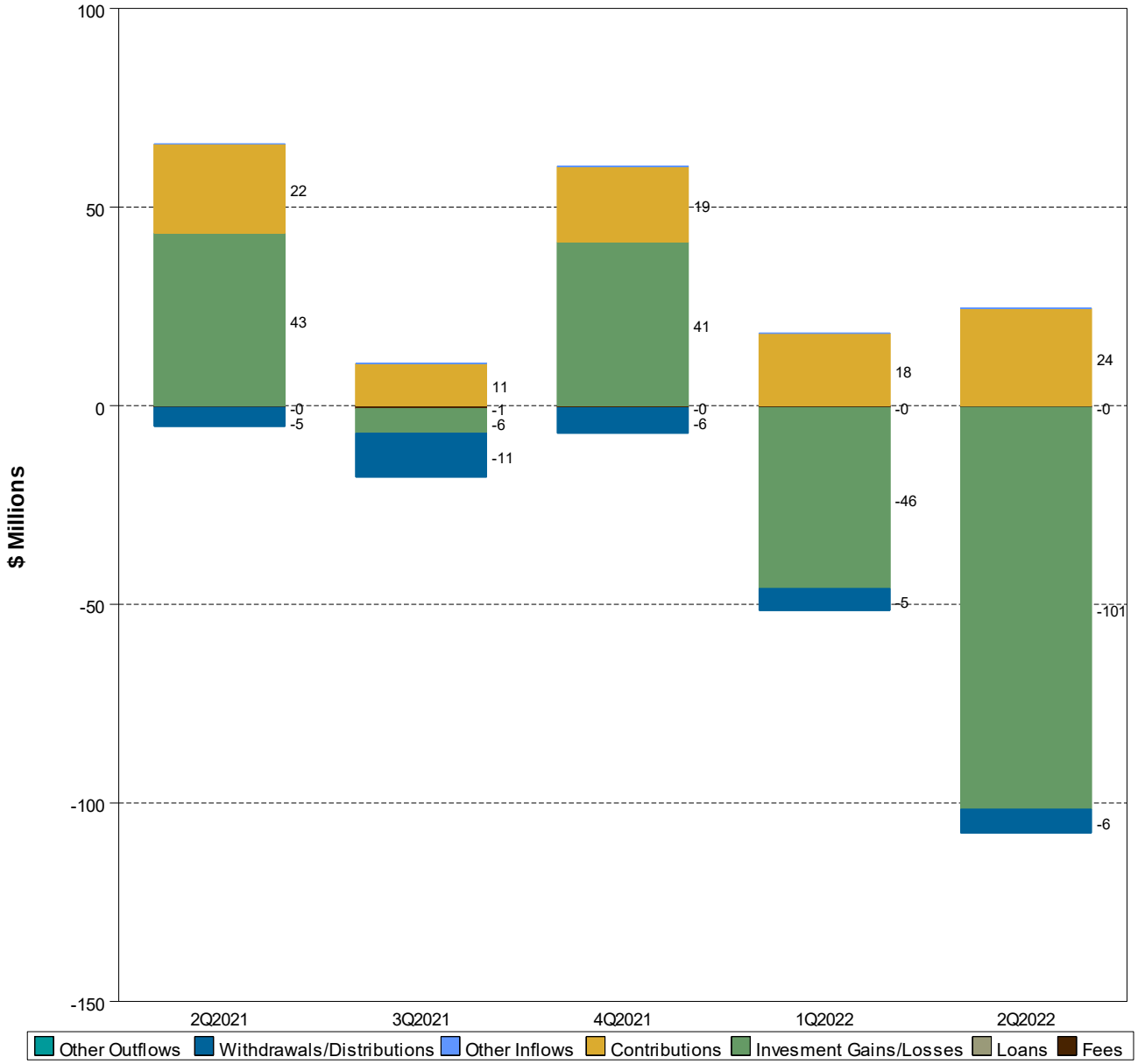
TRS DC Plan

June 30, 2022



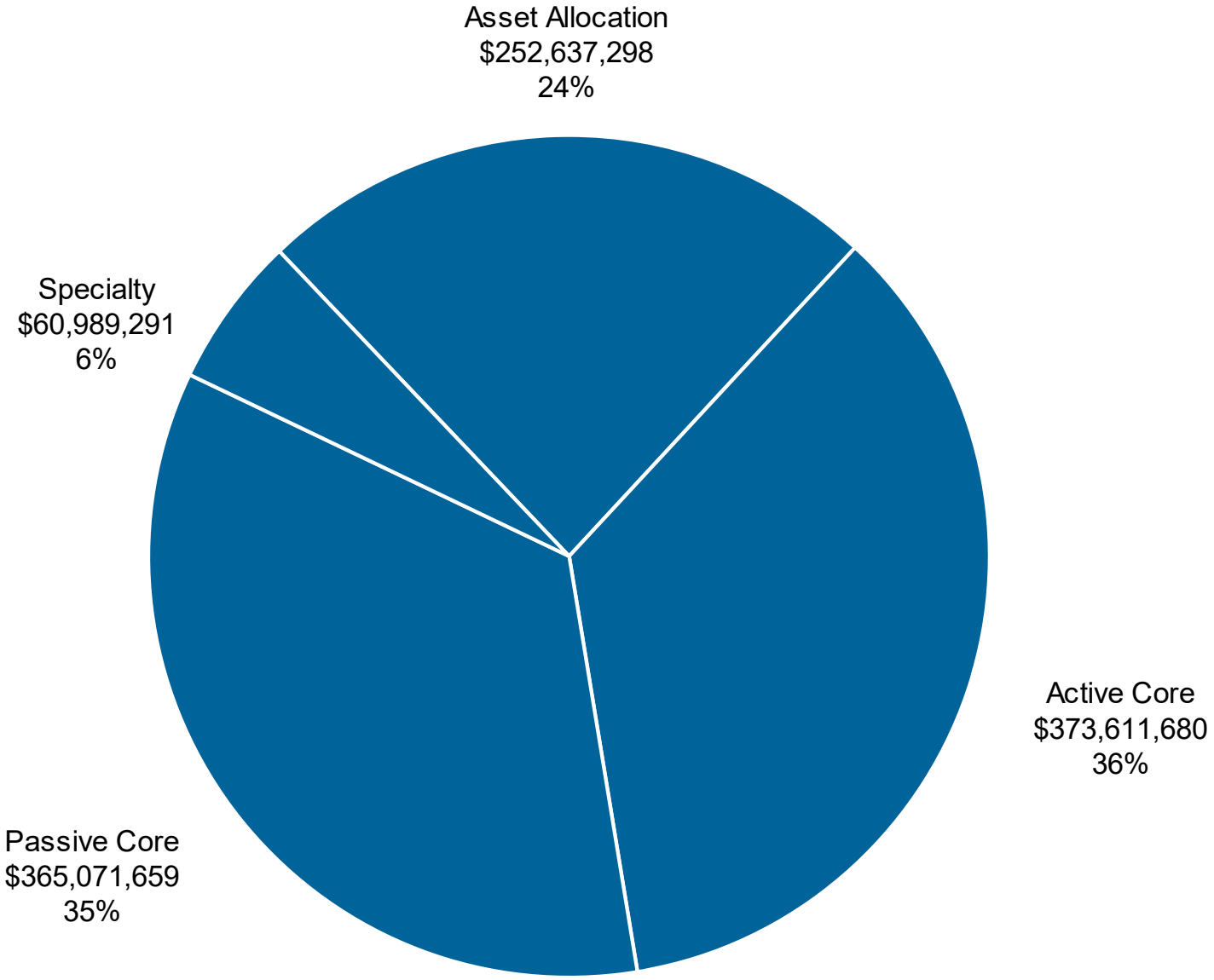
TRS DC Plan: Asset Changes

June 30, 2022



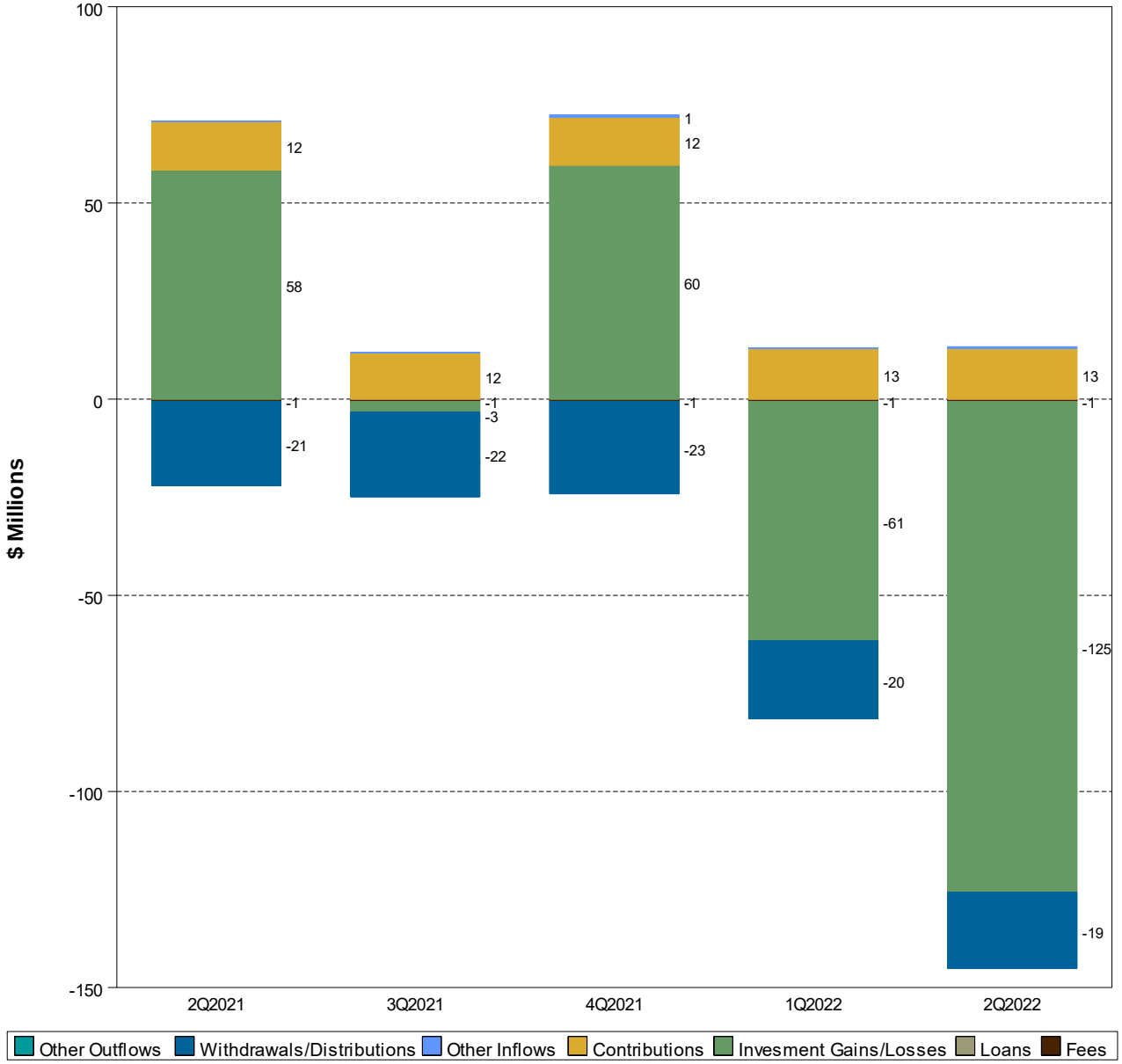
Deferred Comp Plan

June 30, 2022



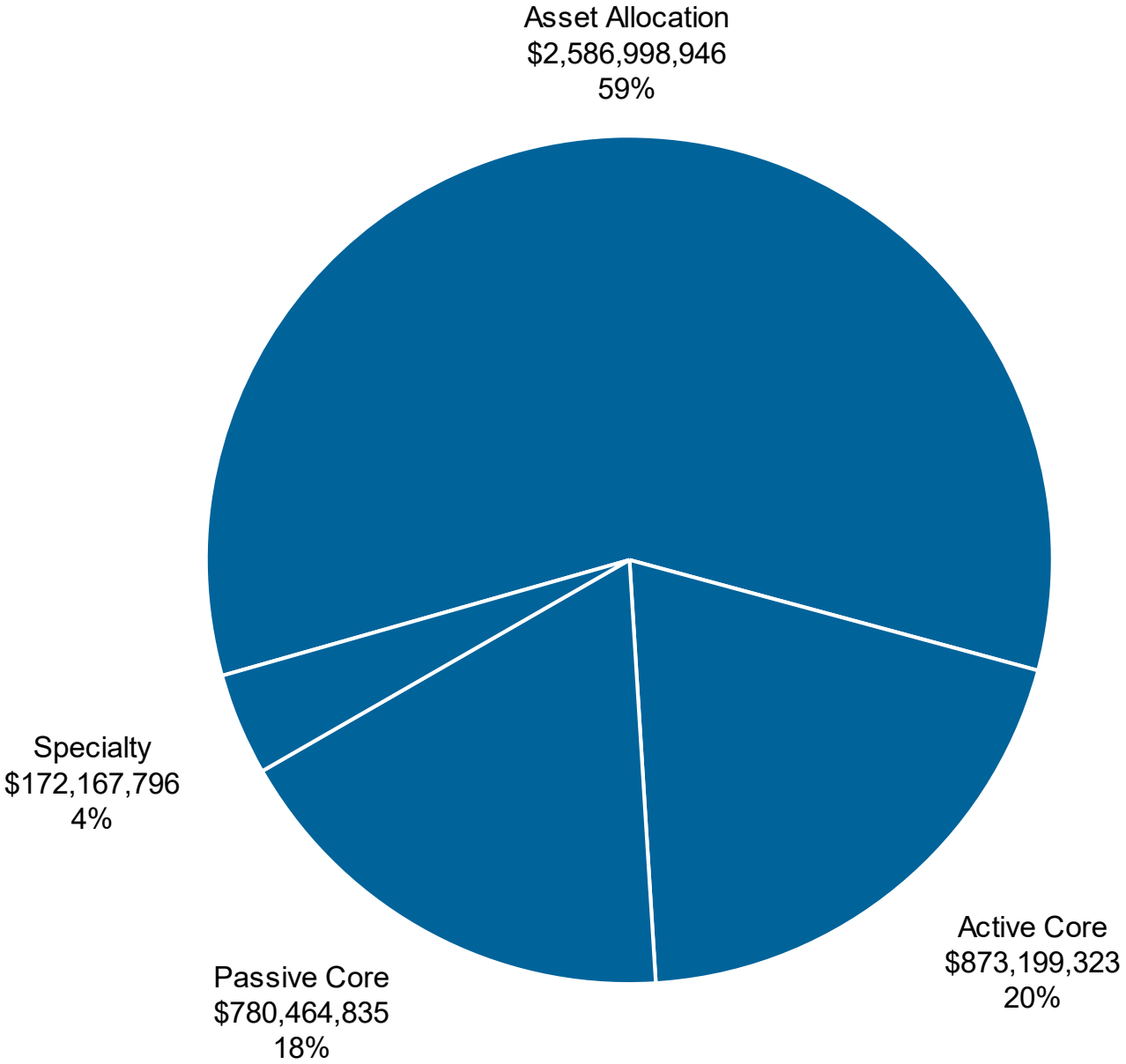
Deferred Comp Plan: Asset Changes

June 30, 2022



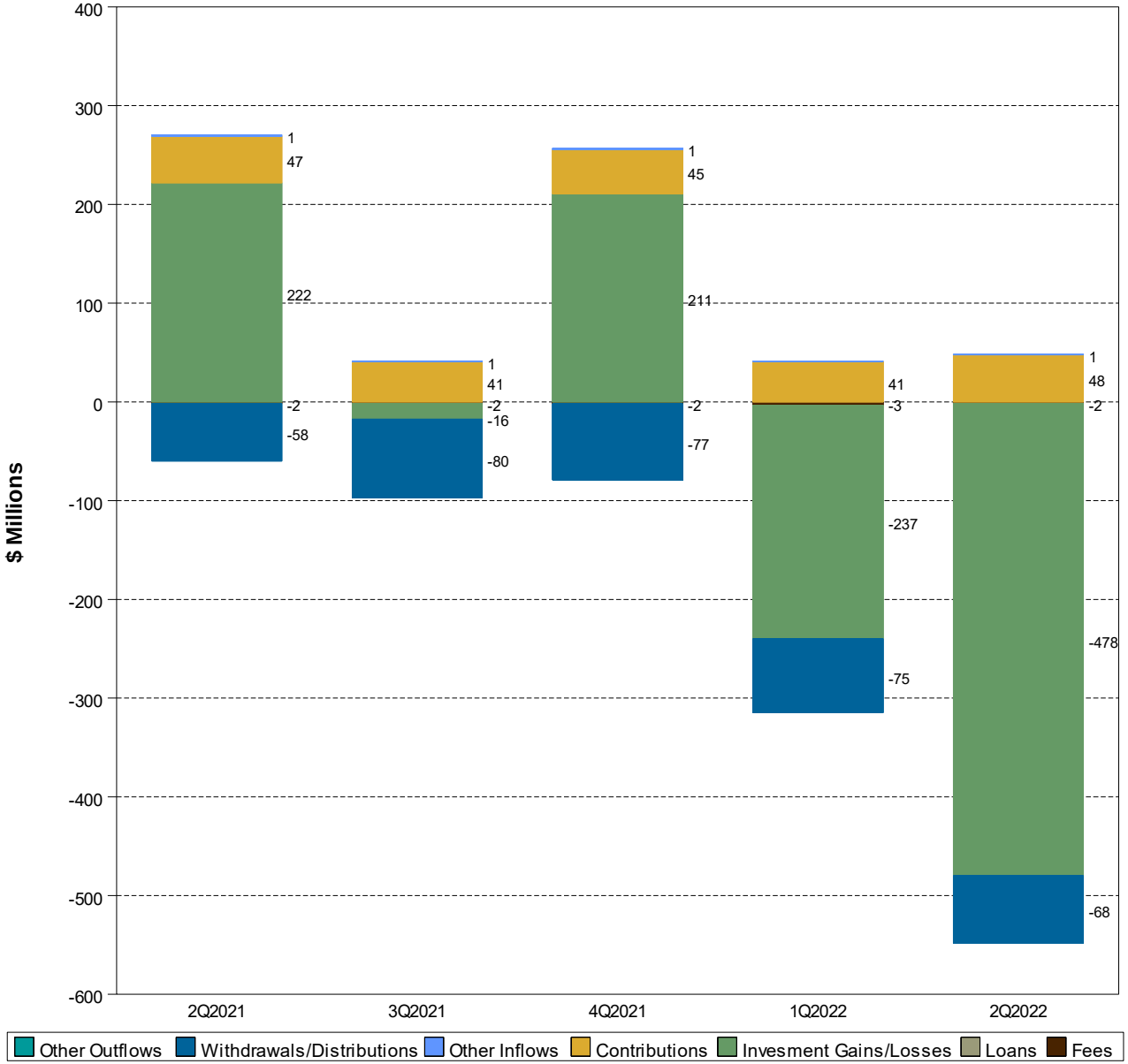
SBS Fund

June 30, 2022



SBS Fund: Asset Changes

June 30, 2022



Individual Account Option Performance: 06/30/22

Balanced & Target Date Funds

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
Asset Allocation										
Alaska Balanced Trust	**-6.9** 28	**-9.0** 25	**3.1** 14	**4.0** 18	**4.1** 14	**7.8** 68		**0.1** 7	**0.4** 100	**0.4** 9
CAI MA Tgt Alloc Cons MFs										
Passive Target	-7.5 36	-9.5 32	2.8 19	3.9 19	4.1 14	8.1 65				0.4 10
Alaska Long-Term Balanced	**-10.0** 48	**-11.2** 44	**4.9** 31	**5.7** 31	**5.8** 30	**12.5** 57		**-0.1** 34	**0.5** 100	**0.4** 27
CAI MA Tgt Alloc Mod MFs										
Passive Target	-10.7 60	-11.8 53	4.7 34	5.7 31	5.8 29	12.8 54				0.4 28
Target 2010 Trust	**-6.9** 8	**-8.3** 18	**3.5** 20	**4.4** 22	**4.5** 24	**8.6** 65		**-0.1** 24	**0.4** 100	**0.4** 12
CAI Tgt Date 2010										
Custom Index	-7.4 14	-8.7 18	3.4 27	4.4 22	4.5 24	8.9 53				0.4 13
Target 2015 Trust	**-7.6** 11	**-8.8** 19	**4.1** 10	**5.0** 5	**5.1** 13	**9.8** 64		**0.2** 4	**0.5** 99	**0.4** 9
CAI Tgt Date 2015										
Custom Index	-8.2 19	-9.4 22	3.9 13	4.9 6	5.0 15	10.1 49				0.4 11
Target 2020 Trust	**-8.8** 24	**-9.8** 23	**4.8** 5	**5.7** 5	**5.8** 8	**11.6** 30		**0.1** 4	**0.5** 99	**0.4** 11
CAI Tgt Date 2020										
Custom Index	-9.4 50	-10.3 27	4.5 8	5.6 5	5.7 11	11.9 28				0.4 11
Target 2025 Trust	**-10.1** 42	**-10.9** 20	**5.3** 3	**6.2** 3	**6.3** 4	**13.4** 25		**0.1** 3	**0.5** 100	**0.4** 6
CAI Tgt Date 2025										
Custom Index	-10.8 71	-11.6 29	5.1 5	6.2 3	6.3 4	13.7 17				0.4 7
Target 2030 Trust	**-11.2** 38	**-11.9** 21	**5.8** 4	**6.7** 2	**6.8** 4	**15.0** 28		**-0.0** 3	**0.5** 100	**0.4** 6
CAI Tgt Date 2030										
Custom Index	-11.9 71	-12.4 25	5.7 6	6.7 2	6.8 4	15.3 24				0.4 6
Target 2035 Trust	**-12.2** 28	**-12.7** 14	**6.3** 5	**7.2** 5	**7.3** 5	**16.3** 44		**0.0** 4	**0.5** 100	**0.4** 5
CAI Tgt Date 2035										
Custom Index	-12.9 65	-13.2 19	6.1 9	7.1 5	7.2 5	16.7 39				0.4 7
Target 2040 Trust	**-13.0** 27	**-13.3** 17	**6.7** 4	**7.5** 4	**7.6** 5	**17.4** 57		**0.0** 3	**0.5** 100	**0.4** 4
CAI Tgt Date 2040										
Custom Index	-13.7 60	-13.8 22	6.5 6	7.5 4	7.5 5	17.7 49				0.4 4
Target 2045 Trust	**-13.6** 26	**-13.7** 15	**7.0** 5	**7.7** 3	**7.8** 2	**18.3** 66		**-0.0** 4	**0.5** 100	**0.4** 3
CAI Tgt Date 2045										
Custom Index	-14.3 57	-14.3 21	6.8 7	7.7 3	7.7 3	18.6 55				0.4 3

Returns:
- above median
- third quartile
- fourth quartile

Risk:
- below median
- second quartile
- first quartile

Risk Quadrant:

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

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

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

Individual Account Option Performance: 06/30/22

Balanced & Target Date Funds

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
Target 2050 Trust	**-13.8** 24	**-13.9** 16	**6.9** 6	**7.7** 3	**7.8** 4	**18.3** 76		**0.0** 3	**0.5** 99	**0.4** 3
CAI Tgt Date 2050 Custom Index	-14.6 56	-14.6 23	6.7 7	7.7 3	7.7 4	18.6 67				0.4 3
Target 2055 Trust	**-13.8** 20	**-13.9** 11	**6.9** 5	**7.7** 3	**7.8** 4	**18.3** 83		**0.0** 3	**0.5** 99	**0.4** 3
CAI Tgt Date 2055 Custom Index	-14.6 48	-14.6 16	6.7 6	7.7 3	7.7 4	18.6 75				0.4 3
Target 2060 Trust	**-13.8** 21	**-14.0** 14	**6.8** 7	**7.6** 5		**18.3** 82		**-0.2** 9	**0.5** 99	**0.4** 3
CAI Tgt Date 2060 Custom Index	-14.6 44	-14.6 18	6.7 9	7.7 4		18.6 71				0.4 3
Target 2065 Trust	**-13.8** 9	**-14.0** 8								
CAI Tgt Date 2065 Custom Index	-14.6 27	-14.6 10								
JPMorgan SmartRetirementBlend 2015 R6	**-9.0** 55	**-12.0** 71								
Callan Target Date 2015 JPMorgan:SR Income MF Idx	-9.2 65	-11.7 63	1.6 97	3.2 96	3.7 93	9.3 73				0.2 95
JPMorgan SmartRetirementBlend 2020 R6	**-9.0** 32									
Callan Target Date 2020 JPMorgan:SR 2020 MF Index	-9.2 39	-11.7 57	1.8 91	3.5 86	4.2 68	9.9 80				0.2 84

Returns:
- above median
- third quartile
- fourth quartile

Risk:
- below median
- second quartile
- first quartile

Risk Quadrant:

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

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

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

Other Options: 06/30/22

Passive Strategies

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
Index Funds										
SSgA S&P 500 Index Fund (i)	**-16.1** 18	**-10.6** 13	**10.6** 15	**11.3** 12	**11.1** 7	**20.3** 38		**-1.1** 23	**0.0** 78	**0.5** 8
Callan S&P 500 Index MFs										
S&P 500 Index	-16.1 6	-10.6 1	10.6 6	11.3 5	11.1 2	20.3 34				0.5 2
SSgA Russell 3000 Index Fund (i)	**-16.7** 57	**-13.7** 53	**9.8** 34	**10.6** 42	**10.5** 40	**21.3** 53		**0.3** 19	**0.1** 100	**0.4** 39
CAI Mut Fd: Large Cap Broad Style (Net)										
Russell 3000 Index	-16.7 57	-13.9 55	9.8 35	10.6 42	10.4 40	21.3 53				0.4 40
SSgA World Equity ex-US Index Fund (i)	**-13.0** 45	**-19.1** 47	**1.6** 46	**2.7** 40	**3.1** 41	**19.7** 71		**0.3** 14	**1.1** 99	**0.1** 41
CAI MF: Non-U.S. Equity Style										
MSCI ACWI x U.S. Index (Net)	-13.7 53	-19.4 48	1.4 54	2.5 45	2.9 45	19.4 82				0.1 44
BlackRock Passive US Bd Index Fund (i)	**-4.7** 13	**-10.3** 26	**-0.9** 81						**0.1** 100	
Callan Core Bond MFs										
Blmbg Aggregate	-4.7 13	-10.3 28	-0.9 78	0.9 76	1.4 87	5.0 82				-0.0 76

Returns:
- above median
- third quartile
- fourth quartile

Risk:
- below median
- second quartile
- first quartile

Risk Quadrant:

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

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

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

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

Other Options: 06/30/22

Active Equity, Stable Value, and Money Market

Investment Manager	Last Quarter Return	Last Year Return	3 Year Return	5 Year Return	7 Year Return	5 Year Risk	5 Year Risk Quadrant	5 Year Excess Rtn Ratio	3 Year Tracking Error	5 Year Sharpe Ratio
Active and Other Funds										
BlackRrock Strategic Completion Fd	**-10.6** 73	**-2.5** 69								
Callan Real Assets MFs										
Strategic Completion Custom Index	-10.7 73	-2.2 66								
Northern Trust ESG Fund	**-16.0** 49	**-10.6** 43	**11.1** 17						**0.1** 100	
Callan Lg Cap Broad MF										
MSCI USA ESG	-16.0 49	-10.5 42	11.3 11	11.9 27	11.3 25	19.7 83				0.5 9
International Equity Fund	**-14.6** 67	**-26.4** 82	**1.6** 46	**1.6** 64	**0.8** 90	**21.7** 30		**-0.2** 65	**4.7** 71	**0.0** 62
CAI Mut Fd: Non-U.S. Equity Style										
MSCI ACWI ex US Index	-13.7 53	-19.4 48	1.4 54	2.5 45	2.9 45	19.4 82				0.1 44
T. Rowe Price Small Cap	**-15.3** 41	**-23.2** 55	**5.9** 47	**9.3** 22	**9.2** 14	**25.5** 89		**0.7** 3	**6.7** 88	**0.3** 13
CAI Mut Fd: Sm Cap Broad Style										
Russell 2000 Index	-17.2 57	-25.2 58	4.2 59	5.2 76	5.9 67	28.6 56				0.1 75
T. Rowe Price Stable Value	**0.5** 16	**1.8** 7	**2.2** 2	**2.3** 1	**2.3** 1	**0.2** 59		**3.4** 5	**0.3** 26	**7.8** 6
Callan Stable Value CT										
FTSE 3 Mo T-Bill	0.1 97	0.2 98	0.6 99	1.1 97	0.9 99	0.5 1				-0.0 97
SSgA Inst Treasury Money Market	**0.1** 20	**0.2** 30	**0.5** 13	**1.0** 10	**0.8** 11	**0.4** 11		**-3.1** 51	**0.0** 95	**-0.3** 10
Callan Money Market Funds										
FTSE 3 Mo T-Bill	0.1 16	0.2 6	0.6 3	1.1 4	0.9 2	0.5 4				-0.0 4

Returns:
- above median
- third quartile
- fourth quartile

Risk:
- below median
- second quartile
- first quartile

Risk Quadrant:

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

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

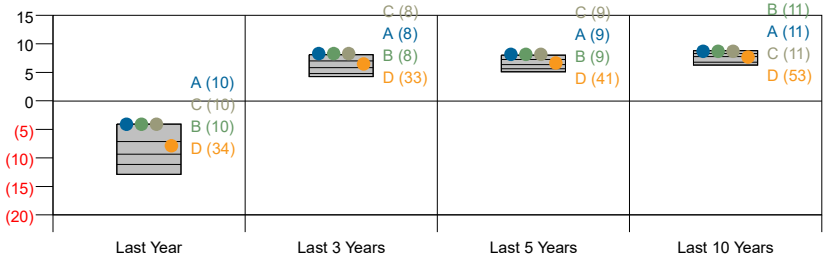
Sharpe Ratio:
- above median
- third quartile
- fourth quartile

Callan

Pension Plans

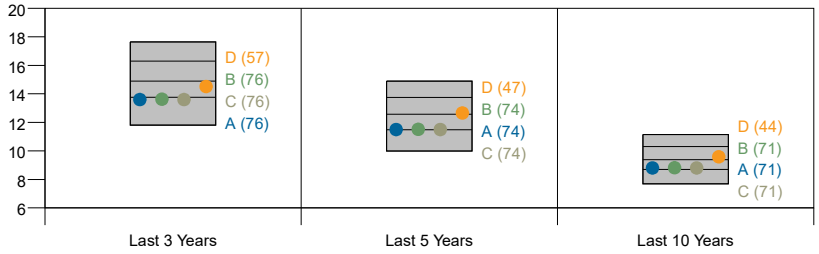
PERS, TRS, and JRS Performance Dashboard – June 30, 2022

Returns vs Callan Public Fund Sponsor Database



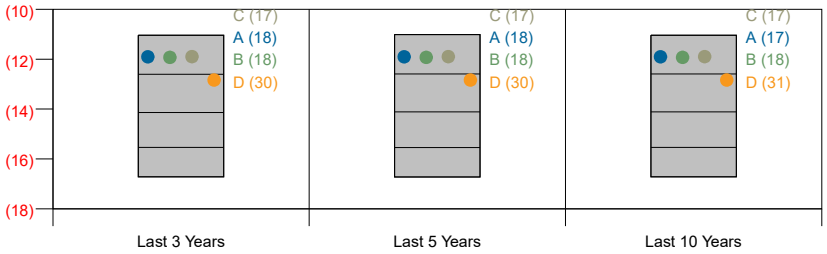
		Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		(4.04)	8.09	8.06	8.82
25th Percentile		(7.13)	7.03	7.28	8.32
Median		(9.35)	5.85	6.40	7.79
75th Percentile		(11.14)	4.81	5.65	6.81
90th Percentile		(12.87)	4.26	5.13	6.29
Member Count		181	181	179	171
Employees' Total Plan	A	(4.08)	8.32	8.19	8.72
Teachers' Total Plan	B	(4.10)	8.32	8.19	8.73
Judicial Total Plan	C	(4.09)	8.33	8.19	8.71
Policy Target	D	(7.86)	6.48	6.67	7.71

Standard Deviation vs Callan Public Fund Sponsor Database



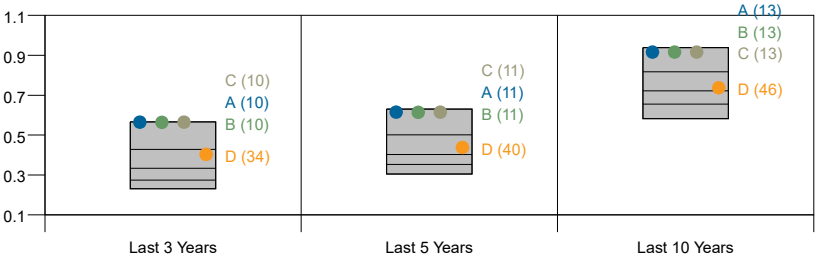
		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		17.65	14.90	11.15
25th Percentile		16.30	13.75	10.31
Median		14.89	12.58	9.39
75th Percentile		13.77	11.49	8.71
90th Percentile		11.82	9.99	7.69
Member Count		181	179	171
Employees' Total Plan	A	13.61	11.51	8.81
Teachers' Total Plan	B	13.63	11.52	8.82
Judicial Total Plan	C	13.61	11.51	8.81
Policy Target	D	14.52	12.67	9.59

Maximum Drawdown vs Callan Public Fund Sponsor Database



		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		(11.04)	(11.01)	(11.04)
25th Percentile		(12.60)	(12.59)	(12.59)
Median		(14.13)	(14.11)	(14.10)
75th Percentile		(15.53)	(15.54)	(15.53)
90th Percentile		(16.71)	(16.72)	(16.71)
Member Count		181	179	171
Employees' Total Plan	A	(11.90)	(11.90)	(11.90)
Teachers' Total Plan	B	(11.92)	(11.92)	(11.92)
Judicial Total Plan	C	(11.89)	(11.89)	(11.89)
Policy Target	D	(12.83)	(12.83)	(12.83)

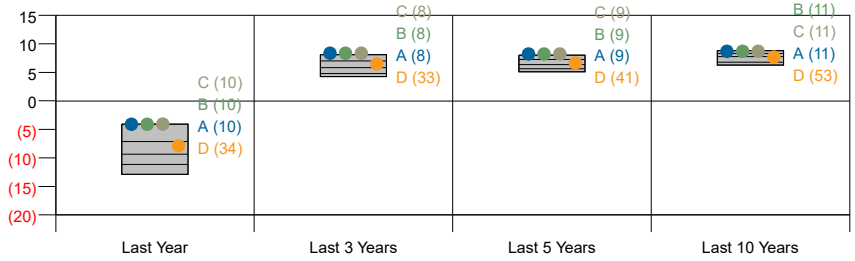
Sharpe Ratio vs Callan Public Fund Sponsor Database



		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		0.57	0.63	0.94
25th Percentile		0.43	0.50	0.82
Median		0.33	0.40	0.72
75th Percentile		0.27	0.35	0.66
90th Percentile		0.23	0.31	0.58
Member Count		181	179	171
Employees' Total Plan	A	0.57	0.62	0.92
Teachers' Total Plan	B	0.56	0.61	0.92
Judicial Total Plan	C	0.57	0.62	0.92
Policy Target	D	0.40	0.44	0.74

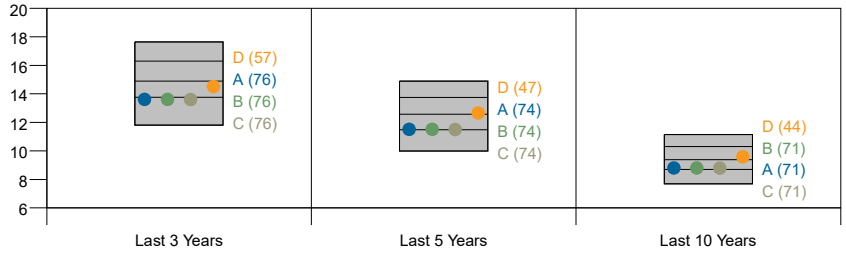
Health Care Plans Performance Dashboard – June 30, 2022

Returns vs Callan Public Fund Sponsor Database



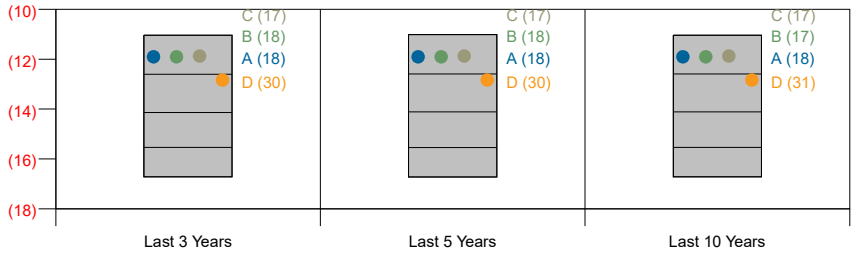
		Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		(4.04)	8.09	8.06	8.82
25th Percentile		(7.13)	7.03	7.28	8.32
Median		(9.35)	5.85	6.40	7.79
75th Percentile		(11.14)	4.81	5.65	6.81
90th Percentile		(12.87)	4.26	5.13	6.29
Member Count		181	181	179	171
PERS Health Plan	A	(4.08)	8.37	8.24	8.72
TRS Health Plan	B	(4.08)	8.37	8.24	8.72
JRS Health Plan	C	(4.07)	8.38	8.25	8.72
Policy Target	D	(7.86)	6.48	6.67	7.71

Standard Deviation vs Callan Public Fund Sponsor Database



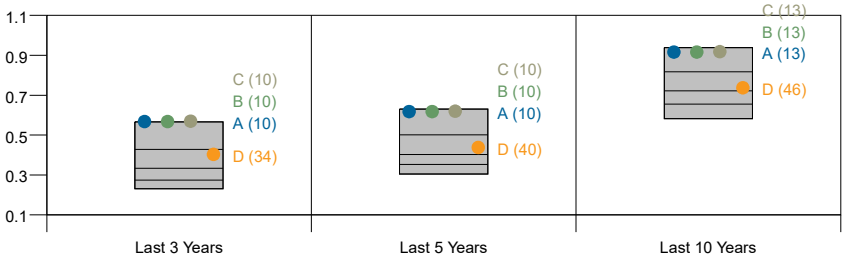
		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		17.65	14.90	11.15
25th Percentile		16.30	13.75	10.31
Median		14.89	12.58	9.39
75th Percentile		13.77	11.49	8.71
90th Percentile		11.82	9.99	7.69
Member Count		181	179	171
PERS Health Plan	A	13.62	11.52	8.81
TRS Health Plan	B	13.62	11.52	8.81
JRS Health Plan	C	13.61	11.50	8.80
Policy Target	D	14.52	12.67	9.59

Maximum Drawdown vs Callan Public Fund Sponsor Database



		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		(11.04)	(11.01)	(11.04)
25th Percentile		(12.60)	(12.59)	(12.59)
Median		(14.13)	(14.11)	(14.10)
75th Percentile		(15.53)	(15.54)	(15.53)
90th Percentile		(16.71)	(16.72)	(16.71)
Member Count		181	179	171
PERS Health Plan	A	(11.90)	(11.90)	(11.90)
TRS Health Plan	B	(11.90)	(11.90)	(11.90)
JRS Health Plan	C	(11.87)	(11.87)	(11.87)
Policy Target	D	(12.83)	(12.83)	(12.83)

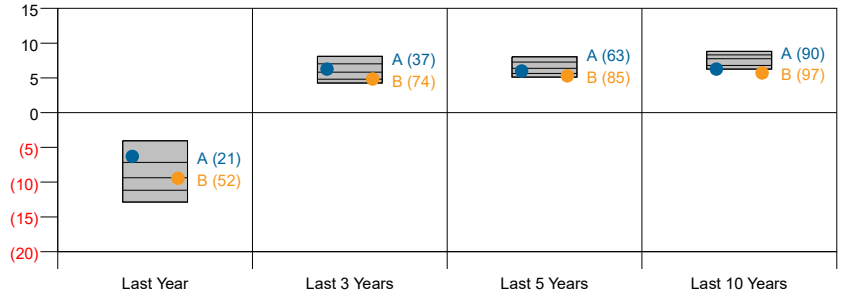
Sharpe Ratio vs Callan Public Fund Sponsor Database



		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		0.57	0.63	0.94
25th Percentile		0.43	0.50	0.82
Median		0.33	0.40	0.72
75th Percentile		0.27	0.35	0.66
90th Percentile		0.23	0.31	0.58
Member Count		181	179	171
PERS Health Plan	A	0.57	0.62	0.92
TRS Health Plan	B	0.57	0.62	0.92
JRS Health Plan	C	0.57	0.62	0.92
Policy Target	D	0.40	0.44	0.74

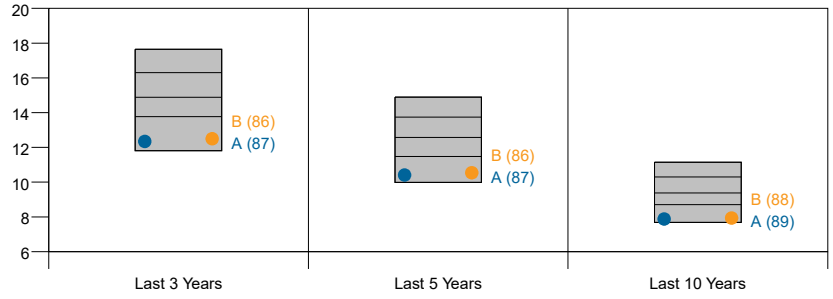
Military Plan Performance Dashboard – June 30, 2022

Returns vs Callan Public Fund Sponsor Database



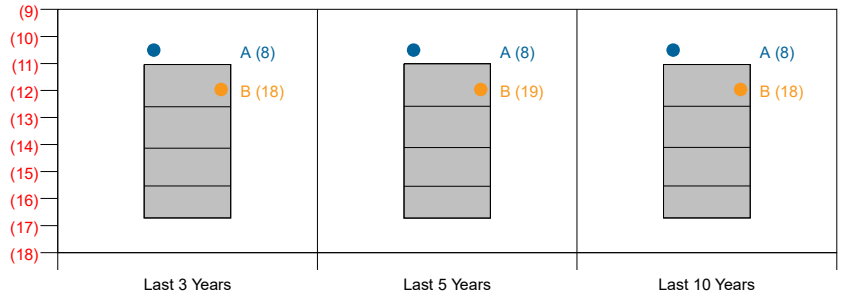
		Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		(4.04)	8.09	8.06	8.82
25th Percentile		(7.13)	7.03	7.28	8.32
Median		(9.35)	5.85	6.40	7.79
75th Percentile		(11.14)	4.81	5.65	6.81
90th Percentile		(12.87)	4.26	5.13	6.29
Member Count		181	181	179	171
Military Total Plan	A	(6.29)	6.29	6.01	6.30
Military Policy Target	B	(9.43)	4.85	5.33	5.74

Standard Deviation vs Callan Public Fund Sponsor Database



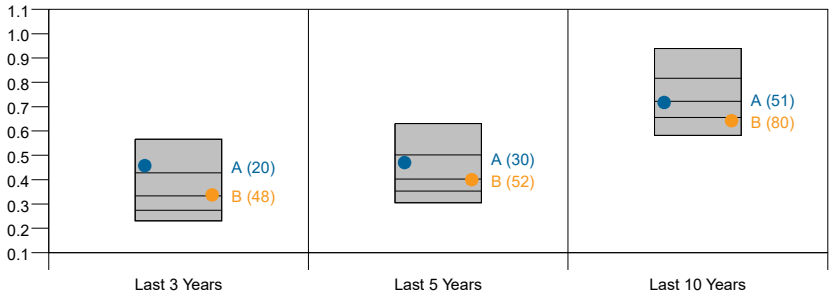
		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		17.65	14.90	11.15
25th Percentile		16.30	13.75	10.31
Median		14.89	12.58	9.39
75th Percentile		13.77	11.49	8.71
90th Percentile		11.82	9.99	7.69
Member Count		181	179	171
Military Total Plan	A	12.35	10.41	7.88
Military Policy Target	B	12.50	10.54	7.94

Maximum Drawdown vs Callan Public Fund Sponsor Database



		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		(11.04)	(11.01)	(11.04)
25th Percentile		(12.60)	(12.59)	(12.59)
Median		(14.13)	(14.11)	(14.10)
75th Percentile		(15.53)	(15.54)	(15.53)
90th Percentile		(16.71)	(16.72)	(16.71)
Member Count		181	179	171
Military Total Plan	A	(10.50)	(10.50)	(10.50)
Military Policy Target	B	(11.96)	(11.96)	(11.96)

Sharpe Ratio vs Callan Public Fund Sponsor Database

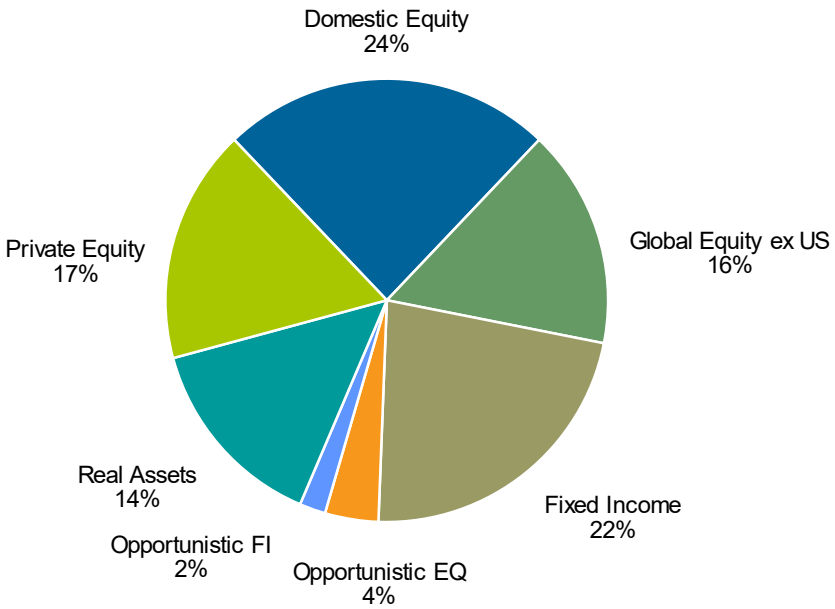


		Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile		0.57	0.63	0.94
25th Percentile		0.43	0.50	0.82
Median		0.33	0.40	0.72
75th Percentile		0.27	0.35	0.66
90th Percentile		0.23	0.31	0.58
Member Count		181	179	171
Military Total Plan	A	0.46	0.47	0.72
Military Policy Target	B	0.34	0.40	0.64

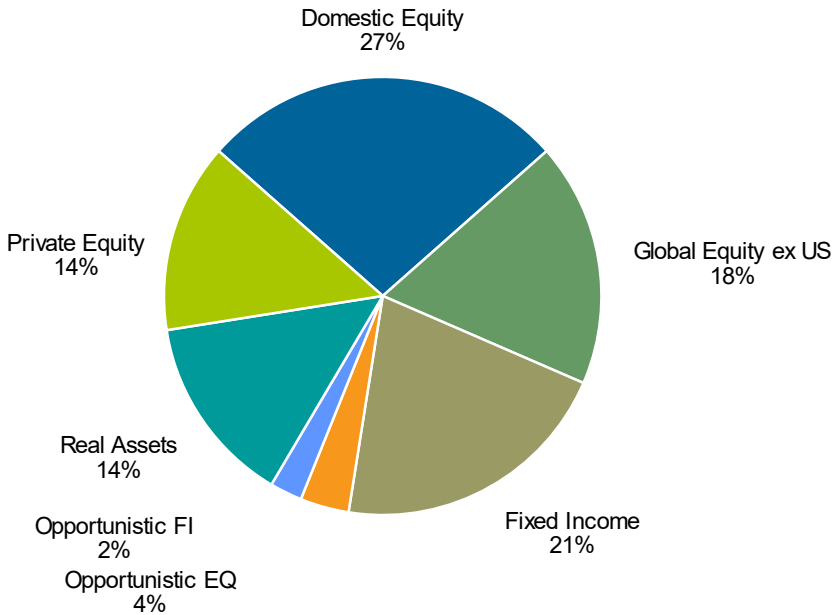
Asset Allocation – Public Employees' Retirement System

Quarter Ending June 30, 2022

Actual Asset Allocation



Target Asset Allocation



Asset Class	$000s Actual	Weight Actual	Target	Percent Difference	$000s Difference
Domestic Equity	2,618,110	24.2%	27.0%	(2.8%)	(307,909)
Global Equity ex US	1,739,275	16.0%	18.0%	(2.0%)	(211,404)
Fixed Income	2,435,373	22.5%	21.0%	1.5%	159,581
Opportunistic EQ	423,326	3.9%	3.6%	0.3%	33,191
Opportunistic FI	206,986	1.9%	2.4%	(0.5%)	(53,105)
Real Assets	1,565,222	14.4%	14.0%	0.4%	48,027
Private Equity	1,848,814	17.1%	14.0%	3.1%	331,619
Total	10,837,108	100.0%	100.0%		

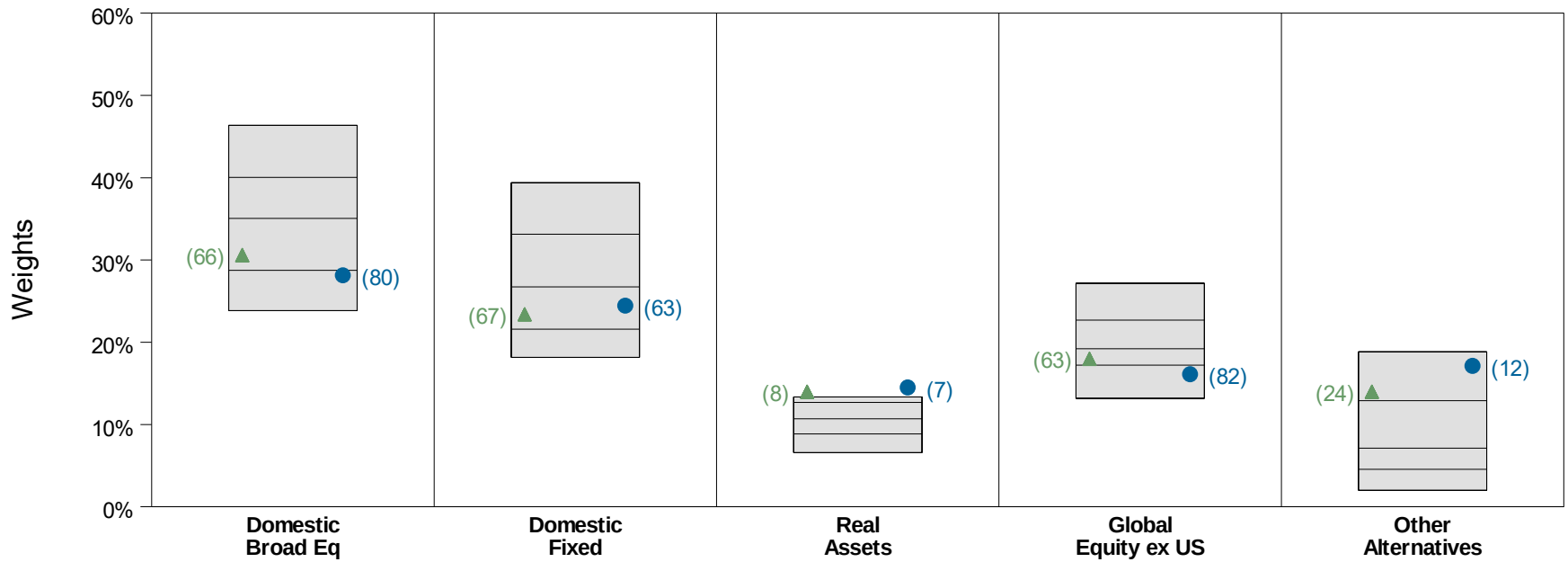
PERS is used as illustrative throughout the presentation.

The other plans exhibit modest variations from strategic target allocations.

Asset Allocation vs. Public Funds (PERS)

Callan Public Fund Database

Asset Class Weights vs Callan Public Fund Sponsor Database



	Domestic Broad Eq	Domestic Fixed	Real Assets	Global Equity ex US	Other Alternatives
10th Percentile	46.38	39.39	13.36	27.17	18.85
25th Percentile	40.04	33.14	12.69	22.70	12.92
Median	35.06	26.72	10.70	19.22	7.14
75th Percentile	28.73	21.59	8.85	17.23	4.56
90th Percentile	23.85	18.16	6.58	13.18	2.01
Fund ●	28.07	24.38	14.44	16.05	17.06
Target ▲	30.60	23.40	14.00	18.00	14.00

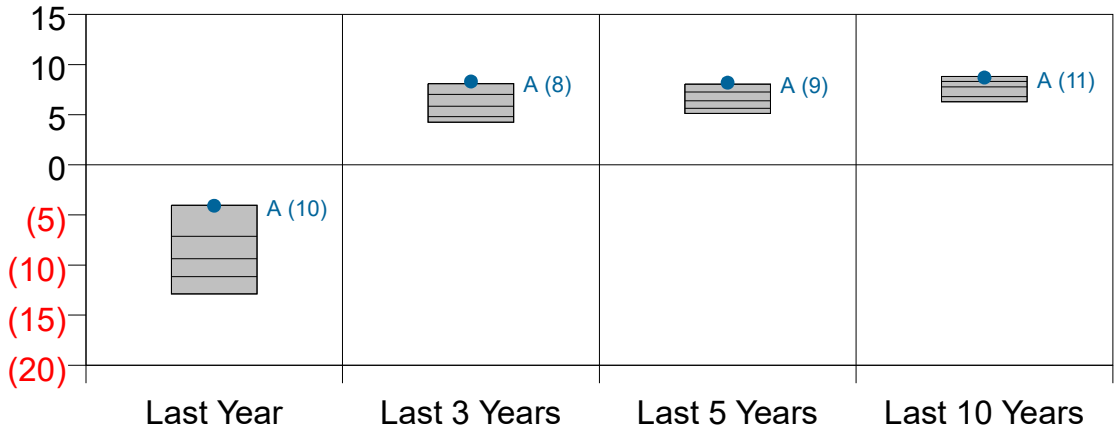
- Asset class allocations are in line with targets after the asset allocation update and associated rebalancing.
- Weightings to real assets and alternatives are relatively high in comparison to other public funds.

Notes: Real Assets includes Private Real Estate, REITs, Farmland, Timber, Energy, and Infrastructure. Other Alternatives represents private equity.

Total Fund Return vs Public Funds (PERS)

Callan Public Fund Database

Gross of Fee Returns
for Periods Ended June 30, 2022
Group: Callan Public Fund Sponsor Database



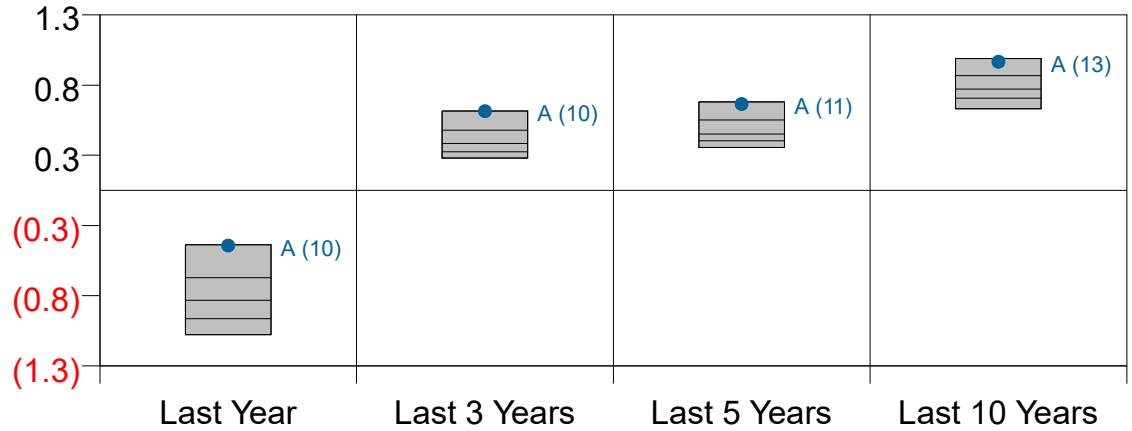
	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(4.04)	8.09	8.06	8.82
25th Percentile	(7.13)	7.03	7.28	8.32
Median	(9.35)	5.85	6.40	7.79
75th Percentile	(11.14)	4.81	5.65	6.81
90th Percentile	(12.87)	4.26	5.13	6.29
Member Count	181	181	179	171
PERS - Total Fund ● A	(4.08)	8.32	8.19	8.72

- Despite the recent change to the asset allocation, longer-term performance reflects ARMB's prior orientation toward capital growth as opposed to income generation.
- Performance was above the Public Funds median for the one-, three-, five-, and ten-year periods.

Total Fund Sharpe Ratio Rankings vs Public Funds (PERS)

Callan Public Fund Database

Gross of Fee Sharpe Ratio
for Periods Ended June 30, 2022
Group: Callan Public Fund Sponsor Database



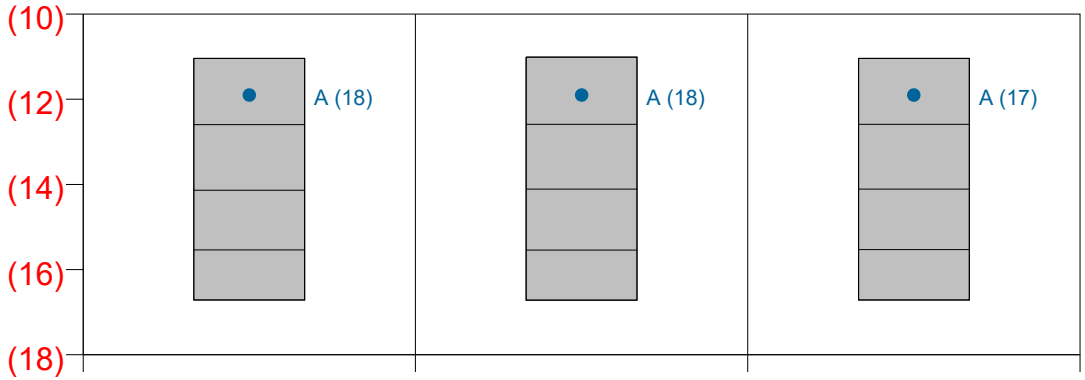
	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(0.39)	0.57	0.63	0.94
25th Percentile	(0.62)	0.43	0.50	0.82
Median	(0.78)	0.33	0.40	0.72
75th Percentile	(0.91)	0.27	0.35	0.66
90th Percentile	(1.03)	0.23	0.31	0.58
Member Count	181	181	179	171
PERS - Total Fund ● A	(0.39)	0.57	0.62	0.92

- “Sharpe ratio” is a risk-adjusted measure of excess return above the risk-free rate.
- ARMB’s risk-adjusted return (Sharpe ratio) was above the Public Funds median for the one-, three-, five-, and ten-year periods.

Total Maximum Drawdown Rankings vs Public Funds (PERS)

Callan Public Fund Database

Gross of Fee Maximum Drawdown
for Periods Ended June 30, 2022
Group: Callan Public Fund Sponsor Database



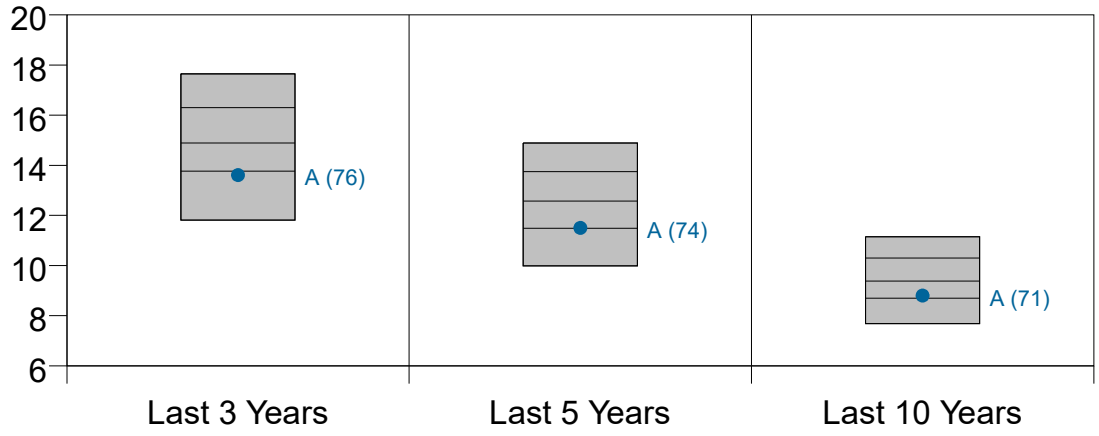
	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	(11.04)	(11.01)	(11.04)
25th Percentile	(12.60)	(12.59)	(12.59)
Median	(14.13)	(14.11)	(14.10)
75th Percentile	(15.53)	(15.54)	(15.53)
90th Percentile	(16.71)	(16.72)	(16.71)
Member Count	181	179	171
PERS - Total Fund ● A	(11.90)	(11.90)	(11.90)

- "Maximum drawdown" is a measure of the largest loss from peak to trough in a given period.
- Lower rankings reflect larger drawdowns (i.e. bigger losses). ARMB's drawdown rankings for all periods have reflected better than average drawdowns (i.e. lower losses) and have improved over time.
- The drawdown experienced in the first quarter of 2020 is the largest of the last 10 years.

Standard Deviation Ranking vs Public Funds (PERS)

Callan Public Fund Database

Gross of Fee Standard Deviation
for Periods Ended June 30, 2022
Group: Callan Public Fund Sponsor Database



	Last 3 Years	Last 5 Years	Last 10 Years
10th Percentile	17.65	14.90	11.15
25th Percentile	16.30	13.75	10.31
Median	14.89	12.58	9.39
75th Percentile	13.77	11.49	8.71
90th Percentile	11.82	9.99	7.69
Member Count	181	179	171
PERS - Total Fund ● A	13.61	11.51	8.81

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

PERS Performance Attribution – 2nd Quarter 2022 & Trailing Year

Relative Attribution Effects for Quarter ended June 30, 2022

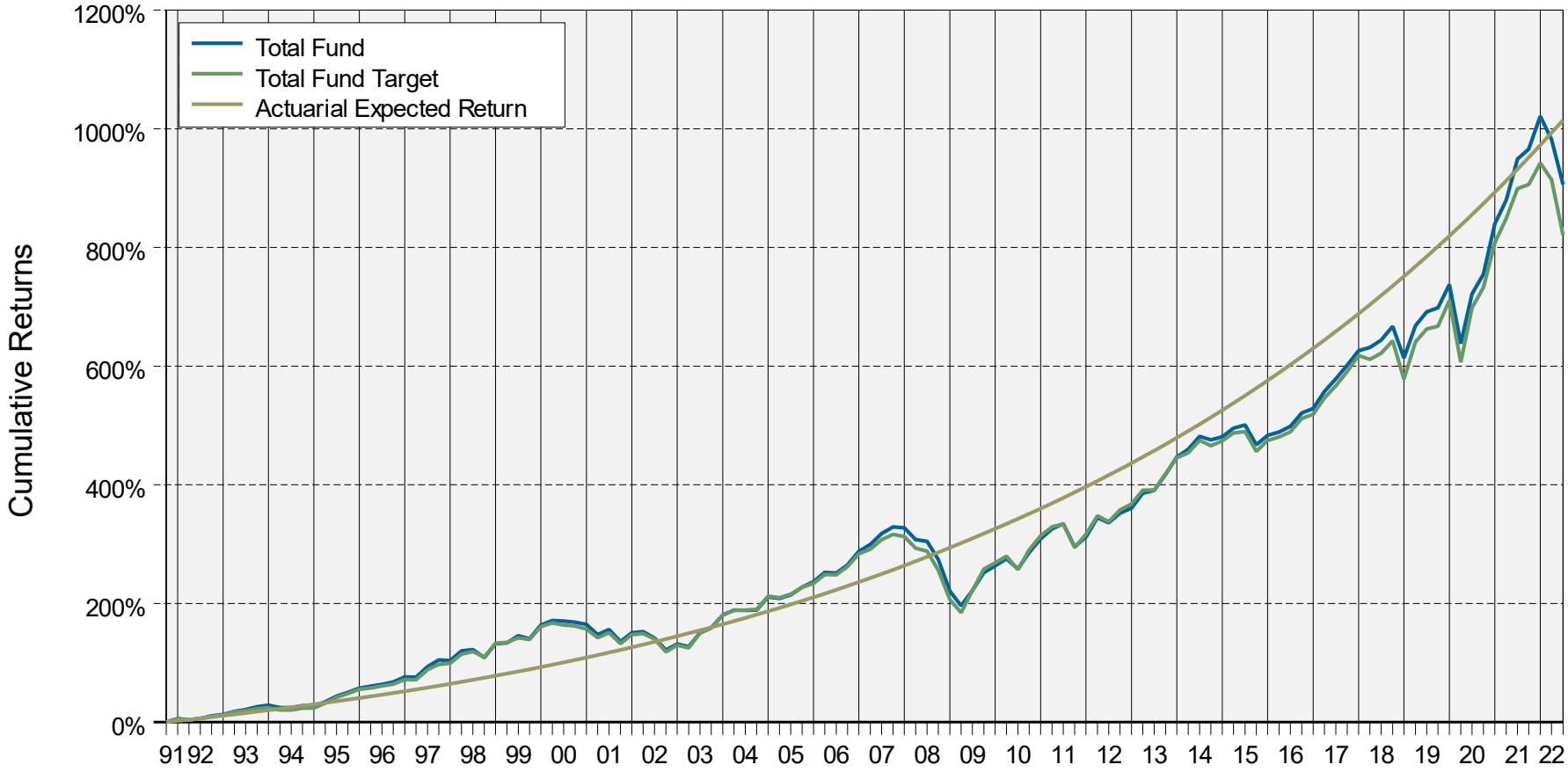
Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	27%	27%	(15.49%)	(16.70%)	0.32%	0.02%	0.34%
Fixed-Income	22%	21%	(3.62%)	(4.45%)	0.18%	0.03%	0.21%
Opportunistic	6%	6%	(8.11%)	(11.38%)	0.19%	0.00%	0.19%
Real Assets	13%	14%	3.82%	2.16%	0.22%	(0.12%)	0.09%
Global Equity ex US	17%	18%	(13.86%)	(14.28%)	0.07%	0.03%	0.11%
Private Equity	15%	14%	1.70%	(6.01%)	1.19%	0.05%	1.24%
Total			**(7.05%) =**	**(9.24%) +**	**2.18% +**	**0.01%**	**2.18%**

One Year Relative Attribution Effects

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	28%	27%	(11.74%)	(13.87%)	0.59%	0.02%	0.61%
Fixed-Income	22%	21%	(6.96%)	(9.78%)	0.61%	(0.02%)	0.59%
Opportunistic	6%	6%	(10.58%)	(13.89%)	0.20%	0.01%	0.21%
Real Assets	12%	14%	14.29%	14.80%	(0.03%)	(0.29%)	(0.32%)
Global Equity ex US	18%	18%	(20.96%)	(19.86%)	(0.22%)	0.04%	(0.18%)
Private Equity	15%	14%	26.25%	3.42%	2.81%	0.05%	2.85%
Total			**(4.08%) =**	**(7.86%) +**	**3.99% +**	**(0.20%)**	**3.79%**

PERS Long-Term Total Fund Performance as of 06/30/2022

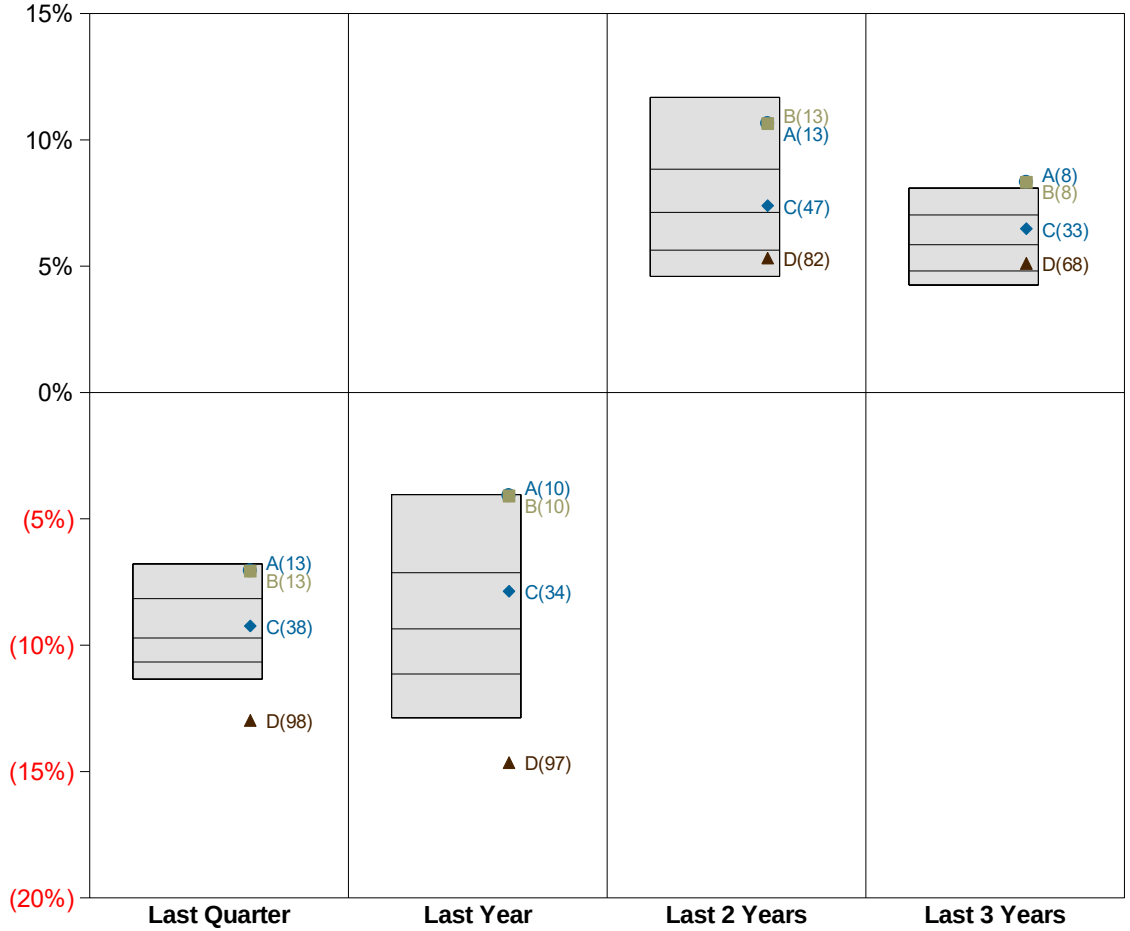
Cumulative Returns Actual vs Target



- Each Fund has two targets: the asset allocation policy return and the actuarial return.
- Total Fund returns continue to closely track the strategic allocation target.
- Market correction setbacks in 3Q15, 4Q18, 1Q20, 1Q22 and 2Q22 have hindered the Total Fund's progress toward closing the gap versus the actuarial return following the Global Financial Crisis of 2008/2009.

Annualized Total Fund Returns as of 06/30/22

Callan Public Fund Database



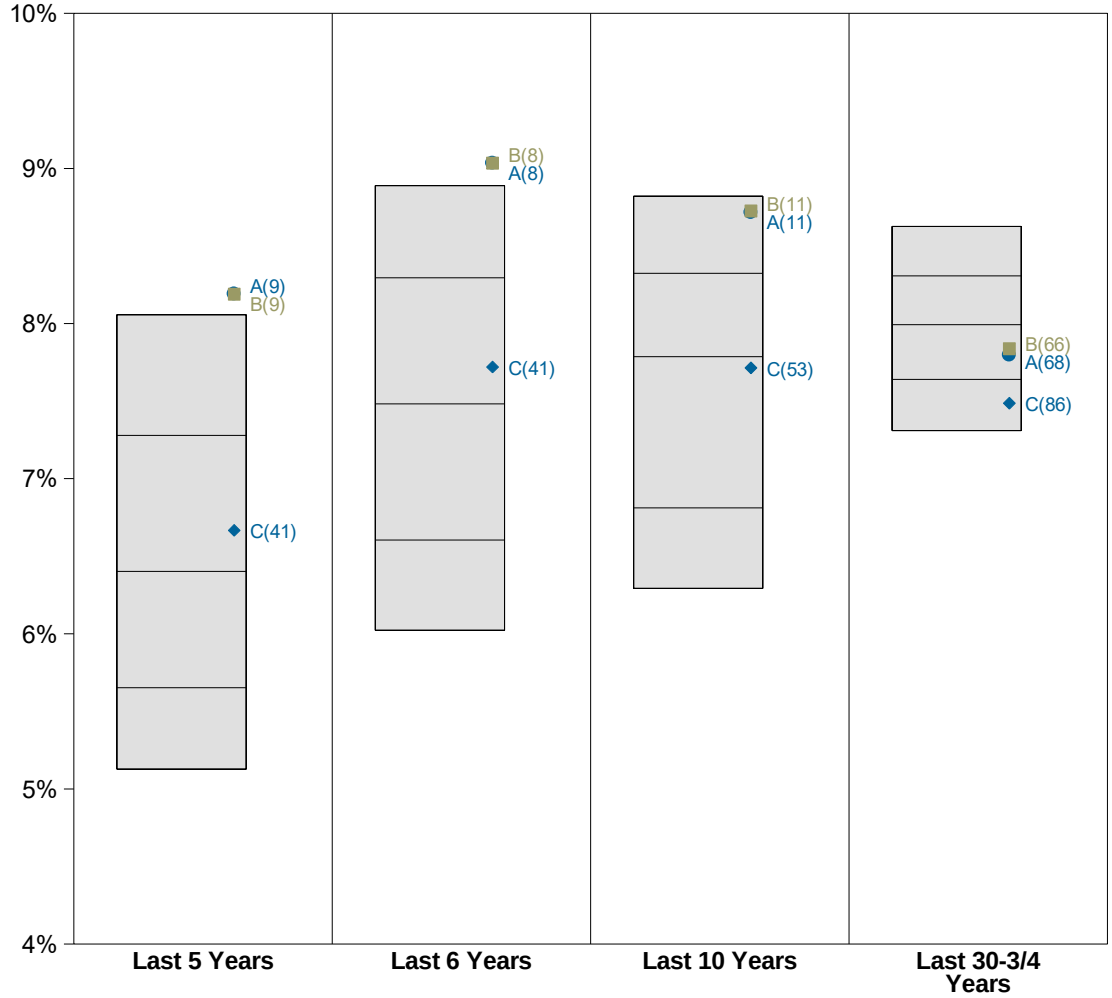
	Last Quarter	Last Year	Last 2 Years	Last 3 Years
10th Percentile	(6.78)	(4.04)	11.68	8.09
25th Percentile	(8.15)	(7.13)	8.84	7.03
Median	(9.71)	(9.35)	7.13	5.85
75th Percentile	(10.66)	(11.14)	5.63	4.81
90th Percentile	(11.34)	(12.87)	4.59	4.26
PERS Total Plan ● A	(7.05)	(4.08)	10.64	8.32
TRS Total Plan ■ B	(7.07)	(4.10)	10.64	8.32
Target Index ◆ C	(9.24)	(7.86)	7.39	6.48
Public Market Proxy ▲ D	(12.97)	(14.64)	5.32	5.11

- PERS and TRS have outperformed their target for the last quarter, year, two-year and three-year periods.

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

Longer-Term Total Fund Returns as of 06/30/22

Callan Public Fund Database

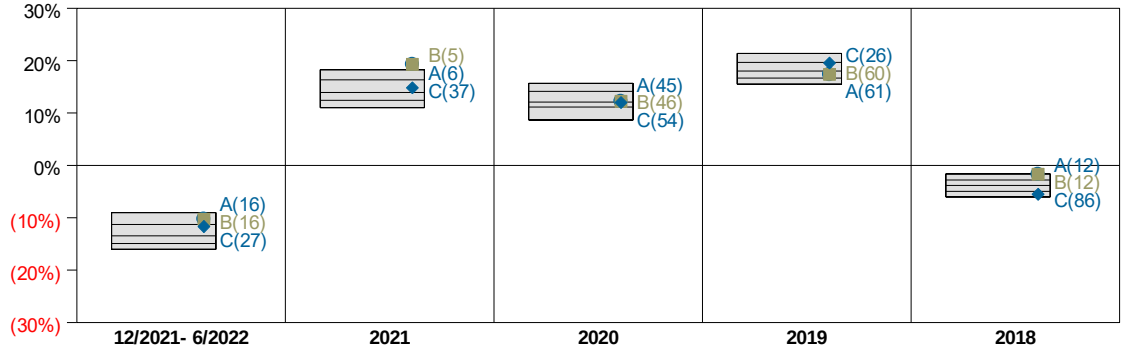


	Last 5 Years	Last 6 Years	Last 10 Years	Last 30-3/4 Years
10th Percentile	8.06	8.89	8.82	8.63
25th Percentile	7.28	8.29	8.32	8.31
Median	6.40	7.48	7.79	7.99
75th Percentile	5.65	6.60	6.81	7.64
90th Percentile	5.13	6.02	6.29	7.31
PERS Total Plan ● A	8.19	9.03	8.72	7.80
TRS Total Plan ■ B	8.19	9.03	8.73	7.84
Target Index ◆ C	6.67	7.72	7.71	7.49

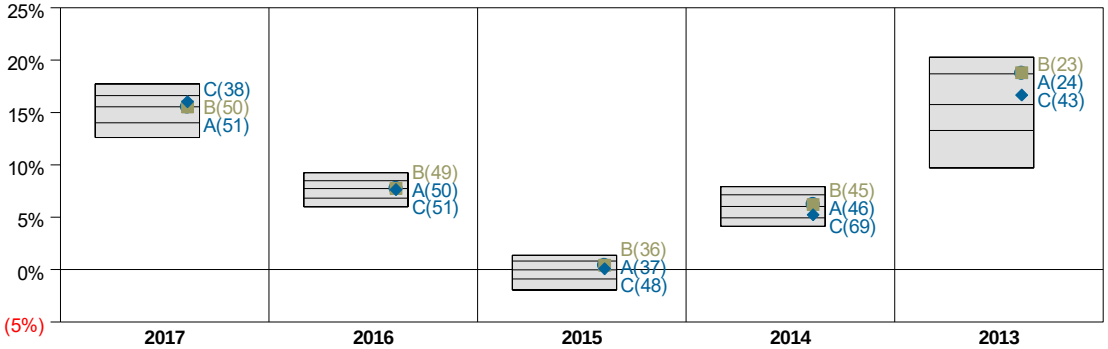
- Five-, six-, and ten-year performance is above target and median.
- 30 year and three quarter return for PERS beat the target by 31 basis points.

Calendar Period Total Fund Performance

Callan Public Fund Database



	12/2021- 6/2022	2021	2020	2019	2018
10th Percentile	(9.04)	18.25	15.66	21.36	(1.62)
25th Percentile	(11.28)	16.34	14.11	19.66	(2.78)
Median	(13.46)	13.91	12.09	18.01	(3.83)
75th Percentile	(14.92)	12.45	11.14	16.65	(4.96)
90th Percentile	(16.01)	11.01	8.66	15.52	(6.02)
PERS Total Plan ● A	(10.26)	19.27	12.23	17.34	(1.70)
TRS Total Plan ■ B	(10.28)	19.28	12.21	17.36	(1.70)
Target Index ◆ C	(11.68)	14.81	11.99	19.54	(5.53)



	2017	2016	2015	2014	2013
10th Percentile	17.73	9.24	1.36	7.91	20.27
25th Percentile	16.61	8.48	0.82	7.14	18.69
Median	15.55	7.73	(0.02)	6.03	15.76
75th Percentile	14.02	6.81	(0.89)	4.95	13.28
90th Percentile	12.61	6.00	(1.95)	4.13	9.71
PERS Total Plan ● A	15.52	7.74	0.40	6.22	18.74
TRS Total Plan ■ B	15.54	7.74	0.41	6.22	18.79
Target Index ◆ C	16.03	7.64	0.08	5.24	16.66

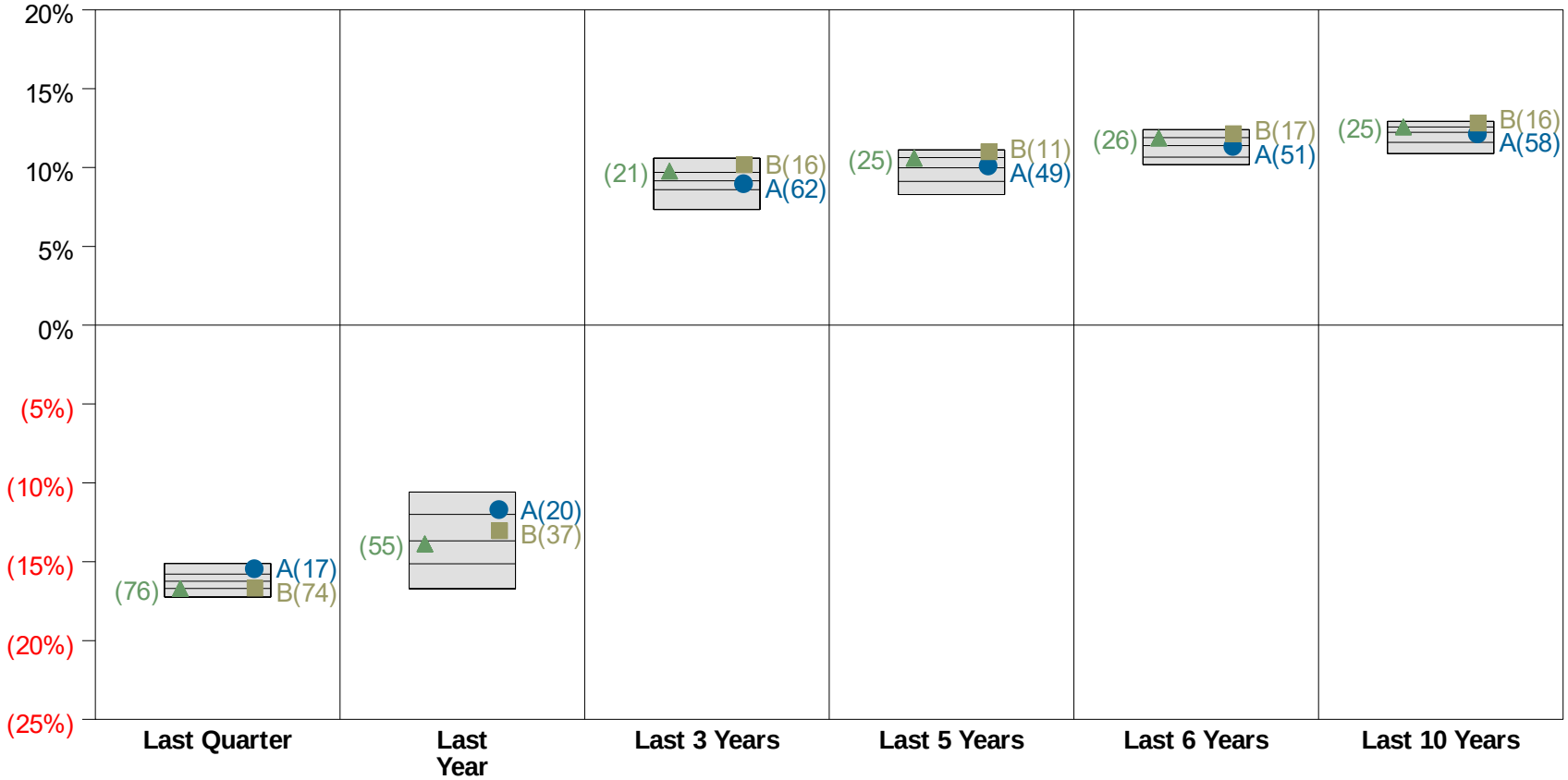
- PERS and TRS rank at or above median in nine of the ten periods shown.
- Peer group range of returns during 2016, 2015, and 2014 were very tight.
- Wide range of peer group returns during calendar 2013 due to varying fixed-income allocations within the Public Fund universe.
- In the three periods with negative Public Fund returns (first and second calendar quarter 2022; calendar years 2018 and 2015), ARMB's results ranked well above median in the Public Fund universe.

Callan

Pension Plan – Asset Class Performance

Total Domestic Equity through 06/30/22

Performance vs Public Fund - Domestic Equity (Gross)



		Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years
10th Percentile		(15.10)	(10.58)	10.59	11.12	12.40	12.93
25th Percentile		(15.78)	(12.00)	9.69	10.63	11.90	12.58
Median		(16.24)	(13.67)	9.16	9.98	11.39	12.24
75th Percentile		(16.69)	(15.13)	8.59	9.13	10.66	11.59
90th Percentile		(17.24)	(16.71)	7.34	8.28	10.18	10.88
Domestic Equity Pool	● A	(15.49)	(11.73)	8.93	10.05	11.30	12.08
Russell 1000 Index	■ B	(16.67)	(13.04)	10.17	11.00	12.14	12.82
Russell 3000 Index	▲	(16.70)	(13.87)	9.77	10.60	11.88	12.57

Domestic Equity Component Returns

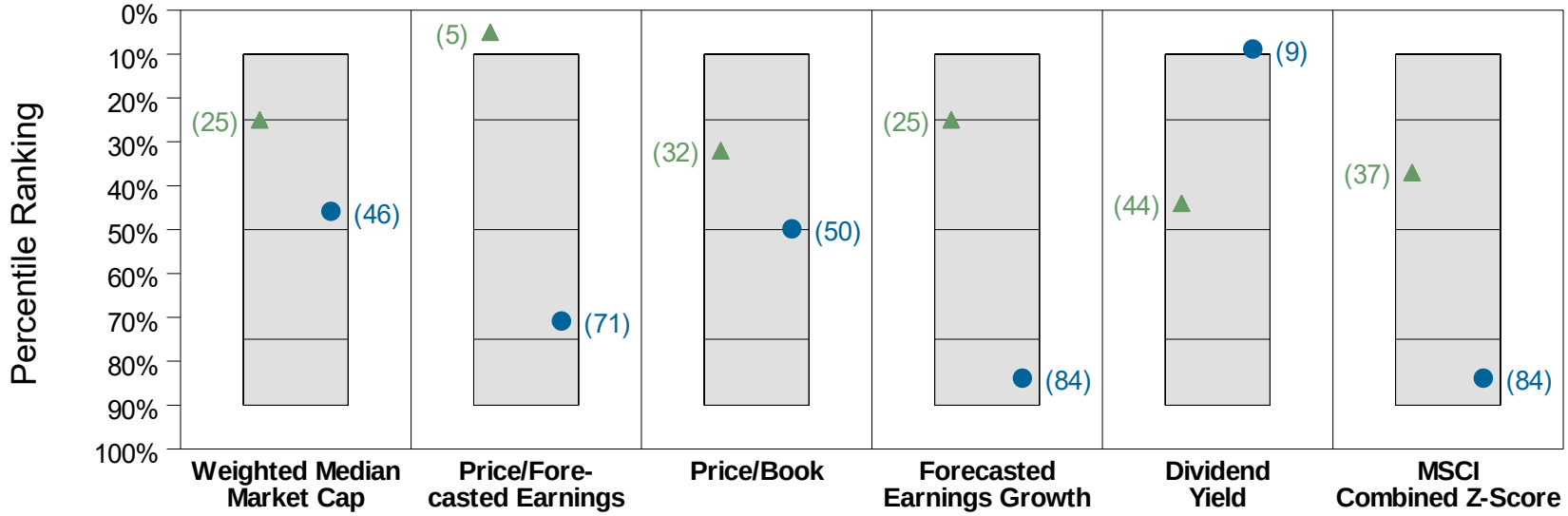
Returns for Periods Ended June 30, 2022

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Total Dom Equity Pool	(15.49%)	(11.73%)	8.93%	10.05%	12.08%
Russell 3000 Index	(16.70%)	(13.87%)	9.77%	10.60%	12.57%
Large Cap Managers	(15.60%)	(11.28%)	9.08%	10.31%	12.42%
Russell 1000 Index	(16.67%)	(13.04%)	10.17%	11.00%	12.82%
Small Cap Managers	(14.12%)	(16.90%)	6.92%	7.90%	11.04%
Russell 2000 Index	(17.20%)	(25.20%)	4.21%	5.17%	9.35%

- The large cap composite trailed its benchmark (the Russell 1000 Index) for the trailing 3-, 5-, and 10-year periods and outperformed over the last quarter and for the fiscal year.
- The small cap composite has outperformed its benchmark (the Russell 2000 Index) over all periods shown in the table.

Domestic Equity Portfolio Characteristics

Portfolio Characteristics Percentile Rankings
Rankings Against Public Fund - Domestic Equity
as of June 30, 2022

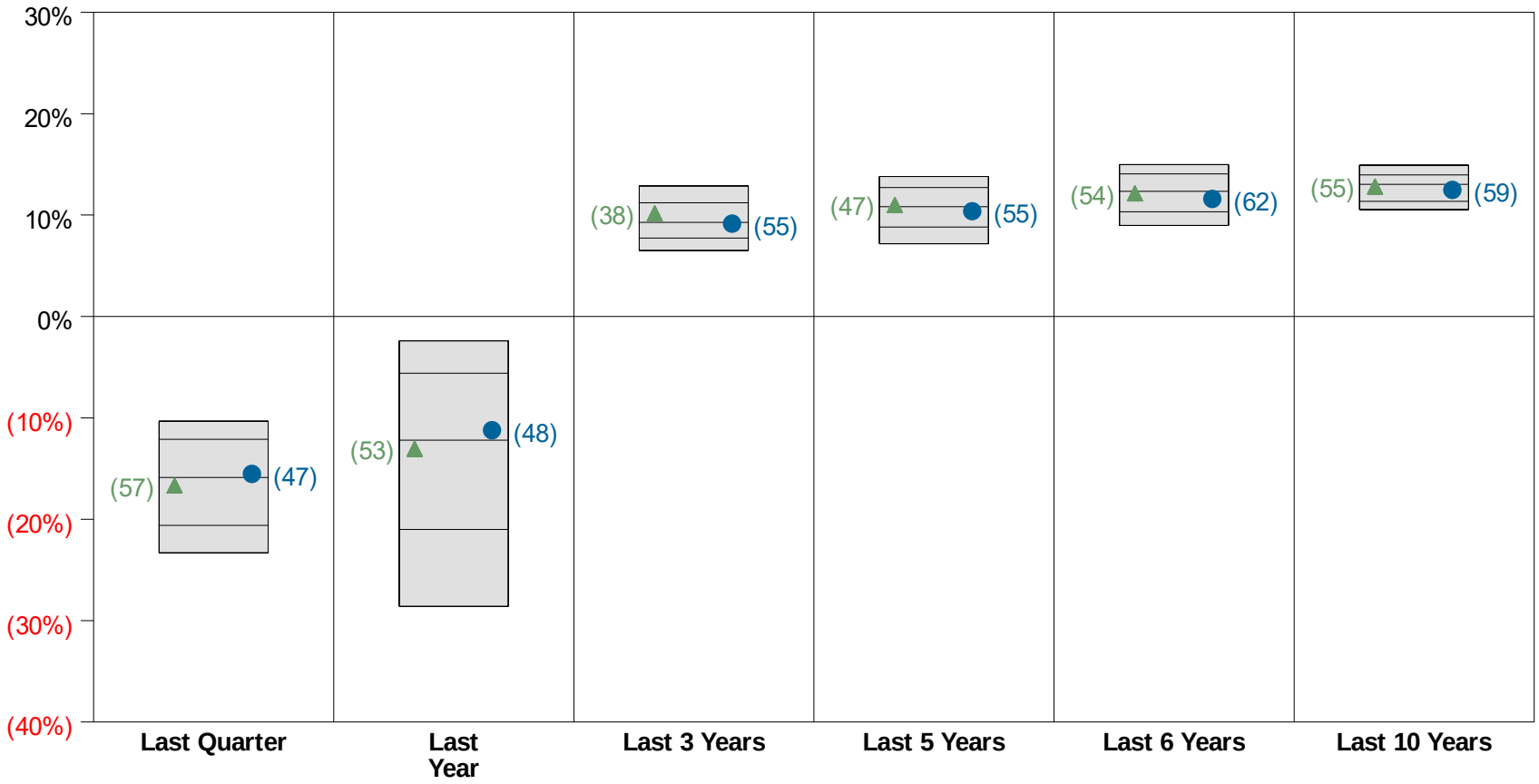


	Weighted Median Market Cap	Price/Fore-casted Earnings	Price/Book	Forecasted Earnings Growth	Dividend Yield	MSCI Combined Z-Score
10th Percentile	157.53	15.99	3.52	15.92	1.72	0.10
25th Percentile	110.28	15.94	3.44	15.21	1.70	0.02
Median	73.60	15.18	2.97	15.10	1.63	(0.01)
75th Percentile	52.75	14.47	2.70	14.80	1.51	(0.04)
90th Percentile	35.52	12.80	2.41	14.06	1.44	(0.19)
Domestic Equity Pool ●	76.52	14.73	2.97	14.56	1.73	(0.09)
Russell 3000 Index ▲	115.53	16.16	3.21	15.20	1.65	0.01

- ARMB's overall domestic equity portfolio's market capitalization is smaller than 46% of public funds (first column).
- Overall, ARMB's domestic equity portfolio tilts decidedly "value" versus peers (last column on right).
  - "MSCI Combined Z-Score" measures Growth and Value characteristics of individual stocks within managers' portfolios.
  - A low Z-Score rank (i.e.– the dot appears towards the top of the floating bar) indicates a Growth bias.
  - A high Z-Score rank (i.e. – the dot appears towards the bottom of the floating bar) indicates a Value bias.

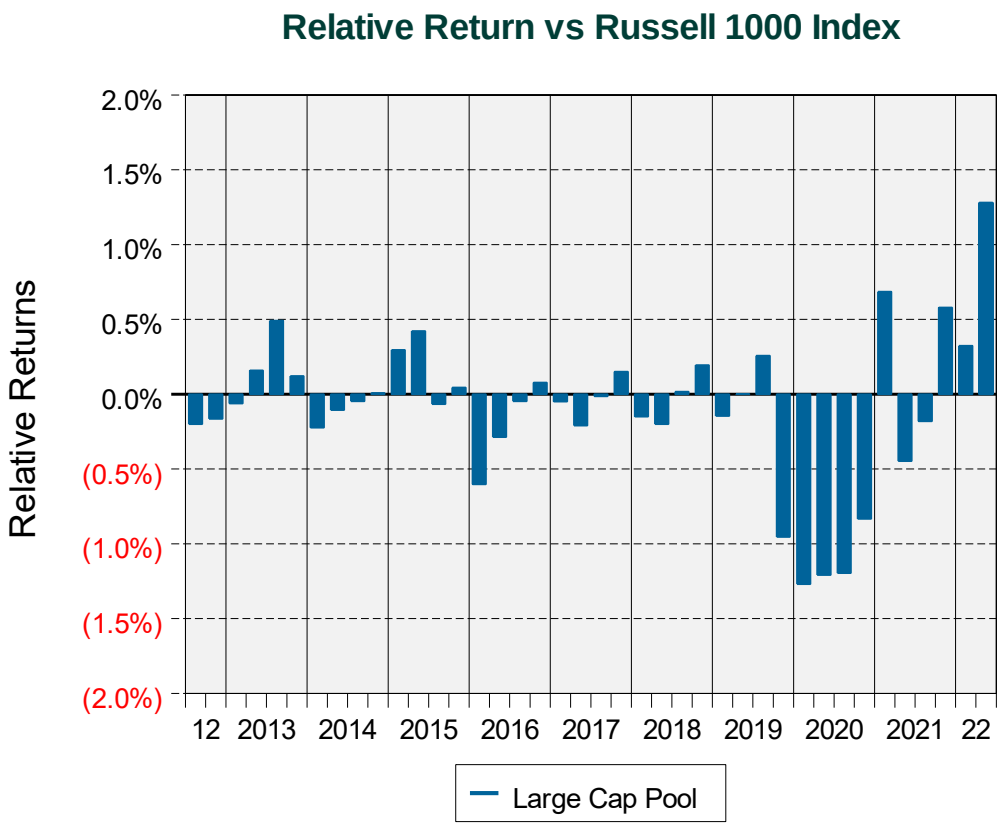
Large Cap Domestic Equity through 06/30/22

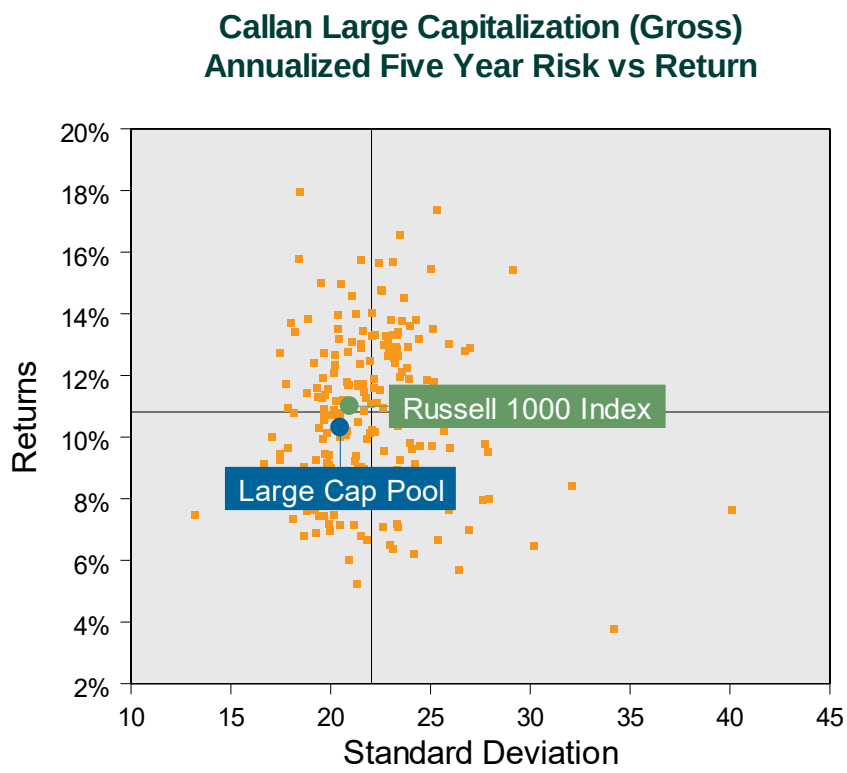
Performance vs Callan Large Capitalization (Gross)



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years
10th Percentile	(10.33)	(2.40)	12.87	13.80	14.98	14.92
25th Percentile	(12.11)	(5.58)	11.22	12.72	14.06	13.96
Median	(15.89)	(12.20)	9.27	10.82	12.34	13.03
75th Percentile	(20.61)	(21.01)	7.72	8.82	10.32	11.36
90th Percentile	(23.31)	(28.59)	6.50	7.17	8.98	10.55
Large Cap Pool ●	(15.60)	(11.28)	9.08	10.31	11.52	12.42
Russell 1000 Index ▲	(16.67)	(13.04)	10.17	11.00	12.14	12.82

Large Cap Domestic Equity as of 06/30/22

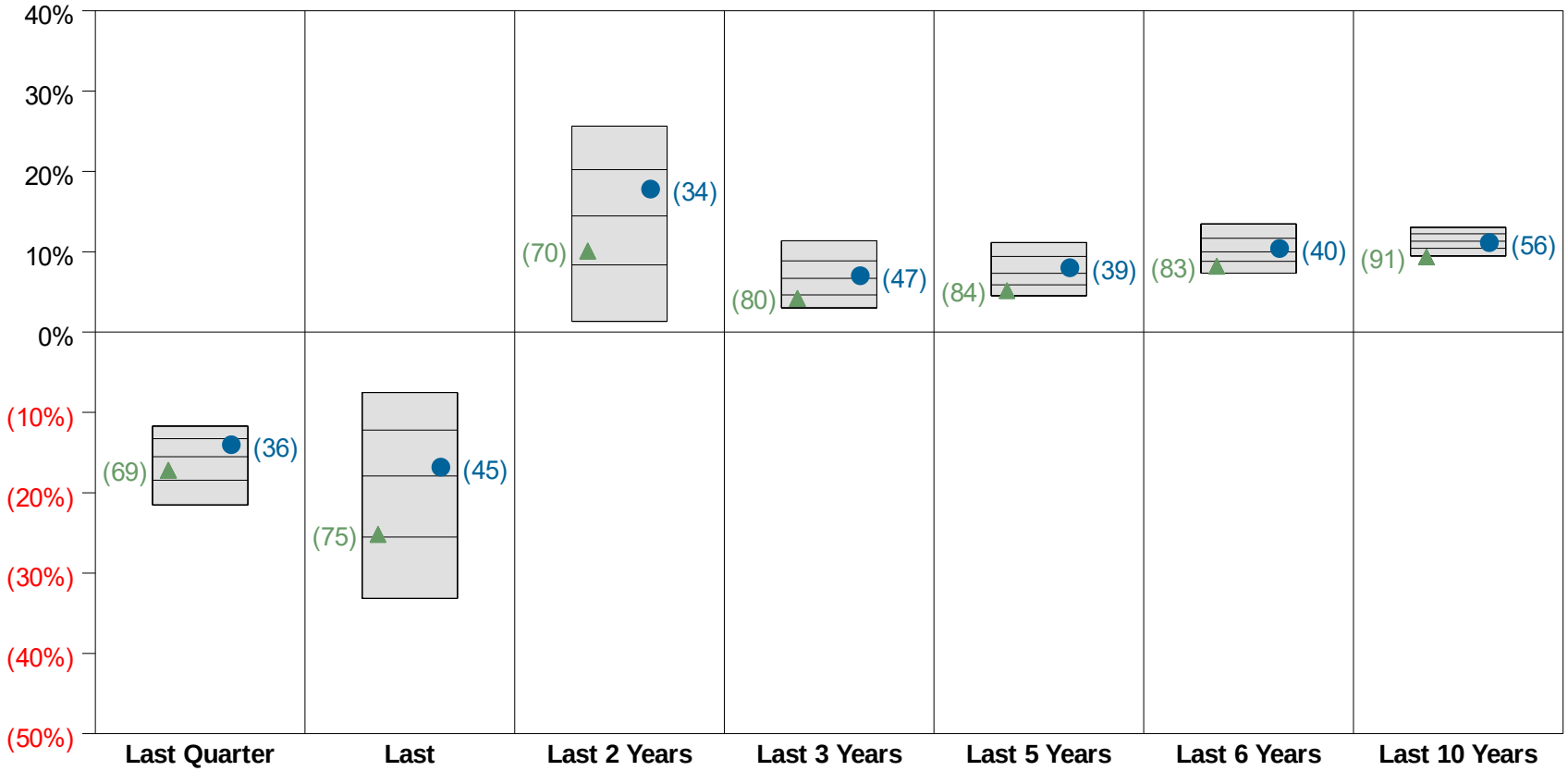




- Large Cap Domestic Equity returns outperformed the Russell 1000 index by 107bps in the second quarter of 2022.
- Long-term performance exhibits market-like returns with similar risk.
- Underperformance vs. the Russell 1000 Index in 4Q19 through 4Q20 was driven by Scientific Beta, which trailed the broad benchmark by between 2% and 4% in each of those quarters.
- Passive implementation also detracted as the S&P 900 Index trailed the Russell 1000 Index by 1.1% in 2Q20, 0.8% in 3Q20, and 0.9% in 4Q20.

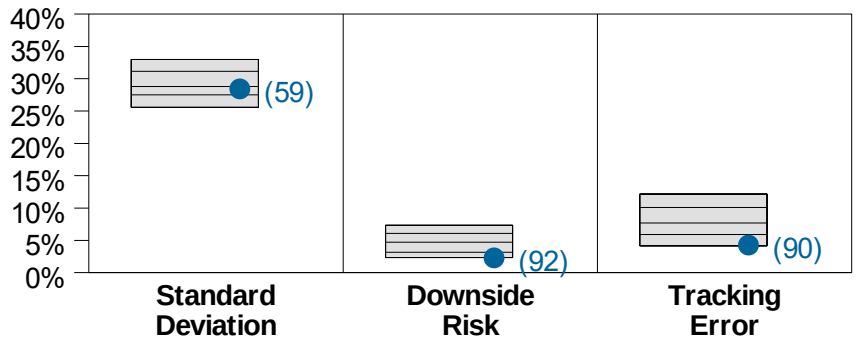
Small Cap Domestic Equity through 06/30/22

Performance vs Callan Small Capitalization (Gross)



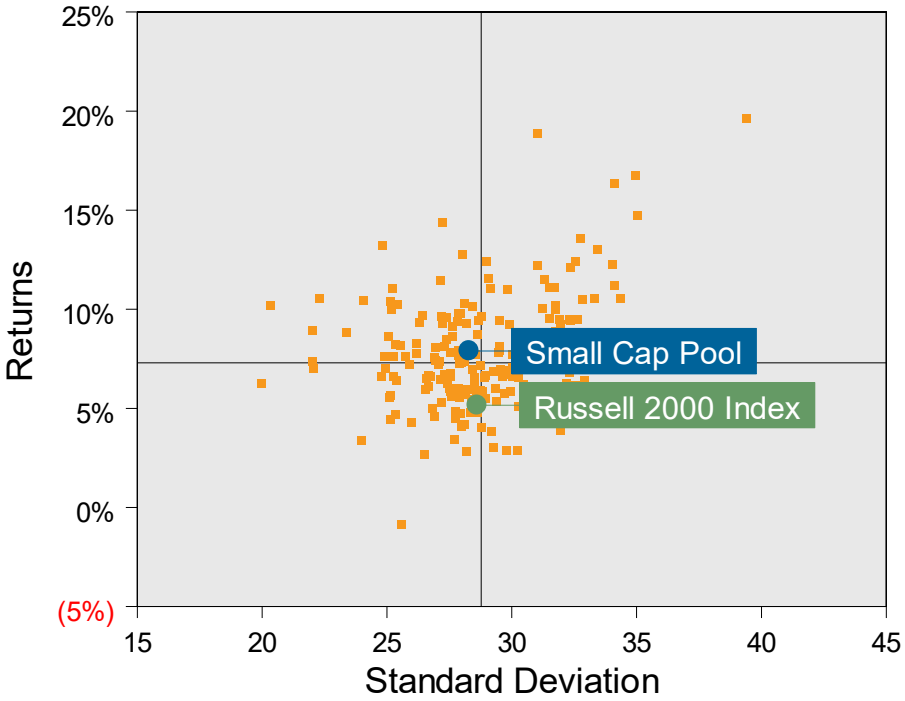
	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years
10th Percentile	(11.70)	(7.52)	25.62	11.37	11.13	13.47	13.04
25th Percentile	(13.27)	(12.19)	20.22	8.88	9.42	11.69	12.24
Median	(15.51)	(17.91)	14.46	6.70	7.31	9.98	11.32
75th Percentile	(18.45)	(25.51)	8.37	4.63	5.88	8.79	10.42
90th Percentile	(21.52)	(33.16)	1.34	3.02	4.53	7.34	9.46
Small Cap Pool ●	(14.12)	(16.90)	17.70	6.92	7.90	10.31	11.04
Russell 2000 Index ▲	(17.20)	(25.20)	10.09	4.21	5.17	8.18	9.35

Small Cap Domestic Equity through 06/30/22



	Standard Deviation	Downside Risk	Tracking Error
10th Percentile	32.97	7.34	12.16
25th Percentile	31.14	6.06	10.09
Median	28.79	4.71	7.69
75th Percentile	27.51	3.17	5.93
90th Percentile	25.58	2.35	4.13
Small Cap Equity Pool ●	28.30	2.15	4.15

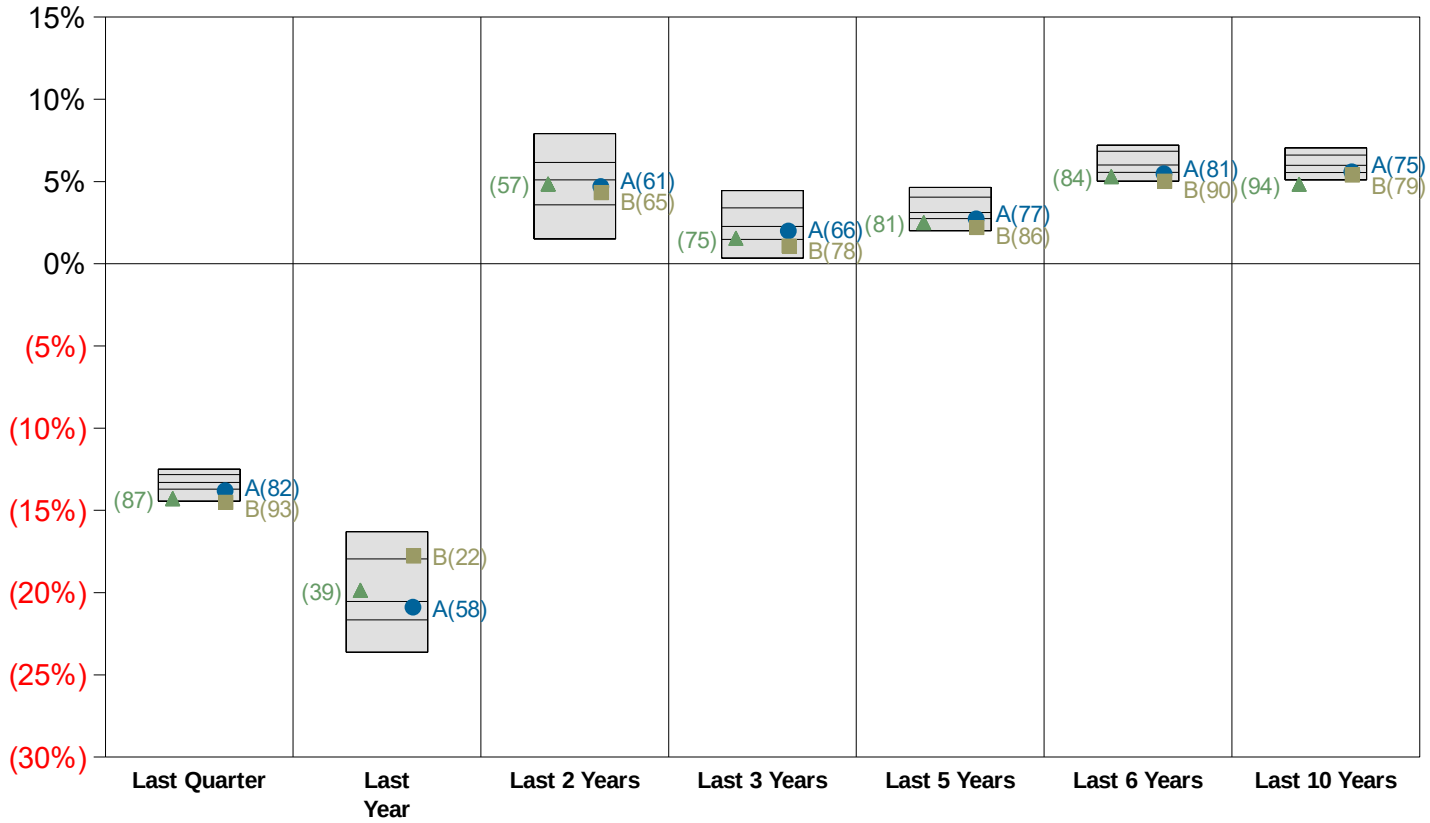
Callan Small Capitalization (Gross)
Annualized Five Year Risk vs Return



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

Global Equity ex-US through 06/30/22

Performance vs Public Fund - International Equity (Gross)

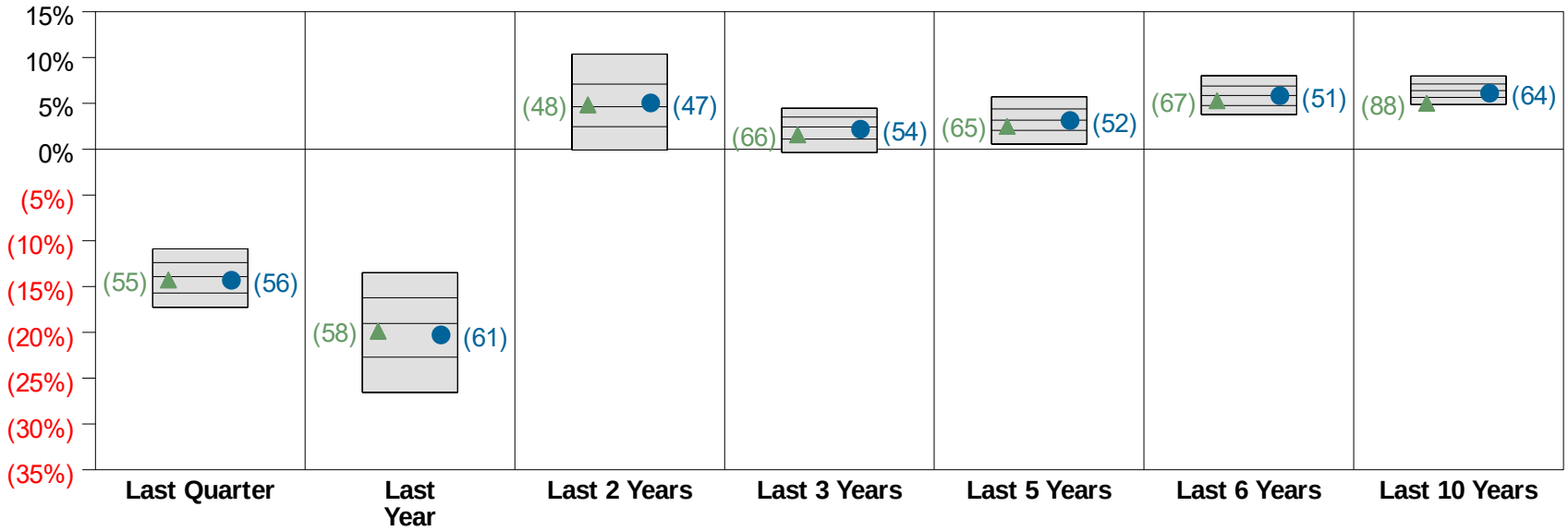


	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years
10th Percentile	(12.50)	(16.29)	7.92	4.45	4.65	7.21	7.05
25th Percentile	(12.82)	(17.96)	6.16	3.39	4.05	6.84	6.61
Median	(13.30)	(20.54)	5.10	2.27	3.12	6.01	5.99
75th Percentile	(13.70)	(21.66)	3.59	1.48	2.74	5.56	5.54
90th Percentile	(14.44)	(23.62)	1.51	0.34	2.00	5.02	5.09
Global Equity ex-US ● A	(13.85)	(20.93)	4.65	1.95	2.70	5.44	5.54
MSCI EAFE Index ■ B	(14.51)	(17.77)	4.32	1.07	2.20	5.01	5.40
Int'l Equity Target ▲	(14.28)	(19.86)	4.85	1.55	2.50	5.29	4.83

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

International Equity ex Emerging Markets through 06/30/22

Performance vs Callan Non-US Equity (Gross)



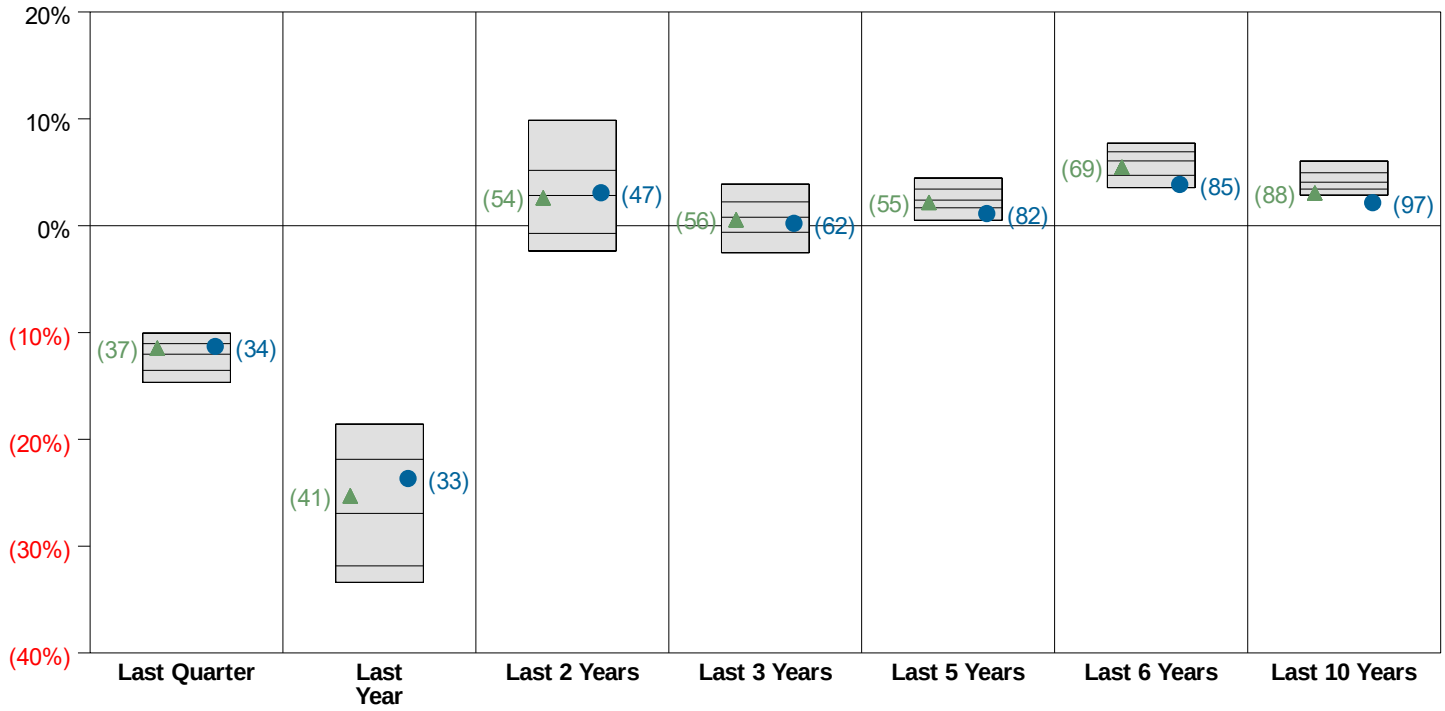
	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years
10th Percentile	(10.88)	(13.48)	10.38	4.46	5.72	8.03	7.98
25th Percentile	(12.39)	(16.22)	7.10	3.50	4.38	6.89	7.12
Median	(13.91)	(19.04)	4.62	2.42	3.16	5.85	6.39
75th Percentile	(15.71)	(22.70)	2.46	1.09	2.05	4.78	5.65
90th Percentile	(17.26)	(26.55)	(0.08)	(0.38)	0.55	3.78	4.87
Int'l Equity Pool (ex Emerging. Mkt) ●	(14.39)	(20.37)	4.97	2.10	3.04	5.76	6.04
MSCI ACWI xUS IMI ▲	(14.28)	(19.86)	4.85	1.55	2.50	5.29	5.01

International Equity ex Emerging Markets through 06/30/22

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Int'l Equity Pool (ex Emerging Market)	**(14.39%)**	**(20.37%)**	**2.10%**	**3.04%**	**6.04%**
Arrowstreet ACWI ex -US	(12.02%)	(16.98%)	8.21%	7.23%	-
Baillie Gifford ACWI ex US	(18.75%)	(35.72%)	0.97%	2.72%	-
Brandes Investment	(10.61%)	(14.76%)	2.41%	1.94%	5.85%
Capital Guardian	(16.49%)	(30.48%)	1.03%	4.19%	6.96%
L&G Sci Beta Dev ex US	(13.38%)	(15.01%)	-	-	-
SSgA World ex US IMI	(15.09%)	(17.62%)	1.79%	-	-
MSCI EAFE Index	(14.51%)	(17.77%)	1.07%	2.20%	5.40%
MSCI ACWI ex-US IMI Index	(14.28%)	(19.86%)	1.55%	2.50%	5.01%

Emerging Markets through 06/30/22

Performance vs Callan Emerging Broad (Gross)



	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years
10th Percentile	(10.05)	(18.58)	9.87	3.89	4.46	7.73	6.04
25th Percentile	(11.04)	(21.86)	5.18	2.23	3.42	6.92	4.96
Median	(12.03)	(26.92)	2.83	0.78	2.39	6.05	4.06
75th Percentile	(13.54)	(31.83)	(0.73)	(0.63)	1.67	4.72	3.43
90th Percentile	(14.66)	(33.39)	(2.37)	(2.55)	0.49	3.57	2.85
Emerging Markets Pool ●	(11.37)	(23.72)	3.02	0.15	1.07	3.80	2.09
MSCI EM ▲	(11.45)	(25.28)	2.60	0.57	2.18	5.49	3.07

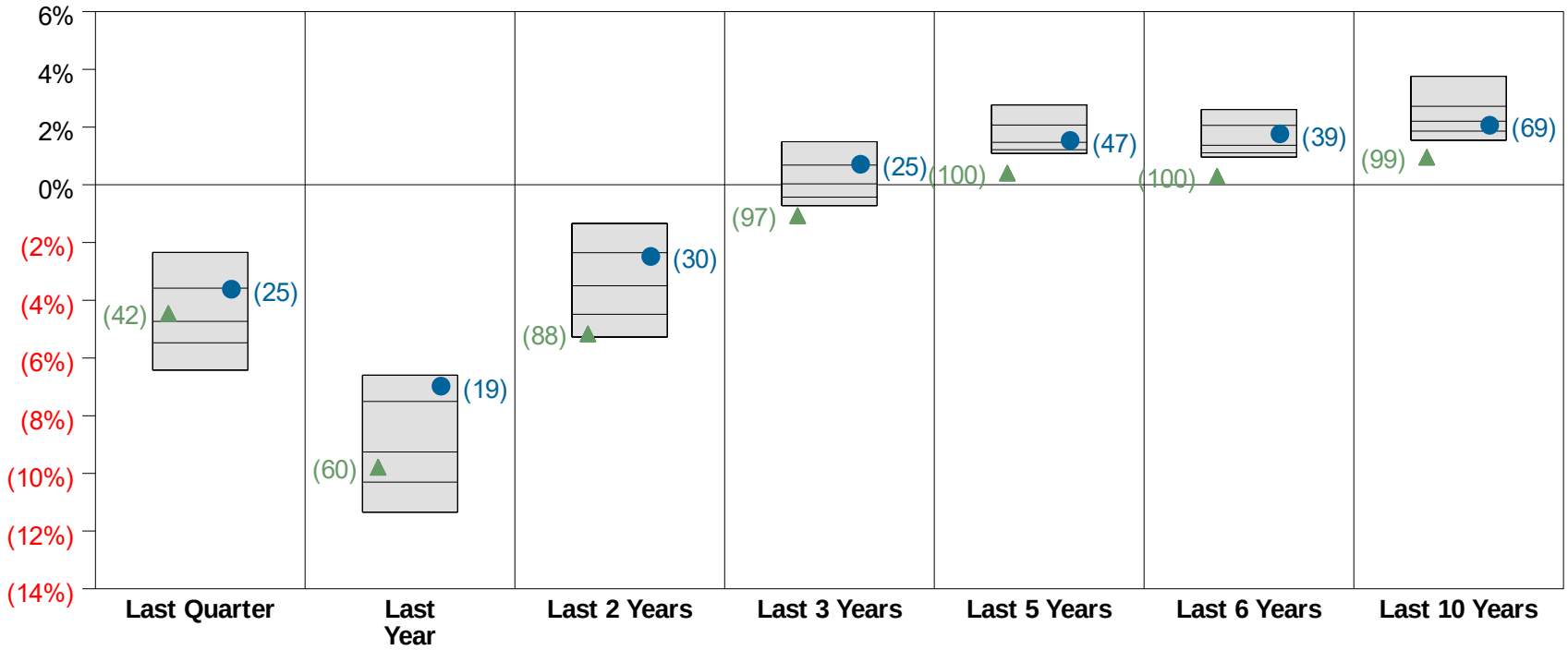
- The Emerging Markets Pool was restructured in 4Q2019 to be a blend of passive and smart beta investments.
- The restructured Pool found its footing in 2021, and outperformed the benchmark by 1.56% for the fiscal year ending June 30, 2022. For the most recent quarter, the Emerging Markets Pool exceeded its benchmark by 0.08% and ranks above median over the last quarter and year.

Emerging Markets Pool through 06/30/22

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Emerging Markets Pool	**(11.37%)**	**(23.72%)**	**0.15%**	**1.07%**	**2.09%**
SSgA Emerging Markets	(11.24%)	(25.10%)	0.53%	-	-
L&G SciBeta EM	(11.66%)	(20.22%)	-	-	-
MSCI EM	(11.45%)	(25.28%)	0.57%	2.18%	3.07%

Total Fixed Income as of 06/30/22

Performance vs Public Fund - Domestic Fixed (Gross)



	Last Quarter	Last Year	Last 2 Years	Last 3 Years	Last 5 Years	Last 6 Years	Last 10 Years
10th Percentile	(2.34)	(6.59)	(1.34)	1.49	2.77	2.61	3.76
25th Percentile	(3.58)	(7.51)	(2.35)	0.68	2.07	2.06	2.72
Median	(4.73)	(9.26)	(3.50)	0.03	1.47	1.37	2.20
75th Percentile	(5.47)	(10.30)	(4.49)	(0.43)	1.21	1.11	1.86
90th Percentile	(6.42)	(11.35)	(5.28)	(0.73)	1.09	0.96	1.54
Total Fixed Income Pool ●	(3.64)	(7.00)	(2.51)	0.69	1.51	1.74	2.04
Fixed Income Target ▲	(4.45)	(9.78)	(5.16)	(1.07)	0.41	0.30	0.95

- The Total Fixed Income Pool portfolio outperformed the Fixed Income Target in all time periods shown.
- The transition from intermediate Treasury to Aggregate mandates was completed during the fourth quarter of 2019.

Total Fixed Income through 06/30/22

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Fixed Income	**(3.64%)**	**(7.00%)**	**0.69%**	**1.51%**	**2.04%**
Fixed Income Target	(4.45%)	(9.78%)	(1.07%)	0.41%	0.95%
Blmbg Treasury Intmdt	(1.67%)	(6.35%)	(0.31%)	0.87%	0.96%
ARMB US Aggregate	(4.55%)	(10.12%)	-	-	-
Opportunistic Fixed Income	**(6.47%)**	**(8.76%)**	**(0.39%)**	**2.21%**	**4.38%**
FIAM Tactical Bond	(7.07%)	(9.66%)	0.96%	2.72%	-
Blmbg Aggregate	(4.69%)	(10.29%)	(0.93%)	0.88%	1.54%
FIAM REHI	(3.63%)	(4.56%)	(0.05%)	2.64%	-
Blmbg:Universal CMBS xAaa	(4.46%)	(10.53%)	(0.58%)	2.10%	3.25%
Alternative Fixed Income	**4.54%**	**14.09%**	**8.11%**	**-**	**-**
Crestline (Blue Glacier)	5.94%	14.30%	7.92%	6.95%	7.99%
Prisma Capital (Polar Bear)	(8.25%)	14.78%	6.64%	5.42%	4.86%
Crestline Specialty Lending Fund	1.32%	29.63%	20.69%	18.22%	-
Crestline Specialty Lndg Fd II	5.98%	12.51%	12.84%	-	-
HFRI Fund of Funds Index	(3.88%)	(5.44%)	3.96%	3.63%	3.75%
T-Bills + 5%	1.33%	5.17%	5.63%	6.11%	5.64%

Opportunistic through 06/30/22

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Opportunistic (T)	**(8.00%)**	**(10.31%)**	**3.83%**	**4.78%**	**-**
Alternative Equity Strategies	**(13.12%)**	**(18.74%)**	**7.33%**	**7.84%**	**8.41%**
McKinley Healthcare Transformation	(13.12%)	(18.74%)	6.93%	-	-
MSCI ACWI	(15.66%)	(15.75%)	6.21%	7.00%	8.76%
Tactical Allocation Strategies	**(10.09%)**	**(13.25%)**	**4.15%**	**-**	**-**
PineBridge	(7.42%)	(13.20%)	3.65%	-	-
Pine Bridge Benchmark	(12.57%)	(14.54%)	3.01%	4.44%	5.33%
Fidelity Signals	(12.66%)	(13.32%)	4.64%	-	-
Fidelity Signals Benchmark	(12.57%)	(14.54%)	3.46%	4.61%	5.99%
Alternative Beta	**5.34%**	**11.98%**	**0.56%**	**(1.15%)**	**-**
Man Group Alternative Risk Premia	5.34%	11.98%	2.42%	-	-
T-Bills + 5%	1.33%	5.17%	5.63%	6.11%	5.64%

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Callan Update

Published Research Highlights from 2Q22

Research Café: ESG Interview Series

Investing in Data Centers: The Real Assets of the Digital Age

Webinar: Pension Risk Transfer

Do Active Fixed Income Managers Add Value With Sector Rotation?

Recent Blog Posts

Best Practices to Make Sure Investors and Their Managers Are in Sync

Jan Mende

Rising Interest Rates Spur Look at Structured Credit

Nathan Wong

SEC Proposes Rule to Enhance ESG Disclosures for Investments

Kristin Bradbury

Additional Reading

Alternatives Focus quarterly newsletter
Active vs. Passive quarterly charts
Capital Markets Review quarterly newsletter
Monthly Updates to the Periodic Table
Market Pulse Flipbook quarterly markets update
Real Estate Indicators market outlook

Callan Institute Events

Upcoming conferences, workshops, and webinars

Callan College

Intro to Alternatives

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with alternative investments like private equity, hedge funds, and real estate and how they can play a key role in any portfolio. In our "Callan College" on Alternatives, you will learn about the importance of allocations to alternatives, and how to consider integrating, evaluating, and monitoring them.

Join our next VIRTUAL session via Zoom (2 sessions, 3 hours each):
August 24-25, 2022

Intro to Investments—Learn the Fundamentals

This course is for institutional investors, including trustees and staff members of public plans, corporate plans, and nonprofits. This session familiarizes trustees and staff with basic investment theory, terminology, and practices.

Join our next VIRTUAL session via Zoom (3 sessions, 2–3 hours each):
September 20–22, 2022

Mark Your Calendar

2022 October Regional Workshops

October 18, 2022
Denver

October 20, 2022
San Francisco

Callan Institute's 2023 National Conference

April 2-4, 2023
Scottsdale, Arizona

Watch your email for further details and an invitation.

Webinars & Research Café Sessions

Market Intelligence

October 14, 2022 – 9:30am (PT)

Content Calendar—Callan Institute

4Q22 Webinar Topics:

- Market Intelligence
- Regional Workshop Recap
- ESG Survey
- Research Café (TBD)

1Q22 Webinar Topics:

- Capital Markets Assumptions
- Market Intelligence
- DC Trends Survey

3Q22 Webinar Topics:

- Market Intelligence
- Corporate DB Webinar
- Research Café (ESG)

2Q22 Webinar Topics:

- Market Intelligence
- Regional Workshop Recap
- Research Café: ESG Interview Series
- Pension Risk Transfer

Callan College | Conference/Workshop | Publication | Webinar | Research Café

Callan Updates

Firm updates by the numbers, as of June 30, 2022

Total Associates: ~200

Ownership

- 100% employees
- 67% of employees are equity owners
- 55% of shareholders identify as women or minority

Total General and Investment Consultants: more than 55

Total Specialty and Research Consultants: more than 80

Total CFA/CAIA/FRMs: more than 55

Total Institutional Investor Clients: more than 475

Assets Under Advisement: more than $4 trillion

Key Hires

- Craig Chaikin, CFA, SVP, Denver Consulting
- Emily Hylton, SVP, Atlanta Consulting
- Christina Mays, VP, Real Assets Consulting
- Nicole Wubbena, SVP, Global Manager Research

"Callan has been offering alternatives investment consulting services for more than 30 years. The demand for our services is greater than ever as institutional investors increase their allocations to alternative investments. As a result, we've been expanding our already robust research resources and capabilities to support them." — Pete Keliuotis, EVP, Callan's Alternatives Consulting Group

Disclaimers

This report is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.

This report may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.

Reference to or inclusion in this report of any product, service or entity should not be construed as a recommendation, approval, affiliation or endorsement of such product, service or entity by Callan.

Past performance is no guarantee of future results.

The statements made herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties such that actual results may differ materially from these statements. There is no obligation to update or alter any forward-looking statement, whether as a result of new information, future events or otherwise. Undue reliance should not be placed on forward-looking statements.

ALASKA RETIREMENT MANAGEMENT BOARD

Risk Reporting

September 2022

Shane Carson, CAIA, CFA
State Investment Officer

Key Board Decisions

Determine Investment Objective

- Fund's Purpose
- Governance – who makes which decisions?

Determine Asset Allocation

- Strategic
- Tactical

Oversee Implementation

- Manager Structure – number and types of manager allocations.
- Manager Selection

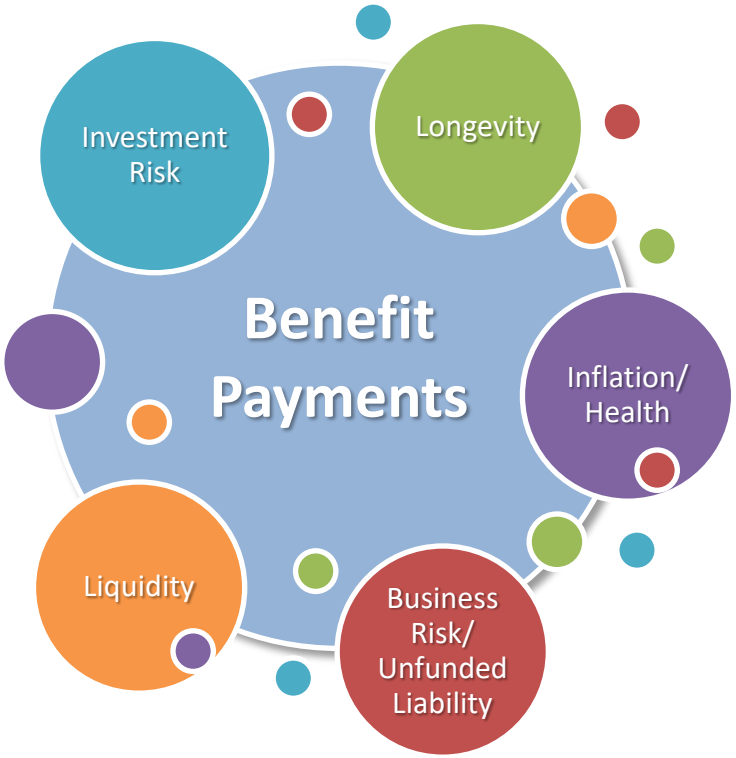
Monitor Results

- Are the fund, asset classes and mandates performing as expected?
- Are they achieving objectives?

Risk and the Retirement System

What does risk mean to the ARMB?

- At the most comprehensive level, risk is anything that could impact the objectives of the retirement systems.
- The defined benefit systems' primary objective is to pay all benefits when they are due.
- Risk encompasses both assets and liabilities.
- Defined benefit systems are designed to be able to take risks – pooling market, longevity, and other risks across time and a broad pool of participants.
- Setting and monitoring investment risks is one of the primary roles of the ARMB.



Risk Monitoring Tool: truView

- The ARMB is using truView for portfolio risk analytics. truView is State Street Global Exchange's risk measurement platform.
- truView analytics are run semi-annually, at month-end in June and December.
- We use truView to help answer the following questions:
  - Is the portfolio risk positioned according to the ARMB's asset allocation?
  - What is the probability and magnitude of potential losses?
  - Is the ARMB taking more or less risk than the strategic benchmark by asset class?
  - Are specific investment mandates or managers adding to or reducing risk?
  - Does the ARMB have unexpected risk exposures or concentration?
  - How would the ARMB's current portfolio perform in historic market events or scenarios?

Volatility Decomposition

- Public equity contributed 53% to portfolio volatility.
- Public and private equities contribute 74% of total volatility.
- Broad Fixed Income contributed about 6%. An increase from the prior report.
- Portfolio volatility has increased from 13.4% in December to 13.8% in June - now aligning with Callan's FY22 long-term forecast of 13.9% for ARMB's target asset allocation.

Volatility Decomposition 6/30/2022

	Market Value (Millions)	Allocation (%)	Volatility[1] (% per annum)	Volatility Contribution (% of Total Vol)
Broad Domestic Equity	7,535	24.5%	18.9%	33.0%
Global Equity Ex-US	4,921	16.0%	17.3%	19.5%
Real Assets	4,432	14.4%	15.3%	13.8%
Broad Fixed Income	6,785	22.1%	6.4%	5.7%
Private Equity	5,236	17.1%	17.9%	21.7%
Opportunistic	1,800	5.9%	15.0%	6.3%
TOTAL	**30,709**	**100.0%**	**13.8%**	**100.0%**

Volatility Decomposition 12/31/2021

	Market Value (Millions)	Allocation (%)	Volatility[1] (% per annum)	Volatility Contribution (% of Total Vol)
Broad Domestic Equity	9,543	27.8%	18.3%	37.6%
Global Equity Ex-US	6,216	18.1%	16.6%	22.1%
Real Assets	4,270	12.4%	14.2%	11.4%
Broad Fixed Income	7,134	20.8%	3.4%	3.4%
Private Equity	5,139	15.0%	16.9%	18.7%
Opportunistic	2,049	6.0%	15.4%	6.8%
TOTAL	**34,350**	**100.0%**	**13.4%**	**100.0%**

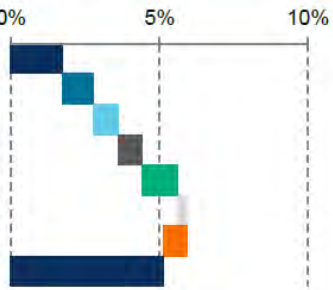
Volatility at the asset class level is calculated using parametric Value-at-Risk at 84th percentile, expressed as a percentage of the market value of each asset class.

Asset Class Risk & Diversification

- The monthly value-at-risk is 5.2%.
- Broad Domestic Equity and Global Equity ex-US contributed 41% of VaR.
- VaR increased from December's report by 0.9%.
- The Diversification Benefit provided additional reduction in overall VaR compared to December.

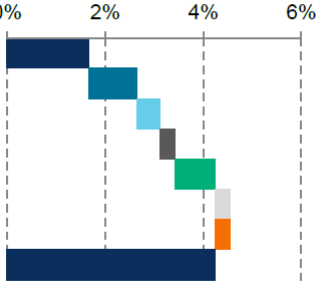
Asset Class Risk & Diversification 6/30/2022

	Allocation (%)	Value-at-Risk[1] Contribution (% of Total VaR)	Value-at-Risk[1] (% of Total MV)
Broad Domestic Equity	24.5%	27.2%	1.7%
Global Equity Ex-US	16.0%	13.8%	1.0%
Real Assets	14.4%	27.3%	0.8%
Broad Fixed Income	22.1%	7.4%	0.8%
Private Equity	17.1%	18.5%	1.2%
Opportunistic	5.9%	5.8%	0.3%
Diversification Benefit	-	-	-0.8%
TOTAL	**100.0%**	**100.0%**	**5.2%**



Asset Class Risk & Diversification 12/31/2021

	Allocation (%)	Value-at-Risk[1] Contribution (% of Total VaR)	Value-at-Risk[1] (% of Total MV)
Broad Domestic Equity	27.8%	28.9%	1.7%
Global Equity Ex-US	18.1%	23.3%	1.0%
Real Assets	12.4%	14.7%	0.5%
Broad Fixed Income	20.8%	7.8%	0.3%
Private Equity	15.0%	18.2%	0.8%
Opportunistic	6.0%	7.1%	0.3%
Diversification Benefit	-	-	-0.3%
TOTAL	**100.0%**	**100.0%**	**4.3%**



Equity Beta

- Equity betas are within expectations for 6/30/2022.
- ARMB's Domestic and Global ex-US equity portfolios should closely parallel their respective benchmarks.
- Slight decrease in total equity beta in the 6/30/2022 report.

Total Equity
State of Alaska

Sub Asset Class Beta Analysis

Asset Class / [Benchmark]	Market Value (Millions)	Allocation (%)	Beta[1] 1Y to the Benchmark	Beta[1] 5Y to the Benchmark
Broad Domestic Equity / [Russell 3000]	**7,535**	**60.5%**	**0.87**	**0.99**
Large Cap Pool (AYQK)	6,887	55.3%	0.89	0.97
Small Cap Pool (AYQC)	649	5.2%	0.71	1.19
Global Equity Ex-Us / [MSCI ACWI Ex US IMI]	**4,921**	**39.5%**	**0.94**	**0.97**
Emerging Markets Pool (AYSC)	902	7.2%	0.84	0.93
IE Large Cap Pool (AYRC)	4,020	32.3%	0.96	0.98
TOTAL Equity / [MSCI ACWI]	**12,457**	**100.0%**	**0.93**	**1.02**

1. Beta is the regression coefficient generated by a linear regression of the percent return time series of position on an explanatory time series. This explanatory time series is often composed of the returns from a broader market index, the Benchmarks of each of the Equity Asset Classes.

International Equity Country Exposure

- For Fiscal Year 2022, the target allocation to International Equities is 18% of the total ARMB portfolio.
- The Global Equity-Ex US asset class invests in a diversified market basket across more than 60 countries.
- In aggregate, asset class level active country weights exist due to active management and factor exposures but are generally not concentrated and track reasonably close to the benchmark.

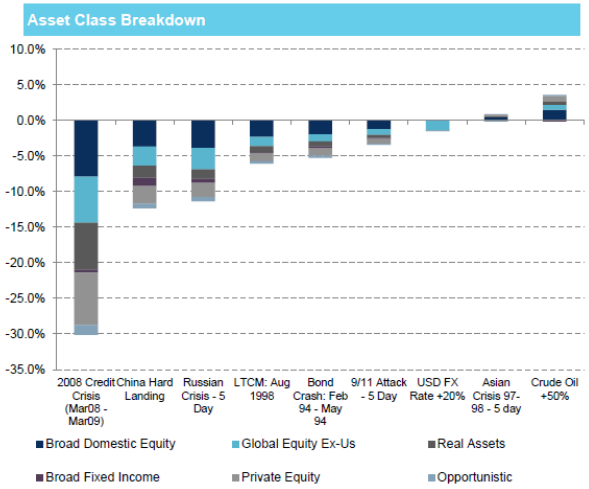
Country	International Portfolio	Benchmark	Difference
Japan	15.5%	14.7%	0.8%
United Kingdom	10.7%	9.6%	1.1%
China	8.8%	8.7%	0.1%
France	7.5%	6.1%	1.4%
Switzerland	6.4%	6.4%	0.1%
Canada	5.4%	7.9%	-2.5%
Germany	5.2%	4.5%	0.6%
Taiwan	3.9%	4.4%	-0.5%
India	3.6%	4.0%	-0.4%
Netherlands	3.6%	2.6%	1.0%
Australia	3.6%	5.0%	-1.5%
South Korea	3.1%	3.4%	-0.3%
Sweden	2.3%	2.2%	0.2%
Hong Kong	2.3%	2.6%	-0.3%
Brazil	2.3%	1.5%	0.8%

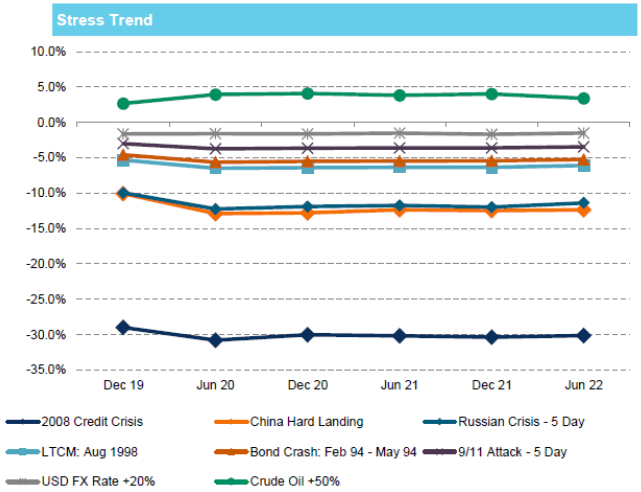
Country	International Portfolio	Benchmark	Difference
Denmark	1.7%	1.6%	0.1%
Italy	1.6%	1.3%	0.3%
Spain	1.6%	1.5%	0.0%
Mexico	1.0%	0.6%	0.4%
Singapore	1.0%	1.0%	0.0%
Saudi Arabia	0.8%	1.2%	-0.4%
Finland	0.8%	0.8%	0.0%
Belgium	0.7%	0.6%	0.1%
South Africa	0.7%	1.1%	-0.4%
Norway	0.7%	0.6%	0.0%
Israel	0.6%	0.7%	-0.1%
Indonesia	0.4%	0.6%	-0.2%
United States	0.4%	0.1%	0.2%
Thailand	0.4%	0.6%	-0.3%
Less than 0.36% weight	3.6%	3.9%	-0.3%

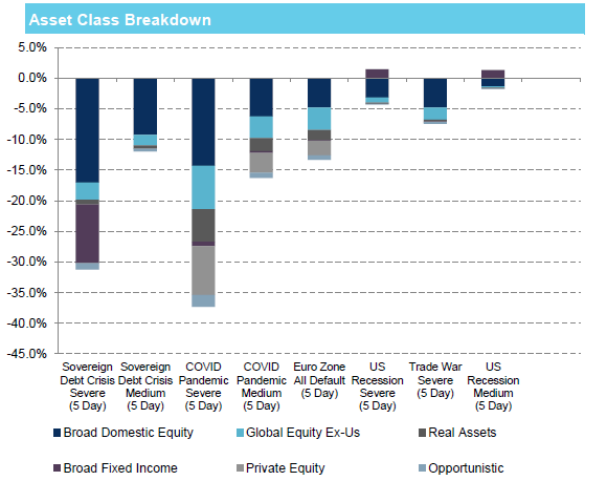
ARMB Global ex-US benchmark is MSCI ACWI ex-US IMI
Data as of 6/30/2022
Source: Custody and benchmark weights

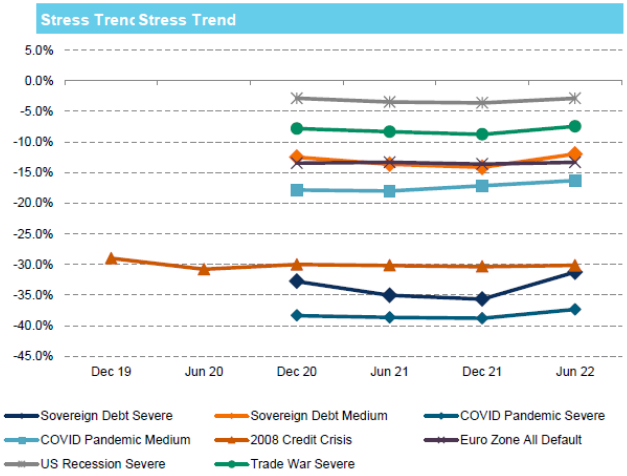
Stress Tests

- Stress tests reveal no significant change in expected outcomes.







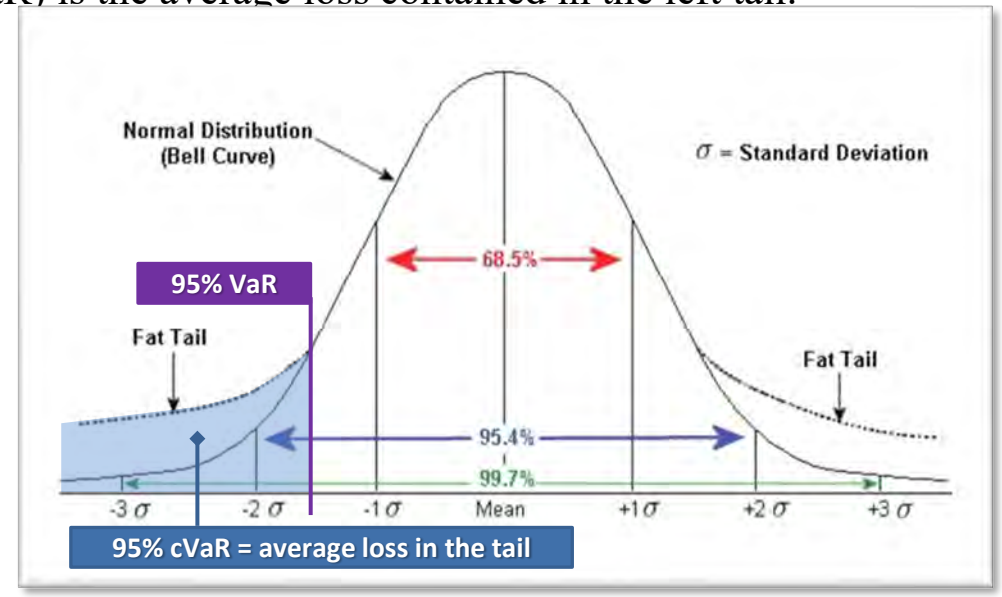


Summary

- Risk metrics are within expectations.
- Public equity allocation is the largest driver of portfolio volatility and value-at-risk as expected.
  - Overall portfolio volatility increased from the December report and now aligns with long-term risk expectations.
- ARMB invests in a diversified basket of international equity. In aggregate, the country weights do not significantly deviate from the asset class benchmark.
- truView models several historical and predictive scenarios.
  - ARMB's portfolio sensitivity to the stress tests has been little changed over time indicating there are no sudden or unexpected exposures to assets that are sensitive to the scenarios provided.

What is Value-at-Risk?

- Value-at-risk (VaR)
  - A commonly used measure of potential loss.
  - VaR represents a return threshold over a given time horizon whereby worse outcomes are only expected with some small and specific probability.
  - VaR can be estimated parametrically using the mean and standard deviation, but this ignores fat tails (kurtosis, skewness).
  - VaR also can be estimated using historic market information, which includes past fat tails – this is the approach truView takes.
- Expected shortfall (conditional VaR or cVaR) is the average loss contained in the left tail.
- Why are VaR and cVaR important?
  - They quantify the risk of loss for the portfolio.
  - Differences between historical and parametric-based VaR calculations suggest impact of fat tails.



BlackRock

Mandate: **BlackRock US Core Property Fund** **Hired: 2018**

Firm Information	Investment Approach	Total ARMB Mandate
BlackRock, Inc is a leading publicly traded investment management firm with $10.01 trillion of assets under management as of December 31, 2021, and approximately 18,400 employees in more than 30 countries. BlackRock provides a broad range of investment management and technology services to institutional and retail clients worldwide. As of 6/30/2022, the BlackRock Real Estate platform's total global assets under management was $36 billion. As of 6/30/2022, the net asset value of the US Core Fund ("the Fund") was $3.9 billion. **Key Executives:** ***Benjamin Young,*** Head of Real Estate Equity ***Lizzy Kurz,*** Lead US Core Portfolio Manager	The BlackRock US Core Property Fund is a core US strategy that seeks attractive and stable income returns from real estate. It acquires and holds high quality, well-leased buildings across the four main property types. The Fund focuses on the US markets and properties with potential to produce above average rent growth and risk-adjusted returns based on research and local market expertise. **Target Portfolio Return:** Long-term gross returns commensurate with NFI-ODCE Index	**Assets Under Management:** 6/30/22: $434,802,346

Concerns: The BlackRock US Core Property Fund was placed on the watchlist in March 2022 for turnover in the portfolio manager position.

6/30/2022 Performance

	Last Quarter	1-Year	3-Years Annualized	4.25-Years Annualized
Manager Gross	4.20%	27.00%	12.56%	10.83%
Fee	.09%	.46%	.37%	.35%
Manager Net	4.11%	26.54%	12.19%	10.48%
Benchmark	4.54%	28.31%	11.66%	9.92%

BlackRock Alternatives

Real Estate 2Q 2022

US Core Property Fund

BlackRock.

FOR USE WITH QUALIFIED PURCHASERS AND PERMITTED CLIENTS ONLY - NOT FOR FURTHER DISTRIBUTION

ALTM0822U/M-2393489-1/36

BlackRock US Core Property Fund

$3.9B
US Core AUM

Supported by **80+** US Real Estate professionals

with **27 years** average senior experience

Why now?

Inflation protection:

- Rising rents with expense pass-through
- Higher construction costs benefit existing property values

Stable market fundamentals:

- Rents rising faster than operational expenses
- Vacancy remains limited, outside of the commodity office and retail sectors

Buying opportunity for Core in the US:

- Disconnect between market fundamentals and capital markets
- A developing once-in-a-cycle buying opportunity

Why US Core Property Fund?

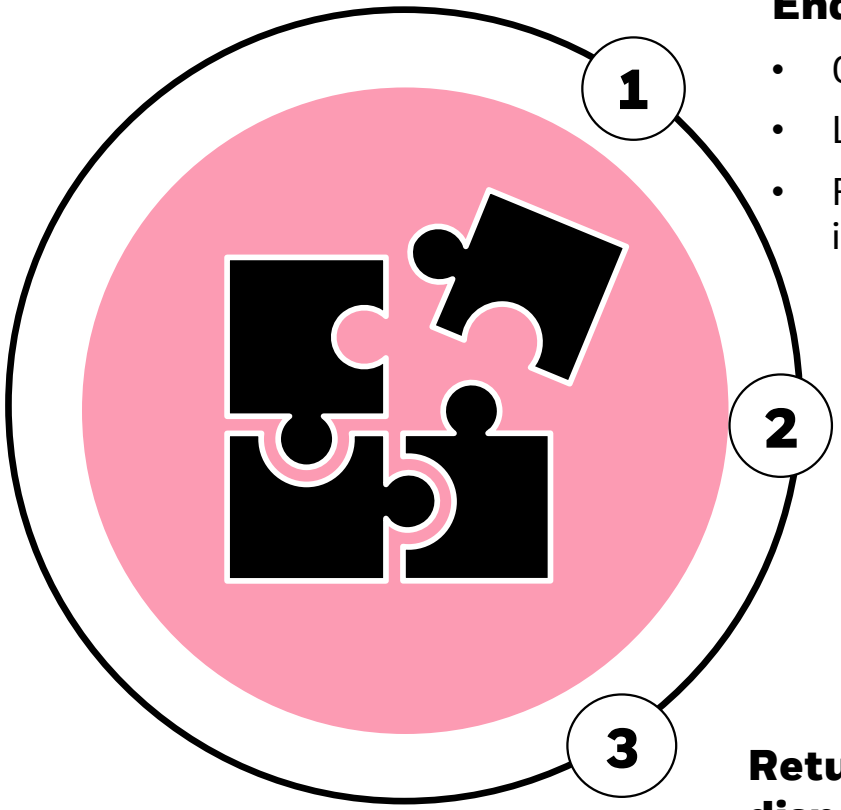
Core for your portfolio	**Risk-aware performance**
Ability to adapt	**Sustainable portfolio**

Source: BlackRock, as of 30 June 2022.

01

Why now?

Market opportunity summary



End of the Great Moderation

- Growth is normalizing, but vol will persist
- Living with inflation is likely outcome
- Fed looking for balance, but hard to have low inflation and high growth

Fundamentals are solid; capital market experiencing some dislocation

- Vacancy is relatively tight
- Rent growth to normalize with macro economy; inflation supportive
- Rising rates resulting in higher cost of capital; affecting where high-levered buyers can bid

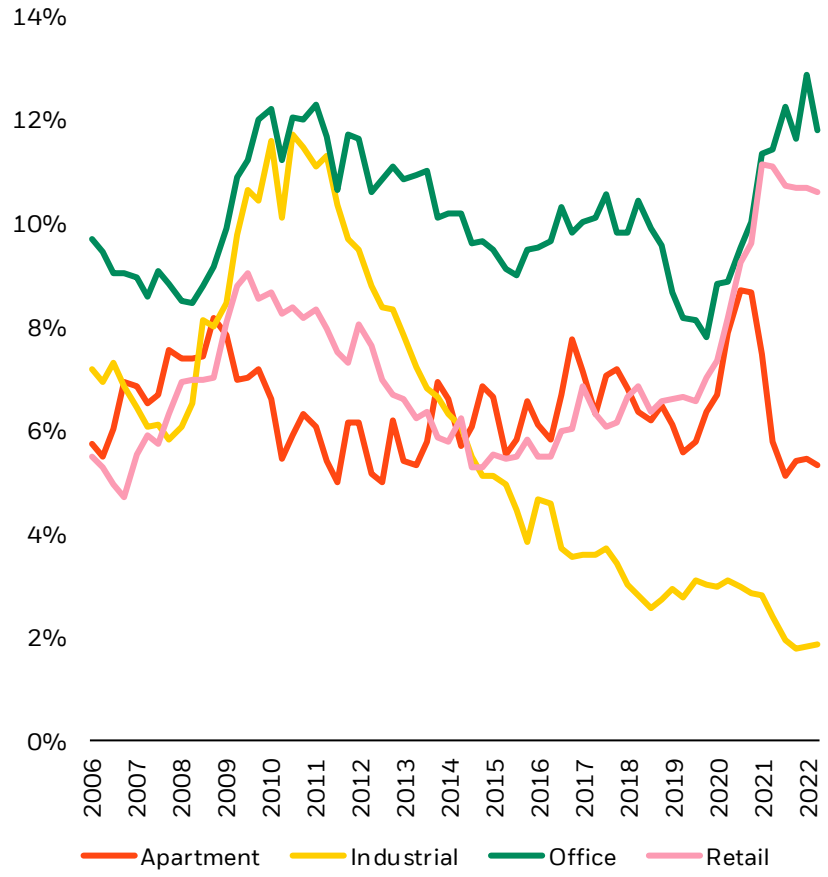
Returns should mean revert, but with more dispersion

- Industrial and apartments are forecast to outperform
- Quality of cash flows counts more now than 2021
- Asset selection will be the differentiator

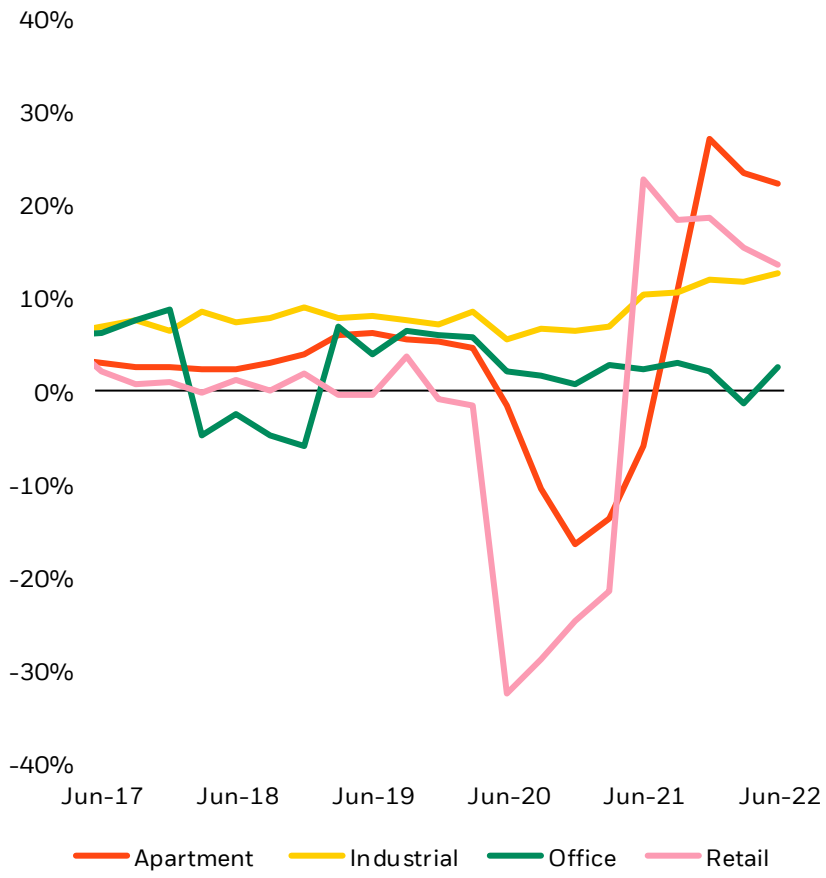
Space market fundamentals stable on average

Dispersion will remain a key trend, and likely accelerate during near term

Vacancy rates



NOI growth

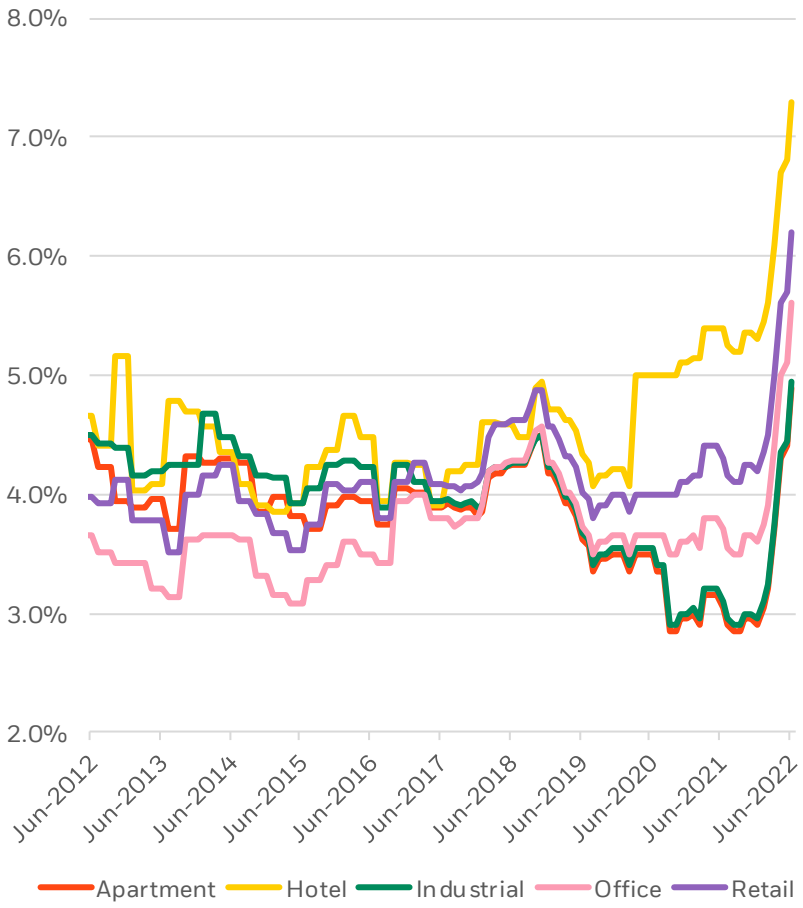


Source: NCREIF, Blackrock; as of 30 June 2022

The capital markets have recovered, but with diverging trends

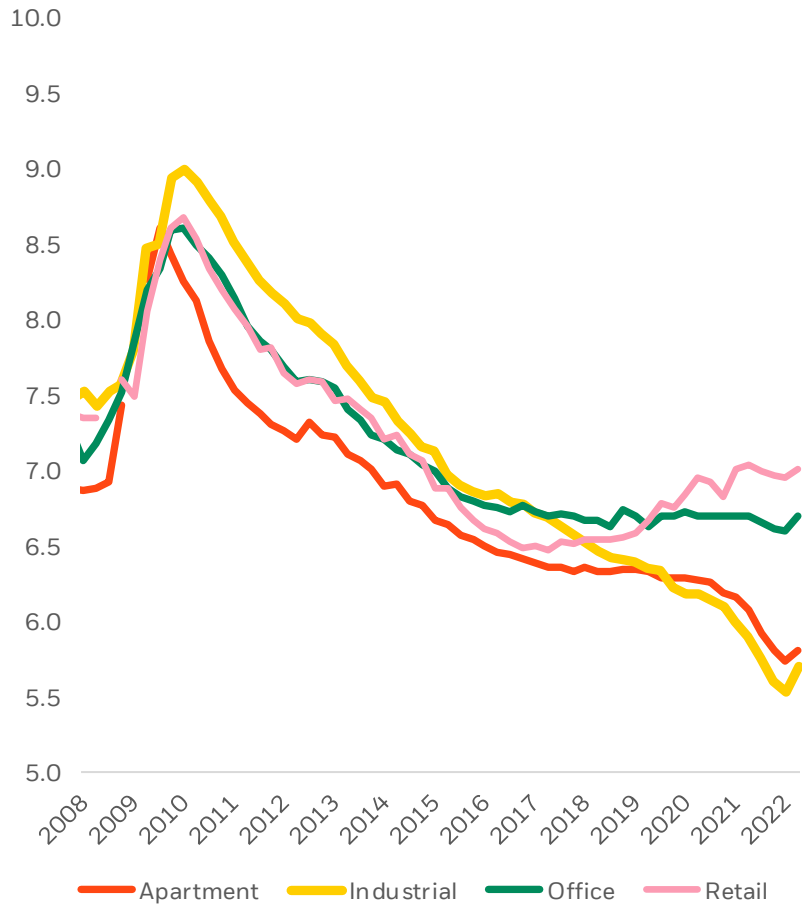
All-cash and low-leverage buyers are in the market, but levered buyers are having to adjust

Mortgage rates; 55% LTV, fixed rate



Source: Chatham Financial, as of June 30, 2022.

10Yr valuation discount rates (%)



Source: Altus; as of 30 June 2022.

02

Who we are

A boutique investment platform benefitting from the full breadth and scale of BlackRock

$36B of client assets

Debt Income | **Equity** Balanced Growth | **Listed** Liquid

Private Real Estate Debt

$3.2B of client assets

Strategy: Investment opportunities across the US and Europe and across sectors through commingled funds

Global Core / Core+ Series Balanced

$15.7B of client assets

Strategy: High quality, well located income generating assets that offer investors stable returns and the potential for capital appreciation with low leverage. Open-end regional strategies including US, Europe and UK.

Global Value Add Series Growth

$11.3B of client assets

Strategy: Targeting off market, defensive, multitenant, high yielding, institutional grade assets with correctable impairments located in growing sub markets or markets undergoing transition. Moderate leverage. Closed-end regional strategies across Europe, Asia Pacific and North America.

Global Real Estate Securities

$6.5B of client assets

Strategy: Alpha seeking relative return strategies and innovative outcome oriented strategies in listed real estate, blended across Core, Core Plus and Value Add.

Underpinned by BlackRock's resources and global reach…

- Sustainable Investing & Strategy
- Risk & Quantitative Analysis
- BlackRock Capital Markets
- BlackRock Investment Institute
- Aladdin
- Legal & Compliance
- Tax
- Business Operations & Finance

Source: : BlackRock, as of 30 June 2022. Client assets demonstrates NAV and dry powder for each strategy.

What is our value proposition?

Bottom-up investing supported by top-down research

Real estate team

brings deep industry and sector expertise for a hands-on approach to real estate investing

BlackRock advantages

breadth of analytical resources, operating partners and network drives information flow and inform tactical investment decisions

ESG integration

is central to how we invest and incorporated throughout the investment lifecycle

Together, these channels deliver distinct advantages…

Proprietary access to over $100 billion of deal flow annually drives disciplined investing

In-house research team dedicated to recognizing shifting markets and evolving target sectors

Direct sourcing capabilities through operating partners across asset classes and geographies

Global real estate investment committee provides best-practices and information exchange

Integration of ESG insights & data into all investments and during underwriting processes

Highly experienced and dedicated team of experts

US Core Investment Committee

Benjamin Young
Head of North America Real Estate

John Lamb
Head of North America Transactions

Derek Helgeson
Senior Portfolio Manager North America Real Estate

Debra Mistretta
Senior Portfolio Manager North America Real Estate

Robert Karnes
Global Head of Real Assets Debt

Mark Howard-Johnson
Global Head of Real Asset Securities

Paul Tebbit
Head of Europe and CIO for Real Estate Equity

Matt Anestis
Global Head of Performance for BlackRock Alternative Investors

Portfolio Management

Benjamin Young Head of Real Estate Equity	33
Lizzy Kurz Lead US Core Portfolio Manager	11
Nathan Newman US Core Portfolio Management	10
Christina Lyndon NAF Portfolio Management	18
Derek Helgeson SMA Portfolio Management	32
Debra Mistretta SMA Portfolio Management	32
William Wambach SMA Portfolio Management	25

+4 VPs, +2 Associates, +1 Analyst

Asset & Development Management

Cathy Bernstein Co-Head of US Real Estate Equity Asset Management West	36
Rory Ingels Co-Head of US Real Estate Equity Asset Management East	24
Kevin Doody Asset Management East	24
John Kent Asset Management East	18
Kari Frazier Asset Management West	23
Vincent Amendola Development Management	32
George Stefan Development Management	23

+4 VPs, +1 Associates, + 1 Analyst

Transactions

John Lamb Head of Transactions	28
Jeff Anderson Transactions Central & South	19
Jeff Brown Transactions West	18
Donald Smith Transactions Northeast	17
Joe Davis Transactions Central & South	14
Michael Cooper Transactions Northeast	14
Kelly Gamble *Transactions West*	11

+3 Associates, +1 Analyst

Research & Product Strategy

Alex Symes Head of US Real Estate Research	15
Yasmine Kamaruddin US Real Estate Research	14
Tara O'Neil US Real Estate Product Strategy	12

Source: BlackRock as of 30 June 2022 (subject to change)

03

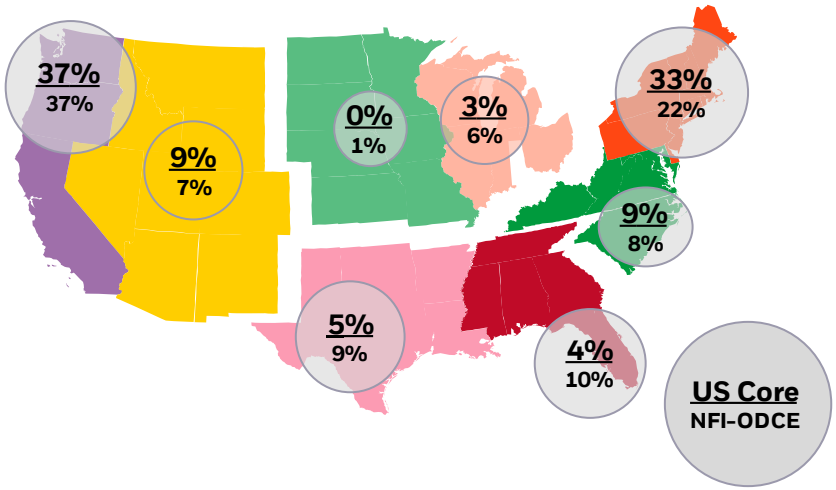
How we invest

Delivering on a core real estate mandate

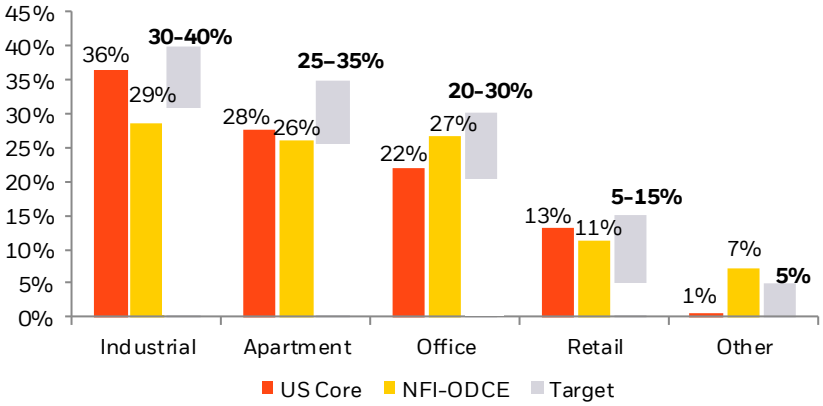
An outcome that investors expect

AUM	$3.9 billion
Net assets	$2.9 billion
Number of investments	32
Number of investors	37
Occupancy	93.3%
WALE	6.1 years
Loan-to-value (LTV)	21.6%
Average total cost of debt	3.3%
WALT	3.8 years
Line of credit	$400 million
Distribution yield	4.0%

Diversification across geographies



Diversification by property type



Source: BlackRock and NFI-ODCE as of 30 June 2022

High quality, well-located buildings providing resilient income

600 Third Avenue
New York Office

Meridian Park West
Riverside Industrial

Darby Knox District
Dallas Multifamily

Flats at Bethesda Avenue
Washington, D.C. Multifamily

Anaheim Distribution Center
Santa Ana Industrial

265 Franklin Street
Boston Office

Elan Ruby Lake
Orlando Multifamily

Crossings @ 880
Oakland Industrial

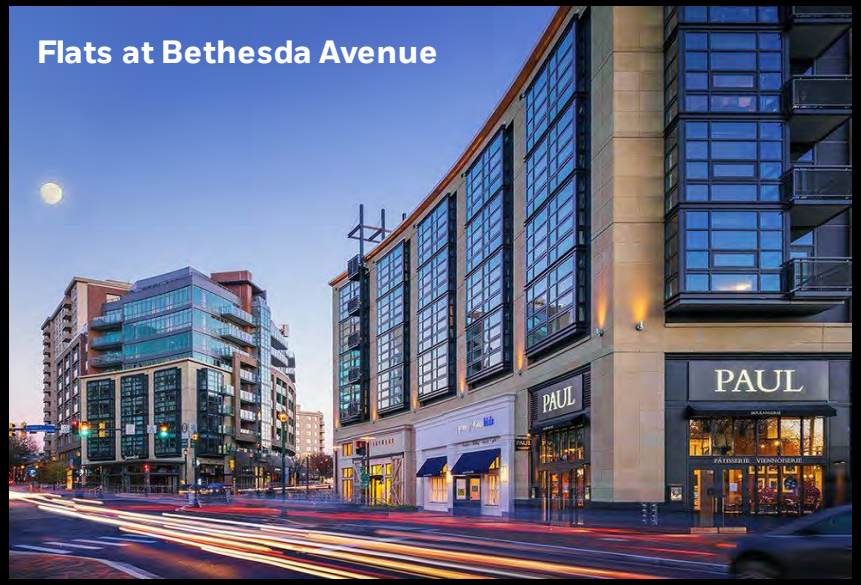
Docks Corner
New York Industrial

Infinity LoHi
Denver Multifamily

BlackRock as of 30 June 2022. These Investments were selected to illustrate the ten largest holdings of the Fund. They are non-representative of all underlying Fund Investments made by BlackRock on behalf of the Fund and it should not be assumed that the Fund will invest in these Investments or in comparable investments, or that any future Investments made by the Fund will be successful. To the extent that these Investments prove to be profitable, it should not be assumed that the Fund's investments will be profitable or will be as profitable.

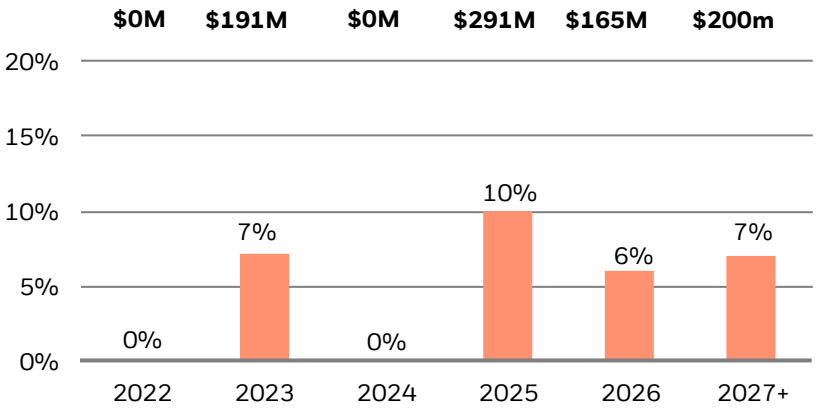
Debt profile

BlackRock relationships and US Core's high-quality assets provide access to attractive debt terms

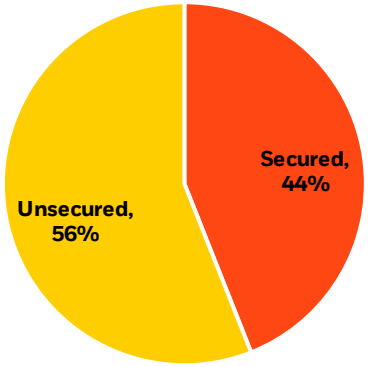


LTV	21.6%
Total cost of debt	3.3%
• Fixed rate	3.4%
• Floating rate (including floating-rate capped)	3.2%
Weighted term to final maturity	3.8 years
Line of credit	$400 million
Outstanding balance	*$125 million*

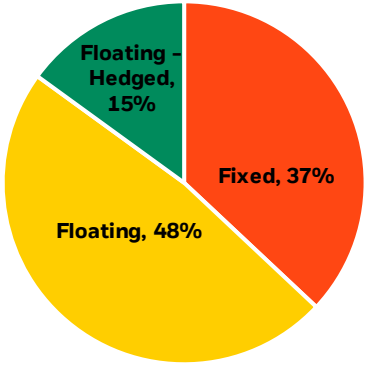
Loan maturities as a % of NAV*



Secured v. unsecured



Fixed v. floating



BlackRock as of 30 June 2022. Note: The majority of floating rate debt is hedged through both property level and portfolio level rate caps; fixed rate debt includes swap arrangements. *Expirations assume BLK US Core Property Fund exercises extension provisions for existing loans, when available. Data reflects BLK US Core Property Fund's contract share of wholly owned and JV loans.

Building a sustainable portfolio for the long term

Philosophy + Practice

- Economical solutions can drive measurable portfolio impact
- Specialized in-house experience in environmental evaluation
- UNPRI, GRESB, US Green Building Council, Greenprint
- ESG Risk Matrix quantifies ESG risk at the portfolio level

GRESB Rating + Ranking

2021 Green star[1]

★★★★

80

U.S. diversified core[2]

20th
Out of 48

LEED Gold + Silver

9

Energy Star ratings

7

600 3rd Avenue, New York
LEED Gold

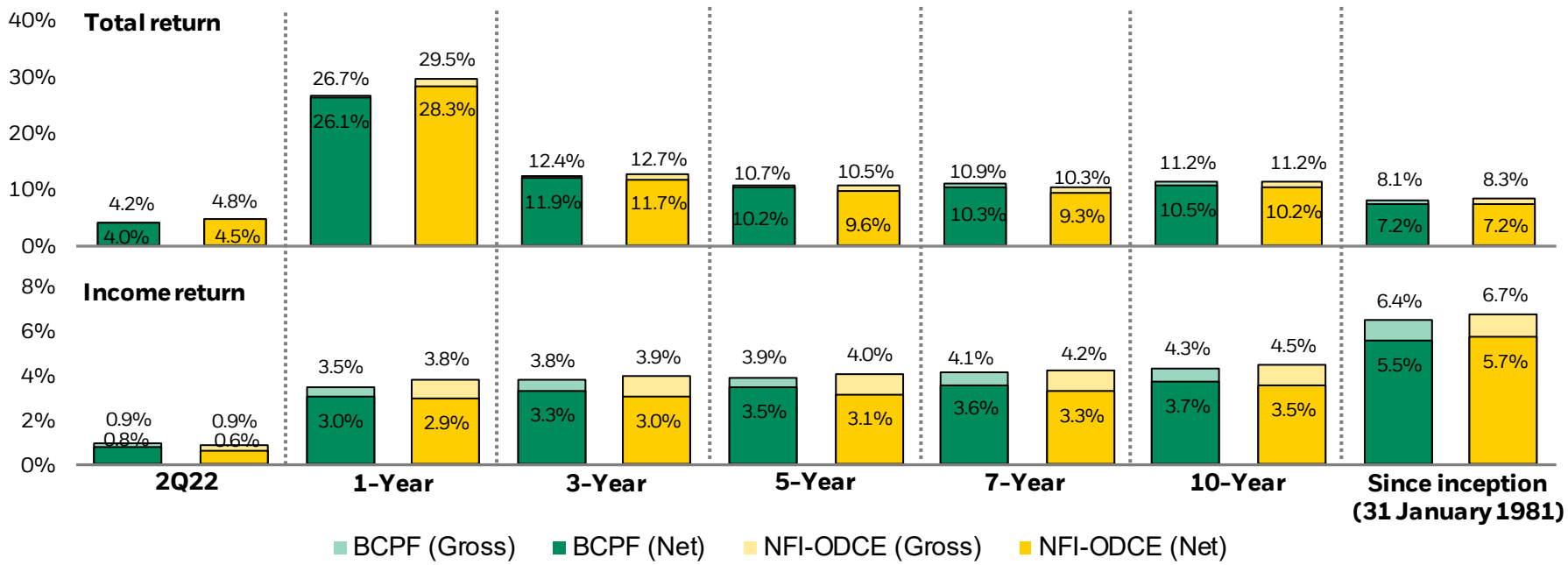
BlackRock, 30 September 2021 and GRESB 2021 survey results. LEED certification is a globally recognized symbol of sustainability achievement. Energy Star is a program run by the U.S. Environmental Protection Agency and U.S. Department of Energy that promotes energy efficiency. The GRESB Rating is based on the GRESB Score and its quintile position relative to all participants in the GRESB Assessment, with annual calibration of the model. 1) BCPF scored 80/100, ahead of the GRESB average of 73/100. 2) Based on a peer comparison of funds that participate in GRESB.

04

What we seek to deliver

Risk-aware performance

Core on the upside and on the downside



Average net income of 5.5% since inception

BlackRock and NFI-ODCE as of 30 June 2022. Past performance is not indicative of future results. You cannot invest directly in an unmanaged index. Returns presented are calculated gross and net, i.e., before and after deduction of asset management fees. Both gross and net returns are calculated net of financing fees, as such fees are reflected in net unrealized gain (loss). Returns reflect the effects of third-party leverage, and do not reflect the reinvestment of earnings in the underlying property of the Fund, except (with respect to periods prior to the fourth quarter of 2006) where an investor in the Tower Fund had requested the distribution of earnings attributable to that investor. Returns presented are denominated in US dollars. As with all investments, real estate investments involve the potential for loss and past performance is not a guarantee of future results. BlackRock US Core Property Fund is part of the Core Diversified Commingled Fund Composite. To receive a complete list and description of BlackRock, Inc.'s composites and/or a presentation that adheres to the GIPS® standards, please contact Matt Seals at 678-775-7888. For periods before the fourth quarter of 2006, the returns presented include the performance of Tower Fund, a commingled insurance company real estate separate account with a core investment strategy. On 30 September 2006, substantially all of the assets and liabilities of Tower Fund were transferred to BlackRock Granite Fund (now BlackRock US Core Fund) and substantially all of the unit holders of Tower Fund received shares of BlackRock Granite Fund. BlackRock Realty or a predecessor ("Realty"), BlackRock US Core Fund's investment manager, also managed Tower Fund from 1 January 1994, and the investment professionals with primary responsibility for the management of Tower Fund prior to 1 January 1994, became employed by Realty on such date. Past Performance is not a reliable indicator of current or future results and should not be the sole factor of consideration when selecting a product or strategy.

Embedded income growth but also downside protection

19% delta between in-place and market rents

Property operations

Property type	2Q22 total occupancy	In-place rents vs. market rents
Apartment	94.7%	--
Office	84.4%	-5.0%
Retail	89.9%	-1.0%
Industrial	100.0%	-35.3%
Total portfolio	**93.3%**	**-18.7%**

Lease rollover schedule

Property type	Yr 1[1]	Yr 2	Yr 3	Yr 4	Yr 5
Industrial	1.3%	1.7%	0.0%	12.1%	21.4%
Office	5.5%	8.8%	5.7%	4.7%	19.5%
Retail	13.6%	15.8%	17.5%	11.4%	7.5%
Total commercial+	**5.0%**	**6.6%**	**5.1%**	**9.4%**	**18.3%**

BlackRock as of 30 June 2022.
1. For the 12-month forward period starting 1 July 2022.
+ Square footage weighted by gross market value

Multifamily acquisition in a growth market

Darby Knox District – Dallas, Texas

Investment profile & thesis

Value / Closing date	$163.0 million / January 18, 2022
Market / Submarket	Dallas / Oak Lawn / Park Cities
Property subtype	Urban apartment
Lifecycle	Core / Operating
Year Built	2021
Units	333
Occupancy	98.2%

- Darby Knox District is a 333-unit, Class A apartment complex located in the Knox District neighborhood of Dallas, Texas.
- Recently completed in 2021, the property features top of the market unit finishes and community amenities such as multiple outdoor grilling and firepit stations, both indoor and outdoor gaming lounges, a resort-style pool, 24-hour fitness center, a golf simulator, and a rooftop terrace with a sky lounge.
- With a Walk Score of 91, Darby Knox District is walkable to many restaurants, bars, coffee shops, and high-end retailers including Apple, Restoration Hardware, Pottery Barn, and Crate and Barrel. The property is also in close proximity to Dallas' Katy Trail and is conveniently located across the street from Trader Joes.
- The surrounding area boasts strong demographics with an average household income of approximately $115k within a three-mile radius of the property.
- Darby Knox District is now stabilized. First move ins began in June 2021.
- The acquisition is in line with the Fund's strategy to enhance the current Sun Belt market exposure.

Multifamily acquisition in a diversified product type

Elan Ruby Lake – Orlando, Florida

Investment profile & thesis

Value / Closing date	$153.6 million / June 28, 2022
Market / Submarket	Orlando / South Orange County
Property subtype	Garden apartment
Lifecycle	Core / Operating
Year Built	2022
Units	372
Occupancy	89% (lease-up)

- Elan Ruby Lake is a newly built, 372-unit Class A apartment complex located in the South Orange County submarket of Orlando, Florida.
- The asset has over 11 million square feet of retail within a 5-mile radius and close to 13 million square feet of office space within a 7-mile radius. Whole Foods, Target, and Aldi are all located within a 5-mile radius of the property. Additionally, the Orlando Vineland Premium Outlets, which features numerous high-end retailers including Lululemon, Coach, Gucci, and Ralph Lauren, are located within close proximity to the asset.
- Though Orlando's MSA employment has historically been driven by hospitality surrounding the city's theme parks, the market has experienced high employment growth and diversification over the last 10 years. Top headquarters in Orlando include AAA, Universal, Darden Restaurants, and Travel + Leisure. The largest employers include Walt Disney, Advent Health, Orlando Health, Publix, and the University of Central Florida.
- Elan Ruby Lake has experienced strong leasing momentum (averaging roughly 35 leases per month). At the time of acquisition, the property was 89% occupied and 94% leased.
- The acquisition is in line with the Fund's strategy to diversify the existing multifamily portfolio into suburban product.

05

Key takeaways

Key takeaways

Key differentiators

Core for your portfolio

Risk-aware performance

Ability to adapt

Investor outcomes

5.5%	Net income return since inception
4.0%	Annualized distribution yield

Predictable & stable income

4	Periods of outperformance(3, 5-, 7-, 10-year)
#1	Sharpe Ratio for the 10-year time period[1]

High quality, low volatility

18.7%	Delta between in-place and market rents
35.3%	Industrial portfolio with the most embedded income

Upside potential & downside protection

Past performance is not indicative of future results. Returns reflect the effects of third-party leverage, and do not reflect the reinvestment of earnings in the underlying property of the Fund, except (with respect to periods prior to the fourth quarter of 2006) where an investor in the Tower Fund had requested the distribution of earnings attributable to that investor. Returns presented are denominated in US dollars. As with all investments, real estate investments involve the potential for loss and past performance is not a guarantee of future results. For periods before the fourth quarter of 2006, the returns presented include the performance of Tower Fund, a commingled insurance company real estate separate account with a core investment strategy. On 30 September 2006, substantially all of the assets and liabilities of Tower Fund were transferred to BlackRock Granite Fund (now BlackRock US Core Fund) and substantially all of the unit holders of Tower Fund received shares of BlackRock Granite Fund. BlackRock Realty or a predecessor ("Realty"), Black Rock US Core Fund's investment manager, also managed Tower Fund from 1 January 1994, and the investment professionals with primary responsibility for the management of Tower Fund prior to 1 January 1994, became employed by Realty on such date.1 Source: Based on NFI-ODCE net returns as of 30 June 2022. 2 Source: BlackRock as of 30 June 2022. 1) 1 out of 17 funds within the NFI-ODCE benchmark over the 10-year time period (Source: NFI-ODCE)

Appendix A

BlackRock US Core Property Fund portfolio

32
Investments[1]

$3.9bn
AUM

93.3%
occupancy

21.6%
loan-to-value

Name	Property Type	Location	MSA	GMV (at contract)
Infinity LoHi	Apartment	Denver, CO	Denver	$148,200,000
85 East End Avenue	Apartment	New York, NY	New York	$122,200,000
James Court / Harrison Court	Apartment	Boston, MA	Boston	$130,400,000
Worthing Place	Apartment	Delray Beach, FL	West Palm Beach	$129,900,000
Flats at Bethesda Avenue Apartments	Apartment	Bethesda, MD	Washington D.C.	$160,900,000
7500 Sunset	Apartment	Los Angeles, CA	Los Angeles	$119,700,000
Darby Knox District	Apartment	Dallas, TX	Dallas	$167,800,000
Elan Ruby Lake	Apartment	Orlando, FL	Orlando	$153,763,684
Crossings @ 880	Industrial	Fremont, CA	Oakland	$309,200,000
Meridian Park West	Industrial	Riverside, CA	Riverside	$212,500,000
Anaheim Distribution Center	Industrial	Anaheim, CA	Santa Ana	$208,600,000
Docks Corner	Industrial	South Brunswick, NJ	New York	$188,400,000
Southwest Industrial Center	Industrial	Phoenix, AZ	Phoenix	$118,300,000
1540 Francisco Street	Industrial	Los Angeles, CA	Los Angeles	$130,700,000
Christy Street	Industrial	Fremont, CA	Oakland	$100,700,000
Fife I-5	Industrial	Fife, WA	Seattle	$58,900,000
Auburn Park 44	Industrial	Auburn, WA	Seattle	$56,000,000
Hiatus Road Industrial	Industrial	Fort Lauderdale, FL	Fort Lauderdale	$14,697,000
600 Third Avenue	Office	New York, NY	New York	$427,291,000
265 Franklin Street	Office	Boston, MA	Boston	$151,776,000
Sage Plaza	Office	Houston, TX	Houston	$143,900,000
1899 L-Street	Office	Washington, D.C.	Washington, D.C.	$91,600,000
The Lab at Platte	Office	Denver, CO	Denver	$49,800,000
Southgate Market	Retail	Chicago, IL	Chicago	$122,900,000
Lynnwood Center	Retail	Lynnwood, WA	Seattle	$54,000,000
Bradlick Shopping Center	Retail	Annandale, VA	Washington, D.C.	$50,272,860
Long Beach Promenade	Retail	Long Beach, CA	Los Angeles	$44,200,000
Studio City Place	Retail	Studio City, CA	Los Angeles	$42,102,030
Village West Center	Retail	Hemet, CA	Riverside	$40,200,000
Brentwood Place	Retail	Los Angeles, CA	Los Angeles	$40,184,670
Vintage Marketplace	Retail	Houston, TX	Houston	$37,000,000

The information provided above represents all of the current investments in the BlackRock US Core Property Fund as of 30 June 2022. 1. Includes senior mezzanine investment.

Disclosures, Risks & Important Information

BlackRock US Core Property Fund disclosure

AN INVESTMENT IN THE BLK US CORE PROPERTY FUND OR ANY OF ITS RELATED FUNDS (COLLECTIVELY REFERRED TO AS THE "FUND") IS SPECULATIVE AND INCLUDES A HIGH DEGREE OF RISK, INCLUDING THE RISK OF A TOTAL LOSS OF CAPITAL. THE FUND IS ILLIQUID, SUBJECT TO SIGNIFICANT RESTRICTIONS ON TRANSFER AND INVESTORS SHOULD BE AWARE THAT THEY MAY BE REQUIRED TO BEAR THE RISKS ASSOCIATED WITH HOLDING SUCH INVESTMENT FOR AN INDEFINITE PERIOD OF TIME. ALL INVESTORS SHOULD CAREFULLY REVIEW THE CONFIDENTIAL PRIVATE PLACEMENT MEMORANDUM AND OTHER OFFERING DOCUMENTS FOR THE FUND PRIOR TO MAKING AN INVESTMENT DECISION. ANY INVESTMENT DECISION WITH RESPECT TO THE FUND MUST BE MADE SOLELY ON THE DEFINITIVE AND FINAL VERSION OF THE FUND'S PRIVATE PLACEMENT MEMORANDUM, THE GOVERNING AGREEMENTS, SUBSCRIPTION AGREEMENTS AND OTHER ANCILLARY DOCUMENTS.

Effective December 1, 2016, BlackRock Granite Property Fund underwent a restructuring effectuated by the merger of a wholly-owned subsidiary of BlackRock US Core Property Fund, L.P. (the "Fund") with and into BlackRock Granite Property Fund, Inc. (the "REIT") pursuant to which all of REIT's common stock became owned by the Fund. The financial results of the Fund are presented as a continuation of the performance of the REIT, as its predecessor, for the period prior to December 1, 2016. The REIT (now BlackRock US Core Property Fund, Inc.) is a Maryland corporation incorporated on May 16, 2006 that has elected to be taxed, and intends to continue to qualify, as a real estate investment trust for U.S. federal income tax purposes.

These materials are neither an offer to sell nor a solicitation of any offer to buy shares in the Fund. You may not rely upon these materials in evaluating the merits of investing in the Fund. Any BlackRock funds mentioned in this material are only offered on a private placement basis and potential investors are required to inform themselves of, and to observe, any legal restrictions on their involvement in the offering. No sale of Fund interests will be made in any jurisdiction in which the offer, solicitation, or sale is not authorized or to any person to whom it is unlawful to make the offer, solicitation or sale. If any such offer of Fund interests is made, it will be made pursuant to the current relevant offering documents that contain material information not contained herein and to which prospective investors will be referred. Any decision to invest in the Fund should be made solely on reliance upon the offering documents of the Fund.

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HISTORICAL PERFORMANCE INFORMATION DEPICTED HEREIN IS NOT INDICATIVE OF FUTURE PERFORMANCE OR INVESTMENT RETURNS, AND ACTUAL EVENTS OR CONDITIONS MAY NOT BE CONSISTENT WITH, AND MAY DIFFER MATERIALLY FROM, THOSE DEPICTED. Any information provided herein relating to the Fund's performance has been provided by BlackRock and is unaudited and subject to change. BlackRock makes no representations or warranties as to the accuracy or completeness of such estimated performance figures, and further no such estimated performance figures shall be relied upon as a promise by, or representation by, BlackRock whether as to past or future performance results.

Any reference herein to any security and/or a particular issuer shall not constitute a recommendation to buy or sell, offer to buy, offer to sell, or a solicitation of an offer to buy or sell any such securities issued by such issuer.

None of the shares of the Fund has been or will be registered under the United States Securities Act of 1933, as amended, ("33 Act") and the shares of the Fund may not be offered or sold, directly or indirectly, in the United States or to any U.S. Person, as such terms are defined in the Confidential Memorandum, without an applicable exemption from registration under the 33 Act. The Fund has not been registered under the United States Investment Company Act of 1940, as amended. Neither the United States Securities and Exchange Commission, nor any state securities administration has passed on, or endorsed, the merits of the shares of the Fund. Any representation to the contrary is unlawful.

BlackRock US Core Property Fund disclosure

All information contained herein is in addition to and supplements the most recent BLK US Core Property Fund Quarterly Report. For periods before the fourth quarter of 2006, the returns presented include the performance of Tower Fund, a commingled insurance company real estate separate account with a core investment strategy. On September 30, 2006, substantially all of the assets and liabilities of Tower Fund were transferred to BlackRock Granite Property Fund (now BlackRock US Core Property Fund) and substantially all of the unit holders of Tower Fund received shares of BlackRock Granite Fund. BlackRock Realty or a predecessor ("Realty"), BlackRock US Core Property Fund's investment manager, also managed Tower Fund from January 1, 1994, and the investment professionals with primary responsibility for the management of Tower Fund prior to January 1, 1994, became employed by Realty on such date.

BlackRock US Core Property Fund risk

Risks associated with an investment in the Fund include, but are not limited to, the following: (i) the Fund's investments may generate losses or suffer losses in value, (ii) the Fund may borrow funds for purposes of leveraging its portfolio, which may magnify the effect of portfolio losses, (iii) the general real estate market has experienced and may continue to experience volatility, (iv) the Fund's investments are illiquid which may impede the Fund's ability to respond to adverse changes in performance, (v) withdrawals of interests in the Fund may be restricted, there is no secondary market for the interests in the Fund and none is expected to develop, (vi) the fees and expenses of the Fund may offset any profits of the Fund, (vii) uncontrollable factors including adverse economic conditions may impact occupancy levels and lease rates of the Fund's investments, (viii) the Fund is not subject to the same regulatory requirements as mutual funds, (ix) bankruptcy or inability of tenants to pay rent may result in losses, and (x) lack of diversification of investments outside of real estate. Investors should also be aware that as a global provider of investment management, risk management and advisory services to institutional and retail clients, BlackRock engages in a broad spectrum of activities. Although the relationships and activities of BlackRock may help offer attractive opportunities and service to the Fund, such relationships and activities create certain inherent conflicts of interest between BlackRock and the Fund and/or the Fund's investors. Prior to making any investment decisions, the applicable fiduciaries of prospective investors subject to the Employee Retirement Income Security Act of 1974, as well as other US and non-US benefit plan investors and plans subject to Section 4975 of the Internal Revenue Code of 1986, should take into account, among other considerations, whether such fiduciary has the authority to make an investment in the Funds, whether the investment may constitute a prohibited transaction or give rise to prohibited transactions (though the Fund intends to operate as a VCOC or REOC), the diversification by type of asset and the general fiduciary standards of prudence and diversification.

In addition to the above, further risks associated with instruments utilized by the Fund include, but are not limited to, the following:

i.) Uninsured Loss. There are certain types and magnitudes of losses that are not generally insured because it is not economically feasible to insure against such losses, such as losses due to riots or acts of war, or other losses that may not be insured or may be insured subject to certain limitations, including large deductibles or co-payments, such as losses due to floods or seismic activity.

ii.) Hedging and Counterparty Risk. Interest rate hedging may fail to protect or adversely affect the Fund including due to the risk of counterparty default.

iii.) Joint Venture Risks. Certain of the Fund's investments are through joint ventures with third parties. Joint venture investments involve the risks that the joint venturers might become bankrupt (in which event the Fund could remain liable for the obligations of such joint venture), that such joint venturers might at any time have economic or other business interests or goals which are inconsistent with the business interests or goals of the Fund, and that such joint venturers may be in a position to take action contrary to the Fund's instructions or requests or contrary to the Fund's policies or objectives.

iv.) Reliance on BlackRock Realty. An investor will not be able to evaluate the nature of, and the terms on which the Fund will acquire additional assets when determining whether to invest in the Fund. Determinations to invest must therefore be made primarily on the basis of an investor's appraisal of existing assets, the proposed objectives and operations of Fund, and the capabilities of BlackRock Realty.

v.) Valuation Risk. Valuations and appraisals used to determine the value of interests in the Fund may not accurately reflect the values for which assets could be sold between a willing buyer and seller as of the date for which they will be used.

vi.) REIT Status. Failure of Blackrock US Core Property Fund, Inc. (formerly BlackRock Granite Property Fund, Inc.), a wholly-owned subsidiary of the Fund, to maintain its status as a REIT would result in higher taxes and reduced cash available for limited partners in the Fund.

This disclosure is subject to the more complete summary of certain risks associated with an investment in the Fund which is included in the Fund's Confidential Private Placement Memorandum.

BlackRock US Core Property Fund disclosure

Performance comparison

A benchmark for this presentation is the National Council of Real Estate Investment Fiduciaries ("NCREIF") Property Index (the "NPI" or the "Index"). NFI-ODCE, has been taken from published sources. The NFI-ODCE Index is a capitalization-weighted, gross of fees, time-weighted return Index with an inception date of 1/1/1978. Published reports may also contain equal-weighted and net of fees information. Open-end Funds are generally defined as infinite-life vehicles consisting of multiple investors who have the ability to enter or exit the fund on a periodic basis, subject to contribution and/or redemption requests, thereby providing a degree of potential investment liquidity.

The term Diversified Core Equity style typically reflects lower risk investment strategies utilizing low leverage and generally represented by equity ownership positions in stable US operating properties. NFI-ODCE includes at least an 80% investment in various real estate property types and includes cash, leverage and other non-property related assets and liabilities, income, and expenses. The calculation methodology for the index is consistent with the fund returns shown.

The NCREIF Fund Index (NFI) Open End Diversified Core Equity (ODCE Index ("NFI-ODCE") is a capitalization weighted, gross of fees, time-weighted return Index. Published reports may also contain equal-weighted and net of fees information. Open end funds are generally defined as infinite-life vehicles consisting of multiple investors who have the ability to enter or exit the fund on a periodic basis, subject to contribution and/or redemption requests, thereby providing a degree of potential investment liquidity. The term Diversified Core Equity style typically reflects lower risk investment strategies utilizing low leverage and generally represented by equity ownership positions in stable US operating properties. NFI-ODCE Index includes at least an 80% investment in various real estate property types and includes cash, leverage and other non-property related assets and liabilities, income, and expenses.

A comparison index for this presentation is the National Council of Real Estate Investment Fiduciaries ("NCREIF") Property Index (the "Index"). The Index has been taken from published sources. The Index is based on the unleveraged performance of stabilized, income-producing US apartment, industrial, office, R&D, hotel and retail properties owned by tax-exempt entities reporting to NCREIF.

Factors that may affect the validity of a comparison of a portfolio's returns with the Index include leverage employed by the portfolio, portfolio-level income and expenses and differences between the property type and geographic composition of the portfolio and the Index. The Index excludes cash and other non-property related assets and liabilities, income and expenses.

The calculation methodology is not consistent with the presentation. Fund returns presented are calculated gross and net, i.e., before and after the deduction of asset management fees. Both gross and net returns are calculated net of financing fees, as such fees are reflected in net unrealized loss. Returns reflect the effects of third party leverage and include cash and cash equivalents and related interest income. Portfolio returns calculations are based on the fund's net asset value and time-weight the contributions and distributions going into and out of the fund. The benchmark calculation is based on operating property values, gross of leverage and time weighted cash flows (i.e., capital expenditures and partial sales) into and out of the properties during the period. Benchmark calculations do not include leverage, portfolio cash, expenses or fees.

The NCREIF Subindices are based on the unleveraged performance of stabilized, income-producing US properties owned by tax-exempt entities reporting to NCREIF. The Indices exclude cash and other non-property related assets and liabilities, income and expenses.

US Real Estate market research endnotes

The following notes should be read in conjunction with the attached document:

This is a general analysis of the real estate market prepared by BlackRock Realty Advisors, Inc. ("BRR") and is not related to any specific products or services of BRR or any affiliate. Sources for statistics and other factual data included herein are maintained by the Research Department of BRR. Such data has not been verified by BRR and we can give no assurance that it is accurate or complete. Statements contained herein that are nonfactual constitute opinions of BRR, which are subject to change. Financial projections contained herein are estimates only and are based on assumptions, including assumptions regarding future rent growth, the availability and cost of financing and changes in market capitalization rates. No assurance can be given that either the projections or the assumptions will prove to be accurate. Investment in real estate involves substantial risk of loss.

Projections and targets contained herein are estimates only and are based on assumptions, including the use and costs of third-party leverage. No assurance can be given that either the projections or the assumptions will prove to be accurate, and an investor could experience losses from investment in a BlackRock product. Projections do not reflect the deduction of any account level fees, such fees will lower actual performance results. Projected fund level returns and equity multiples are based on investment level projected returns and, unless otherwise noted, are gross before fund level expenses, management fees and performance fees borne by investors, which may be substantial.

This presentation the National Council of Real Estate Investment Fiduciaries ("NCREIF") Property Index (the "NPI" or the "Index"). The Index has been taken from published sources. The Index is based on the unleveraged performance of stabilized, income-producing U.S. apartment, industrial, office, R&D, hotel and retail properties owned by tax-exempt entities reporting to NCREIF. Factors that may affect the validity of a comparison of a portfolio's returns with the Index include leverage employed by the portfolio, portfolio-level income and expenses and differences between the property type and geographic composition of the portfolio and the Index. The Index excludes cash and other non-property related assets and liabilities, income and expenses. Factors that may affect the validity of a comparison of a portfolio's returns with the Index include leverage employed by the portfolio, portfolio-level income and expenses and differences between the property type and geographic composition of the portfolio and the Index.

The Moody's/REAL Commercial Property Price Index ("CPPI") is published by Moody's Investor Service, Inc. The CPPI is based on the repeat sales of the same assets at different points in time. See www.moodys.com for additional information regarding the calculation methodology of the CPPI.

Returns presented reflect only property operations and no portfolio-level income or expenses (or leverage). As with all investments, real estate investments involve the potential for loss and past performance is not a guarantee of future results.

The National Council of Real Estate Investment Fiduciaries ("NCREIF") Fund Index — Open-ended Diversified Core Equity (NFI-ODCE) has been taken from published sources. The NFI-ODCE Index is a capitalization-weighted, gross of fees, time-weighted return Index with an inception date of 1/1/1978. Published reports may also contain equal-weighted and net of fees information. Open-end Funds are generally defined as infinite-life vehicles consisting of multiple investors who have the ability to enter or exit the fund on a periodic basis, subject to contribution and/or redemption requests, thereby providing a degree of potential investment liquidity. The term Diversified Core Equity style typically reflects lower risk investment strategies utilizing low leverage and generally represented by equity ownership positions in stable U.S. operating properties. NFI-ODCE includes at least an 80% investment in various real estate property types and includes cash, leverage and other non-property related assets and liabilities, income, and expenses. The calculation methodology for the index is consistent with the fund returns shown.

Investment level projected returns and equity multiples are based on the corresponding business plan that BlackRock intends for each respective investment. The business plan for each investment sets forth the projected costs, hold period, net operating income and disposition proceeds for the investment and is periodically updated. Each of these factors is based upon the good faith estimates of BlackRock as of the date of this presentation. These projected returns do not necessarily reflect the performance that will ultimately be realized by the Fund's investors. Unless otherwise noted, investment level performance figures are gross before fund expenses, management fees and performance fees borne by investors, which may be substantial in the aggregate. Please contact BlackRock to see performance using any different assumptions.

Important notes

You are cautioned not to place undue reliance on any of these forward-looking statements, which reflect our views as of the date of this presentation. Our ability to predict results or the actual effect of future plans or strategies is inherently uncertain. Although we believe that the expectations reflected in such forward-looking statements are based on reasonable assumptions, our actual results and performance could differ materially from those set forth in the forward-looking statements and we cannot guarantee future results or the successful implementation of the strategies discussed in this presentation. We are under no duty to update any of the forward-looking statements after the date of this presentation to conform these statements to actual results.

Properties are valued quarterly. At least once annually the valuation will be based on an independently performed appraisal. Independently performed appraisals are made in accordance with the currently published uniform standards of professional appraisal practice and BlackRock Realty's current appraisal policies by appraisers that are independent organizations, with partners or employees who are members of the Appraisal Institute. Valuations performed by BlackRock Realty are based on the most recently prepared appraisals reflecting changes at the market and property level. For more information please refer to the Fund's offering documents.

Certain information contained herein has been obtained from published sources, agencies of the U.S. government and from third-parties, including without limitation, market forecasts, market research, publicly available information and industry publications. In addition, certain information contained herein has been obtained from companies in which investments have been made by entities affiliated with BlackRock. Although such information is believed to be reliable for the purposes used herein, none of the Fund or BlackRock assumes any responsibility for the accuracy or completeness of such information. Similarly, forecasts or market research, while believed to be reliable, have not been independently verified and none of the Fund or BlackRock makes any representation as to the accuracy or completeness of such information. All information is provided on an "AS IS" basis only. By using this information, the Reader agrees that BlackRock shall not have any liability for the accuracy of the information contained herein, for delays or omissions therein, or for any results based on your use of the information which are not consistent with your objectives. WITHOUT LIMITING THE FOREGOING DISCLAIMERS, THE INFORMATION PROVIDED HEREIN IS NOT GUARANTEED TO BE ACCURATE OR COMPLETE, NOR DOES BLACKROCK TAKE RESPONSIBILITY FOR IT. THE INFORMATION CONTAINED HEREIN HAS NOT BEEN AUDITED AND BLACKROCK DOES NOT GUARANTEE ITS SUITABILITY FOR ANY PURPOSE. ALL INFORMATION IS SUBJECT TO CHANGE AND/OR WITHDRAWAL AT ANY TIME WITHOUT NOTICE. Certain information included herein may refer to published indices. Indices that purport to present performance of certain markets or the performance of certain asset classes or asset managers may actually present performance that materially differs from the overall performance of such markets, asset classes or asset managers due to issues of selection and survivorship bias.

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UBS Realty Investors, LLC

Mandate: **Core Real Estate Separate Account** **Hired: 1997**

Firm Information

UBS Asset Management, Real Estate & Private Markets, Real Estate US provides a comprehensive range of real estate investment advisory services in a variety of direct investment structures and commingled vehicles. The firm operates through its primary legal entity, UBS Realty Investors LLC (UBS Realty) and is headquartered in Hartford, CT.

UBS Realty is organized as a limited liability company, and is an indirect, wholly owned subsidiary of UBS AG. UBS Realty is part of UBS Asset Management, one of UBS AG's four business divisions.

Key Executives:
Jeffrey Maguire, Senior Portfolio Manager
Peter Gilbertie, Portfolio Manager
Tomas O'Shea, Head of Portfolio and Client Service Unit

Investment Approach

UBS Realty takes a team-oriented approach in which portfolio managers are responsible for the execution of the portfolio strategy within the investment guidelines for the portfolio and the performance of their respective portfolios. The acquisition process utilizes a "top down and bottom up" approach. The Real Estate Research - US team identifies markets that are expected, from a macroeconomic perspective, to provide attractive risk/reward pricing. With this direction from research, UBS Realty's investment acquisition professionals search for specific real estate assets that meet the portfolio's investment criteria.

Benchmark: NFI-ODCE Index

Total ARMB Mandate

Assets Under Management:
6/30/22: $691,051,604

Concerns: None

6/30/2022 Performance

	Last Quarter	1-Year	3-Years Annualized	6-Years Annualized	24.25-Years Annualized
Manager Gross	4.05%	30.28%	15.94%	12.18%	10.58%
Fee	.10%	.51%	.48%	.50%	.65%
Manager Net	3.95%	29.77%	15.46%	11.68%	9.93%
Benchmark	4.54%	28.31%	11.66%	9.10%	8.21%

UBS

Real Estate US

UBS Realty Investors LLC/ARMB Separate Account

Alaska Retirement Management Board Presentation

Jeffrey G. Maguire, Lead Portfolio Manager
Thomas J. O'Shea, Head of Portfolio and Client Services Unit
Peter J. Gilbertie, Manager Portfolio Operations

September 15, 2022

Section 1	**Introduction**	2
Section 2	**Market Overview**	4
Section 3	**ARMB Separate Account**	9
Section 4	**Appendix**	27

Section 1

Introduction

ARMB Separate Account Portfolio team

Jeffrey Maguire, CFA
Managing Director

Lead Portfolio Manager

24 years with UBS

- Jeff Maguire is a Lead Portfolio Manager for Real Estate US, a business which forms part of Real Estate & Private Markets within UBS Asset Management. He is a member of the Investment Committee, the Strategy Team and chairs the Performance Measurement and Reporting Committee.
- Before joining the company's predecessor organization in 1997, Jeff served as Senior Investment Officer - Real Estate for the Massachusetts Pension Reserves Investment Board (PRIM), where he managed its core and non-core real estate portfolios.
- Prior to his public service with PRIM, Jeff worked for Travelers Realty Investment Company, managing real estate equity and debt portfolios and restructuring debt transactions.
- Jeff is a member of the board of the National Multi Housing Council and a former board member of the Pension Real Estate Association (PREA). He is admitted to practice law in Connecticut. Jeff is a member of the CFA Institute.
- Education: University of Connecticut, BS; Yale University, JD; Wharton, MBA

Peter Gilbertie
Executive Director

Manager Portfolio Operations

25 years with UBS

- Pete Gilbertie has served since 2005 on the portfolio management team for several individual accounts for Real Estate US, a business which forms part of Real Estate & Private Markets within UBS Asset Management.
- Pete was previously responsible for the review of independent appraisals and internal valuations across the company's portfolio. He also provided technical and underwriting support to the Portfolio Management, Acquisitions, Sales and Asset Management areas.
- He is a former Connecticut State Certified General Real Estate Appraiser and has been qualified as an expert witness in both the Connecticut Superior and Federal Bankruptcy Courts on matters of real property valuation
- Education: University of Connecticut, BS

Thomas O'Shea
Managing Director

Head of Portfolio & Client Services

18 years with UBS

- Tom O'Shea is the Head of the Portfolio and Client Services team for US Real Estate, a business which forms part of Real Estate & Private Markets (REPM) within UBS Asset Management. Tom and his team are responsible for developing and maintaining investment relationships with REPM clients and consultants worldwide. Tom is a member of the Management Committee for the US real estate business.
- Prior to becoming head of the Portfolio and Client Services team, Tom was the General Counsel for the Real Estate business for UBS Asset Management.
- Tom is a member of the Connecticut and American Bar Associations and he is admitted to practice law in Connecticut. Tom is also involved in and served on the Board of Directors of the Association of Foreign Investors in Real Estate (AFIRE) and has been involved in the National Association of Real Estate Investment Managers (NAREIM), the Pension Real Estate Association (PREA) and the Real Estate Finance Association (REFA).
- Tom holds the Series 7, 24 and 66 licenses with the Financial Industry Regulatory Authority (FINRA).
- Education: University of Hartford, BS; University of Connecticut, MBA; Georgetown University Law Center, JD

UBS Realty Investors and ARMB history

1978	Aetna Life Insurance Company began managing real estate assets for pension funds
1980	ARMB predecessor invested USD 15 million in Trumbull Property Fund (TPF, then called RESA)
1982	Institutional client separate accounts added
1996	Business Unit was sold by Aetna Life Insurance Company to management and named Allegis Realty Investors LLC
1998	First ARMB Separate Account investment; initial allocation of $100 million increased to $305 million by 2001
1999	Allegis acquired by UBS Global Asset Management and named UBS Realty Investors LLC
2003	Takeover of PMRealty Separate Account, three assets incorporated into ARMB Separate Account (Westford Valley Marketplace, Winston Park Shopping Center and Winton Industrial Park)
2004	ARMB Farmland Separate Account mandate, initial allocation of $125 million increased to $756 million by 2022
2014	Takeover of Cornerstone Separate Account asset (330 North Brand Boulevard)
2020	Takeover of LaSalle Separate Account asset (Virginia Square), increasing allocation to ARMB Separate Account to $448 million
2022	40th Anniversary of UBS Realty managing separate accounts
2022	ARMB Separate Account produces a 9.82% annualized *net* total return since 1998 inception

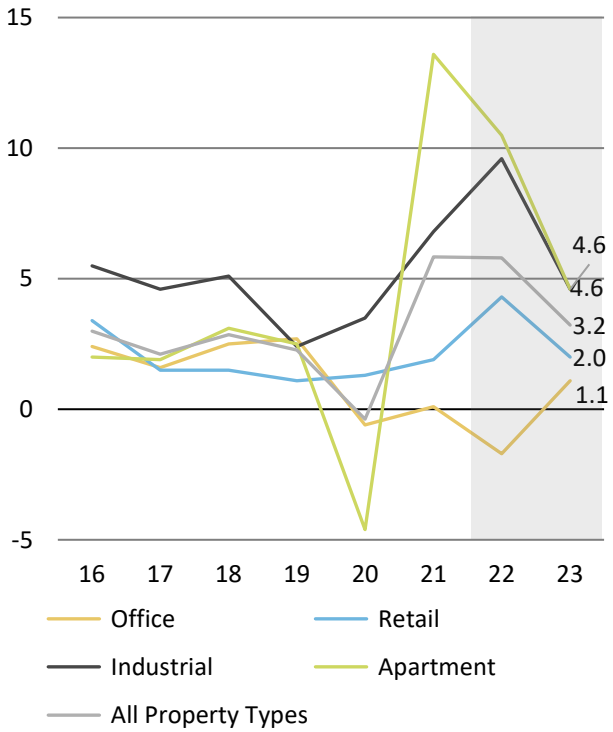
Notes: Returns are net of fees as of June 30, 2022.

Section 2

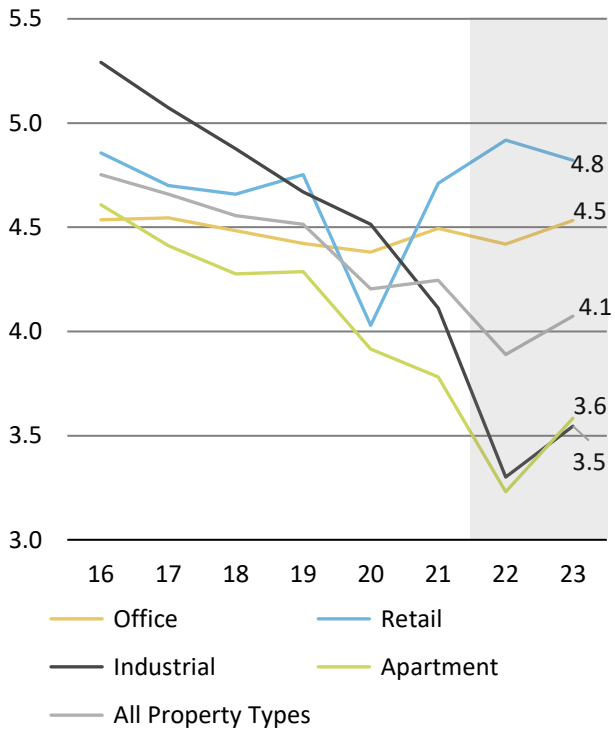
Market Overview

US National Forecast

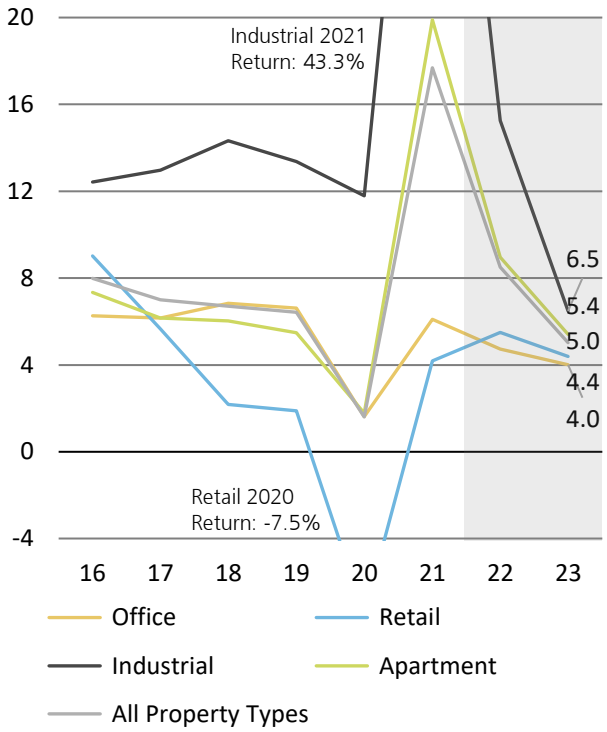
Rent growth (%)



Cap rates (%)



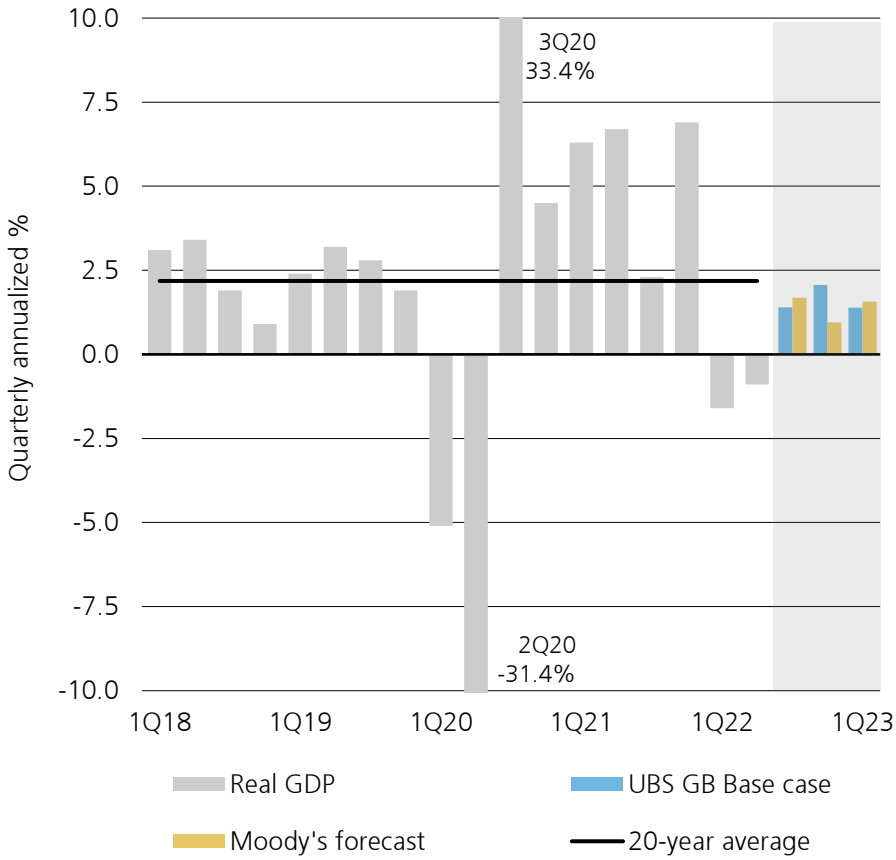
Total returns (%)



Source: Oxford Economics cap rate and total return forecasts as of August 2022. CBRE rent growth forecasts as of June 2022. Historical total return data shows unlevered NCREIF Property Index.

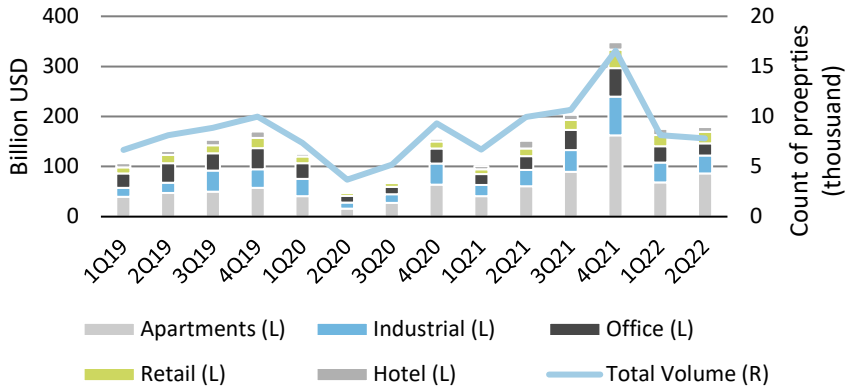
State of the economy and real estate

US GDP growth



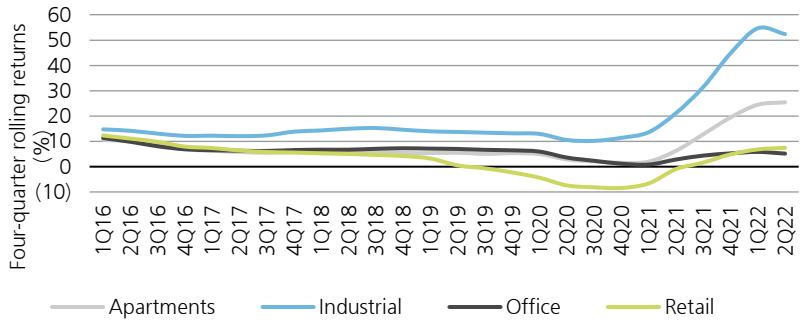
Source: Moody's Analytics GDP History as of July 28, 2022. Shaded area indicates forecast data. Moody's forecast as of August 8, 2022. UBS IB forecast as of August 23,2022.

All commercial and multi-family individual asset and portfolio sales



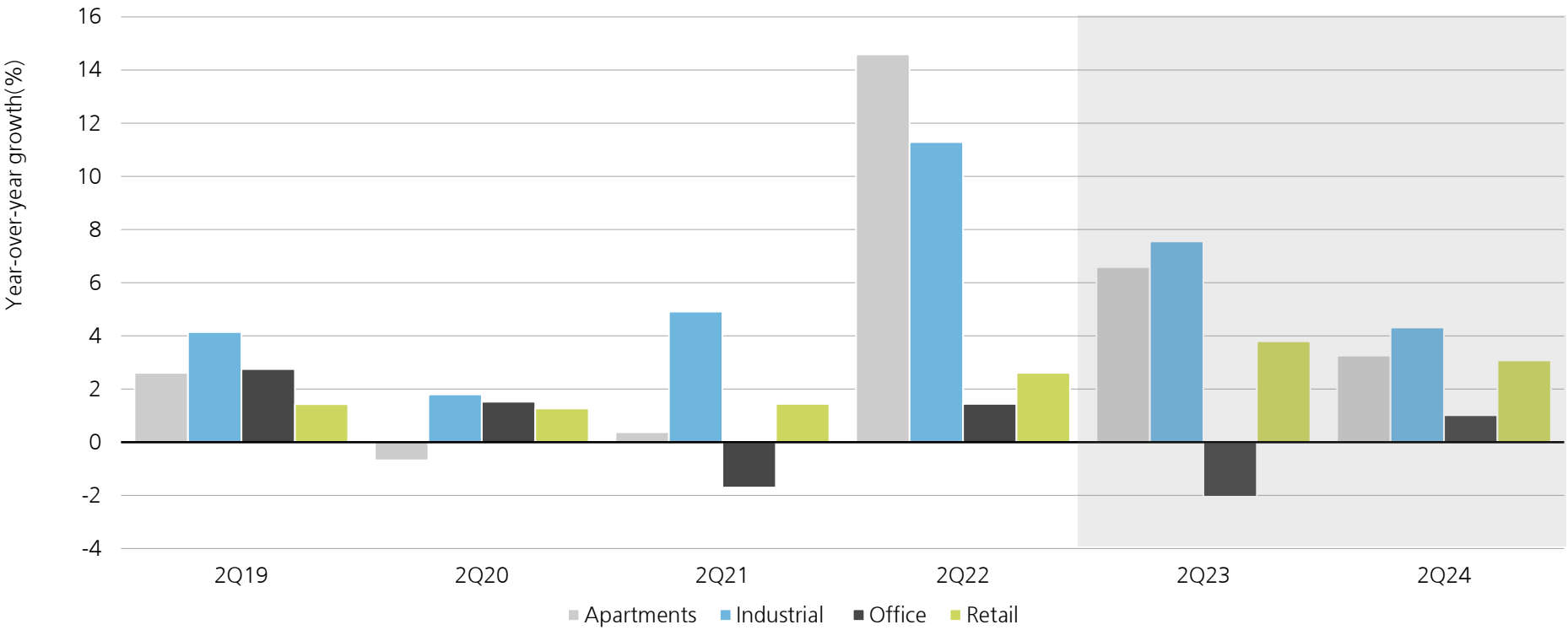
Source: Real Capital Analytics as of June 2022. Data include entity-level transactions.

ODCE total return by property type



Source: NFI-ODCE Performance Attribution June 2022 Preliminary Property Detail Report. Past performance is not indicative of future results.

Property sector rent growth



Source: CBRE-Econometric Advisors June 2022. Retail data represents neighborhood, community and strip centers (NCS). Shaded area indicates forecast

Section 3

ARMB Separate Account

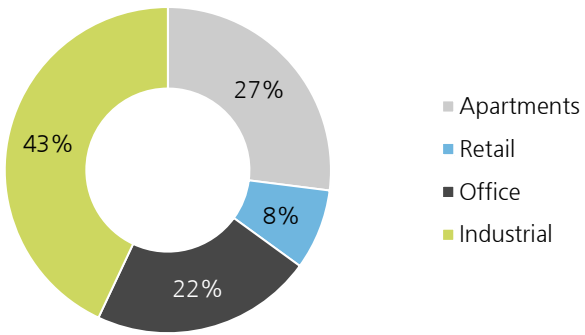
ARMB Separate Account - summary

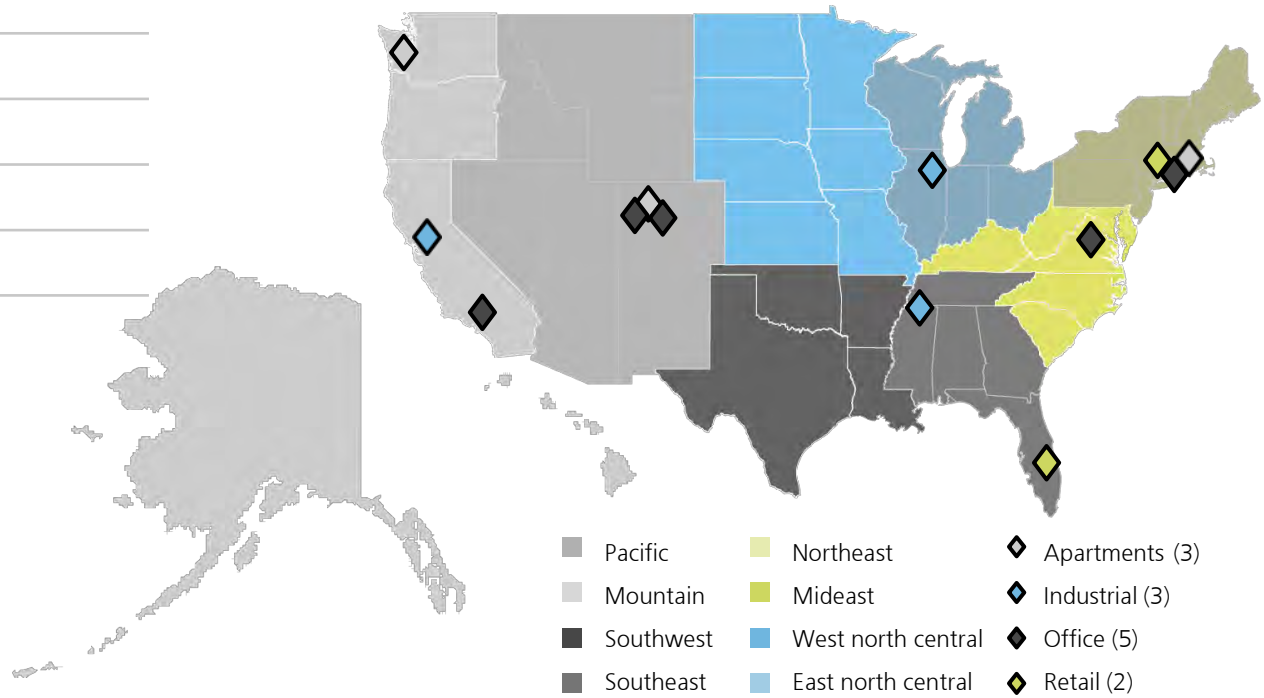
Return objective: Separate account net total return to exceed ODCE net total return.

Risk appetite: Low

Strategy:	Core separate account
Investment authority:	Discretion "within a box"
First investment:	May 29, 1998
Number of investments*:	13 (August 15)
Total assets*:	USD 909 million
Leverage*:	17.4%
Net return since inception:	9.82%

	Annualized total returns (both net of fees) since 2Q1998
ARMB	9.82%
NFI-ODCE	8.12%





Notes: Investment count and estimated total assets, property type diversification, and leverage as of August 15, 2022. Other data as of June 30, 2022*.

ARMB Separate Account - performance

June 30, 2022

	Quarter	One year	Five years	Since Inception
Net investment income (%)	1.09	5.09	4.88	6.50
Net realized/unrealized gain (loss) (%)	2.95	24.29	7.54	3.78
Total(%)	4.05	30.27	12.69	10.48
Total, net of management fee (%)	3.95	29.77	12.20	9.82
CPI (%)	3.06	9.06	3.88	2.52
Net Real Return (%)	0.89	20.71	8.32	7.30

West 55th Street
McCook, IL

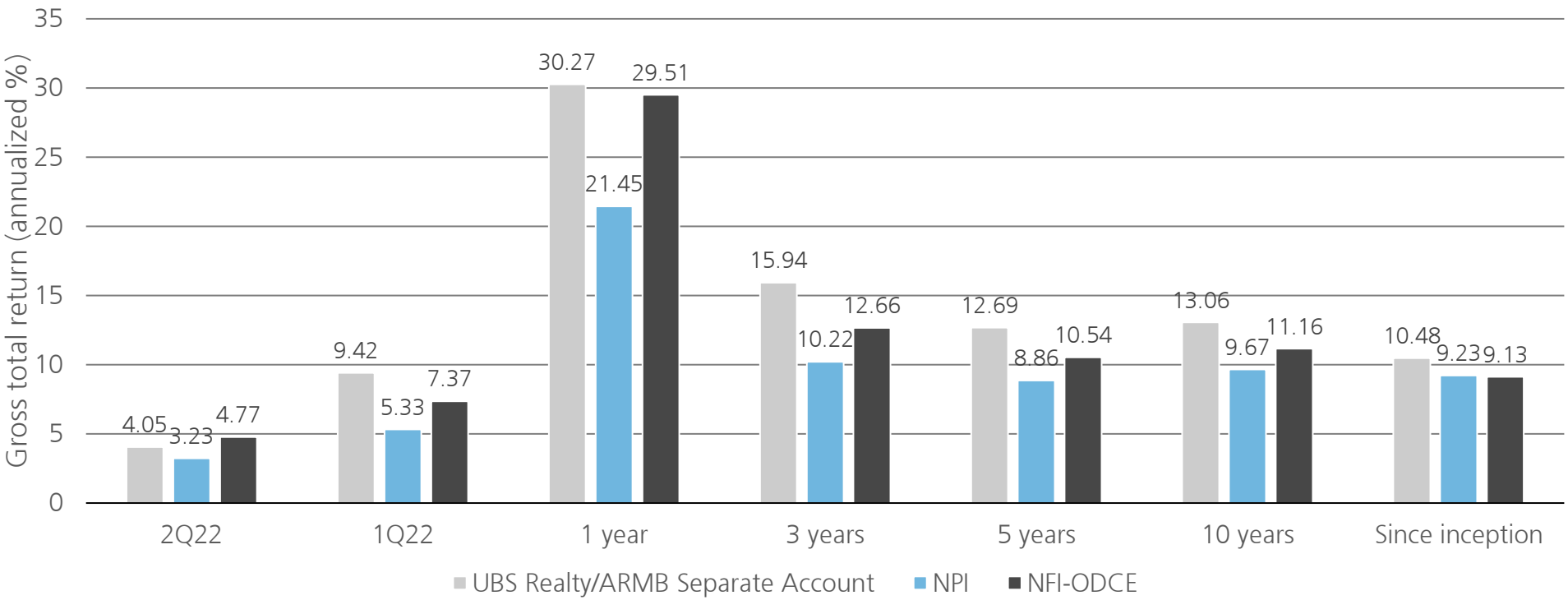
Remington at Lone Tree
Lonetree, CO

Westford Valley Marketplace
Westford, MA

Notes: Rates of return are dollar-weighted and time-weighted, include fund level cash and include reinvestment of income. Past performance is not indicative of future results. Inception date is May 29, 1998.

ARMB Separate Account - NPI and NFI-ODCE Index

Long term gross return outperformance



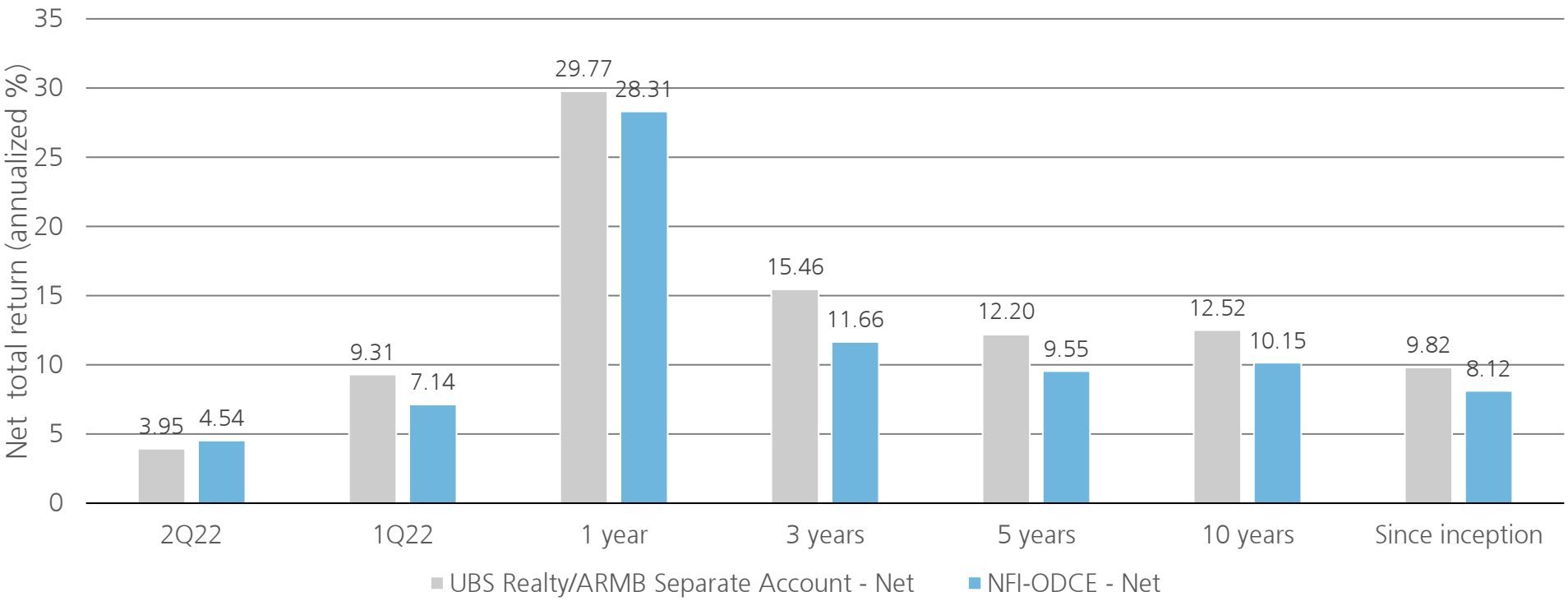
ARMB Separate Account has produced long term outperformance of both NPI and NFI-ODCE as shown above.

Notes: ARMB Separate Account total returns are before management fees. ARMB Separate Account total returns for the quarter, prior quarter, one-, three-, five-, 10-year and since inception periods after the deduction of management fees through 6/30/22 were 3.95%, 9.31%, 29.77%, 15.46%, 12.20%, 12.52% and 9.82%, respectively. Additional information on fees is available upon request. Please see Required Notes page for description of NPI and NFI-ODCE ("ODCE") indices. Past performance is not indicative of future results and the possibility of loss does exist. Data is as of June 30, 2022.

UBS

ARMB Separate Account - Net Returns

Long term outperformance on a net of fees basis

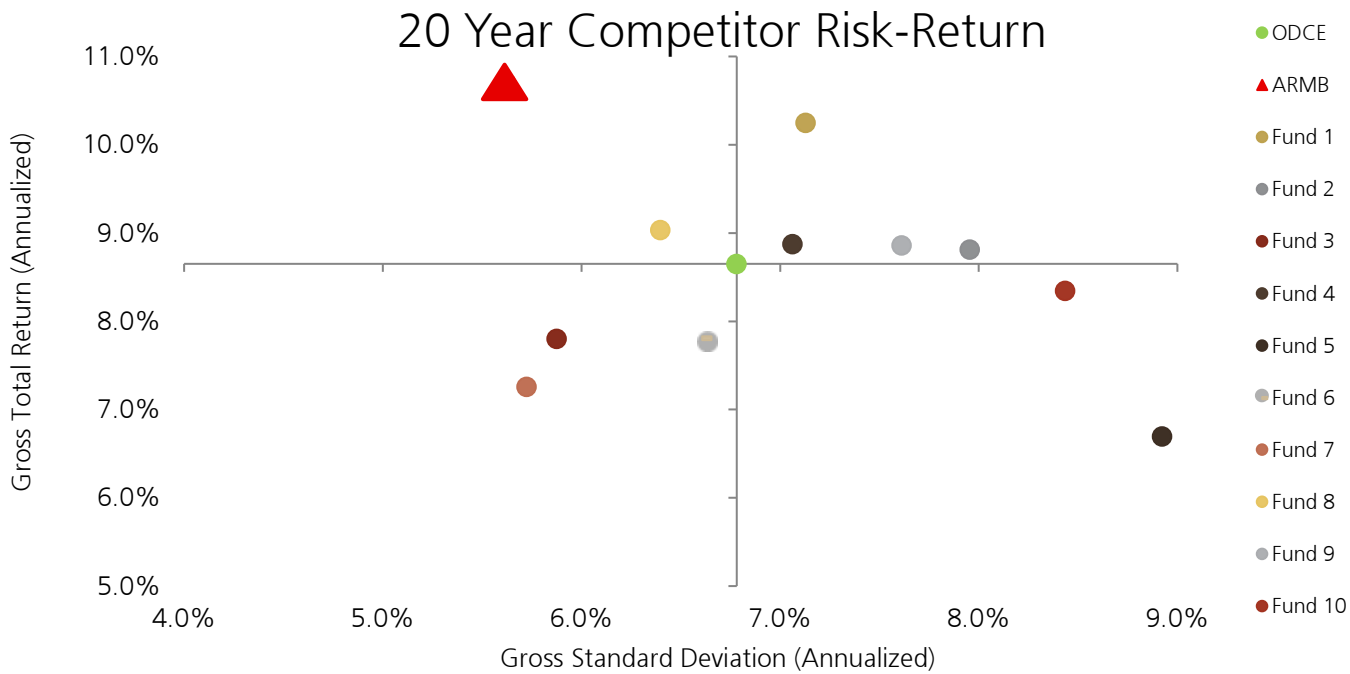


Notes: Please see Required Notes page for description of NPI and NFI-ODCE indices. Past performance is not indicative of future results and the possibility of loss does exist.
Data is as of June 30, 2022.

UBS

ARMB Separate Account Risk-Return Profile

Superior returns with lower risk over a long time period



- Separate Account gross total return during the last twenty years has exceeded that of each of the ten ODCE funds that have been included in the index during that period.
- Separate Account variability of gross total return (Standard Deviation) has been lower than the ten ODCE funds in the index for the prior twenty years.

UBS Realty/ARMB Separate Account Risk Characteristics

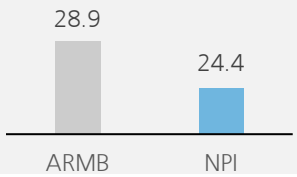
Measure	Definition	20 year value
Sharpe Ratio	Measures return per unit of risk	1.68
Std. Deviation	Annualized standard deviation measures the variability of fund returns	5.66

Source: UBS Asset Management and NCREIF
Notes: Data provided through competitor-shared data exchange universe available consistently throughout funds in the NFI-ODCE each time period. Total returns are annualized and are reported gross of management fees. Please see Required Notes pages for more information. Past performance is not indicative of future results and the possibility of loss does exist. Data is as of March 31, 2022.

UBS

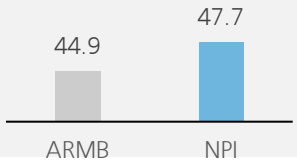
ARMB property type attribution - one year

Apartments



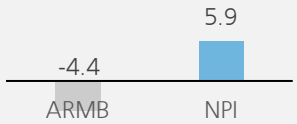
- Outperformance at Springbrook Apartments (Renton, WA) and Remington at Lone Tree (Lone Tree, CO)

Industrial



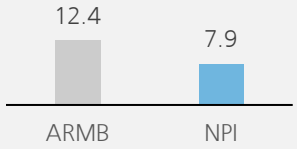
- Outperformance at Memphis Industrial Park (Memphis, TN), slight underperformance at Winton Industrial (Hayward, CA) and West 55th Street (McCook, IL)

Office



- Underperformance at One and Two Maroon Circle (Englewood, CO) and 400 Crown Colony Drive (Quincy, MA)

Retail

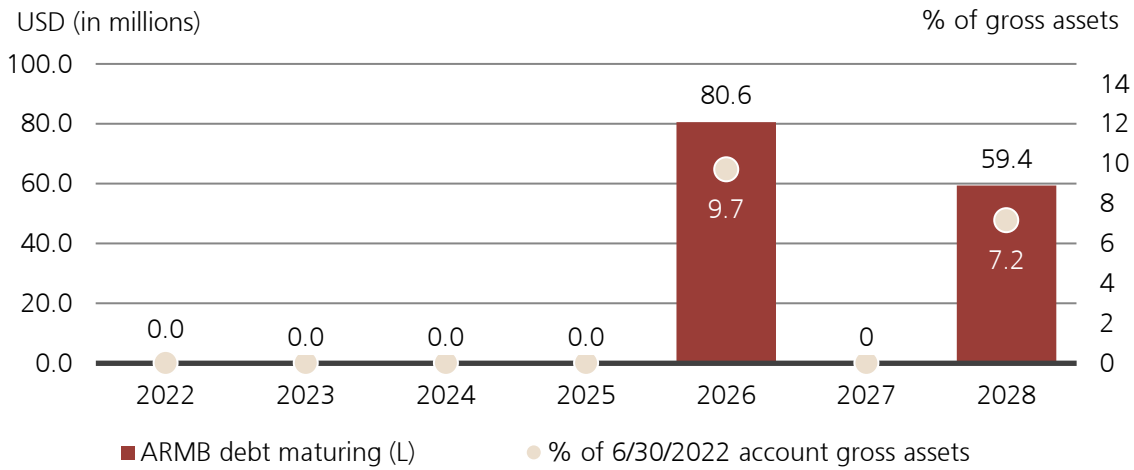


- Outperformance at Westford Valley Marketplace (Westford, MA) and Winston Park Center (Coconut Creek, FL)

Data as of June 30, 2022. Source: NCREIF. Returns reflect total, unleveraged property level returns.

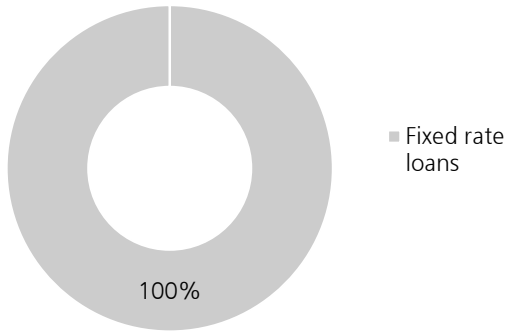
ARMB leverage detail

No near term debt maturities



Debt composition

At 6/30/22



ARMB Separate Account debt status:

- Entirely fixed rate, non-recourse debt – no ARMB liability
- Weighted average annual interest rate of 2.12%
- Highly advantageous prepayment flexibility
- ARMB Separate Account loan to value ratio approximately 15.5% following August 5 BLVD acquisition

Winton Industrial
Hayward, CA

Remington at Lone Tree
Lonetree, CO

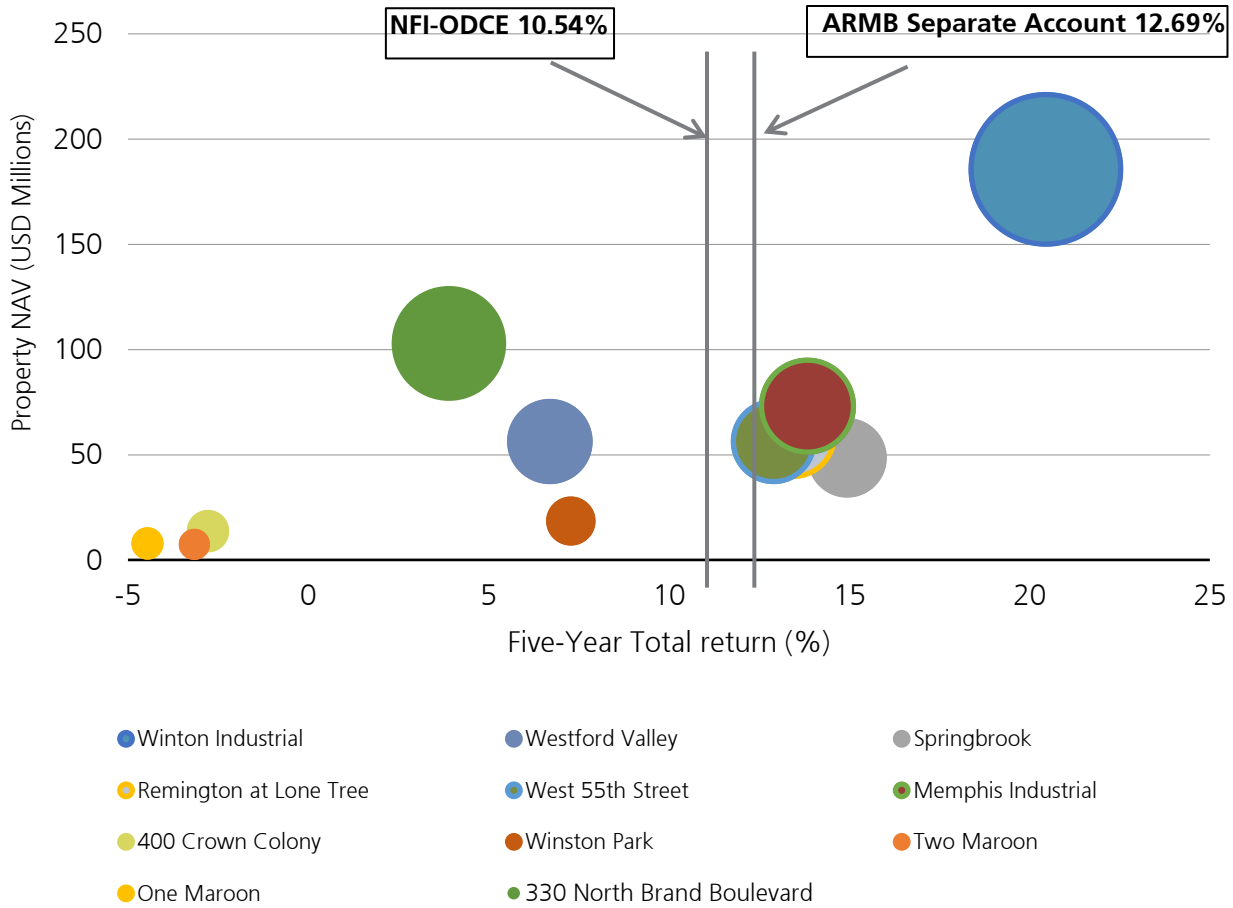
Springbrook Apartments
Renton, WA

Data as of June 30, 2022. Source: UBS Asset Management, Real Estate & Private Markets (REPM).

Five-year gross total returns

As of June 30, 2022

Bubble size = Property NAV (USD millions)



Annualized Net Returns

ARMB Separate Account	12.20%
NFI-ODCE	9.55%

Notes: Unlevered property-level total returns. Please see Required Notes page for description of NFI-ODCE Index. Five-year performance not available for Virginia Square. Past performance is not indicative of future results and the possibility of loss does exist. Data as of June 30, 2020.

UBS

Growth in Net Operating Income (NOI)

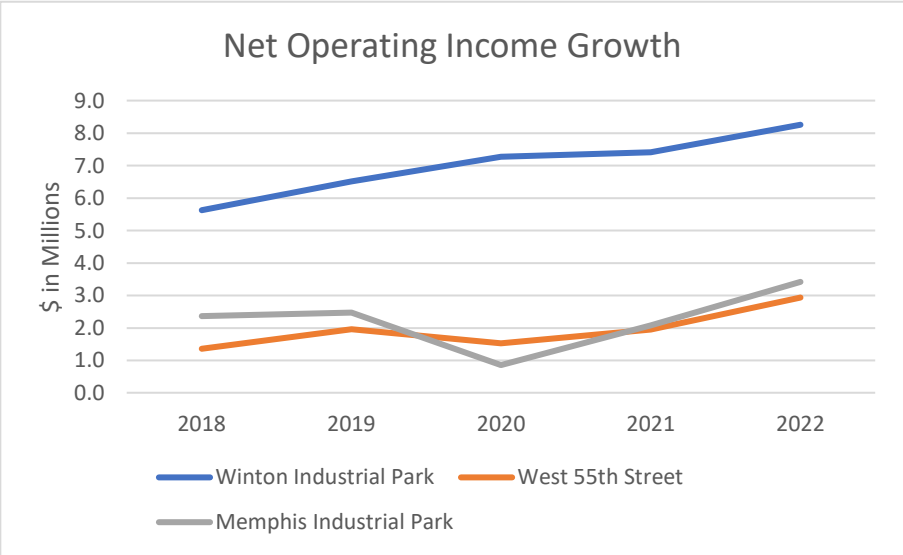
Industrial and apartment

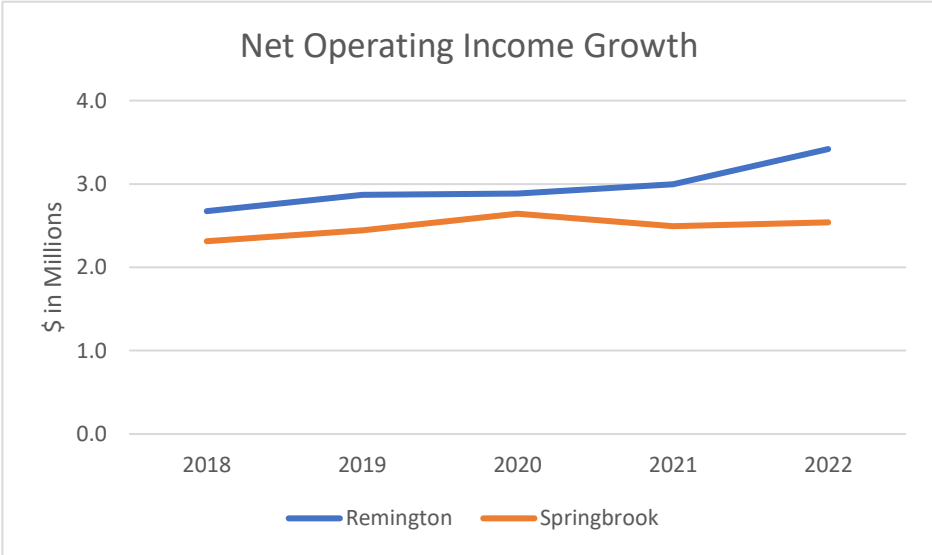
Industrial Properties

- NOI increased 27.7% from FY2021 to FY2022.
- NOI increased at an average annual rate of 11.8% from FY2018 to FY2022.

Apartment Properties

- NOI increased 8.5% from FY2021 to FY2022.
- NOI increased at an average annual rate of 4.5% from FY2018 to FY2022.





Data as of June 30, 2022. Source: UBS Asset Management, Real Estate & Private Markets (REPM).

Growth in Net Operating Income

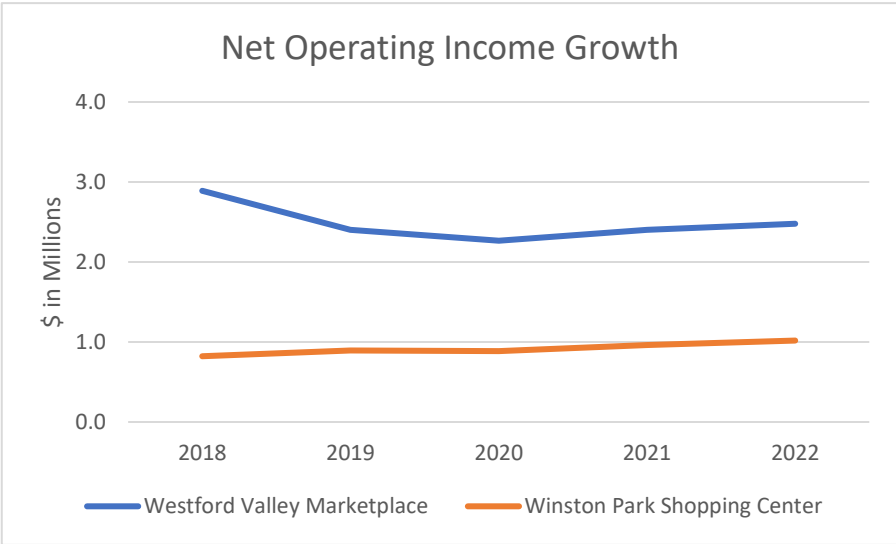
Retail and office

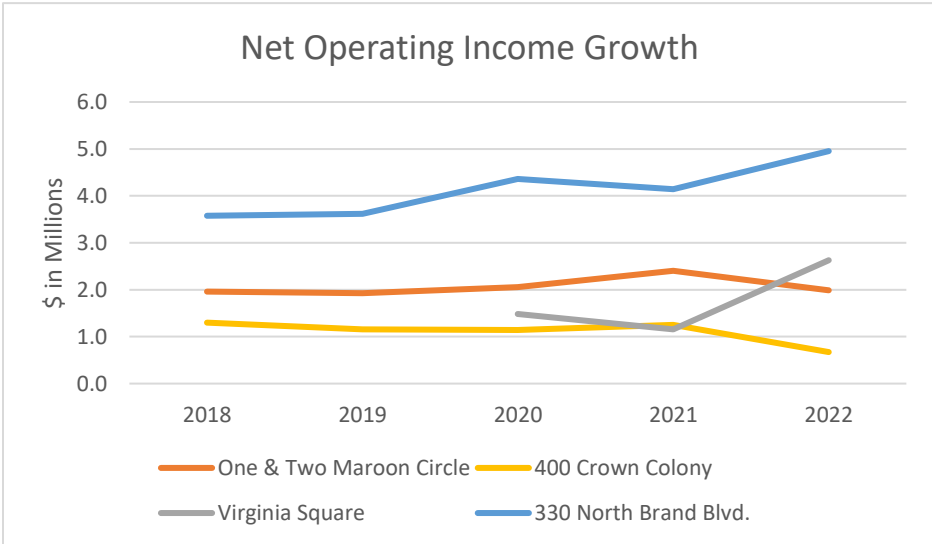
Retail Properties

- NOI increased 3.9% from FY2021 to FY2022.
- Average annual NOI change of (1.5)% from FY2018 to FY2022.

Office Properties

- NOI increased 14.4% from FY2021 to FY2022 including Virginia Square.
- Excluding Virginia Square, NOI declined 2.3% from FY2021 to FY2022.
- NOI increased at an average annual rate of 2.7% from FY2018 to FY2022, excluding Virginia Square.





Data as of June 30, 2022. Source: UBS Asset Management, Real Estate & Private Markets (REPM).

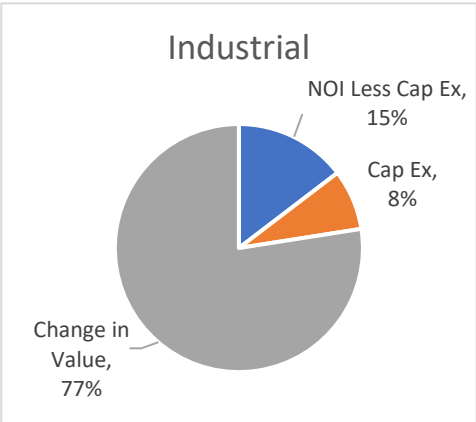
ARMB Separate Account - the last five years

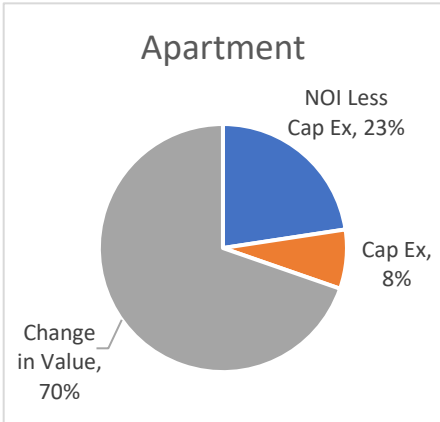
Comings and goings - the dollars

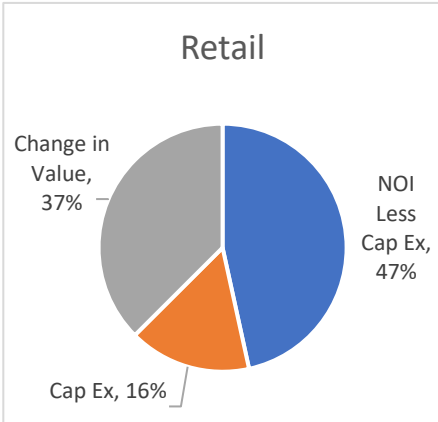
FY 2018 through FY 2022

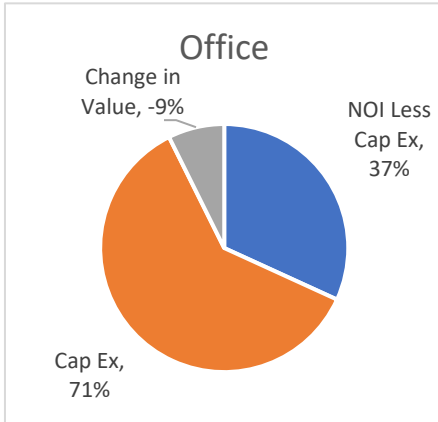
Aggregate NOI	$142.1 million	→	Aggregate Cap Ex	$54.2 million
Aggregate change in Property Values	$266.7 million			
Total	$408.8 million			

- Industrial and Apartment have required relatively less Cap Ex
- Retail NOI has been steady, and has supported positive value changes
- Office has required significant Cap Ex, a trend likely to continue









Data as of June 30, 2022. Source: UBS Asset Management, Real Estate & Private Markets (REPM).

ARMB Separate Account FY 2023 plan

- USD 35.7 million budgeted net operating income (2.2% increase)
  - NOI increases at the Account's industrial, apartment and retail properties along with the lease termination fee at Two Maroon Circle mitigated, in part, by NOI declines at the Account's office properties
- Base building capital and unit interior upgrades at Remington at Lone Tree and Springbrook Apartments
- Reinvestment for leasing transactions at:
  - 330 North Brand Boulevard
  - Virginia Square
  - 400 Crown Colony Drive, if not sold
- Assess pace of recovery in transactions market and explore sales of One and Two Maroon Circle, 400 Crown Colony Drive; assess viability and timing of Virginia Square sale process (subject to additional leasing)

ARMB Separate Account properties

As of June 30, 2022

Property		Property type	Net rent sqft/units	Cost (USD)	Market value (USD)	Percent leased
One Maroon Circle	Englewood, CA	O	86,906	20,421	7,900	52
Remington at Lone Tree	Lone Tree, CO	A	232 units	30,025	88,400	99
Memphis Industrial Park	Memphis, TN	I	900,000	43,089	73,100	100
Two Maroon Circle	Englewood, CO	O	85,681	17,291	7,400	100
Springbrook Apartments	Renton, WA	A	160 units	22,820	73,700	95
West 55th Street	McCook, Il	I	367,870	27,101	56,300	100
Winston Park Shopping Center (1)	Coconut Creek, FL	R	67,787	12,406	18,500	100
Westford Valley Marketplace (1)	Westford, MA	R	142,763	33,433	56,300	86
Winton Industrial Park (1)	Hayward, CA	I	825,808	56,834	261,000	100
400 Crown Colony Drive	Quincy, MA	O	118,909	29,639	13,800	44
330 North Brand Boulevard (2)	Glendale, CA	O	345,990	101,437	103,000	81
Virginia Square (3)	Arlington, VA	O	159,452	68,508	61,600	69
Total				463,004	821,000	92 % (4)
	BLVD Apartments acquired August 5, 2022			80,000	80,000	

Notes:
(1) Property originally acquired by PMRealty; transferred to ARMB Separate Account effective October 1, 2003 based upon September 30, 2003 independent appraisal value.
(2) Property originally acquired by Cornerstone; transferred to ARMB Separate Account effective October 1, 2014 based upon September 30, 2014 independent appraisal value.
(3) Property originally acquired by LaSalle; transferred to ARMB Separate Account effective January 1, 2020 based upon internal valuation prepared by prior advisor.
(4) The percentage leased is weighted by market value.

UBS

ARMB Separate Account - industrial properties

Winton Industrial
Hayward, CA

- Well-leased, multi-tenant properties
- Geographic diversity
- Rents have risen, driving NOI growth
- Cap rates have fallen, driving appreciation return

West 55th Street
McCook, IL

Memphis Industrial Park
Memphis, TN

UBS

ARMB Separate Account – apartment properties

Remington at Lone Tree
Lonetree, CO

Springbrook Apartments
Renton, WA

BLVD at Revere Beach
Revere, MA

- Well-leased, well-located institutional-quality properties in major Metros
- Following lull during initial stage of COVID-19 pandemic, rents have risen significantly
- BLVD, acquired August 2022, is a new core property with mass transit access and amenities suited for work-from-home tenants (either hybrid or full-time)

ARMB Separate Account - retail properties

Westford Valley Marketplace
Westford, MA

Winston Park Shopping Center
Coconut Creek, FL

- Well-located retail centers anchored by dominant grocer tenants
- Winston Park only mildly affected by the Covid-19 pandemic
- Westford Valley leasing momentum has been very positive during emergence from pandemic

ARMB Separate Account – office properties

330 North Brand Boulevard
Glendale, CA

Virginia Square
Arlington, VA

One Maroon Circle
Englewood, CO

400 Crown Colony Drive
Quincy, MA

Two Maroon Circle
Englewood, CO

- Work from home and hybrid work schedules are leading to employers downsizing their leased spaces
- Employer's desire to attract employees to come to office have increased need for amenity and building upgrade Cap Ex

Section 4

Appendix

Jeffrey G. Maguire, CFA

Senior Portfolio Manager
Managing Director

Years of investment industry experience: 39

Education: University of Connecticut (US), BA; Wharton School, University of Pennsylvania (US), MBA; Yale Law School (US), JD

Jeff Maguire is a Senior Portfolio Manager for Real Estate US, a business which forms part of Real Estate & Private Markets within UBS Asset Management. He is a member of the Investment Committee, the Strategy Team and chairs the Performance Measurement and Reporting Committee.

Before joining the company's predecessor organization in 1997, Jeff served as Senior Investment Officer - Real Estate for the Massachusetts Pension Reserves Investment Board (PRIM), where he managed its core and non-core real estate portfolios.

Prior to his public service with PRIM, Jeff worked for Travelers Realty Investment Company, managing real estate equity and debt portfolios and restructuring debt transactions. He also managed the company's three largest borrower relationships in the New England region.

Jeff is a member of the board of the National Multi Housing Council and a former board member of the Pension Real Estate Association (PREA). He is admitted to practice law in Connecticut. Jeff is a member of the CFA Institute.

Note: As at March 2022

Thomas J. O'Shea

Head of Portfolio and Client Services Unit
Managing Director

Years of investment industry experience: 30

Education: University of Hartford (US), BS; University of Connecticut (US), MBA; Georgetown University Law Center (US), JD

Tom O'Shea is the Head of the Portfolio and Client Services team for US Real Estate, a business which forms part of Real Estate & Private Markets (REPM) within UBS Asset Management. Tom and his team are responsible for developing and maintaining investment relationships with REPM clients and consultants worldwide. These responsibilities include client servicing and marketing of Global Real Estate investment products and capabilities to pension funds, defined contribution plans, endowments/foundations, and other investors, and their consultants. Tom is a member of the Management Committee for the US real estate business.

Prior to becoming head of the Portfolio and Client Services team, Tom was the General Counsel for the Real Estate business for UBS Asset Management.

Prior to joining UBS in April 2004, Tom was a Partner in the Real Estate Group of Bingham McCutchen LLP, where he was active in all aspects of real estate law with an emphasis on representing financial institutions in various debt and equity investment matters.

Tom is a member of the Connecticut and American Bar Associations and he is admitted to practice law in Connecticut. Tom is also involved in and served on the Board of Directors of the Association of Foreign Investors in Real Estate (AFIRE) and has been involved in the National Association of Real Estate Investment Managers (NAREIM), the Pension Real Estate Association (PREA) and the Real Estate Finance Association (REFA).

Tom holds the Series 7, 24 and 66 licenses with the Financial Industry Regulatory Authority (FINRA).

Note: As at March 2022

Peter J. Gilbertie

Portfolio Manager
Executive Director

Years of investment industry experience: 35

Education: University of Connecticut (US), BS

Since 2005, Pete Gilbertie has served as portfolio manager for a commingled closed-end fund and several individual accounts for Real Estate US, a business which forms part of Real Estate & Private Markets within UBS Asset Management.

Pete was previously responsible for the review of independent appraisals and internal valuations across the company's portfolio. He also provided technical and underwriting support to the Portfolio Management, Acquisitions, Sales and Asset Management areas.

Prior to joining the firm's predecessor organization in 1997, Pete spent nine years as a real estate analyst and appraiser, including eight years with New England's largest commercial appraisal firm, Edward F. Heberger & Associates, where he held the position of Senior Appraiser.

He is a former Connecticut State Certified General Real Estate Appraiser and has been qualified as an expert witness in both the Connecticut Superior and Federal Bankruptcy Courts on matters of real property valuation.

Note: As at March 2022

General risk disclosure

Certain sections of this presentation that relate to future prospects are forward-looking statements and are subject to certain risks and uncertainties that could cause actual results to differ materially. This material is designed to support an in-person presentation, is not intended to be read in isolation, and does not provide a full explanation of all the topics that are presented and discussed.

An investment in real estate will involve significant risks and there are no assurances against loss of principal resulting from real estate investments or that the portfolio's objectives will be attained.

This is not a recommendation. Investors must have the sophistication to independently evaluate investment risks and to exercise independent judgment in deciding to invest in real estate funds. Investors must also have the financial ability and willingness to accept and bear the risks, including, among other things:

- **Risk of illiquidity.** Real estate is an illiquid investment and the account may not be able to generate sufficient cash to meet withdrawal requests from investors. Redemptions may be delayed indefinitely;
- **Risks of investing in real estate.** These risks include adverse changes in economic conditions (local, national, international), occupancy levels and in environmental, zoning, and other governmental laws, regulations, and policies;
- **Use of leverage.** Leverage will increase the exposure of the real estate assets to adverse economic factors, such as rising interest rates, economic downturns, or deteriorations in the condition of the properties or their respective markets and changes in interest rates; and.
- **Limitations on the transfer of fund units.** There is no public market for interests in any of our funds and no such market is expected to develop in the future.
- **Legal & Taxation.** Investors should consult their own legal and tax advisers for potential US and/or local country legal or tax implications on any investment.

Investors should evaluate all risk and uncertainties before making any investment decision. Risks are detailed in the respective fund's offering memorandum.

Required notes

The NCREIF Fund Index-Open End Diversified Core Equity ("NFI-ODCE") is a fund-level capitalization-weighted index beginning as of the first quarter of 1978, inclusive. The Total Composite and NFI-ODCE returns are time-weighted, include cash balances and leverage, and are presented gross of fees. As of June 30, 2022 the NFI-ODCE consisted of 26 active funds with total net assets of USD 278.1 billion.

The NPI consists of 10,334 properties valued at USD 936.0 billion as of June 30, 2022. The NPI is dollar-weighted and time-weighted and reflects reinvestment of income. It consists of existing properties only (development projects and participating mortgages are excluded), is unleveraged, and excludes cash and other non-property related assets, liabilities, income, and expenses such as management fees.

Please note that past performance is not a guide to the future. The value of investments and the income from them may go down as well as up, and investors may not get back the original amount invested.

Risks

- Investors should be aware that return objectives are subject to a number of assumptions and factors, a change in any of which could adversely affect returns. Accordingly, investors should note the limitations of an objective.
- Investments in direct real estate and real estate funds involve a high degree of risk. For instance, events in 2008 and 2009 such as the deterioration of credit markets and increased volatility have resulted in a historically unprecedented lack of liquidity and decline in asset values. The value of investments and income from them may increase or decrease. Investors must have the financial ability and willingness to accept and bear the risks (including, among other things, the risk of loss of investment) that are characteristic of real estate investing and investing in commingled fund for an indefinite period of time. Among the risks to be considered are:
  - **Risks of investing in real estate.** Risks include adverse changes in market and economic conditions, zoning, and other governmental laws, regulations, and policies, occupancy levels and the ability to lease space, and environmental risks, and risk of uninsured losses.
  - **Debt investment risk.** Risk includes risks of borrower defaults, bankruptcies, fraud and special hazard losses that are not covered by standard hazard insurance.
  - **Restrictions on redemption and transferability of shares or units; illiquidity.** Real estate is an illiquid investment and the account may not be able to generate sufficient cash to meet withdrawal requests from investors.
  - **Reliance on controlling persons and third parties.** The exercise of control over an entity can impose additional risks and the fund can experience a significant loss. The risk of third parties includes a conflict between their objectives and those of the account or fund.
  - **Use of leverage.** Leverage will increase the exposure of the real estate assets to adverse economic factors, such as rising interest rates, economic downturns, or deteriorations in the condition of the properties or their respective markets and changes in interest rates.
  - **Legal & Taxation.** Investors should consult their own legal and tax advisers for potential US and/or local country legal or tax implications on any investment.
  - **Currency risk.** The funds and accounts managed by UBS Realty Investors LLC are denominated in US Dollars. There is a potential for loss due to currency fluctuations for non-US investors.
  - **Lack of diversification**. Individually managed accounts and funds in their initial investment periods may have investments that are relatively large compared to the account's or fund's anticipated total value. Any limit to diversification increases risk because the unfavorable performance of even a single investment might have an adverse effect on the aggregate return.
  - **Unspecified investments**. There can be no assurance that the advisor will be able to continually locate and acquire assets meeting the fund or account's objective. Competition for assets may generally reduce the number of suitable prospective assets available.
- In considering an investment in a commingled real estate fund, prospective investors must rely on their own examination of the partnership agreement, private placement memorandum, and all terms of the offering, including merits and details of these and other risks involved. If there are any discrepancies in fund terms between this presentation and the private placement (offering) memorandum, the memorandum shall prevail.
- This is not a recommendation to invest in any product or services. Investors must have the sophistication to independently evaluate investment risks and to exercise independent judgment in deciding whether or not to invest in real estate and real estate funds.

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In the US, the Real Estate commingled funds are distributed by UBS Fund Services (USA) LLC, member FINRA and other UBS Asset Management broker-dealer affiliates. UBS Fund Services (USA) LLC main office is located at 10 State House Square, Hartford, CT 06103. UBS Realty Investors LLC, UBS Fund Services (USA) LLC is a member of the UBS Asset Management business division and subsidiaries of UBS AG.

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Timberland Investment Resources, LLC

Relevant Mandates: **Timberland** **Hired:** **2008**

Firm Information

Timberland Investment Resources, LLC (TIR) is a Timberland Investment Management Organization. TIR is 100% owned by the equity partners of the firm, who also serve as Managing Directors.

As of 6/30/22, the firm's total assets under management were $1.95 billion.

Key Executives:
Mark Seaman**,** President and CIO
Tom Johnson, Managing Director, Client Service and Business Development
Chung-Hong Fu, Managing Director, Economic Research
Chris Mathis, Managing Director, Real Estate

Investment Approach

TIR's investment philosophy emphasizes active timber and land management, which requires that TIR perform not only the investment management but also many property management functions in-house. TIR is able to reduce operating expenses because of the active level of management conducted with direct employees of TIR. The account management and property management decision making functions are also performed in-house by TIR Partners and staff.

TIR believes that much of the return potential for a timberland portfolio, particularly a southern pine portfolio, is contained in the biological growth of the timber. In order to maximize the growth and thus, return potential, TIR conducts economic and biometric research, coupled with effective implementation of intensive, stand level management plans through TIR's own foresters deployed in the field. TIR's forest biometrician and economist perform research to benefit client portfolios. The same economic and biometric analysis used to develop the acquisition strategy is applied to the disposition strategy, recognizing that in some cases, properties acquired as timberland may transition to Higher-and-Better-Use properties (e.g., recreation, conservation, etc.) over the investment term.

Benchmark: NCREIF Timberland Index.

Total ARMB Mandate

Assets Under Management:
6/30/22 $380,940,434

Concerns: None

6/30/2022 Performance

	Last Quarter	1-Year	3-Years Annualized	6-Years Annualized	13.75-Years Annualized
Manager Gross	1.43%	10.39%	4.85%	4.16%	4.92%
Fee	0.16%	0.70%	0.74%	0.81%	0.76%
Manager Net	1.27%	9.69%	4.11%	3.35%	4.16%
Benchmark	1.87%	12.01%	5.03%	4.16%	4.15%

TIMBERLAND
INVESTMENT RESOURCES LLC

Growing value for our clients every day

Alaska Retirement Management Board (ARMB)
Timberland Investment Portfolio Review

Agenda

01 Introductions

02 Firm Overview

03 Timber Basics

04 Role of Timberland in a Portfolio

05 Market Overview

06 ARMB Portfolio Overview

07 Risks & Emerging and Developing Opportunities

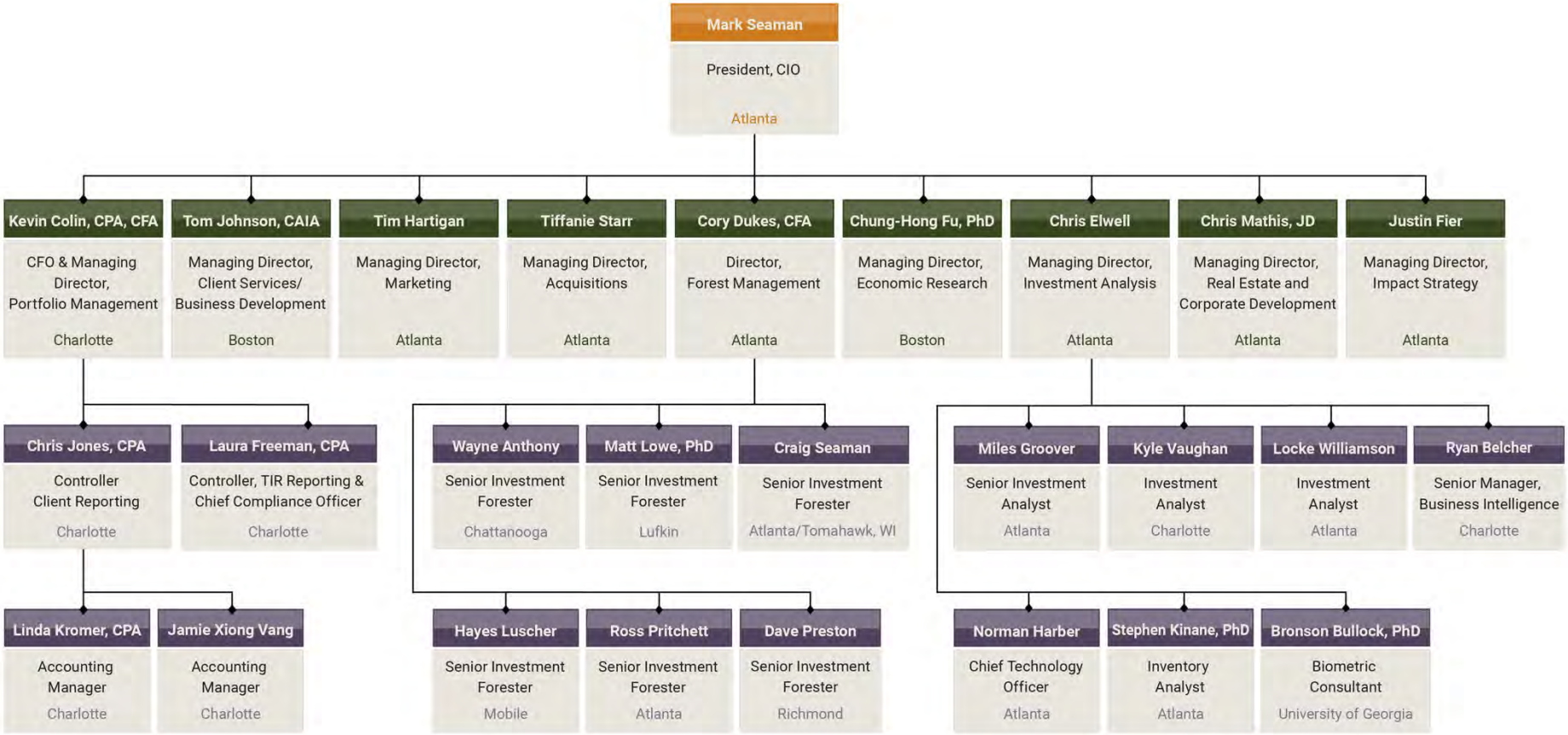
08 Biographies

Firm Overview

Timberland Investment Resources, LLC

- Established in 2003 and now manage more than $1.95 billion in assets under management through nine separate accounts, six commingled funds, and one club account (135 individual investors in total).
- All forest operations independently certified under the Sustainable Forestry Initiative (SFI).
- 100% employee-owned firm.
- Senior management team averages more than 30 years of experience.
- Six U.S. offices with headquarters in Atlanta, Georgia and a London-based affiliate, TIR- Europe.
- Known as a middle market, value-oriented manager.

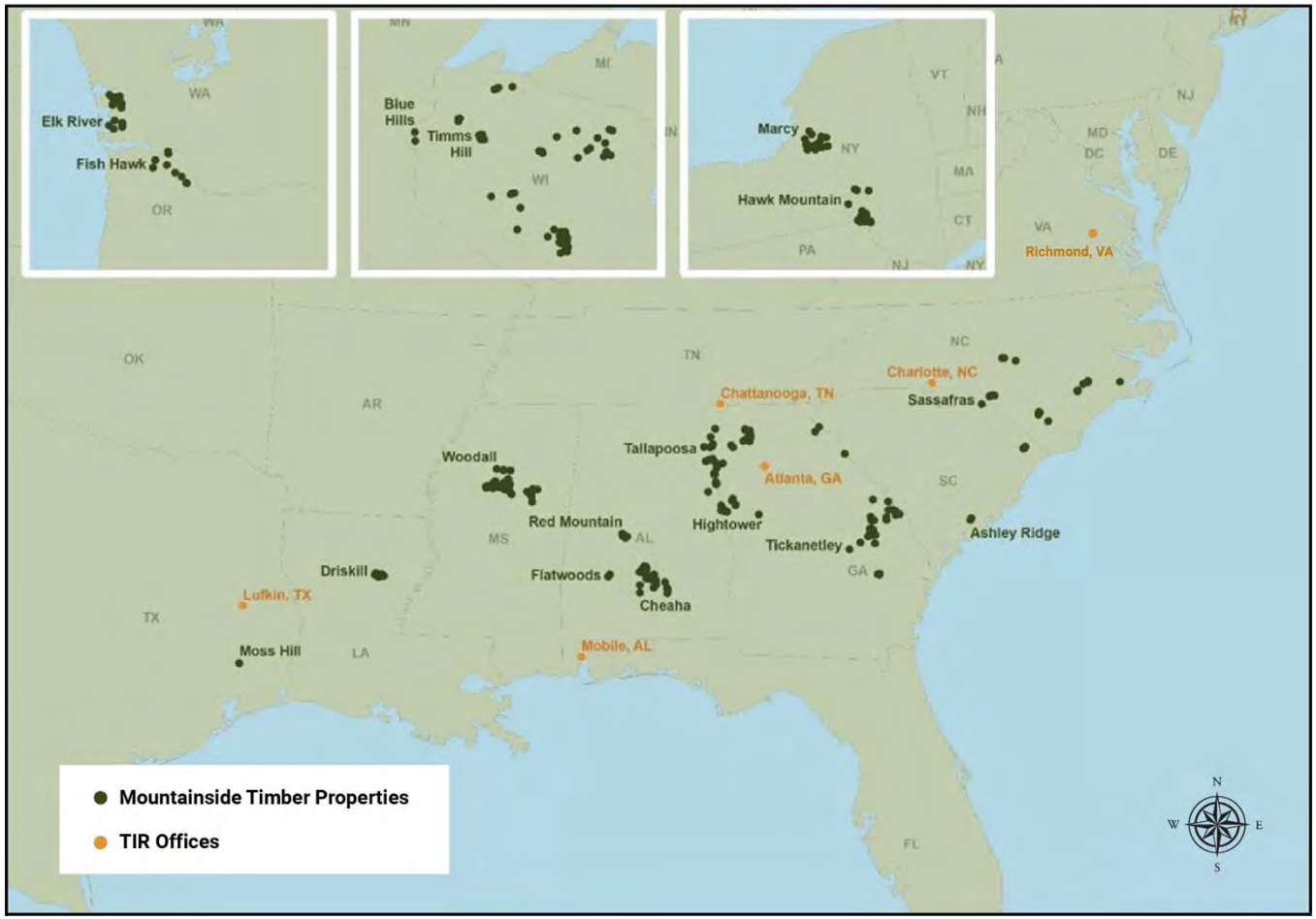
TIR Organization Structure (includes TIR-Europe)



Mountainside Timber

Mountainside Timber – Asset Location Map

Mountainside Timber, LLC Properties: 154,319 acres



Mountainside Timber, LLC

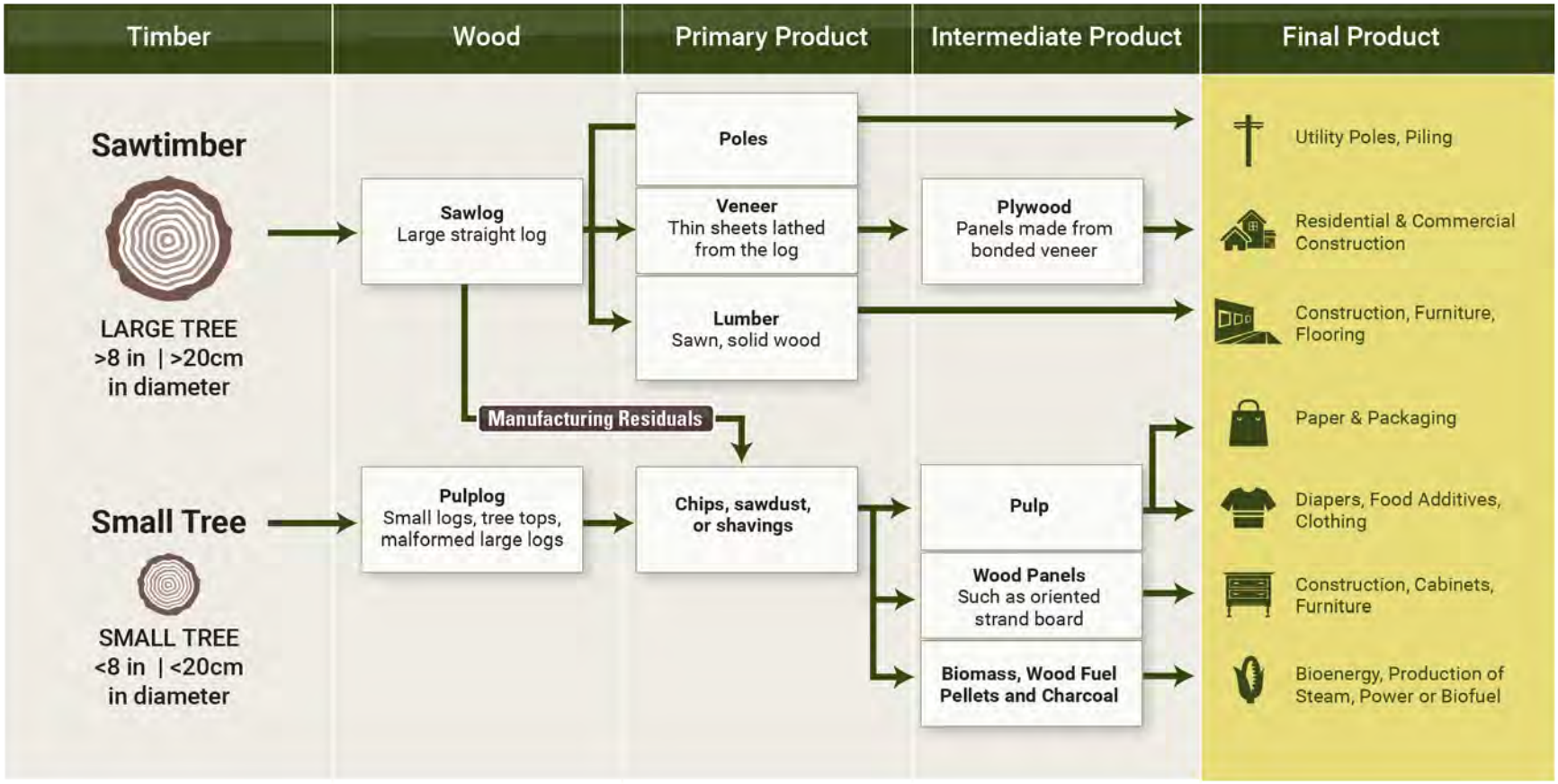
- Formed in 2008 with a capital commitment of $100 million.
- Capital commitment increased over time to $244 million.
- In 2020, assets from Hancock Timber Resource Group (Salmon Timber) were consolidated into Mountainside. The market value of the assets was approximately $100 million at the time of the conversion and included three properties in Alabama, Oregon, and Washington.
- Prior to the consolidation, fees were renegotiated to reflect the increase in scale of assets under management.
- Total market value of the Mountainside assets was $374.5 million as of 6/30/2022.
- The portfolio is unleveraged and is compared to the NCREIF Timberland Index and net-of-fee total return between public equities and fixed income over rolling six-year periods.
- To provide a sense of scale, the properties represent 250 square miles, and if all the trees in Mountainside were harvested and loaded on trucks, they would stretch end-to-end across the width of the State of Alaska.

Timber Basics

Timber Basics – Two Timber Types – Diverse End-Use Products

Timber Basics – Main Products Produced from Timber

Flow diagram that shows how the main economic products of a timber harvest, sawtimber and pulpwood, become value-added products.

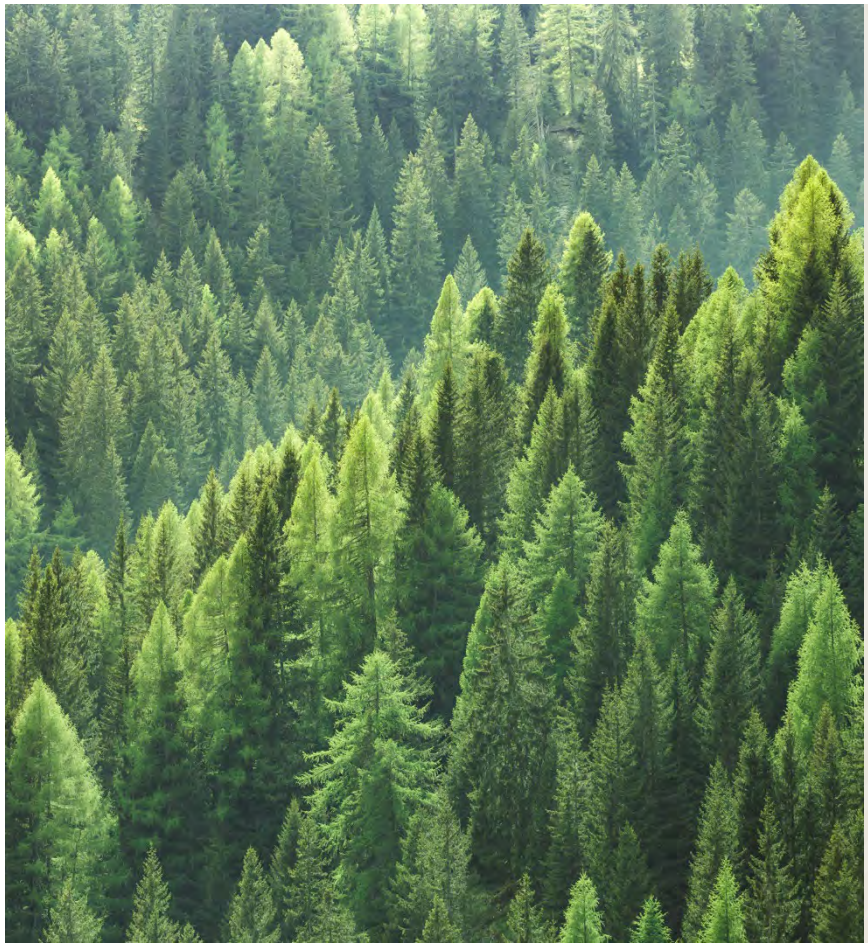


Role of Timberland in a Pension Portfolio

Timberland in a Pension Portfolio

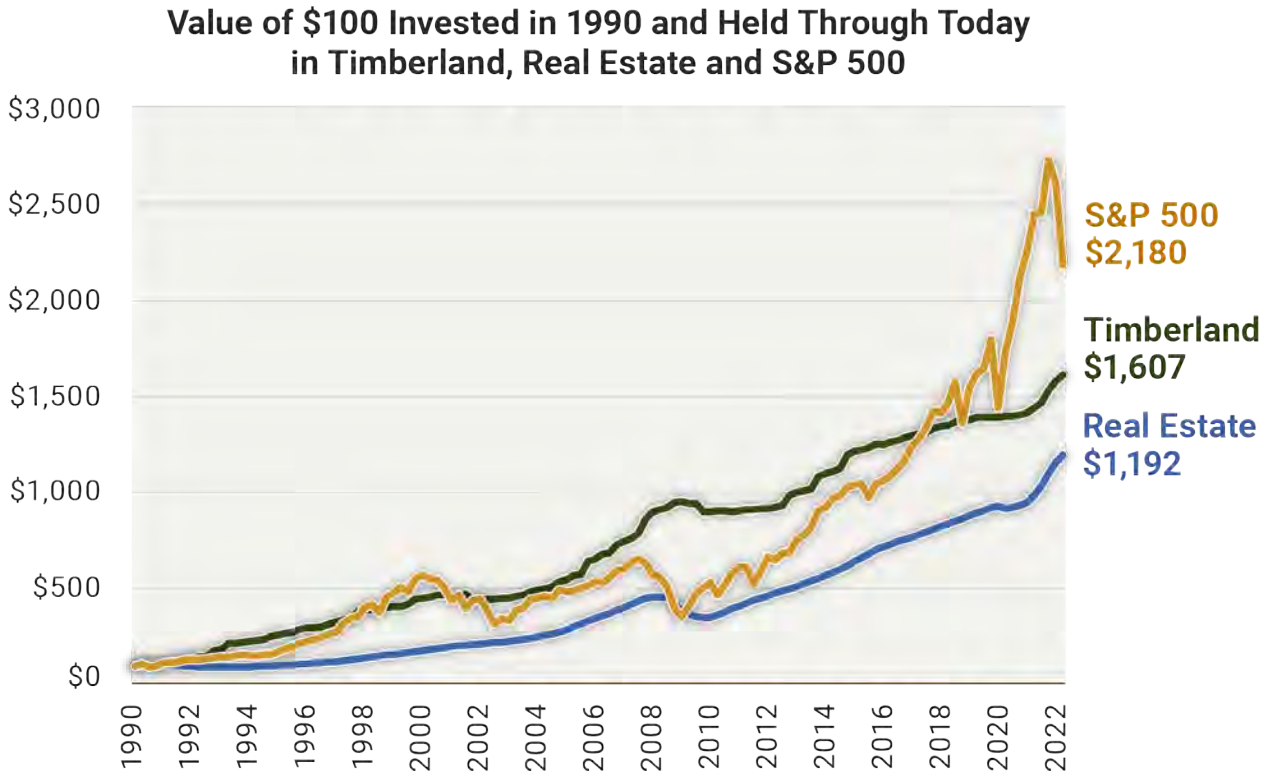
Rationale

- Return
- Diversification
- Inflation Hedge
- Capital Preservation
- Yield



Return

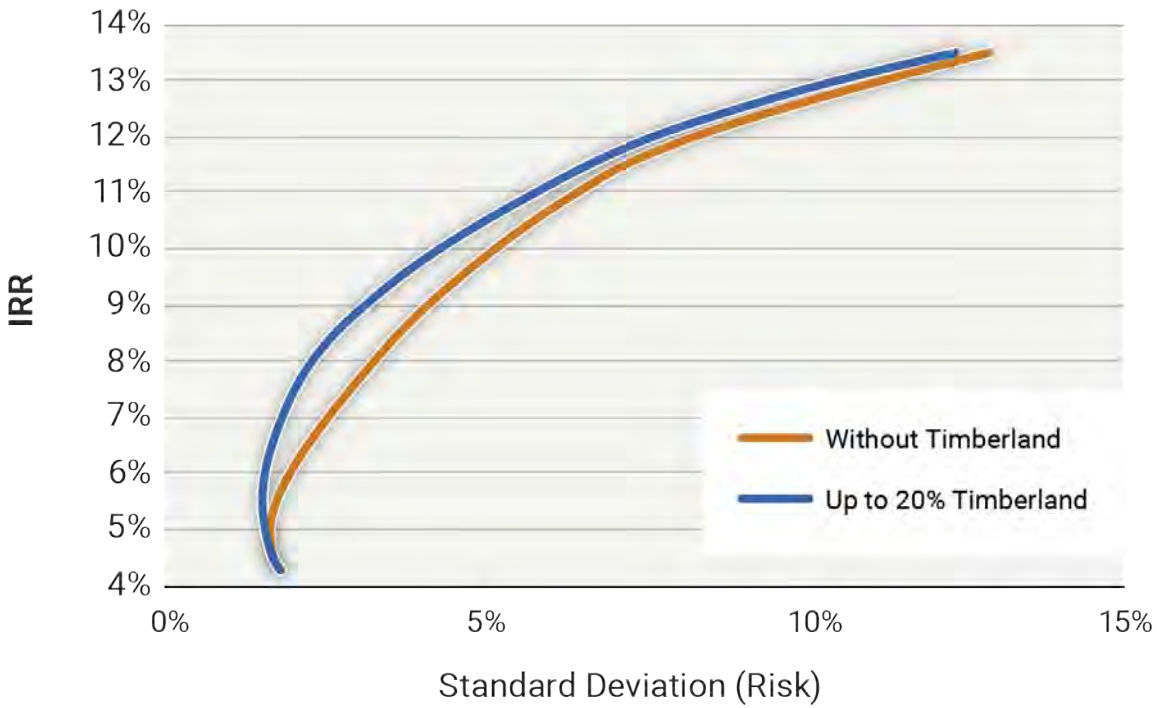
Despite a decade of recovering from our asset class' "Black Swan" event, timberland provides attractive long-term return characteristics.



Performance through June 30, 2022
Sources: NCREIF, Standard & Poor's

Risk

Adding timberland to a typical pension plan portfolio can reduce risk for a given target return.

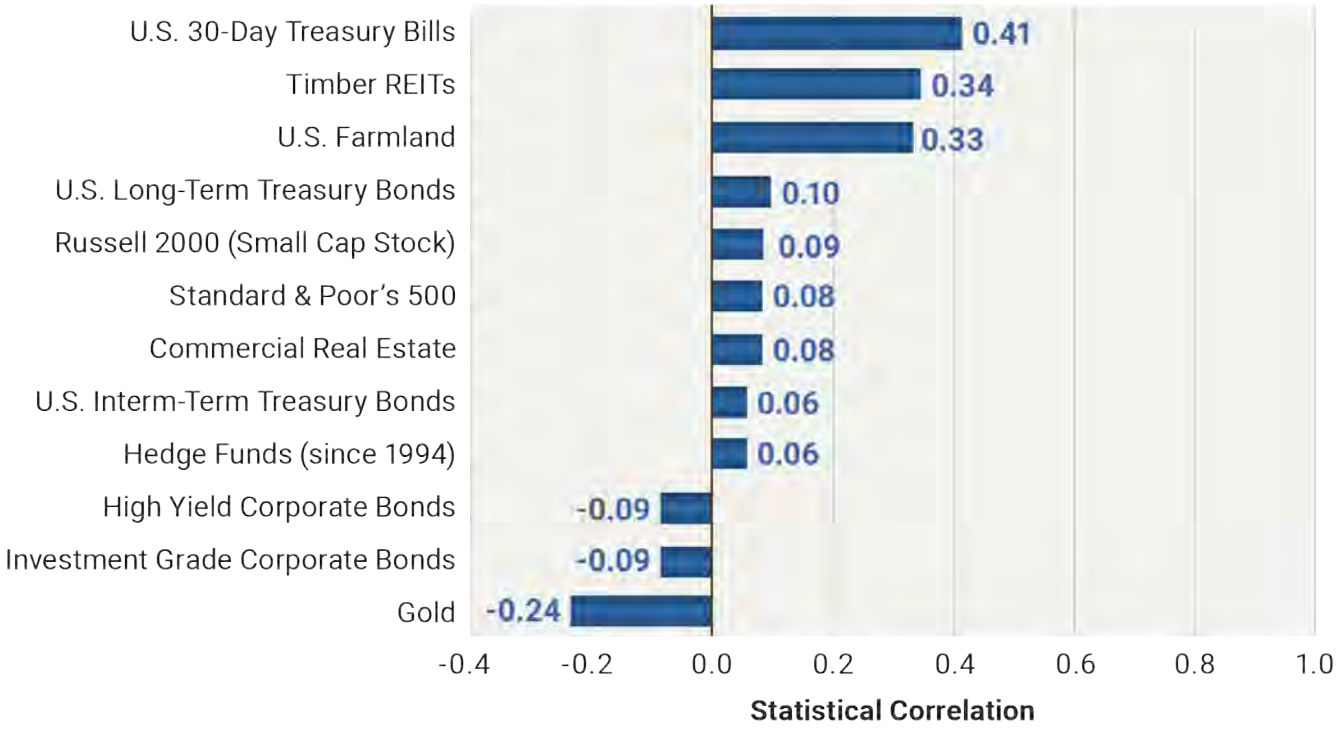


Source: TIR Research

Diversification

Timberland's biological growth properties provide a risk and return characteristic that adds to the diversification of any real assets portfolio.

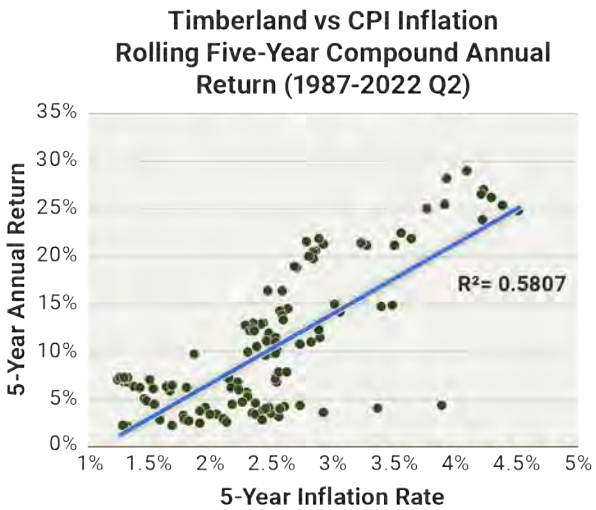
Correlation of the NCREIF Timberland Property Index Annual Returns Against Other Asset Classes (30-Year, 1992-2021)

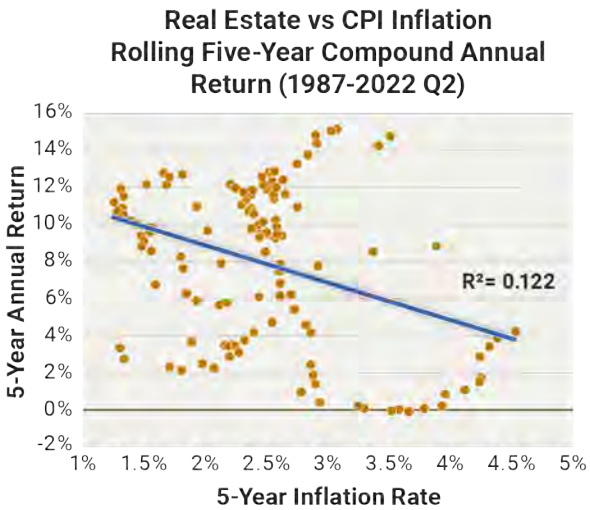


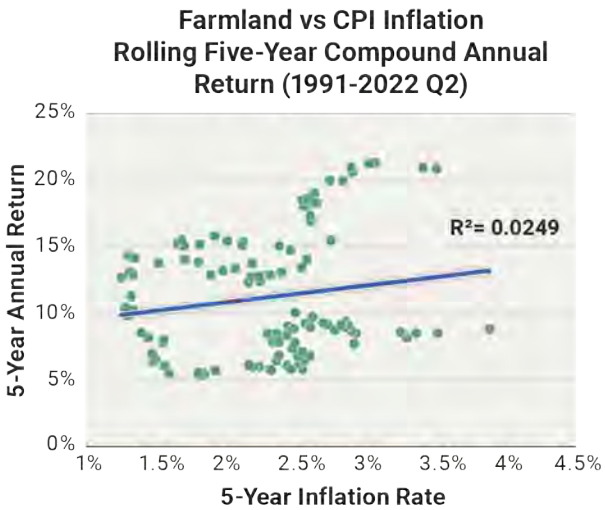
Sources: Ibbotson, NCREIF

Inflation Hedge

Timberland has been consistently shown to have strong inflation hedging properties relative to other real assets.







Sources: NCREIF, U.S. Census Bureau

The charts above plot rolling five-year total annualized return against the observed five-year inflation rate over the same period from 1991 through 2022q2. Timberland returns are measured by the NCREIF Timberland Property Index, real estate by the NCREIF National Property Index, and farmland by the NCREIF Farmland Index. Inflation is measured by the United States Consumer Price Index.

Timber and Economic Projections

Key Themes of Last Year and This Year

Last Year 2021

Housing market rebounds following Covid-19

- Spurred by low mortgage rates and strong economic recovery, housing starts broke above 1.5 million, a first since the U.S. housing crash of 2007

Lumber prices reach record highs

- Transportation bottlenecks in Canada helped push lumber prices above $1,500 per thousand board feet, more than double the previous record

A wave of sawmill investment in the South

- Recovery of lumber prices drew lumber producers to restart capital investments in the U.S. South

This Year 2022

Rising interest rates and economic slowdown

- The Fed is tightening monetary policy, which will raise mortgage rates
- High energy prices and the Ukraine war could lead to a global economic downturn

Housing market faces a period of weakness

- Rising mortgage rates and economic uncertainty will likely create a slowdown in new home construction

Demand for timber stable

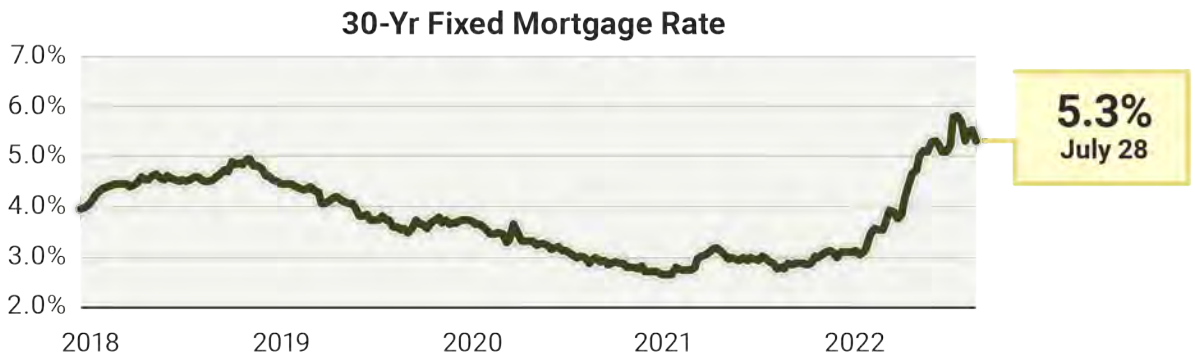
- Home improvement spending is holding up well
- A reduction in Canadian imports means greater demand for U.S. lumber

Higher Mortgage Rates Will Pressure Housing Starts

Housing starts have begun to weaken as mortgage rates reach levels not seen since the 2008 Global Financial Crisis.

However, steady gains in household income combined with a pent-up demand of 3+ million homes could set the stage for a strong recovery following a recession.

Source: U.S. Census Bureau



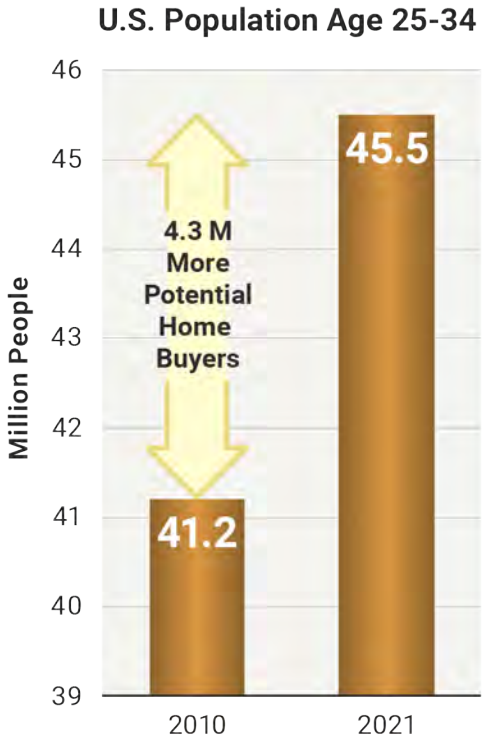
Source: Freddie Mac

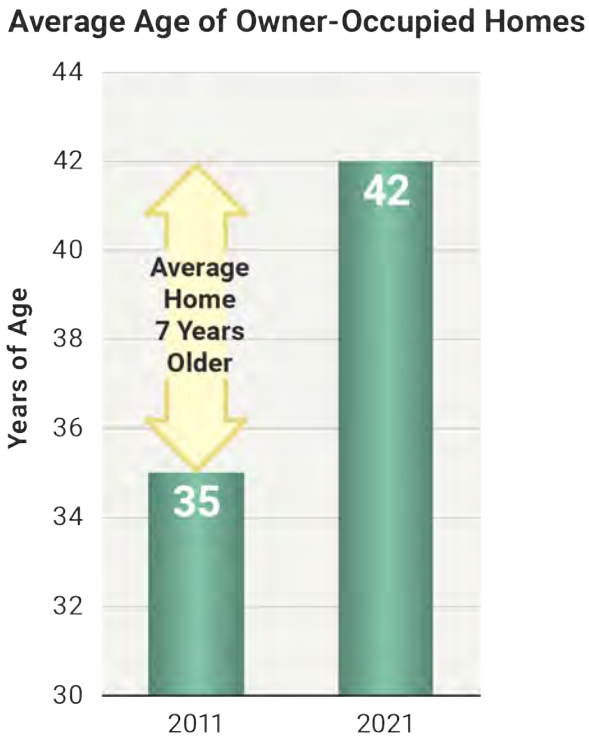
Reasons Housing Downturn Could Be Brief

The U.S. has underbuilt housing for the past decade, creating a large deficit of single-family homes.

Millennials, the largest generation in history, have reached the prime age for buying their first homes.

More homeowners seek to upgrade or remodel their aging homes as home prices rise.

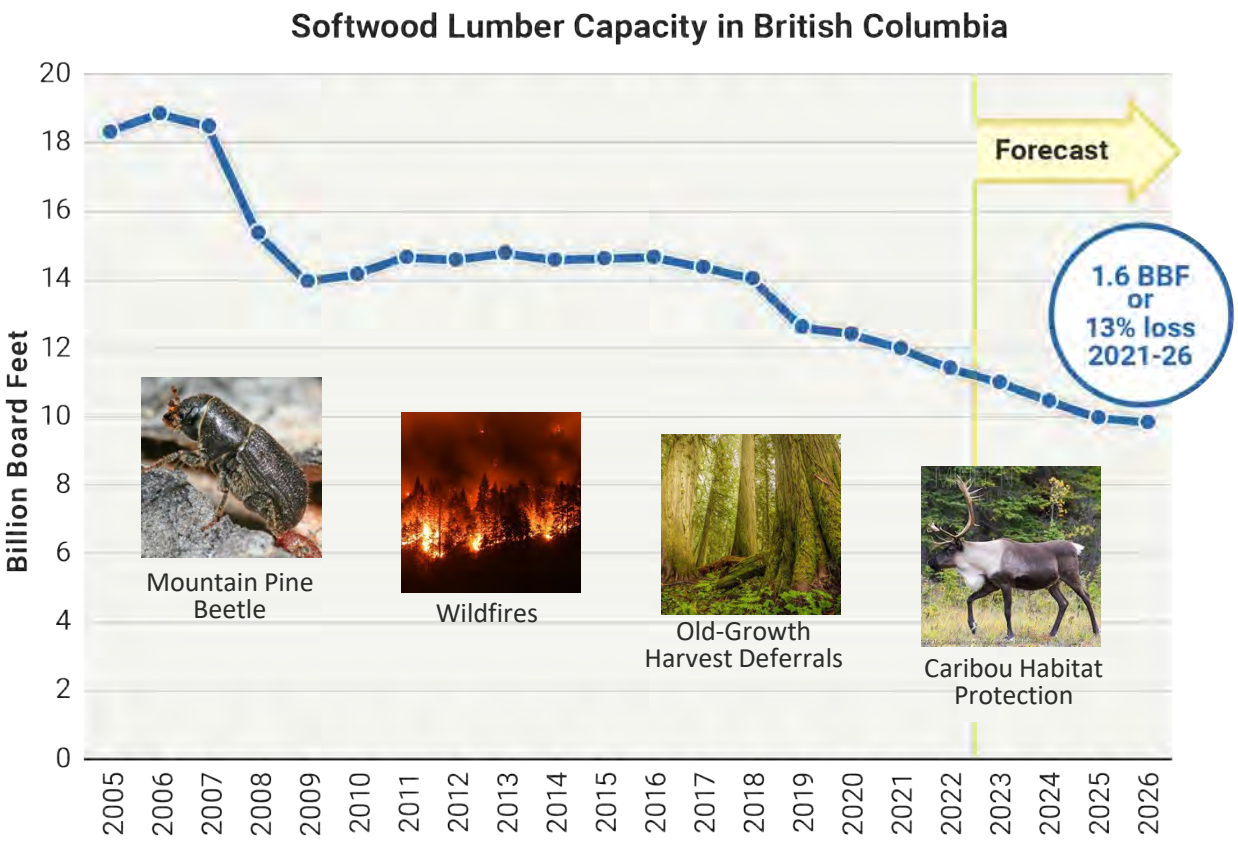




Source: U.S. Census Bureau

Canadian Lumber Imports Face Long-Term Decline

Last year, Canada supplied 26% of the lumber consumed in the United States. However growing harvest restrictions in British Columbia will limit its ability to produce lumber in the future.



Source: Forest Economic Advisors

BC government in 2021 declared harvest deferral on 6.4M acres of old growth forest. RISI estimates as much as 12% of Annual Allowable Cut (AAC) is in jeopardy.

Province suffered several years of severe wildfires, including 2.1M acres burned in 2021 alone, the 3rd highest on record.

Habitat protection for endangered caribou could reduce harvests further.

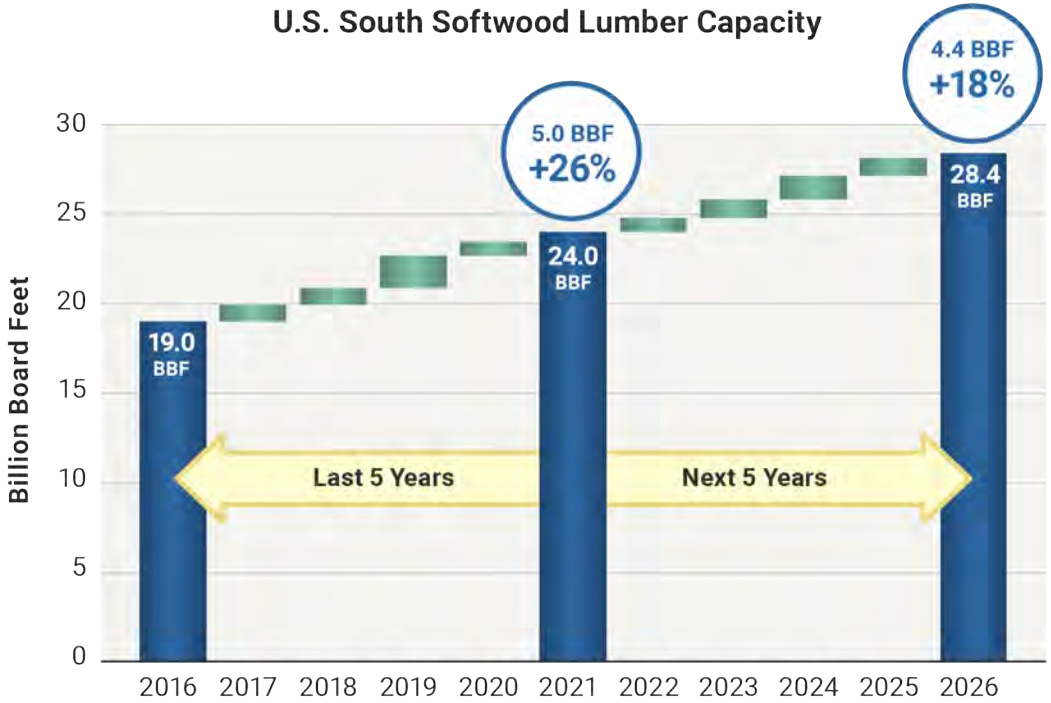
U.S. South is the Low-Cost Producer of Lumber

In a commodity market, the low-cost producer wins. This means mills in the U.S. South can ride out market cycles and keep producing when Canadian producers are forced to curtail production.

Sources: Forest Economic Advisors, Random Lengths

Mill Investments in the U.S. South Continue

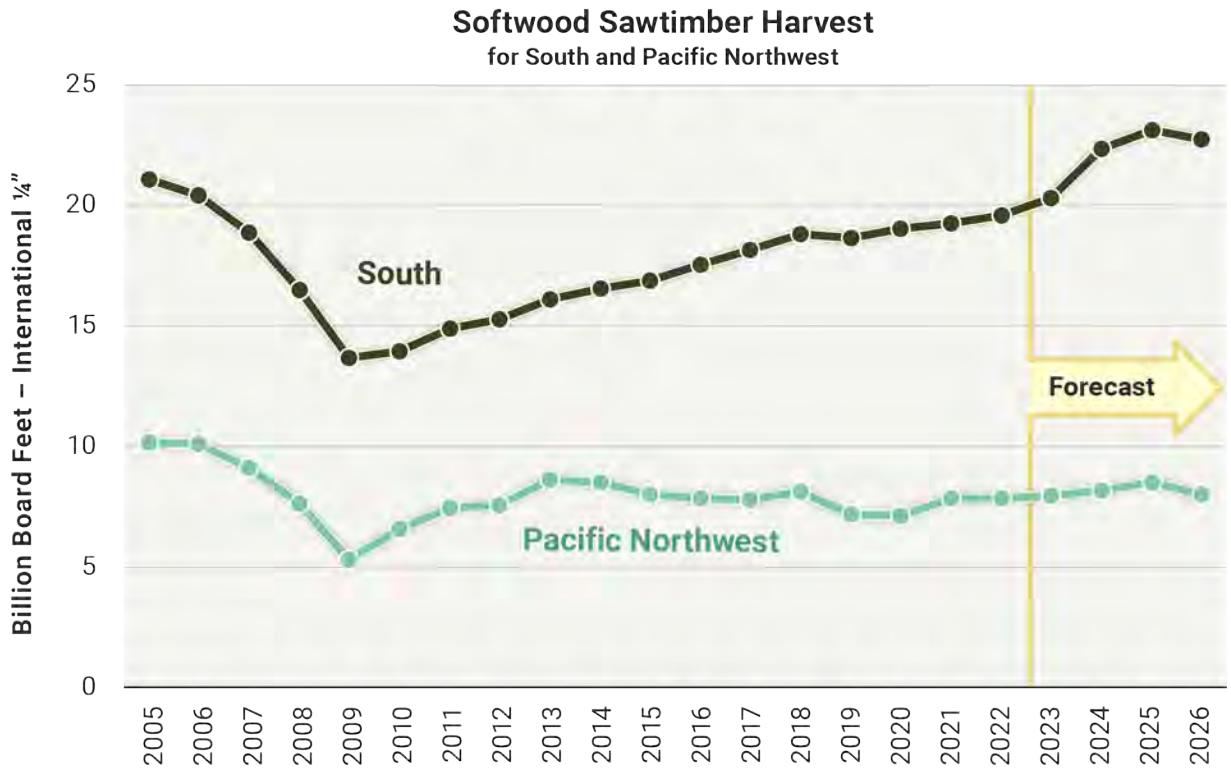
Lumber producers recognize the cost advantage of the U.S. South and continue to invest in capacity in the region. This will have long-term implications for sawtimber prices.



Source: Forest Economic Advisors

South Becomes the Wood Basket of North America

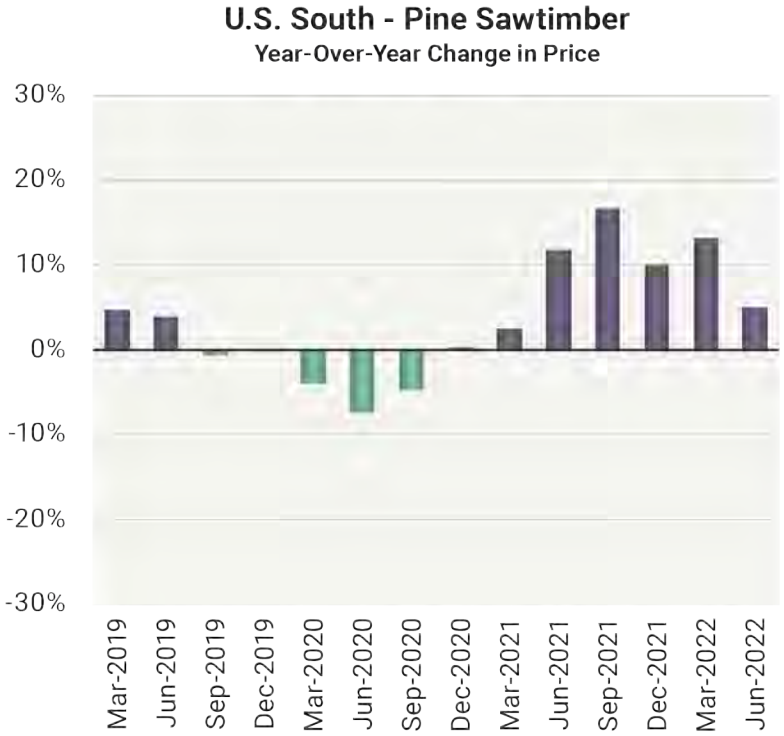
Rising lumber production across the South would lift harvest rates above the peak seen during the last housing bubble. This can add pricing pressures in various micro-markets in the region.



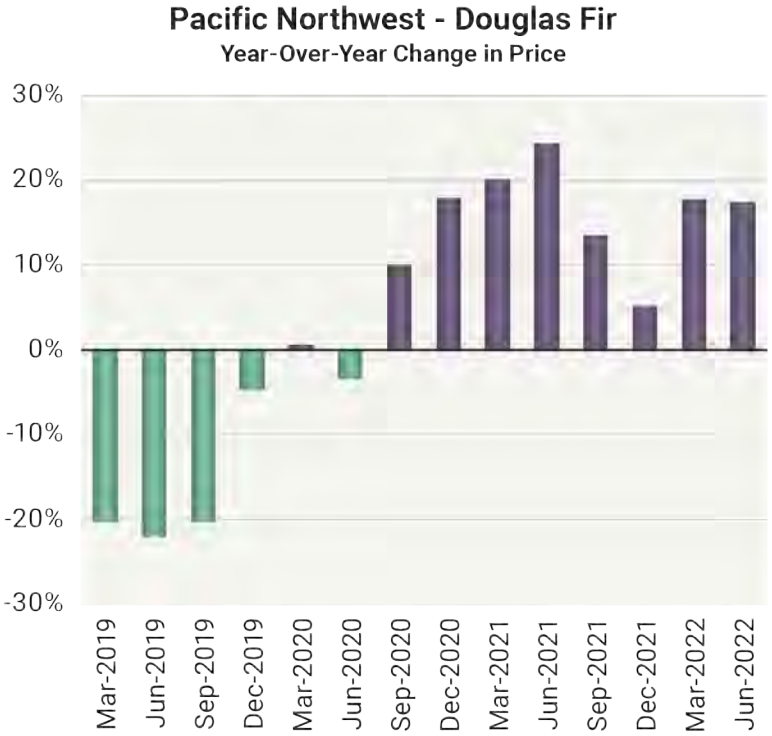
Source: Forest Economic Advisors

Timber Prices Reflect Growing Demand

Following years of lackluster pricing, the added mill capacity in the South has created tension in the region, allowing log prices to respond to higher lumber prices like in the Pacific Northwest.



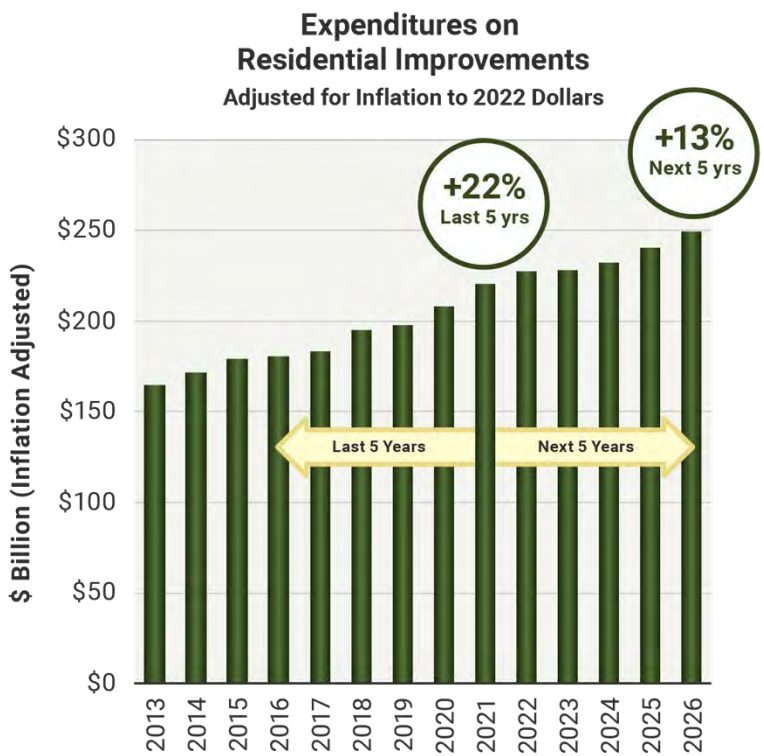
Source: Timber Mart-South



Source: Fastmarkets RISI

Home Improvement Spending Supports Hardwood

Rising home equity values helps spur home improvement spending. That could support Northeast and Lake States hardwood markets over the next few years.

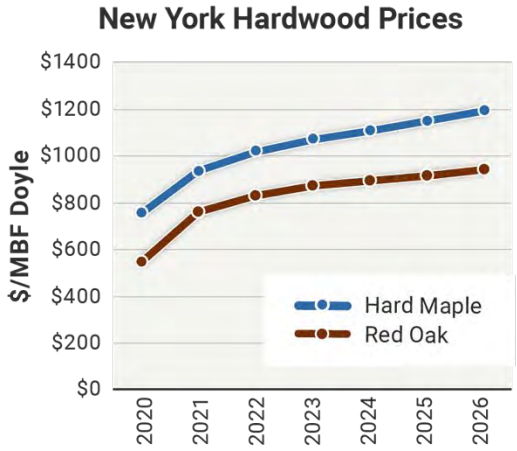


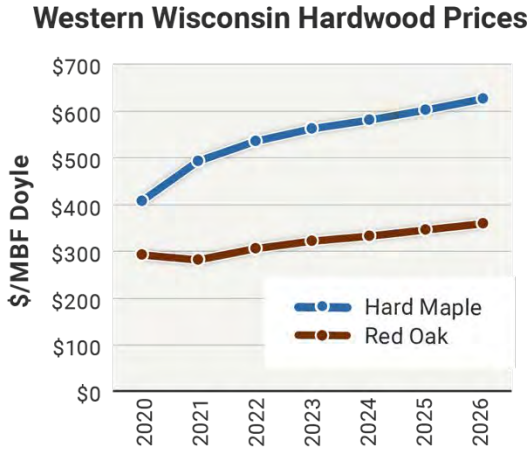
Source: Fastmarkets RISI

Hardwood Floors

Window Frames

Cabinets

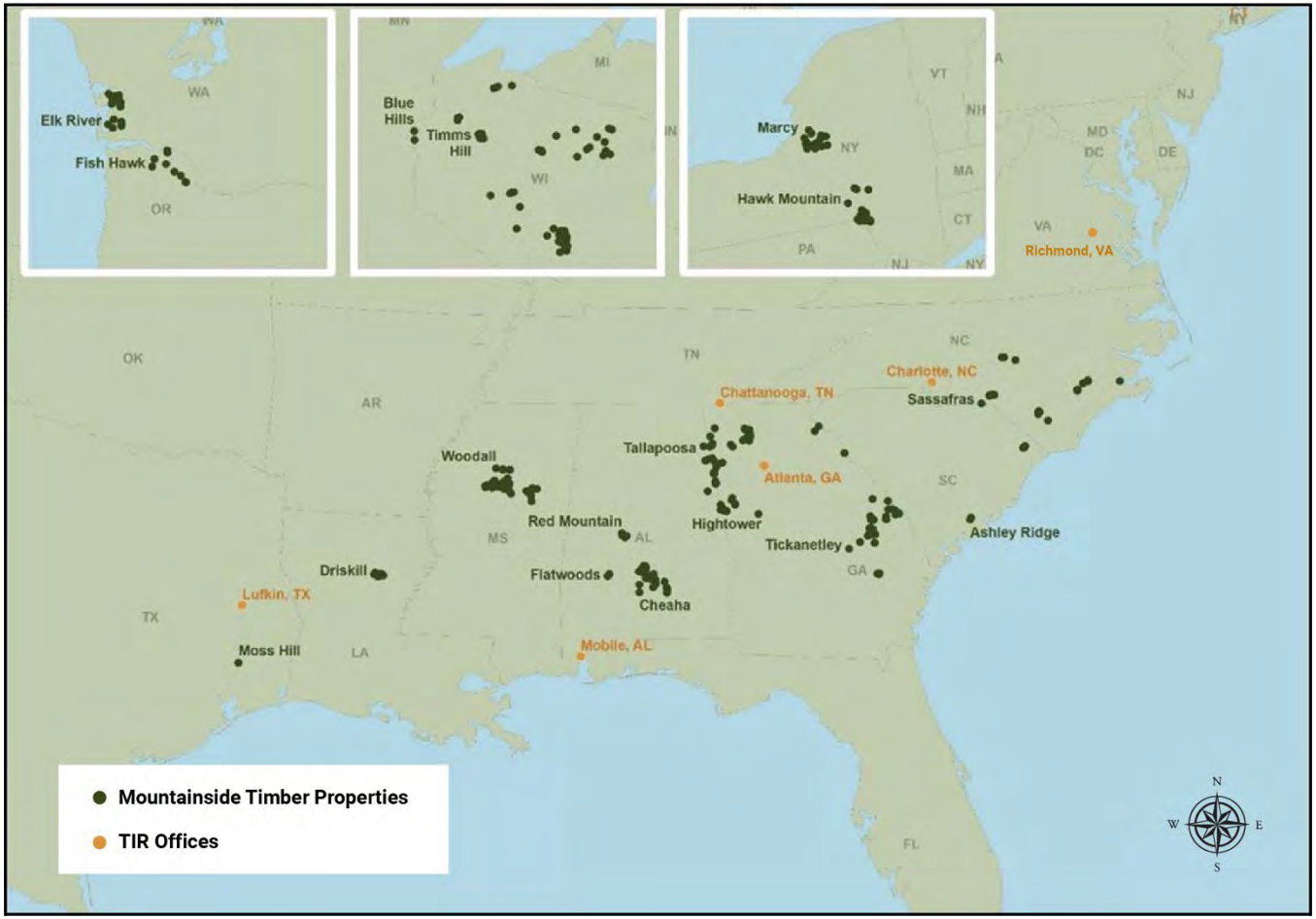




Source: Forest Research Group

ARMB Portfolio Overview

Diversification - Geographically



The Mountainside Timber portfolio encompasses properties located in 11 states (154,319 acres) across all the major timber producing regions of the U.S.

Diversification - Species and Product Classes

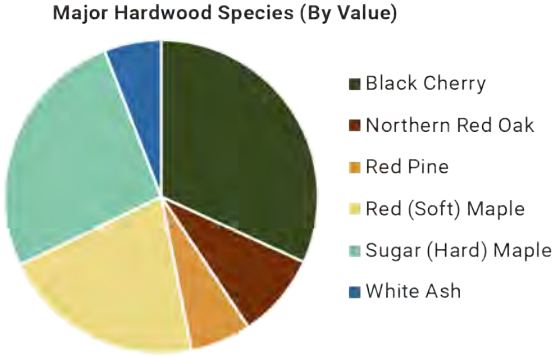
Mountainside also has broad diversification across species, product classes (e.g., pulpwood, chip-n-saw, and sawtimber) and overall age-class distribution.

- Relatively even age-class distribution for softwood and broad hardwood diversification.
- Geographical distribution is roughly comparable to NCREIF with some strategic tilts.

Mountainside Timber, LLC - Portfolio Diversification - 6/30/22

Region	Portfolio Acres	% of Portfolio
South	104,109	67%
Lake States	18,815	12%
Northwest	13,783	9%
Northeast	17,612	12%

Mountainside Portfolio Diversification by Timber Type



Diversification - Relative to the Benchmark

Mountainside is in line with the NCREIF Index for the South; overweighted in the Northeast and Lake States; underweighted in the Pacific Northwest.

Mountainside Timber, LLC - Regional Diversification Compared to Benchmark- 6/30/22

	NCREIF		Mountainside	
Region	**Asset Market Value**	**Asset Weighting**	**Asset Market Value**	**Asset Weighting**
Lake States	$1,011,032,591	4%	$23,070,559	6%
Northeast	$1,259,721,360	5%	$45,052,892	12%
South	$16,452,154,271	67%	$240,336,440	64%
Northwest	$5,875,238,867	24%	$66,016,361	18%
Total Timberland	**$24,598,147,089**	**100%**	**$374,476,252**	**100%**

Performance Summary

- On a gross basis, Mountainside has outperformed the NCREIF (National) benchmark by 106 basis points since inception and is outpacing the Bloomberg Barclays Aggregate Index while trailing the Russell 3000.

Mountainside Timber, LLC - Portfolio Returns - 6/30/2022

Time-Weighted Returns	Mountainside (Gross)	Mountainside (Net)	NCREIF (South)[2]	NCREIF (National)[2]	Barclays US Bond Index[3]	Russell 3000
Current Quarter	1.45%	1.29%	1.92%	1.87%	-5.08%	-16.70%
Trailing 12 Months	**10.41%**	**9.71%**	**9.58%**	**12.01%**	**-10.67%**	**-13.87%**
Trailing 3 Years	4.86%	4.12%	4.93%	5.03%	-1.07%	9.78%
Trailing 5 Years	4.99%	4.20%	3.62%	4.32%	0.79%	10.60%
Trailing 6 Years	4.14%	3.36%	3.50%	4.16%	0.61%	11.88%
Trailing 10 Years	5.26%	4.44%	4.91%	5.73%	1.51%	12.57%
Since Inception[1]	5.08%	4.25%	3.01%	4.02%	2.81%	13.47%

(1) Since inception represents the company contribution return for the fund. This supports comparison with the NCREIF since inception calculation.

(2) NCREIF Property Indices are reported gross of fees and without the impact of leverage.

(3) Bloomberg Barclays US Aggregate Bond Index

Yields

- Yields have averaged 4.51% since 2013.
- The 2022 yield is projected to meet or exceed the 2021 yield:
  - Timber prices remain resilient due to the housing and home improvement markets
  - Retail land sales demand remains strong (recreation and interest in real assets)

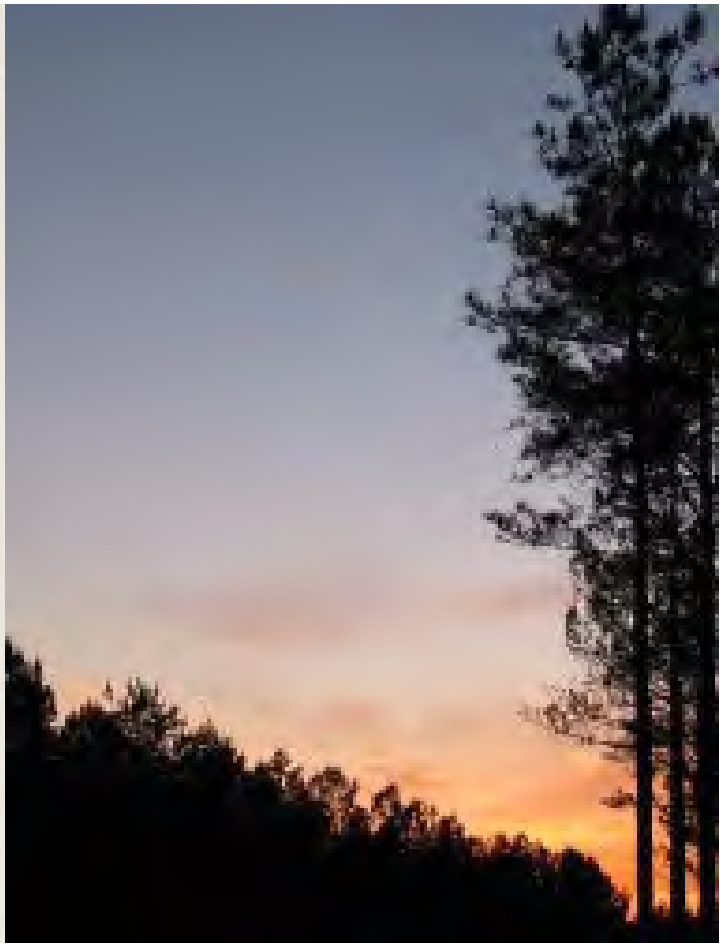
Mountainside Timber, LLC - Distribution & Yield - 6/30/22

Calendar Year	Cash Distribution	Beg Year NAV	Cash Yield
2013	$6,000,000	$171,453,496	3.50%
2014	$7,500,000	$189,008,917	3.97%
2015	$14,000,000	$269,945,189	5.19%
2016	$13,300,000	$276,684,112	4.81%
2017	$18,400,000	$276,813,308	6.65%
2018	$22,800,000	$285,655,074	7.98%
2019	$4,200,000	$268,275,894	1.57%
2020	$5,900,000	$268,695,726	2.20%
2021	$17,000,000	$359,610,786	4.73%
2022 YTD	$9,400,000	$364,918,668	2.58%
Total Cash Distribution	**$118,500,000**	**Avg Annual Yld***	**4.51%**

Yield – Return of capital, capital gains, and ordinary income
* Calculated based upon full calendar years 2013-2021

Increased Harvests Tied to Increased Opportunistic Sales

Performance Summary



- Timber markets maintain strength due to ongoing demand from the housing sector (new home starts as well as repairs and renovations).
- Interest in rural forested land for recreation, conservation and personal investment increased throughout the pandemic (and remains strong) and is driving demand for retail-sized parcels.
- We should continue to see stable to strengthening markets, especially in the U.S. South, along with higher timber yields.

Risks & Emerging and Developing Opportunities

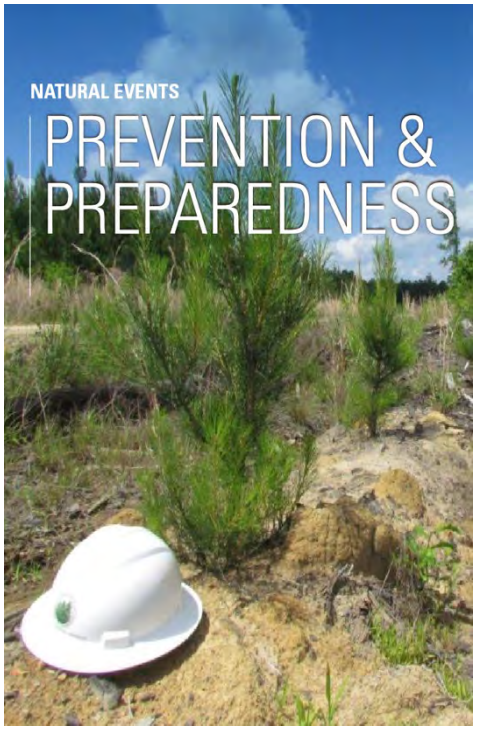
Risks

Systemic Risks

- Market Risk
- Physical Risks
  - The “Big Three” - Fire, Wind, Insects
- Regulatory and Policy Risks

Risk Mitigation

- Market - Diversification
- Physical Risks - Mitigation
  - Advanced Genetics and Breeding
  - Active Forest Management
    - Healthy trees are more resistant to threats
    - Plowing fire lanes and road maintenance
  - Early Detection and Response Time
- Regulatory, Legal, and Policy Risks – Active engagement with policy makers through the National Alliance of Forest Owners (NAFO)



Physical Risks are Low – The average annual loss for Mountainside has been 1 basis point per year over the past five years (2017-2021)

Emerging and Developing Opportunities

Recreation and Conservation Values

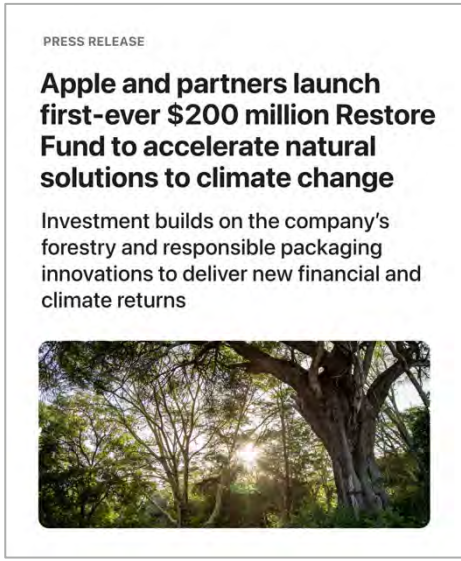
- Demographic influences and land value uses change over time push values into other higher and better uses such as recreation values (~25% premiums) and conservation values (~30% premiums).
- *103 basis points of the total 10.4% return for the 2022 fiscal year has been generated from these retail land sales (42 transactions, total $11.6 million).*

Solar Opportunities

- Solar energy has also seen significant growth (with half of all new projects being launched in the U.S. Southeast).
- TIR has spent several years working to enhance opportunities with solar developers that focus on sourcing rural lands for large-scale projects.
- Solar opportunities provide enhanced economics for landowners (at least 3X+ values relative to traditional timberland valuations).

Carbon

- Significant focus in the media; increasing option value for landowners.
- Mountainside Timber's forest assets currently hold 13.7 million metric tons of carbon dioxide – *equivalent to the amount of carbon dioxide emitted by 3 million passenger cars each year.*
- Marketplace has grown to $2.5 billion annually (*25% increase since last year*) – with some investors acquiring timberland primarily for its carbon properties.



PRESS RELEASE

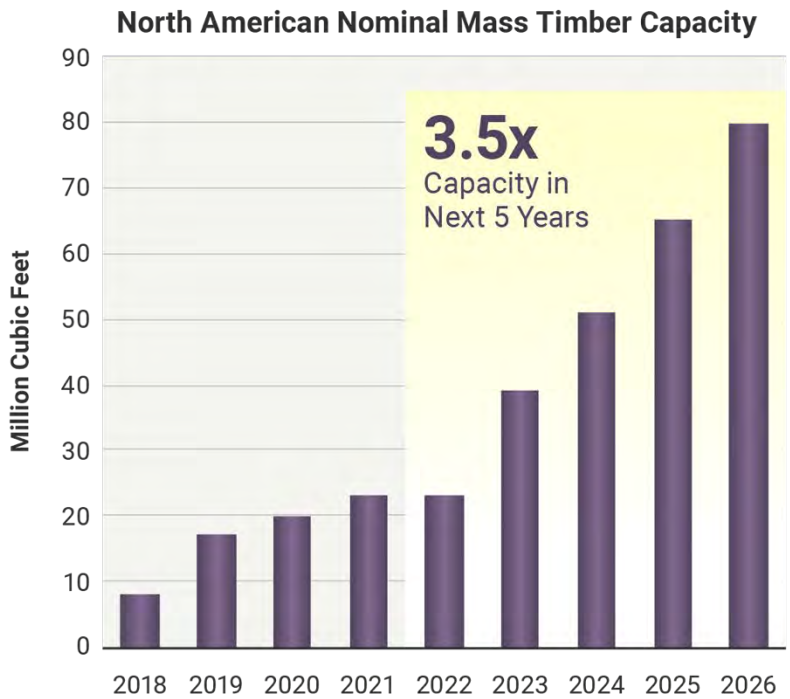
Apple and partners launch first-ever $200 million Restore Fund to accelerate natural solutions to climate change

Investment builds on the company's forestry and responsible packaging innovations to deliver new financial and climate returns

Emerging and Developing Opportunities

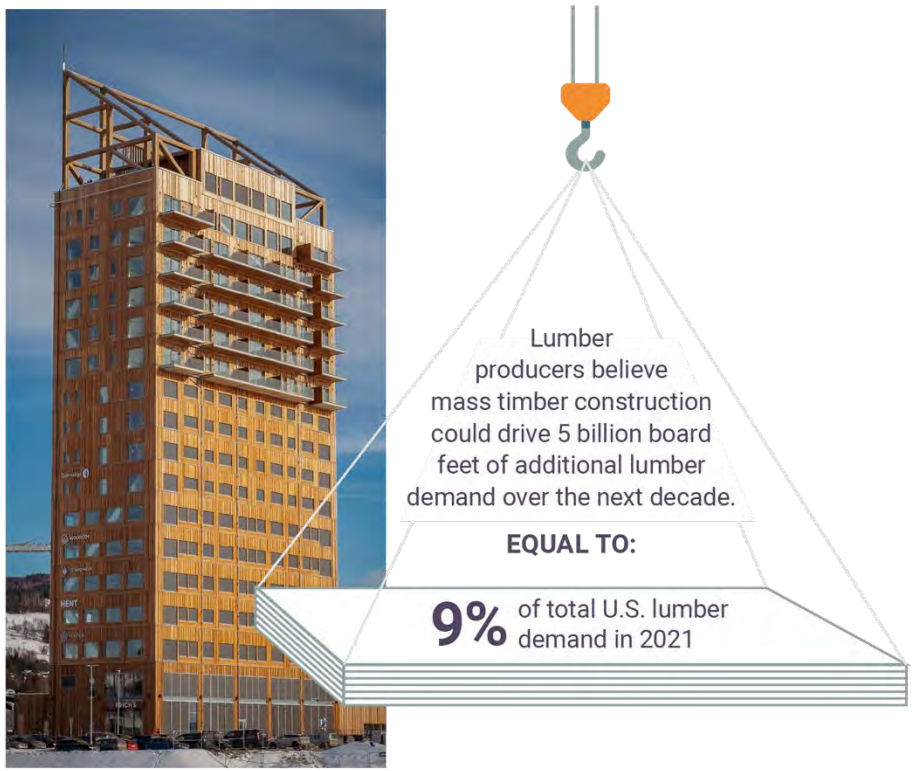
Mass Timber - Constructing Tall Buildings (e.g., 25 floors) with Wood

- Forest-based carbon has captured the limelight, but the emergence of mass timber construction in the U.S. could have a greater long-term benefit to timber markets than carbon.



Capacity covers cross laminated timber (CLT), dowel laminated timber (DLT) and mass plywood panels (MPP)

Source: Forest Economic Advisors



Thank you for your business!

Biographies

Mark T. Seaman, President and Chief Investment Officer

seaman@tirllc.com | 404-848-2000

Mark directs all business and investment strategy and operations for TIR and also serves as the firm's chief investment officer, directing portfolio strategy and management. He has more than 30 years of senior management experience in the timberland investment arena and he founded TIR in 2003. Mark was previously executive managing director of Wachovia's timberland investment business. During his tenure with Wachovia, he grew the company's timberland assets under management from $60 million to almost $1.4 billion and directed all phases of its timberland investment business. His responsibilities entailed developing and managing the company's core investment strategy, which entailed establishing its investment discipline and building its portfolio management, accounting, reporting, compliance, marketing, sales and product development functions.

In addition to helping to launch and expand two, highly successful timberland investment management organizations (TIMOs), Mark also has been directly involved in the development of more than 15 separate account and 6 commingled fund programs on behalf of numerous institutional investment clients.
These efforts have included directing more than 150 acquisitions encompassing more than 1.85 million acres in 12 states and managing more than 180 dispositions involving more than $400 million in assets. Because of his success in this regard, Mark is widely recognized among TIMO senior executives for his disciplined investment approach and his capacity to make and manage investments that are supportive of clients' unique risk and return objectives.

Mark is a graduate of Virginia Polytechnic Institute and State University where he received a BS degree in forest management. He also is a Registered Forester, a Certified Forester and a member of Society of American Foresters.

Tom E. Johnson, Managing Director, Client Service and Business Development

johnson@tirllc.com | 617-264-4769

Tom is responsible for all client relationship management and he directs the firm's domestic and international business development efforts. He was a founding member of TIR and plays key roles in shaping its strategic direction and overseeing the implementation of its core investment strategy on behalf of clients. This includes participating in all buy-hold-sell decisions and establishing operational parameters and priorities for the management of the company's business and portfolios.

Tom began his career at Wachovia where he spent ten years managing significant client relationships in the institutional investment and corporate trust markets. In that capacity, he served as the bank's West Coast territory manager, which entailed directing all business development and client relationship management activities in support of its retirement and charitable fund clients. Prior to joining Wachovia, Tom was a principal consultant at PricewaterhouseCoopers Management Consulting. In that role, he was an industry advisor to global investment management firms, managing major projects that influenced the implementation of clients' business operations and marketing functions.

In addition to his years of experience in the institutional investment arena, Tom is a forester who grew up in a saw-milling family in North Carolina. This background gives him a unique perspective on the timberland asset class - enabling him to provide valuable counsel to TIR with regard to the firm's strategic direction and to consistently reflect and represent the needs and interests of its clients.

Tom is a graduate of Appalachian State University where he earned a BSBA in finance. He earned his MBA and MS in forest resources, with honors, at the University of Georgia and is a member of the Phi Kappa Phi honor society. He holds the designation of Chartered Alternative Investment Analyst (CAIA^{SM}) and also has completed Level I of the Chartered Financial Analysts' exam.

Chung-Hong Fu, Managing Director, Economic Research and Analysis

fu@tirllc.com | 404-848-2000

Hong oversees all economic and market analysis and forecasting for TIR and plays a key role in the development and Implementation of the firm's investment strategy. He was a founding member of TIR and was instrumental in establishing the firm's research-driven investment ethic.

Hong began his career at Temple-Inland Forest Products Corporation where he served as a resource utilization specialist and business analyst. In these roles, he provided economic and research analysis services that were used by senior executives within the company to make strategic decisions across a range of issues, including asset securitization, acquisitions and resource and business optimization. Prior to joining TIR in 2003, Hong served as senior investment analyst with Global Forest Partners where he performed global timber acquisition analysis, created a variety of decision support models and directed currency risk management analysis.

Hong is recognized in the timberland investment arena for his measured and comprehensive analysis of the trends and events that drive investment performance and that influence the long-term risk and return profile of the timberland asset class. He writes extensively on these and related issues and is frequently consulted by market participants and analysts, including the news media, for his unique and well-informed perspectives.

Hong is a graduate of Northwestern University where he received a BS in biology. He also earned an MS in environmental management at Duke University and an MBA at Columbia University. He received his Ph.D. in forest economics at North Carolina State University.

Christopher T. Mathis, JD, Managing Director, Real Estate and Corporate Development

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Chris oversees TIR's asset monetization efforts on behalf of clients by developing and executing land sale strategies that are designed to optimize the long-term investment performance of clients' portfolios. In addition, he plays a key role in the land acquisition analysis process.

Chris has a broad range of experience in timberland finance, law and operations in the forest products industry. He previously held a variety of senior leadership positions at Temple-Inland, including: Vice President of Treasury and Investor Relations; Vice President of Strategic Resource Planning; and, Senior Corporate Attorney. During his tenure at Temple-Inland, Chris led the sale of 1.55 million acres of the company's high quality timberland assets for $2.4 billion in a tax-deferred manner. Chris also managed Temple-Inland's treasury and investor relations departments through the financial crisis and the sale of the company to International Paper in February 2012 for $4.3 billion. In addition, he served on the company's pension investment committee that managed the company's defined benefit plan assets of $1.3 billion. Just prior to joining TIR, Chris headed the Mathis Property Group, where he consulted with a family-office to evaluate opportunities to invest in timberland and other real estate asset classes.

Chris is a Texas native and holds a Bachelor of Business Administration, Master of Business Administration, and Doctor of Jurisprudence from Texas Tech University. He also completed the Stanford University Executive Program at the Stanford Graduate School of Business.

Important Notice

These materials (the “Materials”) and the information contained herein are being provided to Alaska Retirement Management Board (“you” or the “recipient”) to provide information regarding Timberland Investment Resources, LLC (“TIR”) and the timberland portfolio that TIR manages on behalf of the recipient (the “Portfolio”). The Recipient should not construe the contents of the Materials as legal, tax, accounting, investment or other advice. The Recipient should make its own inquiries and consult its advisors as to legal, tax, financial, and other relevant matters concerning any investment, including the Portfolio. The indicative terms and other information included in the Materials are incomplete, subject to change and are provided for discussion purposes only.

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Statements in the Materials are made as of September 2022, unless otherwise stated herein, and the delivery of the Materials shall not at any time under any circumstances create an implication that the information contained herein is correct as of any time subsequent to such date. TIR does not have any obligation to update or revise any statement in the Materials or correct inaccuracies whether as a result of new information, future events or otherwise. The information contained herein has not been audited, contains approximates and has no bearing on the future performance of the Portfolio. The Portfolio’s investment advisor, TIR, is registered as an investment adviser with the U.S. Securities & Exchange Commission ("SEC") and has filed with the SEC, and will be required to update periodically, Form ADV. Part 2 to the Form ADV contains essential information about a given investment advisory firm, including information about firm management, clients, fee arrangements and the handling of conflicts of interests.

Performance Information. In considering any target or projected performance information contained herein, the Recipient should bear in mind that such information is not necessarily indicative of future results. While the targeted or projected returns are based on assumptions regarding estimates of underlying cash flows, current business plans, timing, financing terms and residual values for the investments which TIR believes are reasonable, there can be no assurance that such results will actually be realized or that capital contributed by the Recipient will be returned. Such assumptions are made solely for purposes of underwriting or valuing investments and are not for purposes of projecting returns on such investments, the eventual realization value of such investments or the Portfolio’s overall performance. Actual gross and net returns for the Portfolio may vary significantly from any targeted or projected returns set forth herein and will depend on, among other factors, future operating results, the availability and terms of financing, the value of the assets and market conditions at the time of disposition, any related transaction costs and the timing and manner of sale, all of which may differ from the assumptions on which the targeted or projected returns are based.

Information regarding expected market returns and market outlooks is based on research, analysis, and opinions of certain members of TIR. These opinions are speculative in nature, may not come to pass, and are not intended to predict the future of any specific investment. Certain factual economic and market information contained herein has been obtained from published sources prepared by other parties and has not been independently verified by TIR. While such sources are believed to be reliable, TIR does not assume any responsibility for the accuracy or completeness of such information.

Past performance is not indicative of future results. In considering the operating history contained herein, recipients should bear in mind that such operating history is not necessarily indicative of future results, and there can be no assurance or guarantee that TIR or the Portfolio will achieve comparable results in the future.

Images contained herein are for illustrative purposes only.

TIMBERLAND
INVESTMENT RESOURCES LLC

Growing value for our clients every day

Thank You

Sentinel Real Estate Advisors Corporation

Mandate: **Real Estate Separate Account** **Hired: 2000**

Firm Information

Sentinel is an independent, privately held, real estate investment manager headquartered in New York, NY. Sentinel and its affiliates comprise a fully integrated organization that provides real estate investment management services to institutional and qualified private investors in the United States and abroad. Sentinel manages pooled and separate accounts holding diversified portfolios of real estate properties valued at $9.5 billion consisting of nearly 27,500 apartment units and 5.3 million square feet of commercial real estate.

Key Executives:
George Tietjen, Managing Director/Co-Portfolio Manager
Gregory Macchia, Associate

Investment Approach

Sentinel's mandate is unique among ARMB's real estate separate accounts focusing specifically on multifamily investments. Sentinel's organization structure is vertically integrated so virtually all professionals working on an investment property are Sentinel employees. The strategy for ARMB is to construct a portfolio of core multifamily properties in markets with high barriers to entry with a focus on income and long-term appreciation. Once a property is acquired, Sentinel seeks to add value to that investment. Sentinel's asset and property management teams take an active role in maximizing the property's potential through aggressive leasing strategies, continuous maintenance and capital improvement programs and cost controls.

Benchmark: NFI-ODCE Index

Total ARMB Mandate

Assets Under Management:
6/30/2022: $316,871,567

Concerns: None

6/30/2022 Performance

	Last Quarter	1-Year	3-Years Annualized	6-Years Annualized	22-Years Annualized
Manager Gross	1.63%	36.47%	17.20%	12.83%	10.84%
Fee	0.10%	0.38%	0.42%	0.47%	0.58%
Manager Net	1.53%	36.09%	16.78%	12.36%	10.26%
Benchmark	4.54%	28.31%	11.66%	9.10%	7.71%

ALASKA RETIREMENT MANAGEMENT BOARD

George Tietjen, Managing Director/Portfolio Manager

Gregory Macchia, Associate

BOARD PRESENTATION

BY SENTINEL REAL ESTATE CORPORATION

September 15-16, 2022

Sentinel

Table of Contents

		Page
I.	Sentinel Real Estate Corporation	1
II.	US Multifamily Market	4
III.	Account Update	9

I. Sentinel Real Estate Corporation

Sentinel Overview

Sentinel has over 50 years of global real estate investment experience

- 1969 — Sentinel is founded
- 1976 — Launches Sentinel Real Estate Fund
- 1984 — State of Alaska invests in Sentinel Real Estate Fund
- 1987 — Becomes an independent, privately held firm
- 1988 — Establishes first separate account
- 1998 — **Sentinel establishes Sentinel SMA with Alaska**
- 2000 — Launches first closed-end commercial fund
- 2004 — Forms first private multifamily REIT
- 2008 — Launches first value-add multifamily fund
- 2012 — Establishes Australian BTR development platform
- 2017 — Launches first National Urban strategy fund
- 2019 — Celebrates its 50th Anniversary
- 2019 — Launches Core-Plus strategy fund

Highlights

- Founded in 1969
- Vertically integrated platform with over 750 employees
- $9.5 billion of AUM
- Headquartered in New York City with 11 additional offices across the US
- International offices in Australia, Germany and The Netherlands

Since Inception

- Over $21 billion of direct real estate investments acquired and managed comprising:
  - Nearly 154,000 apartment units across 633 multifamily communities
  - 33.7 million SF across 192 commercial properties

Current Portfolio

- Nearly 27,500 apartment units across 162 communities
- 5.3 million SF of space across 37 commercial properties

Account Management Team

Vertically-integrated team with 53 years of multifamily investing experience

Advisory Account Management Team

Sentinel Investment Committee

Michael F. Streicker, *President**

Karen F. Hallock, *Managing Director**

Robert Leniart, *Managing Director*

Portfolio Management

George Tietjen,
Managing Director/Portfolio Manager

Gregory Macchia,
Associate

ACCOUNTING

RESEARCH & COMMUNICATIONS

CLIENT SERVICING

INFORMATION TECHNOLOGY

Acquisitions/Dispositions & Financing

William Freydberg,
Senior Vice President

Brian Kraut,
Senior Vice President

Alan Greenberg,
First *Vice President*

David Stenger,
First Vice President

Matthew Durham,
Vice President

Michael Gershman,
Vice President

Asset & Property Management

Karen Charde,
Managing Director

Anita Breslin,
Managing Director

Vanessa Healy,
Senior Vice President

Robert Maleszewski,
First Vice President

Financial & Client Reporting

Leland J. Roth,
*Managing Director**

Karen F. Hallock,
*Managing Director**

Joseph Stein,
Senior Vice President

Gulcan Ortac,
Vice President

Architectural Design, Capital Works & Sustainability

Robert Leniart,
Managing Director

Keith Lucas,
Managing Director

Hai Chien Wang,
Vice President

Catherine Sherzer,
Vice President

Jonathan Shrift,
Vice President/Project Manager

** Executive Committee Members*

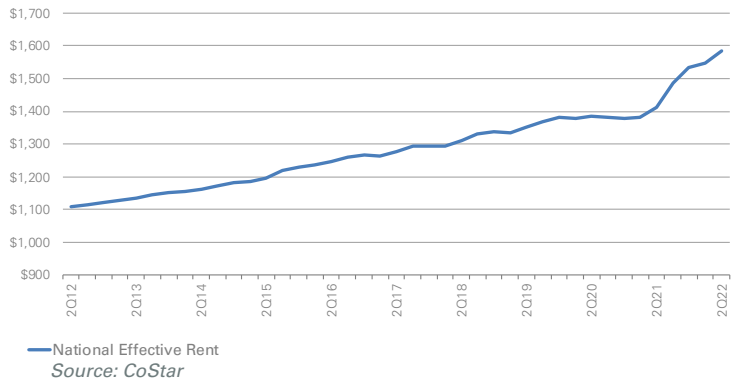
II. US Multifamily Market

Demand in the US Apartment Market

The US multifamily sector continued to experience healthy performance during the second quarter of 2022.

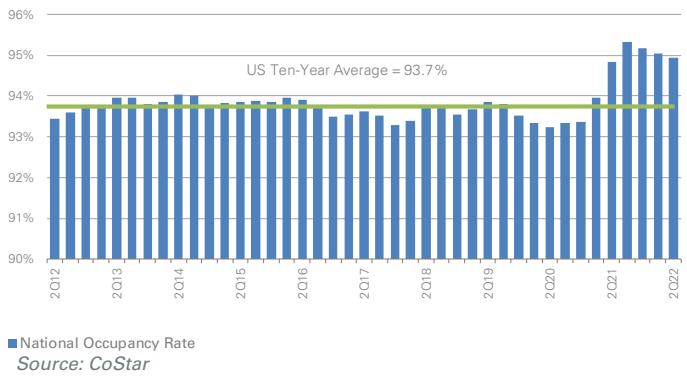
- **Effective rents increased 9.7% on an annual basis**, registering well above the ten-year historical average growth rate of 3.5%. This was the largest year-over-year effective rent growth seen in the second quarter since CoStar began record keeping in 2000.
- **The nation's occupancy rate remained relatively stable at 94.8% as of Q2 2022**, down ten basis points from 1Q 2022, but measuring ten basis points higher than the same period in 2021. This represented the second consecutive quarter that average occupancy has fallen, although it continues to trend above the ten-year historical average of 93.7%.
- Despite strong nationwide rent growth, there are initial signs that rental housing demand is moderating from its record-setting pace.
  - There were approximately 72,000 units absorbed in the second quarter of 2022, compared to the delivery of roughly 95,000 units. This followed the record setting quarterly absorption total of 265,958 units in the second quarter of last year.
- Due to higher rent increases and other inflationary pressures, more tenants are beginning to return home to live with family or are doubling-up with roommates once their leases expire.
  - Absorption over the trailing 12 months through June 2022 was reported to be 381,097 units, compared to the nearly 700,000 units absorbed during the previous 12-month period. This level of absorption was in line with the delivery of about 384,000 units during the one-year period ended June 30, 2022 and outweighed the ten-year historical average absorption of approximately 330,000 units seen annually from 2012 through 2021.

Quarterly Effective Rents for US Apartments



Source: CoStar

Quarterly Occupancy Rates for US Apartments



Source: CoStar

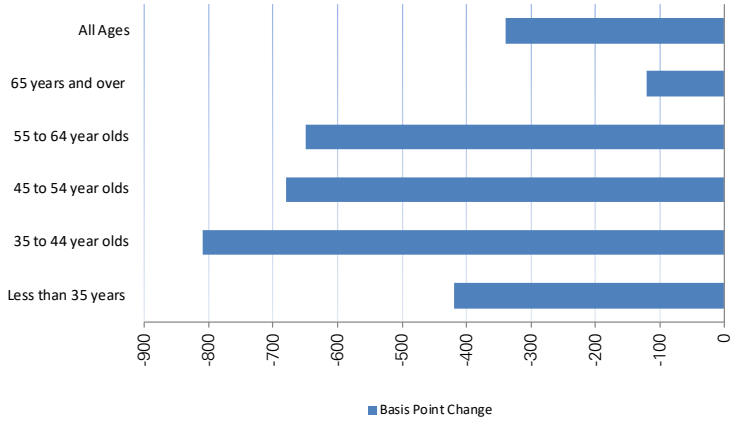
Sentinel

Homeownership Trends

Rapidly rising for-sale housing costs have been keeping potential homeowners sidelined and in the renter pool longer.

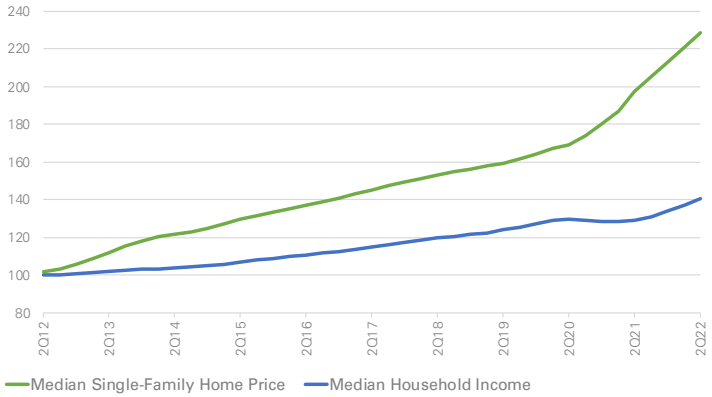
- **US homeownership through Q2 2022 remained well below its historical peak within all age cohorts.**
- **Median-priced single-family homes are now less affordable** than at any time this century in approximately 97% of the nation's counties, according to a new report by real estate data provider, *ATTOM*.
- **The median sales price of a single-family home reached a record high of $423,300 in June 2022, increasing by 13.3%** over the past 12 months and representing the 124th consecutive month of year-over-year growth (*National Association of Realtors*).
- According to a recent analysis by real estate brokerage firm Redfin, approximately 49% of homes sold above list price in June 2022, up from 41.2% in June 2021.
- Due to the *Federal Reserve's* recent interest rate hikes, residential mortgage originations fell to a 22-year low in June 2022 and forecasted home sales are expected to slow due to increasingly unaffordable monthly mortgage payments for new borrowers.

Change in US Homeownership by Age Cohort 2004-2Q22



Source: US Census Bureau

US Median Home Price and Median Household Income Rolling Index



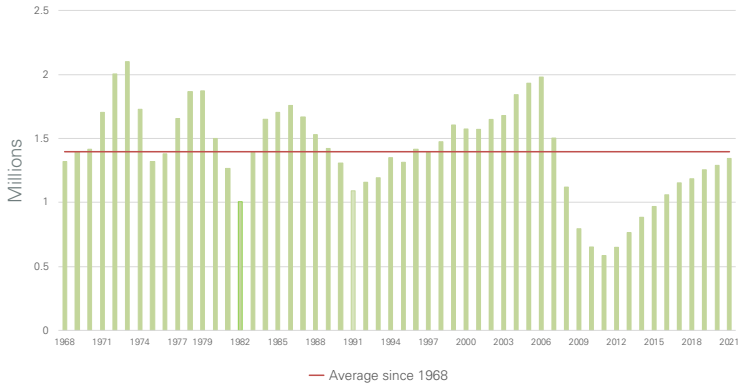
Source: US Census Bureau

Supply in the US Apartment Market

Due to uncertainties stemming from ongoing supply chain constraints, labor shortages, soaring inflation and volatile financing costs, developers have had a difficult time keeping pace with housing demand, creating a shortage of several million homes.

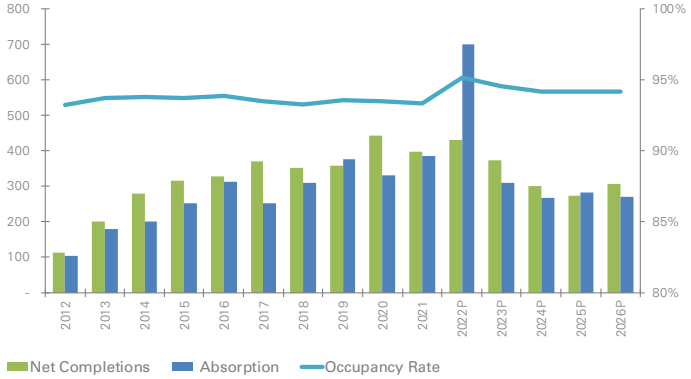
- There were 1.3 million housing units brought online in 2021, which trailed the long-run average by 4.2%; 27.1% of the total were multifamily units.
- **Rapidly rising costs for material and labor** are directly impacting the total costs for single-family and multifamily projects across the nation.
  - According to the US Census Bureau, construction costs rose by 17.5% between 2020 and 2021, representing the largest spike since 1970. Construction costs last year were also more than 23% higher than in 2019.
- **New home construction in the US declined 2.1% in June 2022** with single-family home starts at its lowest level since April 2020 at the onset of the COVID-19 pandemic.

New Privately Owned Housing Completed in US



Source: US Census Bureau

US Apartment Market Trends



Source: CoStar
(P) Projected

Sentinel

Transaction Activity

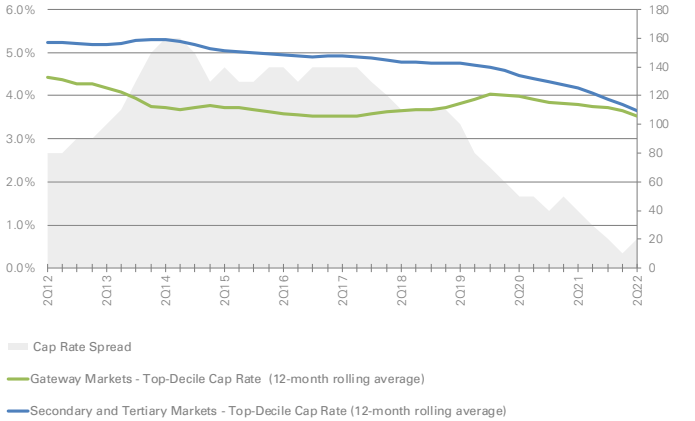
The US multifamily sector continues to attract record levels of investment activity.

- **Total transaction volume during the first six months of the year totaled $145.6 billion, increasing by 48.4% compared to 2021's record-setting pace over the same year-to-date period.**
  - Sales volume in the nation's six Gateway markets grew by 52.0% in the first half of the year, to $29.2 billion, while deal volume in secondary & tertiary markets grew by 47.6%, to $116.4 billion.
- Due to strong buyer interest and a highly competitive acquisition environment, multifamily cap rates have compressed to their lowest level on record due to strong buyer interest and a highly competitive acquisition environment.
  - The nation's 12-month rolling top-decile cap rate measured 3.7% as of the second quarter of 2022, down 40 basis points year-over-year from 4.1%.
  - For deals in the nation's secondary and tertiary markets, the top-decile cap rate declined by 50 basis points to a rolling 12-month average of 3.7% as of Q2 2022. This was the lowest cap rate on record for top-tier assets in those markets. The rolling 12-month top-decile cap rate in the Gateway markets compressed 30 basis points to 3.5%.

US Quarterly Sales Volume

Source: RCA

US Apartment Cap Rates



Source: RCA

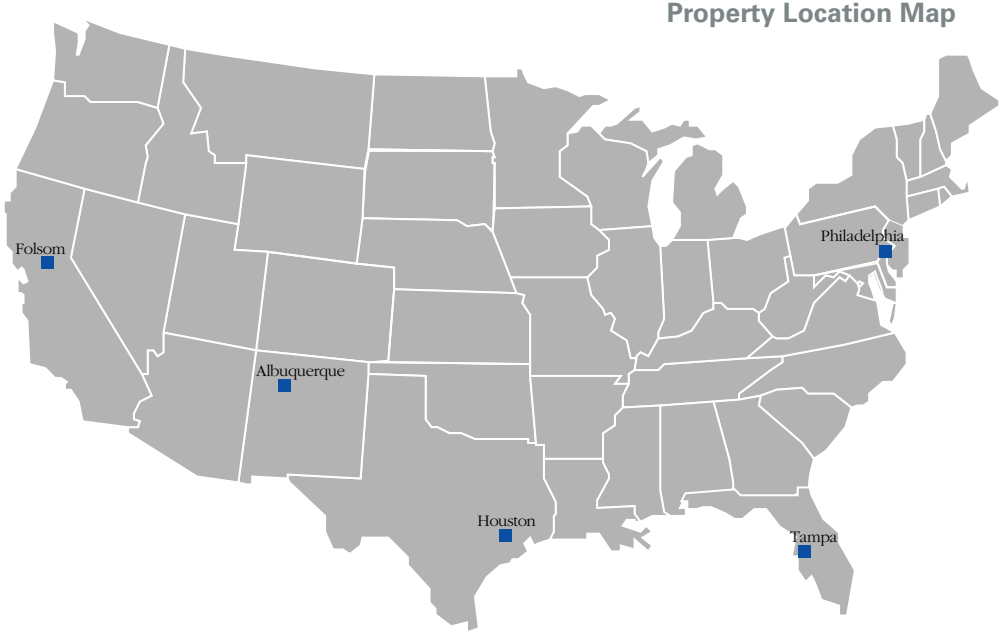
Sentinel

III. Account Update

Account Overview

- The Sentinel relationship with the State of Alaska pension systems began in 1984 with an investment in Sentinel Real Estate Fund, followed by an investment in the closed end limited partnership, Sentinel Realty Partners III, LP. The current Sentinel managed separate account on behalf of Alaska Retirement Management Board began in 2000.
- The Account's mandate is to construct a portfolio of geographically diversified core-style apartment communities. The Account has historically invested in garden and mid-rise style apartment communities in suburban locations of secondary markets in the US, generally constructed after 2000.
- In September 2020, the Alaska Retirement Management Board allocated an additional $125 million to the Account and permitted Sentinel to leverage the portfolio up to 30% of gross assets, with no single asset leveraged higher than 65% of its value. The proceeds of financings are and will be utilized to continue to broaden the geographic diversification of the portfolio.
- As of June 30, 2022, the Account's portfolio consists of five apartment communities located in Folsom, California; Brandon (Tampa), Florida; Albuquerque, New Mexico; Houston, Texas; and Lansdale (Philadelphia), Pennsylvania. The properties have an aggregate value of $382.6 million.

Property Location Map



Sentinel

Account Performance

Alaska Retirement Management Board Investment
Returns for the Period Ended June 30, 2022

	ARMB [1]			NFI-ODCE INDEX [1]		
Period	**Gross Income Return**	**Unrealized Appreciation**	**Total Gross Return**	**Gross Income Return**	**Unrealized Appreciation**	**Total Gross Return**
Quarter	1.02%	0.57%	1.59%	0.87%	3.90%	4.77%
1-Year	4.75%	30.80%	36.60%	3.83%	24.95%	29.51%
3-Years	5.03%	11.89%	17.36%	3.93%	8.47%	12.66%
5-Years	5.14%	8.27%	13.74%	4.05%	6.29%	10.54%
10-Years	5.24%	6.69%	12.20%	4.46%	6.47%	11.16%
Since Inception (3Q 2000)	6.08%	4.70%	10.99%	5.60%	2.96%	8.71%

	ARMB [1]			NFI-ODCE INDEX [2]		
Period	**Net Income Return**	**Unrealized Appreciation**	**Total Net Return**	**Net Income Return**	**Unrealized Appreciation**	**Total Net Return**
Quarter	0.92%	0.57%	1.49%	0.64%	3.90%	4.54%
1-Year	4.33%	30.80%	36.08%	2.93%	24.83%	28.31%
3-Years	4.58%	11.89%	16.87%	3.03%	8.43%	11.66%
5-Years	4.68%	8.27%	13.24%	3.14%	6.27%	9.55%
10-Years	4.73%	6.69%	11.66%	3.52%	6.46%	10.15%
Since Inception (3Q 2000)	5.50%	4.70%	10.39%	4.63%	2.97%	7.71%

(1) *Returns shown are for Sentinel orginated assets, Leverage in the ARMB account commenced during 1Q 2022.*

(2) *The NFI-ODCE (NCREIF Fund Index-Open-End Diversified Core Equity) is a fund level, capitalization weighted, time-weighted return index. It includes property investments at ownership share, cash balances and leverage; therefore, the returns reflect the fund's actual ownership positions and financing strategy. Total net assets: $278.05 billion. The NFI-ODCE index includes multiple property types: apartments, industrial, office, retail and other.*

Portfolio Activity During Fiscal 2022

Significant progress was made during the fiscal year ended June 30, 2022 to broaden the geographic diversification of the Account, introduce accretive leverage to the portfolio and generate returns in excess of its benchmarks.

- **Acquisitions:**
  - 3000 Sage Apartments, a 324-unit mid-rise apartment community located in Houston, Texas, was acquired on November 1, 2021 for $62,600,000.
  - Lansdale Station Apartments, a 186-unit mid-rise apartment community with 11,904 square feet of commercial space located in suburban Philadelphia, was acquired on June 21, 2022 for $61,100,000.
- **Financings:**
  - On January 27, 2022, ABQ Uptown Apartments was financed with a $23.65 million five-year loan with a life insurance company at a rate of 2.51%, interest only.
  - On April 14, 2022, Preserve at Blue Ravine Apartments was financed with a $43.55 million five-year loan with a life insurance company at a rate of 2.75%, interest only.
  - As of June 30, 2022, the Account's average interest rate on financings was 2.65% per annum.
- **Account Liquidity:**
  - As of June 30, 2022, the remaining undeployed allocation is $66,880,510.
  - Account leverage is 17.2% as of June 30, 2022, allowing for additional leverage up to 30% of gross assets to deploy into the acquisition of an additional two or three communities.

Strategy for 2023

Continue to operate the existing portfolio to maximize revenue, net operating income and cash flow.

- Complete initial capital programs for 3000 Sage Apartments and evaluate potential for restarting unit upgrade program.
- Continue to evaluate acquisition and accretive leverage opportunities given the changing interest rate environment.
- Maintain focus on future acquisitions in secondary markets and suburban submarkets with:
  - Manageable supply growth.
  - High construction cost for multifamily and single-family housing.
  - Strong school systems.
  - High home prices and incomes.
  - Strong local employment base with good transportation access.
  - High quality retail, restaurant and entertainment establishments nearby.
- Target markets include: Atlanta, Richmond, Raleigh, Charlotte, Nashville, Jacksonville, Indianapolis, Kansas City, Austin, Dallas, Denver, Phoenix, Portland.

Portfolio Operations Update

- The portfolio's same-store average occupancy for the 12 months ended June 30, 2022 was 94.0%, a 202-basis point decrease from the portfolio's average occupancy during the prior year. This decrease can be attributed to strategic rent increases throughout the portfolio used to capitalize on the high levels of occupancy built during the previous year as a result of heightened demand for apartment rentals within each property's respective submarket.
- Same-store total income increased by 7.3% for the 12-month period ended June 30, 2022 on a year-over-year basis primarily due to a 9.3% increase in market rents.
- Same-store operating expenses increased modestly on a year-over-year basis primarily due to higher costs associated with insurance, payroll and repairs and maintenance.

Portfolio Operations (Same Store)
12 Months Ended June 30, 2022

		Fiscal 2022	Fiscal 2021	Variance (%)
Total Income		$15,993,444	$14,909,605	7.3%
Less:	Taxes and Insurance	$2,049,712	$1,981,603	-3.4%
	Utilities	$635,860	$648,290	1.9%
	Other Expenses	$3,087,752	$2,976,875	-3.7%
Total Operating Expenses		$5,773,324	$5,606,768	-3.0%
Net Operating Income		$10,220,121	$9,302,836	9.9%

ABQ Uptown Apartments

Location:	Albuquerque, New Mexico
Acquisition Date:	September 2018
Property Type:	Garden-style
Number of Units:	198
Purchase Price:	$38,800,000 ($195,960/unit)
Value (6/22):	$63,000,000 ($318,182/unit)
Loan Amount:	$23,650,000 (37.5% LTV)
Interest Rate:	2.51%
Since Inception IRR:	18.82%

- ABQ Uptown Apartments occupies a premier location within ABQ Uptown, an upscale 230,000 lifestyle center with stores and restaurants, including Apple, Michael Kors, Banana Republic, Elephant Bar and Starbucks. The community is adjacent to a Trader Joe's grocer.
- Proximate to large local employers, including Sandia Labs, Kirtland Air Force Base, Netflix, ABQ Studios, University of New Mexico Hospital and Fidelity Investments.
- Community offers studio, one-, two- and three-bedroom floor plans with a patio/balcony, full-sized washer and dryers and a full range of kitchen appliances.
- Community amenities include a clubhouse, a resident lounge, a resort-style pool and a fitness center. Sentinel refurbished the pool and deck and installed an electronic parcel locker system in 2019 after acquisition. To reduce electricity consumption and cost and replacement of bulbs, it converted to LED lighting.
- To maintain ABQ Uptown's upscale position in the market, Sentinel will renovate the clubhouse, fitness center and resident lounge in fiscal 2023. It will also continue a successful interior unit upgrade program with higher rental levels to provide attractive returns on incremental cost. The unit features will include higher quality stainless steel appliances, quartz countertops, wood-style flooring and updated plumbing and electrical features.

ABQ Uptown Apartments

Property Level Operations
12 Months Ended June 30, 2022

	Fiscal 2022	Fiscal 2021	Variance (%)
Total Income	$3,717,650	$3,396,209	9.5%
Less: Taxes and Insurance	$297,923	$304,006	2.0%
Utilities	$106,659	$100,069	-6.6%
Other Expenses	$808,254	$735,594	-9.9%
Total Operating Expenses	$1,212,837	$1,139,669	-6.4%
Net Operating Income	$2,504,813	$2,256,540	11.0%

Preserve at Blue Ravine Apartments

Location:	Folsom (Sacramento), California
Acquisition Date:	July 2008
Property Type:	Garden-style
Number of Units:	260
Purchase Price:	$40,570,000 ($156,038/unit)
Value (6/22):	$101,850,000 ($391,731/unit)
Loan Amount:	$43,550,000 (42.8% LTV)
Interest Rate:	2.75%
Since Inception IRR:	11.51%

- Preserve at Blue Ravine Apartments is located in the premier Sacramento suburb of Folsom with a highly rated school system, numerous shopping and restaurant choices, a walkable downtown area and an expansive bike and walk trail system.
- Folsom has a significant private sector employment base that includes a large Intel R&D facility, Micron Technologies, SAFE Credit Union, Johnson Controls, Kaiser Permanente and Kikkoman Foods.
- The community offers one-, two- and three-bedroom apartment homes with full-sized washer/dryers and balconies or patios in every unit. Over the course of the holding period, unit interiors have been updated with new countertops, kitchen appliances, flooring and lighting and plumbing features, generating additional rents with returns ranging from 15%-30% on incremental cost.
- Community amenities include a clubhouse with a resident lounge, a fitness center, a resort-style pool and a sport court.
- Investments have been made in building systems over the holding period to preserve and extend the life of the investment. This includes roofing, exterior paint and wood replacement, replacement of stairs and supports and landscaping.
- A roofing project will be completed in fiscal 2023 along with a project to inspect and repair balconies as necessary.

Preserve at Blue Ravine Apartments

Property Level Operations
12 Months Ended June 30, 2022

	Fiscal 2022	Fiscal 2021	Variance (%)
Total Income	$6,061,167	$5,732,196	5.7%
Less: Taxes and Insurance	$667,634	$642,033	-4.0%
Utilities	$224,988	$237,972	5.5%
Other Expenses	$1,122,060	$1,131,990	0.9%
Total Operating Expenses	$2,014,682	$2,011,995	-0.1%
Net Operating Income	$4,046,485	$3,720,201	8.8%

Versant Place Apartments

Location:	Brandon (Tampa), Florida
Acquisition Date:	September 2000
Property Type:	Garden-style
Number of Units:	384
Purchase Price:	$27,264,000 ($71,000/unit)
Value (6/22):	$93,850,000 ($244,401/unit)
Since Inception IRR:	11.49%

- Versant Place is located in the eastern Tampa suburb of Brandon, approximately 15 miles from downtown. It is in proximity to Westfield Brandon Mall and Lake Brandon destination retail and restaurant developments.
- Major area employers include Brandon Regional Hospital, TECO Energy, BayCare Health, Citibank Technology, JPMorgan Chase and Cognizant Technologies.
- The community has one-, two- and three-bedroom apartment homes with balconies or patios in every unit along with washer and dryers.
- Versant Place has updated unit interiors with new stainless steel kitchen appliances and wood-style flooring for additional rent premiums and a return on incremental cost ranging from 18%-27%.
- Investment in community amenities and appearance has benefited the property's performance over the long holding period. In 2023, modest updating of pool area amenities will be undertaken along with refreshment of some fitness equipment.

Versant Place Apartments

Property Level Operations
12 Months Ended June 30, 2022

Property Level Operations
12 Months Ending June 30, 2022

	Fiscal 2022	Fiscal 2021	Variance (%)
Total Income	$6,214,628	$5,781,200	7.5%
Less: Taxes and Insurance	$1,084,155	$1,035,564	-4.7%
Utilities	$304,212	$310,250	1.9%
Other Expenses	$1,157,438	$1,109,291	-4.3%
Total Operating Expenses	$2,545,805	$2,455,104	-3.7%
Net Operating Income	$3,668,822	$3,326,095	10.3%

Sentinel

3000 Sage Apartments

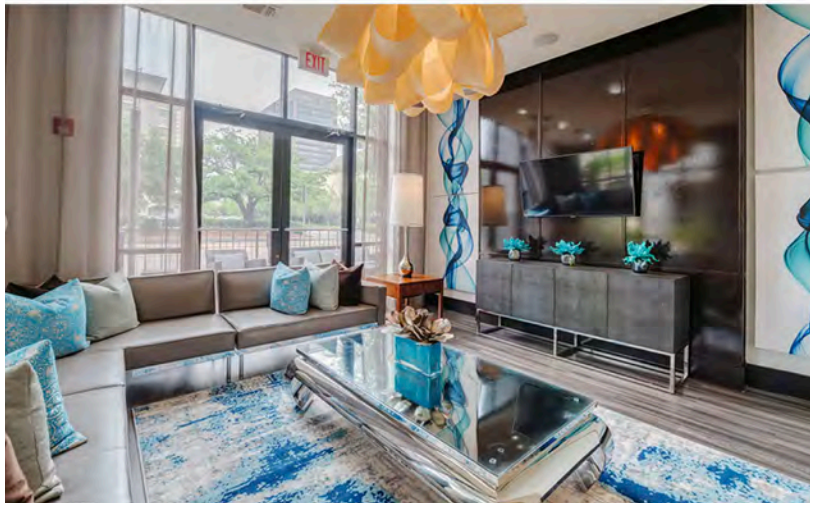
Location:	Houston, Texas
Acquisition Date:	November 2021
Property Type:	Mid-rise
Number of Units:	324
Purchase Price:	$62,600,000 ($193,210/unit)
Carrying Value (6/22):	$62,794,984 ($193,812/unit)
Projected 10-Year IRR:	6.40%

- 3000 Sage Apartments was acquired on November 1, 2021. The property is a 324-unit mid-rise apartment community located within the desirable Galleria Uptown submarket of Houston, Texas.
- The property is three blocks from The Galleria, Texas' largest suburban mixed-use development. The complex comprises over 300 stores and restaurants, two hotels with a combined 900 rooms and three office towers totaling more than one million square feet.
- The property is four blocks from the Williams Tower, the tallest suburban office building in the US, and is within the 22.5 million square feet Galleria Uptown Post Oak Park office submarket.
- Texas Medical Center, the largest medical center in the world with 106,000 direct employees and 72,000 students, is located 5.25 miles from the property.
- 3000 Sage Apartments is forecasted to generate an initial unlevered return of 3.60% and a ten-year unlevered IRR of 6.40%. Occupancy as of July 31, 2022, was 92.1%.
- During the first two years of ownership, Sentinel plans to update the clubhouse and leasing area, along with the pool and fitness center amenities, which have not been addressed in several years. Sentinel also expects to continue and potentially expand the unit upgrade program started by the prior owner.

3000 Sage Apartments

Property Level Operations
12 Months Ended June 30, 2022

	Since Acq. Actual	Since Acq. Budget	Variance (%)
Total Income	$3,372,831	$3,596,290	-6.2%
Less: Taxes and Insurance	$936,326	$1,043,478	10.3%
Utilities	$126,091	$155,223	18.8%
Other Expenses	$962,607	$1,046,647	8.0%
Total Operating Expenses	$2,025,024	$2,245,348	9.8%
Net Operating Income	$1,347,808	$1,350,942	-0.2%



Sentinel

Lansdale Station Apartments

Location:	Lansdale, Pennsylvania
Acquisition Date:	June 2022
Property Type:	Mid-rise
Number of Units:	186
Purchase Price:	$61,100,000 ($328,495/unit)
Carrying Value (6/22):	$61,084,000 ($328,409/unit)
Projected 10-Year IRR:	6.22%

- The Account acquired Lansdale Station Apartments on June 21, 2022. The property is a 186-unit mid-rise apartment community located within the desirable Upper Montgomery County submarket of Philadelphia, Pennsylvania. The community was constructed in 2019 and is a core-style property.
- Lansdale Station Apartments is located one block off Main Street in downtown Lansdale, Pennsylvania, providing access to multiple lifestyle amenities, including award-winning restaurants, boutique retailers and an array of entertainment options.
- The property is adjacent to the Southeastern Pennsylvania Transportation Authority's (SEPTA) Lansdale train station and provides residents with direct access to Center City Philadelphia in 45 minutes.
- Lansdale Station Apartments is situated equidistant from Route 309 and Interstate 476, which provide access to suburban Philadelphia's largest employment centers such as Conshohocken and King of Prussia, in addition to the Lehigh Valley.
- As the pharmaceutical industry is a major employer throughout the Philadelphia area, residents at Lansdale Station Apartments benefit from a short eight-minute drive to a large Merck Company facility, which is located 2.5 miles southwest of the property and is considered the largest employer in Montgomery County with over 12,500 local employees.
- Merck announced a further expansion of its workforce in the area to a facility 15 minutes from Lansdale Station.

Lansdale Station Apartments

UBS Farmland Investors, LLC

Mandate: **Farmland** **Hired:** **2004**

Firm Information

UBS Farmland Investors, LLC is a subsidiary of UBS Realty Investors LLC, which is an indirect wholly owned subsidiary of UBS AG. UBS AG is a pre-eminent global financial services firm, with stock registered on both the New York and Zurich stock exchanges.

As of 6/30/22, UBS Farmland, LLC's total assets under management were $2.1 billion.

Key Executives:
Darren Rabenou, Head of Food & Agriculture and Head of ESG Investment Strategies
Jim McCandless, Head of Real Estate Farmland
Daniel E. Murray, Director

Investment Approach

UBS Farmland Investors, LLC investment decision-making is team-oriented. Regional managers source and screen new investment opportunities in consultation with the portfolio manager and members of the investment committee to ensure that the investments meet the established guidelines and standards. Approval and commitment of capital must be cleared by the regional manager, portfolio manager and investment committee.

Inputs to the process include comparable sales and rent data; rainfall and growing season statistics; irrigation sources and water costs; drainage systems; crop yield history; soil types and topography; crop marketing and/or contracts; buildings and improvements; conservation plans; mineral exploration/production activity; economic analysis – returns/projections; phase I environment site assessment; and legal (access, encroachment, etc).

Benchmark: Leased only properties in NCREIF Farmland Index weighted 80% row and 20% permanent crop.

Total ARMB Mandate

Assets Under Management:
6/30/22: $964,100,543

Concerns: None

6/30/2022 Performance

	Last Quarter	1-Year	3-Years Annualized	6-Years Annualized	17.25-Years Annualized
Manager Gross	0.74%	10.39%	7.21%	6.06%	9.23%
Fee	0.15%	0.70%	0.76%	0.82%	0.86%
Manager Net	0.59%	9.69%	6.45%	5.24%	8.37%
Benchmark	1.98%	12.39%	7.64%	6.57%	10.65%

UBS

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Midnight Sun

UBS Asset Management, Real Estate & Private Markets
Food & Agriculture

Alaska Retirement Management Board

Jim McCandless
Dan Murray

September 16, 2022

Table of contents

Section 1	**Team & Biographies**	2
Section 2	**Midnight Sun (MS)**	7
Section 3	**Farmland Investment Characteristics**	11

Section 1

Team & Biographies

Farmland US

Northwest Region
Charles W. Bryan, Jr. ARA
Director

Stephanie Brain
Admin. Assistant

Midwest Region
Brian C. Duke, AFM
Director

Western Region
Erik C. Roget, ARA, RPRA, AFM
Director

Mark Van Elswyk
Associate Director

Southern Region
D. Cullum Jefferies
Director

UBS Farmland Investors LLC
10 State House Square
15th floor
Hartford, CT 06103-3604
860-616 9000

James B. McCandless
Managing Director
Head of Farmland

Daniel E. Murray
Executive Director

Barbara Missal
Director

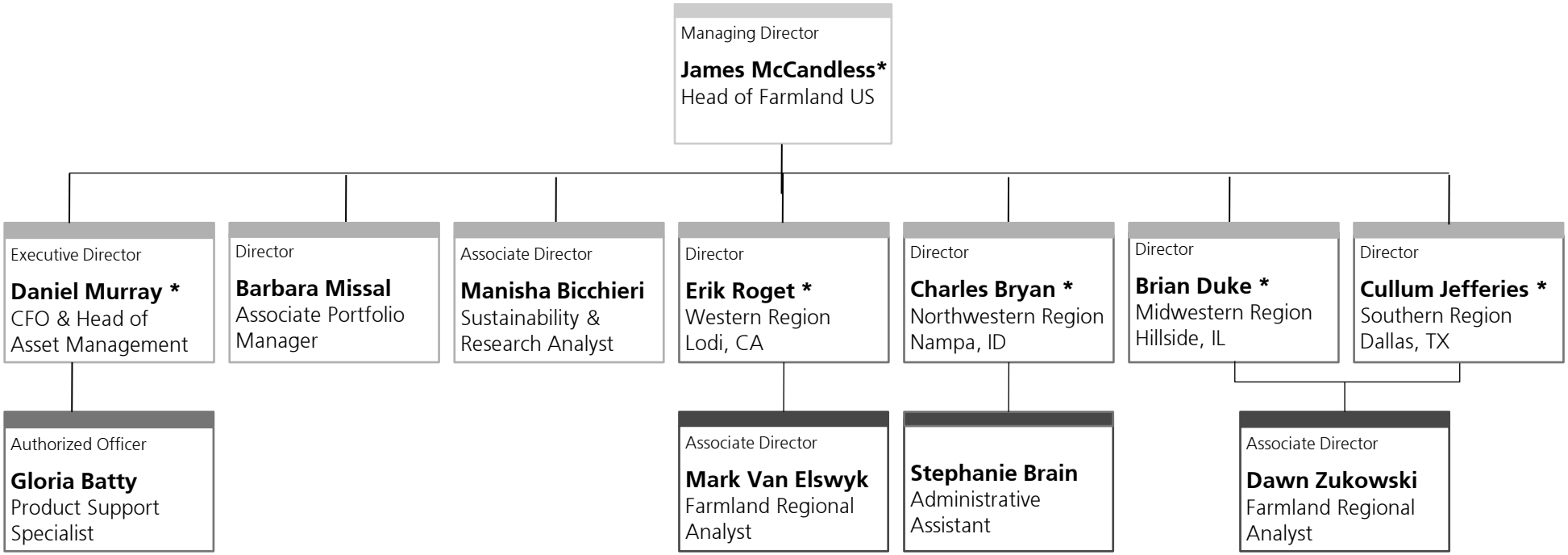
Manisha Bicchieri
Associate Director

Dawn Zukowski
Associate Director

Gloria Batty
Product Specialist

- UBS Farmland Investors LLC is the farmland investment business within UBS Asset Management, Real Estate & Private Markets, Food & Agriculture
- UBS Farmland Investors LLC began investing for US tax-exempt investors in 1991 through its predecessor and has been a major contributor to the NCREIF Farmland Index since its inception in that same year
- Our seasoned regional officers are responsible for the sourcing, acquiring, managing and selling of properties in their regions subject to investment committee approval

Farmland US



UBS Asset Management, Real Estate & Private Markets, Food & Agriculture

Certain logistic functions support the business such as Financial Control, Human Resources, IT, Legal & Compliance and Operation Risk Control. These Functions have reporting lines directly to Group Function heads and do not report into the business

*Members of the UBS Farmland Investors Investment Committee

There is no guarantee that the current portfolio management team will remain with the Fund and can change without notice

UBS Farmland Investors LLC biographies

- **James B. McCandless,** Managing Director, Head of Real Estate Farmland, and President/Chief Executive Officer of UBS Farmland Investors LLC. Mr. McCandless is one of the founders of AgriVest. He has over 47 years of experience financing and investing in agricultural real estate. His career includes positions with Bank of America, Connecticut Mutual Life Insurance Company and Bell Investment Company. Mr. McCandless' duties with these institutions focused exclusively on financing and equity investment in agricultural real estate. His experience covers a broad range of property types in the primary farming regions of the United States. Mr. McCandless received his bachelor's degree in Animal Science and Business Administration from Oklahoma State University. He is an affiliated member of the American Society of Farm Managers and Rural Appraisers, a member of the Pension Real Estate Association and the National Council of Real Estate Investment Fiduciaries.
- **Daniel E. Murray,** Executive Director for UBS Farmland Investors, LLC. Mr. Murray is responsible for the Administration of UBS Farmland Investors LLC's asset management activities, property and portfolio performance measurement, as well as evaluation and analysis of property acquisitions and sales. He has over 13 years of experience in agricultural investment work. Prior to joining the firm in 2019, Mr. Murray held positions in Farmland Investment firms, Commodity Trading firms and a Dairy Research Center. He has undergraduate degrees in Animal Science as well as Applied Economics and Management from Cornell University and an MBA in Finance from Rensselaer Polytechnic Institute.
- **Barbara A. Missal**, Director of UBS Farmland Investors LLC. Ms. Missal is responsible for the management of the UBS Farmland Investors data warehouse, special projects, portfolio reporting, and assisting asset and portfolio management. She has over 30 years of experience with financial reporting and analysis in the real estate industry. Prior to joining the staff of UBS Farmland Investors in 2016, Ms. Missal was with UBS Realty Investors for 25 years. She was most recently a business analyst responsible for defining user requirements, system testing and ongoing user support for various software applications and was previously an accountant responsible for fund and property accounting. Prior to joining UBS Realty Investors, she was an auditor and Certified Public Accountant with Coopers & Lybrand. She received her Bachelor's Degree in Accounting from the University of Connecticut.
- **Charles W. Bryan, Jr.,** ARA, Director of UBS Farmland Investors LLC. Mr. Bryan is responsible for managing assets in the Northwest region and is based in Nampa, Idaho. He has been actively involved in agricultural real estate for over 35 years, primarily in the Northwest. Prior to joining the staff of UBS Farmland Investors LLC in 2005, he was a lending officer with Farm Credit Services in Idaho. Mr. Bryan has extensive farmland appraisal experience having also served as a Senior Appraiser and an Engineer Appraiser with Farm Credit Services. He received his bachelor's degree in Geology from Boise State University. He holds the designation "Accredited Rural Appraiser" awarded by the American Society of Farm Managers and Rural Appraisers.
- **Cullum Jefferies,** Director of UBS Farmland Investors LLC. Mr. Jefferies is responsible for managing assets in Texas, Arkansas, Louisiana, Mississippi and Florida. He has over 20 years of experience in real estate investment management. Prior to joining the staff of UBS Farmland Investors LLC in 2009, Mr. Jefferies was with GE Real Estate where he handled acquisitions, asset management, and valuations. He received his bachelor's degree in agribusiness and master's degree of land economics and real estate from Texas A & M University. He owns several small Texas farms with his family.

UBS Farmland Investors LLC biographies

- **Brian C. Duke**, AFM, Director of UBS Farmland Investors LLC. Mr. Duke is responsible for managing assets in Illinois, Indiana, Colorado, Wisconsin and Georgia. He has 29 years of experience in the acquisition and management of farmland investments in the Central and Western United States. Prior to joining the staff of UBS Farmland Investors in 2014, Mr. Duke was with The Northern Trust Company for 18 years. He was most recently serving as the Director of Agricultural Services, responsible for the management of over 200 agricultural properties in 27 states. Prior to joining Northern Trust he was the Assistant Manager of L. J. Duke Farms in Indiana. He received his Bachelor's Degree in Agricultural Economics from Purdue University. He holds the designation "Accredited Farm Manager" awarded by the American Society of Farm Managers and Rural Appraisers. He is also a Board Member of The Chicago Farmers organization.
- **Erik C. Roget,** ARA, RPRA, AFM, Director of UBS Farmland Investors LLC. Mr. Roget is responsible for managing assets in California and Arizona and is based in Lodi, CA. He has been actively involved in California and Western US agricultural real estate for over 41 years. Prior to joining the staff of UBS Farmland Investors LLC in 2010, he was Regional Vice President, Western Region, with Rabo Agri-Finance, an affiliate of Rabobank NA. Mr. Roget has extensive farmland appraisal and management experience having also served with Equitable Agri-Business Inc., Correia-Xavier Appraisals and the Federal Land Bank. He received his Bachelor's Degree in Agri-business from California State University-Fresno. He holds the designation "Accredited Rural Appraiser", "Accredited Farm Manager" and "Real Property Review Appraiser" awarded by the American Society of Farm Managers and Rural Appraisers. He holds a CA Certified General Appraiser's license. He and his wife own a farm in Madera County, CA.
- **Mark J. Van Elswyk**, Associate Director, UBS Farmland Investors LLC. Mr. Van Elswyk is responsible for assisting the management of assets in California and Arizona and is based in Lodi, CA. He has experience in agricultural appraisal and credit analysis and underwriting. Prior to joining the staff of UBS Farmland Investors LLC in 2022, he was with Yosemite Farm Credit for six years analyzing and underwriting agricultural loans. Before his time at Yosemite Farm Credit he worked at American AgCredit in their appraisal department analyzing farm real estate throughout California. During his employment with Yosemite Farm Credit he completed the Agricultural Lending Institute's two year program and was awarded a Certificate of Completion from California State University, Fresno and the Agricultural Lending Institute, Inc. He received his bachelor's degree in Business Administration from San Francisco State University with a concentration in Finance. He also studied real estate during his time at San Francisco State and received a certificate in commercial real estate from San Francisco State's partnership with the Building Owners and Managers Association.
- **Manisha Bicchieri**, Associate Director of UBS Farmland Investors LLC. Ms. Bicchieri is responsible for managing the firm's ESG initiatives including the implantation and administration of the Leading Harvest Farmland Management Standard. She is also the firm's research analyst. Ms. Bicchieri has over five years of agricultural finance and investment experience having served as a Credit Representative with Farm Credit East, Portfolio Analyst with Hancock Natural Resource Group and Assistant Vice President of Forestry and Agriculture with the Rohatyn Group. She received her Bachelor of Science in Resource Economics with a concentration in Environmental Economics and Policy from the University of Connecticut.
- **Dawn Zukowski**, Experienced real estate analyst with a broad background in portfolio management, finance and legal industries including lease/contract negotiation and review. Accomplished in all areas of property management, acquisition, financing and disposition real estate including land, residential, retail and commercial properties. A.S. in Legal Assistant Studies – B.S. in Business Administration UMASS (In progress).

Section 2

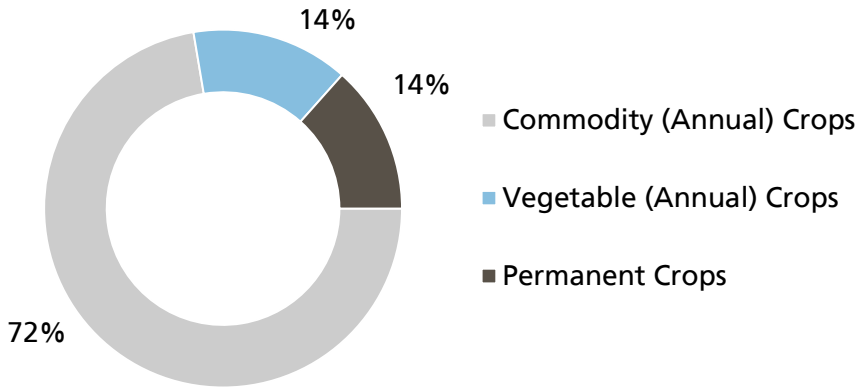
Midnight Sun

Midnight Sun portfolio

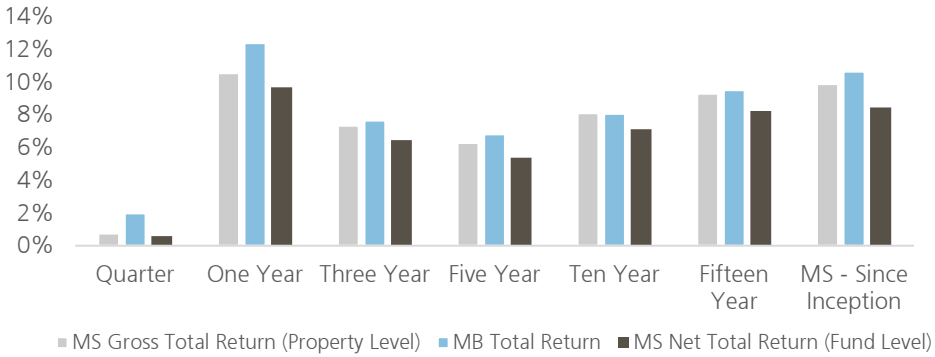
- Midnight Sun (MS) was launched October 7, 2004
- Portfolio summary:
  - USD 973.6 million in gross asset value
  - 144,987 acres (227 square miles) in fifteen states
  - 88 investments growing over 25 major crops
  - One-year gross property level return was 10.54%, with since inception gross return of 9.88%
  - Cash Distributions: USD 232.3 million Since Inception

Data as of June 30, 2022
Source: UBS Asset Management, Real Estate & Private Markets, Food & Agriculture

Portfolio distribution by crop type



MS Account Annualized Performance



Source: UBS Asset Management, Real Estate & Private Markets, Food & Agriculture. Past performance is not indicative of future results. Inception date for portfolio calculations is 4/1/05 at the client's request. Northern Ag properties are included as of 10/1/20.
Midnight Sun Benchmark (MB) is a custom benchmark defined by the client.
MS Gross Total Return and MB are property level returns calculated using the NCREIF Farmland Index return formula which does not include fees.
MS Net Total Return is a time-weighted fund level calculation that includes cash and reinvestment of income and is net of fees and other fund level expenses.

Portfolio distribution by geographic region

UBS

Midnight Sun portfolio

Allocations*

As of August 31, 2022

MSI#74 Highland Orchards, Yakima County, WA — *Crops: apples, cherries*

Cost: USD 6.4 million — *Appraisal:* USD 6.8 million — *Acres: 353* gross, 279 net

MSI#75 Potter Ranch, Yuma County, AZ — *Crops: winter vegetables*

Cost: USD 13.5 million — *Appraisal:* TBD — *Acres: 306* gross, 285 net

MS Updates

Rotation Position & Remaining Allocation: MS is in 4th position in the rotation after the two allocations above. Remaining allocation is approximately USD 86 million inclusive of MSI#74 Highland Orchard and MSI#75 Potter Ranch.

Capital Improvement Projects: the equivalent of 14% of the Midnight Sun portfolio's Net Operating Income was used for capital expenditures in FY 2022. This is approximately equals the annual fiscal year average Since Inception.

Significant Capital Projects:

- **MSI#17 Phipps Road Orchard:** Pink Lady & Cosmic Crisp grafting project started in 2019 (Pink Ladies are expected to produce 21 bins per acre this year; Cosmic Crisps are expected to produce 36 bins per acre this year)
- **MSI#15 Galactic Orchard:** Cosmic Crisp grafting project started in 2019 (Expected to produce 57 bins per acre this year)
- **MSI#66 Wapato Orchard:** Two separate Cosmic Crisp planting projects with planting started in 2020 and 2022. Projects are going as expected.

Data as of August 2022. Data is preliminary and subject to change as farms have not yet closed.

Source: UBS Asset Management, Real Estate & Private Markets, Food & Agriculture

Inflation & Farmland

Farmland's inflation hedge shows up when needed most

Farmland has a demonstrated ability to hedge in inflation, particularly when inflation is moderate or high.

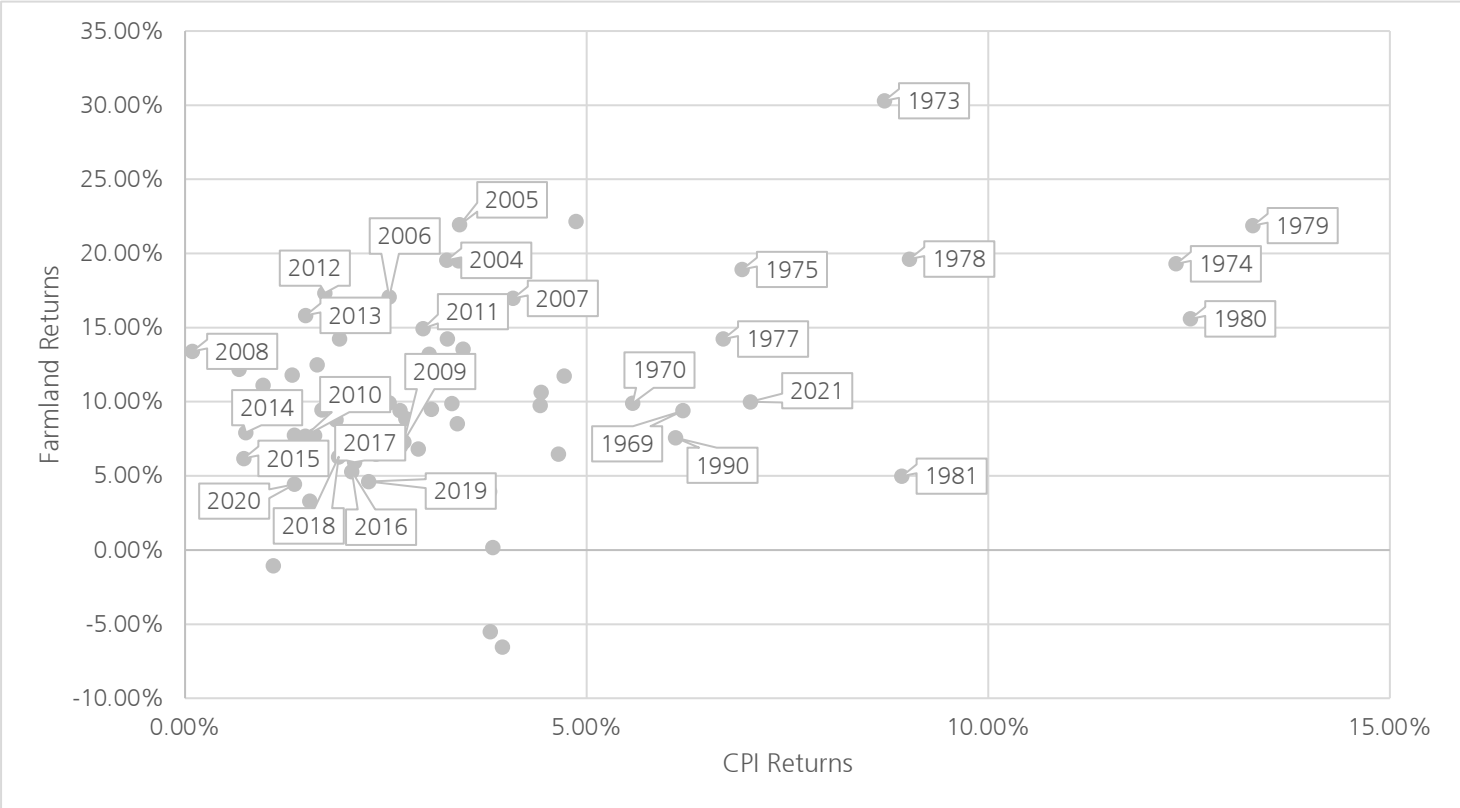
When is inflation is low, Farmland's relationship with inflation is less correlated.

Farmland returns tend to rise during inflationary periods for two reasons: rising revenue (rents) and rising farmland values.

Farmland returns have been strong in low, moderate, and high inflationary environments. Only during the debt crisis in the 1980's did farmland experience negative returns.

Calendar Year Farmland vs CPI Annual Returns

1960 - 2021



Source: UBS Asset Management, Real Estate & Private Markets, Research & Strategy research based on data obtained from the Bureau of Labor Statistics, NCREIF Property Index and Core Farmland Index as of March 31, 2022. Source of CPI: Bureau of Labor Statistics. CPI is the Consumer Price Index, an inflationary indicator of the standard of living in the US. It is also referred to as the "cost of living" index. Means are annualized returns consistent with methodology used by NCREIF and are as of December 2021. Standard Deviation and Correlations are based on December ending annual returns. Past performance is not an indication of future results and the possibility of loss does exist. The Core Farmland Index does not include fund-level management or other fees or fund-level expenses, is not available for investment and is for illustrative purposes only.

Section 3

Farmland Investment Characteristics

US farmland investment universe

- The investment universe of US farmland is significant at USD 2.9 trillion in value
- A diversity of crops are grown across the US
- A significant proportion of commodity crops are grown in the Corn Belt, Delta States and Southern Plains
- The Pacific West is an important and diverse agricultural region with both annual and permanent cropland

MSI#56 Monarch Orchard, Kern & Tulare Counties, CA
Pistachios approaching harvest

Photo of rice courtesy of USDA NRCS.
Source: USDA as of August 2022 (2021 value)

Competitive advantages of US agriculture

Source: ESRI

Geography:

- Largest cropland mass in the world located in latitudes favorable to crop production
- Midway between major export markets of Europe, Asia, Mexico and Canada

Infrastructure:

- Mississippi, Ohio, Columbia Rivers
- Rails, highways
- Port facilities - New Orleans, Portland, Houston, Los Angeles, Baltimore

Technology & capital:

- Biotechnology, mechanical, conservation
- Land grant colleges, agricultural extension programs
- Innovative farmers with strong management skills
- Well-capitalized farm economy

Dominant global export market share:

- Increasing global demand from improving income in developing countries and alternative fuels (ethanol and biodiesel)
- US is most efficient and reliable producer
- Depth and diversity of US exports is unmatched by any other country or region in the world

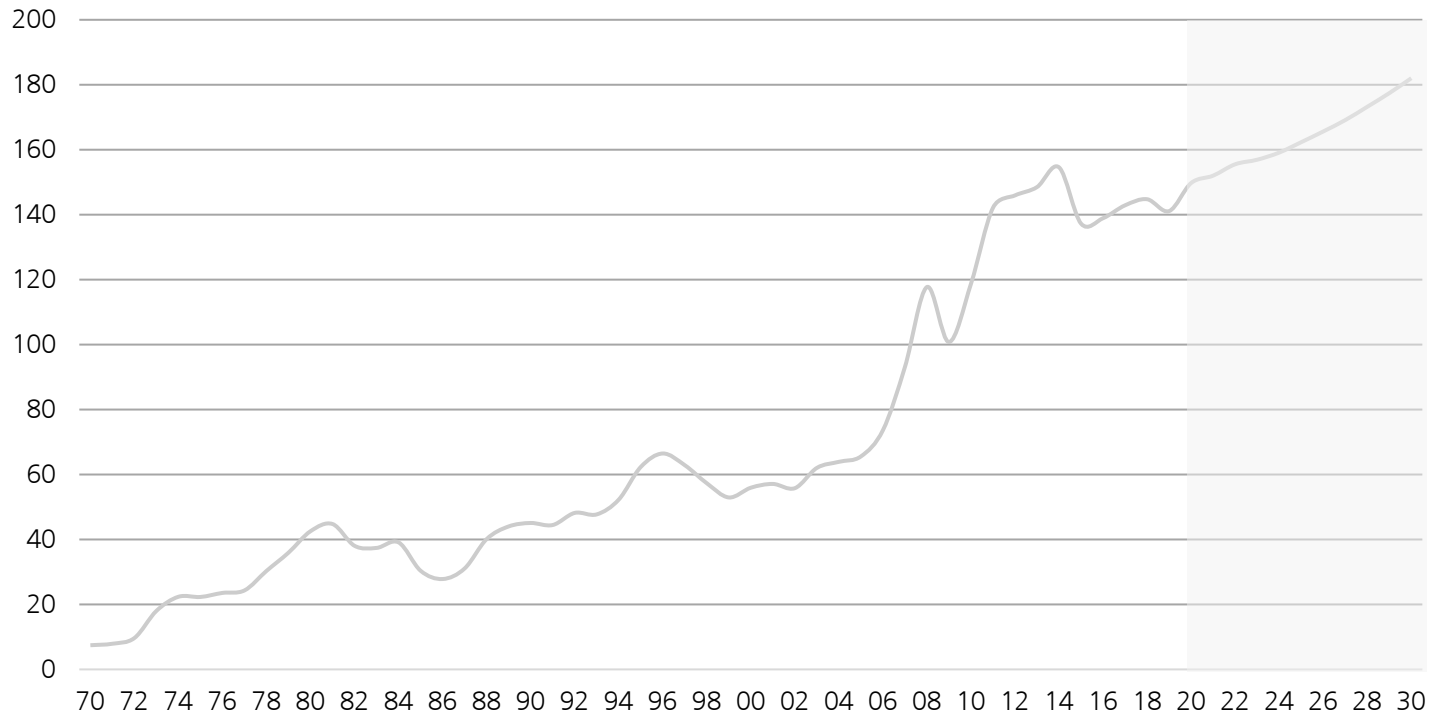
Expanding global demand for farm commodities

GDP growth around the globe is creating additional demand for commodities in general

Improving incomes in developing countries are having a major impact on the demand for farm commodities

The US is the most dependable exporter of farm commodities in the global market

US agricultural exports (billion USD)

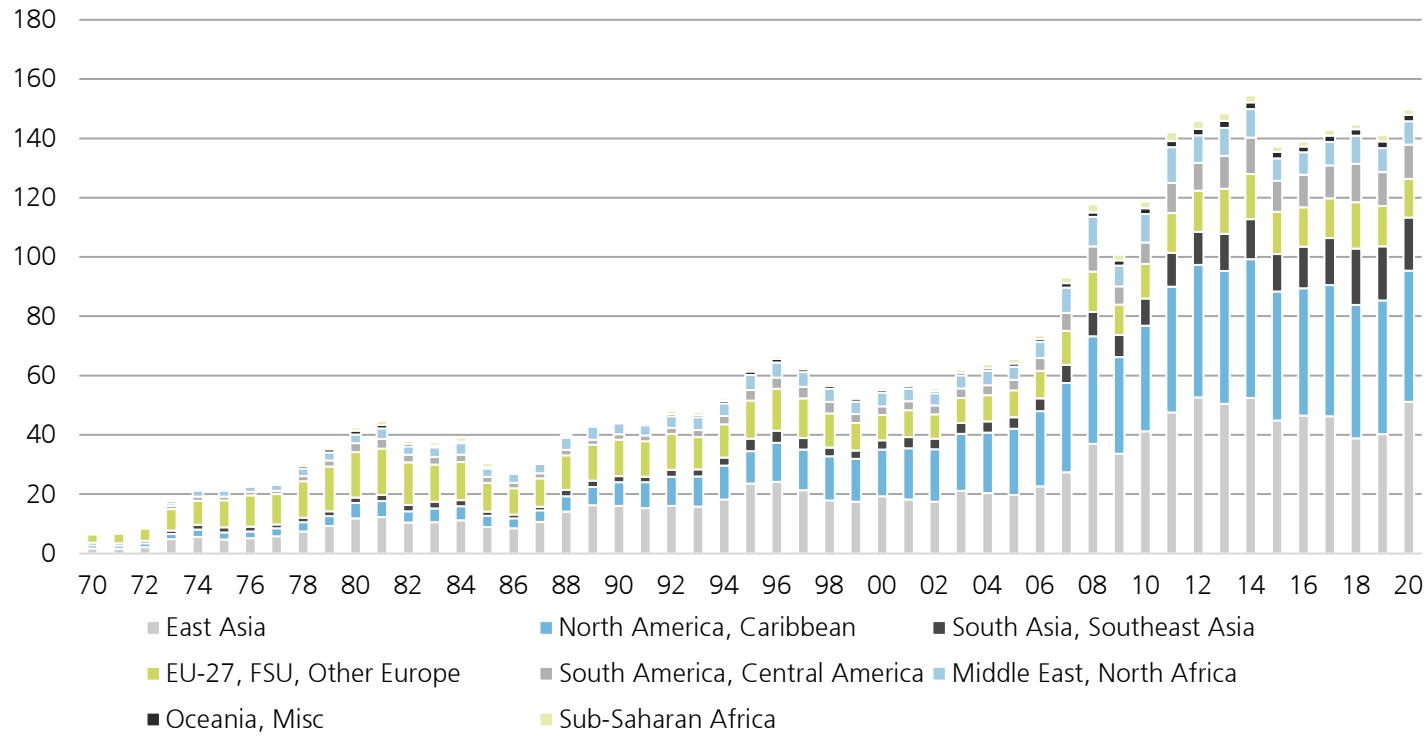


Source: USDA as of January 2022. 2021 to 2030 are forecasted by the USDA. Data is based on fiscal year.

US agricultural exports

- Emerging and developing economies are a source of rising demand for US agricultural products
- As incomes rise, lifestyles change. For example, people consume more protein in their diet (more meat requires more livestock feed). They also become more mobile and burn more fuel (more fuel increases ethanol demand).
- China is a prime example. Sixteen years ago, they were a small buyer, and, despite temporary trade tensions, China remains a prominent export market and imported a record number of US agricultural goods in 2020.

US agricultural exports, 1970-2020 (billion USD)



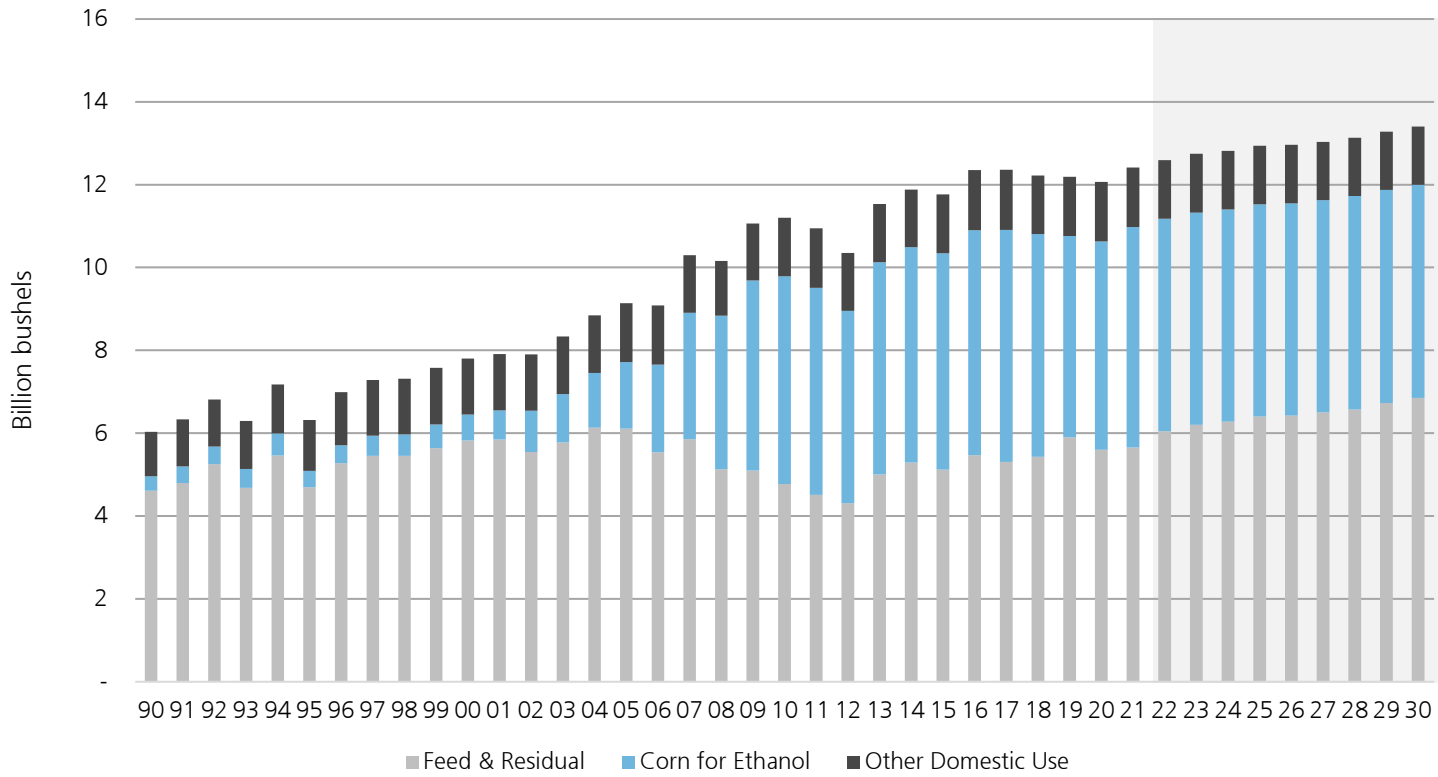
Source: USDA/Economic Research Service as of January 2022.

Additional demand from alternative fuels

Alternative fuels in the US has accelerated the demand for corn while feed and other uses have also continued to grow

Increasing demand for corn has resulted in improved supply/demand fundamentals for other row crops as well as corn acreage expanded

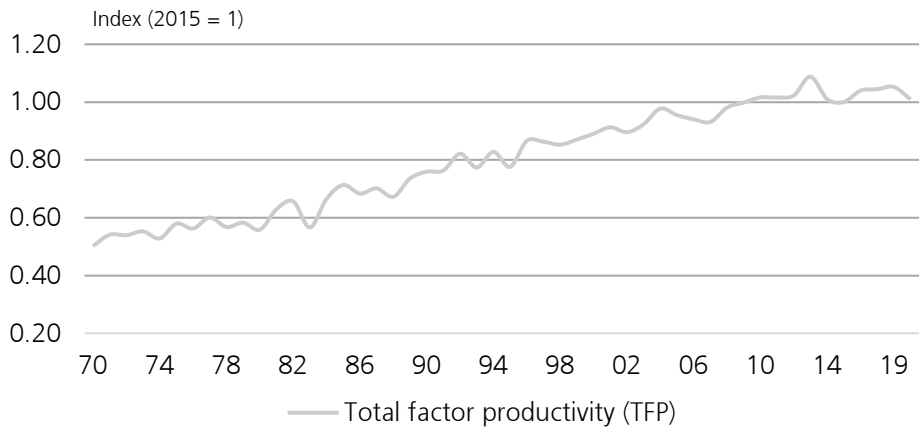
US domestic corn use



Source: USDA as of January 2022, 2022 through 2030 are forecasted by the USDA

Productivity of US agriculture

US agriculture total factor productivity
1970 – 2019



Source: USDA, Economic Research Service, Productivity in the United States as of January 2022. USDA, Economic Research Service uses Total Factor Productivity (TFP) which measures changes in the efficiency with which all inputs are transformed into outputs.

- Increased productivity is one of the main contributors to economic growth in US agriculture
- Productivity has more than doubled since 1970 and has grown at an annual rate of approximately 1.50%
- Increased productivity contributed to, and supports, higher farmland values

MSI#66 Wapato Orchard, Yakima County, WA
2020 Cosmic Crisp Planting

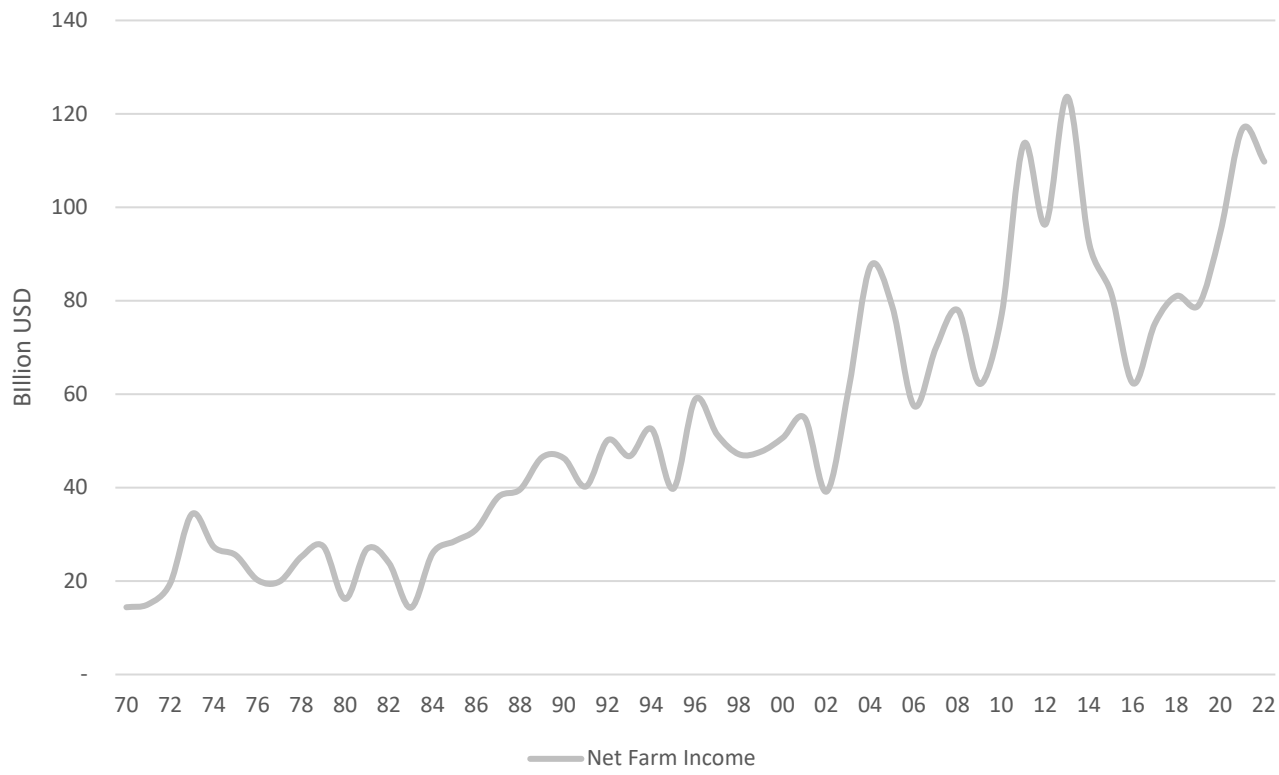
US farm income

From 2013 to 2016, a sharp decline in commodity prices reduced net farm income by 50%.

Since then, Net Farm Income has rebounded to near record highs despite multiple challenges such as trade wars and the COVID-19 pandemic.

Farmland rents and values are accelerating upwards

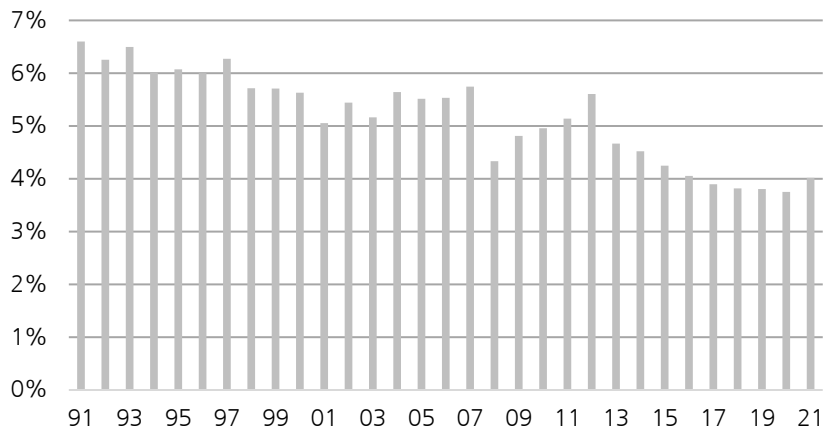
Net farm income 1970 – 2022, (billion USD)



Source: USDA as of December 2021. 2022 is forecasted by the USDA as of February 2021

US farmland income returns

Core farmland income returns



Source: NCREIF as of March 31, 2022. Past performance is not an indication of future results, and the possibility of loss does exist. The Core Farmland Index does not include fund-level management or other fees or fund-level expenses, is not available for investment and is for illustrative purposes only.

MSI#71 Bassinger Grove, Okeechobee County, FL
Valencia oranges ripening on the tree

- Farmland investments that are leased to local operators tend to provide a steady flow of income
- Core farmland income returns have averaged 5.13% over the past 30 years
- Capital expenses have averaged 0.80%

US farmland returns

US farmland returns

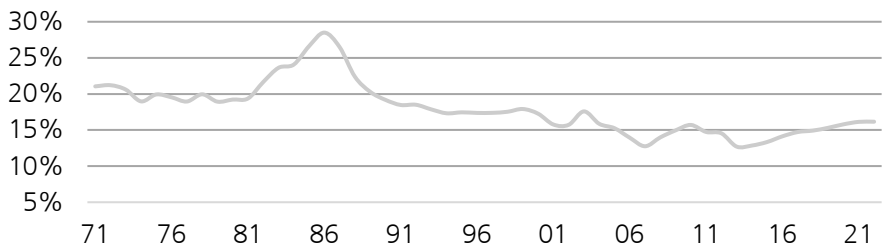
Source: Ibbotson Associates (1970-1990) and the Core Farmland Index (1991-2021) as of December 31, 2021. Past performance is not an indication of future results, and the possibility of loss does exist. The Core Farmland Index does not include fund-level management or other fees or fund-level expenses, is not available for investment and is for illustrative purposes only.

- Farmland has provided positive returns in 45 out of 49 years:
  - Consistent 5%-6% income returns
  - 10.47% annual total return over the 1970-2021 time period
- A period of high inflation and low (even negative) real interest rates encouraged leveraged acquisition of farmland in the late 1970s
- Lower farm income has moderated the gains in farmland values recently

NAP#28 Camden Currituck, Camden County, NC
Recently emerged chipping potatoes in the spring time

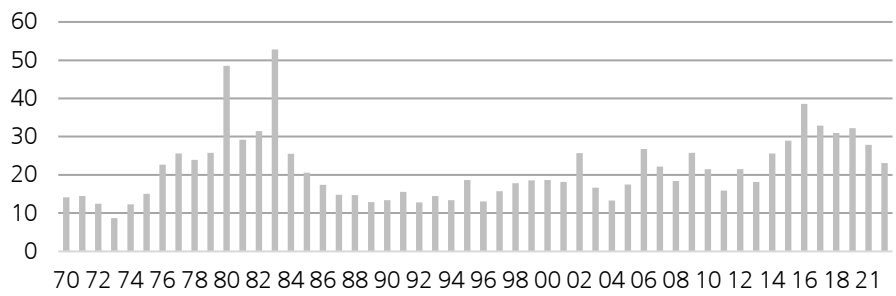
US farm sector financial indicators

Farm debt/equity ratio



Source: USDA/Economic Research Service as of December, 2021. 2021 is forecasted by the USDA. Ratio represents total farm debt divided by equity in land, buildings, equipment, crops and livestock.

Price/earnings ratio



Source: USDA/Economic Research Service as of December, 2021. 2021 is forecasted by the USDA. Ratio represents land and building value divided by net farm income.

- Farm debt/equity ratios have drifted slightly higher as land values have leveled off and debt levels increased slightly.
- Farm price/earnings ratios have increased largely due to the drop in Net Farm Income.
- Low debt/equity ratios suggest that solid farm sector debt levels remain low.

MSI#60 Carneros Hills Vineyard, Napa County, CA
Chardonnay grapes maturing on vine in early autumn

US farmland returns in perspective

Annual returns 1970-2021

	Mean		Standard deviation		Correlations				
	Nominal (%)	Real (%)	Nominal (%)	Sharpe Ratio	CPI	Bonds	Stocks	Commercial real estate	Farmland (CFI)
CPI	3.9	-	3.0	N/A	1.00				
Bonds	7.1	3.3	6.6	0.40	(0.14)	1.00			
Stocks	11.1	7.2	16.9	0.39	(0.09)	0.24	1.00		
Commercial Real Estate	9.0	5.2	6.9	0.66	0.31	(0.16)	0.09	1.00	
Farmland (CFI)	**10.2**	**6.3**	**7.1**	**0.80**	**0.43**	**(0.44)**	**(0.14)**	**0.21**	**1.00**

Source: UBS Asset Management, Real Estate & Private Markets, Research & Strategy research based on data obtained from the Bureau of Labor Statistics, Morningstar, the Bar-Cap Aggregate Bond Index, EAFE International Stock Index, S&P 500 Stock Index, IA SBBI US Small Stock Index, NAREIT, NCREIF Property Index and Core Farmland Index as of March 31, 2022. Source of CPI: Bureau of Labor Statistics. CPI is the Consumer Price Index, an inflationary indicator of the standard of living in the US. It is also referred to as the "cost of living" index. Means are annualized returns consistent with methodology used by NCREIF and are as of December 2021. Standard Deviation and Correlations are based on December ending annual returns. Past performance is not an indication of future results and the possibility of loss does exist. The Core Farmland Index does not include fund-level management or other fees or fund-level expenses, is not available for investment and is for illustrative purposes only.

- Strong total returns over this 51-year period
- Low total return variability with stable income component
- Historically strong hedge against inflation
- Diversification benefits for a traditional stock and bond portfolio

Contact information

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Together, UBS Realty Investors LLC, UBS Farmland Investors LLC, and UBS Fund Services (USA) LLC , subsidiaries of UBS AG, comprise Real Estate US.

US-I 03072018

J.P. Morgan Asset Management Global Alternatives

Mandate: **Infrastructure Investment Fund** **Hired: 2014**

Firm Information

J.P. Morgan Investment Management Inc. (JPMIM), the Investment Advisor, is a member of J.P. Morgan Asset Management, the asset management business of JPMorgan Chase & Co. J.P. Morgan Asset Management is a full-service global asset management firm that provides a broad array of investment management and advisory services since 1873.

As of 6/30/2022, the net asset value of the JP Morgan Infrastructure Investments Fund was over $26 billion.

Key Executives:
Paul Ryan, CEO and Portfolio Manager
Matthew LeBlanc, CIO

Investment Approach

The Infrastructure Investments Fund ("IIF" or "Fund"), advised by J.P. Morgan Investment Management Inc., is an open-ended strategy that invests in unlisted infrastructure equity.

IIF seeks to provide diversification from other asset classes, attractive risk-adjusted returns, downside protection, inflation sensitivity, and yield. Consistent with these objectives, the IIF invests in a range of unlisted, lower-risk "core" and "core-plus" assets with a focus on long-term (10+ years) contracted and regulated cash flows. These cash flows underpin the benefits of the asset class and drive a majority of investor returns in the form of cash yield, and also help to mitigate commodity/GDP and other risks.

In further alignment with its objectives, the Fund primarily invests in North America, Western Europe, Australia, and secondarily in other OECD countries.

IIF's control positions and the long-term investment horizon of its open-ended structure provide the ability to invest in, or through, the Fund's existing portfolio companies who importantly actively operate the Fund's underlying assets. This "strategic platform investing" approach seeks to provide more efficient deployment of capital and less competitive processes.

Target Return: 8-12% per annum *(~8-9% net in current market environment)*

Total ARMB Mandate

Assets Under Management:
6/30/2022: $145,722,431

Concerns: None

6/30/2022 Performance

	Last Quarter	1-Year	3-Years Annualized	6-Years Annualized	8-Years Annualized
Manager Gross	2.00%	10.36%	8.02%	8.75%	6.72%
Fee	0.21%	1.10%	1.30%	1.51%	1.44%
Manager Net	1.79%	9.26%	6.72%	7.24%	5.28%

Q2 2022

Infrastructure Investments Fund

("IIF" or "Fund") *Established 2006*

Open-Ended Private Infrastructure

Alaska Retirement Management Board ("ARMB")

As of June 30, 2022 and in U.S. dollar terms unless otherwise specified.

Today's Presenters

Jeff Shields, ***Executive Director***, is a ***Client Advisor*** at J.P. Morgan Asset Management advising institutional investors on a variety of strategic and tactical investment decisions. He joined the firm in 2013 from Watershed Asset Management, a credit hedge fund manager, where he led the investor relations effort since 2009. Prior to joining Watershed, Jeff was a principal at Hall Capital Partners focusing on marketing the firm's co-mingled alternative investment funds to private and institutional investors. He joined Hall Capital Partners in 2005 from U.S Trust Company where he was a member of the endowment and foundation group and responsible for the administration and investments for planned gift management programs and multi-asset class mandates. Before joining U.S. Trust in 2000, Jeff worked in the community foundation field at the Council on Foundations, The San Francisco Foundation, and the Peninsula Community Foundation. He is currently a board member of the Dechomai Foundation which was launched in 2003 to assist charitable organizations to receive, manage, liquidate and grant proceeds from non-cash donations. Jeff graduated from the University of Maryland with a Bachelor of Arts degree.

Nicholas Moller, *Managing Director*, is an ***Investment Specialist*** in the Infrastructure Investments Group. Nick is a senior member of the team that leads the Infrastructure Investments Group's fundraising and investor relations efforts. Nick has worked at J.P. Morgan since 2006 and joined the Infrastructure Investments Group in early 2014. Prior to joining the Infrastructure Investments Group, Nick was a member of the J.P. Morgan Investment Bank's Public Finance Transportation and Infrastructure Group. In that role Nick advised both public sector and private sector clients on executing infrastructure and Public Private Partnership transactions. In addition, Nick structured and executed several billion dollars of taxable and tax-exempt financings both for publicly and privately owned infrastructure assets. Nick graduated from the University of Auckland (New Zealand) with a Bachelor of Commerce in Finance (First Class Honors).

There can be no assurance that these professionals will continue to be involved with JPMIM or the Investment Advisor, or that the past performance or success of any such professional serves as an indicator of such professional's future performance or success.

Core/Core+ Infrastructure is Essential

Distribution/Regulated Assets

Guideline: 30-60% of Portfolio[1]

Monopolistic regulatory frameworks give visibility into stable cash flows

Contracted/Power Assets

Guideline: 30-60% of Portfolio[1]

Long-term contracts with volume minimums

GDP-Sensitive Assets

Guideline: 10-30% of Portfolio[1]

Mature assets with significant demand history often underpinned by contracts

Essential services that often operate on a monopolistic basis either by regulatory structure or long-term contract, which drives visibility into **historically strong EBITDA margins & cash yield**

D Diversification

Downside protection potential and lower volatility

Approximately 1/10th the volatility of Global Equities[2]

I Inflation Protection

Inflation is a pass-through under many contractual and regulatory structures

Significant allocation to regulated utilities

Y Yield

Strong cash flow generation

10 Year Operational Cash Yield of 5.4% p.a.

Source: J.P. Morgan. All data as of June 30, 2022 unless otherwise stated. Photo source: JPMAM
Diversification does not guarantee investment returns and does not eliminate the risk of loss.
1. Represents target ranges. The Investment Adviser seeks to achieve the stated objectives. There can be no guarantee the objectives will be met.
2. IIF 10-yr quarterly Net Local Currency Return vs. MSCI World

IIF — Established Open Ended Infrastructure Portfolio

Summary

- ***Experience:*** 15 years of operating experience managing a diversified $26.0 billion portfolio with 20 portfolio companies and 777 assets
- ***Core:*** Demonstrated track record of consistent yield and low volatility through market cycles
- ***Consistent:*** Systematic asset management approach driven by control, people, continuous business improvement & ESG integration
- ***Platform:*** Accretive and lower risk capital deployment strategy providing enhanced diversification via ongoing investment

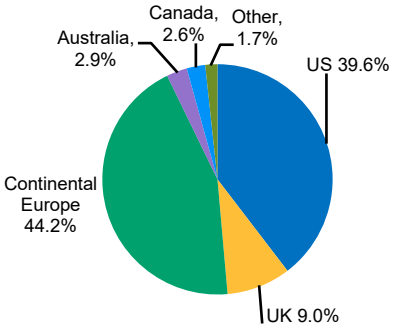
Key Strategy Elements

Net Asset Value	USD 26.0 billion
Portfolio	20 Portfolio Companies with 777 assets
Return Expectation[1]	8-9% Net Local Currency in current market
Cash Yield Expectation[1]	5-7% on NAV
Commitment Queue	Estimated ~3-6 months or less from closing[2]

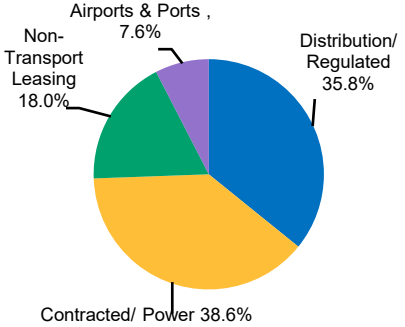
Proven Historical Performance

As at June 30, 2022	1-yr	5-yr	10-yr	10-yr Vol
Operational Cash Yield	4.9%	6.1%	5.4%	-
Net Local Currency Return	8.6%	7.6%	7.2%	1.6%
Net Local Currency MOIC[3]		1.4x	2.0x	

Portfolio Geography



Portfolio Sectors



All data as of June 30, 2022 unless otherwise stated. The Investment Adviser seeks to achieve the stated objectives. There can be no guarantee the objectives will be met. [1] The target returns and cash yield are for illustrative purposes only and are subject to significant limitations. An investor should not expect to achieve actual returns or yield similar to the targets shown above. Please see the complete Target Return disclosure at the conclusion of the presentation for more information on the risks and limitation of target returns. [2] The investment queue is an estimate only and subject to change. [3] Based on Local Currency Returns and assumes reinvestment of cash yield as of June 30, 2022. **Past performance is not a reliable indicator of current and future results. Returns include the re-investment of income. All performance numbers have been calculated in US dollar terms. Please refer to the Fund's return snapshot and quarterly reporting for more information and detail.**

IIF Historical Summary

Performance as of June 30, 2022

Fund Performance[1, 2]	FY 2018	FY 2019	FY 2020	FY 2021	YTD 2022
NAV	$10.3bn	$12.5bn	$17.0bn	$19.6bn	**$26.0bn**
Total Net Return (USD)	4.8%	8.1%	9.1%	3.9%	**-1.7%**
Total Net Return (Local)	8.4%	8.2%	5.3%	7.3%	**3.5%**
Cash Yield	8.2%	9.0%	10.7%	11.5%	**2.3%**

Fundraising (in millions)	FY 2018	FY 2019	FY 2020	FY 2021	YTD 2022
New Commitments	$3,779.0	$4,841.5	$3,443.9	$8,231.8	**$3,320.1**
Dividend Reinvestments	$360.0	$463.2	$641.1	$811.2	**$241.1**
Redemptions	($420.6)	($111.9)	($320.5)	($196.8)	**($28.4)**
Net Inflow	$3,718.4	$5,192.8	$3,764.5	$8,846.2	**$3,532.8**

Acquisitions[3]	FY 2018	FY 2019	FY 2020	FY 2021	YTD 2022
New	$210.6	$448.7	$2,305.5	$797.2	**$6,511.8**
Platform	$911.4	$3,153.0	$3,005.9	$1,161.2	**$3,155.9**
Total	$1,122.0	$3,601.7	$5,311.4	$1,958.4	**$9,667.8**

[1] Performance numbers represent a composite return of the combined Fund investor vehicles (FIVs) in existence as of June 30, 2022, after taxes and Fund expenses, excluding fees. Specific FIV and investor returns are shown on the quarterly investor statement.
[2] Periods greater than one year are annualized. Returns for periods greater than one quarter are time-weighted rates of return calculated by linking quarterly returns. The sum of Asset performance, FX impact and Other may not equal total returns due to the compounding effects of linking quarterly returns. Other includes dividend income, Fund income and expenses.
[3] Net Platform Investments including investments that were acquired with a plan in place to combine with an existing portfolio company.

Past performance is not a reliable indicator of current and future results. Total return assumes the reinvestment of income. Performance results are gross of investment management fees. The deduction of an advisory fee reduces an investor's return. Actual account performance will vary depending on individual portfolio security selection and the applicable fee schedule. Fees are described in Part II of the Advisor's ADV which is available upon request.

IIG — Team Within the Global Alternatives Platform Dedicated to IIF

Paul Ryan, Managing Director
Chief Executive Officer and Portfolio Manager
New York

Matt LeBlanc, Managing Director
Chief Investment Officer
New York

Brian Goodwin, Managing Director
Head of Portfolio Asset Management
New York

Client Team (9)

MANAGING DIRECTORS (14)

Nick Moller, Gilly Zimmer

EXECUTIVE DIRECTORS (12)

Dan Galinko, Chris Simard, Cassie Winn

VICE PRESIDENTS (18)

Esandra Blackwood, Chloe Chung, Lindsay Scotti, Kevin Wellema

ASSOCIATES (17)

Includes fundraising, investor relations, client service, ESG and Sustainability

Investment Team – *London (18) and New York (17)*

MANAGING DIRECTORS (14)

Rob Hardy, John Lynch, Mark Scarsella, Sara Sulaiman, Mark Walters, Landy Gilbert, Hai-Gi Li, Dan Mitaro

EXECUTIVE DIRECTORS (12)

Ben Francis, Sneha Sinha, Marko Josipovic, Preston Scherer

VICE PRESIDENTS (18)

Stephen Leh, Clara Lequin, Michael Karp, Gary Blackburn, Michelle van Ryneveld, Georgina Yea

ASSOCIATES (17)

Martin Berkowitz, Patrick Glodkowski, Mauricio Palazzi, Patrick Powers, Natalie Rathjen, Sophia Sciabica, Harriet Allison, Lisandro Cardinali, Fred Correia, Mawuse Doe, Alex Godoroja, Vagiz Gubaidulin, Mathieu Marroncle, Yannik Prang

Specialist Team (17)

MANAGING DIRECTORS (14)

Amanda Wallace

EXECUTIVE DIRECTORS (12)

Stephen Liu, Hannah Logan, Manu Miriyagalla, Ebru Sert, Ed Wu

VICE PRESIDENTS (18)

Sam Attalla, Simon Choi, April Lee, Robert Hollywood, Lan Nyguen, Katarina Roele, Sara Scoppetuolo, Hardip Syan

ASSOCIATES (17)

Ruchi Mehendale, Swastik Roy, Doris Toyou

Includes legal, controls, compliance, reporting, finance, tax, research and technology

All listed individuals are employees of JPMAM. There can be no assurance that the professionals currently employed by JPMAM will continue to be employed by JPMAM or that the past performance or success of any such professional serves as an indicator of such professional's future performance or success.
Source: JPMAM, as of June 2022. Photo source: JPMAM

Long-Term Track Record of Core Risk / Return Outcomes

History of stable cash yield focused returns generating attractive multiple of invested capital

Asset Performance **- Annualized Returns for Period Ended June 30, 2022[1]**

Since July 1st, 2007	1-Yr[2]	3-Yr[2]	5-Yr[2]	10-Yr[2]	Inception[2]	*5-yr Vol.*	*10-yr Vol.*
Operational Cash Yield[3]	4.9%	6.3%	6.1%	5.4%	4.9%	-	-
Net Total Return Local Currency[4]	8.6%	6.9%	7.6%	7.2%	6.0%	1.5%	1.6%
Net Multiple of Invested Capital (MOIC)[5]			**1.4x**	**2.0x**	**2.4x**		

Hedging Options **- Annualized USD Hedged Returns for Period Ended June 30, 2022[1]**

Since October 1st, 2018	1-Yr[2]	3-Yr[2]	Program Inception[2]
Net Total USD Hedged Return[6]	8.9%	7.1%	7.6%

Source: J.P. Morgan. All data as of June 30, 2022 unless otherwise stated.

Past performance is not a reliable indicator of current and future results. Returns include the re-investment of income. All performance numbers have been calculated in US dollar terms. Please refer to the Fund's return snapshot and quarterly reporting for more information and detail.

[1] Performance numbers represent a composite return of the combined fund investor vehicles (FIVs) in existence as of June 30, 2022. Specific FIV and investor returns are shown on the quarterly investor statements. Non hedged investment performance does not include hedging gains/(losses) resulting from the Hedging Program.

[2] Returns for periods greater than one quarter are time-weighted rates of return calculated by linking quarterly returns. Returns of greater than one year are annualized.

[3] Return of Capital represents the cost basis of the sale of any investments or the cost basis of any refinancing proceeds. Any other proceeds are included in Operational Cash Yield.

[4] USD Currency Unhedged Net Returns over a 1, 3, 5, 10-year and since inception time period are: 1.1%, 5.3%, 6.3%, 5.5% and 3.7% p.a., respectively

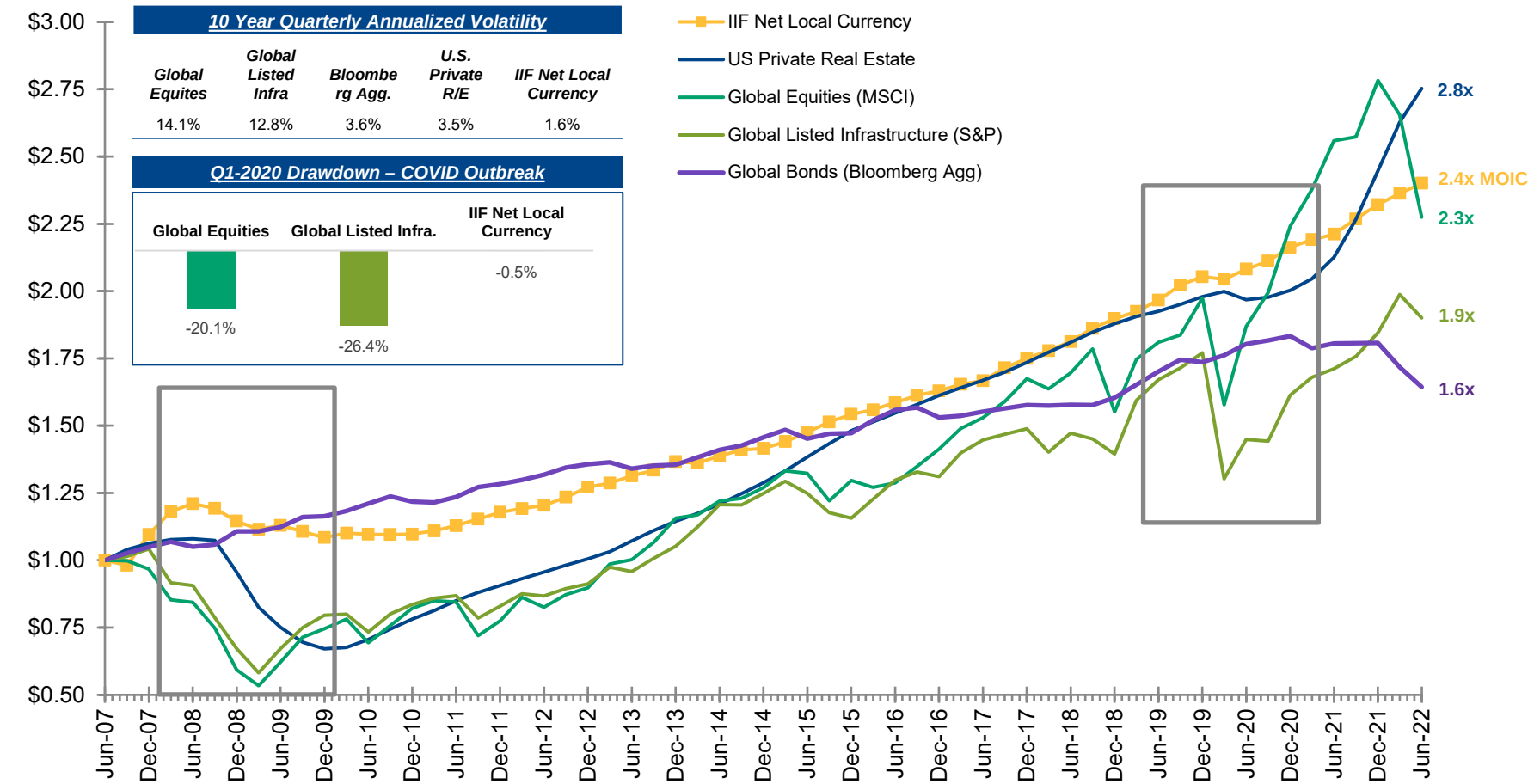
[5] Based on Net Local Currency Returns and assumes reinvestment of cash yield as of June 30, 2022.

[6] Reflects the returns of IIF Hedged LP as of June 30, 2022. IIF's hedging program was incepted in October 2018. Other currencies available including unhedged USD.

Demonstrated Performance Through Two Crises

IIF has delivered stable and compounding MOIC through market cycles

Evolution of USD 1 Invested in Q2 2007 to Q2 2022



Source: Bloomberg, J.P.Morgan Asset Management. IIF Local Currency Returns are net of fees, taxes and expenses. Global equities, global listed infrastructure, global bonds, US Private R/E are measured by MSCI World, S&P Global Infrastructure Index, Barclays Global Agg, NCREIF ODCE, respectively. All non IIF series are total return indices (reinvestment of yield) and denominated in USD; Data as of Q2-2022. **Past performance is not a reliable indicator of current and future results.** Indices do not include fees or operating expenses and are not available for actual investment.

ARMB Q2-2022 Performance Summary

Fund Investor Vehicle: IIF Hedged LP

Annualized Time Weighted Returns for Period Ended June 30, 2022

Inception Date: July 1st, 2014	Year to Date	1-Yr	2-Yr	3-Yr	5-Yr	Inception
Cash Yield (Distributions / NAV)	**2.7%**	**9.5%**	**10.0%**	**10.5%**	**9.7%**	**8.5%**
Net Total Return Local Currency	*3.3%*	*8.5%*	*7.3%*	*6.6%*	*7.5%*	*N/A*
Net Total USD Unhedged Return	*(1.7%)*	*1.2%*	*5.6%*	*5.2%*	*6.4%*	*4.6%*
Net Total USD Hedged Return	**3.6%**	**9.0%**	**7.7%**	***N/A***	***N/A***	***N/A***

Note: Transferred to USD Hedged version on July 1st, 2020.

Key Investment Metrics

Inception Date: July 1st, 2014	Market Value (USD)
Total Drawn Commitment	**100,000,000.00**
Hedged NAV	**145,722,430.68**
Current Management Fee Rate	*0.82%*

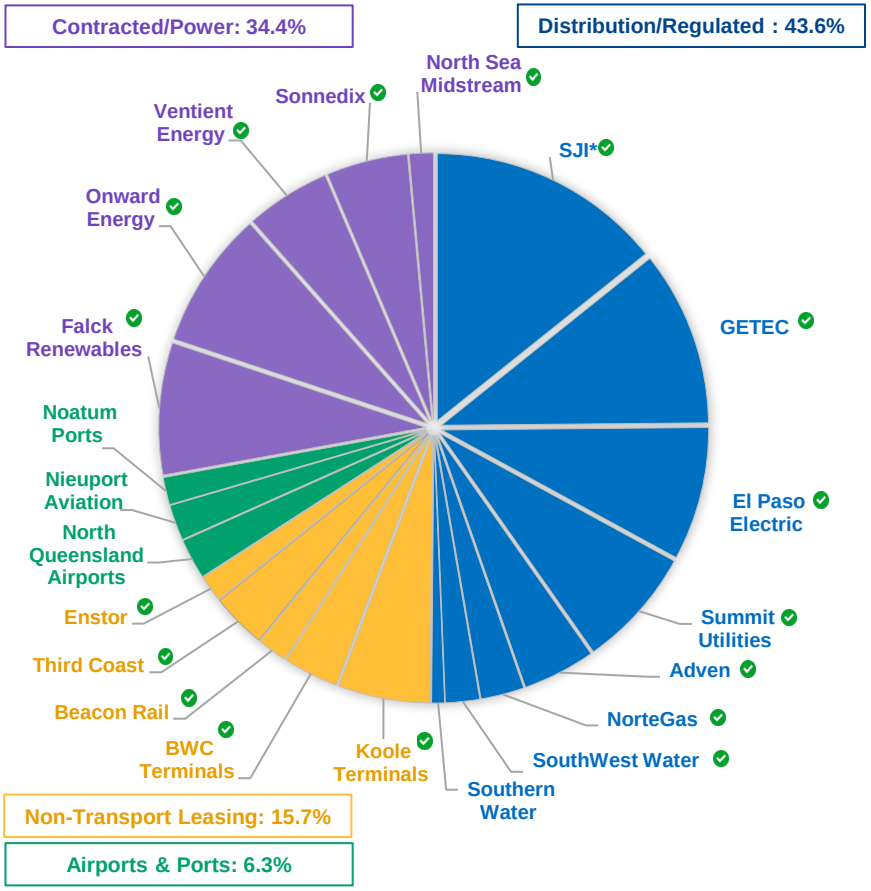
All data as of June 30, 2022 unless otherwise stated. Please refer to the investor statement for additional information. Past performance is not a reliable indicator of current and future results. Returns include the re-investment of income. All performance numbers have been calculated in US dollar terms. Please refer to the Fund's return snapshot and quarterly reporting for more information and detail.

J.P.Morgan ASSET MANAGEMENT

Diversified Core Portfolio Construction

Pro Forma USD 31bn Portfolio in 4 Key Sectors and 30+ Countries with ~800 Assets

Portfolio Companies

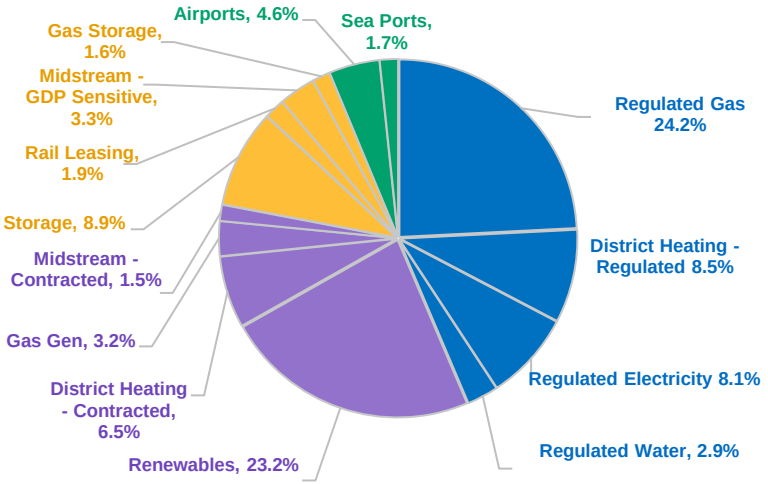


Denotes Strategic Platform Investments

Pro Forma Portfolio Highlights

- **NAV:** USD 31bn
- **Sectors**: 44% Regulated, 34% Contracted, 22%, Non-Transport Leasing: 16%, Airports & Ports: 6%
- **Geographies**: 51% US & Canada, 44% Western Europe & UK, 5% Other OECD
- **Equity Discount Rate**: Weighted average of ~10%
- **Leverage**: 49% LTV, 78% fixed/index, 8.7yr avg. maturity

Pro Forma Portfolio Sub-Sectors



*Subject to customary closing conditions, including regulatory approvals

Source: J.P. Morgan. All data as of June 30, 2022 unless otherwise stated. Diversification does not guarantee investment returns and does not eliminate the risk of loss. Opinions, estimates, forecasts, and projections are based on current market conditions, constitute IIF's judgment and are subject to change without notice. Pro forma includes transactions signed pending closing. Adven and GETEC sector allocation split across both distribution/regulated and contracted/power.

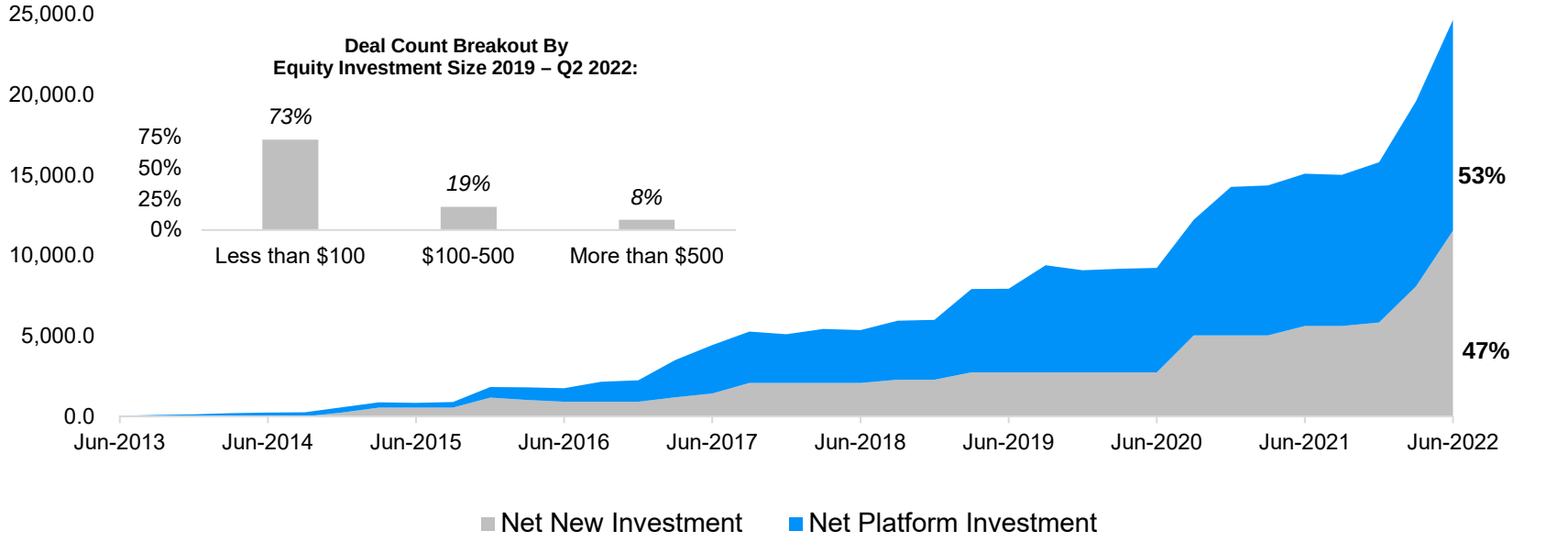
J.P.Morgan ASSET MANAGEMENT

Consistent Growth Through Strategic Platform Investment

Operating businesses create competitive advantages relative to purely financial investors

- Local or regional add-ons to existing companies for more efficient and de-risked capital deployment
- Since 2013, ~53% of deployment behind platform investments – facilitates non-competitive processes
- More than 200 separate investments, including ~100 closed acquisitions, with average equity check size < $100m

Cumulative Net Investment 2013 – Q2 2022 – Platform vs. New



Note: Net Investment includes the sale and co-investments at the asset level.

Source: JPMAM. All data as of June 30, 2022 unless otherwise stated. Net capital invested into platforms includes (a) IIF equity provided to portfolio companies for acquisitions and capital improvements and (b) IIF equity used for the acquisition of portfolio company ownership interests from co-shareholders (c) Investments that were acquired with a plan in place to combine with an existing portfolio company. **Past performance is not a reliable indicator of current and future results.**

Last 12 Months Select Transaction Activity

Portfolio Company Investments

Falck Renewables (Q3 2021)

- In October 2021, IIF entered into an agreement for the acquisition of 60% of Falck Renewables' share capital.
- Falck Renewables is a leading and well established renewable energy platform of scale in Europe and the U.S.

GETEC (Q4 2021)

- On November 19, 2021, IIF entered into an agreement to acquire 100% of GETEC
- GETEC is a leading provider of energy contracting solutions to real estate and industrial customers across Europe, and is headquartered in Magdeburg, Germany

South Jersey Industries* (Q1 2021)

- In February 2022, IIF entered into a definitive agreement to take-private South Jersey Industries, Inc ("SJI")
- SJI's utility business includes South Jersey Gas and Elizabethtown Gas, which are both located in New Jersey and serve ~716,000 customers with ~$3.7 billion of rate base

Enstor (Q2 2022)

- In May 2022, IIF closed on the acquisition of a 100% stake in Enstor Gas ("Enstor")
- Enstor is one of the largest independent natural gas storage operators in the US

Platform Investments

Sonnedix

Closed on 11 MW portfolio in Italy and an 112 MW development portfolio in Spain

Onward Energy

Acquired Dominion Energy's 67% interest in a 423 MW portfolio of 24 operating solar projects

Ventient

Ventient entered into a purchase and sale agreement for the acquisition a 203MW onshore wind portfolio, located in Spain

Bodium

Closed on 49% stake in Bodium, a U.K. 273 MW onshore wind portfolio.

Adven

Closed on the acquisition of a 50% stake in Perstorps Fjärrvärme AB, the district heating assets in the Swedish municipality of Perstorp.

Summit

Closed on purchase of gas distribution assets (including 17,000 miles of gas main pipeline) from Centerpoint

Beacon

Beacon signed on the acquisition of 30 new build dual mode freight locomotives for the UK market,

Onward Energy

Onward entered into a binding agreement to acquire a ~1.2 GW operating solar portfolio. Onward also entered into a purchase and sale agreement to acquire gas-fired generation facilities

As of August 10, 2022. *Subject to customary closing conditions, including regulatory approvals. These examples are included solely to illustrate the investment process and strategies which have been utilized by IIF. It should not be assumed that investments within the portfolio have or will perform in a similar manner to the investments above. Please note that these investments are not necessarily representative of future investments that IIF will make. **Past performance is not a reliable indicator of current and future results.**

J.P.Morgan ASSET MANAGEMENT

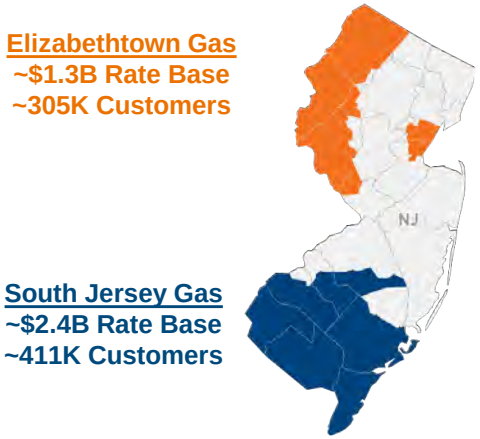
Transaction Summary: South Jersey Industries, Inc.

- In February 2022, IIF announced that it had entered into a definitive agreement to take-private South Jersey Industries, Inc. ("SJI" or the "Company")
  - 100% cash transaction, valued at $8.1bn enterprise value and $4.4bn equity value
- SJI provides IIF with an opportunity to acquire a large scale, single state utility on the forefront of the energy transition with significant follow-on investment opportunities to support decarbonization initiatives
- The transaction is expected to close in the fourth quarter of 2022, subject to the approval of SJI's shareholders, the receipt of regulatory approvals and other customary closing conditions
- Following the close of the transaction, SJI will remain locally managed and operated with headquarters in Folsom, New Jersey

TRANSACTION OVERVIEW

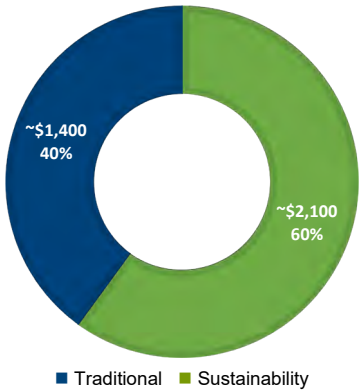
- SJI is an energy services holding company that owns natural gas utility and non-utility companies with over 1,100 employees
  - SJI's utility business includes South Jersey Gas and Elizabethtown Gas, which are both located in New Jersey and serve ~716,000 customers with ~$3.7 billion of rate base across 10,000 miles of distribution and transmission pipeline
  - SJI's non-utility operations are complementary businesses that support the utility operations and are primarily focused on clean energy development and decarbonization via renewable energy production, including renewable natural gas, and energy management activities
- SJI has established itself as a leader among its peers, distinguished by the strength of its utilities and ability to provide safe, reliable, and affordable clean energy to its customers
- The Company's $3.5 billion capital program over the next 5 years includes substantial investments in pipeline replacement, energy efficiency, redundancy, renewable natural gas, fuel cell, solar, and other clean energy initiatives
- Commitment for 70% reduction in scope one and two carbon emissions and consumption by 2030 (ahead of commitments in the NJ Energy Master Plan) and 100% by 2040
- Favorable regulatory constructs in a constructive regulatory jurisdiction driven by strong relationships between SJI and the New Jersey Board of Public Utilities

Service Territory



$3.5 billion 5-year capital plan focused on growth, infrastructure modernization and sustainability

~60% for Sustainability



Source: J.P. Morgan Asset Management as of 2 March 2022. Note: Subject to customary closing conditions, including regulatory approvals

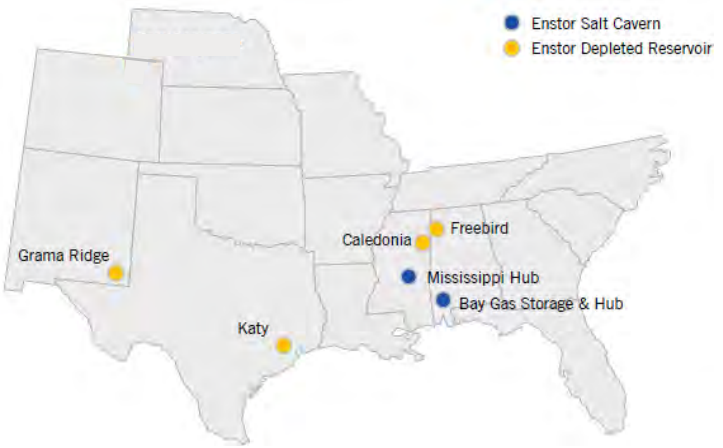
Note: These examples are included solely to illustrate the investment process and strategies which have been utilized by the Investment Adviser. It should not be assumed that investments within the portfolio have or will perform in a similar manner to the investment above. Please note that this investment is not necessarily representative of future investments that the Investment Adviser will make. There can be no guarantee of future success.

J.P.Morgan ASSET MANAGEMENT

Investment Case Study — Enstor Gas

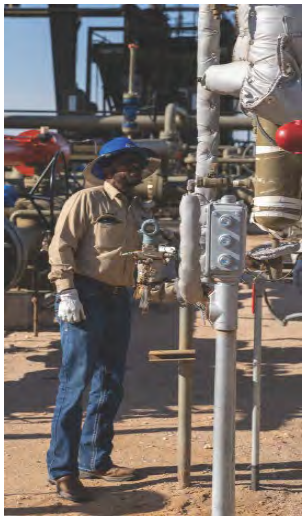
COMPANY OVERVIEW

- In May 2022, IIF closed on the acquisition of a 100% stake in Enstor Gas ("Enstor" or the "Company")
- Enstor is one of the largest independent natural gas storage operators in the US, owning ~110 billion cubic feet ("Bcf") of certificated storage capacity across six strategically located storage facilities (the "Facilities")
- Enstor's 171 miles of associated pipelines provides attractive end-use market access and firm transportation service to customers



ACQUISITION HIGHLIGHTS

- Enstor offers a contracted base business with high-quality end-user customers, significant potential organic development, and a strong platform for inorganic growth
- The Facilities are expected to benefit from heightened weather volatility, rising demand for natural gas, and increasing barriers to developing natural gas infrastructure
- Most revenue is from firm take-or-pay contracts, with additional revenue from ancillary and merchant services
- Most contracted revenue is from utility customers, and the weighted average remaining contract length is ~4 years
- Enstor benefits from a seasoned management team with extensive commercial relationships in the gas storage and transmission sectors
- The Company has achieved the first carbon-neutral storage facility in the world, with a focus on carbon-neutral LNG exports
- An exceptional safety track record includes more than 2 million consecutive safe working hours and receipt of the Texas Gas Association's Safety Achievement Award for 2 years in a row



Source: J.P. Morgan Asset Management as of May 2022

Note: These examples are included solely to illustrate the investment process and strategies which have been utilized by the Investment Adviser. It should not be assumed that investments within the portfolio have or will perform in a similar manner to the investment above. Please note that this investment is not necessarily representative of future investments that the Investment Adviser will make. There can be no guarantee of future success.

Appendix

J.P.Morgan
ASSET MANAGEMENT

IIF Historical Investment Performance

Investment Performance as of 06/30/2022[1]

Since July 1st, 2007	Quarter	One Year[2]	Three Year[2]	Five Year[2]	Ten Year[2]	Inception[2,3]
Cash Yield (Distributions / NAV)	**0.9%**	**8.9%**	**9.9%**	**9.2%**	**7.5%**	**6.3%**
Operational Cash Yield[4]	0.7%	4.9%	6.3%	6.1%	5.4%	4.9%
Return of Capital[4]	0.2%	3.9%	3.5%	3.0%	2.0%	1.4%
Gross Asset Performance (Local Currency)	1.9%	10.0%	8.1%	9.1%	9.0%	8.2%
Less: Taxes[5]	0.0%	-0.1%	0.1%	-0.2%	-0.3%	-0.3%
Less: Fund Expenses[6]	-0.1%	-0.4%	-0.4%	-0.5%	-0.5%	-0.6%
Less: Management & Incentive Fees[7]	-0.2%	-0.9%	-0.8%	-0.9%	-1.0%	-1.2%
Net Total Return Local Currency	**1.6%**	**8.6%**	**6.9%**	**7.6%**	**7.2%**	**6.0%**
Unhedged F/X Impact[8]	-3.8%	-7.0%	-1.5%	-1.2%	-1.5%	-2.2%
Net Total USD *Unhedged* Return	-2.1%	1.1%	5.3%	6.3%	5.5%	3.7%

Past performance is not indicative of future returns. Returns include the re-investment of income. All performance numbers have been calculated in US dollar terms.

[1] Performance numbers represent a composite return of the combined fund investor vehicles (FIVs) in existence as of June 30, 2022. Specific FIV and investor returns are shown on the quarterly investor statements. Investment performance does not include hedging gains/(losses) resulting from the Hedging Program.

[2] Returns for periods greater than one quarter are time-weighted rates of return calculated by linking quarterly returns. Returns of greater than one year are annualized. The sum of Asset performance, taxes, expenses, management fees, and F/X impact may not equal Net total USD returns due to the compounding effects of linking quarterly

[3] Inception to date returns have been calculated beginning July 1, 2007, which represents the first full quarter of Investor participation in the Fund.

[4] Return of Capital represents the cost basis of the sale of any investments or the cost basis of any refinancing proceeds. Any other proceeds are included in Operational Cash Yield.

[5] Taxes mainly relate to deferred taxes on unrealized net appreciation of certain investments by the Fund.

[6] Includes Fund-level income and expenses.

[7] Starting Q1 2020, incentive fees are being accrued within the Fund for those investors who elected the new fee structure.

[8] FX gains and losses at the underlying portfolio companies are included in FX and represent an impact on the Quarterly, YTD, One Year, Three Year, Five Year, Ten Year and Inception to Date returns of -0.1%, -0.2%, -0.3%, -0.2%, -0.2%, -0.1%, and 0.0%, respectively.

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IFM Investors

Mandate: **IFM Global Infrastructure Fund** **Hired: 2015**

Firm Information

IFM Investors, established in 1995, is a global fund manager owned by 19 Australian pension funds.

IFM has a team of more than 680 staff, including more than 110 investment professionals on the infrastructure team in offices across the globe.

As of 6/30/2022, the firm's total assets under management were approximately $137 billion across infrastructure (equity), debt, listed equities, and private equity asset classes. As of 6/30/2022, the net asset value of the IFM Global Infrastructure Fund ("the Fund") was $44.9 billion.

Key Executives:
Kyle Mangini, Head of Infrastructure - Global
Julio Garcia, Head of Infrastructure - North America
Christian Seymour, Head of Infrastructure - Europe
Michael Hanna, Head of Infrastructure - Australia

Investment Approach

IFM Investors believes a professionally managed portfolio of infrastructure assets can provide long-term institutional investors with significant benefits: portfolio diversification, participation in economic growth, protection from inflation, asset-level earnings resilience, and portfolio risk management. Infrastructure assets can also help investors to match their long-term liabilities with long-term investments.

IFM seeks to construct and maintain a portfolio which consist of long-term, core infrastructure assets. Core infrastructure assets typically have monopoly-like characteristics, strong market positions, a reliable regulatory environment, high barriers to entry, limited demand-elasticity, exposure to inflation and economic growth, and long lives.

The Fund utilizes an open-end structure that suits the long-lived nature of the assets and provides investors with vintage year diversification, embedded growth opportunities with strategic partners, and the alignment of long-term liabilities with long-lived infrastructure investments.

The Fund's foreign currency exposure is hedged, to the extent that it is reasonably practicable and prudent, against currency movements.

Target Portfolio Return: 8-12% per annum, net of fees

Total ARMB Mandate

Assets Under Management:
6/30/22: $651,604,402

Concerns: None

6/30/2022 Performance

	Last Quarter	1-Year	3-Years Annualized	6-Years Annualized	7.25-Years Annualized
Manager Gross	2.74%	13.71%	11.41%	13.38%	12.53%
Fee	.20%	.83%	.76%	.75%	.74%
Manager Net	2.54%	12.88%	10.65%	12.63%	11.79%
CPI+4%	3.97%	13.06%	8.98%	7.51%	7.19%

IFM (US) Securities, LLC

June 2022

IFM Investors

IFM Global Infrastructure Fund

Alaska Retirement Management Board

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Liquidity- An investment in the Partnership provides limited liquidity since withdrawal rights are not unqualified and Interests may not be transferred without the prior written consent of the General Partner, which may be withheld in its absolute discretion. Although portfolio investments may generate some current income, they are expected to be generally illiquid.

Valuation- Most of the portfolio investments will be highly illiquid and will most likely not be publicly traded or readily marketable.

Economic conditions- Interest rates, general levels of economic activity, the price of securities and participation by other investors in the financial markets may affect the value of portfolio investments made by the Master Fund or considered for prospective investment.

Leverage- Portfolio investments may include businesses whose capital structures may have significant leverage.

An infrastructure investment is subject to certain risks including but not limited to: the burdens of ownership of infrastructure; local, national and international economic conditions; the supply and demand for services from and access to infrastructure; the financial condition of users and suppliers of infrastructure assets; changes in interest rates and the availability of funds which may render the purchase, sale or refinancing of infrastructure assets difficult or impractical; changes in environmental and planning laws and regulations, and other governmental rules; environmental claims arising in respect of infrastructure acquired with undisclosed or unknown environmental problems or as to which inadequate reserves have been established; changes in energy prices; changes in fiscal and monetary policies; negative economic developments that depress travel; uninsured casualties; force majeure acts, terrorist events, under insured or uninsurable losses; and other factors beyond reasonable control. Please consult the constituent documents for more information on risks specific to infrastructure investing. An investment in any of these investment programs should be made only after careful review of the risk factors described in the related offering documents.

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Presenters

Julio Garcia

Head of Infrastructure, North America

IFM Investors

Julio is responsible for IFM's infrastructure business in North America and manages the infrastructure team in the US.

Julio joined IFM Investors in January 2008 in Melbourne, Australia, and relocated to New York in 2014. Julio's experience includes senior roles in deal sourcing, investment evaluation, transaction execution, asset management, investment banking and strategy. Julio has led several major infrastructure investments and has been a director on the boards of various infrastructure companies, including the Port of Brisbane, NSW Ports, Ecogen Energy, Northern Territory Airports and Wyuna Water. Prior to joining IFM Investors, Julio held positions with Viant Capital, Bank of America, Robertson Stephens and Gemini Consulting.

Julio holds a Master's Degree in Business Administration from the Stanford University Graduate School of Business, and a Bachelor of Arts (Public Policy) degree from Stanford University.

David Altshuler

Head of North America, Global Relationship Group

IFM Investors

David is an Executive Director, Head of North America's Global Relationship Group at IFM Investors, where he is responsible for product development for the firm.

David has more than 18 years of equity and debt investment experience in infrastructure, energy, and natural resources sectors. Prior to joining IFM Investors, David was the founding partner of StepStone Infrastructure and Real Assets, where he was responsible for constructing and managing portfolios of funds and co-investments for institutions globally. David spent the first part of his career at Nuveen Investments, where he was a member of the infrastructure financing team.

David holds a PhD (University of Chicago).

Contents

Section	Topic	Page
1	IFM Investors Firm Overview	6
2	IFM Global Infrastructure Fund	12
3	LP Performance	17
4	Key Macro Drivers	18
5	Appendix – Recent Transactions	21

IFM Investors Firm Overview

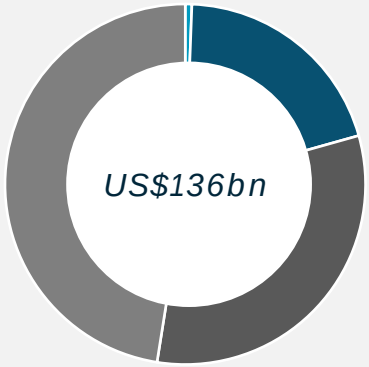
GIF portfolio company
Freeport LNG (United States)

Firm Overview

IFM is a global infrastructure specialist with 27 years of experience in the infrastructure sector investing on behalf of long-term, like-minded investors

Established & owned by pension funds

US$136 billion across four asset classes[1]



- Infrastructure Equity **$64.4bn**
- Debt Investments **$43.2bn**
- Listed Equities **$27.2bn**
- Private Equity **$0.8bn**

10 global locations

New York | Berlin | Melbourne | Hong Kong | Amsterdam

London | Zurich | Sydney | Seoul | Tokyo

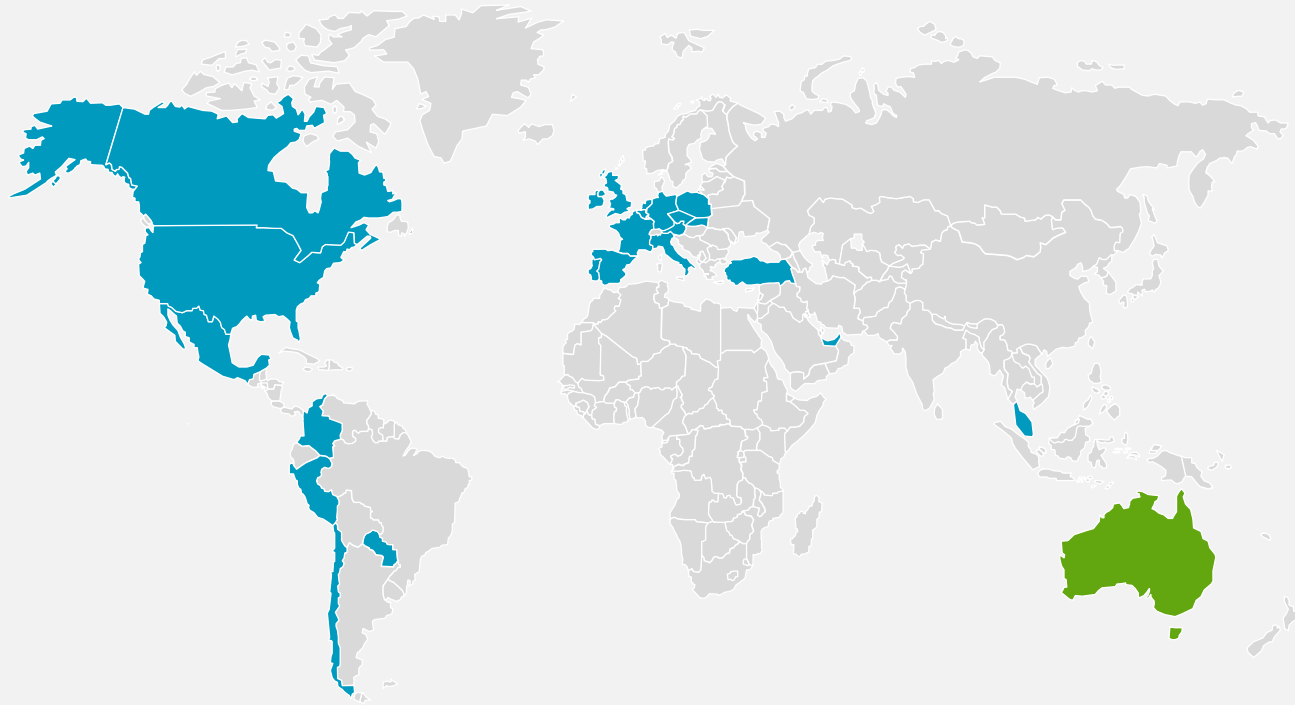
To protect & grow our investors' long-term capital

(1) As of 30 June 2022. US $136bn represents the FUM of investments and undrawn investor commitments. Differences may be due to rounding.

Infrastructure Equity

With a track record over two decades, IFM Investors is an established infrastructure equity manager with global scale

US$ 64 BN	Funds Under Management
3	Open-end infrastructure equity funds
27	Years investing in infrastructure
100+	Infrastructure investment professionals
80+	Transactions since 1995
38	Portfolio Companies



Global Infrastructure Fund (GIF)
Incepted in December 2004
22 Portfolio Investments

Australia Infrastructure Fund (AIF)
Incepted in August 1995
16 Portfolio Companies

Net Zero Infrastructure Fund (NZIF)
Incepted in March 2022
1 Portfolio Company

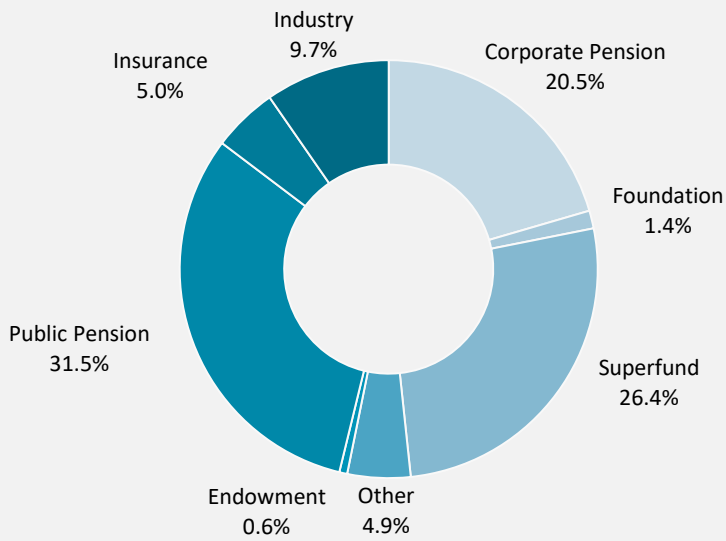
All figures as of 30 June 2022. Differences may be due to rounding.

GIF Investor Base

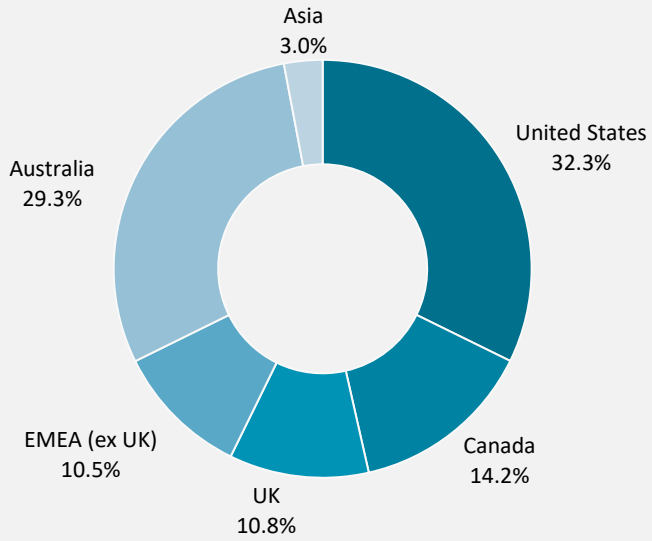
IFM Investors manages infrastructure investments for long-term institutional investors globally, with impacts on our investors' 120 million members and retirees.

Serving 552 investors

FUM by Investor Type (1)



FUM by Investor Region (1)



As of 30 June 2022.
(1) FUM represents total NAV of the IFM Global Infrastructure Master Fund plus all undrawn investor commitments and cash available for investment in USD. Differences due to rounding. Past returns are not indicative of future performance.

IFM
Global Infrastructure Fund

GIF portfolio company
Global Container Terminals (Canada)

Targeted Investments

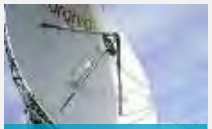
IFM GIF seeks to invest in essential infrastructure assets primarily in OECD countries

Key target sectors

Utilities

Gas & Electric

Water


Telecom

Energy

Terminals&LNG

Pipelines

Renewables

Transportation

Toll Roads

Airports

Seaports

We focus on assets with distinct characteristics:

01 Strong market positions/ High barriers to entry

02 Long asset/ concession life

03 Inflation protection

04 Benefit from regional/global economic growth

05 Stable and predictable revenues

06 Stable regulatory environment

07 Targeting investment-grade financing

Investment Strategy

IFM GIF is focused on building and managing a diversified portfolio of essential infrastructure assets to deliver stable long-term returns

GIF portfolio company:
Global Container Terminals (US)

Key building blocks of our investment strategy include specific goals through the investment cycle:

Buy Well

- A long-term partner aligned with government entities and strategics
- Opportunities sourced through 100+ dedicated specialists and senior advisors, extended sourcing network through portfolio companies' industry relationships
- Current portfolio is a platform for bolt on acquisitions and capital reinvestment

Manage Intensively

- Strong governance and active board representation
- Integrated Asset Management Specialist team driving global knowledge sharing and best practice
- Prudent and conservative approach towards leverage
- ESG principles embedded in investment decision and asset management

Sell Opportunistically

- Create value with a long-term return focus
- Sell to capture one-off market opportunities
- Partial divestments to rebalance portfolio and partner with strategic sponsors

IFM Global Infrastructure Fund (GIF)

IFM GIF's strategy is to manage a diversified portfolio of global infrastructure investments with a net target return of 8-12% p.a. over the long term [1]

Net Asset Value: $44.9 bn

Weighted Average Discount Rate: 10.2%

Weighted average leverage: 34.1%

Net Return	1-Year	3-Year	5-Year	7-Year	10-Year	Since Inception
GIF Net Return[2]	**12.8%**	**10.5%**	**12.4%**	**12.8%**	**11.1%**	**9.2%**
US LP Net Return[3]	**12.8%**	**10.5%**	**12.6%**	**n.a.**	**n.a.**	**12.4%**

5.8% p.a. net cash yield since inception [4]

GIF's total return seeks a significant contribution from cash yield over the medium to long term.

Past returns are not indicative of future performance. All figures as of June 30, 2022.

1. There is no guarantee that target returns will be realized. Actual returns may vary materially from target and past returns as a result of changes in the portfolio composition, such as acquisitions, divestments or material changes in business plan forecasts for individual assets. Returns are reported on an annualized basis.
2. The IFM Global Infrastructure Fund ("Master Fund") has been investing in core infrastructure assets globally ex-Australia since December 1, 2004 (including investments made through predecessor vehicles). The return series shown above is time-weighted, reported on an annualized basis, and reflects the aggregated performance of each asset's respective local currency performance at the Master Fund level, weighted by the USD proportionate equity value of each asset. In order to show net returns for the Master Fund return series, the highest Class A management and performance fees structure has been applied on a pro-forma basis. The Master Fund return series does not reflect the impact and costs of hedging and other expenses charged to the fund, which will further reduce returns. No representation is being made that the Master Fund return series reflects the returns of any feeder fund or the returns of an actual investor in the fund. Actual net feeder performance is available upon request. This information is provided for illustrative purposes only. Investment decisions should not be made solely based on the returns series shown above. Past performance is not indicative of future performance.
3. IFM Global Infrastructure (US) L.P. Class A is a hedged product for eligible US investors seeking access to core infrastructure located in globally developed economies ex-Australia. Returns are time-weighted as of June 30, 2022 net of taxes and fees, denominated in USD. Fund was incepted June 2016. Returns are reported on an annualized basis Cash yield for the IFM Global Infrastructure Master Fund represents aggregate feeder cash yield to investors on a NAV basis net of management and performance fees.
   Since inception cash yield is calculated as of the Fund's first distribution to investors on June 1, 2012. Returns are reported on an annualized basis.

Global Infrastructure Team

Kyle Mangini

Global Head of Infrastructure

Julio Garcia

Head of North America

Christian Seymour

Head of Europe

Michael Hanna

Head of Australia

11 years average tenure at IFM Investors[1]

24 years average industry experience[1]

30% Women

20+ Languages Spoken

300+ Support staff across Legal, Tax & Ops

110+ Professionals

80+ *Investment Team*

Infrastructure specialists

- Origination and agile transactional capability
- Deal team continues to be responsible for asset management, ensuring alignment and continuity
- Deep sector knowledge

20 *Asset Management Specialists*

Support investment team for value creation across portfolio

- Managing key asset risks
- Enhancing asset performance
- Leveraging portfolio's scale to generate synergies

7 *Portfolio Management*

Improving efficiency of portfolio

- Portfolio insight
- Determining optimal asset allocations
- FX, structuring and liquidity management

Diverse Skill Set

- **IB/ Capital Markets**
- **Operations**
- **Regulation/ Government / Legal**
- **Project Management**
- **HR/Labour Relations**

(1) Representative of employees who are Director and above in title.

Portfolio Evolution

Buy and manage strategy with opportunistic exits

Since 2017, we've executed 18 acquisitions and follow-ons, representing ~US$22.4bn+ [1]

14 New Acquisitions

c. $20.8bn

2017

- VTTI (Global) & Follow-on
- OHL Mexico (Mexico)
- M6toll (UK)
- Mersin Port (Turkey)

2018

- FCC Aqualia (Spain, Czech Republic)
- GCT Terminals (US and Canada)
- Impala Terminal (Peru, Spain & Mexico)
- Aleatica (Global)

2019

- DCT Gdańsk (Poland)
- Buckeye Partners (US)

2021

- Enwave Energy Corporation (Canada)
- Naturgy Energy Group[1] (Spain)

2022

- GlasfaserPlus GmbH (Germany)
- Sydney Airport (Australia)

4 Follow-ons/ Expansion

c. $1.6bn

2017

- Conmex (Mexico)
- Freeport Notes 2 (US)

2018

- Indiana Toll Road (US)
- VTTI (Global)

Divestitures

2017

- Freeport Notes, Full (US)
- Duquesne Light, Full (US)

2018

- Conmex, Partial (Mexico)
- 50Hertz, Full (Germany)
- Freeport Notes 2 (US)

2019

- VTTI, Partial (Global)

2021

- Indiana Toll Road, Partial (US)

Main Reasons for divesture

- Portfolio Diversification
- Strategic Considerations
- Opportunistic Exit

(1) Investments made since 2017 have been included. This is not a representation of all investments completed since the inception of the Global Infrastructure Fund. It should not be assumed that the investments shown herein will be profitable or that investments made in the future will be profitable or will equal the performance of the investments shown herein.
A complete list of historical investments in the portfolio is available upon request.

IFM Global Infrastructure Fund

Diversified portfolio of investments

21 portfolio companies across 20+ countries[1]

Americas

Colonial Pipeline
US, 2007
The largest refined product pipeline system in U.S.

Global Container Terminals
US & Canada, 2018
Portfolio of container terminals in Vancouver and NY/NJ

Buckeye Partners, L.P.
US, 2019
Energy midstream company with over 130 years of operating history

Freeport LNG
US, 2014
Natural gas liquefaction and export facility

Indiana Toll Road
US, 2015
157-mile toll road in the State of Indiana

enwave
Canada, 2021
Fully integrated district energy business – cooling & heating

Global

aqualia
Spain and Global, 2018
One of the world's largest private water groups

vtti
Global, 2017
Portfolio of energy midstream marine terminals across five continents

ALEATICA
Americas and Spain, 2015
Portfolio of transportation infrastructure with 20 assets

impala
Global, 2018
Portfolio of essential base metals terminals

SYD
Australia, 2022
Key international gateway into Australia

Europe

arqiva
UK, 2004
Broadcast & wireless communication infrastructure

Veolia Energia Polska
Poland, 2006
District heating and cogeneration plants

Anglian Water Group
UK, 2006
5th largest water supply and sewerage company in England

glasfaserplus
Germany, 2022
Broadband fibre roll-out joint venture

MIP
Turkey, 2017
Turkey's largest port by volume

MAG
UK, 2013
One of the top three airport operators in the UK

Vienna International Airport
Austria, 2014
The primary airport in Austria and a gateway to Eastern Europe

M6toll
UK, 2017
A 43km, dual three-lane tolled motorway

DCT Gdansk
Poland, 2019
The largest container terminal operator in the Baltic Sea

Naturgy
Spain, 2021
Leading Spanish utility company

As of 30 June 2022. Portfolio holdings shown are as of the date noted, may not represent all of the portfolio's current holdings, and are not representative of future investments.
Note: Year indicates initial acquisition year. Certain assets have subsequent transactions (follow-on investments or partial divestments).

(1) Country exposures outlined here reflect material asset exposures (based on contribution to total EBITDA) across our portfolio companies. GIF has assets located in 45+ countries, of which 93% are OECD.

Performance
GIF asset
Aleatica (LatAm)

Alaska Retirement Management Board

IFM GIF US LP (Class B) Account Activity	Date	Amount (USD)
Initial Commitment	January 2, 2014	$200,000,000
Drawdown	May 13, 2015	$200,000,000
Additional Commitment	September 30, 2015	$50,000,000
Total Distributions Since Inception (Class B)	May 31, 2016	$3,089,338
Ending Capital Balance	May 31, 2016	$219,559,388
Net TWR Since Inception (%p.a.)	**May 31, 2016**	**9.28%**

IFM GIF US LP (Class A) Account Activity	Date	Amount (USD)
Switch from Class B	June 1, 2016	$219,559,388
Partial Drawdown	February 15, 2017	$25,000,000
Partial Drawdown	April 19, 2017	$25,000,000
Additional Commitment	October 3, 2016	$50,000,000
Drawdown	November 1, 2017	$50,000,000
Additional Commitment	March 9, 2018	$52,789,278
Partial Drawdown	July 1, 2019	$13,197,320
Partial Drawdown	October 23, 2019	$39,591,959
Total Distributions Since Inception (Class A)	June 30, 2022	$183,868,855
Ending Capital Balance	June 30, 2022	$651,604,402
Net TWR Since Inception (%p.a.)	**June 30, 2022**	**12.49%**

Notes:

1. Investor has chosen to have distributions in CASH via wire.
2. Combined Partnership Net TWR Since Inception: **11.85%.** Return calculated by annualizing the monthly returns since inception for the time in Class B and Class A. Returns are net of fees and are as of 30 June 2022.

Past performance is no guarantee of future results. Returns are shown net of all fees and all costs incurred by the investment programs, but before withholding taxes and other costs that are incumbent on clients. Nothing contained herein should be deemed to be a prediction or projection of future performance of any investment.

Key macro drivers - GIF

Macro Sensitivity Summary

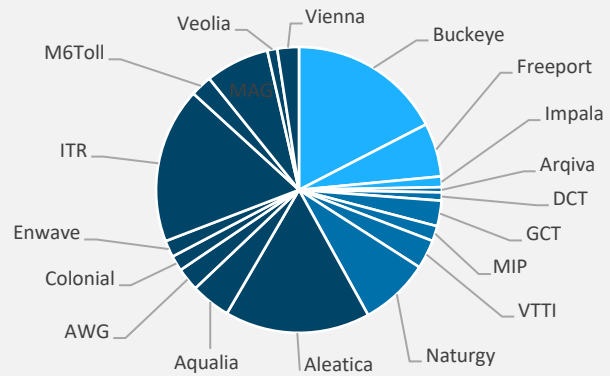
Diversification is demonstrated through a diversity of macroeconomic responses throughout the portfolio (and in some cases diversified within the assets themselves).

Key	Low	Medium	High

	Asset	GDP Linkage	Inflation Linkage	Interest Rate Linkage
Airports	MAG			
	Vienna			
Toll Roads	ITR			
	M6Toll			
	Aleatica			
Seaports	MIP			
	GCT			
	DCT			
Utilities	Arqiva			
	AWG			
	Aqualia			
	Veolia			
	Enwave			
	Naturgy			
Midstream	Colonial			
	VTTI			
	Impala			
	Freeport			
	Buckeye			

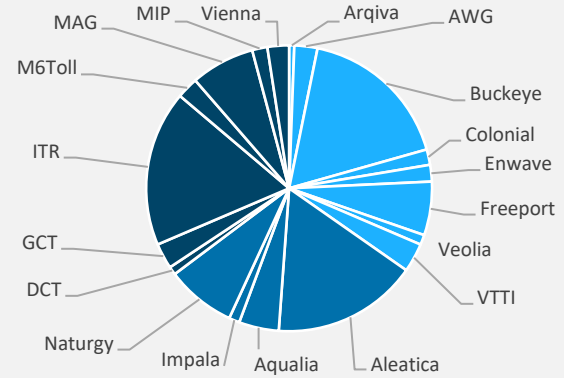
Inflation Sensitivity

The majority of assets have pricing mechanisms tied to inflation, or have a track record of price escalation in-line with inflation.



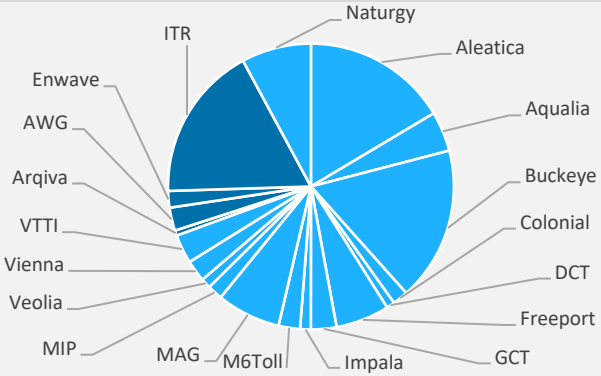
GDP Sensitivity

Assets with volume-linked revenue streams are typically GDP sensitive. Aleatica GDP risk is mitigated through guaranteed return mechanisms for most of its concessions.



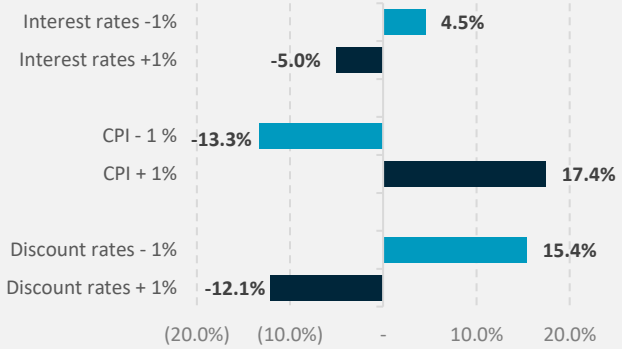
Interest Rate Sensitivity

The vast majority of debt is hedged or fixed rate. Over several years we have been extending maturities and locking in low rates. Residual risk tends to arise from new debt issuances or refinancing activity.



Univariate Sensitivities to Portfolio NAV

Independent valuers provide univariate sensitivities every quarter for each asset. Note that discount rates are not directly dependent on bond rates – valuers smooth the decline in risk free rate over years.



Note: This material is provided for illustrative purposes only and should not be construed as investment advice or a recommendation to buy or sell securities. The L-M-H assessments in the table and the pie charts are an interpretation of quantitative data. GDP, Inflation, Interest Rate, Macro and Univariate Sensitivities (exclude Naturgy, Sydney Airport and GlasfaserPlus GmbH) as of 31 March 2022.

Note: Bar chart based upon sensitivities over the entire life of cashflows.

Appendix

GIF asset
Anglian Water Group (UK)

Recently Announced Transactions

This section will show new GIF assets either announced or acquired and all GIF assets fully or partially divested over the last 12 months to June 30, 2022. Not included are add on/divestment transactions within current Portfolio Company footprints which is information that is available upon request. It should not be assumed that the investments shown herein will be profitable.

New Investment: Sydney Airport

In March 2022, IFM (GIF and AIF) together with consortium members completed the US$23bn take-private of Sydney Airport

SYD

Sydney Airport is a major global airport infrastructure asset

SYD is one of the oldest continually operating airports in the world, celebrating its 100 year anniversary in 2019

44.4m

Passengers served in 2019[1]

+5.0% CAGR

Passenger growth between 1989-2019

2030

Targeting net zero Scope 1 & 2 emissions

Investment Overview

- **Key international gateway** into Australia and the **largest airport by passenger volumes**
- **8km from the Sydney CBD** and consists of 3 runways and 3 passenger terminals
- Serves **100 destinations in 27 countries** via more **than 50 airlines**
- **GIF (18.0%)** will invest alongside **IFM AIF (14.99%)**, AustralianSuper (7.5%), QSuper (7.5%), UniSuper (15.01%) and Global Infrastructure Partners (37.0%)

Investment Thesis

- **Value Recognition through Airport expertise**
  - IFM has invested in 16 airports globally and has deep understanding of value drivers
  - Favorable entry multiples versus precedents
- **Unique, Essential Infrastructure**
  - Australia's primary international gateway with CBD proximity
  - Australia's geographic isolation provides unique defensiveness
- **Robust Track Record and Strong Fundamentals**
  - Long operating history with strong history of passenger growth
  - Sydney's strong economic and population growth, access to growth markets in Asia
- **ESG Credentials**
  - Net zero emissions by 2030 and targeting 100% renewable electricity by 2025
- **Portfolio Fit**
  - Complementary to GIF's existing airport portfolio (MAG, VIE)
  - GIF's first investment in Australia

(1) Last full year of airport statistics available that were not affected by the COVID-19 pandemic.

New Investment: GlasfaserPlus GmbH

In November 2021, IFM GIF entered into a broadband fibre roll-out joint venture **("JV") with Telekom Deutschland GmbH ("TDG")**

Providing gigabit broadband to poorly served rural areas

Contributes to the German government's goal of using gigabit applications by the end of 2025

40%

TDG's market share in the retail broadband space in Germany

4 million

Homes provided with fibre by the JV by 2028

€1.6 billion

Estimated total GIF funding to the JV by 2028

Investment Overview

- GlasfaserPlus GmbH is a **broadband fibre roll-out joint venture with TDG**, the German unit of Deutsche Telekom AG
- **Owned 50% by TDG and 50% by GIF**, JV will be responsible for the roll out and operation of an open-access **fibre-to-the-home network for rural areas** of Germany
- **By 2028** the company aims to roll out fibre to **at least 4 million homes in selected rural areas** with low cable coverage, subsidy availability and low overbuild risk
- GIF's investment will be a combination of upfront and future payments subject to certain milestones being met, which is expected to **exceed €1.6 billion** by 2028

Investment Thesis

- **Long-term strategic partnership**: Deutsche Telekom is a leading telecom operator in Europe's largest economy and the incumbent telecom in Germany with a 40% market share in the retail broadband space.
  - TDG to provide procurement, construction, municipality management, network operations and maintenance support to the JV under **operating agreements**
  - TDG will also enter into a **long term wholesale agreement** as an anchor tenant on the network of the JV
- **Stable cash flows**: A low-carbon investment with strong socio economic benefits, located in a stable jurisdiction. It also provides long-term cash-flow predictability and strong government support
- **Diversification:** The investment provides new sector and country diversification for the GIF portfolio and represents GIF's first investment into the fibre sector

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Registered Representative
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Email: david.altshuler@ifminvestors.com

ifm investors

One purpose. Shared prosperity.

IFM (US) Securities, LLC

Member: FINRA/SIPC

IFM-22AUGUST2022-2387503

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STATE OF ALASKA
DEPARTMENT OF REVENUE

ALASKA RETIREMENT MANAGEMENT BOARD

Real Assets
Fiscal Year 2023 Annual Investment Plan

September 2022

Steve Sikes, CFA, CPA
Manager of Real Assets

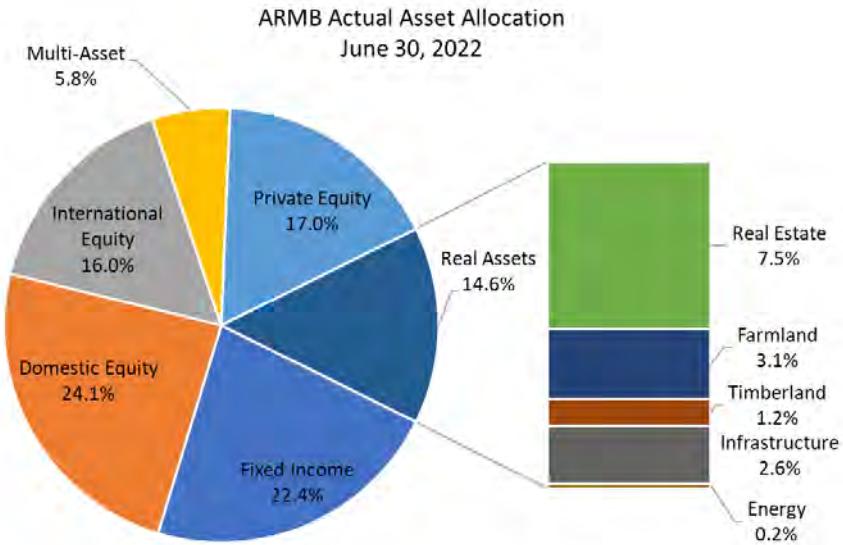
Alaska Retirement Management Board

Real Assets Portfolio

ARMB Portfolio Role: Diversify the portfolio while providing attractive total returns, inflation protection, and income.

Strategy: Seek to establish exposure to real assets through both public and private assets primarily in core investments.

Return Expectations: Long-term performance expectations for real assets are to have net-of-fee performance between public equities and fixed income over rolling 6-year periods.



Real Assets represented $4.5 billion of ARMB's $30.8 billion of total defined benefit assets as of June 30, 2022. Callan Real Assets Consulting values are used. Numbers may not sum due to rounding.

Benchmark: At the asset class level, a custom benchmark of 35% NFI-ODCE, 15% FTSE NAREIT Equity Index, 25% NCREIF Farmland Index, 10% NCREIF Timberland Index, 15% CPI+4 is employed.

Structure: The Real Assets portfolio is primarily a collection of private, illiquid assets requiring long-term holding periods and an investment in publicly traded REITs.

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Fiscal Year 2023 ARMB Asset Allocation

- What do we expect to achieve? How does it fit?

Customized 10-Year ARMB Capital Market Projections – PERS & TRS Target

ARMB Asset Allocation Model 2022-2031

		PROJECTED RETURN		PROJECTED RISK	
Asset Class	**Target Weight**	**1-Year Arithmetic**	**10-Year Geometric Return**	**Annualized Standard Deviation**	**Projected Yield**
Public Equities	**45.0%**				
Broad US Equity	27.0%	8.00%	6.60%	17.95%	1.70%
Global Ex-US Equity	18.0%	8.70%	6.80%	20.70%	2.55%
Fixed Income	**21.0%**				
ARMB Core Fixed Income	21.0%	1.75%	1.70%	3.55%	2.82%
Multi-Asset	**6.0%**				
Multi-Asset	6.0%	5.65%	5.20%	10.80%	2.40%
Private Equity	**14.0%**				
Private Equity	14.0%	11.45%	8.00%	27.60%	0.00%
Real Assets	**14.0%**	**6.90%**	**6.15%**	**13.60%**	**4.35%**
Real Estate	4.90%	6.60%	5.75%	14.20%	4.40%
Timber	1.40%	6.45%	5.40%	15.60%	3.70%
Farmland	3.50%	6.60%	5.50%	15.45%	4.25%
Private Infrastructure	2.10%	7.10%	6.10%	15.45%	4.60%
REITs	2.10%	8.15%	6.20%	20.70%	4.65%
Cash Equivalents	**0.0%**				
Cash Equivalents	0.0%	1.20%	1.20%	0.90%	1.20%
Inflation			2.25%	1.50%	
Total Fund	**100.0%**	**7.00%**	**6.24%**	**13.72%**	**2.27%**

Projection set customized to reflect specific ARMB strategies:

- Real assets, multi-asset and fixed income

Current target projected to generate a return of 6.24% compounded over 10 years, at a risk (standard deviation) of 13.72%. This return is comparable to that projected last year for the same target (6.23%).

Source: Callan, LLC June 2022 ARMB presentation

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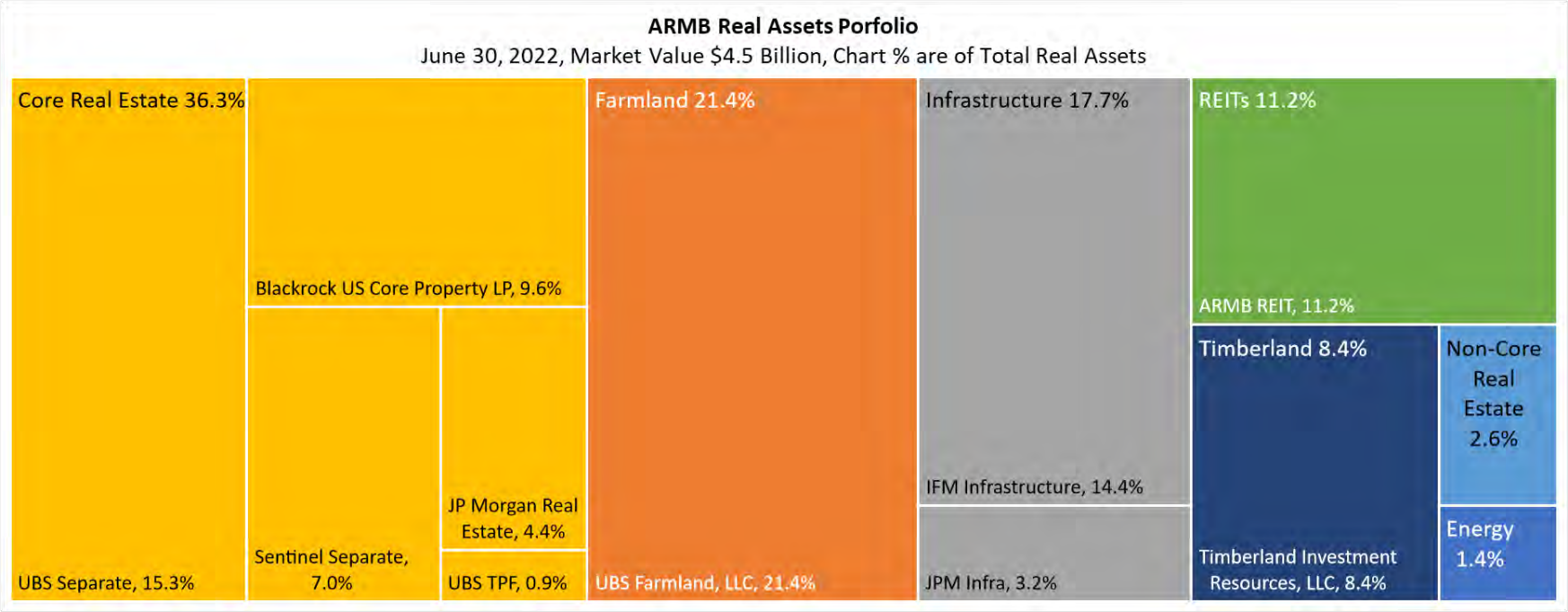
Actual vs. Target Weights

- Long-term sector target allocations are developed with Callan, ARMB's Real Assets consultant. The asset class sector target weights remain unchanged since 2019.
- As of June 30, the Real Assets portfolio was largely in-line with targets. Underweight in REITs is offset against exposure to core and non-core real estate.

as of June 30, 2022	Actual	Target	Difference
Core Real Estate	37.3%	35.0%	2.3%
Non-Core Real Estate	2.6%	0.0%	2.6%
REITS	11.2%	15.0%	-3.8%
Farmland	21.4%	25.0%	-3.6%
Timberland	8.4%	10.0%	-1.6%
Infrastructure	17.7%	15.0%	2.7%
Energy	1.4%	0.0%	1.4%
Total Real Assets	14.6%	14.0%	0.6%



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ARMB Performance vs. Benchmarks

- The Real Assets portfolio returned 14.39% net in Fiscal Year 2022 compared to the target return of 14.82%.
- Most sectors performed within reasonable ranges around benchmark expectations. Non-core real estate returns underperformed on 1-year basis but longer-term results are closer to the benchmark.
- Performance has met objectives of providing diversification and producing returns between public equities and fixed income.

as of June 30, 2022 (net of fees)	Qtr	1yr	6yr	10yr
Core	3.63%	29.48%	10.20%	10.41%
NCREIF ODCE	4.54%	28.31%	9.10%	10.15%
Non-Core	0.97%	10.55%	7.92%	10.13%
NCREIF ODCE +1.5%	4.87%	29.81%	10.61%	11.66%
REIT	-14.67%	-5.78%	5.53%	8.22%
FTSE NAREIT All Equity	-14.68%	-5.89%	5.63%	8.34%
Farmland	0.59%	9.69%	4.88%	6.32%
NCREIF Farmland (80/20 Blend)	1.98%	12.39%	6.57%	7.12%
Timberland	1.27%	9.69%	3.37%	4.61%
NCREIF Timberland	1.87%	12.01%	4.16%	4.44%
Infrastructure	2.40%	12.20%	10.60%	-
CPI+4%	3.97%	13.06%	7.51%	-
ARMB Real Assets	-0.13%	14.39%	7.27%	7.65%
ARMB Real Assets Target	0.83%	14.82%	6.88%	7.74%
Russell 3000	-16.70%	-13.87%	11.88%	12.57%
Bloomberg Barclays Aggregate	-4.69%	-10.29%	0.68%	1.54%
CPI	3.06%	9.06%	3.50%	2.59%

Source: Callan Real Assets Quarterly Report June 30, 2022, Callan PEP

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Fiscal Year 2022 Accomplishments

- Implemented mortgage debt program in the U.S real estate separate account program. A total of five properties were mortgaged returning $207.2 million in capital to ARMB at a weighted interest rate of 2.30% and weighted maturity of just under 5 years.

- Acquired three multifamily investments in the UBS and Sentinel separate account portfolios. Two of the properties are new construction and all the properties provide complimentary diversification benefits to the existing portfolio.

- Conducted a core open-end search but effort was paused due to asset class drifting to overweight condition as year evolved. Exercise was still very valuable in forming views on possible future investments.

- Staff continues to consider the non-qualified fund option for JPM Strategic Property Fund to harmonize real estate exposure between pension and healthcare/DC trusts.

Lansdale Station
Lansdale, PA

3000 Sage
Houston, TX

BLVD
Revere Beach, MA

Alaska Retirement Management Board

Real Estate Portfolio

- Two core separate account managers make investments on a discretionary basis within the parameters defined by ARMB's guidelines and annual investment plan up to approved allocations. These investments represent 44% of the real estate portfolio and are currently comprised of 17 assets within the apartment, industrial, office, and retail sectors across the U.S. ARMB owns 100% interest in these assets. An additional apartment asset was purchased after the fiscal year end.

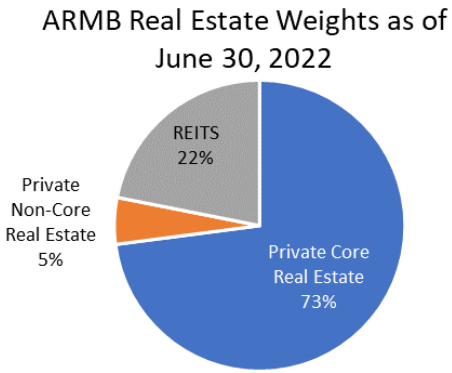
- Three core open-end commingled funds make investments on a discretionary basis according to each fund's strategy. These funds represent 29% of the real estate portfolio and offer well diversified exposure across asset types, markets, and size. ARMB owns units in these funds along with other institutional investors.

- Fund investments with three non-core commingled fund managers represent the majority of non-core real estate strategies. Non-core funds represent 5% of the real estate portfolio.

- The remaining 22% of the real estate portfolio is a passive publicly traded REIT equity portfolio invested internally by staff.

Real Estate Portfolio
June 30, 2022

- Net Asset Value: $2.3 billion
- Number of Assets: 17 + commingled fund interests
- Core Structure: 2 separate accounts, 3 open-end funds
- Non-Core Structure: 14 commingled funds
- U.S. Domestic REITs – FTSE NAREIT All Equity

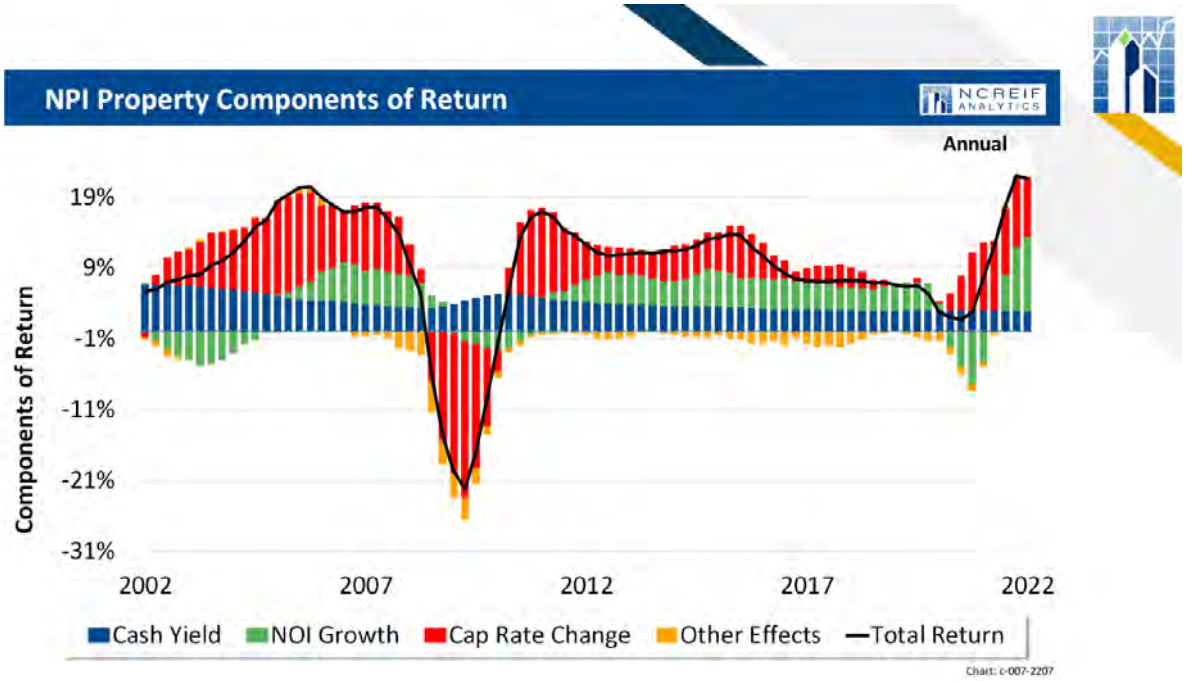


Alaska Retirement Management Board

Real Estate – Performance

- Core real estate returns as reflected by the NCREIF Property Index continue to show strong results through June 30, 2022, particularly in apartments and industrial.

- Net operating income (NOI) growth has been robust and should help offset rising cap rates and other possible valuation headwinds.



Source: NCREIF

Alaska Retirement Management Board

Real Estate – Outlook

NCREIF Property Index Annual Total Returns by Property Type

2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2Q22 YTD
20.5%	-4.1%	-11.0%	18.2%	15.5%	11.6%	12.9%	13.4%	15.3%	12.3%	13.0%	14.3%	13.4%	11.8%	43.3%	17.5%
18.1%	-5.8%	-16.9%	13.1%	14.6%	11.2%	12.3%	13.1%	14.9%	9.0%	7.0%	7.6%	6.6%	1.8%	19.9%	9.3%
15.9%	-6.5%	-17.5%	12.6%	14.3%	10.7%	11.0%	11.8%	13.3%	8.0%	6.2%	6.9%	6.4%	1.6%	17.7%	8.7%
15.0%	-7.3%	-17.9%	11.7%	13.8%	10.5%	10.4%	11.5%	13.2%	7.3%	6.0%	6.7%	5.5%	1.6%	6.1%	4.0%
13.5%	-7.3%	-19.1%	9.4%	13.8%	9.5%	9.9%	11.1%	12.5%	6.2%	5.7%	6.1%	3.5%	-7.5%	5.5%	3.6%
11.4%	-9.4%	-20.4%	9.0%	11.8%	8.2%	7.7%	10.3%	12.0%	4.7%	4.9%	2.2%	1.9%	-25.6%	4.2%	2.2%

Source: NCREIF

NPI | Industrial | Apartment | Retail | Hotel | Office

- Industrial and Apartment sectors are expected to continue to benefit from positive trends in logistics and housing demand. Retail and Office have higher uncertainty and lower expected returns.
- ARMB's portfolio has benefitted from being overweight apartment and industrial.

Forecasts project continuation (2022-2024)

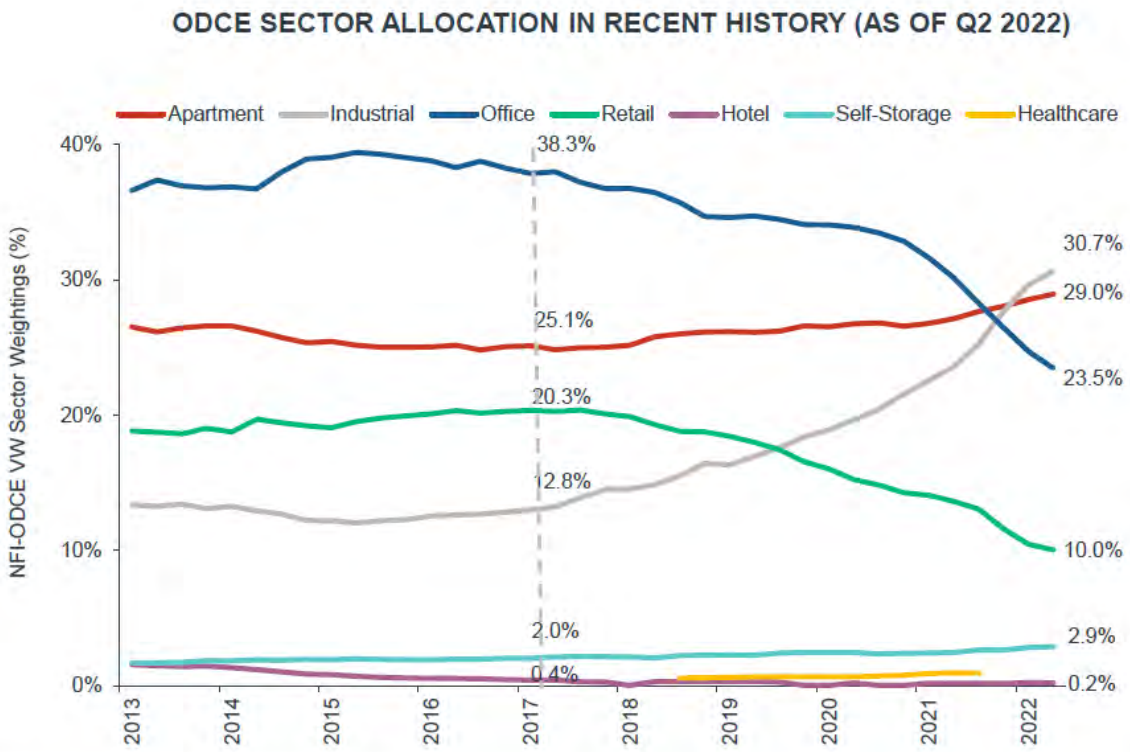
Sector	Current Cap Rate		Dividend Pay-Out Ratio		Dividend Yield		NOI Growth		Cap Rate Shift Effect		Total Return	Exit Cap Rate
Industrial	4.0	x	69.0	=	2.6	+	7.8	+	2.0	=	12.5	3.9
Apartment	3.6	X	74.5	=	2.6	+	5.4	+	-0.2	=	7.9	3.6
Retail	4.5	X	70.0	=	3.1	+	3.9	+	-1.5	=	5.6	4.7
Office	4.6	X	56.9	=	2.7	+	2.8	+	-0.4	=	5.1	4.7
NPI	4.2	X	66.8	=	2.7	+	4.8	+	0.0	=	7.7	4.2

Source: BlackRock, as of March 31, 2022

Alaska Retirement Management Board

Real Estate – Outlook

- NCREIF ODCE Index has changed substantially as a result of the changing macro trends.



Source: NCREIF, Clarion Partners Investment Research, Q2 2022.
Note: ODCE = NCREIF Open-End Diversified Core Equity Index. Past performance is not indicative of future results. Please see the important disclosures at the end of this presentation.

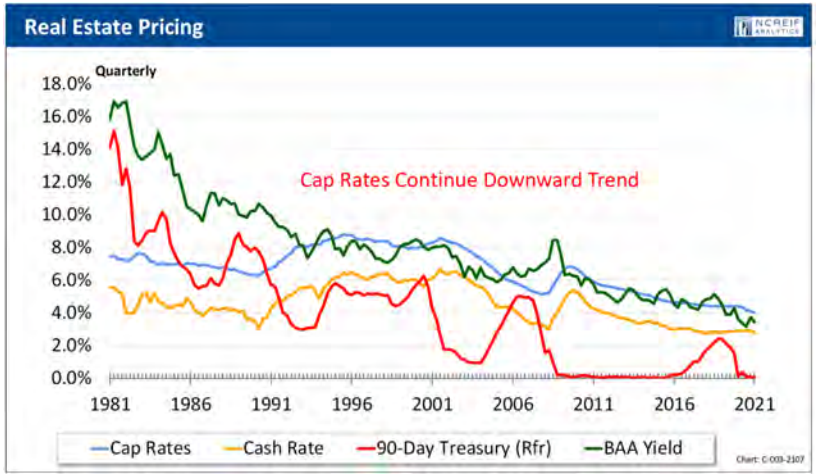
Source: Clarion Partners Investment Research, NCREIF

Alaska Retirement Management Board

Real Estate – Outlook

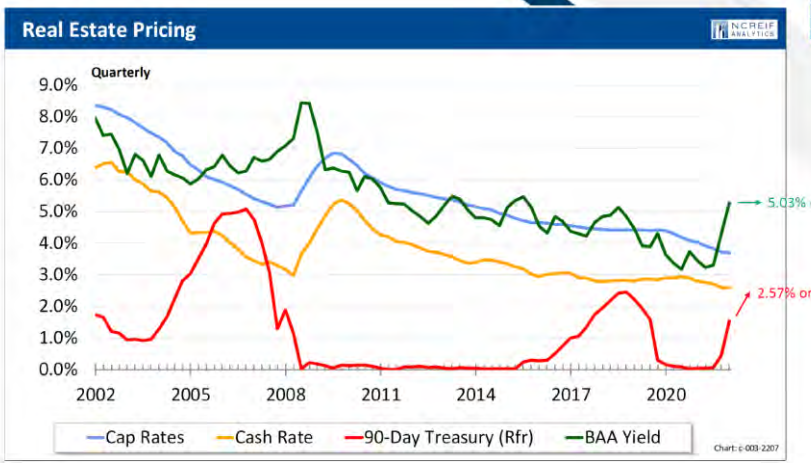
- NCREIF cap rates have yet to meaningfully respond to higher U.S. Treasury yields.
- Continued expected rent growth and inflation hedge expectations provide some cushion but cap rates will likely move higher as interest rates increase creating downward pressure on valuations.

Through last year…



Source: NCREIF

Updated for this year …

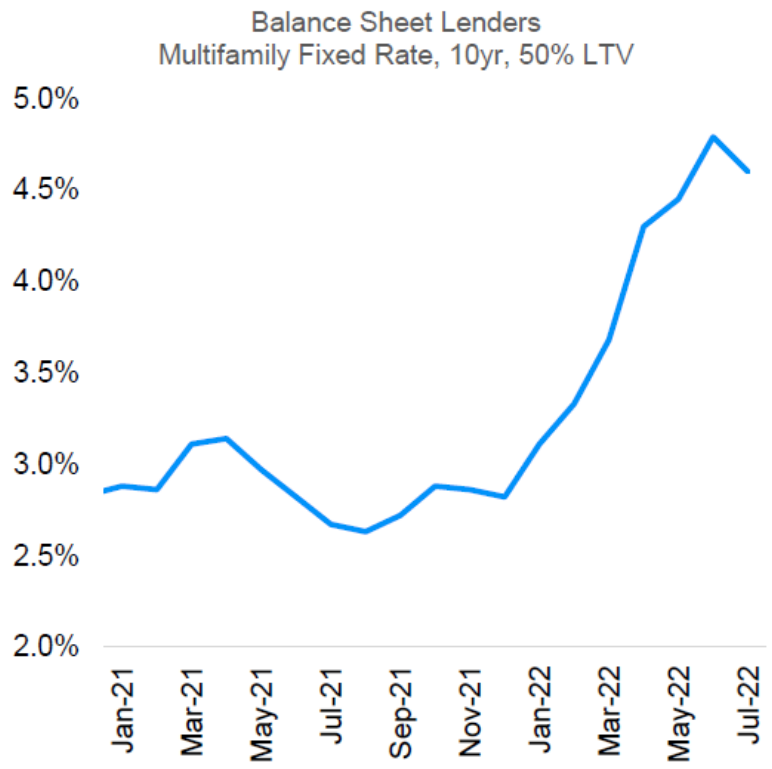


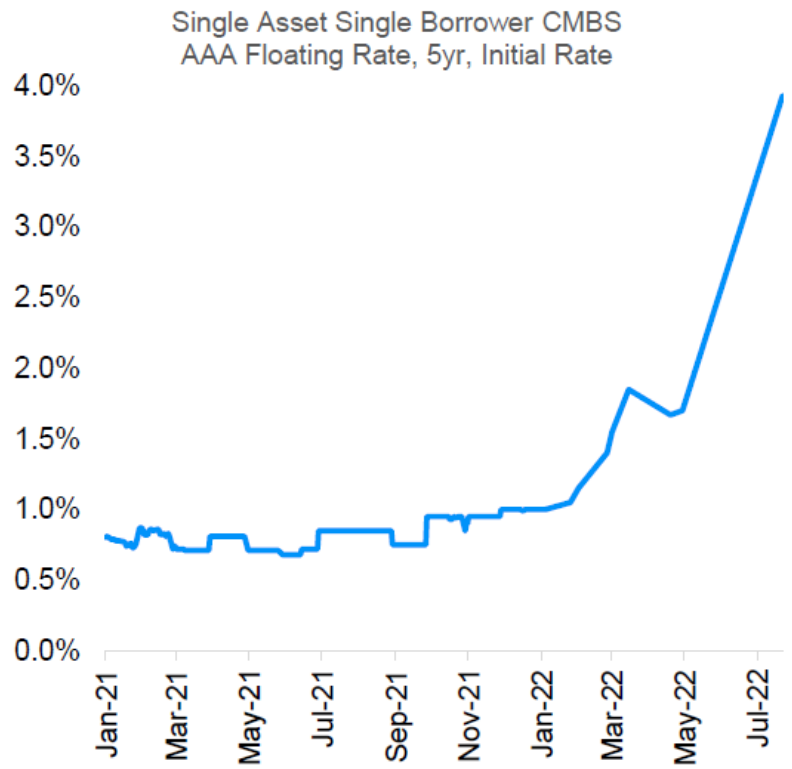
Source: NCREIF

Alaska Retirement Management Board

Real Estate – Outlook

- Debt costs have risen across the real estate lending spectrum creating "negative leverage" in many cases where debt interest rate costs are above property cap rates.





Source: U.S. Board of Governors of the Federal Reserve System, Moody's Economy.com, Bank of America, JPMorgan as of 7/31/2022

Alaska Retirement Management Board

Real Estate – Strategy

- Continue primary focus on income producing core real estate to achieve results between stocks and bonds through core separate accounts and open-end funds. ARMB's managers have produced attractive results.
- Seek to add core properties where returns are attractive and will add diversification to overall portfolio. Staff will also continue to evaluate non-core opportunities.
- Portfolio is expected to continue to be overweight to apartment and industrial assets going forward.
- ARMB has attractive fee levels on both private core real estate and internally managed REIT portfolio.

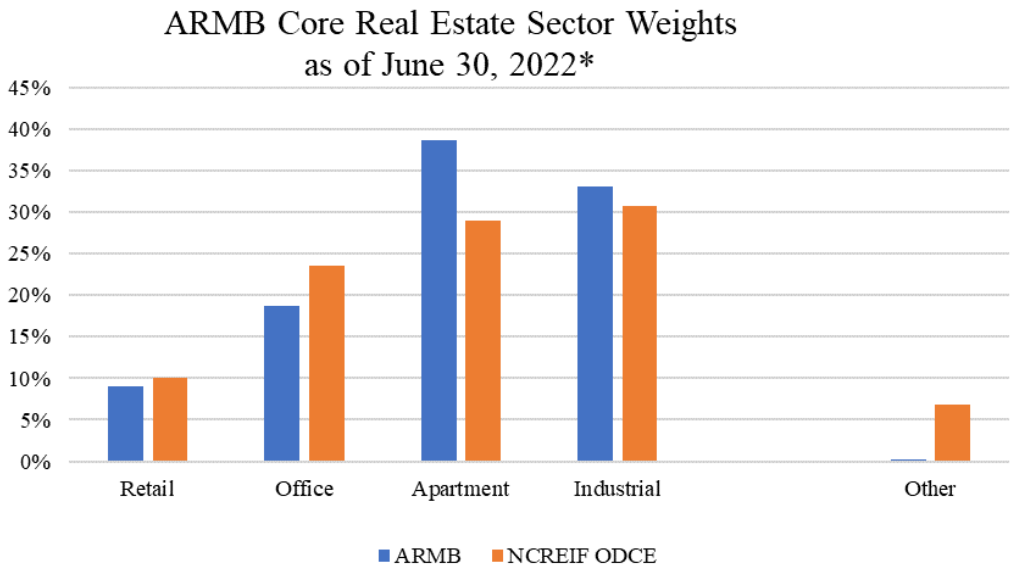
	ARMB NAV		1 Year		5 year		10 year	
as of June 30, 2022	$millions	Core Weight	Income	Total	Income	Total	Income	Total
UBS Separate Account (net)	691	41%	4.67%	29.77%	4.42%	12.20%	4.44%	12.92%
Sentinal Separate Account (net)	317	19%	4.55%	36.09%	4.72%	13.22%	4.71%	11.55%
BlackRock Core Property Fund (net)	435	26%	3.21%	26.54%	3.45%	10.17%	3.69%	10.50%
JPM Strategic Property Fund (net)	198	12%	2.69%	27.48%	2.79%	8.75%	3.51%	9.95%
UBS Trumbull Property Fund (net)	42	2%	3.02%	23.50%	3.37%	5.30%	3.63%	6.98%
NCREIF ODCE Value Wt (net)				28.31%		9.55%		10.15%

Source: Callan and BlackRock (5yr, 10r BlackRock numbers reflect general fund returns and not ARMB results)

Alaska Retirement Management Board

Real Estate – Strategy

- ARMB core portfolio is tilted toward sectors with strongest expected fundamentals.



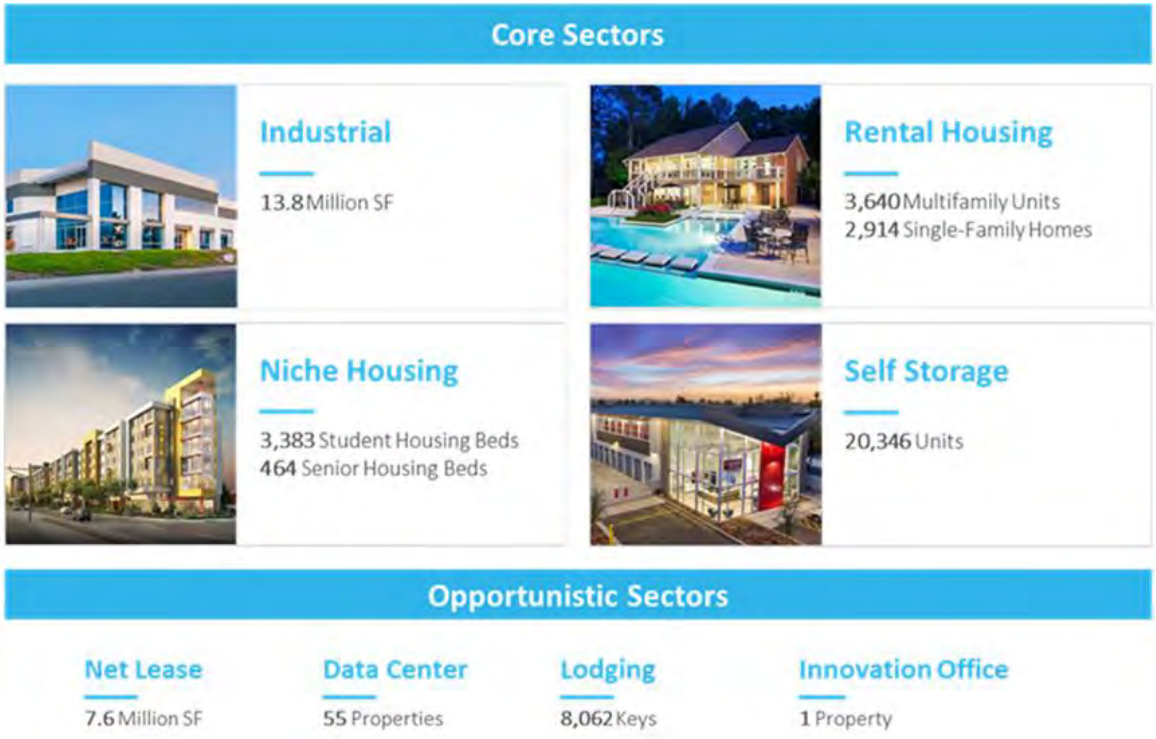
* Chart reflects the combined position of ARMB's core strategies using values reported by Callan Real Assets Consulting as of June 30, 2022, adjusted for UBS acquisition of apartment property in August 2022.

Alaska Retirement Management Board

Real Estate – KKR – Thematic Strategy

- ARMB has invested with KKR since 2014 across a series of closed-end funds.
- KKR invests based on a thematic approach, with a focus on sectors and markets with attractive fundamentals.
- Opportunistic strategy that invests in cash flowing transitional assets, real estate companies and platforms, and distressed situations.

Fund	ARMB Commitment	June 30 value ($000s)	Year	Net IRR	Equity Multiple	Status
REPA	$75 million	3,700	2014	11.5%	1.3	Execution Stage - Late
REPA II	$25 million	12,700	2017	27.0%	1.6	Execution Stage - Mid
REPA III	$50 million	18,900	2021	18.4%	1.1	Investment Stage



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Real Estate – Almanac Real Estate – Growth Capital Strategy

- ARMB has invested with Almanac since 2004 across a series of closed-end funds.
- Almanac provides growth capital to real estate operating companies across property sectors.
- Structure of investment is income focused and defensively positioned by predominantly using debt and preferred equity structures to invest. Active governance is also used to manage.

Fund	ARMB Commitment	June 30 value ($000s)	Year	Net IRR	Equity Multiple	Status
ARS 4	$50 million	-	2004	9.4%	1.5	Fully realized
ARS 5	$30 million	49	2008	11.7%	1.5	Final Windown Stage
ARS 7	$50 million	31,500	2014	12.6%	1.4	Execution Stage - Late
ARS 8	$50 million	27,000	2018	16.0%	1.3	Execution Stage - Mid
ARS 9	$50 million	300	2021	N/A	N/A	Initial Investment Stage

Industrial

367 Properties | 22.8m SF | $3.2bn GAV

Self-Storage

27 Properties | 33,192 units | $1.0bn GAV

Multifamily/Senior Housing/Hotel

235 Properties | 42,844 units | $11.5bn GAV

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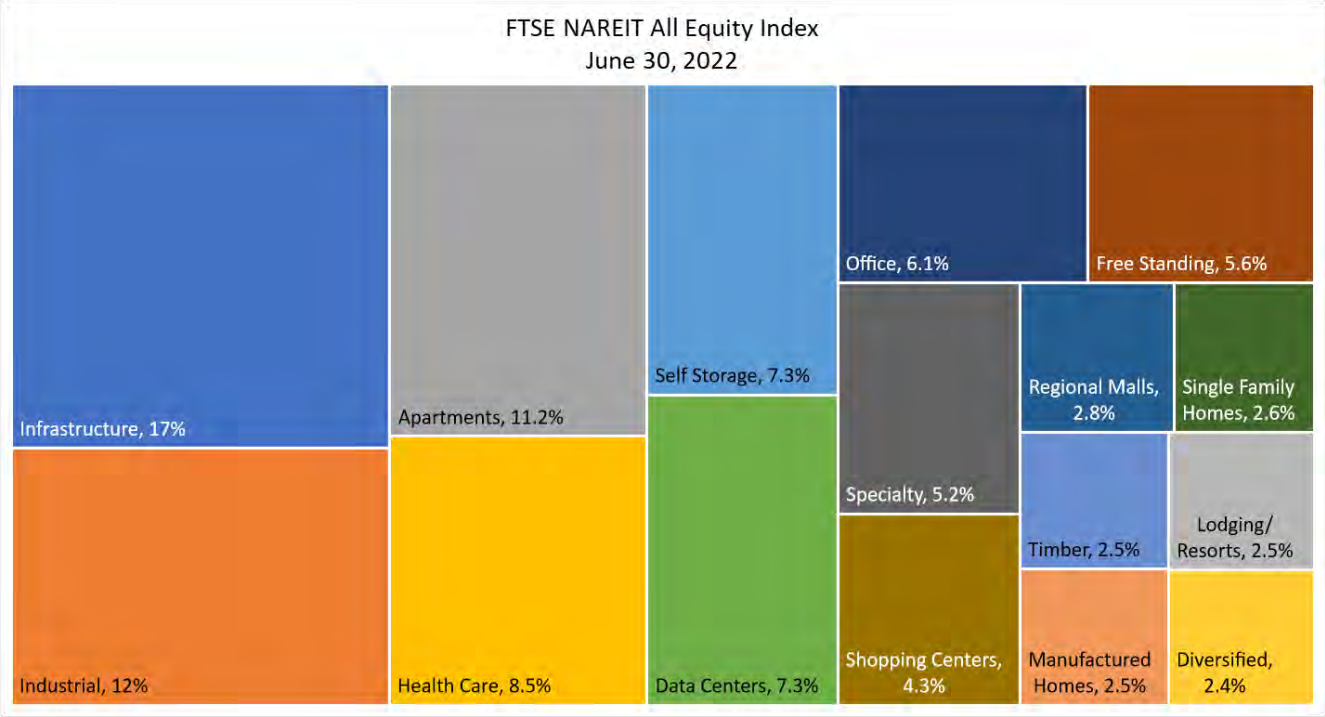
Real Estate Portfolio – REITs

- REITs provide diversification and attractive returns over the long-run.
- FTSE NAREIT All Equity Index is a good reflection of ARMB's Real Assets strategy including timber and infrastructure-like sectors.
- Index is comprised of 151 companies with a dividend yield of 3.4%.



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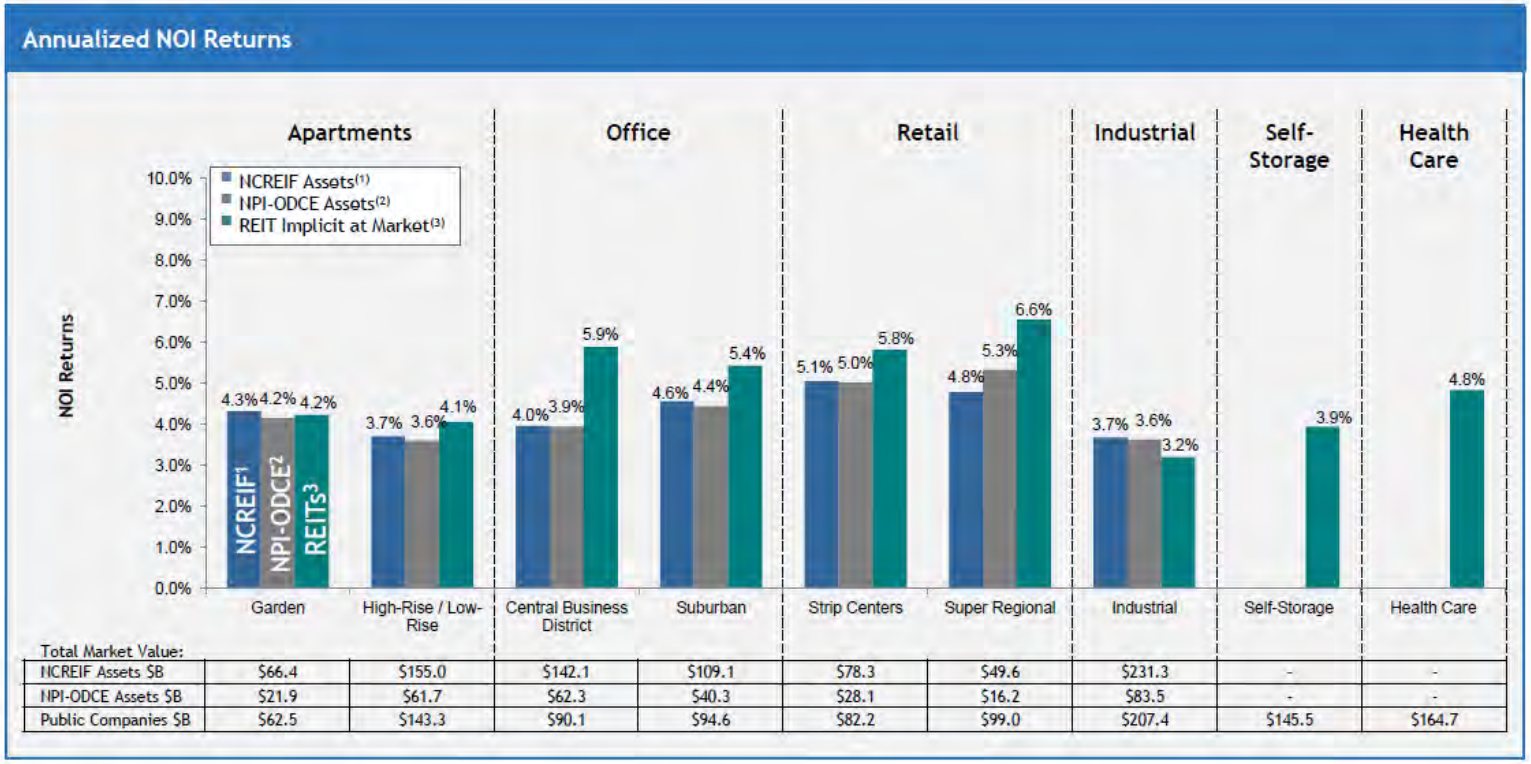
Real Estate Portfolio – REITs

- REITs provide exposure to real estate sectors at attractive valuations compared to private markets.



Total Market Value:	Garden	High-Rise / Low-Rise	Central Business District	Suburban	Strip Centers	Super Regional	Industrial	Self-Storage	Health Care
NCREIF Assets $B	$66.4	$155.0	$142.1	$109.1	$78.3	$49.6	$231.3	-	-
NPI-ODCE Assets $B	$21.9	$61.7	$62.3	$40.3	$28.1	$16.2	$83.5	-	-
Public Companies $B	$62.5	$143.3	$90.1	$94.6	$82.2	$99.0	$207.4	$145.5	$164.7

Source: NCREIF, SNL, Security Capital.
Note: NAREIT and NFI-ODCE data updated quarterly, on a lag after each quarter-end.
(1) NCREIF Property Index (NPI) data as of December 31, 2021.
(2) NPI properties held in ODCE funds (NPI-ODCE) data as of December 31, 2021.
(3) Public market implicit NOI returns reflect March 31, 2022 equity pricing. Security Capital models isolate implied NOI return based on expected next 12 months NOI, from public disclosure. Public universe generally represents companies comprising the WILRESI index.

Source: Security Capital

Alaska Retirement Management Board

Real Estate Portfolio – Fiscal Year 2023 Plan

Core

- At 36.3% allocation is slightly above target.
- No additional separate account allocations are needed for Fiscal Year 2023. UBS has $65.5 million and Sentinel has $66.8 million of remaining allocation. Financing and sales proceeds may provide additional allocation to invest in new opportunities.
- Discontinue reinvestment in BlackRock Core Open-end Fund due to overweight condition in core.
- Continue to monitor open-end fund universe for possible addition to portfolio if allocation capacity presents.

Non-Core

- Consider non-core strategies selectively to provide alpha opportunities to portfolio.
- Capital is still being invested by KKR and Almanac from most recent fund commitments.

REITs

- Maintain investment in passive diversified approach.

Alaska Retirement Management Board

Farmland Portfolio

- Investment manager makes investments on a discretionary basis within the parameters defined by the ARMB's guidelines and annual investment plan up to approved allocations.

- Portfolio is composed of U.S. farmland. Strategy is a leased-based approach targeting both row crops and permanent crops. ARMB owns 100% of the assets. Portfolio is currently 100% leased.

- The farmland portfolio target benchmark is the NCREIF Farmland Index reweighted to reflect 80% row crops and 20% permanent crops.

Farmland Portfolio
June 30, 2022

- Total Net Asset Value: $964 million
- Number of Assets: 88
- Total acres: 144,987
- Number of states where investments are located: 15
- Row/Permanent Crop Distribution by MV: 87%/13%

Strawberries, California

Wine Grapes, California

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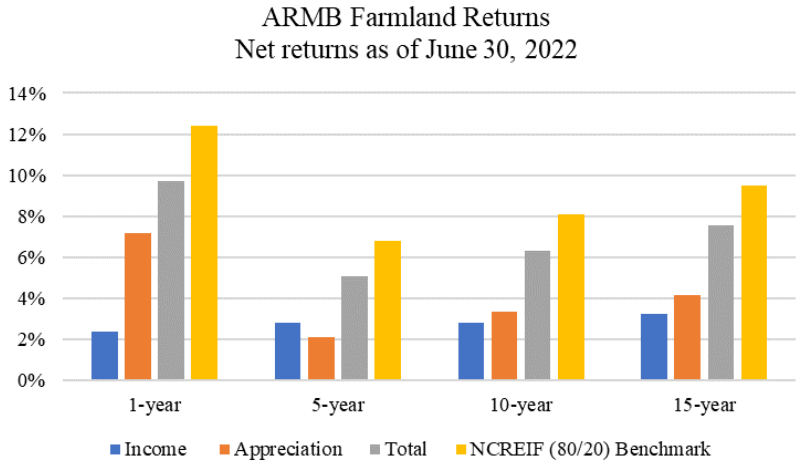
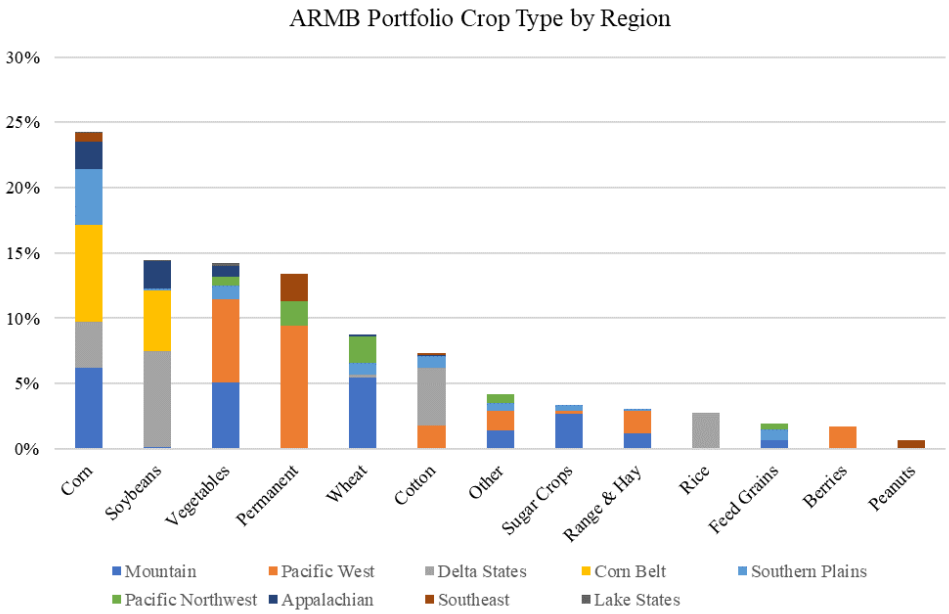
Farmland Portfolio – Performance

- Historical returns have met objectives with attractive mix of income and appreciation.
- Portfolio is U.S.-based and well diversified by crop type and region.
- No leverage is used in portfolio construction.
- Longer-term underperformance compared to the benchmark is due to an underweight to permanent crops. UBS will be looking to add permanent crops with the additional allocation.





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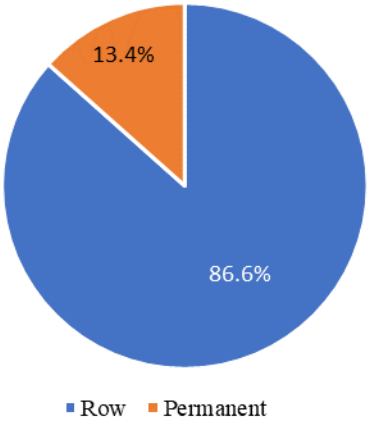
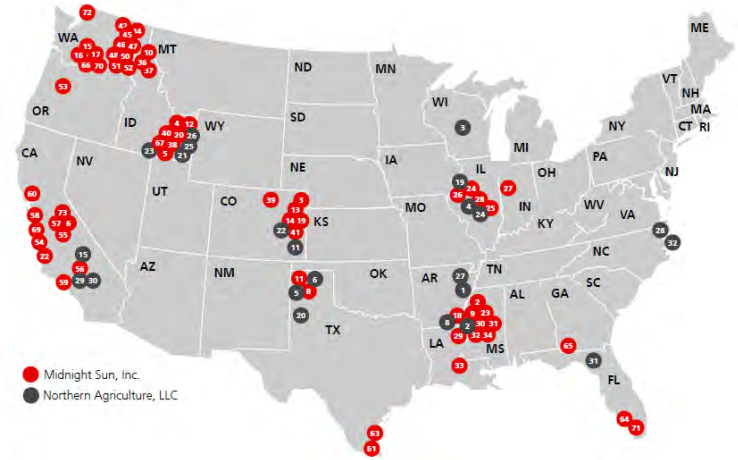
Farmland Portfolio – Fiscal Year 2023 Plan

- UBS currently has $100 million of allocation to invest.
- Staff will work with UBS to manage additional allocation commitment with investment pace to achieve target allocation over time.
- No additional board action is required. CIO has discretion to add allocation as needed.
- Continue leased-based strategy targeting 80% permanent crops and 20% row crops.

ARMB Portfolio by Crop Type
as of June 30, 2022



Midnight Sun property location map
(Unaudited)



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Timberland – Portfolio

- Investments are made on a discretionary basis within the parameters defined by ARMB's guidelines and annual investment plan up to approved allocations.
- ARMB allocation is fully invested at current size.
- Portfolios are composed of U.S. timberland. ARMB owns 100% of the assets.
- ARMB portfolio is diversified and well positioned to benefit from building product demand with 68% of portfolio in the U.S. South.
- No leverage is used in portfolio construction.

Timberland Portfolio
June 30, 2022

- Total Net Asset Value: $380.9 million
- Number of Assets: 17
- Total acres: 154,960
- Number of States where investments are located: 11

Source: Timberland Investment Resources, LLC

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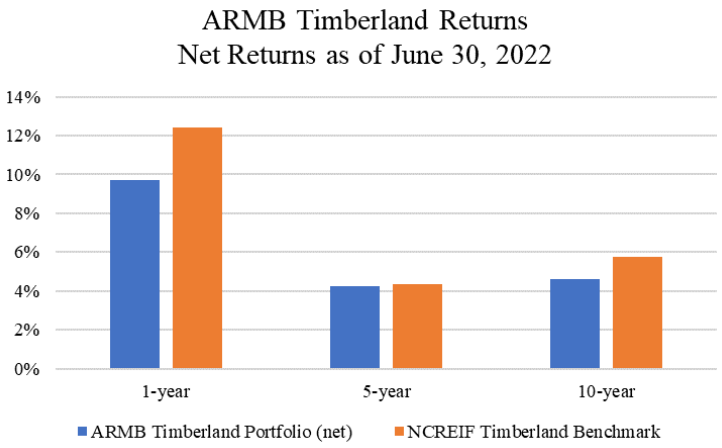
Timberland Portfolio – Performance and Fiscal Year 2023 Plan

- Sector returns have not met original 5% real return expectations, but current market trends are positive, and sector is still considered attractive within the context of a diversified Real Assets portfolio. Valuations imply net IRR of 8%.

- Timberland returns have been frustrated primarily by lack of growth in sawtimber prices. Sawtimber prices are expected to continue to recover as demand is buoyed by home construction and supply is reduced from lower imports. A meaningful part of ARMB portfolio will be transitioning to higher value sawtimber in the coming years.

- Strategy is to stay the course with current portfolio as it provides inflation hedge and higher return opportunities through retail land sales and other higher and better use opportunities.

- Project Pearl strategy contract will be terminated and assets will be managed as part of timberland portfolio going forward like other HBU opportunities.



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Infrastructure Portfolio

- ARMB is invested in two open-end private investment funds, sponsored by J.P. Morgan and Industry Funds Management (IFM).
- Investments are focused on essential core public infrastructure that are both regulated and unregulated. Assets include regulated water, regulated electricity, airports, pipelines, toll roads, and ports. Target return is 8 – 12% net with a high cash yield.
- Portfolio is well diversified with a mix of GDP sensitive assets and regulated or contractually based assets which often include inflation pass-through features.

Infrastructure Portfolio Profile
June 30, 2022

- Total Net Asset Value: $797.3 million
- Number of Company Investments: 42
- Total Combined Fund NAV (all investors): $70.9 billion

- ARMB infrastructure portfolio mix is 18% JPM and 82% IFM. While both funds are attractive investments, this mix has produced beneficial results so far with greater exposure to GDP sensitive assets and better cost economics for ARMB.

Koole Terminals, JPM

Third Coast, JPM

GCT Container Terminals, IFM

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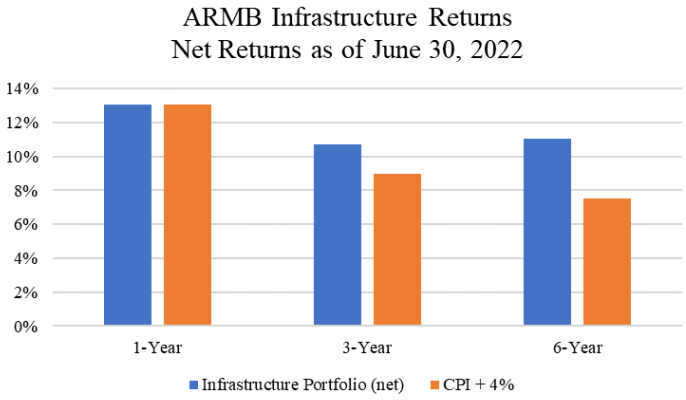
Infrastructure Portfolio – Performance and Fiscal Year 2023 Plan

- ARMB portfolio performance has been good. Both funds have benefitted from focus on cash yield and organic growth opportunities from existing companies in the portfolio.
- Current portfolio discount rates are attractive compared to risk free rates. They have not compressed like other asset sectors. The current weighted average discount rate for assets in the portfolios is approximately 10%.
- Both IFM and JPM have large current entry queues from investors. This benefits ARMB as the funds grow and diversify from additional investments.
- Discontinue reinvestment in JPM Infrastructure Investment Fund due to overweight condition in infrastructure.
- Expect standalone energy portfolio will continue to wind down.



Sydney Airport, IFM

Alaska Retirement Management Board

Real Assets – Fiscal Year 2023 Recommendations

Real Estate	▪ No additional separate account allocations are needed for Fiscal Year 2023. UBS has $65.5 million and Sentinel has $66.8 million of remaining allocation. Financing and sales proceeds may provide additional allocation to invest in new opportunities. ▪ Discontinue reinvestment in BlackRock Core Open-end Fund due to overweight condition in core. ▪ Consider non-core strategies selectively to provide alpha opportunities to portfolio. ▪ Maintain REIT investment in passive diversified approach and use as asset class rebalancing tool. ▪ Continue to consider the non-qualified fund option for JPM Strategic Property Fund to harmonize real estate exposure between pension and healthcare/DC trusts. ▪ Monitor open-end fund universe for possible addition to portfolio if allocation capacity presents.
Farmland	▪ No additional separate account allocation is needed as UBS has $106 million of allocation to invest.
Timberland	▪ No strategy changes recommended. ▪ Project Pearl strategy contract will be terminated and assets will be managed as part of timberland portfolio going forward like other HBU opportunities.
Infrastructure	▪ No strategy changes recommended. ▪ Discontinue reinvestment in JPM Infrastructure Investment Fund due to overweight condition in infrastructure.

Callan

September 2022

Alaska Retirement Management Board

Real Assets Strategic Plan Review

Jonathan Gould, CAIA
Senior Vice President

Callan

ARMB Real Assets Strategic Plan Review

ARMB – Real Assets Role and Target Allocation

ARMB Real Assets: Portfolio Role, Objective & AssetMax Model

- The Role of Real Assets Revisited:
  - **Role / Objective**: *The Alaska Retirement Management Board (ARMB) will invest in real estate with the goals of portfolio diversification and attaining the optimum return on the portfolio, consistent with the assumption of prudent risk and safety of principal*
  - **Return Expectations**: *Over rolling six- year periods, the ARMB real estate investment portfolio is expected to generate a net-of-fee total return between public equities and fixed-income*
- The goal of the AssetMax modeling exercise is to identify the optimal mix of real assets sub-components that help achieve the role of real assets while taking into account practicality and implementation constraints
- The below target mix was adopted in 2019 as the result of an asset allocation study. The model is revisited annually and in 2022 resulted in a recommendation to maintain the existing target sub-allocations

Portfolio Component	Allocation Target	1-Year Arithmetic Return	10-Year Geometric Return	Annualized Std. Deviation	Projected Yield
Real Estate	35%	6.60%	5.57%	14.20%	4.40%
REITs	15%	8.15%	6.20%	20.70%	4.65%
Farmland	25%	6.60%	5.50%	15.45%	4.25%
Timber	0-10%	6.45%	5.40%	15.60%	3.70%
Infrastructure	15%	7.10%	6.10%	15.45%	4.60%
Total Real Assets	***100%***	***6.90%***	***6.15%***	***13.60%***	***4.35%***

ARMB Real Assets Allocation

ARMB Real Assets Portfolio Allocation vs. Target – June 30, 2022

	Target Weight	Exposure ($million)	Current Weight	Variance	Percent of Overall Portfolio
Core Real Estate	35.00%	$1,683	37.3%	+2.3%	5.5%
Farmland	25.00%	$964	21.4%	-3.6%	3.1%
Private Infrastructure	15.00%	$797	17.7%	+2.7%	2.6%
Timber	10.00%	$381	8.4%	-1.6%	1.2%
REITs	15.00%	$505	11.2%	-3.8%	1.6%
Energy	-	$64	1.4%	+1.4%	0.2%
Non-Core Real Estate	-	$119	2.6%	+2.6%	0.4%
Total Real Assets	***14.00%***	***$4,514***	***100.0%***	***+0.6%***	***14.6%***
Total Fund		**$30,843**			

Implementation Considerations:

- The Real Assets target was increased from 13% to 14% in 2021; however, due to challenged performance in public equities, the Real Assets portfolio became overweight to the target allocation by +0.6%. A year ago, the plan was -1.9% underweight the 14% target.
- The underweight to public **REITs** expanded over the past year from a -1.5% underweight at June 30, 2021 to -3.8% at June 30, 2022 due to the aforementioned public equities performance.
- ARMB is modestly overweight to **Private Infrastructure** (+2.7%). The dividend reinvestment option for the portfolio's larger infrastructure position, IFM, was toggled off in 2020, which modestly limits the ability for the position to grow. A partial-redemption for rebalancing purposes is not necessary at this time given the challenges of re-entering the funds at a later date due to large entry queues.
- The portfolio has a modest underweight to **Farmland**. Capital deployment in Farmland can be lumpy and take several years to fully fund.
- **Energy** and **Non-Core Real Estate** have been eliminated from the target allocation. The Energy and Non-Core real estate allocations are entirely in illiquid, closed-end funds, and as such will take a few years to fully wind down. As the positions burn off, distributed proceeds should continue to be reinvested in other asset classes to which the plan is underweight, particularly REITs.
  - While non-core real estate was also eliminated from the target allocation in 2019, re-ups with existing managers and new strategies may be considered on a select basis.

FY 2022 Strategic Plan & Accomplishments

The following is a summary of action items implemented over the prior year.

Category	Action	Status
Core Real Estate	Implementation of SMA leverage initiative from FY 2022 Strategic Plan Conduct search for additional core real estate fund options	The ability for ARMB to utilize leverage on its core real estate separate accounts was approved at the September 2020 ARMB Board Meeting. UBS has implemented leverage on two assets, while Sentinel implemented leverage in the second half of 2021. ARMB staff and Callan evaluated subset of ODCE managers over past year; however, allocation decision postponed due to current overweight to core real estate / Real Assets
Non-Core Real Estate	While non-strategic, consider re-up opportunities with existing non-core fund series that have performed well for ARMB in the past and are coming to market with continuation funds in the same strategy.	During 4Q2020 and 1Q2021, ARMB and Callan evaluated re-ups with existing funds KKR RE Partners III and Almanac Realty Securities IX, both of which were approved.
Farmland	Track consolidation of two Farmland accounts into one, under the management of UBS.	During the fourth quarter of 2020, the two Farmland separate accounts were consolidated under the management of UBS, with Hancock being removed. The consolidated account is 100% leased and continues to target 80% row crop and 20% permanent crop.
Timber	Track consolidation of two Timber accounts into one, under the management of Timber Investment Resources.	During the fourth quarter of 2020, the two Timber separate accounts were consolidated under the management of Timberland Investment Resources, with Hancock being removed. Consolidation has gone smoothly, and Timber portfolio remains well-diversified geographically and by timber type.
Infrastructure	Review infrastructure portfolio structure. Consider activating cash dividend option for J.P. Morgan and using distributions to rebalance and fund other components of the real assets program as necessary (i.e. REITs).	ARMB staff will look to rebalance the positions overtime to improve diversification. Dividends from IFM continue to be received in cash, while the JPM dividend will be reinvested to increase exposure and provide greater balance between the two funds.
REIT Portfolio	Strategically increase REIT exposure as capital is returned from other components that are above their targets.	ARMB's real assets portfolio increased its REIT allocation from 8.3% of the portfolio as of June 30, 2020 to 13.5% at June 30, 2021; however, REIT performance suffered during the first half of 2022, which resulted in REITs accounting for 11.2% of the Real Assets portfolio at June 30, 2022. Portfolio continues to be passively managed internally by Alaska staff.

FY 2023 Strategic Plan Recommendation

ARMB Staff has proposed the following recommendations for the FY 2023 ARMB Real Assets Strategic Plan:

- **Private Real Estate**
  - No additional separate account allocations are needed for FY 2023. UBS has $65.5 million and Sentinel has $66.8 million of remaining allocation. Financing and sales proceeds may provide additional allocation to invest in new opportunities.
  - Discontinue reinvestment in BlackRock Core Open-end Fund due to overweight condition in core.
  - Existing non-core strategies provide alpha opportunities to portfolio. Consider new strategies selectively.
  - Maintain REIT investment in passive diversified approach and use as asset class rebalancing tool.
  - Continue to consider the non-qualified fund option for JPM Strategic Property Fund to harmonize real estate exposure between pension and healthcare/DC trusts.
  - Monitor open-end fund universe for possible addition to portfolio if allocation capacity presents.
- **Farmland**
  - No additional separate account allocation is needed as UBS has $106 million of allocation to invest.
- **Timber**
  - No strategy changes recommended.
  - Project Pearl strategy contract will be terminated and assets will be managed as part of timberland portfolio going forward like other HBU opportunities.
- **Infrastructure**
  - No strategy changes recommended.
  - Discontinue reinvestment in JPM Infrastructure Investment Fund due to overweight condition in infrastructure.

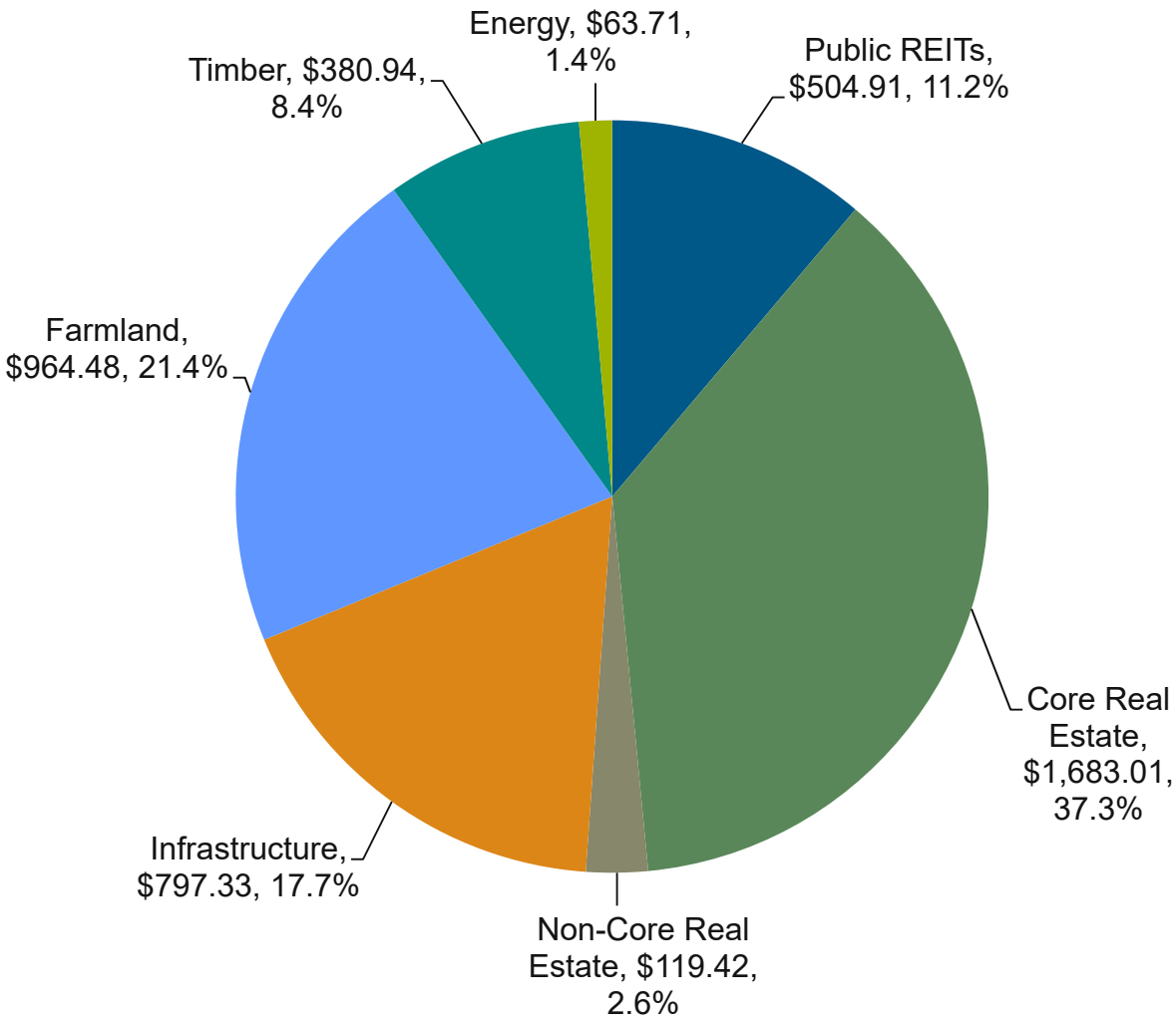
- ***Callan has reviewed the FY 2023 Strategic Plan recommendation developed by ARMB Staff and concurs with the proposed recommendations. There are no additional recommendations that Callan would put forth to be included in the plan.***

ARMB Real Assets Portfolio Composition & Performance

ARMB Real Assets Portfolio Summary

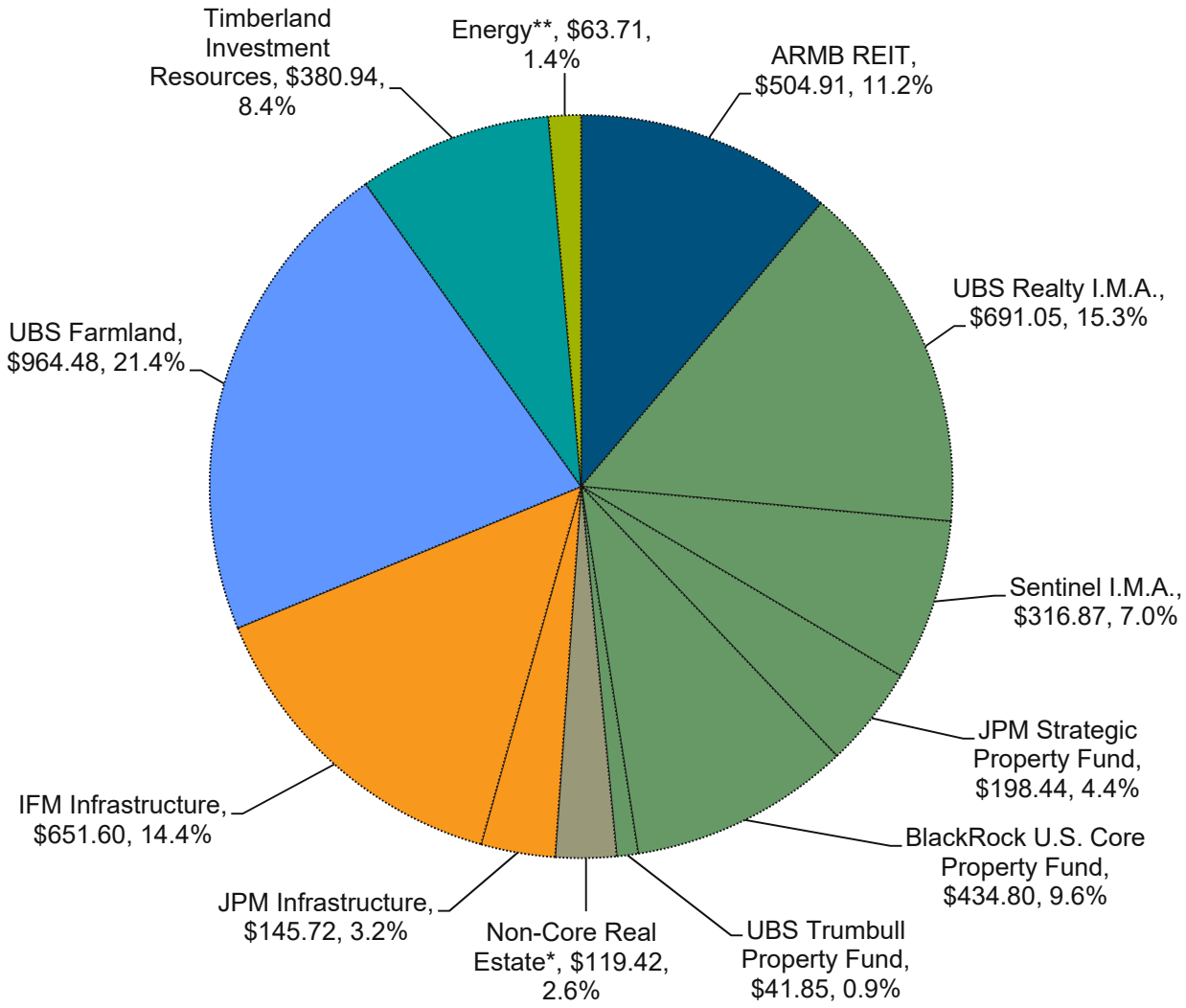
ARMB Real Assets Portfolio Overview, as of June 30, 2022

- The ARMB Real Assets portfolio was valued at approximately **$4.51 billion** at June 30, 2022.
- Real Estate accounted for approximately half of the Real Assets portfolio, with private core real estate comprising 37.3% of the portfolio followed by public REITs at 11.2%. Non-core real estate is a smaller component at just 2.6% of the Real Assets portfolio.
- Farmland and Infrastructure are also key components of the ARMB Real Assets portfolio, while Timber remains a relatively modest position. Private Energy is no longer a strategic allocation but still accounts for 1.4% of the Real Assets portfolio.



ARMB Real Assets Portfolio Summary

ARMB Real Assets Manager Distribution, as of June 30, 2022

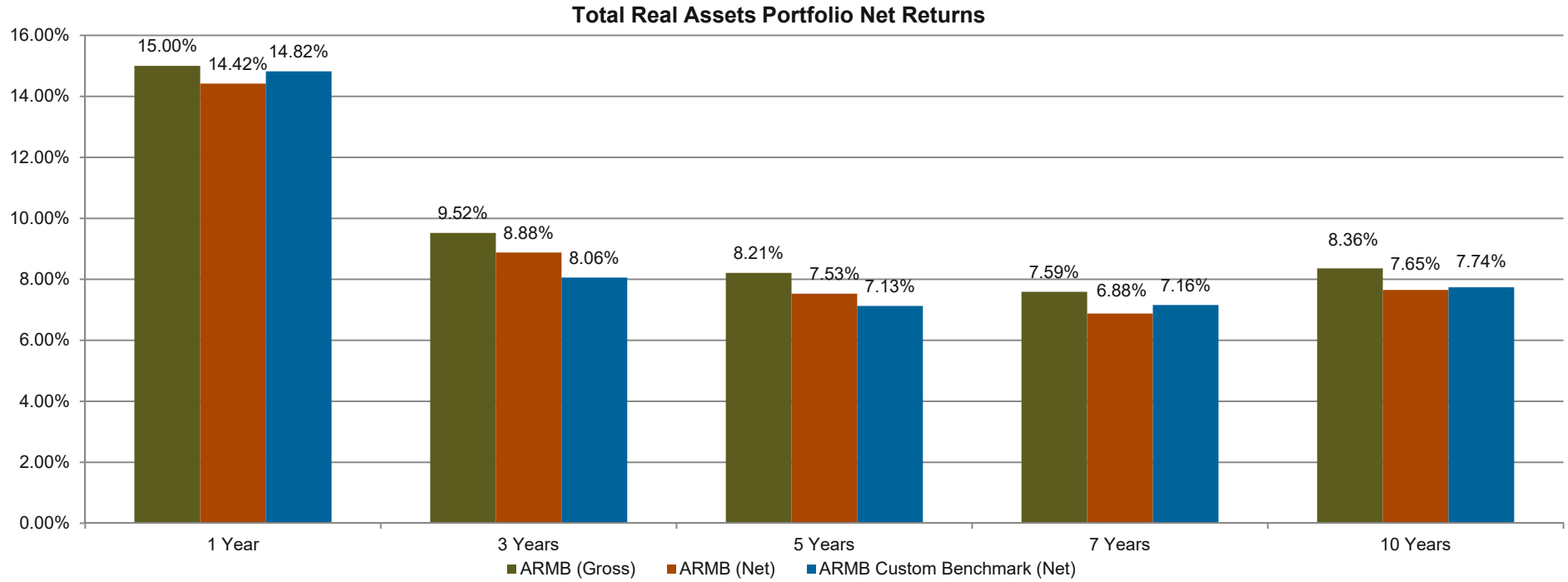


* Non-Core RE portfolio includes Almanac (1.31%), KKR (0.90%), Clarion (0.36%), Silverpeak (0.07%), Colony (<0.01%) and Tishman Speyer (<0.01%)

** Energy includes EIG (1.33%) and TCW (0.08%)

ARMB Real Assets Portfolio – Total Returns

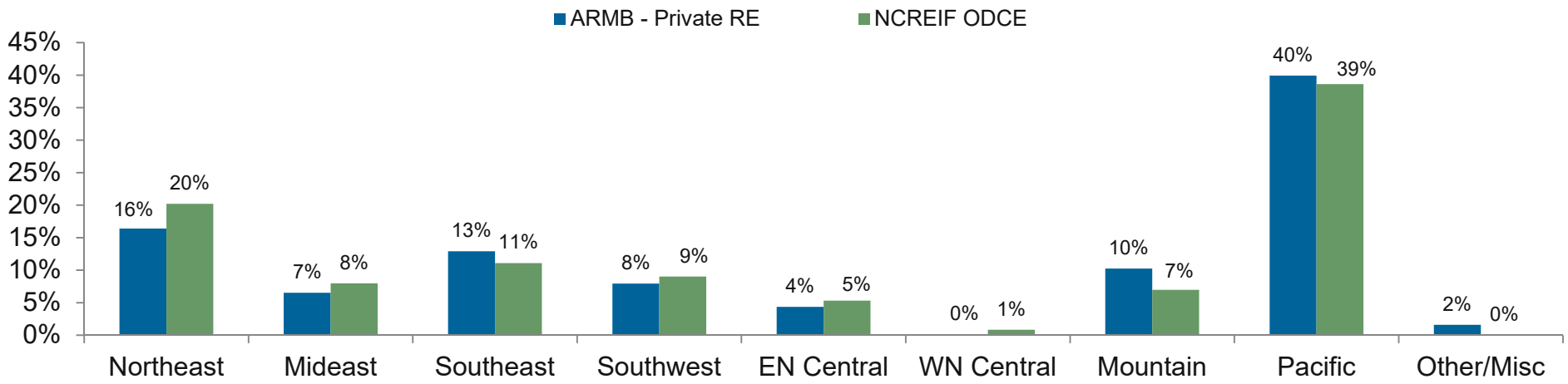
For Period Ended June 30, 2022

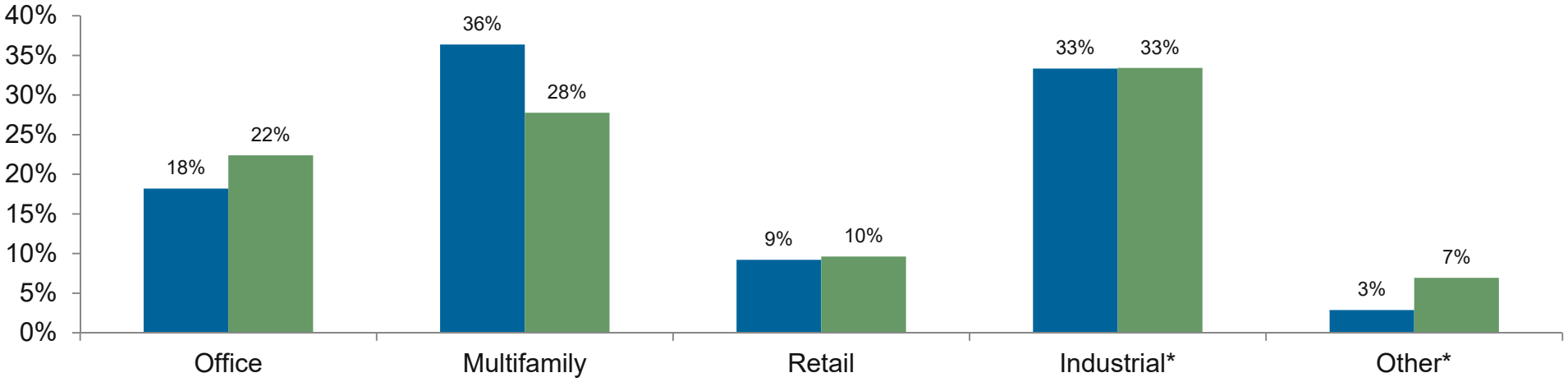


Sub-Sector Returns	1 Year	3 Years	5 Years	7 Years	10 Years
Total Real Assets Gross	14.98%	9.52%	8.20%	7.58%	8.35%
Total Real Assets Net	**14.39%**	**8.87%**	**7.52%**	**6.87%**	**7.65%**
ARMB Real Assets Benchmark*	14.82%	8.06%	7.13%	7.16%	7.74%
Net Excess Return	*-0.43%*	*0.81%*	*0.39%*	*-0.29%*	*-0.09%*

* Starting 07/01/2021 (3Q21), the Real Assets Target is 35% NCREIF ODCE Value Wt Net Index, 15% FTSE NAREIT All Equity Index, 25% NCREIF Farmland Index, 10% NCREIF Timberland Index, and 15% CPI + 4%

ARMB Real Assets Portfolio – Private Real Estate Diversification



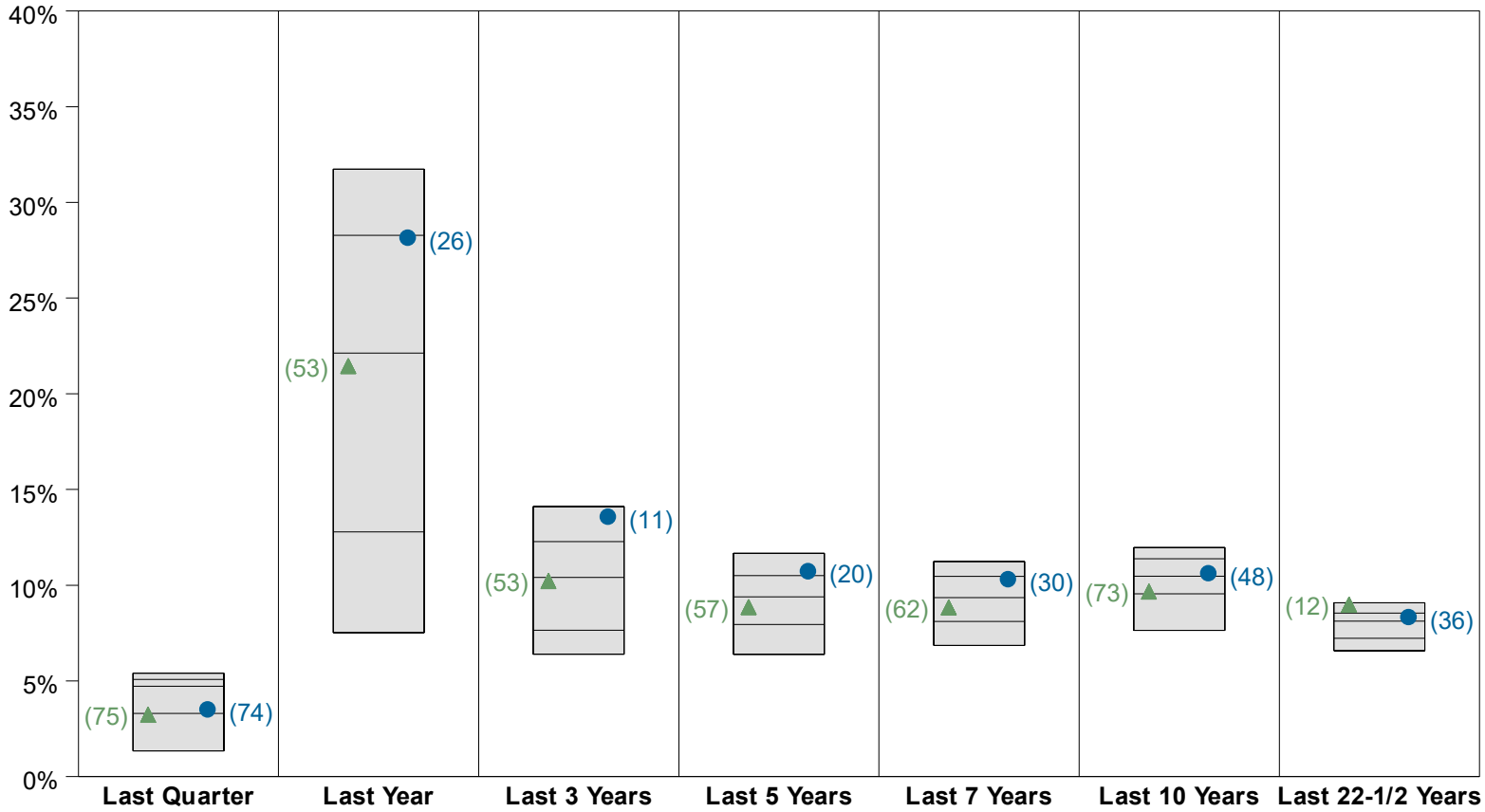


* Includes Hotels, Mixed-Use, Self-Storage, For Sale Residential, Senior Housing, Student Housing and Land.

- ARMB's private real estate portfolio is well diversified and well-positioned by market and property type for the current real estate environment.

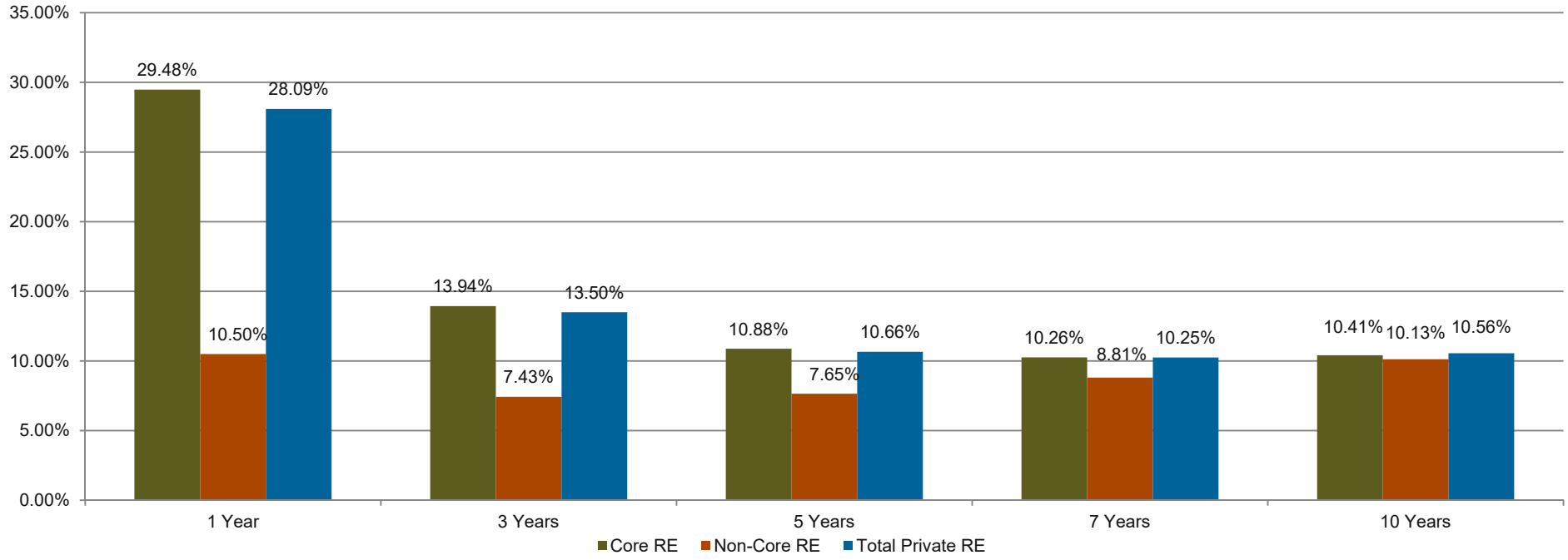
ARMB Private Real Estate Performance – Private Real Estate

Performance vs Callan Total Domestic Real Estate DB



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 22-1/2 Years
10th Percentile	5.41	31.73	14.11	11.67	11.24	11.97	9.08
25th Percentile	5.08	28.28	12.28	10.50	10.46	11.38	8.55
Median	4.72	22.13	10.41	9.39	9.35	10.47	8.13
75th Percentile	3.30	12.78	7.65	7.95	8.11	9.54	7.22
90th Percentile	1.34	7.52	6.39	6.38	6.85	7.64	6.58
Private Real Estate Portfolio ●	3.44	28.09	13.50	10.66	10.25	10.56	8.26
NCREIF Total Index ▲	3.23	21.45	10.22	8.86	8.84	9.67	8.99

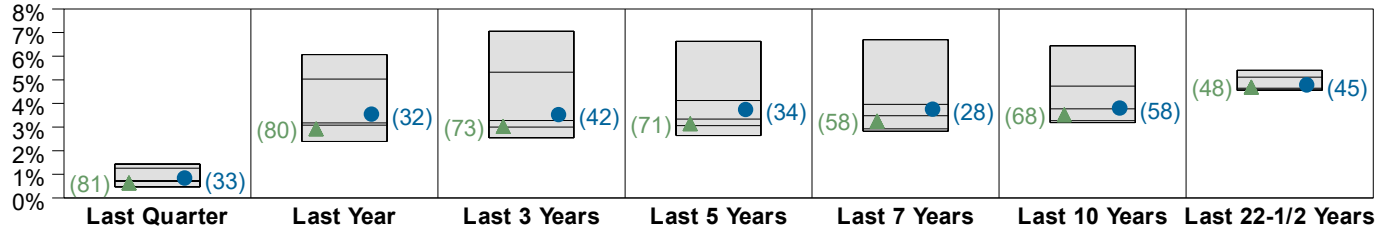
ARMB Private Real Estate Performance – Core vs. Non-Core



Sub-Sector Returns	1 Year	3 Years	5 Years	7 Years	10 Years
Core Real Estate	29.48%	13.94%	10.88%	10.26%	10.41%
Non-Core Real Estate	10.55%	7.43%	7.65%	8.81%	10.13%
Total Private Real Estate	**28.09%**	**13.50%**	**10.66%**	**10.25%**	**10.56%**
NCREIF Total Index	*21.45%*	*10.22%*	*8.86%*	*8.84%*	*9.67%*
NCREIF NFI-ODCE Val Wt Nt	*28.31%*	*11.66%*	*9.55%*	*9.35%*	*10.15%*

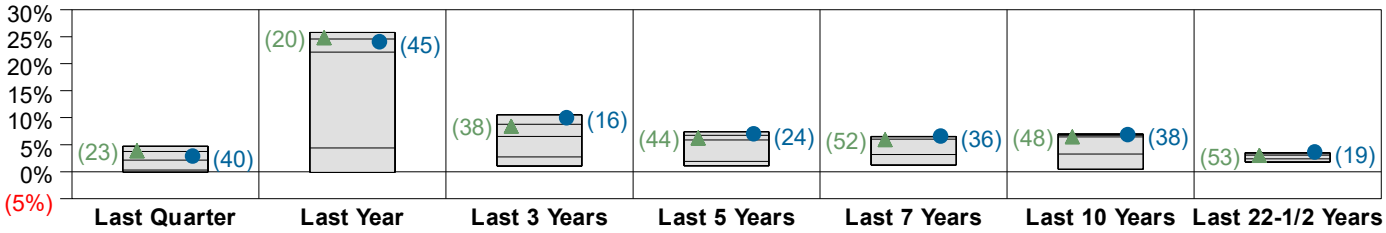
ARMB Private Real Estate Performance – Income vs. Appreciation

Income Rankings vs Callan Real Estate Core
Periods ended June 30, 2022



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 22-1/2 Years
10th Percentile	1.44	6.07	7.06	6.63	6.69	6.44	5.41
25th Percentile	1.25	5.04	5.32	4.13	3.96	4.73	5.11
Median	0.74	3.18	3.28	3.34	3.48	3.77	4.65
75th Percentile	0.69	3.08	3.00	3.06	2.92	3.27	4.60
90th Percentile	0.47	2.39	2.55	2.64	2.83	3.19	4.55
Private Real Estate Portfolio ●	0.79	3.49	3.47	3.69	3.70	3.75	4.73
NCREIF NFI-ODCE Val Wt Nt ▲	0.64	2.93	3.03	3.14	3.26	3.52	4.69

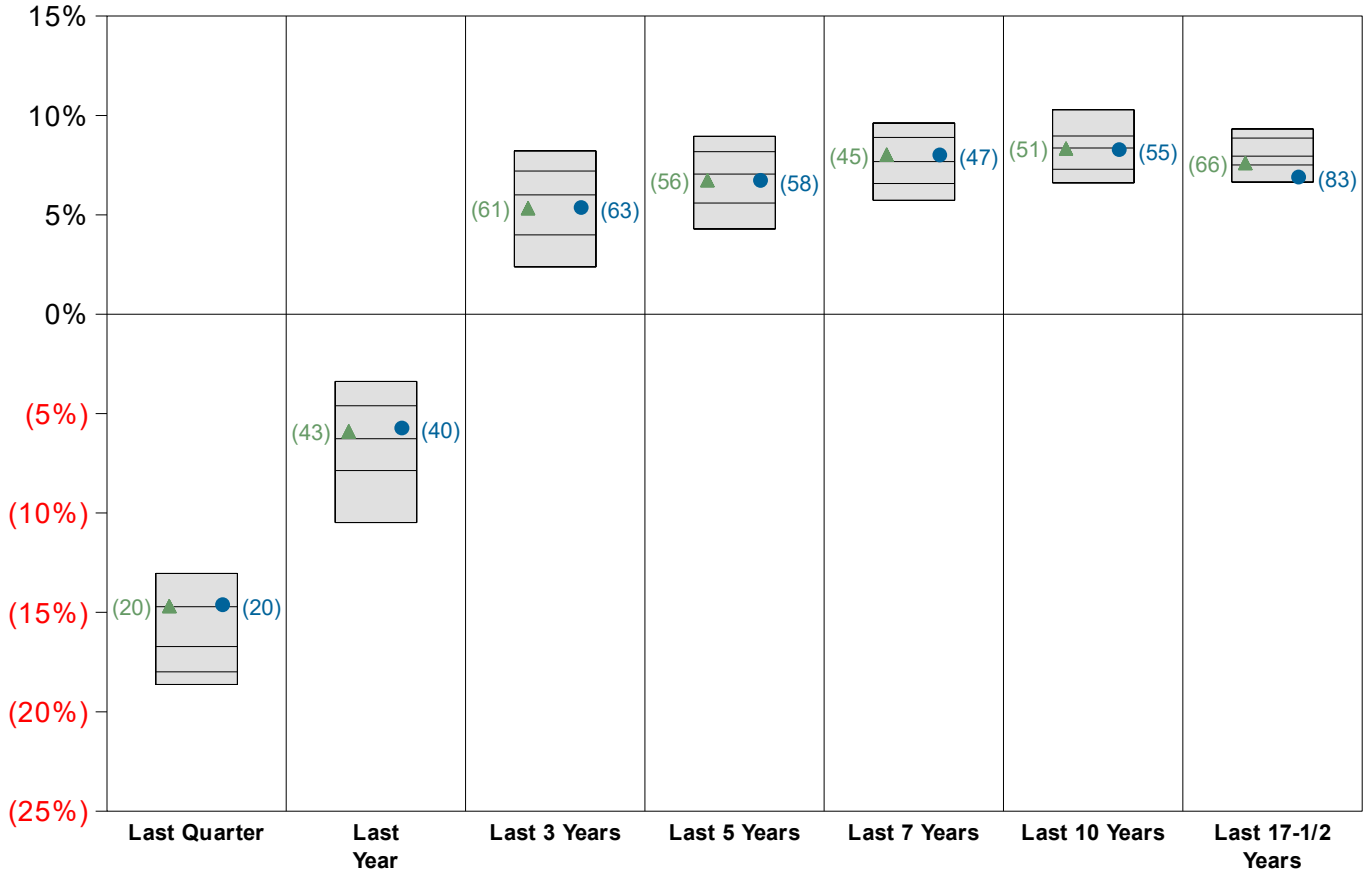
Appreciation Rankings vs Callan Real Estate Core
Periods ended June 30, 2022



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 22-1/2 Years
10th Percentile	4.74	25.80	10.53	7.40	6.51	6.99	3.50
25th Percentile	3.75	24.56	8.78	6.73	6.44	6.73	3.33
Median	2.13	22.12	6.53	5.87	6.03	6.42	3.05
75th Percentile	0.30	4.39	2.73	1.89	3.17	3.27	2.39
90th Percentile	(0.09)	(0.13)	1.04	1.09	1.22	0.43	1.77
Private Real Estate Portfolio ●	2.64	23.82	9.74	6.75	6.34	6.61	3.40
NCREIF NFI-ODCE Val Wt Nt ▲	3.90	24.83	8.43	6.27	5.94	6.46	3.01

ARMB Real Assets Portfolio Performance – Public Real Estate

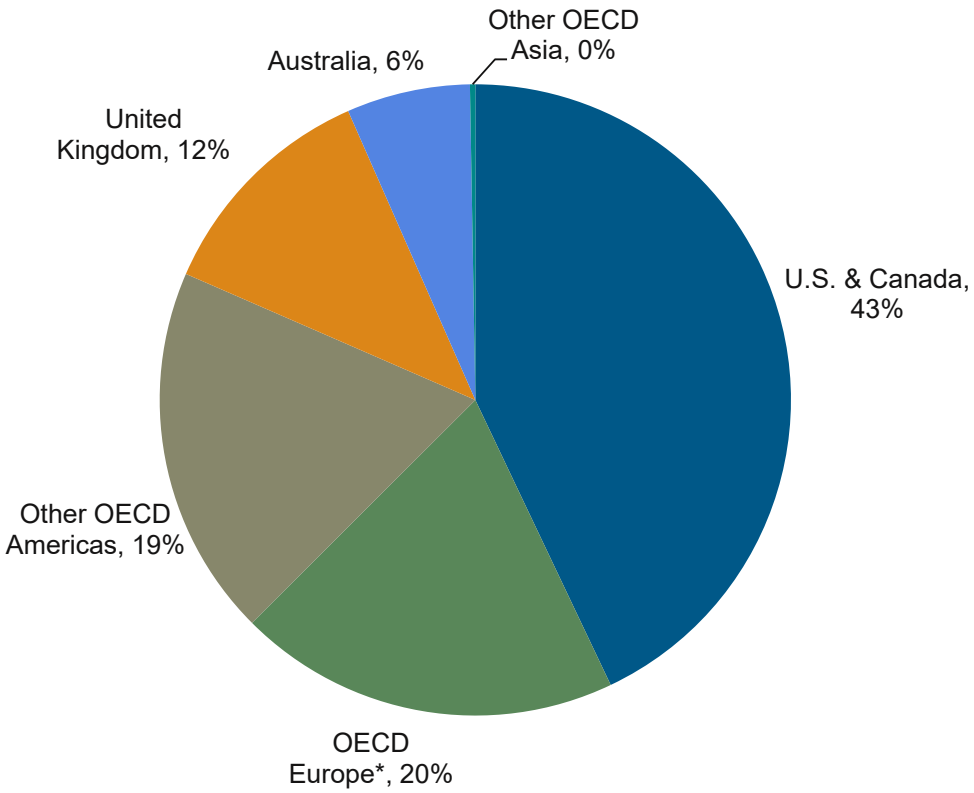
Performance vs Callan Real Estate REIT (Gross)

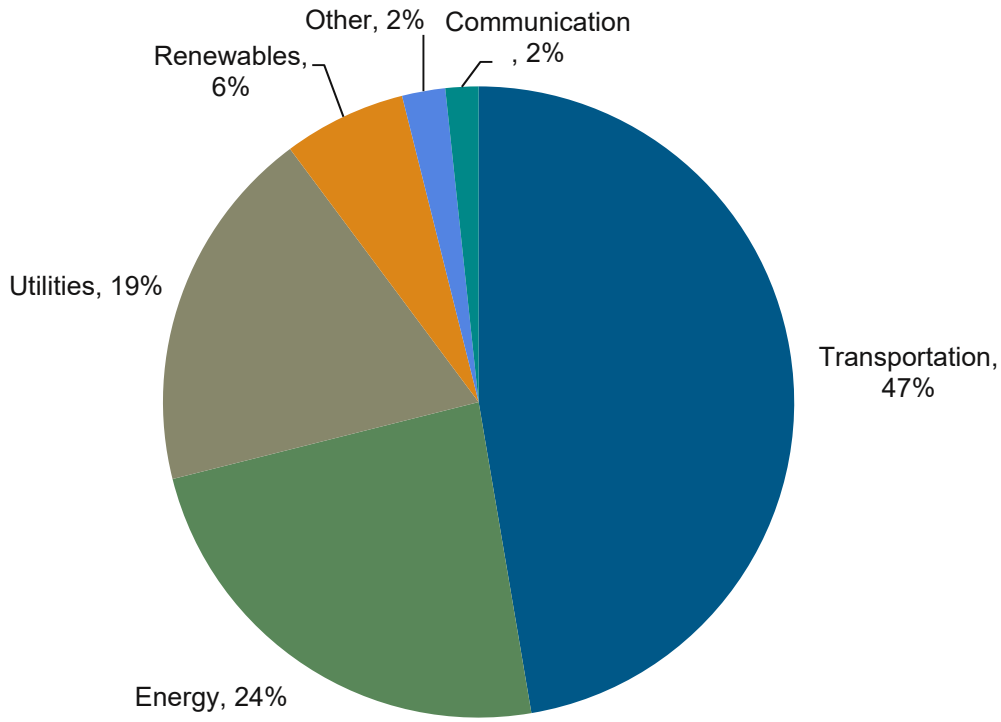


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 17-1/2 Years
10th Percentile	(13.04)	(3.39)	8.22	8.95	9.62	10.28	9.32
25th Percentile	(14.71)	(4.60)	7.21	8.18	8.89	8.97	8.86
Median	(16.72)	(6.26)	6.00	7.05	7.68	8.37	7.95
75th Percentile	(17.99)	(7.86)	3.99	5.59	6.58	7.30	7.51
90th Percentile	(18.63)	(10.48)	2.39	4.29	5.74	6.60	6.65
ARMB REIT ●	(14.67)	(5.78)	5.31	6.68	7.95	8.22	6.85
FTSE NAREIT All Eq Index ▲	(14.68)	(5.89)	5.34	6.75	8.03	8.34	7.61

ARMB Real Assets Portfolio – Infrastructure Portfolio

- ARMB's Private Infrastructure portfolio is predominately invested in stabilized assets in the primary infrastructure sectors, which are expected to continue generating reliable cash flows over longer time periods.
- The portfolio also provides a global exposure, though almost exclusively in mature, stable markets.

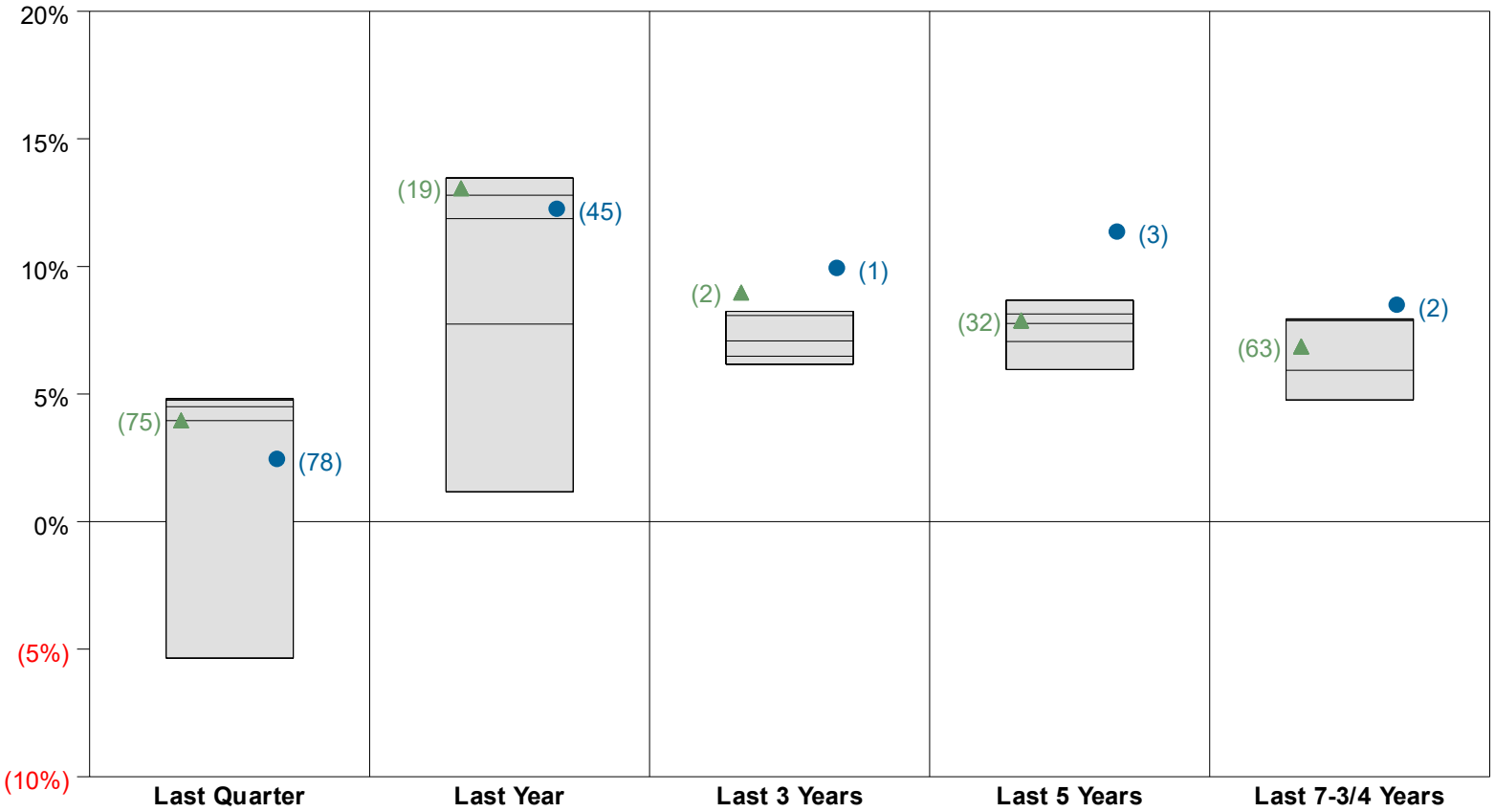




* Excludes U.K..

ARMB Real Assets Portfolio Performance – Infrastructure

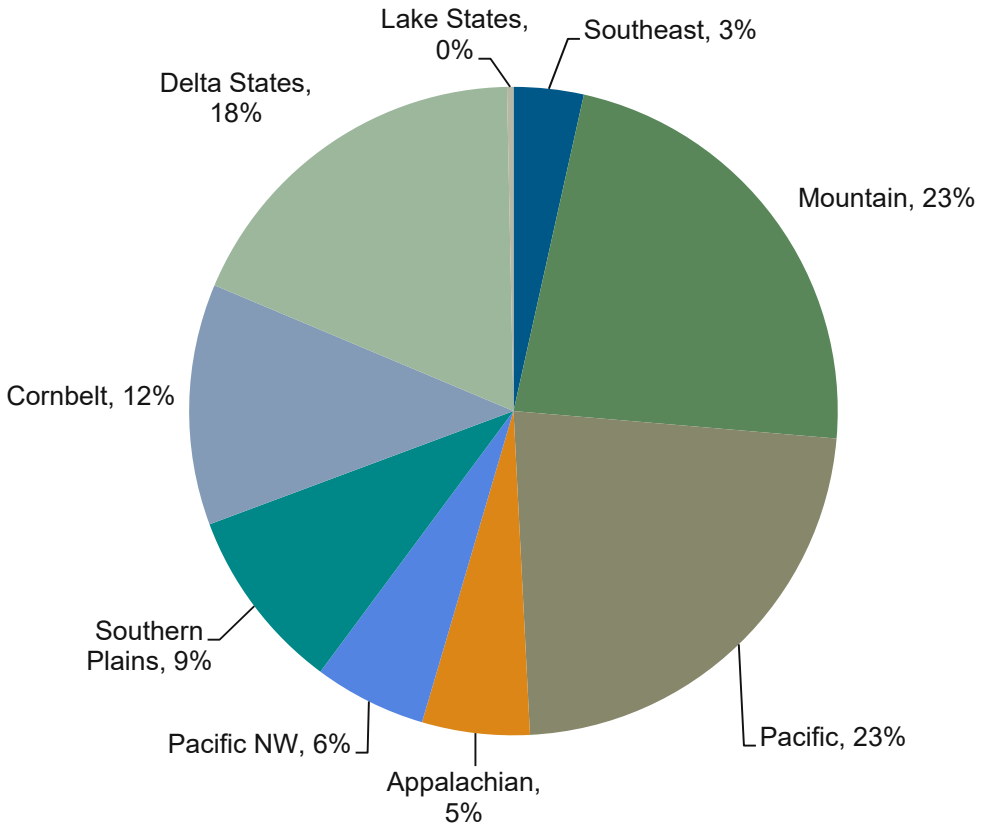
Performance vs Callan Real Estate Pvt Infrastructure (Net)

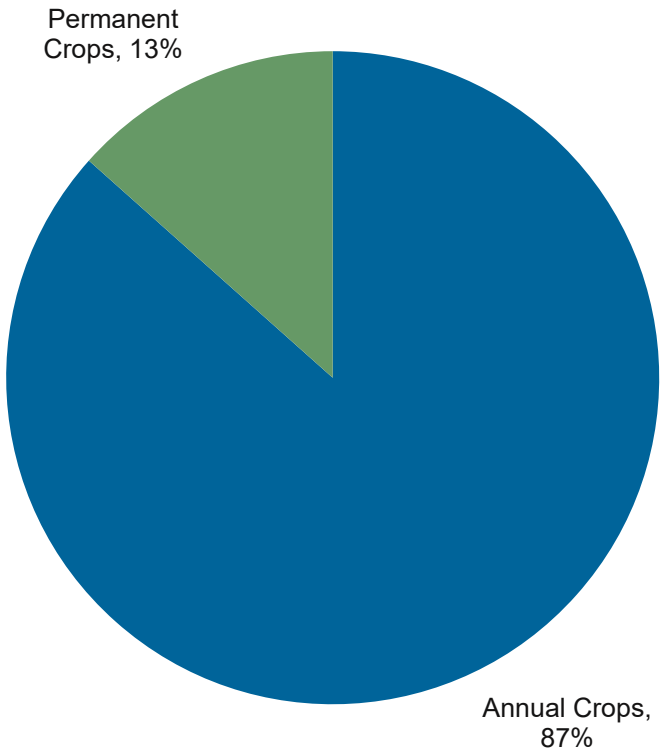


	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7-3/4 Years
10th Percentile	4.81	13.47	8.24	8.68	7.94
25th Percentile	4.75	12.79	8.08	8.13	7.91
Median	4.50	11.87	7.09	7.77	7.87
75th Percentile	3.95	7.74	6.48	7.05	5.93
90th Percentile	(5.35)	1.17	6.16	5.96	4.76
Private Infrastructure ●	2.40	12.20	9.89	11.31	8.44
CPIU + 4% ▲	3.97	13.06	8.98	7.88	6.87

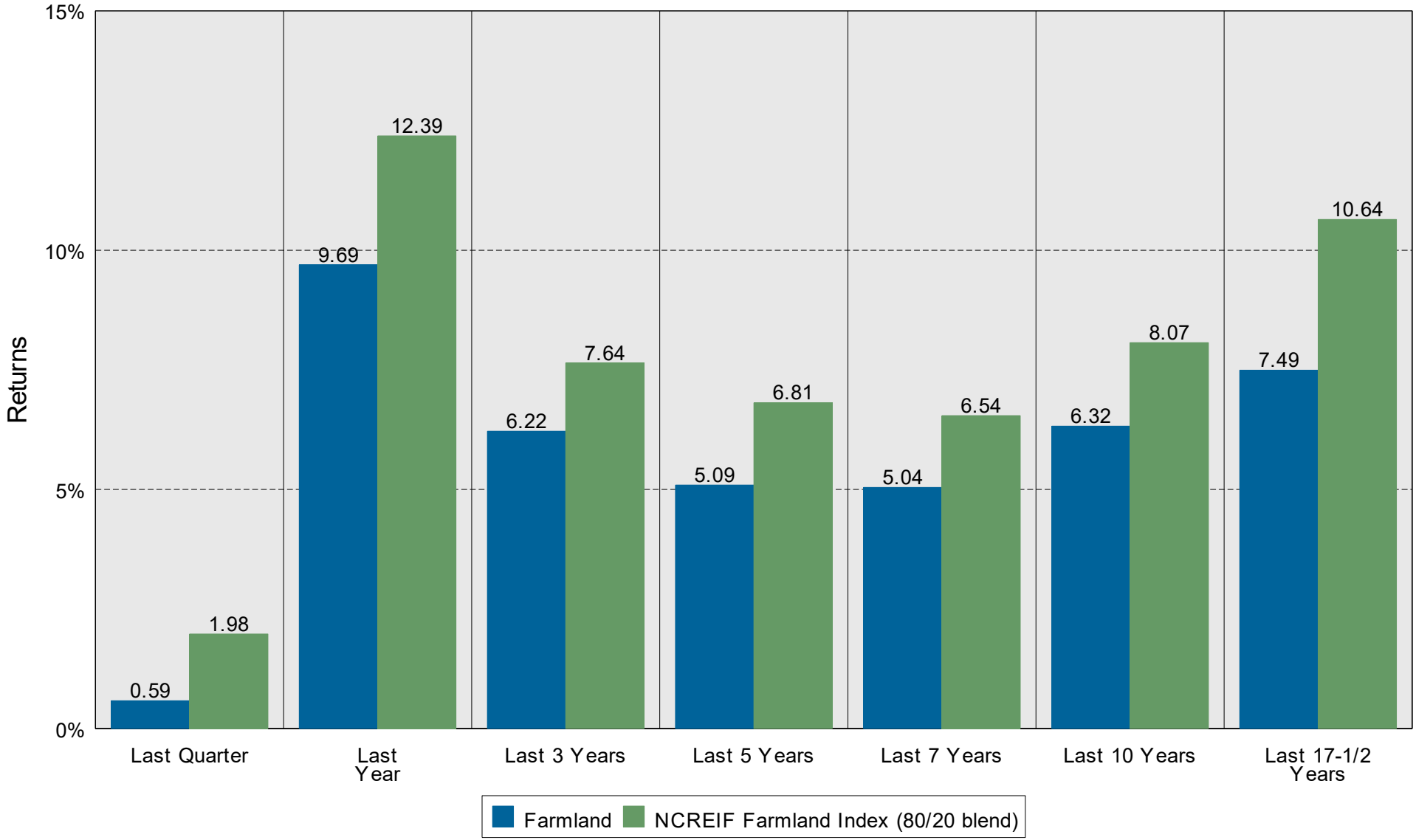
ARMB Real Assets Portfolio – Farmland Diversification

- ARMB's Farmland portfolio is heavily tilted toward annual row crops, which over time are generally expected to provide more stable income yields and better track core inflation.
- The Farmland portfolio is purely U.S.-based, but is well diversified across the major agricultural regions.



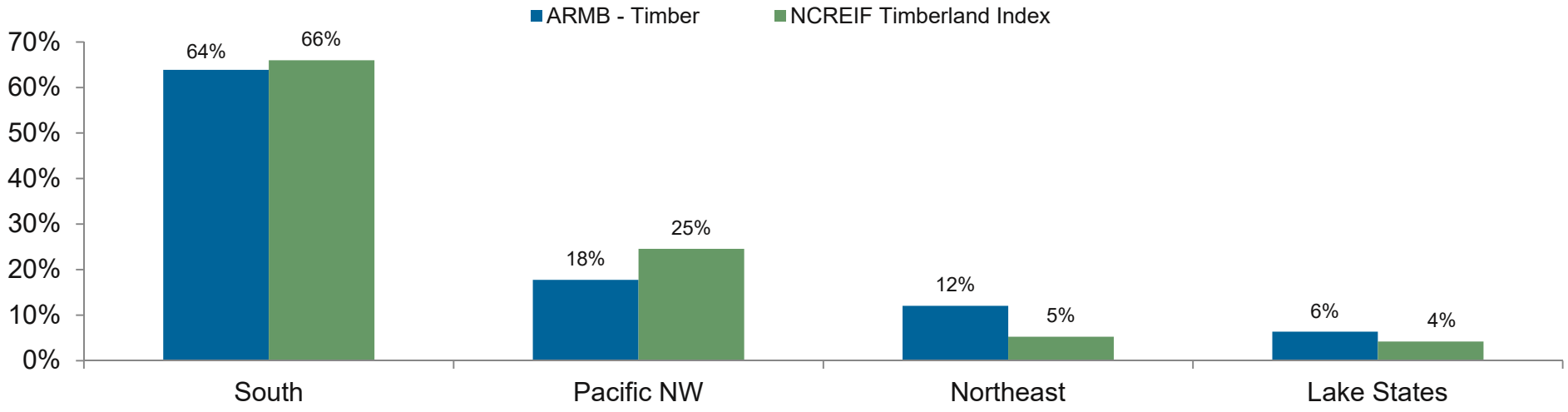


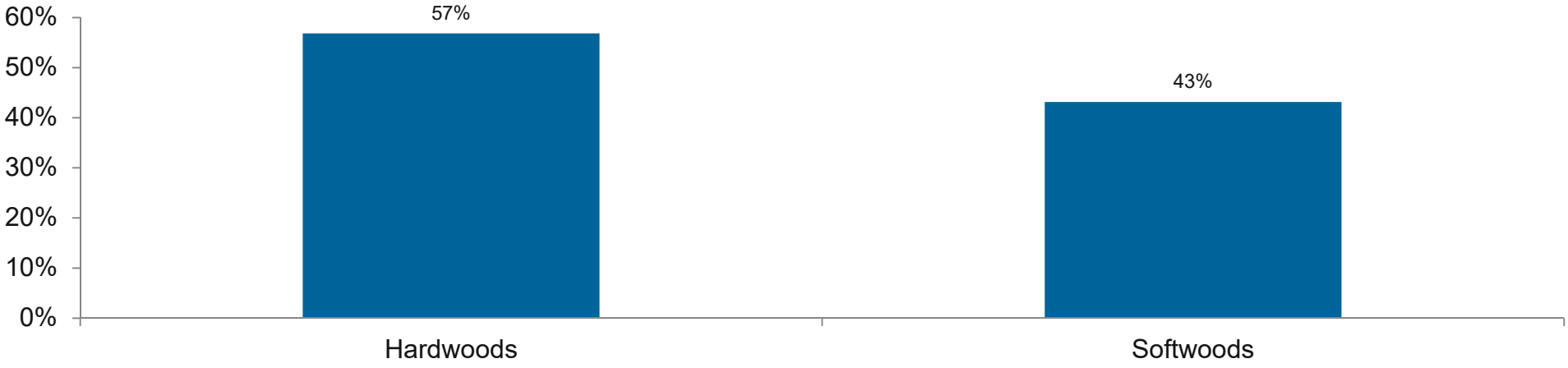
ARMB Real Assets Portfolio Performance – Farmland



ARMB Real Assets Portfolio – Timber Diversification

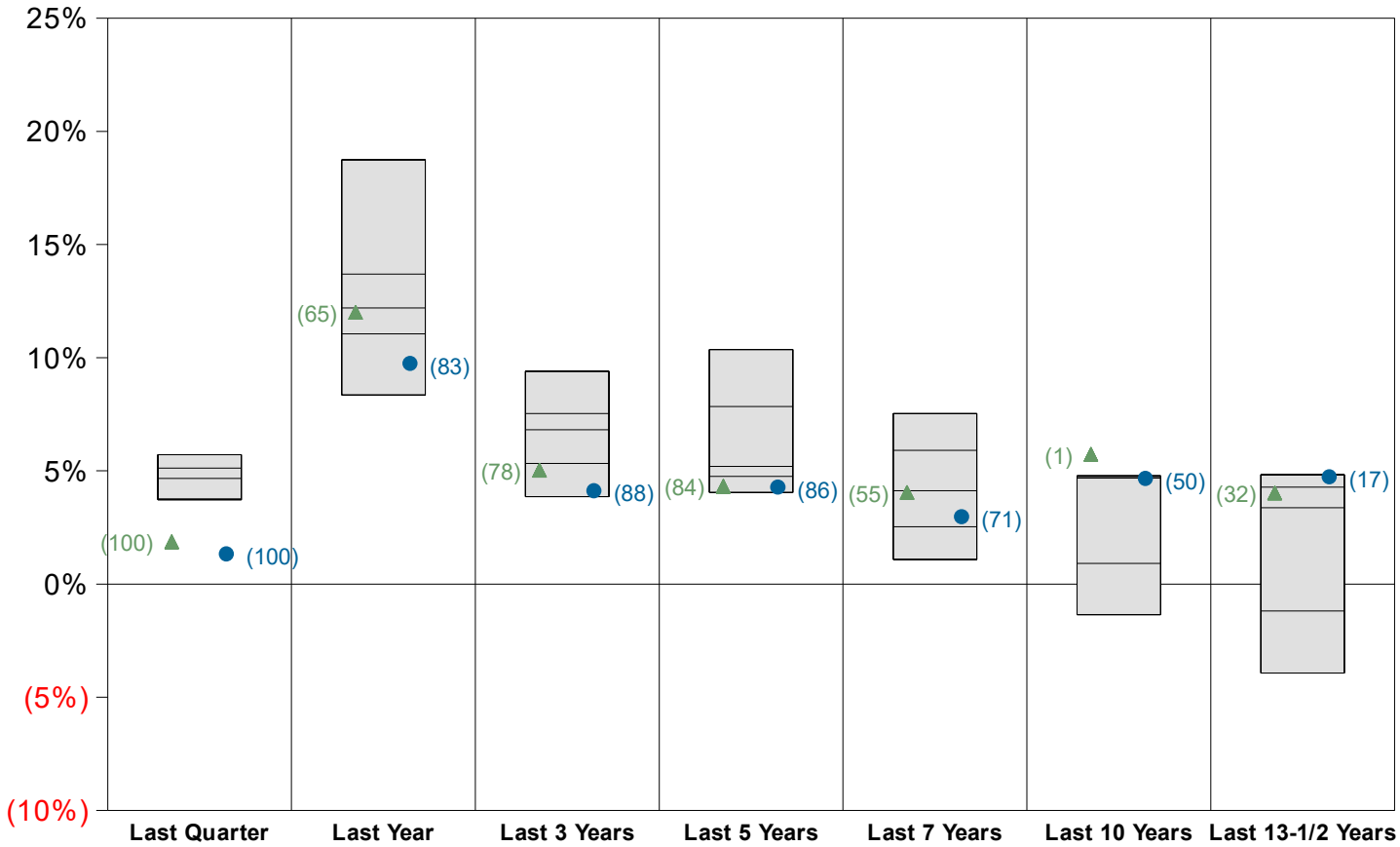
- ARMB's Timber portfolio is well-diversified by region, with slight over-weights to the Northeast and Lake States relative to the NCREIF Timberland Index.
- The portfolio is also well-balanced between hardwoods and softwoods, which diversifies the end use of timber product.





ARMB Real Assets Portfolio Performance – Timber

Performance vs Callan Real Estate Timber



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 7 Years	Last 10 Years	Last 13-1/2 Years
10th Percentile	5.72	18.74	9.40	10.36	7.53	4.78	4.83
25th Percentile	5.12	13.69	7.53	7.84	5.90	4.74	4.28
Median	4.67	12.20	6.82	5.20	4.13	4.68	3.37
75th Percentile	3.76	11.05	5.33	4.76	2.53	0.91	(1.19)
90th Percentile	3.72	8.35	3.86	4.05	1.08	(1.35)	(3.93)
Timber ●	1.27	9.69	4.06	4.23	2.92	4.61	4.68
NCREIF Timberland Index ▲	1.87	12.01	5.03	4.32	4.05	5.73	4.02

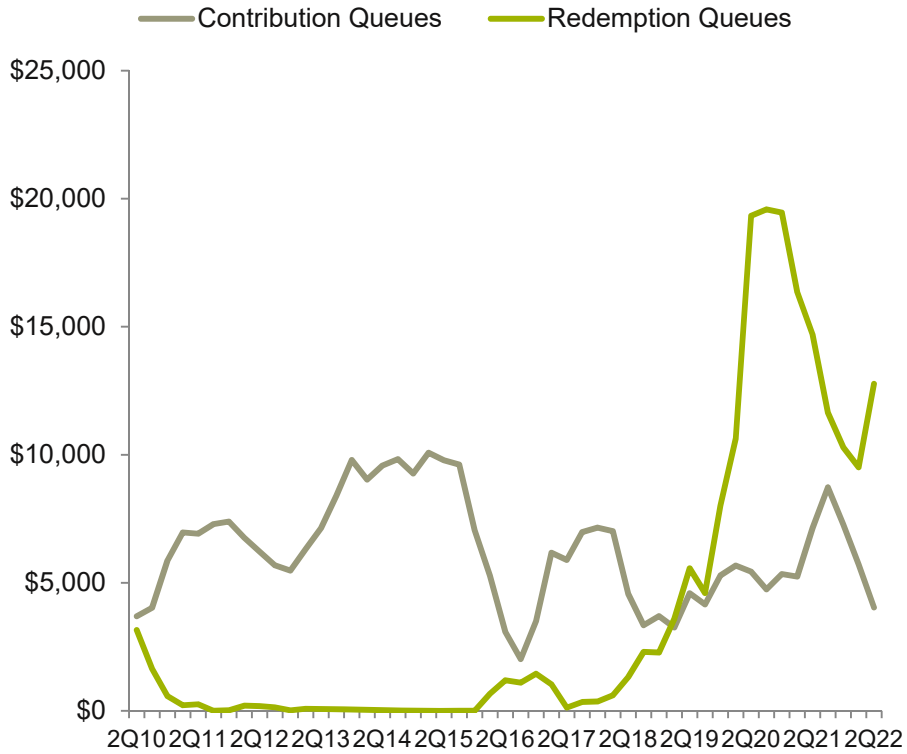
Callan

Real Assets Market Overview

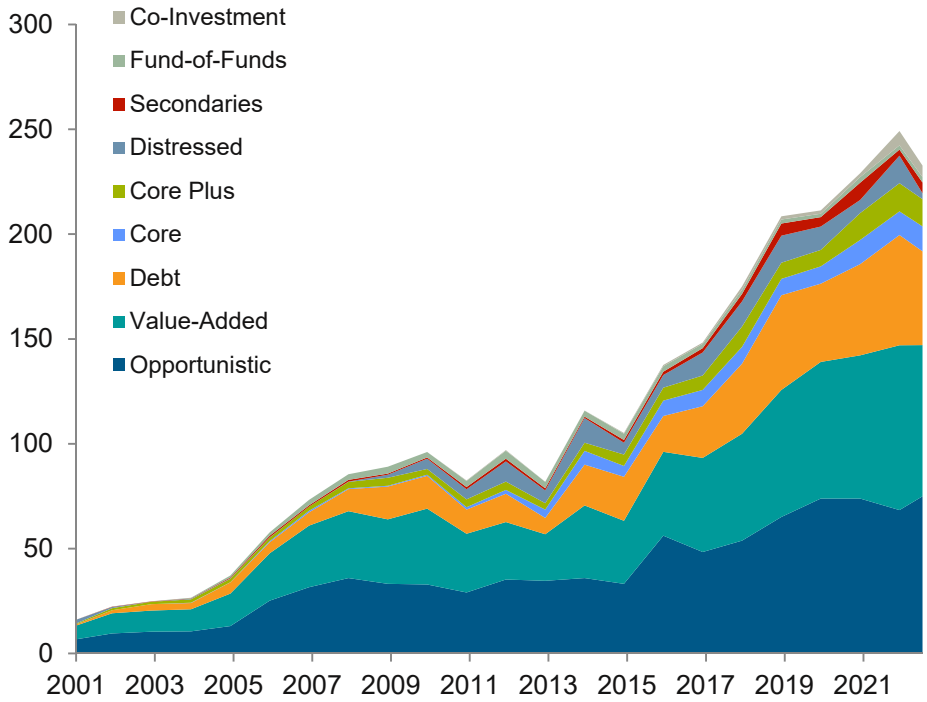
U.S. Private Real Estate Market Trends

Dry powder exceeds $200 billion

Core Fund Contribution/Redemption Queues ($mm)*



Dry Powder for CRE Investment in North America ($bn)



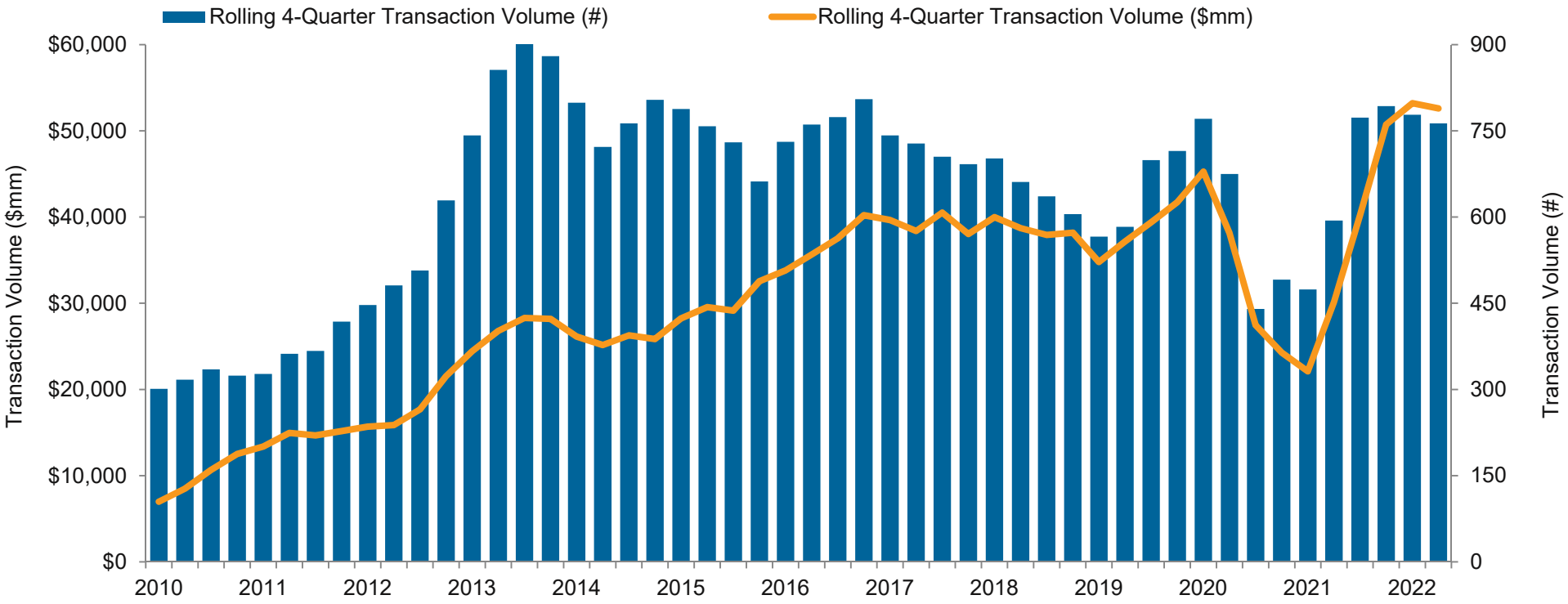
- Core activity has whipsawed in recent quarters. Rebalancing activity has increased due to the denominator effect.
- Over $200 billion of capital waiting to be deployed in North America
- Majority of dry powder in opportunistic, value-add, and real estate debt funds

Sources: AEW, NCREIF, Preqin
*Queue data as of 2Q22

U.S. Private Real Estate Market Trends

Pricing and transaction volumes fell slightly in 2Q22

NCREIF Rolling 4-Quarter Transaction Totals



- Transaction volume decreased slightly and continues to be led by Multifamily and Industrial assets with strong credit tenants, which are trading at well above pre-COVID-19 levels.
- Increased borrowing costs and volatility in capital markets leading to some re-trades of assets and in some cases resulting in lower transaction values.
- Rising interest rates may create repricing in sectors with weaker overall fundamentals (Office, Retail, Hotel).

Source: NCREIF

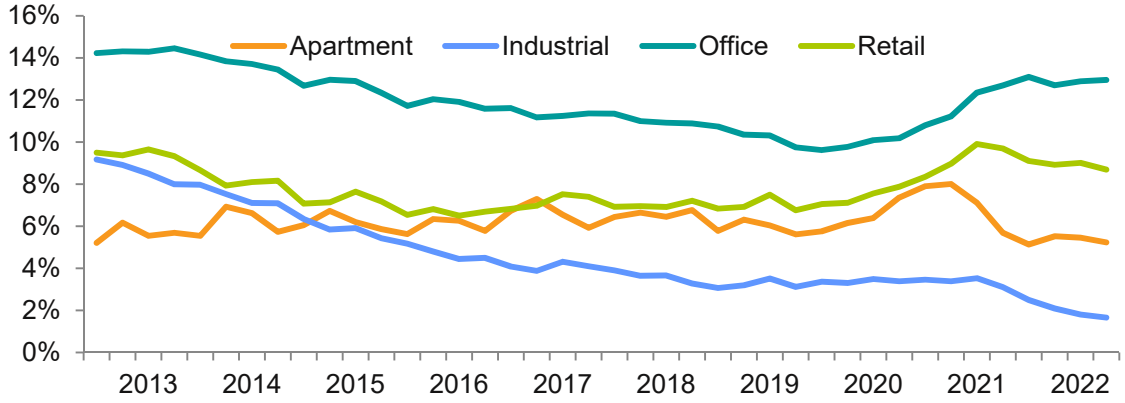
U.S. Private Real Estate Market Trends

Vacancy rates and NOI growth remain mixed

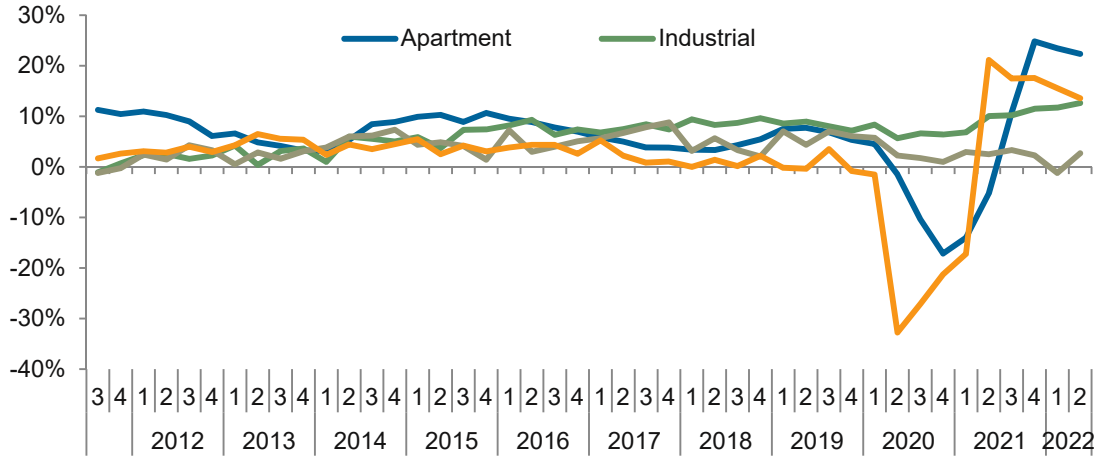
Mixed vacancy and NOI growth results

- Vacancy rates continued to compress in Industrial, Apartment and Retail.
- Office vacancy rates increased slightly during the quarter.
- Net operating income growth decreased in Apartment and Retail while Industrial and Office increased slightly.
- Overall fundamentals remain strong in Industrial, Apartment, Grocery Anchored Retail, and alternative sectors.

Vacancy by Property Type



Rolling 4-Quarter NOI Growth by Property Type



Source: NCREIF

U.S. Private Real Estate Performance: 2Q22

Positive returns across sectors

Another strong quarter for real estate

- Income returns were positive across sectors.
- Valuations are reflective of strong fundamentals in Industrial and Apartment and continued uncertainty despite a modest recovery in Office and Retail.
- Return dispersion by manager within the ODCE Index was due to the composition of underlying portfolios, and increased borrowing costs are impacting values.
- Niche sectors such as self-storage and life sciences continued to be accretive.

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
NCREIF ODCE	4.5%	28.3%	11.7%	9.6%	10.2%
Income	0.6%	2.9%	3.0%	3.1%	3.5%
Appreciation	3.9%	25.0%	8.4%	6.3%	6.5%
NCREIF Property Index	3.2%	21.5%	10.2%	8.9%	9.7%
Income	1.0%	4.1%	4.2%	4.4%	4.8%
Appreciation	2.3%	16.9%	5.8%	4.4%	4.7%

Returns are geometrically linked

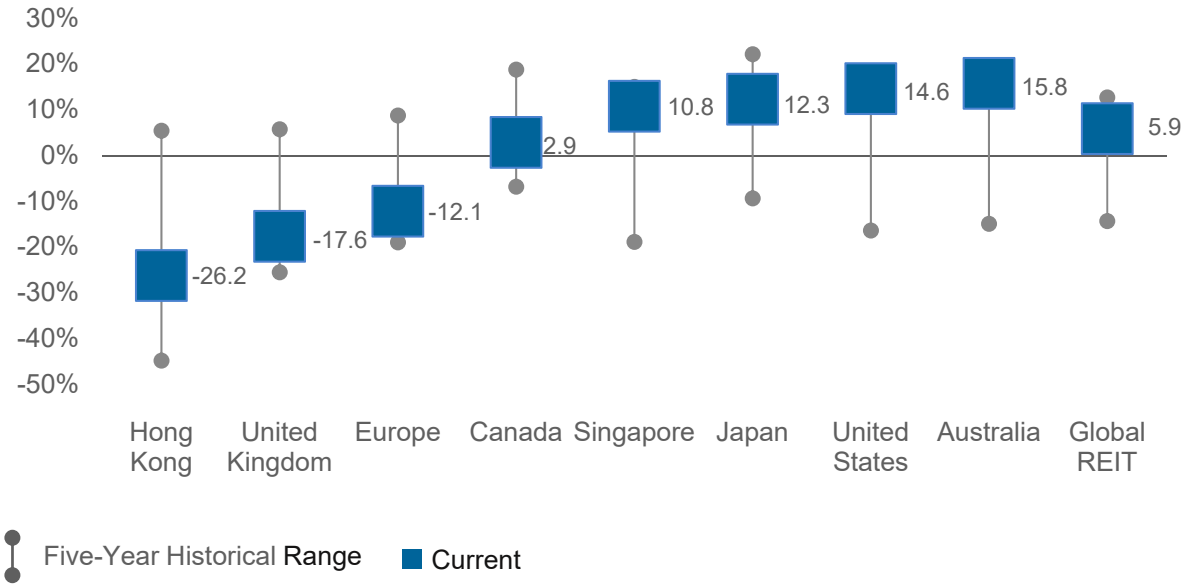
NCREIF Property Index Quarterly Returns by Region and Property Type

Source: NCREIF, ODCE return is net

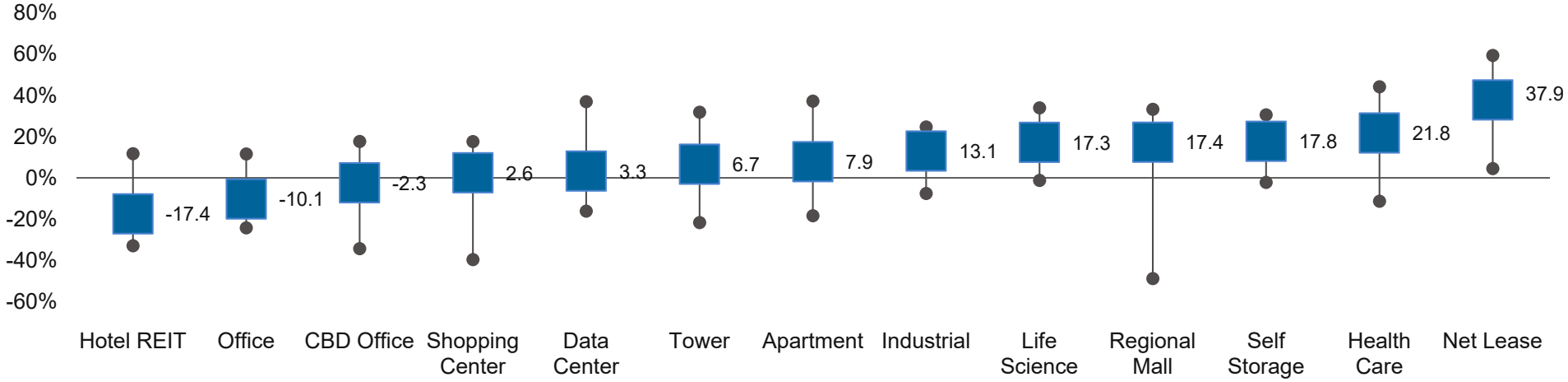
Global REIT Market Trends

- Globally, REITs are trading above NAV with the exception of those in Hong Kong, the United Kingdom, and Continental Europe.
- Property sectors are mixed, between trading at a discount or premium.
- Ongoing volatility in REIT share prices offers opportunities to purchase mispriced securities, individual assets from REIT owners, and discounted debt, as well as lend to companies and/or execute take-privates of public companies.

Price to NAV by Region



Price to NAV by Sector



Source: Cohen & Steers
Note: Five-year historical range 5/15/16 to 5/15/21

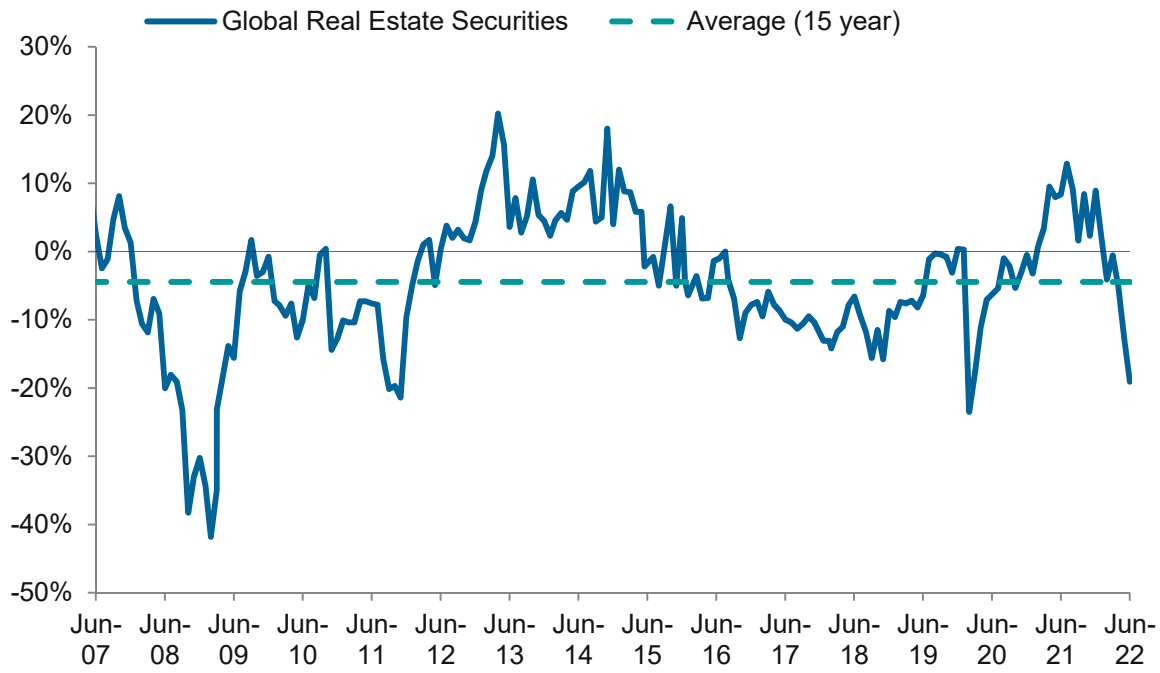
REIT Real Estate Overview

REITs trading at a discount but fell further than equities, both in the U.S. and globally

Observations

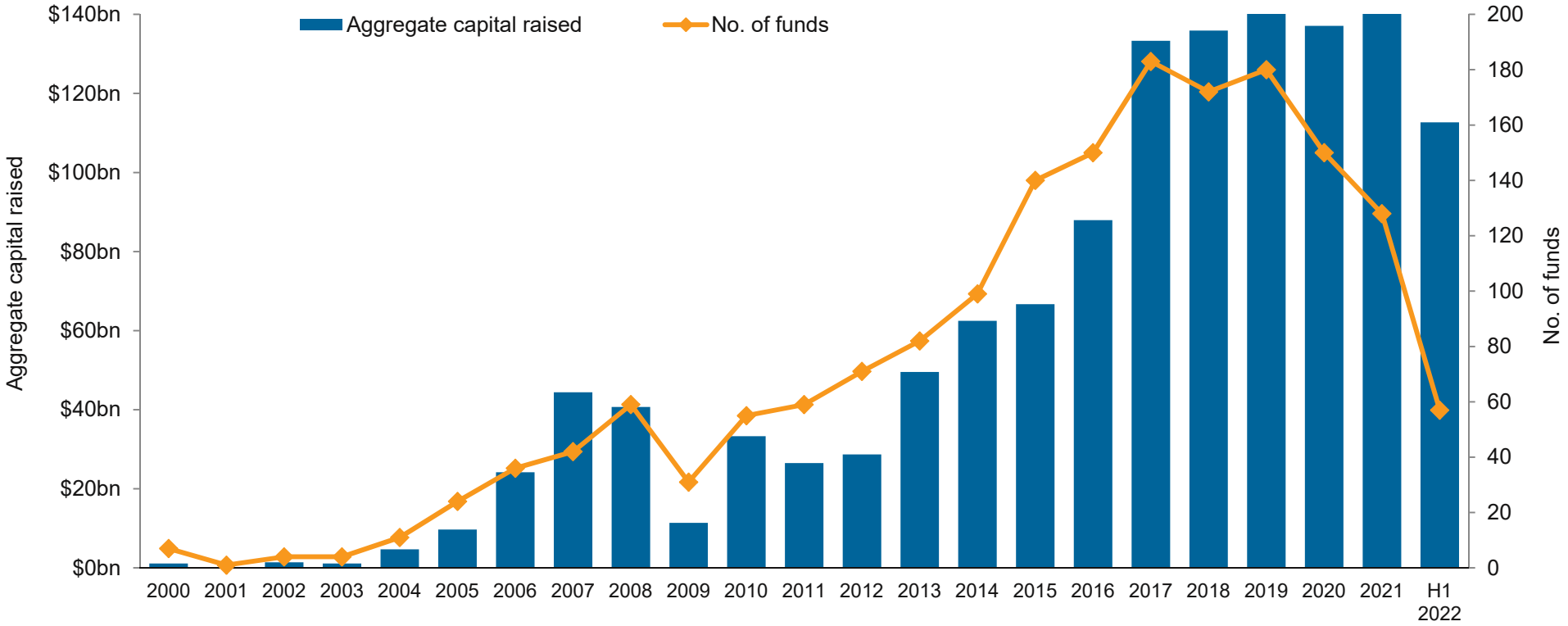
- Global REITs underperformed in 2Q22, falling 17.4% compared to a 15.8% drop for global equities (MSCI World).
- U.S. REITs fell 17.0% in 2Q22, in contrast with the S&P 500 Index, which lost 16.1%.
- REITs are now trading at a discount to NAV and offer relative value given the strength of underlying fundamentals

Global Real Estate Securities Price to NAV



Infrastructure Fundraising Momentum Continues

Mega-funds continue to dominate fundraising



- Fundraising continues to be strong for the mega-funds, which are targeting a fund size in excess of $5 billion.
- The closed-end fund market continues to expand, with infrastructure debt, emerging markets and sector-specific strategies (e.g., communications and renewables).
- The open-end fund market is increasing, with multiple new funds coming to market in 2020/2021/2022.
- In recent years assets with guaranteed/contracted revenue or more inelastic demand patterns (e.g., renewables, telecoms, and utilities) fared better than assets with GDP/demand-based revenue (e.g. airports, seaports, midstream-related).
- "NetZero" or other similarly focused transition strategies have been coming to market.

Source: Institutional Infrastructure Investor data and Callan research

Investors are Paying More Attention to Infrastructure

In 2001, Private Infrastructure Collected 1% of Alternatives Capital

Year	Capital Raised ($ billions)	Share of Capital Raised by Alternative Sector					
		Private Equity	Venture Capital	Real Estate	Infrastructure	Private Debt	Other*
2001	$160	57.83%	28.61%	8.04%	1.03%	4.45%	0.04%
2011	$444	55.58%	12.45%	18.19%	3.47%	9.09%	1.21%
2021	$979	40.13%	20.97%	12.60%	10.56%	15.30%	0.45%
Total (2001-2021)	**$13,644**	**48.63%**	**14.88%**	**10.90%**	**7.18%**	**12.16%**	**2.23%**

*"Other" includes Collateralized Loan Obligations, Hedge Funds, Project Finance, and others

Source: Pitchbook as February 2, 2022

Disclaimers

This report is for informational purposes only and should not be construed as legal or tax advice on any matter. Any decision you make on the basis of this content is your sole responsibility. You should consult with legal and tax advisers before applying any of this information to your particular situation.

This report may consist of statements of opinion, which are made as of the date they are expressed and are not statements of fact.

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Past performance is no guarantee of future results.

The statements made herein may include forward-looking statements regarding future results. The forward-looking statements herein: (i) are best estimations consistent with the information available as of the date hereof and (ii) involve known and unknown risks and uncertainties such that actual results may differ materially from these statements. There is no obligation to update or alter any forward-looking statement, whether as a result of new information, future events or otherwise. Undue reliance should not be placed on forward-looking statements.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Fiscal Year 2023 Real Assets Annual Investment Plan and Guidelines

ACTION: X

DATE: September 15-16, 2022

INFORMATION: _____

BACKGROUND

Staff prepares an Annual Real Assets Investment Plan to review performance, structure, objectives, and strategy of the portfolio. The plan establishes the ARMB-approved plan for the portfolio for the upcoming fiscal year.

STATUS

Staff, with the assistance of Callan, has developed the Real Assets Annual Investment Plan for Fiscal Year 2023. The Real Assets Annual Investment Plan includes a presentation of the Fiscal Year 2023 investment strategy. Recommendations are as follows:

Real Estate	▪ No additional separate account allocations are needed for Fiscal Year 2023. UBS has $65.5 million and Sentinel has $66.8 million of remaining allocation. Financing and sales proceeds may provide additional allocation to invest in new opportunities. ▪ Discontinue reinvestment in BlackRock Core Open-end Fund due to overweight condition in core. ▪ Consider non-core strategies selectively to provide alpha opportunities to portfolio. ▪ Maintain REIT investment in passive diversified approach and use as asset class rebalancing tool. ▪ Continue to consider the non-qualified fund option for JPM Strategic Property Fund to harmonize real estate exposure between pension and healthcare/DC trusts. ▪ Monitor open-end fund universe for possible addition to portfolio if allocation capacity presents.
Farmland	▪ No additional separate account allocation is needed as UBS has $106 million of allocation to invest.
Timberland	▪ No strategy changes recommended. ▪ Project Pearl strategy contract will be terminated and assets will be managed as part of timberland portfolio going forward like other HBU opportunities.
Infrastructure	▪ No strategy changes recommended. ▪ Discontinue reinvestment in JPM Infrastructure Investment Fund due to overweight condition in infrastructure.

RECOMMENDATION

The ARMB approve Resolution 2022-11 which adopts the Real Assets Annual Investment Plan for Fiscal Year 2023.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Real Assets Annual Investment Plan

Resolution 2022-11

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, the Board contracts an independent consultant to provide experience and expertise in asset allocation and other investment matters to come before the Board; and

WHEREAS, the Board has established an asset allocation for the funds that considers earnings and liabilities on a current as well as a future basis; and

WHEREAS, the Board has authorized investments in Real Assets for the Public Employees' Retirement System, Teachers' Retirement System, and Judicial Retirement System, including investments for those systems in the State of Alaska Retirement and Benefits Plans Trust; and

WHEREAS, the Board will establish and on an annual basis review an investment plan for Real Assets asset class.

NOW THEREFORE BE IT RESOLVED THAT THE ALASKA RETIREMENT MANAGEMENT BOARD adopt the Real Assets Annual Investment Plan for Fiscal Year 2023, attached hereto and made a part hereof.

DATED at Anchorage, Alaska this ___ day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT:	Real Assets Investment Guidelines	ACTION:	X
	Policies, Procedures and Guidelines		
DATE:	September 15-16, 2022	INFORMATION:	

BACKGROUND

The Real Assets' Policies, Procedures and Guidelines (Guidelines) are to be reviewed no less than annually and revised as appropriate. There are a total of four Guidelines – one each for Real Estate, Farmland, Timberland, and Infrastructure. As part of the annual planning process for Real Assets, proposed changes to the Guidelines are recommended by staff.

STATUS

The following revisions are being proposed:

Real Estate:

1) The real estate target index is being revised to 70%/30% NFI-ODCE/NAREIT All Equity Index from 80%/20% to correctly reflect the existing Real Asset target weights of 35% NFI-ODCE/15% NAREIT All Equity.

2) The Property Type limit is being raised from 40% to 50% in recognition of the evolution of the NFI-ODCE market value weights as apartments (29%) and industrial assets (31%) are expected to continue to grow in relative index weight. ARMB's projected core private real estate weights are apartment (39%) and (33%) industrial. This additional capacity will allow ARMB's real estate managers to continue to consider apartment and industrial properties but still guard the portfolio against excessive property type concentration. Other diversification principles, such as geographic and economic drivers, are expected to adequately manage risk at higher property type concentrations.

   Increasing the property type weight is also recognizing that Sentinel invests exclusively in apartments which will naturally result in a higher aggregate portfolio exposure in the apartment property type.

Farmland:

3) Crop-type weights were updated to reflect ARMB's previously approved targets of 80% row crops and 20% permanent crops with a band of +/- 10%.

No revisions were made to the Timberland or Infrastructure Guidelines.

RECOMMENDATION

The ARMB approve:

Resolution 2022-12 which adopts the revised Real Estate Investment Guidelines;

Resolution 2022-13 which adopts the revised Farmland Investment Guidelines;

Resolution 2022-14 which adopts the revised Timberland Investment Guidelines; and,

Resolution 2022-15 which adopts the revised Infrastructure Investment Guidelines.

ALASKA RETIREMENT MANAGEMENT BOARD
REAL ESTATE INVESTMENT
POLICIES, PROCEDURES AND GUIDELINES

TABLE OF CONTENTS

Page #

I. INVESTMENT OBJECTIVES ***1***
A. Investments in Real Estate and Other Real Estate Related Assets 1
B. Asset Allocation 1
C. Portfolio Return Objective 1

II. PROGRAM RISK MANAGEMENT AND IMPLEMENTATION ***2***
A. Institutional Quality 2
B. Diversification 2
C. Implementation Approach 6
D. Prudent Leverage 6
E. Lease Structure 7
F. Separate Account Investment Manager Business Plan; Annual Strategic/Tactical Plan; Disposition/Exit Strategy 7
G. Fee Structure 7
H. Single Asset Ownership Structure (Applies to Separate Accounts Only) 7
I. Reporting System 7
J. Distribution of Current Income 8
K. Lines of Responsibility 8

III. CONFLICTS OF INTEREST ***8***
A. Property Valuation 8
B. Property Management 9

IV. INSURANCE COVERAGE ***9***

V. UNRELATED BUSINESS INCOME TAX ***9***

VI. ENVIRONMENTAL EVALUATIONS ***9***

VII. PROCEDURES FOR INVESTMENT ***10***
A. Delegation of Responsibilities 10
B. Investment Procedure 11

VIII. DELEGATION OF AUTHORITY ***12***

IX. CONFIDENTIALITY ***12***

X. REVISIONS ***13***

XI. REAL ESTATE SEPARATE ACCOUNT INVESTMENT MANAGERS ***14***

XII. REAL ESTATE COMMINGLED ACCOUNT INVESTMENT MANAGERS ***14***

ATTACHMENTS

Attachment 1 – Delegation of Responsibilities

ALASKA RETIREMENT MANAGEMENT BOARD
REAL ESTATE INVESTMENT
POLICIES, PROCEDURES AND GUIDELINES

I. INVESTMENT OBJECTIVES

A. Investments in Real Estate and Other Real Estate Related Assets

The Alaska Retirement Management Board (ARMB) will invest in real estate with the goals of portfolio diversification and attaining the optimum return on the portfolio, consistent with the assumption of prudent risk and safety of principal. ARMB recognizes the need to use active investment management in order to obtain the highest attainable total investment return (measured as income plus appreciation) within ARMB's framework of prudence and managed risk.

ARMB will select Real Estate Investment Managers who have the discretion to invest in publicly traded equity, privately placed debt, and/or privately placed equity sectors, subject to ARMB's approval of an Annual Strategic/Tactical Plan and an Annual Investment Plan. In order for real estate investments to be considered, the Investment Manager must demonstrate that it is able to: add value through its real estate knowledge, experience and strategy; underwrite the risks of the investment which is contemplated; and at the time of investment, comply with the intent of the Real Estate Investment Policies, Procedures and Guidelines **(Guidelines)**.

Single property and multi property strategies will be considered as well as "pooled/commingled" fund investment vehicles.

B. Asset Allocation

The ARMB allocation to real estate investments shall be determined by the Board of Trustees and reviewed annually. Allocated capital to Investment Managers will be defined as invested capital based on ARMB's cost.

C. Portfolio Return Objective

1. **Total Return**
   Over rolling six- year periods, the ARMB real estate investment portfolio is expected to generate a net-of-fee total return between public equities and fixed-income.

2. **Income Return**
   Income, which is defined as cash distributed to ARMB, is expected to produce 50-60% of the total return over rolling five-year periods.

3. **Index**

   The overall portfolio is expected to exceed the target index. The target index is composed of 70~~80~~% NFI-ODCE and 30~~20~~% NAREIT All Equity Index.

II. PROGRAM RISK MANAGEMENT AND IMPLEMENTATION

The selection and management of assets in the real estate portfolio of the ARMB will be guided by the principles of preserving investment capital, attaining the optimum return on the portfolio consistent with the assumption of prudent risk, generating current income, being sensitive to inflation, maintaining diversification of assets and diversification of management responsibility.

In real estate investment, there is an inherent risk that the actual income and return of capital will vary from the amounts expected. The ARMB will manage the investment risk associated with real estate in several ways**:**

A. Institutional Quality

All assets must be of institutional investment quality as evidenced by a precedent of institutional investment in similar properties; expert analysis which supports the economic viability of the market; high quality construction and design features; and a potential competitive position within the property's immediate market area**.**

B. Diversification

The real estate portfolio will be diversified as to style group, property type, industry sector, life cycle, economic driver, investment manager and geographical location. Diversification reduces the impact on the portfolio of any one investment or any single manager's investment style to the extent that an adversity affecting any one particular area will not impact a disproportionate share of the total portfolio. Portfolios for core investment managers and non-core or value added investment managers will carry the diversification characteristics set forth in the allocations and definitions set out below. Diversification compliance will be monitored on a quarterly basis for compliance with ARMB's Guidelines by staff and the real estate consultant.

For purposes of calculating diversification compliance, the overall real estate portfolio size will be considered the product of the greater of projected or target real estate allocation times the projected fiscal year-end overall plan assets as established in the Annual Investment Plan. The projected fiscal year-end overall plan assets will take into account the target allocations and projected returns of all asset classes in which plan assets are invested, and estimated net pay-outs to plan beneficiaries. Unless exceptional circumstances justify a deviation, the maximum percentage of the real estate portfolio investment for each of the identified categories is as follows:

Non-Controlled Investments: (ARMB cannot liquidate within 180 days)	50%
Non-Core Investments (See definition below):	50%
Single Manager Limit: *(value of both Separate Account and Commingled Fund combined, if applicable)*	45 %

Geographic:

ARMB will avoid over-concentration in areas of similar real estate performance. The consultant will monitor ARMB's concentrations in this area, considering indicators such as NCREIF sub-region, metropolitan areas and economic drivers. The consultant will report its conclusions regarding the acceptability of ARMB's concentration limits quarterly.

Outside United States:	20 %
Single Property Investment: *(acquisition cost plus projected capital additions and improvements)*	5 %
Single-Tenant (any one firm):	10 %
Property Type:	504 ~~0~~ %

Manager Allocation – It is understood that Separate Account Investment Managers may exceed their Board-approved allocations by up to 5% for the purposes of capital improvements on existing assets and/or for the completion of an acquisition. A core Separate Account Investment Manager's portfolio may be invested up to 15% in core-plus style properties to assemble a core portfolio. A value-added Separate Account Investment Manager's portfolio shall include 70%-100% in value-added style properties, and may include up to 30% in opportunistic style properties.

Subject to CIO approval, upon the sale of a property held by a Separate Account Investment Manager in which the net sales proceeds are in excess of the property's cumulative basis, the advisor's allocation will increase in an amount equal to the lesser of the excess of the net sales proceeds over the property's cumulative basis or the aggregate

portfolio net asset value over the aggregate portfolio cumulative basis adjusted to reflect actual sale proceeds. The CIO will also consider whether an allocation increase should be adjusted for any past realized losses incurred by the Separate Account Investment Manager. The intent of this provision is to allow a Separate Account Investment Manager to reinvest realized gains but only to the extent gains are greater than losses which have been experienced in other property investments in the Separate Account Investment Manager's portfolio.

Exceptional circumstances justifying a deviation – When circumstances arise of a temporary nature, such as an unexpected re-valuation of assets, a transfer of assets among managers, or an event in which it would be in the fiduciary interest of the ARMB to do so, the limits set forth in paragraph II.B of ARMB Policies may be exceeded provided that ARMB concurs.

CIO Discretionary Investment Authority – The CIO shall have the following discretionary investment authority:

a) To increase or decrease existing separate account allocations and investments in open-end funds;

b) To commit to new investment funds up to $100 million for each fund; and,

c) To engage consultants and take other action as may be necessary to ensure sufficient due diligence is performed on all investments under consideration.

The CIO shall exercise this discretion within Board approved asset allocations, investment plans, and guidelines as they may apply.

The CIO will provide prior notification to the Chair of ARMB before committing to any investments under this authority. All discretionary CIO investment actions shall be reported to the Board.

Definitions

Core Investments

Primary Characteristics:

- Fully or substantially leased (85% occupancy or greater)
- Inconsequential turnover near term
- Inconsequential physical issues or renovation required
- Credit tenants
- Primary markets
- Quality property
- Income produces 50% or more of expected return
- Typically longer term holds
- Properties in markets with stable or improving economic conditions

Core-plus Investments

Primary Characteristics:

- Limited renovation, primarily deferred maintenance, limited physical issues or repositioning needed
- Modest near term lease roll over; modest vacant lease up
- Expected growth through increasing rents
- Poor prior management
- A- to B- quality
- Income produces 50% or more of expected return

Non-Core Investments

Value-Added Investments

Primary Characteristics:

- Asset renovation – lobbies, corridors, deferred maintenance
- Intermediate term (6-9 months) physical issues
- Current vacancies or rent loss
- Near term roll over exposure
- Repositioning, re-tenanting
- Distressed prior management
- Purchase of adjacent land to develop
- Alternative, turnaround markets and property types
- Income produces 50% or less of total return

Opportunistic Investments – These investments involve significant redevelopment risk, high leasing risk, and high development risk.

Primary Characteristics:

- Empty Buildings
- High near term turnover
- New development – spec or limited pre-leasing
- Significant rehabilitation and leasing, redevelopment into alternative uses
- Capital displacement in maligned markets: lack of investment capital due to level of risk
- Non-traditional asset type (mezzanine debt, land, etc.)
- Wide ranging investment structures

- Investing in non-performing notes
- Cross-border investing
- Holding periods typically 1 to 5 years
- Income produces less than 50% of total return

Note: *Properties within a multi-property investment will be categorized as either core or non-core.*

C. Implementation Approach

All allocation of funds to a manager (including additional investment with existing accounts) and investment strategy must be recommended to ARMB by Staff and the Real Estate Consultant and be accompanied by an investment report which, at a minimum, includes the following: market information; investment alternatives; fee structure and comparison to other alternatives; demonstration of compliance with Guidelines and the then current Annual Investment Plan; historical performance of Separate Account Investment Manager (cash–based internal rates of return and industry standard); projected returns (income and appreciation); and positive and negative attributes of the investment strategy.

On a selective basis, a member of ARMB may visit the site of a real estate investment for the purpose of rendering a report to ARMB supplementing reports provided by Staff, the Real Estate Consultant, or others**.**

D. Prudent Leverage

Separate account investment managers may place leverage on properties up to a maximum of 65% at the property level and 30% at the portfolio level, measured at the time the financing is established. All debt shall be non-recourse to ARMB. Property encumbered by debt at the time of purchase, if justified on a risk-return basis by the Separate Account Investment Manager, may be acquired subject to the aforementioned leverage constraints.

The total amount of fund level leverage, at the time of investment, will not exceed 35% for core commingled funds investing in a core equity diversified asset strategy. The total amount of fund level leverage, at the time of investment, will not exceed 65% for non-core commingled funds investing in a value-add or opportunistic diversified asset strategy.

E. Lease Structure

Multi-tenant and single tenant properties will be considered. When acquiring single tenant properties, consideration will be given to avoid multiple single-tenant exposure to any firm if those single tenant properties constitute more than 10% of the portfolio. A staggered lease structure for commercial properties will be emphasized.

F. Separate Account Investment Manager Business Plan; Annual

Strategic/Tactical Plan; Disposition/Exit Strategy

A Business Plan (including property operating budgets) will be completed by each Separate Account manager for each asset under its management. The Business Plan will identify the current and anticipated competitive position for each property in order to set tactical and strategic objectives and will prescribe in appropriate detail a disposition and exit strategy respecting the particular investments. Part of this process is to evaluate the potential timing of dispositions. A property is considered for sale when it is believed that the equity in the existing investment can achieve a higher return in another real estate investment of similar risk. The Annual Strategic/Tactical Plan will describe the expectation of the manager with respect to acquisitions and dispositions.

G. Fee Structure

Involvement in any venture will be done on a fee basis that is competitive. The preferred method of calculating manager fees will be based upon a formula, which considers both 1) the cost basis of assets under management and 2) investment performance. All fee structures will be approved by ARMB. For core managers, the return-based portion of a fee will emphasize actual cash available for distribution to ARMB.

H. Single Asset Ownership Structure (Applies to Separate Accounts Only)

Provided that the goals of these guidelines are followed, ARMB may invest in separate, specific real estate assets. However, such investments will be undertaken in a fashion structured to limit ARMB's liability to the amount of its investment.

I. Reporting System

Staff and the Real Estate Consultant will develop and implement a comprehensive and responsive reporting and monitoring system for the entire portfolio, individual investments and individual managers. The reporting and monitoring system will endeavor to identify under-performing investments, controlled portfolio diversification deficiencies and inherent conflicts of interest, thereby facilitating active portfolio management. A cash-based internal rate of return (IRR) will be used when evaluating the long-term performance of an investment. Time- weighted returns will be used to measure comparative performance.

J. Distribution of Current Income

All separate account income will be distributed immediately to ARMB or its designee and not automatically reinvested in the account.

K. Lines of Responsibility

Well defined lines of responsibility and accountability will be required of all participants in ARMB's real estate investment program. Participants are identified as:

ARMB – The fiduciaries appointed by the Governor to represent the beneficiaries' interest which shall retain final authority over all real estate investment decisions.

Staff – Investment professionals on the staff of the Department of Revenue and assigned ARMB responsibilities who will assist in the Real Estate equity investment program's design, policy implementation and administration.

Real Estate Consultant – Professionals retained to support Staff and ARMB through the provision of expert real estate strategic planning, implementation and performance monitoring support.

Separate Account Investment Managers – Qualified entities who provide institutional real estate investment management services and maintain a discretionary relationship with ARMB subject to Staff's approval of Annual Business Plans and Annual Strategic/Tactical plans, prepared by Separate Account Investment Managers, and ARMB's approval of the Annual Investment Plan.

Commingled Fund Managers – Qualified entities who provide institutional real estate investment management services through open-end and closed-end real estate pools and other pooled/commingled vehicles.

III. CONFLICTS OF INTEREST

In real estate investment, separate and distinct from other asset classes, the Manager of a Separate Account or Commingled Fund may have direct or significant control over the operations of the assets. This inherent or potential conflict of interest if openly described and regulated may contribute to the lower volatility associated with the asset class, but it also creates a need for a higher oversight standard by the plan sponsor. Staff and ARMB will maintain this oversight in at least the following ways:

A. Property Valuation

The Separate Account Investment Manager will provide ARMB with annual appraisal valuations for all properties for which it has asset management responsibility as of the quarter ending March 31. Unless otherwise directed by ARMB, the appraisal will be prepared by a qualified independent third party entity in accordance with industry standards. Staff may waive the appraisal requirement for recent acquisitions or pending dispositions following a recommendation by the Separate Account Investment Manager that such appraisal would not be a cost effective exercise. For development assets, appraisals are to be conducted in the manner described above after substantial completion payment by ARMB is made. In addition, the Separate Account Investment Manager will mark each asset to market each quarter based on asset conditions and leasing, operations and capital market conditions for comparable properties in that market.

B. Property Management

The selection of on-site property management will generally be left to the discretion of the Separate Account Investment Manager. It is expected that the Separate Account Investment Manager will retain the highest caliber, market rate property management service either through a third party fee manager or the Separate Account Investment Manager's affiliated property management division. This business relationship will be periodically reviewed by Staff, the Real Estate Consultant and ARMB.

IV. INSURANCE COVERAGE

The Separate Account Investment Manager will obtain insurance for the physical properties and assets under its control. The coverage will be in such amounts and against such risks as, in the Separate Account Investment Manager's professional judgment, shall be in accordance with sound institutional practices applicable to such properties or assets in the specific geographic area. It is expected that such insurance will include, but not be limited to, casualty loss, including where deemed appropriate by the Separate Account Investment Manager, earthquake, flood and any other disaster-type insurance coverage; comprehensive general liability; and title insurance. Separate Account Investment Managers will provide proof of insurance to Staff annually.

V. UNRELATED BUSINESS INCOME TAX

Prior to entering into any transaction, the Manager will assess whether income generated from the property under consideration could qualify as unrelated business taxable income. If this risk exists, the Manager will provide ARMB with an opinion of counsel satisfactory to ARMB that the transaction will not generate unrelated business taxable income under the federal income tax law or any other tax provisions that could affect ARMB's tax-exempt status existing at the time. The Manager shall investigate as to whether ARMB shall be entitled to any property tax exemptions. Managers will provide letters of opinion on UBIT and property tax exemptions to Staff.

VI. ENVIRONMENTAL EVALUATIONS

As a standard procedure during the pre-acquisition analysis, the Separate Account Investment Manager will initiate a formal evaluation for each property through the selection of an environmental consultant. In carrying out the review, appropriate procedures based on standards of the locale and conditions known to exist in the locale shall be undertaken and such procedures should at a minimum include:

- Appointment of an environmental consultant with specific experience in testing and removal of asbestos and other environmental hazards.
- A site survey will be conducted to determine from the available evidence whether hazardous chemicals or environmentally dangerous materials exist or have existed on the subject property, including, at a minimum, a Phase I report.

ARMB may invest in properties, which contain asbestos and other toxic substances, only if the following conditions are met:

- The substance and potential risks are thoroughly disclosed.
- The property is not in violation of any federal, state or local law, ordinance, or regulation relating to the property's environmental condition.
- The estimated cost of the removal or containment programs will be reflected in the purchase assumptions.
- The substance can be properly contained or removed in accordance with the then current Environmental Protection Agency Standards.
- The leasing rollover pattern in the property will accommodate a removal program in the future.

Separate Account Investment Managers will provide the environmental evaluation reports to staff

VII. PROCEDURES FOR INVESTMENT

A. Delegation of Responsibilities

The real estate investment program will be implemented and monitored through the coordinated efforts of the ARMB, Staff, the Real Estate Consultant, and the qualified Manager(s). Delegation of responsibilities for each participant is described in the following sections: A summary of the delegation is attached:

1. ARMB

ARMB will retain final authority over all real estate investment strategy decisions except for Business Plan variances as set forth in the Guidelines Section VIII; approve the Guidelines, the Annual Investment Plan and any periodic revisions to these documents which ARMB deems to be appropriate and prudent for the investment of ARMB assets; retain qualified investment managers and real estate consultants; and set investment limits.

2. Staff

Staff will coordinate program compliance among all participants and communicate the investment policies, objectives and performance criteria to the Separate Account Investment Managers and monitor diversification compliance on a quarterly basis. Staff will also coordinate the receipt and distribution of capital. Staff, in cooperation with the Real Estate Consultant, will periodically review the Separate Account Investment Managers' and portfolio's performance in relation to target returns; review and approve the Separate Account Investment Manager's Annual Business Plan and Annual Strategic/Tactical Plan; review and recommend investments in commingled vehicles; prepare and recommend an Annual Investment Plan; and recommend revisions to the Real Estate Investment Policy Procedures and Guidelines. Staff will also review and approve the detailed property operating budgets prior to the start of each fiscal year and revisions to the property operating budgets in accordance with Section VIII of these Guidelines.

3. Real Estate Consultant

In cooperation with Staff and as deemed appropriate by ARMB, the Real Estate Consultant will ensure program compliance; assist in the implementation of a multiple manager program; review all program documentation and management relationships; conduct manager searches when requested; provide performance measurement analysis of the portfolio; review the Annual Investment Plan as set forth in the Investment Procedures outlined below; and provide special project research pertaining to technical real estate issues.

The Real Estate Consultant will, as requested by ARMB, provide periodic reports for the real estate program including a performance evaluation of the total portfolio to include both ARMB's commingled fund investments and ARMB's separate account investments. The analysis will include both income and capital accounting; comparison to industry performance benchmarks (such as NCREIF); Manager reviews, and effects of "Pooled Leverage" on the real estate portfolio. The Real

Estate Consultant will prepare a quarterly performance analysis report which will provide after-fee realized and unrealized gains/losses; monitor and report quarterly diversification compliance and the geographic concentration limits; time weighted returns including both current quarter returns and annualized returns since portfolio inception; and internal rates of return since inception based on actual cash flow from and to ARMB.

Additional responsibilities may include developing selection criteria in manager search efforts, coordinating/conducting manager searches, conducting manager reviews, and other special projects.

4. Managers

Separate Account Investment Managers will acquire and manage real estate investments on behalf of ARMB and in accordance with the then current and approved Annual Business, Annual Strategic/Tactical Plans, and the objectives set forth in the Annual Investment Plan and the Guidelines. Managers will prepare Annual Business (including property operating budgets) and Annual Strategic/Tactical Plans for Staff review and approval.

Commingled fund investment managers will acquire and manage real estate investments on behalf of ARMB and in accordance with the terms of any and all agreements between each respective Manager and ARMB.

B. Investment Procedure

Real estate investments, in compliance with ARMB's Policies, shall be acquired through the following process:

1. Separate Accounts:

Annually, Staff will prepare an Investment Plan after reviewing the Annual Business and Strategic/Tactical Plans of the Separate Account Investment Managers. This document will recommend, as appropriate, revisions to the ARMB Guidelines, additional allocations to existing managers, and revisions to the Annual Business and Strategic/Tactical Plans of each respective Separate Account Investment Manager. Any searches that may be recommended will be outlined. The Investment Plan will then be reviewed by the consultant and submitted to ARMB for final approval. Staff and the Real Estate Consultant shall review the Separate Account Investment Manager's Annual Business Plans and Annual Strategic/Tactical Plans for consistency with the Annual Investment Plan. Staff will approve all Plans prepared by Separate Account Investment Managers.

Investments will be made on a discretionary basis by Separate Account Investment Managers in accordance with their approved Annual Business and Strategic/Tactical Plans. Separate Account Investment Managers must provide staff with copies of their internal "Investment Committee" reports for each asset purchased on ARMB's behalf.

2. Commingled Funds:

Investments in commingled funds will be recommended by Staff and the Real Estate Consultant on an individual fund basis in accordance with the Annual Investment Plan and the ARMB Guidelines.

VIII. DELEGATION OF AUTHORITY

ARMB shall delegate authority to Staff to approve the following:

- Each Separate Account Investment Manager's detailed property operating budgets for each fiscal year;
- Annual Business Plans and Annual Tactical/Strategic Plans prepared by ARMB's Separate Account Investment Managers;
- Revised property operating budgets and variances in approved Annual Business Plans for unanticipated, significant leasing activity; and
- Line item variances in approved capital expenditure budgets in amounts up to $300,000 with a cumulative fiscal year maximum of $3,000,000 per Separate Account Investment Manager for other capital expenditures not related to leasing activity (such as repairs for building damage or defects).

IX. CONFIDENTIALITY

Pursuant to 15 AAC 112.770, ARMB shall withhold from other persons all information furnished to it by Manager(s) or Consultant(s) which is reasonably designated by Manager(s) or Consultant(s) as being confidential or proprietary, within the meaning of Alaska Statutes regarding rights to public information, except to the extent that the information is needed by ARMB in order to adequately report on the status and performance of the portfolio, or to comply with a court subpoena or with an official criminal investigation.

Those portions of reports provided pursuant to Part II section I (Reporting System) of these Guidelines shall be considered confidential pursuant to 15 AAC 112.770 to the extent that information is reasonably designated by Manager(s) as being confidential or proprietary, or to the extent the disclosure of which would unfairly prejudice the ability of Manager(s) or ARMB to manage, lease, market or sell such property or Assets.

X. REVISIONS

This document replaces and consolidates the policies, procedures, and guidelines as of September 18, 2020~~2018~~. This document is to be reviewed no less than annually and revised as appropriate.

XI. REAL ESTATE SEPARATE ACCOUNT INVESTMENT MANAGERS

The following investment managers acquire institutional-grade properties on a discretionary basis for the Alaska Retirement Management Board:

UBS Realty Investors LLC
Property type – Core/apartments, industrial, retail and office
Contact - Jeffrey G. Maguire
Managing Director
10 State House Square
Hartford, CT 06103-3604
Telephone: 860-616-9086
Fax: 860-616-9104
E-mail: jeffrey.maguire@ubs.com
Web site: www.ubs.com

Sentinel Realty Advisors Corp.
Property type – Core/apartments only
Contact – George Tietjen
Managing Director
1251 Avenue of the Americas
New York, NY 10020
Telephone: 212-408-2929
Fax: 212-603-5961
E-mail: tietjen@sentinelcorp.com
Web site: www. sentinelcorp.com

XII. REAL ESTATE COMMINGLED ACCOUNT INVESTMENT MANAGERS

UBS Realty Investors LLC
Contact: Thomas J. O'Shea,
Managing Director
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Attachment 1

REAL ESTATE INVESTMENT POLICY and PROCEDURES - Delegation of Responsibilities Attachment					
	Frequency	**Separate Account Investment Managers**	**Consultant**	**Staff**	**Board**
Real Estate Investment Policy, Procedures, and Guidelines			R	P&R	A
Review and Revise	Annually		R	R	A
Separate Account Investment **Manager Selection**	Periodically		G&R	G&R	A
Request For Proposal (RFP)			P&R	P&R	A
Real Estate **Consultant Selection**	Tri-Annually			G&R	A
Request For Proposal (RFP)				P&R	A
Commingled Fund Selection**	Periodically		R	R	A
Real Estate Investment Plan**	Annually		R	P&R	A
Separate Account Business Plan**	Annually	P	R	R&A	
Detailed Property Operating Budget	Annually	P	R	R&A	
Separate Account Strategic/Tactical Plan**	Annually	P	R	R&A	RT
Quarterly Performance	Quarterly		P	RT	RT
Portfolio/Property Diversification Compliance	Quarterly		M	M	
Geographic Concentration Limit	Quarterly		M	RT	

A = Approves RT = Reported To * Grade Semi-finalists only
G = Grade M = Monitor ** Investment Decision (Shaded)
P = Prepares
R = Recommends

APPENDIX E

ALASKA RETIREMENT MANAGEMENT BOARD
FARMLAND INVESTMENT
POLICIES, PROCEDURES AND GUIDELINES

TABLE OF CONTENTS

Page #

I. INVESTMENT OBJECTIVES ***1***
A. Investments in Farmland and Other Farmland Related Assets 1
B. Asset Allocation 1
C. Portfolio Return Objective 1

II. PROGRAM RISK MANAGEMENT AND IMPLEMENTATION ***2***
A. Institutional Quality 2
B. Diversification 2
C. Implementation Approach 4
D. Prudent Leverage 4
E. Directly Operated Properties 5
F. Lease Structure 5
G. Manager Business Plan; Annual Strategic/Tactical Plan; Disposition/Exit Strategy 5
H. Fee Structure 5
I. Single Asset Ownership Structure (Applies to Separate Accounts Only) 5
J. Reporting System 55~~6~~
K. Distribution of Current Income 6
L. Lines of Responsibility 6

III. CONFLICTS OF INTEREST ***6***
A. Property Valuation 66~~7~~
B. Property Management 7

IV. INSURANCE COVERAGE ***7***

V. UNRELATED BUSINESS INCOME TAX ***7***

VI. ENVIRONMENTAL EVALUATIONS ***8***

VII. PROCEDURES FOR INVESTMENT ***8***
A. Delegation of Responsibilities 8
B. Investment Procedure 9

VIII. DELEGATION OF AUTHORITY ***10***

IX. CONFIDENTIALITY ***10***

X. REVISIONS ***10***

XI. FARMLAND SEPARATE ACCOUNT INVESTMENT MANAGERS ***10***

ALASKA RETIREMENT MANAGEMENT BOARD
FARMLAND INVESTMENT
POLICIES, PROCEDURES AND GUIDELINES

I. INVESTMENT OBJECTIVES

A. Investments in Farmland and Other Farmland Related Assets

The Alaska Retirement Management Board (ARMB) will invest in Farmland with the goals of portfolio diversification and attaining the optimum return on the portfolio, consistent with the assumption of prudent risk and safety of principal. ARMB recognizes the need to use active investment management in order to obtain the highest attainable total investment return (measured as income plus appreciation) within ARMB's framework of prudence and managed risk.

ARMB will select Separate Account Investment Managers **(Managers)** who have the discretion to invest in Farmland, subject to ARMB's approval of an Annual Strategic/Tactical Plan and an Annual Investment Plan. In order for Farmland investments to be considered, the Manager must demonstrate that it is able to: add value through its Farmland knowledge, experience and strategy; underwrite the risks of the investment which is contemplated; and comply with the intent of the Farmland Investment Policies, Procedures and Guidelines **(Guidelines)**.

Single property and multi property strategies will be considered.

B. Asset Allocation

The ARMB allocation to Farmland investments shall be determined by the Board of Trustees and reviewed annually.

Farmland Investments will be allocated 80% to row crops and 20% to permanent crops, +/- ten (10%) percent

Allocated capital to Managers will be defined as invested capital based on ARMB's cost.

C. Portfolio Return Objective

1. **Total Return**
   Over rolling 6 year periods, the equity Farmland investment portfolio is expected to generate a net-of-fee total return between public equities and fixed income using a time-weighted rate of return calculation.

2. **Income Return**
   Income, which is defined as cash distributed to ARMB, is expected to produce 4.0% returns over rolling five-year periods with a minimum of 3.0% distributed income after fees and projected capital expenditures.

II. PROGRAM RISK MANAGEMENT AND IMPLEMENTATION

The selection and management of assets in the Farmland portfolio of the ARMB will be guided by the principles of preserving investment capital, attaining the optimum return on the portfolio consistent with the assumption of prudent risk, generating current income, being sensitive to inflation, maintaining diversification of assets and diversification of management responsibility.

In Farmland investment, there is an inherent risk that the actual income and return of capital will vary from the amounts expected. The ARMB will manage the investment risk associated with Farmland in several ways**:**

A. Institutional Quality

All assets must be of institutional investment quality as evidenced by a precedent of institutional investment in similar properties; i.e., properties that have high percentage of Class I & II soils or other soil types appropriate for the production of the targeted commodity, adequate sources of water for irrigation (if applicable) at reasonable costs, located in well established agricultural regions.

"Eligible Properties" mean real property in which ownership in fee vests in ARMB or an ARMB Title Holding Entity. Subsurface, water or other property rights will be acquired and/or retained consistent with use of the property for Farmland, and the terms of acquisition shall include the most favorable rights and terms accorded to any other participant in any controlling or overriding master lease or utilization type agreement which might be applicable to the use of the property (for example, if the ARMB property is a portion of a larger agricultural unit). For purposes of this definition, real property includes any property treated as real property either by local law or state law or for federal income tax purposes.

Investments will be located in the United States of America. International investments are not permitted.

B. Diversification

The Farmland portfolio will be diversified as to crop type, property type and geographical location. Diversification reduces the impact on the portfolio of any one investment. Diversification compliance will be monitored on a quarterly basis for compliance with ARMB's Guidelines by staff.

For purposes of calculating diversification compliance, the overall Farmland portfolio size will be considered the allocation to Farmland. Unless exceptional circumstances justify a deviation, the maximum percentage of the Farmland portfolio investment for each of the identified categories is as follows:

Controlled Investments:	100 %
(ARMB can liquidate within 180 days –targeted, not guaranteed))	
Non-Controlled Investments:	50%
(ARMB cannot liquidate within 180 days)	

Public Equity:	0 %
Public Debt:	0 %
Private Equity:	100 %
Private Debt:	0 %

Geographic:

ARMB will avoid over-concentration in areas of similar Farmland performance. The consultant will monitor ARMB's concentrations in this area. The consultant will report its conclusions regarding the acceptability of ARMB's concentration limits quarterly.

Properties Within the Same NCREIF Farmland Region	40%
Single Property Investment:* *(acquisition cost plus projected capital additions and improvements)*	15%
Single-Tenant/Sub-Tenant (any one firm):	15%
Crop Type (with a band of +/- 10%)	
Row Crop	-80~~60~~%
Permanent Crop	-20~~40~~%
Properties Producing the Same Commodity	30%

Exceptional circumstances justifying a deviation – When circumstances arise of a temporary nature, such as an unexpected re-valuation of assets, a transfer of assets among managers, or an event in which it would be in the fiduciary interest of the ARMB to do so, the limits set forth in paragraph II.B of ARMB Policies may be exceeded provided that ARMB concurs.

* Exception for high cost markets shall be approved annually by the ARMB through its Annual Investment Plan.

Reinvestment of allocation by the investment manager shall require approval by the Chief Investment Officer (CIO). The CIO has discretion in determining the reinvestment amount to authorize. Amounts may reflect the original allocation or may recognize some portion of any realized gains or losses.

CIO Discretionary Investment Authority – The CIO shall have the following discretionary investment authority:

a) To increase or decrease existing separate account allocations and investments in open-end funds;

b) To commit to new investment funds up to $100 million for each fund; and,

c) To engage consultants and take other action as may be necessary to ensure sufficient due diligence is performed on all investments under consideration.

The CIO shall exercise this discretion within Board approved asset allocations, investment plans, and guidelines as they may apply.

The CIO will provide prior notification to the Chair of ARMB before committing to any investments under this authority. All discretionary CIO investment actions shall be reported to the Board.

C. Implementation Approach

The ARMB will endeavor to allocate specific funds to qualified managers on a separate account basis. Selected managers will seek Farmland investment opportunities in privately-placed equity sectors. Investments will be made on a discretionary basis subject to ARMB Staff approval of the Annual Strategic/Tactical Plans prepared by Managers and Staff's approval of the Annual Investment Plan.

All allocation of funds to a manager (including additional investment with existing accounts) and investment strategy must be recommended to Staff and be accompanied by an investment report which, at a minimum, includes the following: market information; investment alternatives; fee structure and comparison to other alternatives; demonstration of compliance with the Guidelines and the then current Annual Investment Plan; historical performance of Manager (cash–based internal rates of return and industry standard); projected returns (income and appreciation); and positive and negative attributes of the investment strategy.

On a selective basis, a member of ARMB may visit the site of a Farmland investment for the purpose of rendering a report to ARMB supplementing reports provided by Staff or others**.**

D. Prudent Leverage

The total amount of leverage placed on the aggregate Separate Account assets will not exceed ten percent (10%) of the total market value of the Farmland separate account portfolio. Directly-owned properties will not be leveraged by the separate account investment manager unless, with approval from the Chief Investment Officer, the property was encumbered by debt at the time of purchase and leaving the debt in place can be justified on a risk-return basis. With authorization by the ARMB, the Chief Investment

Officer may place leverage on a pool of existing core Farmland assets held in ARMB's separate account portfolio in a manner consistent with the ARMB's Guidelines.

E. Directly Operated Agriculture Properties

Directly operated agriculture properties are permitted. Managers will select operators for agricultural properties who have relevant experience and who have demonstrated expertise in operating that property's crop type.

F. Lease Structure

All leases must be of institutional investment quality with a precedent of institutional investment in similar properties; Leases will be structured with fixed cash rents, or participating rents calculated as a percentage of gross income. A lease structure incorporating both fixed cash rent and participating rent is also acceptable.

G. Manager Business Plan; Annual Strategic/Tactical Plan; Disposition/Exit Strategy

A Business Plan (including property operating budgets) will be completed by each manager for each asset under its management. The Business Plan will identify the current and anticipated competitive position for each property in order to set tactical and strategic objectives and will prescribe in appropriate detail a disposition and exit strategy respecting the particular investments. Part of this process is to evaluate the potential timing of dispositions. The Annual Strategic/Tactical Plan will describe the expectation of the manager with respect to acquisitions and dispositions.

H. Fee Structure

Involvement in any venture will be done on a fee basis that is competitive. The preferred method of calculating manager fees will be based upon a formula, which considers 1) the cost basis of assets under management and 2) market value of the assets under management. All fee structures will be approved by ARMB.

I. Single Asset Ownership Structure (Applies to Separate Accounts Only)

Provided that the goals of these guidelines are followed, ARMB may invest in separate, specific Farmland assets. However, such investments will be undertaken in a fashion structured to limit ARMB's liability to the amount of its investment.

J. Reporting System

Staff will develop and implement a comprehensive and responsive reporting and monitoring system for the entire portfolio, individual investments and individual managers. The reporting and monitoring system will endeavor to identify under-performing investments, control portfolio diversification deficiencies and inherent conflicts of interest,

thereby facilitating active portfolio management. A cash-based internal rate of return (IRR) will be used when evaluating the long-term performance of an investment. Time-weighted returns will be used to measure comparative performance.

K. Distribution of Current Income

All separate account income less expenses and prudent operating reserves will be distributed to ARMB or its designee on a quarterly basis and not automatically reinvested in the Account.

L. Lines of Responsibility

Well defined lines of responsibility and accountability will be required of all participants in ARMB's Farmland investment program. Participants are identified as:

ARMB – The fiduciaries appointed by the Governor to represent the beneficiaries' interest which shall retain final authority over all Farmland investment decisions.

Staff – Investment professionals on the staff of the Department of Revenue and assigned ARMB responsibilities who will assist in the Farmland equity investment program's design, policy implementation and administration.

Separate Account Managers – Qualified entities that provide institutional Farmland investment management services and maintain a discretionary relationship with ARMB subject to Staff's approval of Annual Business Plans and Annual Strategic/Tactical plans, prepared by Managers.

III. CONFLICTS OF INTEREST

In Farmland investment, separate and distinct from other asset classes, the Manager of a Separate Account or Commingled Fund may have direct or significant control over the operations of the assets. Additionally, Managers may now or in the future maintain or manage properties and provide discretionary or non-discretionary advisory services for a number of other accounts and clients, including accounts affiliated with the Manager. These inherent or potential conflicts of interest if openly described and regulated may contribute to the lower volatility associated with the asset class, but it also creates a need for a higher oversight standard by the plan sponsor. Staff and ARMB will maintain this oversight in at least the following ways:

A. Property Valuation

The following valuation procedures shall be applied to all farmland assets managed in separate accounts for the Alaska Retirement Management Board:

1) All assets shall be appraised at the time of acquisition.

2) All assets shall be appraised annually during the quarter ending March 31 unless the property was acquired during the preceding twelve months in which case, based on a recommendation from the advisor, staff may allow an appraisal update or waive the appraisal requirement if such appraisal would not be a cost effective exercise.

3) All property valuations shall be reviewed internally by advisors for the quarters ending in June, September, and December. If changes in market conditions, expected cash flows, or other factors suggest a property valuation has likely changed by more than 3% to 5% the advisor shall prepare a documented internal valuation and record the resulting value in the financial statements.

4) Appraisals will be prepared by a qualified independent third party entity in accordance with industry standards. Appraisers shall be selected by the advisor in a manner that achieves a high quality appraisal at a reasonable cost.

5) Advisor shall attempt to rotate appraisers on each property every three years.

B. Property Management

The selection of on-site property management will generally be left to the discretion of the Manager. It is expected that the Manager will retain the highest caliber, market rate property management service either through a third party fee manager or the Manager's affiliated property management division. This business relationship will be periodically reviewed by Staff and ARMB.

IV. INSURANCE COVERAGE

The Manager will obtain insurance for the physical properties and assets under its control. The coverage will be in such amounts and against such risks as, in the Manager's professional judgment, shall be in accordance with sound institutional practices applicable to such properties or assets in the specific geographic area. It is expected that such insurance will include, but not be limited to, casualty loss, including where deemed appropriate by the Manager, disaster-type insurance coverage; comprehensive general liability; and title insurance.

V. UNRELATED BUSINESS INCOME TAX

The Manager will provide ARMB with an opinion of counsel satisfactory to ARMB that the standard lease or subsequent revisions to the standard lease used to lease Account Property will not generate unrelated business taxable income under the federal income tax law or any other tax provisions that could affect ARMB's tax-exempt status existing at the time. The Manager shall investigate as to whether ARMB shall be entitled to any property tax exemptions.

VI. ENVIRONMENTAL EVALUATIONS

As a standard procedure during the pre-acquisition analysis, the Manager will initiate a formal evaluation for each property though the selection of an environmental consultant. In carrying out the review, appropriate procedures based on standards of the locale and conditions known to exist in the locale shall be undertaken and such procedures should at a minimum include:

- Appointment of an environmental consultant with specific experience in testing and removal of asbestos and other environmental hazards.
- A site survey will be conducted to determine from the available evidence whether hazardous chemicals or environmentally dangerous materials exist or have existed on the subject property, including, at a minimum, a Phase I report.

ARMB may invest in properties, which contain asbestos and other toxic substances, only if the following conditions are met:

- The substance and potential risks are thoroughly disclosed.
- The property is not in violation of any federal, state or local law, ordinance, or regulation relating to the property's environmental condition.
- The estimated cost of the removal or containment programs will be reflected in the purchase assumptions.
- The substance can be properly contained or removed in accordance with the then current Environmental Protection Agency Standards.
- The leasing rollover pattern in the property will accommodate a removal program in the future.

VII. PROCEDURES FOR INVESTMENT

A. Delegation of Responsibilities

The Farmland investment program will be implemented and monitored through the coordinated efforts of the ARMB; Staff and; the qualified Manager(s). Delegation of responsibilities for each participant is described in the following sections: A summary of the delegation is attached:

1. ARMB

ARMB will retain final authority over all Farmland investment strategy decisions except for Business Plan variances as set forth in the Guidelines Section VIII; approve the Guidelines, the Annual Investment Plan and any periodic revisions to these documents which ARMB deems to be appropriate and prudent for the investment of ARMB assets; retain qualified investment managers and Farmland consultants; and set investment limits.

2. Staff

Staff will coordinate program compliance among all participants and communicate the investment policies, objectives and performance criteria to the Managers and monitor diversification compliance on a quarterly basis. Staff will also coordinate the receipt and distribution of capital. Staff will periodically review the Managers' and portfolio's performance in relation to target returns; review and approve the Manager's Annual Business Plan and Annual Strategic/Tactical Plan; review and recommend an Annual Investment Plan; and recommend revisions to the Farmland Investment Policy Procedures and Guidelines. Staff will also review and approve the detailed property operating budgets prior to the start of each fiscal year and revisions to the property operating budgets in accordance with Section VIII of these Guidelines.

3. Managers

Separate account investment managers will acquire and manage Farmland investments on behalf of ARMB and in accordance with the then current and approved Annual Business, Annual Strategic/Tactical Plans, and the objectives set forth in the Annual Investment Plan and the Guidelines. Managers will prepare Annual Business (including property operating budgets) and Annual Strategic/Tactical Plans for Staff review and approval.

B. Investment Procedure

Farmland investments, in compliance with ARMB's Policies, shall be acquired through the following process:

Separate Accounts:

Annually, Staff will prepare an Investment Plan after reviewing the Annual Business and Strategic/Tactical Plans of the separate account investment managers. This document will recommend, as appropriate, revisions to the ARMB Guidelines, additional allocations to existing managers, and revisions to the Annual Business and Strategic/Tactical Plans of each respective separate account investment manager. Staff shall review the Manager's Annual Business Plans and Annual Strategic/Tactical Plans for consistency with the Annual Investment Plan. Staff will approve all Plans prepared by the Managers.

Investments will be made on a discretionary basis by separate account investment managers in accordance with their approved Annual Business and Strategic/Tactical Plans. Investments will be approved in accordance with Managers' standard internal investment approval process, which may involve levels of authority delegated to senior officers and/or one or more investment committees. Upon the request of ARMB, separate account investment managers will provide copies of their internal Investment Committee reports for each asset purchased.

VIII. DELEGATION OF AUTHORITY

ARMB shall delegate authority to Staff to approve the following:

- Each separate account Manager's detailed property operating budgets for each fiscal year;
- Annual Business Plans and Annual Tactical/Strategic Plans prepared by ARMB's separate account Managers;
- Revised property operating budgets and variances in approved Annual Business Plans for unanticipated, significant leasing activity; and
- Line item variances in approved capital expenditure budgets in amounts up to $500,000 with a cumulative fiscal year maximum of $3,000,000 per Investment Manager for other capital expenditures not related to leasing activity (such as repairs for building damage or defects).

IX. CONFIDENTIALITY

Pursuant to 15 AAC 112.770, ARMB shall withhold from other persons all information furnished to it by Manager(s) or Consultant(s) which is reasonably designated by Manager(s) or Consultant(s) as being confidential or proprietary, within the meaning of Alaska Statutes regarding rights to public information, except to the extent that the information is needed by ARMB in order to adequately report on the status and performance of the portfolio, or to comply with a court subpoena or with an official criminal investigation.

Those portions of reports provided pursuant to Part II section I (Reporting System) of these Guidelines shall be considered confidential pursuant to 15 AAC 112.770 to the extent that information is reasonably designated by Manager(s) as being confidential or proprietary, or to the extent the disclosure of which would unfairly prejudice the ability of Manager(s) or ARMB to manage, lease, market or sell such property or Assets.

X. REVISIONS

This document is to be reviewed no less than annually and revised as appropriate.

XI. FARMLAND SEPARATE ACCOUNT INVESTMENT MANAGERS

The following investment managers will acquire institutional-grade farmland properties on a discretionary basis for the Alaska Retirement Management Board:

UBS Farmland Investors LLC
James B. McCandless
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Hartford, CT 06103-3604
Telephone: 860-616-9200
Fax: 860-616-9204
E-mail: james.mccandless@ubs.com
Web site: www.ubs.com

Attachment 1

FARMLAND INVESTMENT POLICIES, PROCEDURES AND GUIDELINES - Delegation of Responsibilities "Attachment 1"					
	Frequency	**Separate Account Investment Managers**	**Consultant**	**Staff**	**Board**
Farmland Investment Policies Procedures and Guidelines Review and Revise	Annually			P, R	A
Separate Account Investment Manager Selection Request for Proposals (RFP)	Periodically		P, G, R	P, G, R	A
Farmland Investment Plan	Annually			P, R	A
Separate Account Business Plan and Strategic/Tactical Plan	Annually	P, R		A	
Quarterly Performance	Quarterly		P		
Portfolio/Property Diversification Compliance	Quarterly	P		M	
Geographic Concentration Limit	Quarterly	P		M	
A = Approve R = Recommend G = Grade M = Monitor P = Prepare					

Timberland

ARMB Investment Guidelines

Section 1. Investment Objective

To develop a diversified portfolio of Timberland Investments with a focus on total return which will seek to produce a net-of-fee total return between public equities and fixed income over rolling six-year periods. Portfolio risk shall reflect, in each ARMB Timberland Advisor's (as defined in Section 2 below) judgment, the lowest expected risk profile required to achieve the return objectives. Each ARMB Timberland Advisor will place an emphasis on the preservation of capital and diversify the Timberland Investments to minimize risk. To the extent return objectives can be met, current income shall be given preference over appreciation.

Section 2. ARMB Timberland Advisor Selection

ARMB will select qualified investment managers who have the discretion to invest in Timberland ("ARMB Timberland Advisors). In order for entities to be considered, the entity must demonstrate that it is able to add value through its Timberland knowledge, experience and strategy; evaluate the risks of each Timberland Investment which is contemplated; and, comply with these ARMB Timberland Investment Guidelines (the "ARMB Investment Guidelines").

Each ARMB Timberland Advisor will provide services according to an agreed upon investment management agreement (contract) and the ARMB Investment Guidelines. ARMB will endeavor to allocate specific funds to each ARMB Timberland Advisor on a separate account basis (each a "Separate Account"). ARMB Timberland Advisors will invest funds on a discretionary basis in Timberland Investment opportunities to the extent of its specific allocation and Separate Account.

Compensation for investment management services will be done on a fee basis that is competitive. The preferred method of calculating ARMB Timberland Advisor fees will be based upon a formula, which considers 1) the cost basis of assets under management and 2) market value of the assets under management.

Section 3. Allocation

ARMB's allocation to Timberland Investments shall be determined by the Board of Trustees and reviewed annually.

Reinvestment of allocation by the investment manager shall require approval by the Chief Investment Officer (CIO). The CIO has discretion in determining the reinvestment amount to authorize. Amounts may reflect the original allocation or may recognize some portion of any realized gains or losses.

CIO Discretionary Investment Authority – The CIO shall have the following discretionary investment authority:

a) To increase or decrease existing separate account allocations and investments in open-end funds;

b) To commit to new investment funds up to $100 million for each fund; and,

c) To engage consultants and take other action as may be necessary to ensure sufficient due diligence is performed on all investments under consideration.

The CIO shall exercise this discretion within Board approved asset allocations, investment plans, and guidelines as they may apply.

The CIO will provide prior notification to the Chair of ARMB before committing to any investments under this authority. All discretionary CIO investment actions shall be reported to the Board.

Section 4. Advisor Performance Benchmark

NCREIF Timberland Index

Section 5. Investment Constraints

(a) Each property underlying a Timberland Investment will be commercial timberland in accordance with the standards and customs of the region in which the property is located. Although commercial attributes vary significantly across regions and among forest types, generally, properties will be characterized by adequate timber stocking, sufficient productivity, established timber markets, and ready access.

(b) Location: Timberland Investments will be located inside the United States of America.

(c) Diversification and Concentration: Each ARMB Timberland Advisor will undertake to ensure that the Timberland Investments under its control are adequately diversified. While each ARMB Timberland Advisor will seek to invest across the primary timberland regions of the United States as defined by the National Council of Real Estate Investment Fiduciaries (NCREIF) Timberland Index, geographic diversification will ultimately depend on the availability of attractive investment opportunities, as well as potential diversification by species, age classes of trees and suitability for a variety of end products.

(d) Leverage: The total amount of leverage placed on the aggregate Separate Accounts allocated to all ARMB Timberland Advisors for investment will not exceed ten percent (10%) of the total market value of all such Timberland Investments at the time such leverage is incurred. The purchase or refinance of Timberland Investments with debt and borrowing against Timberland Investments shall be permitted only with the prior consent of ARMB's Chief Investment Officer. The Advisor will not cause the Account to incur indebtedness without ARMB's prior consent.

(e) Allocation: Each ARMB Timberland Advisor may exceed its Separate Account Allocation by up to 5% for the purposes of capital expenditures on existing assets and/or the completion of an acquisition.

(f) Non-Routine Activity: Each ARMB Timberland Advisor will seek the prior approval of ARMB's Chief Investment Officer before entering into any arrangements which provide ancillary income activity from the Timberland which are not routinely associated with Timberland Investments. Examples include mining, wind farms, and utility infrastructure.

Section 6. ARMB Timberland Advisor Annual Portfolio Review

Annually, each ARMB Timberland Advisor will submit an annual portfolio review to ARMB staff ("Staff") which shall include an annual business plan addressing each Timberland Investment in the portfolio in its Separate Account and an annual portfolio level strategic plan. The objective of this effort is to facilitate Staff's monitoring of the Timberland Investments to ensure existing investments and future strategy are consistent with ARMB's objectives and to recognize any program changes, which may require ARMB approval, to facilitate the efficient operation of the investment program. Each ARMB Timberland Advisor will collaborate with Staff to identify the specific content of the business plan and strategic plan for the Timberland Investments in its Separate Account, but should consider the following:

Annual business plans will focus on past performance and future performance expectations for existing assets in the portfolio. Information should include performance analysis, hold/sell analysis, and investment budgets including explanations for future capital budget items.

Annual portfolio level strategic plans will focus on overall portfolio and market performance, portfolio diversification, market conditions, and strategy for acquisitions and disposition for the upcoming year. The strategic plan should also include any recommendations to improve the ARMB Investment Guidelines and/or ARMB's Timberland investment strategy.

Section 7. Ownership Structure

Timberland Investments will be owned in a structure designed to limit ARMB's liability to the amount of its capital commitment to such Timberland Investment and, where feasible, to recognize and preserve tax-exempt status.

Section 8. Reporting System

Staff will develop and implement a comprehensive and responsive reporting and monitoring system for all Timberland Investments and each ARMB Timberland Advisor. In order to facilitate active portfolio management, Staff will develop a reporting and monitoring system which will endeavor to identify under-performing investments, control portfolio diversification deficiencies and manage inherent conflicts of interest. A cash-based internal rate of return (IRR) will be used when evaluating the long-term performance of a Timberland Investment. Time-weighted returns will be used to measure comparative performance.

Section 9. Lines of Responsibility

The Timberland investment program will be implemented and monitored through the coordinated efforts of the ARMB, Staff, and the ARMB Timberland Advisors. A description of the program participants and their general responsibilities are as follows:

ARMB – The statutorily created board which is the fiduciary for the retirement trust funds, comprised of trustees appointed by the Governor to represent the beneficiaries' interest. ARMB hires qualified ARMB Timberland Advisors and consultants; approves the ARMB Investment Guidelines and revisions to them; and approves the Annual Investment Plan prepared by Staff.

Staff - Investment professionals on staff at the Department of Revenue assigned to ARMB Timberland Investments, who will assist in the Timberland investment program's design, policy implementation, and administration. Staff coordinates program and guidelines compliance among all participants and communicates the investment policies, objectives, and performance criteria to the ARMB Timberland Advisors; monitors diversification compliance on a quarterly basis; and coordinates the receipt and distribution of capital. Staff will review and approve each ARMB Timberland Advisor's annual business plan, including revisions to the investment budgets in accordance with Section 13 hereof, and annual portfolio level strategic plan. Staff will recommend, to ARMB, revisions to the Timberland Investment Guidelines as may be necessary from time to time.

Annually, Staff will prepare an Annual Investment Plan after reviewing the annual business and annual portfolio level strategic plan prepared by the ARMB Timberland Advisors. This document will recommend, as appropriate, revisions to the overall Timberland Investment strategy, revisions to the Timberland Investment Guidelines, and make recommendations for additional allocations to the ARMB Timberland Advisors as may be desirable.

ARMB Timberland Advisors – Qualified entities selected by ARMB that provide institutional Timberland investment management services to ARMB. ARMB Timberland Advisors will invest and manage the Timberland Investment portfolios in accordance with their contracts.

Section 10. Property Management

The selection of on-site property management will generally be left to the discretion of the applicable ARMB Timberland Advisor. It is expected the ARMB Timberland Advisor will retain the highly qualified, market rate property management service either through a third party fee manager or the ARMB Timberland Advisor's affiliated property management division. This business relationship will be periodically reviewed by Staff and ARMB.

Section 11. Insurance Coverage

Each ARMB Timberland Advisor shall obtain insurance coverage with respect to the Timberland and the Timberland Investments in such amounts and against such risks as, in such ARMB Timberland Advisor's professional judgment, are in accordance with sound institutional practices applicable to Timberland Investments.

Section 12. Environmental Evaluations

As part of the pre-acquisition analysis for all prospective new Timberland Investments, each ARMB Timberland Advisor shall conduct a Phase 1 Environmental Site Assessment to identify the presence or likely presence of hazardous substances or petroleum products under conditions that indicate an imminent, existing or past release, or a material threat of a release into structures, or into the ground, groundwater or surface water.

Section 13. Delegation of Authority

ARMB shall delegate authority to Staff to approve the following:

- Annual business plans and annual portfolio strategic plans prepared by the ARMB Timberland Advisors;
- Revised investment budgets and variances in approved annual business plans for unanticipated activity; and
- Line item variances in approved capital expenditure budgets in amounts up to $500,000 with a cumulative fiscal year maximum of $3,000,000 per Advisor.

Section 14. Confidentiality

Pursuant to 15 AAC 112.770, ARMB shall withhold from other persons all information furnished to it by ARMB Timberland Advisor(s) or consultant(s) which is reasonably designated by ARMB Timberland Advisor(s) or consultant(s) as being confidential or proprietary, within the meaning of Alaska Statutes regarding rights to public information, except to the extent that the information is needed by ARMB in order to adequately report on the status and performance of the portfolio, or to comply with a court subpoena or with an official criminal investigation.

Those portions of reports provided pursuant to the Agreement with ARMB Timberland Advisor(s) shall be considered confidential pursuant to 15 AAC 112.770 to the extent that information is reasonably designated by ARMB Timberland Advisor(s) as being confidential or proprietary, or to the extent the disclosure of which would unfairly prejudice the ability of ARMB Timberland Advisor(s) or ARMB to manage, lease, market or sell such property or Assets.

Section 15. Unrelated Business Income Tax

Each ARMB Timberland Advisor will manage its respective Separate Account with a view toward minimizing the recognition of unrelated business taxable income ("UBTI") to the extent consistent with the Investment Objective set forth in Section 1 above. Each ARMB Timberland Advisor will consult with ARMB prior to entering into any transaction that could reasonably be expected to result in the recognition of significant amounts of UBTI.

Section 16. Revisions

The ARMB Investment Guidelines are to be reviewed no less than annually and revised as appropriate.

Section 17. ARMB Timberland Advisors

The following entities have been selected and appointed as ARMB Timberland Advisors to acquire Timberland properties on a discretionary basis for the Alaska Retirement Management Board:

Timberland Investment Resources, LLC

115 Perimeter Center Place, Suite 940

Atlanta, GA 30346

Telephone: 404-848-2000

Fax: 404-848-2006

www.tirllc.com

Section 18. Definitions

(a) "Timber" means trees growing on Timberland, or trees which have been cut but not removed from Timberland.

(b) "Timberland" means real property which is to be planted with Timber or real property on which Timber is growing.

(c) "Timberland Investment" means, in general, all interests (including fee ownership, leasehold interests or management rights) in Timberland; timber deeds, timber cutting contracts and other rights, contracts or agreements relating to the ownership, cutting and/or use of Timber; options to acquire or sell Timber or Timberland or interests therein; mineral rights (including oil and gas rights), biomass or carbon credits attendant to the ownership of Timberland; and personal property, both tangible and intangible, directly associated or connected with the use of Timberland.

Infrastructure

ARMB Investment Guidelines

In addition to the Infrastructure Guidelines, public infrastructure investments shall comply with ARMB's Investment Guidelines for Domestic, International and Alternative Equities.

Section 1. Investment Objective

To develop a diversified portfolio of infrastructure investments with a focus on total return which will seek to produce a net-of-fee total return between public equities and fixed income over rolling six-year periods. Each ARMB infrastructure advisor will place an emphasis on the preservation of capital and diversify the infrastructure investments to minimize risk. To the extent return objectives can be met, current income shall be given preference over appreciation.

Section 2. ARMB Infrastructure Advisor Selection

ARMB will select qualified investment managers who have the discretion to invest in infrastructure. In order for entities to be considered, the entity must demonstrate that it is able to add value through its infrastructure knowledge, experience and strategy; evaluate the risks of each infrastructure investment which is contemplated; and comply with these ARMB Infrastructure Investment Guidelines.

ARMB will implement an investment process for infrastructure which will, over time, include a minimum of two private investment advisors who have been selected on a competitive basis. Each ARMB infrastructure investment advisor will provide services according to an agreed upon investment management agreement (contract) and the ARMB Investment Guidelines. ARMB will endeavor to allocate specific funds to each ARMB infrastructure investment advisor. ARMB infrastructure advisors will invest funds on a discretionary basis in infrastructure investment opportunities to the extent of its specific allocation.

Compensation for investment management services will be done on a fee basis that is competitive. The preferred method of calculating ARMB infrastructure investment advisor fees will be based upon a formula, which considers 1) the cost basis of assets under management and 2) market value of the assets under management.

Section 3. Allocation

ARMB's allocation to infrastructure investments shall be determined by the Board of Trustees and reviewed annually.

CIO Discretionary Investment Authority – The CIO shall have the following discretionary investment authority:

a) To increase or decrease existing separate account allocations and investments in open-end funds;

b) To commit to new investment funds up to $100 million for each fund; and,

c) To engage consultants and take other action as may be necessary to ensure sufficient due diligence is performed on all investments under consideration.

The CIO shall exercise this discretion within Board approved asset allocations, investment plans, and guidelines as they may apply.

The CIO will provide prior notification to the Chair of ARMB before committing to any investments under this authority. All discretionary CIO investment actions shall be reported to the Board.

Section 4. Performance Benchmark

The benchmark for the total infrastructure portfolio will be CPI + 4%. Investment managers for public stock portfolios will be allowed to use their preferred infrastructure benchmark. Private investment advisors will be evaluated based on the income and total return objectives of their strategies. The inflation index used to calculate the actual real rate of return is the CPI All Urban.

Section 5. Investment Constraints

(a) Private infrastructure investment strategies shall be constrained by the partnership agreements and other agreements establishing the contractual arrangement with ARMB's infrastructure investment advisors.

(b) Location: No more than 10% of ARMB's infrastructure investments shall be located in emerging markets.

(c) Strategy: No more than 20% of ARMB's infrastructure investments shall be focused on development of infrastructure assets.

(d) Diversification and Concentration: Each ARMB infrastructure advisor shall ensure that the infrastructure investments under its control are adequately diversified in the context of its investment strategy.

(e) Leverage: The total amount of leverage utilized by private infrastructure managers shall not exceed 75% of the value of the asset as measured at the time the leverage is placed on the asset. Public infrastructure investment managers shall not use leverage.

Section 6. Ownership Structure

Private infrastructure investments will be owned in a structure designed to limit ARMB's liability to the amount of its investment and, where feasible, to recognize and preserve tax-exempt status.

Section 7. Reporting System

Staff will develop and implement a comprehensive and responsive reporting and monitoring system for each ARMB infrastructure advisor.

Section 8. Lines of Responsibility

The infrastructure investment program will be implemented and monitored through the coordinated efforts of the ARMB, staff, and the ARMB infrastructure advisors. A description of the program participants and their general responsibilities are as follows:

ARMB – The statutorily created board which is the fiduciary for the retirement trust funds, comprised of trustees appointed by the Governor to represent the beneficiaries' interest. ARMB hires qualified infrastructure investment advisors and consultants, approves the ARMB Investment Guidelines and revisions to them, and approves the Annual Investment Plan prepared by staff.

Staff - Investment professionals on staff at the Department of Revenue assigned to ARMB infrastructure investments, which will assist in the program's design, policy implementation, and administration. Staff will recommend revisions to the Infrastructure Investment Guidelines as may be necessary from time to time to ARMB.

Annually, staff will prepare an Annual Investment Plan. This document will recommend, as appropriate, revisions to the overall infrastructure investment strategy, revisions to the Infrastructure Investment Guidelines, and make recommendations for additional allocations as may be desirable.

ARMB Infrastructure Advisors – Qualified entities selected by ARMB that provide institutional infrastructure investment management services to ARMB. ARMB Infrastructure Advisors will invest and manage the portfolios in accordance with their contracts.

Section 9. Confidentiality

Pursuant to 15 AAC 112.770, ARMB shall withhold from other persons all information furnished to it by ARMB Infrastructure Advisor(s) or consultant(s) which is reasonably designated by ARMB Infrastructure Advisor(s) or consultant(s) as being confidential or proprietary, within the meaning of Alaska Statutes regarding rights to public information, except to the extent that the information is needed by ARMB in order to adequately report on the status and performance of the portfolio, or to comply with a court subpoena or with an official criminal investigation.

Those portions of reports provided pursuant to the Agreement with ARMB Infrastructure Advisor(s) shall be considered confidential pursuant to 15 AAC 112.770 to the extent that information is reasonably designated by ARMB Infrastructure Advisor(s) as being confidential or proprietary, or to the extent the disclosure of which would unfairly prejudice the ability of ARMB Infrastructure Advisor(s) or ARMB to manage, lease, market or sell such property or assets.

Section 10. Revisions

The ARMB Investment Guidelines are to be reviewed no less than annually and revised as appropriate.

Section 11. ARMB Infrastructure Advisors

The following entities have been selected and appointed as ARMB Infrastructure Advisors to acquire infrastructure investments on a discretionary basis for the Alaska Retirement Management Board:

IFM Investors 114 West 47th Street New York, NY 10036 Phone: 212-784-2260 www.ifminvestors.com	
JPMorgan Asset Management 270 Park Avenue, 7th Floor, NY1-K141 New York, NY 10017 Phone: 212-648-2219 www.jpmorgan.com	

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Real Estate Investment Guidelines

Resolution 2022-12

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, the Board contracts an independent consultant to provide experience and expertise in asset allocation and other investment matters to come before the Board; and

WHEREAS, the Board has established an asset allocation for the funds that considers earnings and liabilities on a current as well as a future basis; and

WHEREAS, the Board has authorized investment in real estate assets for the Public Employees' Retirement System, Teachers' Retirement System, and Judicial Retirement System, including investments for those systems in the State of Alaska Retirement and Benefit Plans Trust; and

WHEREAS, the Board establishes and from time to time as necessary, modifies investment policies, procedures, and guidelines for real estate;

NOW THEREFORE, BE IT RESOLVED THAT THE ALASKA RETIREMENT MANAGEMENT BOARD adopts the revised Real Estate Investment Guidelines, attached hereto and made a part hereof. This resolution repeals and replaces Resolution 2020-15.

DATED at Anchorage, Alaska this _____ day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Farmland Investment Guidelines

Resolution 2022-13

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, the Board contracts an independent consultant to provide experience and expertise in asset allocation and other investment matters to come before the Board; and

WHEREAS, the Board has established an asset allocation for the funds that considers earnings and liabilities on a current as well as a future basis; and

WHEREAS, the Board has authorized investment in real estate assets for the Public Employees' Retirement System, Teachers' Retirement System, and Judicial Retirement System, including investments for those systems in the State of Alaska Retirement and Benefit Plans Trust; and

WHEREAS, the Board establishes and from time to time as necessary, modifies investment policies, procedures, and guidelines for real estate;

NOW THEREFORE, BE IT RESOLVED THAT THE ALASKA RETIREMENT MANAGEMENT BOARD adopts the revised Farmland Investment Guidelines, attached hereto and made a part hereof. This resolution repeals and replaces Resolution 2020-16.

DATED at Anchorage, Alaska this _____ day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Timberland Investment Guidelines

Resolution 2022-14

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, the Board contracts an independent consultant to provide experience and expertise in asset allocation and other investment matters to come before the Board; and

WHEREAS, the Board has established an asset allocation for the funds that considers earnings and liabilities on a current as well as a future basis; and

WHEREAS, the Board has authorized investment in timberland assets for the Public Employees' Retirement System, Teachers' Retirement System, and Judicial Retirement System, including investments for those systems in the State of Alaska Retirement and Benefit Plans Trust; and

WHEREAS, the Board establishes and from time to time as necessary, modifies investment policies, procedures and guidelines for timberland;

NOW THEREFORE BE IT RESOLVED THAT THE ALASKA RETIREMENT MANAGEMENT BOARD adopt the Timberland Investment Guidelines, attached hereto and made a part hereof.

This resolution repeals and replaces Resolution 2020-03.

DATED at Anchorage, Alaska this ___ day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Infrastructure Investment Guidelines

Resolution 2022-15

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

WHEREAS, under AS 37.10.210-220, the Board is to establish and determine the investment objectives and policy for each of the funds entrusted to it; and

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

WHEREAS, the Board contracts an independent consultant to provide experience and expertise in asset allocation and other investment matters to come before the Board; and

WHEREAS, the Board has established an asset allocation for the funds that considers earnings and liabilities on a current as well as a future basis; and

WHEREAS, the Board has authorized investment in real estate assets for the Public Employees' Retirement System, Teachers' Retirement System, and Judicial Retirement System, including investments for those systems in the State of Alaska Retirement and Benefit Plans Trust; and

WHEREAS, the Board establishes and from time to time as necessary, modifies investment policies, procedures, and guidelines for real estate;

NOW THEREFORE, BE IT RESOLVED THAT THE ALASKA RETIREMENT MANAGEMENT BOARD adopts the Infrastructure Investment Guidelines, attached hereto and made a part hereof.

This resolution repeals and replaces Resolution 2019-15.

DATED at Anchorage, Alaska this _____ day of September, 2022.

_____
Chair

ATTEST:

_____
Secretary

APPENDIX

State of Alaska Retirement Systems

Presentation to ARMB Actuarial Committee

FY24-FY39 State Contribution Projections

September 14, 2022

Projection Methodology and Scenarios

- Projections are based on the June 30, 2021 valuations
- Liabilities are projected two years to June 30, 2023 assuming no gains/losses (other than expected vs. actual pension benefits paid in FY22)
- Based on preliminary June 30, 2022 asset statements, **the FY22 market return was approximately -6%**
  - this resulted in FY22 market **losses** of $2.9B (PERS) and $1.4B (TRS)
  - the FY22 market losses partially offset the FY21 market gains of $3.8B (PERS) and $1.9B (TRS)
- State contribution projections for FY24-FY39 are shown under two scenarios:
  - **Scenario 1**: with *expected* FY22 asset return of 7.38%
  - **Scenario 2**: with *actual* FY22 asset return of -6%
  - for both scenarios:
    - ❑ asset returns for all years after FY22 are 7.38%
    - ❑ 100% of the healthcare Normal Cost is deposited to the healthcare trust in FY24 and beyond
    - ❑ the June 30, 2021 valuation reports contain additional projection assumptions

Projected Figures as of June 30, 2023

Pension

($millions)	6/30/21 Actual	6/30/23 with FY22 Expected Return	6/30/23 with FY22 Actual Return
PERS			
Actuarial Accrued Liability*	15,420	15,881	15,895
Actuarial Value of Assets (AVA)	10,467	11,950	11,234
Unfunded Actuarial Accrued Liability	4,953	3,931	4,661
Funded Ratio (based on AVA)	67.9%	75.2%	70.7%
TRS			
Actuarial Accrued Liability*	7,472	7,563	7,576
Actuarial Value of Assets (AVA)	5,910	6,564	6,164
Unfunded Actuarial Accrued Liability	1,562	999	1,413
Funded Ratio (based on AVA)	79.1%	86.8%	81.4%

*Difference in projected 6/30/23 liabilities is due to expected vs. actual pension benefits paid in FY22.
Amounts may not add due to rounding.

Projected Figures as of June 30, 2023

Healthcare

($millions)	6/30/21 Actual	6/30/23 with FY22 Expected Return	6/30/23 with FY22 Actual Return
PERS			
Actuarial Accrued Liability	6,856	7,153	7,153
Actuarial Value of Assets (AVA)	8,581	9,809	9,204
Unfunded Actuarial Accrued Liability	(1,725)	(2,656)	(2,050)
Funded Ratio (based on AVA)	125.2%	137.1%	128.7%
TRS			
Actuarial Accrued Liability	2,440	2,561	2,561
Actuarial Value of Assets (AVA)	3,268	3,775	3,547
Unfunded Actuarial Accrued Liability	(828)	(1,214)	(986)
Funded Ratio (based on AVA)	133.9%	147.4%	138.5%

Amounts may not add due to rounding.

Projected Figures as of June 30, 2023

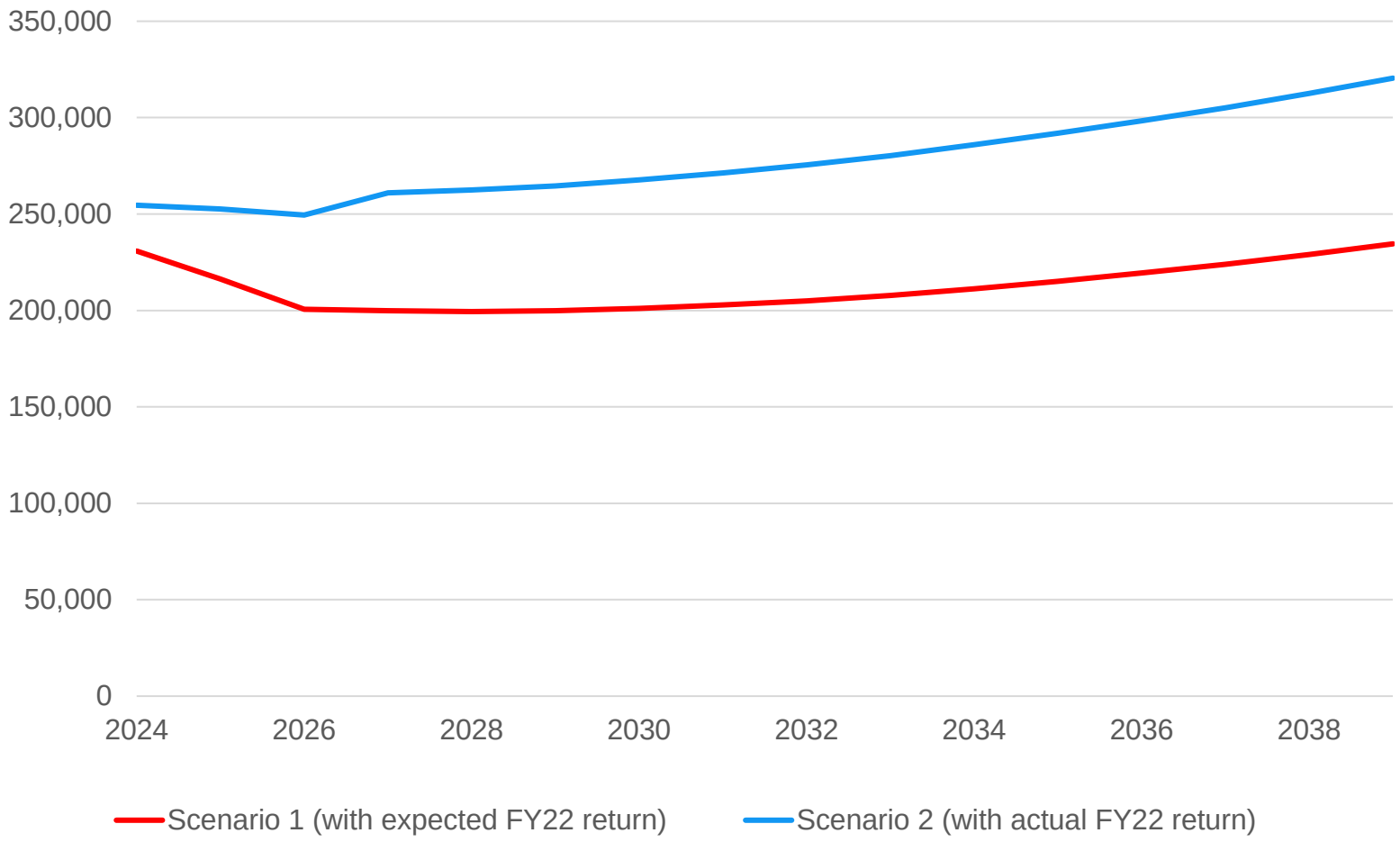
Total

($millions)	6/30/21 Actual	6/30/23 with FY22 Expected Return	6/30/23 with FY22 Actual Return
PERS			
Actuarial Accrued Liability*	22,276	23,034	23,048
Actuarial Value of Assets (AVA)	19,048	21,759	20,437
Unfunded Actuarial Accrued Liability	3,228	1,275	2,611
Funded Ratio (based on AVA)	85.5%	94.5%	88.7%
TRS			
Actuarial Accrued Liability*	9,911	10,124	10,137
Actuarial Value of Assets (AVA)	9,178	10,339	9,711
Unfunded Actuarial Accrued Liability	733	(215)	427
Funded Ratio (based on AVA)	92.6%	102.1%	95.8%

*Difference in projected 6/30/23 liabilities is due to expected vs. actual pension benefits paid in FY22.
Amounts may not add due to rounding.

State Contribution Projections – PERS

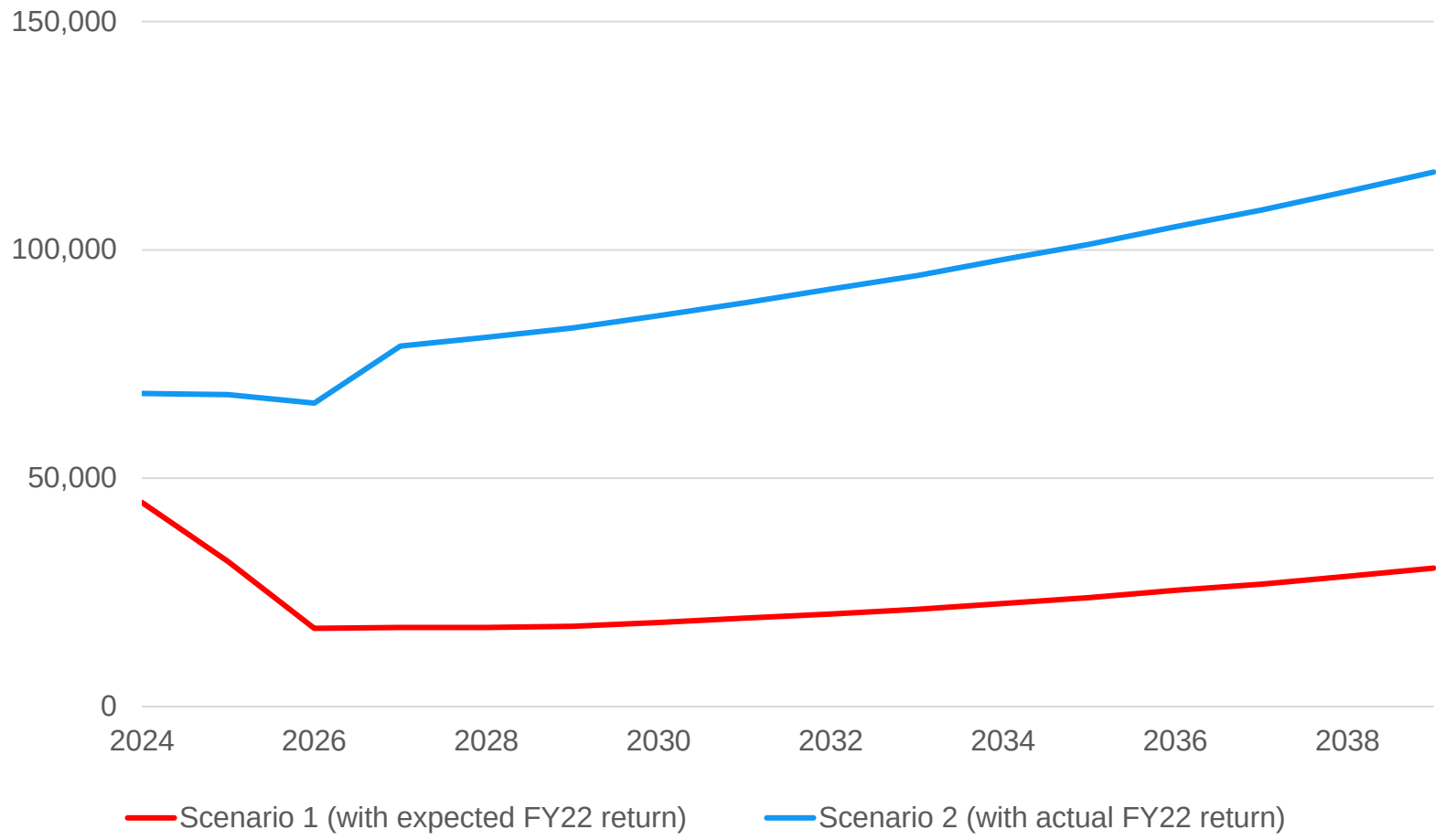
State-as-an-Employer Contributions – PERS
($000's)



Total projected contributions for FY24-FY39:

- Scenario 1: $3.4B
- Scenario 2: $4.5B
- Increase due to FY22 asset return: $1.1B

Additional State Contributions – PERS
($000's)



Total projected contributions for FY24-FY39:

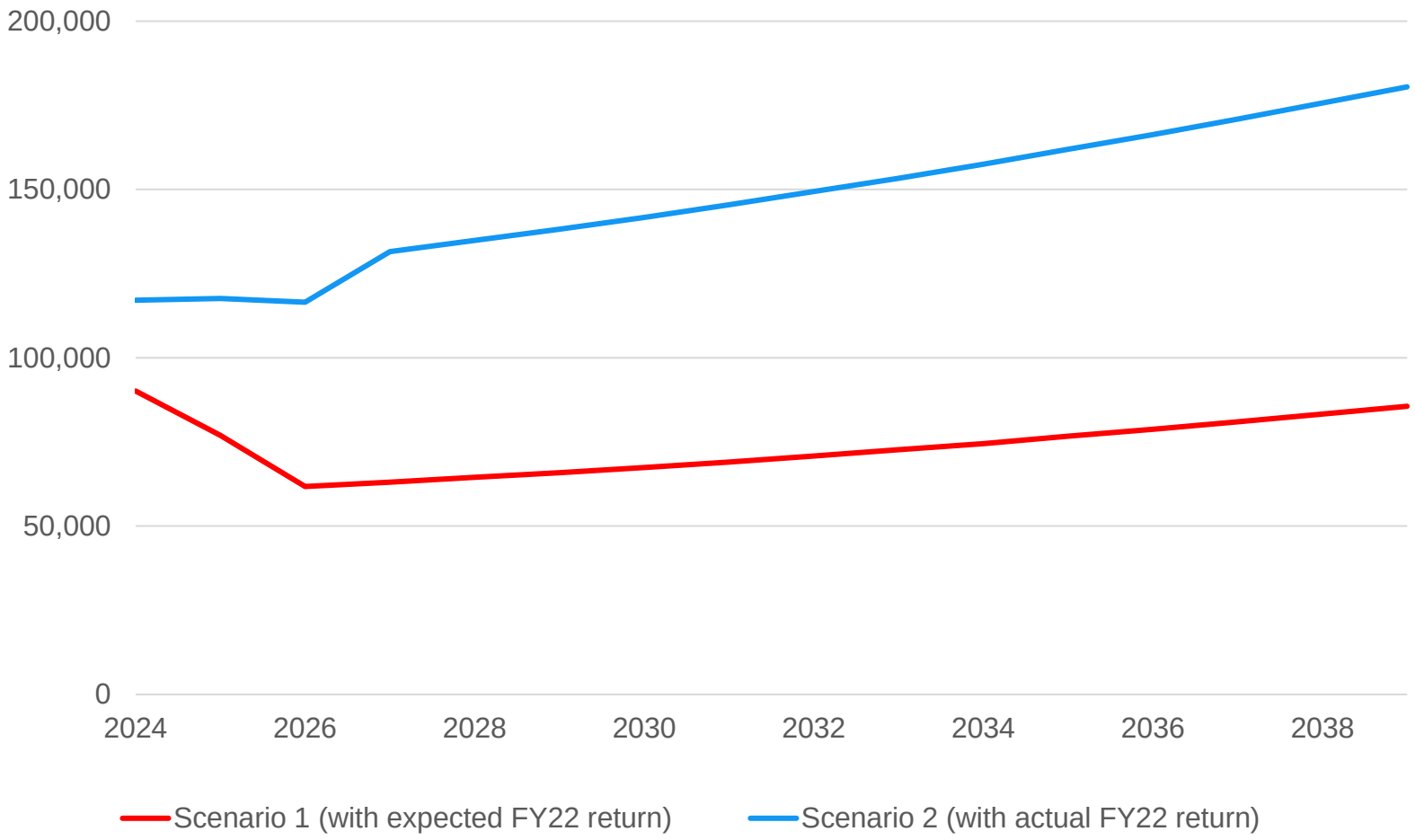
- Scenario 1: $0.4B
- Scenario 2: $1.4B
- Increase due to FY22 asset return : $1.0B

State Contribution Summary – PERS
($000's)

Fiscal Year	State-as-an-Employer Contributions: With Expected FY22 Asset Return (A)	State-as-an-Employer Contributions: With Actual FY22 Asset Return (B)	State-as-an-Employer Contributions: Increase/ (Decrease) (C)	Additional State Contributions: With Expected FY22 Asset Return (D)	Additional State Contributions: With Actual FY22 Asset Return (E)	Additional State Contributions: Increase/ (Decrease) (F)	Total State Contributions: With Expected FY22 Asset Return (G)	Total State Contributions: With Actual FY22 Asset Return (H)	Total State Contributions: Increase/ (Decrease) (I)
2024	230,844	254,511	23,667	44,673	68,540	23,867	275,517	323,051	47,534
2025	216,299	252,553	36,254	31,743	68,303	36,560	248,042	320,856	72,814
2026	200,553	249,454	48,901	17,103	66,416	49,313	217,656	315,870	98,214
2027	199,805	260,937	61,132	17,307	78,954	61,647	217,112	339,891	122,779
2028	199,443	262,451	63,008	17,294	80,834	63,540	216,737	343,285	126,548
2029	199,848	264,616	64,768	17,564	82,878	65,314	217,412	347,494	130,082
2030	201,056	267,681	66,625	18,384	85,571	67,187	219,440	353,252	133,812
2031	202,848	271,309	68,461	19,379	88,418	69,039	222,227	359,727	137,500
2032	204,935	275,466	70,531	20,283	91,409	71,126	225,218	366,875	141,657
2033	207,822	280,289	72,467	21,279	94,358	73,079	229,101	374,647	145,546
2034	211,269	285,901	74,632	22,607	97,869	75,262	233,876	383,770	149,894
2035	215,146	291,891	76,745	23,847	101,239	77,392	238,993	393,130	154,137
2036	219,465	298,407	78,942	25,439	105,047	79,608	244,904	403,454	158,550
2037	223,888	305,095	81,207	26,787	108,679	81,892	250,675	413,774	163,099
2038	228,950	312,516	83,566	28,508	112,778	84,270	257,458	425,294	167,836
2039	234,494	320,502	86,008	30,300	117,034	86,734	264,794	437,536	172,742
Total	3,396,665	4,453,579	1,056,914	382,497	1,448,327	1,065,830	3,779,162	5,901,906	2,122,744

State Contribution Projections – TRS

Additional State Contributions – TRS
($000's)



Total projected contributions for FY24-FY39:

- Scenario 1: $1.2B
- Scenario 2: $2.4B
- Increase due to FY22 asset return: $1.2B

Additional State Contribution Summary – TRS
($000's)

Fiscal Year	Additional State Contributions		
	With Expected FY22 Asset Return	With Actual FY22 Asset Return	Increase/ (Decrease)
	(A)	(B)	(C)
2024	90,155	117,132	26,977
2025	76,956	117,629	40,673
2026	61,747	116,555	54,808
2027	63,023	131,574	68,551
2028	64,481	134,890	70,409
2029	65,898	138,223	72,325
2030	67,425	141,716	74,291
2031	69,065	145,457	76,392
2032	70,825	149,377	78,552
2033	72,724	153,333	80,609
2034	74,532	157,474	82,942
2035	76,706	161,915	85,209
2036	78,797	166,287	87,490
2037	80,991	170,876	89,885
2038	83,281	175,664	92,383
2039	85,638	180,491	94,853
Total	1,182,244	2,358,593	1,176,349

Actuarial Certification

Actuarial Certification

The purpose of this presentation is to illustrate for the ARMB Actuarial Committee the impact of FY22 asset returns on the projected PERS/TRS State contributions for FY24-FY39. The projections are based on the data, assumptions, methods and plan provisions described in the June 30, 2021 actuarial valuation reports. Preliminary June 30, 2022 asset statements were reflected in Scenario 2.

Please see the June 30, 2021 actuarial valuation reports for a detailed description of (i) Buck's projection models which are the same ones used for this presentation (ASOP 56), and (ii) risk factors related to future funding of the plans (ASOP 51).

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law.

The results were prepared under the direction of David Kershner and Steve Oates, both of whom meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. These results have been prepared in accordance with all applicable Actuarial Standards of Practice.

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

Stephen Oates
ASA, EA, MAAA, FCA
Principal, Health

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Scenario 1: **100%** of healthcare Normal Cost is deposited to healthcare trust
Scenario 2: **0%** of healthcare Normal Cost is deposited to healthcare trust
Scenario 3: **50%** of healthcare Normal Cost is deposited to healthcare trust

FY24 State Contributions	Scenario 1	Scenario 2	Scenario 3
PERS			
- Additional State Contribution	68,540,000	37,942,000	53,241,000
- State-as-an-Employer Contribution	254,511,000	224,169,000	239,340,000
- Total	323,051,000	262,111,000	292,581,000
TRS			
- Additional State Contribution	117,132,000	98,766,000	107,987,000
PERS/TRS Total	440,183,000	360,877,000	400,568,000

Decrease vs Scenario 1	Scenario 2	Scenario 3
PERS		
- Additional State Contribution	(30,598,000)	(15,299,000)
- State-as-an-Employer Contribution	(30,342,000)	(15,171,000)
- Total	(60,940,000)	(30,470,000)
TRS		
- Additional State Contribution	(18,366,000)	(9,145,000)
PERS/TRS Total	(79,306,000)	(39,615,000)

For Scenarios 2 and 3, the portion of the healthcare Normal Cost not contributed to the healthcare trust was added to the pension Past Service Cost in order to keep the total employer contribution at 22% (PERS non-State employers) and 12.56% (TRS).

See letter dated September 1, 2022 for additional details.

($000's)

	6/30/21 actual	6/30/22 projected	6/30/22 projected	6/30/23 projected	6/30/23 projected
	(A)	(B)	(C)	(D)	(E)
FY22 market return:	n/a	7.38%	-6.00%	7.38%	-6.00%
FY23 market return:	n/a	n/a	n/a	7.38%	7.38%
PERS - pension					
- AAL	15,419,975	15,673,357	15,685,956	15,881,248	15,894,777
- AVA	10,466,709	11,252,171	10,964,486	11,950,139	11,233,552
- MVA	11,912,309	12,362,862	10,816,155	12,729,487	11,068,633
- AVA funded ratio	67.9%	71.8%	69.9%	75.2%	70.7%
- MVA funded ratio	77.3%	78.9%	69.0%	80.2%	69.6%
PERS - HC					
- AAL	6,856,170	7,012,762	7,012,762	7,153,239	7,153,239
- AVA	8,581,155	9,233,294	8,980,042	9,809,356	9,203,632
- MVA	9,784,141	10,153,231	8,869,151	10,452,448	9,073,603
- AVA funded ratio	125.2%	131.7%	128.1%	137.1%	128.7%
- MVA funded ratio	142.7%	144.8%	126.5%	146.1%	126.8%
PERS - Total					
- AAL	22,276,145	22,686,119	22,698,718	23,034,487	23,048,016
- AVA	19,047,864	20,485,465	19,944,528	21,759,495	20,437,184
- MVA	21,696,450	22,516,093	19,685,306	23,181,935	20,142,236
- AVA funded ratio	85.5%	90.3%	87.9%	94.5%	88.7%
- MVA funded ratio	97.4%	99.3%	86.7%	100.6%	87.4%

	6/30/21 actual	6/30/22 projected	6/30/22 projected	6/30/23 projected	6/30/23 projected
	(A)	(B)	(C)	(D)	(E)
FY22 market return:	n/a	7.38%	-6.00%	7.38%	-6.00%
FY23 market return:	n/a	n/a	n/a	7.38%	7.38%
TRS - pension					
- AAL	7,471,887	7,526,838	7,539,454	7,562,926	7,576,473
- AVA	5,910,369	6,259,981	6,100,245	6,563,686	6,163,945
- MVA	6,731,481	6,891,180	6,026,639	7,007,573	6,079,228
- AVA funded ratio	79.1%	83.2%	80.9%	86.8%	81.4%
- MVA funded ratio	90.1%	91.6%	79.9%	92.7%	80.2%
TRS - HC					
- AAL	2,439,603	2,502,055	2,502,055	2,561,015	2,561,015
- AVA	3,267,737	3,531,298	3,437,233	3,775,187	3,546,760
- MVA	3,723,031	3,879,776	3,392,198	4,018,771	3,495,210
- AVA funded ratio	133.9%	141.1%	137.4%	147.4%	138.5%
- MVA funded ratio	152.6%	155.1%	135.6%	156.9%	136.5%
TRS - Total					
- AAL	9,911,490	10,028,893	10,041,509	10,123,941	10,137,488
- AVA	9,178,106	9,791,279	9,537,478	10,338,873	9,710,705
- MVA	10,454,512	10,770,956	9,418,837	11,026,344	9,574,438
- AVA funded ratio	92.6%	97.6%	95.0%	102.1%	95.8%
- MVA funded ratio	105.5%	107.4%	93.8%	108.9%	94.4%

Projected figures are based on the June 30, 2021 valuations and preliminary June 30, 2022 asset statements. See the June 30, 2021 valuation reports for projection assumptions.

AAL = Actuarial Accrued Liability
AVA = Actuarial Value of Assets
MVA = Market Value of Assets

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	Historical Healthcare Funded Ratios			
	PERS based on AVA	PERS based on MVA	TRS based on AVA	TRS based on MVA
6/30/21	125.2%	142.7%	133.9%	152.6%
6/30/20	113.5%	111.0%	121.4%	118.6%
6/30/19	109.2%	108.6%	117.0%	116.3%
6/30/18	100.4%	99.4%	108.0%	106.9%
6/30/17	93.9%	91.2%	96.9%	94.2%
6/30/16	95.8%	87.0%	100.9%	91.8%
6/30/15	99.1%	95.2%	100.3%	96.7%
6/30/14	87.0%	87.0%	77.0%	77.0%
6/30/13	70.2%	72.4%	60.1%	62.2%
6/30/12	67.4%	65.8%	56.8%	55.4%
6/30/11	64.6%	65.5%	54.3%	54.9%
6/30/10	60.4%	53.9%	52.1%	46.0%
6/30/09	60.1%	50.1%	56.9%	47.5%
6/30/08	56.9%	56.3%	53.1%	52.5%
6/30/07	53.5%	59.1%	45.8%	50.6%
6/30/06	43.1%	44.7%	35.6%	37.0%

Note: Healthcare funded ratios are not available prior to 2006.

State of Alaska Retirement Systems

Presentation to ARMB Actuarial Committee

Development of FY24 Additional State Contribution - TRS

September 14, 2022

Background

Background

- AS 14.25.070(a): Each employer contributes 12.56% of total base salaries

- DB and DCR salaries are based on the 6/30/21 valuation data provided to us; future salaries are estimated based on the salary increase assumptions used in the 6/30/21 valuations

($000's)	FY22 Payroll	FY24 Projected Payroll
TRS DB	326,551	270,617
TRS DCR	423,783	491,467
TRS DB/DCR	750,334	762,084

Background (cont'd)

- The actuarial valuations produce the two components of the Actuarially Determined Contribution
  - Normal Cost (the cost of active members' benefit accruals in the upcoming year)
  - 25-year layered amortizations of the unfunded liability

- The amounts from the valuations are projected to FY24
  - DB – Step 1
  - DCR – Steps 2-4

- In Step 5, the FY24 projected amounts are converted to a % of FY24 <u>total</u> pay

- In Step 6, the FY24 contribution rates from Step 5 are combined to calculate the FY24 Additional State Contribution

Summary of Steps

Summary of Steps

- **Step 1*:** Calculate Projected FY24 DB Contribution Amounts (2-year roll-forward from 6/30/21)
- **Step 2*:** Calculate FY22 DCR Contribution Amounts as of 6/30/21
- **Step 3:** Convert DCR Contribution Amounts from Step 2 to a % of FY22 DCR Pay
- **Step 4:** Calculate Projected FY24 DCR Contribution Amounts
- **Step 5:** Convert FY24 Contribution Amounts from Steps 1 & 4 to a % of FY24 Total Pay
- **Step 6:** Calculate FY24 Additional State Contribution

* the outputs of the 6/30/21 actuarial valuations are used in Steps 1 and 2

Step 1

Calculate Projected FY24 DB Contribution Amounts

Step 1: Calculate Projected FY24 DB Contribution Amounts ($000's)

Projected FY24 Contribution Amount = Normal Cost + 25-Year Layered Amortizations (cannot be less than Normal Cost)

		Pension	Healthcare	Total
1)	Normal Cost - Total	39,024	18,394	57,418
2)	Less: Employee Contributions*	(23,396)	0	(23,396)
3)	Normal Cost - Employer	15,628	18,394	34,022
4)	25-year Layered Amortizations	125,253	(69,174)	125,253
5)	DB Contribution Amount [3 + 4, not less than 3]	140,881	18,394	159,275

* excludes indebtedness contributions

Step 2

Calculate FY22 DCR Contribution Amounts as of 6/30/21

Step 2: Calculate FY22 DCR Contribution Amounts as of 6/30/21 ($000's)

FY22 Contribution Amount = Normal Cost + 25-Year Layered Amortizations (cannot be less than Normal Cost)

	ODD	Healthcare	Total
1) Normal Cost	340	3,470	3,810
2) 25-year Layered Amortizations	(448)	(934)	(1,382)
3) DCR Contribution Amount [1 + 2, not less than 1]	340	3,470	3,810

Step 3

Convert DCR Contribution Amounts to a % of FY22 DCR Pay

Step 3: Convert DCR Contribution Amounts (Step 2) to a % of FY21 DCR Pay ($000's)

FY24 DCR Contribution Rate = Contribution Amount / FY22 DCR Pay

	ODD	Healthcare	Total
1) 6/30/21 DCR Contribution Amount (from Step 2)	340	3,470	3,810
2) FY22 DCR Pay (from Slide 3)	423,783	423,783	423,783
3) FY24 DCR Contribution Rate (% of DCR pay) [1 / 2]	0.08%	0.82%	0.90%

Step 4

Calculate Projected FY24 DCR Contribution Amounts

Step 4: Calculate Projected FY24 DCR Contribution Amounts ($000's)

FY24 Contribution Amount = FY24 Contribution Rate x FY24 DCR Pay

		ODD	Healthcare	DC Match*	HRA*	Total
1)	FY24 DCR Contribution Rate (from Step 3)	0.08%	0.82%	7.00%	3.00%	10.90%
2)	FY24 DCR Pay (from Slide 3)	491,467	491,467	491,467	491,467	491,467
3)	FY24 DCR Contribution Amount [1 x 2]	393	4,030	34,403	14,744	53,570

* fixed contribution rates

Step 5

Convert FY24 DB & DCR Contribution Amounts to a % of FY24 Total Pay

Step 5: Convert FY24 DB & DCR Contribution Amounts (Steps 1 & 4) to a % of FY24 Total Pay ($000's)

FY24 Contribution Rate = FY24 Contribution Amount x FY24 Total Pay

	DB			DCR
	Pension	Healthcare	Total	
1) FY24 Contribution Amount (from Steps 1 & 4)	140,881	18,394	159,275	53,570
2) FY24 Total Pay (from Slide 3)	762,084	762,084	762,084	762,084
3) FY24 Contribution Rate (% of total pay) [1 / 2]	18.49%	2.41%	20.90%	7.03%

Step 6

Calculate FY24 Additional State Contribution

Step 6: Calculate FY24 Additional State Contribution ($000's)

		Total
1)	FY24 DB Contribution Rate (from Step 5)	20.90%
2)	FY24 DCR Contribution Rate (from Step 5)	7.03%
3)	FY24 DB/DCR Contribution Rate [1 + 2]	27.93%
4)	Statutory Employer Contribution Rate	12.56%
5)	FY24 Additional State Contribution Rate [3 – 4]	15.37%
6)	FY24 Total Pay (from Slide 3)	762,084
7)	FY24 Additional State Contribution [5 x 6]	**117,132**

Actuarial Certification

Actuarial Certification

The purpose of this presentation is to illustrate for the ARMB Actuarial Committee the steps involved in the calculation of the FY24 Additional State Contribution for TRS. All calculations are based on the data, assumptions, methods and plan provisions described in the June 30, 2021 actuarial valuation reports, as well as preliminary June 30, 2022 asset statements.

Please see the June 30, 2021 actuarial valuation reports for a detailed description of (i) Buck's projection models which are the same ones used for this presentation (ASOP 56), and (ii) risk factors related to future funding of the plan (ASOP 51).

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law.

The results were prepared under the direction of David Kershner and Steve Oates, both of whom meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. These results have been prepared in accordance with all applicable Actuarial Standards of Practice.

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

Stephen Oates
ASA, EA, MAAA, FCA
Principal, Health

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State of Alaska Retirement Systems

Presentation to ARMB Actuarial Committee

Development of FY24 Additional State Contribution - PERS

September 14, 2022

Background

Background

- AS 39.35.255(a): Each *non-State* employer contributes 22% of total base salaries
- AS 39.35.255(i): The *State-as-an-Employer* contributes the Actuarially Determined Contribution rates applied to total base salaries of its employees
- DB and DCR salaries are based on the 6/30/21 valuation data provided to us; future salaries are estimated based on the salary increase assumptions used in the 6/30/21 valuations

	State-as-an-Employer*		Non-State Employers	
($000's)	FY22 Payroll	FY24 Projected Payroll	FY22 Payroll	FY24 Projected Payroll
PERS DB	427,517	354,314	431,124	357,303
PERS DCR				
- P/F	110,023	n/a	110,951	n/a
- Others	660,784	n/a	666,358	n/a
- Total	770,807	859,376	777,309	866,626
PERS DB/DCR	1,198,324	1,213,690	1,208,433	1,223,929

* payroll of State's employees assumed to be 49.79% of total PERS payroll based on 6/30/21 valuation data

Background (cont'd)

- The actuarial valuations produce the two components of the Actuarially Determined Contribution
  - Normal Cost (the cost of active members' benefit accruals in the upcoming year)
  - 25-year layered amortizations of the unfunded liability

- The amounts from the valuations are projected to FY24
  - DB – Step 1
  - DCR – Steps 2-4

- In Step 5, the FY24 projected amounts are converted to a % of FY24 <u>total</u> pay

- In Step 6, the FY24 contribution rates from Step 5 are combined to calculate the FY24 Additional State Contribution

Summary of Steps

Summary of Steps

- **Step 1*:** Calculate Projected FY24 DB Contribution Amounts (2-year roll-forward from 6/30/21)
- **Step 2*:** Calculate FY22 DCR Contribution Amounts as of 6/30/21
- **Step 3:** Convert DCR Contribution Amounts from Step 2 to a % of FY22 DCR Pay
- **Step 4:** Calculate Projected FY24 DCR Contribution Amounts
- **Step 5:** Convert FY24 Contribution Amounts from Steps 1 & 4 to a % of FY24 Total Pay
- **Step 6:** Calculate FY24 Additional State Contribution

* the outputs of the 6/30/21 actuarial valuations are used in Steps 1 and 2

Step 1

Calculate Projected FY24 DB Contribution Amounts

Step 1: Calculate Projected FY24 DB Contribution Amounts ($000's)

Projected FY24 Contribution Amount = Normal Cost + 25-Year Layered Amortizations (cannot be less than Normal Cost)

		Pension	Healthcare	Total
1)	Normal Cost - Total	101,319	60,964	162,283
2)	Less: Employee Contributions*	(49,240)	0	(49,240)
3)	Normal Cost - Employer	52,079	60,964	113,043
4)	25-year Layered Amortizations	398,168	(142,049)	398,168
5)	DB Contribution Amount [3 + 4, not less than 3]	450,247	60,964	511,211

* excludes indebtedness contributions

Step 2

Calculate FY22 DCR Contribution Amounts as of 6/30/21

Step 2: Calculate FY22 DCR Contribution Amounts as of 6/30/21 ($000's)

FY22 Contribution Amount = Normal Cost + 25-Year Layered Amortizations (cannot be less than Normal Cost)

		P/F		Others		
		ODD	Healthcare	ODD	Healthcare	Total
1)	Normal Cost	1,508	1,873	3,964	13,738	21,083
2)	25-year Layered Amortizations	(522)	(47)	(2,515)	(323)	(3,407)
3)	DCR Contribution Amount [1 + 2, not less than 1]	1,508	1,873	3,964	13,738	21,083

Step 3

Convert DCR Contribution Amounts to % of FY22 DCR Pay

Step 3: Convert DCR Contribution Amounts (Step 2) to % of FY22 DCR Pay ($000's)

FY24 DCR Contribution Rate = Contribution Amount / FY22 DCR Pay

		P/F		Others		Total	
		ODD	Healthcare	ODD	Healthcare	ODD	Healthcare
1)	6/30/21 DCR Contribution Amount (from Step 2)	1,508	1,873	3,964	13,738	5,472	15,611
2)	FY22 DCR Pay (from Slide 3)	220,974	220,974	1,327,142	1,327,142	1,548,116	1,548,116
3)	FY24 DCR Contribution Rate (% of DCR pay) [1 / 2]	0.68%	0.85%	0.30%	1.03%	0.35%	1.01%

Step 4

Calculate Projected FY24 DCR Contribution Amounts

Step 4: Calculate Projected FY24 DCR Contribution Amounts ($000's)

FY24 Contribution Amount = FY24 Contribution Rate x FY24 DCR Pay

		ODD	Healthcare	DC Match*	HRA*	Total
1)	FY24 DCR Contribution Rate (from Step 3)	0.35%	1.01%	5.00%	3.00%	9.36%
2)	FY24 DCR Pay (from Slide 3)	1,726,002	1,726,002	1,726,002	1,726,002	1,726,002
3)	FY24 DCR Contribution Amount [1 x 2]	6,041	17,433	86,300	51,780	161,554

* fixed contribution rates

Step 5

Convert FY24 DB & DCR Contribution Amounts to a % of FY24 Total Pay

Step 5: Convert FY24 DB & DCR Contribution Amounts (Steps 1 & 4) to a % of FY24 Total Pay ($000's)

FY24 Contribution Rate = FY24 Contribution Amount x FY24 Total Pay

	DB			DCR
	Pension	Healthcare	Total	
1) FY24 Contribution Amount (from Steps 1 & 4)	450,247	60,964	511,211	161,554
2) FY24 Total Pay (from Slide 3)	2,437,619	2,437,619	2,437,619	2,437,619
3) FY24 Contribution Rate (% of total pay) [1 / 2]	18.47%	2.50%	20.97%	6.63%

Step 6

Calculate FY24 Additional State Contribution

Step 6: Calculate FY24 Additional State Contribution ($000's)

		State-as-an-Employer	Non-State Employers	Total
1)	FY24 DB Contribution Rate (from Step 5)	20.97%	20.97%	20.97%
2)	FY24 DCR Contribution Rate (from Step 5)	6.63%	6.63%	6.63%
3)	FY24 DB/DCR Contribution Rate [1 + 2]	27.60%	27.60%	27.60%
4)	Statutory Employer Contribution Rate	27.60%	22.00%	n/a
5)	FY24 Additional State Contribution Rate [3 – 4]	0.00%	5.60%	n/a
6)	FY24 Total Pay (from Slide 3)	1,213,690	1,223,929	2,437,619
7)	FY24 Additional State Contribution [5 x 6]	**0**	**68,540**	**68,540**

Actuarial Certification

Actuarial Certification

The purpose of this presentation is to illustrate for the ARMB Actuarial Committee the steps involved in the calculation of the FY24 Additional State Contribution for PERS. All calculations are based on the data, assumptions, methods and plan provisions described in the June 30, 2021 actuarial valuation reports, as well as preliminary June 30, 2022 asset statements.

Please see the June 30, 2021 actuarial valuation reports for a detailed description of (i) Buck's projection models which are the same ones used for this presentation (ASOP 56), and (ii) risk factors related to future funding of the plan (ASOP 51).

Future actuarial measurements may differ significantly from current measurements due to plan experience differing from that anticipated by the economic and demographic assumptions, increases or decreases expected as part of the natural operation of the methodology used for these measurements, and changes in plan provisions or applicable law.

The results were prepared under the direction of David Kershner and Steve Oates, both of whom meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. These results have been prepared in accordance with all applicable Actuarial Standards of Practice.

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

Stephen Oates
ASA, EA, MAAA, FCA
Principal, Health

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PUBLIC COMMENT

Thursday, September 15, 2022

1. Doug Woodby, 350Juneau (oral)
2. Randall Burns, Retired Public Employees of Alaska (oral)

Friday, September 16, 2022

No requests for comment.