
ALASKA RETIREMENT MANAGEMENT BOARD

BOARD OF TRUSTEES MEETING

September 29-30, 2016

Dena'Ina Convention Center
K'enakatnu Room
600 W. 7th Avenue
Anchorage, AK
907 263-2850

Teleconference 1 800 315-6338 Code 12762#

Thursday, September 29, 2016

- I. 9:00 am Call to Order
- II. Roll Call
- III. Public Meeting Notice
- IV. Approval of Agenda
- V. Public/Member Participation, Communications, and Appearances
(Three Minute Limit)

- VI. Approval of Minutes - June 24, 2016

- VII. 9:05 Reports
 - 1. Chair Report, *Gail Schubert*
 - 2. Committee Reports
 - A. Actuarial Committee, *Kris Erchinger, Chair*
 - B. Audit Committee, *Rob Johnson, Chair*
 - C. Budget Committee, *Gail Schubert, Chair*
 - D. Defined Contribution Committee, _____, *Chair*
 - 3. Retirement & Benefits Division Report
 - A. Membership Statistics (informational)
 - B. Buck Consulting Invoices (informational)
John Boucher, Deputy Commissioner, DOA
 - 4. Treasury Division Report
 - A. Pension Obligations Bond Update
Jerry Burnett, Deputy Commissioner
 - B. FY 18 Budget - Action
Pam Leary, Director, Treasury Division
 - 5. CIO Report, *Gary Bader*
 - 6. Fund Financial Report with Cash Flow Update
Scott Jones, Comptroller, Department of Revenue
Kevin Worley, CFO, Division of Retirement & Benefits

9:45-10:15 7. Frontier Capital Management
T.J. Duncan

10:20-10:50 8. Lord Abbett LLC
Nick Johnston

*10:50 - Break
10 Minutes*

11:00-11:45 8. BMO - Small Cap
David Corris, Tom Lettenberger and Kamila Kowalke

11:45-12:00 9. Actuarial Resolutions -- FY18 Contribution Rate Setting
Kris Erchinger, Chair, Actuarial Committee

Action: Relating to FY18 PERS Contribution Rate
Resolution 2016-11

Action: Relating to FY18 PERS RMMI Contribution Rate
Resolution 2016-12

Action: Relating to FY18 PERS ODD Contribution Rate
Resolution 2016-13

Action: Relating to FY18 TRS Contribution Rate
Resolution 2016-14

Action: Relating to FY18 TRS RMMI Contribution Rate
Resolution 2016-15

Action: Relating to FY18 TRS ODD Contribution Rate
Resolution 2016-16

Action: Relating to FY18 NGNMRS Contribution Amount
Resolution 2016-17

Information: JRS Contribution

Lunch - 12:00 - 1:15 pm

Thursday Afternoon

- 1:15-2:00 10. A. Real Assets FY17 Annual Plan
Real Estate Guidelines Policies and Procedures
Steve Sikes, State Investment Officer
Nicholas Orr, State Investment Officer
- 2:05-2:50 B. Consultant Evaluation of Real Estate Plan:
Diversification, Compliance, & Performance
Measurement
Chris Cunningham and Jack Koch, Townsend Group
- 2:50 C. Adoption: Real Assets FY 17 Plan & Policies
Board Discussion
Action: Real Assets FY17 Annual Plan
Res. 2016-18
Action: Revised Investment Guidelines
Res 2016-19 - Real Estate
Res 2016-20 - Farmland
Res 2016-21 - Timber
Res 2016-22 - Infrastructure

*3:00 - Break
15 Minutes*

- 3:15-4:15 11. Performance Measurement - 2nd Quarter
Paul Erlendson and Steve Center, Callan Associates, Inc.
- 4:20-4:50 12. Investment Actions
A. BMO Small Cap Manager
Gary Bader, Chief Investment Officer
Bob Mitchell, Deputy Chief Investment Officer

End of Meeting Day

Friday, September 30, 2016

9:00 Call to Order

9:00-10:30 13. Defined Contribution Plan Review
*Lori Lucas, James Veneruso, and Jamie McAllister
Callan Associates Inc.*

*10:30 - Break
10 Minutes*

10:40-12:00 *Continue:* Defined Contribution Plan Review

Action: Direction to Staff

Lunch - 12:00 - 1:15 pm

1:15-2:15 14. Executive Session

- VIII. Unfinished Business
1. Disclosure Report, *Judy Hall, Liaison Officer*
 2. Calendar, *Judy Hall, Liaison Officer*
 3. Legal Report, *Stuart Goering, DOL*
- IX. New Business
- X. Other Matters to Properly Come Before the Board
- XI. Public/Member Comments
- XII. Investment Advisory Council Comments
- XIII. Trustee Comments
- XIV. Future Agenda Items
- XV. Adjournment

(Times are approximate. Every attempt will be made to stay on schedule; however, adjustments may be made.)

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

Location:
Dena'ina Convention Center
600 West Seventh Avenue
Anchorage, Alaska

**MINUTES OF
June 24, 2016**

Friday, June 24, 2016

CALL TO ORDER

CHAIR GAIL SCHUBERT called the meeting of the Alaska Retirement Management Board (ARMB) to order at 9:02 a.m.

ROLL CALL

Six ARMB trustees were present at roll call to form a quorum. Commissioner Sheldon Fisher arrived late.

Board Members Present

Gail Schubert, *Chair*
Robert Johnson, *Vice Chair*
Gayle Harbo, *Secretary*
Kristin Erchinger
Commissioner Sheldon Fisher
Tom Brice
Bob Williams

Investment Advisory Council Members Present

Dr. William Jennings

Department of Revenue Staff Present

Gary M. Bader, Chief Investment Officer
Bob Mitchell, Deputy Chief Investment Officer
Scott Jones, State Comptroller
Pamela Leary, Director, Treasury Division
Judy Hall, Board Liaison

Department of Administration Staff Present

Kevin Worley, Chief Financial Officer, Division of Retirement & Benefits (DRB)
John Boucher, Deputy Commissioner

Consultants, Invited Participants, and Others Present

Melissa Bissett, Buck Consultants
David Kershner, Buck Consultants
Larry Langer, Buck Consultants
Steven Center, Callan Associates, Inc.
Paul Erlendson, Callan Associates, Inc.
Stuart Goering, Department of Law, Assistant Attorney General
Leslie Thompson, Gabriel Roeder Smith
Katie AmRhein, Hancock Timber
Karen McQuiston, Jennison Associates
Sheetal Prasad, Jennison Associates
Peter Reinemann, Jennison Associates
Sarah Lukin, PT Capital
Hugh Short, PT Capital
Mead Treadwell, PT Capital
Brad Owens, Retired Public Employees of Alaska
Eric Shirbini, Scientific Beta North America
Marc Zieger, Scientific Beta North America

PUBLIC MEETING NOTICE

JUDY HALL, Board Liaison, confirmed public meeting notice requirements had been met.

APPROVAL OF AGENDA

MRS. HARBO moved to approve the agenda. MS. ERCHINGER seconded the motion.

GARY M. BADER, Chief Investment Officer, requested to move Item 15B. Investment Action S&P 600 to Item 7B., immediately following the presentation of Item 7A. S&P 600.

VICE-CHAIR ROBERT JOHNSON requested an addition to the agenda discussing the statement of legislative intent regarding transfer of management responsibilities and a possible draft resolution to be discussed under Item 4. Treasury Division Report.

The Maker of the Motion and the Second to the Motion agreed to the friendly amendments to the agenda.

The agenda was approved as amended.

PUBLIC/MEMBER PARTICIPATION, COMMUNICATIONS, AND APPEARANCES

BRAD OWENS, Vice-President of Retired Public Employees Association of Alaska (RPEA), stated House Bill (HB) 256 could impact pension funds and affect the role of the ARMB in managing assets. The bill requests a report be delivered by October 15th addressing whether the management responsibility of the pension funds' assets currently managed by the ARMB

should be transferred to the Alaska Permanent Fund Corporation (APFC). RPEA strenuously objects to any change from the current responsibility of the management of pension funds the Legislature specifically assigned the ARMB.

MR. OWENS stated the RPEA believes the APFC is not representative of the interests of the pension funds dedicated to state retirees. The distinct difference in perspective could result in a loss of primary focus on the needs and goals of the pension funds. Any effort to consolidate management could result in a blended approach with more attention provided to the APFC. RPEA believes any savings would likely come at the expense of the pension funds' management, rather than from the APFC. The proposed transfer of assets to a single entity ignores the principles of diversification and the long, excellent working relationship between the ARMB and staff would be negatively impacted or lost. RPEA urges the ARMB to oppose any transfer proposed under HB 256.

MR. OWENS noted RPEA publically states the use of any pension fund assets in preparing the report could constitute a clear misuse of funds and violate the State's fiduciary duties to protect and use the pension funds for the sole and primary benefit of retirees and beneficiaries.

HUGH SHORT, CEO of PT Capital, introduced team members SARAH LUKIN, Chief of Staff, and MEAD TREADWELL, President. PT Capital is the first Alaskan private equity firm and has raised \$300 million in their Arctic-focused fund. MR. SHORT expressed his goal to follow up with MR. BADER regarding PT Capital as an emerging manager based in Alaska. He expressed his appreciation to the members and is pleased CHAIR SCHUBERT is presiding.

MR. BADER asked if PT Capital's objective is to make investments solely in Alaska. MR. SHORT explained the firm has the ability to deploy 60% or greater of the fund within Alaska, up to 25% within Canada, and up to 15% within Iceland and Greenland. MR. SHORT described a very cautious and patient approach to acquisitions within the Alaska market is held now because of the cyclical downturn and noted some buy opportunities and attractive valuations.

APPROVAL OF MINUTES: April 21-22, 2016

MRS. HARBO moved to approve the minutes of the April 21-22, 2016 meeting. MR. WILLIAMS seconded the motion.

The minutes were approved.

REPORTS

1. CHAIR REPORT

CHAIR SCHUBERT expressed her appreciation to the involved Trustees for their continued work on complex issues addressed by the Actuarial Committee.

2. COMMITTEE REPORTS

A. Audit Committee

VICE-CHAIR JOHNSON stated he was honored to be appointed Chair of the Audit Committee. The Committee met the day before the Board meeting. Robust discussions occurred with KPMG regarding GASB 68, materiality of matter, patterns and practices from particular employers, medical cost savings, and the use of proxy statements. No actions were taken.

B. Actuarial Committee

MS. ERCHINGER reported the Actuarial Committee met the day before the Board meeting and covered three action items that will come before the Board today. The first was a recommendation to accept GRS' certification for FY15 PERS and TRS, DC, National Guard and Naval Militia, and JRS valuations. The second was a recommendation to accept Buck's FY15 valuation for those same plans. The third was a recommendation the Board accept the updated audit findings and the resolution of those findings to date.

MS. ERCHINGER stated the issue of persistent material health gains and the migration from proxy data to more actual data was discussed. The Department of Administration is considering the issuance of an RFP to improve the quality of available retiree data. There was discourse regarding the upcoming 2016 valuation and changes to the proxy data issue and the rehired retiree liability load assumption. Minor adjustments were made to the timeline to give the actuary and review actuary more time in between meetings.

3. RETIREMENT & BENEFITS DIVISION REPORT

A. Buck Consulting Invoices (Informational)

KEVIN WORLEY, Chief Financial Officer, DRB, provided the Buck Consulting quarterly report ended March 31, 2016.

B. Membership Statistics

MR. WORLEY provided the membership activity quarterly report ended March 31, 2016. He reviewed the expected decrease in both PERS and TRS DB and expected increase in both PERS and TRS DC. MR. WORLEY reported he received the GFOA Certificate of Achievement in Financial Reporting for PERS CAFR in the mail.

MS. ERCHINGER congratulated staff for receiving the award and expressed appreciation for their hard work.

C. DRB Update

JOHN BOUCHER, Deputy Commissioner, Department of Administration, provided the DRB update and noted there was essentially no legislation that affected the retirement system that passed. DEPUTY COMMISSIONER BOUCHER anticipates the reappearance in the next session of HB 4002, extending benefits to the deceased members of peace officers and fire fighters. The DRB is contemplating a reorganization to reinstate the director position which was removed two years ago. DEPUTY COMMISSIONER BOUCHER will report on the progress during the next several months.

CHAIR SCHUBERT expressed her support for HB 4002.

4. TREASURY DIVISION REPORT

Treasury Division Director PAMELA LEARY reported that the budget bill passed by the Legislature is the budget MS. LEARY reported on in April. It is with the Governor, awaiting his response. The budget bill supports the continued progress of staff in managing the ARMB assets and growing internal asset management. The budget bill also includes the intent language that directs the Department of Revenue, in consultation with the APFC, to evaluate whether management responsibility of State and ARMB assets should be transferred to APFC.

MS. LEARY provided a copy of the response letter from COMMISSIONER HOFFBECK to RPEA summarizing the Department will be cooperating with the language and working with APFC to see if potential synergies or savings exist between the Treasury and APFC in light of the current fiscal situation. APFC is engaging KPMG to issue a report of the data metrics, risks and opportunities of options, and potential costs and savings under three scenarios; 1) all assets of the ARBM moved to APFC, 2) a subset of Treasury assets, including ARMB assets, moved to APFC, and 3) all assets of the APFC moved to the Treasury.

STUART GOERING, Department of Law, Assistant Attorney General, stated the Department of Law agrees with the position the legislative intent is not a binding legal requirement upon anyone in the executive branch or elsewhere. The Governor is generally advised during the bill review that legislative intent is nonbinding. This bill review is confidential and is protected by attorney/client privilege and deliberative process privilege.

MR. GOERING stated the legislative intent was directed to the Department of Revenue. The Department of Law generally advises agencies that receive intent language to attempt to comply with the spirit of the intent language. MR. GOERING suggested it might be worthwhile for the ARMB to consider meaningful recommendations regarding possible future structural changes that would be valuable and in the best interest of the funds in the event the Legislature and/or Governor decide to pursue APFC management responsibility.

VICE-CHAIR JOHNSON asked if statements of legislative intent may be subject to line item veto. MR. GOERING does not know of any use of the line item veto for statements of legislative intent. The line item veto is typically limited to actual appropriation items.

MS. ERCHINGER requested clarification of the issue of the Board's fiduciary responsibility and trust funds, since the funds are held in trust by the State of Alaska, but do not belong to

the State of Alaska. MS. ERCHINGER asked if discussion has occurred regarding the relationship APFC has with the State of Alaska. MR. GOERING indicated he is unaware of the discussions because he has not participated in any discussions. MR. GOERING does not believe the intent language transfers fiduciary responsibility from the ARMB, but rather transfers the actual investment management functions from the Treasury. MR. GOERING explained APFC is an independent entity that has an existence separate from the State of Alaska, but is also an arm of the State with the authority to manage funds for State agencies. MR. GOERING commented it would not be appropriate for the fiduciary responsibilities of the ARMB to be transferred.

CHAIR SCHUBERT inquired as to the reason the bill only contemplated consultation with APFC and no consultation with the ARMB. MS. LEARY had no information. CHAIR SCHUBERT commented the Department of Revenue has developed an excellent investment staff that has provided real investment results. CHAIR SCHUBERT expressed hope this bill does not unsettle the investment staff. She noted the ARMB will be watching this bill closely and would not object to consultation as the bill moves forward.

VICE-CHAIR JOHNSON moved to adopt Resolution 2016-10 relating to legislative intent concerning the transfer of Board management responsibilities. MRS. HARBO seconded the motion.

VICE-CHAIR JOHNSON commented the lack of clarity of the statement of legislative intent regarding the transfer of management responsibilities is a fundamental problem that invades specifically the fiduciary space the ARMB currently has under law. The intentions to save funds during troubled times in the state is appreciated and an analysis on various savings should be conducted. VICE-CHAIR JOHNSON agreed the close working relationship with staff and the ARMB built over years is excellent. He believes the statement of intent would potentially handoff significant investment functions to APFC, separate from the State of Alaska, and this could give rise to problems from Washington, D.C. and elsewhere.

VICE-CHAIR JOHNSON submits the statement of intent is simply not a good idea and has a tendency to mix and match apples and oranges in the fashion of affiliating key elements of what the ARMB does with other agencies. VICE-CHAIR JOHNSON expressed his concern as an Alaskan citizen with the possibility of APFC changing the focus from its mission and utilizing assets for critical state investment responsibilities. VICE-CHAIR JOHNSON believes it is important to keep a robust investment operation within the Department of Revenue.

VICE-CHAIR JOHNSON requested the Board adopt the resolution which opposes the statement of intent, asks the Governor to use his line item veto power, if it exists, provides that the Legislature seek interview of Board of Trustees' input, and recommends a copy of the resolution be provided to the Governor, the Legislature, and APFC.

MRS. HARBO moved for unanimous consent.

DEPUTY COMMISSIONER BOUCHER requested a roll call vote be taken since neither Commissioner was present.

Motion for unanimous consent failed.

CHAIR SCHUBERT asked if the word legislature should be legislative statement on page two, item three. VICE-CHAIR JOHNSON agreed. The error was corrected with no objection.

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

5. CIO REPORT

MR. BADER reviewed the CIO Report provided to the Board. He reported the pension funds and health trust funds had been rebalanced several times since the last meeting and the dates were listed in the report. MR. BADER provided a review of each of the 21 transaction items provided in the CIO Report.

MR. BADER asked for a motion authorizing staff to request legal counsel draft a paper on whether or not it is permissible for the Board to create an emerging manager sleeve, and secondly, to ask Callan to provide a report to the Board on how frequently emerging managers are used by other large pension funds.

MRS. HARBO moved to authorize staff request legal counsel to draft a paper on whether or not it is permissible for the Board to create an emerging manager sleeve, and secondly, to ask Callan to provide a report to the Board on how frequently emerging managers are used by other large pension funds. MR. BRICE seconded the motion.

MR. BRICE requested the due diligence process include other opportunities the MMP sleeve may present.

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

6. FUND FINANCIAL REPORT

State Comptroller SCOTT JONES and Chief Financial Officer of the Division of Retirement and Benefits KEVIN WORLEY presented the Fund Financial Report. MR. JONES reviewed the financial statements for the fiscal year-to-date through April 30th, 2016. The approximate numbers are: the PERS system ended with \$16 billion, the TRS system with \$7.9 billion, the JRS with \$170.3 million, the National Guard and Naval Militia (NGNMRS) with \$36 million, SBS with \$3.4 billion, and Deferred Comp with \$805.4 million, for a total of \$28.2 billion, of which \$23.1 billion is non-participant directed assets and \$5.1 billion is participant-directed assets. This is a year-to-date decrease in assets of 2.79%, mostly due to cash flows and approximately .69% was related to investment income. All of the funds are near their bands and within the set asset allocation.

MR. JONES reviewed the updated financial statements as of the end of May. The non-participant directed assets were approximately \$23.1 billion and participant-directed assets were approximately \$5.1 billion, for a total of \$28.2 billion.

MR. WORLEY reviewed the one payment for health reimbursement received in April. Payroll reports are consistently being received from employers. The general inflows and outflows are consistent with what has been received during the fiscal year. MR. WORLEY discussed the disbursement report, highlighting the separation from service and retirement line at 90%. Over the last few months, there has been an uptick in folks leaving service and taking their funds out of the plan. Many of these withdrawals have met the IRS hardship definition, including losing their home or medical treatments, to receive funds without waiting the 60-day required timeframe.

MR. BRICE stated the Defined Contribution Committee worked with the Department surveying people who are separating to get a better understanding of the reasons for cashing out accounts. MR. BRICE asked for an update on that process. MR. WORLEY noted part of the issue found was members did not understand the fee structure. Another issue found that members erroneously thought they had to transfer their funds when they left State employment. Empower/Great-West is working on an education program for members mainly via web, mailers, and email due to the cuts to the travel program.

DEPUTY COMMISSIONER BOUCHER noted the education efforts are a renewed area of emphasis within the last year for the agency to try to retain some of the funds and educate the members on the possibilities they have. DEPUTY COMMISSIONER BOUCHER stated he will cover educational topics and other concerns at the Defined Contribution meeting in September.

MR. WILLIAMS suggested creating an educational campaign to inform participants of their choices and consequences of their choices.

Discussion continued regarding education to participants and MR. WORLEY reiterated Chief Pension Officer LEA and her staff have made education a high priority. The members who are cashing out their accounts have to talk to counselors regarding consequences. There are also counseling sessions regarding tax consequences and hardship cash-outs.

7. S&P 600

A. Presentation

MR. BADER informed this presentation is a request for the Board's approval for Department of Revenue internal staff to implement a small cap investment strategy benchmarked to the S&P 600 Index. Currently staff internally manages about \$1.6 billion in assets in addition to the \$1.1 billion of internally managed fixed income assets. MR. BADER described the breakdown of these investments.

MR. BADER noted the three goals of internally managing money are; 1) to lower the aggregate investment management fees, 2) for staff to become increasingly proficient, and 3) to manage assets in Alaska for Alaskans, which helps the economic health of Alaska. These goals can be realized if an internally managed portfolio can earn more on a risk-adjusted basis after fees than if the funds were placed with an external investment manager.

MR. BADER continued his detailed presentation explaining the S&P 600 Index is designed to track companies that meet specific inclusion criteria to ensure they are liquid and financially viable. He gave specific examples of each. MR. BADER believes the S&P 600 Index mandate will be a strong contributor to the portable alpha strategy approved by the Board at the February meeting.

B. Action: S&P 600

VICE-CHAIR JOHNSON moved to authorize staff to make an initial investment of \$75 million to an internally-managed, domestic, small cap portfolio benchmarked against the S&P 600 Index. MRS. HARBO seconded the motion.

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

CHAIR SCHUBERT recessed the meeting from 10:34 a.m. to 10:45 a.m.

8. ADOPT ASSET ALLOCATION

Resolution 2016-08:

DB PERS/TRS/JRS

PERS/TRS/JRS Retiree Health Trusts

Retiree Major Medical HRAP/ODD

MR. BADER noted there were concerns expressed by Board members at the last meeting regarding the new recommendation of a global asset allocation, as opposed to maintaining a domestic sleeve and an international sleeve. MR. BADER informed the Board that staff, Callan, and the IAC all were equally comfortable with keeping the status quo, in terms of asset buckets for the asset allocation recommended to the Board. The substance of the asset allocation will have the same effect as what was previously recommended.

MR. BADER presented, in the interest of time, a new resolution containing the same asset classes as currently held, instead of a global asset allocation. The full presentation given by MR. ERLENDSON at the previous meeting remains the same with the one change from global asset allocation to the current domestic and international allocations. MR. BADER outlined the differences between the current asset allocation and the recommendation today. The expected return for PERS and TRS asset allocation remains at 7.1%. Public equity and the risk are slightly less in the current asset allocation. Cash is 2% less. Alternatives have increased. The military return and risk are the same as last year, with cash down from 3% to zero, and fixed income up 3%.

MR. WILLIAMS moved to adopt Resolution 2016-08. MS. ERCHINGER seconded the motion.

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

Resolution 2016-09: DB NGNMRS

MRS. HARBO moved to adopt Resolution 2016-09. MR. WILLIAMS seconded the motion.

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

9. ACTUARIAL REVIEW/ACCEPTANCE-CERTIFICATION OF FY15 VALUATIONS

A. Introduction

MS. ERCHINGER reported the Actuarial Committee met with Buck Consultants and Gabriel Roeder Smith (GRS) the previous day and will present unanimous recommended action items to the Board. The only change from what appears in the packet was a request to Buck and GRS to agree on specific changes in language in the valuation report with regard to the proxy data and the potential risks associated with the use of proxy data.

B. GRS Review Comments

National Guard Naval Militia Retirement System and Judicial Retirement System: FY15 Roll-Forward

CHAIR SCHUBERT introduced LESLIE THOMPSON of GRS, who presented the review comments of the NGNMRS and JRS. MS. THOMPSON reported the new timeline, providing additional time to perform the review, proved to be successful. The National Guard Naval Militia Retirement System (NGNMRS) and Judicial Retirement System (JRS) roll-forward valuation had no audit findings and GRS was able to replicate every number.

Update: DB and DCR Systems Previously Reviewed

MS. THOMPSON advised that Buck implemented the recommended changes given by GRS. Buck will identify those in their presentation. The issues remaining on the checklist for further review during the experience study include, people being rehired and the resulting upward pressure on contribution rates. MS. THOMPSON expressed appreciation to Buck for their explanation of the large retiree medical gains outlined in their modeling. Buck addressed the GRS concerns regarding pension data being used to value retiree medical data by diligently creating disclosure statements to coincide with the actuarial standard of practice.

VICE-CHAIR JOHNSON advised six of the Board members were at the recent Actuarial Committee meeting where hours of discussion occurred regarding the issues reviewed by MS. THOMPSON. He expressed his appreciation to MS. THOMPSON for her work and suggested the minutes of the Actuarial Committee be reviewed for additional information.

C. Summary Presentation:
NGNMRS and JRS Roll Forward
Update: DB and DCR Systems Previously Reviewed

CHAIR SCHUBERT introduced LARRY LANGER, DAVID KERSHNER and MELISSA BISSETT of Buck Consultants, who presented the roll-forward valuations for NGNMRS and JRS and provided an update on DB and DCR systems. MR. LANGER expressed appreciation for the efforts of DRB, Actuarial Committee, and GRS in assisting with the valuation results.

MR. KERSHNER reviewed the details of the preliminary numbers reported in April compared to the final numbers reflecting the recommended changes from GRS for the PERS and TRS DB plans and the PERS and TRS DCR plans.

MS. ERCHINGER believes it is critical to mention the funding ratios were down in the 60% range before the Legislature appropriated the \$3 billion into the retirement systems. The funding ratios are now 78% for PERS and 83% for TRS. The Legislature also extended the amortization period by an additional nine years, which decreased the State assistance contribution rate. MS. ERCHINGER noted the Actuarial Committee will have future conversations regarding meaningful ways to keep the funding ratio high.

DEPUTY COMMISSIONER BOUCHER expressed congratulations to the Board members for addressing the funding problem and believes this official release of numbers is a milestone for this plan and a major success for Board and staff.

MR. KERSHNER reviewed the roll-forward valuation results for NGNMRS and JRS. He explained the liabilities are rolled forward and the actual assets are used to determine the funded ratios and contribution rates. The JRS funded ratio increased from 71.9% to 75.6%, and the employer contribution as a percentage of payroll changed from 76.49% for FY17 to 74.21% for FY18. The NGNMRS funded ratio stayed the same at 98.8%. The employer contribution is expressed as a dollar amount and changed from \$867,000 to \$907,000, primarily due to the difference in the expense load.

MS. ERCHINGER recognized the trend of reducing employer contribution rates. She believes the Alaska retirement plan will compare favorably to other states' retirement plans.

D. Board Discussion/Questions
Action: Board Acceptance of GRS Certification for
FY15 PERS/TRS, DC Plan Valuations
NGNMRS and JRS Roll-Forward Reports

MS. ERCHINGER, as Actuarial Committee Chair, moved to accept the review and certification of actuarial reports by GRS. No second needed.

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

***Action: Board Acceptance of FY15 Buck Valuations for
PERS/TRS, DC Plan Valuations
NGNMRS and JRS Roll-Forward Reports***

MS. ERCHINGER, as Actuarial Committee Chair, moved to accept the actuarial valuation reports prepared by Buck Consultants for the PERS, TRS, PERS DC for Occupational Death and Disability and Retiree Medical Benefits, TRS DC for Occupational Death and Disability and Retiree Medical Benefits, and the roll-forward valuation reports for JRS and NGNMRS as of June 30, 2015, as amended by mutual agreement of Buck Consultants and GRS, subject to such cover letter as the ARMB may deem appropriate. No second needed.

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

***Action: Board Acceptance of Audit Findings Report and
Proposed Resolution of Findings***

MS. ERCHINGER, as Actuarial Committee Chair, moved to accept the resolutions and findings as indicated on the audit findings lists dated June 23, 2016. No second needed.

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

10. PERFORMANCE MEASUREMENT - 1ST QUARTER

MR. ERLENDSON reported the performance of the funds in general has been meeting objectives. He believes the Brexit decision does not fundamentally change the risk exposure that is appropriate for the portfolio. MR. ERLENDSON commented the ARMB policy is sound, prudent and long-term in nature. The portfolio's investment managers are qualified, informed and prudent. He stated the monitoring of the Brexit situation will continue and Board and staff will remain informed.

VICE-CHAIR JOHNSON inquired if there were any specific issues regarding Baillie Gifford. MR. ERLENDSON expressed no immediate concern and noted the bulk of those working at Baillie Gifford are UK citizens.

MR. ERLENDSON continued with an economic overview through the end of March. The real GDP growth has been below average at around 2%. The developed markets are expected to have struggles trying to reach the long-term historical average growth rates. Inflation continues to be very moderate, even with the slight uptick in oil prices. The employment participation rate is the lowest it has been since the 1970s at 62.2%. This is due to reasons such as early retirement, becoming disabled, or participation in college. Bond yields around the world remain low, with some countries' yields below zero.

MR. ERLENDSON reviewed the volatile first quarter in the equity markets. Expectations are the market volatility will continue to increase in the short-term. It is vitally important to rebalance and keep asset allocation targets in place during the volatile times. Emerging markets was the strongest performing asset class for the quarter and expected growth rates are

twice that of the developed world. The currency exposure was a significant detractor last year because of the strong dollar, costing investors about 5% after conversion. The dollar started to weaken in the first quarter. Real estate has been one of the best performing asset classes over the last five years providing strong double-digit returns. REITs have remained strong over this time period as well.

MR. CENTER discussed the PERS plan as an illustrated example of all the retirement plans. The asset allocation remains very close to the target allocation. As compared to its public fund peers, the plan's allocation is underweight fixed income and overweight global non-U.S. equities. Over three years, the plans are exceeding the benchmark and are above the median versus peers. Most of the drivers of performance have come from the active managers within the plan, some positive performance from private equity and a little drag on the real assets side. The actuarial return target has been difficult to keep up with since the 2008 financial crisis. The total fund performance has exceeded the target benchmark for many periods, which is closing the gap with the actuarial return target.

MR. CENTER reported on the total domestic equity exposure within the plan over the last quarter, which trailed both the S&P 500 and the Russell 3000 benchmarks. Most of the underperformance was driven by active managers because of the high level of volatility during the first quarter. The alternative equity portfolio had a very strong quarter dampening the overall portfolio volatility during this period of distress. Utilities were the strongest performing sector within the U.S. equity space.

MR. CENTER described the emerging market trend on the international portfolio that drove performance during the first quarter. The long-term international portfolio performance compares quite strong versus benchmarks. MR. CENTER informed the fixed income portfolio strategy is unique with exposure to very high quality bonds, non-U.S. bonds, and high yield bonds. Overall, the bond portfolio returned 3.8% for the quarter. The absolute return portfolio did well versus the benchmark. There are no concerns at this time with the constituents within the absolute return portfolio.

MR. CENTER reviewed the spotlight page representing the Balanced and Target Date Fund options within the Defined Contribution plan and stated there were no areas of concern. The social responsible equity space has been very difficult for managers to add value over time. There are not many strategies that have performed well versus a non-socially responsible benchmark. MR. CENTER stated there are no concerns with the passive strategies held in the plans.

UNFINISHED BUSINESS

1. Calendar

Action: Adopt Proposed 2017 Calendar

MS. HALL noted the calendar updates. The September meeting location has been changed from Fairbanks to Anchorage. The Audit Committee will have the annual teleconference meeting for financial statements on November 3rd, 2016.

MS. HALL stated the proposed 2017 calendar was included in the Board's packet and requested approval.

MRS. HARBO moved to accept the proposed 2017 calendar. MS. ERCHINGER seconded the motion.

VICE-CHAIR JOHNSON expressed disappointment with the absence of an education conference in October. He understands travel is restricted during these fiscally restrained times, but is concerned about fulfilling the statutory mandate for the Board's education. MR. BADER stated staff is working on addressing the statutory mandated education requirement while adhering to the limitations of travel placed by the Administration and will have more information at the September meeting. Options may include dedicating one day of the September meeting to education only, carving out a portion of every Board meeting solely for education, sending Board members to a conference covering a broad range of topics, or calling in specialists to supplement education.

The motion passed unanimously.

2. Disclosure Report

MS. HALL indicated the Disclosure Report was included in the Board's packet. There was nothing unusual to report.

3. Legal Report

MR. GOERING had nothing new to report.

CHAIR SCHUBERT recessed the meeting from 11:57 a.m. to 1:17 p.m.

11. GLOBAL VS REGIONAL PORTFOLIOS

CHAIR SCHUBERT welcomed KAREN MCQUISTON of Prudential, the parent company of Jennison Associates. MS. MCQUISTON informed the advisory work she will present was completed before she transitioned to the investment management business of Prudential. Jennison manages both global and regional world equity portfolios and researched the dynamics from an institutional perspective of the active management investments in global and regional portfolios. The global portfolios are benchmarked to the MSCI ACWI or the MSCI World Index. The regional portfolios are standard long-only mutual funds benchmarked to the MSCI ACWI and consist equally of U.S. large cap, EAFE, and emerging market funds.

MS. MCQUISTON stated research shows individual security performance was more linked to industry and sector rather than country. She discussed the three sections of research; 1) global investments compared to regional investments, 2) the role of active management, and 3) the role of combining global and regional approaches. MS. MCQUISTON explained graphics

illustrating the risk/return charts over multiple five-year periods for global and regional funds. She reported on the reduced risk findings when managers were randomly combined in groups of five, 10, and 20 managers. The combination of global funds produced a median excess return distribution of around 200 basis points. The combination of regional funds produced a median excess return distribution of approximately 160 to 170 basis points.

MS. MCQUISTON discussed information ratio, which is excess return over tracking error, and noted the tracking error is decreased when global managers are combined, and decreased more when regional managers are combined. The global approach tended to have a slightly lower overall relative volatility than the regional approach. The regional approach was closer to the index volatility.

MS. MCQUISTON stated the three ways the study measured actively managed funds were; 1) the level of concentration, 2) the level of active share, and 3) tracking error relative to the index. Both the excess return and information ratio increase with the combination of active funds, and the tracking error for both global and regional approaches increases with active funds. Global funds have reduced relative volatility with actively managed funds. The study showed actively managed funds are not necessarily riskier than the index. The study showed global managers and more active managers tended to present greater excess returns and the regional approach and less active managers tended to keep a tighter tracking error. The study showed the combination of global and regional approaches reduced both tracking error and overall volatility.

DR. JENNINGS highlighted the practice of generating excess return by rebalancing the global equities portfolio. He cautioned more concentrated managers take on more risk and the managers shown in the study are a subset that have survived for five years or more.

MR. WILLIAMS asked if the study was able to sort for quality of managers. MS. MCQUISTON advised this study utilized random managers and did not address past performance.

12. SCIENTIFIC BETA NORTH AMERICA

CHAIR SCHUBERT introduced MARK ZIEGER, Director, and ERIC SHIRBINI, PHD., Global Product Specialist, of Scientific Beta who presented the benefits of multi-smart factor investing. MR. ZIEGER explained Scientific Beta is part of the French EDHEC-Risk Institute business school and has been in the market since 2012. Scientific Beta does not manage money. The company is an index provider, giving the tools for portfolio management to invest assets according to a 100% transparent rules-based approach. The indices focus on smart beta, which is the systematic harvesting of factor risk premium to achieve a smooth out-performance of the benchmarks at a cost effective price. The company has attracted approximately \$10 billion mainly from pension plans and sovereign wealth funds.

MR. SHIRBINI continued the presentation explaining smart beta wraps the well-known, well-understood risk factors into an index strategy, which is rules-driven and very cost effective. The beta element in smart beta refers to the risk factors. The smart element in smart beta

refers to the way access to the risk factors is provided. Scientific Beta uses empirical evidence from years of studies to determine their main risk factors and include the equity market itself, value factor, momentum factor, low-risk factor, and size factor. Each of these factors contains an economic rationale to explain its relevancy. MR. SHIRBINI continued a detailed explanation of the risk factors utilized in smart beta.

MR. SHIRBINI noted smart beta is providing the performance of active managers in a very cost effective way and active managers have pushed back claiming a crowding effect will decrease returns as flows into successful smart beta strategies increase. MR. SHIRBINI explained markets do not respond to the crowding effect as suggested by active managers. The markets do not have a correction because everyone is invested in them. Markets have a correction because of some economic fundamental happening in the market at a particular point in time. The same is true for risk factors and has nothing to do with crowding.

MR. SHIRBINI reviewed the index construction strategy utilized to provide exposure to the risk factors. The first stage is to choose 250 stocks out of the S&P 500 with the highest risk exposure and the second stage is to apply a cap-weighted factor to give a well-diversified portfolio. MR. SHIRBINI continued the presentation describing the technical process of the index selection.

COMMISSIONER FISHER requested further explanation as to why only four risk factors are used rather than the known broader range of factors. MR. SHIRBINI replied the value and size factor were first documented in academic studies in 1990. The momentum factor was added in 1997. The low volatility factor was added in 2006. Academics have come up with two new factors within the last two years; quality and high profitability/low investment. The newest two can be included, if requested. MR. SHIRBINI explained there are hundreds of factors and Scientific Beta uses the four risk factors that are well-established, have empirical data, and have delivered performance.

COMMISSIONER FISHER asked for additional information regarding the crowding effect. MR. SHIRBINI gave the example if everyone invested in the S&P 500 and at some point, the S&P 500 had a correction, the reason for the correction is not that there were too many investors. The correction occurred because something happened in the economy. The same is true for the other factors as well. The factors will experience a draw-down at some point and a reward at some point. There is no market timing. The intent is to hold onto the risk factors through the cycles.

MR. WILLIAMS asked if MR. SHIRBINI has any studies that show crowding is not occurring and has not been an issue. MR. SHIRBINI advised there are studies showing the risk factors are cyclical. He believe the best thing to do is let the cycles happen and get the additional 2.5% to 4% reward for holding through those cycles. MR. ZIEGER informed the individual factors happen at different times in the cycle and combining different factor portfolios may provide a smoothing effect as shown in the performance review.

DR. JENNINGS commented the four risk factors used by Scientific Beta are well-established, well-accepted and academically sound. He noted this presentation is similar to one presented

in New York suggesting a dedicated allocation for part of the long-term portfolio utilizing risk factor data.

MR. ERLENDSON requested additional information on the mechanics of managing the portfolio and examples of who has utilized this strategy. MR. SHIRBINI discussed some of the built-in rules for the portfolio. For all of the portfolio indices, turnover does not exceed 30% annually. The S&P 500 Index typically has a 4% turnover per year. The portfolio may not contain more than 10 times the weight of an individual security that exists in the index. MR. ZIEGER informed some of the public plans that utilize this strategy include State Board of Administration in Florida, Ohio State Teachers, Colorado Fire and Police, and City of Austin. He noted the index models are rules-based and completely transparent.

13. JENNISON ASSOCIATES

CHAIR SCHUBERT introduced PETER REINEMANN, Managing Director, and SHEETAL PRASAD, Portfolio Manager, from Jennison Associates. MR. REINEMANN informed Jennison has a full 11 years relationship with the ARM Board. MS. PRASAD has been with Jennison since 2007. MR. REINEMANN provided background information on Jennison, who manages approximately \$167 billion in total assets. Jennison's capacity-constrained strategies include small cap, SMid cap, and mid cap growth. MR. REINEMANN informed Jennison has been going through the iterative process of selecting a chief executive officer since January and expects the process to be complete by the end of the year. The previous CEO took a position with another investment manager. MR. REINEMANN stated the firm is operating quite successfully in this challenging period for active managers.

MS. PRASAD informed there has been no change in the exemplary investment team or the process since the last update before the Board. MR. BADER requested more information on the roles of listed executives JASON SWIATEK and JOHN MULLMAN. MS. PRASAD explained MR. MULLMAN is the head of the small and mid cap team. MR. SWIATEK is the lead of the small cap portfolio team.

MS. PRASAD reviewed the detailed quantitative process used to select the portfolio of stocks. It includes a collaborative effort between the analysts and the portfolio managers, who use the models, thesis statements, and quarterly write-ups to guide the investment process. The ARMB portfolio annualized return since its 2005 inception is 9.9% versus 7.7% for the Russell 2000. MS. PRASAD showed performance numbers for the portfolio in various different market environments.

MS. PRASAD explained the tough start to the beginning of this year relates to interest rates and is viewed as a short-term issue. The portfolio is currently overweight banks, which is a sector that has been challenged by the low interest rates. The portfolio is currently underweight utilities, which is a sector that has done very well since they are often a substitute for bonds.

MS. PRASAD reviewed a few of the specific portfolio stocks and their favorable characteristics. She reported the portfolio has a steady nature with a high earnings growth and

a low P/E multiple compared to the Russell 2000. The portfolio turnover remains consistent at 40% to 60% and the portfolio is built from the bottom up. No sector is more than 200 basis points overweight or underweight. MS. PRASAD shared the selection process for the companies. She noted the managers get to know the companies over time and are able to build larger positions as the companies execute.

MS. PRASAD discussed the current market environment and believes there are many cross-currents in the economy now, including the Brexit decision and other global issues in terms of infrastructure. The U.S. consumer seems relatively healthy. Housing and autos are strong for now. Oil remains low and manufacturing is in a recession. MS. PRASAD believes the low growth environment will remain for the medium term. There are still good industries and great businesses available. The mergers and acquisition activity has opportunity and the portfolio has had five acquisitions year-to-date.

CHAIR SCHUBERT recessed the meeting from 2:58 p.m. to 3:08 p.m.

14. HANCOCK TIMBER

MR. BADER introduced KATIE AMRHEIN, Senior Portfolio Manager, of Hancock Timber Resource Group, who provided a detailed presentation reviewing the timberland portfolio. The Hancock Timber Resource Group has roughly \$11.5 billion in assets under management that involve over six million acres in investments across the globe. Timberland provides diversification benefits, an inflation hedge, and has a low to negative correlation with major asset classes. The timberland portfolio focuses on total return, looking for both income and appreciation in investments.

MS. AMRHEIN explained the domestic portfolio is managed by the Hancock Forest Management affiliate. The management is in-house and aligned with investor objectives. The third-party certification for the Alaska portfolio is provided by SFI. The primary goal of the real assets portfolio is to generate attractive returns in assets which provide diversification and inflation hedging to the total portfolio. The strategy is a lower risk/lower return, conservative, low leverage approach with a focus on high quality assets with stable returns.

MS. AMRHEIN reviewed the portfolio was initiated in 2009 and the committed capital came in over a period of time totalling \$244 million. Contributions since inception total \$77 million and distributions totaled \$12 million. The current NAV is \$99 million. The three wholly owned investments are currently held in the U.S. and are Tallapoosa, a 20,000-acre property with a market value of \$41 million, Fishhawk, a 3,700-acre property with a market value of \$23 million, and Elk River, a 10,000-acre property with a market value of \$33.2 million.

MS. AMRHEIN continued the presentation comparing the rolling five-year average objective of 5% to the portfolio's five-year return of 7.3%. The NCREIF Timberland Index for the same period returned 6.6%. The portfolio has averaged a 2.1% cash yield over the previous five years. MS. AMRHEIN described the driver for portfolio performance in the near-term is the recovery in the demand for residential construction.

VICE-CHAIR JOHNSON asked if fire insurance is available for these properties. MS. AMRHEIN indicated there is no fire insurance, but the properties are actively maintained which minimizes the fire risk. She noted fire damage historically in the U.S. has been minimal and there has been one catastrophic fire event in Australia in 2009.

MR. ERLENDSON requested discussion about global economic activity and markets for timber. MS. AMRHEIN indicated this portfolio benefitted from the post-global financial crisis phenomena of Asia markets coming back into the Pacific Northwest on a cycle to acquire timber, which coincided with a period with the U.S. dollar was relatively weak. That cycle has passed. The domestic market now has the capacity to consume the volume generated from the Pacific Northwest.

15. INVESTMENT/PROCUREMENT ACTIONS

A. Scientific Beta

MR. BADER invited BOB MITCHELL, Deputy CIO, to join him and answer relevant questions. MR. BADER outlined the presentation by Scientific Beta. It is the desire of staff to bring more assets under internal management. This action requests the Board's permission to subscribe to the indexes provided by Scientific Beta so staff may invest internally. The cost of the contract will be negotiated between four and six basis points.

MR. BRICE moved to authorize staff to contract with Scientific Beta to receive the constituents of the multi-beta multi-strategy indices, subject to successful fee and contractual negotiations, and to invest up to \$200 million in a domestic equity strategy benchmarked against the S&P 500 Index. MRS. HARBO seconded the motion.

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

B. Manager Review

MR. BADER noted the manager review termination of Luther King Small Cap is provided in the Board packet. The ARMB has been investing with Luther King Asset Management since 2005. Over the last 10 years, Luther King's investment returned 4.36% versus the index of 5.26%. The return has not measured up to the standard staff believes is appropriate for small cap holdings. Regrettably, staff is asking the Board authorize termination of Luther King's association in the small cap space.

MRS. HARBO moved to authorize staff to terminate the Board's association with Luther King in the small cap space. MR. WILLIAMS seconded the motion.

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

C. Contract Extension - GRS

MR. BADER reported the contract with GRS runs out on June 30th, and this is a request for the Board to authorize staff to renew the contract.

MRS. HARBO moved to authorize staff to renew the contract with Gabriel Roeder Smith.
MR. BRICE seconded the motion.

VICE-CHAIR JOHNSON expressed he is in favor of the extension and believes MS. THOMPSON on behalf of GRS provides excellent service.

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

NEW BUSINESS

None

OTHER MATTERS TO PROPERLY COME BEFORE THE BOARD

None

PUBLIC/MEMBER COMMENTS

None

INVESTMENT ADVISORY COUNCIL COMMENTS

None

TRUSTEE COMMENTS

MS. ERCHINGER specifically requested Resolution 2016-10 that passed earlier in the meeting be distributed directly the Alaska Permanent Fund Corporation Trustees, as well as the management. MS. ERCHINGER requested KPMG's scope of work regarding cost benefit analysis of the potential for shifting management responsibilities either to the Department of Revenue or to the Alaska Permanent Fund Corporation also include a specific analysis of the impact of savings or costs accrued to the retirement systems.

MS. ERCHINGER offered sincere appreciation to the entire investment staff of the Department of Revenue. She suspected the legislative intent language may have been unsettling to staff. MS. ERCHINGER stated more and more investments have been moved in-house based on the excellent track record of the Department of Revenue staff and Trustee's growing confidence in the tenure, qualifications, and impressive investment performance of those same staff. MR. BADER informed he will pass MS. ERCHINGER's requests onto the Permanent Fund Corporation, who is managing the KPMG contract.

VICE-CHAIR JOHNSON shares MS. ERCHINGER's compliments to the excellent staff.

FUTURE AGENDA ITEMS

None

ADJOURNMENT

There being no objection and no further business to come before the Board, the meeting was adjourned at 3:45 p.m. On June 24, 2016, on a motion made by MRS. HARBO and seconded by MR. WILLIAMS.

Chair of the Board of Trustees
Alaska Retirement Management Board

ATTEST:

Corporate Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Retirement System Membership Activity
as of June 30, 2016

ACTION: _____

DATE: September 29, 2016

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, 2016.

MEMBERSHIP STATISTICS AS OF SEPTEMBER 30, 2015

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB				DC	SYSTEM	DB			DC	SYSTEM				
	Tier I	Tier II	Tier III	Total	Tier IV	TOTAL	Tier I	Tier II	Total	Tier III	TOTAL				
Active Members	2,140	4,744	10,654	17,538	17,871	35,409	672	4,944	5,616	4,901	10,517	75	n/a	21,904	6,555
Terminated Members															
Entitled to Future Benefits	632	2,491	2,878	6,001	521	6,522	73	701	774	259	1,033	3	n/a	21,891	4,404
Other Terminated Members	1,272	2,372	8,354	11,998	8,698	20,696	324	1,810	2,134	1,650	3,784	-	n/a	-	-
Total Terminated Members	1,904	4,863	11,232	17,999	9,219	27,218	397	2,511	2,908	1,909	4,817	3	n/a	21,891	4,404
Retirees & Beneficiaries	23,654	6,343	2,490	32,487	11	32,498	10,668	1,765	12,433	-	12,433	110	660	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	5,908	5,908	n/a	n/a	n/a	1,608	1,608	n/a	n/a	1,109	1,201
Retirements - 1st QTR FY16	199	188	160	547	n/a	547	217	201	418	n/a	418	1	31	n/a	n/a
Full Disbursements - 1st QTR FY16	29	33	123	185	483	668	21	38	59	97	156	-	n/a	636	133
Partial Disbursements - 1st QTR FY16	n/a	n/a	n/a	n/a	50	50	n/a	n/a	n/a	12	12	n/a	n/a	672	489

MEMBERSHIP STATISTICS AS OF DECEMBER 31, 2015

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB				DC	SYSTEM	DB			DC	SYSTEM				
	Tier I	Tier II	Tier III	Total	Tier IV	TOTAL	Tier I	Tier II	Total	Tier III	TOTAL				
Active Members	2,074	4,673	10,559	17,306	18,475	35,781	671	4,938	5,609	4,965	10,574	75	n/a	23,033	6,724
Terminated Members															
Entitled to Future Benefits	603	2,470	2,893	5,966	524	6,490	65	697	762	262	1,024	3	n/a	21,081	4,275
Other Terminated Members	1,259	2,354	8,302	11,915	8,759	20,674	318	1,797	2,115	1,648	3,763	-	n/a	-	-
Total Terminated Members	1,862	4,824	11,195	17,881	9,283	27,164	383	2,494	2,877	1,910	4,787	3	n/a	21,081	4,275
Retirees & Beneficiaries	23,694	6,438	2,566	32,698	11	32,709	10,647	1,782	12,429	-	12,429	111	669	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	5,858	5,858	n/a	n/a	n/a	1,595	1,595	n/a	n/a	1,142	1,246
Retirements - 2nd QTR FY16	129	119	92	340	n/a	340	11	18	29	n/a	29	1	46	n/a	n/a
Full Disbursements - 2nd QTR FY16	28	43	97	168	400	568	13	20	33	67	100	-	n/a	567	125
Partial Disbursements - 2nd QTR FY16	n/a	n/a	n/a	n/a	44	44	n/a	n/a	n/a	15	15	n/a	n/a	780	520

MEMBERSHIP STATISTICS AS OF MARCH 31, 2016

	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB				DC	SYSTEM TOTAL	DB			DC	SYSTEM TOTAL				
	Tier I	Tier II	Tier III	Total	Tier IV		Tier I	Tier II	Total	Tier III					
Active Members	2,018	4,590	10,439	17,047	18,738	35,785	668	4,922	5,590	4,996	10,586	76	n/a	23,870	6,985
Terminated Members															
Entitled to Future Benefits	562	2,432	2,882	5,876	581	6,457	55	674	729	262	991	3	n/a	19,792	4,041
Other Terminated Members	1,240	2,340	8,247	11,827	9,114	20,941	313	1,787	2,100	1,628	3,728	-	n/a	-	-
Total Terminated Members	1,802	4,772	11,129	17,703	9,695	27,398	368	2,461	2,829	1,890	4,719	3	n/a	19,792	4,041
Retirees & Beneficiaries	23,693	6,528	2,659	32,880	11	32,891	10,634	1,815	12,449	-	12,449	111	674	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	5,814	5,814	n/a	n/a	n/a	1,585	1,585	n/a	n/a	1,149	1,284
Retirements - 3rd QTR FY16	107	107	98	312	n/a	312	16	32	48	n/a	48	-	32	n/a	n/a
Full Disbursements - 3rd QTR FY16	19	33	102	154	446	600	10	20	30	65	95	-	n/a	610	153
Partial Disbursements - 3rd QTR FY16	n/a	n/a	n/a	n/a	42	42	n/a	n/a	n/a	15	15	n/a	n/a	774	490

MEMBERSHIP STATISTICS AS OF JUNE 30, 2016

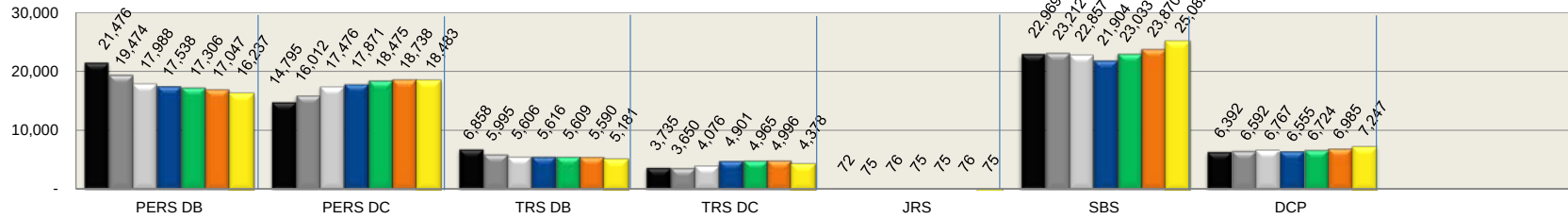
	PERS						TRS					JRS	NGNMRS	SBS	DCP
	DB				DC		DB			DC					
	Tier I	Tier II	Tier III	Total	Tier IV	TOTAL	Tier I	Tier II	Total	Tier III	TOTAL				
Active Members	1,780	4,370	10,087	16,237	18,483	34,720	546	4,635	5,181	4,378	9,559	75	n/a	25,082	7,247
Terminated Members															
Entitled to Future Benefits	551	2,422	2,975	5,948	620	6,568	69	758	827	425	1,252	4	n/a	18,813	3,811
Other Terminated Members	1,225	2,320	8,214	11,759	9,354	21,113	308	1,778	2,086	1,987	4,073	-	n/a		
Total Terminated Members	1,776	4,742	11,189	17,707	9,974	27,681	377	2,536	2,913	2,412	5,325	4	n/a	18,813	3,811
Retirees & Beneficiaries	23,765	6,685	2,813	33,263	11	33,274	10,611	1,833	12,444	-	12,444	110	682	n/a	n/a
Managed Accounts	n/a	n/a	n/a	n/a	5,735	5,735	n/a	n/a	n/a	1,572	1,572	n/a	n/a	1,155	1,305
Retirements - 4th QTR FY16	165	166	144	475	n/a	475	2	13	15	n/a	15	1	38	n/a	n/a
Full Disbursements - 4th QTR FY16	28	32	106	166	470	636	10	18	28	50	78	-	n/a	607	157
Partial Disbursements - 4th QTR FY16	n/a	n/a	n/a	n/a	59	59	n/a	n/a	n/a	10	10	n/a	n/a	734	491

Alaska Division of Retirement and Benefits

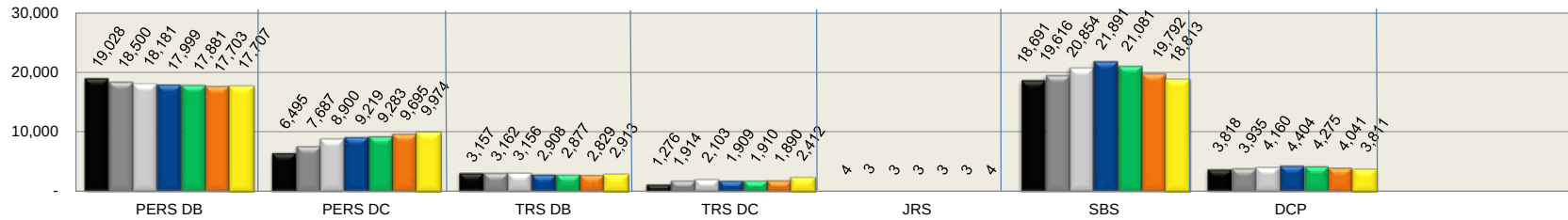
FY 2016 QUARTERLY REPORT OF MEMBERSHIP STATISTICS

Annual & Quarterly Trends as of June 30, 2016

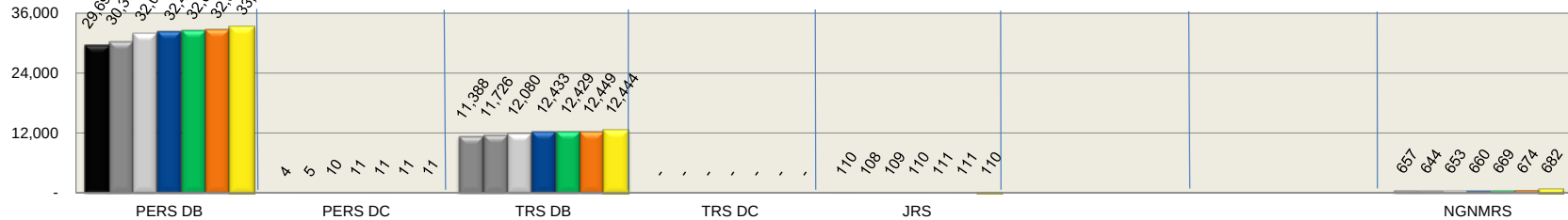
Active Members



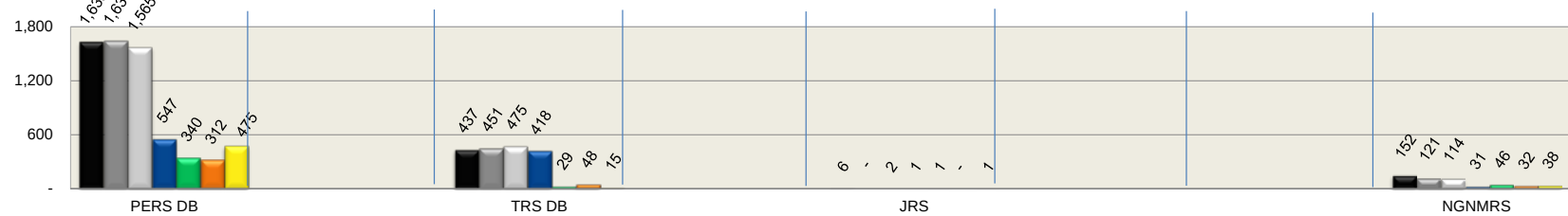
Terminated Members



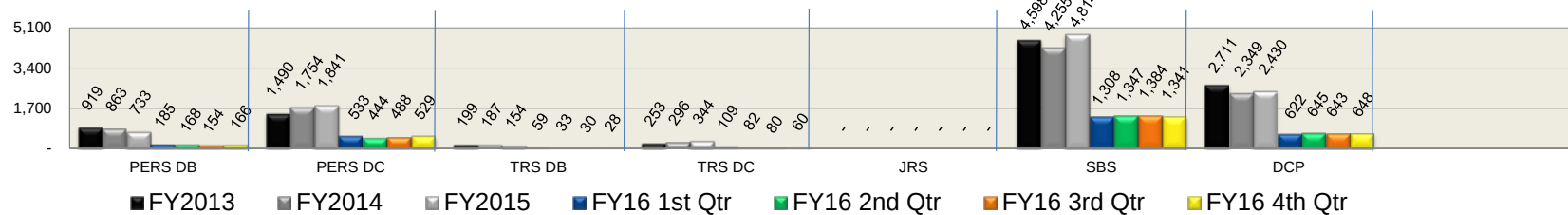
Retirees & Beneficiaries



Retirements



Disbursements



■ FY2013 ■ FY2014 ■ FY2015 ■ FY16 1st Qtr ■ FY16 2nd Qtr ■ FY16 3rd Qtr ■ FY16 4th Qtr

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 measurement period for a member, they are counted
only once per quarter for statistical purposes.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT:	<u>Summary of Monthly Billings -</u>	ACTION:	<u> </u>
	<u>Buck Consultants</u>		
DATE:	<u>September 29, 2016</u>	INFORMATION:	<u> X </u>

BACKGROUND:

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

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

STATUS:

Attached are the summary totals for the quarter and twelve months ended June 30, 2016.

Buck Consultants
Billing Summary
For the Three Months Ended September 30, 2015

	<u>PERS</u>	<u>TRS</u>	<u>JRS</u>	<u>NGNMRS</u>	<u>EPORS</u>	<u>AHF</u>	<u>RHF</u>	<u>SBS</u>	<u>DCP</u>	<u>TOTAL</u>
Actuarial Valuations	\$ 144,445	100,848	7,423	5,095	280	-	-	-	-	\$ 258,091
ARMB Presentations	39,014	14,354	268	48	-	-	-	-	-	53,684
Audit Request	2,565	-	1,432	1,002	-	-	-	-	-	4,999
GASB 68 work for PERS and TRS	9,078	3,551	-	-	-	-	-	-	-	12,629
GASB 67 Plan Accounting Reports for the fiscal year ending June 30, 2014	10,880	7,612	5,935	6,232	-	-	-	-	-	30,659
Level percent verses level dollar methodology study for the September Board meeting	2,250	2,250	-	-	-	-	-	-	-	4,500
Misc emails and phone calls	427	-	-	-	-	-	-	-	-	427
TOTAL	\$ 208,659	128,615	15,058	12,377	280	-	-	-	-	\$ 364,989
For the Three Months Ended September 30, 2014	\$ 112,801	88,620	14,039	5,866	144	35	307	-	-	\$ 221,812

For the Three Months Ended December 31, 2015

	<u>PERS</u>	<u>TRS</u>	<u>JRS</u>	<u>NGNMRS</u>	<u>EPORS</u>	<u>AHF</u>	<u>RHF</u>	<u>SBS</u>	<u>DCP</u>	<u>TOTAL</u>
Actuarial Valuations	\$ 61,291	29,514	2,592	2,853	-	-	-	-	-	\$ 96,250
ARMB Presentations	3,198	1,176	22	4	-	-	-	-	-	4,400
GASB 68 work for PERS and TRS	47,927	18,744	-	-	-	-	-	-	-	66,671
GASB 67 Plan Accounting Reports for the fiscal year ending June 30, 2014	12,398	7,101	6,804	5,697	-	-	-	-	-	32,000
DCR Healthcare Plan Design Discussions	6,305	6,305	-	-	-	-	-	-	-	12,610
Misc emails and phone calls	1,092	1,092	-	-	-	-	-	-	-	2,184
TOTAL	\$ 132,211	63,932	9,418	8,554	-	-	-	-	-	\$ 214,115
For the Three Months Ended December 31, 2014	\$ 167,406	100,375	32,169	6,664	1,464	-	1,373	-	-	\$ 309,451

For the Three Months Ended March 31, 2016

	<u>PERS</u>	<u>TRS</u>	<u>JRS</u>	<u>NGNMRS</u>	<u>EPORS</u>	<u>AHF</u>	<u>RHF</u>	<u>SBS</u>	<u>DCP</u>	<u>TOTAL</u>
ARMB Presentations	\$ 23,273	8,883	7	31	-	-	1	-	-	\$ 32,195
GASB work GASB 68 & 74 and planning session with KPMG for PERS and TRS	24,293	9,501	-	-	-	-	-	-	-	33,794
DCR Healthcare Plan Design Discussions	33,016	33,016	-	-	-	-	-	-	-	66,032
FY17 Allocation Method Adjustment	8,038	2,959	-	-	-	-	-	-	-	10,997
Trustee Pihl slide	1,231	453	-	-	-	-	-	-	-	1,684
Past Service Cost Analysis - PERS and TRS	6,192	2,279	-	-	-	-	-	-	-	8,471
Misc emails and phone calls	876	582	-	-	-	-	-	-	-	1,458
TOTAL	\$ 96,919	57,673	7	31	-	-	1	-	-	\$ 154,631
For the Three Months Ended March 31, 2015	\$ 82,813	61,535	18,130	14,856	10,393	-	-	-	-	\$ 187,727

For the Three Months Ended June 30, 2016

	<u>PERS</u>	<u>TRS</u>	<u>JRS</u>	<u>NGNMRS</u>	<u>EPORS</u>	<u>AHF</u>	<u>RHF</u>	<u>SBS</u>	<u>DCP</u>	<u>TOTAL</u>
Actuarial Valuations	\$ 24,843	8,756	80	-	-	-	103	-	-	\$ 33,782
ARMB Presentations	59,062	21,360	334	1,532	-	-	-	-	-	82,288
GASB 68 work for PERS and TRS	11,369	4,446	-	-	-	-	-	-	-	15,815
GASB work GASB 68 & 74 and planning session with KPMG for PERS and TRS	16,184	6,329	-	-	-	-	-	-	-	22,513
DCR Healthcare Plan Design Discussions	22,759	22,758	-	-	-	-	-	-	-	45,517
Retiree medical data review	1,250	441	-	-	-	-	-	-	-	1,691
Misc emails and phone calls	3,408	1,673	12	55	-	-	-	-	-	5,148
TOTAL	\$ 138,875	65,763	426	1,587	-	-	103	-	-	\$ 206,754
For the Three Months Ended June 30, 2015	\$ 93,603	62,244	5,426	14,047	1,512	-	-	-	-	\$ 176,832

Summary through the Twelve Months Ended June 30, 2016

	<u>PERS</u>	<u>TRS</u>	<u>JRS</u>	<u>NGNMRS</u>	<u>EPORS</u>	<u>AHF</u>	<u>RHF</u>	<u>SBS</u>	<u>DCP</u>	<u>TOTAL</u>
Actuarial Valuations	\$ 230,579	139,118	10,095	7,948	280	-	103	-	-	\$ 388,123
ARMB Presentations	124,547	45,773	631	1,615	-	-	1	-	-	172,567
Audit Request	2,565	-	1,432	1,002	-	-	-	-	-	4,999
GASB 68 work for PERS and TRS	68,374	26,741	-	-	-	-	-	-	-	95,115
GASB 67 Plan Accounting Reports for the fiscal year ending June 30, 2014	23,278	14,713	12,739	11,929	-	-	-	-	-	62,659
GASB work GASB 68 & 74 and planning session with KPMG for PERS and TRS	40,477	15,830	-	-	-	-	-	-	-	56,307
Level percent verses level dollar methodology study for the September Board meeting	2,250	2,250	-	-	-	-	-	-	-	4,500
DCR Healthcare Plan Design Discussions	62,080	62,079	-	-	-	-	-	-	-	124,159
FY17 Allocation Method Adjustment	8,038	2,959	-	-	-	-	-	-	-	10,997
Trustee Pihl slide	1,231	453	-	-	-	-	-	-	-	1,684
Past Service Cost Analysis - PERS and TRS	6,192	2,279	-	-	-	-	-	-	-	8,471
Retiree medical data review	1,250	441	-	-	-	-	-	-	-	1,691
Misc emails and phone calls	5,803	3,347	12	55	-	-	-	-	-	9,217
TOTAL	<u>\$ 576,664</u>	<u>315,983</u>	<u>24,909</u>	<u>22,549</u>	<u>280</u>	<u>-</u>	<u>104</u>	<u>-</u>	<u>-</u>	<u>\$ 940,489</u>
Summary through the Twelve Months Ended June 30, 2015	<u>\$ 456,623</u>	<u>312,774</u>	<u>69,764</u>	<u>41,433</u>	<u>13,513</u>	<u>35</u>	<u>1,680</u>	<u>-</u>	<u>-</u>	<u>\$ 895,822</u>

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY2018 ARMB Budget Proposal

ACTION: X

DATE: September 29, 2016

INFORMATION:

BACKGROUND:

Pursuant to its charter, the Alaska Retirement Management Board (ARMB) Budget Committee meets annually to review the actual expenditures in the immediately preceding fiscal year budget; consider and review the current fiscal year budget as approved by the legislature; and develop a proposed budget for the next fiscal year and make appropriate recommendations for action to the Board.

The Alaska Retirement Management Board (ARMB) budgets asset management related pension expenditures in the Alaska Budget System (ABS) as follows: the Alaska Retirement Management Board component and the Alaska Retirement Management Board – Custody and Management component. For presentation purposes, the attached schedule combines these into one schedule for FY2012 through FY2016 actuals and FY2017 and FY2018 projected and proposed amounts.

STATUS:

Staff to the ARMB

The ARMB purchases personal services from the Treasury Division each year. The FY2018 budget is estimated to include \$255,230 for personal services increases over FY2017 amounts. Additional funds for new positions and/or salary increases are included in the budget proposal during discussions with the OMB and Legislature.

Investment Management Fees

Budgeted investment management fees are calculated as a percent of the market value of investments under management. To determine proposed FY2018 management fees, Treasury staff compiles the actual assets in each manager's account from the most recent fiscal year, applies a growth rate using the actuarial assumed rate through the end of the budget period and applies the percent charged by each manager. The individual fees are added to arrive at a total projected cost of external management fees and summed with custody fees to be included in the budget proposal during discussions with the OMB and Legislature. Total estimated FY2018 investment management and custody fees are proposed at \$60,742,046. Authorization for management fees in excess of actual fees lapses and these funds remain unspent. Not all investment management fees are paid directly by Treasury administrative staff; these expenses are netted from investment income and are not included in the budget.

Committee Recommendation

The Budget Committee met September 28, 2016 with Department of Revenue staff, reviewed the budget schedules and worksheets attached, and makes the following:

RECOMMENDATION

That the ARMB adopt the FY18 Proposed Budget as attached, with the understanding that components will be subject to appropriation by OMB and the Legislature.

Attachment: Budget Work Sheet

A		B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	FY18 ARMB Working Budget																			
2																				
3																				
4							Variance Auth v Actual													
		FY12 Actual	FY13 Actual	FY14 Actuals	FY15 Actuals	FY16 Authorized	FY16 Actuals	\$	%age	FY17 Projected	FY18 Proposed	\$ Change from FY17	% change	Remarks						
5	Personal Services	3,022,178	3,229,215	3,446,651	3,219,381	4,228,700	3,766,935	(461,765)	-10.9%	5,104,600	5,359,830	255,230	5.0%							
6	Travel																			
7	Staff	168,701	160,007	154,529	156,151	100,000	109,000	9,000	9.0%	150,000	165,000									
8	Board	58,153	69,338	66,110	59,297	23,700	29,886	6,186	26.1%	30,000	30,000									
9		226,854	229,345	220,639	215,448	123,700	138,887	15,187	12.3%	180,000	195,000	15,000	8.3%							
10	Contractual																			
11	Investment Management and Custody Fees																			
12	Directly Paid Investment Management Fees	27,812,013	31,760,963	37,815,145	43,464,356	60,816,700	42,850,970	(17,965,730)	-29.5%	55,616,109	59,342,046			Assumes 8% annual growth increase in AUM.						
13	Custody	1,130,155	1,128,202	1,289,343	1,289,503	1,290,000	1,381,228	91,228	7.1%	1,400,000	1,400,000									
14		28,942,168	32,889,164	39,104,488	44,753,859	62,106,700	44,232,198	(17,874,502)	-28.8%	57,016,109	60,742,046	3,725,937	6.5%							
15	Investment Consulting																			
16	General consultant and performance (Callan)	477,405	561,641	557,593	598,279	650,000	616,610	(33,390)	-5.1%	650,000	650,000									
17	Real Estate - Townsend	100,000	100,000	105,000	100,000	110,000	100,000	(10,000)	-9.1%	110,000	110,000									
18	Investment Advisory Council	110,548	113,973	106,580	102,171	150,000	103,816	(46,184)	-30.8%	150,000	150,000									
19		687,953	775,614	769,173	800,450	910,000	820,428	(89,574)	-9.8%	910,000	910,000	0	0.0%							
20	Investment Information Services																			
21	Bloomberg	297,205	327,302	320,253	359,999	375,000	378,006	3,006	0.8%	500,000	525,000			Annual cost increase for each user subscription and additional users						
22	Factset	196,964	236,235	285,117	314,248	350,000	345,340	(4,660)	-1.3%	450,000	470,000			Additional users/features added in 2013/2014/2015/2016						
23	Yieldbook	36,004	16,479	16,425	15,110	25,000	23,200	(1,800)	-7.2%	32,000	32,000									
24	State Street Risk Management	170,050	96,243	54,996	0	150,000	0	(150,000)	-100.0%	100,000	100,000			Implemented in 2017						
25	Standard & Poors	91,006	146,959	147,993	160,098	173,000	171,217	(1,783)	-1.0%	185,000	185,000			Standard and Poor, S&P Indices and CUSIP Data						
26	Moody's	10,390	12,048	16,660	17,005	17,000	18,886	1,886	11.1%	25,000	25,000									
27	Credit Sights	2,904	2,701	2,390	2,058	5,000	2,939	(2,061)	-41.2%	4,000	4,000									
28	Trade Web	4,792	4,501	4,023	3,497	5,000	5,251	251	5.0%	7,500	7,500									
29	TREPP	60,000	30,600	0	0	0	0	0	0.0%	0	0			Terminated 12/12/2012						
30	Institutional Investor Proxy Service for REIT Portfolio	6,506	8,346	9,063	9,063	10,000	14,040	4,040	40.4%	15,000	22,000									
31	Zach Investments Research	51,250	51,250	51,250	51,667	52,000	51,250	(750)	-1.4%	52,000	52,000									
32	FTSE International	14,842	15,510	16,230	16,990	17,900	17,805	(95)	-0.5%	20,000	20,000									
33	Fitch Ratings	10,923	10,157	8,987	0	0	0	0	0.0%	0	0			Contract Expired 9/30/2014						
34	Other	5,551	13,647	12,366	11,120	20,000	11,569	(8,431)	-42.2%	20,000	20,000			MSCI, NYSE, Russell, Barclays, RDO Economics						
35		958,388	971,977	945,752	954,855	1,199,900	1,039,504	(160,396)	-13.4%	1,410,500	1,462,500	52,000	3.7%							
36	Inter and Intra Departmental Charges																			
37	Legal	63,897	77,029	96,930	121,061	160,000	81,167	(78,833)	-49.3%	160,000	160,000									
38	DOR Admin Services	154,976	166,975	168,000	189,163	204,000	119,604	(84,396)	-41.4%	220,000	220,000									
39	DOR Commissioner's Office	21,471	33,810	36,455	49,780	55,000	39,770	(15,230)	-27.7%	55,000	55,000									
40	Building Maintenance	51	1,254	0	582	500	332	(168)	-33.6%	500	500									
41	Building Lease	84,135	92,024	80,286	88,778	100,000	115,856	15,856	15.9%	92,000	92,000									
42	DOA Human Resources	51,559	14,411	11,454	11,454	12,000	16,299	4,299	35.5%	20,000	20,000									
43	ETS - Telecommunications & Computer Services	48,453	48,713	37,135	37,670	50,000	54,917	4,917	9.5%	60,000	60,000									
44	Mail	4,217	3,636	2,748	3,826	7,000	4,996	(2,004)	-28.6%	7,000	7,000									
45	DOA Finance (AKSAS,AKPAY & IRIS)	23,464	21,338	15,867	16,585	40,000	39,430	(570)	-1.4%	40,000	40,000			2017 IRIS charges expected						
46	Other	3,329	6,341	4,101	2,017	10,000	2,977	(7,023)	-70.2%	10,000	10,000									
47		421,552	465,531	452,975	520,927	638,500	475,307	(163,193)	-25.6%	664,500	664,500	0	0.0%							
48	Other professional services																			
49	Actuarial Services - Buck & GRS	77,203	203,968	172,042	282,349	350,000	325,733	(24,267)	-6.9%	325,000	300,000									
50	Peer Review of Actuarial Experience Study	0	170,900	0	0	0	0	0	0.0%	0	170,000			AON						
51	Performance consultant audit - Anodos	0	0	0	65,900	0	0	0	0.0%	0	0									
52	IT Support	34,626	25,601	10,356	10,356	35,000	21,361	(13,639)	-39.0%	35,000	35,000									
53	Financial Audit	89,400	92,000	92,000	92,240	115,000	93,778	(21,222)	-18.5%	115,000	115,000			KPMG contract through 6/30/2017						
54	Other	24,330	16,655	10,520	18,421	20,000	10,195	(9,805)	-49.0%	20,000	20,000			Deloitte & Touche, PWC payments						
55		166,603	501,494	289,642	450,845	500,000	440,872	(59,128)	-11.8%	475,000	620,000	145,000	30.5%							
56	Subscriptions, training and other expenses																			
57	Subscriptions	3,772	3,428	2,139	1,766	6,000	2,561	(3,439)	-57.3%	6,000	6,000									
58	Training, memberships and conferences	60,800	55,892	60,288	55,713	62,000	34,251	(27,749)	-44.8%	50,000	50,000									
59	Courier and express services	2,814	2,139	2,260	2,337	5,000	4,141	(859)	-17.2%	5,000	5,000									
60	Phone and telecommunications	25,899	27,189	23,892	28,235	30,000	31,101	1,101	3.7%	30,000	30,000									
61	Board meeting related expenses	74,496	56,884	72,502	72,020	75,000	65,460	(9,540)	-12.7%	75,000	75,000									
62	Software & Software Support	61,079	55,198	34,607	7,129	40,000	12,204	(27,796)	-69.5%	20,000	20,000									
63	Advertising	7,355	14,421	15,052	6,681	15,000	6,618	(6,382)	-42.5%	15,000	15,000									
64	Board Honoraria	55,088	74,021	71,445	60,400	86,500	56,703	(29,737)	-34.4%	75,000	75,000									
65	Other	7,096	9,178	2,272	4,957	16,700	5,743	(10,957)	-65.6%	16,000	16,000									
66		298,398	298,351	284,456	236,238	336,200	220,842	(115,358)	-34.3%	292,000	292,000	0	0.0%							
67	Contractual	31,475,062	35,902,131	41,846,487	47,717,174	65,691,300	47,229,149	(18,462,151)	-28.1%	60,768,109	64,691,046	3,922,937	6.5%							
68	Supplies and equipment	323,023	119,649	21,962	36,277	75,000	18,629	(56,371)	-75.2%	75,000	75,000	0	0.0%							
69	Personal Services & Travel	3,249,032	3,458,560	3,667,290	3,434,829	4,352,400	3,905,822	(446,578)	-10.3%	5,284,600	5,554,830	270,230	5.1%							
70	Total all Expenses	35,047,118	39,480,340	45,535,739	51,188,279	70,118,700	51,153,600	(18,965,100)	-27.0%	66,127,709	70,320,876	4,193,167	6.3%							
71																				
72	Investment fees and custody	28,942,168	32,889,164	39,104,488	44,753,859	62,106,700	44,232,198	(17,874,502)	-28.8%	57,016,109	60,742,046	3,725,937	6.5%							
73	Operations	6,104,950	6,591,176	6,431,251	6,434,420	8,012,000	6,921,402	(1,090,598)	-13.6%	9,111,600	9,578,830	467,230	5.1%							
74	Total all Expenses	35,047,118	39,480,340	45,535,739	51,188,279	70,118,700	51,153,600	(18,965,100)	-27.0%	66,127,709	70,320,876	4,193,167	6.3%							

FY2018 Proposed Directly Paid Custody & Management Fees

			FY2016 Actual Fees	Asset Value as of 6/30/16	Projected Asset Value as of 6/30/17	Projected Asset Value as of 6/30/18	Fees in Basis Points	Fees in Basis Points	FY17 Projected	FY2018 Proposed
Type	Manager									
PE	Abbott Capital Management	AY85	1,984,597	769,692,462	831,267,859	897,769,288	0.002578	25.78	2,143,365	2,314,834
CB	Advent Capital	AY52	1,163,176	196,850,498	212,598,538	229,606,421	0.005909	59.09	1,256,230	1,356,728
RA	Advisory Research MLP(FAMCO)	AY1P	973,292	227,415,098	245,608,306	265,256,970	0.004280	42.80	1,051,156	1,135,248
LC	Allianz	AY38	1,212,039	348,176,221	376,030,319	406,112,744	0.003481	34.81	1,309,002	1,413,722
Intl	Allianz Global NFJ	AYLP	1,048,134	245,288,215	264,911,272	286,104,174	0.004273	42.73	1,131,985	1,222,544
Alt	Analytic Buy Write Account	AY4X	363,066	302,953,216	327,189,473	353,364,631	0.001198	11.98	392,111	423,480
Intl	Arrow Street Capital	AYLQ	1,215,931	292,023,745	315,385,645	340,616,496	0.005040	50.40	1,589,544	1,716,707
Intl	Baillie Gifford Overseas Limited	AYLR	1,400,835	364,826,672	394,012,806	425,533,830	0.003840	38.40	1,512,902	1,633,934
SC	Barrow Hanley Mewhinney & Strauss	AY4Q	475,389	332,610,062	359,218,867	387,956,376	0.001429	14.29	513,420	554,494
LC	Barrow Hanley Mewhinney & Strauss	AY4U	1,208,706	85,037,322	91,840,308	99,187,532	0.014214	142.14	1,305,402	1,409,835
Intl	Blackrock	AY6U	344,663	762,225,293	823,203,316	889,059,582	0.000452	4.52	372,236	402,014
Intl	Brandes Investment Partners LP	AY65	3,232,575	660,639,461	713,490,618	770,569,867	0.004893	48.93	3,491,181	3,770,475
RA	Brookfield	AYRE	719,555	97,235,562	105,014,407	113,415,560	0.007400	74.00	777,119	839,288
Intl	Capital Gudian Trust Co.	AY67	2,613,015	671,782,191	725,524,766	783,566,748	0.003890	38.90	2,822,057	3,047,821
DomFI	Columbia Threadneedle(Ameriprise)	AYRQ	322,523	214,356,637	231,505,168	250,025,581	0.001505	15.05	348,325	376,191
SC	DePrince Race & Zollo Ince	AY4E	736,868	77,252,806	83,433,030	90,107,673	0.009538	95.38	795,817	859,483
DomFI	Eaton Vance	AYRS	451,968	212,557,079	229,561,645	247,926,577	0.002126	21.26	488,126	527,176
SC	Fidelity	AYKN	291,574	199,872,365	215,862,154	233,131,127	0.001459	14.59	314,900	340,092
IntFI	Fidelity Institutional Asset (was Pyramis)	AY1F	430,239	127,706,124	137,922,614	148,956,423	0.003524	35.24	486,039	524,922
LC	Frontier	AY5G	757,881	133,264,741	143,925,920	155,439,994	0.005687	56.87	818,511	883,992
TMB	Guggenheim Partners	AY1E	260,736	111,699,866	120,635,855	130,286,724	0.002334	23.34	281,595	304,123
SC	Jennison	AY4G	694,687	83,799,587	90,503,554	97,743,838	0.008290	82.90	750,262	810,283
LC	Lazard Freres Asset Management	AY47	926,756	353,505,387	381,785,818	412,328,683	0.002622	26.22	1,000,897	1,080,968
Intl	Lazard Freres Asset Management	AY58	647,987	109,682,271	118,456,853	127,933,401	0.005908	59.08	699,826	755,812
RA	Lazard Infrastructure Private Pool	AYRF	777,407	340,140,292	367,351,515	396,739,637	0.002286	22.86	839,600	906,768
SC	Lord Abbett & Co.	AY4Z	784,648	76,100,814	82,188,879	88,763,989	0.010311	103.11	847,420	915,213
SC	Lord Abbett & Co.	AY5F	575,054	71,817,420	77,562,814	83,767,839	0.008007	80.07	621,058	707,742
SC	Luther King	AY4F	439,637	79,445,565	85,801,210	92,665,307	0.005534	55.34	474,808	512,793
DomFI	MacKay Shields LLC	AY9P	1,572,624	222,408,549	240,201,233	259,417,332	0.007071	70.71	1,698,434	1,834,309
LC	McKinley Capital Management, Inc.	AY48	1,174,704	340,771,273	368,032,975	397,475,613	0.003447	34.47	1,268,680	1,370,175
Intl	McKinley Capital Management, Inc.	AY69	2,356,440	484,967,213	523,764,590	565,665,757	0.004859	48.59	2,544,955	2,748,552
IntFI	Mondrian Investment Partners Limited	AY63	1,461,567	368,119,317	397,568,862	429,374,371	0.003970	39.70	1,578,493	1,704,772
IntISC	Mondrian Investment Partners Limited	AY5B	1,106,511	153,394,305	165,665,849	178,919,117	0.007214	72.14	1,195,032	1,290,634
PE	Pathway	AY98	2,563,109	819,252,480	884,792,678	955,576,093	0.003129	31.29	2,768,158	2,989,611
LC	Quantitative Management Associates	AY4V	905,682	326,416,132	352,529,423	380,731,776	0.002775	27.75	978,136	1,056,387
Alt	Quantitative Management Associates QMA MPS	AYRX	490,543	200,085,492	216,092,331	233,379,718	0.002498	24.98	539,799	582,983
IntISC	Schroeder	AY5D	1,280,244	158,162,851	170,815,879	184,481,149	0.008094	80.94	1,382,664	1,493,277
LC	SSgA Russell 1000 Growth Index Fund	AY4L	122,276	1,045,182,891	1,128,797,522	1,219,101,324	0.000117	1.17	132,059	142,623
LC	SSgA 1000 Value Index Fund	AY4M	129,736	959,175,616	1,035,909,665	1,118,782,439	0.000135	1.35	140,115	151,325
SC	SSgA 2000 Growth Index Fund	AY4N	8,914	17,787,079	19,210,045	20,746,849	0.000501	5.01	9,627	10,397
SC	SSgA Russell 2000 Value Index Fund	AY4P	16,312	31,243,653	33,743,145	36,442,597	0.000522	5.22	17,617	19,026
LC	SSgA 200 Index Fund	AY4R	85,971	815,844,871	881,112,461	951,601,458	0.000105	1.05	92,849	100,277
Alt	SSgA Buy Write	AY4W	30,786	270,587,946	292,234,982	315,613,780	0.000114	1.14	33,248	35,908
Intl	SSgA MSCI All Country World	AY68	462,564	765,606,415	826,854,928	893,003,322	0.000604	6.04	499,569	539,534
SC	SSgA Futures Small Cap	AY6A	11,132	15,013,612	16,214,701	17,511,877	0.000741	7.41	12,023	12,985
LC	SSgA Futures Large Cap	AY6B	14,293	14,264,717	15,405,894	16,638,366	0.001002	10.02	15,436	16,671
LC	SSgA Volatility Russell 1000	AYKU	79,860	87,836,195	94,863,091	102,452,138	0.000800	8.00	75,890	81,962
SC	SSgA92 Volatility Russell 2000	AYKV	60,504	58,693,973	63,389,491	68,460,650	0.000800	8.00	50,712	54,769
RA	Tortoise	AY1Q	1,404,513	259,333,563	280,080,248	302,486,668	0.005416	54.16	1,516,874	1,638,224
SC	Sycamore Capital (Victory)	AY5H	773,002	99,142,208	107,073,585	115,639,471	0.007797	77.97	834,842	901,630
TMB	Western Asset Management	AY1D	278,408	127,769,304	137,990,848	149,030,116	0.002179	21.79	300,680	324,735
SC	Zebra Capital Management	AYKW	408,336	73,016,338	78,857,645	85,166,257	0.005750	57.50	453,431	489,706
Total Management Fees			42,850,970	15,262,032,965	16,482,995,602	17,801,635,250			46,574,215	50,300,153
Total Potential Management Fees					3,200,000,000	3,200,000,000			9,041,893	9,041,893.40
									55,616,109	59,342,046
Alt	Alternative Equities		884,394							
CB	Convertible Bond		1,163,176							
DomFI	Domestic Fixed Income		2,347,116							
IntISC	International Equities Small Cap		2,386,755							
Intl	International Equities		13,322,144							
IntFI	International Fixed Income		1,891,807							
LC	Domestic Equity Large Cap		6,617,905							
PE	Private Equity		4,547,706							
TMB	Municipal Bond		539,144							
SC	Domestic Equity Small Cap		5,276,056							
RA	Real Assets		3,874,767							
Total Management Fees			42,850,970							
Total Management Fees			42,850,970							
Total Custody Fees ARMB			1,381,228						1,400,000	1,400,000
Actual			44,232,198							
Authorized			62,106,700						62,106,700	n/a
Lapse			17,874,502						5,090,591	
P:\FY2017\ARMB Meeting\Final FY18 Proposed Mgmt Custody Fees										

Chief Investment Officer Report

September 29, 2016

1. Rebalanced Defined Contribution Funds July 1, 2016, July 14, 2016, July 15, 2016, July 25, 2016, and August 8, 2016.
2. Redeemed \$1 million Blue Glacier Fund on June 27, 2016, and \$45 million on July 28.
3. Invested \$6,468,522, \$4,095,528, and \$10,489,500, in Blue Glacier Fund Class C-2 on July 26, 2016, August 16, 2016, and September 15, 2016.
4. Initiated Portable Alpha Strategy totaling \$250 million in five transactions of \$50 million notional value Long S&P 500 futures and Short Russell 2000 futures on July 28, 2016, August 4, 2016, August 11, 2016, August 19, 2016, and September 9, 2016.
5. Redeemed \$15 million from the Glacier Bear Fund (GAM) on June 29, 2016.
6. Approved assignment of contract with Analytic Investors, LLC to Wells Fargo Asset Management.
7. Invested \$11 million in Fidelity Real Estate High Income fund on July 19, 2016 and \$9 million on July 29, 2016.

8. Sold \$10 million each of Mondrian and Schroder International Small Cap funds on July 28, 2016.
9. Redeemed \$2.35 million on July 1, 2016, \$21.5 million on June 29, 2016, and \$55 million on July 28, 2016 from the Polar Bear Fund (KKR).
10. Invested \$36.5 million in Zebra Global Equity Funds on June 27, 2016. \$25.5 million in Zebra Global Equity Fund and \$11 million in Zebra Global Equity Advantage fund.
11. Invested \$100 million in Zebra Global Equity Funds on July 26, 2016. \$60 million in the Zebra Global Equity fund and \$40 million in Zebra Global Equity Advantage fund.
12. Sold a total of \$81,951,073 Luther King Small Cap between August 12, 2016 and September 12, 2016.
13. Invested \$20 million in Fidelity Real Estate High Income fund on August 30.
14. Transferred \$31,488.82 residual cash from Large Cap Transition Account to Cash account.
15. Sold \$40 million Brandes International Large Cap and transferred funds to Cash Account.
16. _____
17. _____

		7/1/2016 Pension				Health Care			
Rebalancing Trades (Final)		PERS	TRS	JRS	Mil	PERS	TRS	JRS	
		AY21	AY22	AY23	AY24	AYW2	AYW3	AYW4	
Broad Domestic Equity									
AYQK	Large Cap Pool (AYQK)	(3,134,632)		(919,309)	12,671	(367)	1,350,406	1,106,933	20,528
AYQC	Small Cap Pool (AYQC)	(666,808)		(195,560)	2,699	(78)	287,262	235,470	4,366
Alternative Equity Strategies									
AY52	Advent Capital Convertible Bond (AY52)	(124,658)		(36,562)	505	53,697	44,017	816	
AYYK	Alternative Equity Strategies Pool (AYYK)	(495,843)		(145,425)	2,004	213,584	175,083	3,247	
Global Equity Ex-US									
AYRC	International Equity Pool (AYRC)	(2,890,654)		(844,449)	11,914	(30,419)	1,258,764	1,027,878	19,035
AYRK	International Equity - Small Cap Pool (AYRK)	(196,317)		(57,349)	809	(2,066)	85,488	69,807	1,293
AYSC	Emerging Markets Pool (AYSC)	(415,417)		(121,358)	1,712	(4,371)	180,897	147,717	2,735
Private Equity									
AYSK	Private Equity Pool (AYSK)	(1,162,972)		(341,085)	4,699	500,950	410,648	7,615	
Real Assets									
AYVK	Real Estate Pool (AYVK)	(1,210,515)		(523,209)	(6,860)	779,379	469,419	7,573	
AY7A	JP Morgan Real Estate (AY7A)	(53,327)		48,622	4,705				
AYPC	REIT Holdings (AYPC)	(222,566)		(65,280)	899	95,872	78,589	1,458	
AYTK	Farmland Pool (AYTK)	(511,277)		(149,947)	2,060	220,233	180,534	3,348	
AYUK	Timber Pool (AYUK)	(238,452)		(69,936)	958	102,715	84,200	1,562	
AYVC	Energy Pool (AYVC)	(45,295)		(13,290)	181	19,514	15,996	296	
AY6N	TIPS Internally Managed (AY6N)	(35,164)		(10,319)	138	15,150	12,419	231	
AYWK	MLP Pool (AYWK)	(308,239)		(90,400)	1,245	132,773	108,840	2,019	
AYZK	Private Infrastructure (AYZK)	(202,393)		(59,360)	818	87,180	71,466	1,326	
AYMK	Public Infrastructure (AYMK)	(131,033)		(38,431)	530	56,442	46,268	858	
Absolute Return									
AYTC	Absolute Return Pool (AYTC)	(959,716)		(281,473)	3,878	413,397	338,878	6,285	
Fixed Income									
AYZC	Taxable Municipal Bond Pool (AYZC)	(165,380)		(48,603)	660	936	70,818	58,175	1,080
AY1A	US Treasury Fixed Income Pool (AY1A)	(1,002,453)		(396,148)	(3,087)	929,149	15,936	134,657	3,309
AY63	Mondrian Inv. Partners Inc (AY63)	(262,753)		(86,531)	400	86,133	74,629	72,448	1,419
AYPK	High Yield Pool (AYPK)	(555,770)		(176,163)	1,326	119,710	185,818	167,989	3,220
AY5M	Lazard Emerging Income (AY5M)	(99,626)		(29,281)	399	564	42,662	35,045	651
AYIC	Tactical Fixed Income Pool (AYIC)	3,918,445		2,827,580	40,329	(232,368)	(3,812,463)	(1,371,008)	(25,252)
Short-term Fixed Income									
AY70	State of AK Short Term Pool (AY70)	11,172,815		1,823,266	(85,592)	(866,823)	(2,431,103)	(3,721,468)	(69,018)

Rebalancing Trades (Final)	7/1/2016		DC Medical		DC Health Reimbursement		DC OD&D		
	PERS	TRS		PERS	TRS	PERS	TRS	P&F	
	AYX2	AYX3		AYY2	AYY3	AY6G	AY6H	AY6I	
Broad Domestic Equity									
Large Cap Pool (AYQK)	259,045		259,138		630,345	359,546	34,709	2,580	18,407
Small Cap Pool (AYQC)	55,104		55,125		134,088	76,483	7,384	549	3,916
Alternative Equity Strategies									
Advent Capital Convertible Bond (AY52)	10,301		10,305		25,067	14,298	1,380	102	732
Alternative Equity Strategies Pool (AYYK)	40,974		40,990		99,705	56,871	5,490	408	2,912
Global Equity Ex-US									
International Equity Pool (AYRC)	239,847		239,886		583,734	332,880	32,145	2,392	17,047
International Equity - Small Cap Pool (AYRK)	16,289		16,291		39,643	22,608	2,183	163	1,158
Emerging Markets Pool (AYSC)	34,469		34,475		83,888	47,839	4,620	344	2,450
Private Equity									
Private Equity Pool (AYSK)	96,104		96,139		233,851	133,388	12,877	957	6,829
Real Assets									
Real Estate Pool (AYVK)	79,825		77,829		198,732	109,986	11,065	938	5,838
JP Morgan Real Estate (AY7A)									
REIT Holdings (AYPC)	18,392		18,399		44,754	25,528	2,465	183	1,307
Farmland Pool (AYTK)	42,250		42,265		102,809	58,641	5,661	421	3,002
Timber Pool (AYUK)	19,705		19,712		47,949	27,350	2,640	197	1,400
Energy Pool (AYVC)	3,743		3,745		9,109	5,196	501	38	266
TIPS Internally Managed (AY6N)	2,906		2,908		7,072	4,034	390	28	207
MLP Pool (AYWK)	25,471		25,481		61,981	35,354	3,412	254	1,809
Private Infrastructure (AYZK)	16,724		16,731		40,697	23,214	2,241	167	1,189
Public Infrastructure (AYMK)	10,828		10,832		26,348	15,029	1,451	108	770
Absolute Return									
Absolute Return Pool (AYTC)	79,306		79,336		192,981	110,076	10,626	790	5,636
Fixed Income									
Taxable Municipal Bond Pool (AYZC)	13,636		13,642		33,178	18,927	1,827	136	968
US Treasury Fixed Income Pool (AY1A)	53,061		54,533		125,894	74,227	6,845	426	3,651
Mondrian Inv. Partners Inc (AY63)	18,953		19,094		45,819	26,359	2,515	179	1,336
High Yield Pool (AYPK)	42,090		42,293		102,005	58,494	5,606	406	2,976
Lazard Emerging Income (AY5M)	8,214		8,218		19,987	11,401	1,101	81	584
Tactical Fixed Income Pool (AYIC)	(269,240)		(158,065)		(667,522)	(190,336)	(36,707)	(3,186)	(20,207)
Short-term Fixed Income									
State of AK Short Term Pool (AY70)	(917,997)		(1,029,302)		(2,222,114)	(1,457,393)	(122,427)	(8,661)	(64,183)



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Revenue

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

September 6, 2016

David Mabry
Managing Director
Crestline Investors, Inc.
201 Main Street, Suite 1900
Fort Worth, Texas 76102

Dear David:

RE: Redemption from Blue Glacier Fund, L.P.

On Thursday September 8, 2016, please redeem and wire transfer **\$1,000,000.00** to the following account at State Street Bank:

State Street Bank
ABA Number: 011-000-028
Account Number: 00132191
Account Name: State of Alaska – AY9F
Attn: Traci Wright, 617-664-7218

Sincerely,

A handwritten signature in blue ink, appearing to be "G. Bader", written over a horizontal line.

for Gary M. Bader
Chief Investment Officer

GMB/sv

A handwritten signature in blue ink, appearing to be "G. Bader", written over a horizontal line.

cc: Scott Jones, Comptroller
Bob Mitchell, Investment Officer
Zachary Hanna, Investment Officer
Nancy Fong, Bank of New York
Traci Wright, State Street Bank.



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Fax: 907.465.2389

July 21, 2016

Traci Wright
State Street Global Services
ITS Public Funds
1200 Crown Colony Drive, CC5
Quincy, MA 02169

Dear Traci:

RE: Capital Contribution Blue Glacier Fund, L.P. – Class C-2

This letter is your authorization to transfer **\$6,468,522.00** on **Tuesday, July 26, 2016** from account AY70 to account AY9F using the currently applicable absolute return ratios and then wire transfer the full amount as soon as possible using the following instructions:

Bank Name: The Bank of New York Mellon
ABA Number: 021-000-018
Account Name: Blue Glacier Fund, L.P. (Class C-2)
Account Number: 890-1302-112
Reference: Investor – Capital Contribution – Tuesday, July 26, 2016
Reference Details: Alaska Retirement Management Board on behalf of the State of Alaska Retirement and Benefits Plans Trust

Please provide the Fed Confirmation number for this transaction to Sarah Baulch of Bank of New York Mellon via e-mail at Sarah.Baulch@bnymellon.com.

Sincerely,

A handwritten signature in blue ink, appearing to read "G. Bader".

Gary M. Bader
Chief Investment Officer

GMB/sv A handwritten signature in blue ink, appearing to read "GMB/sv".

cc: Scott Jones, Comptroller
Bob Mitchell, Deputy Chief Investment Officer
Zachary Hanna, Investment Officer
Sarah Baulch, Bank of New York Mellon
Travis Keith, Crestline Investors, Inc.



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Revenue
ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

LETTER OF DIRECTION

State Street Global Advisors
State Street Financial Center
One Lincoln Street
Boston, MA 02111

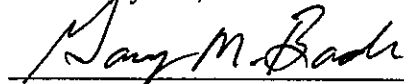
VIA FACSIMILE: 617-204-0088

Please accept this letter as authorization to execute the following instruction(s).

Letter of Direction Date	07/26/2016			
Client Account Name	State of Alaska Defined Benefit Plans			
Client Account Number	AYG2			
Fund Name and Code	Large Cap Portable Alpha Overlay Separate Account			
Transaction Type	Buy (Long) S&P500 eMini futures (Sept. contract)			
Transaction Amount(s)	Notional Value	\$50,000,000	In-Kind:	
Trade Date	07/28/2016	Settlement Date (if required)		
Special Instructions	Please execute notional value on trade date, with execution at the Cash Close, to match the timing of the short positions being sold in AYG1.			

We understand that we will contact our custodian/trustee to ensure that funds are properly received by SSgA or the appropriate custodian on settlement and/or trade date. This letter should be faxed to the SSgA Boston office at 617-204-0088.

Sincerely yours,


Authorized Signature

07/26/2016
Date

Gary M. Bader
Authorized Signator Name (Printed)

(907) 465-4399
Phone



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Revenue

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

June 27, 2016

Arvin Soh
Portfolio Manager
GAM USA, Inc.
One Rockefeller Plaza, 21st Floor
New York, NY 10020

Dear Arvin:

RE: Redemption from Glacier Bear Fund, L.P.

On Wednesday, June 29, 2016, please redeem and wire transfer **\$15,000,000.00** to the following account at State Street Bank:

State Street Bank
ABA Number: 011-000-028
Account Number: 00566182
Account Name: State of Alaska – AY8M
Attn: Traci Wright, 617-664-7218

Sincerely,

A handwritten signature in blue ink that reads "Gary M. Bader".

Gary M. Bader
Chief Investment Officer

GMB/scv Handwritten initials "scv" in blue ink.

cc: Scott Jones, Comptroller
Bob Mitchell, Deputy Chief Investment Officer
Zachary Hanna, Investment Officer
Arvin Soh, GAM
Nancy Fong, Bank of New York
Traci Wright, State Street Bank.



Analytic Investors, LLC

555 West Fifth Street, 50th Floor ▲ Los Angeles, CA 90013

Tel: 213.688.3015 Fax: 213.688.8856 ▲ www.aninvestor.com

August 12, 2016

Gary Bader
Alaska Retirement Management Board
Department of Revenue
333 Willoughby Ave.
Treasury Division, 11th Floor
Juneau, AK 99801

RE: Investment Management Agreement, dated January 11, 2011, as amended (the "Advisory Agreement")

Dear Gary:

We are pleased to inform you that Analytic Investors, LLC ("Analytic") has entered into an agreement with Wells Capital Management Incorporated ("Wells"), whereby Wells will acquire Analytic. We anticipate that this transaction will close at or around the end of the third quarter of 2016. Upon closing Wells will own 100% of the ownership interests of Analytic.

Analytic will become part of Wells Fargo Asset Management, Wells Fargo's global asset management division with \$481 billion in assets under management as of March 31, 2016. As with other investment teams in WFAM, the Analytic team will remain an independent investment team with the same structure, investment philosophy, name and location; day-to-day investment management will reside with the current Analytic team. This transaction provides Analytic with the opportunity to fully leverage the distribution and operations capabilities of a world class financial services company while maintaining Analytic's autonomy over our investment process and high client service standards and practices.

While Analytic's management team and key investment personnel will retain control and authority over the investment decisions in your account and its existing client service team will continue to service your account, the anticipated change in ownership of Analytic is deemed to be a change of control and, therefore, a deemed assignment of your Advisory Agreement with Analytic, for purposes of the Advisers Act. As a result, we are seeking your consent in order to continue our advisory relationship with you following the closing of this transaction. Please sign the enclosed consent form and return to us as soon as possible.

This transaction will not result in any change to your Advisory Agreement or the management of your portfolio.

We apologize for the inconvenience of this required consent process and thank you in advance for your continued confidence in Analytic.

Sincerely,

A handwritten signature in black ink that reads "Harindra de Silva".

Harindra de Silva
President

CONSENT FORM

The undersigned hereby consents to the assignment of the Advisory Agreement as described above.

Client: Alaska Retirement Management Board

By: _____

Name: _____

Title: _____

Date: _____

Please return this signed Consent Form to:

By mail: Analytic Investors, LLC
 ATTN: Michael Brogan
 555 West Fifth Street, 50th Floor
 Los Angeles, CA 90013

By fax: 213.688.8856
 ATTN: Michael Brogan

By email: consentnotices@aninvestor.com



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PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

July 18, 2016

Mark Botelho
Senior Account Executive
Pyramis Global Advisors Trust Company
900 Salem Street OT2N1
Smithfield, RI 02917

Re: Contribution to the Fidelity Real Estate High Income fund

Dear Mr. Botelho:

Please accept this as notification that the Alaska Retirement Management Board (ARMB) is directing a contribution of \$11,000,000 into the **Fidelity Real Estate High Income fund** on trade date July 19, settlement date July 20, 2016. The ARMB has instructed State Street to wire the funds on July 20, 2016, according to the wire instructions you have provided below:

Bank Name:	Deutsche Bank
Bank ABA#:	021-001-033
Account Number:	000159759
Account Name:	Fidelity Dart Depository
OBI Field #:	State of Alaska, Acct # 00701454464

Please let me know if you have any questions regarding this contribution.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Bader".

Gary M. Bader

bm

Cc: Gail Schubert, ARMB Chair
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, Deputy Chief Investment Officer
Kelli Barkov, Accounting Technician
Fixed Income Group

GMB/bm



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Revenue
ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

July 18, 2016

Traci Wright
State Street Global Services
IIS Public Funds
1200 Crown Colony Drive, CC2
Quincy, MA 02169

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests the following changes to be made on **Thursday, July 28, 2016**:

Mondrian International Small Cap (AY5B)	<\$10,000,000>
Schroder International Small Cap (AY5D)	<\$10,000,000>
Short-Term Fixed Income Pool (AY70)	\$20,000,000

Please take this letter as direction to transfer \$20,000,000 from International Equity Small Cap Pool (AYRK) to Short-Term Fixed Income Pool (AY70) using percentage of ownership ratios on July 28, 2016.

If you have any questions, please do not hesitate to contact me at (907) 465-4399.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Bader".

for Gary M. Bader
Chief Investment Officer

Cc: Gail Schubert, ARMB Chair
Randall Hoffbeck, Commissioner
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, Deputy Chief Investment Officer
Mike Barnhill, State Investment Officer

GMB/sjc



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Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

July 26, 2016

Jared Davidson

KKR

9 West 57th Street, Suite 2600

New York, NY 10019

****REVISED****

Dear Jared:

RE: Redemption from Polar Bear Fund, L.P.

On Thursday, July 28, 2016, please redeem and wire transfer **\$55,000,000.00** to the following account at State Street Bank:

State Street Bank

ABA Number: 011-000-028

Account Number: 00566190

Account Name: State of Alaska – AY8N

Attn: Traci Wright, 617-664-7218

Sincerely,

A handwritten signature in cursive script that reads "Gary M. Bader".

Gary M. Bader

Chief Investment Officer

GMB/scv

cc: Scott Jones, Comptroller
Bob Mitchell, Deputy Chief Investment Officer
Zachary Hanna, Investment Officer
Sarah Baulch, Bank of New York
Traci Wright, State Street Bank.



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ALASKA RETIREMENT MANAGEMENT BOARD

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PO Box 110405
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Main: 907.465.3749
Fax: 907.465.2389

June 27, 2016

Traci Wright
State Street Global Services
IIS Public Funds
1200 Crown Colony Drive, CC5
Quincy, MA 02169

Dear Traci:

RE: Zebra Global Equity Fund, LP

This letter is your authorization to transfer **\$25,500,000.00** on **Wednesday, June 29, 2016** from account AY70 to account AYLK using the currently applicable absolute return ratios and then wire transfer the full amount as soon as possible using the following instructions:

Citibank, N.A.
New York, New York
ABA Number: 021-000-089
For credit to: Morgan Stanley & Co. LLC, NY
Account Number: 388-90774
For further credit to: Zebra Global Equity Fund, LP
Account Number: 038-CDAZB2
Reference Details: Alaska Retirement Management Board on behalf of the State of Alaska
Retirement and Benefits Plans Trust

Please provide the Fed Confirmation number for this transaction to email: prime@primebermuda.com

Sincerely,

A handwritten signature in blue ink that reads "Gary M. Bader".

Gary M. Bader
Chief Investment Officer

GMB/sv

cc: Gail Schubert, ARMB Chair
Randall Hoffbeck, Commissioner
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, State Investment Officer
prime@primebermuda.com



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333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

July 26, 2016

Traci Wright
State Street Global Services
IIS Public Funds
1200 Crown Colony Drive, CC5
Quincy, MA 02169

Dear Traci:

RE: Zebra Global Equity Fund, LP

This letter is your authorization to transfer **\$60,000,000.00** on **Thursday, July 28, 2016** from account AY70 to account AYLU using the currently applicable absolute return ratios and then wire transfer the full amount as soon as possible using the following instructions:

Citibank, N.A.
New York, New York
ABA Number: 021-000-089
For credit to: Morgan Stanley & Co. LLC, NY
Account Number: 388-90774
For further credit to: Zebra Global Equity Fund, LP
Account Number: 038-CDAZB2
Reference Details: Alaska Retirement Management Board on behalf of the State of Alaska
Retirement and Benefits Plans Trust

Please provide the Fed Confirmation number for this transaction to email: prime@primebermuda.com

Sincerely,

A handwritten signature in blue ink that reads "Gary M. Bader".

Gary M. Bader
Chief Investment Officer

GMB/sv

cc: Gail Schubert, ARMB Chair
Randall Hoffbeck, Commissioner
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, State Investment Officer
prime@primebermuda.com



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ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

July 26, 2016

READER'S FILE

Traci Wright
State Street Global Services
IIS Public Funds
1200 Crown Colony Drive, CC5
Quincy, MA 02169

Dear Traci:

RE: Zebra Global Equity Advantage Fund, LP

This letter is your authorization to transfer **\$40,000,000.00** on **Thursday, July 28, 2016** from account AY70 to account AYLX using the currently applicable absolute return ratios and then wire transfer the full amount as soon as possible using the following instructions:

Citibank, N.A.
New York, New York
ABA Number: 021-000-089
For credit to: Morgan Stanley & Co. LLC, NY
Account Number: 388-90774
For further credit to: Zebra Global Equity Advantage Fund, LP
Account Number: 038-CAAKM7
Reference Details: Alaska Retirement Management Board on behalf of the State of Alaska
Retirement and Benefits Plans Trust

Please provide the Fed Confirmation number for this transaction to email: prime@primebermuda.com

Sincerely,

A handwritten signature in blue ink that reads "Gary M. Bader".

Gary M. Bader
Chief Investment Officer

GMB/sv Handwritten initials "sv" in blue ink.

cc: Gail Schubert, ARMB Chair
Randall Hoffbeck, Commissioner
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, State Investment Officer
prime@primebermuda.com



THE STATE
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Department of Revenue

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
Main: 907.465.3749
Fax: 907.465.2389

August 11, 2016

Traci Wright
State Street Global Services
IIS Public Funds
1200 Crown Colony Drive, CC2
Quincy, MA 02169

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests the following changes to be made on **Friday, August 12, 2016**:

Luther King Small Cap (AY4F)	<\$81,800,000>
Short-Term Fixed Income Pool (AY70)	\$81,800,000

Please take this letter as direction to transfer \$81,800,000 from Small Cap Pool (AYQC) to Short-Term Fixed Income Pool (AY70) using percentage of ownership ratios on August 12, 2016.

If you have any questions, please do not hesitate to contact me at (907) 465-4399.

Sincerely,

A handwritten signature in blue ink that reads "Gary M. Bader".

Gary M. Bader
Chief Investment Officer

Cc: Gail Schubert, ARMB Chair
Randall Hoffbeck, Commissioner
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, Deputy Chief Investment Officer
Mike Barnhill, State Investment Officer

GMB/sjc



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Department of Revenue

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
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Fax: 907.465.2389

August 19, 2016

Mark Botelho
Senior Account Executive
Pyramis Global Advisors Trust Company
900 Salem Street OT2N1
Smithfield, RI 02917

Re: Contribution to the Fidelity Real Estate High Income fund

Dear Mr. Botelho:

Please accept this as notification that the Alaska Retirement Management Board (ARMB) is directing a contribution of \$20,000,000 into the **Fidelity Real Estate High Income fund** on trade date August 30, settlement date August 31, 2016. The ARMB has instructed State Street to wire the funds on August 31, 2016, according to the wire instructions you have provided below:

Bank Name:	Deutsche Bank
Bank ABA#:	021-001-033
Account Number:	000159759
Account Name:	Fidelity Dart Depository
OBFI Field #:	State of Alaska, Acct # 00701454464

Please let me know if you have any questions regarding this contribution.

Sincerely,

A handwritten signature in black ink that reads "Gary M. Bader".

Gary M. Bader

Cc: Gail Schubert, ARMB Chair
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, Deputy Chief Investment Officer
Kelli Barkov, Accounting Technician
Fixed Income Group

GMB/mab



THE STATE
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Department of Revenue

ALASKA RETIREMENT MANAGEMENT BOARD

333 Willoughby Avenue, 11th Floor
PO Box 110405
Juneau, Alaska 99811-0405
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Fax: 907.465.2389

September 2, 2016

Traci Wright
State Street Global Services
IIS Public Funds
1200 Crown Colony Drive, CC2
Quincy, MA 02169

REVISED

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests the following changes to be made on **Tuesday, August 30, 2016**. Please process the following custody and accounting residual cash transfer using the applicable sending pool ratios:

Large Cap Transition Account (AY30)	<\$31,488.82>
Short-Term Fixed Income Pool (AY70)	\$31,488.82

Please take this letter as direction to transfer \$31,488.82 from Large Cap Pool (AYQK) to Short-Term Fixed Income Pool (AY70) using percentage of ownership ratios on August 30, 2016.

If you have any questions, please do not hesitate to contact me at (907) 465-4399.

Sincerely,

A handwritten signature in black ink, appearing to read "G. Bader".

For Gary M. Bader
Chief Investment Officer

Cc: Gail Schubert, ARMB Chair
Randall Hoffbeck, Commissioner
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, Deputy Chief Investment Officer
Mike Barnhill, State Investment Officer

GMB/kl



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ALASKA RETIREMENT MANAGEMENT BOARD

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Fax: 907.465.2389

June 21, 2016

Traci Wright
State Street Global Services
IIS Public Funds
1200 Crown Colony Drive, CC2
Quincy, MA 02169

Dear Ms. Wright:

The Alaska Retirement Management Board (ARMB) requests the following changes to be made on **Monday, June 27, 2016**:

Brandes Investment Partners (AY65)	< \$40,000,000 >
Short-Term Fixed Income Pool (AY70)	\$40,000,000

Please take this letter as direction to transfer \$40,000,000 from International Equity Large Cap Pool (AYRC) to Short-Term Fixed Income Pool (AY70) using percentage of ownership ratios on Monday, June 27, 2016

If you have any questions, please do not hesitate to contact me at (907) 465-4399.

Sincerely,

A handwritten signature in blue ink that reads "Gary M. Bader".

Gary M. Bader
Chief Investment Officer

Cc: Gail Schubert, ARMB Chair
Randall Hoffbeck, Commissioner
Pamela Leary, Director
Scott Jones, State Comptroller
James McKnight, Senior Investment Compliance Officer
Bob Mitchell, Deputy Chief Investment Officer
Shane Carson, State Investment Officer
Mike Barnhill, State Investment Officer

GMB/kl

**ALASKA RETIREMENT MANAGEMENT BOARD
FINANCIAL REPORT**

As of August 31, 2016

ALASKA RETIREMENT MANAGEMENT BOARD
Schedule of Investment Income and Changes in Invested Assets by Fund
Fiscal Year-to-Date through August 31, 2016

	Beginning Invested Assets	Investment Income ⁽¹⁾	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income ⁽²⁾
<u>Public Employees' Retirement System (PERS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	\$ 8,209,687,323	\$ 255,571,502	\$ 28,250,191	\$ 8,493,509,016	3.46%	3.11%
Retirement Health Care Trust	6,773,545,245	210,514,196	(50,502,960)	6,933,556,481	2.36%	3.12%
Total Defined Benefit Plans	14,983,232,568	466,085,698	(22,252,769)	15,427,065,497	2.96%	3.11%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	667,523,128	24,715,361	15,635,098	707,873,587	6.04%	3.66%
Health Reimbursement Arrangement	224,830,912	7,044,427	5,856,452	237,731,791	5.74%	3.09%
Retiree Medical Plan	59,563,867	1,875,658	2,476,733	63,916,258	7.31%	3.08%
Defined Benefit Occupational Death and Disability:						
Public Employees	14,541,982	455,172	280,984	15,278,138	5.06%	3.10%
Police and Firefighters	7,181,338	225,001	133,218	7,539,557	4.99%	3.10%
Total Defined Contribution Plans	973,641,227	34,315,619	24,382,485	1,032,339,331	6.03%	3.48%
Total PERS	15,956,873,795	500,401,317	2,129,716	16,459,404,828	3.15%	3.14%
<u>Teachers' Retirement System (TRS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	4,939,784,971	154,002,833	45,004,676	5,138,792,480	4.03%	3.10%
Retirement Health Care Trust	2,537,521,837	78,865,620	(20,591,187)	2,595,796,270	2.30%	3.12%
Total Defined Benefit Plans	7,477,306,808	232,868,453	24,413,489	7,734,588,750	3.44%	3.11%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	286,112,304	10,760,000	(144,567)	296,727,737	3.71%	3.76%
Health Reimbursement Arrangement	68,360,784	2,138,405	672,288	71,171,477	4.11%	3.11%
Retiree Medical Plan	23,621,452	742,750	479,833	24,844,035	5.18%	3.11%
Defined Benefit Occupational Death and Disability	3,137,633	97,689	(142)	3,235,180	3.11%	3.11%
Total Defined Contribution Plans	381,232,173	13,738,844	1,007,412	395,978,429	3.87%	3.60%
Total TRS	7,858,538,981	246,607,297	25,420,901	8,130,567,179	3.46%	3.13%
<u>Judicial Retirement System (JRS)</u>						
Defined Benefit Plan Retirement Trust	143,723,441	4,498,511	5,322,401	153,544,353	6.83%	3.07%
Defined Benefit Retirement Health Care Trust	26,917,606	837,585	(47,692)	27,707,499	2.93%	3.11%
Total JRS	170,641,047	5,336,096	5,274,709	181,251,852	6.22%	3.08%
<u>National Guard/Naval Militia Retirement System (MRS)</u>						
Defined Benefit Plan Retirement Trust	35,866,581	832,274	(201,200)	36,497,655	1.76%	2.33%
<u>Other Participant Directed Plans</u>						
Supplemental Annuity Plan	3,419,489,723	82,881,636	(4,954,088)	3,497,417,271	2.28%	2.43%
Deferred Compensation Plan	808,795,367	22,508,967	(2,851,865)	828,452,469	2.43%	2.79%
Total All Funds	28,250,205,494	858,567,587	24,818,173	29,133,591,254		
Total Non-Participant Directed	23,068,284,972	717,701,623	17,133,595	23,803,120,190	3.19%	3.11%
Total Participant Directed	5,181,920,522	140,865,964	7,684,578	5,330,471,064	2.87%	2.72%
Total All Funds	\$ 28,250,205,494	\$ 858,567,587	\$ 24,818,173	\$ 29,133,591,254	3.13%	3.04%

Notes:

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

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

ALASKA RETIREMENT MANAGEMENT BOARD
Schedule of Investment Income and Changes in Invested Assets by Fund
For the Month Ended August 31, 2016

	Beginning Invested Assets	Investment Income ⁽¹⁾	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income ⁽²⁾
<u>Public Employees' Retirement System (PERS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	\$ 8,372,026,166	\$ 55,345,067	\$ 66,137,783	\$ 8,493,509,016	1.45%	0.66%
Retirement Health Care Trust	6,914,921,291	45,962,506	(27,327,316)	6,933,556,481	0.27%	0.67%
Total Defined Benefit Plans	15,286,947,457	101,307,573	38,810,467	15,427,065,497	0.92%	0.66%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	697,092,855	2,247,407	8,533,325	707,873,587	1.55%	0.32%
Health Reimbursement Arrangement	232,929,132	1,557,739	3,244,920	237,731,791	2.06%	0.66%
Retiree Medical Plan	62,311,021	417,473	1,187,764	63,916,258	2.58%	0.66%
<u>Defined Benefit Occupational Death and Disability:</u>						
Public Employees	15,034,995	100,408	142,735	15,278,138	1.62%	0.66%
Police and Firefighters	7,445,400	49,646	44,511	7,539,557	1.26%	0.66%
Total Defined Contribution Plans	1,014,813,403	4,372,673	13,153,255	1,032,339,331	1.73%	0.43%
Total PERS	16,301,760,860	105,680,246	51,963,722	16,459,404,828	0.97%	0.65%
<u>Teachers' Retirement System (TRS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	5,028,098,048	33,585,547	77,108,885	5,138,792,480	2.20%	0.66%
Retirement Health Care Trust	2,590,611,194	17,215,850	(12,030,774)	2,595,796,270	0.20%	0.67%
Total Defined Benefit Plans	7,618,709,242	50,801,397	65,078,111	7,734,588,750	1.52%	0.66%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	297,095,504	1,008,635	(1,376,402)	296,727,737	-0.12%	0.34%
Health Reimbursement Arrangement	70,652,976	470,327	48,174	71,171,477	0.73%	0.67%
Retiree Medical Plan	24,665,752	164,189	14,094	24,844,035	0.72%	0.67%
Defined Benefit Occupational Death and Disability	3,213,871	21,387	(78)	3,235,180	0.66%	0.67%
Total Defined Contribution Plans	395,628,103	1,664,538	(1,314,212)	395,978,429	0.09%	0.42%
Total TRS	8,014,337,345	52,465,935	63,763,899	8,130,567,179	1.45%	0.65%
<u>Judicial Retirement System (JRS)</u>						
Defined Benefit Plan Retirement Trust	146,746,296	994,248	5,803,809	153,544,353	4.63%	0.66%
Defined Benefit Retirement Health Care Trust	27,553,664	183,250	(29,415)	27,707,499	0.56%	0.67%
Total JRS	174,299,960	1,177,498	5,774,394	181,251,852	3.99%	0.66%
<u>National Guard/Naval Militia Retirement System (MRS)</u>						
Defined Benefit Plan Retirement Trust	36,572,846	35,001	(110,192)	36,497,655	-0.21%	0.10%
<u>Other Participant Directed Plans</u>						
Supplemental Annuity Plan	3,503,837,321	5,163,141	(11,583,191)	3,497,417,271	-0.18%	0.15%
Deferred Compensation Plan	829,346,138	2,061,827	(2,955,496)	828,452,469	-0.11%	0.25%
Total All Funds	28,860,154,470	166,583,648	106,853,136	29,133,591,254		
Total Non-Participant Directed	23,532,782,652	156,102,638	114,234,900	23,803,120,190	1.15%	0.66%
Total Participant Directed	5,327,371,818	10,481,010	(7,381,764)	5,330,471,064	0.06%	0.20%
Total All Funds	\$ 28,860,154,470	\$ 166,583,648	\$ 106,853,136	\$ 29,133,591,254	0.95%	0.58%

Notes:

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

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

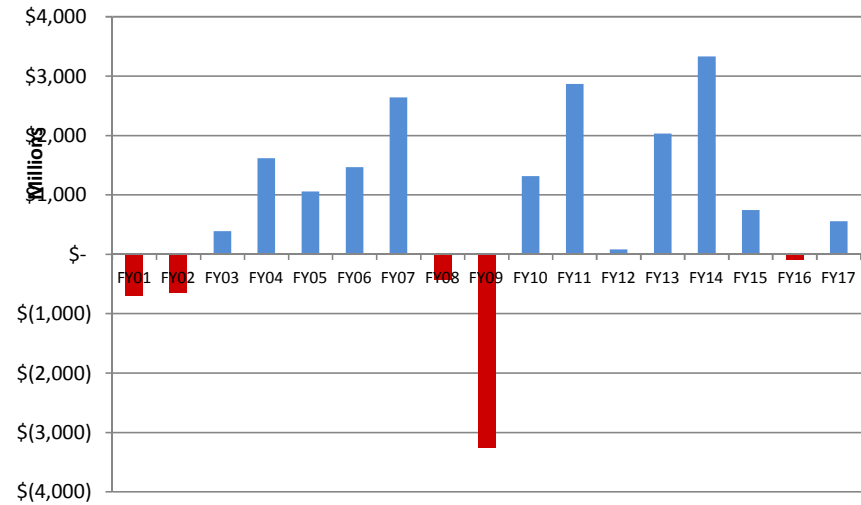
Total Defined Benefit Assets

As of August 31, 2016

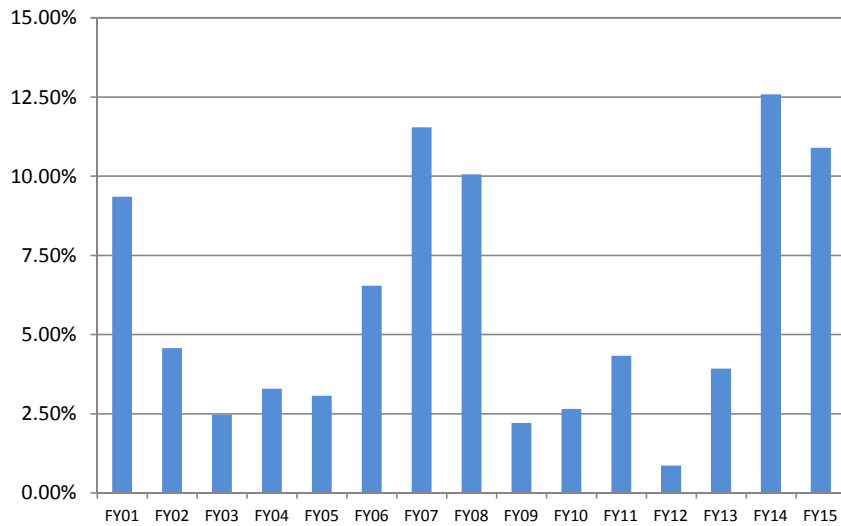
Total Assets History



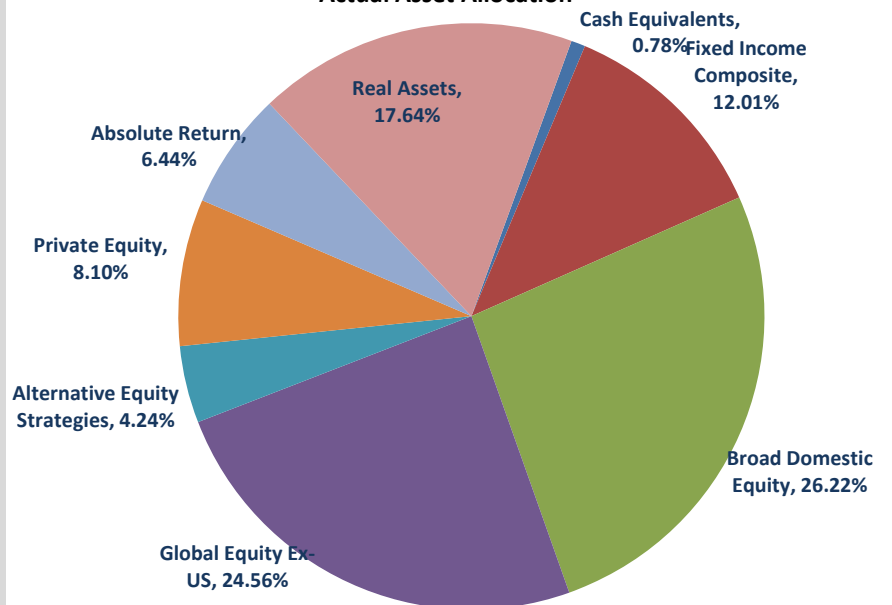
Income by Fiscal Year



5-year Annualized Returns as of Fiscal Year End

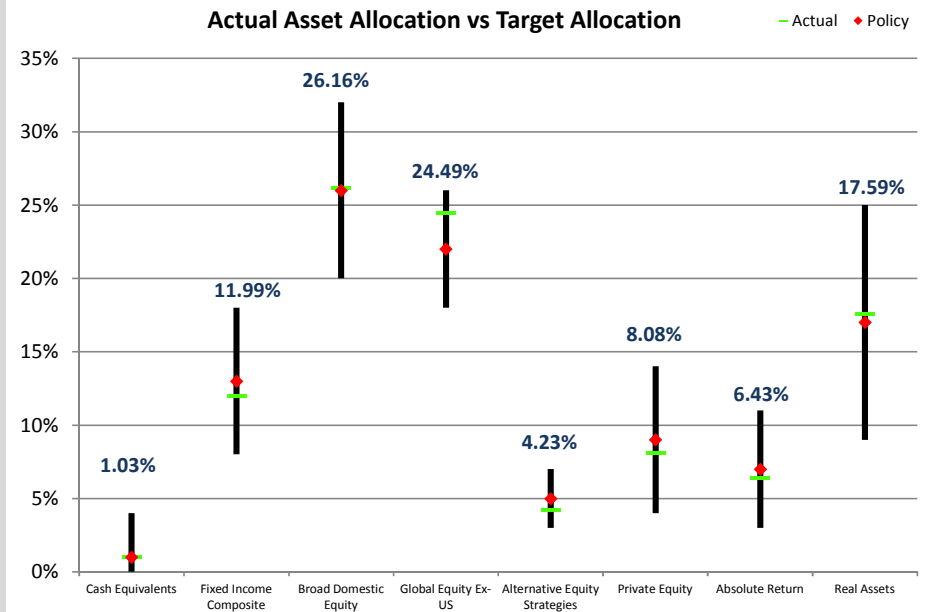
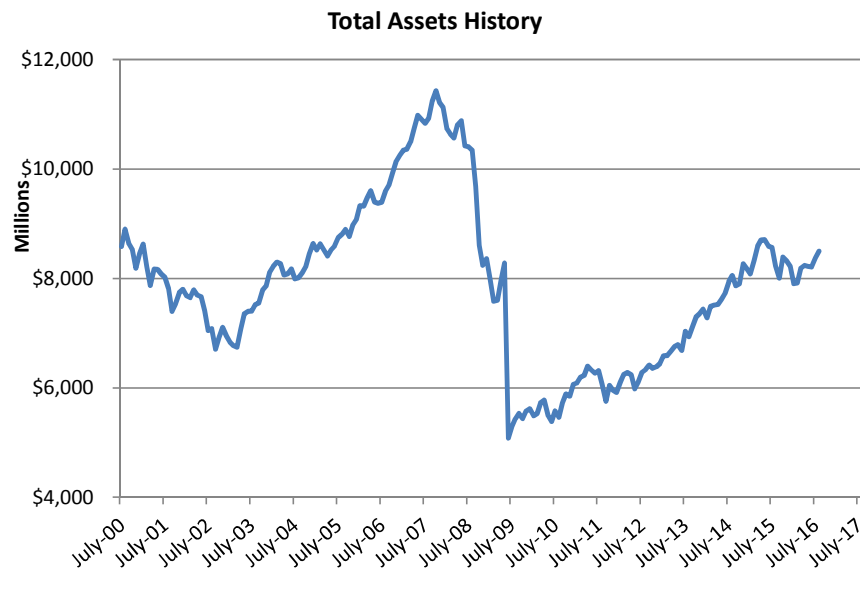
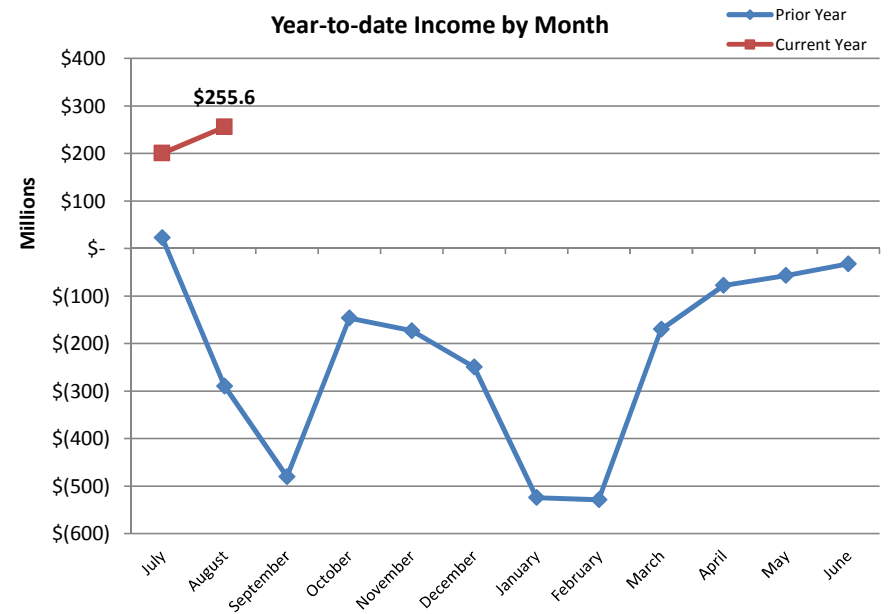
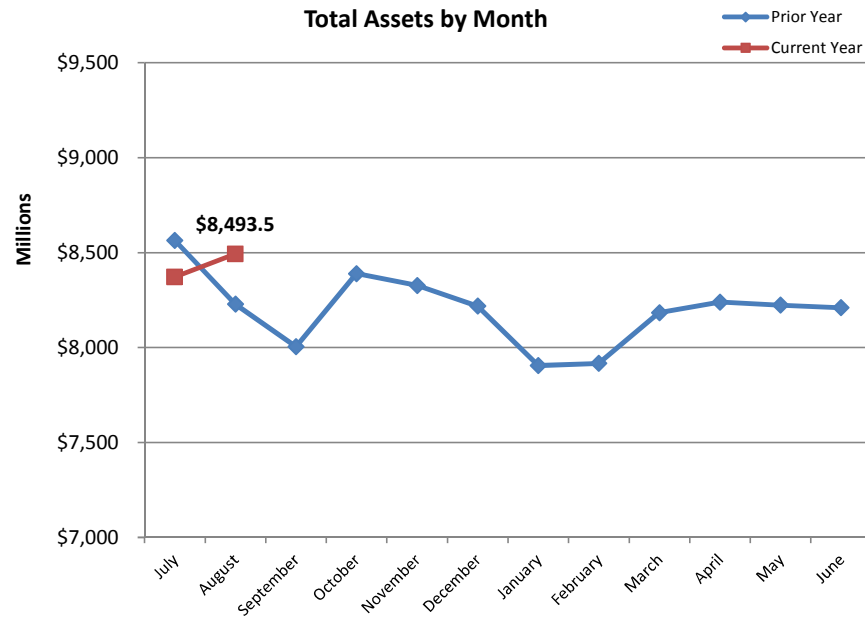


Actual Asset Allocation



Public Employees' Retirement Pension Trust Fund

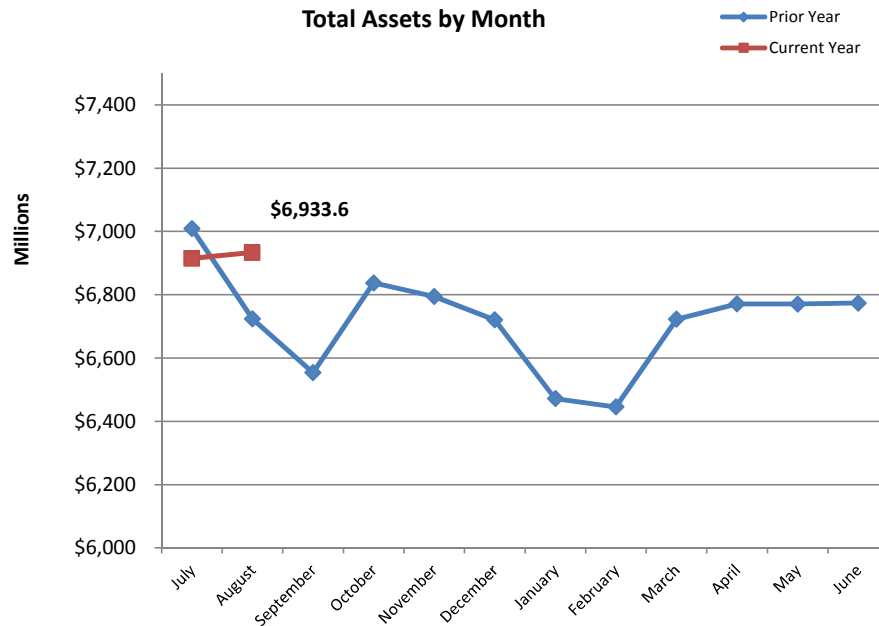
Fiscal Year-to-Date through August 31, 2016



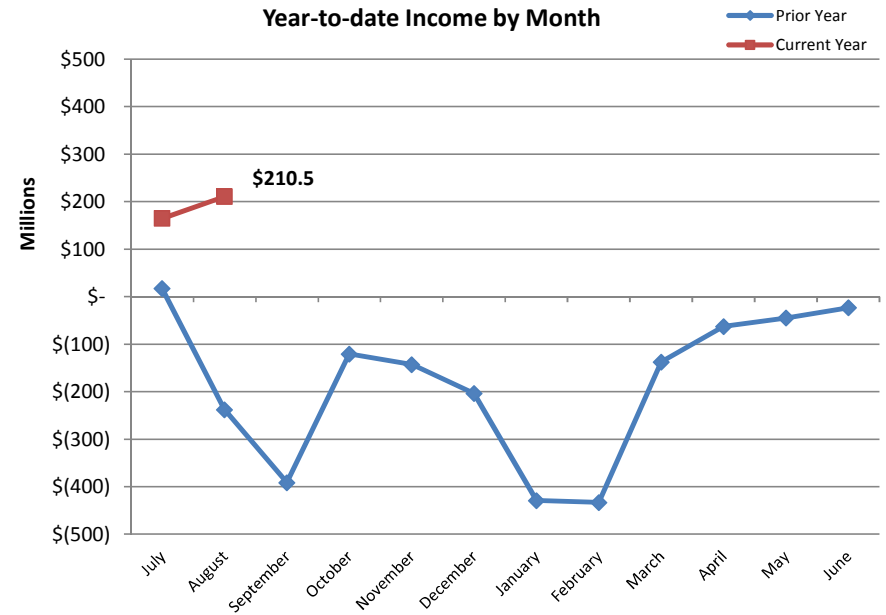
Public Employees' Retirement Health Care Trust Fund

Fiscal Year-to-Date through August 31, 2016

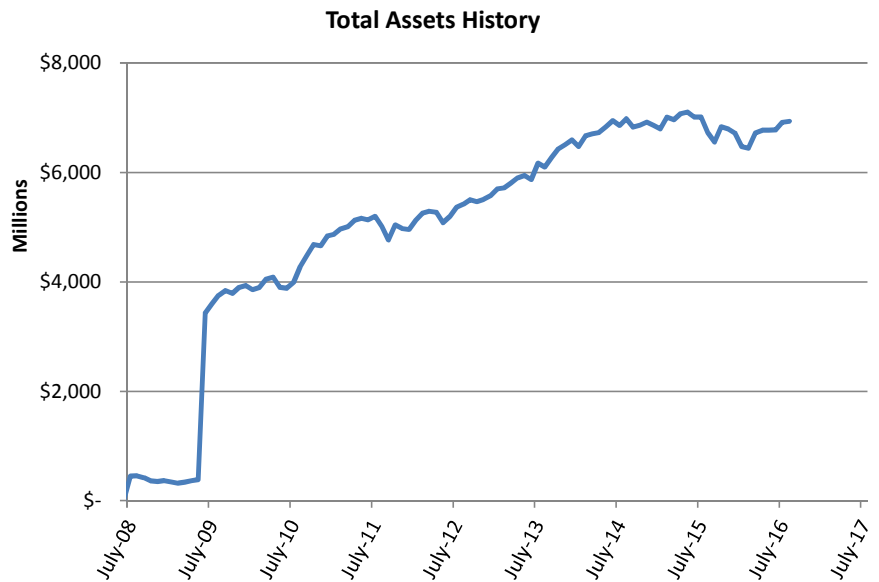
Total Assets by Month



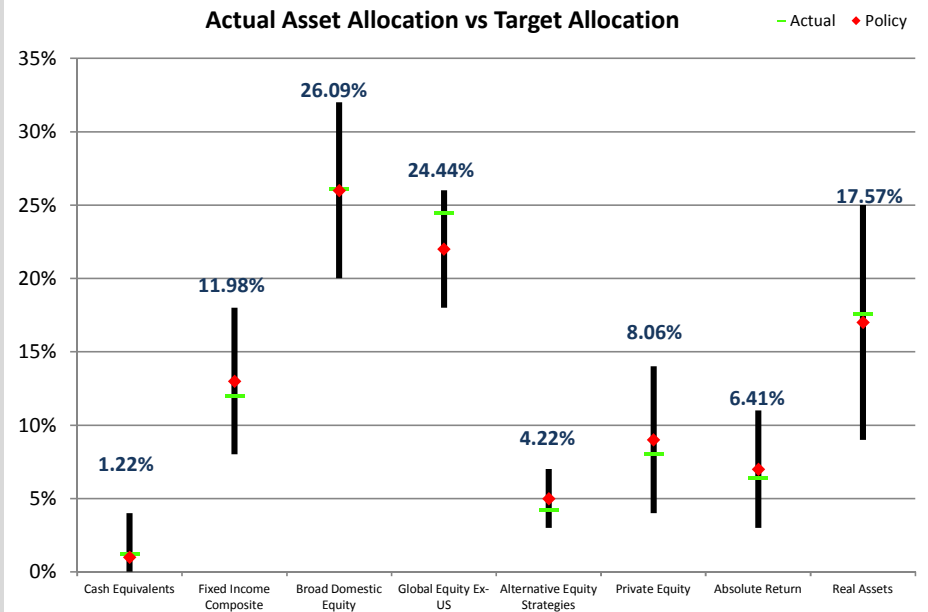
Year-to-date Income by Month



Total Assets History

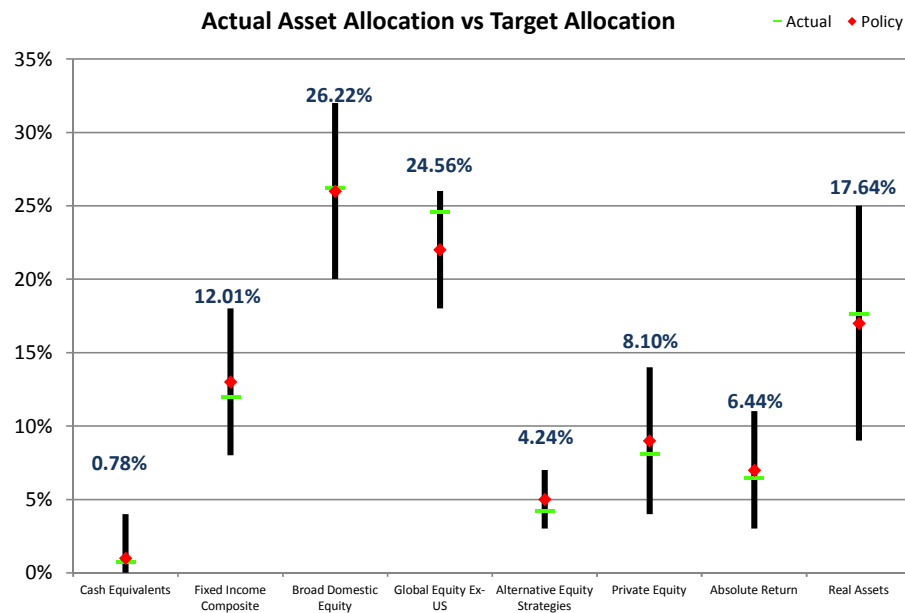
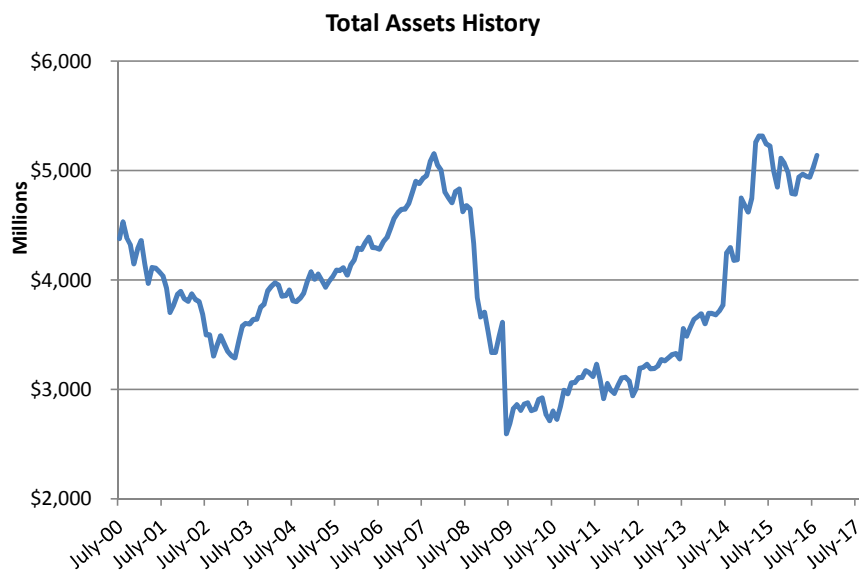
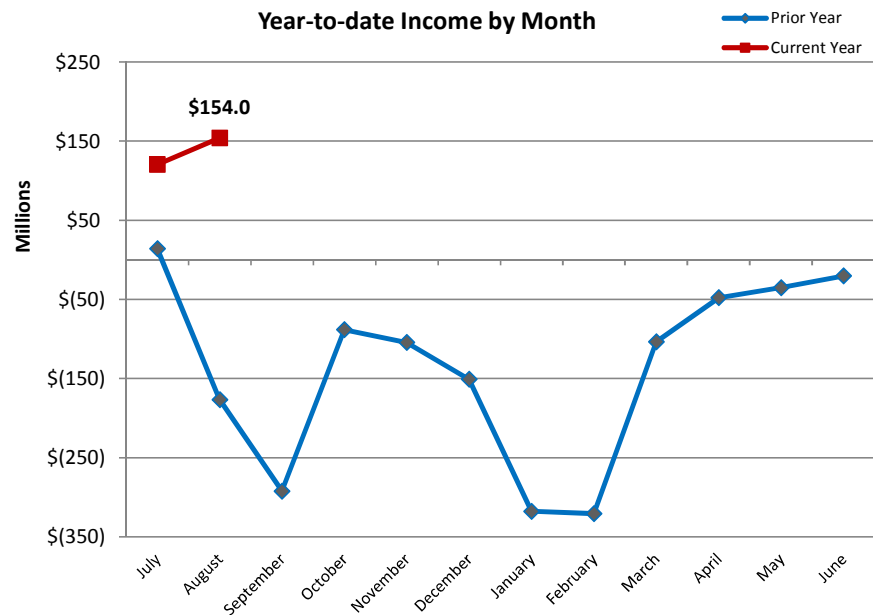
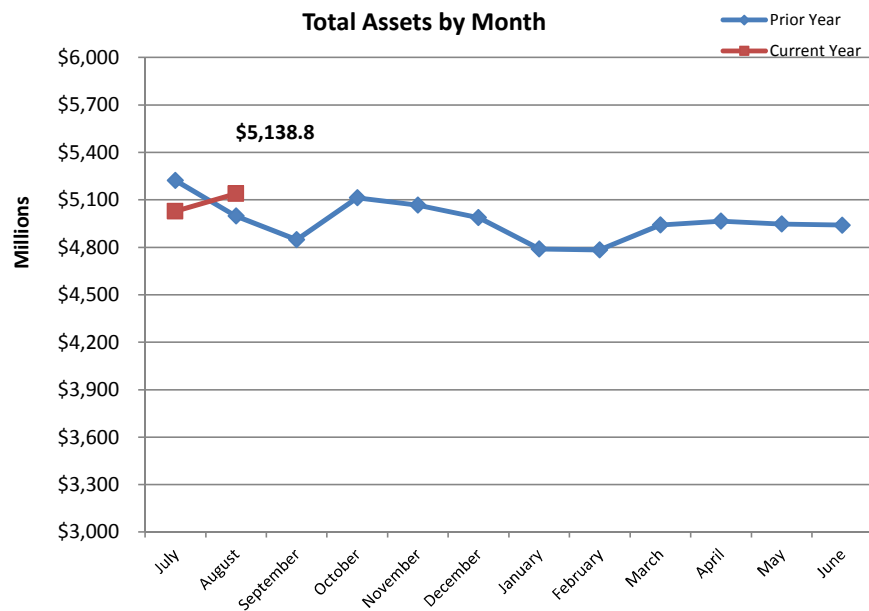


Actual Asset Allocation vs Target Allocation



Teachers' Retirement Pension Trust Fund

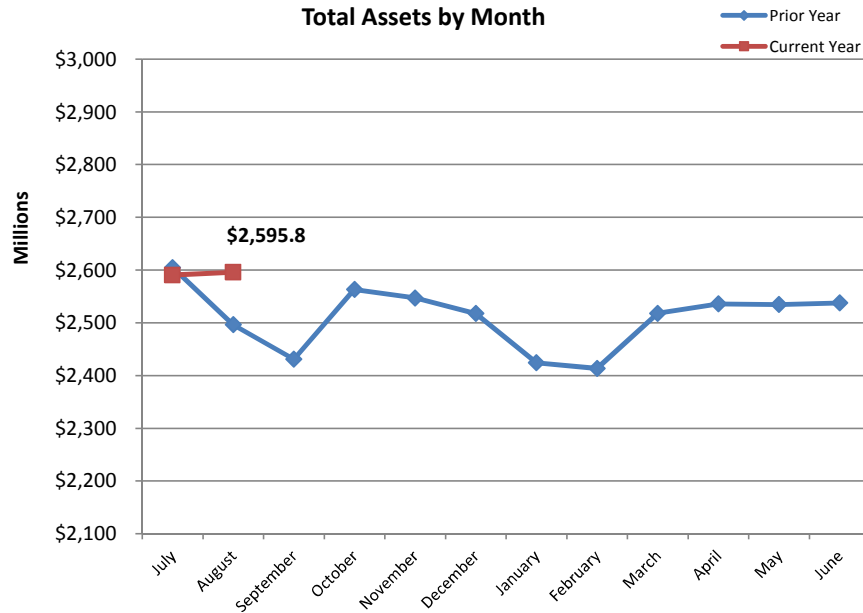
Fiscal Year-to-Date through August 31, 2016



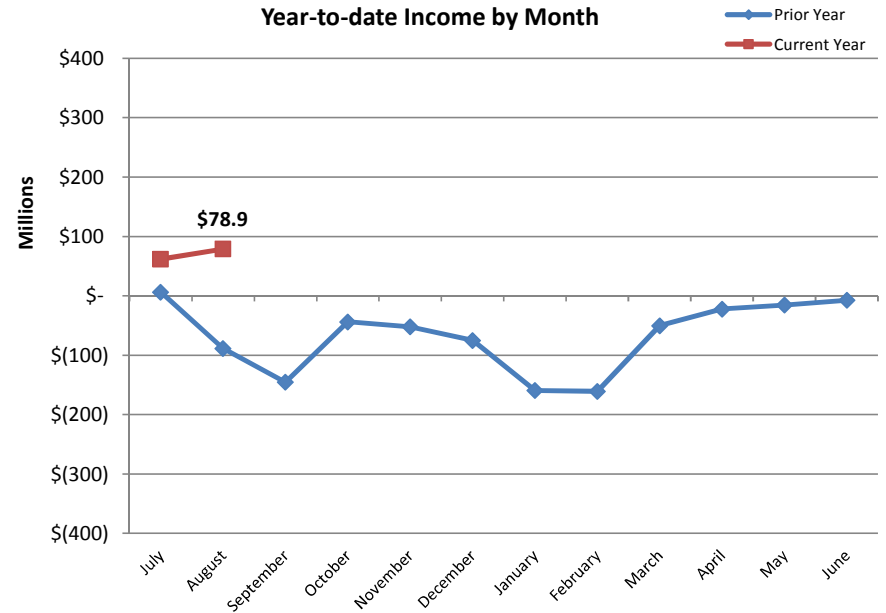
Teachers' Retirement Health Care Trust Fund

Fiscal Year-to-Date through August 31, 2016

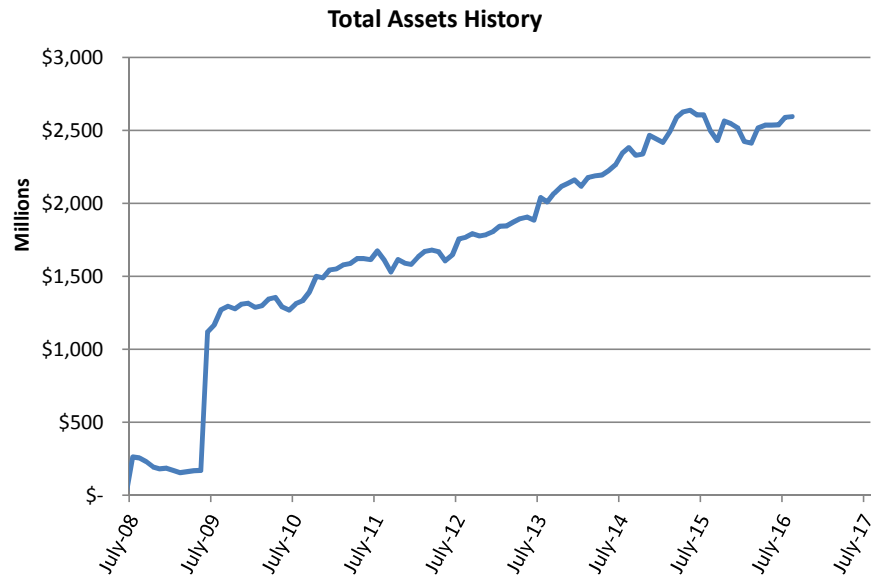
Total Assets by Month



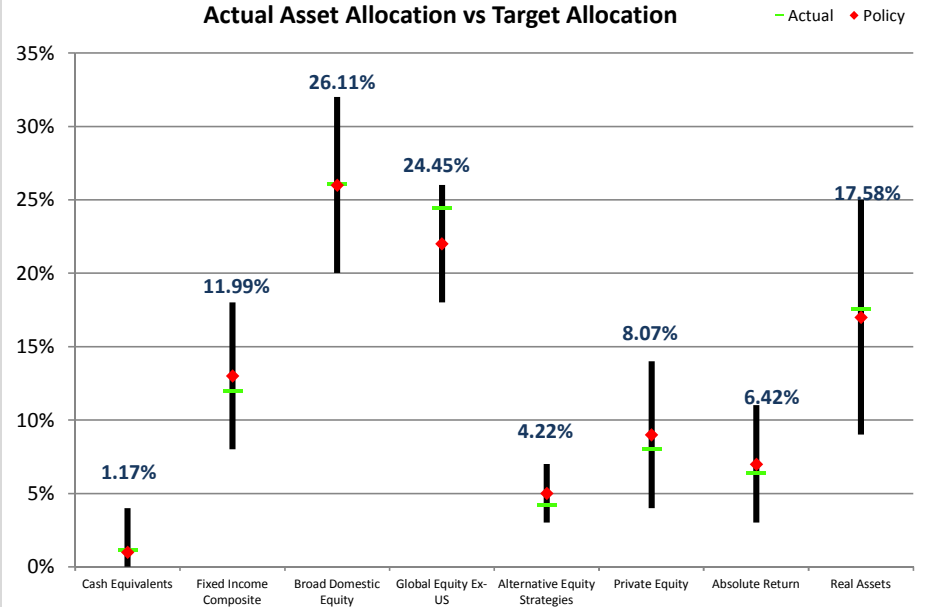
Year-to-date Income by Month



Total Assets History



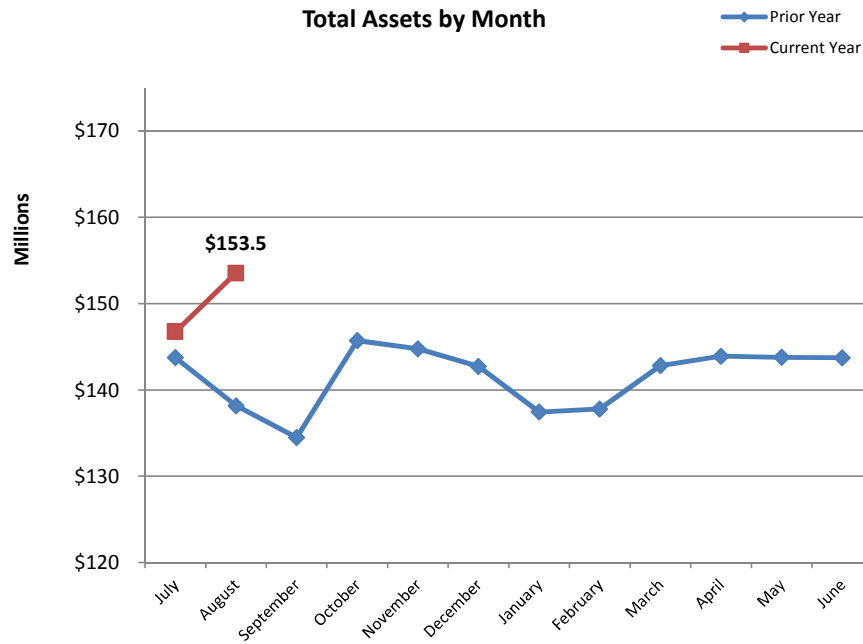
Actual Asset Allocation vs Target Allocation



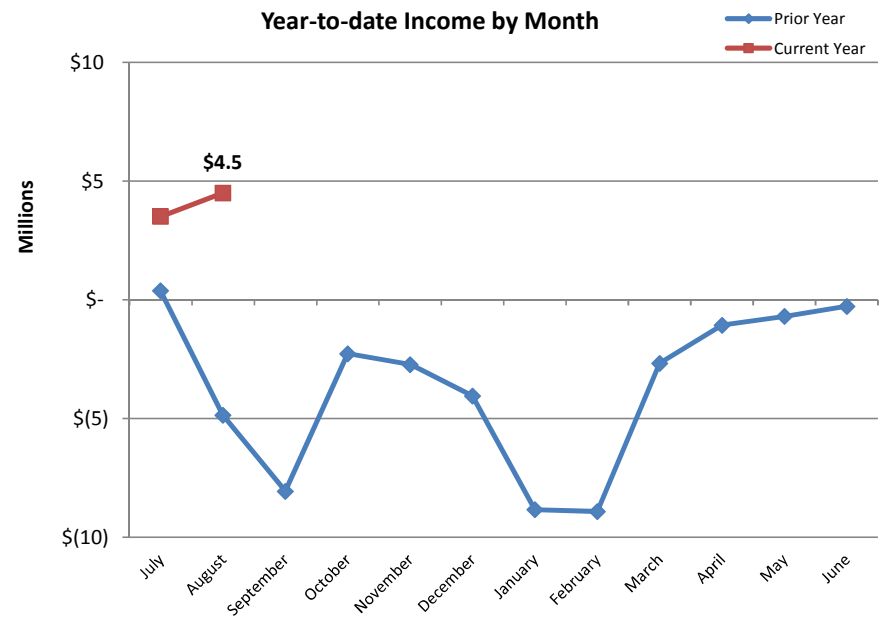
Judicial Retirement Pension Trust Fund

Fiscal Year-to-Date through August 31, 2016

Total Assets by Month



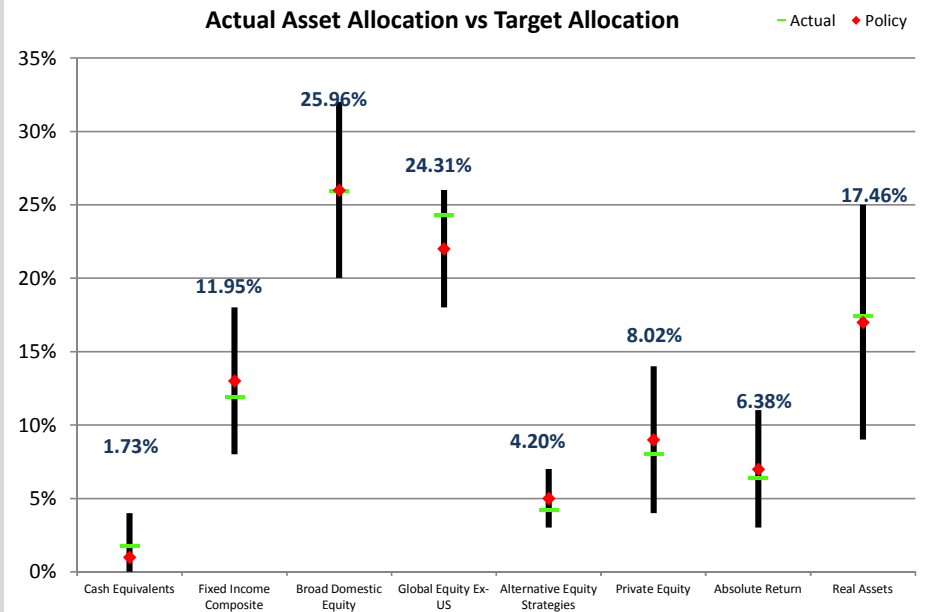
Year-to-date Income by Month



Total Assets History



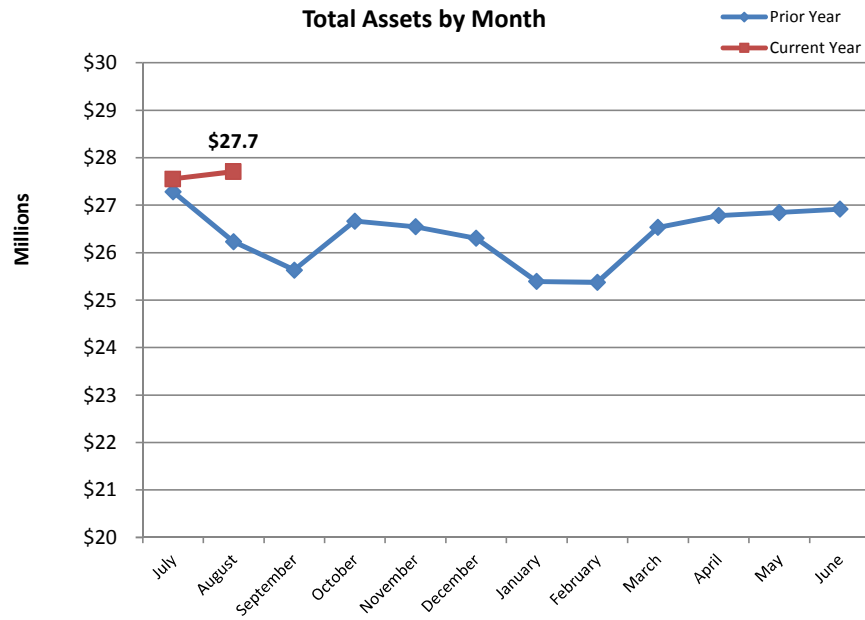
Actual Asset Allocation vs Target Allocation



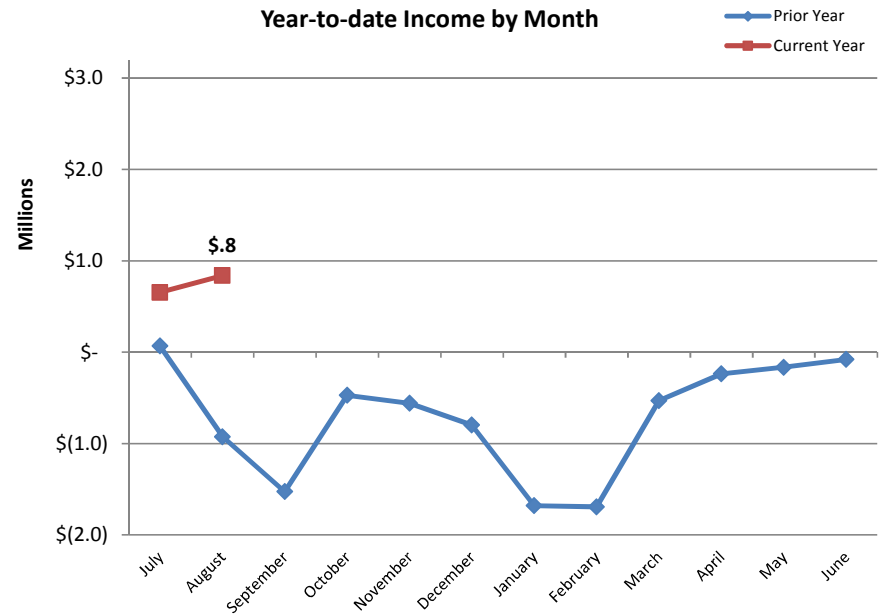
Judicial Retirement Health Care Trust Fund

Fiscal Year-to-Date through August 31, 2016

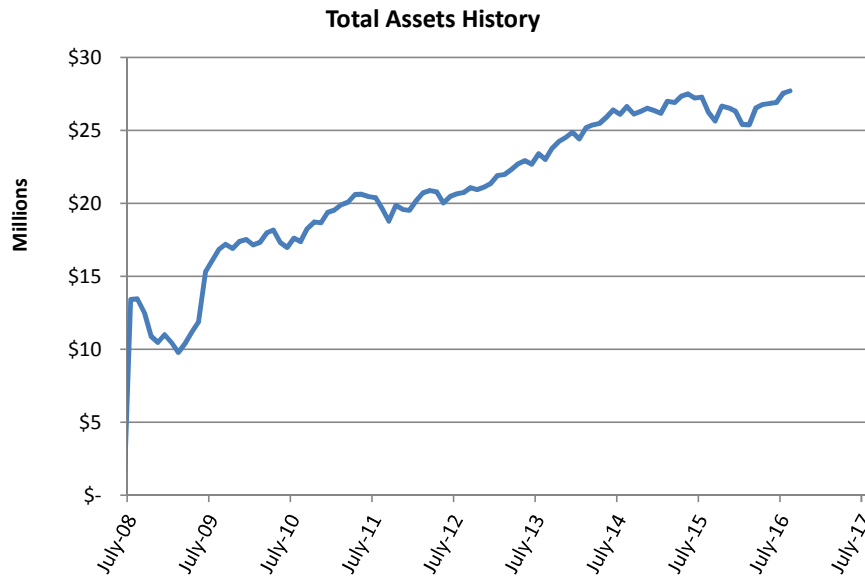
Total Assets by Month



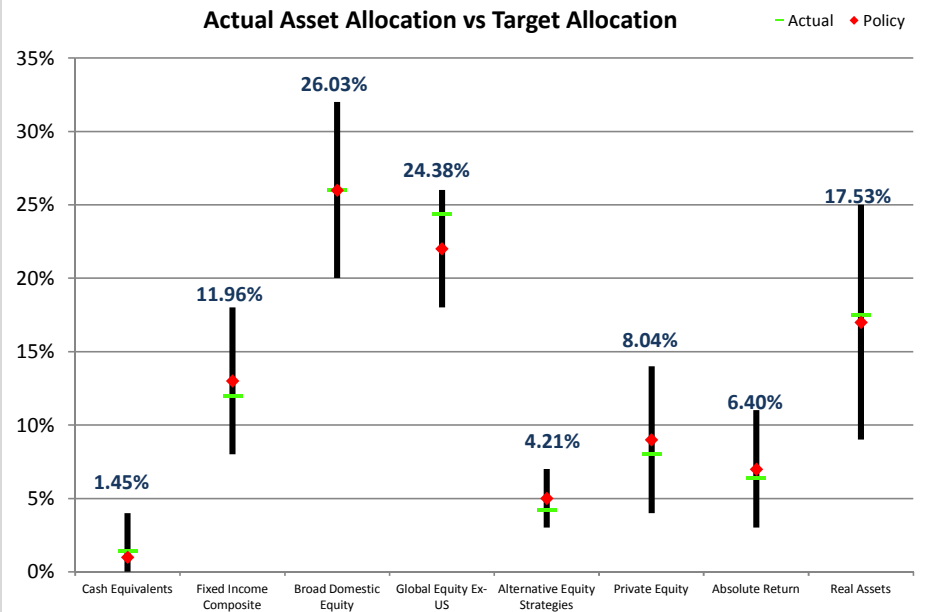
Year-to-date Income by Month



Total Assets History

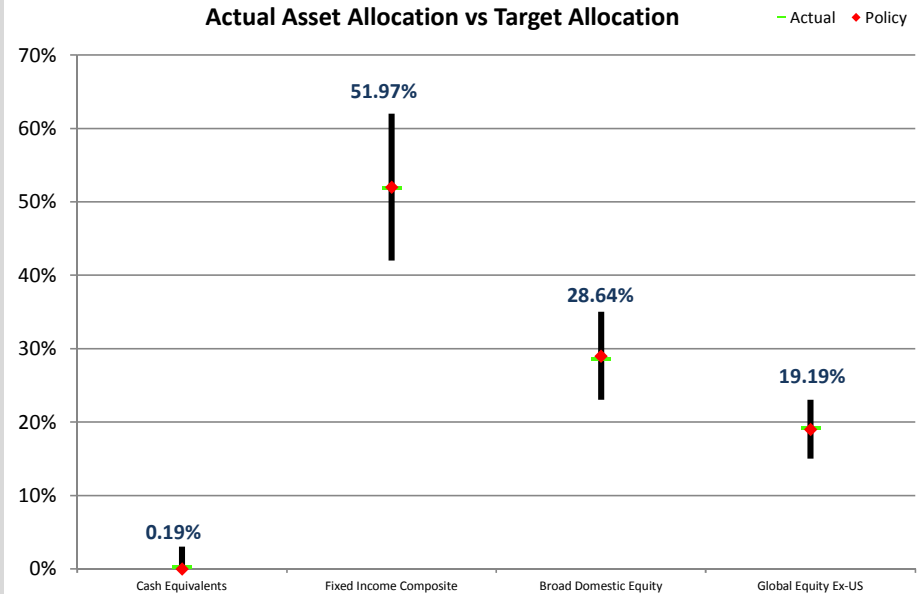
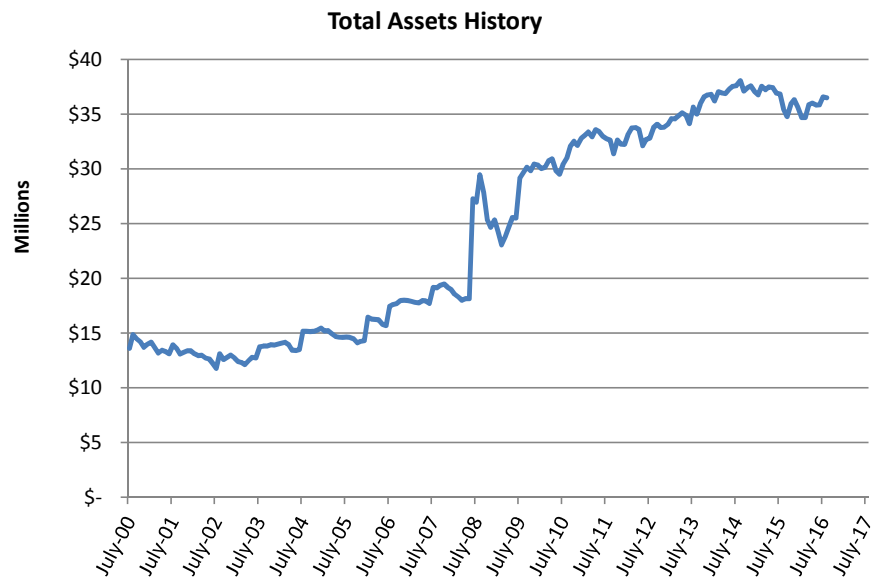
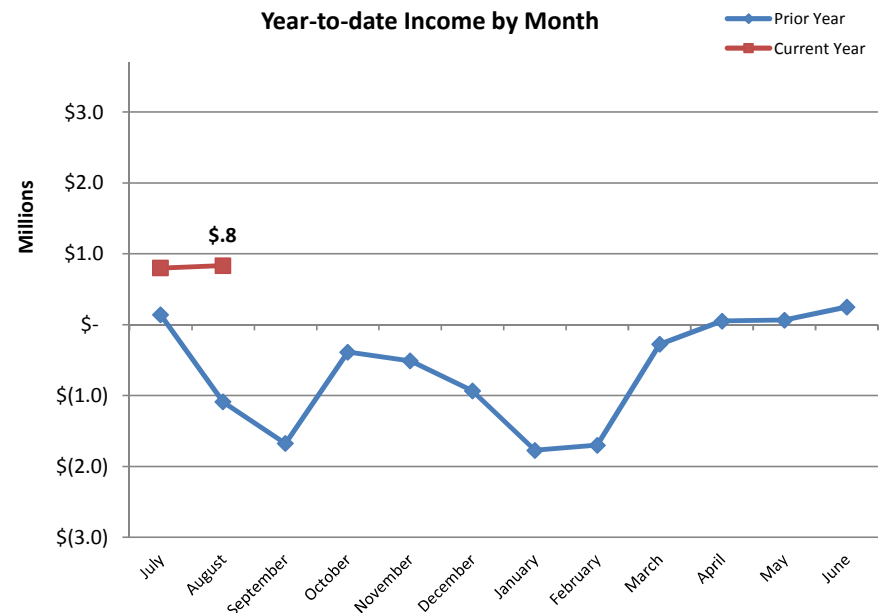
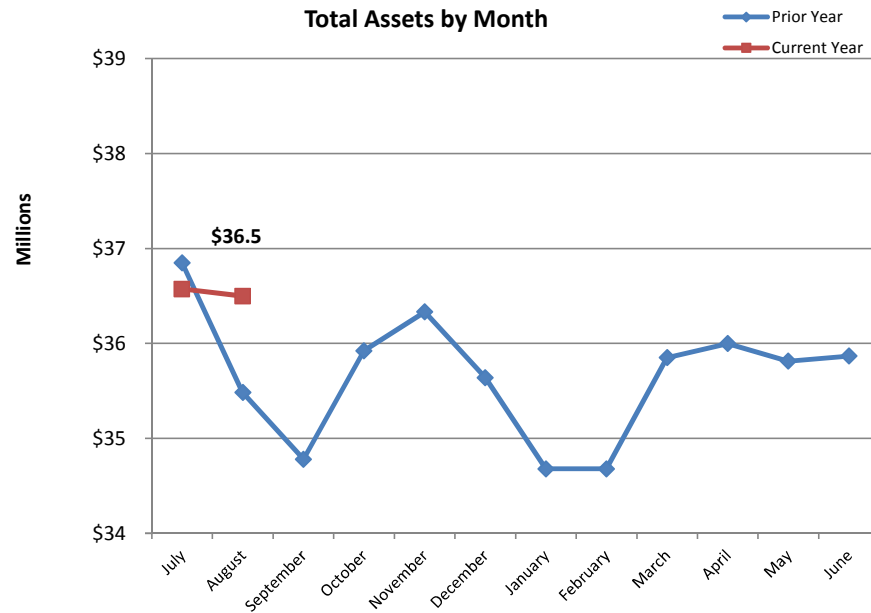


Actual Asset Allocation vs Target Allocation



Military Retirement Trust Fund

Fiscal Year-to-Date through August 31, 2016



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 August 31, 2016

	Beginning Invested Assets	Investment Income	Net Contributions and (Withdrawals)	Ending Invested Assets	% increase (decrease)
Cash					
Short-Term Fixed Income Pool	\$ 114,937,504	\$ 150,907	\$ 139,754,622	\$ 254,843,033	121.72%
Total Cash	<u>114,937,504</u>	<u>150,907</u>	<u>139,754,622</u>	<u>254,843,033</u>	121.72%
Fixed Income					
US Treasury Fixed Income	<u>1,074,119,945</u>	<u>(4,750,131)</u>	<u>-</u>	<u>1,069,369,814</u>	-0.44%
Taxable Municipal Bond Pool					
Western Asset Management	136,233,009	(72,525)	-	136,160,484	-0.05%
Guggenheim Partners	<u>130,073,520</u>	<u>576,496</u>	<u>-</u>	<u>130,650,016</u>	0.44%
	<u>266,306,529</u>	<u>503,971</u>	<u>-</u>	<u>266,810,500</u>	0.19%
Alternative Fixed Income Pool					
Fidelity Institutional Asset Management.	130,253,211	1,308,863	-	131,562,074	1.00%
Schroders Innsurance Linked Securities	<u>39,974,528</u>	<u>(25,456)</u>	<u>-</u>	<u>39,949,072</u>	-0.06%
	<u>170,227,739</u>	<u>1,283,407</u>	<u>-</u>	<u>171,511,146</u>	0.75%
International Fixed Income Pool					
Mondrian Investment Partners	<u>369,407,156</u>	<u>(2,653,377)</u>	<u>-</u>	<u>366,753,779</u>	-0.72%
High Yield Pool					
MacKay Shields, LLC	227,853,196	4,954,237	-	232,807,433	2.17%
Fidelity Instit. Asset Mgmt. High Yield CMBS	185,359,917	526,745	20,000,000	205,886,662	11.07%
Columbia Threadneedle	218,944,705	4,397,834	-	223,342,539	2.01%
Eaton Vance High Yield	<u>217,394,927</u>	<u>3,396,286</u>	<u>-</u>	<u>220,791,213</u>	1.56%
	<u>849,552,745</u>	<u>13,275,102</u>	<u>20,000,000</u>	<u>882,827,847</u>	3.92%
Emerging Debt Pool					
Lazard Emerging Income	<u>109,379,951</u>	<u>1,479,350</u>	<u>-</u>	<u>110,859,301</u>	1.35%
Total Fixed Income	<u>2,838,994,065</u>	<u>9,138,322</u>	<u>20,000,000</u>	<u>2,868,132,387</u>	1.03%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended August 31, 2016

Domestic Equities

Small Cap Pool

Passively Managed

SSgA Russell 2000 Growth	18,933,638	199,680	-	19,133,318	1.05%
SSgA Russell 2000 Value	32,929,940	830,811	-	33,760,751	2.52%
Total Passive	51,863,578	1,030,491	-	52,894,069	1.99%

Actively Managed

Barrow, Haney, Mewhinney & Strauss	79,507,570	1,215,356	(29,184,900)	51,538,026	-35.18%
DePrince, Race & Zollo Inc.- Micro Cap	80,470,941	3,097,801	-	83,568,742	3.85%
Fidelity (FIAM) Small Company	199,404,556	2,288,225	(27,640,200)	174,052,581	-12.71%
Frontier Capital Mgmt. Co.	82,219,187	2,089,495	(37,499,700)	46,808,982	-43.07%
Jennison Associates, LLC	87,629,839	714,013	-	88,343,852	0.81%
Lord Abbett Small Cap Growth Fund	71,705,272	677,873	(17,324,100)	55,059,045	-23.21%
Lord Abbett & Co.- Micro Cap	82,833,310	797,588	-	83,630,898	0.96%
Luther King Capital Management	83,139,613	(1,188,540)	(81,949,268)	1,805	-100.00%
SSgA Futures Small Cap	12,148,294	212,681	-	12,360,975	1.75%
Transition Account	13	-	-	13	-
Sycamore Capital	103,010,273	3,963,873	(851,100)	106,123,046	3.02%
SSgA Volatility-Russell 2000	46,985,801	(431,545)	(37,500,000)	9,054,256	-80.73%
Zebra Capital Management	76,663,136	2,310,280	-	78,973,416	3.01%
Total Active	1,005,717,805	15,747,100	(231,949,268)	789,515,637	-21.50%
Total Small Cap	1,057,581,383	16,777,591	(231,949,268)	842,409,706	-20.35%

Large Cap Pool

Passively Managed

SSgA Russell 1000 Growth	1,094,539,524	(5,221,709)	-	1,089,317,815	-0.48%
SSgA Russell 1000 Value	987,119,704	7,530,963	-	994,650,667	0.76%
SSgA Russell 200	844,450,693	2,430,308	-	846,881,001	0.29%
Total Passive	2,926,109,921	4,739,562	-	2,930,849,483	0.16%

Actively Managed

Allianz Global Investors	364,412,421	2,300,869	-	366,713,290	0.63%
Barrow, Haney, Mewhinney & Strauss	343,964,163	5,389,061	-	349,353,224	1.57%
Lazard Freres	371,301,648	1,374,294	-	372,675,942	0.37%
McKinley Capital Mgmt.	356,443,344	1,613,638	-	358,056,982	0.45%
Quantitative Management Assoc.	336,000,416	4,413,032	-	340,413,448	1.31%
SSgA Futures large cap	15,622,572	17,165	-	15,639,737	0.11%
Transition Account	31,472	17	(31,489)	-	-100.00%
SSgA Volatility-Russell 1000	89,160,140	(1,499,248)	-	87,660,892	-1.68%
Portable Alpha	57,544,372	(77,648)	169,500,000	226,966,724	294.42%
Internally Managed Large Cap.	335,623,162	(3,456,052)	-	332,167,110	-1.03%
Total Active	2,270,103,710	10,075,128	169,468,511	2,449,647,349	7.91%
Total Large Cap	5,196,213,631	14,814,690	169,468,511	5,380,496,832	3.55%
Total Domestic Equity	6,253,795,014	31,592,281	(62,480,757)	6,222,906,538	-0.49%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended August 31, 2016

Alternative Equity Strategies

Alternative Equity Strategy Pool

Relational Investors, LLC	1,080,805	-	-	1,080,805	-
Analytic Buy Write Account	305,687,696	2,295,297	-	307,982,993	0.75%
Quantitative Management Associates MPS	206,629,427	(1,241,331)	-	205,388,096	-0.60%
ARMB Equity Yield Strategy	287,107,381	(758,731)	-	286,348,650	-0.26%
Alternative Equity Strategies Transition Account	-	-	-	-	-
Total Alternative Equity Strategy Pool	800,505,309	295,235	-	800,800,544	0.04%

Convertible Bond Pool

Advent Capital	202,992,144	1,303,914	-	204,296,058	0.64%
Total Alternative Equity Strategies	1,003,497,453	1,599,149	-	1,005,096,602	0.16%

Global Equities Ex US

Small Cap Pool

Mondrian Investment Partners	150,708,740	1,665,409	-	152,374,149	1.11%
Schroder Investment Management	158,882,303	(298,090)	-	158,584,213	-0.19%
Total Small Cap	309,591,043	1,367,319	-	310,958,362	0.44%

Large Cap Pool

Blackrock ACWI Ex-US IMI	800,683,489	4,064,326	-	804,747,815	0.51%
Brandes Investment Partners	682,790,097	11,396,114	-	694,186,211	1.67%
Cap Guardian Trust Co	711,393,585	4,330,710	-	715,724,295	0.61%
Lazard Freres	351,004,029	(2,310,344)	-	348,693,685	-0.66%
McKinley Capital Management	505,368,268	(4,313,579)	-	501,054,689	-0.85%
SSgA Futures International	-	-	-	-	-
Allianz Global Investors	255,712,447	224,424	-	255,936,871	0.09%
Arrow Street Capital	304,384,845	(2,722,275)	-	301,662,570	-0.89%
Baillie Gifford Overseas Limited	389,443,003	(2,040,442)	-	387,402,561	-0.52%
State Street Global Advisors	803,735,196	4,286,704	-	808,021,900	0.53%
Total Large Cap	4,804,514,959	12,915,638	-	4,817,430,597	0.27%

Emerging Markets Equity Pool

Lazard Asset Management	446,405,952	6,460,555	-	452,866,507	1.45%
Eaton Vance	243,213,863	561,695	-	243,775,558	0.23%
Total Emerging Markets Pool	689,619,815	7,022,250	-	696,642,065	1.02%

Total Global Equities

	5,803,725,817	21,305,207	-	5,825,031,024	0.37%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended August 31, 2016

Private Equity Pool

Abbott Capital	764,439,977	20,324,876	2,064,334	786,829,187	2.93%
Angelo, Gordon & Co.	3,324,407	12,279	-	3,336,686	0.37%
Advent International GPE Fund VIII-B	-	-	-	-	-
Lexington Partners VII	35,958,950	-	(1,106,719)	34,852,231	-3.08%
Merit Capital Partners	18,063,157	-	-	18,063,157	-
NB SOF III	22,144,117	-	-	22,144,117	-
NB SOF IV	-	-	-	-	-
Resolute Fund III	7,786,669	598,543	-	8,385,212	7.69%
Glendon Opportunities	22,915,829	2,539,494	-	25,455,323	11.08%
New Mountain Partners IV	12,623,969	916,463	-	13,540,432	7.26%
KKR Lending Partners II	69,806,391	2,645,260	(2,204,254)	70,247,397	0.63%
NGP XI	11,985,335	1,552,446	3,696,300	17,234,081	43.79%
Lexington Capital Partners VIII	11,539,109	-	-	11,539,109	-
Onex Partnership III	20,876,813	35,831	(104,565)	20,808,079	-0.33%
Pathway Capital Management LLC	810,559,280	28,610,196	(868,600)	838,300,876	3.42%
Summit Partners GE IX	-	-	-	-	-
Warburg Pincus X	14,705,159	512,418	-	15,217,577	3.48%
Warburg Pincus XI	28,369,336	659,863	150,000	29,179,199	2.85%
Warburg Pincus XII	4,178,116	(304,119)	812,500	4,686,497	12.17%
Total Private Equity	1,859,276,614	58,103,550	2,438,996	1,919,819,160	3.26%

Absolute Return Pool

Global Asset Management (USA) Inc.	256,411,378	828,290	-	257,239,668	0.32%
Prisma Capital Partners	349,848,174	5,924,896	-	355,773,070	1.69%
Crestline Investors, Inc.	354,520,091	3,938,103	4,095,528	362,553,722	2.27%
Allianz Global Investors	231,653,761	981,972	-	232,635,733	0.42%
Crestline Specialty Fund	18,709,882	678,890	3,971,495	23,360,267	24.86%
KKR Apex Equity Fund	95,559,360	1,016,740	-	96,576,100	1.06%
Zebra Global Equity Fund	129,360,492	(337,689)	-	129,022,803	-0.26%
Zebra Global Equity Advantage Fund	69,639,568	(235,689)	-	69,403,879	-0.34%
Total Absolute Return Investments	1,505,702,706	12,795,513	8,067,023	1,526,565,242	1.39%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended August 31, 2016

Real Assets

Farmland Pool

UBS Agrivest, LLC	540,535,436	5,774,913	9,915,853	556,226,202	2.90%
Hancock Agricultural Investment Group	266,841,225	-	-	266,841,225	-
Total Farmland Pool	807,376,661	5,774,913	9,915,853	823,067,427	1.94%

Timber Pool

Timberland Invst Resource LLC	276,961,105	7,723,918	-	284,685,023	2.79%
Hancock Natural Resource Group	97,894,410	(30,478)	-	97,863,932	-0.03%
Total Timber Pool	374,855,515	7,693,440	-	382,548,955	2.05%

Energy Pool

EIG Energy Fund XV	32,523,365	1,751,564	(700,227)	33,574,702	3.23%
EIG Energy Fund XD	3,848,454	(2,286,008)	-	1,562,446	-59.40%
EIG Energy Fund XIV-A	11,836,370	(216,774)	(107,740)	11,511,856	-2.74%
EIG Energy Fund XVI	24,767,055	4,483,481	3,871,313	33,121,849	33.73%
Total Energy Pool	72,975,244	3,732,263	3,063,346	79,770,853	9.31%

REIT Pool

REIT Trans Account	-	-	-	-	-
REIT Holdings	364,979,161	(12,645,756)	-	352,333,405	-3.46%
Total REIT Pool	364,979,161	(12,645,756)	-	352,333,405	-3.46%

Treasury Inflation Proof Securities

TIPS Internally Managed Account	56,037,306	(217,617)	-	55,819,689	-0.39%

Master Limited Partnerships

Advisory Research MLP	228,304,560	1,681,323	-	229,985,883	0.74%
Tortoise Capital Advisors	260,522,448	(434,215)	-	260,088,233	-0.17%
Total Master Limited Partnerships	488,827,008	1,247,108	-	490,074,116	0.26%

Infrastructure Private Pool

IFM Global Infrastructuer Fund-Private	219,876,341	890,823	-	220,767,164	0.41%
JP Morgan Infrastructure Fund-Private	100,045,381	(896,822)	-	99,148,559	-0.90%
Total Infrastructure Private Pool	319,921,722	(5,999)	-	319,915,723	0.00%

Infrastructure Public Pool

Brookfield Investment Mgmt.-Public	98,748,427	(1,354,739)	-	97,393,688	-1.37%
Lazard Asset Mgmt.-Public	114,141,574	(504,898)	-	113,636,676	-0.44%
Total Infrastructure Public Pool	212,890,001	(1,859,637)	-	211,030,364	-0.87%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended August 31, 2016

Real Estate					
Core Commingled Accounts					
JP Morgan	238,257,131	1,352,315	-	239,609,446	0.57%
UBS Trumbull Property Fund	97,630,529	-	-	97,630,529	-
Total Core Commingled	335,887,660	1,352,315	-	337,239,975	0.40%
Core Separate Accounts					
LaSalle Investment Management	217,950,817	3,790,906	(700,261)	221,041,462	1.42%
Sentinel Separate Account	220,022,419	630,964	(764,390)	219,888,993	-0.06%
UBS Realty	481,416,996	7,669,911	(1,358,623)	487,728,284	1.31%
Total Core Separate	919,390,232	12,091,781	(2,823,274)	928,658,739	1.01%
Non-Core Commingled Accounts					
Almanac Realty Securities IV	55,897	(3,412)	-	52,485	-6.10%
Almanac Realty Securities V	8,950,113	148,610	(1,379,095)	7,719,628	-13.75%
Almanac Realty Securities VII	12,471,519	234,155	(99,773)	12,605,901	1.08%
BlackRock Diamond Property Fund	3,115,750	-	-	3,115,750	-
Clarion Ventures 4	41,130,059	(109,543)	-	41,020,516	-0.27%
Colony Investors VIII, L.P.	13,568,200	-	-	13,568,200	-
Cornerstone Apartment Venture III	48,222	(1,914)	-	46,308	-3.97%
Coventry	2,054,913	-	-	2,054,913	-
ING Clarion Development Ventures III	4,677,067	1,264,441	-	5,941,508	27.03%
KKR Real Estate Partners Americas LP.	45,341,356	-	(2,222,041)	43,119,315	-4.90%
LaSalle Medical Office Fund II	205,607	-	-	205,607	-
Lowe Hospitality Partners	976,447	7,823	-	984,270	0.80%
Silverpeak Legacy Pension Partners II, L.P.	15,627,857	1,008,428	-	16,636,285	6.45%
Silverpeak Legacy Pension Partners III, L.P.	6,295,878	(537,266)	-	5,758,612	-8.53%
Tishman Speyer Real Estate Venture VI	37,425,003	1,916,383	-	39,341,386	5.12%
Tishman Speyer Real Estate Venture VII	7,769,081	327,193	-	8,096,274	4.21%
Total Non-Core Commingled	199,712,969	4,254,898	(3,700,909)	200,266,958	0.28%
Total Real Estate	1,454,990,861	17,698,994	(6,524,183)	1,466,165,672	0.77%
Total Real Assets	4,152,853,479	21,417,709	6,455,016	4,180,726,204	0.67%
Total Assets	\$ 23,532,782,652	\$ 156,102,638	\$ 114,234,900	\$ 23,803,120,190	1.15%

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
August 31, 2016

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions (Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested Assets</u>	<u>% Change in Invested Assets</u>	<u>% Change due to Investment Income (2)</u>
Participant Options							
T. Rowe Price							
Stable Value Fund	\$ 376,542,525	\$ 665,390	\$ (2,047,989)	\$ (1,854,992)	\$ 373,304,934	-0.86%	0.18%
Small Cap Stock Fund	128,981,443	2,041,247	(107,059)	705,486	131,621,117	2.05%	1.58%
Alaska Balanced Trust	1,173,354,357	714,416	(6,003,599)	(866,841)	1,167,198,333	-0.52%	0.06%
Long Term Balanced Fund	548,288,744	1,194,014	(395,824)	(531,492)	548,555,442	0.05%	0.22%
AK Target Date 2010 Trust	9,975,695	13,713	(2,106)	24,591	10,011,893	0.36%	0.14%
AK Target Date 2015 Trust	90,467,080	169,553	(1,512,667)	(111,343)	89,012,623	-1.61%	0.19%
AK Target Date 2020 Trust	78,029,710	188,195	(151,293)	(399,735)	77,666,877	-0.46%	0.24%
AK Target Date 2025 Trust	51,632,427	143,118	5,388	9,297	51,790,230	0.31%	0.28%
AK Target Date 2030 Trust	38,153,509	120,890	209,007	326,071	38,809,477	1.72%	0.31%
AK Target Date 2035 Trust	35,726,681	124,469	(40,065)	63,813	35,874,898	0.41%	0.35%
AK Target Date 2040 Trust	35,051,253	134,999	108,727	106,390	35,401,369	1.00%	0.38%
AK Target Date 2045 Trust	38,002,105	146,768	152,264	19,686	38,320,823	0.84%	0.39%
AK Target Date 2050 Trust	43,080,451	169,274	191,588	(86,556)	43,354,757	0.64%	0.39%
AK Target Date 2055 Trust	32,450,412	125,728	412,089	(55,874)	32,932,355	1.49%	0.39%
AK Target Date 2060 Trust	115,689	374	255	(3,908)	112,410	-2.83%	0.33%
Total Investments with T. Rowe Price	<u>2,679,852,081</u>	<u>5,952,148</u>	<u>(9,181,284)</u>	<u>(2,655,407)</u>	<u>2,673,967,538</u>		
State Street Global Advisors							
State Street Treasury Money Market Fund - Inst.	39,522,537	5,865	(945,683)	(304,053)	38,278,666	-3.15%	0.02%
S&P 500 Stock Index Fund Series A	348,876,081	503,762	(652,660)	2,084,779	350,811,962	0.55%	0.14%
Russell 3000 Index	70,910,402	194,817	(87,654)	(2,443,306)	68,574,259	-3.29%	0.28%
US Real Estate Investment Trust Index	49,651,180	(1,693,848)	(93,448)	1,275,860	49,139,744	-1.03%	-3.37%
World Equity Ex-US Index	28,315,535	175,304	(13,523)	(1,266,595)	27,210,721	-3.90%	0.63%
Long US Treasury Bond Index	28,731,452	(250,930)	28,787	937,908	29,447,217	2.49%	-0.86%
US Treasury Inflation Protected Securities Index	22,342,317	(101,254)	(103,618)	312,575	22,450,020	0.48%	-0.45%
World Government Bond Ex-US Index	8,978,513	(97,452)	(10,394)	24,848	8,895,515	-0.92%	-1.08%
Global Balanced Fund	53,168,585	44,522	(121,132)	657,178	53,749,153	1.09%	0.08%
Total Investments with SSGA	<u>650,496,602</u>	<u>(1,219,214)</u>	<u>(1,999,325)</u>	<u>1,279,194</u>	<u>648,557,257</u>		
BlackRock							
Government/Credit Bond Fund	42,821,393	(84,584)	(63,041)	(209,711)	42,464,057	-0.83%	-0.20%
Intermediate Bond Fund	31,559,844	(141,465)	(311,555)	1,170,509	32,277,333	2.27%	-0.44%
Total Investments with Barclays Global Investors	<u>74,381,237</u>	<u>(226,049)</u>	<u>(374,596)</u>	<u>960,798</u>	<u>74,741,390</u>		
Brandes/Allianz (3)							
AK International Equity Fund	58,730,336	725,632	(6,250)	1,203,416	60,653,134	3.27%	1.22%
RCM							
Sustainable Core Opportunities Fund	40,377,065	(69,376)	(21,736)	(788,001)	39,497,952	-2.18%	-0.17%
Total All Funds	<u>\$ 3,503,837,321</u>	<u>\$ 5,163,141</u>	<u>\$ (11,583,191)</u>	<u>\$ -</u>	<u>\$ 3,497,417,271</u>	<u>-0.18%</u>	<u>0.15%</u>

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.
(3) This investment is comprised of two funds, Brandes International Equity Fund and Allianz NFJ International Fund effective March 30, 2015.

Supplemental Annuity Plan
Schedule of Invested Assets with
Schedule of Investment Income and Changes in Invested Assets
By Month Through the Month Ended
August 31, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>
Investments with T. Rowe Price		
Stable Value Fund	\$ 376,543	\$ 373,305
Small Cap Stock Fund	128,981	131,621
Alaska Balanced Trust	1,173,354	1,167,198
Long Term Balanced Fund	548,289	548,555
AK Target Date 2010 Trust	9,976	10,012
AK Target Date 2015 Trust	90,467	89,013
AK Target Date 2020 Trust	78,030	77,667
AK Target Date 2025 Trust	51,632	51,790
AK Target Date 2030 Trust	38,154	38,809
AK Target Date 2035 Trust	35,727	35,875
AK Target Date 2040 Trust	35,051	35,401
AK Target Date 2045 Trust	38,002	38,321
AK Target Date 2050 Trust	43,080	43,355
AK Target Date 2055 Trust	32,450	32,932
AK Target Date 2060 Trust	116	112
State Street Global Advisors		
State Street Treasury Money Market Fund - Inst.	39,523	38,279
S&P 500 Stock Index Fund Series A	348,876	350,812
Russell 3000 Index	70,910	68,574
US Real Estate Investment Trust Index	49,651	49,140
World Equity Ex-US Index	28,316	27,211
Long US Treasury Bond Index	28,731	29,447
US Treasury Inflation Protected Securities Index	22,342	22,450
World Government Bond Ex-US Index	8,979	8,896
Global Balanced Fund	53,169	53,749
Investments with BlackRock		
Government/Credit Bond Fund	42,821	42,464
Intermediate Bond Fund	31,560	32,277
Investments with Brandes/Allianz Institutional		
AK International Equity Fund	58,730	60,653
Investments with RCM		
Sustainable Core Opportunities Fund	40,377	39,498
Total Invested Assets	\$ 3,503,837	\$ 3,497,417
<u>Change in Invested Assets</u>		
Beginning Assets	\$ 3,419,490	\$ 3,503,837
Investment Earnings	77,719	5,163
Net Contributions (Withdrawals)	6,629	(11,583)
Ending Invested Assets	\$ 3,503,837	\$ 3,497,417

Deferred Compensation Plan
Schedule of Invested Assets and Changes in Invested Assets
for the Month Ended
August 31, 2016

	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (1)
Participant Options							
T. Rowe Price							
Interest Income Fund	\$ 183,806,220	\$ 374,640	\$ (990,652)	\$ 23,149	\$ 183,213,357	-0.32%	0.20%
Small Cap Stock Fund	91,928,183	1,457,990	(103,186)	(41,956)	93,241,031	1.43%	1.59%
Alaska Balanced Trust	22,931,670	13,678	(1,553)	58,319	23,002,114	0.31%	0.06%
Long Term Balanced Fund	48,901,694	109,650	(524,372)	119,988	48,606,960	-0.60%	0.23%
AK Target Date 2010 Trust	3,469,290	4,855	(55,372)	(30,117)	3,388,656	-2.32%	0.14%
AK Target Date 2015 Trust	9,656,260	18,608	(553,781)	292,328	9,413,415	-2.51%	0.20%
AK Target Date 2020 Trust	18,789,784	43,772	56,770	143,975	19,034,301	1.30%	0.23%
AK Target Date 2025 Trust	10,182,233	27,321	73,696	288,960	10,572,210	3.83%	0.26%
AK Target Date 2030 Trust	6,994,089	21,981	98,748	(102,304)	7,012,514	0.26%	0.31%
AK Target Date 2035 Trust	4,227,379	15,025	46,412	(18,159)	4,270,657	1.02%	0.35%
AK Target Date 2040 Trust	4,656,147	16,887	23,847	152,212	4,849,093	4.14%	0.36%
AK Target Date 2045 Trust	3,166,357	12,389	58,022	146	3,236,914	2.23%	0.39%
AK Target Date 2050 Trust	2,077,273	8,162	23,238	(20,409)	2,088,264	0.53%	0.39%
AK Target Date 2055 Trust	3,306,703	12,259	43,446	(98,184)	3,264,224	-1.28%	0.37%
AK Target Date 2060 Trust	82,014	317	1,312	5,512	89,155	8.71%	0.37%
Total Investments with T. Rowe Price	<u>414,175,296</u>	<u>2,137,534</u>	<u>(1,803,425)</u>	<u>773,460</u>	<u>415,282,865</u>		
State Street Global Advisors							
State Street Treasury Money Market Fund - Inst.	11,619,939	1,736	(278,225)	(200,409)	11,143,041	-4.10%	0.02%
Russell 3000 Index	29,473,577	78,985	80,033	(15,293)	29,617,302	0.49%	0.27%
US Real Estate Investment Trust Index	17,591,693	(592,005)	(211,839)	(163,006)	16,624,843	-5.50%	-3.40%
World Equity Ex-US Index	9,475,189	57,243	45,831	96,558	9,674,821	2.11%	0.60%
Long US Treasury Bond Index	10,409,137	(96,978)	(114,325)	80,443	10,278,277	-1.26%	-0.93%
US Treasury Inflation Protected Securities Index	9,422,521	(42,374)	(199,623)	94,463	9,274,987	-1.57%	-0.45%
World Government Bond Ex-US Index	3,792,949	(38,434)	(51,331)	(33,173)	3,670,011	-3.24%	-1.02%
Global Balanced Fund	37,942,209	32,573	(113,955)	43,471	37,904,298	-0.10%	0.09%
Total Investments with SSGA	<u>129,727,214</u>	<u>(599,254)</u>	<u>(843,434)</u>	<u>(96,946)</u>	<u>128,187,580</u>		
BlackRock							
S&P 500 Index Fund	184,378,673	267,137	(86,147)	(195,695)	184,363,968	-0.01%	0.14%
Government/Credit Bond Fund	27,541,002	(54,981)	(199,951)	(370,922)	26,915,148	-2.27%	-0.20%
Intermediate Bond Fund	20,510,530	(91,393)	(81,657)	229,052	20,566,532	0.27%	-0.44%
Total Investments with Barclays Global Investors	<u>232,430,205</u>	<u>120,763</u>	<u>(367,755)</u>	<u>(337,565)</u>	<u>231,845,648</u>		
Brandes/Allianz (2)							
AK International Equity Fund	35,708,208	435,563	85,940	(298,185)	35,931,526	0.63%	1.22%
RCM							
Sustainable Core Opportunities Fund	17,305,215	(32,779)	(26,822)	(40,764)	17,204,850	-0.58%	-0.19%
Total All Funds	<u>\$ 829,346,138</u>	<u>\$ 2,061,827</u>	<u>\$ (2,955,496)</u>	<u>\$ -</u>	<u>\$ 828,452,469</u>	-0.11%	0.25%

Notes: Source data provided by the record keeper, Great West Life.

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

(2) This investment is comprised of two funds, 50% Brandes International equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

Deferred Compensation Plan
Schedule of Invested Assets with
Schedule of Investment Income and Changes in Invested Assets
By Month Through the Month Ended
August 31, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>
Investments with T. Rowe Price		
Interest Income Fund		
Cash and cash equivalents	\$ 7,197	\$ 6,432
Synthetic Investment Contracts	176,609	176,781
Small Cap Stock Fund	91,928	93,241
Alaska Balanced Trust	22,932	23,002
Long Term Balanced Fund	48,902	48,607
AK Target Date 2010 Trust	3,469	3,389
AK Target Date 2015 Trust	9,656	9,413
AK Target Date 2020 Trust	18,790	19,034
AK Target Date 2025 Trust	10,182	10,572
AK Target Date 2030 Trust	6,994	7,013
AK Target Date 2035 Trust	4,227	4,271
AK Target Date 2040 Trust	4,656	4,849
AK Target Date 2045 Trust	3,166	3,237
AK Target Date 2050 Trust	2,077	2,088
AK Target Date 2055 Trust	3,307	3,264
AK Target Date 2060 Trust	82	89
State Street Global Advisors		
State Street Treasury Money Market Fund - Inst.	11,620	11,143
Russell 3000 Index	29,474	29,617
US Real Estate Investment Trust Index	17,592	16,625
World Equity Ex-US Index	9,475	9,675
Long US Treasury Bond Index	10,409	10,278
US Treasury Inflation Protected Securities Index	9,423	9,275
World Government Bond Ex-US Index	3,793	3,670
Global Balanced Fund	37,942	37,904
Investments with BlackRock		
S&P 500 Index Fund	184,379	184,364
Government/Credit Bond Fund	27,541	26,915
Intermediate Bond Fund	20,511	20,567
Investments with Brandes/Allianz		
AK International Equity Fund	35,708	35,932
Investments with RCM		
Sustainable Opportunities Fund	17,305	17,205
Total Invested Assets	\$ 829,346	\$ 828,452
<u>Change in Invested Assets</u>		
Beginning Assets	\$ 808,795	\$ 829,346
Investment Earnings	20,447	2,062
Net Contributions (Withdrawals)	104	(2,955)
Ending Invested Assets	\$ 829,346	\$ 828,452

Defined Contribution Retirement - Participant Directed PERS
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
August 31, 2016

	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (2)
Participant Options							
T. Rowe Price							
Alaska Money Market	\$ 8,617,626	\$ 2,465	\$ 281	\$ 170,300	\$ 8,790,672	2.01%	0.03%
Small Cap Stock Fund	60,872,015	965,087	320,179	(608,520)	61,548,761	1.11%	1.59%
Alaska Balanced Trust	14,964,475	9,344	72,917	(559,528)	14,487,208	-3.19%	0.06%
Long Term Balanced Fund	10,894,459	25,168	36,074	(1,276,684)	9,679,017	-11.16%	0.24%
AK Target Date 2010 Trust	2,096,109	2,822	(9,739)	-	2,089,192	-0.33%	0.13%
AK Target Date 2015 Trust	9,091,962	17,629	(101,332)	(9,725)	8,998,534	-1.03%	0.20%
AK Target Date 2020 Trust	22,301,737	53,334	280,909	(63,404)	22,572,576	1.21%	0.24%
AK Target Date 2025 Trust	32,367,849	91,734	300,824	55,433	32,815,840	1.38%	0.28%
AK Target Date 2030 Trust	33,667,189	108,380	675,216	(83,427)	34,367,358	2.08%	0.32%
AK Target Date 2035 Trust	39,047,183	138,663	713,928	(29,573)	39,870,201	2.11%	0.35%
AK Target Date 2040 Trust	46,696,137	181,727	650,218	53,299	47,581,381	1.90%	0.39%
AK Target Date 2045 Trust	57,905,899	226,717	1,098,535	(1,756)	59,229,395	2.29%	0.39%
AK Target Date 2050 Trust	68,378,038	270,231	1,465,767	(1,076)	70,112,960	2.54%	0.39%
AK Target Date 2055 Trust	45,309,194	178,066	1,573,695	(25,878)	47,035,077	3.81%	0.39%
AK Target Date 2060 Trust	34,234	131	568	-	34,933	2.04%	0.38%
Total Investments with T. Rowe Price	452,244,106	2,271,498	7,078,040	(2,380,539)	459,213,105		
State Street Global Advisors							
Money Market	2,986,227	459	49,243	123,151	3,159,080	5.79%	0.01%
S&P 500 Stock Index Fund Series A	52,701,054	67,132	351,131	3,833,079	56,952,396	8.07%	0.12%
Russell 3000 Index	36,790,250	105,480	247,382	(5,026,215)	32,116,897	-12.70%	0.31%
US Real Estate Investment Trust Index	16,951,118	(571,509)	119,272	(272,902)	16,225,979	-4.28%	-3.39%
World Equity Ex-US Index	35,145,297	229,734	211,290	(3,123,324)	32,462,997	-7.63%	0.68%
Long US Treasury Bond Index	1,545,039	(14,702)	36,029	9,942	1,576,308	2.02%	-0.94%
US Treasury Inflation Protected Securities Index	10,104,600	(45,221)	34,716	595,871	10,689,966	5.79%	-0.43%
World Government Bond Ex-US Index	5,262,718	(62,763)	8,601	541,254	5,749,810	9.26%	-1.13%
Global Balanced Fund	7,850,108	4,541	29,839	808,513	8,693,001	10.74%	0.05%
Total Investments with SSGA	169,336,411	(286,849)	1,087,503	(2,510,631)	167,626,434		
BlackRock							
Government/Credit Bond Fund	30,417,263	(60,321)	88,863	(341,302)	30,104,503	-1.03%	-0.20%
Intermediate Bond Fund	12,018,306	(55,223)	43,331	1,344,505	13,350,919	11.09%	-0.43%
Total Investments with Barclays Global Investors	42,435,569	(115,544)	132,194	1,003,203	43,455,422		
Brandes/Allianz (3)							
AK International Equity Fund	29,898,723	384,260	189,545	3,904,827	34,377,355	14.98%	1.20%
RCM							
Sustainable Core Opportunities Fund	3,178,046	(5,958)	46,043	(16,860)	3,201,271	0.73%	-0.19%
Total All Funds	\$ 697,092,855	\$ 2,247,407	\$ 8,533,325	\$ -	\$ 707,873,587	1.55%	0.32%

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.

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

(3) This investment is comprised of two funds, 50% Brandes International Equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

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
August 31, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>
Investments with T. Rowe Price		
Alaska Money Market	\$ 8,618	\$ 8,791
Small Cap Stock Fund	60,872	61,549
Alaska Balanced Trust	14,964	14,487
Long Term Balanced Fund	10,894	9,679
AK Target Date 2010 Trust	2,096	2,089
AK Target Date 2015 Trust	9,092	8,999
AK Target Date 2020 Trust	22,302	22,573
AK Target Date 2025 Trust	32,368	32,816
AK Target Date 2030 Trust	33,667	34,367
AK Target Date 2035 Trust	39,047	39,870
AK Target Date 2040 Trust	46,696	47,581
AK Target Date 2045 Trust	57,906	59,229
AK Target Date 2050 Trust	68,378	70,113
AK Target Date 2055 Trust	45,309	47,035
AK Target Date 2060 Trust	34	35
State Street Global Advisors		
Money Market	2,986	3,159
S&P 500 Stock Index Fund Series A	52,701	56,952
Russell 3000 Index	36,790	32,117
US Real Estate Investment Trust Index	16,951	16,226
World Equity Ex-US Index	35,145	32,463
Long US Treasury Bond Index	1,545	1,576
US Treasury Inflation Protected Securities Index	10,105	10,690
World Government Bond Ex-US Index	5,263	5,750
Global Balanced Fund	7,850	8,693
Investments with BlackRock		
Government/Credit Bond Fund	30,417	30,105
Intermediate Bond Fund	12,018	13,351
Investments with Brandes/Allianz		
International Equity Fund	29,899	34,377
Investments with RCM		
Sustainable Opportunities Fund	3,178	3,201
Total Invested Assets	\$ <u>697,093</u>	\$ <u>707,874</u>
<u>Change in Invested Assets</u>		
Beginning Assets	\$ 667,523	\$ 697,093
Investment Earnings	22,468	2,247
Net Contributions (Withdrawals)	7,102	8,533
Ending Invested Assets	\$ <u>697,093</u>	\$ <u>707,874</u>

Defined Contribution Retirement - Participant Directed TRS
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
August 31, 2016

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions (Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested Assets</u>	<u>% Change in Invested Assets</u>	<u>% Change due to Investment Income (2)</u>
Participant Options							
T. Rowe Price							
Alaska Money Market	\$ 2,895,442	\$ 819	\$ (21,271)	\$ 22,010	\$ 2,897,000	0.05%	0.03%
Small Cap Stock Fund	26,278,359	416,410	(60,754)	(46,226)	26,587,789	1.18%	1.59%
Alaska Balanced Trust	7,066,211	4,535	(44,014)	(266,299)	6,760,433	-4.33%	0.07%
Long Term Balanced Fund	4,916,496	11,360	(29,651)	(546,971)	4,351,234	-11.50%	0.25%
AK Target Date 2010 Trust	490,470	649	(4,160)	-	486,959	-0.72%	0.13%
AK Target Date 2015 Trust	2,656,889	5,374	(123,765)	-	2,538,498	-4.46%	0.21%
AK Target Date 2020 Trust	6,571,089	15,594	(35,602)	-	6,551,081	-0.30%	0.24%
AK Target Date 2025 Trust	10,506,452	29,777	(19,632)	-	10,516,597	0.10%	0.28%
AK Target Date 2030 Trust	11,515,981	36,957	(70,253)	(65,894)	11,416,791	-0.86%	0.32%
AK Target Date 2035 Trust	17,502,267	63,133	(75,544)	15	17,489,871	-0.07%	0.36%
AK Target Date 2040 Trust	18,575,632	72,425	(95,926)	(40,000)	18,512,131	-0.34%	0.39%
AK Target Date 2045 Trust	29,695,866	117,496	(124,552)	(30,034)	29,658,776	-0.12%	0.40%
AK Target Date 2050 Trust	41,678,488	164,596	(270,319)	-	41,572,765	-0.25%	0.40%
AK Target Date 2055 Trust	13,833,403	53,940	(41,323)	(9,589)	13,836,431	0.02%	0.39%
AK Target Date 2060 Trust	9,111	50	(1)	(3,823)	5,337	-41.42%	0.69%
Total Investments with T. Rowe Price	<u>194,192,156</u>	<u>993,115</u>	<u>(1,016,767)</u>	<u>(986,811)</u>	<u>193,181,693</u>		
State Street Global Advisors							
Money Market	218,866	32	(20)	3,160	222,038	1.45%	0.01%
S&P 500 Stock Index Fund Series A	21,624,554	27,500	(72,278)	1,810,990	23,390,766	8.17%	0.12%
Russell 3000 Index	15,824,368	44,792	(20,743)	(2,220,122)	13,628,295	-13.88%	0.30%
US Real Estate Investment Trust Index	6,520,108	(219,220)	(21,925)	(81,491)	6,197,472	-4.95%	-3.39%
World Equity Ex-US Index	15,330,424	100,427	(15,603)	(1,368,832)	14,046,416	-8.38%	0.69%
Long US Treasury Bond Index	238,484	(1,928)	(25)	40,000	276,531	15.95%	-0.75%
US Treasury Inflation Protected Securities Index	3,888,636	(17,484)	(35,845)	163,687	3,998,994	2.84%	-0.44%
World Government Bond Ex-US Index	2,574,627	(30,835)	(6,091)	270,527	2,808,228	9.07%	-1.14%
Global Balanced Fund	3,974,655	2,639	(25,100)	349,987	4,302,181	8.24%	0.06%
Total Investments with SSGA	<u>70,194,722</u>	<u>(94,077)</u>	<u>(197,630)</u>	<u>(1,032,094)</u>	<u>68,870,921</u>		
BlackRock							
Government/Credit Bond Fund	14,047,179	(28,006)	(66,861)	(290,258)	13,662,054	-2.74%	-0.20%
Intermediate Bond Fund	4,773,604	(21,942)	(43,173)	569,928	5,278,417	10.58%	-0.44%
Total Investments with Barclays Global Investors	<u>18,820,783</u>	<u>(49,948)</u>	<u>(110,034)</u>	<u>279,670</u>	<u>18,940,471</u>		
Brandes/Allianz Institutional (3)							
AK International Equity Fund	12,624,816	161,932	(35,322)	1,743,574	14,495,000	14.81%	1.20%
RCM							
Sustainable Core Opportunities Fund	1,263,027	(2,387)	(16,649)	(4,339)	1,239,652	-1.85%	-0.19%
Total All Funds	<u>\$ 297,095,504</u>	<u>\$ 1,008,635</u>	<u>\$ (1,376,402)</u>	<u>\$ -</u>	<u>\$ 296,727,737</u>	<u>-0.12%</u>	<u>0.34%</u>

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.
(3) This investment option is comprised of two funds, 50% Brandes International equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

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
August 31, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>
Investments with T. Rowe Price		
Alaska Money Market	\$ 2,895	\$ 2,897
Small Cap Stock Fund	26,278	26,588
Alaska Balanced Trust	7,066	6,760
Long Term Balanced Fund	4,916	4,351
AK Target Date 2010 Trust	490	487
AK Target Date 2015 Trust	2,657	2,538
AK Target Date 2020 Trust	6,571	6,551
AK Target Date 2025 Trust	10,506	10,517
AK Target Date 2030 Trust	11,516	11,417
AK Target Date 2035 Trust	17,502	17,490
AK Target Date 2040 Trust	18,576	18,512
AK Target Date 2045 Trust	29,696	29,659
AK Target Date 2050 Trust	41,678	41,573
AK Target Date 2055 Trust	13,833	13,836
AK Target Date 2060 Trust	9	5
State Street Global Advisors		
Money Market	219	222
S&P 500 Stock Index Fund Series A	21,625	23,391
Russell 3000 Index	15,824	13,628
US Real Estate Investment Trust Index	6,520	6,197
World Equity Ex-US Index	15,330	14,046
Long US Treasury Bond Index	238	277
US Treasury Inflation Protected Securities Index	3,889	3,999
World Government Bond Ex-US Index	2,575	2,808
Global Balanced Fund	3,975	4,302
Investments with BlackRock		
Government/Credit Bond Fund	14,047	13,662
Intermediate Bond Fund	4,774	5,278
Investments with Brandes/Allianz		
AK International Equity Fund	12,625	14,495
Investments with RCM		
Sustainable Opportunities Fund	1,263	1,240
Total Invested Assets	\$ <u>297,096</u>	\$ <u>296,728</u>
<u>Change in Invested Assets</u>		
Beginning Assets	\$ 286,112	\$ 297,096
Investment Earnings	9,751	1,009
Net Contributions (Withdrawals)	1,232	(1,376)
Ending Invested Assets	\$ <u>297,096</u>	\$ <u>296,728</u>

**Notes for the DRB Supplement to the Treasury Report
August 2016**

This report is the DRB supplement to the Financial Report presented by the Treasury Division, and expands their “Net Contributions (Withdrawals)” column into contributions and expenditures. It shows contributions received from both employers and employees, contributions from the State of Alaska, and other non-investment income. It also breaks out 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 Report. Page one shows the year-to-date totals for the first two months of Fiscal Year 2017, while page two shows only the month of August 2016.

Highlights – On page one, for the two months ending August 31, 2016:

- PERS DB Pension – Average employer and employee contributions of \$31.5 million per month; benefit payments of approximately \$63.2 million per month; refunds average \$1.1 million per month; and average Administrative and Investment expenditures of \$2.4 million.
- PERS DB Healthcare – Average employer contributions of \$12.4 million per month; benefit payments of approximately \$34.2 million per month; and average Administrative and Investment expenditures of \$3.5 million per month (DOR and DRB).
- PERS DC Pension – Average employer and employee contributions of \$12 million per month; participant disbursements average \$3.7 million per month; and average Administrative and Investment expenditures of \$505 thousand per month (DOR and DRB) with a HIGH of \$933 thousand in the month of July and a LOW of \$78 thousand in August.
- PERS DC Health – For HRA, RMP, and OD&D, only employer contributions on behalf of participating employees; currently eleven (11) benefits are being paid from the Occupational Death & Disability plans; 5 are for Public Employees and 6 are for Police and Firefighters.
- TRS DB Pension - Average employer and employee contributions of \$3.2 million per month; benefit payments of approximately \$37.3 million per month; refunds average \$230 thousand with a HIGH of \$309 thousand in August 2016 and a LOW of \$152 thousand in July 2016; and average Administrative and Investment expenditures of \$1.5 million per month (DOR and DRB).
- TRS DB Healthcare – Average employer contributions of \$1.1 million per month; benefit payments of approximately \$10.1 million per month; and average Administrative and Investment expenditures of \$1.3 million per month (DOR and DRB) with a HIGH of \$2.1 million in August and a LOW of \$493 thousand in July.
- TRS DC Pension – Average employer and employee contributions of \$1.9 million per month; participant disbursements

average \$1.9 million per month; and average Administrative and investment expenditures of \$130 thousand per month (DOR and DRB).

- TRS DC Health – For HRA, RMP, and OD&D, only employer contributions on behalf of participating employees; currently no benefits paid from any category; and minor Administrative and Investment expenditures for each category (DOR and DRB).
- JRS Pension – Average employer and employee contributions of \$942 thousand per month; benefit payments of approximately \$947 thousand per month; and average Administrative and Investment expenditures of \$39 thousand per month (DOR and DRB).
- JRS Healthcare – Average employer contributions of \$46 thousand per month; benefit payments of approximately \$56 thousand per month; average Administrative and Investment expenditures of \$15 thousand per month (DOR and DRB).
- NGNMRS – combination of lump-sum and monthly benefit payments of \$76 thousand per month with a HIGH of \$77 thousand in July 2016 and a LOW of \$74 thousand in August 2016; and average Administrative and Investment expenditures of \$25 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 \$16.9 million per month with a HIGH of \$19.7 million in August 2016 and a LOW of \$14.1 million in July 2016; average Administrative and Investment expenditures of \$331 thousand per month (DOR and DRB).
- Deferred Compensation – Average member-only contributions and transfers in of \$4.3 million per month; participant disbursements average of \$5.6 million per month; average Administrative and Investment expenditures of \$116 thousand per month (DOR and DRB).

Highlights – On page two, activity for the one month ending August 31, 2016 only:

- PERS DB Pension – During month of August, \$99.2 million has been received from the State of Alaska on-behalf funding for FY2017. Other income of \$9 thousand was received for late fees. Administrative expenses were reported higher in August (\$4.8 million) in comparison with the month of July (\$647 thousand). The increase due to year-end closing in the amount of \$4.3 million.
- PERS DB Healthcare – Administrative expenses were reported higher (\$5.7 million) in August in comparison with the month of July (\$1.3 million). The increase due to year-end closing in the amount of \$4.2 million.
- PERS DC Pension – nothing significant to report

- PERS DC Health – nothing significant to report
- TRS DB Pension – During month of August, \$116.7 million has been received from the State of Alaska on-behalf funding for FY2017. Administrative expenses were reported higher (\$2.8 million) in August in comparison with the month of July (\$289 thousand). The increase due to year-end closing in the amount of \$2.6 million.
- TRS DB Healthcare – Administrative expenses were reported higher (\$2.1 million) in August in comparison with the month of July (\$493 thousand). The increase due to year-end closing in the amount of \$1.6 million.
- TRS DC Pension – nothing significant to report
- TRS DC Health – nothing significant to report
- JRS Pension – During month of August, \$5.4 million has been received from the State of Alaska on-behalf funding for FY2017. Administrative expenses were reported higher (\$74 thousand) in August in comparison with the month of July (\$5 thousand). The increase due to year-end closing in the amount of \$70 thousand.
- JRS Healthcare – Administrative expenses were reported higher (\$6 thousand) in August in comparison with the month of July (\$23 thousand). The increase due to year-end closing in the amount of \$16 thousand.
- NGNMRS – Administrative expenses were reported higher (\$37 thousand) in August in comparison with the month of July (\$14 thousand). The increase due to year-end closing in the amount of \$22 thousand.
- SBS – nothing significant to report
- Deferred Compensation – 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 August 31, 2016

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 Two Months Ending August 31, 2016

	Contributions				Expenditures				Net
	Contributions EE and ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	Contributions/ (Withdrawals)
Public Employees' Retirement System (PERS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	\$ 63,083,951	\$ 99,166,576	\$ 9,454	\$ 162,259,981	\$ (126,353,191)	\$ (2,188,453)	\$ (5,468,146)	\$ (134,009,790)	\$ 28,250,191
Retirement Health Care Trust	24,862,478	-	3,381	24,865,859	(68,379,964)	-	(6,988,855)	(75,368,819)	(50,502,960)
Total Defined Benefit Plans	87,946,429	99,166,576	12,835	187,125,840	(194,733,155)	(2,188,453)	(12,457,001)	(209,378,609)	(22,252,769)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	23,953,136	-	-	23,953,136	-	(7,307,068)	(1,010,970)	(8,318,038)	15,635,098
Health Reimbursement Arrangement ^(a)	5,865,696	-	-	5,865,696	-	-	(9,244)	(9,244)	5,856,452
Retiree Medical Plan ^(a)	2,494,721	-	-	2,494,721	-	-	(17,988)	(17,988)	2,476,733
Occupational Death and Disability: ^(a)									
Public Employees	300,298	-	-	300,298	(18,744)	-	(570)	(19,314)	280,984
Police and Firefighters	169,456	-	-	169,456	(35,948)	-	(290)	(36,238)	133,218
Total Defined Contribution Plans	32,783,307	-	-	32,783,307	(54,692)	(7,307,068)	(1,039,062)	(8,400,822)	24,382,485
Total PERS	120,729,736	99,166,576	12,835	219,909,147	(194,787,847)	(9,495,521)	(13,496,063)	(217,779,431)	2,129,716
Teachers' Retirement System (TRS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	6,401,685	116,699,959	30	123,101,674	(74,542,864)	(460,468)	(3,093,666)	(78,096,998)	45,004,676
Retirement Health Care Trust	2,177,257	-	1,377	2,178,634	(20,129,469)	-	(2,640,352)	(22,769,821)	(20,591,187)
Total Defined Benefit Plans	8,578,942	116,699,959	1,407	125,280,308	(94,672,333)	(460,468)	(5,734,018)	(100,866,819)	24,413,489
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	3,830,921	-	-	3,830,921	-	(3,716,254)	(259,234)	(3,975,488)	(144,567)
Health Reimbursement Arrangement ^(a)	675,114	-	-	675,114	-	-	(2,826)	(2,826)	672,288
Retiree Medical Plan ^(a)	493,864	-	-	493,864	-	-	(14,031)	(14,031)	479,833
Occupational Death and Disability ^(a)	-	-	-	-	-	-	(142)	(142)	(142)
Total Defined Contribution Plans	4,999,899	-	-	4,999,899	-	(3,716,254)	(276,233)	(3,992,487)	1,007,412
Total TRS	13,578,841	116,699,959	1,407	130,280,207	(94,672,333)	(4,176,722)	(6,010,251)	(104,859,306)	25,420,901
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Trust	1,883,967	5,412,366	-	7,296,333	(1,894,939)	-	(78,993)	(1,973,932)	5,322,401
Defined Benefit Retirement Health Care Trust	92,889	-	-	92,889	(111,098)	-	(29,483)	(140,581)	(47,692)
Total JRS	1,976,856	5,412,366	-	7,389,222	(2,006,037)	-	(108,476)	(2,114,513)	5,274,709
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Trust ^(a)	-	-	-	-	(151,093)	-	(50,107)	(201,200)	(201,200)
Other Participant Directed Plans									
Supplemental Annuity Plan	29,510,876	-	-	29,510,876	-	(33,803,501)	(661,463)	(34,464,964)	(4,954,088)
Deferred Compensation Plan	8,652,053	-	-	8,652,053	-	(11,271,987)	(231,931)	(11,503,918)	(2,851,865)
Total All Funds	174,448,362	221,278,901	14,242	395,741,505	(291,617,310)	(58,747,731)	(20,558,291)	(370,923,332)	24,818,173
Total Non-Participant Directed	108,501,376	221,278,901	14,242	329,794,519	(291,617,310)	(2,648,921)	(18,394,693)	(312,660,924)	17,133,595
Total Participant Directed	65,946,986	-	-	65,946,986	-	(56,098,810)	(2,163,598)	(58,262,408)	7,684,578
Total All Funds	\$ 174,448,362	\$ 221,278,901	\$ 14,242	\$ 395,741,505	\$ (291,617,310)	\$ (58,747,731)	\$ (20,558,291)	\$ (370,923,332)	\$ 24,818,173

(a) Employer only contributions.

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Month Ended August 31, 2016

	Contributions				Expenditures				Net
	Contributions EE and ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	Contributions/ (Withdrawals)
Public Employees' Retirement System (PERS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	\$ 36,174,869	\$ 99,166,576	\$ 9,454	\$ 135,350,899	\$ (63,309,264)	\$ (1,083,177)	\$ (4,820,675)	\$ (69,213,116)	\$ 66,137,783
Retirement Health Care Trust	12,714,205	-	2,994	12,717,199	(34,345,576)	-	(5,698,939)	(40,044,515)	(27,327,316)
Total Defined Benefit Plans	48,889,074	99,166,576	12,448	148,068,098	(97,654,840)	(1,083,177)	(10,519,614)	(109,257,631)	38,810,467
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	13,179,381	-	-	13,179,381	-	(4,567,820)	(78,236)	(4,646,056)	8,533,325
Health Reimbursement Arrangement ^(a)	3,250,053	-	-	3,250,053	-	-	(5,133)	(5,133)	3,244,920
Retiree Medical Plan ^(a)	1,198,493	-	-	1,198,493	-	-	(10,729)	(10,729)	1,187,764
Occupational Death and Disability: ^(a)									
Public Employees	152,426	-	-	152,426	(9,372)	-	(319)	(9,691)	142,735
Police and Firefighters	62,649	-	-	62,649	(17,974)	-	(164)	(18,138)	44,511
Total Defined Contribution Plans	17,843,002	-	-	17,843,002	(27,346)	(4,567,820)	(94,581)	(4,689,747)	13,153,255
Total PERS	66,732,076	99,166,576	12,448	165,911,100	(97,682,186)	(5,650,997)	(10,614,195)	(113,947,378)	51,963,722
Teachers' Retirement System (TRS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	1,077,432	116,699,959	30	117,777,421	(37,555,439)	(308,902)	(2,804,195)	(40,668,536)	77,108,885
Retirement Health Care Trust	268,126	-	806	268,932	(10,152,813)	-	(2,146,893)	(12,299,706)	(12,030,774)
Total Defined Benefit Plans	1,345,558	116,699,959	836	118,046,353	(47,708,252)	(308,902)	(4,951,088)	(52,968,242)	65,078,111
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	299,384	-	-	299,384	-	(1,646,786)	(29,000)	(1,675,786)	(1,376,402)
Health Reimbursement Arrangement ^(a)	49,757	-	-	49,757	-	-	(1,583)	(1,583)	48,174
Retiree Medical Plan ^(a)	22,127	-	-	22,127	-	-	(8,033)	(8,033)	14,094
Occupational Death and Disability ^(a)	-	-	-	-	-	-	(78)	(78)	(78)
Total Defined Contribution Plans	371,268	-	-	371,268	-	(1,646,786)	(38,694)	(1,685,480)	(1,314,212)
Total TRS	1,716,826	116,699,959	836	118,417,621	(47,708,252)	(1,955,688)	(4,989,782)	(54,653,722)	63,763,899
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Trust	1,417,209	5,412,366	-	6,829,575	(951,706)	-	(74,060)	(1,025,766)	5,803,809
Defined Benefit Retirement Health Care Trust	48,111	-	-	48,111	(54,519)	-	(23,007)	(77,526)	(29,415)
Total JRS	1,465,320	5,412,366	-	6,877,686	(1,006,225)	-	(97,067)	(1,103,292)	5,774,394
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Trust ^(a)	-	-	-	-	(73,650)	-	(36,542)	(110,192)	(110,192)
Other Participant Directed Plans									
Supplemental Annuity Plan	8,437,913	-	-	8,437,913	-	(19,681,748)	(339,356)	(20,021,104)	(11,583,191)
Deferred Compensation Plan	3,538,458	-	-	3,538,458	-	(6,376,569)	(117,385)	(6,493,954)	(2,955,496)
Total All Funds	81,890,593	221,278,901	13,284	303,182,778	(146,470,313)	(33,665,002)	(16,194,327)	(196,329,642)	106,853,136
Total Non-Participant Directed	56,435,457	221,278,901	13,284	277,727,642	(146,470,313)	(1,392,079)	(15,630,350)	(163,492,742)	114,234,900
Total Participant Directed	25,455,136	-	-	25,455,136	-	(32,272,923)	(563,977)	(32,836,900)	(7,381,764)
Total All Funds	\$ 81,890,593	\$ 221,278,901	\$ 13,284	\$ 303,182,778	\$ (146,470,313)	\$ (33,665,002)	\$ (16,194,327)	\$ (196,329,642)	\$ 106,853,136

(a) Employer only contributions.

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Two Months Ending August 31, 2016

PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND BY TYPE

	<u>PERS DCR Plan</u>	<u>TRS DCR Plan</u>	<u>Supplemental Annuity Plan</u>	<u>Deferred Compensation</u>	<u>TOTAL</u>	<u>% of Total</u>
Payment to Beneficiary	3,849	-	9,394	28,258	41,501	0.1%
Death Benefit	415,009	11,361	1,525,172	92,232	2,043,775	3.6%
Disability / Hardship	11,322	-	59,190	61,440	131,952	0.2%
Minimum Required Distribution	9,086	9,509	820,551	258,783	1,097,929	2.0%
Qualified Domestic Relations Order	85,985	-	795,794	39,799	921,578	1.6%
Separation from Service / Retirement	6,781,816	3,695,384	30,487,031	10,690,027	51,654,259	92.1%
Purchase of Service Credit	-	-	106,368	101,448	207,817	0.4%
Transfer to a Qualifying Plan	-	-	-	-	-	0.0%
TOTAL	<u>7,307,068</u>	<u>3,716,254</u>	<u>33,803,501</u>	<u>11,271,987</u>	<u>56,098,810</u>	<u>100.0%</u>

**ALASKA RETIREMENT MANAGEMENT BOARD
FINANCIAL REPORT**

As of July 31, 2016

ALASKA RETIREMENT MANAGEMENT BOARD
Schedule of Investment Income and Changes in Invested Assets by Fund
Fiscal Year-to-Date through July 31, 2016

	Beginning Invested Assets	Investment Income ⁽¹⁾	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income ⁽²⁾
<u>Public Employees' Retirement System (PERS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	\$ 8,209,687,323	\$ 200,226,435	\$ (37,887,592)	\$ 8,372,026,166	1.98%	2.44%
Retirement Health Care Trust	6,773,545,245	164,551,689	(23,175,643)	6,914,921,291	2.09%	2.43%
Total Defined Benefit Plans	14,983,232,568	364,778,124	(61,063,235)	15,286,947,457	2.03%	2.44%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	667,523,128	22,467,954	7,101,773	697,092,855	4.43%	3.35%
Health Reimbursement Arrangement	224,830,912	5,486,688	2,611,532	232,929,132	3.60%	2.43%
Retiree Medical Plan	59,563,867	1,458,185	1,288,969	62,311,021	4.61%	2.42%
Defined Benefit Occupational Death and Disability:						
Public Employees	14,541,982	354,763	138,250	15,034,995	3.39%	2.43%
Police and Firefighters	7,181,338	175,356	88,706	7,445,400	3.68%	2.43%
Total Defined Contribution Plans	973,641,227	29,942,946	11,229,230	1,014,813,403	4.23%	3.06%
Total PERS	15,956,873,795	394,721,070	(49,834,005)	16,301,760,860	2.16%	2.48%
<u>Teachers' Retirement System (TRS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	4,939,784,971	120,417,286	(32,104,209)	5,028,098,048	1.79%	2.45%
Retirement Health Care Trust	2,537,521,837	61,649,769	(8,560,412)	2,590,611,194	2.09%	2.43%
Total Defined Benefit Plans	7,477,306,808	182,067,055	(40,664,621)	7,618,709,242	1.89%	2.44%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	286,112,304	9,751,365	1,231,835	297,095,504	3.84%	3.40%
Health Reimbursement Arrangement	68,360,784	1,668,078	624,114	70,652,976	3.35%	2.43%
Retiree Medical Plan	23,621,452	578,561	465,739	24,665,752	4.42%	2.43%
Defined Benefit Occupational Death and Disability	3,137,633	76,302	(64)	3,213,871	2.43%	2.43%
Total Defined Contribution Plans	381,232,173	12,074,306	2,321,624	395,628,103	3.78%	3.16%
Total TRS	7,858,538,981	194,141,361	(38,342,997)	8,014,337,345	1.98%	2.48%
<u>Judicial Retirement System (JRS)</u>						
Defined Benefit Plan Retirement Trust	143,723,441	3,504,263	(481,408)	146,746,296	2.10%	2.44%
Defined Benefit Retirement Health Care Trust	26,917,606	654,335	(18,277)	27,553,664	2.36%	2.43%
Total JRS	170,641,047	4,158,598	(499,685)	174,299,960	2.14%	2.44%
<u>National Guard/Naval Militia Retirement System (MRS)</u>						
Defined Benefit Plan Retirement Trust	35,866,581	797,273	(91,008)	36,572,846	1.97%	2.23%
<u>Other Participant Directed Plans</u>						
Supplemental Annuity Plan	3,419,489,723	77,718,495	6,629,103	3,503,837,321	2.47%	2.27%
Deferred Compensation Plan	808,795,367	20,447,140	103,631	829,346,138	2.54%	2.53%
Total All Funds	28,250,205,494	691,983,937	(82,034,961)	28,860,154,470		
Total Non-Participant Directed	23,068,284,972	561,598,983	(97,101,303)	23,532,782,652	2.01%	2.44%
Total Participant Directed	5,181,920,522	130,384,954	15,066,342	5,327,371,818	2.81%	2.51%
Total All Funds	\$ 28,250,205,494	\$ 691,983,937	\$ (82,034,961)	\$ 28,860,154,470	2.16%	2.45%

Notes:

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

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

ALASKA RETIREMENT MANAGEMENT BOARD
Schedule of Investment Income and Changes in Invested Assets by Fund
For the Month Ended July 31, 2016

	Beginning Invested Assets	Investment Income ⁽¹⁾	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income ⁽²⁾
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Notes:

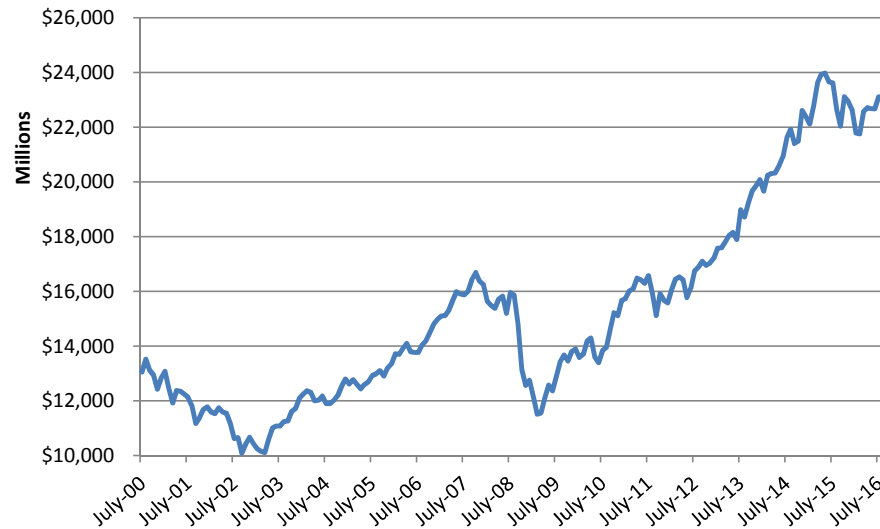
(1) Includes interest, dividends, securities lending, expenses, realized and unrealized gains/losses

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

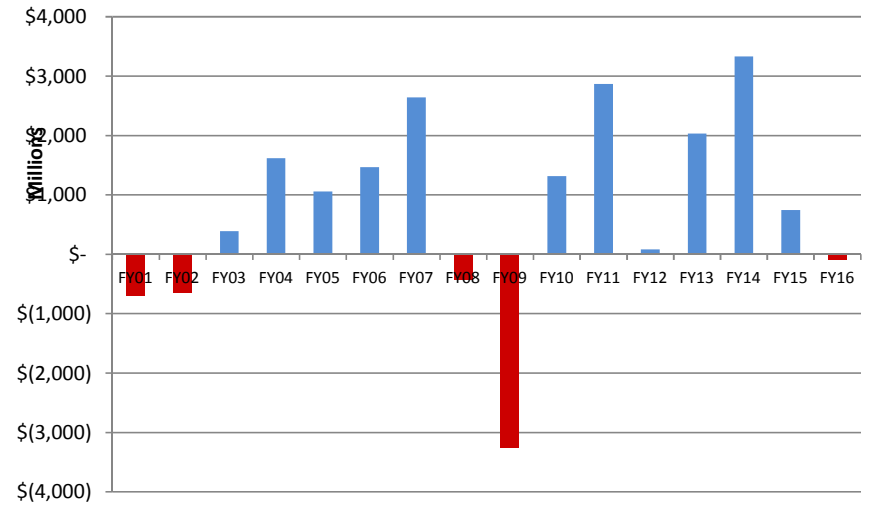
Total Defined Benefit Assets

As of July 31, 2016

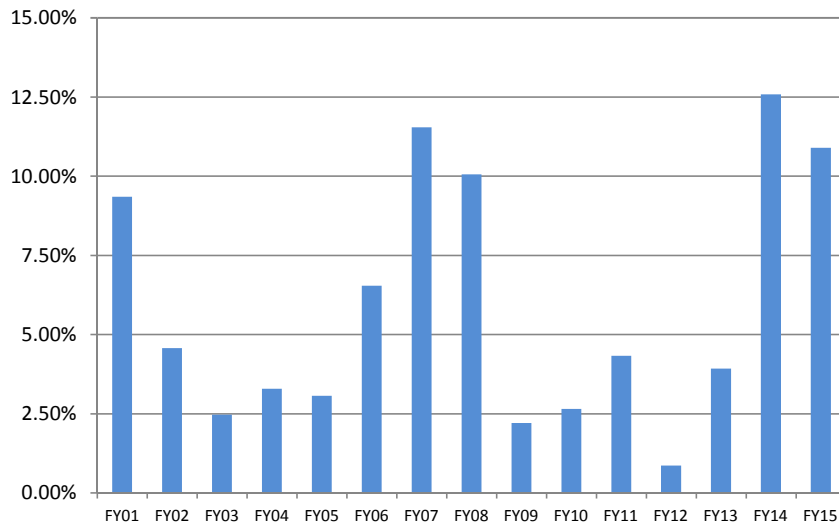
Totals Assets History



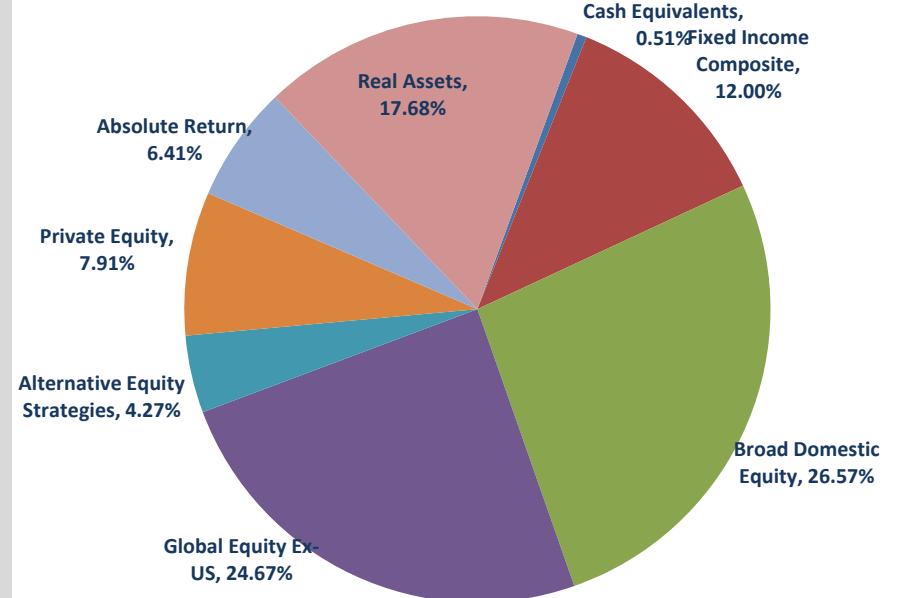
Income by Fiscal Year



5-year Annualized Returns as of Fiscal Year End



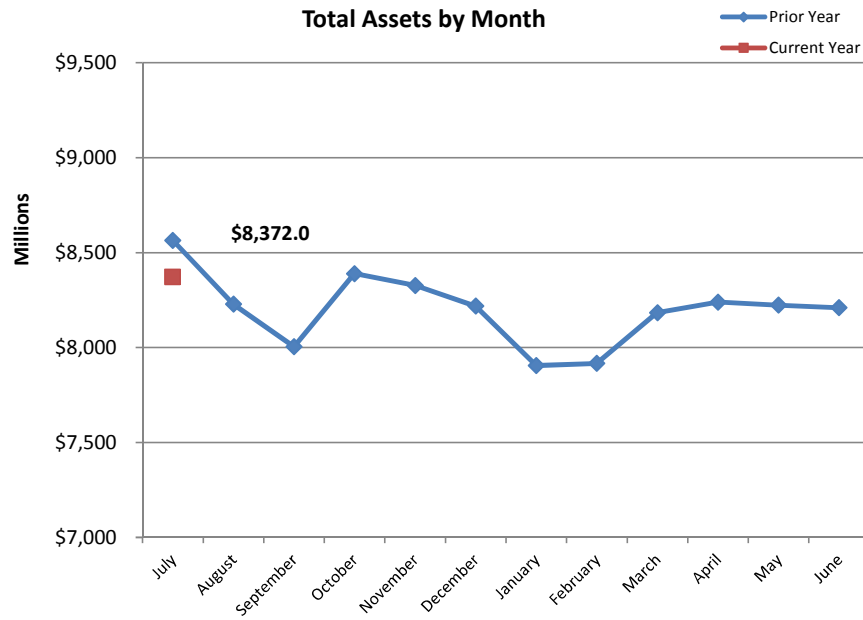
Actual Asset Allocation



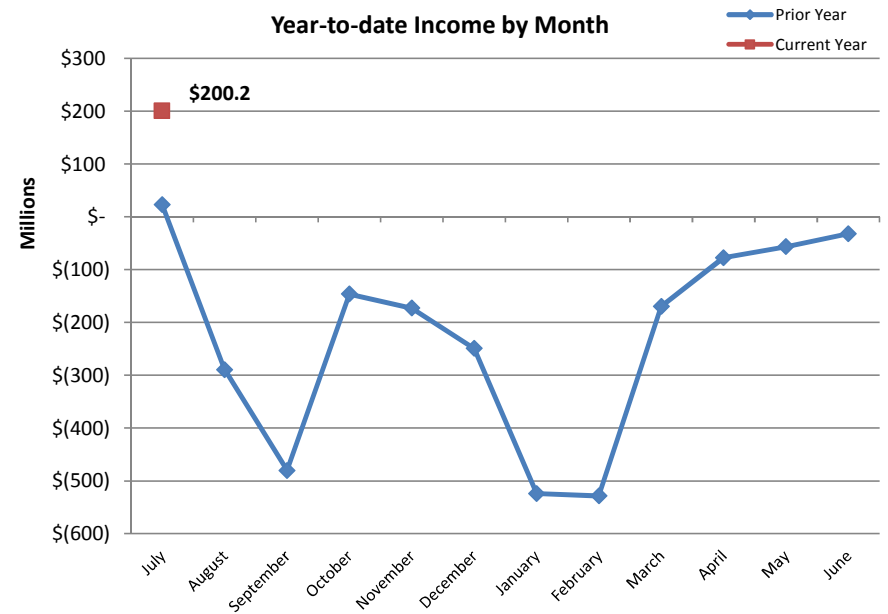
Public Employees' Retirement Pension Trust Fund

Fiscal Year-to-Date through July 31, 2016

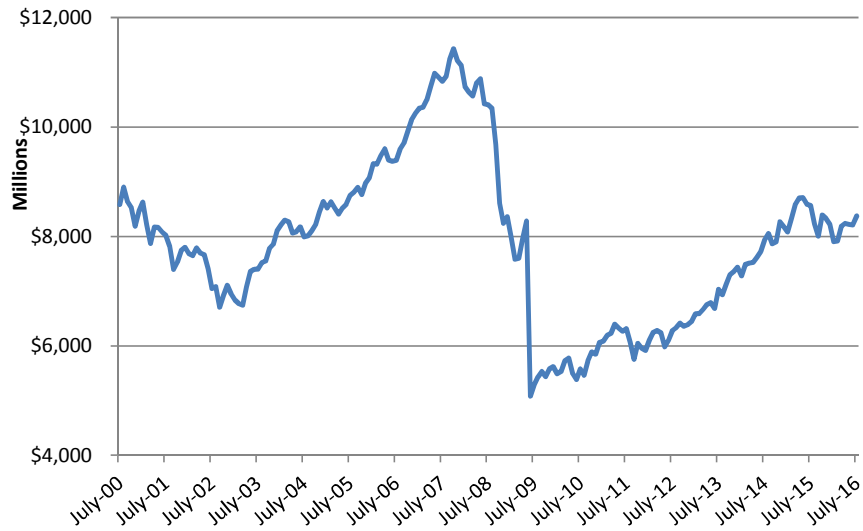
Total Assets by Month



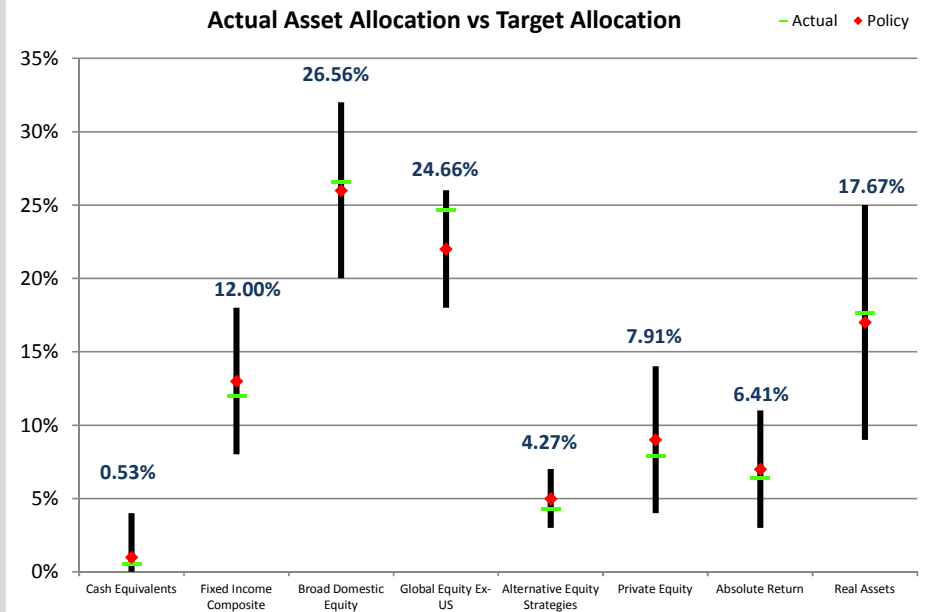
Year-to-date Income by Month



Total Assets History



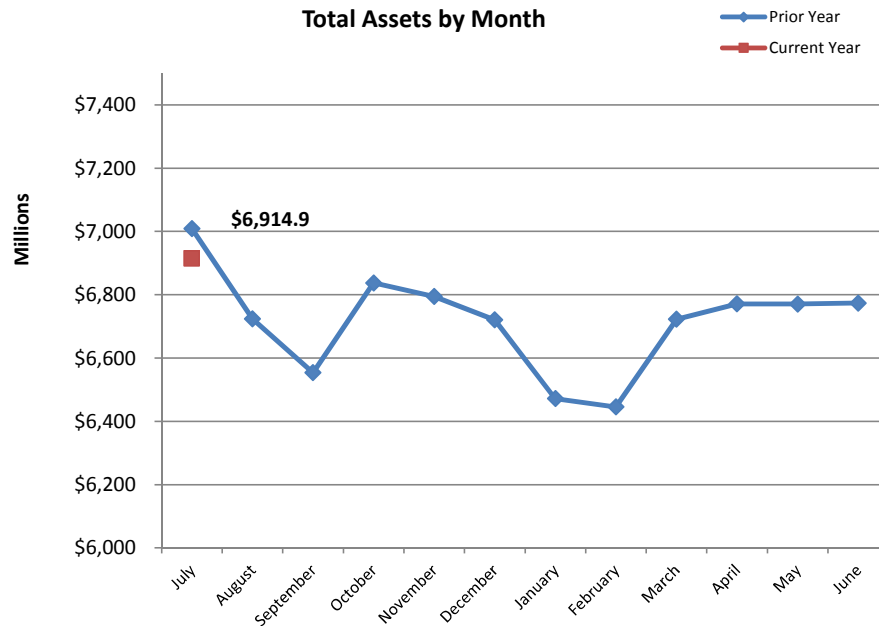
Actual Asset Allocation vs Target Allocation



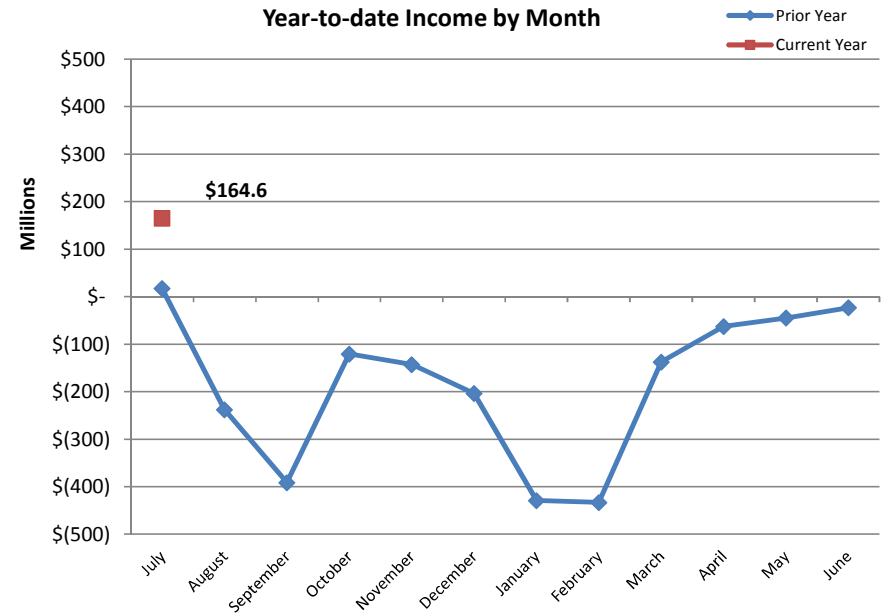
Public Employees' Retirement Health Care Trust Fund

Fiscal Year-to-Date through July 31, 2016

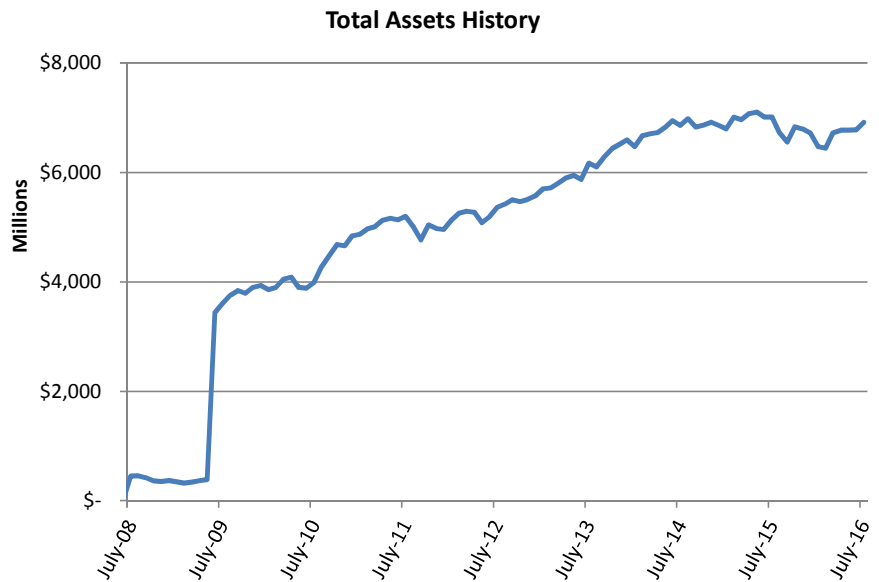
Total Assets by Month



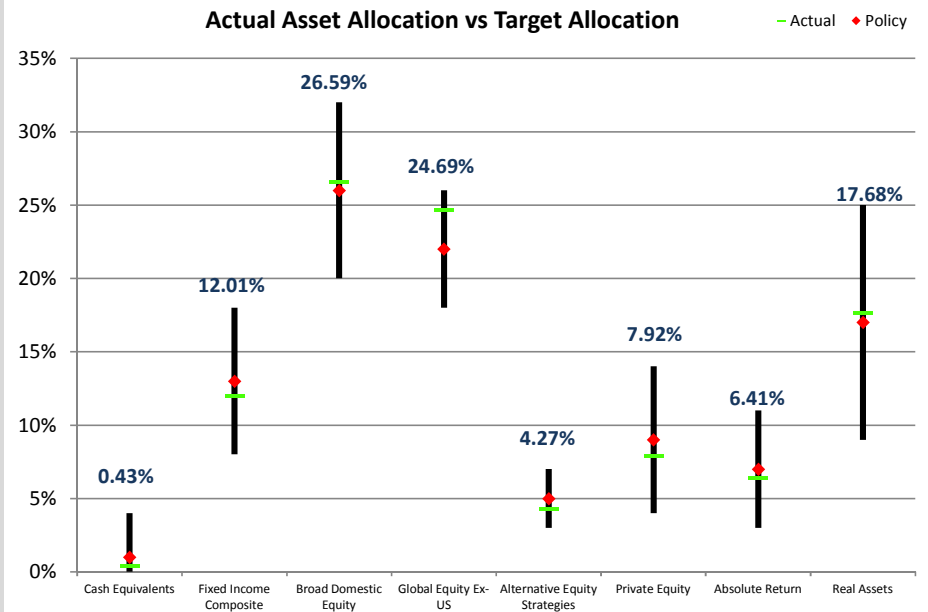
Year-to-date Income by Month



Total Assets History

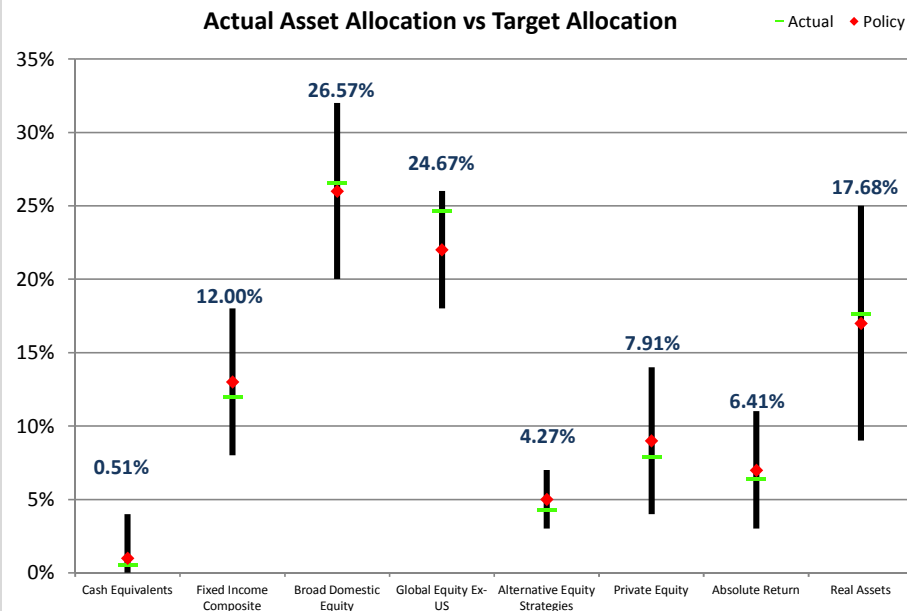
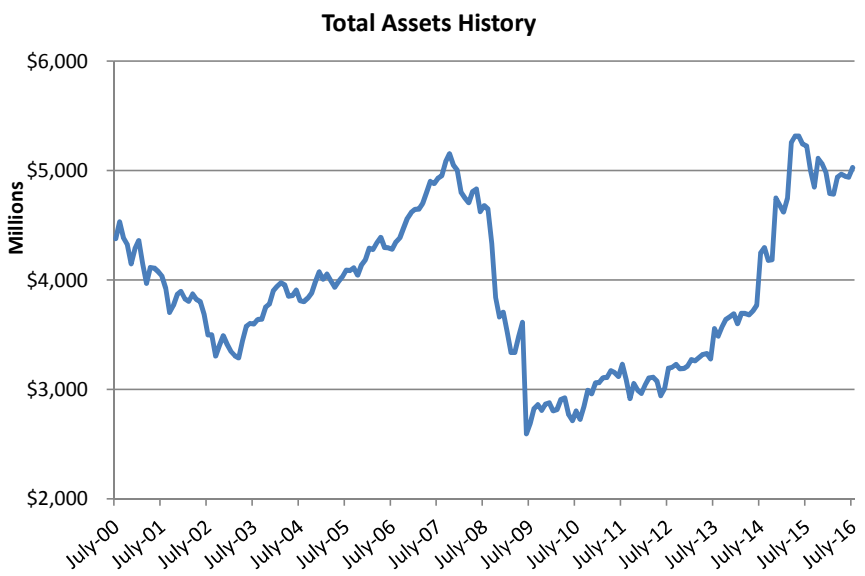
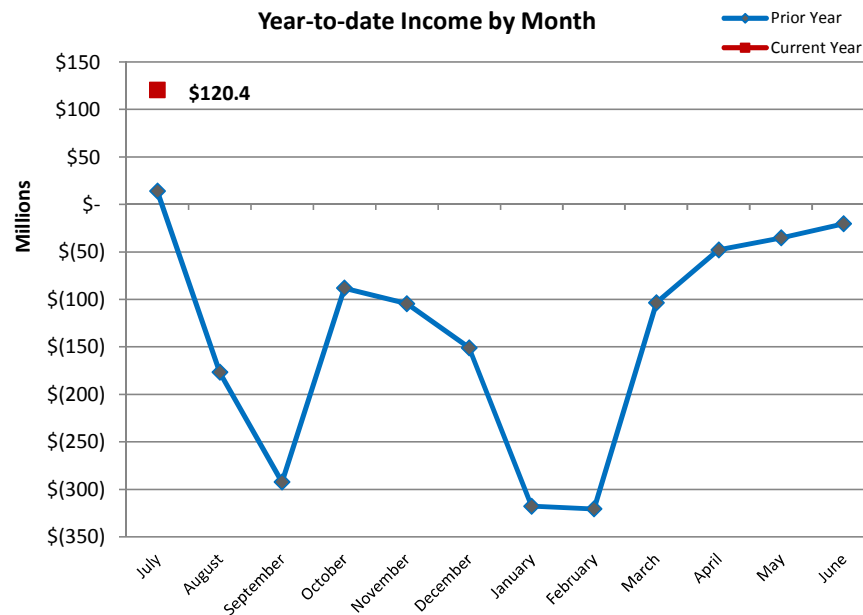
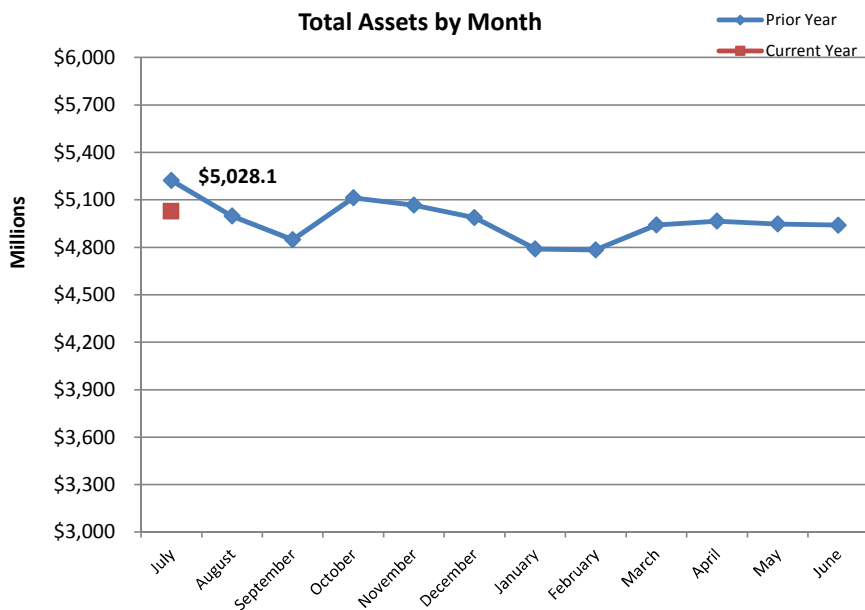


Actual Asset Allocation vs Target Allocation



Teachers' Retirement Pension Trust Fund

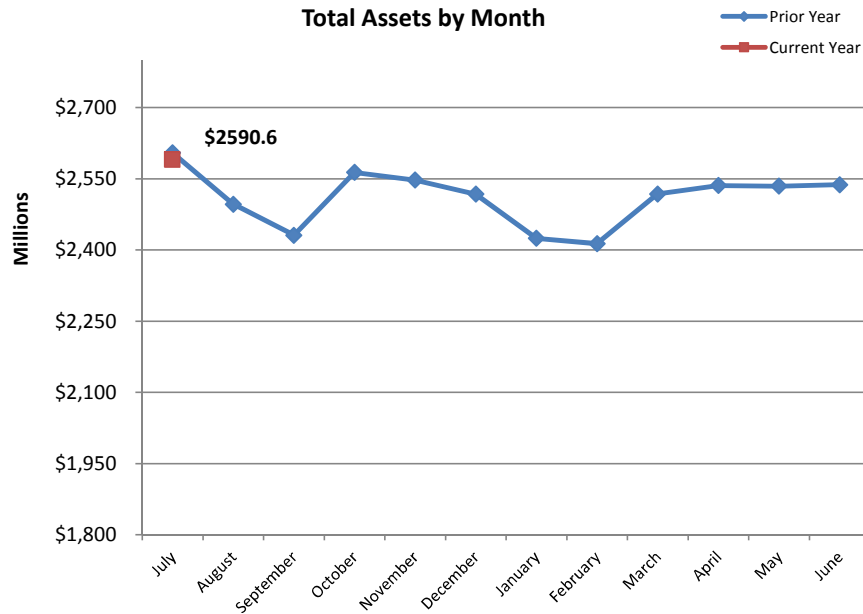
Fiscal Year-to-Date through July 31, 2016



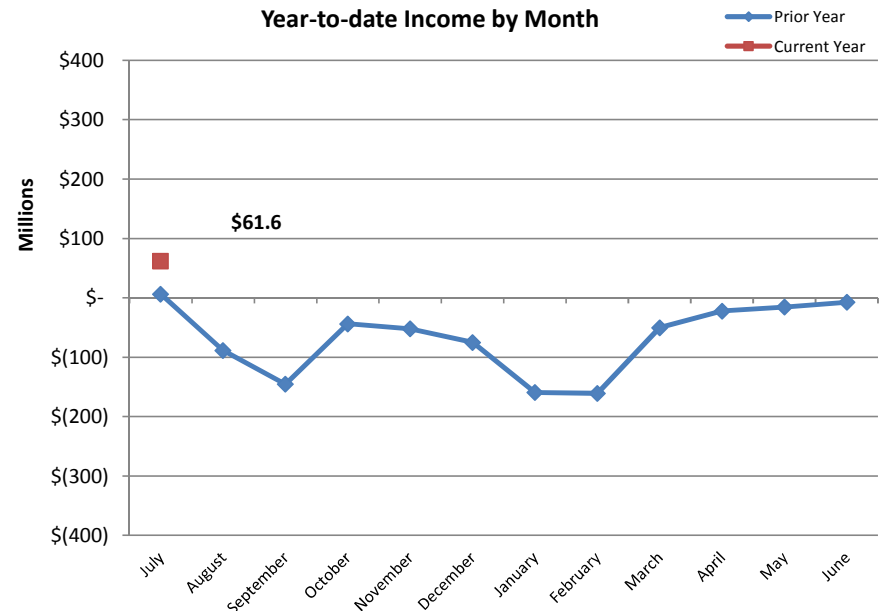
Teachers' Retirement Health Care Trust Fund

Fiscal Year-to-Date through July 31, 2016

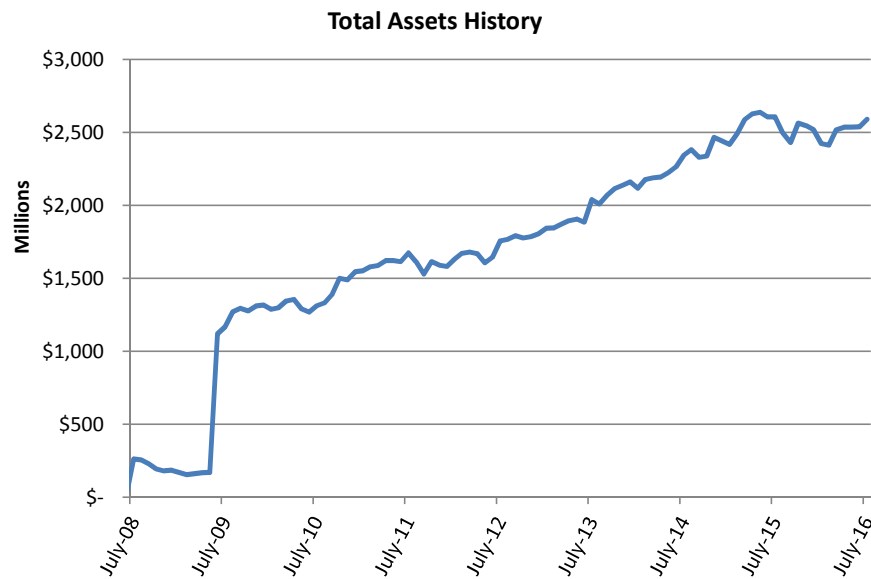
Total Assets by Month



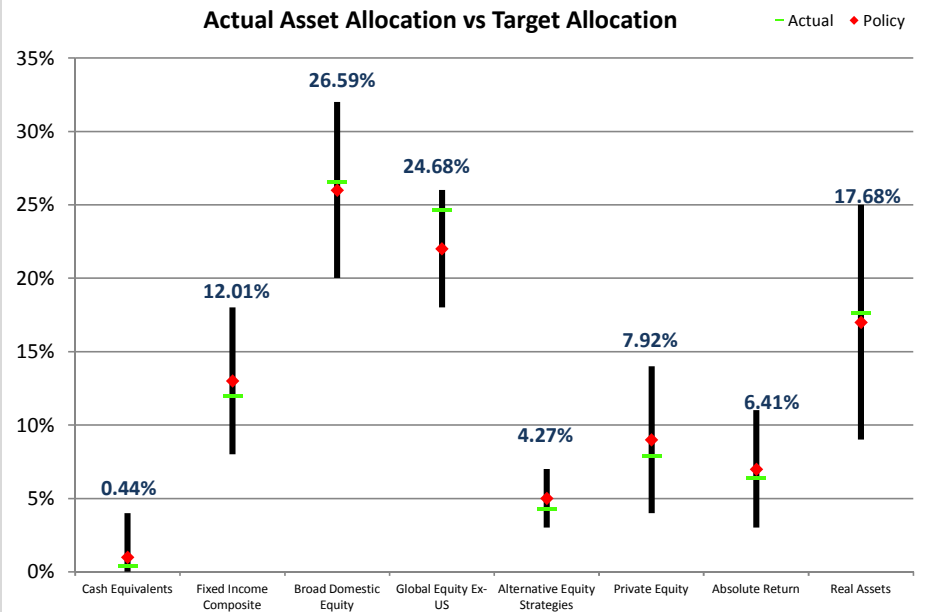
Year-to-date Income by Month



Total Assets History



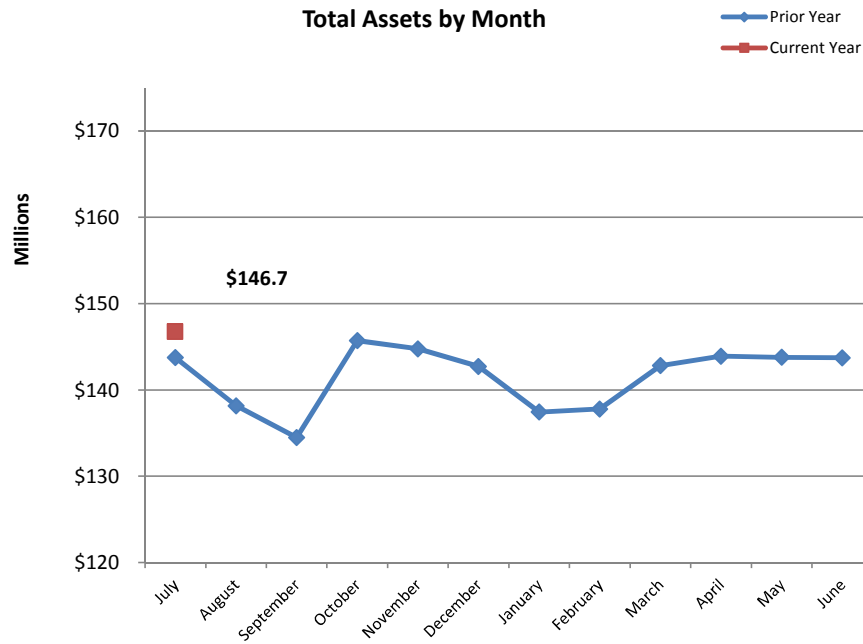
Actual Asset Allocation vs Target Allocation



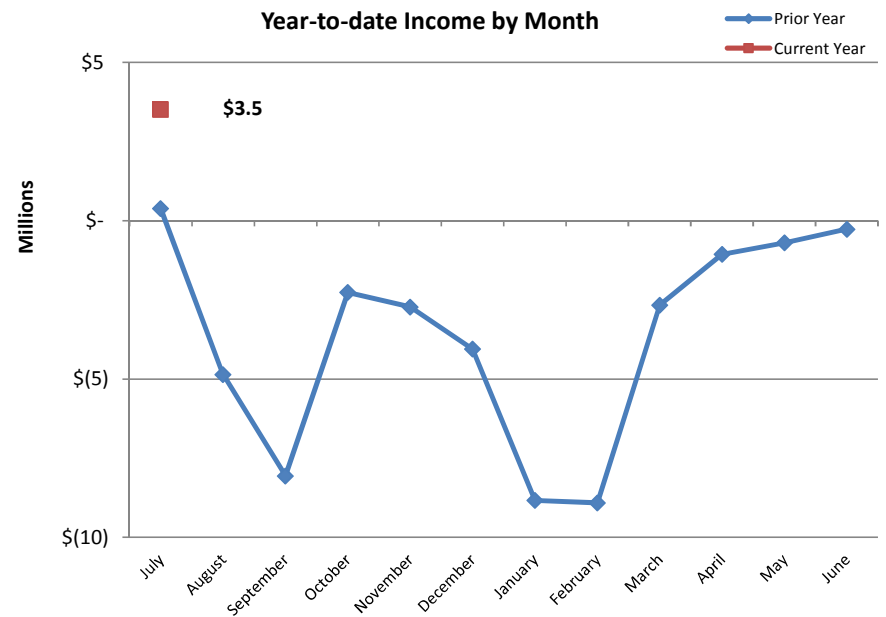
Judicial Retirement Pension Trust Fund

Fiscal Year-to-Date through July 31, 2016

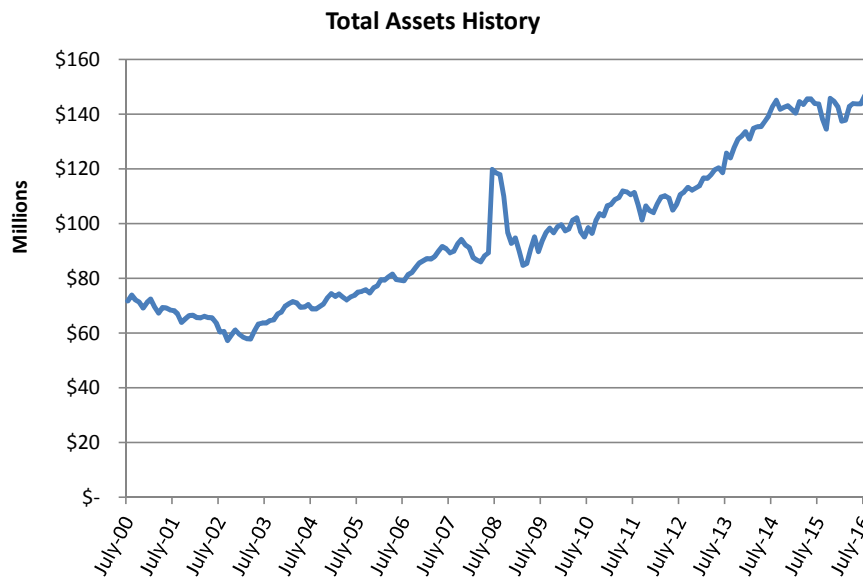
Total Assets by Month



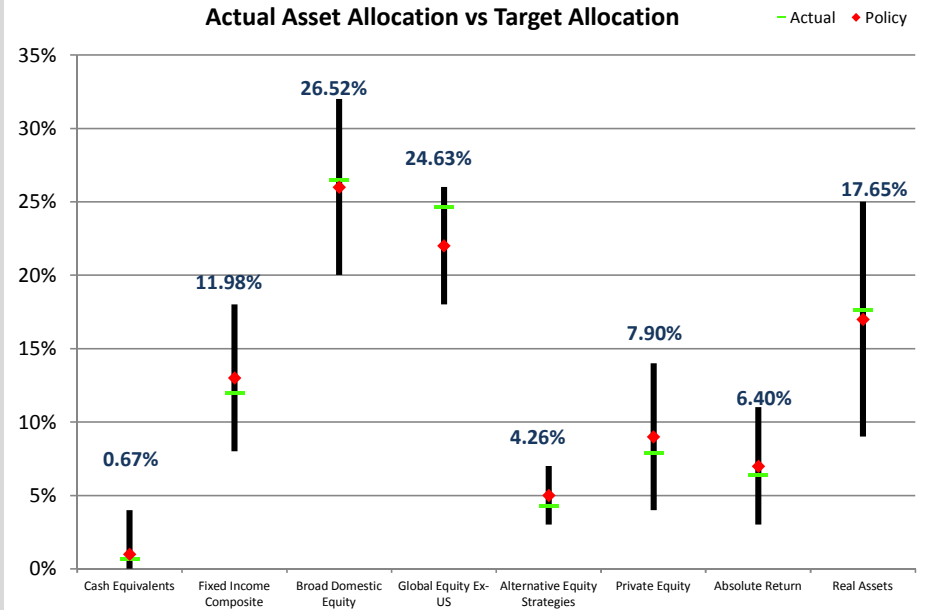
Year-to-date Income by Month



Total Assets History

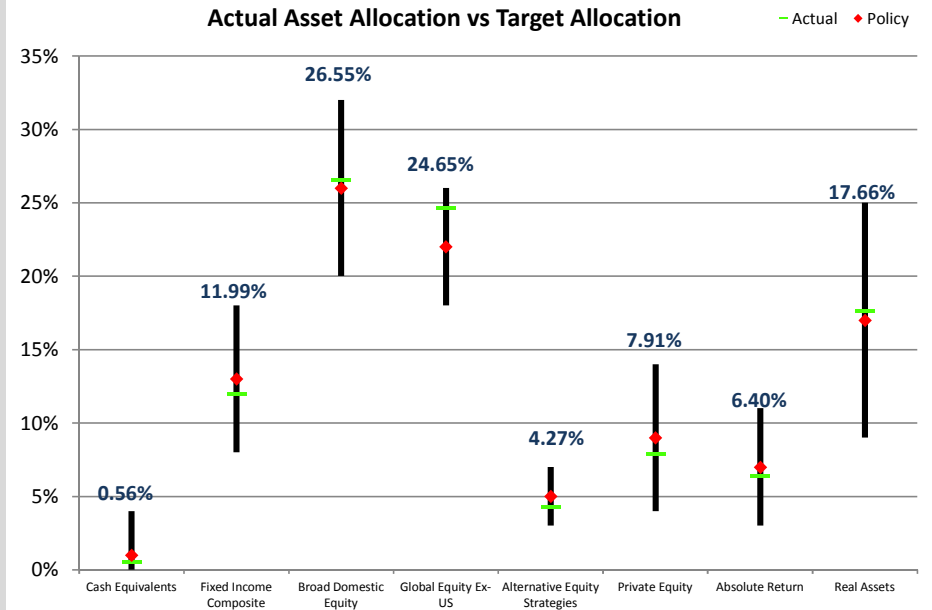
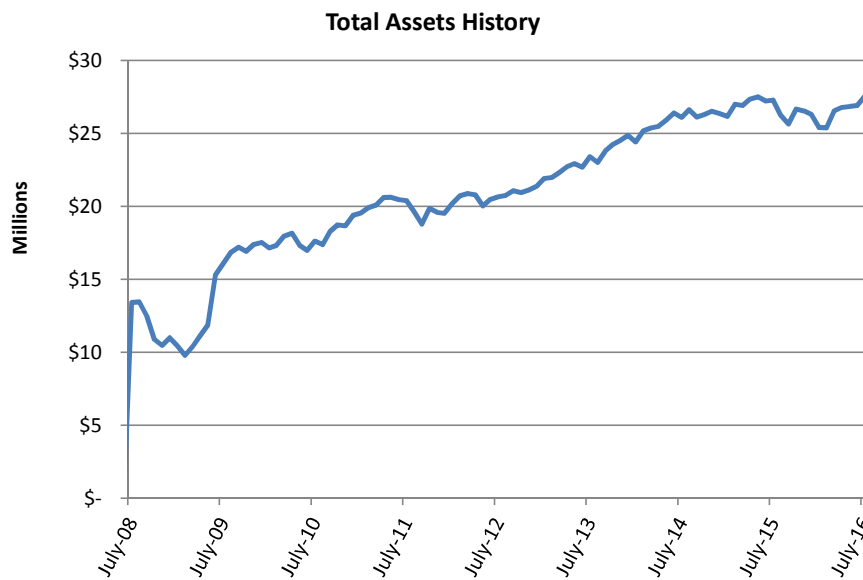
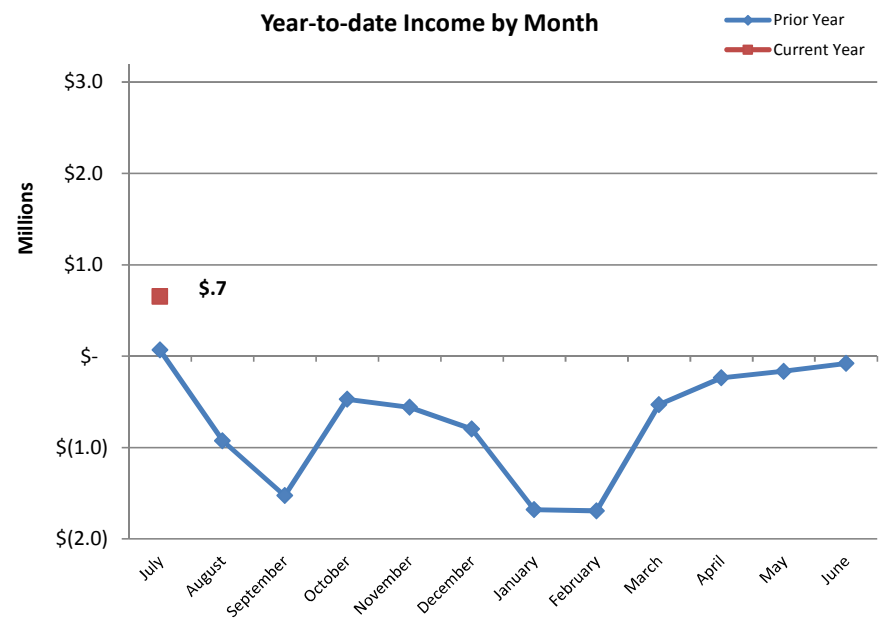
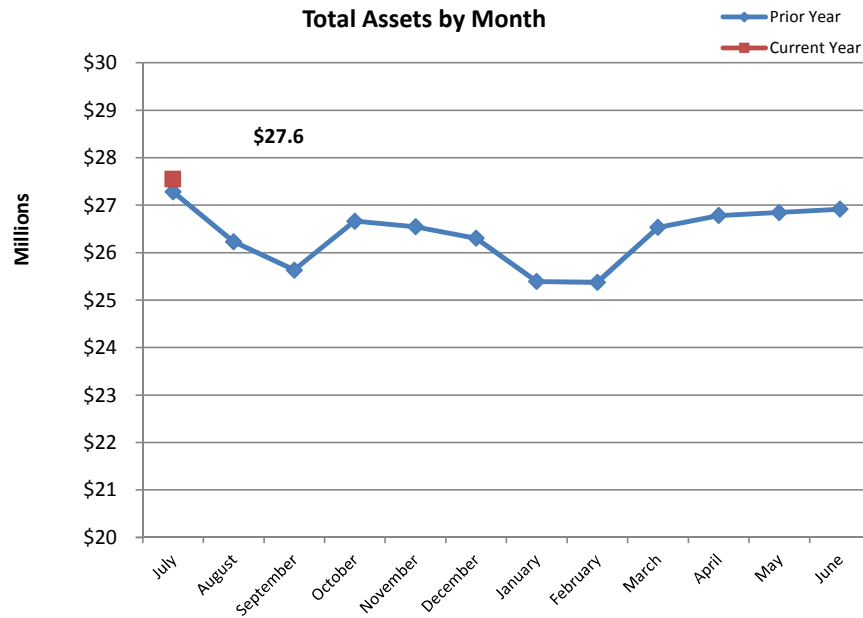


Actual Asset Allocation vs Target Allocation



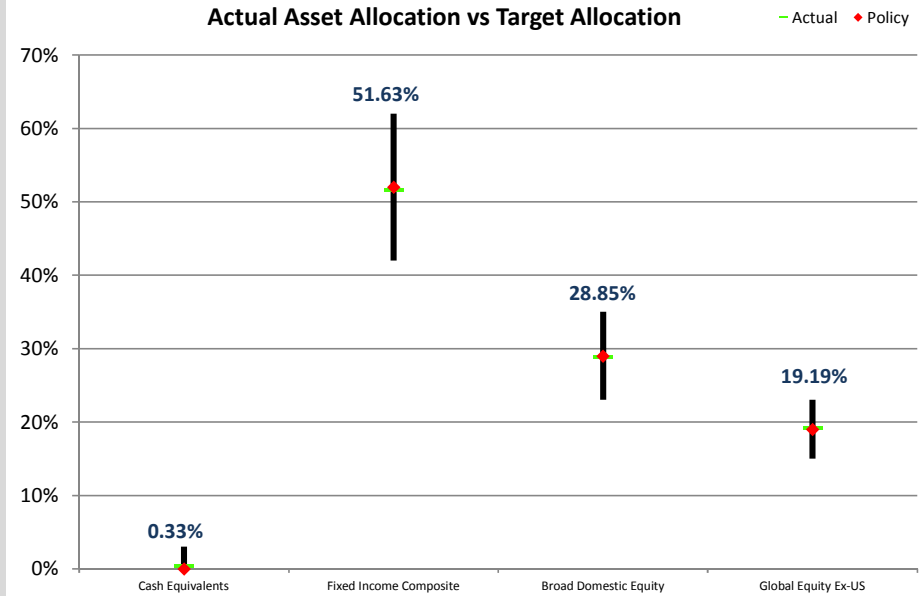
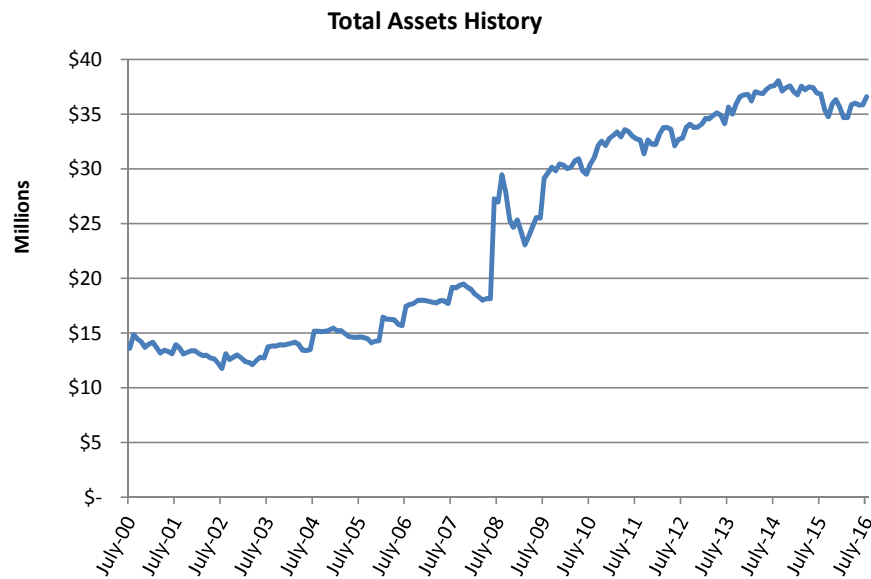
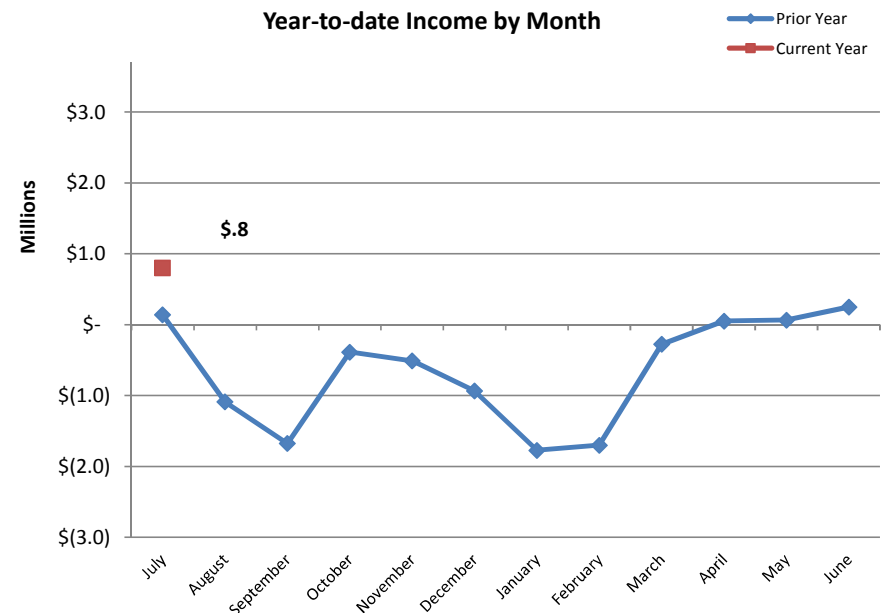
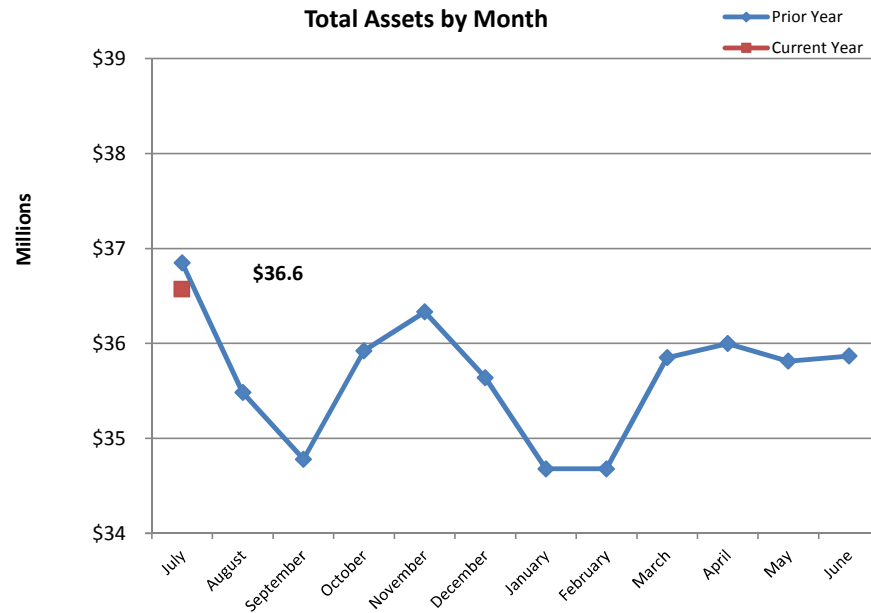
Judicial Retirement Health Care Trust Fund

Fiscal Year-to-Date through July 31, 2016



Military Retirement Trust Fund

Fiscal Year-to-Date through July 31, 2016



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, 2016

	Beginning Invested Assets	Investment Income	Net Contributions and (Withdrawals)	Ending Invested Assets	% increase (decrease)
Cash					
Short-Term Fixed Income Pool	\$ 186,877,315	\$ 98,487	\$ (72,038,298)	\$ 114,937,504	-38.50%
Total Cash	<u>186,877,315</u>	<u>98,487</u>	<u>(72,038,298)</u>	<u>114,937,504</u>	<u>-38.50%</u>
Fixed Income					
US Treasury Fixed Income	<u>1,073,194,334</u>	<u>935,611</u>	<u>(10,000)</u>	<u>1,074,119,945</u>	<u>0.09%</u>
Taxable Municipal Bond Pool					
Western Asset Management	133,264,741	2,968,268	-	136,233,009	2.23%
Guggenheim Partners	<u>127,769,304</u>	<u>2,304,216</u>	<u>-</u>	<u>130,073,520</u>	<u>1.80%</u>
	<u>261,034,045</u>	<u>5,272,484</u>	<u>-</u>	<u>266,306,529</u>	<u>2.02%</u>
Alternative Fixed Income Pool					
Fidelity Institutional Asset Management.	127,706,124	2,547,087	-	130,253,211	1.99%
Schroders Innsurance Linked Securities	<u>40,000,000</u>	<u>(25,472)</u>	<u>-</u>	<u>39,974,528</u>	<u>-0.06%</u>
	<u>167,706,124</u>	<u>2,521,615</u>	<u>-</u>	<u>170,227,739</u>	<u>1.50%</u>
International Fixed Income Pool					
Mondrian Investment Partners	<u>368,119,317</u>	<u>1,287,839</u>	<u>-</u>	<u>369,407,156</u>	<u>0.35%</u>
High Yield Pool					
MacKay Shields, LLC	222,408,549	5,444,647	-	227,853,196	2.45%
Fidelity Instit. Asset Mgmt. High Yield CMBS	162,574,866	2,785,051	20,000,000	185,359,917	14.02%
Columbia Threadneedle	214,356,637	4,588,068	-	218,944,705	2.14%
Eaton Vance High Yield	<u>212,557,079</u>	<u>4,837,848</u>	<u>-</u>	<u>217,394,927</u>	<u>2.28%</u>
	<u>811,897,131</u>	<u>17,655,614</u>	<u>20,000,000</u>	<u>849,552,745</u>	<u>4.64%</u>
Emerging Debt Pool					
Lazard Emerging Income	<u>157,248,778</u>	<u>2,131,173</u>	<u>(50,000,000)</u>	<u>109,379,951</u>	<u>-30.44%</u>
Total Fixed Income	<u>2,839,199,729</u>	<u>29,804,336</u>	<u>(30,010,000)</u>	<u>2,838,994,065</u>	<u>-0.01%</u>

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, 2016

Domestic Equities

Small Cap Pool

Passively Managed

SSgA Russell 2000 Growth	17,787,079	1,146,559	-	18,933,638	6.45%
SSgA Russell 2000 Value	31,243,653	1,686,287	-	32,929,940	5.40%
Total Passive	49,030,732	2,832,846	-	51,863,578	5.78%

Actively Managed

Barrow, Haney, Mewhinney & Strauss	85,037,322	4,198,548	(9,728,300)	79,507,570	-6.50%
DePrince, Race & Zollo Inc.- Micro Cap	77,252,806	3,218,135	-	80,470,941	4.17%
Fidelity (FIAM) Small Company	199,872,365	8,745,591	(9,213,400)	199,404,556	-0.23%
Frontier Capital Mgmt. Co.	90,154,591	4,564,496	(12,499,900)	82,219,187	-8.80%
Jennison Associates, LLC	83,799,587	3,830,252	-	87,629,839	4.57%
Lord Abbett Small Cap Growth Fund	71,817,420	5,662,552	(5,774,700)	71,705,272	-0.16%
Lord Abbett & Co.- Micro Cap	76,100,814	6,732,496	-	82,833,310	8.85%
Luther King Capital Management	79,445,565	3,694,048	-	83,139,613	4.65%
SSgA Futures Small Cap	11,480,669	667,625	-	12,148,294	5.82%
Transition Account	13	-	-	13	-
Sycamore Capital	99,142,208	4,151,765	(283,700)	103,010,273	3.90%
SSgA Volatility-Russell 2000	58,693,973	791,828	(12,500,000)	46,985,801	-19.95%
Zebra Capital Management	73,016,338	3,646,798	-	76,663,136	4.99%
Total Active	1,005,813,671	49,904,134	(50,000,000)	1,005,717,805	-0.01%
Total Small Cap	1,054,844,403	52,736,980	(50,000,000)	1,057,581,383	0.26%

Large Cap Pool

Passively Managed

SSgA Russell 1000 Growth	1,045,182,891	49,356,633	-	1,094,539,524	4.72%
SSgA Russell 1000 Value	959,175,616	27,944,088	-	987,119,704	2.91%
SSgA Russell 200	815,844,871	28,605,822	-	844,450,693	3.51%
Total Passive	2,820,203,378	105,906,543	-	2,926,109,921	3.76%

Actively Managed

Allianz Global Investors	348,176,221	16,236,200	-	364,412,421	4.66%
Barrow, Haney, Mewhinney & Strauss	332,610,062	11,354,101	-	343,964,163	3.41%
Lazard Freres	353,505,387	17,796,261	-	371,301,648	5.03%
McKinley Capital Mgmt.	340,771,273	15,672,071	-	356,443,344	4.60%
Quantitative Management Assoc.	326,416,132	9,584,284	-	336,000,416	2.94%
SSgA Futures large cap	15,013,612	608,960	-	15,622,572	4.06%
Transition Account	12,794	18,678	-	31,472	145.99%
SSgA Volatility-Russell 1000	87,836,195	1,323,945	-	89,160,140	1.51%
Portable Alpha	-	44,372	57,500,000	57,544,372	100.00%
Internally Managed Large Cap.	334,232,577	1,390,585	-	335,623,162	0.42%
Total Active	2,138,574,253	74,029,457	57,500,000	2,270,103,710	6.15%
Total Large Cap	4,958,777,631	179,936,000	57,500,000	5,196,213,631	4.79%
Total Domestic Equity	6,013,622,034	232,672,980	7,500,000	6,253,795,014	3.99%

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, 2016

Alternative Equity Strategies

Alternative Equity Strategy Pool

Relational Investors, LLC	1,080,805	-	-	1,080,805	-
Analytic Buy Write Account	302,953,216	2,734,480	-	305,687,696	0.90%
Quantitative Management Associates MPS	200,085,492	6,543,935	-	206,629,427	3.27%
ARMB Equity Yield Strategy	278,882,335	8,225,046	-	287,107,381	2.95%
Alternative Equity Strategies Transition Account	-	-	-	-	-
Total Alternative Equity Strategy Pool	783,001,848	17,503,461	-	800,505,309	2.24%

Convertible Bond Pool

Advent Capital	196,850,498	6,141,646	-	202,992,144	3.12%
Total Alternative Equity Strategies	979,852,346	23,645,107	-	1,003,497,453	2.41%

Global Equities Ex US

Small Cap Pool

Mondrian Investment Partners	153,394,305	7,314,435	(10,000,000)	150,708,740	-1.75%
Schroder Investment Management	158,162,851	10,719,452	(10,000,000)	158,882,303	0.45%
Total Small Cap	311,557,156	18,033,887	(20,000,000)	309,591,043	-0.63%

Large Cap Pool

Blackrock ACWI Ex-US IMI	762,225,293	38,458,196	-	800,683,489	5.05%
Brandes Investment Partners	660,639,461	22,150,636	-	682,790,097	3.35%
Cap Guardian Trust Co	671,782,191	39,611,394	-	711,393,585	5.90%
Lazard Freres	340,140,292	10,863,737	-	351,004,029	3.19%
McKinley Capital Management	484,967,213	20,401,055	-	505,368,268	4.21%
SSgA Futures International	-	-	-	-	-
Allianz Global Investors	245,288,215	10,424,232	-	255,712,447	4.25%
Arrow Street Capital	292,023,745	12,361,100	-	304,384,845	4.23%
Baillie Gifford Overseas Limited	364,826,672	24,616,331	-	389,443,003	6.75%
State Street Global Advisors	765,606,415	38,128,781	-	803,735,196	4.98%
Total Large Cap	4,587,499,497	217,015,462	-	4,804,514,959	4.73%

Emerging Markets Equity Pool

Lazard Asset Management	426,355,280	20,050,672	-	446,405,952	4.70%
Eaton Vance	232,916,125	10,297,738	-	243,213,863	4.42%
Total Emerging Markets Pool	659,271,405	30,348,410	-	689,619,815	4.60%

Total Global Equities	5,558,328,058	265,397,759	(20,000,000)	5,803,725,817	4.41%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended July 31, 2016

Private Equity Pool

Abbott Capital	769,692,462	(1,337,725)	(3,914,760)	764,439,977	-0.68%
Angelo, Gordon & Co.	3,522,227	-	(197,820)	3,324,407	-5.62%
Advent International GPE Fund VIII-B	-	-	-	-	-
Lexington Partners VII	37,607,469	(295,863)	(1,352,656)	35,958,950	-4.38%
Merit Capital Partners	18,398,874	-	(335,717)	18,063,157	-1.82%
NB SOF III	21,646,671	-	497,446	22,144,117	2.30%
NB SOF IV	-	-	-	-	-
Resolute Fund III	7,565,217	-	221,452	7,786,669	2.93%
Glendon Opportunities	22,915,829	-	-	22,915,829	-
New Mountain Partners IV	12,588,365	-	35,604	12,623,969	0.28%
KKR Lending Partners II	32,874,849	-	36,931,542	69,806,391	112.34%
NGP XI	9,714,513	-	2,270,822	11,985,335	23.38%
Lexington Capital Partners VIII	11,792,681	(253,572)	-	11,539,109	-2.15%
Onex Partnership III	20,876,813	-	-	20,876,813	-
Pathway Capital Management LLC	819,252,480	(2,184,098)	(6,509,102)	810,559,280	-1.06%
Summit Partners GE IX	-	-	-	-	-
Warburg Pincus X	14,705,161	(2)	-	14,705,159	0.00%
Warburg Pincus XI	29,153,836	-	(784,500)	28,369,336	-2.69%
Warburg Pincus XII	4,178,116	-	-	4,178,116	-
Total Private Equity	1,836,485,563	(4,071,260)	26,862,311	1,859,276,614	1.24%

Absolute Return Pool

Global Asset Management (USA) Inc.	302,832,692	(1,421,314)	(45,000,000)	256,411,378	-15.33%
Prisma Capital Partners	410,829,408	(8,331,234)	(52,650,000)	349,848,174	-14.84%
Crestline Investors, Inc.	354,115,900	728,265	(324,074)	354,520,091	0.11%
Allianz Global Investors	230,784,475	869,286	-	231,653,761	0.38%
Crestline Specialty Fund	19,218,233	-	(508,351)	18,709,882	-2.65%
KKR Apex Equity Fund	97,696,251	(2,136,891)	-	95,559,360	-2.19%
Zebra Global Equity Fund	70,053,566	(693,074)	60,000,000	129,360,492	84.66%
Zebra Global Equity Advantage Fund	29,986,718	(347,150)	40,000,000	69,639,568	132.23%
Total Absolute Return Investments	1,515,517,243	(11,332,112)	1,517,575	1,505,702,706	-0.65%

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, 2016

Real Assets

Farmland Pool

UBS Agrivest, LLC	540,535,436	-	-	540,535,436	-
Hancock Agricultural Investment Group	266,841,225	-	-	266,841,225	-
Total Farmland Pool	807,376,661	-	-	807,376,661	-

Timber Pool

Timberland Invst Resource LLC	278,661,105	-	(1,700,000)	276,961,105	-0.61%
Hancock Natural Resource Group	97,894,410	-	-	97,894,410	-
Total Timber Pool	376,555,515	-	(1,700,000)	374,855,515	-0.45%

Energy Pool

EIG Energy Fund XV	32,202,966	320,399	-	32,523,365	0.99%
EIG Energy Fund XD	3,848,454	-	-	3,848,454	-
EIG Energy Fund XIV-A	10,589,200	(2,830)	1,250,000	11,836,370	11.78%
EIG Energy Fund XVI	24,895,925	(128,870)	-	24,767,055	-0.52%
Total Energy Pool	71,536,545	188,699	1,250,000	72,975,244	2.01%

REIT Pool

REIT Trans Account	-	-	-	-	-
REIT Holdings	351,463,611	13,515,550	-	364,979,161	3.85%
Total REIT Pool	351,463,611	13,515,550	-	364,979,161	3.85%

Treasury Inflation Proof Securities

TIPS Internally Managed Account	55,538,019	499,287	-	56,037,306	0.90%

Master Limited Partnerships

Advisory Research MLP	227,415,098	889,462	-	228,304,560	0.39%
Tortoise Capital Advisors	259,333,563	1,188,885	-	260,522,448	0.46%
Total Master Limited Partnerships	486,748,661	2,078,347	-	488,827,008	0.43%

Infrastructure Private Pool

IFM Global Infrastructuer Fund-Private	219,559,388	316,953	-	219,876,341	0.14%
JP Morgan Infrastructure Fund-Private	100,045,381	-	-	100,045,381	-
Total Infrastructure Private Pool	319,604,769	316,953	-	319,921,722	0.10%

Infrastructure Public Pool

Brookfield Investment Mgmt.-Public	97,235,562	1,512,865	-	98,748,427	1.56%
Lazard Asset Mgmt.-Public	109,682,271	4,459,303	-	114,141,574	4.07%
Total Infrastructure Public Pool	206,917,833	5,972,168	-	212,890,001	2.89%

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, 2016

Real Estate					
Core Commingled Accounts					
JP Morgan	238,898,539	1,439,435	(2,080,843)	238,257,131	-0.27%
UBS Trumbull Property Fund	96,912,309	1,470,364	(752,144)	97,630,529	0.74%
Total Core Commingled	335,810,848	2,909,799	(2,832,987)	335,887,660	0.02%
Core Separate Accounts					
LaSalle Investment Management	217,439,730	-	511,087	217,950,817	0.24%
Sentinel Separate Account	221,027,617	-	(1,005,198)	220,022,419	-0.45%
UBS Realty	481,039,089	-	377,907	481,416,996	0.08%
Total Core Separate	919,506,436	-	(116,204)	919,390,232	-0.01%
Non-Core Commingled Accounts					
Almanac Realty Securities IV	55,897	-	-	55,897	-
Almanac Realty Securities V	8,950,113	-	-	8,950,113	-
Almanac Realty Securities VII	12,471,519	-	-	12,471,519	-
BlackRock Diamond Property Fund	3,212,867	(97,117)	-	3,115,750	-3.02%
Clarion Ventures 4	43,190,832	-	(2,060,773)	41,130,059	-4.77%
Colony Investors VIII, L.P.	13,568,200	-	-	13,568,200	-
Cornerstone Apartment Venture III	48,222	-	-	48,222	-
Coventry	2,054,913	-	-	2,054,913	-
ING Clarion Development Ventures III	9,193,283	-	(4,516,216)	4,677,067	-49.13%
KKR Real Estate Partners Americas LP.	45,341,356	-	-	45,341,356	-
LaSalle Medical Office Fund II	205,607	-	-	205,607	-
Lowe Hospitality Partners	976,447	-	-	976,447	-
Silverpeak Legacy Pension Partners II, L.P.	15,627,857	-	-	15,627,857	-
Silverpeak Legacy Pension Partners III, L.P.	7,252,589	-	(956,711)	6,295,878	-13.19%
Tishman Speyer Real Estate Venture VI	37,425,003	-	-	37,425,003	-
Tishman Speyer Real Estate Venture VII	7,769,081	-	-	7,769,081	-
Total Non-Core Commingled	207,343,786	(97,117)	(7,533,700)	199,712,969	-3.68%
Total Real Estate	1,462,661,070	2,812,682	(10,482,891)	1,454,990,861	-0.52%
Total Real Assets	4,138,402,684	25,383,686	(10,932,891)	4,152,853,479	0.35%
Total Assets	\$ 23,068,284,972	\$ 561,598,983	\$ (97,101,303)	\$ 23,532,782,652	2.01%

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, 2016

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions (Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested Assets</u>	<u>% Change in Invested Assets</u>	<u>% Change due to Investment Income (2)</u>
Participant Options							
T. Rowe Price							
Stable Value Fund	\$ 373,631,978	\$ 670,335	\$ (1,288,574)	\$ 3,528,786	\$ 376,542,525	0.78%	0.18%
Small Cap Stock Fund	121,029,514	5,966,218	130,023	1,855,688	128,981,443	6.57%	4.89%
Alaska Balanced Trust	1,156,896,581	19,245,670	(2,066,716)	(721,178)	1,173,354,357	1.42%	1.67%
Long Term Balanced Fund	533,479,669	13,859,509	2,590,399	(1,640,833)	548,288,744	2.78%	2.60%
AK Target Date 2010 Trust	9,652,723	194,193	27,037	101,742	9,975,695	3.35%	2.00%
AK Target Date 2015 Trust	88,212,402	2,046,542	155,975	52,161	90,467,080	2.56%	2.32%
AK Target Date 2020 Trust	75,524,797	2,037,284	342,561	125,068	78,029,710	3.32%	2.69%
AK Target Date 2025 Trust	49,861,969	1,498,949	497,588	(226,078)	51,632,428	3.55%	3.00%
AK Target Date 2030 Trust	36,227,134	1,194,031	489,589	242,757	38,153,511	5.32%	3.26%
AK Target Date 2035 Trust	33,611,140	1,188,512	664,411	262,618	35,726,681	6.29%	3.49%
AK Target Date 2040 Trust	33,249,172	1,235,085	719,902	(152,903)	35,051,256	5.42%	3.68%
AK Target Date 2045 Trust	35,934,141	1,352,056	747,901	(31,994)	38,002,104	5.75%	3.73%
AK Target Date 2050 Trust	40,617,726	1,527,096	973,111	(37,482)	43,080,451	6.06%	3.72%
AK Target Date 2055 Trust	30,080,198	1,137,169	1,417,562	(184,517)	32,450,412	7.88%	3.70%
AK Target Date 2060 Trust	173,523	4,130	(3,527)	(58,437)	115,689	-33.33%	2.90%
Total Investments with T. Rowe Price	<u>2,618,182,667</u>	<u>53,156,779</u>	<u>5,397,242</u>	<u>3,115,398</u>	<u>2,679,852,086</u>		
State Street Global Advisors							
State Street Treasury Money Market Fund - Inst.	39,188,355	5,512	113,342	215,328	39,522,537	0.85%	0.01%
S&P 500 Stock Index Fund Series A	340,068,624	12,497,625	446,923	(4,137,091)	348,876,081	2.59%	3.70%
Russell 3000 Index	70,532,396	2,755,754	233,892	(2,611,640)	70,910,402	0.54%	3.97%
US Real Estate Investment Trust Index	46,542,750	2,053,019	54,369	1,001,042	49,651,180	6.68%	4.36%
World Equity Ex-US Index	28,568,807	1,180,264	184,622	(1,618,158)	28,315,535	-0.89%	4.24%
Long US Treasury Bond Index	26,643,790	581,203	(71,347)	1,577,806	28,731,452	7.84%	2.12%
US Treasury Inflation Protected Securities Index	21,998,646	187,915	(23,882)	179,638	22,342,317	1.56%	0.85%
World Government Bond Ex-US Index	9,469,548	47,026	30,160	(568,221)	8,978,513	-5.19%	0.51%
Global Balanced Fund	51,351,062	1,368,306	44,394	404,823	53,168,585	3.54%	2.65%
Total Investments with SSGA	<u>634,363,978</u>	<u>20,676,624</u>	<u>1,012,473</u>	<u>(5,556,473)</u>	<u>650,496,602</u>		
BlackRock							
Government/Credit Bond Fund	42,868,610	343,729	(106,682)	(284,264)	42,821,393	-0.11%	0.81%
Intermediate Bond Fund	30,057,474	13,693	(82,591)	1,571,268	31,559,844	5.00%	0.04%
Total Investments with Barclays Global Investors	<u>72,926,084</u>	<u>357,422</u>	<u>(189,273)</u>	<u>1,287,004</u>	<u>74,381,237</u>		
Brandes/Allianz (3)							
AK International Equity Fund	55,188,207	1,916,979	303,924	1,321,226	58,730,336	6.42%	3.42%
RCM							
Sustainable Core Opportunities Fund	38,828,787	1,610,696	104,737	(167,155)	40,377,065	3.99%	4.15%
Total All Funds	<u>\$ 3,419,489,723</u>	<u>\$ 77,718,500</u>	<u>\$ 6,629,103</u>	<u>\$ -</u>	<u>\$ 3,503,837,326</u>	2.47%	2.27%

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.

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

(3) This investment is comprised of two funds, Brandes International Equity Fund and Allianz NFJ International Fund effective March 30, 2015.

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, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>
Investments with T. Rowe Price	
Stable Value Fund	\$ 376,543
Small Cap Stock Fund	128,981
Alaska Balanced Trust	1,173,354
Long Term Balanced Fund	548,289
AK Target Date 2010 Trust	9,976
AK Target Date 2015 Trust	90,467
AK Target Date 2020 Trust	78,030
AK Target Date 2025 Trust	51,632
AK Target Date 2030 Trust	38,154
AK Target Date 2035 Trust	35,727
AK Target Date 2040 Trust	35,051
AK Target Date 2045 Trust	38,002
AK Target Date 2050 Trust	43,080
AK Target Date 2055 Trust	32,450
AK Target Date 2060 Trust	116
State Street Global Advisors	
State Street Treasury Money Market Fund - Inst.	39,523
S&P 500 Stock Index Fund Series A	348,876
Russell 3000 Index	70,910
US Real Estate Investment Trust Index	49,651
World Equity Ex-US Index	28,316
Long US Treasury Bond Index	28,731
US Treasury Inflation Protected Securities Index	22,342
World Government Bond Ex-US Index	8,979
Global Balanced Fund	53,169
Investments with BlackRock	
Government/Credit Bond Fund	42,821
Intermediate Bond Fund	31,560
Investments with Brandes/Allianz Institutional	
AK International Equity Fund	58,730
Investments with RCM	
Sustainable Core Opportunities Fund	40,377
Total Invested Assets	\$ 3,503,837
<u>Change in Invested Assets</u>	
Beginning Assets	\$ 3,419,490
Investment Earnings	77,719
Net Contributions (Withdrawals)	6,629
Ending Invested Assets	\$ 3,503,837

Deferred Compensation Plan
Schedule of Invested Assets and Changes in Invested Assets
for the Month Ended
July 31, 2016

	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (1)
Participant Options							
T. Rowe Price							
Interest Income Fund	\$ 182,626,266	\$ 375,165	\$ (432,272)	\$ 1,237,061	\$ 183,806,220	0.65%	0.20%
Small Cap Stock Fund	88,311,635	4,327,706	(373,252)	(337,906)	91,928,183	4.10%	4.92%
Alaska Balanced Trust	22,344,052	375,756	181,679	30,183	22,931,670	2.63%	1.67%
Long Term Balanced Fund	48,011,273	1,245,327	(51,151)	(303,755)	48,901,694	1.85%	2.60%
AK Target Date 2010 Trust	3,435,073	69,258	(1,009)	(34,032)	3,469,290	1.00%	2.03%
AK Target Date 2015 Trust	9,500,829	218,821	(84,714)	21,324	9,656,260	1.64%	2.31%
AK Target Date 2020 Trust	18,423,557	488,146	216,280	(338,199)	18,789,784	1.99%	2.66%
AK Target Date 2025 Trust	9,733,019	293,860	176,235	(20,881)	10,182,233	4.62%	3.00%
AK Target Date 2030 Trust	6,600,527	216,605	138,803	38,154	6,994,089	5.96%	3.24%
AK Target Date 2035 Trust	3,927,179	139,870	96,687	63,643	4,227,379	7.64%	3.49%
AK Target Date 2040 Trust	4,394,106	163,763	113,935	(15,657)	4,656,147	5.96%	3.69%
AK Target Date 2045 Trust	2,974,961	111,921	93,400	(13,925)	3,166,357	6.43%	3.71%
AK Target Date 2050 Trust	1,934,265	73,139	69,916	(47)	2,077,273	7.39%	3.71%
AK Target Date 2055 Trust	3,201,611	118,863	53,278	(67,049)	3,306,703	3.28%	3.72%
AK Target Date 2060 Trust	77,573	2,917	1,523	1	82,014	5.72%	3.72%
Total Investments with T. Rowe Price	405,495,926	8,221,117	199,338	258,915	414,175,296		
State Street Global Advisors							
State Street Treasury Money Market Fund - Inst.	11,576,254	1,653	(602,297)	644,329	11,619,939	0.38%	0.01%
Russell 3000 Index	28,475,118	1,125,865	233,920	(361,326)	29,473,577	3.51%	3.96%
US Real Estate Investment Trust Index	16,312,031	725,524	98,800	455,338	17,591,693	7.84%	4.37%
World Equity Ex-US Index	8,486,795	373,541	102,686	512,167	9,475,189	11.65%	4.25%
Long US Treasury Bond Index	9,030,751	208,652	36,082	1,133,652	10,409,137	15.26%	2.17%
US Treasury Inflation Protected Securities Index	9,604,745	78,642	(63,505)	(197,361)	9,422,521	-1.90%	0.83%
World Government Bond Ex-US Index	3,959,530	18,474	17,805	(202,860)	3,792,949	-4.21%	0.48%
Global Balanced Fund	36,813,955	978,118	135,795	14,341	37,942,209	3.06%	2.65%
Total Investments with SSGA	124,259,179	3,510,469	(40,714)	1,998,280	129,727,214		
BlackRock							
S&P 500 Index Fund	180,263,943	6,613,321	(201,334)	(2,297,257)	184,378,673	2.28%	3.69%
Government/Credit Bond Fund	27,305,422	218,479	(1,253)	18,354	27,541,002	0.86%	0.80%
Intermediate Bond Fund	20,081,364	8,240	75,464	345,462	20,510,530	2.14%	0.04%
Total Investments with Barclays Global Investors	227,650,729	6,840,040	(127,123)	(1,933,441)	232,430,205		
Brandes/Allianz (2)							
AK International Equity Fund	34,821,742	1,185,668	27,182	(326,384)	35,708,208	2.55%	3.42%
RCM							
Sustainable Core Opportunities Fund	16,567,791	689,846	44,948	2,630	17,305,215	4.45%	4.16%
Total All Funds	\$ 808,795,367	\$ 20,447,140	\$ 103,631	\$ -	\$ 829,346,138	2.54%	2.53%

Notes: Source data provided by the record keeper, Great West Life.

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

(2) This investment is comprised of two funds, 50% Brandes International equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

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, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>
Investments with T. Rowe Price	
Interest Income Fund	
Cash and cash equivalents	\$ 7,197
Synthetic Investment Contracts	176,609
Small Cap Stock Fund	91,928
Alaska Balanced Trust	22,932
Long Term Balanced Fund	48,902
AK Target Date 2010 Trust	3,469
AK Target Date 2015 Trust	9,656
AK Target Date 2020 Trust	18,790
AK Target Date 2025 Trust	10,182
AK Target Date 2030 Trust	6,994
AK Target Date 2035 Trust	4,227
AK Target Date 2040 Trust	4,656
AK Target Date 2045 Trust	3,166
AK Target Date 2050 Trust	2,077
AK Target Date 2055 Trust	3,307
AK Target Date 2060 Trust	82
State Street Global Advisors	
State Street Treasury Money Market Fund - Inst.	11,620
Russell 3000 Index	29,474
US Real Estate Investment Trust Index	17,592
World Equity Ex-US Index	9,475
Long US Treasury Bond Index	10,409
US Treasury Inflation Protected Securities Index	9,423
World Government Bond Ex-US Index	3,793
Global Balanced Fund	37,942
Investments with BlackRock	
S&P 500 Index Fund	184,379
Government/Credit Bond Fund	27,541
Intermediate Bond Fund	20,511
Investments with Brandes/Allianz	
AK International Equity Fund	35,708
Investments with RCM	
Sustainable Opportunities Fund	17,305
Total Invested Assets	\$ 829,346
<u>Change in Invested Assets</u>	
Beginning Assets	\$ 808,795
Investment Earnings	20,447
Net Contributions (Withdrawals)	104
Ending Invested Assets	\$ 829,346

Defined Contribution Retirement - Participant Directed PERS
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
July 31, 2016

	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (2)
Participant Options							
T. Rowe Price							
Alaska Money Market	\$ 8,432,948	\$ 2,431	\$ 30,062	\$ 152,185	\$ 8,617,626	2.19%	0.03%
Small Cap Stock Fund	58,094,337	2,856,835	272,791	(351,948)	60,872,015	4.78%	4.92%
Alaska Balanced Trust	15,125,556	249,181	6,484	(416,746)	14,964,475	-1.06%	1.67%
Long Term Balanced Fund	11,545,670	287,676	48,439	(987,326)	10,894,459	-5.64%	2.60%
AK Target Date 2010 Trust	2,068,390	40,998	(13,284)	5	2,096,109	1.34%	1.99%
AK Target Date 2015 Trust	8,855,496	206,027	22,800	7,639	9,091,962	2.67%	2.32%
AK Target Date 2020 Trust	21,419,280	582,265	359,765	(59,573)	22,301,737	4.12%	2.70%
AK Target Date 2025 Trust	31,032,547	940,897	469,198	(74,793)	32,367,849	4.30%	3.01%
AK Target Date 2030 Trust	32,173,010	1,061,433	496,285	(63,539)	33,667,189	4.64%	3.28%
AK Target Date 2035 Trust	37,278,646	1,310,057	557,653	(99,173)	39,047,183	4.74%	3.49%
AK Target Date 2040 Trust	44,536,778	1,653,169	477,633	28,557	46,696,137	4.85%	3.69%
AK Target Date 2045 Trust	55,057,772	2,070,163	830,167	(52,203)	57,905,899	5.17%	3.73%
AK Target Date 2050 Trust	64,930,207	2,442,259	1,080,290	(74,718)	68,378,038	5.31%	3.73%
AK Target Date 2055 Trust	42,618,856	1,610,261	1,226,932	(146,855)	45,309,194	6.31%	3.73%
AK Target Date 2060 Trust	25,530	1,015	644	7,045	34,234	34.09%	3.46%
Total Investments with T. Rowe Price	433,195,023	15,314,667	5,865,859	(2,131,443)	452,244,106		
State Street Global Advisors							
Money Market	3,004,366	425	22,942	(41,506)	2,986,227	-0.60%	0.01%
S&P 500 Stock Index Fund Series A	47,054,377	1,796,662	317,574	3,532,441	52,701,054	12.00%	3.67%
Russell 3000 Index	39,728,972	1,507,003	209,635	(4,655,360)	36,790,250	-7.40%	4.02%
US Real Estate Investment Trust Index	16,166,313	703,933	92,293	(11,421)	16,951,118	4.85%	4.34%
World Equity Ex-US Index	35,946,157	1,473,837	184,671	(2,459,368)	35,145,297	-2.23%	4.23%
Long US Treasury Bond Index	1,406,209	32,174	23,250	83,406	1,545,039	9.87%	2.20%
US Treasury Inflation Protected Securities Index	9,635,408	83,608	39,530	346,054	10,104,600	4.87%	0.85%
World Government Bond Ex-US Index	4,784,760	34,631	14,519	428,808	5,262,718	9.99%	0.69%
Global Balanced Fund	6,932,448	194,874	27,611	695,175	7,850,108	13.24%	2.67%
Total Investments with SSGA	164,659,010	5,827,147	932,025	(2,081,771)	169,336,411		
BlackRock							
Government/Credit Bond Fund	30,470,589	242,832	94,295	(390,453)	30,417,263	-0.18%	0.80%
Intermediate Bond Fund	10,939,724	5,929	51,954	1,020,699	12,018,306	9.86%	0.05%
Total Investments with Barclays Global Investors	41,410,313	248,761	146,249	630,246	42,435,569		
Brandes/Allianz (3)							
AK International Equity Fund	25,171,585	948,757	157,847	3,620,534	29,898,723	18.78%	3.51%
RCM							
Sustainable Core Opportunities Fund	3,087,197	128,622	(207)	(37,566)	3,178,046	2.94%	4.19%
Total All Funds	\$ 667,523,128	\$ 22,467,954	\$ 7,101,773	\$ -	\$ 697,092,855	4.43%	3.35%

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.

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

(3) This investment is comprised of two funds, 50% Brandes International Equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

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, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>
Investments with T. Rowe Price	
Alaska Money Market	\$ 8,618
Small Cap Stock Fund	60,872
Alaska Balanced Trust	14,964
Long Term Balanced Fund	10,894
AK Target Date 2010 Trust	2,096
AK Target Date 2015 Trust	9,092
AK Target Date 2020 Trust	22,302
AK Target Date 2025 Trust	32,368
AK Target Date 2030 Trust	33,667
AK Target Date 2035 Trust	39,047
AK Target Date 2040 Trust	46,696
AK Target Date 2045 Trust	57,906
AK Target Date 2050 Trust	68,378
AK Target Date 2055 Trust	45,309
AK Target Date 2060 Trust	34
State Street Global Advisors	
Money Market	2,986
S&P 500 Stock Index Fund Series A	52,701
Russell 3000 Index	36,790
US Real Estate Investment Trust Index	16,951
World Equity Ex-US Index	35,145
Long US Treasury Bond Index	1,545
US Treasury Inflation Protected Securities Index	10,105
World Government Bond Ex-US Index	5,263
Global Balanced Fund	7,850
Investments with BlackRock	
Government/Credit Bond Fund	30,417
Intermediate Bond Fund	12,018
Investments with Brandes/Allianz	
International Equity Fund	29,899
Investments with RCM	
Sustainable Opportunities Fund	3,178
Total Invested Assets	\$ <u>697,093</u>
<u>Change in Invested Assets</u>	
Beginning Assets	\$ 667,523
Investment Earnings	22,468
Net Contributions (Withdrawals)	7,102
Ending Invested Assets	\$ <u>697,093</u>

Defined Contribution Retirement - Participant Directed TRS
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
July 31, 2016

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions (Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested Assets</u>	<u>% Change in Invested Assets</u>	<u>% Change due to Investment Income (2)</u>
Participant Options							
T. Rowe Price							
Alaska Money Market	\$ 2,908,505	\$ 825	\$ (159,315)	\$ 145,427	\$ 2,895,442	-0.45%	0.03%
Small Cap Stock Fund	25,035,751	1,235,285	10,688	(3,365)	26,278,359	4.96%	4.93%
Alaska Balanced Trust	7,265,547	118,864	(59,875)	(258,325)	7,066,211	-2.74%	1.67%
Long Term Balanced Fund	5,333,740	131,970	(2,306)	(546,908)	4,916,496	-7.82%	2.61%
AK Target Date 2010 Trust	475,112	9,540	5,818	-	490,470	3.23%	2.00%
AK Target Date 2015 Trust	2,582,717	60,347	13,825	-	2,656,889	2.87%	2.33%
AK Target Date 2020 Trust	6,440,663	173,924	(25,490)	(18,008)	6,571,089	2.03%	2.71%
AK Target Date 2025 Trust	10,143,152	307,116	56,184	-	10,506,452	3.58%	3.02%
AK Target Date 2030 Trust	11,073,963	364,953	134,980	(57,915)	11,515,981	3.99%	3.28%
AK Target Date 2035 Trust	16,745,608	590,700	165,926	33	17,502,267	4.52%	3.51%
AK Target Date 2040 Trust	17,786,397	661,943	127,050	242	18,575,632	4.44%	3.71%
AK Target Date 2045 Trust	28,505,483	1,072,356	118,027	-	29,695,866	4.18%	3.75%
AK Target Date 2050 Trust	39,777,702	1,497,348	420,297	(16,859)	41,678,488	4.78%	3.75%
AK Target Date 2055 Trust	12,906,254	491,832	435,317	-	13,833,403	7.18%	3.75%
AK Target Date 2060 Trust	8,591	329	191	-	9,111	6.05%	3.79%
Total Investments with T. Rowe Price	<u>186,989,185</u>	<u>6,717,332</u>	<u>1,241,317</u>	<u>(755,678)</u>	<u>194,192,156</u>		
State Street Global Advisors							
Money Market	229,809	32	(10,975)	-	218,866	-4.76%	0.01%
S&P 500 Stock Index Fund Series A	19,171,966	735,356	56,175	1,661,057	21,624,554	12.79%	3.67%
Russell 3000 Index	17,299,299	656,429	34,290	(2,165,650)	15,824,368	-8.53%	4.04%
US Real Estate Investment Trust Index	6,342,384	274,870	6,531	(103,677)	6,520,108	2.80%	4.37%
World Equity Ex-US Index	15,813,052	645,848	(1,572)	(1,126,904)	15,330,424	-3.05%	4.24%
Long US Treasury Bond Index	295,971	5,273	(62,565)	(195)	238,484	-19.42%	1.99%
US Treasury Inflation Protected Securities Index	3,735,484	32,119	618	120,415	3,888,636	4.10%	0.85%
World Government Bond Ex-US Index	2,338,771	16,509	(62,124)	281,471	2,574,627	10.08%	0.67%
Global Balanced Fund	3,553,582	99,584	(3,702)	325,191	3,974,655	11.85%	2.68%
Total Investments with SSGA	<u>68,780,318</u>	<u>2,466,020</u>	<u>(43,324)</u>	<u>(1,008,292)</u>	<u>70,194,722</u>		
BlackRock							
Government/Credit Bond Fund	14,318,207	112,769	4,117	(387,914)	14,047,179	-1.89%	0.80%
Intermediate Bond Fund	4,244,260	2,230	(1,925)	529,039	4,773,604	12.47%	0.05%
Total Investments with Barclays Global Investors	<u>18,562,467</u>	<u>114,999</u>	<u>2,192</u>	<u>141,125</u>	<u>18,820,783</u>		
Brandes/Allianz Institutional (3)							
AK International Equity Fund	10,542,386	401,320	28,252	1,652,858	12,624,816	19.75%	3.53%
RCM							
Sustainable Core Opportunities Fund	1,237,948	51,694	3,398	(30,013)	1,263,027	2.03%	4.22%
Total All Funds	<u>\$ 286,112,304</u>	<u>\$ 9,751,365</u>	<u>\$ 1,231,835</u>	<u>\$ -</u>	<u>\$ 297,095,504</u>	<u>3.84%</u>	<u>3.40%</u>

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.
(3) This investment option is comprised of two funds, 50% Brandes International equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

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, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>
Investments with T. Rowe Price	
Alaska Money Market	\$ 2,895
Small Cap Stock Fund	26,278
Alaska Balanced Trust	7,066
Long Term Balanced Fund	4,916
AK Target Date 2010 Trust	490
AK Target Date 2015 Trust	2,657
AK Target Date 2020 Trust	6,571
AK Target Date 2025 Trust	10,506
AK Target Date 2030 Trust	11,516
AK Target Date 2035 Trust	17,502
AK Target Date 2040 Trust	18,576
AK Target Date 2045 Trust	29,696
AK Target Date 2050 Trust	41,678
AK Target Date 2055 Trust	13,833
AK Target Date 2060 Trust	9
State Street Global Advisors	
Money Market	219
S&P 500 Stock Index Fund Series A	21,625
Russell 3000 Index	15,824
US Real Estate Investment Trust Index	6,520
World Equity Ex-US Index	15,330
Long US Treasury Bond Index	238
US Treasury Inflation Protected Securities Index	3,889
World Government Bond Ex-US Index	2,575
Global Balanced Fund	3,975
Investments with BlackRock	
Government/Credit Bond Fund	14,047
Intermediate Bond Fund	4,774
Investments with Brandes/Allianz	
AK International Equity Fund	12,625
Investments with RCM	
Sustainable Opportunities Fund	1,263
Total Invested Assets	\$ <u>297,096</u>
<u>Change in Invested Assets</u>	
Beginning Assets	\$ 286,112
Investment Earnings	9,751
Net Contributions (Withdrawals)	1,232
Ending Invested Assets	\$ <u>297,096</u>

ALASKA RETIREMENT MANAGEMENT BOARD

FINANCIAL REPORT

(Supplement to the Treasury Division Report)

As of July 31, 2016

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, 2016

	Contributions				Expenditures				Net
	Contributions			Total		Refunds &	Administrative	Total	Contributions/ (Withdrawals)
	EE and ER	State of Alaska	Other	Contributions	Benefits	Disbursements	& Investment	Expenditures	
Public Employees' Retirement System (PERS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	\$ 26,909,082	\$ -	\$ -	\$ 26,909,082	\$ (63,043,927)	\$ (1,105,276)	\$ (647,471)	\$ (64,796,674)	\$ (37,887,592)
Retirement Health Care Trust	12,148,273	-	387	12,148,660	(34,034,388)	-	(1,289,915)	(35,324,303)	(23,175,643)
Total Defined Benefit Plans	39,057,355	-	387	39,057,742	(97,078,315)	(1,105,276)	(1,937,386)	(100,120,977)	(61,063,235)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	10,773,755	-	-	10,773,755	-	(2,739,248)	(932,734)	(3,671,982)	7,101,773
Health Reimbursement Arrangement ^(a)	2,615,643	-	-	2,615,643	-	-	(4,111)	(4,111)	2,611,532
Retiree Medical Plan ^(a)	1,296,228	-	-	1,296,228	-	-	(7,259)	(7,259)	1,288,969
Occupational Death and Disability: ^(a)									
Public Employees	147,872	-	-	147,872	(9,372)	-	(250)	(9,622)	138,250
Police and Firefighters	106,807	-	-	106,807	(17,974)	-	(127)	(18,101)	88,706
Total Defined Contribution Plans	14,940,305	-	-	14,940,305	(27,346)	(2,739,248)	(944,481)	(3,711,075)	11,229,230
Total PERS	53,997,660	-	387	53,998,047	(97,105,661)	(3,844,524)	(2,881,867)	(103,832,052)	(49,834,005)
Teachers' Retirement System (TRS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	5,324,253	-	-	5,324,253	(36,987,425)	(151,566)	(289,471)	(37,428,462)	(32,104,209)
Retirement Health Care Trust	1,909,131	-	571	1,909,702	(9,976,656)	-	(493,458)	(10,470,114)	(8,560,412)
Total Defined Benefit Plans	7,233,384	-	571	7,233,955	(46,964,081)	(151,566)	(782,929)	(47,898,576)	(40,664,621)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	3,531,537	-	-	3,531,537	-	(2,069,468)	(230,234)	(2,299,702)	1,231,835
Health Reimbursement Arrangement ^(a)	625,357	-	-	625,357	-	-	(1,243)	(1,243)	624,114
Retiree Medical Plan ^(a)	471,737	-	-	471,737	-	-	(5,998)	(5,998)	465,739
Occupational Death and Disability ^(a)	-	-	-	-	-	-	(64)	(64)	(64)
Total Defined Contribution Plans	4,628,631	-	-	4,628,631	-	(2,069,468)	(237,539)	(2,307,007)	2,321,624
Total TRS	11,862,015	-	571	11,862,586	(46,964,081)	(2,221,034)	(1,020,468)	(50,205,583)	(38,342,997)
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Trust	466,758	-	-	466,758	(943,233)	-	(4,933)	(948,166)	(481,408)
Defined Benefit Retirement Health Care Trust	44,778	-	-	44,778	(56,579)	-	(6,476)	(63,055)	(18,277)
Total JRS	511,536	-	-	511,536	(999,812)	-	(11,409)	(1,011,221)	(499,685)
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Trust ^(a)	-	-	-	-	(77,443)	-	(13,565)	(91,008)	(91,008)
Other Participant Directed Plans									
Supplemental Annuity Plan	21,072,963	-	-	21,072,963	-	(14,121,753)	(322,107)	(14,443,860)	6,629,103
Deferred Compensation Plan	5,113,595	-	-	5,113,595	-	(4,895,418)	(114,546)	(5,009,964)	103,631
Total All Funds	92,557,769	-	958	92,558,727	(145,146,997)	(25,082,729)	(4,363,962)	(174,593,688)	(82,034,961)
Total Non-Participant Directed	52,065,919	-	958	52,066,877	(145,146,997)	(1,256,842)	(2,764,341)	(149,168,180)	(97,101,303)
Total Participant Directed	40,491,850	-	-	40,491,850	-	(23,825,887)	(1,599,621)	(25,425,508)	15,066,342
Total All Funds	\$ 92,557,769	\$ -	\$ 958	\$ 92,558,727	\$ (145,146,997)	\$ (25,082,729)	\$ (4,363,962)	\$ (174,593,688)	\$ (82,034,961)

(a) Employer only contributions.

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Month Ended July 31, 2016

	Contributions				Expenditures				Net
	Contributions EE and ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	Contributions/ (Withdrawals)
Public Employees' Retirement System (PERS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	\$ 26,909,082	\$ -	\$ -	\$ 26,909,082	\$ (63,043,927)	\$ (1,105,276)	\$ (647,471)	\$ (64,796,674)	\$ (37,887,592)
Retirement Health Care Trust	12,148,273	-	387	12,148,660	(34,034,388)	-	(1,289,915)	(35,324,303)	(23,175,643)
Total Defined Benefit Plans	39,057,355	-	387	39,057,742	(97,078,315)	(1,105,276)	(1,937,386)	(100,120,977)	(61,063,235)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	10,773,755	-	-	10,773,755	-	(2,739,248)	(932,734)	(3,671,982)	7,101,773
Health Reimbursement Arrangement ^(a)	2,615,643	-	-	2,615,643	-	-	(4,111)	(4,111)	2,611,532
Retiree Medical Plan ^(a)	1,296,228	-	-	1,296,228	-	-	(7,259)	(7,259)	1,288,969
Occupational Death and Disability: ^(a)									
Public Employees	147,872	-	-	147,872	(9,372)	-	(250)	(9,622)	138,250
Police and Firefighters	106,807	-	-	106,807	(17,974)	-	(127)	(18,101)	88,706
Total Defined Contribution Plans	14,940,305	-	-	14,940,305	(27,346)	(2,739,248)	(944,481)	(3,711,075)	11,229,230
Total PERS	53,997,660	-	387	53,998,047	(97,105,661)	(3,844,524)	(2,881,867)	(103,832,052)	(49,834,005)
Teachers' Retirement System (TRS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	5,324,253	-	-	5,324,253	(36,987,425)	(151,566)	(289,471)	(37,428,462)	(32,104,209)
Retirement Health Care Trust	1,909,131	-	571	1,909,702	(9,976,656)	-	(493,458)	(10,470,114)	(8,560,412)
Total Defined Benefit Plans	7,233,384	-	571	7,233,955	(46,964,081)	(151,566)	(782,929)	(47,898,576)	(40,664,621)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	3,531,537	-	-	3,531,537	-	(2,069,468)	(230,234)	(2,299,702)	1,231,835
Health Reimbursement Arrangement ^(a)	625,357	-	-	625,357	-	-	(1,243)	(1,243)	624,114
Retiree Medical Plan ^(a)	471,737	-	-	471,737	-	-	(5,998)	(5,998)	465,739
Occupational Death and Disability ^(a)	-	-	-	-	-	-	(64)	(64)	(64)
Total Defined Contribution Plans	4,628,631	-	-	4,628,631	-	(2,069,468)	(237,539)	(2,307,007)	2,321,624
Total TRS	11,862,015	-	571	11,862,586	(46,964,081)	(2,221,034)	(1,020,468)	(50,205,583)	(38,342,997)
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Trust	466,758	-	-	466,758	(943,233)	-	(4,933)	(948,166)	(481,408)
Defined Benefit Retirement Health Care Trust	44,778	-	-	44,778	(56,579)	-	(6,476)	(63,055)	(18,277)
Total JRS	511,536	-	-	511,536	(999,812)	-	(11,409)	(1,011,221)	(499,685)
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Trust ^(a)	-	-	-	-	(77,443)	-	(13,565)	(91,008)	(91,008)
Other Participant Directed Plans									
Supplemental Annuity Plan	21,072,963	-	-	21,072,963	-	(14,121,753)	(322,107)	(14,443,860)	6,629,103
Deferred Compensation Plan	5,113,595	-	-	5,113,595	-	(4,895,418)	(114,546)	(5,009,964)	103,631
Total All Funds	92,557,769	-	958	92,558,727	(145,146,997)	(25,082,729)	(4,363,962)	(174,593,688)	(82,034,961)
Total Non-Participant Directed	52,065,919	-	958	52,066,877	(145,146,997)	(1,256,842)	(2,764,341)	(149,168,180)	(97,101,303)
Total Participant Directed	40,491,850	-	-	40,491,850	-	(23,825,887)	(1,599,621)	(25,425,508)	15,066,342
Total All Funds	\$ 92,557,769	\$ -	\$ 958	\$ 92,558,727	\$ (145,146,997)	\$ (25,082,729)	\$ (4,363,962)	\$ (174,593,688)	\$ (82,034,961)

(a) Employer only contributions.

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the One Month Ending July 31, 2016

PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND BY TYPE

	PERS DCR Plan	TRS DCR Plan	Supplemental Annuity Plan	Deferred Compensation	TOTAL	% of Total
Payment to Beneficiary	3,849	-	1,400	8,025	13,274	0.1%
Death Benefit	123,810	11,361	1,034,711	74,906	1,244,788	5.2%
Disability / Hardship	-	-	251	9,451	9,702	0.0%
Minimum Required Distribution	886	-	365,920	117,548	484,354	2.0%
Qualified Domestic Relations Order	55,131	-	562,611	1,900	619,642	2.6%
Separation from Service / Retirement	2,555,572	2,058,107	12,084,068	4,588,954	21,286,701	89.3%
Purchase of Service Credit	-	-	72,793	94,633	167,426	0.7%
Transfer to a Qualifying Plan	-	-	-	-	-	0.0%
TOTAL	<u>2,739,248</u>	<u>2,069,468</u>	<u>14,121,753</u>	<u>4,895,418</u>	<u>23,825,887</u>	<u>100.0%</u>

**ALASKA RETIREMENT MANAGEMENT BOARD
FINANCIAL REPORT**

As of June 30, 2016

ALASKA RETIREMENT MANAGEMENT BOARD
Schedule of Investment Income and Changes in Invested Assets by Fund
For the Period Ending June 30, 2016

	Beginning Invested Assets	Investment Income ⁽¹⁾	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income ⁽²⁾
<u>Public Employees' Retirement System (PERS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	\$ 8,586,489,509	\$ (32,128,315)	\$ (344,673,871)	\$ 8,209,687,323	-4.39%	-0.38%
Retirement Health Care Trust	7,012,198,154	(23,511,371)	(215,141,538)	6,773,545,245	-3.40%	-0.34%
Total Defined Benefit Plans	15,598,687,663	(55,639,686)	(559,815,409)	14,983,232,568	-3.95%	-0.36%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	582,368,666	1,345,460	83,809,002	667,523,128	14.62%	0.22%
Health Reimbursement Arrangement	191,992,905	267,198	32,570,809	224,830,912	17.10%	0.13%
Retiree Medical Plan	43,611,892	257,512	15,694,463	59,563,867	36.58%	0.50%
Defined Benefit Occupational Death and Disability:						
Public Employees	12,857,318	6,088	1,678,576	14,541,982	13.10%	0.04%
Police and Firefighters	6,187,308	6,789	987,241	7,181,338	16.07%	0.10%
Total Defined Contribution Plans	837,018,089	1,883,047	134,740,091	973,641,227	16.32%	0.21%
Total PERS	16,435,705,752	(53,756,639)	(425,075,318)	15,956,873,795	-2.91%	-0.33%
<u>Teachers' Retirement System (TRS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	5,242,445,334	(20,479,888)	(282,180,475)	4,939,784,971	-5.77%	-0.40%
Retirement Health Care Trust	2,606,131,168	(7,514,756)	(61,094,575)	2,537,521,837	-2.63%	-0.29%
Total Defined Benefit Plans	7,848,576,502	(27,994,644)	(343,275,050)	7,477,306,808	-4.73%	-0.36%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	250,086,268	804,124	35,221,912	286,112,304	14.41%	0.30%
Health Reimbursement Arrangement	59,380,498	45,224	8,935,062	68,360,784	15.12%	0.07%
Retiree Medical Plan	17,463,072	85,850	6,072,530	23,621,452	35.27%	0.42%
Defined Benefit Occupational Death and Disability	3,164,542	(8,678)	(18,231)	3,137,633	-0.85%	-0.28%
Total Defined Contribution Plans	330,094,380	926,520	50,211,273	381,232,173	15.49%	0.26%
Total TRS	8,178,670,882	(27,068,124)	(293,063,777)	7,858,538,981	-3.91%	-0.34%
<u>Judicial Retirement System (JRS)</u>						
Defined Benefit Plan Retirement Trust	143,835,542	(268,797)	156,696	143,723,441	-0.08%	-0.19%
Defined Benefit Retirement Health Care Trust	27,224,906	(80,585)	(226,715)	26,917,606	-1.13%	-0.30%
Total JRS	171,060,448	(349,382)	(70,019)	170,641,047	-0.25%	-0.20%
<u>National Guard/Naval Militia Retirement System (MRS)</u>						
Defined Benefit Plan Retirement Trust	36,944,780	248,844	(1,327,043)	35,866,581	-2.92%	0.69%
<u>Other Participant Directed Plans</u>						
Supplemental Annuity Plan	3,394,333,691	54,719,291	(29,563,259)	3,419,489,723	0.74%	1.62%
Deferred Compensation Plan	806,278,563	10,552,710	(8,035,906)	808,795,367	0.31%	1.32%
Total All Funds	29,022,994,116	(15,653,300)	(757,135,322)	28,250,205,494		
Total Non-Participant Directed	23,989,926,928	(83,074,885)	(838,567,071)	23,068,284,972	-3.84%	-0.35%
Total Participant Directed	5,033,067,188	67,421,585	81,431,749	5,181,920,522	2.96%	1.33%
Total All Funds	\$ 29,022,994,116	\$ (15,653,300)	\$ (757,135,322)	\$ 28,250,205,494	-2.66%	-0.05%

Notes:

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

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

ALASKA RETIREMENT MANAGEMENT BOARD
Schedule of Investment Income and Changes in Invested Assets by Fund
For the Month Ended June 30, 2016

	Beginning Invested Assets	Investment Income ⁽¹⁾	Net Contributions (Withdrawals)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income ⁽²⁾
<u>Public Employees' Retirement System (PERS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	\$ 8,223,026,680	\$ 24,514,425	\$ (37,853,782)	\$ 8,209,687,323	-0.16%	0.30%
Retirement Health Care Trust	6,770,775,277	21,356,009	(18,586,041)	6,773,545,245	0.04%	0.32%
Total Defined Benefit Plans	14,993,801,957	45,870,434	(56,439,823)	14,983,232,568	-0.07%	0.31%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	658,405,010	1,792,065	7,326,053	667,523,128	1.38%	0.27%
Health Reimbursement Arrangement	221,133,762	699,803	2,997,347	224,830,912	1.67%	0.31%
Retiree Medical Plan	57,966,994	183,860	1,413,013	59,563,867	2.75%	0.31%
<u>Defined Benefit Occupational Death and Disability:</u>						
Public Employees	14,340,287	45,348	156,347	14,541,982	1.41%	0.31%
Police and Firefighters	7,070,676	22,355	88,307	7,181,338	1.57%	0.31%
Total Defined Contribution Plans	958,916,729	2,743,431	11,981,067	973,641,227	1.54%	0.28%
Total PERS	15,952,718,686	48,613,865	(44,458,756)	15,956,873,795	0.03%	0.31%
<u>Teachers' Retirement System (TRS)</u>						
<u>Defined Benefit Plans:</u>						
Retirement Trust	4,947,269,141	14,749,740	(22,233,910)	4,939,784,971	-0.15%	0.30%
Retirement Health Care Trust	2,534,556,861	7,994,992	(5,030,016)	2,537,521,837	0.12%	0.32%
Total Defined Benefit Plans	7,481,826,002	22,744,732	(27,263,926)	7,477,306,808	-0.06%	0.30%
<u>Defined Contribution Plans:</u>						
Participant Directed Retirement	276,959,379	833,167	8,319,758	286,112,304	3.30%	0.30%
Health Reimbursement Arrangement	66,584,695	210,901	1,565,188	68,360,784	2.67%	0.31%
Retiree Medical Plan	22,328,565	71,338	1,221,549	23,621,452	5.79%	0.31%
Defined Benefit Occupational Death and Disability	3,127,911	9,871	(149)	3,137,633	0.31%	0.32%
Total Defined Contribution Plans	369,000,550	1,125,277	11,106,346	381,232,173	3.31%	0.30%
Total TRS	7,850,826,552	23,870,009	(16,157,580)	7,858,538,981	0.10%	0.30%
<u>Judicial Retirement System (JRS)</u>						
Defined Benefit Plan Retirement Trust	143,785,002	428,101	(489,662)	143,723,441	-0.04%	0.30%
Defined Benefit Retirement Health Care Trust	26,844,749	84,622	(11,765)	26,917,606	0.27%	0.32%
Total JRS	170,629,751	512,723	(501,427)	170,641,047	0.01%	0.30%
<u>National Guard/Naval Militia Retirement System (MRS)</u>						
Defined Benefit Plan Retirement Trust	35,813,329	183,623	(130,371)	35,866,581	0.15%	0.51%
<u>Other Participant Directed Plans</u>						
Supplemental Annuity Plan	3,402,642,384	17,944,485	(1,097,146)	3,419,489,723	0.50%	0.53%
Deferred Compensation Plan	809,347,949	3,225,501	(3,778,083)	808,795,367	-0.07%	0.40%
Total All Funds	28,221,978,651	94,350,206	(66,123,363)	28,250,205,494		
Total Non-Participant Directed	23,074,623,929	70,554,988	(76,893,945)	23,068,284,972	-0.03%	0.31%
Total Participant Directed	5,147,354,722	23,795,218	10,770,582	5,181,920,522	0.67%	0.46%
Total All Funds	\$ 28,221,978,651	\$ 94,350,206	\$ (66,123,363)	\$ 28,250,205,494	0.10%	0.33%

Notes:

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

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

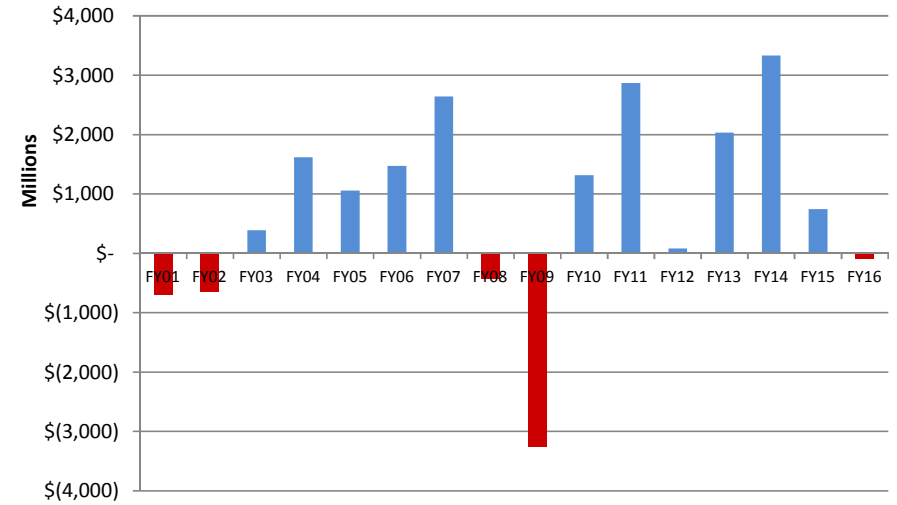
Total Defined Benefit Assets

As of June 30, 2016

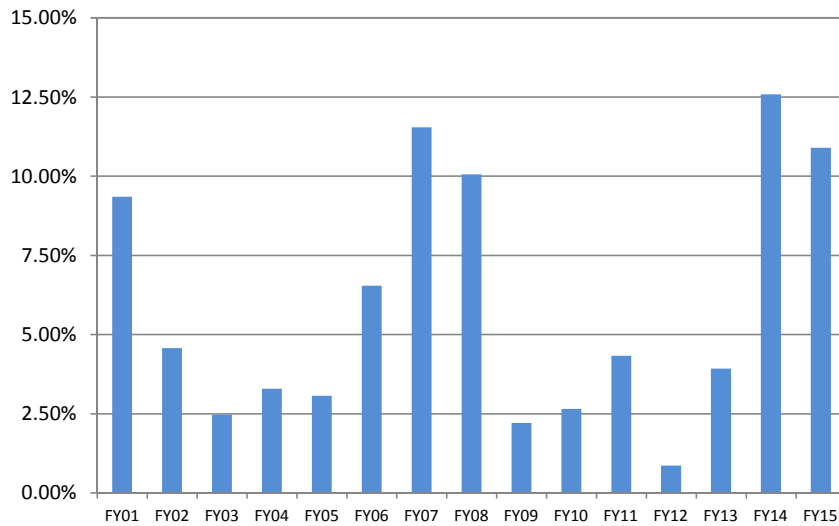
Totals Assets History



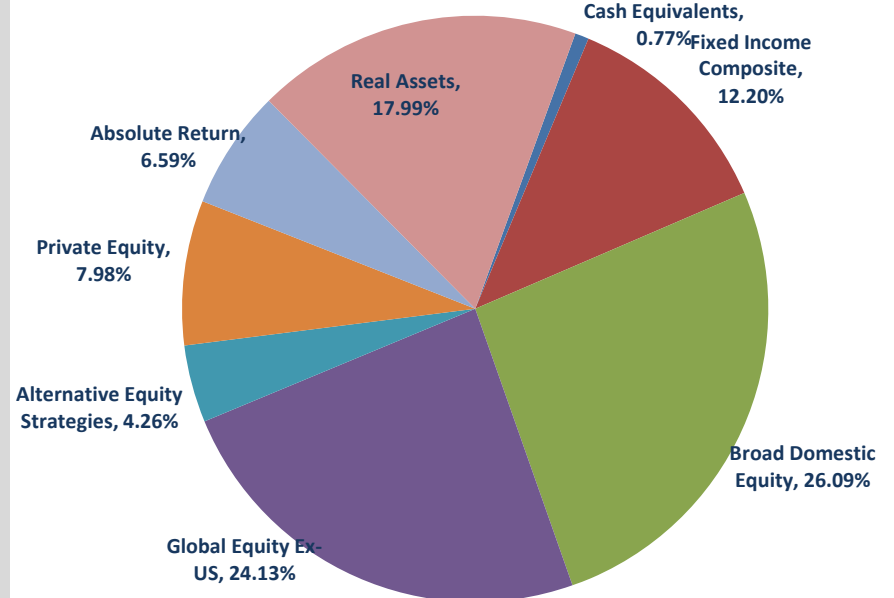
Income by Fiscal Year



5-year Annualized Returns as of Fiscal Year End

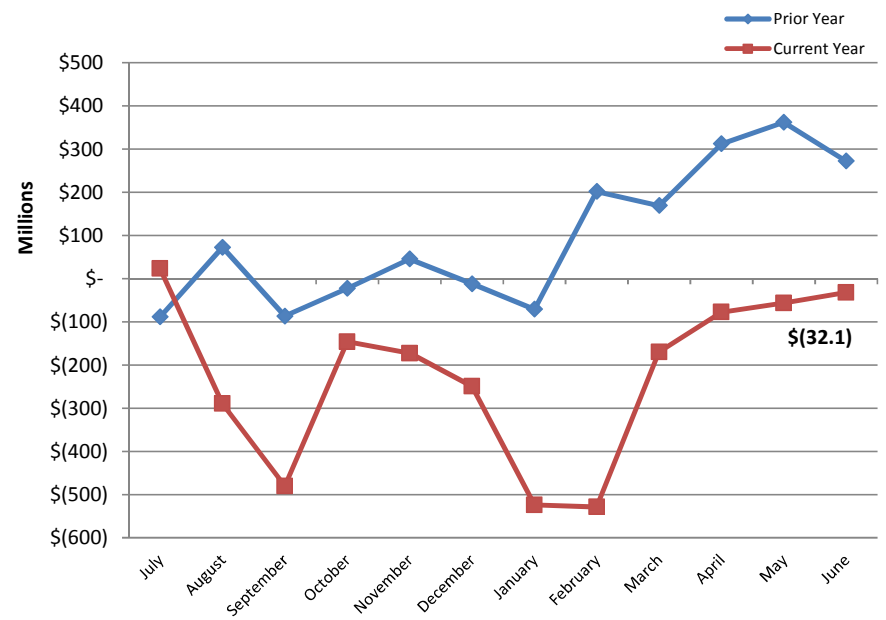
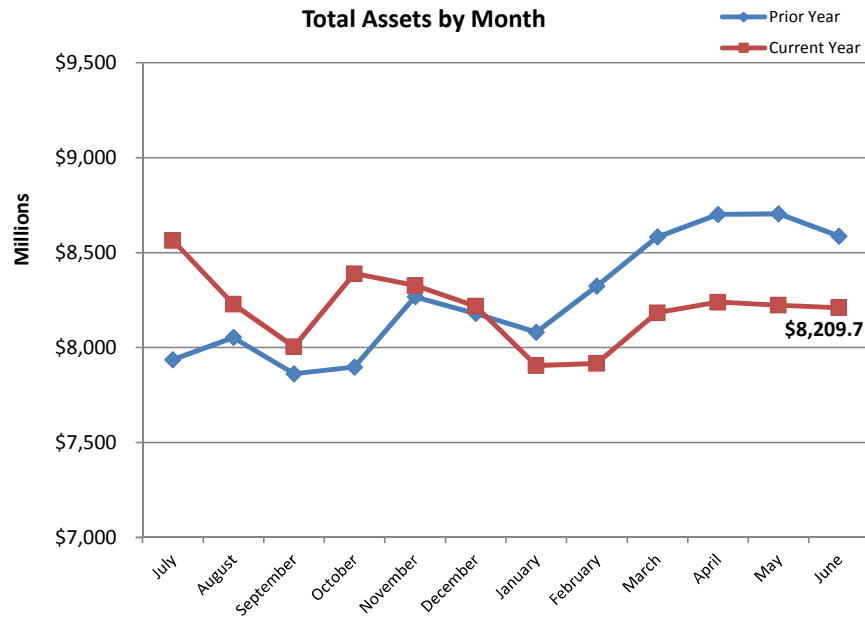


Actual Asset Allocation

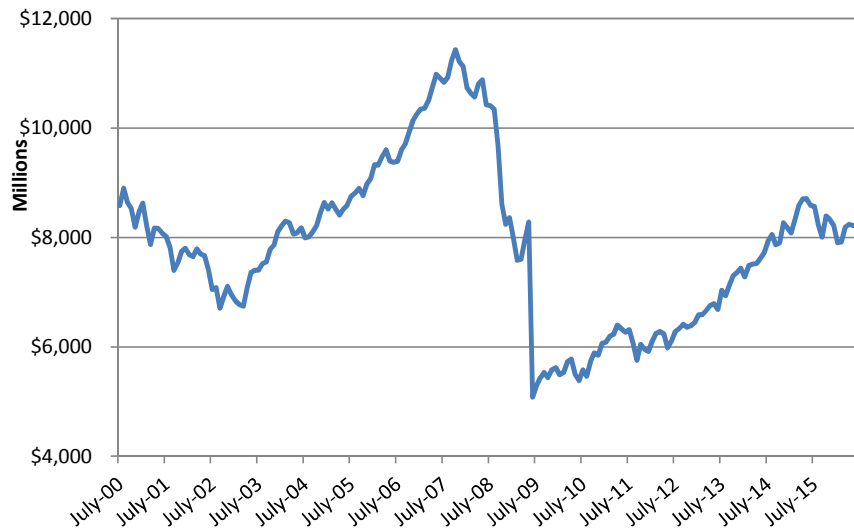


Public Employees' Retirement Pension Trust Fund For the Period Ending June 30, 2016

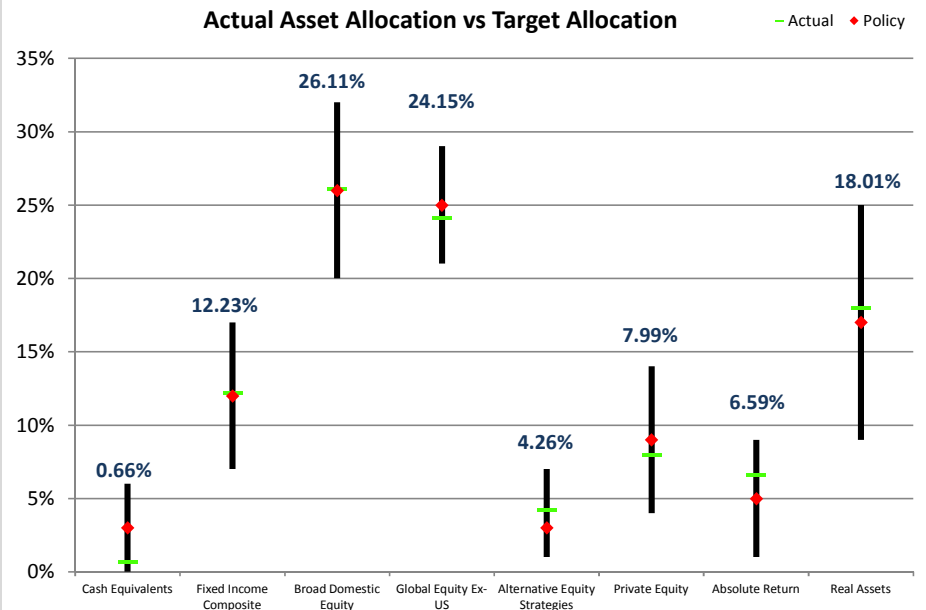
Total Assets by Month



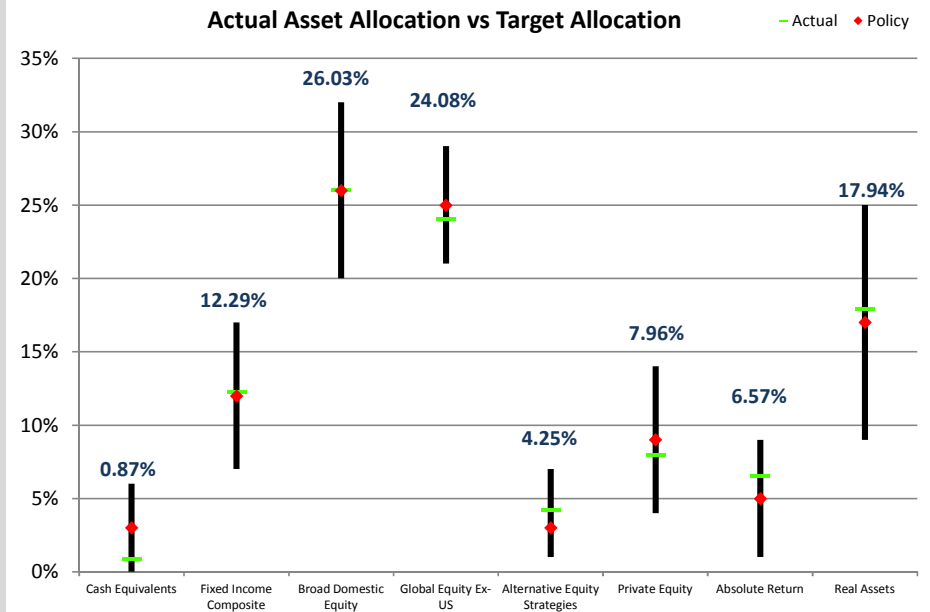
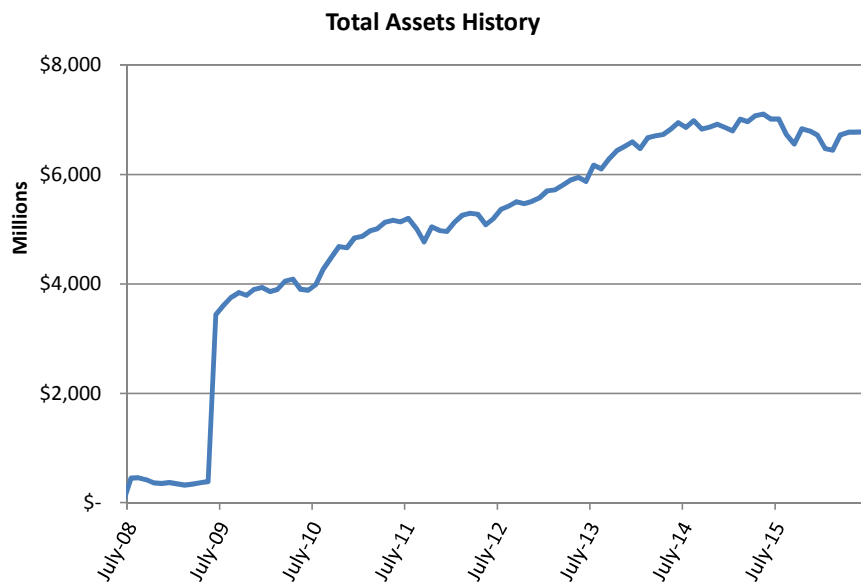
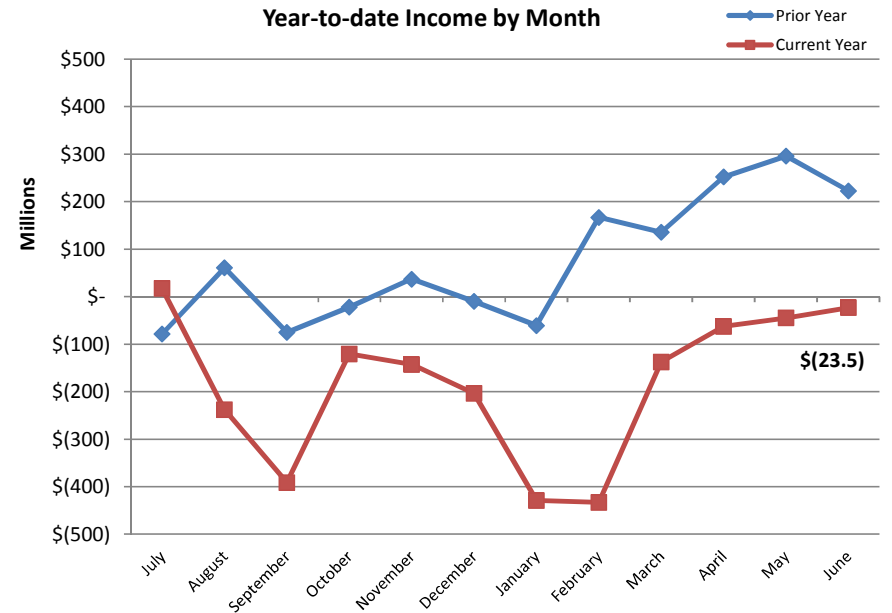
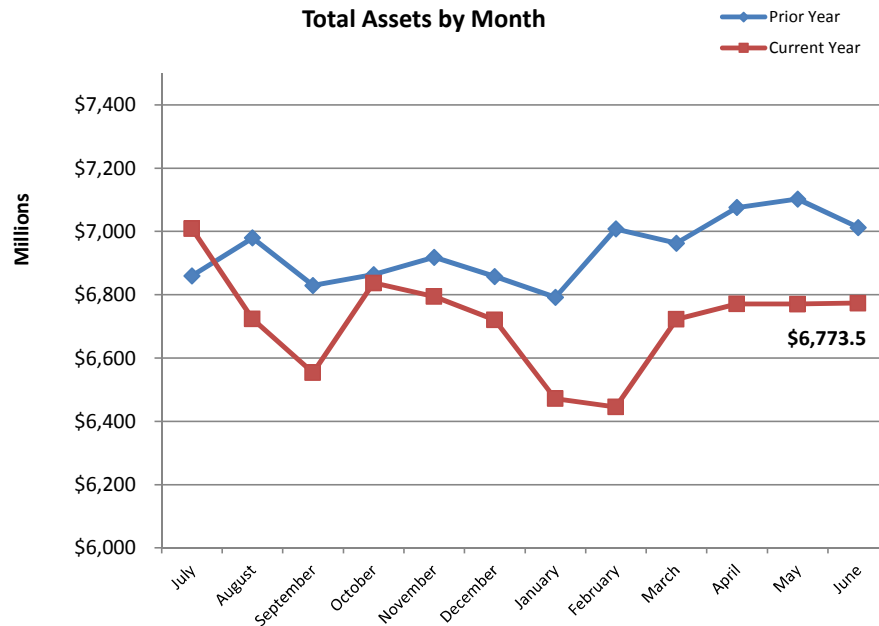
Total Assets History



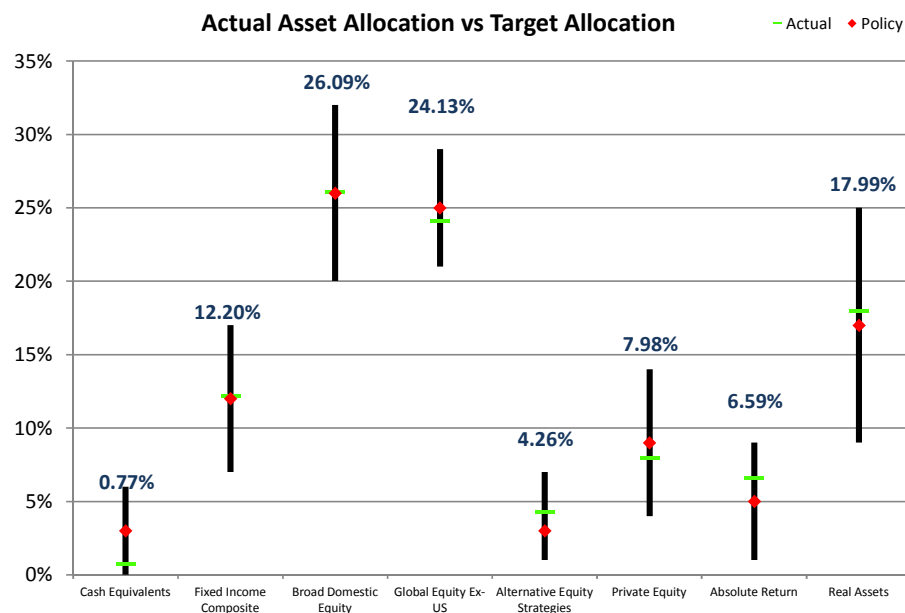
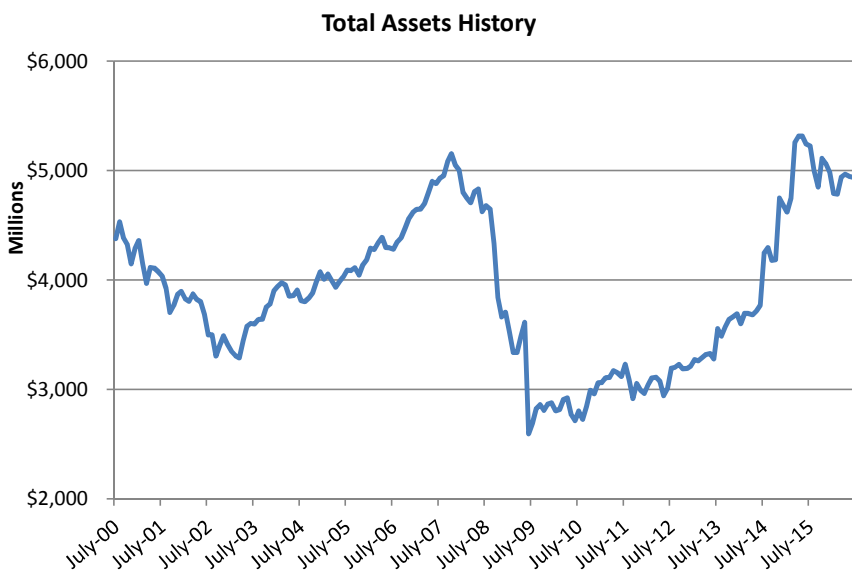
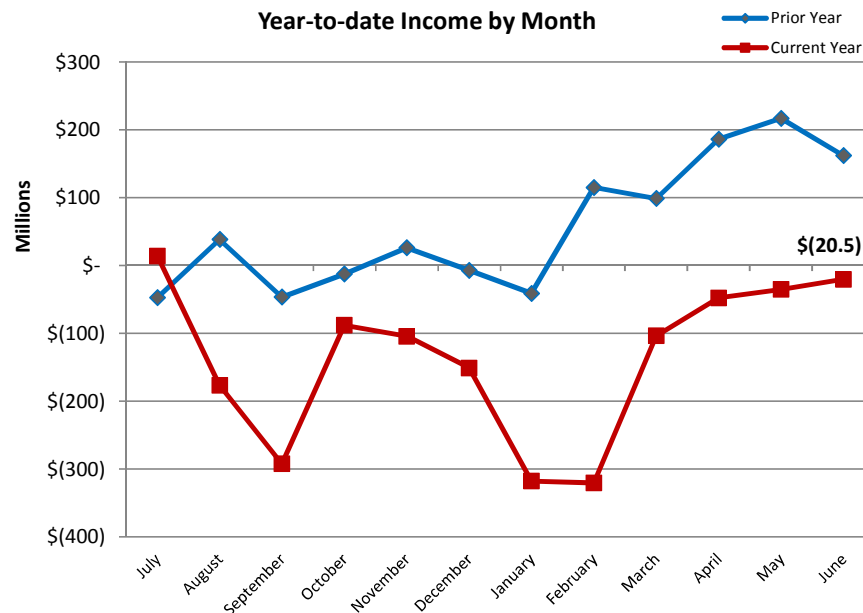
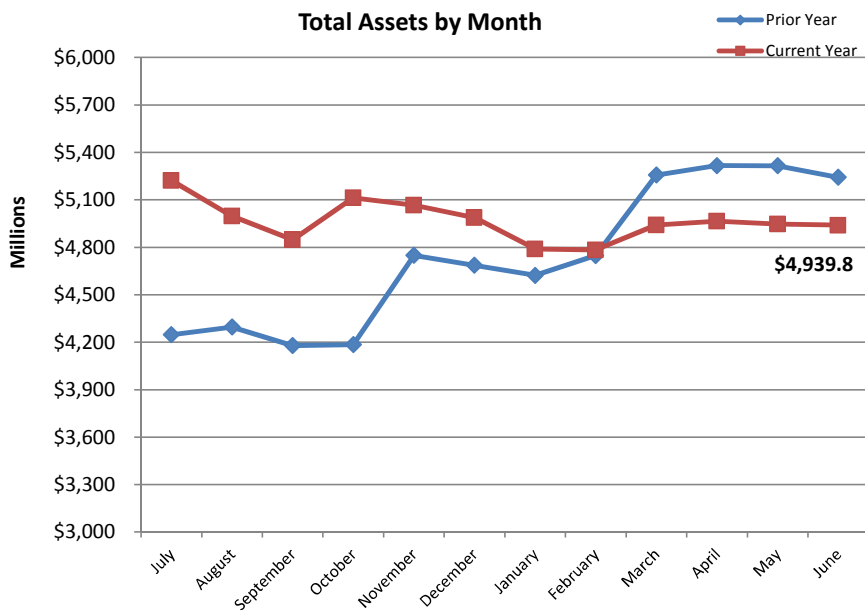
Actual Asset Allocation vs Target Allocation



Public Employees' Retirement Health Care Trust Fund For the Period Ending June 30, 2016



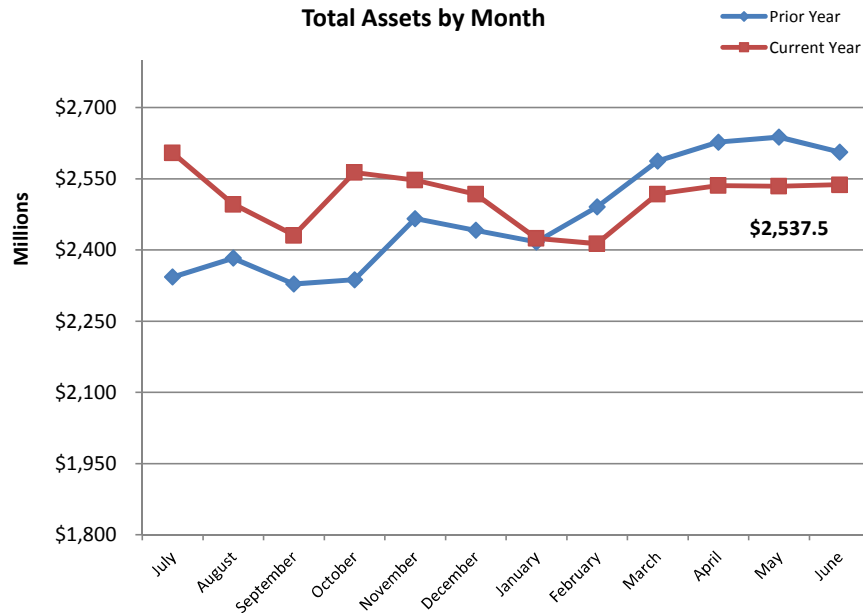
Teachers' Retirement Pension Trust Fund For the Period Ending June 30, 2016



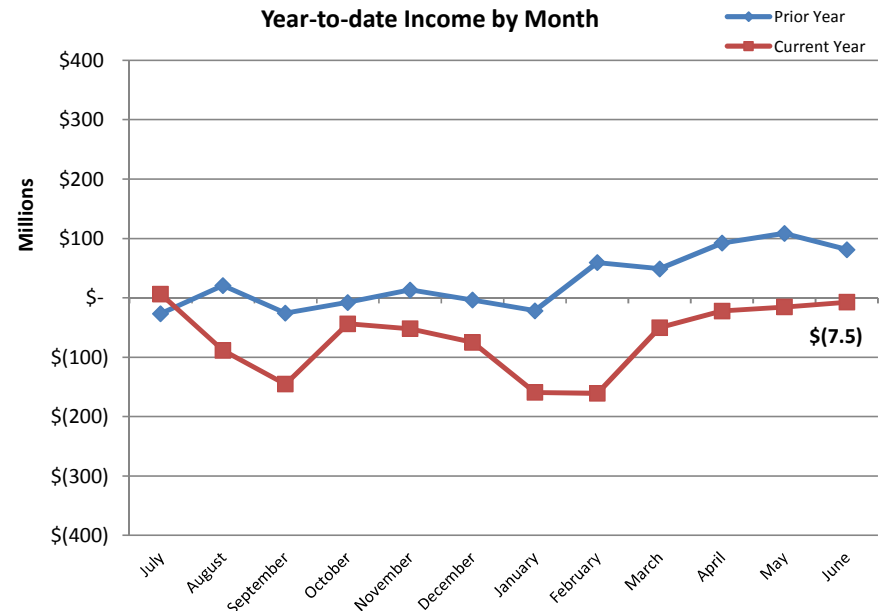
Teachers' Retirement Health Care Trust Fund

For the Period Ending June 30, 2016

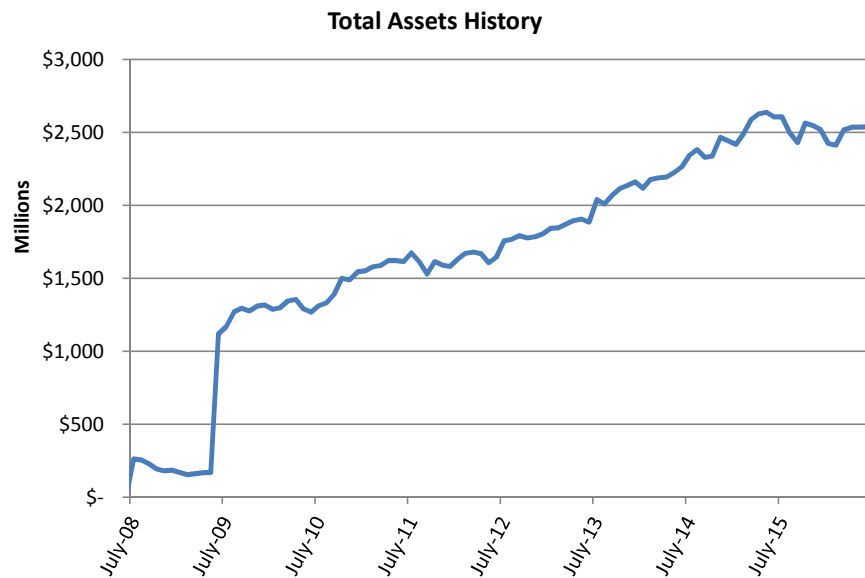
Total Assets by Month



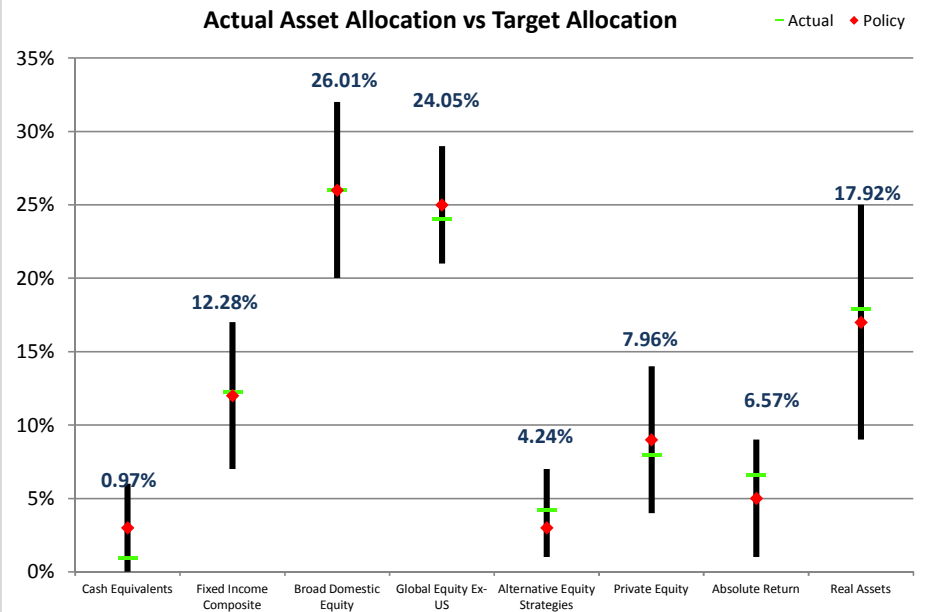
Year-to-date Income by Month



Total Assets History



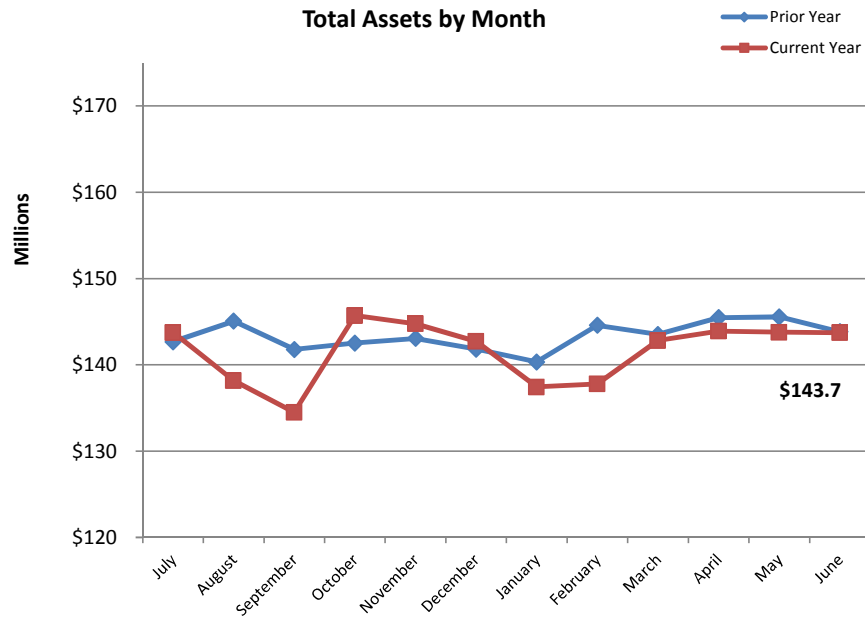
Actual Asset Allocation vs Target Allocation



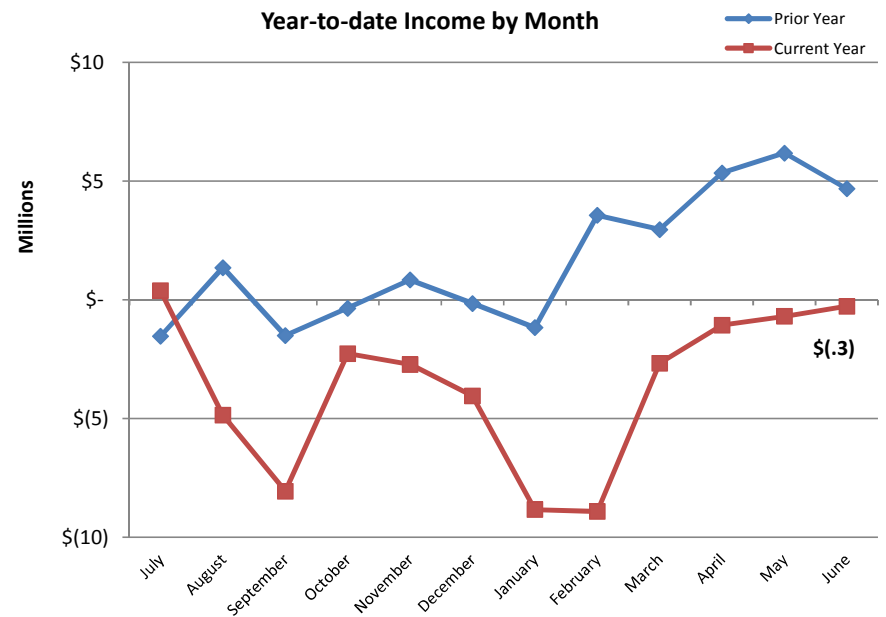
Judicial Retirement Pension Trust Fund

For the Period Ending June 30, 2016

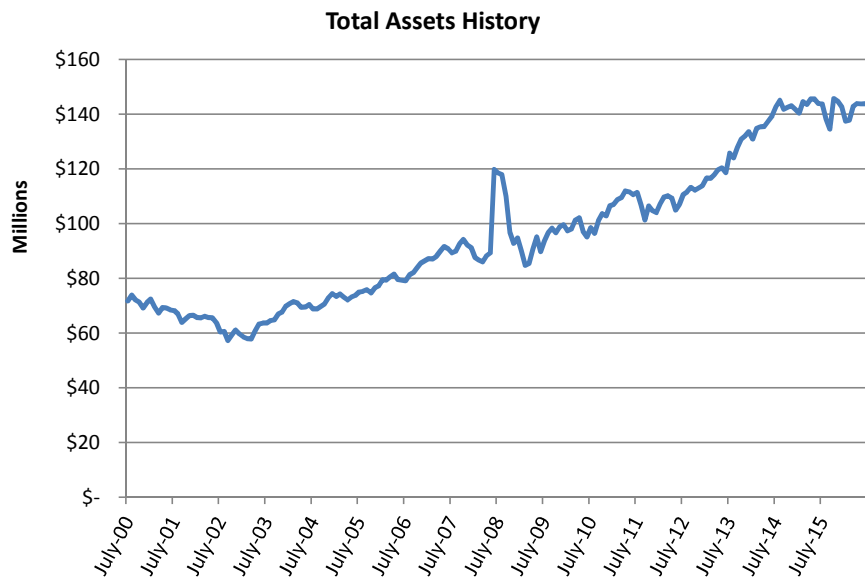
Total Assets by Month



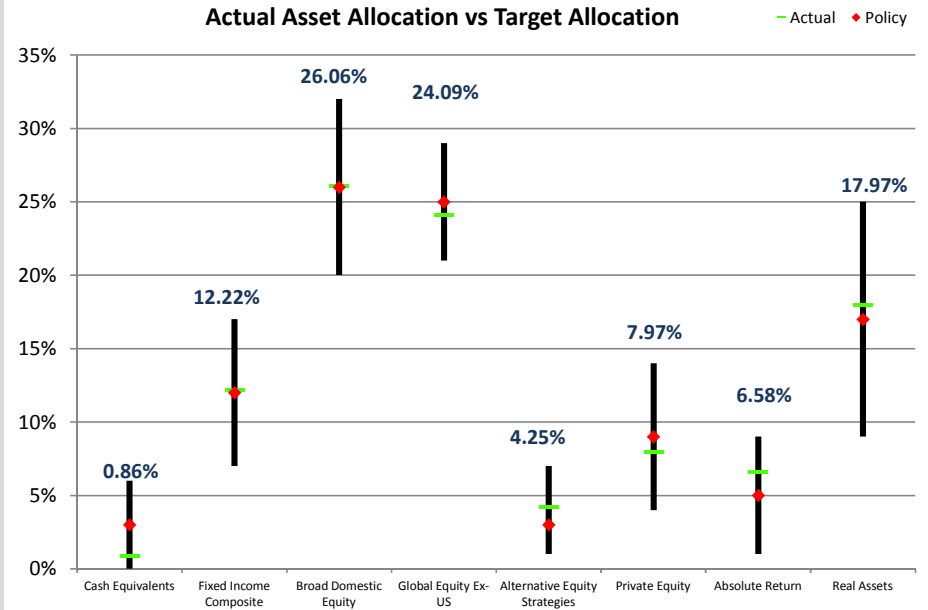
Year-to-date Income by Month



Total Assets History



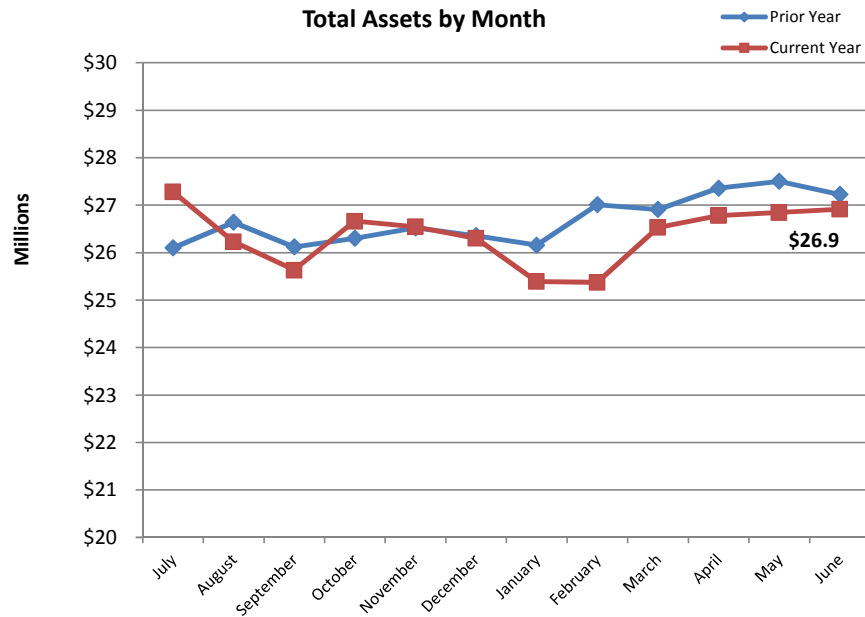
Actual Asset Allocation vs Target Allocation



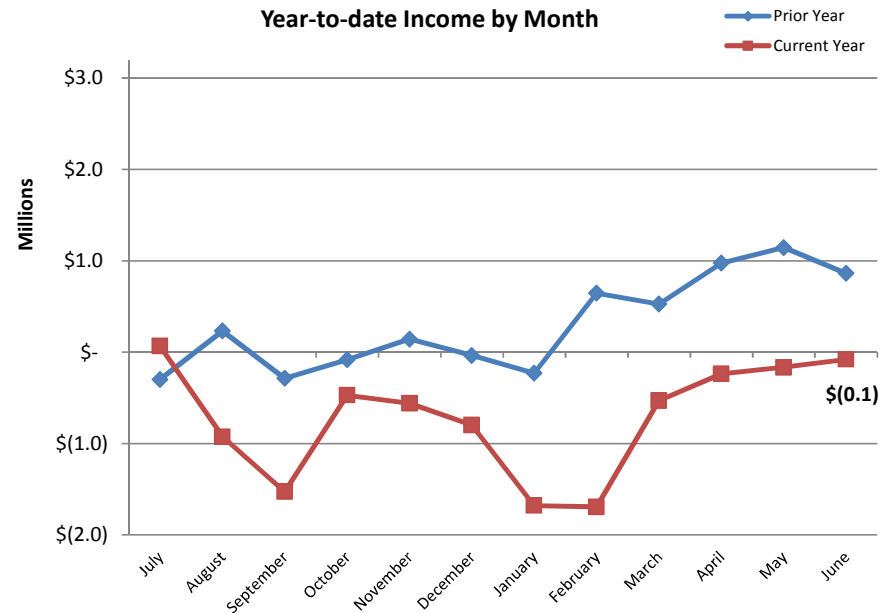
Judicial Retirement Health Care Trust Fund

For the Period Ending June 30, 2016

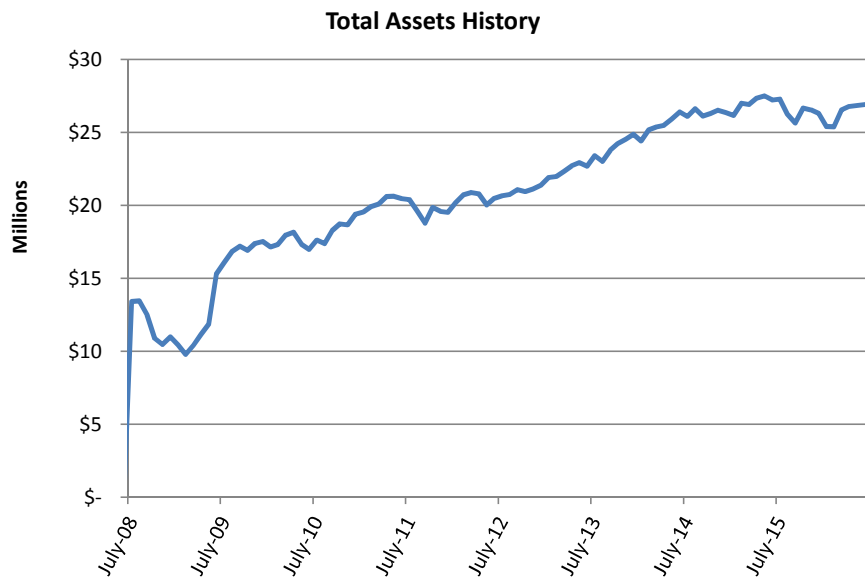
Total Assets by Month



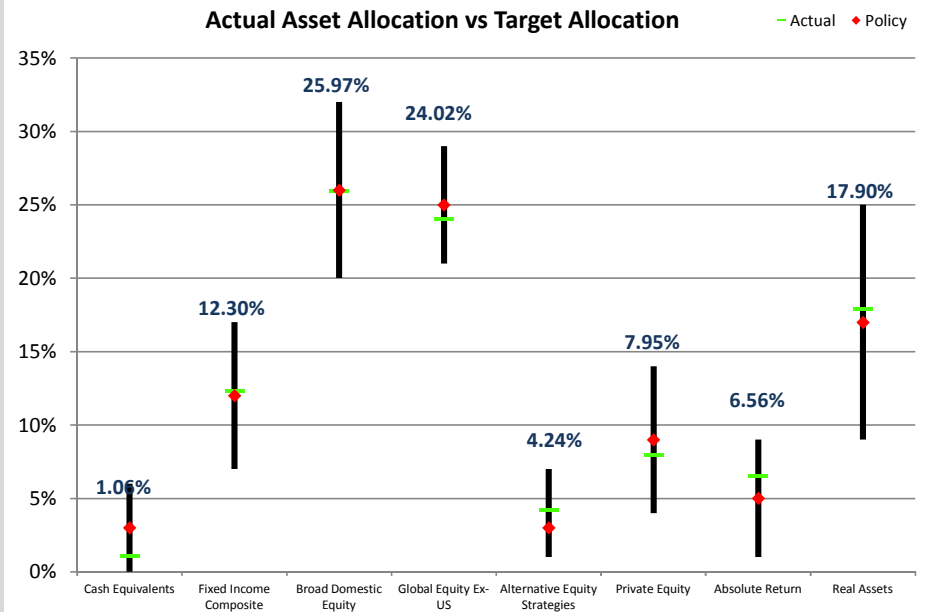
Year-to-date Income by Month



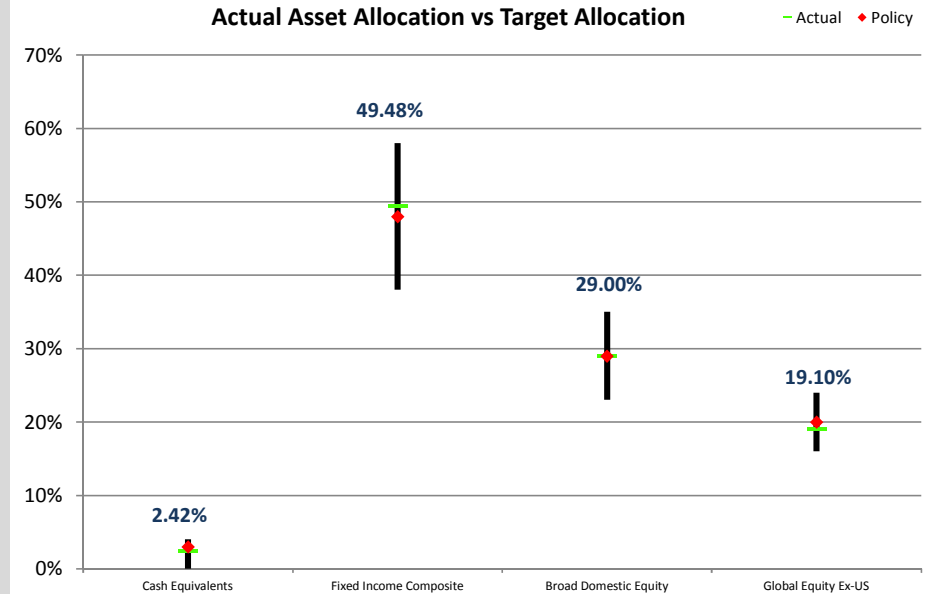
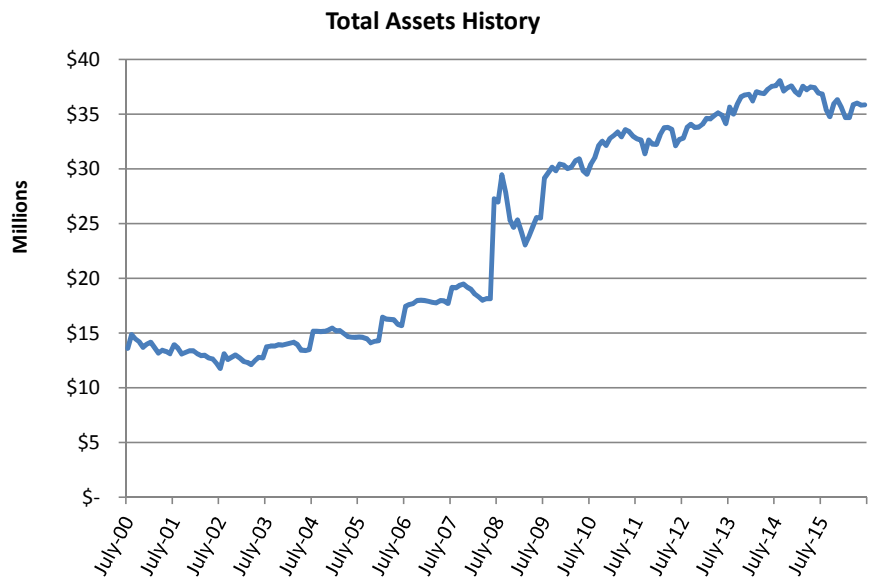
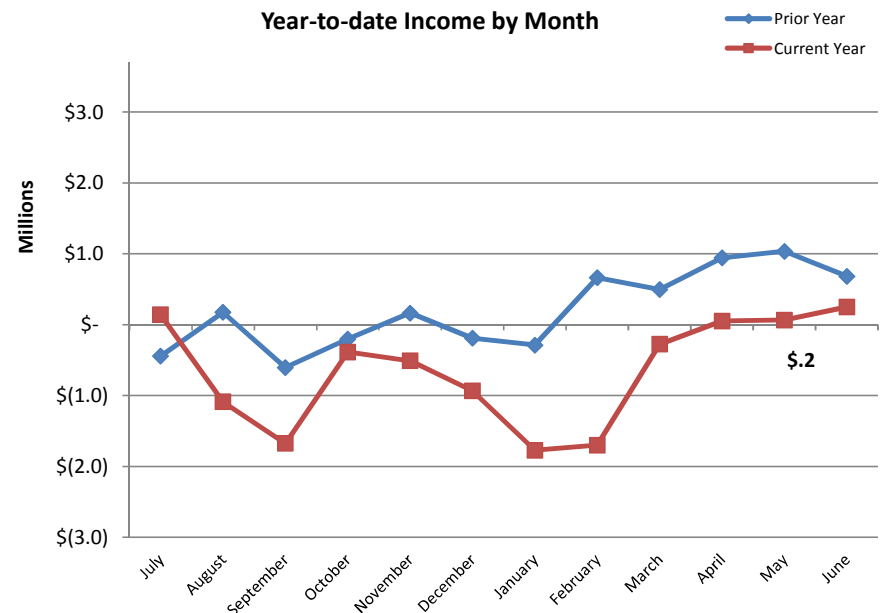
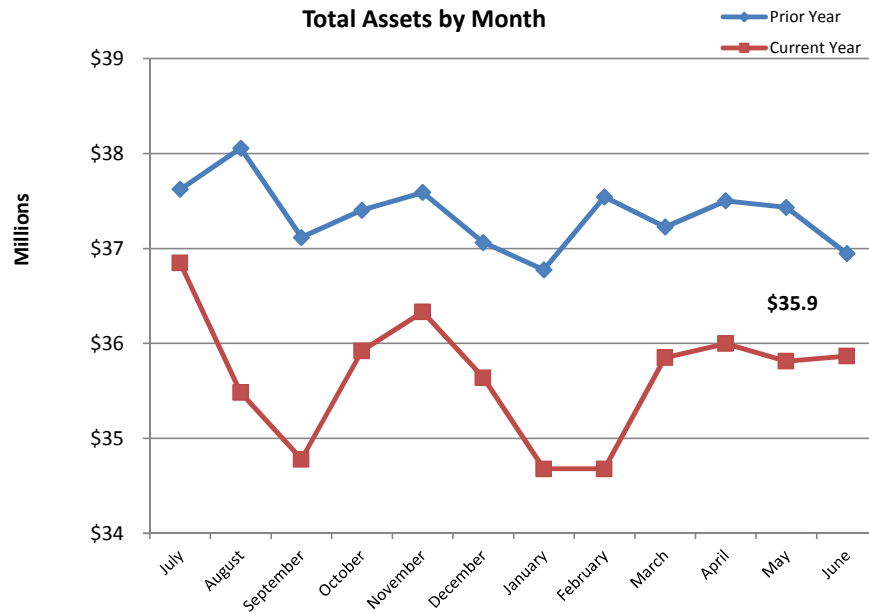
Total Assets History



Actual Asset Allocation vs Target Allocation



Military Retirement Trust Fund For the Period Ending June 30, 2016



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 June 30, 2016

	Beginning Invested Assets	Investment Income	Net Contributions and (Withdrawals)	Ending Invested Assets	% increase (decrease)
Cash					
Short-Term Fixed Income Pool	\$ 94,612,363	\$ 131,680	\$ 92,133,272	\$ 186,877,315	97.52%
Total Cash	<u>94,612,363</u>	<u>131,680</u>	<u>92,133,272</u>	<u>186,877,315</u>	97.52%
Fixed Income					
US Treasury Fixed Income	<u>1,057,974,554</u>	<u>15,219,780</u>	<u>-</u>	<u>1,073,194,334</u>	1.44%
Taxable Municipal Bond Pool					
Western Asset Management	129,316,214	3,948,527	-	133,264,741	3.05%
Guggenheim Partners	<u>123,642,266</u>	<u>4,127,038</u>	<u>-</u>	<u>127,769,304</u>	3.34%
	<u>252,958,480</u>	<u>8,075,565</u>	<u>-</u>	<u>261,034,045</u>	3.19%
Alternative Fixed Income Pool					
Fidelity Institutional Asset Management.	125,684,392	2,021,732	-	127,706,124	1.61%
Schroders Innsurance Linked Securities	<u>-</u>	<u>-</u>	<u>40,000,000</u>	<u>40,000,000</u>	100.00%
	<u>125,684,392</u>	<u>2,021,732</u>	<u>40,000,000</u>	<u>167,706,124</u>	33.43%
International Fixed Income Pool					
Mondrian Investment Partners	<u>400,760,122</u>	<u>17,359,195</u>	<u>(50,000,000)</u>	<u>368,119,317</u>	-8.14%
High Yield Pool					
MacKay Shields, LLC	219,287,941	3,120,608	-	222,408,549	1.42%
Fidelity Instit. Asset Mgmt. High Yield CMBS	161,030,775	1,544,091	-	162,574,866	0.96%
Columbia Threadneedle	213,408,193	948,444	-	214,356,637	0.44%
Eaton Vance High Yield	<u>211,536,649</u>	<u>1,020,430</u>	<u>-</u>	<u>212,557,079</u>	0.48%
	<u>805,263,558</u>	<u>6,633,573</u>	<u>-</u>	<u>811,897,131</u>	0.82%
Emerging Debt Pool					
Lazard Emerging Income	<u>155,871,925</u>	<u>1,376,853</u>	<u>-</u>	<u>157,248,778</u>	0.88%
Total Fixed Income	<u>2,798,513,031</u>	<u>50,686,698</u>	<u>(10,000,000)</u>	<u>2,839,199,729</u>	1.45%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended June 30, 2016

Domestic Equities

Small Cap Pool

Passively Managed

SSgA Russell 2000 Growth	17,874,961	(87,882)	-	17,787,079	-0.49%
SSgA Russell 2000 Value	31,147,096	96,557	-	31,243,653	0.31%
Total Passive	49,022,057	8,675	-	49,030,732	0.02%

Actively Managed

Barrow, Haney, Mewhinney & Strauss	87,140,924	(2,103,602)	-	85,037,322	-2.41%
DePrince, Race & Zollo Inc.- Micro Cap	76,819,206	433,600	-	77,252,806	0.56%
Fidelity (FIAM) Small Company	205,788,994	(5,916,629)	-	199,872,365	-2.88%
Frontier Capital Mgmt. Co.	91,068,935	(914,344)	-	90,154,591	-1.00%
Jennison Associates, LLC	84,020,312	(220,725)	-	83,799,587	-0.26%
Lord Abbett Small Cap Growth Fund	71,722,668	94,752	-	71,817,420	0.13%
Lord Abbett & Co.- Micro Cap	75,619,310	481,504	-	76,100,814	0.64%
Luther King Capital Management	78,351,880	1,093,685	-	79,445,565	1.40%
SSgA Futures Small Cap	11,484,440	(3,771)	-	11,480,669	-0.03%
Transition Account	13	-	-	13	-
Sycamore Capital	99,167,002	(24,794)	-	99,142,208	-0.03%
SSgA Volatility-Russell 2000	56,215,639	2,478,334	-	58,693,973	4.41%
Zebra Capital Management	72,370,878	645,460	-	73,016,338	0.89%
Total Active	1,009,770,201	(3,956,530)	-	1,005,813,671	-0.39%
Total Small Cap	1,058,792,258	(3,947,855)	-	1,054,844,403	-0.37%

Large Cap Pool

Passively Managed

SSgA Russell 1000 Growth	1,049,508,913	(4,326,022)	-	1,045,182,891	-0.41%
SSgA Russell 1000 Value	951,046,047	8,129,569	-	959,175,616	0.85%
SSgA Russell 200	814,768,703	1,076,168	-	815,844,871	0.13%
Total Passive	2,815,323,663	4,879,715	-	2,820,203,378	0.17%

Actively Managed

Allianz Global Investors	353,405,654	(5,229,433)	-	348,176,221	-1.48%
Barrow, Haney, Mewhinney & Strauss	339,420,534	(6,810,472)	-	332,610,062	-2.01%
Lazard Freres	355,895,326	(2,389,939)	-	353,505,387	-0.67%
McKinley Capital Mgmt.	341,546,974	(775,701)	-	340,771,273	-0.23%
Quantitative Management Assoc.	328,903,551	(2,487,419)	-	326,416,132	-0.76%
SSgA Futures large cap	14,979,471	34,141	-	15,013,612	0.23%
Transition Account	12,776	18	-	12,794	0.14%
SSgA Volatility-Russell 1000	84,414,778	3,421,417	-	87,836,195	4.05%
Internally Managed Large Cap.	317,506,226	16,726,351	-	334,232,577	5.27%
Total Active	2,136,085,290	2,488,963	-	2,138,574,253	0.12%
Total Large Cap	4,951,408,953	7,368,678	-	4,958,777,631	0.15%
Total Domestic Equity	6,010,201,211	3,420,823	-	6,013,622,034	0.06%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended June 30, 2016

Alternative Equity Strategies

Alternative Equity Strategy Pool

Relational Investors, LLC	1,080,780	25	-	1,080,805	-
Analytic Buy Write Account	297,875,338	5,077,878	-	302,953,216	1.70%
Allianz Global Investors Buy-Write Account	-	-	-	-	-
Quantitative Management Associates MPS	199,808,740	276,752	-	200,085,492	0.14%
ARMB Equity Yield Strategy	271,417,956	7,464,379	-	278,882,335	2.75%
Alternative Equity Strategies Transition Account	-	-	-	-	-
Total Alternative Equity Strategy Pool	770,182,814	12,819,034	-	783,001,848	1.66%

Convertible Bond Pool

Advent Capital	195,854,680	995,818	-	196,850,498	0.51%
Total Alternative Equity Strategies	966,037,494	13,814,852	-	979,852,346	1.43%

Global Equities Ex US

Small Cap Pool

Mondrian Investment Partners	156,706,078	(3,311,773)	-	153,394,305	-2.11%
Schroder Investment Management	168,694,755	(10,531,904)	-	158,162,851	-6.24%
Total Small Cap	325,400,833	(13,843,677)	-	311,557,156	-4.25%

Large Cap Pool

Blackrock ACWI Ex-US IMI	775,374,970	(13,149,677)	-	762,225,293	-1.70%
Brandes Investment Partners	730,704,914	(30,065,453)	(40,000,000)	660,639,461	-9.59%
Cap Guardian Trust Co	746,202,312	(24,420,121)	(50,000,000)	671,782,191	-9.97%
Lazard Freres	345,611,725	(5,471,433)	-	340,140,292	-1.58%
McKinley Capital Management	496,213,561	(11,246,348)	-	484,967,213	-2.27%
SSgA Futures International	-	-	-	-	-
Allianz Global Investors	307,565,539	(12,277,324)	(50,000,000)	245,288,215	-20.25%
Arrow Street Capital	289,556,505	2,467,240	-	292,023,745	0.85%
Baillie Gifford Overseas Limited	371,311,267	(6,484,595)	-	364,826,672	-1.75%
State Street Global Advisors	779,006,421	(13,400,006)	-	765,606,415	-1.72%
Total Large Cap	4,841,547,214	(114,047,717)	(140,000,000)	4,587,499,497	-5.25%

Emerging Markets Equity Pool

Lazard Asset Management	403,241,310	23,113,970	-	426,355,280	5.73%
Eaton Vance	225,322,982	7,593,143	-	232,916,125	3.37%
Total Emerging Markets Pool	628,564,292	30,707,113	-	659,271,405	4.89%

Total Global Equities	5,795,512,339	(97,184,281)	(140,000,000)	5,558,328,058	-4.09%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended June 30, 2016

Private Equity Pool

Abbott Capital	777,155,875	(459,591)	(7,003,822)	769,692,462	-0.96%
Angelo, Gordon & Co.	3,522,227	-	-	3,522,227	-
Advent International GPE Fund VIII-B	-	-	-	-	-
Blum Capital Partners-Strategic	-	-	-	-	-
Lexington Partners VII	38,773,750	(2,447)	(1,163,834)	37,607,469	-3.01%
Merit Capital Partners	18,014,169	384,705	-	18,398,874	2.14%
NB SOF III	21,319,667	327,004	-	21,646,671	1.53%
NB SOF IV	-	-	-	-	-
Resolute Fund III	7,565,217	-	-	7,565,217	-
Glendon Opportunities	22,915,829	-	-	22,915,829	-
New Mountain Partners IV	11,040,812	-	1,547,553	12,588,365	14.02%
KKR Lending Partners II	32,874,849	-	-	32,874,849	-
NGP XI	8,303,338	-	1,411,175	9,714,513	17.00%
Lexington Capital Partners VIII	11,906,432	429,012	(542,763)	11,792,681	-0.96%
Onex Partnership III	21,099,327	-	(222,514)	20,876,813	-1.05%
Pathway Capital Management LLC	829,188,880	407,507	(10,343,907)	819,252,480	-1.20%
Summit Partners GE IX	-	-	-	-	-
Warburg Pincus X	15,369,363	(2)	(664,200)	14,705,161	-4.32%
Warburg Pincus XI	28,913,836	-	240,000	29,153,836	0.83%
Warburg Pincus XII	2,520,616	-	1,657,500	4,178,116	65.76%
Total Private Equity	<u>1,850,484,187</u>	<u>1,086,188</u>	<u>(15,084,812)</u>	<u>1,836,485,563</u>	-0.76%

Absolute Return Pool

Global Asset Management (USA) Inc.	312,815,023	5,017,669	(15,000,000)	302,832,692	-3.19%
Prisma Capital Partners	426,232,816	6,098,139	(21,501,547)	410,829,408	-3.61%
Crestline Investors, Inc.	349,265,557	(977,154)	5,827,497	354,115,900	1.39%
Allianz Global Investors	225,139,203	5,645,272	-	230,784,475	2.51%
Crestline Specialty Fund	14,766,045	480,693	3,971,495	19,218,233	30.15%
KKR Apex Equity Fund	94,790,789	2,905,462	-	97,696,251	3.07%
Zebra Global Equity Fund	44,215,187	338,379	25,500,000	70,053,566	58.44%
Zebra Global Equity Advantage Fund	18,726,346	260,372	11,000,000	29,986,718	60.13%
Total Absolute Return Investments	<u>1,485,950,966</u>	<u>19,768,832</u>	<u>9,797,445</u>	<u>1,515,517,243</u>	1.99%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended June 30, 2016

Real Assets

Farmland Pool

UBS Agrivest, LLC	541,860,584	(1)	(1,325,147)	540,535,436	-0.24%
Hancock Agricultural Investment Group	268,671,225	-	(1,830,000)	266,841,225	-0.68%
Total Farmland Pool	810,531,809	(1)	(3,155,147)	807,376,661	-0.39%

Timber Pool

Timberland Invst Resource LLC	278,661,105	-	-	278,661,105	-
Hancock Natural Resource Group	99,294,410	-	(1,400,000)	97,894,410	-1.41%
Total Timber Pool	377,955,515	-	(1,400,000)	376,555,515	-0.37%

Energy Pool

EIG Energy Fund XV	31,925,698	277,268	-	32,202,966	0.87%
EIG Energy Fund XD	3,862,333	(13,879)	-	3,848,454	-0.36%
EIG Energy Fund XIV-A	10,574,422	14,778	-	10,589,200	0.14%
EIG Energy Fund XVI	20,408,106	287,819	4,200,000	24,895,925	21.99%
Total Energy Pool	66,770,559	565,986	4,200,000	71,536,545	7.14%

REIT Pool

REIT Trans Account	-	1	(1)	-	-
REIT Holdings	329,027,624	22,435,987	-	351,463,611	6.82%
Total REIT Pool	329,027,624	22,435,988	(1)	351,463,611	6.82%

Treasury Inflation Proof Securities

TIPS Internally Managed Account	54,408,669	1,129,350	-	55,538,019	2.08%

Master Limited Partnerships

Advisory Research MLP	218,427,559	8,987,539	-	227,415,098	4.11%
Tortoise Capital Advisors	246,480,048	12,853,515	-	259,333,563	5.21%
Total Master Limited Partnerships	464,907,607	21,841,054	-	486,748,661	4.70%

Infrastructure Private Pool

IFM Global Infrastructuer Fund-Private	214,578,452	4,980,936	-	219,559,388	2.32%
JP Morgan Infrastructure Fund-Private	100,045,381	-	-	100,045,381	-
Total Infrastructure Private Pool	314,623,833	4,980,936	-	319,604,769	1.58%

Infrastructure Public Pool

Brookfield Investment Mgmt.-Public	92,952,884	4,282,678	-	97,235,562	4.61%
Lazard Asset Mgmt.-Public	110,601,960	(919,689)	-	109,682,271	-0.83%
Total Infrastructure Public Pool	203,554,844	3,362,989	-	206,917,833	1.65%

Alaska Retirement Management Board
All Non-Participant Directed Plans by Manager
Schedule of Investment Income and Changes in Invested Assets
For the Month Ended June 30, 2016

Real Estate					
Core Commingled Accounts					
JP Morgan	236,749,809	2,148,730	-	238,898,539	0.91%
UBS Trumbull Property Fund	96,912,309	-	-	96,912,309	-
Total Core Commingled	333,662,118	2,148,730	-	335,810,848	0.64%
Core Separate Accounts					
LaSalle Investment Management	217,547,179	-	(107,449)	217,439,730	-0.05%
Sentinel Separate Account	215,337,887	6,082,853	(393,123)	221,027,617	2.64%
UBS Realty	463,579,320	18,317,159	(857,390)	481,039,089	3.77%
Total Core Separate	896,464,386	24,400,012	(1,357,962)	919,506,436	2.57%
Non-Core Commingled Accounts					
Almanac Realty Securities IV	55,897	-	-	55,897	-
Almanac Realty Securities V	11,206,431	-	(2,256,318)	8,950,113	-20.13%
Almanac Realty Securities VII	11,834,809	140,935	495,775	12,471,519	5.38%
BlackRock Diamond Property Fund	3,212,867	-	-	3,212,867	-
Clarion Ventures 4	43,190,832	-	-	43,190,832	-
Colony Investors VIII, L.P.	15,301,400	(1,733,200)	-	13,568,200	-11.33%
Cornerstone Apartment Venture III	48,222	-	-	48,222	-
Coventry	2,824,211	(769,298)	-	2,054,913	-27.24%
ING Clarion Development Ventures III	8,866,273	327,010	-	9,193,283	3.69%
KKR Real Estate Partners Americas LP.	40,762,045	-	4,579,311	45,341,356	11.23%
LaSalle Medical Office Fund II	205,902	(295)	-	205,607	-0.14%
Lowe Hospitality Partners	976,447	-	-	976,447	-
Silverpeak Legacy Pension Partners II, L.P.	29,536,521	-	(13,908,664)	15,627,857	-47.09%
Silverpeak Legacy Pension Partners III, L.P.	7,252,589	-	-	7,252,589	-
Tishman Speyer Real Estate Venture VI	37,425,003	-	-	37,425,003	-
Tishman Speyer Real Estate Venture VII	8,705,925	-	(936,844)	7,769,081	-10.76%
Total Non-Core Commingled	221,405,374	(2,034,848)	(12,026,740)	207,343,786	-6.35%
Total Real Estate	1,451,531,878	24,513,894	(13,384,702)	1,462,661,070	0.77%
Total Real Assets	4,073,312,338	78,830,196	(13,739,850)	4,138,402,684	1.60%
Total Assets	\$ 23,074,623,929	\$ 70,554,988	\$ (76,893,945)	\$ 23,068,284,972	-0.03%

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
June 30, 2016

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions (Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested Assets</u>	<u>% Change in Invested Assets</u>	<u>% Change due to Investment Income (2)</u>
Participant Options							
T. Rowe Price							
Stable Value Fund	\$ 369,559,060	\$ 648,139	\$ (1,724,606)	\$ 5,149,385	\$ 373,631,978	1.10%	0.17%
Small Cap Stock Fund	121,807,864	585,344	(215,952)	(1,147,742)	121,029,514	-0.64%	0.48%
Alaska Balanced Trust	1,153,805,612	8,877,108	(2,008,231)	(3,777,908)	1,156,896,581	0.27%	0.77%
Long Term Balanced Fund	532,682,467	1,953,181	1,050,145	(2,206,124)	533,479,669	0.15%	0.37%
AK Target Date 2010 Trust	9,897,808	37,561	4,864	(287,510)	9,652,723	-2.48%	0.38%
AK Target Date 2015 Trust	88,396,326	335,992	(152,809)	(367,107)	88,212,402	-0.21%	0.38%
AK Target Date 2020 Trust	74,604,950	226,152	260,603	433,092	75,524,797	1.23%	0.30%
AK Target Date 2025 Trust	49,224,583	108,858	313,217	215,311	49,861,969	1.29%	0.22%
AK Target Date 2030 Trust	35,641,769	33,835	359,624	191,906	36,227,134	1.64%	0.09%
AK Target Date 2035 Trust	33,523,055	12,935	276,106	(200,956)	33,611,140	0.26%	0.04%
AK Target Date 2040 Trust	32,405,349	(4,026)	461,218	386,631	33,249,172	2.60%	-0.01%
AK Target Date 2045 Trust	35,560,083	(14,404)	595,979	(207,517)	35,934,141	1.05%	-0.04%
AK Target Date 2050 Trust	40,018,634	(13,465)	693,209	(80,652)	40,617,726	1.50%	-0.03%
AK Target Date 2055 Trust	29,600,859	(10,964)	722,757	(232,454)	30,080,198	1.62%	-0.04%
AK Target Date 2060 Trust	16,982	5,498	510	150,533	173,523	921.81%	5.94%
Total Investments with T. Rowe Price	<u>2,606,745,401</u>	<u>12,781,744</u>	<u>636,634</u>	<u>(1,981,112)</u>	<u>2,618,182,667</u>		
State Street Global Advisors							
State Street Treasury Money Market Fund - Inst.	38,192,412	4,958	(551,708)	1,542,693	39,188,355	2.61%	0.01%
S&P 500 Stock Index Fund Series A	338,695,161	965,908	97,574	309,981	340,068,624	0.41%	0.29%
Russell 3000 Index	71,970,679	117,029	(126,046)	(1,429,266)	70,532,396	-2.00%	0.16%
US Real Estate Investment Trust Index	43,347,884	2,793,179	(3,076)	404,763	46,542,750	7.37%	6.41%
World Equity Ex-US Index	29,019,751	(255,491)	24,280	(219,733)	28,568,807	-1.55%	-0.88%
Long US Treasury Bond Index	23,642,063	1,480,812	51,841	1,469,074	26,643,790	12.70%	6.07%
US Treasury Inflation Protected Securities Index	21,492,302	447,355	(231,235)	290,224	21,998,646	2.36%	2.08%
World Government Bond Ex-US Index	8,648,204	382,258	(107,065)	546,151	9,469,548	9.50%	4.31%
Global Balanced Fund	51,396,000	401,347	(534,309)	88,024	51,351,062	-0.09%	0.78%
Total Investments with SSGA	<u>626,404,456</u>	<u>6,337,355</u>	<u>(1,379,744)</u>	<u>3,001,911</u>	<u>634,363,978</u>		
BlackRock							
Government/Credit Bond Fund	42,065,646	895,502	(114,703)	22,165	42,868,610	1.91%	2.13%
Intermediate Bond Fund	29,758,791	420,168	(238,706)	117,221	30,057,474	1.00%	1.41%
Total Investments with Barclays Global Investors	<u>71,824,437</u>	<u>1,315,670</u>	<u>(353,409)</u>	<u>139,386</u>	<u>72,926,084</u>		
Brandes/Allianz (3)							
AK International Equity Fund	58,299,609	(2,252,127)	73,101	(932,376)	55,188,207	-5.34%	-3.89%
RCM							
Sustainable Core Opportunities Fund	39,368,481	(238,157)	(73,728)	(227,809)	38,828,787	-1.37%	-0.61%
Total All Funds	<u>\$ 3,402,642,384</u>	<u>\$ 17,944,485</u>	<u>\$ (1,097,146)</u>	<u>\$ -</u>	<u>\$ 3,419,489,723</u>	<u>0.50%</u>	<u>0.53%</u>

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.
(3) This investment is comprised of two funds, Brandes International Equity Fund and Allianz NFJ International Fund effective March 30, 2015.

Supplemental Annuity Plan
Schedule of Invested Assets with
Schedule of Investment Income and Changes in Invested Assets
By Month Through the Month Ended
June 30, 2016
\$ (Thousands)

<u>Invested Assets (at fair value)</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>
Investments with T. Rowe Price												
Stable Value Fund	\$ 346,173	\$ 349,359	\$ 353,495	\$ 358,781	\$ 359,982	\$ 356,998	\$ 362,394	\$ 365,559	\$ 367,593	\$ 365,399	\$ 369,559	\$ 373,632
Small Cap Stock Fund	134,022	124,649	118,122	124,929	127,388	123,141	110,770	109,399	118,385	121,044	121,808	121,030
Alaska Balanced Trust	1,175,887	1,148,636	1,135,435	1,157,835	1,152,917	1,137,863	1,120,764	1,116,024	1,147,315	1,152,609	1,153,806	1,156,897
Long Term Balanced Fund	543,965	521,768	513,749	536,244	534,645	525,287	505,559	502,586	524,980	530,816	532,682	533,480
AK Target Date 2010 Trust	9,263	9,073	9,163	9,182	9,279	8,986	8,679	9,235	9,412	9,388	9,898	9,653
AK Target Date 2015 Trust	96,167	92,443	90,970	92,548	91,357	89,748	87,009	85,481	88,525	89,399	88,396	88,212
AK Target Date 2020 Trust	69,848	67,574	66,283	70,567	70,391	69,930	67,669	67,990	71,710	73,245	74,605	75,525
AK Target Date 2025 Trust	46,272	44,542	43,606	46,763	47,068	46,640	44,670	44,654	48,018	48,870	49,225	49,862
AK Target Date 2030 Trust	34,476	31,731	31,350	32,457	32,909	33,677	32,171	32,259	34,380	35,008	35,642	36,227
AK Target Date 2035 Trust	29,802	27,945	27,613	29,693	30,255	30,625	29,195	29,539	32,050	32,775	33,523	33,611
AK Target Date 2040 Trust	30,048	28,735	28,633	30,673	31,053	31,190	29,205	29,123	31,272	31,887	32,405	33,249
AK Target Date 2045 Trust	32,463	30,614	30,292	32,414	32,959	33,033	31,263	31,315	33,910	34,761	35,560	35,934
AK Target Date 2050 Trust	34,657	33,343	33,473	35,770	36,254	36,524	34,855	35,273	38,185	39,126	40,019	40,618
AK Target Date 2055 Trust	26,703	24,989	25,569	27,109	27,532	27,397	25,849	25,965	27,940	28,853	29,601	30,080
AK Target Date 2060 Trust	-	-	-	-	1	1	12	1	1	5	17	174
State Street Global Advisors												
State Street Treasury Money Market Fund - Inst.	38,582	39,465	39,088	38,296	37,742	38,297	38,062	38,467	38,381	38,858	38,192	39,188
S&P 500 Stock Index Fund Series A	346,334	324,294	316,038	339,138	340,350	336,619	314,553	314,251	334,072	334,652	338,695	340,069
Russell 3000 Index	66,039	61,815	60,645	65,986	68,536	70,863	69,419	71,159	74,999	73,013	71,971	70,532
US Real Estate Investment Trust Index	36,332	33,999	34,429	38,592	38,058	41,033	38,991	37,969	43,029	41,242	43,348	46,543
World Equity Ex-US Index	30,072	28,858	28,932	32,272	31,008	29,858	27,844	27,516	29,867	30,389	29,020	28,569
Long US Treasury Bond Index	13,012	16,355	15,263	15,291	14,557	14,582	19,603	22,062	22,434	22,074	23,642	26,644
US Treasury Inflation Protected Securities Index	14,943	14,809	14,871	14,898	16,033	17,551	19,677	20,192	20,773	21,108	21,492	21,999
World Government Bond Ex-US Index	10,659	10,877	10,754	10,066	8,915	8,066	6,885	6,904	7,283	8,271	8,648	9,470
Global Balanced Fund	59,906	56,837	55,119	57,365	56,332	53,818	49,847	48,640	50,805	51,367	51,396	51,351
Investments with BlackRock												
Government/Credit Bond Fund	53,260	53,143	53,599	53,271	50,588	46,861	43,843	43,278	43,123	42,566	42,066	42,869
Intermediate Bond Fund	12,158	12,343	12,939	13,610	17,430	21,883	27,304	29,141	29,194	29,251	29,759	30,057
Investments with Brandes/Allianz Institutional												
AK International Equity Fund	76,997	68,179	62,209	65,935	63,451	60,442	55,130	53,595	57,949	59,231	58,300	55,188
Investments with RCM												
Sustainable Core Opportunities Fund	41,359	37,985	37,652	41,233	41,522	40,374	37,274	36,285	38,826	39,166	39,368	38,829
Total Invested Assets	\$ 3,409,401	\$ 3,294,359	\$ 3,249,291	\$ 3,370,916	\$ 3,368,514	\$ 3,331,285	\$ 3,238,496	\$ 3,233,863	\$ 3,364,410	\$ 3,384,374	\$ 3,402,642	\$ 3,419,490
<u>Change in Invested Assets</u>												
Beginning Assets	\$ 3,394,334	\$ 3,409,401	\$ 3,294,359	\$ 3,249,291	\$ 3,370,916	\$ 3,368,514	\$ 3,331,285	\$ 3,238,496	\$ 3,233,863	\$ 3,364,410	\$ 3,384,374	\$ 3,402,642
Investment Earnings	26,325	(115,035)	(47,085)	127,585	(420)	(39,662)	(82,268)	(3,001)	130,768	22,324	17,244	17,944
Net Contributions (Withdrawals)	(11,258)	(7)	2,016	(5,960)	(1,982)	2,433	(10,521)	(1,632)	(220)	(2,360)	1,024	(1,097)
Ending Invested Assets	\$ 3,409,401	\$ 3,294,359	\$ 3,249,291	\$ 3,370,916	\$ 3,368,514	\$ 3,331,285	\$ 3,238,496	\$ 3,233,863	\$ 3,364,410	\$ 3,384,374	\$ 3,402,642	\$ 3,419,490

Deferred Compensation Plan
Schedule of Invested Assets and Changes in Invested Assets
for the Month Ended
June 30, 2016

	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (1)
Participant Options							
T. Rowe Price							
Interest Income Fund	\$ 183,984,092	\$ 364,100	\$ (1,781,189)	\$ 59,263	\$ 182,626,266	-0.74%	0.20%
Small Cap Stock Fund	88,284,225	443,282	(216,196)	(199,676)	88,311,635	0.03%	0.50%
Alaska Balanced Trust	22,337,333	169,953	3,888	(167,122)	22,344,052	0.03%	0.76%
Long Term Balanced Fund	48,097,745	174,048	(46,579)	(213,941)	48,011,273	-0.18%	0.36%
AK Target Date 2010 Trust	3,415,178	15,366	2,788	1,741	3,435,073	0.58%	0.45%
AK Target Date 2015 Trust	9,629,424	36,721	(157,027)	(8,289)	9,500,829	-1.34%	0.38%
AK Target Date 2020 Trust	18,123,329	58,601	35,455	206,172	18,423,557	1.66%	0.32%
AK Target Date 2025 Trust	9,225,853	22,661	64,519	419,986	9,733,019	5.50%	0.24%
AK Target Date 2030 Trust	6,593,402	2,692	39,892	(35,459)	6,600,527	0.11%	0.04%
AK Target Date 2035 Trust	3,983,660	2,983	(6,574)	(52,890)	3,927,179	-1.42%	0.08%
AK Target Date 2040 Trust	4,280,347	1,481	40,045	72,233	4,394,106	2.66%	0.03%
AK Target Date 2045 Trust	2,942,807	(774)	33,676	(748)	2,974,961	1.09%	-0.03%
AK Target Date 2050 Trust	1,983,143	(1,187)	507	(48,198)	1,934,265	-2.46%	-0.06%
AK Target Date 2055 Trust	3,167,252	(1,010)	28,411	6,958	3,201,611	1.08%	-0.03%
AK Target Date 2060 Trust	72,978	106	1,052	3,437	77,573	6.30%	0.14%
Total Investments with T. Rowe Price	406,120,768	1,289,023	(1,957,332)	43,467	405,495,926		
State Street Global Advisors							
State Street Treasury Money Market Fund - Inst.	11,674,827	1,499	(196,900)	96,828	11,576,254	-0.84%	0.01%
Russell 3000 Index	28,491,291	60,620	(11,740)	(65,053)	28,475,118	-0.06%	0.21%
US Real Estate Investment Trust Index	15,029,409	976,402	(45,108)	351,328	16,312,031	8.53%	6.43%
World Equity Ex-US Index	8,514,718	(80,348)	(1,425)	53,850	8,486,795	-0.33%	-0.94%
Long US Treasury Bond Index	8,550,424	526,248	(183)	(45,738)	9,030,751	5.62%	6.17%
US Treasury Inflation Protected Securities Index	9,458,552	192,053	(19,981)	(25,879)	9,604,745	1.55%	2.04%
World Government Bond Ex-US Index	3,839,861	168,573	(40,151)	(8,753)	3,959,530	3.12%	4.42%
Global Balanced Fund	36,882,299	290,005	(267,007)	(91,342)	36,813,955	-0.19%	0.79%
Total Investments with SSGA	122,441,381	2,135,052	(582,495)	265,241	124,259,179		
BlackRock							
S&P 500 Index Fund	180,940,210	470,852	(990,221)	(156,898)	180,263,943	-0.37%	0.26%
Government/Credit Bond Fund	26,879,902	569,677	(190,105)	45,948	27,305,422	1.58%	2.13%
Intermediate Bond Fund	19,528,062	276,456	(45,646)	322,492	20,081,364	2.83%	1.41%
Total Investments with Barclays Global Investors	227,348,174	1,316,985	(1,225,972)	211,542	227,650,729		
Brandes/Allianz (2)							
AK International Equity Fund	36,601,725	(1,411,766)	(38,522)	(329,695)	34,821,742	-4.86%	-3.88%
RCM							
Sustainable Core Opportunities Fund	16,835,901	(103,793)	26,238	(190,555)	16,567,791	-1.59%	-0.62%
Total All Funds	\$ 809,347,949	\$ 3,225,501	\$ (3,778,083)	\$ -	\$ 808,795,367	-0.07%	0.40%

Notes: Source data provided by the record keeper, Great West Life.

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

(2) This investment is comprised of two funds, 50% Brandes International equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

Deferred Compensation Plan
Schedule of Invested Assets with
Schedule of Investment Income and Changes in Invested Assets
By Month Through the Month Ended
June 30, 2016
\$ (Thousands)

<u>Invested Assets</u> (at fair value)	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>
Investments with T. Rowe Price												
Interest Income Fund												
Cash and cash equivalents	\$ 9,454	\$ 7,141	\$ 7,495	\$ 7,607	\$ 6,820	\$ 6,877	\$ 6,461	\$ 6,636	\$ 8,100	\$ 8,405	\$ 8,504	\$ 6,701
Synthetic Investment Contracts	170,674	171,907	172,294	172,712	173,106	173,670	173,838	174,499	175,108	175,137	175,480	175,925
Small Cap Stock Fund	95,872	89,472	85,029	89,696	91,500	87,213	79,602	79,386	85,499	87,230	88,284	88,312
Alaska Balanced Trust	16,896	17,514	17,525	17,781	18,051	18,879	19,376	20,164	21,029	21,421	22,337	22,344
Long Term Balanced Fund	51,174	49,279	48,483	51,599	51,047	49,303	47,062	46,057	47,916	48,434	48,098	48,011
AK Target Date 2010 Trust	3,137	3,055	3,156	3,017	3,116	3,076	2,992	3,105	3,307	3,389	3,415	3,435
AK Target Date 2015 Trust	11,155	10,564	10,372	10,206	10,287	10,209	9,533	9,611	9,930	9,580	9,629	9,501
AK Target Date 2020 Trust	16,856	16,146	15,477	16,371	16,452	16,434	16,012	16,327	17,520	17,659	18,123	18,424
AK Target Date 2025 Trust	8,868	8,443	8,321	8,936	9,094	9,131	8,816	8,836	9,346	9,361	9,226	9,733
AK Target Date 2030 Trust	6,016	6,035	5,712	5,882	6,075	6,166	5,651	5,773	6,263	6,443	6,593	6,601
AK Target Date 2035 Trust	3,684	3,483	3,456	3,711	3,710	3,691	3,529	3,497	3,808	3,913	3,984	3,927
AK Target Date 2040 Trust	3,954	3,729	3,537	3,814	3,927	3,978	3,884	3,937	4,166	4,248	4,280	4,394
AK Target Date 2045 Trust	2,593	2,428	2,459	2,650	2,764	2,746	2,571	2,570	2,812	2,908	2,943	2,975
AK Target Date 2050 Trust	1,787	1,602	1,595	1,719	1,784	1,776	1,680	1,783	1,857	1,922	1,983	1,934
AK Target Date 2055 Trust	3,089	2,637	2,938	2,742	3,186	2,964	2,505	2,537	2,635	2,762	3,167	3,202
AK Target Date 2060 Trust	-	-	-	-	28	31	10	64	70	71	73	78
State Street Global Advisors												
State Street Treasury Money Market Fund - Inst.	12,621	12,541	11,627	12,012	12,047	12,088	11,676	11,690	11,424	11,791	11,675	11,576
Russell 3000 Index	24,500	23,382	23,103	25,385	26,081	26,688	26,024	26,583	28,359	28,204	28,491	28,475
US Real Estate Investment Trust Index	12,682	12,099	12,273	13,387	13,736	14,302	13,409	13,497	15,338	15,057	15,029	16,312
World Equity Ex-US Index	10,720	10,172	10,062	11,104	10,475	9,950	9,238	9,088	9,281	9,029	8,515	8,487
Long US Treasury Bond Index	4,426	4,997	4,958	4,806	4,586	4,731	6,257	7,646	8,341	8,281	8,550	9,031
US Treasury Inflation Protected Securities Index	7,286	7,210	7,149	7,090	7,490	8,129	8,980	9,040	9,104	9,160	9,459	9,605
World Government Bond Ex-US Index	3,813	3,887	4,271	3,751	3,622	3,400	3,155	3,183	3,365	3,756	3,840	3,960
Global Balanced Fund	40,816	39,218	37,958	39,392	38,671	37,697	35,922	35,693	37,355	37,549	36,882	36,814
Investments with BlackRock												
S&P 500 Index Fund	183,818	172,869	168,239	181,818	183,514	180,093	170,360	170,677	180,297	179,035	180,940	180,264
Government/Credit Bond Fund	30,447	30,169	30,318	29,953	29,439	28,178	27,561	27,365	27,474	27,322	26,880	27,305
Intermediate Bond Fund	14,747	14,658	15,195	14,786	15,842	17,000	18,593	19,116	19,215	19,445	19,528	20,081
Investments with Brandes/Allianz												
AK International Equity Fund	44,643	40,645	37,578	39,902	38,718	36,914	34,030	32,852	35,793	37,130	36,602	34,822
Investments with RCM												
Sustainable Opportunities Fund	17,575	16,336	16,263	17,607	17,741	16,924	15,710	15,478	16,404	16,755	16,836	16,568
Total Invested Assets	\$ 813,302	\$ 781,618	\$ 766,840	\$ 799,437	\$ 802,908	\$ 792,238	\$ 764,435	\$ 766,693	\$ 801,117	\$ 805,396	\$ 809,348	\$ 808,795
<u>Change in Invested Assets</u>												
Beginning Assets	\$ 806,279	\$ 813,302	\$ 781,618	\$ 766,840	\$ 799,437	\$ 802,908	\$ 792,238	\$ 764,435	\$ 766,693	\$ 801,117	\$ 805,396	\$ 809,348
Investment Earnings	6,564	(30,580)	(14,275)	34,927	1,708	(10,601)	(25,232)	(540)	34,127	5,224	6,004	3,226
Net Contributions (Withdrawals)	460	(1,105)	(502)	(2,331)	1,764	(70)	(2,571)	2,798	297	(946)	(2,052)	(3,778)
Ending Invested Assets	\$ 813,302	\$ 781,618	\$ 766,840	\$ 799,437	\$ 802,908	\$ 792,238	\$ 764,435	\$ 766,693	\$ 801,117	\$ 805,396	\$ 809,348	\$ 808,795

Defined Contribution Retirement - Participant Directed PERS
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
June 30, 2016

	Beginning Invested Assets	Investment Income	Net Contributions (Withdrawals)	Transfers In (Out)	Ending Invested Assets	% Change in Invested Assets	% Change due to Investment Income (2)
Participant Options							
T. Rowe Price							
Alaska Money Market	\$ 8,161,586	\$ 2,225	\$ (36,851)	\$ 305,988	\$ 8,432,948	3.32%	0.03%
Small Cap Stock Fund	57,923,563	295,943	263,347	(388,516)	58,094,337	0.29%	0.51%
Alaska Balanced Trust	14,984,435	115,022	(2,867)	28,966	15,125,556	0.94%	0.77%
Long Term Balanced Fund	11,620,367	39,210	23,459	(137,366)	11,545,670	-0.64%	0.34%
AK Target Date 2010 Trust	2,021,033	9,256	38,101	-	2,068,390	2.34%	0.45%
AK Target Date 2015 Trust	8,794,474	34,036	44,645	(17,659)	8,855,496	0.69%	0.39%
AK Target Date 2020 Trust	20,979,568	64,367	388,237	(12,892)	21,419,280	2.10%	0.30%
AK Target Date 2025 Trust	30,544,854	64,349	456,663	(33,319)	31,032,547	1.60%	0.21%
AK Target Date 2030 Trust	31,627,920	40,591	476,769	27,730	32,173,010	1.72%	0.13%
AK Target Date 2035 Trust	36,618,381	20,155	638,696	1,414	37,278,646	1.80%	0.05%
AK Target Date 2040 Trust	43,632,905	(5,566)	797,186	112,253	44,536,778	2.07%	-0.01%
AK Target Date 2045 Trust	54,253,042	(20,440)	964,519	(139,349)	55,057,772	1.48%	-0.04%
AK Target Date 2050 Trust	63,812,064	(19,574)	1,155,490	(17,773)	64,930,207	1.75%	-0.03%
AK Target Date 2055 Trust	41,522,001	(11,675)	1,202,605	(94,075)	42,618,856	2.64%	-0.03%
AK Target Date 2060 Trust	4,728	(12)	440	20,374	25,530	439.97%	-0.08%
Total Investments with T. Rowe Price	426,500,921	627,887	6,410,439	(344,224)	433,195,023		
State Street Global Advisors							
Money Market	3,085,581	395	13,739	(95,349)	3,004,366	-2.63%	0.01%
S&P 500 Stock Index Fund Series A	45,995,768	136,168	293,121	629,320	47,054,377	2.30%	0.29%
Russell 3000 Index	40,670,933	61,290	195,794	(1,199,045)	39,728,972	-2.32%	0.15%
US Real Estate Investment Trust Index	15,298,157	976,049	71,011	(178,904)	16,166,313	5.67%	6.40%
World Equity Ex-US Index	36,736,199	(337,488)	173,892	(626,446)	35,946,157	-2.15%	-0.92%
Long US Treasury Bond Index	1,237,526	77,991	18,779	71,913	1,406,209	13.63%	6.08%
US Treasury Inflation Protected Securities Index	9,229,513	192,534	(16,498)	229,859	9,635,408	4.40%	2.06%
World Government Bond Ex-US Index	4,389,573	194,262	(10,393)	211,318	4,784,760	9.00%	4.33%
Global Balanced Fund	6,702,772	55,550	11,113	163,013	6,932,448	3.43%	0.82%
Total Investments with SSGA	163,346,022	1,356,751	750,558	(794,321)	164,659,010		
BlackRock							
Government/Credit Bond Fund	29,721,058	639,227	(17,675)	127,979	30,470,589	2.52%	2.15%
Intermediate Bond Fund	10,413,183	149,278	(1,110)	378,373	10,939,724	5.06%	1.41%
Total Investments with Barclays Global Investors	40,134,241	788,505	(18,785)	506,352	41,410,313		
Brandes/Allianz (3)							
AK International Equity Fund	25,344,800	(963,808)	154,875	635,718	25,171,585	-0.68%	-3.74%
RCM							
Sustainable Core Opportunities Fund	3,079,026	(17,270)	28,966	(3,525)	3,087,197	0.27%	-0.56%
Total All Funds	\$ 658,405,010	\$ 1,792,065	\$ 7,326,053	\$ -	\$ 667,523,128	1.38%	0.27%

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.

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

(3) This investment is comprised of two funds, 50% Brandes International Equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

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
June 30, 2016
\$ (Thousands)

<u>Invested Assets</u> (at fair value)	July	August	September	October	November	December	January	February	March	April	May	June
Investments with T. Rowe Price												
Alaska Money Market	\$ 5,125	\$ 5,333	\$ 5,576	\$ 5,716	\$ 5,983	\$ 6,698	\$ 7,356	\$ 7,762	\$ 7,779	\$ 7,918	\$ 8,162	\$ 8,433
Small Cap Stock Fund	51,481	48,845	46,819	50,381	52,413	51,153	48,139	49,450	54,665	56,305	57,924	58,094
Alaska Balanced Trust	4,701	5,597	6,316	7,005	8,249	10,340	12,184	13,284	13,945	14,434	14,984	15,126
Long Term Balanced Fund	22,448	21,960	21,382	22,409	20,063	15,956	11,554	9,417	10,349	11,029	11,620	11,546
AK Target Date 2010 Trust	1,876	1,843	1,794	1,886	1,842	1,857	1,850	1,887	1,983	1,978	2,021	2,068
AK Target Date 2015 Trust	8,400	8,148	8,052	8,349	8,427	8,498	8,304	8,407	8,614	8,725	8,794	8,855
AK Target Date 2020 Trust	17,681	17,143	17,023	18,164	18,486	18,685	18,517	18,854	20,051	20,682	20,980	21,419
AK Target Date 2025 Trust	25,673	24,995	24,955	26,700	27,094	27,316	26,575	27,126	29,175	29,850	30,545	31,033
AK Target Date 2030 Trust	26,831	26,015	25,788	27,738	28,146	28,405	27,623	28,150	30,020	30,898	31,628	32,173
AK Target Date 2035 Trust	30,667	29,618	29,414	31,666	32,400	32,598	31,550	32,145	34,766	35,841	36,618	37,279
AK Target Date 2040 Trust	37,548	36,001	35,630	38,665	39,383	39,413	37,838	38,468	41,489	42,721	43,633	44,537
AK Target Date 2045 Trust	46,210	44,386	43,873	47,619	48,540	48,729	46,414	47,443	51,464	53,032	54,253	55,058
AK Target Date 2050 Trust	53,982	52,187	51,687	55,732	56,794	57,110	54,841	55,982	60,397	62,241	63,812	64,930
AK Target Date 2055 Trust	30,995	30,295	30,360	33,199	34,178	34,799	33,961	35,199	38,531	40,100	41,522	42,619
AK Target Date 2060 Trust	-	-	-	-	-	-	20	1	1	2	5	26
State Street Global Advisors												
Money Market	1,757	1,986	2,310	2,287	2,387	2,429	2,932	3,030	3,111	2,844	3,086	3,004
S&P 500 Stock Index Fund Series A	36,123	32,482	30,367	32,066	33,395	34,734	34,800	36,097	40,596	42,871	45,996	47,054
Russell 3000 Index	37,400	36,807	37,866	42,071	43,464	44,626	44,108	45,922	46,267	43,515	40,671	39,729
US Real Estate Investment Trust Index	9,872	9,347	9,608	10,195	10,934	12,527	13,199	13,728	15,364	15,027	15,298	16,166
World Equity Ex-US Index	30,991	31,994	34,048	38,477	38,176	37,530	35,871	35,572	37,811	38,168	36,736	35,946
Long US Treasury Bond Index	753	821	750	868	836	897	1,180	1,408	1,131	1,156	1,238	1,406
US Treasury Inflation Protected Securities Index	4,131	4,171	4,117	4,102	4,913	6,159	7,571	8,404	8,708	8,946	9,230	9,635
World Government Bond Ex-US Index	7,856	7,433	6,893	6,678	5,968	5,268	4,380	3,890	4,004	4,239	4,390	4,785
Global Balanced Fund	21,814	19,800	18,011	18,184	15,928	12,103	7,987	6,042	6,451	6,601	6,703	6,932
Investments with BlackRock												
Government/Credit Bond Fund	37,763	37,388	36,886	36,728	35,040	32,587	29,854	27,927	28,026	28,942	29,721	30,471
Intermediate Bond Fund	626	885	1,025	1,079	2,381	4,527	7,049	8,444	8,996	9,585	10,413	10,940
Investments with Brandes/Allianz												
International Equity Fund	34,231	29,679	26,160	27,340	27,164	26,744	25,357	25,179	26,509	26,559	25,345	25,172
Investments with RCM												
Sustainable Opportunities Fund	2,885	2,766	2,662	2,887	2,941	2,888	2,769	2,817	2,957	3,066	3,079	3,087
Total Invested Assets	\$ 589,820	\$ 567,923	\$ 559,374	\$ 598,190	\$ 605,524	\$ 604,579	\$ 583,783	\$ 592,031	\$ 633,162	\$ 647,275	\$ 658,405	\$ 667,523
<u>Change in Invested Assets</u>												
Beginning Assets	\$ 582,369	\$ 589,820	\$ 567,923	\$ 559,374	\$ 598,190	\$ 605,524	\$ 604,579	\$ 583,783	\$ 592,031	\$ 633,162	\$ 647,275	\$ 658,405
Investment Earnings	4,591	(30,149)	(14,791)	32,874	(334)	(11,359)	(26,325)	(2,042)	36,510	6,581	3,997	1,792
Net Contributions (Withdrawals)	2,860	8,252	6,242	5,942	7,668	10,414	5,529	10,290	4,621	7,531	7,133	7,326
Ending Invested Assets	\$ 589,820	\$ 567,923	\$ 559,374	\$ 598,190	\$ 605,524	\$ 604,579	\$ 583,783	\$ 592,031	\$ 633,162	\$ 647,275	\$ 658,405	\$ 667,523

Defined Contribution Retirement - Participant Directed TRS
Schedule of Investment Income and Changes in Invested Assets
for the Month Ended
June 30, 2016

	<u>Beginning Invested Assets</u>	<u>Investment Income</u>	<u>Net Contributions (Withdrawals)</u>	<u>Transfers In (Out)</u>	<u>Ending Invested Assets</u>	<u>% Change in Invested Assets</u>	<u>% Change due to Investment Income (2)</u>
Participant Options							
T. Rowe Price							
Alaska Money Market	\$ 2,815,505	\$ 768	\$ 45,624	\$ 46,608	\$ 2,908,505	3.30%	0.03%
Small Cap Stock Fund	24,611,594	134,545	414,158	(124,546)	25,035,751	1.72%	0.54%
Alaska Balanced Trust	7,084,526	55,412	106,797	18,812	7,265,547	2.56%	0.78%
Long Term Balanced Fund	5,297,435	18,772	79,572	(62,039)	5,333,740	0.69%	0.35%
AK Target Date 2010 Trust	456,644	2,134	16,334	-	475,112	4.04%	0.46%
AK Target Date 2015 Trust	2,499,178	9,998	73,541	-	2,582,717	3.34%	0.39%
AK Target Date 2020 Trust	6,192,801	19,807	228,029	26	6,440,663	4.00%	0.31%
AK Target Date 2025 Trust	9,717,798	23,734	401,471	149	10,143,152	4.38%	0.24%
AK Target Date 2030 Trust	10,693,132	17,929	362,902	-	11,073,963	3.56%	0.16%
AK Target Date 2035 Trust	16,079,310	16,590	660,493	(10,785)	16,745,608	4.14%	0.10%
AK Target Date 2040 Trust	17,026,436	7,260	766,851	(14,150)	17,786,397	4.46%	0.04%
AK Target Date 2045 Trust	27,470,177	8,031	1,041,833	(14,558)	28,505,483	3.77%	0.03%
AK Target Date 2050 Trust	38,271,203	6,322	1,506,829	(6,652)	39,777,702	3.94%	0.02%
AK Target Date 2055 Trust	11,993,450	8,351	904,453	-	12,906,254	7.61%	0.07%
AK Target Date 2060 Trust	7,828	15	748	-	8,591	9.75%	0.18%
Total Investments with T. Rowe Price	<u>180,217,017</u>	<u>329,668</u>	<u>6,609,635</u>	<u>(167,135)</u>	<u>186,989,185</u>		
State Street Global Advisors							
Money Market	220,570	29	9,210	-	229,809	4.19%	0.01%
S&P 500 Stock Index Fund Series A	18,357,241	63,708	348,086	402,931	19,171,966	4.44%	0.34%
Russell 3000 Index	17,569,184	29,203	312,227	(611,315)	17,299,299	-1.54%	0.17%
US Real Estate Investment Trust Index	5,846,486	379,519	107,575	8,804	6,342,384	8.48%	6.43%
World Equity Ex-US Index	15,981,158	(144,273)	284,393	(308,226)	15,813,052	-1.05%	-0.90%
Long US Treasury Bond Index	270,245	16,823	10,169	(1,266)	295,971	9.52%	6.12%
US Treasury Inflation Protected Securities Index	3,561,697	74,451	53,621	45,715	3,735,484	4.88%	2.06%
World Government Bond Ex-US Index	2,140,589	94,725	35,547	67,910	2,338,771	9.26%	4.32%
Global Balanced Fund	3,409,916	29,204	55,525	58,937	3,553,582	4.21%	0.84%
Total Investments with SSGA	<u>67,357,086</u>	<u>543,389</u>	<u>1,216,353</u>	<u>(336,510)</u>	<u>68,780,318</u>		
BlackRock							
Government/Credit Bond Fund	13,813,789	296,982	210,194	(2,758)	14,318,207	3.65%	2.13%
Intermediate Bond Fund	3,989,048	57,162	54,726	143,324	4,244,260	6.40%	1.40%
Total Investments with Barclays Global Investors	<u>17,802,837</u>	<u>354,144</u>	<u>264,920</u>	<u>140,566</u>	<u>18,562,467</u>		
Brandes/Allianz Institutional (3)							
AK International Equity Fund	10,367,801	(387,045)	204,109	357,521	10,542,386	1.68%	-3.63%
RCM							
Sustainable Core Opportunities Fund	1,214,638	(6,989)	24,741	5,558	1,237,948	1.92%	-0.57%
Total All Funds	<u>\$ 276,959,379</u>	<u>\$ 833,167</u>	<u>\$ 8,319,758</u>	<u>\$ -</u>	<u>\$ 286,112,304</u>	<u>3.30%</u>	<u>0.30%</u>

Notes: Source data provided by the record keeper, Great West Life. (1) Represents net contributions in transit to/from the record keeper.
(2) Income divided by beginning assets plus half of net contributions/(withdrawals). Actual returns are calculated by Callan and Associates.
(3) This investment option is comprised of two funds, 50% Brandes International equity Fund and 50% Allianz NFJ International Fund effective March 30, 2015.

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
June 30, 2016
\$ (Thousands)

<u>Invested Assets</u> (at fair value)	July	August	September	October	November	December	January	February	March	April	May	June
Investments with T. Rowe Price												
Alaska Money Market	\$ 1,691	\$ 1,690	\$ 1,656	\$ 1,681	\$ 1,865	\$ 2,144	\$ 2,483	\$ 2,703	\$ 2,707	\$ 2,758	\$ 2,816	\$ 2,909
Small Cap Stock Fund	21,277	19,928	19,044	20,572	21,539	21,188	20,189	20,815	23,159	23,793	24,612	25,036
Alaska Balanced Trust	2,159	2,764	3,252	3,608	4,012	5,010	5,855	6,261	6,562	6,837	7,085	7,266
Long Term Balanced Fund	11,012	11,042	11,135	11,922	10,633	8,096	5,552	4,339	4,719	5,053	5,297	5,334
AK Target Date 2010 Trust	388	303	300	325	333	325	328	335	356	444	457	475
AK Target Date 2015 Trust	2,316	2,207	2,174	2,316	2,362	2,277	2,259	2,284	2,430	2,438	2,499	2,583
AK Target Date 2020 Trust	5,500	5,252	5,209	5,575	5,684	5,700	5,585	5,544	5,912	6,062	6,193	6,441
AK Target Date 2025 Trust	8,424	7,978	7,890	8,471	8,672	8,723	8,579	8,633	9,269	9,557	9,718	10,143
AK Target Date 2030 Trust	8,968	8,487	8,300	9,049	9,281	9,349	9,089	9,282	10,078	10,461	10,693	11,074
AK Target Date 2035 Trust	13,706	12,986	12,794	13,923	14,209	14,108	13,701	13,963	15,170	15,683	16,079	16,746
AK Target Date 2040 Trust	14,850	13,918	13,643	14,874	15,139	15,116	14,660	14,776	16,108	16,688	17,026	17,786
AK Target Date 2045 Trust	24,442	23,028	22,553	24,510	24,834	24,715	23,741	24,064	26,157	26,852	27,470	28,505
AK Target Date 2050 Trust	33,920	31,700	30,932	33,567	34,138	34,093	32,964	33,409	36,284	37,394	38,271	39,778
AK Target Date 2055 Trust	8,737	8,207	8,063	8,975	9,381	9,561	9,498	9,823	10,897	11,488	11,993	12,906
AK Target Date 2060 Trust	-	-	-	-	-	3	-	3	6	6	8	9
State Street Global Advisors												
Money Market	233	300	241	251	304	256	259	262	198	217	221	230
S&P 500 Stock Index Fund Series A	12,971	11,501	10,569	11,181	12,004	12,986	13,433	14,162	16,082	16,936	18,357	19,172
Russell 3000 Index	15,454	14,924	15,180	16,786	17,510	18,279	18,531	19,337	19,588	18,570	17,569	17,299
US Real Estate Investment Trust Index	3,950	3,661	3,817	3,983	4,206	4,839	5,141	5,387	5,900	5,737	5,846	6,342
World Equity Ex-US Index	11,754	12,277	13,320	15,317	15,438	15,454	15,201	15,259	16,307	16,493	15,981	15,813
Long US Treasury Bond Index	182	191	194	200	187	197	206	218	264	273	270	296
US Treasury Inflation Protected Securities Index	1,678	1,641	1,614	1,615	1,945	2,442	2,935	3,218	3,346	3,471	3,562	3,735
World Government Bond Ex-US Index	3,798	3,573	3,281	3,110	2,737	2,417	2,097	1,900	1,972	2,102	2,141	2,339
Global Balanced Fund	10,909	9,998	9,252	9,472	8,360	6,138	3,992	2,986	3,198	3,316	3,410	3,554
Investments with BlackRock												
Government/Credit Bond Fund	18,405	17,999	17,671	17,372	16,479	15,152	13,979	13,101	13,185	13,550	13,814	14,318
Intermediate Bond Fund	119	170	212	175	731	1,616	2,422	2,888	3,226	3,623	3,989	4,244
Investments with Brandes/Allianz												
AK International Equity Fund	14,223	11,976	10,240	10,540	10,564	10,588	10,318	10,352	10,896	10,819	10,368	10,542
Investments with RCM												
Sustainable Opportunities Fund	1,131	1,036	1,022	1,139	1,158	1,161	1,108	1,106	1,197	1,181	1,215	1,238
Total Invested Assets	\$ 252,196	\$ 238,736	\$ 233,558	\$ 250,509	\$ 253,706	\$ 251,934	\$ 244,105	\$ 246,410	\$ 265,176	\$ 271,800	\$ 276,959	\$ 286,112
<u>Change in Invested Assets</u>												
Beginning Assets	\$ 250,086	\$ 252,196	\$ 238,736	\$ 233,558	\$ 250,509	\$ 253,706	\$ 251,934	\$ 244,105	\$ 246,410	\$ 265,176	\$ 271,800	\$ 276,959
Investment Earnings	1,987	(12,676)	(6,144)	13,643	(144)	(4,739)	(11,031)	(847)	15,411	2,831	1,680	833
Net Contributions (Withdrawals)	123	(785)	966	3,308	3,342	2,967	3,201	3,152	3,355	3,794	3,480	8,320
Ending Invested Assets	\$ 252,196	\$ 238,736	\$ 233,558	\$ 250,509	\$ 253,706	\$ 251,934	\$ 244,105	\$ 246,410	\$ 265,176	\$ 271,800	\$ 276,959	\$ 286,112

Notes for the DRB Supplement to the Treasury Report
June 2016

This report is the DRB supplement to the Financial Report presented by the Treasury Division, and expands their “Net Contributions (Withdrawals)” column into contributions and expenditures. It shows contributions received from both employers and employees, contributions from the State of Alaska, and other non-investment income. It also breaks out 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 Report. Page one shows the year-to-date totals for the first twelve months of Fiscal Year 2016, while page two shows only the month of June 2016.

Highlights – On page one, for the twelve months ending June 30, 2016:

- PERS DB Pension – Average employer and employee contributions of \$27 million per month; benefit payments of approximately \$61.3 million per month; refunds average \$836 thousand with a HIGH of \$1.5 million in January 2016 and a LOW of \$429 thousand in October 2015.
- PERS DB Healthcare – Average employer contributions of \$12.7 million per month; other income from Rx rebates and similar total of \$31.6 million; benefit payments of approximately \$33.5 million per month; and average Administrative and Investment expenditures of \$3 million per month (DOR and DRB).
- PERS DC Pension – Average employer and employee contributions of \$10.1 million per month; participant disbursements average \$2.9 million per month; and average Administrative and Investment expenditures of \$210 thousand per month (DOR and DRB).
- PERS DC Health – For HRA, RMP, and OD&D, only employer contributions on behalf of participating employees; currently eleven (11) benefits are being paid from the Occupational Death & Disability plans; 5 are for Public Employees and 6 are for Police and Firefighters.
- TRS DB Pension - Average employer and employee contributions of \$6.4 million per month; benefit payments of approximately \$36.3 million per month; refunds average \$160 thousand with a HIGH of \$431 thousand in September 2015 and a LOW of \$50 thousand in December 2015; and average Administrative and Investment expenditures of \$958 thousand per month (DOR and DRB).
- TRS DB Healthcare – Average employer contributions of \$2.2 million per month; other income from Rx rebates and similar total of \$9.7 million; benefit payments of approximately \$10.3 million per month; and average Administrative and Investment expenditures of \$1.2 million per month (DOR and DRB).

- TRS DC Pension – Average employer and employee contributions of \$3.8 million per month; participant disbursements average \$755 thousand per month; and average Administrative and investment expenditures of \$82 thousand per month (DOR and DRB).
- TRS DC Health – For HRA, RMP, and OD&D, only employer contributions on behalf of participating employees; currently no benefits paid from any category; and minor Administrative and Investment expenditures for each category (DOR and DRB).
- JRS Pension – Average employer and employee contributions of \$488 thousand per month; benefit payments of approximately \$938 thousand per month; and average Administrative and Investment expenditures of \$28 thousand per month (DOR and DRB).
- JRS Healthcare – Average employer contributions of \$169 thousand per month; other income from Rx rebates and similar total of \$92 thousand; benefit payments of approximately \$182 thousand per month; average Administrative and Investment expenditures of \$13 thousand per month (DOR and DRB).
- NGNMRS – Annual contribution from DMVA in the amount of \$735 thousand was received in November 2015; combination of lump-sum and monthly benefit payments of \$145 thousand per month with a HIGH of \$230 thousand in March 2016 and a LOW of \$34 thousand in February 2016; and average Administrative and Investment expenditures of \$27 thousand per month (DOR and DRB).
- SBS – Average employer and employee contributions and transfers in of \$13.5 million per month. Participant disbursements average of \$15.4 million per month with a HIGH of \$19.4 million in July 2015 and a LOW of \$13.2 million in May 2016; average Administrative and Investment expenditures of \$398 thousand per month (DOR and DRB).
- Deferred Compensation – Average member-only contributions and transfers in of \$3.5 million per month; participant disbursements average of \$4.1 million per month; average Administrative and Investment expenditures of \$116 thousand per month (DOR and DRB).

Highlights – On page two, activity for the one month ending June 30, 2016 only:

- PERS DB Pension – nothing significant to report
- PERS DB Healthcare – During the month of June, \$4.0 million was received for prescription rebate from Aetna for calendar year 2015, and \$4.5 million was received for drug subsidy from CMS for calendar year 2016.
- PERS DC Pension – nothing significant to report
- PERS DC Health – nothing significant to report
- TRS DB Pension – nothing significant to report
- TRS DB Healthcare – During the month of June, \$1.1 million was received for prescription rebate from Aetna for calendar year 2015, and \$1.5 million was received for drug subsidy from CMS for calendar year 2016.
- TRS DC Pension – nothing significant to report
- TRS DC Health – nothing significant to report
- JRS Pension – nothing significant to report
- JRS Healthcare – During the month of June, \$8 thousand was received for prescription rebate from Aetna for calendar year 2015, and \$16 thousand was received for drug subsidy from CMS for calendar year 2016.
- NGNMRS – nothing significant to report
- SBS – nothing significant to report
- Deferred Compensation – 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, 2016

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 Month Ending June 30, 2016

	Contributions				Expenditures				Net
	Contributions EE and ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	Contributions/ (Withdrawals)
Public Employees' Retirement System (PERS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	\$ 323,442,291	\$ 88,586,485	\$ 15,627	\$ 412,044,403	\$ (735,076,324)	\$ (10,034,758)	\$ (11,607,192)	\$ (756,718,274)	\$ (344,673,871)
Retirement Health Care Trust	152,900,007	37,934,279	31,590,505	222,424,791	(401,491,915)	-	(36,074,414)	(437,566,329)	(215,141,538)
Total Defined Benefit Plans	476,342,298	126,520,764	31,606,132	634,469,194	(1,136,568,239)	(10,034,758)	(47,681,606)	(1,194,284,603)	(559,815,409)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	121,455,016	-	-	121,455,016	-	(35,121,736)	(2,524,278)	(37,646,014)	83,809,002
Health Reimbursement Arrangement ^(a)	32,659,359	-	-	32,659,359	-	-	(88,550)	(88,550)	32,570,809
Retiree Medical Plan ^(a)	15,733,677	-	-	15,733,677	-	-	(39,214)	(39,214)	15,694,463
Occupational Death and Disability: ^(a)									
Public Employees	1,815,732	-	-	1,815,732	(120,535)	-	(16,621)	(137,156)	1,678,576
Police and Firefighters	1,219,905	-	-	1,219,905	(215,314)	-	(17,350)	(232,664)	987,241
Total Defined Contribution Plans	172,883,689	-	-	172,883,689	(335,849)	(35,121,736)	(2,686,013)	(38,143,598)	134,740,091
Total PERS	649,225,987	126,520,764	31,606,132	807,352,883	(1,136,904,088)	(45,156,494)	(50,367,619)	(1,232,428,201)	(425,075,318)
Teachers' Retirement System (TRS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	76,326,629	90,589,614	7,483	166,923,726	(435,687,478)	(1,922,429)	(11,494,294)	(449,104,201)	(282,180,475)
Retirement Health Care Trust	26,750,160	39,518,713	9,741,690	76,010,563	(123,249,446)	-	(13,855,692)	(137,105,138)	(61,094,575)
Total Defined Benefit Plans	103,076,789	130,108,327	9,749,173	242,934,289	(558,936,924)	(1,922,429)	(25,349,986)	(586,209,339)	(343,275,050)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	45,265,831	-	131	45,265,962	-	(9,062,659)	(981,391)	(10,044,050)	35,221,912
Health Reimbursement Arrangement ^(a)	8,958,815	-	-	8,958,815	-	-	(23,753)	(23,753)	8,935,062
Retiree Medical Plan ^(a)	6,117,027	-	-	6,117,027	-	-	(44,497)	(44,497)	6,072,530
Occupational Death and Disability ^(a)	-	-	-	-	-	-	(18,231)	(18,231)	(18,231)
Total Defined Contribution Plans	60,341,673	-	131	60,341,804	-	(9,062,659)	(1,067,872)	(10,130,531)	50,211,273
Total TRS	163,418,462	130,108,327	9,749,304	303,276,093	(558,936,924)	(10,985,088)	(26,417,858)	(596,339,870)	(293,063,777)
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Trust	5,860,855	5,890,788	-	11,751,643	(11,255,769)	-	(339,178)	(11,594,947)	156,696
Defined Benefit Retirement Health Care Trust	2,027,187	-	92,403	2,119,590	(2,185,598)	-	(160,707)	(2,346,305)	(226,715)
Total JRS	7,888,042	5,890,788	92,403	13,871,233	(13,441,367)	-	(499,885)	(13,941,252)	(70,019)
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Trust ^(a)	734,500	-	-	734,500	(1,739,702)	-	(321,841)	(2,061,543)	(1,327,043)
Other Participant Directed Plans									
Supplemental Annuity Plan	161,676,018	-	200,499	161,876,517	(2,091,933)	(184,571,209)	(4,776,634)	(191,439,776)	(29,563,259)
Deferred Compensation Plan	42,348,071	-	77,158	42,425,229	-	(49,072,277)	(1,388,858)	(50,461,135)	(8,035,906)
Total All Funds	1,025,291,080	262,519,879	41,725,496	1,329,536,455	(1,713,114,014)	(289,785,068)	(83,772,695)	(2,086,671,777)	(757,135,322)
Total Non-Participant Directed	654,546,144	262,519,879	41,447,708	958,513,731	(1,711,022,081)	(11,957,187)	(74,101,534)	(1,797,080,802)	(838,567,071)
Total Participant Directed	370,744,936	-	277,788	371,022,724	(2,091,933)	(277,827,881)	(9,671,161)	(289,590,975)	81,431,749
Total All Funds	\$ 1,025,291,080	\$ 262,519,879	\$ 41,725,496	\$ 1,329,536,455	\$ (1,713,114,014)	\$ (289,785,068)	\$ (83,772,695)	\$ (2,086,671,777)	\$ (757,135,322)

(a) Employer only contributions.

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Month Ended June 30, 2016

	Contributions				Expenditures				Net
	Contributions EE and ER	State of Alaska	Other	Total Contributions	Benefits	Refunds & Disbursements	Administrative & Investment	Total Expenditures	Contributions/ (Withdrawals)
Public Employees' Retirement System (PERS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	\$ 28,200,701	\$ -	\$ 1,590	\$ 28,202,291	\$ (62,844,186)	\$ (869,516)	\$ (2,342,371)	\$ (66,056,073)	\$ (37,853,782)
Retirement Health Care Trust	12,971,482	-	8,607,964	21,579,446	(37,208,254)	-	(2,957,233)	(40,165,487)	(18,586,041)
Total Defined Benefit Plans	41,172,183	-	8,609,554	49,781,737	(100,052,440)	(869,516)	(5,299,604)	(106,221,560)	(56,439,823)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	10,836,950	-	-	10,836,950	-	(3,145,326)	(365,571)	(3,510,897)	7,326,053
Health Reimbursement Arrangement ^(a)	3,019,985	-	-	3,019,985	-	-	(22,638)	(22,638)	2,997,347
Retiree Medical Plan ^(a)	1,418,196	-	-	1,418,196	-	-	(5,183)	(5,183)	1,413,013
Occupational Death and Disability: ^(a)									
Public Employees	167,156	-	-	167,156	(9,372)	-	(1,437)	(10,809)	156,347
Police and Firefighters	106,805	-	-	106,805	(17,943)	-	(555)	(18,498)	88,307
Total Defined Contribution Plans	15,549,092	-	-	15,549,092	(27,315)	(3,145,326)	(395,384)	(3,568,025)	11,981,067
Total PERS	56,721,275	-	8,609,554	65,330,829	(100,079,755)	(4,014,842)	(5,694,988)	(109,789,585)	(44,458,756)
Teachers' Retirement System (TRS)									
<u>Defined Benefit Plans:</u>									
Retirement Trust	15,087,613	-	1,584	15,089,197	(36,010,454)	(68,355)	(1,244,298)	(37,323,107)	(22,233,910)
Retirement Health Care Trust	5,371,886	-	2,558,374	7,930,260	(11,717,435)	-	(1,242,841)	(12,960,276)	(5,030,016)
Total Defined Benefit Plans	20,459,499	-	2,559,958	23,019,457	(47,727,889)	(68,355)	(2,487,139)	(50,283,383)	(27,263,926)
<u>Defined Contribution Plans:</u>									
Participant Directed Retirement	9,059,243	-	-	9,059,243	-	(581,095)	(158,390)	(739,485)	8,319,758
Health Reimbursement Arrangement ^(a)	1,568,147	-	-	1,568,147	-	-	(2,959)	(2,959)	1,565,188
Retiree Medical Plan ^(a)	1,239,937	-	-	1,239,937	-	-	(18,388)	(18,388)	1,221,549
Occupational Death and Disability ^(a)	-	-	-	-	-	-	(149)	(149)	(149)
Total Defined Contribution Plans	11,867,327	-	-	11,867,327	-	(581,095)	(179,886)	(760,981)	11,106,346
Total TRS	32,326,826	-	2,559,958	34,886,784	(47,727,889)	(649,450)	(2,667,025)	(51,044,364)	(16,157,580)
Judicial Retirement System (JRS)									
Defined Benefit Plan Retirement Trust	482,320	-	-	482,320	(942,023)	-	(29,959)	(971,982)	(489,662)
Defined Benefit Retirement Health Care Trust	168,869	-	23,960	192,829	(193,886)	-	(10,708)	(204,594)	(11,765)
Total JRS	651,189	-	23,960	675,149	(1,135,909)	-	(40,667)	(1,176,576)	(501,427)
National Guard/Naval Militia Retirement System (NGNMRS)									
Defined Benefit Plan Retirement Trust ^(a)	-	-	-	-	(106,863)	-	(23,508)	(130,371)	(130,371)
Other Participant Directed Plans									
Supplemental Annuity Plan	14,164,750	-	-	14,164,750	-	(14,812,681)	(449,215)	(15,261,896)	(1,097,146)
Deferred Compensation Plan	2,043,370	-	-	2,043,370	-	(5,675,086)	(146,367)	(5,821,453)	(3,778,083)
Total All Funds	105,907,410	-	11,193,472	117,100,882	(149,050,416)	(25,152,059)	-	(183,224,245)	(66,123,363)
Total Non-Participant Directed	69,803,097	-	11,193,472	80,996,569	(149,050,416)	(937,871)	(7,902,227)	(157,890,514)	(76,893,945)
Total Participant Directed	36,104,313	-	-	36,104,313	-	(24,214,188)	(1,119,543)	(25,333,731)	10,770,582
Total All Funds	\$ 105,907,410	\$ -	\$ 11,193,472	\$ 117,100,882	\$ (149,050,416)	\$ (25,152,059)	\$ (9,021,770)	\$ (183,224,245)	\$ (66,123,363)

(a) Employer only contributions.

ALASKA RETIREMENT MANAGEMENT BOARD
SCHEDULE OF NON-INVESTMENT CHANGES BY FUND
(Supplement to the Treasury Division Report)
For the Twelve Month Ending June 30, 2016

PARTICIPANT DIRECTED DISBURSEMENTS BY PLAN AND BY TYPE

	<u>PERS DCR Plan</u>	<u>TRS DCR Plan</u>	<u>Supplemental Annuity Plan</u>	<u>Deferred Compensation</u>	<u>TOTAL</u>	<u>% of Total</u>
Payment to Beneficiary	-	-	87,837	203,251	291,088	0.1%
Death Benefit	698,743	75,989	8,578,001	1,998,004	11,350,737	4.1%
Disability / Hardship	7,261	-	369,790	149,964	527,015	0.2%
Minimum Required Distribution	36,567	621	4,248,862	1,645,360	5,931,411	2.1%
Qualified Domestic Relations Order	676,538	112,518	6,166,878	498,815	7,454,749	2.7%
Separation from Service / Retirement	33,702,627	8,873,530	163,400,295	44,132,266	250,108,718	90.0%
Purchase of Service Credit	-	-	1,719,546	444,619	2,164,164	0.8%
Transfer to a Qualifying Plan	-	-	-	-	-	0.0%
TOTAL	<u>35,121,736</u>	<u>9,062,659</u>	<u>184,571,209</u>	<u>49,072,277</u>	<u>277,827,881</u>	<u>100.0%</u>

Frontier Capital Management

Mandate: Small Cap Value

Hired: 2011

Firm Information	Investment Approach	Total ARMB Mandate*
Frontier Capital Management Company (“Frontier”) was incorporated on November 26, 1980, as a Subchapter S Corporation and filed with the SEC on January 14, 1981. The firm began managing accounts on January 31, 1981. Frontier is an independently managed firm. Frontier is a research driven investment management boutique specializing in U.S. equity strategies. As of 6/30/16, the firm’s total assets under management were \$12.7 billion. Key Executives: Thomas W. Duncan, Jr., <i>Senior Vice President, Co-Portfolio Manager</i> William A. Teichner, <i>Senior Vice President, Co-Portfolio Manager</i> Leigh Anne Yoo, <i>Vice President, Marketing and Client Service</i>	Frontier’s small cap value strategy seeks to capitalize on their expertise in small cap U.S. equities, applying internally generated fundamental research and bottom-up stock selection in creating a defined small cap value portfolio. Frontier believes that a disciplined and consistent approach to fundamental, bottom-up research leads to superior long-term investment performance. Consistent since its inception in 1999, the Frontier small cap value strategy has sought long-term capital appreciation by employing a relative-value approach to identify the best risk/reward investment ideas in the U.S. small cap equity universe. They purchase companies with prospects for improving business that have multiple levers to drive the stock price and that are selling at reasonable valuations. Frontier’s philosophy combines rigorous bottom-up fundamental analysis with a proven investment process. Benchmark: Russell 2000 Value Index	Assets Under Management: 6/30/16 \$90,154,590

Concerns: None

6/30/16 Performance*				
	<u>Last Quarter</u>	<u>1-Year</u>	<u>3-Years Annualized</u>	<u>5-Years Annualized</u>
Manager (gross)	2.14%	3.10%	9.90%	N/A
Fee	0.22%	0.87%	0.92%	
Manager (net)	1.92%	2.23%	8.98%	
Benchmark	4.31%	-2.58%	6.36%	

*Source: Callan Associates Inc.

Small Cap Value Portfolios

Thomas W. "TJ" Duncan, Jr.
William A. Teichner, CFA
Co-Portfolio Managers

September 29, 2016

For more information, contact:

Leigh Anne Yoo
Vice President, Marketing and Client Service
99 Summer Street, Boston, MA 02110
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C +646.242.4991
lyoo@frontiercap.com



ORGANIZATION OVERVIEW

As of August 31, 2016

Expertise in U.S. Small & Mid Cap Equity Investing

- 30-year history in managing U.S. Small Cap portfolios for institutional investors
- \$13.3 billion in assets under management across 7 strategies and 104 clients
- Nearly all Frontier strategies have delivered 1st quartile performance returns since inception in their respective peer universes* (source: eVestment Alliance)

Deep and Experienced Investment Team

- 18 investment professionals and 2 institutional traders, constituting half of our firm's 39 employees
- 11 research analysts focused on rigorous, fundamental due diligence
- One investment process with a long-term orientation

Organization Stability

- Minimal personnel turnover: only one investment team departure during the last 5 years (Research Analyst)
- Continued investment in research with the addition of three analyst positions over the last 5 years
- 16+ years of continuity under current ownership structure with broad employee ownership

*Universe rankings were for periods ending 6/30/2016 using eVestment Alliance universes. The eVestment Alliance small cap growth universe (197 products; 86% updated) was used to rank the Frontier Small Growth strategy. The eVestment Alliance small-mid cap growth universe (91 products; 82% updated) was used to rank the Frontier Capital Appreciation strategy and Smid Research strategy. The eVestment Alliance mid cap growth universe (140 products; 87% updated) was used to rank the Frontier Mid Growth strategy. The eVestment Alliance small cap value universe (267 products; 87% updated) was used to rank the Frontier Small Value strategy. The rankings described above may not be representative of any one client's experience and the rating is not indicative of Frontier's future performance.

FRONTIER INVESTMENT STRATEGIES SUMMARY

Strategy	Managers	Capitalization Emphasis	Inception	Vehicle Minimums	Assets (8/31/16)	# of Holdings	Status

Portfolio Manager Strategies - portfolio managers with authority to buy/sell

Small Cap Growth	Jim Colgan / Mike Novak	Small	1985	LP > \$1M Sep. account > \$50M	\$1.8B	90-110	Open
Capital Appreciation	Mike Cavarretta / Drew Bennett	Small/Mid	1987	LP > \$1M Sep. account > \$50M	\$2.7B	120-140	Closed (sep. accounts)
Mid Cap Growth	Steve Knightly / Chris Scarpa	Mid	1992	LP > \$1M Sep. account > \$50M	\$5.8B	~85	Closed (sep. accounts)
Small Cap Value	T.J. Duncan / Bill Teichner	Small	1999	LP > \$5M Sep. account > \$5M	\$2.7B	70-100	Closed (sep. accounts)
Concentrated Mid Cap Growth	Steve Knightly / Chris Scarpa	Mid	2009	Sep. account > \$25M	\$25M	~20	Open

Research Strategies - concentrated portfolios managed by analyst team

Smid	Research Team	Small/Mid	2000	LP > \$1M Sep. account > \$5M	\$329M	up to 40	Open
All Cap	Research Team	All Cap	2006	LP > \$1M Sep. account > \$5M	\$34M	30-35	Open

FRONTIER PORTFOLIOS

The following Frontier products are first quartile since inception:

FRONTIER STRATEGY	CAPITALIZATION EMPHASIS	LENGTH OF RECORD	UNIVERSE QUARTILE RANKING* SINCE INCEPTION
Small Growth	Small	31½ Years	FIRST QUARTILE
Capital Appreciation	Smid	29½ Years	FIRST QUARTILE
Mid Growth	Mid	24½ Years	FIRST QUARTILE
Small Value	Small	17½ Years	FIRST QUARTILE
Smid Research	Smid	16¼ Years	FIRST QUARTILE

**Universe rankings were for periods ending 6/30/2016 using eVestment Alliance universes. The eVestment Alliance small cap growth universe (197 products; 86% updated) was used to rank the Frontier Small Growth strategy. The eVestment Alliance small-mid cap growth universe (91 products; 82% updated) was used to rank the Frontier Capital Appreciation strategy and Smid Research strategy. The eVestment Alliance mid cap growth universe (140 products; 87% updated) was used to rank the Frontier Mid Growth strategy. The eVestment Alliance small cap value universe (267 products; 87% updated) was used to rank the Frontier Small Value strategy. The rankings described above may not be representative of any one client's experience and the rating is not indicative of Frontier's future performance.*

REPRESENTATIVE CLIENT LIST

Corporate

AECOM DC Retirement Plans SMA Master Trust
ALAS Investment Services Ltd.
Archdiocese of Boston
Archdiocese of Los Angeles
Caritas Christi Health Care
Children's Hospital Medical Center of Akron
The Church Pension Fund
Delta Air Lines
Erie Insurance
Hartford HealthCare
The Hospital Authority Provident Fund
Mary Kay Inc.
National Grid
NV Energy
Oakwood Healthcare
OSP Liquid Fund
Pension Plan for Insurance Organizations
PNC Financial Services Group Pension Plan
RPM Inc.
R.R. Donnelley & Sons Company
St. Luke's Regional Medical Center
Tufts Associated Health Maintenance Organization
University of Pittsburgh Medical Center

Sub Advisory

M Financial Group
MetLife
MassMutual Financial Group
Prudential Retirement
The Vanguard Group

Public

Alaska Retirement Management Board
California Department of Personnel Administration
County Employees' and Officers' Annuity and Benefit Fund of Cook County
Illinois Municipal Retirement Fund
L.A. County Employee Retirement Association
L.A. Fire & Police
MA Pension Reserves Investment Management
Ohio Bureau of Workers' Compensation
Teachers' Retirement System of Oklahoma

Multi-Employer

Airconditioning and Refrigeration Industry
Construction Workers Pension Trust
Iron Workers Local 25
Iron Workers of New England
Local 863 Pension Fund
New England Carpenters
New York State Teamsters
Sheet Metal Workers Local 9 Pension
Steelworkers Pension Trust
Texas Iron Workers Pension Plan

Endowments and Foundations

Academy of American Poets	Mount Union College
Akron Community Foundation	Museum of Fine Arts, Boston
American Hospital Association	National Gallery of Art
Baptist Hospitals and Health Systems	Norwich University
Boston College	ProMedica Health System
Bowdoin College	Purdue University
Boys and Girls Club	QueensCare
Bryn Mawr College	Richard Nixon Library
CareGroup	Robert B. Daugherty Foundation
Case Alumni Foundation	Saint Ignatius High School
Catholic Charities of Archdiocese of Chicago	San Diego Museum of Art
Catholic Schools Foundation	Santa Barbara Museum of Art
Catholic Society of Religious & Literary Education	Segerstrom Center for the Arts
Columbus Medical Association Foundation	South County Healthcare System
Crotched Mountain Foundation	Southcoast Health System
Dr. Scholl Foundation	Stan Hywet Hall & Gardens Foundation
Foundation Trust	Susquehanna Health System
The Fred A. Lennon Charitable Trust	Trinity Episcopal School
Hampton University	University of Nebraska Foundation
International Tennis Hall of Fame	University of San Francisco
K21 Health Foundation	University of the Pacific
Laurel School	William Penn Foundation
Library of Congress	
Los Angeles Orthopedic Foundation	
Massachusetts Eye & Ear Infirmary Foundation	

INVESTMENT TEAM

* Employee owners

MICHAEL A. CAVARRETTA, CFA*

CHAIRMAN

**Portfolio Manager – Capital Appreciation
Team Leader – Research Portfolios**

BA – University of Maine
MBA – Harvard University
• 28 years with Frontier
• 33 years experience

JAMES A. COLGAN*

Portfolio Manager – Small Cap Growth

BS – University of Connecticut
MS – University of Massachusetts
MS, MBA – MIT
• 18 years with Frontier
• 25 years experience

PETER G. KUECHLE*

**Team Leader – Research Portfolios
Analyst – Technology Services / Software**

BA – Dartmouth College
MBA – Harvard University
• 14 years with Frontier
• 21 years experience

NATHAN A. HAYMAN*

Analyst – Aerospace / Transport. / Housing

LLB – Hebrew University Law School
MBA – Dartmouth College
• 8 years with Frontier
• 9 years experience

DANIEL SCHÄFER

Analyst – Energy / Materials / Industrials

BA – University of Cooperative Education
MBA – Dartmouth College
• 2 years with Frontier
• 5 years experience

STEPHEN M. KNIGHTLY, CFA*

PRESIDENT

Portfolio Manager – Mid Cap Growth

BS – Lehigh University
MBA – University of Pennsylvania
• 24 years with Frontier
• 27 years experience

G. MICHAEL NOVAK, JR.*

Portfolio Manager – Small Cap Growth

BS – US Military Academy
MBA – Harvard University
• 18 years with Frontier
• 19 years experience

JONATHAN M. LEVIN, MD*

Analyst – Health Care

BA – Yale University
MD – Emory University School of Medicine
MPH – Harvard School of Public Health
MBA – MIT
• 12 years with Frontier
• 14 years experience

KRISTIN S. KING, CFA*

Analyst – Consumer

BS – University of Notre Dame
MBA – University of Pennsylvania
• 7 years with Frontier
• 12 years experience

URI L. NURKO, CFA

Analyst – REITs / Financial Services

BS – University of Maryland
MBA – University of Pennsylvania
• <1 year with Frontier
• 5 years experience

WILLIAM A. TEICHNER, CFA*

Portfolio Manager – Small Cap Value

BA – Columbia University
MBA – Harvard University
• 24 years with Frontier
• 27 years experience

CHRISTOPHER J. SCARPA*

Portfolio Manager – Mid Cap Growth

BA – Tufts University
MBA – Harvard University
• 15 years with Frontier
• 18 years experience

RUSHAN (GREG) JIANG, CFA*

Analyst – Industrials

BS – The University of Texas at Austin
MS – Stanford University
MBA – MIT
• 11 years with Frontier
• 14 years experience

MICHAEL E. GARGANO*

**Analyst – Health Care Services / Technology
Hardware**

BS – Boston College
• 6 years with Frontier
• 19 years experience

LISA A. TURLEY*

Senior Trader

BA – University of Massachusetts
• 25 years with Frontier
• 26 years experience

THOMAS W. DUNCAN, JR.*

Portfolio Manager – Small Cap Value

BA – Skidmore College
MBA – Cornell University
• 23 years with Frontier
• 26 years experience

ANDREW B. BENNETT, CFA*

**Portfolio Manager – Capital Appreciation
Analyst – Special Situations**

BA – Wheaton College
• 15 years with Frontier
• 21 years experience

RAVI DABAS*

Analyst – Computer Services / Technology

BE – University of New Delhi
MS – University of Houston
MBA – University of Pennsylvania
• 9 years with Frontier
• 18 years experience

EMMANUEL (MANNY) FRANJUL*

Analyst – Financial Services / Business Services

BS – Cornell University
MBA – Cornell University
• 5 years with Frontier
• 6 years experience

CAROLYN C. SHEA

Senior Trader

BA – St. Lawrence University
• 16 years with Frontier
• 26 years experience

FRONTIER SMALL CAP VALUE – PORTFOLIO DESCRIPTION

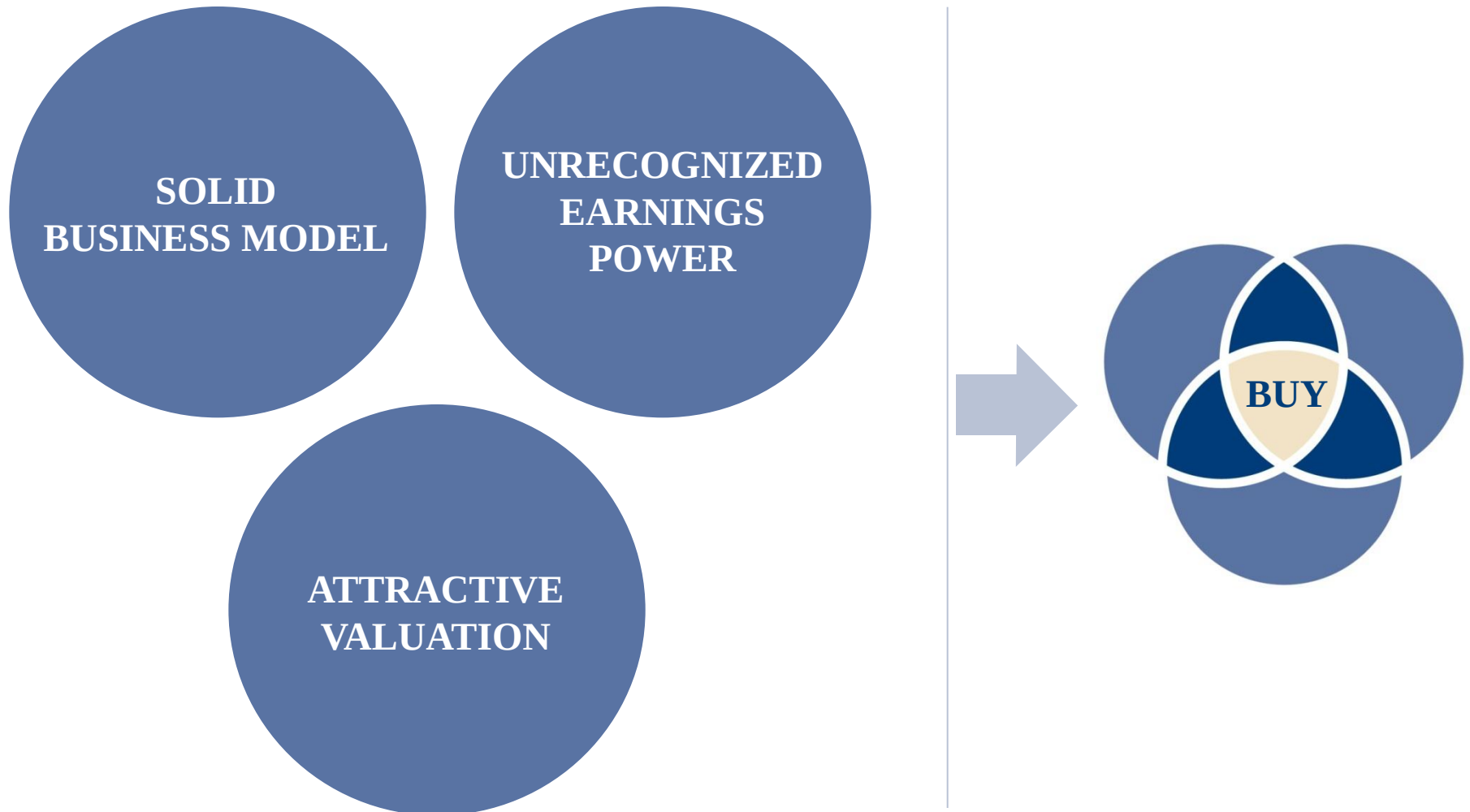
Portfolio Managers Since Inception	William A. Teichner, CFA and Thomas W. “TJ” Duncan
Inception	January 1, 1999
Style	Relative Small Cap Value
Capitalization Range	Within the range of the Russell 2000® Index <i>(at time of initial purchase for the strategy)</i>
Performance History	Top quartile performance for 1-, 3-, 5-, 7-, 10-year and since inception periods* Performed well in fundamentally driven markets History of beating benchmark in down markets Likely challenged in speculative markets
Basic Product Design	Approximately 70 – 100 stocks Majority of value added from stock selection <i>(trailing 5 years as of 8/31/2016)</i>

Past performance is no guarantee of future results.

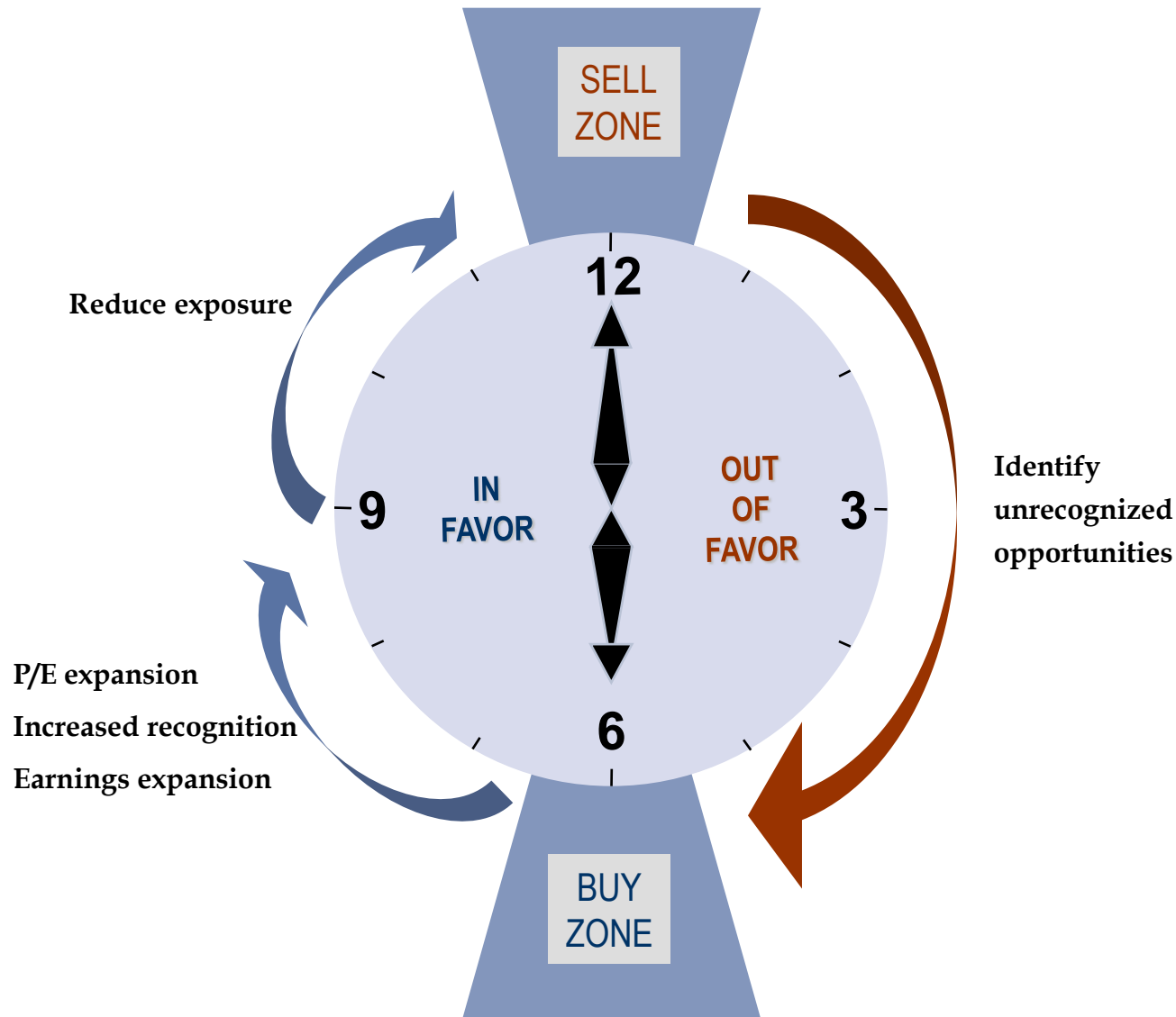
**Universe rankings were for periods ending 6/30/2016. The eVestment Alliance small cap value universe (267 products; 87% updated) was used to rank the Frontier Small Value strategy. The rankings described above may not be representative of any one client's experience and the rating is not indicative of Frontier's future performance.*

INVESTMENT PHILOSOPHY – WHAT WE BUY

We believe there are three key drivers of long-term consistent performance

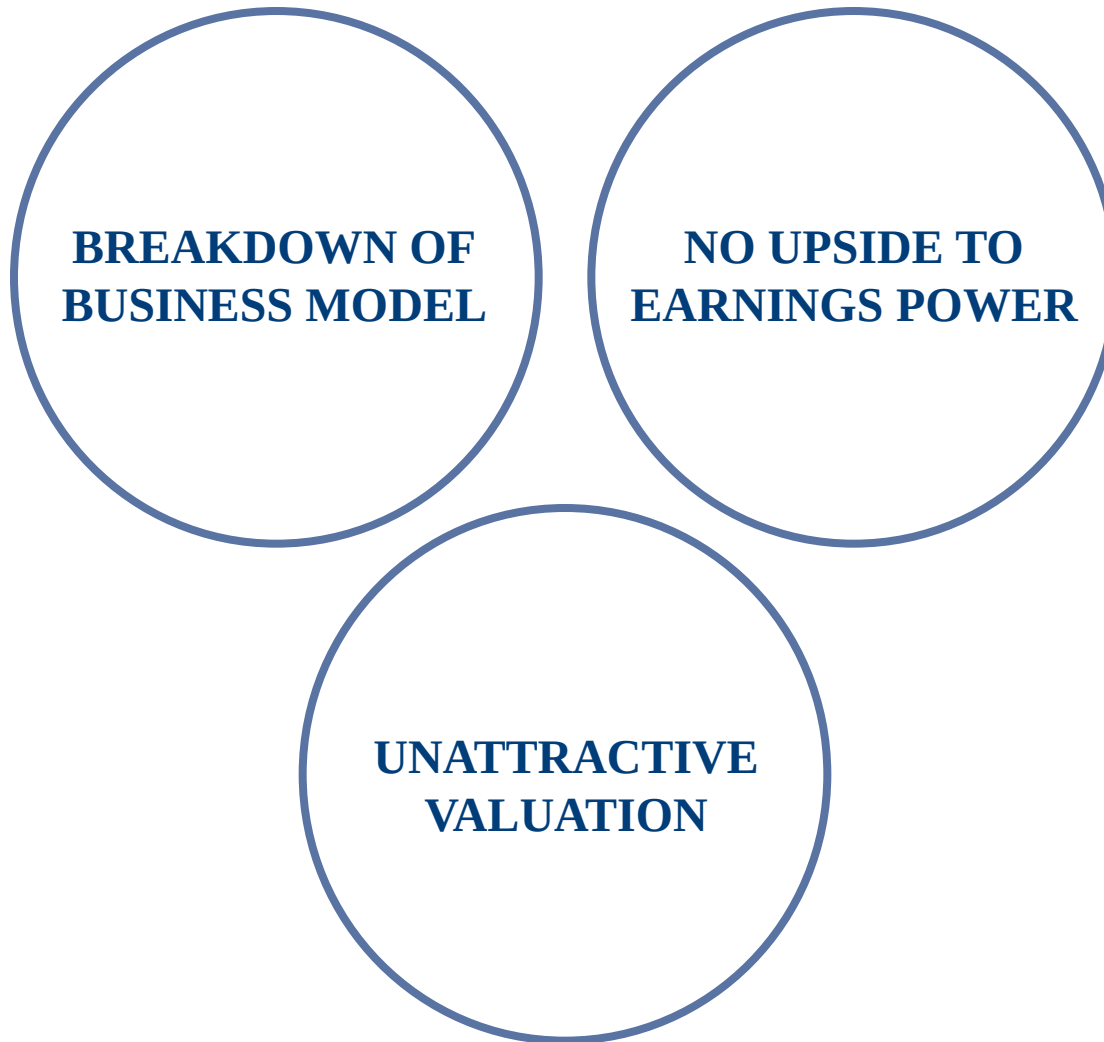


WHEN WE BUY



SELL DISCIPLINE

Capital preservation is critical to superior long-term performance



RISK CONTROL

Risk management is embedded in our culture and investment approach

RISK MANAGEMENT

Stages and Descriptions

FIRM

Culture of Risk Management

- Management committee oversight
- Senior chief compliance officer
- Firm-wide compliance training
- Automated testing systems
- State-of-the-industry policies
- Periodic capacity assessment

PORTFOLIO

Structural Risk Controls*

- No more than 20% in single industry
- No stock weight greater than 5% at time of purchase
- Performance analytics
- Monthly attribution review

STOCK

Stylistic Risk Controls

- Valuation discipline
- Price target assessment: risk/reward
- Balance sheet & accounting reviews
- Multiple ways to win
- Client guidelines assessment

**This is a brief summary of certain investment guidelines by which the strategy is managed. Actual guidelines for any client account may differ and are set forth in the management agreement.*

PHILOSOPHY

PROCESS

SELL DISCIPLINE

RISK MANAGEMENT

PORTFOLIO PERFORMANCE

GROSS RETURNS (%)	YTD 2016 <i>(Ending 8/31/16)</i>	YEAR 2015	YEAR 2014	YEAR 2013	YEAR 2012	INCEPTION* <i>(Ann. ending 8/31/16)</i>
Alaska Retirement Management Board	16.1%	-0.5%	5.5%	40.2%	25.8%	17.8%
Russell 2000® Value	14.6%	-7.5%	4.2%	34.5%	18.1%	12.8%
<i>Excess Return</i>	<i>+1.5%</i>	<i>+7.0%</i>	<i>+1.3%</i>	<i>+5.7%</i>	<i>+7.7%</i>	<i>+5.0%</i>

*Performance Inception: 1/1/12

PORTFOLIO SUMMARY	AMOUNT
Initial Value Invested on 11/07/11	\$100,000,000
Net Additions / (Withdrawals)	(\$100,000,000)
Income Received	\$6,803,821
Market Appreciation	\$91,634,072
Market Value as of 8/31/16	\$98,437,893

SMALL CAP VALUE PERFORMANCE

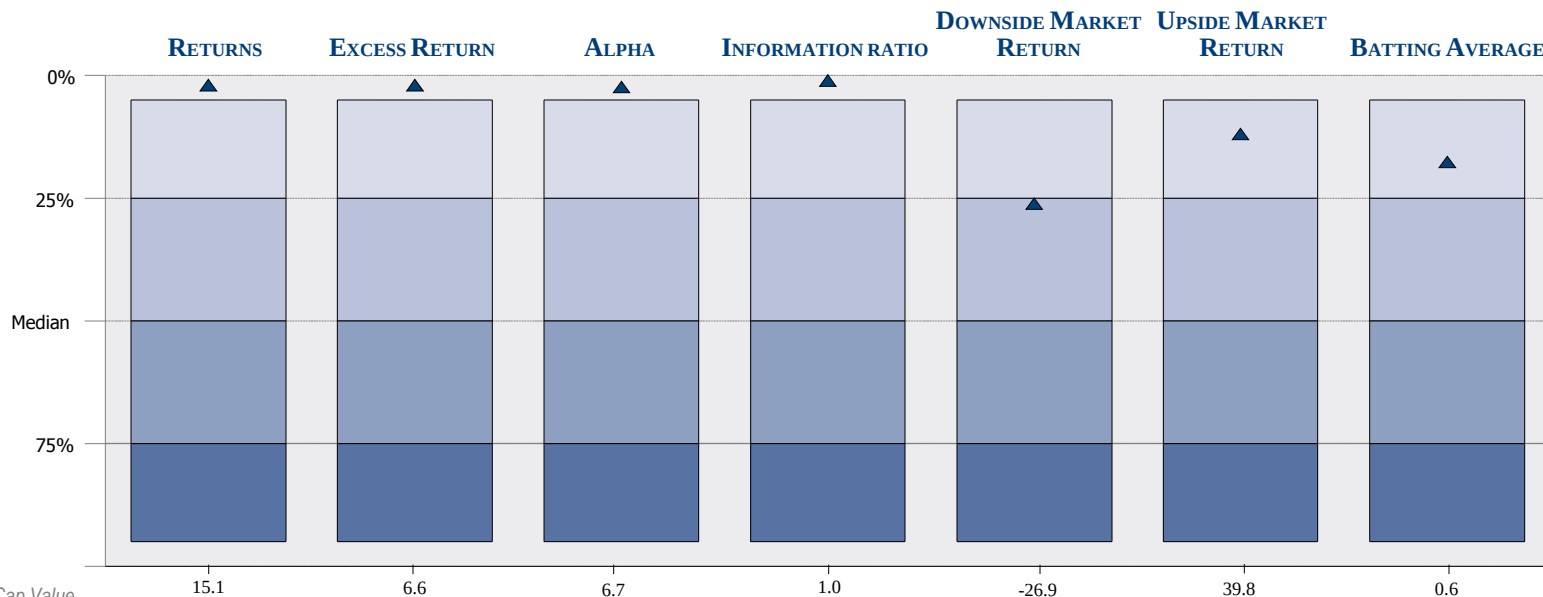
For Annualized Periods Ending June 30, 2016

RETURNS (%)	YTD (Ending 8/31/16)	1 Year	3 Year	5 Year	10 Year	17½ Years*
Frontier Small Cap Value (gross of fees)	16.0%	2.9%	9.9%	13.3%	11.2%	15.1%
Russell 2000® Value	14.6%	-2.6%	6.4%	8.2%	5.2%	8.5%
Excess Return	+1.4%	+5.5%	+3.5%	+5.1%	+6.0%	+6.6%

Information herein refers to the composite and is provided for illustrative purposes only. Performance figures do not reflect the deduction of investment advisory fees. A client's returns will be reduced by any advisory fees, which are described in Part 2A of Frontier's Form ADV, as well as any other expenses incurred in the management of their account. For example, if a portfolio experienced a 10% annual return compounded quarterly for ten years, its ending annualized compounded return, without giving effect to the deduction of advisory fees, would be 10.38%. If an advisory fee of 1.0% of average net assets per year were deducted quarterly for the ten-year period, the ending annualized compounded return would be 9.31%. Past performance is no guarantee of future results.

PEER GROUP RANKINGS - SINCE INCEPTION

*Inception: 1/1/99



▲ Frontier Small Cap Value

Source: eVestment Alliance

Benchmark: Russell 2000® Value

Universe: Small Cap Value (267 products in universe: 87% updated)

Period: Ending June 30, 2016. Please contact Frontier for data for time periods other than that shown in this chart.

PERFORMANCE REVIEW – TRAILING 1 YEAR

<u>ATTRIBUTION ANALYSIS</u>			
Russell Global Sector	Sector Selection	Stock Selection	Total Effect
Technology	0.6	0.6	1.2
Consumer Discretionary	0.0	1.4	1.3
Producer Durables	-0.2	0.7	0.5
Materials & Processing	0.7	-0.7	0.0
Financial Services	-0.3	1.9	1.6
Utilities	0.2	0.7	0.9
Energy	0.4	0.2	0.6
Health Care	0.3	-0.4	-0.2
Consumer Staples	-0.2	0.0	-0.2
Total	1.4	4.3	5.7

Top Five Contributors	Sector	Contrib. to Return
Central Garden & Pet Co.	Consumer Discretionary	+1.3%
Kraton Performance Polymers Inc.	Materials & Processing	+1.0%
WSFS Financial Corporation	Financial Services	+1.0%
National Retail Properties Inc.	Financial Services	+0.9%
Popular Inc.	Financial Services	+0.9%

Bottom Five Detractors	Sector	Contrib. to Return
Celadon Group Inc.	Producer Durables	-0.8%
Crocs Inc.	Consumer Discretionary	-0.8%
Myriad Genetics Inc.	Health Care	-0.7%
CIBER Inc.	Technology	-0.7%
Harsco Corporation	Producer Durables	-0.6%

Source: FactSet Fundamentals

Benchmark: Russell 2000® Value

Period: One Year Ending August 31, 2016

The performance quoted represents past performance. Past performance does not guarantee future results. Performance attribution is based on client's equity-only portfolio. Data is represented on a cumulative basis.

FRONTIER SMALL CAP VALUE

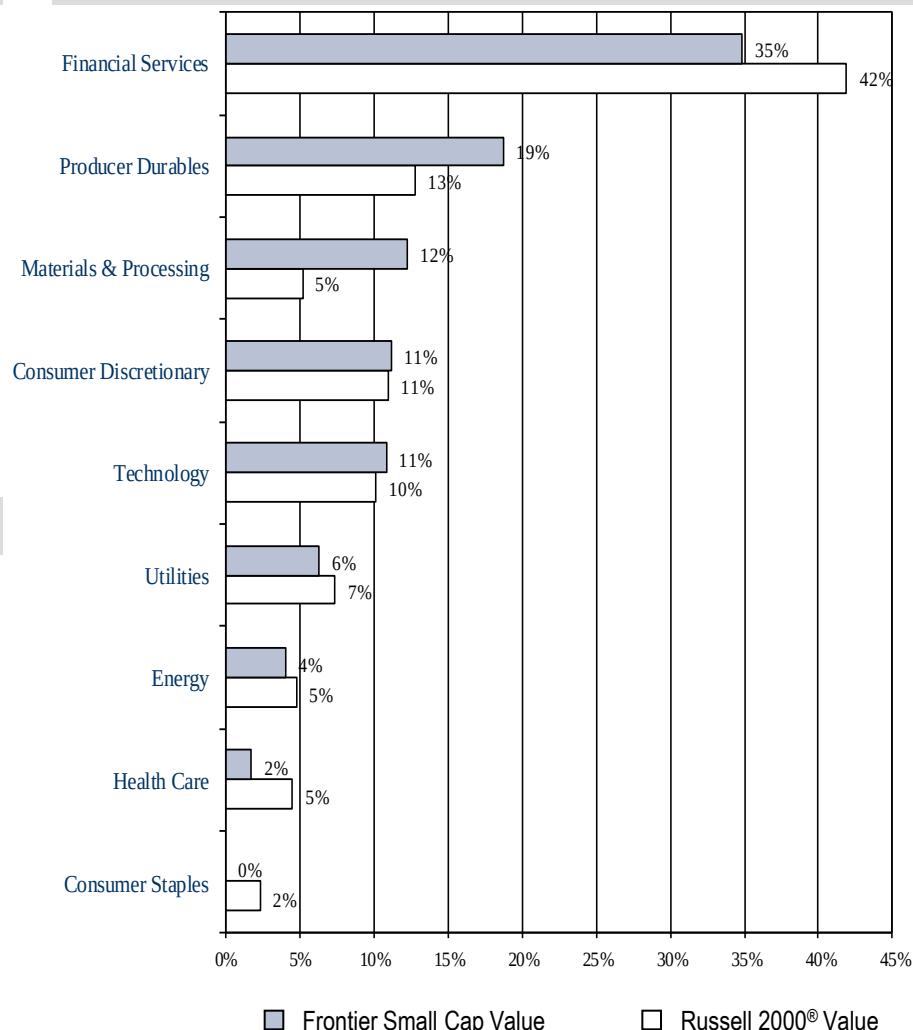
PORTFOLIO CHARACTERISTICS

		Frontier Small Cap Value	Russell 2000® Value
Number of Holdings		80	1,348
Capitalization	Weighted Average	\$2.1B	\$1.7B
	Weighted Median	\$1.7B	\$1.5B
P/B Ratio		1.8x	1.6x
Turnover	Trailing 1 Year	28%	n/a

TOP TEN HOLDINGS

Security Name*	Russell Sector	Percentage of Portfolio
Popular Inc.	Financial Services	3.0
Argo Group International Holdings	Financial Services	2.6
WSFS Financial Corporation	Financial Services	2.5
First Horizon National Corporation	Financial Services	2.4
Aspen Insurance Holdings Ltd.	Financial Services	2.3
Renasant Corporation	Financial Services	2.2
Portland General Electric Company	Utilities	2.2
Kraton Performance Polymers Inc.	Materials & Processing	2.1
Flushing Financial Corporation	Financial Services	2.0
Endurance Specialty Holdings Ltd.	Financial Services	2.0
Total		23.3

RUSSELL GLOBAL SECTOR WEIGHTS



As of August 31, 2016. Source: FactSet Fundamentals. *The specific securities identified are not representative of all of the securities purchased, sold or recommended for clients and should not be considered a recommendation to purchase or sell any particular security. It should not be assumed that an investment in the securities identified has been or will be profitable. Actual holdings will vary for each client and there is no guarantee that a particular client's account will hold any or all of the securities listed.

SMALL CAP VALUE PORTFOLIO

Producer Durables

- Actuant Corporation
- Altra Industrial Motion Corporation
- Brady Corporation
- Briggs & Stratton Corporation
- Celadon Group Inc.
- DXP Enterprises Inc.
- Encore Wire Corporation
- EnerSys
- FTI Consulting Inc.
- HNI Corporation
- Itron Inc.
- KLX Inc.
- Littelfuse Inc.
- Modine Manufacturing Company
- Primoris Services Corporation
- Saia Inc.
- Team Inc.
- Wesco Aircraft Holdings Inc.
- WESCO International Inc.

Health Care

- Merit Medical Systems Inc.
- Myriad Genetics Inc.

Financial Services

- Argo Group International Holdings Ltd.
- Aspen Insurance Holdings Ltd.
- Endurance Specialty Holdings Ltd.
- First Horizon National Corporation
- First Midwest Bancorp Inc.
- Flushing Financial Corporation
- Investment Technology Group Inc.
- James River Group Holdings Ltd.
- Mack-Cali Realty Corporation
- National Retail Properties Inc.
- Navigators Group Inc.
- Parkway Properties Inc.
- Popular Inc.
- Renasant Corporation
- Selective Insurance Group Inc.
- Texas Capital Bancshares Inc.
- Washington Federal Inc.
- WSFS Financial Corporation

Energy

- Carrizo Oil & Gas Inc.
- PDC Energy Inc.
- QEP Resources Inc.
- SM Energy Company

Technology

- FormFactor Inc.
- Global Eagle Entertainment Inc.
- Infinera Corporation
- Ingram Micro Inc.
- Insight Enterprises Inc.
- Integrated Device Technology Inc.
- Jabil Circuit Inc.
- Lattice Semiconductor Corporation
- ON Semiconductor Corporation
- Semtech Corporation
- Ultratech Inc.

Utilities

- MDU Resources Group Inc.
- Portland General Electric Company
- Southwest Gas Corporation
- Unitil Corporation

Consumer Discretionary

- American Eagle Outfitters Inc.
- Ascena Retail Group Inc.
- Boot Barn Holdings Inc.
- Career Education Corporation
- Central Garden & Pet Company
- Chico's FAS Inc.
- Crocs Inc.
- Deckers Outdoor Corporation
- Del Taco Restaurants Inc.
- DSW Inc.
- LGI Homes Inc.
- Libbey Inc.

Materials & Processing

- Beacon Roofing Supply Inc.
- BMC Stock Holdings Inc.
- Boise Cascade Co.
- Eagle Materials Inc.
- Innophos Holdings Inc.
- Interface Inc.
- Kraton Performance Polymers Inc.
- LSB Industries Inc.
- MRC Global Inc.
- P. H. Glatfelter Company

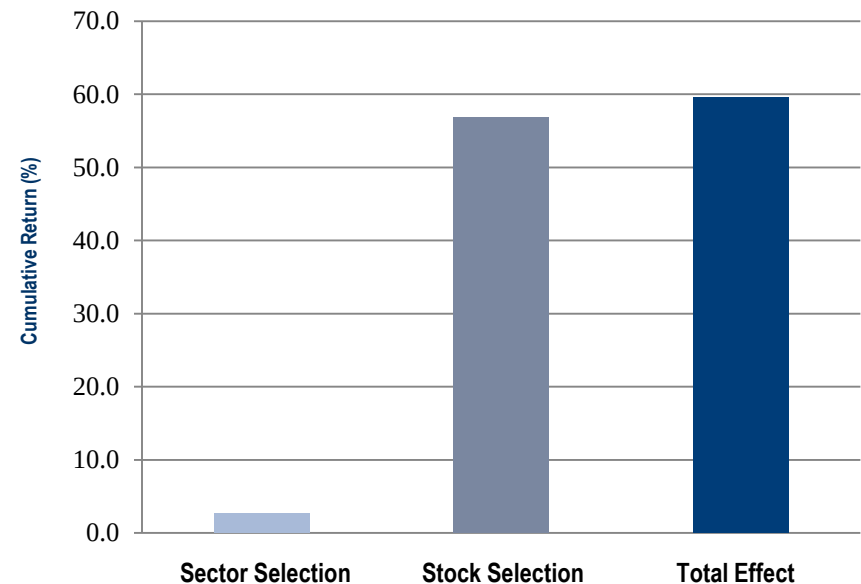
SMALL CAP VALUE PERFORMANCE ATTRIBUTION

- Positive stock selection across multiple sectors
- 95% of performance contributions, over the last 5 years, can be attributed to stock selection

PORTFOLIO ATTRIBUTION

Five Years Ending August 31, 2016

	Sector	Stock	Total
Russell Global Sector	Selection	Selection	Effect
Producer Durables	-0.1	16.6	16.5
Financial Services	-1.4	14.8	13.4
Materials & Processing	1.2	10.5	11.7
Technology	2.1	2.7	4.8
Health Care	-0.1	4.7	4.6
Utilities	1.3	2.8	4.1
Energy	0.2	2.3	2.5
Consumer Staples	0.0	0.8	0.8
Consumer Discretionary	-1.1	1.5	0.4
Other	0.7	0.0	0.7
Total	2.7	56.9	59.6



APPENDIX

BIOGRAPHIES



Michael A. Cavarretta, CFA

Chairman

Responsibility

Portfolio Manager, Frontier Capital Appreciation
Team Leader, Frontier Research Portfolios

Prior Experience

Financial Analyst, General Electric Company

Education

B.S. University of Maine

M.B.A. Harvard Graduate School of Business Administration



Thomas (T.J.) W. Duncan, Jr.

Senior Vice President

Responsibility

Portfolio Manager, Frontier Small Cap Value

Prior Experience

Equity Trader, Cowen & Company

Education

B.A. Skidmore College

M.B.A. Cornell University Johnson Graduate School of Management



Stephen M. Knightly, CFA

President

Responsibility

Portfolio Manager, Frontier Mid Cap Growth

Prior Experience

Analyst and Account Manager, Bankers Trust Company

Education

B.S. Lehigh University

M.B.A. The University of Pennsylvania Wharton School



James A. Colgan

Senior Vice President

Responsibility

Portfolio Manager, Frontier Small Cap Growth

Prior Experience

Manager, Digital Equipment Corporation

Program Manager, United Technologies Corporation

Education

B.S. University of Connecticut

M.S. University of Massachusetts

M.S., M.B.A. MIT Sloan School of Management



William A. Teichner, CFA

Senior Vice President

Responsibility

Portfolio Manager, Frontier Small Cap Value

Prior Experience

President's Council of Economic Advisers, The White House

Corporate Finance Analyst, Shearson Lehman Brothers Inc.

Education

B.A. Columbia University

M.B.A. Harvard Graduate School of Business Administration



G. Michael Novak, Jr.

Senior Vice President

Responsibility

Portfolio Manager, Frontier Small Cap Growth

Prior Experience

Captain, United States Army

Education

B.S. United States Military Academy

M.B.A. Harvard Graduate School of Business Administration

BIOGRAPHIES



Christopher J. Scarpa

Vice President

Responsibility

Portfolio Manager, Frontier Mid Cap Growth

Prior Experience

Institutional Research Equity Sales, Merrill Lynch & Co.

Area Director, Public Employees Benefit Services Corp.

Financial Analyst, Drexel Burnham Lambert, Inc.

Education

B.A. Tufts University

M.B.A. Harvard Graduate School of Business Administration



Jonathan M. Levin, MD

Vice President

Responsibility

Research Analyst

Prior Experience

Equity Analyst, State Street Research and Management

Clinical Director, Brain Imaging Center and *Director*, Laboratory for

Cerebral Blood Flow, Harvard Medical School/McLean Hospital

Neurology Resident, Brigham and Women's Hospital

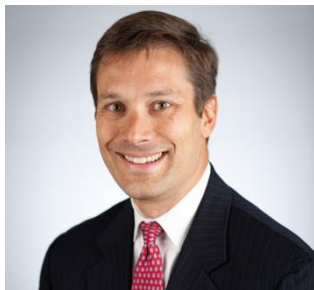
Education

B.A. Yale University

M.D. Emory University School of Medicine

M.P.H. Harvard School of Public Health

M.B.A. MIT Sloan School of Management



Peter G. Kuechle

Vice President

Responsibility

Team Leader, Frontier Research

Research Analyst

Prior Experience

Associate, Bain Capital Ventures

Manager, Corporate Development, SupplierMarket/Ariba

Principal, Advent International

Business Analyst, McKinsey & Company, Inc.

Education

B.A. Dartmouth College

M.B.A. Harvard Graduate School of Business Administration



Rushan (Greg) Jiang, CFA

Vice President

Responsibility

Research Analyst

Prior Experience

Associate, Equity Research, India Capital Fund

Project Leader and Senior Engineer, Oracle Corporation

Education

B.S. The University of Texas at Austin

M.S. Stanford University

M.B.A. MIT Sloan School of Management



Andrew B. Bennett, CFA

Vice President

Responsibility

Portfolio Manager, Frontier Capital Appreciation

Research Analyst

Prior Experience

Assistant Portfolio Manager, Wellington Management

Company, LLP

Research Associate, Frontier Capital Management Company,

LLC

Associate Analyst, Alex. Brown & Sons

Education

B.A. Wheaton College



Ravi Dabas

Vice President

Responsibility

Research Analyst

Prior Experience

Director, Information Technology, Agere Systems Inc.

Senior Manager, Information Technology, EMC Corporation

Senior Consultant, Deloitte Consulting/CGI Group Inc.

Systems Analyst, BP/Amoco Corporation

Education

B.E. Delhi College of Engineering, University of New Delhi

M.S. University of Houston

M.B.A. The University of Pennsylvania Wharton School

BIOGRAPHIES



Nathan A. Hayman

Vice President

Responsibility

Research Analyst

Prior Experience

Senior Associate, Yigal Arnon & Co.

Education

L.L.B. Hebrew University Law School

M.B.A. Dartmouth College Tuck School of Business



Emmanuel (Manny) Franjul

Vice President

Responsibility

Research Analyst

Prior Experience

Aerospace/Design Engineer - Edison Leadership Program, General Electric Company

Education

B.S. Cornell University

M.B.A. Cornell University Johnson Graduate School of Management



Kristin S. King, CFA

Vice President

Responsibility

Research Analyst

Prior Experience

Fixed Income Corporate Credit Analyst, Emerging Market Debt, Wellington Management Company
Associate and Business Analyst, Global Investment Research, Goldman, Sachs & Co.

Education

B.S. University of Notre Dame

M.B.A. The University of Pennsylvania Wharton School



Daniel Schäfer

Research Analyst

Responsibility

Research Analyst

Prior Experience

Financial Controller, HSH Nordbank Securities S.A.
Auditor, DFP Feß & Kollegen

Education

B.A. University of Cooperative Education

M.B.A. Dartmouth College Tuck School of Business



Michael E. Gargano

Vice President

Responsibility

Research Analyst

Prior Experience

Sr. Research Analyst, Copper Rock Capital Partners, LLC
Vice President, Analyst, BlackRock, Inc./State Street Research & Management
Research Associate, Bear, Stearns & Company, Inc.
Research Associate, Loomis, Sayles & Company, L.P.
Financial Analyst, Charterhouse, Inc.

Education

B.S. Boston College



Uri L. Nurko, CFA

Research Analyst

Responsibility

Research Analyst

Prior Experience

Valuation Analyst, Weatherbie Capital, LLC
Investment Executive, Wealth Strategies Group

Education

B.A. University of Maryland

M.B.A. The University of Pennsylvania Wharton School

BIOGRAPHIES



Carolyn C. Shea

Vice President

Responsibility

Institutional Trader

Prior Experience

Senior Equity Trader, Principal, Arlington Capital Management

Senior Equity Trader, Assistant Vice President, ING Pilgrim Investments

Equity Trader, Harbor Capital Management

Research Analyst/Assistant, Franklin Research & Development

Education

B.A. St. Lawrence University



Sarah J. Jankowski

Chief Administrative Officer

Responsibility

Institutional Client Service and Administration

Prior Experience

Associate Director, Investment Counsel Association of America, Inc. (now Investment Adviser Association)

Education

B.A. Wells College



Lisa A. Turley

Vice President

Responsibility

Institutional Trader

Education

B.S. University of Massachusetts



Richard H. Binder, CPA

Chief Financial Officer

Responsibility

Finance

Prior Experience

Manager, Wolf & Company

Education

B.A. University of Massachusetts



William J. Ballou

Chief Operating Officer

Responsibility

Legal and Compliance

Prior Experience

Senior Vice President and Senior Counsel, Liberty Financial Companies, Inc.

Vice President and Associate Counsel, MFS Investment Management

Associate, Ropes & Gray

Education

B.S. Union College

J.D. Duke University School of Law



William (Skip) A. Carino

Network / IT Manager

Responsibility

Information Technology

Prior Experience

Senior Architect and Financial Systems Analyst, Computer Sciences Corporation

AVP and Manager of Internet Systems Operations,

Scudder, Stevens & Clark & Kemper Investments

Systems Analyst/Designer/Developer, Fidelity Investments

Education

B.S. University of Massachusetts

BIOGRAPHIES



David Okereke

Systems Administrator

Responsibility

Information Technology

Prior Experience

Field Engineer, Eze-Castle Integration

Education

B.S. University of Massachusetts

M.S. Boston University



Leigh Anne Yoo

Vice President

Responsibility

Institutional Marketing and Client Service

Prior Experience

Vice President, Lazard Asset Management

Education

B.B.A. University of Georgia



Christopher W. Premock

Vice President

Responsibility

Institutional Marketing and Client Service

Prior Experience

Vice President, Lehman Brothers Asset Management

Vice President, Neuberger Berman, LLC

Founder, Premier Travel Bags

Education

A.A.S. Vermont Technical College

B.S. Arizona State University

M.S. Baruch College



Forrest H. Letarte, CFA

Operations Manager

Responsibility

Operations

Prior Experience

Business Consultant, Eze Castle Software, LLC

President and Co-Founder, Our Town Biodiesel, LLC

Education

B.S. Plymouth State University



Amy L. Janezic

Vice President

Responsibility

Institutional Marketing and Client Service

Prior Experience

Custody Accountant, Investors Bank & Trust Company

Education

B.S. Boston College

M.B.A. Babson College

DISCLOSURE

Small Cap Value Composite

Performance Results: January 1, 1999 through December 31, 2015

Year	Gross of Fees Return (%)	Net of Fees Return (%)	Benchmark Return (%)	Composite 3-Year	Benchmark 3-Year	Composite Dispersion (%)	At End of Period			
				Std. Deviation (%)	Std. Deviation (%)		Number of Portfolios	Total Composite Assets (USD millions)	Percentage of Non-Fee-Paying Portfolios	Total Firm Assets (USD millions)
1999	32.0%	30.7%	-1.5%	N/A	N/A	N/A	1	\$8	100	\$4,987
2000	52.3%	50.9%	22.8%	N/A	N/A	N/A	1	\$13	100	\$4,848
2001	16.0%	14.9%	14.0%	17.5%	14.9%	N/A	3	\$62	25	\$4,396
2002	-13.2%	-14.1%	-11.4%	19.2%	17.6%	0.4%	8	\$116	11	\$3,852
2003	35.7%	34.4%	46.0%	19.5%	18.7%	0.7%	9	\$169	10	\$5,661
2004	20.8%	19.7%	22.3%	17.6%	17.8%	0.1%	9	\$89	22	\$5,629
2005	9.3%	8.2%	4.7%	14.5%	14.3%	0.5%	7	\$73	25	\$5,411
2006	19.6%	18.4%	23.5%	13.3%	12.5%	0.2%	7	\$85	24	\$6,076
2007	1.1%	0.1%	-9.8%	11.9%	12.8%	0.2%	7	\$83	25	\$6,305
2008	-27.4%	-28.2%	-28.9%	19.4%	19.4%	0.3%	7	\$55	20	\$4,397
2009	33.6%	32.3%	20.6%	23.5%	26.0%	0.8%	6	\$65	15	\$6,776
2010	36.1%	34.8%	24.5%	26.2%	28.8%	0.4%	7	\$121	11	\$9,950
2011	2.7%	1.7%	-5.5%	23.4%	26.4%	0.2%	10	\$151	9	\$9,015
2012	25.7%	24.5%	18.1%	19.6%	20.2%	0.3%	15	\$381	0	\$9,603
2013	40.1%	38.8%	34.5%	16.9%	16.1%	0.3%	27	\$1,663	0	\$13,880
2014	5.8%	4.8%	4.2%	13.0%	13.0%	0.5%	31	\$1,927	0	\$13,757
2015	-0.7%	-1.7%	-7.5%	13.9%	13.7%	0.2%	28	\$2,067	0	\$12,452

Frontier Capital Management Co., LLC claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS® standards. Frontier Capital Management Co., LLC has been independently verified for the periods January 1, 1993 to December 31, 2015. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS standards. The Small Cap Value Composite has been examined for the periods January 1, 1999 to December 31, 2015. The verification and performance examination reports are available upon request.

1. Frontier Capital Management Co., LLC ("Frontier") is a registered investment advisor and is an affiliate of Affiliated Managers Group, Inc. Registration does not imply a certain level of skill or training.
2. The firm's list of composite descriptions is available upon request.
3. Inception date and composite creation date: Small Cap Value: January 1, 1999.
4. The Small Cap Value Composite includes all discretionary portfolios whose strategy is to hold investments in companies typically with a price/book ratio of less than 3.0 and with a market capitalization within the range of companies in the Russell 2000® Index at the time of initial purchase. Effective January 1, 2006, the composite has a significant cash flow policy and defines significant as a cash flow that exceeds 50% of portfolio assets.
5. Benchmark: Russell 2000® Value. Russell indices are unmanaged and their results include income, but do not include fees, commissions or other expenses. The Russell 2000® Value Index measures the performance of small-cap value segment of the U.S. equity universe. It includes those Russell 2000® companies with lower price-to-book ratios and lower forecasted growth values. The benchmark returns are not covered by the report of independent verifiers.
6. Valuations and performance results are computed and stated in U.S. Dollars. Composite and benchmark returns reflect the reinvestment of dividends and other earnings.
7. Gross-of-fees returns are presented before management fees, but after all trading costs. Net-of-fees returns are calculated monthly by deducting 1/12 of the highest fee of 1.0% from the composite gross-of-fees return. Some clients have fee arrangements that include a performance based fee schedule. The standard fee schedule is 1.0% of all assets. Actual fees are negotiable and may vary depending on account type and portfolio size. Net-of-fees returns prior to 2012 have been restated to reflect the use of model fees. Previously actual fees were used. Net-of-fees returns prior to 2012 have not been examined.
8. Policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request.
9. Composite dispersion is computed using the asset-weighted standard deviation of the annual gross returns of all accounts that were included in the composite for the entire year. Dispersion is not considered meaningful and is not presented when there are less than five accounts included in the composite for the entire year.
10. The three-year annualized standard deviation measures the variability of the composite and the benchmark returns over the preceding 36-month period. The three year standard deviation is not presented for periods where there is not a continuous 36-month history of composite returns.

ADDITIONAL DISCLOSURES

The holdings of the strategy may differ significantly from the securities that comprise the indexes and universes shown. The index and universe have been selected to represent what Frontier believes are appropriate benchmarks to compare the strategy's performance to. The index is unmanaged and cannot be invested in directly. The returns of the index do not include any transaction costs, management fees, or other costs.

The actual performance achieved by a client portfolio may be affected by a variety of factors, including the initial balance of the account, the timing and amount of any additions to or withdrawals from the portfolio, changes made to the account to reflect the specific investment needs or preferences of the client, duration and timing of participation as a Frontier client, and a client portfolio's risk tolerance, investment objectives, and investment time horizon.

Charts and graphs included in this presentation are not meant as investment tools or to assist with investment decisions.

The Russell 2000® Value Index is a trademark of Russell Investments. Russell Investments is the owner of the trademarks, service marks and copyrights related to its respective indexes.

There is no guarantee that the investment objective will be met. There is no guarantee that this investment strategy will work under all market conditions and each investor should evaluate his or her ability to invest for a long term, especially during periods of downturn in the market.

Frontier data reflected in all universe charts and graphs is that of the product composite and is gross of fees. Information contained in this presentation has been obtained from sources believed to be reliable, but not guaranteed. Furthermore, there can be no assurance that any trends described in this presentation will continue because economic and market conditions change frequently.

The product composite represents the investment results of a group of accounts with similar investment philosophies and objectives, managed by Frontier. The composite is an asset-weighted average of each account's time-weighted return, and includes reinvestment of income. Composite returns have the potential to be adjusted until reviewed and finalized following calendar quarter ends, and changes to monthly data will be made without any notification to institutional clients, prospects, or consultants.

Frontier endeavors to manage client portfolios within the same investment strategy consistently. Consequently, for the initial funding of new client portfolios Frontier may purchase securities of companies that exceed the market capitalization of the benchmark if these companies were within the range of the benchmark market capitalization at the time of Frontier's initial purchase of the company for the investment strategy.

Returns reflect the reinvestment of dividends and earnings.

Any sectors, industries or securities discussed should not be perceived as investment recommendations.

Lord, Abbett & Co., LLC

Mandate: Micro Cap Growth

Hired: 2011

Firm Information	Investment Approach	Total ARMB Mandate*
Lord, Abbett & Co. (“Lord Abbett”) was founded in 1929 and is an independent money management firm structured as a limited liability company. Currently, Lord Abbett has 57 executive members (“partners”). As of 6/30/16, the firm’s total assets under management were \$130.3 billion. Key Executives: F. Thomas O’Halloran, J.D., CFA <i>Partner & Portfolio Manager</i> Arthur K. Weise, CFA, <i>Partner & Portfolio Manager</i> Matthew R. DeCicco, CFA, <i>Portfolio Manager</i> Nick Johnston, <i>Director, Institutional Investor Services</i>	Lord Abbett seeks to own micro cap growth companies that are transformative in some way, either through innovative products or services, and have the potential to deliver outsized returns for investors. Lord Abbett’s high-growth team employs intensive fundamental analysis to identify rapidly emerging and financially sound growth companies, while ongoing analysis of behavioral trends in the market strengthens the conviction in their buy and sell decisions. Lord Abbett seeks to provide attractive risk-adjusted returns by complementing their bottom-up stock selection with top-down analysis and broad portfolio diversification. Benchmark: Russell Micro Cap Growth Index	Assets Under Management: 6/30/16 \$76,100,813

Concerns: None

6/30/16 Performance*				
	<u>Last Quarter</u>	<u>1-Year</u>	<u>3-Years Annualized</u>	<u>5-Years Annualized</u>
Manager (gross)	6.46%	-22.37%	8.00%	10.84%
Fee	0.28%	0.86%	1.14%	1.17%
Manager (net)	6.18%	-23.23%	6.86%	9.67%
Benchmark	3.17%	-18.47%	5.73%	7.48%

*Source: Callan Associates Inc.

Lord, Abbett & Co., LLC

Mandate: Small Cap Growth

Hired: 2013

Firm Information	Investment Approach	Total ARMB Mandate*
Lord, Abbett & Co. (“Lord Abbett”) was founded in 1929 and is an independent money management firm structured as a limited liability company. Currently, Lord Abbett has 57 executive members (“partners”). As of 6/30/16, the firm’s total assets under management were \$130.3 billion. Key Executives: F. Thomas O’Halloran, J.D., CFA, Partner & Portfolio Manager Arthur K. Weise, CFA, Partner & Portfolio Manager Nick Johnston, Director, Institutional Investor Services	Lord Abbett seeks to own small cap growth companies that are transformative in some way, either through innovative products or services, and have the potential to deliver outsized returns for investors. Lord Abbett’s high-growth team employs intensive fundamental analysis to identify rapidly emerging and financially sound growth companies, while ongoing analysis of behavioral trends in the market strengthens the conviction in their buy and sell decisions. Lord Abbett seeks to provide attractive risk-adjusted returns by complementing their bottom-up stock selection with top-down analysis and broad portfolio diversification. Benchmark: Russell 2000 Growth Index	Assets Under Management: 6/30/16 \$71,817,420

Concerns: None

6/30/16 Performance*				
	<u>Last Quarter</u>	<u>1-Year</u>	<u>3-Years Annualized</u>	<u>5-Years Annualized</u>
Manager (gross)	2.45%	-23.60%	3.24%	N/A
Fee	0.28%	0.84%	1.08%	
Manager (net)	2.17%	-24.44%	2.16%	
Benchmark	3.24%	-10.75%	7.74%	

*Source: Callan Associates Inc.



LORD ABBETT®

ALASKA RETIREMENT MANAGEMENT BOARD

Lord Abbett Equity Management

SEPTEMBER 29, 2016

F. Thomas O'Halloran, J.D., CFA
Partner & Portfolio Manager

Nicholas Johnston
Director, Institutional Investor Services

Lord Abbett
90 Hudson Street
Jersey City, NJ 07302



LORD ABBETT

A singular focus since 1929

Investment-Led

- Active management characterized by a deliberate process, teamwork, and collaboration
- Rigorous research that challenges consensus and identifies opportunities
- Comprehensive risk management that enhances investment decisions

Investor-Focused

- Perspectives shaped and decisions sharpened by our independence
- Resources dedicated to the markets we serve
- Strategies intelligently designed to meet client needs



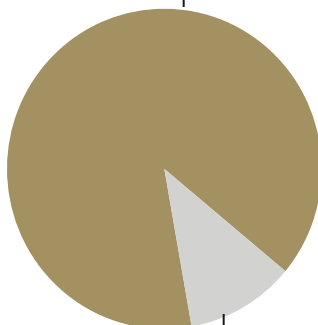
LORD ABBETT AT A GLANCE

\$130.3 BILLION IN ASSETS UNDER MANAGEMENT

EQUITY

U.S. Equity: \$30.1 billion

- Micro Cap Growth
- Small Cap Growth
- Large Cap Growth
- Mid Cap Growth
- Large to Micro Value
- Large Cap Core
- Dividend Growth
- Equity Income



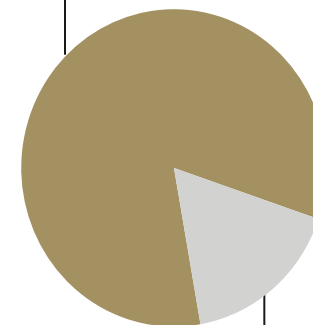
International: \$2.9 billion

- Core Equity
- Dividend Income
- Small Cap Core

FIXED INCOME

Fixed Income: \$77.5 billion

- Short Credit
- Government
- Core & Core Plus
- Inflation Focused
- Corporate Credit
- Bank Loan
- Multi-Sector
- Emerging Markets Corporate Debt
- Emerging Markets Currency
- Long Duration
- High Yield
- Convertible
- Emerging Markets Local Bond



Tax-Free Income: \$19.8 billion

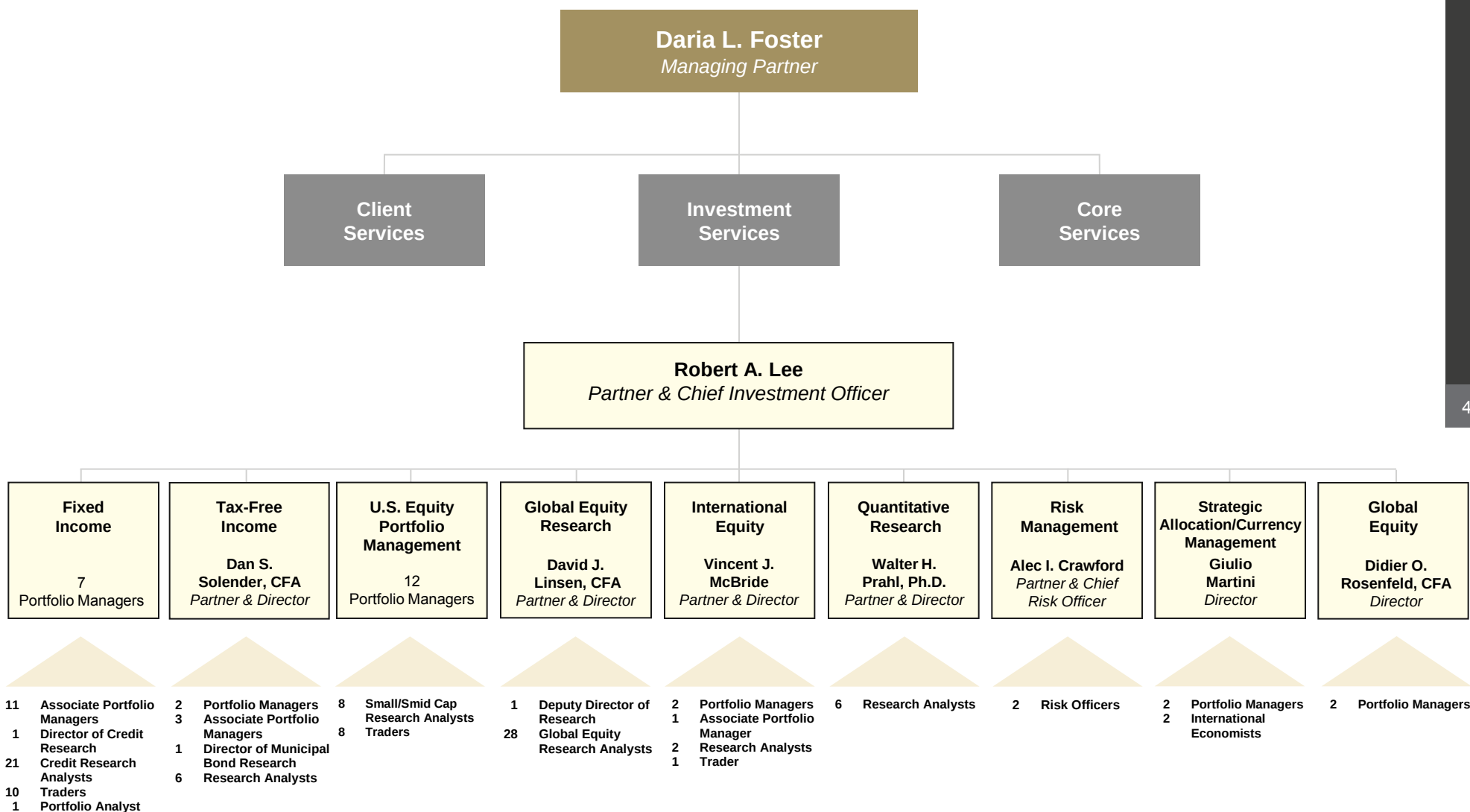
- Short, Intermediate, & Long
- Short Duration High Yield
- AMT Free
- State Specific
- High Yield

Note: Assets under management data is as of 06/30/2016 unless noted and includes approximately \$1.6 billion for which Lord Abbett provides investment models to managed account sponsors. The Equity and Fixed Income asset totals include the equity and fixed income portions of the multi-asset class strategies managed by Lord Abbett in addition to the strategies listed above. The multi-asset class strategies are: Income, Balanced Opportunity, Growth, and Global Opportunity. Including over \$800 Million from current and former partners, employees and their families.



ORGANIZATIONAL STRUCTURE & INVESTMENT TEAMS

4



148 Investment Professionals with an average of 17 years industry experience

As of 07/01/2016.



Lord Abbett's Micro and Small Cap Growth investment team believes:

- Some companies are special and enjoy outsized growth opportunities. We seek to own those market-leading growth companies that may transform society and its markets through innovative products and services.
- Intensive fundamental analysis is a powerful tool in identifying these market-leading companies. A careful analysis of market participants' behavior is crucial in determining optimal entry and exit points for the shares of these companies.
- Risk can be effectively managed through lowering fundamental company risk, diversification, and a focused selling discipline.



MICRO CAP GROWTH



DEEP, EXPERIENCED INVESTMENT RESOURCES

Portfolio Management

F. Thomas O'Halloran, J.D., CFA
Partner & Portfolio Manager
29 Years

Arthur K. Weise, CFA
Partner & Portfolio Manager
23 Years

Matthew R. DeCicco, CFA
Portfolio Manager
17 Years

Vernon Bice
Associate Portfolio Manager
15 Years

Research

Benjamin Ebel
Information Technology, Telecom
24 Years

Steven Wortman
Consumer Discretionary, Industrials
Complex, Financials
18 Years

Justin Kim
Consumer Discretionary, Business
Services, Financials
4 Years



Risk Management

Alec I. Crawford
Partner & Chief Risk Officer
28 Years

2 Risk Management Professionals
12 Years

Equity Resources

50 Additional Investment Professionals
20 Years Average

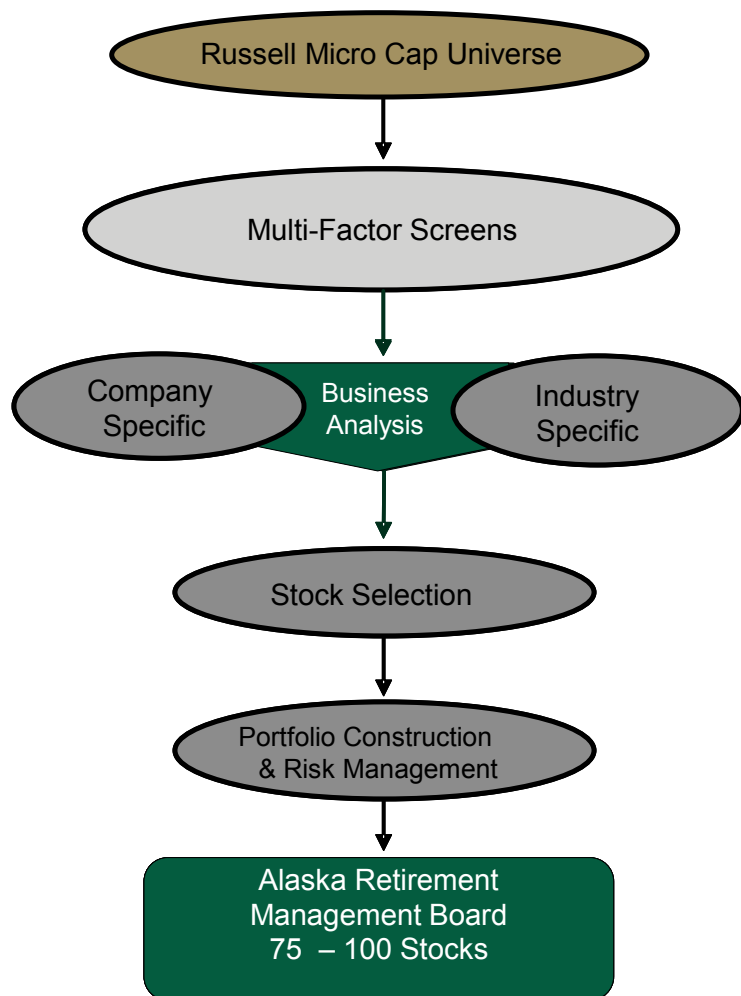
Equity Trading

Ted Oberhaus
Partner & Director of Trading
34 Years

8 Equity Traders
28 Years Average



INVESTMENT PROCESS



Screen universe for:

- Russell Microcap® Index market cap range
- Double-digit revenue and earnings growth
- Conservative capital structure
- Preference for positive current earnings

Identify market-leading growth companies with:

- Sound business models
- Capable management
- Competitive advantages
- Favorable industry conditions

Develop company expectations and forecasts:

- Forecast revenue and earnings growth
- Predict market impact of future operating results

Construct and manage portfolio based on:

- Company quality and health of fundamentals
- Corroborating technical factors and market action
- Favored sectors, industries and market capitalizations
- Prudent diversification, liquidity and reasonable valuation support



Securities are continuously monitored and evaluated for sale when:

Fundamentals change

- Business model deviates
- Management's execution falters
- Industry conditions worsen
- Competitive advantage deteriorates

Stock becomes less attractive

- Revenue and/or earnings growth rates are lowered
- Expectations of growth become too high
- Valuation and/or stock outperformance reach extremes

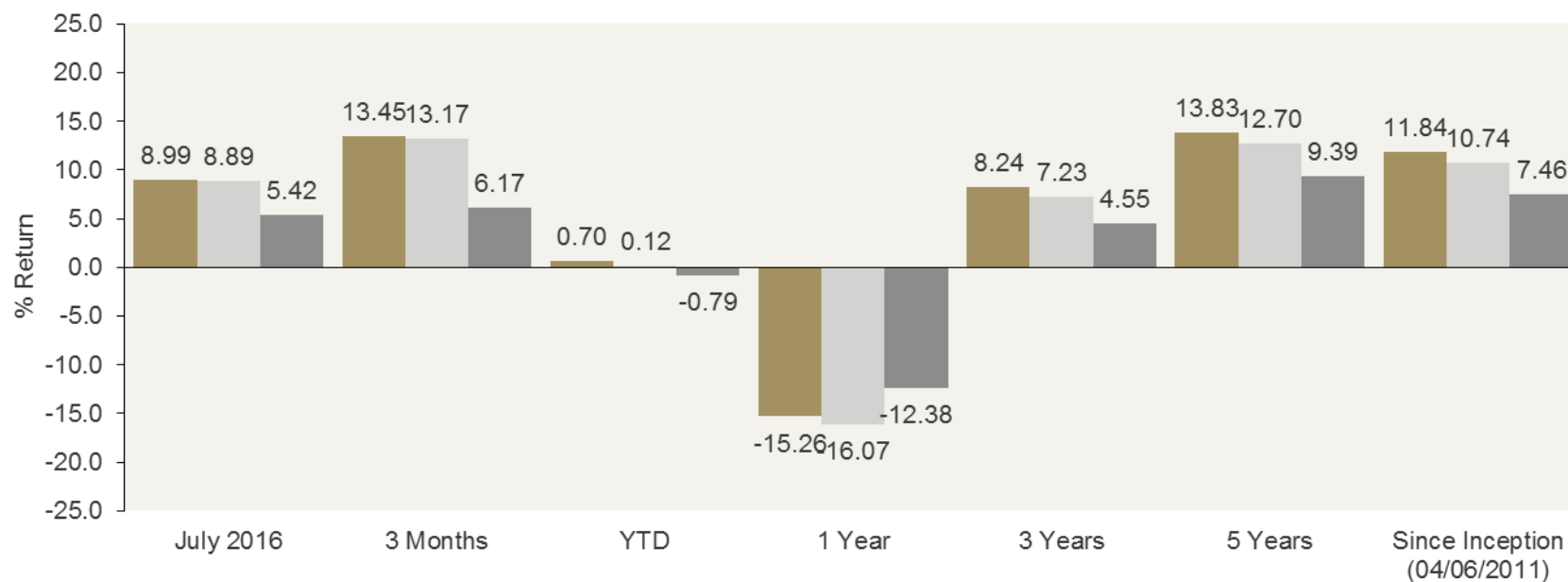
Diversification

- Trim positions in names and/or sectors to maintain optimal exposures and diversification



AVERAGE ANNUAL RATES OF RETURN

AS OF 07/29/2016



■ Alaska Retirement Management Board Micro (Gross) ■ Alaska Retirement Management Board Micro (Net) ■ Russell Microcap Growth Index*

The gross performance information shown is gross of advisory fees and other expenses, with the exception of brokerage commissions and/or markups and mark-downs with respect to fixed income and/or over-the-counter securities transactions, if any. Returns for periods of less than one year are not annualized. *Source: Russell.



ATTRIBUTION ANALYSIS: YEAR TO DATE

AS OF 07/29/2016

	Alaska Retirement Management Board Micro		Russell Microcap [®] Growth Index		Variance		
Sectors*	Average Weight %	Base Return %	Average Weight %	Base Return %	Stock Selection %	Group Weight %	Total %
Health Care	25.3	-11.4	36.7	-14.2	1.3	1.4	2.7
Information Technology	32.2	7.2	20.4	7.3	-0.3	0.9	0.6
Energy	0.6	49.1	0.9	-18.7	0.3	0.1	0.3
Consumer Discretionary	16.5	8.0	14.1	6.4	0.1	0.2	0.3
Consumer Staples	3.0	33.2	3.1	13.8	0.3	-0.1	0.2
Utilities	0.5	-2.1	0.5	8.8	-0.2	0.0	-0.2
Industrials	11.1	6.8	11.1	10.6	0.0	-0.3	-0.2
Telecommunication Services	1.1	27.2	2.9	16.8	-0.1	-0.3	-0.4
Financials	5.0	-7.8	6.9	3.5	-0.4	-0.1	-0.5
Materials	1.5	-24.6	3.5	27.3	-0.4	-0.6	-1.0
Cash	3.2	0.3	0.0	0.0	0.0	0.5	0.5
Total	100.0	1.5	100.0	-0.8	0.5	1.8	2.3

Source: Wilshire AtlasSM ("Wilshire"). Please see "About Wilshire" at the end of the presentation for important Wilshire information regarding the calculation of performance attribution information, including information about Not Classified securities. *GICS Sectors. Sectors may include many industries.



PERFORMANCE HIGHLIGHTS: YEAR TO DATE

AS OF 07/29/2016

Largest Contributors	Ticker	% Contribution
Duluth Hldgs Inc Consumer Discretionary	DLTH	0.79
Gigamon Inc Information Technology	GIMO	0.74
Insperity, Inc. Industrials	NSP	0.72
Silicon Motion Techn Information Technology	SIMO	0.71
Five9 Inc Information Technology	FIVN	0.71

Largest Detractors	Ticker	% Contribution
Sarepta Therapeutics In Health Care	SRPT	-0.99
Gogo Inc Information Technology	GOGO	-0.74
Pacific Biosciences Health Care	PACB	-0.64
Revance Therapeutics In Health Care	RVNC	-0.62
Truecar Inc Information Technology	TRUE	-0.61

% contribution reflects the effect of the individual stock's performance on the portfolio's overall performance for the period shown. Individual holdings and their effect on portfolio performance may change significantly over time.



ATTRIBUTION ANALYSIS: ONE YEAR

AS OF 07/29/2016

	Alaska Retirement Management Board Micro		Russell Microcap [®] Growth Index		Variance		
Sectors*	Average Weight %	Base Return %	Average Weight %	Base Return %	Stock Selection %	Group Weight %	Total %
Information Technology	31.5	4.1	19.8	3.8	-0.1	1.5	1.4
Health Care	29.4	-30.5	38.1	-29.7	-0.3	1.2	0.9
Energy	0.4	3.7	1.0	-41.8	0.2	0.1	0.3
Consumer Staples	2.7	26.1	3.2	12.9	0.2	-0.2	0.0
Utilities	0.3	-2.1	0.4	10.0	-0.2	0.0	-0.2
Financials	5.5	-14.1	6.6	-1.1	-0.4	0.0	-0.4
Telecommunication Services	0.6	27.2	2.8	19.4	-0.1	-0.6	-0.7
Consumer Discretionary	15.9	-13.0	13.7	-6.0	-1.2	0.2	-1.0
Industrials	8.9	-20.1	10.8	-2.1	-1.0	-0.3	-1.3
Materials	1.2	-49.8	3.5	22.9	-0.6	-0.7	-1.3
Cash	3.6	0.4	0.0	0.0	0.0	0.1	0.1
Total	100.0	-14.6	100.0	-12.4	-3.5	1.3	-2.2

Source: Wilshire AtlasSM ("Wilshire"). Please see "About Wilshire" at the end of the presentation for important Wilshire information regarding the calculation of performance attribution information, including information about Not Classified securities. *GICS Sectors. Sectors may include many industries.



PERFORMANCE HIGHLIGHTS: ONE YEAR

AS OF 07/29/2016

Largest Contributors	Ticker	% Contribution
Maxlinear, Inc. Information Technology	MXL	0.84
Duluth Hldgs Inc Consumer Discretionary	DLTH	0.79
Silicon Motion Techn Information Technology	SIMO	0.66
Inphi Corp. Information Technology	IPHI	0.61
Insperity, Inc. Industrials	NSP	0.61

Largest Detractors	Ticker	% Contribution
Glu Mobile Inc Information Technology	GLUU	-0.85
Ldr Hldg Corp Health Care	LDRH	-0.73
Synergy Pharmaceuticals Health Care	SGYP	-0.72
Sarepta Therapeutics In Health Care	SRPT	-0.71
Teladoc Inc Health Care	TDOC	-0.70

% contribution reflects the effect of the individual stock's performance on the portfolio's overall performance for the period shown. Individual holdings and their effect on portfolio performance may change significantly over time.



ATTRIBUTION ANALYSIS: SINCE INCEPTION CUMULATIVE

AS OF 07/29/2016

	Alaska Retirement Management Board Micro		Russell Microcap® Growth Index		Variance		
Sectors*	Average Weight %	Base Return %	Average Weight %	Base Return %	Stock Selection %	Group Weight %	Total %
Health Care	29.3	140.3	35.5	83.5	17.1	-1.3	15.9
Energy	2.5	-36.7	3.4	-80.2	1.0	5.4	6.4
Consumer Discretionary	14.5	96.5	13.0	43.4	5.6	0.7	6.3
Financials	6.8	165.2	5.4	122.9	2.4	2.4	4.7
Not Classified	0.0	93.9	0.0	0.0	1.8	0.0	1.7
Industrials	11.0	48.4	12.2	39.7	1.8	-0.2	1.6
Materials	1.4	-76.4	4.3	1.4	-1.6	1.8	0.2
Consumer Staples	2.9	94.6	2.8	60.9	1.2	-1.3	0.0
Utilities	0.1	-2.1	0.5	47.4	-0.4	0.3	-0.1
Telecommunication Services	0.1	27.2	2.7	80.2	-0.1	-0.8	-0.9
Information Technology	28.5	27.5	20.3	34.1	-2.1	0.1	-2.0
Cash	3.1	1.2	0.0	0.0	0.1	-1.6	-1.5
Total	100.0	78.5	100.0	46.1	26.8	5.6	32.4

Source: Wilshire AtlasSM ("Wilshire"). Please see "About Wilshire" at the end of the presentation for important Wilshire information regarding the calculation of performance attribution information, including information about Not Classified securities. *GICS Sectors. Sectors may include many industries.



PERFORMANCE HIGHLIGHTS: SINCE INCEPTION CUMULATIVE

AS OF 07/29/2016

Largest Contributors	Ticker	% Contribution
Intercept Pharmaceuticals, Inc. Health Care	ICPT	8.37
Receptos, Inc. Health Care	RCPT	5.88
Bluebird Bio, Inc. Health Care	BLUE	5.68
voxeljet AG Industrials	VJET	4.31
Ambarella, Inc. Information Technology	AMBA	4.01

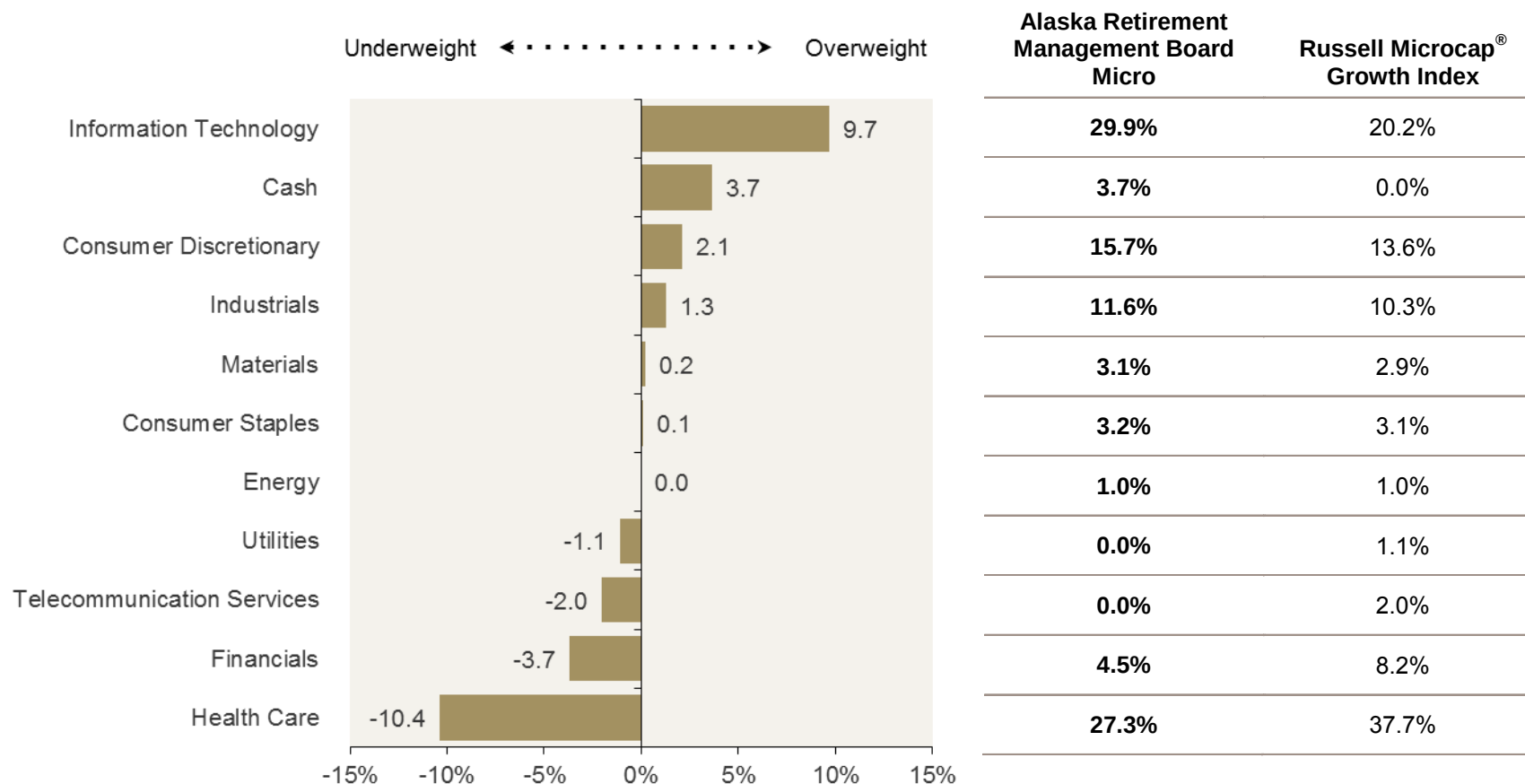
Largest Detractors	Ticker	% Contribution
Glu Mobile Inc. Information Technology	GLUU	-2.37
Dynavax Technologies Corp. Health Care	DVAX	-1.83
Chegg, Inc. Consumer Discretionary	CHGG	-1.70
Arrowhead Pharmaceutical, Inc. Health Care	ARWR	-1.68
PowerSecure International, Inc. Industrials	POWR	-1.52

% contribution reflects the effect of the individual stock's performance on the portfolio's overall performance for the period shown. Individual holdings and their effect on portfolio performance may change significantly over time.



SECTOR ALLOCATION

AS OF 07/29/2016



Source: Wilshire AtlasSM ("Wilshire"). Please see "About Wilshire" at the end of the presentation for important Wilshire information, including information about Not Classified securities, GICS Sectors. Sectors may include many industries. Totals may not equal 100% due to rounding.



PORTFOLIO CHARACTERISTICS

AS OF 07/29/2016

	Alaska Retirement Management Board Micro	Russell Microcap [®] Growth Index
Total Net Assets (\$M)	\$82,935,927	N/A
Number of Holdings	91	885
Weighted Average Market Capitalization (\$M)	\$956	\$461
Price/Sales	2.2x	1.6x
Long Term Growth (<i>IBES Median</i>)	18.9%	16.3%
Price/Earnings (<i>1 Year Forecast</i>)	21.4x	18.4x
Debt/Capital	32.3%	37.2%
Sales Growth (<i>Historical 5 Year</i>)	12.5%	6.9%



TEN LARGEST HOLDINGS

AS OF 07/29/2016

Company Name	Sector	% of Portfolio
Instructure, Inc.	Information Technology	2.5
Five9, Inc.	Information Technology	2.3
LGI Homes, Inc.	Consumer Discretionary	2.0
Universal Electronics, Inc.	Consumer Discretionary	1.9
Pacific Biosciences of California, Inc.	Health Care	1.8
Natera, Inc.	Health Care	1.7
Patrick Industries, Inc.	Industrials	1.7
Alarm.com Holdings, Inc.	Information Technology	1.7
Glaukos Corp.	Health Care	1.6
Vascular Solutions, Inc.	Health Care	1.6
Total		18.8%



PORTFOLIO HOLDINGS

AS OF 07/29/2016

Description %MV

Consumer Discretionary

Cavco Industries, Inc.	1.49
Chuy's Holdings, Inc.	0.95
ClubCorp Holdings, Inc.	0.47
Duluth Holdings, Inc.	1.22
Entravision Communications Corp.	0.24
Etsy, Inc.	0.74
Fox Factory Holding Corp.	1.05
iRobot Corp.	0.75
LGI Homes, Inc.	1.95
Ollie's Bargain Outlet Holdings, Inc.	0.30
PetMed Express, Inc.	1.25
Stoneridge, Inc.	0.85
Universal Electronics, Inc.	1.85
Wingstop, Inc.	1.19
Zoe's Kitchen, Inc.	1.39

Consumer Staples

Amplify Snack Brands, Inc.	0.85
Calavo Growers, Inc.	1.56
MGP Ingredients, Inc.	0.83

Energy

GasLog Ltd.	0.96

Financials

Cardinal Financial Corp.	0.83
Hannon Armstrong Sustainable Infrastructure Capita	0.96
HomeStreet, Inc.	0.47
LendingTree, Inc.	1.57
National Storage Affiliates Trust	0.44
ServisFirst Bancshares, Inc.	0.26

Health Care

Acceleron Pharma, Inc.	0.91
Blueprint Medicines Corp.	0.86
Coherus Biosciences, Inc.	1.46
Cynosure, Inc.	1.00
Dynavax Technologies Corp.	0.78
Endologix, Inc.	1.03
Evolent Health, Inc.	1.04
Exact Sciences Corp.	0.77
Five Prime Therapeutics, Inc.	1.59

Description %MV

Health Care Cont'd

Fluidigm Corp.	0.87
Foundation Medicine, Inc.	1.05
Genomic Health, Inc.	1.01
Glaukos Corp.	1.65
Inogen, Inc.	1.43
NanoString Technologies, Inc.	0.65
Natera, Inc.	1.74
NxStage Medical, Inc.	0.73
Pacific Biosciences of California, Inc.	1.82
Sage Therapeutics, Inc.	0.75
Spark Therapeutics, Inc.	0.80
Spectranetics Corp.	1.10
US Physical Therapy, Inc.	1.51
Vascular Solutions, Inc.	1.63
Zeltiq Aesthetics, Inc.	1.07

Industrials

Air Transport Services Group, Inc.	1.25
Argan, Inc.	1.22
Builders FirstSource, Inc.	1.13
Comfort Systems USA, Inc.	0.55
Echo Global Logistics, Inc.	1.28
Insperty, Inc.	0.98
LSI Industries, Inc.	0.93
Mercury Computer Systems, Inc.	1.00
NV5 Global, Inc.	1.06
Patrick Industries, Inc.	1.73
Taser International, Inc.	0.52

Information Technology

2U, Inc.	0.76
8x8, Inc.	0.86
Alarm.com Holdings, Inc.	1.66
Amber Road, Inc.	0.38
Apigee Corp.	1.46
Applied Micro Circuits Corp.	1.31
Benefitfocus, Inc.	1.24
BroadSoft, Inc.	1.19
Callidus Software, Inc.	1.19
CEVA, Inc.	0.99
Fabrinet	0.83
Five9, Inc.	2.29
Gigamon, Inc.	1.15
Globant SA	0.75
Hortonworks, Inc.	0.72

Description %MV

Information Technology Cont'd

II-VI, Inc.	0.65
Inphi Corp.	1.02
Instructure, Inc.	2.47
Materialise NV	0.64
MaxLinear, Inc.	1.53
Perficient, Inc.	0.93
Rogers Corp.	1.24
Silver Spring Networks, Inc.	0.95
Talend SA	0.38
The Rubicon Project, Inc.	0.61
TubeMogul, Inc.	0.44
Wix.com Ltd.	1.36
Xactly Corp.	0.94

Materials

Ferro Corp.	0.90
Flotek Industries, Inc.	0.78
US Concrete, Inc.	1.42

The portfolio is actively managed and is subject to change.



SMALL CAP GROWTH

LORD ABBETT



DEEP, EXPERIENCED INVESTMENT RESOURCES

Portfolio Management

F. Thomas O'Halloran, J.D., CFA
Partner & Portfolio Manager
29 Years

Arthur K. Weise, CFA
Partner & Portfolio Manager
23 Years

Vernon Bice
Associate Portfolio Manager
15 Years

Research

Benjamin Ebel
Information Technology, Telecom
24 Years

Steven Wortman
Consumer Discretionary, Industrials
Complex, Financials
18 Years

Matthew R. DeCicco, CFA
Health Care
17 Years

Justin Kim
Consumer Discretionary, Business
Services, Financials
4 Years

Risk Management

Alec I. Crawford
Partner & Chief Risk Officer
28 Years

2 Risk Management Professionals
12 Years

Equity Resources

50 Additional Investment Professionals
20 Years Average

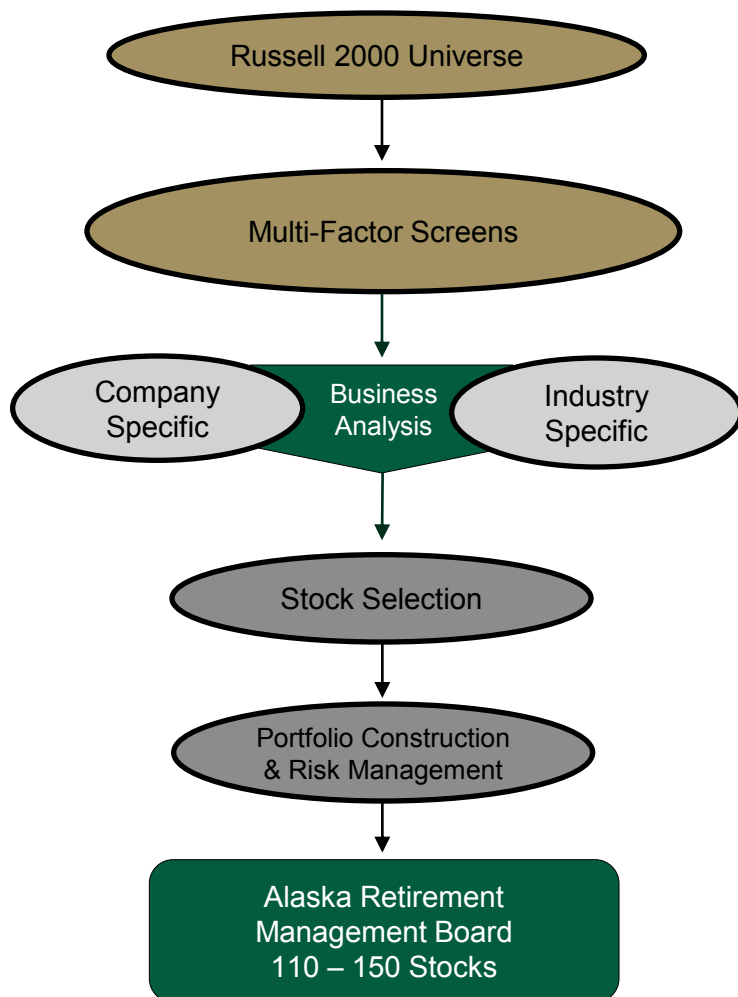
Equity Trading

Ted Oberhaus
Partner & Director of Trading
34 Years

8 Equity Traders
28 Years Average



INVESTMENT PROCESS



Screen universe for:

- Russell 2000 universe market cap range
- Double-digit revenue and earnings growth
- Conservative capital structure
- Preference for positive current earnings

Identify market-leading growth companies with:

- Sound business models
- Capable management
- Competitive advantages
- Favorable industry conditions

Develop company expectations and forecasts:

- Forecast revenue and earnings growth
- Predict market impact of future operating results

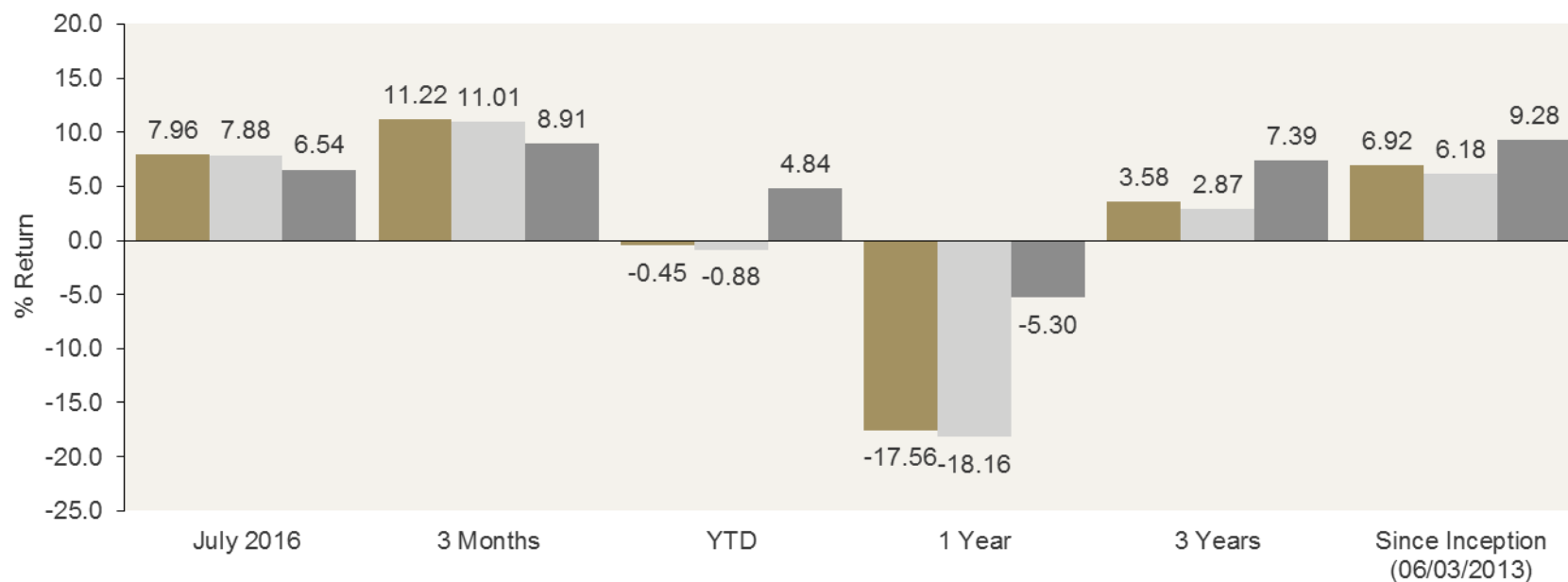
Construct and manage portfolio based on:

- Company quality and health of fundamentals
- Corroborating (confirm, validate) technical factors and market action
- Favored sectors, industries and market capitalizations
- Prudent diversification, liquidity and reasonable valuation support



AVERAGE ANNUAL RATES OF RETURN

AS OF 07/29/2016



■ Alaska Retirement Management Board SCG (Gross) ■ Alaska Retirement Management Board SCG (Net) ■ Russell 2000 Growth Index*

The gross performance information shown is gross of advisory fees and other expenses, with the exception of brokerage commissions and/or markups and mark-downs with respect to fixed income and/or over-the-counter securities transactions, if any. Returns for periods of less than one year are not annualized. *Source: Russell.



ATTRIBUTION ANALYSIS: YEAR TO DATE

AS OF 07/29/2016

	Alaska Retirement Management Board SCG		Russell 2000® Growth Index		Variance		
Sectors*	Average Weight %	Base Return %	Average Weight %	Base Return %	Stock Selection %	Group Weight %	Total %
Health Care	20.9	-4.2	24.4	-6.3	0.5	0.7	1.1
Consumer Staples	4.1	17.5	3.6	10.8	0.2	0.0	0.2
Energy	0.5	43.4	1.0	-4.5	0.2	0.0	0.2
Utilities	1.3	18.5	0.2	4.8	0.1	-0.2	-0.1
Telecommunication Services	0.4	15.6	0.9	26.3	0.0	-0.1	-0.2
Financials	7.1	0.7	8.7	6.7	-0.4	0.1	-0.3
Materials	0.7	-36.2	4.4	16.8	-0.2	-0.4	-0.6
Consumer Discretionary	16.9	-0.4	17.5	7.0	-1.3	-0.1	-1.4
Industrials	11.2	0.6	14.0	14.0	-1.3	-0.4	-1.7
Information Technology	33.8	-1.0	25.2	8.1	-2.9	0.3	-2.6
Cash	3.2	0.3	0.0	0.0	0.0	0.0	0.0
Total	100.0	-0.5	100.0	4.9	-5.3	-0.1	-5.3

Source: Wilshire AtlasSM ("Wilshire"). Please see "About Wilshire" at the end of the presentation for important Wilshire information regarding the calculation of performance attribution information, including information about Not Classified securities. *GICS Sectors. Sectors may include many industries.



PERFORMANCE HIGHLIGHTS: YEAR TO DATE

AS OF 07/29/2016

Largest Contributors	Ticker	% Contribution
Cirrus Logic, Inc. Information Technology	CRUS	0.47
MarketAxess Holdings, Inc. Financials	MKTX	0.46
Belden CDT, Inc. Information Technology	BDC	0.44
Grubhub Inc Information Technology	GRUB	0.44
Burlington Stores Inc Consumer Discretionary	BURL	0.41

Largest Detractors	Ticker	% Contribution
SunPower Corp. Information Technology	SPWR	-0.66
Gogo Inc Information Technology	GOGO	-0.61
Sarepta Therapeutics In Health Care	SRPT	-0.54
Liberty TripAdvisor Hld Consumer Discretionary	LTRPA	-0.37
Cavium Networks, Inc. Information Technology	CAVM	-0.35

% contribution reflects the effect of the individual stock's performance on the portfolio's overall performance for the period shown. Individual holdings and their effect on portfolio performance may change significantly over time.



ATTRIBUTION ANALYSIS: ONE YEAR

AS OF 07/29/2016

	Alaska Retirement Management Board SCG		Russell 2000® Growth Index		Variance		
Sectors*	Average Weight %	Base Return %	Average Weight %	Base Return %	Stock Selection %	Group Weight %	Total %
Energy	0.6	-13.7	1.1	-33.4	0.1	0.0	0.1
Utilities	0.8	18.5	0.2	-6.7	0.1	-0.1	-0.1
Telecommunication Services	0.2	15.6	0.9	33.2	0.0	-0.2	-0.2
Consumer Staples	3.8	-2.9	3.5	12.8	-0.4	0.0	-0.4
Materials	0.5	-59.0	4.2	7.3	-0.3	-0.4	-0.7
Financials	7.7	-10.6	8.3	-0.1	-0.9	0.1	-0.8
Health Care	22.4	-23.5	25.7	-18.2	-1.4	0.4	-0.9
Consumer Discretionary	17.4	-16.5	17.6	-8.5	-1.5	0.0	-1.5
Industrials	9.8	-24.1	13.6	1.2	-2.1	-0.3	-2.4
Information Technology	33.5	-14.9	24.9	4.3	-5.7	0.6	-5.1
Cash	3.5	0.4	0.0	0.0	0.0	-0.6	-0.6
Total	100.0	-17.9	100.0	-5.3	-12.1	-0.6	-12.6

Source: Wilshire AtlasSM ("Wilshire"). Please see "About Wilshire" at the end of the presentation for important Wilshire information regarding the calculation of performance attribution information, including information about Not Classified securities. *GICS Sectors. Sectors may include many industries.



PERFORMANCE HIGHLIGHTS: ONE YEAR

AS OF 07/29/2016

Largest Contributors	Ticker	% Contribution
MarketAxess Holdings, Inc. Financials	MKTX	0.47
ABIOMED, Inc. Health Care	ABMD	0.42
Belden CDT, Inc. Information Technology	BDC	0.36
Pool Corporation Consumer Discretionary	POOL	0.36
Burlington Stores Inc Consumer Discretionary	BURL	0.34

Largest Detractors	Ticker	% Contribution
Wisdomtree Invts Inc Financials	WETF	-0.61
Chimerix Inc Health Care	CMRX	-0.58
Ldr Hldg Corp Health Care	LDRH	-0.58
SunPower Corp. Information Technology	SPWR	-0.56
Amicus Therapeutics Inc Health Care	FOLD	-0.53

% contribution reflects the effect of the individual stock's performance on the portfolio's overall performance for the period shown. Individual holdings and their effect on portfolio performance may change significantly over time.



ATTRIBUTION ANALYSIS: SINCE INCEPTION CUMULATIVE

AS OF 07/29/2016

	Alaska Retirement Management Board SCG		Russell 2000® Growth Index		Variance		
Sectors*	Average Weight %	Base Return %	Average Weight %	Base Return %	Stock Selection %	Group Weight %	Total %
Health Care	22.2	65.0	23.7	49.5	3.4	0.1	3.5
Energy	2.7	-40.6	2.9	-50.1	0.0	2.6	2.6
Financials	8.2	48.8	7.7	32.1	2.0	-0.1	1.9
Materials	1.3	-75.0	4.7	9.2	0.3	1.5	1.7
Consumer Staples	3.6	91.9	4.0	51.5	0.6	0.0	0.5
Not Classified	0.0	71.4	0.0	0.0	0.0	0.0	0.0
Utilities	0.3	30.6	0.2	22.4	0.1	-0.2	0.0
Telecommunication Services	0.1	15.6	0.8	73.3	0.0	-0.3	-0.3
Industrials	11.6	0.3	14.5	22.7	-1.8	0.3	-1.5
Consumer Discretionary	15.4	4.6	16.5	13.2	-2.5	0.1	-2.4
Information Technology	31.7	11.4	24.9	53.9	-13.7	1.3	-12.5
Cash	3.1	0.7	0.0	0.0	0.0	-1.4	-1.4
Total	100.0	23.8	100.0	31.7	-11.6	3.7	-7.9

Source: Wilshire AtlasSM ("Wilshire"). Please see "About Wilshire" at the end of the presentation for important Wilshire information regarding the calculation of performance attribution information, including information about Not Classified securities. *GICS Sectors. Sectors may include many industries.



PERFORMANCE HIGHLIGHTS: SINCE INCEPTION CUMULATIVE

AS OF 07/29/2016

Largest Contributors	Ticker	% Contribution
Receptos, Inc. Health Care	RCPT	2.90
DexCom, Inc. Health Care	DXCM	1.80
Skechers USA, Inc. Consumer Discretionary	SKX	1.77
MarketAxess Holdings, Inc. Financials	MKTX	1.76
ABIOMED, Inc. Health Care	ABMD	1.57

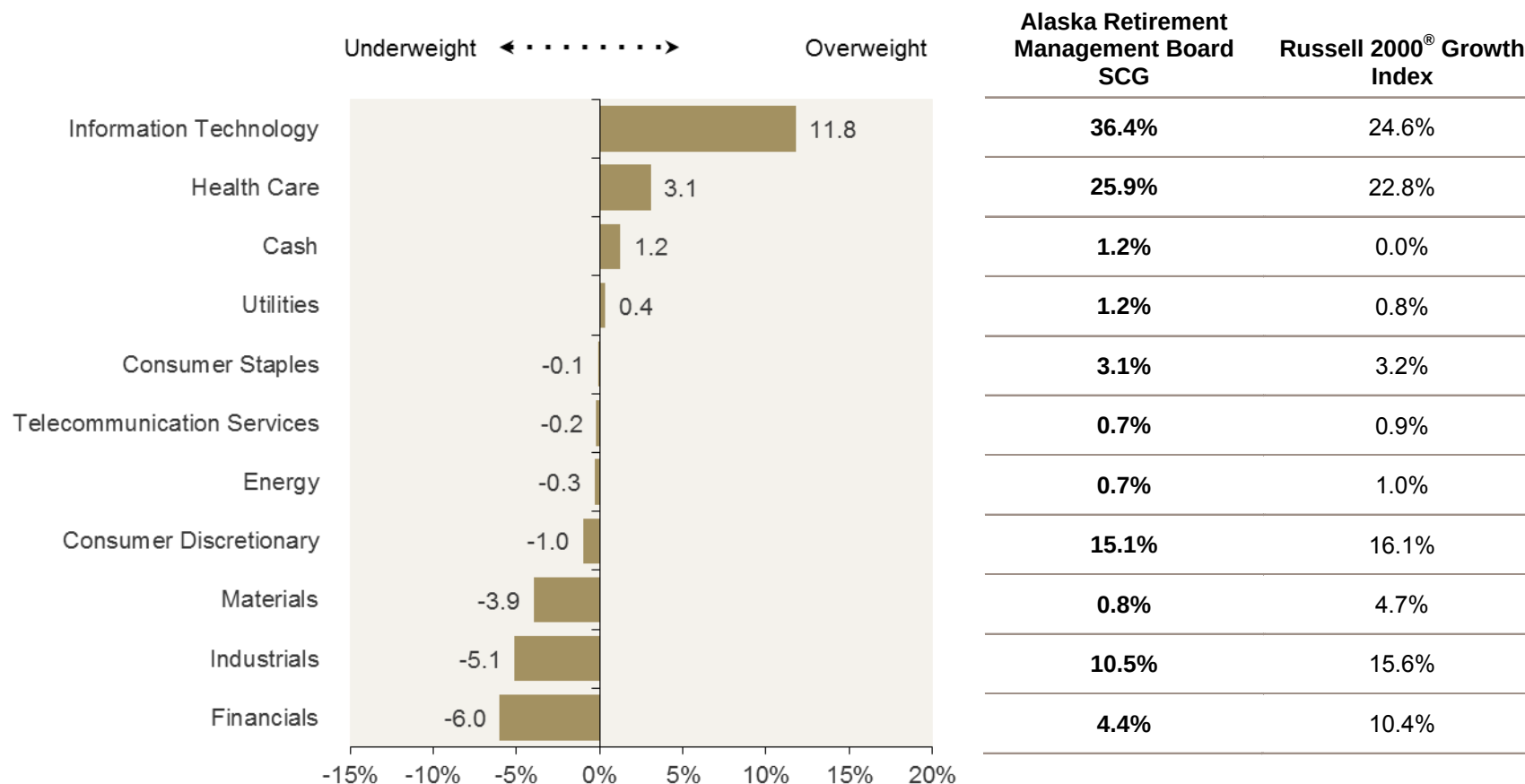
Largest Detractors	Ticker	% Contribution
Nimble Storage, Inc. Information Technology	NMBL	-1.38
Sarepta Therapeutics, Inc. Health Care	SRPT	-1.30
Gogo, Inc. Information Technology	GOGO	-1.18
Chimerix, Inc. Health Care	CMRX	-0.78
Amicus Therapeutics, Inc. Health Care	FOLD	-0.67

% contribution reflects the effect of the individual stock's performance on the portfolio's overall performance for the period shown. Individual holdings and their effect on portfolio performance may change significantly over time.



SECTOR ALLOCATION

AS OF 07/29/2016



Source: Wilshire AtlasSM ("Wilshire"). Please see "About Wilshire" at the end of the presentation for important Wilshire information, including information about Not Classified securities. GICS Sectors. Sectors may include many industries. Totals may not equal 100% due to rounding.



PORTFOLIO CHARACTERISTICS

AS OF 07/29/2016

	Alaska Retirement Management Board SCG	Russell 2000 [®] Growth Index
Total Net Assets (\$M)	\$77,532,119	N/A
Number of Holdings	115	1,170
Weighted Average Market Capitalization (\$M)	\$2,916	\$1,961
Price/Sales	3.0x	1.8x
Long Term Growth (<i>IBES Median</i>)	18.6%	15.3%
Price/Earnings FY1	26.0x	18.9x
Debt/Capital	35.7%	42.8%
Sales Growth (<i>Historical 5 Year</i>)	16.0%	11.3%

Source: The Bank of New York Mellon Corp.



TEN LARGEST HOLDINGS

AS OF 07/29/2016

Company Name	Sector	% of Portfolio
Beacon Roofing Supply, Inc.	Industrials	1.9
GrubHub, Inc.	Information Technology	1.7
Dave & Buster's Entertainment, Inc.	Consumer Discretionary	1.7
Cirrus Logic, Inc.	Information Technology	1.7
Ellie Mae, Inc.	Information Technology	1.5
Press Ganey Holdings, Inc.	Health Care	1.5
TESARO, Inc.	Health Care	1.5
Paylocity Holding Corp.	Information Technology	1.5
Wix.com Ltd.	Information Technology	1.5
Veeva Systems, Inc.	Health Care	1.4
Total		15.9%



PORTFOLIO HOLDINGS

AS OF 07/29/2016

Description	%MV
Consumer Discretionary	
Bright Horizons Family Solutions, Inc.	0.96
Burlington Stores, Inc.	1.14
Dave & Buster's Entertainment, Inc.	1.71
Etsy, Inc.	0.25
Five Below, Inc.	1.25
Imax Corp.	1.13
iRobot Corp.	0.50
Liberty TripAdvisor Holdings, Inc.	0.22
Live Nation Entertainment, Inc.	0.54
Ollie's Bargain Outlet Holdings, Inc.	0.48
Panera Bread Co.	0.94
Planet Fitness, Inc.	1.11
Pool Corp.	1.03
Shake Shack, Inc.	1.03
Texas Roadhouse, Inc.	0.81
Vail Resorts, Inc.	0.52
Vista Outdoor, Inc.	0.42
Wayfair, Inc.	1.05
Consumer Staples	
Blue Buffalo Pet Products, Inc.	0.68
Calavo Growers, Inc.	1.20
Performance Food Group Co.	1.18
Energy	
GasLog Ltd.	0.73
Financials	
CoreSite Realty Corp.	0.72
CyrusOne, Inc.	0.45
LendingTree, Inc.	0.77
MarketAxess Holdings, Inc.	1.07
Morningstar, Inc.	0.40
Western Alliance Bancorp	0.70
WisdomTree Investments, Inc.	0.24
Health Care	
ABIOMED, Inc.	1.43
ACADIA Pharmaceuticals, Inc.	1.25
Agios Pharmaceuticals, Inc.	0.26
Align Technology, Inc.	0.26
Charles River Laboratories International, Inc.	0.71

Description	%MV
Health Care Cont'd	
Cotiviti Holdings, Inc.	0.54
Exact Sciences Corp.	0.97
Exelixis, Inc.	0.98
Glaukos Corp.	1.15
Integra LifeSciences Holdings Corp.	1.22
Medidata Solutions, Inc.	0.65
Neurocrine Biosciences, Inc.	0.50
Nevro Corp.	1.43
Pacific Biosciences of California, Inc.	1.06
Patheon NV	0.49
Penumbra, Inc.	1.44
Press Ganey Holdings, Inc.	1.51
Prestige Brands Holdings, Inc.	1.09
Sage Therapeutics, Inc.	0.74
Spark Therapeutics, Inc.	1.07
Techne Corp.	0.95
TESARO, Inc.	1.48
Ultragenyx Pharmaceutical, Inc.	0.29
VCA Antech, Inc.	0.76
Veeva Systems, Inc.	1.45
West Pharmaceutical Services, Inc.	0.80
Zeltiq Aesthetics, Inc.	1.42
Industrials	
Beacon Roofing Supply, Inc.	1.94
Builders FirstSource, Inc.	1.18
Dycom Industries, Inc.	1.05
Healthcare Services Group	0.15
HEICO Corp.	0.68
Insperty, Inc.	0.49
Nordson Corp.	1.01
RBC Bearings, Inc.	0.79
SiteOne Landscape Supply, Inc.	0.50
TransUnion	0.70
WageWorks, Inc.	1.26
Watsco, Inc.	0.76
Information Technology	
2U, Inc.	1.43
Acacia Communications, Inc.	0.91
Ambarella, Inc.	0.57
Atlassian Corp. plc	0.59
Belden, Inc.	1.39
Benefitfocus, Inc.	1.22
BroadSoft, Inc.	1.32

Description	%MV
Information Technology Cont'd	
Callidus Software, Inc.	0.49
Cirrus Logic, Inc.	1.68
Coherent, Inc.	0.13
Criteo S.A.	0.92
Ellie Mae, Inc.	1.51
EPAM Systems, Inc.	0.64
Fair Isaac Corp.	1.20
Five9, Inc.	0.50
Gigamon, Inc.	0.20
GoDaddy, Inc.	0.57
GrubHub, Inc.	1.71
HubSpot, Inc.	0.79
Inphi Corp.	1.00
Instructure, Inc.	0.26
Materialise NV	0.18
MaxLinear, Inc.	1.01
Mellanox Technologies Ltd.	0.43
Monolithic Power Systems, Inc.	0.90
Paycom Software, Inc.	1.40
Paylocity Holding Corp.	1.47
Proofpoint, Inc.	1.41
Shopify, Inc.	0.77
Shutterstock, Inc.	0.96
Silicon Motion Technology Corp.	1.02
SunPower Corp.	0.10
The Rubicon Project, Inc.	0.43
Trimble Navigation Ltd.	0.48
Twilio, Inc.	0.62
Ultimate Software Group, Inc.	0.79
Universal Display Corp.	1.32
VistaPrint Ltd.	0.51
WebMD Health Corp.	0.88
Wix.com Ltd.	1.47
Zendesk, Inc.	1.24
Materials	
Minerals Technologies, Inc.	0.04
Scotts Miracle-Gro Co.	0.74
Telecommunication Services	
Cogent Communications Group, Inc.	0.75
Utilities	
New Jersey Resources Corp.	0.45
ONE Gas, Inc.	0.24
Portland General Electric Co.	0.46

The portfolio is actively managed and is subject to change.



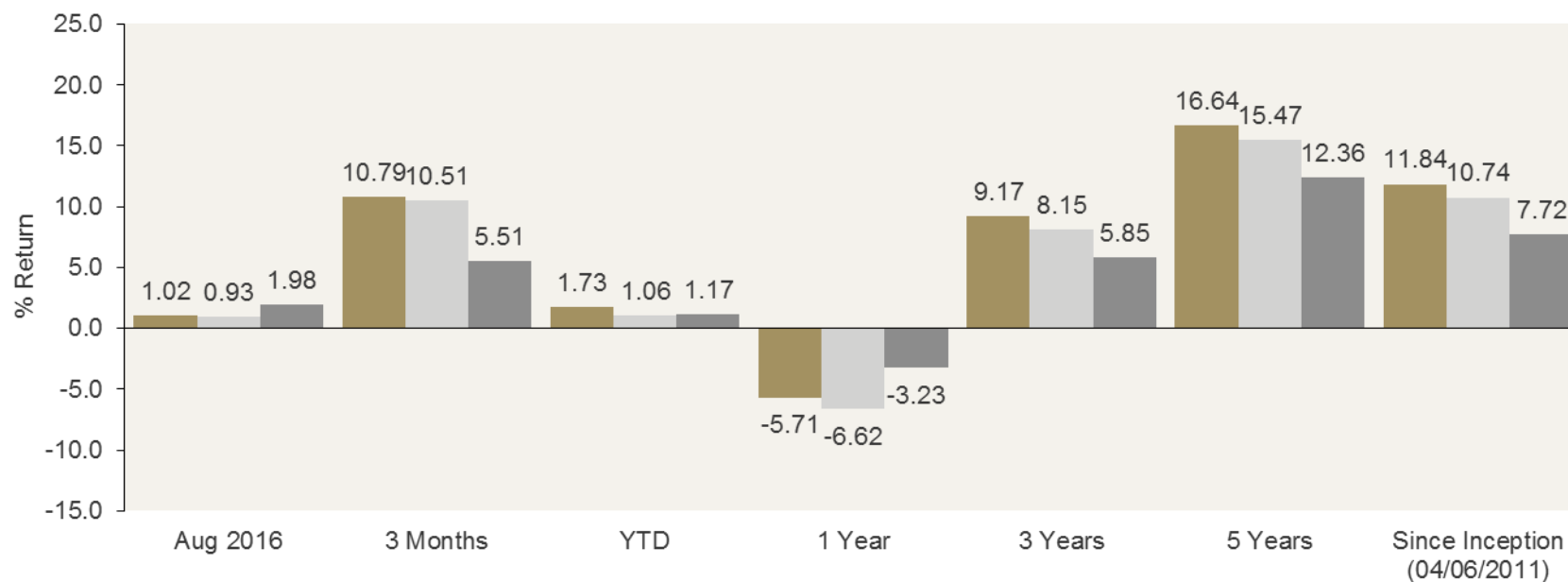
APPENDIX

LORD ABBETT



AVERAGE ANNUAL RATES OF RETURN

AS OF 08/31/2016



■ Alaska Retirement Management Board Micro (Gross) ■ Alaska Retirement Management Board Micro (Net) ■ Russell Microcap Growth Index*

The gross performance information shown is gross of advisory fees and other expenses, with the exception of brokerage commissions and/or markups and mark-downs with respect to fixed income and/or over-the-counter securities transactions, if any. Returns for periods of less than one year are not annualized. *Source: Russell.



CALENDAR YEAR RETURNS

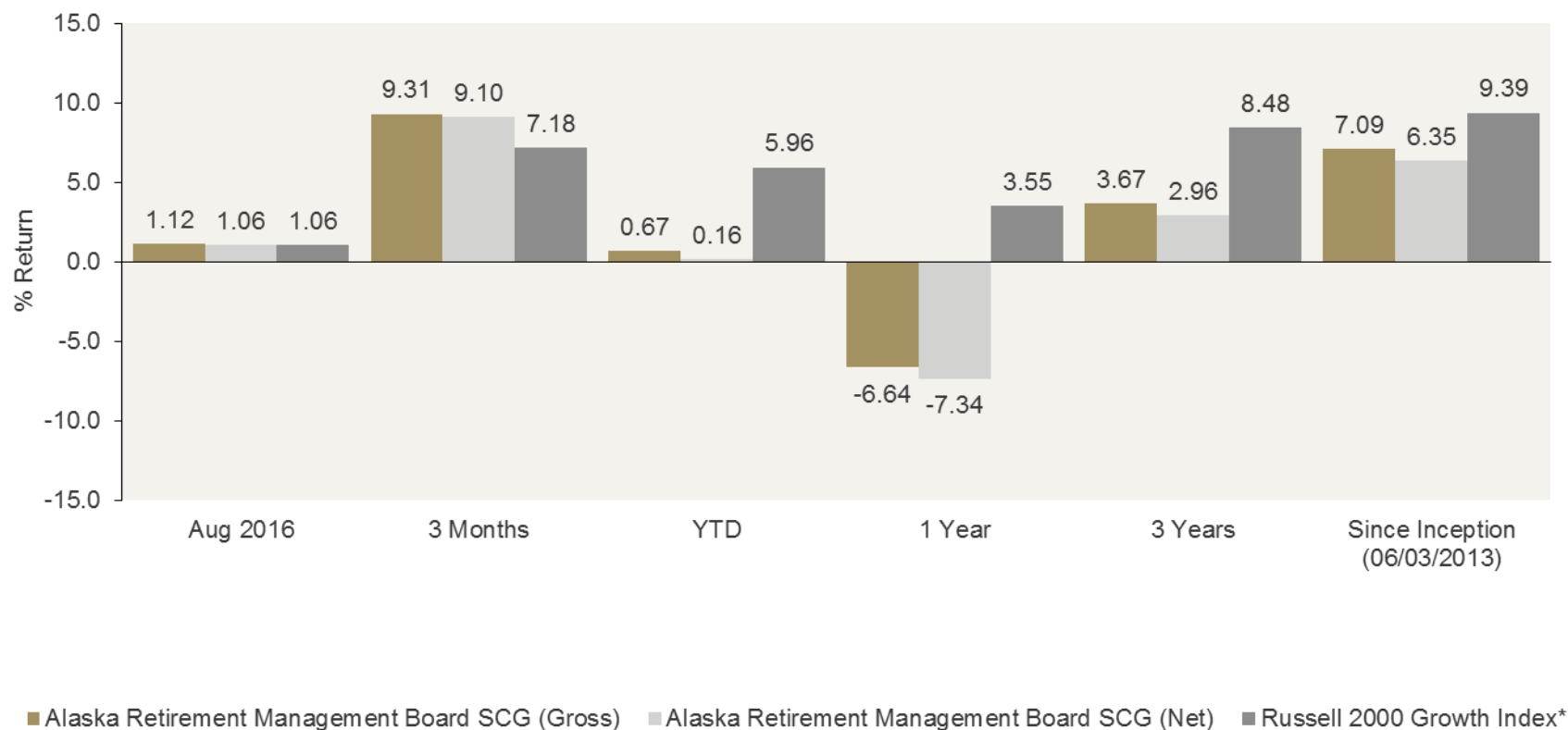
	Micro Cap Growth Institutional Composite (Gross of Fees)	Micro Cap Growth Institutional Composite (Net of Fees)	Russell Microcap® Growth Index*
2015	-4.90%	-6.03%	-3.85%
2014	12.59%	11.22%	4.30%
2013	81.16%	79.07%	52.84%
2012	4.35%	3.09%	15.17%
2011	-3.99%	-5.20%	-8.42%
2010	36.78%	34.80%	29.48%
2009	55.20%	52.97%	39.18%
2008	-45.02%	-45.88%	-44.65%
2007	25.30%	23.46%	-2.68%

Past performance is not a reliable indicator or guarantee of future results. The performance information provided above is supplemental to the Micro Cap Growth Institutional Composite presentation, which is included in the Appendix, and is subject to change. *Source: Russell.



AVERAGE ANNUAL RATES OF RETURN

AS OF 08/31/2016



The gross performance information shown is gross of advisory fees and other expenses, with the exception of brokerage commissions and/or markups and mark-downs with respect to fixed income and/or over-the-counter securities transactions, if any. Returns for periods of less than one year are not annualized. *Source: Russell.



CALENDAR YEAR RETURNS

	Small Cap Growth Institutional Composite (Gross of Fees)	Small Cap Growth Institutional Composite (Net of Fees)	Russell 2000 [®] Growth Index*
2015	-8.00%	-8.83%	-1.38%
2014	4.33%	3.32%	5.60%
2013	58.82%	57.17%	43.30%
2012	11.60%	10.45%	14.59%
2011	-0.62%	-1.64%	-2.91%
2010	38.23%	36.89%	29.09%
2009	48.71%	47.28%	34.47%
2008	-46.75%	-47.31%	-38.54%
2007	37.33%	36.00%	7.05%
2006	13.76%	12.64%	13.35%
2005	13.09%	11.97%	4.15%
2004	6.58%	5.52%	14.31%

Past performance is not a reliable indicator or guarantee of future results. The performance information provided above is supplemental to the Small Cap Growth Institutional Composite presentation, which is included in the Appendix, and is subject to change. *Source: Russell.



F. Thomas O'Halloran, J.D., CFA

Partner & Portfolio Manager

F. Thomas O'Halloran is the Director and lead Portfolio Manager responsible for managing the firm's small cap growth, micro cap growth, and growth equity strategies. He also is a member of the Asset Allocation Investment Committee.

Mr. O'Halloran joined Lord Abbett in 2001 as a Research Analyst. He assumed full-time responsibility for managing Lord Abbett's small cap growth strategy in 2003. In that year, he also was named Partner. Prior to joining Lord Abbett, he was an Executive Director/Senior Research Analyst at Dillon Read & Co. Inc. and its acquirer, UBS. He began his career in the financial services industry in 1987.

Before beginning his career in the financial services industry, he was a trial lawyer, which included work as a criminal prosecutor for the State of Rhode Island.

Several publications, including The Wall Street Journal, have interviewed Mr. O'Halloran for his insights on current market trends and his perspective on small cap growth investments. He also has been profiled in Investor's Business Daily and Barron's.

Mr. O'Halloran earned an AB from Bowdoin College, a JD from Boston College, and an MBA from Columbia University. He also is a holder of the Chartered Financial Analyst® (CFA) designation.



Nicholas Johnston

Director, Institutional Investor Services

Nicholas Johnston is responsible for working with institutional investors across a range of segments, including corporate, public, insurance, health care, endowments and foundations. In this role, he provides the professional investor with market perspectives, new investment ideas, in-depth portfolio reviews, and access to the full breadth of Lord Abbett's resources.

Mr. Johnston joined Lord Abbett in 2012 as a Retirement Sales Director. Prior to joining Lord Abbett, he was a VP, Business Development Manager at ING. Previous experience also includes: Client Relations Manager at ING; Internal Wholesaler at ING; and Senior Loan Consultant at American Home Equity. He began his career in the financial services industry in 2007.

Mr. Johnston earned a BA in government from Claremont McKenna College.



KEY INVESTMENT TEAM BIOGRAPHIES

Name	Role	Years of Industry Experience	Years with Lord Abbett	Prior Professional Experience	Education
Robert A. Lee*	Chief Investment Officer	25	19	ARM Capital Advisors; Kidder Peabody Asset Management; First Boston Corporation	BS, University of Pennsylvania
F. Thomas O'Halloran, J.D., CFA*	Portfolio Manager	29	15	Dillon, Read, & Co.; Trial Attorney	AB, Bowdoin College; JD, Boston College; MBA, Columbia University
Arthur K. Weise, CFA*	Portfolio Manager	23	9	BNY Institutional Asset Management, Trainer Wortham & Co.; Dillon Read/UBS Warburg	BA, Columbia University
Matthew R. DeCicco, CFA	Portfolio Manager	17	17	N/A	BS, University of Richmond
Vernon Bice	Associate Portfolio Manager	15	5	UBS; BNY Institutional Asset Management; Bank of America	BS, The Ohio State University
Benjamin Ebel	Research Analyst	24	11	Dreyfus; Invesco; Armen Partners, LP	BA, Brandeis University; MS, University of North Carolina

As of 09/06/2016. *Partner of Lord Abbett. Years of industry experience is updated as of 01/01/2016.



KEY INVESTMENT TEAM BIOGRAPHIES

Name	Role	Years of Industry Experience	Years with Lord Abbett	Prior Professional Experience	Education
Steven Wortman	Research Analyst	18	10**	Greenhouse Funds; Babson Capital Management; Wynnefield Capital	BS, University of Florida
Matthew R. DeCicco, CFA	Research Analyst	17	17	N/A	BS, University of Richmond
Justin Kim	Associate Research Analyst	4	4	N/A	BS, University of Pennsylvania
Alec I. Crawford*	Chief Risk Officer	28	4	Ziff Brothers Investments; RBS Greenwich Capital; Deutsche Bank Securities	AB, Harvard College
Ted Oberhaus*	Director of Trading	34	33	Brimberg & Co.	BA, Ohio Wesleyan University



The Wilshire Atlas Variance Analysis tool provides a methodology for explaining the difference in performance between a portfolio and its benchmark, based on the decomposition of returns. The user specifies the portfolio, index, link frequency, sector and weighting. The weighting can be shown as beginning, average or end weights and is used for display purposes only.

Portfolio Weight	Portfolio Base Return	Benchmark Weight	Benchmark Base Return	Stock Selection	Group Weight	Total

Weight (Portfolio): This is the average weight of each group in the portfolio. Alternatively, the weight at the end of the reporting period, or on average across the reporting period, may be selected.

Base Return (Portfolio): This is the weighted average holding period return for the securities in each group. This weighted average is calculated for each link period using beginning weights and then the resulting values are linked together to calculate the displayed value.

Weight (Benchmark): This is the average weight of each group in the benchmark. Alternatively, the weight at the end of the reporting period, or on average across the reporting period, may be selected.

Base Return (Benchmark): This is the weighted average holding period return for the benchmark securities in each group. This weighted average is calculated for each link period using beginning weights, then the resulting values are linked together to calculate the displayed value.

Stock Selection Variance: This is the success of selection decisions within each group versus the benchmark. It is calculated for each link period using the following equation: Stock Selection Variance = $W_{P,G} * (R_{P,G} - R_{B,G})$, where $W_{P,G}$ = Weight of the group in the portfolio, $R_{P,G}$ = Return of the group in the portfolio, $R_{B,G}$ = Return of the group in the benchmark.

Group Weighting Variance: This is the result of weighting decisions in each group versus the benchmark. It is calculated for each link period using the following equation: Group Weighting Variance = $(W_{P,G} - W_{B,G}) * (R_{B,G} - R_{B,T})$, where $W_{P,G}$ = Weight of the group in the portfolio, $W_{B,G}$ = Weight of the group in the benchmark, $R_{B,G}$ = Return of the group in the benchmark, $R_{B,T}$ = Overall return of the benchmark.

Total Variance: This is the sum of group weighting and stock selection variances. This represents the amount of total variance that is explained by the selection and allocation decisions for each group.

Hedging Cost: This is the contribution due to the difference in the risk-free rates between currencies and is a function of the time left to maturity. It can be positive or negative, depending on the interest rate differentials between the long and short currencies. The hedge cost for each contract is calculated individually by multiplying its exposure by its hedge cost; then these contributions are summed to give the total contribution shown on the report.

Hedging Effect: This is the contribution due to hedging. It is calculated by multiplying the exposure associated with each currency forward by the portion of the forward's return due to currency fluctuations; then, each of the forward's contributions are summed together to give the total that appears in the Contribution Summary table. The return that is used in the calculation excludes the hedge cost.

Portfolio Return: This is the sum of each of contributions displayed in the Contribution Summary table.

Wilshire generated returns are calculated gross of fees based on end of day prices and do not capture intraday cash flow, price changes or trading activity, and therefore are subject to some variance from Lord Abbett returns. In addition, Wilshire and Lord Abbett may use different pricing sources and methodologies.

Not Classified securities represent those securities which have not been assigned an official GICS Direct classification. GICS Direct, a joint product of Standard & Poor's and MSCI, provides industry classifications for more than 40,000 companies and over 45,000 securities. Not Classified securities may include, but are not limited to: Exchange-Traded Funds (ETFs), pink sheet-listed issues, pre-IPO placements, private placements, secondary issues, open-end funds, closed-end funds, and non-operating establishments.

Under certain circumstances, Lord Abbett may elect to have Wilshire map an ETF holding to the relevant characteristics represented by that ETF's underlying index in order to reflect the exposure and performance contributed by the ETF to the overall portfolio. When this option is selected, Wilshire will remove the ETF from the Not Classified category and instead allocate the ETF's exposures across the relevant attributes based on the composition of the ETF's underlying index.

BMO Disciplined Small-Cap Core Strategy

**Prepared for:
Alaska Retirement
Management Board**



Presented by:

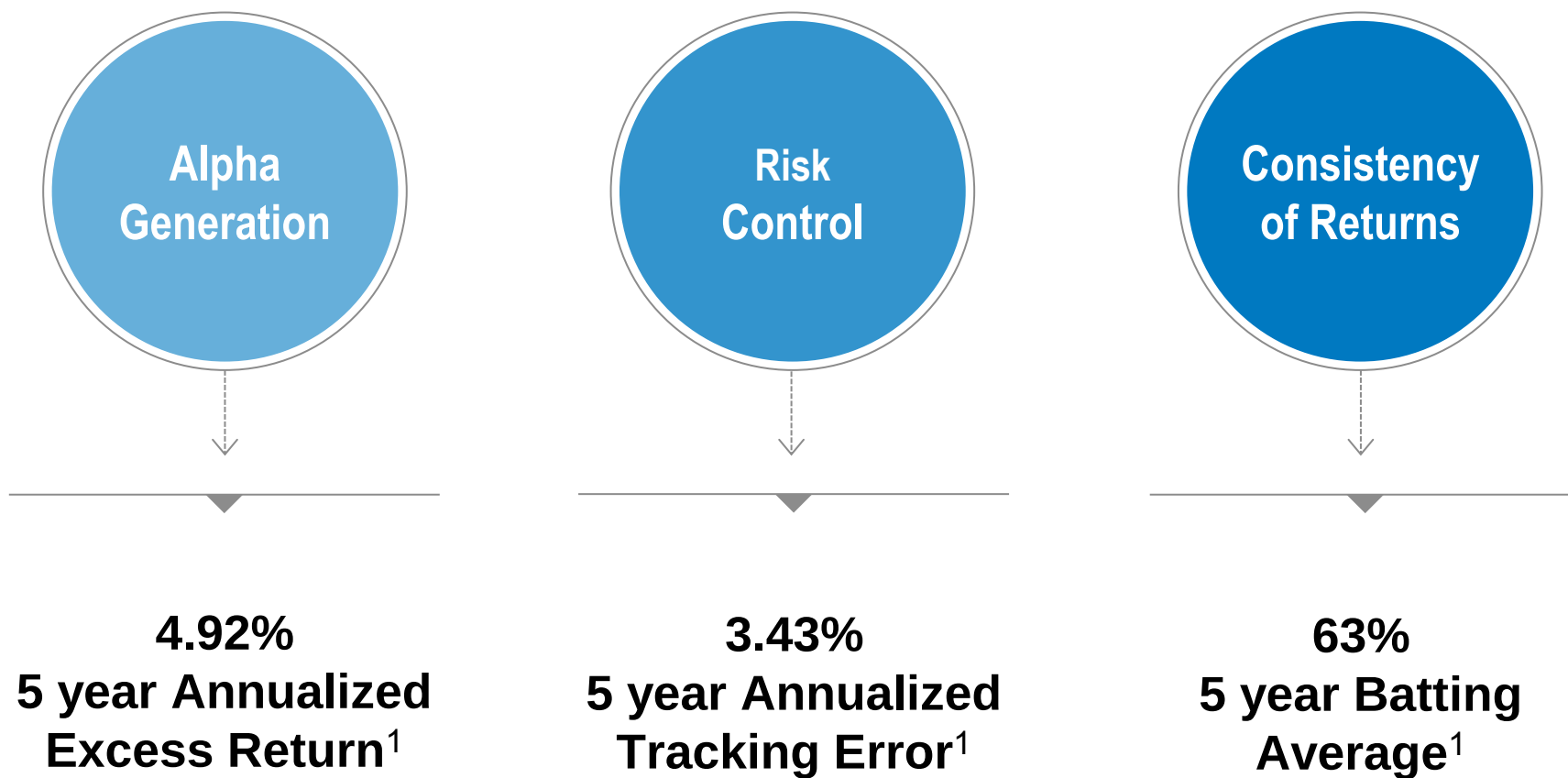
David Corris, CFA, Head of Disciplined Equities, Senior Portfolio Manager
Thomas Lettenberger, CFA, Senior Portfolio Manager

Kamila Kowalke, Director, Institutional Sales
Phone: 949-230-2902, Email: kamila.kowalke@bmo.com

For Institutional use only.

September 29, 2016

Why BMO Disciplined Small-Cap Core?



BMO Global Asset Management overview

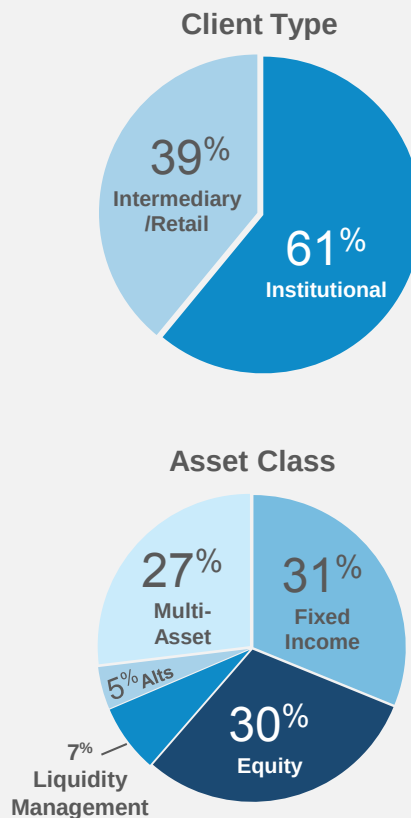
Firm snapshot

- \$234 billion under management globally¹
- Headquartered in Chicago
- Offices in 24 cities, located in 14 countries, serving clients across five continents
- 55th Largest Global Asset Manager²

What sets us apart

- **Global presence**
Part of the BMO Financial Group – one of North America's largest financial institutions.
- **Specialized investment teams**
Independent teams that are empowered to deliver strong, consistent results while minimizing unnecessary risk.
- **Culture of partnership and innovation**
Working in partnership with clients to create and deliver innovative solutions.

AUM Breakdown¹



AUM figures in USD as of 6/30/2016 ¹ As of June 30, 2016. AUM includes \$74.4 billion managed by BMO Global Asset Management (Canada), \$54.5 billion managed by BMO Global Asset Management (U.S.), \$101.9 billion managed by BMO Global Asset Management (EMEA), \$2.5 billion managed by LGM Investments, \$2.0 billion managed by Money, \$9.8 billion managed by Pyrford International, \$10.5 billion managed by Taplin, Canada & Habacht, and \$9.2 billion managed by BMO Real Estate Partners. ² Pensions & Investments (P&I) Largest Money Managers – Ranking of investment management firms based on worldwide assets under management. For the year ended December 31, 2015. AUM includes both discretionary and non-discretionary assets. Figures are adjusted to avoid double-counting of assets sub-advised by boutiques.

Investment capabilities

Team	Equity	Fixed Income	Alternative/Multi-Asset
BMO Global Asset Management (US)	• U.S. Disciplined • International Disciplined • U.S. Fundamental • Low Volatility	• Money Market • Short Duration • Tax-Exempt	• Target Date • Target Risk • Multi-Manager Solutions
BMO Global Asset Management (Canada)	• Canadian Fundamental • Canadian Quantamental • Global	• Canadian Fixed Income • Canadian Money Market • Canadian Balanced	• Global Structured Solutions • ETFs
BMO Global Asset Management (EMEA)	• International • Global • European • ESG	• Global Fixed Income • Emerging Market Debt • Global High Yield	• European LDI • Direct Real Estate • Private Equity • Multi-Asset Solutions • ETFs
	• International • Global • Asia ex-Japan Equities		• Global Absolute Return/Balanced
	• Emerging Markets • Frontier Markets • Asian Markets • India Markets		
		• U.S. Core/Core Plus • U.S. Intermediate Core/Core Plus • U.S. Credit • U.S. Long Duration	• Custom Strategies • U.S. LDI
		• U.S. High Yield • U.S. Quality High Yield • Bank Loans	
BMO Real Estate Partners			• Core Pan-European Real Estate • Core Plus Pan-European Real Estate • Value Add Pan-European Real Estate

BMO Disciplined Small-Cap Core investment team

Portfolio managers

David Corris, CFA

Head of Disciplined Equities, Senior Portfolio Manager

MBA, Harvard University

17 Years of Experience

Tom Lettenberger, CFA, CPA

Senior Portfolio Manager

MA, University of Michigan

22 Years of Experience

Equity team

Ernesto Ramos, PhD

Head of Equities, Senior Portfolio Manager

PhD, Harvard University

29 Years of Experience

Jason Hans, CFA

Senior Portfolio Manager

MBA, Notre Dame

18 Years of Experience

Jay Kaufman, CFA

Portfolio Manager

MBA, University of Chicago

10 Years of Experience

Casey Sambs, CFA

Portfolio Manager

MBA, University of Wisconsin

15 Years of Experience

Kenneth Conrad, PhD, CFA

Portfolio Manager

PhD, George Mason University

11 Years of Experience

David Rosenblatt, CFA

Portfolio Manager

MBA, University of Chicago

8 Years of Experience

Jon Borchardt

Portfolio Manager

BS, University of San Francisco

22 Years of Experience

Lei Zhu, CFA

Equity Analyst

MS, University of Waterloo

8 Years of Experience

Steven Minturn

Equity Analyst

MBA, University of Chicago

2 Years of Experience

Christopher Jenks, CFA

Product Specialist

BS, DePaul University

9 Years of Experience

Jeanne Simmons

Business Analyst

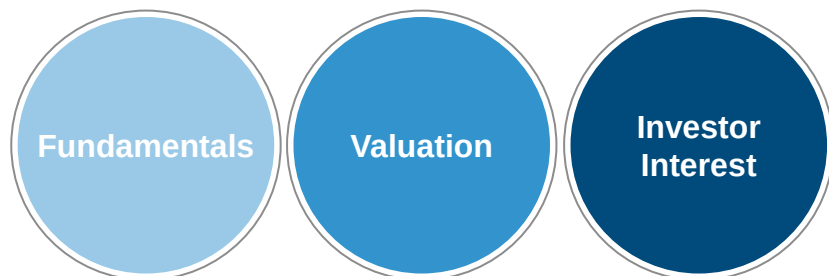
BS, Cardinal Stritch University

24 Years of Experience

Investment philosophy

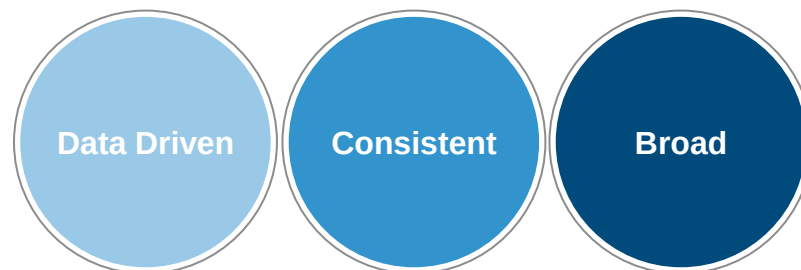
Fundamental Perspective

We believe markets are inefficient due to predictable investor biases. Our research shows that fundamentally strong, attractively valued companies with growing investor interest will outperform over the long run.



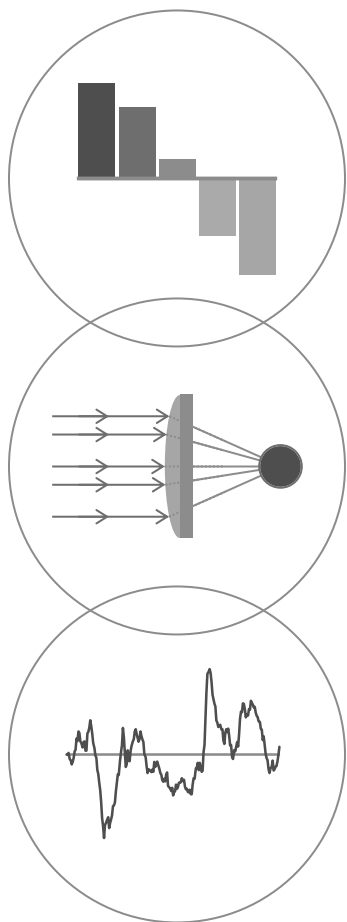
Quantitative Implementation

We believe a quantitative approach to return/risk analysis and portfolio construction leads to consistent long-term outperformance.



Our clients benefit from integrating the complementary strengths of fundamental and quantitative analysis

Disciplined equity approach adds value in three ways



Active stock selection

Our research shows that stocks with certain characteristics tend to outperform. We seek to own fundamentally strong, attractively valued companies that have growing investor interest.

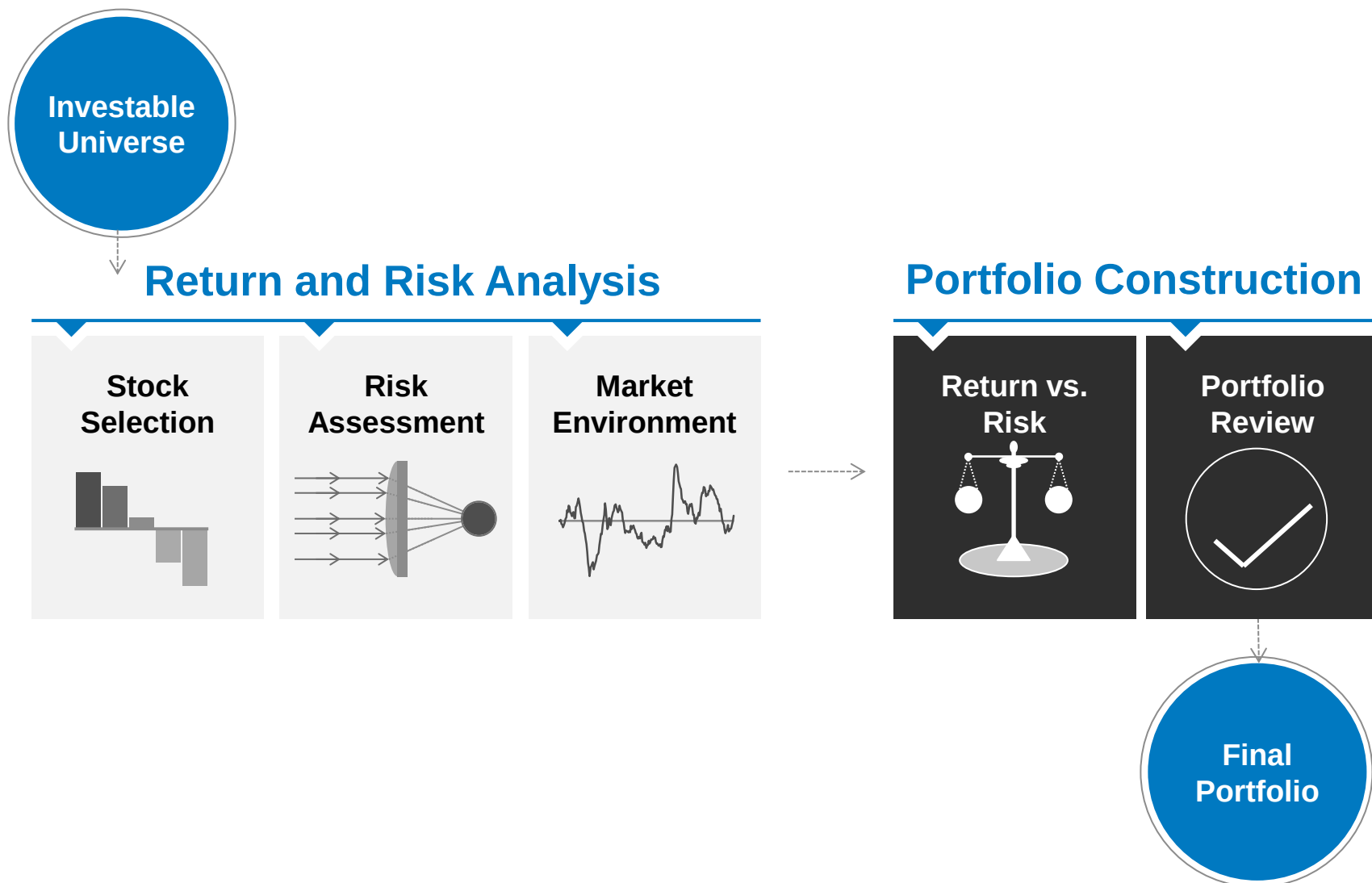
Thoughtful risk management

Risk management is an integral complement to stock selection and leads to higher returns over time when implemented thoughtfully. Managing risk properly requires a comprehensive and multi-faceted view of risk.

Adaptive and proactive process

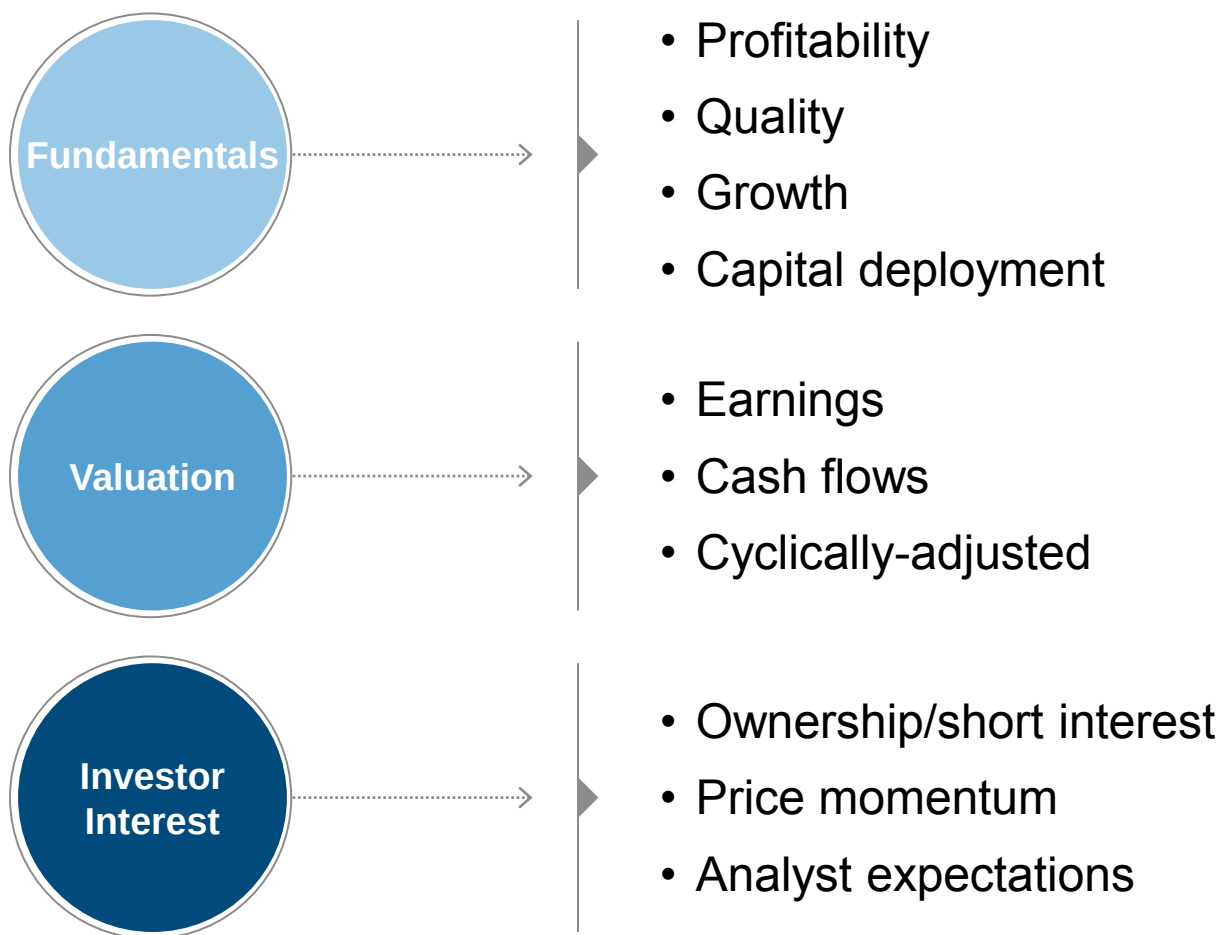
Market conditions play an important role in determining stock returns. A successful investment process adapts to evolving markets, identifying potential challenges as well as alpha-generation opportunities, to generate consistent returns.

Overview of disciplined equity investment process



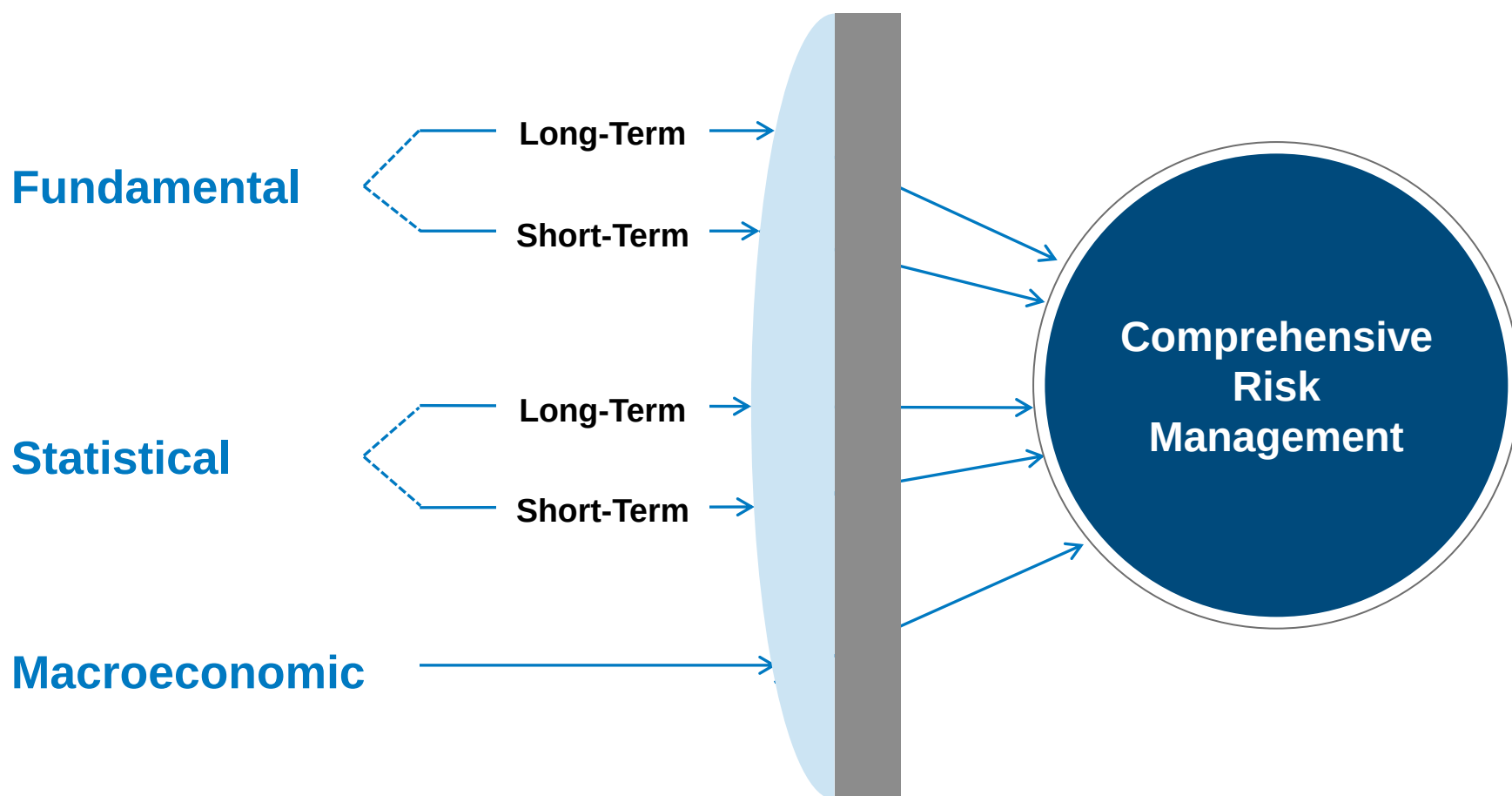
Stock selection – three building blocks

Our research shows that stocks with certain characteristics tend to outperform. We seek to own fundamentally strong, attractively valued companies that have growing investor interest.



Risk assessment – risk models

We incorporate **multiple perspectives** to focus on key portfolio risks



Market environment – market monitor

Proprietary dashboard for understanding the current market environment

- What is unusual today?
- Does our process face any headwinds today?

Reinforces our philosophy of being disciplined yet adaptive

- We take a data-driven approach to evaluating groups of stocks
- We apply a disciplined process to identify, analyze, and capitalize on these opportunities

Presents an opportunity for alpha generation and risk management

- Alpha generation: Is there an opportunity to add excess return?
- Risk management: Is there an unexpected risk to manage?

Market environment – market monitor

We take a disciplined approach towards addressing emerging opportunities in the market

Identify

Find market conditions at extremes

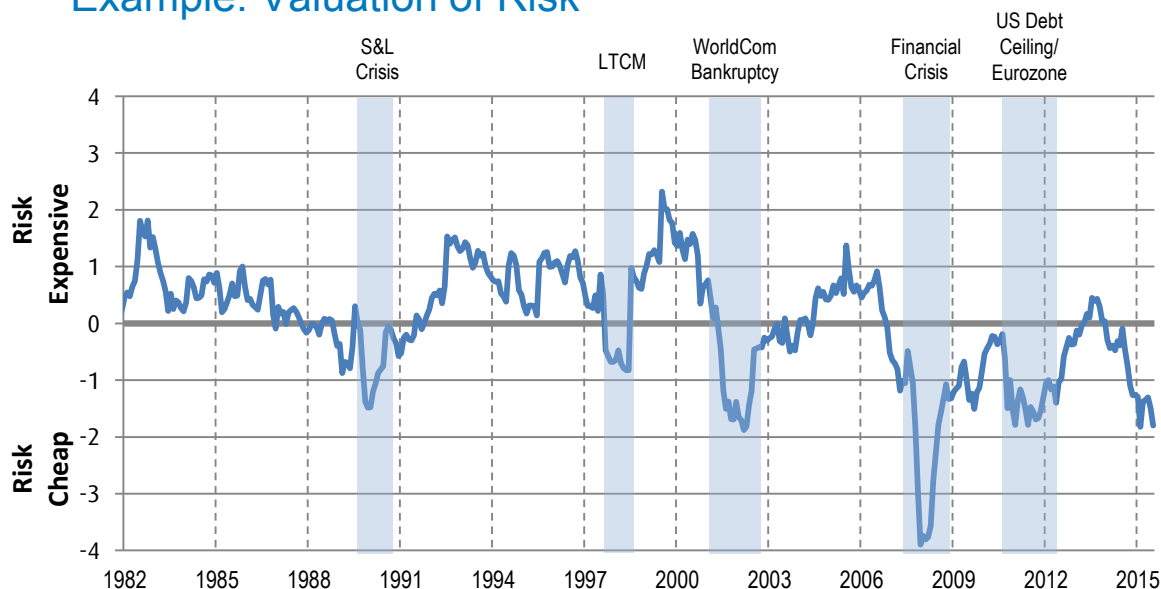
Analyze

Thoroughly research and understand event

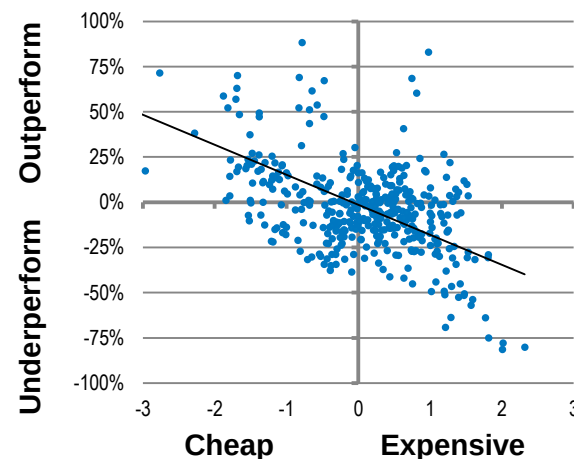
Capitalize

Thoughtfully decide on an implementation plan, including how to enter and when to exit

Example: Valuation of Risk

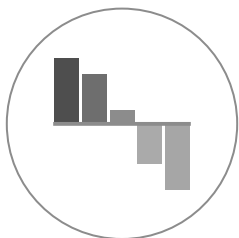


When risk is cheap, it generally outperforms significantly in the next year

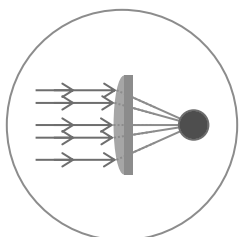


Portfolio construction

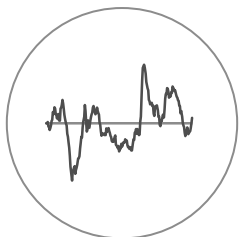
Return Forecast



Risk Assessment



Market Environment



Iterative process balancing return and risk

Quantitative Qualitative

Data validation
Exposure review

Philosophy embodiment
Stock specific review



Buy Candidates

Top-ranking alphas and
desirable risk
characteristics/exposures

Sell Discipline

Deteriorating alphas and
undesirable risk
characteristics/exposures

Portfolio Limits/Targets

Holdings: 150–250
Annual turnover: 60 – 90%
Tracking error: 4 – 6%
Sector bounds +/- 5%
Industry bounds +/- 3%

Security Level Limits

Weights +2% vs. index
Max. positions liquidity based

Transaction costs

BMO Disciplined Small-Cap Core portfolio

Holdings and characteristics as of June 30, 2016

Top ten active weights

Holdings	% of Portfolio	% of Index	Active Weight	Sector
DuPont Fabros Technology, Inc.	1.20	0.22	0.98	Financials
El Paso Electric Company	1.09	0.12	0.98	Utilities
Masimo Corporation	1.11	0.13	0.97	Health Care
Gigamon Inc.	1.03	0.07	0.95	Information Technology
ExlService Holdings, Inc.	1.05	0.10	0.94	Information Technology
Cambrex Corporation	1.03	0.10	0.93	Health Care
Blucora, Inc.	0.94	0.02	0.92	Information Technology
Gibraltar Industries, Inc.	0.98	0.06	0.92	Industrials
Children's Place, Inc.	1.00	0.09	0.90	Consumer Discretionary
PNM Resources, Inc.	1.07	0.17	0.90	Utilities

Holdings-based characteristics

	Small-Cap Core	Russell 2000® Index
Weighted avg. market capitalization (\$B)	\$1.5	\$1.7
Median market capitalization (\$B)	\$1.1	\$0.7
Price to earnings FY1 estimate ¹	14.0x	16.9x
Price to sales ²	1.3x	2.1x
Price to cash flow ²	9.2x	12.5x
Dividend yield (%)	1.4%	1.6%
1 year ROE (%)	12.7%	5.4%
Historical 3 year sales growth (%)	10.7%	18.2%
Historical 3 year EPS growth (%)	14.3%	13.6%
Active Share	88.7%	--
Tracking Error (5 yr.)	3.4%	--
Number of Holdings	157	2006

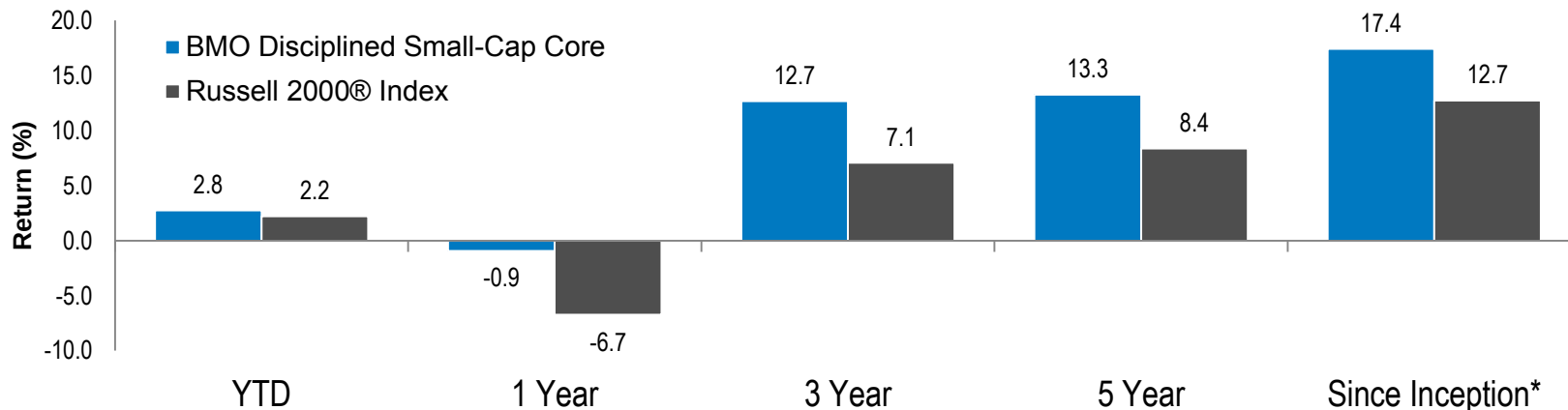
Sector weights³

	Small-Cap Core	Russell 2000® Index
Consumer Discretionary	9.8%	13.5%
Consumer Staples	3.5%	3.1%
Energy	3.1%	3.0%
Financials	23.5%	25.8%
Health Care	16.2%	13.6%
Industrials	16.1%	13.8%
Information Technology	20.6%	17.3%
Materials	3.3%	4.6%
Telecommunication Services	0.0%	0.9%
Utilities	4.0%	4.3%

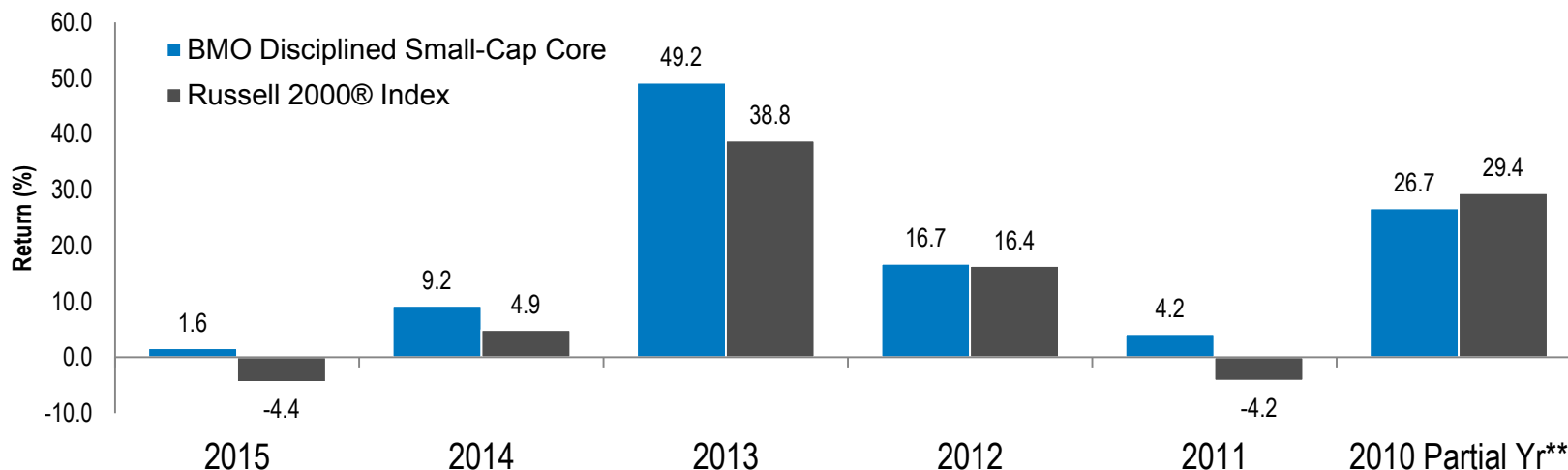
BMO Disciplined Small-Cap Core composite

Performance gross of fees as of June 30, 2016

Annualized Returns



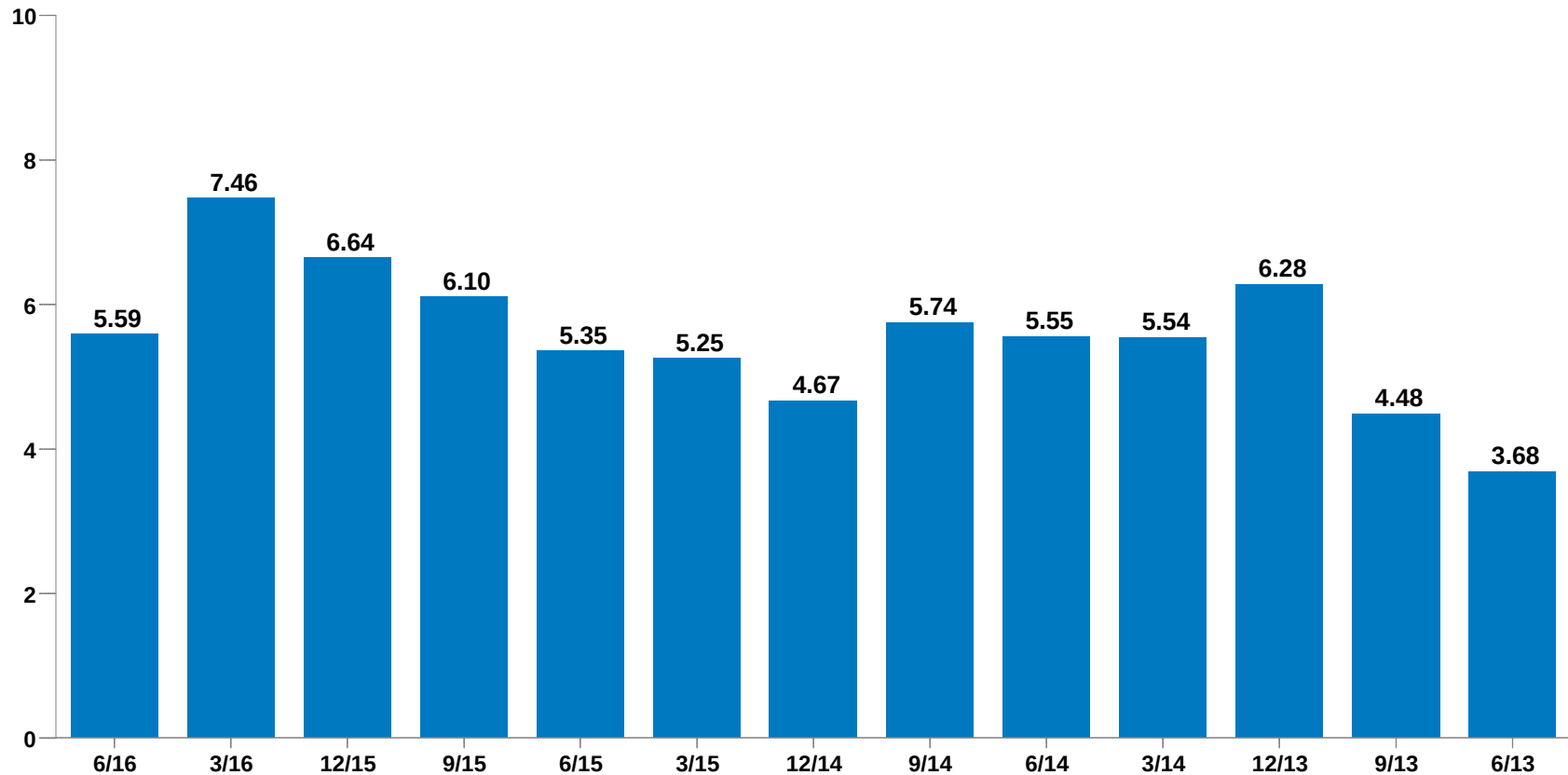
Calendar Year Returns



BMO Disciplined Small-Cap Core

eA 3 year rolling excess returns using Russell 2000 Index (quarterly)

As of June 30, 2016



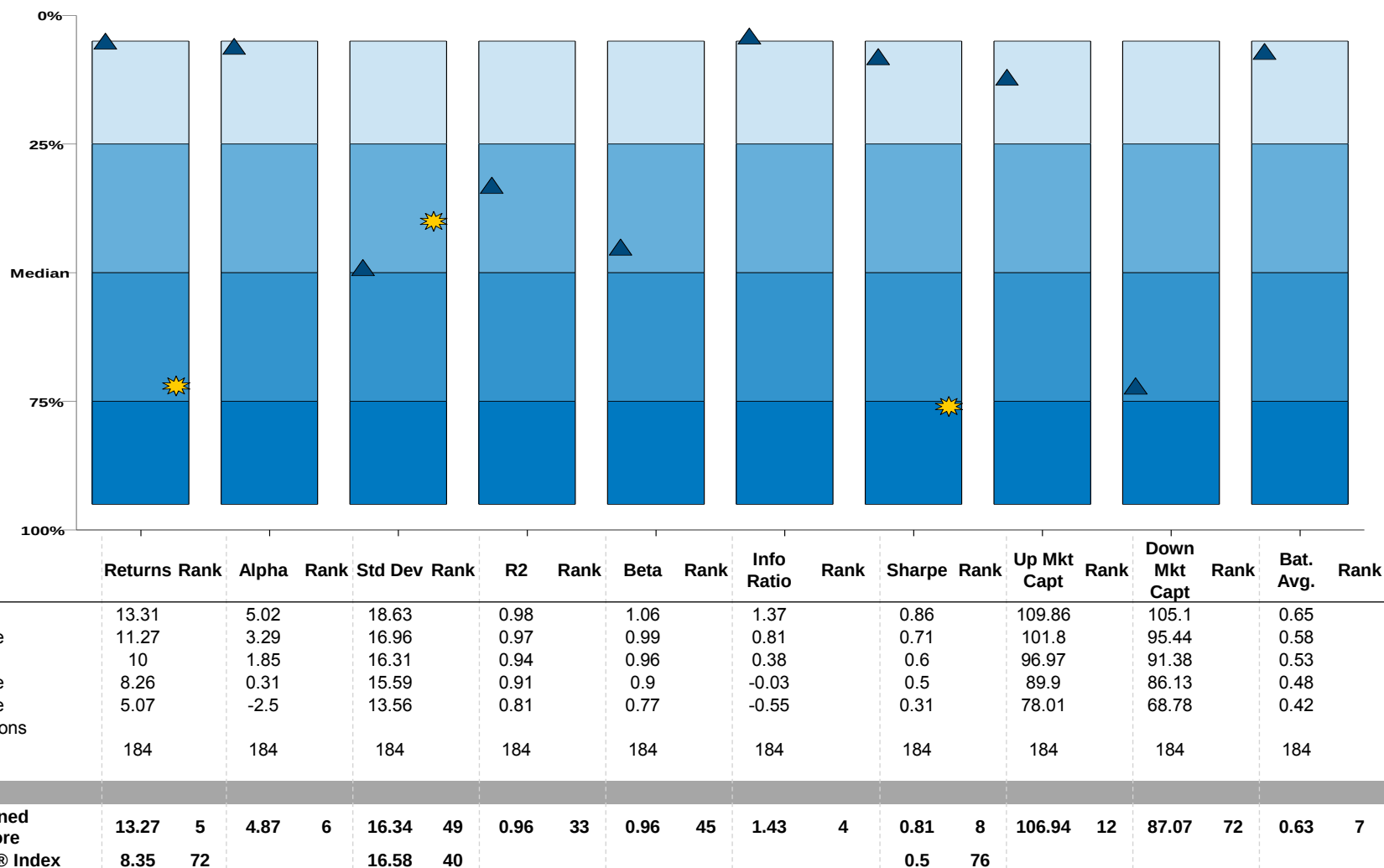
 BMO Disciplined Small Cap Core

Results displayed in US Dollar (USD)

BMO Disciplined Small-Cap Core composite

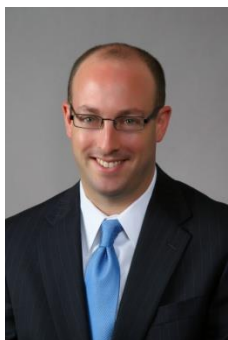
eA multi-statistic quartile ranking - annualized 5 year period

As of June 30, 2016



Appendix

Biographies



David Corris, CFA
Head of Disciplined Equities
Senior Portfolio Manager

David heads the Disciplined Equity Team and is responsible for equity portfolio management and research. He joined the company in 2008.

David began his investment management career in 1999, and was a quantitative equity portfolio manager/researcher at Northern Trust Global Investments and a quantitative equity research analyst at Citigroup Asset Management.

He holds an M.B.A. from Harvard Business School and a B.S. in mathematics and quantitative economics from the University of Wisconsin. In addition, he is a CFA® charterholder and a member of the CFA Institute, the CFA Society of Chicago and the Chicago Quantitative Alliance.



Thomas Lettenberger, CFA, CPA
Senior Portfolio Manager

Thomas began with BMO Asset Management U.S. in 2005. He entered into the investment industry in 1994, and prior to joining BMO, he served as a Vice President and Portfolio Manager at Columbia Management and as an Equity Research Analyst at William Blair & Company, LLC. His industry experience includes portfolio management, research and consulting.

He holds an MA in Accounting and a BBA in Finance and Accounting from the University of Michigan. In addition, Thomas holds the Chartered Financial Analyst® (CFA) designation, is a Certified Public Accountant (CPA) and is a member of the CFA Institute and the CFA Society of Chicago.

Disciplined equity team overview

13

Investment
Professionals

15

Average Years
of Experience

\$14.6*

Billion Total
AUM Across All
Strategies

10

Advanced
Degrees

9

CFA
Charterholders

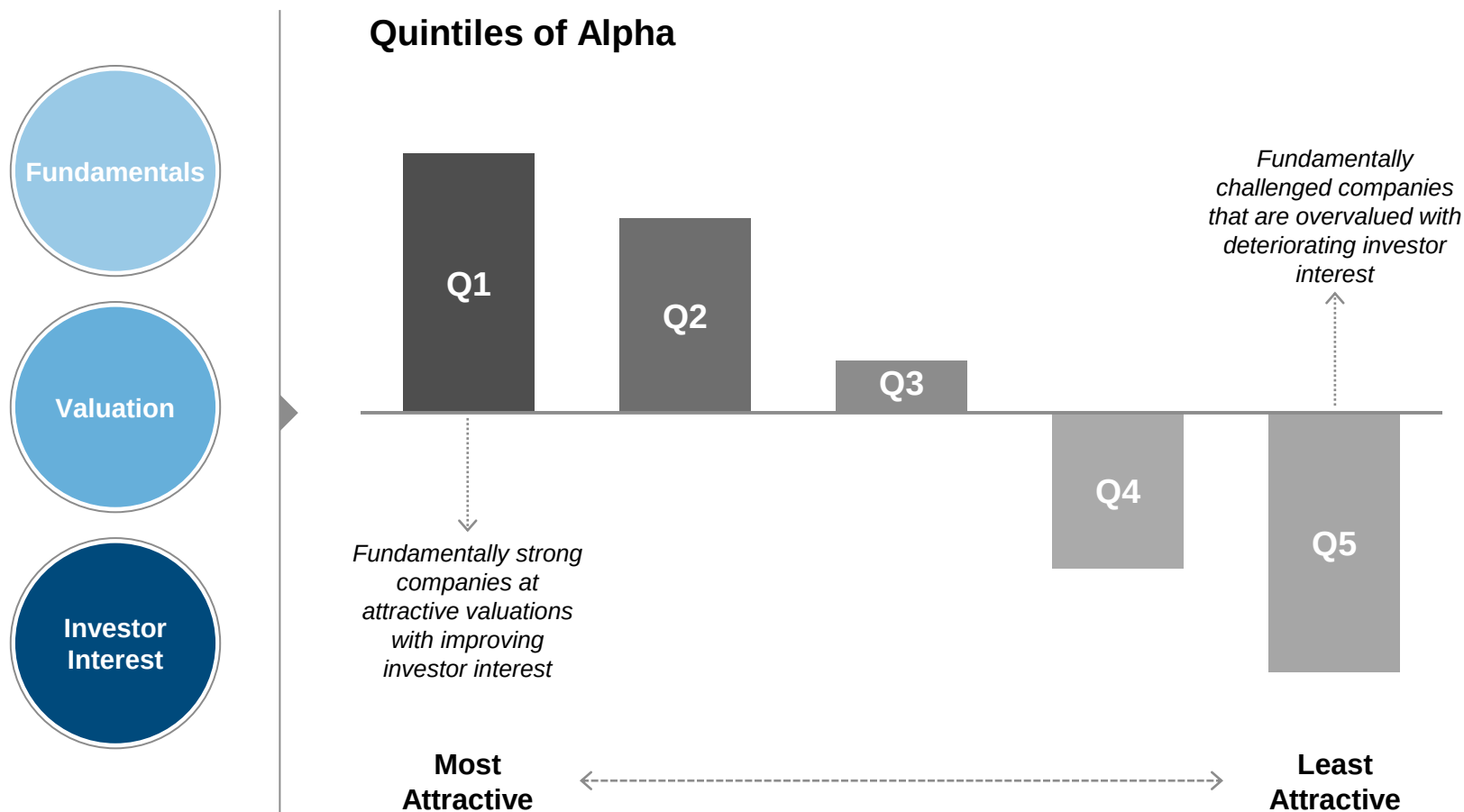
Investment Capabilities

Strategy	Inception Date	\$ Millions
U.S. Equity		
Large-Cap Equity	October 1, 1985	\$8,765
Large-Cap Growth	April 1, 1996	\$401
Large-Cap Value	January 1, 2000	\$2,761
Small-Cap Core	July 1, 2010	\$50
Small-Cap Value	July 1, 2010	\$272
Small-Cap Growth	October 1, 2007	\$23
Micro-Cap	July 1, 2007	\$13

Strategy	Inception Date	\$ Millions
International Equity		
International Equity	April 1, 2007	\$640
Low Volatility		
U.S. Low Volatility Equity	January 1, 2011	\$277
Global Low Volatility	April 1, 2012	\$40

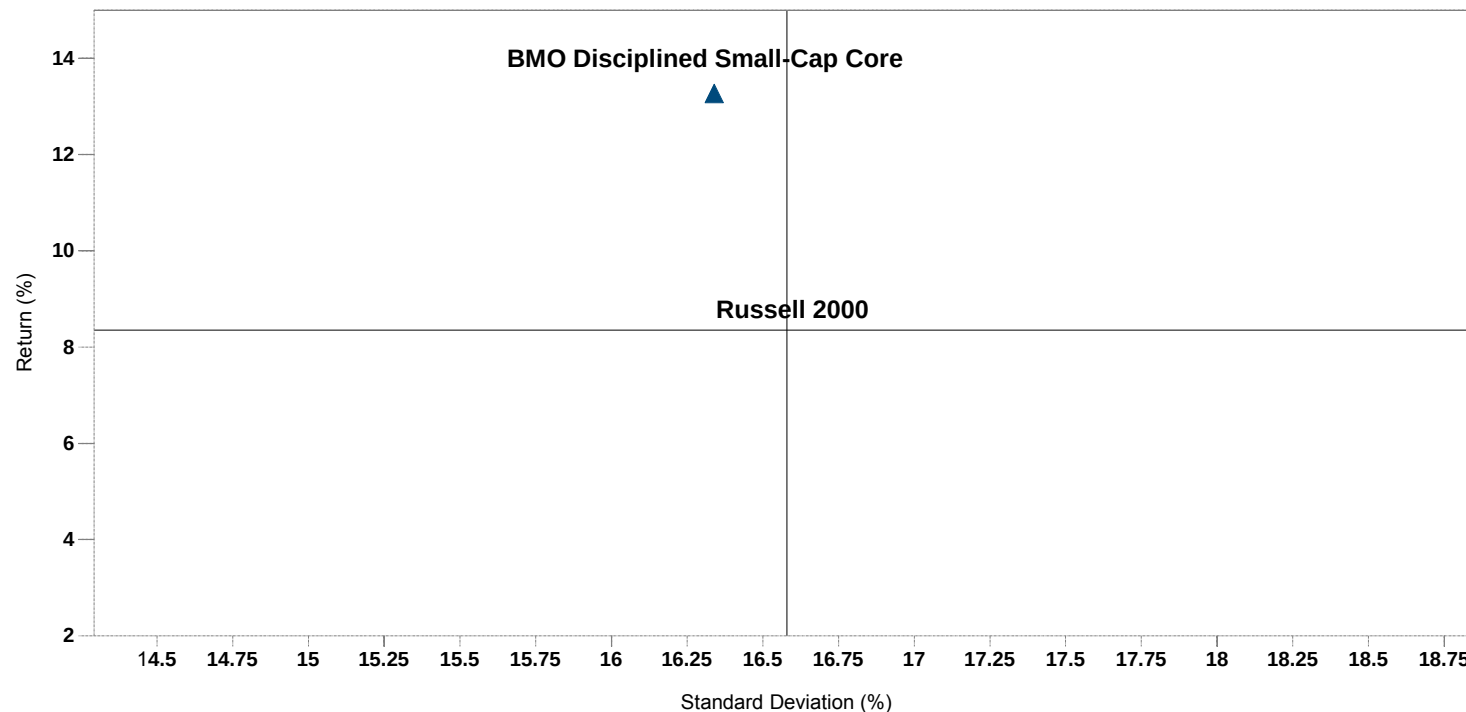
Return forecasts – stock rankings

Our Alpha Model ranks each stock in the universe from most to least attractive



BMO Disciplined Small-Cap Core composite eA total risk reward – annualized 5 year period

As of June 30, 2016



	Return (%)	Standard Deviation (%)
▲ BMO Disciplined Small-Cap Core	13.27	16.34
+ Russell 2000	8.35	16.58

Results displayed in US Dollar (USD)

BMO Disciplined Small-Cap Core composite

As of December 31, 2015

GIPS Composite statistics and performance

Calendar year ended	2015	2014	2013	2012	2011	2010 ²
Gross annual returns (%)	1.64	9.18	49.16	16.72	4.17	26.67
Net annual returns (%)	0.73	8.20	47.82	15.67	3.24	26.09
3-year composite deviation	13.59	12.83	16.93	—	—	—
Russell 2000® Index (%)	-4.41	4.89	38.82	16.35	-4.18	29.38
3-year index deviation	13.96	13.12	16.45	—	—	—
Composite dispersion (%)	0.30	0.06	0.02	—	—	—
Composite assets (\$M)	41.6	35.2	21.4	4.8	4.6	0.5
Number of accounts in composite	9	8	7	< 5	< 5	< 5
Total strategy assets (\$M) ¹	41.6	35.2	22.4	4.8	4.6	0.5
Total firm assets (\$M)	36,595	36,630	33,953	32,621	12,208	11,641

Past performance does not guarantee future results.

“—” is shown on the composite dispersion because the information is not statistically meaningful due to an insufficient number of portfolios in the composite for the entire year. “—” is shown on the 3 Yr Std Deviation for the composite and index because 36 monthly returns are not available on the composite.

¹ Strategy assets include composite and non-composite accounts that have the same investment mandate. Non-composite accounts are excluded from the composite due to size, specific client guidelines, or other strategy limitations.

² 2010 returns for both the Composite and the Russell 2000® Index represent a partial year return. Composite inception is July 1, 2010

BMO AM claims compliance with the Global Investment Performance Standards (GIPS®) and has prepared and presented this report in compliance with the GIPS® standards. BMO AM has been independently verified for the periods 01/01/1992 through 06/30/2015. The verification report(s) is/are available upon request. Verification assesses whether (1) the firm has complied with all the composite construction requirements of the GIPS® standards on a firm-wide basis and (2) the firm's policies and procedures are designed to calculate and present performance in compliance with the GIPS® standards. Verification does not ensure the accuracy of any specific composite presentation.

The U.S. dollar is the currency used to express performance. Returns are presented gross and net of management fees and include the reinvestment of all income. Gross returns will be reduced by investment advisory fees and other expenses that may be incurred in the management of the account. The annual composite dispersion presented is an asset-weighted standard deviation calculated for the accounts in the composite the entire year. Additional information regarding the policies for valuing portfolios, calculating performance, and preparing compliant presentations are available upon request. Net-of-fee performance was calculated using the highest management fee of 0.90% from inception through September 30, 2015. Net-of-fee results after September 30, 2015 are calculated by taking the highest fee a separately managed account would be charged based on the current fee schedule, and deducting one-twelfth of this annual fee from each monthly gross return. Actual investment advisory fees incurred by clients may vary. Results are based on fully discretionary accounts under management, including those accounts no longer with the firm. Non-fee paying accounts represented the following percentage of assets in the composite for these years: 100% for 2010 and 10.29% for 2011.

Please contact us to receive a complete list and description of BMO Asset Management Corp.'s composites.

BMO Disciplined Small-Cap Core composite

As of December 31, 2015

BMO Asset Management Corp. (BMO AM) is a registered investment adviser and wholly owned subsidiary of BMO Financial Corp., which is a wholly owned subsidiary of Bank of Montreal. The firm provides separate account investment management services for institutional and private clients, securities lending, proprietary and sub-advised mutual funds and common/collective trust funds. Prior to November 1989, the firm was known as Harris Investment Management Group, which was operated as part of Harris Trust and Savings Bank. Prior to June 1, 2012 the firm was known as Harris Investment Management, Inc. On July 6, 2011 Bank of Montreal (BMO), the parent company of Harris Investment Management, Inc., purchased Marshall & Ilsley Corporation. M&I Investment Management Corp. merged into BMO Asset Management Corp. (formerly Harris Investment Management, Inc.) on June 1, 2012.

Net of fee performance was calculated using the highest management fee of 0.85% as described in the firm's fee schedule shown below.

First \$25 million	0.85%
Next \$75 million	0.75%
Next \$100 million	0.65%
Thereafter	0.60%

The **BMO Disciplined Small-Cap Core Composite** includes all institutional portfolios invested in small-cap equity securities with our Disciplined Small-Cap Core equity strategy. The strategy is designed to outperform the benchmark over full market cycles while maintaining moderate risk controls. The benchmark is the Russell 2000® Index. Prior to May 31, 2013, the composite was named the BMO Disciplined Small-Cap Core Diversified Composite. Prior to December 31, 2011, the composite was named the Small-Cap Core Diversified Composite. The composite was created July 1, 2010.

The **Russell 2000® Index** measures the performance of the 2,000 smallest companies in the Russell 3000® Index, which represents approximately 8% of the total market capitalization of the Russell 3000® Index. Investments cannot be made in an index.

BMO Asset Management Corp., BMO Investment Distributors, LLC, BMO Private Bank, BMO Harris Bank N.A. and BMO Harris Financial Advisors, Inc. are affiliated companies. BMO Private Bank is a brand name used in the United States by BMO Harris Bank N.A.

Investment products are: **NOT FDIC INSURED — NOT BANK GUARANTEED — MAY LOSE VALUE.**

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FactSet is a leading provider of global financial and economic information, including fundamental financial data. This independent software tool assists BMO Asset Management in the production of in-depth quantitative analysis to examine information on companies, global markets, dynamic reports that incorporate BMO Asset Management Corp. portfolio holdings with data on hundreds of global benchmark indices, and to assess the factors driving a portfolio's performance.

eVestment Alliance (eA) is an investment manager database. The rankings and statistics presented were created using the information collected through the eA's manager questionnaire and uses only gross of fee returns. Performance used to calculate the percentile rankings did not take into account the deduction of investment advisory fees and a client's return will be reduced by advisory fees and other expenses it may incur in the management of its account. Because of the possibility of human or mechanical error by eA sources or others, eA nor BMO Asset Management Corp. guarantee the accuracy, adequacy, completeness, or availability of any information and are not responsible for any error or omissions or the results obtained from the use of such information.

eA Multi-Statistic Quartile Ranking Bar – The Multiple Statistics Quartile Ranking graph is used to rank various performance and statistics of eA managers, market indexes or your own self-entered products against a universe. The range of returns or other modern portfolio characteristics in the universe are represented by floating bars. Each bar is broken up into 4 quartiles. The upper quartile represents the top 25% of the managers in the particular universe for the particular time period (you can choose up to eight time periods). The managers, indexes and portfolios are plotted relative to the floating bars.

eA Total Risk Reward – The Risk Reward graph is used to compare the performance and risk (standard deviation) of selected managers against the performance and risk of a market index for a specific period of time. The graph is broken down into 4 quadrants: Less Risk-Less Return, Less Risk-More Return, More Risk-More Return, and More Risk-Less Return. The risk index determines the intersection of the quadrants. In addition to the rate of return and standard deviation, the analysis also calculates optional risk statistics such as alpha, beta, and r-squared.

eVestment US Small Cap Core Equity – US Equity products that invest primarily in small capitalization stocks with fundamental characteristics between growth and value or products that invest in a relatively even mix of growth and value stocks/sectors. The expected benchmarks for this universe would include the Russell 2000. Managers in this category will typically indicate a "Primary Capitalization Emphasis" equal to Small Cap and a "Primary Style Emphasis" equal to Core.

Returns shown on a gross basis will be reduced by advisory fees and other expenses, and the effect of these fees will compound over time. As a hypothetical example, if an account generated a 10% return each year for five years, it would appreciate by 61%. If such an account paid a 1% annual fee, the appreciation would be 54%, or seven percentage points lower after five years. Information about management fees is shown on the preceding page, and in Part 2 of Form ADV.

Disclosure

BMO Asset Management Corp., a registered investment adviser, is a wholly owned subsidiary of BMO Financial Corp., a wholly owned subsidiary of Bank of Montreal (BMO). This is not intended to serve as a complete analysis of every material fact regarding any company, industry or security. The opinions expressed here reflect our judgment at this date and are subject to change. Information has been obtained from sources we consider to be reliable, but we cannot guarantee the accuracy. This publication is prepared for general information only. This material does not constitute investment advice and is not intended as an endorsement of any specific investment. It does not have regard to the specific investment objectives, financial situation and the particular needs of any specific person who may receive this report. Investors should seek advice regarding the appropriateness of investing in any securities or investment strategies discussed or recommended in this report and should understand that statements regarding future prospects may not be realized. Investment involves risk. Market conditions and trends will fluctuate. The value of an investment as well as income associated with investments may rise or fall. Accordingly, investors may receive back less than originally invested. Investments cannot be made in an index. **Past performance is not necessarily a guide to future performance.**

BMO Global Asset Management is the brand name for various affiliated entities of BMO Financial Group that provide investment management and trust and custody services. Certain of the products and services offered under the brand name BMO Global Asset Management are designed specifically for various categories of investors in a number of different countries and regions and may not be available to all investors. Products and services are only offered to such investors in those countries and regions in accordance with applicable laws and regulations. BMO Financial Group is a service mark of Bank of Montreal (BMO).

BMO Global Asset Management comprises BMO Asset Management U.S., BMO Asset Management (Canada)®, and BMO's specialized investment boutiques: Moneyg, Inc.®, Pyrford International Ltd, Lloyd George Management, and Taplin, Canida & Habacht, LLC. BMO Asset Management U.S. consists of BMO Asset Management Corp., BMO Asset Management Canada includes BMO Asset Management Inc. and Lloyd George Management consists of the subsidiaries of LGM (Bermuda) Ltd. BMO Global Asset Management is part of the BMO Financial Group, a service mark of Bank of Montreal (BMO). M&I Investment Management Corp. merged into BMO Asset Management Corp. (formerly Harris Investment Management Inc.) on June 1, 2012. Certain companies within BMO Global Asset Management offer a number of products and services designed specifically for various categories of investors in a number of different countries and regions. These products or services are only offered to such investors in those countries and regions in accordance with applicable laws and regulations.

Portfolio holdings and sector allocations may not be representative of the portfolio manager's current or future investment and are subject to change at any time. The holdings identified do not represent all of the securities purchased, sold, or recommended and you should not assume that these investments were or will be profitable.

BMO Asset Management U.S. consists of BMO Asset Management Corp.

All investments involve risk, including the possible loss of principal.

Investment products are: **Not FDIC Insured – No Bank Guarantee – May Lose Value.**

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C11: 4926476

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 18 PERS Employer Contribution Rate
Tier I - III
DATE: September 29, 2016

ACTION: X
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 Alaska Retirement Management Board (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, 2007."

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' actuary, Buck Consultants, has completed the Allocation of Projected FY 18 Employer and State Assistance Contributions Based on June 30, 2015 Roll Forward Valuation report dated September 16, 2016. This roll-forward valuation methodology has been reviewed by the Board's actuary, Gabriel, Roeder, Smith & Co.

The Actuarial Committee met September 28, 2016, and passed a motion recommending that the Board adopt Resolution 2016-11 setting the FY 2018 PERS Employer Contribution Rate (Tiers I – III).

RECOMMENDATION:

That the Alaska Retirement Management Board set Fiscal Year 2018 PERS actuarially determined contribution rates attributable to employers consistent with its fiduciary duty, as set out in the attached form of Resolution 2016-11.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2018 Employer Contribution Rate
For the Public Employees' Retirement System

Resolution 2016-11

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, 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 employer contribution rate of 22.00 percent and AS 39.35.280 requires additional state contribution to make up the difference between 22.00 percent and the actuarially determined contribution rate;

WHEREAS, the "Alaska PERS, TRS, and JRS - Allocation of the Additional State Contributions for FY 18" letter dated September 16, 2016 determines that the actuarially determined contribution rate for pension benefits is 17.27 percent composed of the normal cost rate of 2.94 percent and past service rate of 14.33 percent;

WHEREAS, the "Alaska PERS, TRS, and JRS - Allocation of the Additional State Contributions for FY 18" letter dated September 16, 2016 determines that the actuarially determined contribution rate for postemployment healthcare benefits is 3.11 percent composed of the normal cost rate of 2.16 percent and past service rate of 0.95 percent;

WHEREAS, the “Alaska PERS, TRS, and JRS - Allocation of the Additional State Contributions for FY 18” letter dated September 16, 2016 presents the employer rate incorporating the normal cost of the Defined Contribution Retirement Plan of 4.63 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2018 actuarially determined contribution rate attributable to employers participating in the Public Employees’ Retirement System is set at 25.01 percent, composed of the contribution rate for defined benefit pension of 17.27 percent, the contribution rate for postemployment healthcare of 3.11 percent, and the contribution rate for defined contribution pension of 4.63 percent.

DATED at Anchorage, Alaska this 29th day of September, 2016.

Chair

ATTEST:

Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 2018 PERS Retiree Major Medical
and Occupational Death & Disability

ACTION: X

DATE: September 29, 2016

INFORMATION:

BACKGROUND:

The Alaska Retirement Management Board (Board) establishes rates for the Public Employees' Retirement System (PERS) Tier IV Defined Contribution Retirement Plan (DCR) for the following plans: 1) Retiree Major Medical Insurance (RMMI) and 2) Occupational Death & Disability (OD&D) 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 Consultants, has completed the actuarial valuation of the PERS DCR Plan as of June 30, 2015. The valuation has been reviewed by the Board's actuary, Gabriel, Roeder, Smith & Co. (GRS).

According to the PERS DCR Plan actuarial valuation report, and confirmed by GRS, the Fiscal Year 2018 actuarially determined contribution rate attributable to employers for the Retiree Major Medical Insurance (RMMI) should be 1.03 percent; for the peace officer/firefighter Occupational Death & Disability (OD&D) Benefit should be 0.43 percent; and for "all other" OD&D Benefit should be 0.16 percent.

The Actuarial Committee met September 28, 2016, and passed a motion recommending that the Board adopt Resolutions 2016-12 and 2016-13 setting the FY 2018 PERS Retiree Major Medical Insurance and Occupational Death & Disability Benefit contribution rates.

RECOMMENDATION:

That the Alaska Retirement Management Board set the Fiscal Year 2018 PERS Defined Contribution Retirement Plan actuarially determined contribution rates for the Retiree Major Medical Insurance and Occupational Death & Disability Benefit consistent with its fiduciary duty, as set out in the following resolutions:

- 1) Resolution 2016-12: Public Employees' Defined Contribution Retirement Plan Retiree Major Medical Insurance Rate
- 2) Resolution 2016-13: Public Employees' Defined Contribution Retirement Plan Occupational Death & Disability Benefit Rates

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2018 Employer Contribution Rate
For Public Employees' Defined Contribution Retirement Plan
Retiree Major Medical Insurance

Resolution 2016-12

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, 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;

WHEREAS, the June 30, 2015 PERS Defined Contribution actuarial valuation report determines that the actuarially determined contribution rate for retiree major medical insurance is 1.03 percent composed of the normal cost rate of 0.92 percent and past service rate of 0.11 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, the Fiscal Year 2018 employer contribution rate for the retiree major medical insurance for the Public Employees' Defined Contribution Retirement Plan is set at 1.03 percent.

DATED at Anchorage, Alaska this 29th day of September, 2016.

Chair

ATTEST:

Secretary

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2018 Employer Contribution Rate
For Public Employees' Defined Contribution Retirement Plan
Occupational Death & Disability Benefit Rates

Resolution 2016-13

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, 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;

WHEREAS, the June 30, 2015 PERS Defined Contribution actuarial valuation report determines that the actuarially determined contribution rate for peace officer / firefighter occupational death & disability is 0.43 percent composed of the normal cost rate of 0.62 percent and past service rate of -0.19 percent and the actuarially determined contribution rate for "all other" is 0.16 percent composed of the normal cost rate of 0.25 percent and past service rate is -0.09 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, the Fiscal Year 2018 employer contribution rate for public employees' occupational death and disability benefit rate is set at 0.43 percent for peace officers and fire fighters, and at 0.16 percent for all other Public Employees' Defined Contribution Retirement Plan employees.

DATED at Anchorage, Alaska this 29th day of September, 2016.

Chair

ATTEST:

Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 18 TRS Employer Contribution Rate
Tier I - II
DATE: September 29, 2016

ACTION: X
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 Alaska Retirement Management Board (ARMB), 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' actuary, Buck Consultants, has completed the Allocation of Projected FY 18 Employer and State Assistance Contributions Based on June 30, 2015 Roll Forward Valuation report dated September 16, 2016. This roll-forward valuation methodology has been reviewed by the Board's actuary, Gabriel, Roeder, Smith & Co. (GRS).

The Actuarial Committee met September 28, 2016, and passed a motion recommending that the Board adopt Resolution 2016-14 setting the FY 2018 TRS Employer Contribution Rate (Tiers I – II).

RECOMMENDATION:

That the Alaska Retirement Management Board set Fiscal Year 2018 TRS actuarially determined contribution rates attributable to employers consistent with its fiduciary duty, as set out in the attached form of Resolution 2016-14.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2018 Employer Contribution Rate
For the Teachers' Retirement System

Resolution 2016-14

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, 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;

WHEREAS, the "Alaska PERS, TRS, and JRS - Allocation of the Additional State Contributions for FY 18" letter dated September 16, 2016 determines that the actuarially determined contribution rate for pension benefits is 19.16 percent composed of the normal cost rate of 2.22 percent and past service rate of 16.94 percent;

WHEREAS, the "Alaska PERS, TRS, and JRS - Allocation of the Additional State Contributions for FY 18" letter dated September 16, 2016 determines that the actuarially determined contribution rate for postemployment healthcare benefits is 2.59 percent composed of the normal cost rate of 1.77 percent and past service rate of 0.82 percent;

WHEREAS, the “Alaska PERS, TRS, and JRS - Allocation of the Additional State Contributions for FY 18” letter dated September 16, 2016 presents the employer rate incorporating the normal cost of the Defined Contribution Retirement Plan of 5.03 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2018 actuarially determined contribution rate attributable to employers participating in the Teachers’ Retirement System is set at 26.78 percent, composed of the contribution rate for defined benefit pension of 19.16 percent, the contribution rate for postemployment healthcare of 2.59 percent, and the contribution rate for defined contribution pension of 5.03 percent.

DATED at Anchorage, Alaska this 29th day of September, 2016.

Chair

ATTEST:

Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 2018 TRS Retiree Major Medical
and Occupational Death & Disability

ACTION: X

DATE: September 29, 2016

INFORMATION: _____

BACKGROUND:

The Alaska Retirement Management Board (Board) establishes rates for the Teachers' Retirement System (TRS) Tier III Defined Contribution Retirement Plans for the following plans: 1) Retiree Major Medical Insurance (RMMI) and 2) Occupational Death & Disability (OD&D) 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. 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 Consultants, has completed the actuarial valuation of the TRS DCR Plan as of June 30, 2015. The valuation has been reviewed by the Board's actuary, Gabriel, Roeder, Smith & Co. (GRS).

According to the TRS DCR Plan actuarial valuation report, and confirmed by GRS, the Fiscal Year 2018 actuarially determined contribution rates attributable to employers for the Retiree Major Medical Insurance (RMMI) should be 0.91 percent and for the Occupational Death & Disability (OD&D) Benefit should be 0.00 percent.

The Actuarial Committee met September 28, 2016, and passed a motion recommending that the Board adopt Resolutions 2016-15 and 2016-16 setting the FY 2018 TRS Retiree Major Medical Insurance and Occupational Death & Disability Benefit contribution rates.

RECOMMENDATION:

That the Alaska Retirement Management Board set the Fiscal Year 2018 TRS Defined Contribution Retirement Plan actuarially determined contribution rates for the Retiree Major Medical Insurance and Occupational Death & Disability Benefit consistent with its fiduciary duty, as set out in the following resolutions:

- 1) Resolution 2016-15: Teachers' Defined Contribution Retirement Plans Retiree Major Medical Insurance Rate
- 2) Resolution 2016-16: Teachers' Defined Contribution Retirement Plan Occupational Death & Disability Benefit Rate

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2018 Employer Contribution Rate
For Teachers' Defined Contribution Retirement Plan
Retiree Major Medical Insurance

Resolution 2016-15

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, 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;

WHEREAS, the June 30, 2015 TRS Defined Contribution actuarial valuation report determines that the actuarially determined contribution rate for retiree major medical insurance is 0.91 percent composed of the normal cost rate of 0.85 percent and past service rate of 0.06 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, the Fiscal Year 2018 employer contribution rate for the retiree major medical insurance for the Teachers' Defined Contribution Retirement Plan is set at 0.91 percent.

DATED at Anchorage, Alaska this 29th day of September, 2016.

Chair

ATTEST:

Secretary

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2018 Employer Contribution Rate
For Teachers' Defined Contribution Retirement Plan
Occupational Death & Disability Benefit Rate

Resolution 2016-16

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;

WHEREAS, the June 30, 2015 TRS Defined Contribution actuarial valuation report determines that the actuarially determined contribution rate for occupational death & disability is 0.00 percent composed of the normal cost rate of 0.07 percent and past service rate of -0.07 percent;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, the Fiscal Year 2018 employer contribution rate for teachers' occupational death and disability benefit rate is set at 0.00 percent for all Teachers' Defined Contribution Retirement Plan employees.

DATED at Anchorage, Alaska this 29th day of September, 2016.

Chair

ATTEST:

Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 2018 Alaska National Guard and
Naval Militia Contribution Amount

ACTION: X

DATE: September 29, 2016

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 Consultants, has completed the roll-forward actuarial valuation of the Alaska National Guard and Naval Militia Retirement System (NGNMRS) as of June 30, 2015. The roll-forward 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, 2015 actuarial roll-forward valuation report, and confirmed by GRS, the Fiscal Year 2018 actuarially determined contribution amount should be \$907,231.

The Actuarial Committee met September 28, 2016, and passed a motion recommending that the Board adopt Resolution 2016-17 setting the FY 2018 Alaska National Guard and Naval Militia contribution amount at \$907,231.

RECOMMENDATION:

That the Alaska Retirement Management Board set the Fiscal Year 2018 NGNMRS annual actuarially determined contribution amount consistent with its fiduciary duty, as set out in the attached form of Resolution 2016-17.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to the Fiscal Year 2018 Actuarially Determined Contribution Amount
For the Alaska National Guard and Naval Militia Retirement System

Resolution 2016-17

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;

NOW THEREFORE, BE IT RESOLVED BY THE ALASKA RETIREMENT MANAGEMENT BOARD, that the Fiscal Year 2018 actuarially determined 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 \$907,231, composed of the contribution amount for the normal cost of \$603,495, past service cost of \$71,736, and expense load cost of \$232,000.

DATED at Anchorage, Alaska this 29th day of September, 2016.

Chair

ATTEST:

Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: FY 2018 JRS Employer Contribution
Rate

ACTION: _____

DATE: September 29, 2016

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 Consultants, has completed the roll-forward actuarial valuation of the Alaska Judicial Retirement System (JRS) as of June 30, 2015. The roll-forward 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 JRS roll-forward actuarial valuation letter as of June 30, 2015, the Fiscal Year 2018 employer contribution rate should be 74.21 percent based on the following table:

	Pension	Post-employment Health Care	Total
Normal Cost Rate	37.00%	4.33%	41.33%
Past Service Cost Rate	35.83%	-2.95%	32.88%
Total Employer Contribution Rate	72.83%	1.38%	74.21%

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 similar to that of PERS and TRS. An amount for the System's past service cost will be computed and reflected in the operating budget and will be deposited in the JRS pension benefit and/or the JRS retiree healthcare benefit trusts during FY 2018.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: History of PERS / TRS Employer
Contribution Rates
 DATE: September 29, 2016

ACTION: _____
 INFORMATION: X

Below is a history of employer contribution rates adopted by the Alaska Retirement Management Board for Fiscal Years 2010 through 2017, as well as the proposed FY 2018 contribution rates.

ARMB ADOPTED RATES										
	FY10	FY11	FY12 (a)	FY13	FY14 (b)	FY15 (b)	FY15 (c)	FY16	FY17	PROPOSED FY18
Public Employees' Retirement System (PERS)										
DB Employer Contribution Rate	27.65%	27.96%	33.49%	35.84%	35.68%	44.03%	31.90%	27.19%	26.14%	25.01%
DCR - Retiree Medical Plan	0.83%	0.55%	0.51%	0.48%	0.48%	1.66%	1.66%	1.68%	1.18%	1.03%
DCR - Occupational Death & Disability - All Others	0.30%	0.31%	0.20%	0.14%	0.20%	0.22%	0.22%	0.22%	0.17%	0.16%
DCR - Occupational Death & Disability - Peace Officer/Fire Fighter	1.33%	1.18%	0.97%	0.99%	1.14%	1.06%	1.06%	1.05%	0.49%	0.43%
Teachers' Retirement System (TRS)										
DB Employer Contribution Rate	39.53%	38.56%	45.55%	52.67%	53.62%	70.75%	48.69%	29.27%	28.02%	26.78%
DCR - Retiree Medical Plan	1.03%	0.68%	0.58%	0.49%	0.47%	2.04%	2.04%	2.04%	1.05%	0.91%
DCR - Occupational Death & Disability	0.32%	0.28%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

- (a) Beginning in Fiscal Year 2012, the defined benefit employer contribution rates for both PERS and TRS incorporated the normal cost of the Defined Contribution Retirement Plan.
- (b) 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."
- (c) 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.

September 16, 2016

VIA EMAIL

Mr. John Boucher
Deputy Commissioner
Division of Retirement and Benefits
Department of Administration
State of Alaska
333 Willoughby Avenue
6th Floor State Office Building
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Re: PERS, TRS, and JRS –Allocation of the Additional State Contributions for FY18

Dear John:

As requested, we have calculated the preliminary allocation between the pension and healthcare funds of the Additional State Contributions for FY18 for the State of Alaska Public Employees' Retirement System (PERS), Teachers' Retirement System (TRS) and Judicial Retirement System (JRS).

The results for PERS and TRS reflect preliminary June 30, 2016 asset statements that were provided to us on September 9, 2016.

Summary of Results

At the February 2016 Actuarial Committee meeting, a decision was made to allocate the FY17 State Assistance contributions 100% to pension. These results reflect that decision.

For the allocation of the FY18 State Assistance contributions, we have attached two exhibits. In Exhibit 1, the FY18 State Assistance contributions are allocated based on the past service portion of the projected contribution rate as of June 30, 2017 (i.e., based on the relative funded status of the pension and healthcare funds). In Exhibit 2, the FY18 State Assistance contributions are allocated 100% to pension consistent with the FY17 State Assistance contributions. Otherwise, the exhibits are the same.

In the exhibits:

- Liabilities from June 30, 2015 were rolled forward two years using valuation assumptions. FY16 benefit payments based on the preliminary June 30, 2016 asset statements were used for this roll-forward.
- Assets from June 30, 2015 were rolled forward one year using FY16 benefit payments, contributions, and investment return based on the preliminary June 30, 2016 asset statements, and then another year using valuation assumptions.

- Investment gains and losses are recognized over 5 years beginning June 30, 2014. Unfunded actuarial accrued liabilities are amortized over a closed 25-year period effective June 30, 2014. For FY18, the unfunded actuarial accrued liabilities are amortized over 22 years.
- All contribution rates are based on total payroll [Defined Benefit (DB) and Defined Contribution Retirement (DCR) payrolls combined].

The allocation of the past service cost rate between pension and healthcare for JRS is shown below:

JRS			
	FY18 Projected Pay	Past Service Cost Rate ¹	FY18 Past Service Contribution Amount
Pension	\$ 15,028,000	35.83%	\$ 5,385,000
Healthcare	\$ 15,028,000	0.00%	\$ 0
Total	\$ 15,028,000	35.83%	\$ 5,385,000

Data, Provisions, Assumptions, and Methods

The data, assumptions, plan provisions and methods used for the PERS, TRS and JRS DB and DCR plan costs are described in the June 30, 2015 valuation reports. Preliminary June 30, 2016 asset statements for PERS and TRS were reflected as noted above.

Please let us know if you have any questions or if we can be of further assistance.

Sincerely,



Larry Langer, ASA, EA, MAAA, FCA
Principal, Wealth



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



Melissa A. Bissett, FSA, MAAA
Senior Consultant, Health

Attachment

cc: Mr. Kevin Worley, State of Alaska
Ms. Kathy Lea, State of Alaska

¹ Based on the June 30, 2015 valuation, but not less than zero.

Exhibit 1

State of Alaska Preliminary Allocation of Projected FY18 Employer and State Assistance Contributions Based on June 30, 2015 Valuations with Liabilities "Rolled Forward" Two years, Assets "Rolled Forward" One year and Smoothed State Assistance Contributions Allocated Based on Past Service Rate

	PERS		TRS	
Projected FY18 DB Payroll	\$1,198,763,000		\$423,128,000	
Projected FY18 DCR Payroll	<u>\$1,212,231,000</u>		<u>\$362,785,000</u>	
Projected FY18 Total Payroll	\$2,410,994,000		\$785,913,000	

	Percent of Total Payroll	Dollar Amount	Percent of Total Payroll	Dollar Amount
Employer Contributions				
DB Plan - Pension	14.45%	\$348,389,000	5.60%	\$44,011,000
<i>Employer Normal Cost</i>	2.94%	70,883,000	2.22%	17,447,000
<i>Past Service Cost Payment</i>	11.51%	277,506,000	3.38%	26,564,000
DB Plan - Healthcare	2.92%	\$70,401,000	1.93%	\$15,168,000
<i>Employer Normal Cost</i>	2.16%	52,077,000	1.77%	13,911,000
<i>Past Service Cost Payment</i>	0.76%	18,324,000	0.16%	1,257,000
DCR Plan	4.63%	\$111,742,000	5.03%	\$39,580,000
Total	22.00%	\$530,532,000	12.56%	\$98,759,000
State Assistance Contributions to DB				
Pension	2.82%	\$67,990,000	13.56%	\$106,570,000
Healthcare	0.19%	4,581,000	0.66%	5,187,000
Total	3.01%	\$72,571,000	14.22%	\$111,757,000
Total DB				
Pension	17.27%	\$416,379,000	19.16%	\$150,581,000
Healthcare	3.11%	74,982,000	2.59%	20,355,000
Total	20.38%	\$491,361,000	21.75%	\$170,936,000
Total DB and DCR	25.01%	\$603,103,000	26.78%	\$210,516,000

Notes:

1. Projected FY18 payroll based on the June 30, 2015 valuation roll-forward projections assuming 0% population growth.
2. State Assistance contributions allocated based on the past service portion of the projected contribution rate as of June 30, 2017 for pension and healthcare.
3. DCR contribution rates are based on total payroll.
4. FY16 investment return, benefit payments and contributions based on preliminary 6/30/16 asset statements provided by the State on 9/9/16. FY17 investment return, benefit payments and contributions based on the June 30, 2015 valuation roll-forward projection assuming 0% population growth. All investment gains and losses are recognized over 5 years beginning June 30, 2014.
5. Data, plan provisions, assumptions, and methods used for the DB and DCR plan costs are described in the final actuarial reports as of June 30, 2015.

Exhibit 2

State of Alaska Preliminary Allocation of Projected FY18 Employer and State Assistance Contributions Based on June 30, 2015 Valuations with Liabilities "Rolled Forward" Two years, Assets "Rolled Forward" One year and Smoothed State Assistance Contributions Allocated 100% to Pension

	PERS		TRS	
Projected FY18 DB Payroll	\$1,198,763,000		\$423,128,000	
Projected FY18 DCR Payroll	<u>\$1,212,231,000</u>		<u>\$362,785,000</u>	
Projected FY18 Total Payroll	\$2,410,994,000		\$785,913,000	

	Percent of Total Payroll	Dollar Amount	Percent of Total Payroll	Dollar Amount
Employer Contributions				
DB Plan - Pension	14.45%	\$348,389,000	5.60%	\$44,011,000
<i>Employer Normal Cost</i>	2.94%	70,883,000	2.22%	17,447,000
<i>Past Service Cost Payment</i>	11.51%	277,506,000	3.38%	26,564,000
DB Plan - Healthcare	2.92%	\$70,401,000	1.93%	\$15,168,000
<i>Employer Normal Cost</i>	2.16%	52,077,000	1.77%	13,911,000
<i>Past Service Cost Payment</i>	0.76%	18,324,000	0.16%	1,257,000
DCR Plan	4.63%	\$111,742,000	5.03%	\$39,580,000
Total	22.00%	\$530,532,000	12.56%	\$98,759,000
State Assistance Contributions to DB				
Pension	3.01%	\$72,571,000	14.22%	\$111,757,000
Healthcare	0.00%	-	0.00%	-
Total	3.01%	\$72,571,000	14.22%	\$111,757,000
Total DB				
Pension	17.46%	\$420,960,000	19.82%	\$155,768,000
Healthcare	2.92%	70,401,000	1.93%	15,168,000
Total	20.38%	\$491,361,000	21.75%	\$170,936,000
Total DB and DCR	25.01%	\$603,103,000	26.78%	\$210,516,000

Notes:

1. Projected FY18 payroll based on the June 30, 2015 valuation roll-forward projections assuming 0% population growth.
2. State Assistance contributions allocated 100% to pension consistent with the decision to allocate the FY17 State Assistance contributions 100% to pension.
3. DCR contribution rates are based on total payroll.
4. FY16 investment return, benefit payments and contributions based on preliminary 6/30/16 asset statements provided by the State on 9/9/16. FY17 investment return, benefit payments and contributions based on the June 30, 2015 valuation roll-forward projection assuming 0% population growth. All investment gains and losses are recognized over 5 years beginning June 30, 2014.
5. Data, plan provisions, assumptions, and methods used for the DB and DCR plan costs are described in the final actuarial reports as of June 30, 2015.

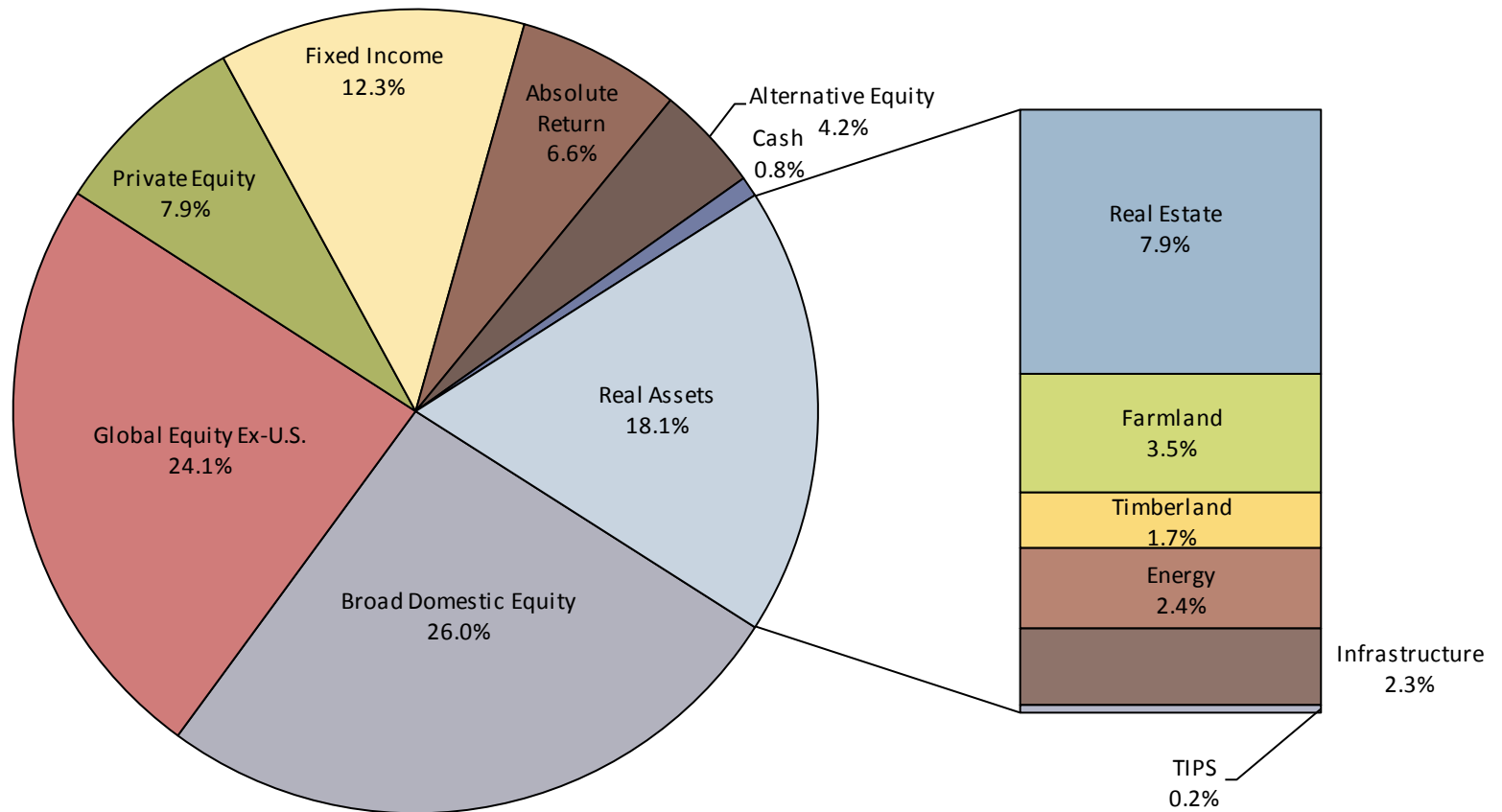
Alaska Retirement Management Board

Real Assets Fiscal Year 2017 Investment Plan

September 2016

Real Assets Plan Level Allocation

ARMB Actual Asset Allocation June 30, 2016



Source: State Street Bank and Trust Company and manager reported NAVs for Real Estate, Farmland, Timberland, and Infrastructure. Percentages reflect combined defined benefit pension and health care portfolios as of June 30, 2016. Percentages may not add to 100% due to rounding.

Real Assets Portfolio Approach

- Portfolio Role: The primary role of the Real Assets portfolio is to generate attractive returns in assets which provide portfolio diversification and inflation hedging to ARMB's total portfolio. Many of the asset sectors in Real Assets have historically exhibited low volatility and a high income component of total return.
- Strategy: Lower risk, lower return approach. Conservative strategy employing low leverage and focusing on higher quality assets producing stable returns.
- Return Expectations: Long-term performance expectations for Real Estate, Farmland, Timberland, and Infrastructure are to exceed a 5% net real return over rolling 5-year periods. Custom benchmarks are also used to evaluate performance compared to market.
- Benchmark: At the asset class level, a custom benchmark of 50% NCREIF Property Index, 5% FTSE NAREIT Equity Index, 10% NCREIF Farmland Index, 10% NCREIF Timberland Index, 15% Barclays Capital U.S. TIPS Index, and 10% S&P Global Infrastructure Index is employed.
- Structure: The Real Assets portfolio is primarily a collection of private, illiquid assets requiring long-term holding periods. However, the portfolio includes both publicly traded and private investment structures. Liquid investments include REITS, TIPS, MLP investments, and infrastructure stock portfolios.
- Implementation: Management of the portfolio is delegated among staff. Real Estate, Farmland, Timberland, and Infrastructure are managed by the real assets group. TIPS are managed by fixed income staff and Energy is managed by private equity staff. Discretionary authority is given to external managers to select and manage the investments.

Role of Real Assets

- Diversification: Low correlations with stocks and bonds, particularly with private market components.
- Inflation Hedge: Relatively high correlation with CPI driven by inflation linked payments (infrastructure), economic inputs (agriculture and timber), and/or economic sensitivity.
- Stable Income Return: Many of the assets have a leased or contractual based cash flow structure (real estate, farmland, infrastructure).

Select Asset Returns 2009-2015 (calendar years)

2009	2010	2011	2012	2013	2014	2015
MSCI EAFE 31.8%	NAREIT All Equity Idx 27.9%	ARMB Farmland Index 14.9%	NAREIT All Equity Idx 19.7%	S&P 500 32.4%	NAREIT All Equity Idx 28.0%	NCREIF:Total Index 13.3%
NAREIT All Equity Idx 28.0%	S&P 500 15.1%	NCREIF:Total Index 14.3%	ARMB Farmland Index 17.3%	MSCI EAFE 22.8%	S&P 500 13.7%	ARMB Farmland Index 6.2%
S&P 500 26.5%	NCREIF:Total Index 13.1%	NAREIT All Equity Idx 8.3%	MSCI EAFE 17.3%	ARMB Farmland Index 15.8%	S&P:GI Infr Idx 13.0%	NCREIF:Timberland Index 5.0%
S&P:GI Infr Idx 25.3%	MSCI EAFE 7.8%	Barclays Aggregate 7.8%	S&P 500 16.0%	S&P:GI Infr Idx 15.0%	NCREIF:Total Index 11.8%	NAREIT All Equity Idx 2.8%
ARMB Farmland Index 7.3%	ARMB Farmland Index 7.7%	S&P 500 2.1%	S&P:GI Infr Idx 11.9%	NCREIF:Total Index 11.0%	NCREIF:Timberland Index 10.5%	S&P 500 1.4%
Barclays Aggregate 5.9%	Barclays Aggregate 6.5%	NCREIF:Timberland Index 1.6%	NCREIF:Total Index 10.5%	NCREIF:Timberland Index 9.7%	ARMB Farmland Index 7.9%	Barclays Aggregate 0.5%
NCREIF:Timberland Index (4.8%)	S&P:GI Infr Idx 5.8%	S&P:GI Infr Idx (0.4%)	NCREIF:Timberland Index 7.8%	NAREIT All Equity Idx 2.9%	Barclays Aggregate 6.0%	MSCI EAFE (0.8%)
NCREIF:Total Index (16.9%)	NCREIF:Timberland Index (0.2%)	MSCI EAFE (12.1%)	Barclays Aggregate 4.2%	Barclays Aggregate (2.0%)	MSCI EAFE (4.9%)	S&P:GI Infr Idx (11.5%)

Source: Callan

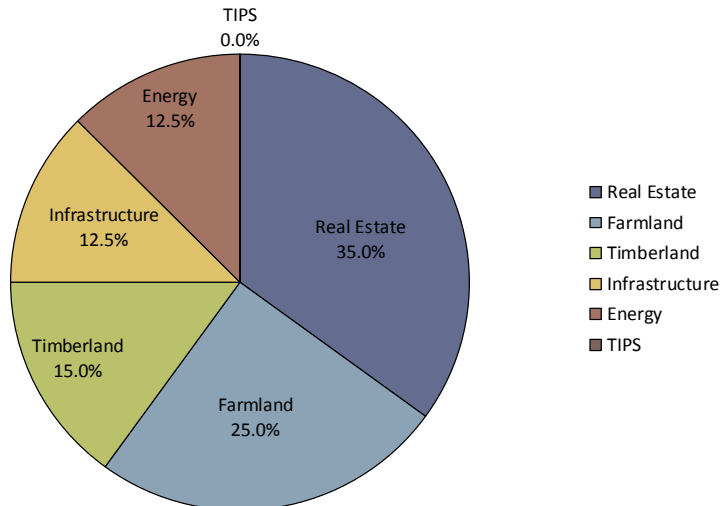
Real Assets Portfolio Sector Allocation

- The Fiscal Year 2017 asset allocation target for Real Assets is 17% +/- 8%.
- The actual Real Assets allocation was 18.1% at June 30, 2016.
- No new strategies were added to the asset class in Fiscal Year 2016. Existing commitments across the strategies continued to be funded.

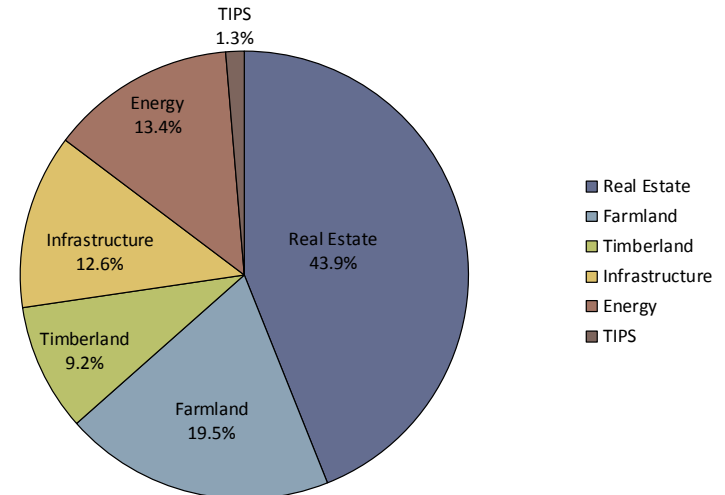
ARMB Actual Sector Allocation Compared to Target Allocation as of June 30, 2016				
Sector Allocation	Actual %	Target %	Target Band	Actual % (-) Target %
Real Assets				
Real Estate	43.9%	35%	+40%/-35%	8.9%
Farmland	19.5%	25%	+30%/-25%	-5.5%
Timberland	9.2%	15%	+30%/-15%	-5.8%
Infrastructure	12.6%	12.5%	+10%/-12.5%	0.1%
Energy	13.4%	12.5%	+10%/-5%	0.9%
TIPS	1.3%	0%	+20%	1.3%

Source: State Street Bank and Trust Company and manager reported NAVs for real estate, farmland, and timberland. Percentages reflect combined defined benefit pension and health care portfolios as of June 30, 2016. Percentages may not add due to rounding.

ARMB Real Assets Portfolio
Target Sector Allocations as of June 30, 2016



ARMB Real Assets Portfolio
Total Market Value \$4.1 billion as of June 30, 2016



Real Assets Performance

Returns for Periods Ended June 30, 2016

	Last Quarter	Fiscal Year	Last 3 Years	Last 5 Years
Real Assets	3.78%	4.81%	7.14%	8.38%
Real Assets Target (1)	2.38%	8.87%	9.27%	9.51%
Real Estate Pool	2.67%	13.78%	12.43%	11.02%
Real Estate Target (2)	2.57%	11.91%	11.84%	11.72%
Private Real Estate	1.51%	11.38%	12.12%	10.69%
NCREIF Total Index	2.03%	10.64%	11.61%	11.51%
REIT Internal Portfolio	7.20%	23.70%	13.37%	12.43%
NAREIT Equity Index	7.41%	23.62%	13.31%	12.52%
 Total Farmland	 0.82%	 5.99%	 6.61%	 10.04%
UBS Farmland	1.05%	6.44%	7.26%	11.23%
Hancock Agricultural	0.35%	5.04%	5.27%	7.93%
ARMB Farmland Target (3)	1.38%	6.39%	8.01%	11.83%
 Total Timber	 2.03%	 0.24%	 6.27%	 6.22%
Timberland Investment Resources	2.77%	1.13%	6.15%	5.40%
Hancock Timber	(0.03%)	(2.23%)	6.00%	7.39%
NCREIF Timberland Index	1.09%	3.49%	7.77%	6.72%
 TIPS Internal Portfolio	 1.71%	 4.36%	 2.28%	 2.77%
BC US TIPS Index	1.71%	4.35%	2.31%	2.63%
 Total Energy Funds *	 (11.62%)	 (35.72%)	 (20.06%)	 (10.72%)
CPI + 5%	2.52%	5.65%	5.77%	6.13%
 MLP Composite	 19.50%	 (17.91%)	 (0.91%)	 -
Advisory Research (FKA FAMCO) MLP	22.32%	(21.74%)	(3.23%)	-
Tortoise Capital Adv MLP	17.16%	(14.24%)	1.28%	-
Alerian MLP Index	19.70%	(13.11%)	(5.38%)	3.24%
 Total Infrastructure	 5.09%	 7.31%	 -	 -
Brookfield	9.32%	1.43%	-	-
Lazard	(3.85%)	8.68%	-	-
JPM Infrastructure	2.39%	10.11%	-	-
IFM Infrastructure (funded May 2015)	9.61%	10.77%	-	-
Global Infrastructure Idx	4.99%	3.71%	8.66%	6.16%

(1) As of 4/01/2014, Real Assets Target is 50% NCREIF Property Index, 10% NCREIF Farmland Index, 10% NCREIF Timberland Index, 15% Barclays Capital US TIPS Index, 10% S&P Global Infrastructure, and 5% NAREIT All Equity Index.

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

(3) ARMB Custom Farmland Target is leased-only properties in the NCREIF Farmland Index reweighted to reflect 90% row crops and 10% permanent crops until 1/1/08 and 80% row crops and 20% permanent crops thereafter.

Farmland and Timber data supplied by the manager and may vary from State Street returns due to timing variations.

* Return data supplied by State Street.

Real Estate Portfolio

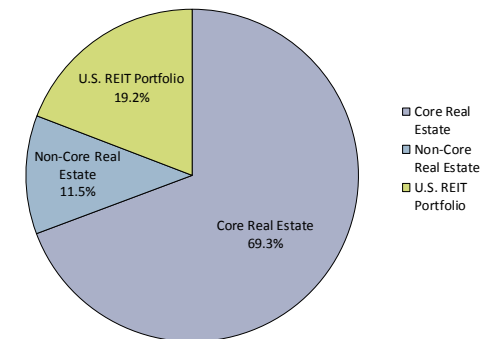
- Core portfolio returned 10.7% net for the fiscal year. The core portfolio performed consistent with the NCREIF Property Index benchmark of 10.6%. Strong performance was generated by the UBS separate account at 16% net due to positive leasing and market improvement. Weaker performance was generated by LaSalle due to vacancy in a large office asset.
- No sales or acquisitions occurred during the year. All advisors are either currently in the market with sales or are considering sales to take advantage of strong pricing in many markets.
- Non-Core portfolio returned 14.1% net during the fiscal year with strong performance from Silverpeak, Tishman Speyer, and Clarion Funds. Fund performance is benefiting from continued improvement in the economy, leveraged capital structures, and the maturity of the portfolio.
- U.S. REIT portfolio returned 23.7% compared to FTSE NAREIT All Equity REITs Index of 23.6%. Approximately \$50 million was transferred out of the REIT portfolio to the MLP portfolio during the Fiscal Year.
- No additional commitments were made to Non-Core funds during the fiscal year.

Real Estate Portfolio Profile

- Net Asset Value: \$1.8 billion
- Number of Properties: 21 + commingled fund interests
- Core Structure: 3 separate accounts, 2 open-end funds
- Non-Core Structure: 16 commingled funds
- Remaining separate account allocation: \$115 million

as of June 30	2016	2015	2014	2013	2012	2011	2010	2009	2008
ARMB Core Income	4.7%	5.0%	4.8%	5.4%	5.7%	6.8%	7.3%	5.9%	5.6%
ARMB Core Appreciation	6.5%	6.9%	6.5%	4.7%	5.8%	11.3%	-8.0%	-27.7%	2.6%
ARMB Core Total (Net)	10.7%	11.4%	10.8%	9.6%	11.0%	17.8%	-1.9%	-23.7%	7.6%
ARMB Non-Core Total (Net)	14.1%	19.4%	14.4%	5.9%	3.1%	26.2%	-18.1%	-58.9%	3.2%
ARMB REIT (Net)	23.7%	4.3%	13.0%	9.5%	12.6%	35.5%	52.3%	-46.5%	-15.7%
ARMB Total Real Estate (Net)	13.8%	11.2%	12.2%	8.7%	9.2%	20.8%	-3.9%	-34.8%	5.1%
ARMB Custom Benchmark	11.9%	12.2%	11.4%	10.7%	12.4%	18.4%	3.7%	-21.1%	6.8%

ARMB Real Estate Portfolio
Strategy Weights as of June 30, 2016



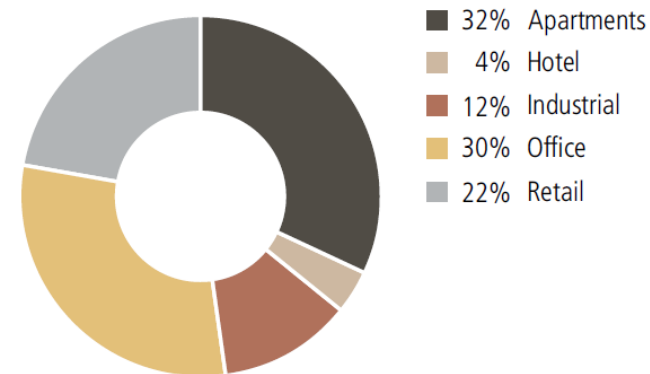
Source: Townsend

Real Estate Portfolio – UBS Trumbull Property Fund

- U.S. domestic core real estate open-end fund allowing for quarterly deposits and distributions/withdrawals.
- Objective is 5% real rate of return, gross of fees, over 3 to 5 years cycles and to outperform NCREIF ODCE Index over a market cycle.
- Defensively positioned with a relatively low 15.6% leverage ratio and a relatively high 32% weighting to apartments. Provides large asset exposure that is not practical in ARMB's real estate separate accounts.
- The Fund has produced strong income and total returns over time. Recent relative underperformance compared to NCREIF ODCE is attributed to lower leverage compared to peer group.

ARMB Investment as of June 30, 2016

- Initial Investment: 1980
- Deposits: \$45 million
- Distributions/Withdrawals: \$93.9 million
- ARMB Net Asset Value: \$98.6 million
- Fund Size, \$ Gross: \$22.8 billion
- Fund Size, # of Investments: 224



Periods ended June 30, 2016	Annualized					Since inception 1/13/78 (%)
	Quarter (%)	12 months (%)	3 years (%)	5 years (%)	10 years (%)	
Net investment income	1.22	4.92	5.06	5.12	5.51	7.61
Net realized/unrealized gain	0.56	5.58	5.99	5.63	1.02	1.41
Total, before advisory fee	1.78	10.71	11.27	10.96	6.58	9.10
Total, net of advisory fee ¹	1.53	9.60	10.15	9.84	5.57	8.10
CPI	1.22	1.01	1.06	1.32	1.74	3.58
NFI-ODCE gross	2.13	11.82	13.00	12.72	6.17	8.75

Source: UBS Realty Investors LLC

Farmland Portfolio

- Farmland portfolio returned 5.99% net for the fiscal year slightly below the ARMB Farmland Target benchmark return of 6.39%. Separate account activity reflects the acquisition of three properties during the year – raisins, almonds, and table grapes. One sale occurred in the portfolio.
- The Farmland portfolio is within the row/permanent crop-type mix targets of 80%/20% +/- 10% at 85.3% row and 14.7% permanent. The portfolio is well diversified based on location and crop type. The portfolio grows a wide variety of row crops including corn, cotton, and soybeans. Permanent crops include pistachios, almonds, apples, oranges, and wine grapes.
- Farmland returns have moderated in recent years due to commodity price weakness and strength in the US dollar. In general, ARMB's managers have been able to hold rents at existing levels but some rent concessions have been made in certain markets where farm profitability has been more severely impacted.
- In terms of new investment opportunity, the broader interest rate environment continues to generate challenging conditions for finding acquisitions that fit ARMB's 3-year minimum going-in yield guidelines of 5% for the portfolio and 4% for individual properties. Weaker commodity prices, a stronger US dollar, and expectations for higher interest rates create the potential for more attractive investment opportunities in the future.

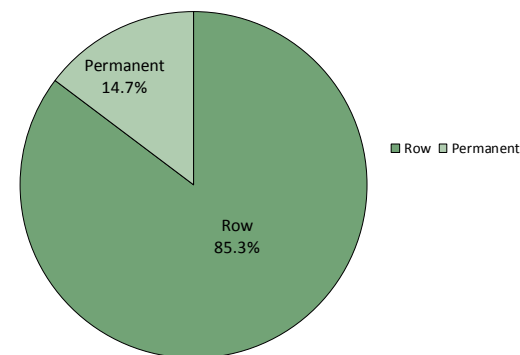
Farmland Portfolio Profile

- Net Asset Value: \$814 million
- Number of Properties: 92
- Total Acres: 156,845
- Structure: 2 separate accounts
- Remaining separate account allocation: \$75 million

Investment Location - Top 5 States

	ARMB Portfolio	Properties
California	22.0%	14
Idaho	16.6%	15
Texas	10.8%	9
Illinois	9.6%	7
Colorado	9.2%	9

ARMB Farmland Portfolio
Strategy Weights as of June 30, 2016



Annual ARMB PERS Farmland Returns

Fiscal Year ending June 30

	2016	2015	2014	2013	2012	2011	2010	2009
ARMB Farmland Income Net Return	2.77%	2.96%	2.89%	3.25%	3.32%	4.88%	3.98%	3.77%
ARMB Farmland Appreciation Return	3.15%	2.35%	5.49%	12.00%	11.61%	4.89%	1.49%	2.05%
ARMB Farmland Total Net Return	5.99%	5.36%	8.50%	15.56%	15.23%	9.91%	5.52%	5.88%
ARMB Farmland Custom Benchmark	6.39%	5.69%	12.05%	17.72%	17.92%	10.21%	5.47%	11.23%

Source: Callan

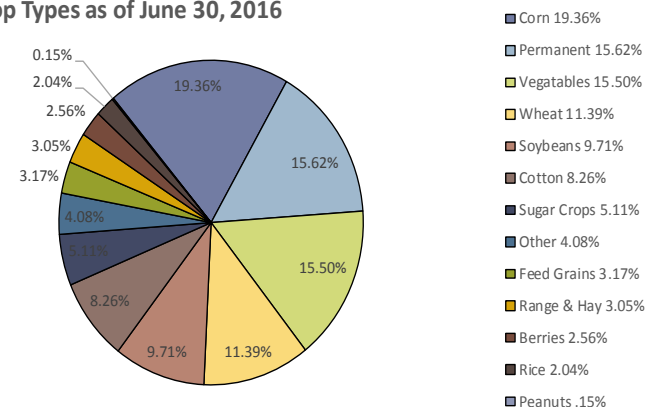
Farmland Portfolio – UBS Separate Account

- U.S. domestic separate account focused on purchasing farmland and leasing to farmers with a strategic target of 80% row crops and 20% permanent crops. ARMB is exclusive, 100% owner.
- Objective is 5% real rate of return, net of fees, and to outperform custom NCREIF benchmark reweighted to 80% row crops and 20% permanent crops.
- Well diversified portfolio with strong historical total returns and producing consistent current cash income.

ARMB Investment as of June 30, 2016

- Initial Investment: 2005
- Remaining Allocation: \$12 million
- Capital Invested: \$343 million
- Since Inception Income Distributions: \$139 million
- Net Asset Value: \$546 million
- Profile: 66 farms, 97,519 acres, located in 13 states
- Annualized net ITD performance (11.25yrs): 10.22%

ARMB - UBS Farmland Separate Account
Crop Types as of June 30, 2016



Midnight Sun

Property level comparative returns (%)

Calendar year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
MS annual total returns	11.94	15.69	16.95	5.71	5.62	11.79	17.07	24.33	8.56	6.30
MB annual total returns	15.61	17.05	13.40	7.30	7.68	14.93	17.33	15.82	7.92	6.17
			1 Year	3 years	5 years	10 years	From inception 4/1/05–6/30/16			
MS annualized total return (ending 6/30) (%)			7.41	8.28	12.29	11.79	11.92			
MB annualized total returns (%)			6.39	8.01	11.83	11.94	12.89			

Source: UBS Asset Management, Global Real Estate – Farmland. Past performance is not an indication of future results. The NCREIF 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.

Timberland Portfolio

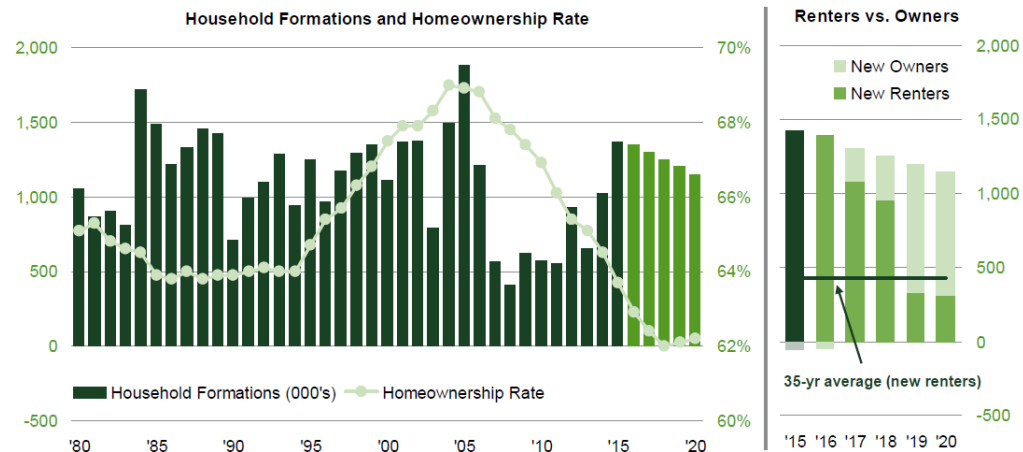
- Timberland portfolio returned .24% net for the fiscal year. The Timberland portfolio underperformed the NCREIF Timberland Index benchmark return of 3.49%. One acquisition and no large property sales occurred during the fiscal year. ARMB has built a well diversified portfolio across NCREIF geographic regions.
- Low returns from the Timberland portfolio in Fiscal Year 2016 are attributed to sluggish growth in new housing starts and lower export demand from Asia. Home ownership continues to be at surprising low historical levels. Additionally, excess timber supply has accumulated and continues to pressure pricing as a result lower harvest levels following the 2008 housing crisis. This condition is expected to normalize with continued improvement in housing starts.

Annual ARMB Timberland Returns

Fiscal Year ending June 30

	2016	2015	2014	2013	2012	2011	2010
ARMB Timberland Total Net Return	0.24%	8.37%	10.49%	7.17%	5.11%	4.61%	-2.78%
NCREIF Timberland Index	3.49%	10.02%	9.92%	9.37%	1.13%	0.51%	-3.60%

Source: Callan



Sources: Economy.com, U.S. Census Bureau, Green Street Advisors. Forecasts are Green Street Advisors'.

Green Street Advisors

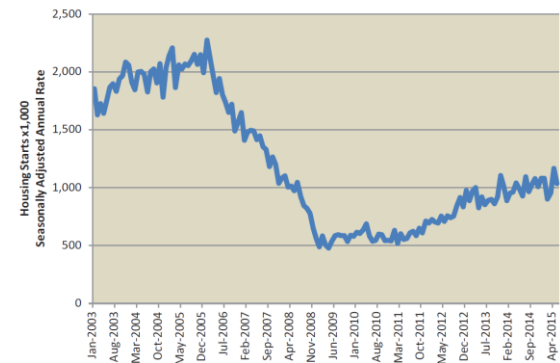
Timberland Portfolio Profile

- Net Asset Value: \$384 million
- Number of Properties: 16
- Total Acres: 190,735
- Structure: 2 separate accounts
- Remaining separate account allocation: \$183 million

Diversification by Geographic Region

	ARMB Portfolio	NTI	Difference
South	58.7%	71.8%	-13.1%
Pacific Northwest	14.7%	21.6%	-6.9%
Northeast	12.1%	4.6%	7.5%
Lake States	14.4%	2.0%	12.4%

U.S. Housing Starts



Source: U.S. Census Bureau

Source: TIR

Infrastructure and Energy Portfolios

- The Fiscal Year 2016 infrastructure portfolio return was 7.19% compared to its global benchmark return of 3.71%. Returns were negatively impacted by energy markets and the appreciation of the U.S. dollar but continue to be supported by globally low interest rates and the search for yield by investors.
- ARMB's infrastructure investments are focused on core infrastructure investments which are characterized by long-lived assets with high barriers to entry. These assets often have monopolistic characteristics with contracted or regulated cash flows. Investments include airports, toll roads, sea ports, water utilities, and electric transmission assets. Both the IFM and JPM investments are large private open-end funds that invest in OECD countries globally. Brookfield and Lazard invest in public stocks in OECD countries with Brookfield also including some emerging market exposure.
- MLP and private energy investments continued to be negatively impacted by the overall energy markets in Fiscal Year 2016. An additional \$50 million was allocated to MLPs in Fiscal Year 2016. MLP stocks have begun to recover since their lows in February 2016.

ARMB Annual Returns Fiscal Year ending June 30						
Infrastructure	2016	2015	2014	2013	2012	2011
ARMB Infrastructure Composite Total Return	7.19%	-5.54%				
IFM Infrastructure	10.77%					
JPM Infrastructure	10.11%	-9.14%				
Lazard Infrastructure	8.10%	-5.22%				
Brookfield Infrastructure	0.68%	-6.49%				
S&P Global Infrastructure Index	3.71%	-5.15%	30.42%	9.70%	-4.18%	31.96%
Master Limited Partnerships	2016	2015	2014	2013	2012	2011
Advisory Research MLP	-21.74%	-10.89%	29.96%			
Tortoise MLP	-14.24%	-12.83%	38.96%			
Alerian MLP Index	-13.11%	-19.81%	21.57%	28.38%	7.86%	27.86%
EIG Energy Funds	2016	2015	2014	2013	2012	2011
EIG Energy Funds Composite	-35.72%	-15.69%	-5.73%	5.61%	5.15%	8.04%
US TIPS	2016	2015	2014	2013	2012	2011
ARMB TIPS Portfolio	4.36%	-1.59%	4.19%	-4.61%	12.31%	8.06%
Barclays US TIPS Index	4.35%	-1.73%	4.44%	-4.78%	11.66%	7.74%

Infrastructure Portfolio – IFM Global Infrastructure Fund

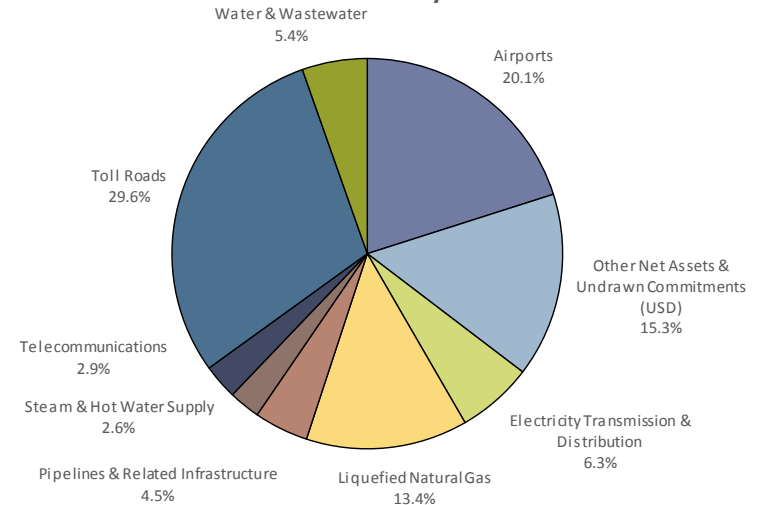
- Core diversified OECD infrastructure fund. Core assets are defined by monopolistic features, predictable and stable cash flows, and the ability to hedge against inflation.
- Fund objective is 10% rate of return, net of fees, per annum over the long term.
- Fund seeks assets with the following characteristics:
 - strong market position;
 - high barriers to entry;
 - limited demand elasticity;
 - long lives; and
 - inherent link to inflation.

Infrastructure can be defined as a facility or asset which provides a core essential service critical to the operation and development of the economy. Infrastructure assets tend to be capital intensive, have long useful lives and demonstrate relatively high barriers to entry with growth generally linked to economic activity. -IFM

ARMB Investment as of June 30, 2016

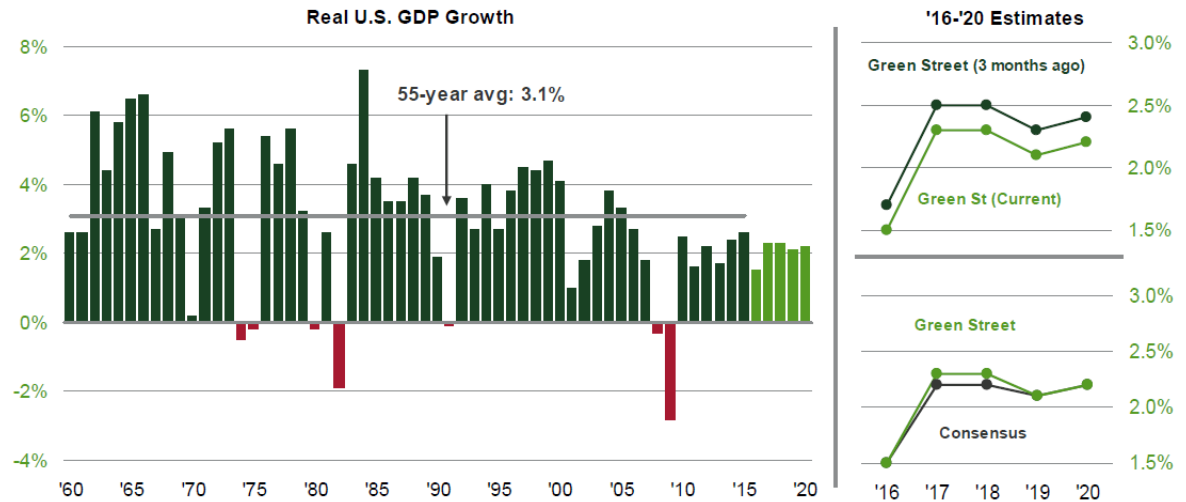
- Initial Investment: 2015
- Capital Invested: \$200 million
- Remaining Commitment: \$50 million
- ARMB Net Asset Value: \$219 million
- ARMB ITD performance: 9.4%
- Fund Size, \$ NAV: \$11.7 billion
- Fund Size, # of Investments: 11

IFM Global Infrastructure Fund by Sub Sector Allocation



U.S. Economy

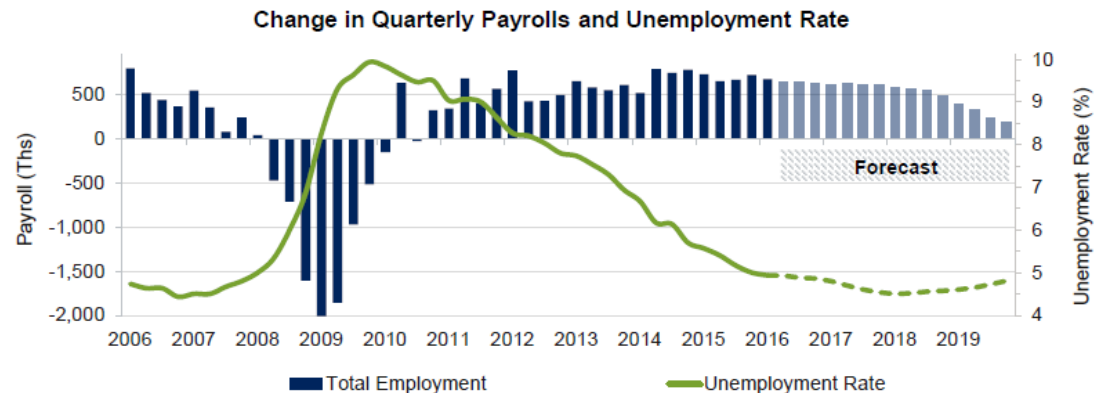
- The U.S. economy continues to demonstrate signs of strength and growth although data suggests the future trend in GDP growth may be closer to 2% rather than the historic 3% average.



Sources: Bureau of Economic Analysis (historical data), Blue Chip Economic Indicators (consensus estimates). Forecasts are Green Street Advisors'.

Source: Green Street Advisors

- U.S. job data and job growth forecasts are supportive of continued economic strength.

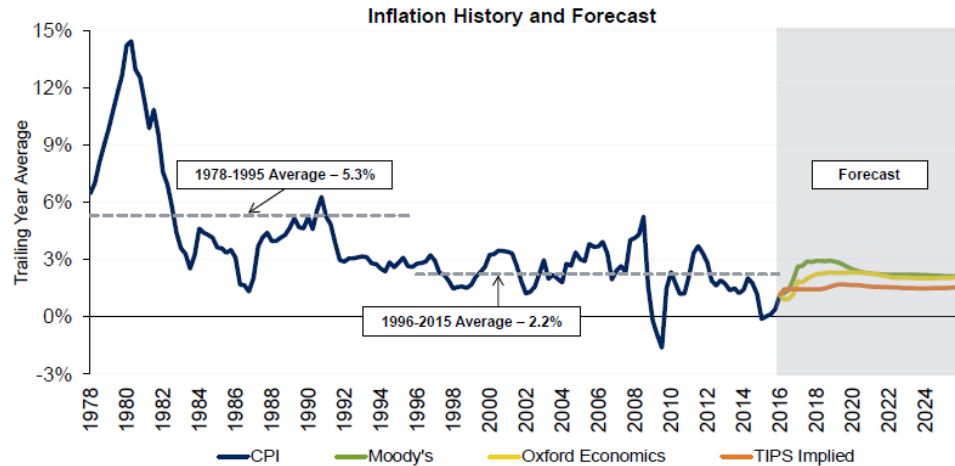


Source: Economy.com. Data through March 2016; Forecast as of April 2016.

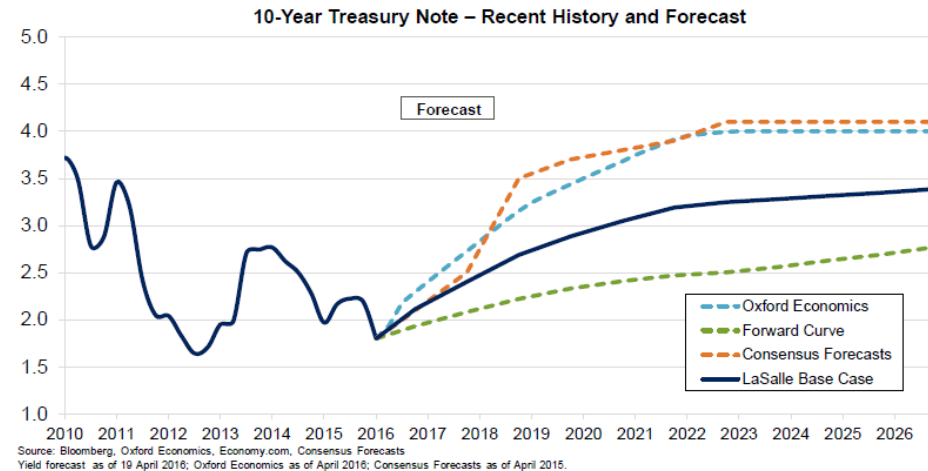
Source: LaSalle Investment Management

Inflation

- One of the strategic objectives for real assets is to provide a hedge against inflation. Current market expectations are that inflation will not be a concern. In the short-term, commodity weakness, USD appreciation, and potential slower global growth are consistent with low inflation expectations. While not an apparent threat right now, the Real Assets portfolio should help hedge against unexpected higher inflation should that occur and surprise the markets.
- While the market is not concerned about inflation, nominal U.S. Treasury rates are expected to increase over time as a result of continued economic growth and tightening of stimulative monetary policy.
- Given the income nature of many real assets strategies and capital intensive levered nature of the asset class, rising U.S. Treasury rates will likely be a headwind to future asset performance. Offsetting that threat is the expectation for continued economic growth.



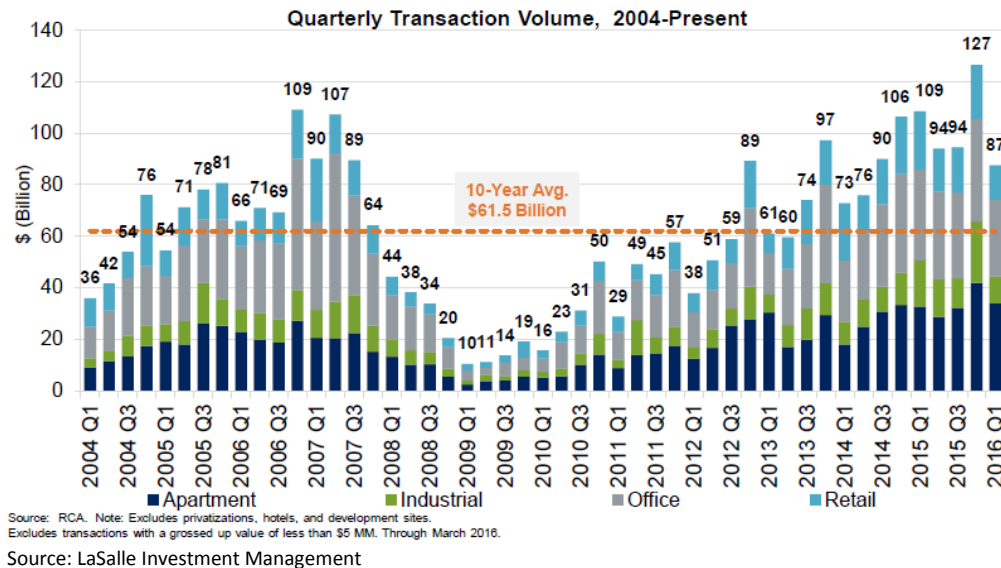
Source: LaSalle Investment Management



Source: LaSalle Investment Management

Capital Markets

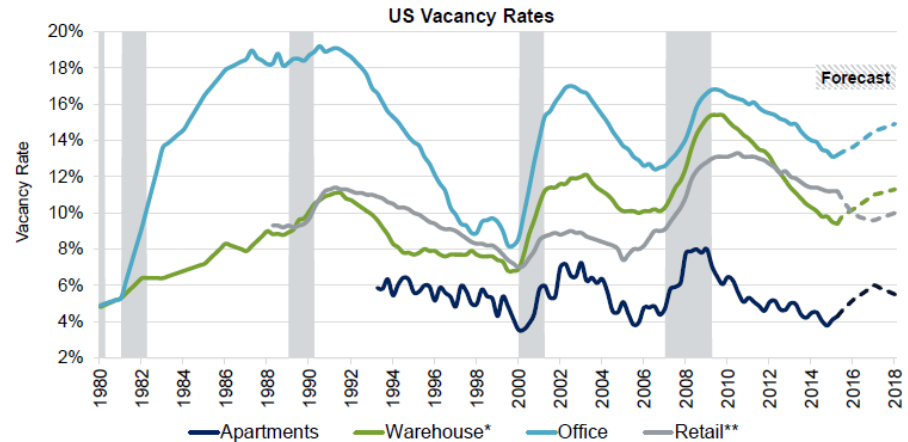
- Real Estate equity and debt markets continue to be very liquid and active across property types based on transaction volume. Availability of capital and the search for yield has benefited owners of U.S. real estate.



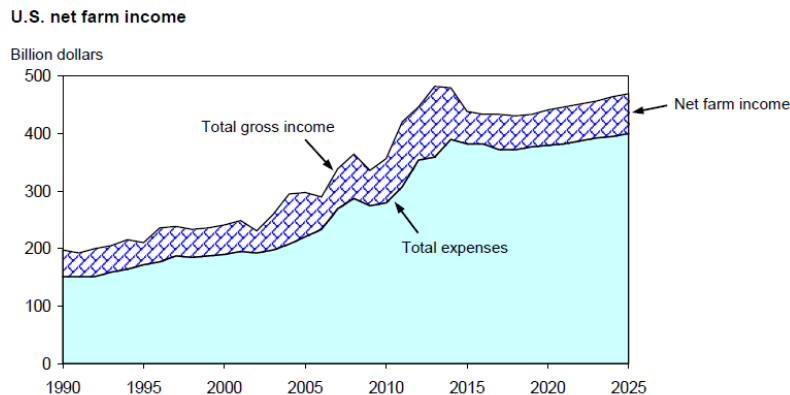
- The timberland transaction market continues to be active but represents a relatively small opportunity set compared to real estate with 35 institutional transactions totaling \$2 billion in fiscal year 2016. Most of these transactions occurred in the south. High quality timberland transactions are very competitive and expected to continue as such with forest products companies re-entering the market as strategic buyers.
- Farmland markets continue to be very competitive and challenging for investment managers to find attractive opportunities despite lower commodity prices and lower farm income. Transaction flow has increased and more investment opportunity is expected as commodity price pressure negatively impacts farmland profitability.

Fundamentals

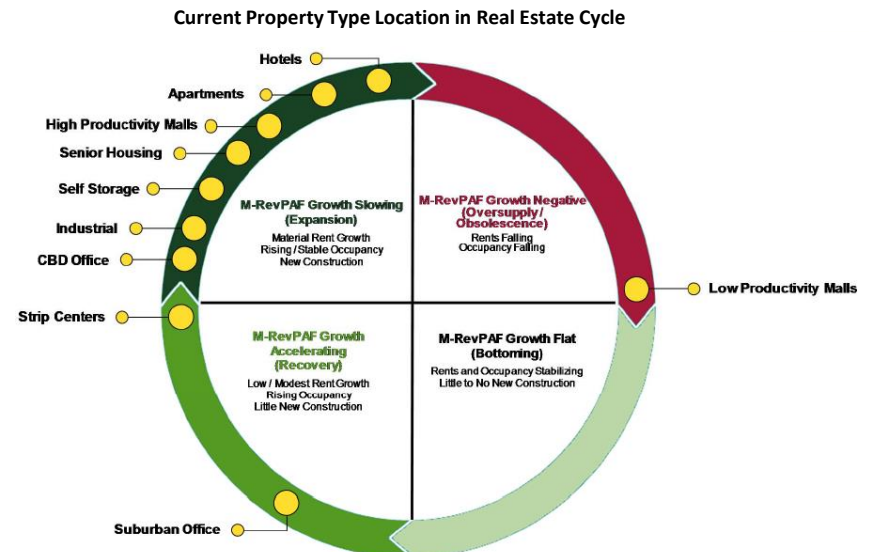
- Real Estate fundamentals are generally strong across markets and continue to improve in warehouse, office, retail, and apartments. Generally low vacancy rates have given landlords pricing power and the ability to increase rents. Space absorption across sectors is expected to continue to be positive going forward, though new supply is expected to increase vacancy rates.
- Timberland fundamentals are expected to strengthen with continued growth in the residential construction market and increasing bioenergy demands. Demand for timber is expected to increase as mill capacity is currently being added in the U.S. Southeast.
- According to USDA projections, U.S. net farm income is expected to decline over the next few years as record commodity prices moderate but the market is still expected to benefit from growth in export demand over the long-term.



Source: LaSalle Investment Management



Source: USDA Long-term Projections, February 2016

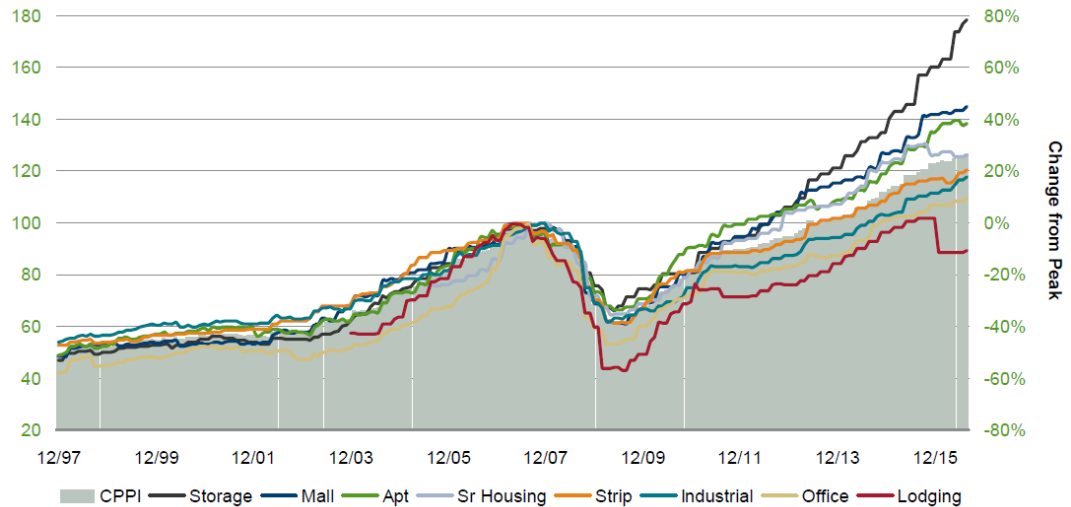


Source: Green Street Advisors

Current Market Opportunity

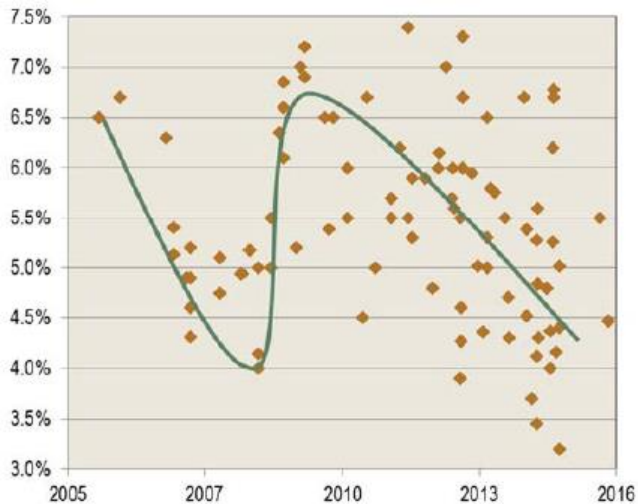
- Real Asset valuations have continued to improve driving current yields to historically low levels. Current market yields are bumping up against ARMB minimum yield requirements for separate accounts.
- Stable, yield-based U.S. investments have been highly sought by investors as a result of the very low global interest rate environment and the relatively attractive macro environment in the U.S.
- Current timberland, farmland, and infrastructure yields offer similar, historically low, yield prospects.

Green Street Commercial Property Price Index



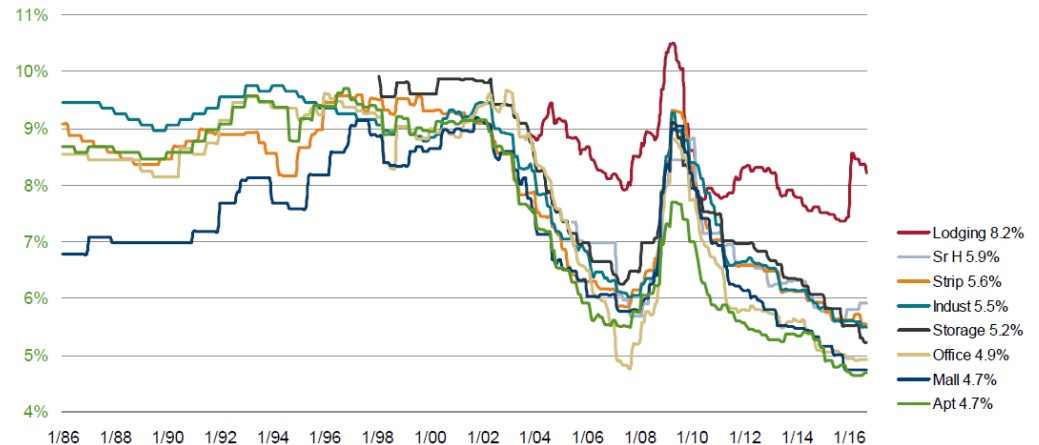
Source: Green Street Advisors

Implied Real Discount Rates for U.S. Timberland Sales



Source: Hancock Timber Resource Group, assumes 2.5% long-term inflation rate

Nominal Cap Rates



Source: Green Street Advisors

Current Market Opportunity – Comparative Data

- Real Estate valuation metrics are consistent with the broad market. Absolute valuation metrics generally look historically rich but fair to attractive on a spread basis to bond yields.

Asset Relative Value

Category	Asset	2Q 2016 Level	15 Year Median	15 Year Percentile°	Value Assessment
Equities	S&P 500 Dividend Yield	2.20%	1.96%	82.1%	Very Good Value
	10 Year Treasury Note	1.64%	3.64%	1.1%	Very Expensive
Bonds	AAA Corporate Bond Spread	1.86%	1.69%	69.2%	Good Value
	Baa Corporate Bond Spread	2.89%	2.77%	61.4%	Fair Value
Real Estate Debt	AAA CMBS Spread	1.61%	1.19%	59.2%	Fair Value
	Commercial Mortgage Rate Spread*	2.02%	1.74%	66.4%	Good Value
Private Real Estate	NPI Income Yield*	4.85%	6.12%	1.6%	Very Expensive
	NPI Income Yield less 10 year Note*	3.21%	3.01%	61.4%	Fair Value
	NCREIF Transaction Cap Rate*	4.97%	5.81%	6.7%	Very Expensive
	Implied REIT Cap Rate	4.67%	6.21%	3.9%	Very Expensive
REITs	REIT Cap Rate Spread to Baa Corporate Bond	-0.78%	-0.68%	43.5%	Fair Value
	REIT Cap Rate Spread to 10 year Note	2.86%	2.75%	57.5%	Fair Value

Source: NCREIF, Economy.com, Bloomberg, JP Morgan, SNL Financial, GreenStreet Advisors.

Note: Spreads are to 10 year Treasury Rate.

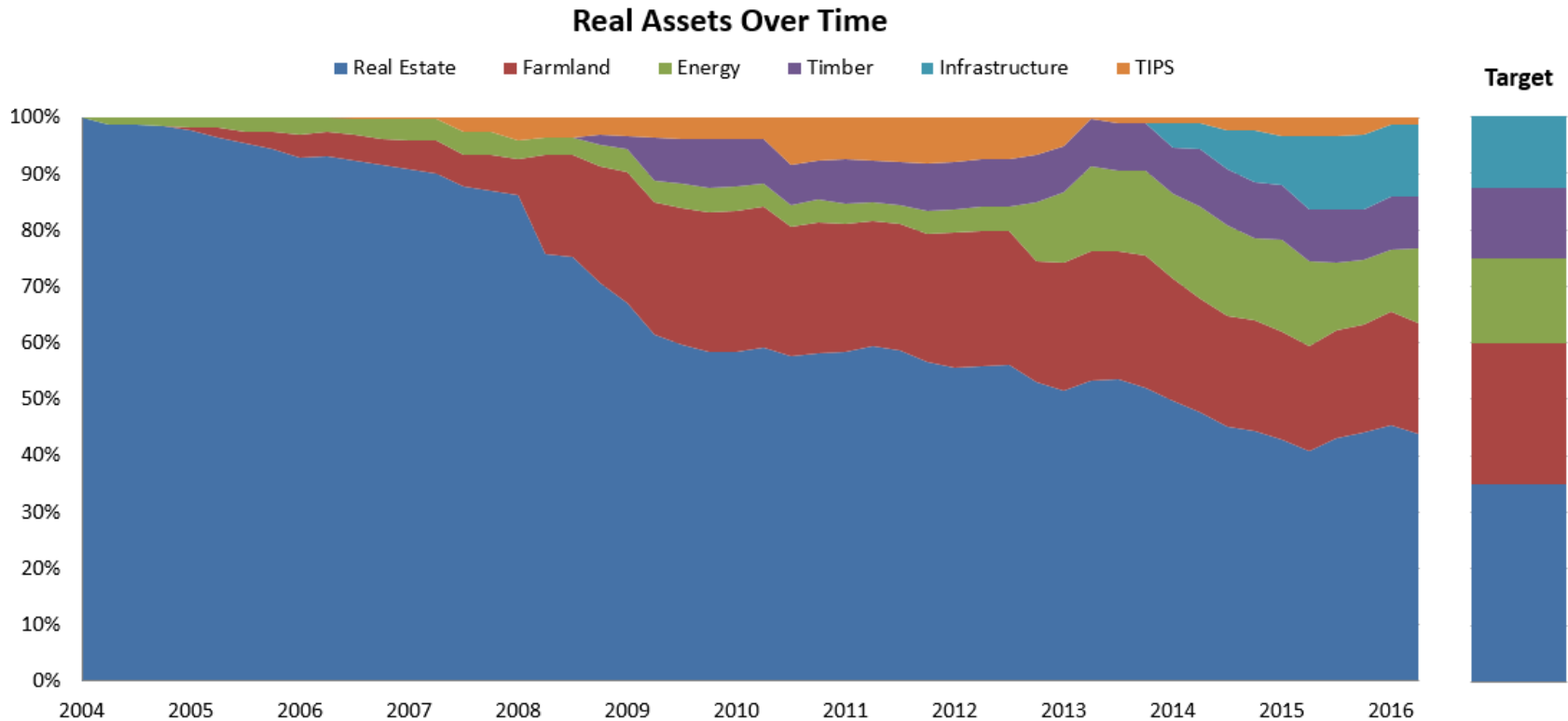
*Relative to 15 year historic distribution of quarterly values.

Data as of 2Q 2016.

Source: LaSalle Investment Management

History of Real Assets Allocation

The Real Assets asset class continues to evolve and mature with each sector now approximating its target allocation.



Aggregate Real Assets Market Values (\$ billions, as of June 30, 2016)

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
0.96	1.30	1.53	1.98	2.49	2.04	2.03	2.55	2.69	3.13	3.60	4.18	4.17

Projected Real Assets Allocation

- The Real Assets portfolio was overweight its target allocation of 17% as of June 30, 2016 by 1.1%.
- The allocation is projected to increase over the next five years as existing allocations and commitments are invested and the actuarial projected growth of defined benefits assets slows.
- Sector allocations are currently within target ranges and are forecasted to remain within acceptable ranges but some adjustments are warranted to better align portfolio with targets and in light of historical experience. These adjustments are delineated as part of Fiscal Year 2017 Investment Recommendations.
- Liquid investments in REITs, TIPS, MLPs, public infrastructure, and open-end funds can be used by the CIO to calibrate investment allocation levels over time.

Actual Portfolio Weights as of June 30, 2016					Five Year Forecast				
Sector Allocation	Actual %	Target %	Over/Under%	Band	FY17	FY18	FY19	FY20	FY21
Real Assets Allocation	18.1%	17.0%	1.1%	+/-8%	18.7%	19.4%	20.2%	20.7%	21.0%
Real Assets Sector Allocation									
Real Estate	44.0%	35.0%	9.0%	+40%/-35%	41.8%	40.8%	40.2%	39.3%	38.5%
Farmland	19.5%	25.0%	-5.5%	+30%/-25%	19.5%	19.5%	19.0%	18.6%	18.4%
Timberland	9.2%	15.0%	-5.8%	+30%/-15%	9.8%	10.4%	10.9%	11.5%	11.4%
Infrastructure	12.6%	12.5%	0.1%	+10%/-12.5%	13.9%	14.2%	14.5%	14.9%	15.4%
Energy	13.4%	12.5%	0.9%	+10%/-5%	13.6%	13.9%	14.2%	14.5%	15.1%
TIPS	1.3%	0.0%	1.3%	+20%	1.3%	1.3%	1.3%	1.2%	1.2%
Private Real Estate Strategy Allocation									
Core	85.7%	100.0%	-14.3%	-25%	90.8%	93.0%	92.8%	93.7%	96.0%
Non-Core	14.3%	0.0%	14.3%	+27%	9.2%	7.0%	7.2%	6.3%	4.0%
Private/Public Real Estate Allocation									
Private	80.8%	90.0%	-9%	+10%/-20%	79.7%	79.0%	78.4%	77.6%	76.5%
Public	19.2%	10.0%	9%	+20%/-10%	20.3%	21.0%	21.6%	22.4%	23.5%

- Total pension fund assets based on projections from Buck Consultants reflecting 2015 Actuarial Valuation.
- Cash flow expectations based on manager and staff estimates.
- Projections include no future new allocations or commitments.
- Schedule includes changes in market values based on expected returns.

Fiscal Year 2017 Investment Recommendations

Category	Recommendation	Rationale
Real Assets	The overall Fiscal Year 2017 investment strategy is to stay the course with the existing investment sectors, strategies, and investment managers.	Portfolio is a diversified mix of real assets strategies which, in the aggregate, is slightly above the target allocation. ARMB's actual allocation to the overall Real Assets portfolio can be managed by the CIO over time using the liquid investments in MLPs, REITs, TIPS, public infrastructure, and private open-end funds.
Real Estate	- Continue strategy of managing existing core separate account portfolios and allocations toward core assets located in markets with high barriers to entry. - Invest an additional \$100 million in UBS Trumbull Property Fund using REITS as a source of funds. - Staff will continue to explore new value-add and opportunistic real estate investments.	- A focus on high barrier to entry higher quality assets is the foundation of ARMB's core real estate strategy. - ARMB is currently overweight public real estate investments compared to private real estate assets at 81%/19% compared to a target of 90/10%. UBS TPF is a high quality, income focused, low leveraged open-end real estate fund which has been a good long-term investment for ARMB. - Higher risk/return strategies are not a strategic focus for the portfolio but attractive investment opportunities may present. KKR is currently in the market with their next real estate fund which will be considered. Other funds may also be considered within CIO discretion.

Fiscal Year 2017 Investment Recommendations

Category	Recommendation	Rationale
Timberland	- Decrease timberland target allocation by 5% from 15% to 10%. - Reduce Hancock remaining allocation by \$150 million in recognition of decrease in target allocation. - Require CIO approval for reinvestment of capital by timberland separate account managers (Revision to Timberland Guidelines).	- ARMB has built a diversified timberland portfolio with sufficient scale to contribute to its overall Real Assets portfolio. Challenges with deploying existing timberland allocation suggests investment approach should be modified. - Hancock has done a good job for ARMB in being disciplined about capital deployment. However, their last acquisition was in 2011. CIO discretion will remain available if Hancock finds opportunities they recommend we consider. - Currently, investment managers may reinvest capital unless their allocation is reduced by the CIO. This reinvestment approval requirement will enhance the ability of the CIO to control allocations going forward.
Infrastructure	- Increase infrastructure target allocation by 5% from 12.5% to 17.5%. - Increase commitment to IFM Global Infrastructure Fund by \$50 million.	- Attractive investment opportunity set with relatively high cash yields, inflation hedge, diversification, and monopolistic business models. - IFM has built an attractive large diversified pool of OECD infrastructure assets. IFM has a unique ownership that promotes a cultural alignment of interest with investors. Recent fee reduction and decision to hedge currency risk is also positive.
TIPS and Energy	No recommendations	

Fiscal Year 2017 Investment Recommendations

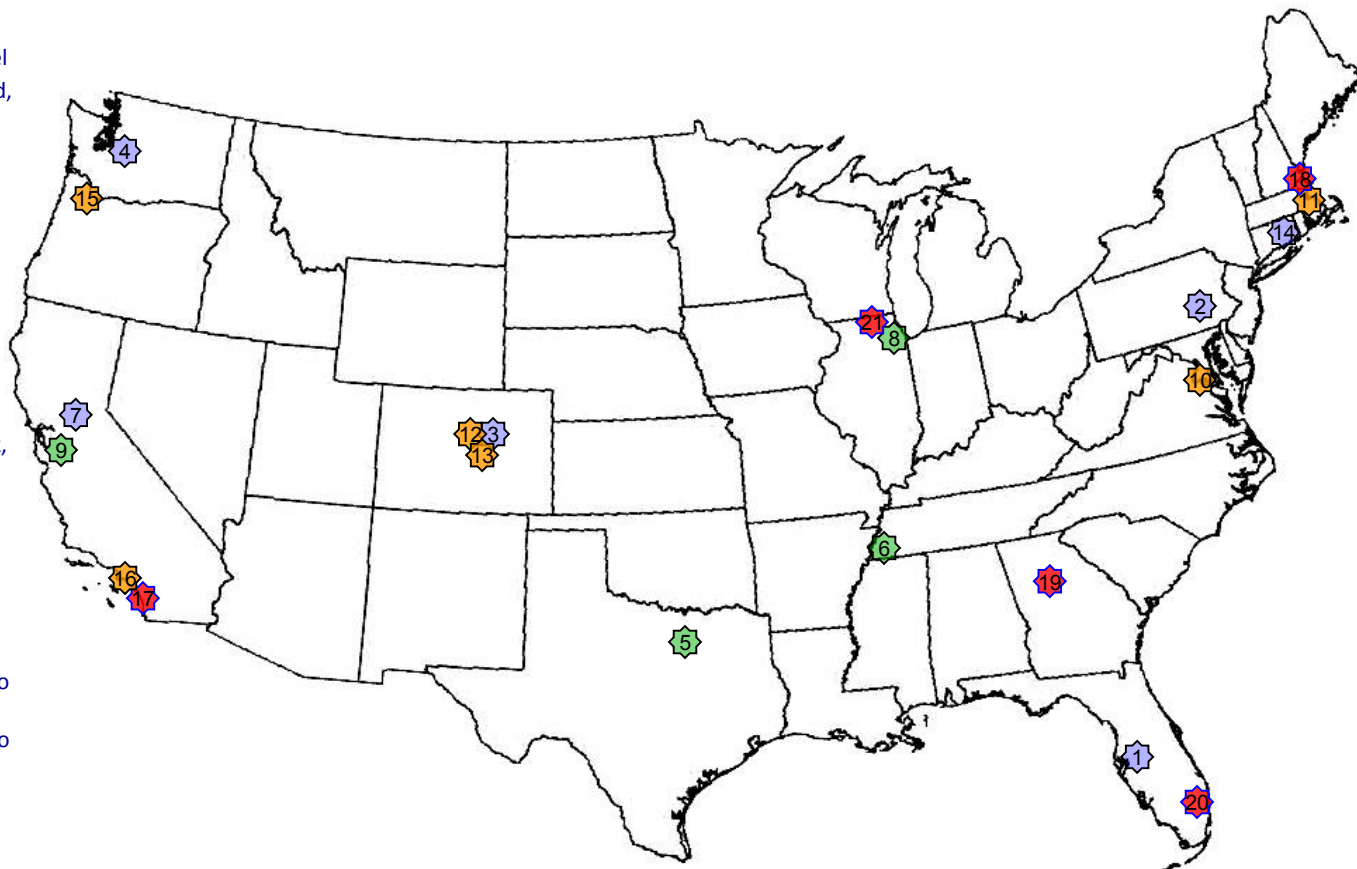
Category	Recommendation	Rationale
Farmland	• Increase allocation to UBS separate account by \$100 million. • Require CIO approval for reinvestment of capital by farmland separate account managers (Revision to Farmland Guidelines).	• Existing allocation to UBS Farmland is effectively fully invested at current allocation with \$12 million remaining. • The portfolio has generated strong income and total returns over time. • ARMB's farmland investment is underweight its strategic target of 25% by approximately 5% and is projected to remain underweight without additional allocation. • UBS queue is expected to delay actual investment of additional allocation by 12 to 24 months. • Currently, investment managers may reinvest capital unless their allocation is reduced by the CIO. This reinvestment approval requirement will enhance the ability of the CIO to control allocations going forward.
TIPS and Energy	No recommended changes to strategy.	

Appendix

Appendix A: Separate Account Real Estate Properties

Property List

1. Versant Place, Brandon, Florida - Sentinel
2. Valleybrook at Chadds Ford, Chadds Ford, Pennsylvania – Sentinel
3. Remington at Lone Tree, Denver, Colorado – UBS
4. Springbrook Apartments, Renton, Washington – UBS
5. Gateway Distribution Center, Roanoke, Texas – UBS
6. Memphis Industrial Park, Memphis, Tennessee – UBS
7. Glacier/Preserve Blue Ravine Inc., Folsom, CA – Sentinel
8. West 55th Street Industrial Park, McCook, Illinois – UBS
9. Winton Industrial Center, Hayward, California – UBS
10. Virginia Square, Arlington, Virginia – LaSalle
11. 400 Crown Colony, Quincy, Massachusetts - UBS
12. One Maroon Circle, Englewood, Colorado – UBS
13. Two Maroon Circle, Englewood, Colorado – UBS
14. Parallel 41, Stamford, Connecticut– Sentinel
15. Amber Glen, Hillsboro, Oregon – LaSalle
16. 330 North Brand Boulevard, Glendale, California – UBS
17. Aliso Creek, Laguna Beach, California – LaSalle
18. Westford Valley Marketplace, Westford, Massachusetts – UBS



19. Shallowford Corners, Roswell, Georgia – LaSalle
20. Winston Park Shopping Center, Coconut Creek Florida – UBS
21. Glen Gate Shopping Center, Glenview Illinois – LaSalle

Legend

Apartments	Blue	
Industrial	Green	
Office	Orange	
Retail	Red	

Appendix B: Glossary of Terms

Allocation	The total amount of investments a Separate Account Manager is authorized to make on behalf of the ARMB.
Barrier to Entry	Broad term used to describe a market environment that is supply constrained due to one or more factors such as zoning, lack of developable real estate, geography, etc.
Cap Rate	Capitalization Rate. One measure of expected return determined by dividing the first year expected annual net operating income from the property by the purchase price.
Closed-End Fund	A commingled fund that has a finite life. Investors ability to invest is limited to a certain time period at the inception of the fund. An investor's ability to sell the fund is often limited. Structures include limited partnerships, limited liability companies, and REITs.
Core Real Estate	Substantially leased, multi-tenant properties, greater than \$5 million in size, in major metropolitan areas, with little or no mortgage debt. Makes up the largest share of most pension fund portfolios.
Commitment	The total amount of investment a commingled fund is authorized to make on behalf of the ARMB.
NCREIF Property Index - NPI	National Council of Real Estate Investment Fiduciaries - NCREIF Property Index. The NCREIF Property Index is a quarterly time series composite total rate of return measure of investment performance of a very large pool of individual commercial real estate properties acquired in the private market for investment purposes only. All properties in the NPI have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment. As of June 30, 2016: 7,353 properties valued at over \$505 billion.
NCREIF Farmland Index – NFI	The NCREIF Farmland Index is a quarterly time series composite return measure of investment performance of a large pool of individual agricultural properties acquired in the private market for investment purposes only. All properties in the Farmland Index have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment. As of June 30, 2016: 696 properties valued at over \$7.5 billion.
NCREIF Timberland Index – NTI	The NCREIF Timberland Index is a quarterly time series composite return measure of investment performance of a large pool of individual timber properties acquired in the private market for investment purposes only. All properties in the Timberland Index have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment. As of June 30, 2016: 457 properties valued at over \$24.2 billion.
Net Asset Value	Total asset value – total liabilities = net asset value. In the context of REITs, net asset value is the value of real estate owned by the company less all debt owed by the company.
Non-Core Real Estate	Value-add or opportunistic real estate strategies involving higher risk than core investing. Investment strategies include relatively substantial redevelopment or releasing, buying distressed assets, new property development, and high leverage.
Open-End Fund	A commingled fund that has an infinite life. An investor may buy and sell shares of the fund. Similar to a mutual fund.
REIT	Real Estate Investment Trust – A company that owns and operates income producing real estate such as apartments, shopping centers, offices, hotels, and warehouses. A REIT must distribute at least 90% of taxable income to its shareholders annually. A REIT is a creation of the Internal Revenue Code which allows companies, who elect and meet stringent requirements, to avoid paying taxes on income passed through to shareholders.
Separate Account	An account with an investment manager that is invested exclusively for the ARMB and is not commingled with other client funds. Investments are made at the discretion of the Separate Account manager within the policy parameters approved by ARMB.



Alaska Retirement Management Board

Portfolio and Manager Performance Report

June 30, 2016

Portfolio Overview



Funding Status

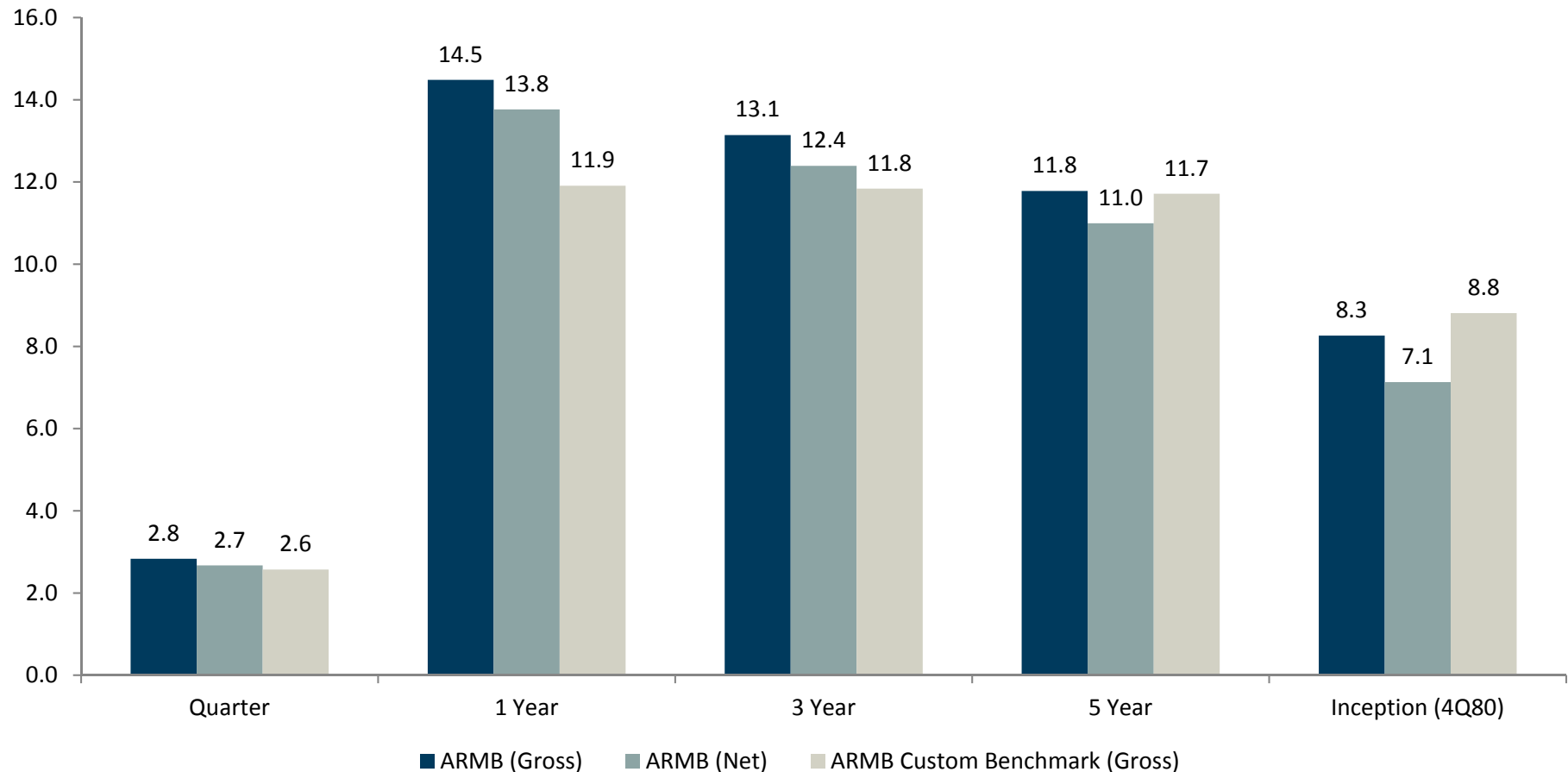
AS OF JUNE 30, 2016



- As of June 30, 2016, real estate comprised 36% of the real assets portfolio, in comparison to the 35% targeted allocation.
- Overfunding will continue to be addressed through additional allocations to other real assets and through self liquidating funds within the real estate portfolio.
- Additional commitments will to be made (as appropriate) in order to maintain the 35% target over longer term periods.



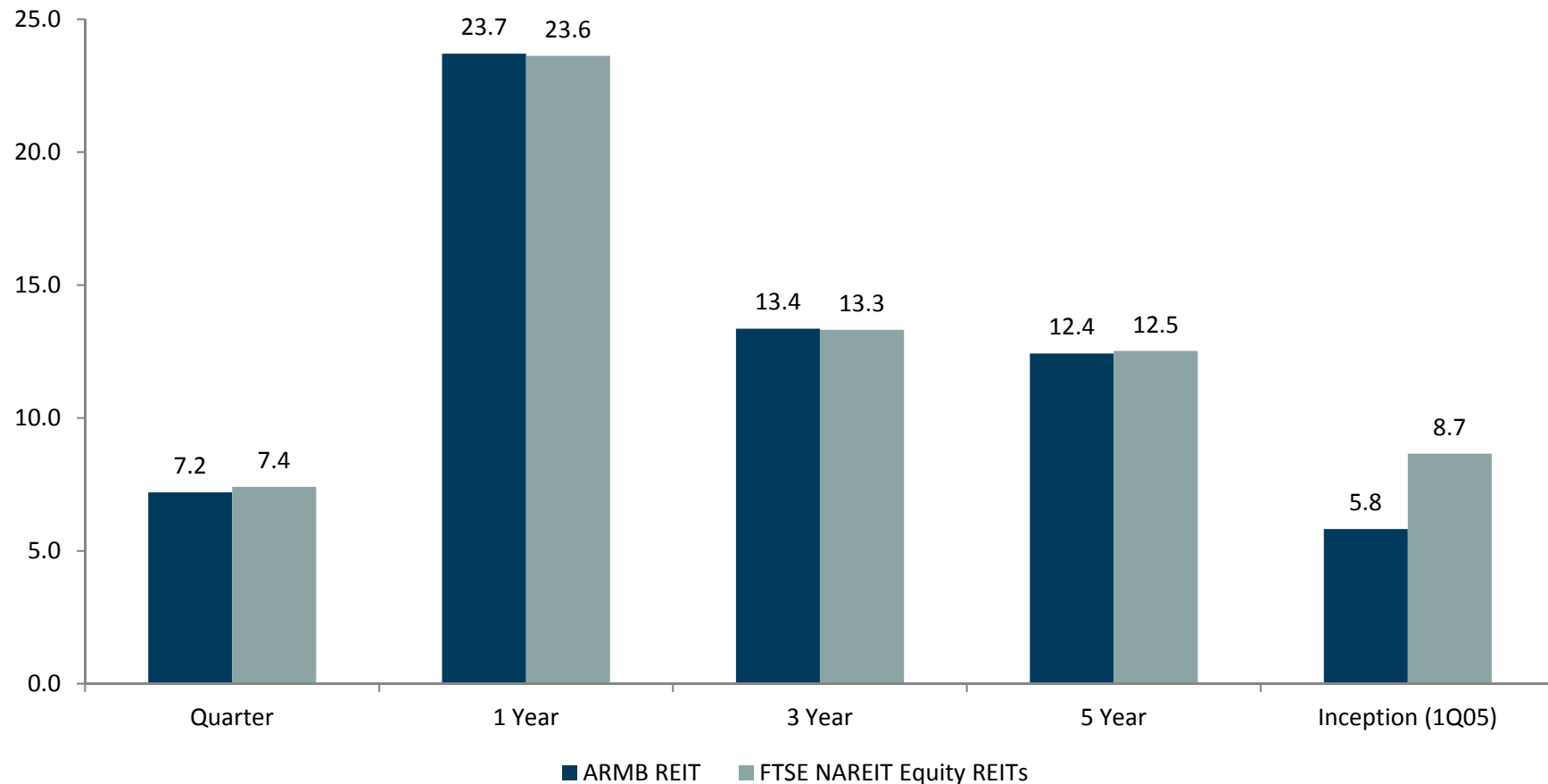
Total Portfolio Time-Weighted Returns – June 30, 2016



- ARMB performance remains strong, outperforming the gross Custom Benchmark over all time periods with exception of the since inception period.
- The relatively low fee drag is due to the significant presence of Core investments and separate accounts, which charge lower fees than higher risk commingled fund offerings.
- Since inception underperformance is attributable to the impact of poor vintage year performers selected preceding the GFC in 2005-2008.



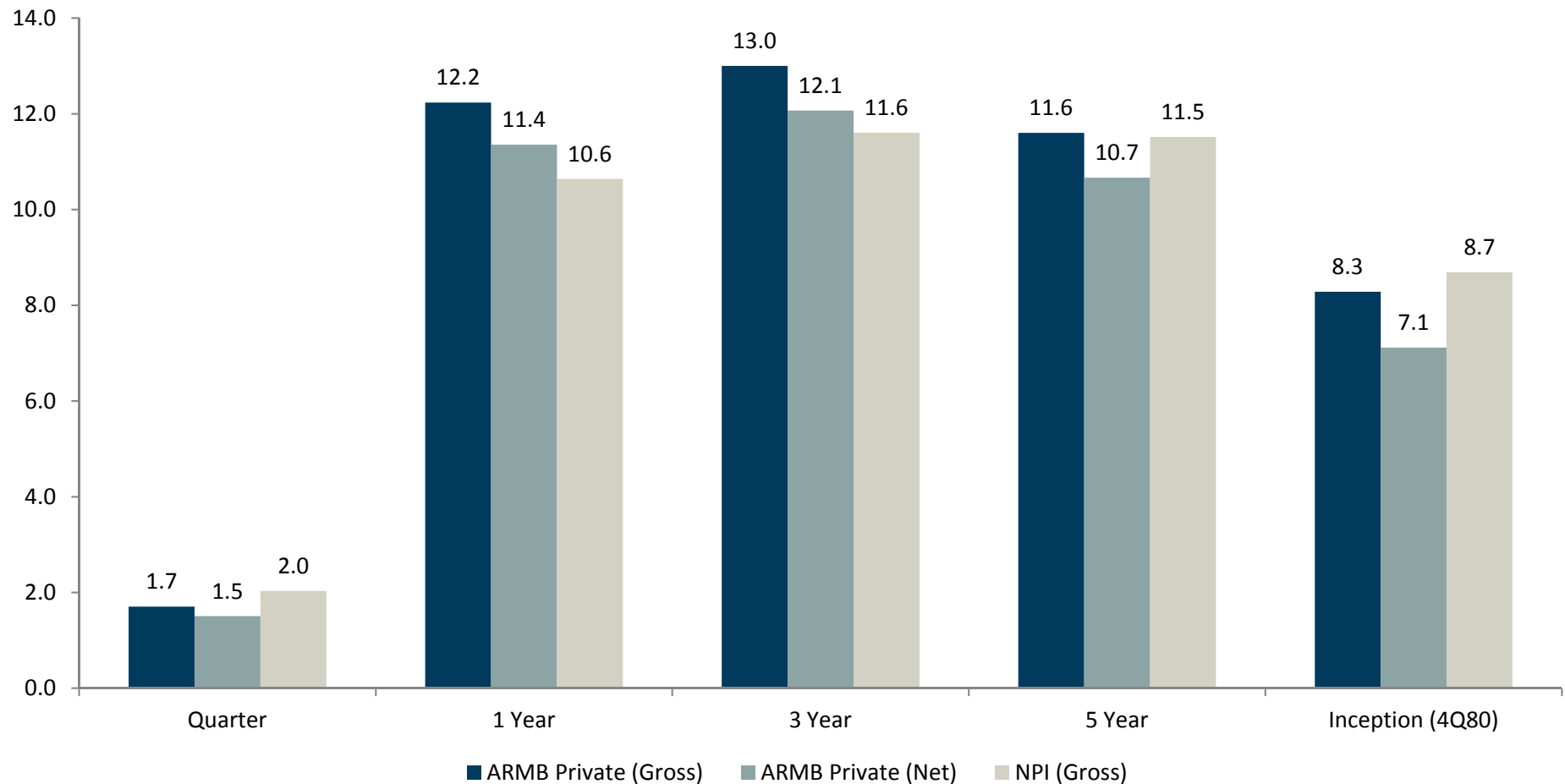
Public Portfolio Time-Weighted Returns – June 30, 2016



- The ARMB public portfolio continues to perform in line with the benchmark, exhibiting very strong absolute returns.
- Since Inception performance reflects prior investment strategies while the five year demonstrates the successful changes made by Staff.



Private Portfolio Time-Weighted Returns – June 30, 2016

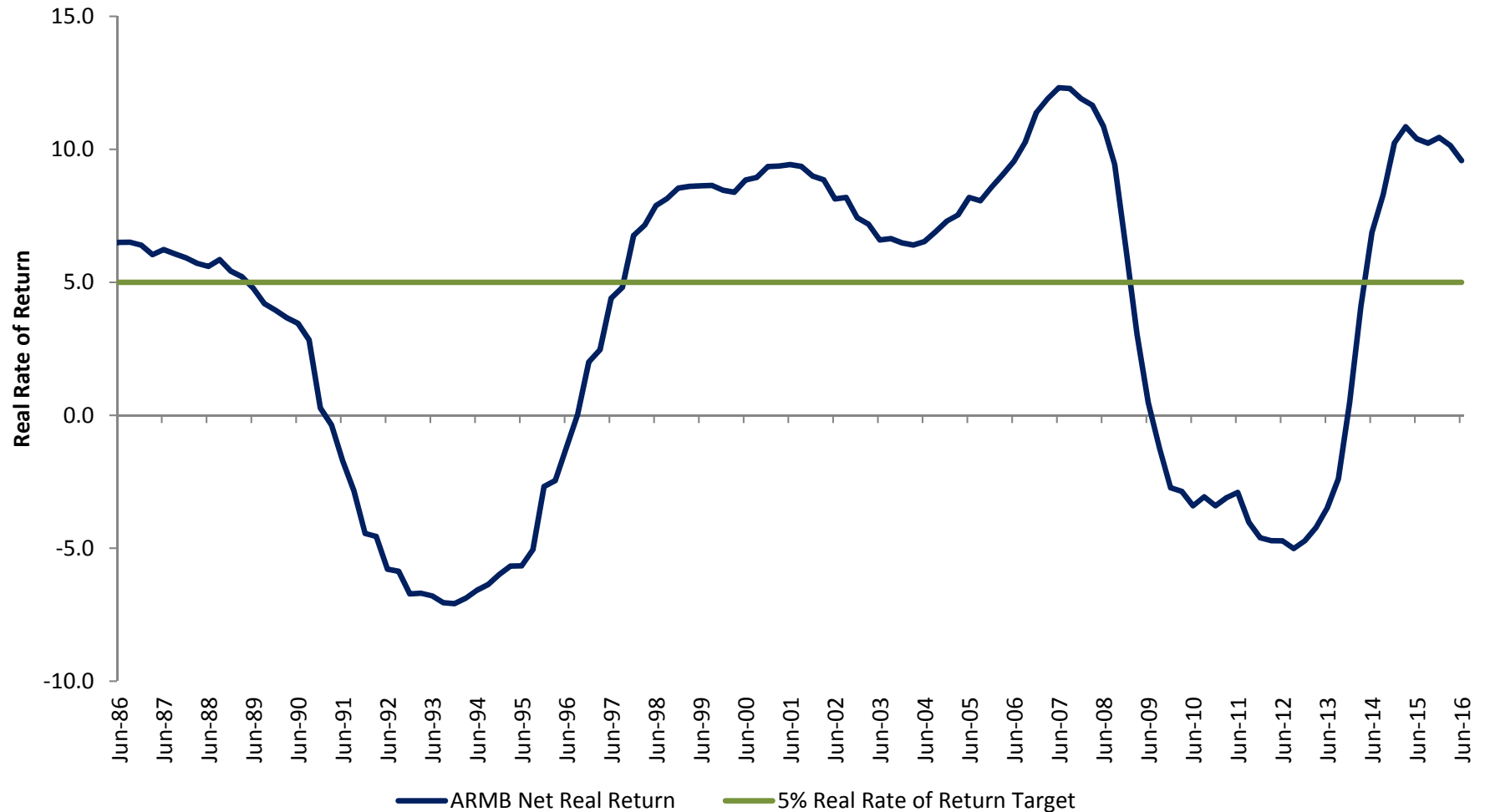


- The private portfolio outperforms the benchmark (gross to gross) over most time periods except since inception period.
- Since inception returns are diluted by the lower performance in the non-core and public portfolios.
- It is important to note that income generation has been consistently strong at an annualized 4.5% over the trailing 5 years.



Real Rate of Return Objective

Rolling 5 Years - Inception through June 30, 2016



- The portfolio continues to exceed the 5% real rate of return target bolstered by a strong market recovery as well as low inflation.



Portfolio Compliance – Funded

Portfolio Component	Strategic Limits	Portfolio June 30, 2016
Investment Risk Style/Category		
Core	50% - 100%	69%
Non-Core	0% - 50%	12%
Public Equity	0% - 50%	19%
Public and Private Debt	0%	0%
Control Mechanisms		
Non-Controlled Investments (180 days)	50%	12%
Single Manager Limits	45%	Largest Manager 32% (UBS)
Diversification		
Geographic, MSA, Economic	Per Consultant	Compliant
Ex- United States	20%	2%
Single Property	10%	Compliant
Property Type	40%	Compliant
Leverage		
Core Allocations	35%	7%
Non-Core Allocations	65%	35%



Portfolio Detail



Core Portfolio Time-Weighted Returns – June 30, 2016

	3 Year Gross	+/- NPI		5 Year Gross	+/- NPI		SI Gross	+/- NPI
Core Funds								
JP Morgan Strategic Property Fund	12.8%	1.2%		12.9%	1.4%		9.8%	0.2
UBS Trumbull Property Fund	11.2%	0.4%		10.9%	0.6%		8.8%	0.1
Core IMA's								
LaSalle	6.7%	4.9%		8.4%	3.1%		8.0%	1.3
Sentinel	12.1%	0.5%		12.3%	0.8%		10.3%	1.3
UBS Realty	17.0%	5.4%		14.6%	3.1%		10.1%	0.6
Core Total Portfolio	11.7%	0.1%		11.5%	0.0%		8.6%	0.1
NPI Benchmark	11.6%			11.5%			Various	

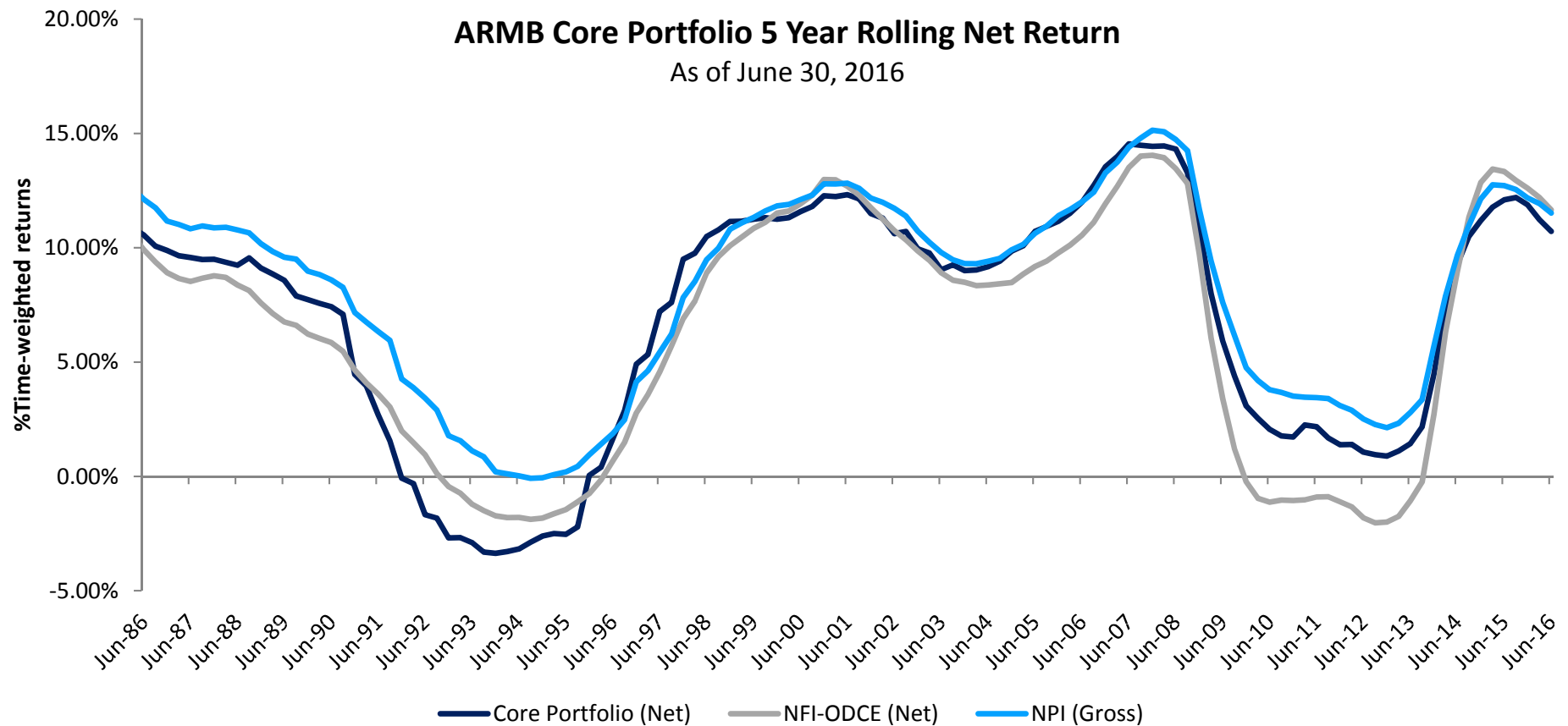
- Takeover portfolios generally begin with a revaluation of assets and may lag the market for a year or two.
- Assets held by takeover managers after three years will be transferred to the managers active portfolio.

	1 Qtr Gross	+/- NPI		1 Year Gross	+/- NPI		SI Gross	+/- NPI
Takeover IMA's – Inception 4Q14								
Sentinel	-18.1%	20.1%		-14.8%	25.4%		-11.7%	23.6%
UBS Realty	-3.7%	5.7%		5.1%	5.5%		7.3%	4.6%
NPI Benchmark	2.0%			10.6%			11.9%	



Rolling Five Year Analysis – Nominal Returns

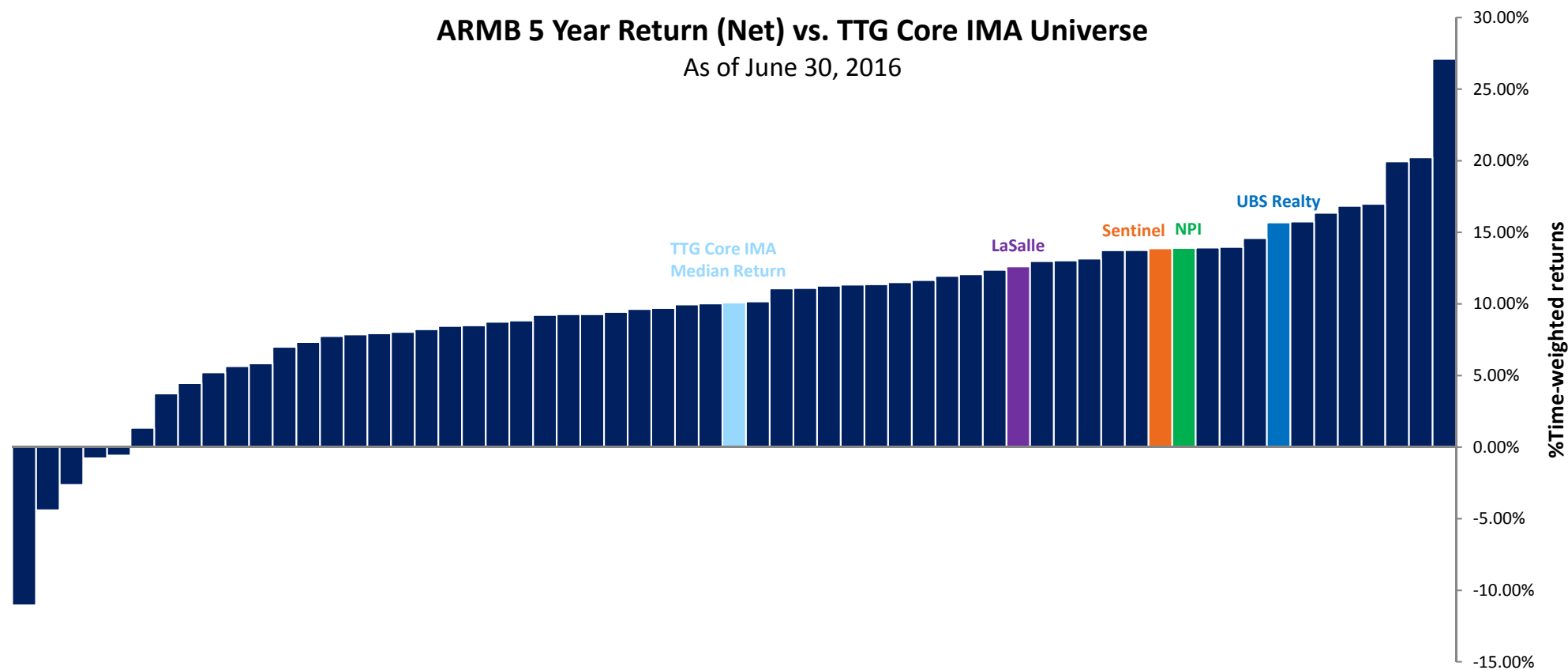
- The ARMB Core portfolio has underperformed the NPI over most rolling five year periods.
- Please note that the NPI is an unleveraged index, whereas the ARMB portfolio has an LTV of 7.4%, as of June 2016.
- The ODCE benchmark is provided to demonstrate the pattern of a leveraged portfolio (22.2% LTV, as of June 30, 2016).



IMA Manager 5 Year Net Returns Vs. Townsend Core IMA Universe

- For the five year period ending June 30, 2016, only UBS exceeded the NPI index with Sentinel underperforming by only 14 basis points. However, all ARMB Separate Accounts performed well relative to the Core IMA Universe tracked by Townsend.

ARMB 5 Year Return (Net) vs. TTG Core IMA Universe
As of June 30, 2016



*NOTE, The IMA Universe is for comparison purposes only, as differing goals/objectives, leverage, and inception dates are present within the universe. The IMA Universe is not Risk Adjusted. All ARMB IMAs remain unlevered, consistent with the NPI.

Open End Fund Selection

- For the five year period ending June 30, 2016, ARMB's investment in JP Morgan Strategic Property Fund performed in line with many comparable funds, while the investment in UBS Trumbull Property Fund provided relatively lower returns.
- Over longer periods, both funds have performed better relative to peers.

Core OECF Universe 5 Year Performance Ranking

2Q16 Annualized Returns	5 Year	
	TGRS	TNET
Core Diversified		
Prime Property Fund	15.3%	13.9%
ASB Allegiance Real Estate Fund	13.7%	12.7%
LaSalle Property Fund	13.1%	12.4%
RREEF America REIT II	13.3%	12.2%
Heitman HART	13.0%	12.2%
Principal U.S. Property Account	13.5%	12.2%
PRISA SA	13.0%	12.1%
Lion Properties Fund	13.1%	12.1%
JP Morgan Strategic Property Fund	13.0%	11.8%
Blackrock Granite Property Fund	12.4%	11.6%
AFL-CIO Building Investment Trust	12.3%	11.3%
INVESCO Core Real Estate	12.1%	11.2%
AEW Core Property Trust	12.0%	11.2%
American Core Realty Fund	12.1%	11.0%
Cornerstone Patriot Fund	11.7%	10.7%
Multi-Employer Property Trust	11.2%	10.2%
L&B Core Income Partners, L.P.	11.1%	10.2%
TIAA-CREF Core Property Fund	11.1%	10.1%
UBS Trumbull Property Fund	11.0%	9.8%
NFI-ODCE	12.7%	11.7%

Core OECF Universe 10 Year Performance Ranking

2Q16 Annualized Returns	10 Year	
	TGRS	TNET
Core Diversified		
ASB Allegiance Real Estate Fund	7.6%	6.6%
Prime Property Fund	7.8%	6.5%
JP Morgan Strategic Property Fund	6.9%	5.8%
UBS Trumbull Property Fund	6.6%	5.6%
RREEF America REIT II	6.2%	5.4%
AFL-CIO Building Investment Trust	6.3%	5.2%
INVESCO Core Real Estate	6.0%	5.2%
Cornerstone Patriot Fund	5.9%	5.0%
Principal U.S. Property Account	6.1%	4.9%
PRISA SA	5.7%	4.9%
American Core Realty Fund	5.6%	4.6%
Multi-Employer Property Trust	5.4%	4.4%
Lion Properties Fund	5.0%	4.0%
TIAA-CREF Core Property Fund	4.2%	3.2%
Blackrock Granite Property Fund	3.3%	2.5%
NFI-ODCE	6.2%	5.2%

Non-Core Portfolio

- ARMB's Non-Core Portfolio is faced with challenging vintage year exposure that impacted long term performance compared to the unlevered core benchmark (NPI)
- Performance has improved significantly over recent years, with the Non-Core Portfolio outperforming the NPI over the quarter as well as the one, three, and five-year time periods.

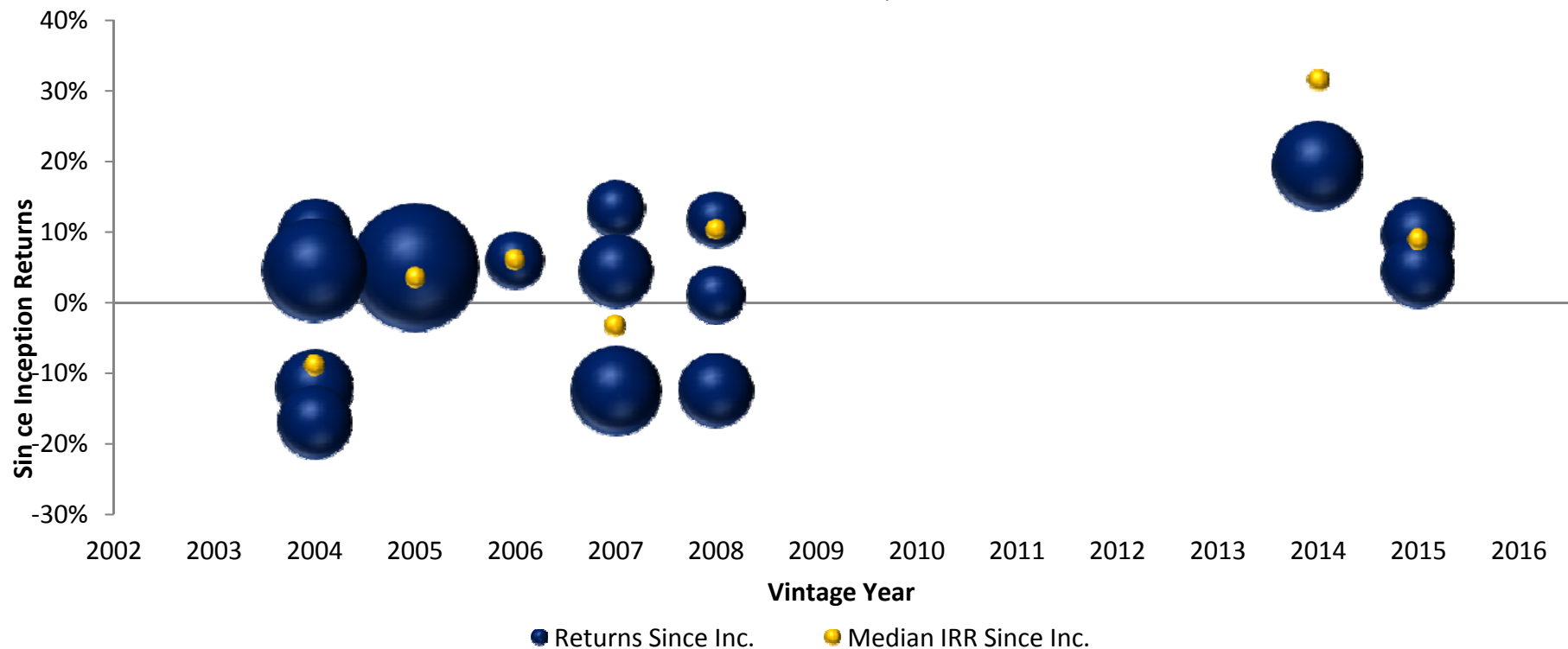
Returns (%) As of June 30, 2016	Quarter			1 Year			3 Year			5 Year			Since Inception		
	TGRS	TNET	Variance to NPI	TGRS	TNET	Variance to NPI	TGRS	TNET	Variance to NPI	TGRS	TNET	Variance to NPI	TGRS	TNET	Multiple
Non-Core Portfolio															
Almanac Realty Securities IV, LP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	10.2	7.8	1.5
Almanac Realty Securities V, LP	1.6	1.3	-0.4	7.6	6.4	-3.0	13.5	12.3	1.9	13.4	12.2	1.9	12.3	8.8	1.4
Almanac Realty Securities VII	3.3	2.0	1.2	16.7	9.2								16.7	9.2	1.1
BlackRock Diamond Property Fund	-0.5	-0.5	-2.5	-10.7	-11.3	-21.3	-2.7	-3.7	-14.3	2.1	0.9	-9.5	-8.8	-10.0	0.3
Clarion Development Ventures III	13.8	13.8	11.7	82.2	82.0	71.5	50.5	49.5	38.9	29.2	27.4	17.7	N/A	N/A	1.6
Clarion Development Ventures IV	0.0	-0.3	-2.1	11.1	10.0	0.4							7.9	6.8	1.0
Colony Investors VIII	-0.8	-1.1	-2.8	-24.9	-26.6	-35.6	1.7	-0.7	-9.9	-1.6	-4.1	-13.1	-17.0	-20.3	0.4
Cornerstone Apartment Venture III	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.2
Coventry Real Estate Fund II	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.4
KKR Real Estate Partners Americas	3.0	2.0	0.9	11.7	7.8	1.1							15.0	9.5	1.2
LaSalle Medical Office Fund II	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.8	1.7	1.3
Lowe Hospitality Investment Partners	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-11.7	-14.1	0.6
Silverpeak Legacy Partners II (Lehman)	3.8	3.4	1.7	38.4	37.1	27.8	29.4	28.1	17.8	18.7	17.5	7.2	11.0	9.2	1.3
Silverpeak Legacy Partners III (Lehman)	-5.8	-6.4	-7.9	-1.2	-3.5	-11.9	-1.1	-3.3	-12.7	-4.0	-5.8	-15.5	-14.9	-17.5	0.4
Tishman Speyer Real Estate Venture VI	5.3	5.1	3.2	13.7	13.1	3.0	15.5	14.7	3.9	10.8	9.9	-0.7	1.4	0.8	1.2
Tishman Speyer Real Estate Venture VII	4.1	3.8	2.1	18.9	17.4	8.3	30.2	28.5	18.6	23.9	22.1	12.4	-18.0	-24.1	1.0
Total Non-Core Portfolio	2.5	2.0	0.4	16.1	14.1	5.4	17.9	16.1	6.3	12.9	11.3	1.4	7.0	5.2	
NPI	2.0			10.6			11.6			11.5			8.7		

Impact of Vintage Year Allocations on Non-Core Performance

- The vintage year of an investment, along with the relative weighting of any single investment allocation within each vintage year and across the portfolio, will have a significant role in its return profile and portfolio impact.
- ARMB's non-core fund commitments are concentrated in peak vintage years and recovery within the ARMB portfolio has been muted due to limited investments in key recovery vintage years (2009-2013). Townsend would recommend more consistent vintage year commitments.

ARMB Vintage Year Analysis

As of June 30, 2016



Real Assets Fiscal Year Plans and Policies – Real Estate

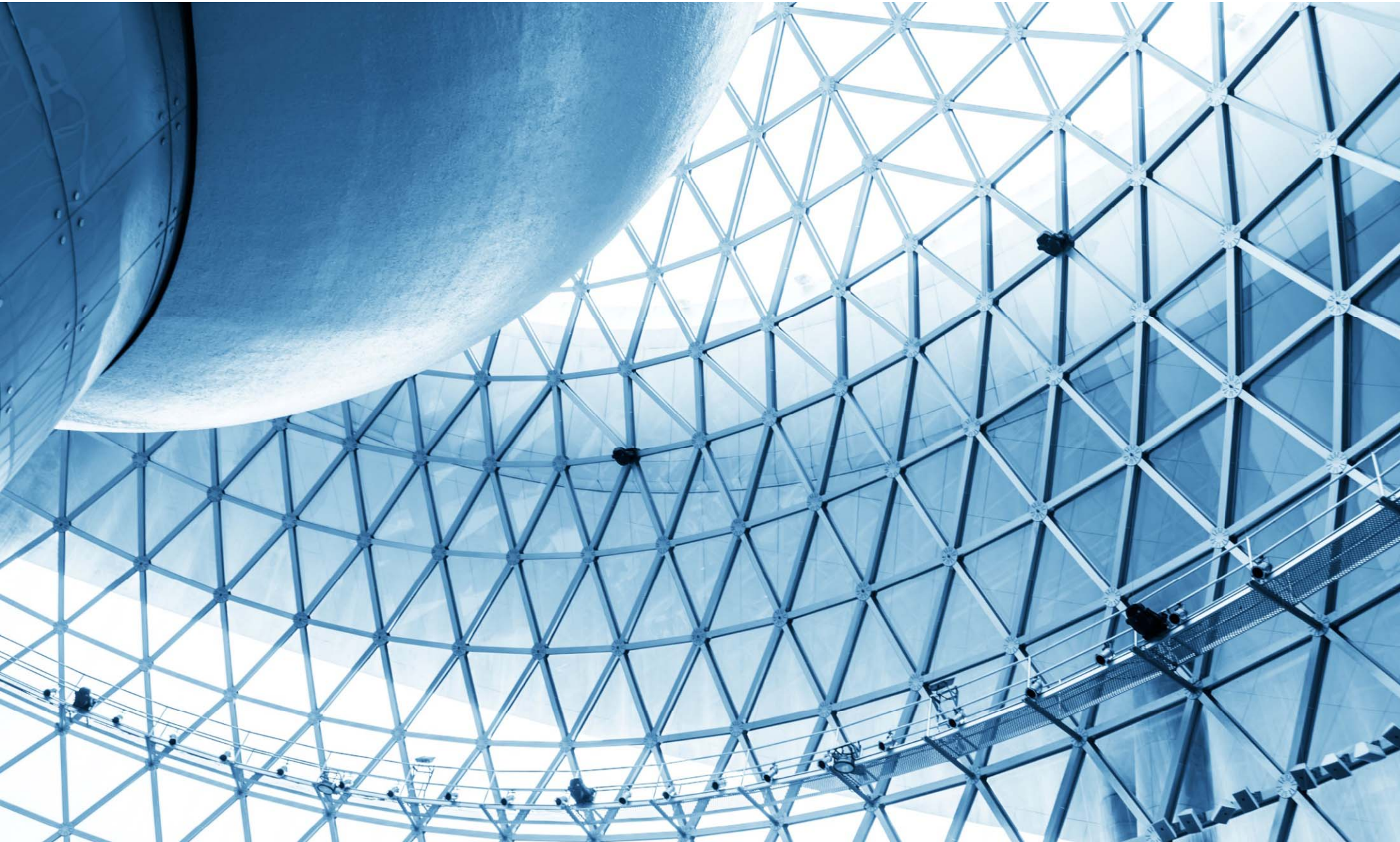


Fiscal 2017 Real Estate Plans and Policies

Staff Recommendations As proposed to ARMB	Consultant Comments
Continue strategy of managing existing Core separate account portfolios and allocations to improve quality and income stability (i.e., stabilized assets located in markets with high barriers to entry)	Given the considerable duration of the current market recovery, Townsend agrees with this approach to position the portfolio more defensively.
Invest an additional \$100 million in UBS Trumbull Property Fund using REITs as a source of funds	Townsend agrees with the partial transfer of assets from public to private Core real estate within this portfolio. UBS is a reasonable option for low risk, low leveraged Core real estate.
Continue to explore new Value Add and Opportunistic real estate investments	Selective new investments will help maintain target exposures to Non-Core real estate. Offerings that are somewhat defensive in nature or structure (e.g. immediate income production, pre-seeded portfolios, or debt strategies) will be preferred over high risk equity strategies with limited investment restrictions.



Market Overview



United States Real Estate Market Update (2Q16)

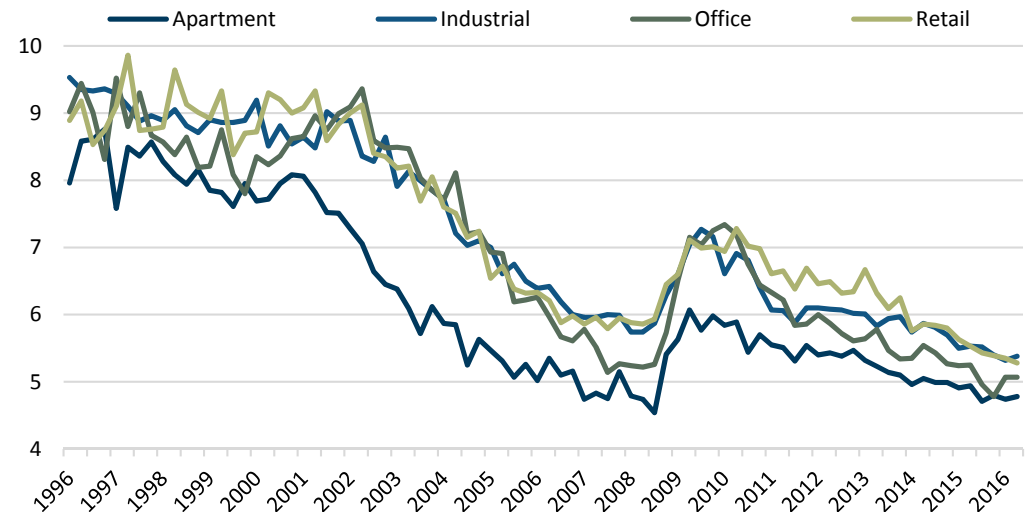
General

- Economic activity increased during the second quarter of 2016 at an annual rate of 1.1%, 2% over 2Q15 levels. Growth during the quarter was chiefly supported by positive contributions by the consumer, with fractional help from trade. Favorable employment trends with moderate wage growth (+2.5% y/y) and strong sentiment (+4.4% annual rate) helped buoy consumer spending. Business investment continues to weigh on trade, reducing growth by 9.7% during the quarter. Leading indicators for the business sector; Purchasing Managers Index (49.4 with 50 and above signaling expansion), Durable Goods Orders (-6% y/y), and Industrial Production Index, point to more of the same to come from subsequent quarters.
- Macro indicators for U.S. real estate came in tepid during 2Q16 with residential housing starts and total construction investment flat to marginally down y/y. Building permits, which signal future construction activity, also fell 9% compared to same period 2015.

Commercial Real Estate

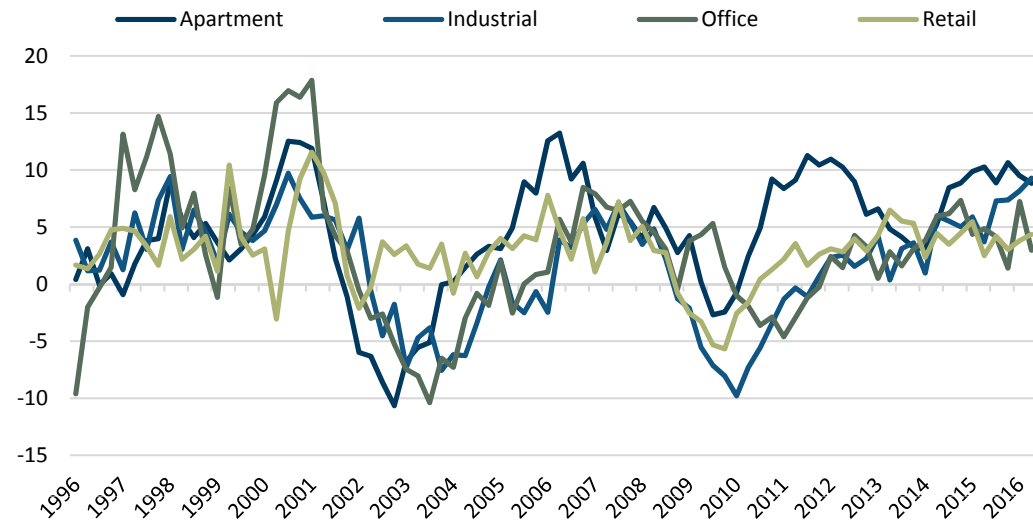
- 2Q16 saw \$63.5 billion in commercial real estate transaction volume or 41% of global activity. While solid, this represented a 16% drop compared to record 2015 levels. The U.S. decline was on trend with the broad moderation of global transaction activity during the quarter.
- CMBS issuances slowed to \$11.4 billion in 2Q16, less than half of the \$27.5 billion a year ago. Credit conditions remain relatively unchanged from 1Q, with the Fed's survey of senior loan officers showing stronger demand but tighter standards for commercial real estate loans.
- U.S. cities continue to be attractive targets for global investment capital. New York and Los Angeles (1st and 3rd respectively), accounted for 12% of global transactions. Foreign investment represented approximately 12% of total U.S. activity, with China overtaking Canada as the primary foreign capital source year-to-date.
- On average, industrial and multifamily transaction cap rates were essentially flat (0 and 2 bps respectively) for the first half of 2016 while hotel and office saw 15 and 11 basis point expansions respectively.

Current Value Cap Rates by Property Type



Source: NCREIF

4-Qtr Rolling NOI Growth by Property Type



Source: NCREIF



United States Property Matrix (2Q16)

INDUSTRIAL

- Net absorption for 2Q16 was 18.9% higher than the previous quarter, with 62.0 million SF being absorbed. Vacancy rate has continued to decline posting a new record low of 6.1%.
- First half y/y investment volumes were down 47.2%, however removing the five largest transaction in segment history, volumes were only down 8.0% since last year.
- Single-asset acquisitions continue to dominate the landscape, outpacing portfolio activity and representing 75% of transactions on a dollar basis.
- Speculative completions have increased by 15.0% compared to 1Q16 to 35.0 million SF. Despite this increase 36.3% of all speculative space preleases prior to completion, an increase of 10.0% since the first quarter and nearly double the rate of 4Q15.
- As of 2Q16, industrial properties returned 2.90% and outperformed the NPI by 87 bps.

MULTIFAMILY

- Investment for 2Q16 totaled \$30.6 billion. The YTD figure increased 3.5% from the first half of 2015 to \$68.2 billion, outpacing the record –setting volumes of 2015.
- New supply continues to come to market with completions increasing a modest 10 bps compared to the second quarter of 2015. Conversely, absorption of inventory declined 10 bps. The current national vacancy rate increased 10 bps to 4.5%, which is still 100 bps above the long-term average.
- Cap rates continue to compress reaching 4.4%, driven by persistent investor demand. This is a function of increased focus on secondary markets. Mid- and high-rise activity in secondary markets has increased 56.7% YTD.
- The apartment sector delivered a 1.88% return during the quarter, underperforming the NPI by 15 bps.

OFFICE

- The office segment experienced \$67.2 billion of reported capital markets activity through the first two quarters of 2016, compared \$71.8 billion at this time last year representing -6.4% investment sales growth.
- Volumes are moving back towards primary markets with 70.1% of total transaction volume, indicating a current resistance to market risk.
- Leasing activity rebounded by 18.2% during the second quarter. Total absorption was 59.1 million SF, with 38.4% taking place in primary markets. Vacancy has declined 10 bps to reach 14.6%, with suburban declining 20 bps to 16.1%, and CBDs remaining at 12.1%.
- Cap rates continue to compress, with 75% of markets seeing compressing. Cap rates have increased the rate of compression declining 36 bps in the last 12 months to 4.4%.
- The office sector returned 1.74% in 2Q16, 29 bps below the NPI.

RETAIL

- Retail volume has declined 20.5% y/y down \$8.5 billion to \$32.9 billion. Second quarter volume was also below 2015's levels, dropping 7.7%. While urban investment volumes have declined 47.3% YTD, activity in secondary markets has increased 34.9%.
- West region sales continues its growth accounting for 39.9% of total quarter volume. Conversely, Northeast and Mid-Atlantic regions have decreasing YTD activity of 50.1% and 16.5%, respectively.
- While mall volume for the year has decreased by 41.8% y/y, it has increased 56.6% q/q to a volume of \$5.9 billion for the first half of 2016. Class A malls continue to move quickly and fetch premiums, while Class B and C malls have lagged due to a pricing disconnect between buyers and sellers.
- As of 2Q16, the retail sector delivered a quarterly return of 2.17%, beating the NPI by 14 bps.



Global Real Estate Market Update (2Q16)

Global

- Global investment activity for 2Q16 was generally subdued, coming in at \$154 billion, bringing the first half down 10% y/y over 2015. This was the result of broad investor caution surrounding the unanticipated result of the Brexit vote. Medium to long term effects remain unclear, however the expectation is for investors to adopt a 'wait and see' attitude in the short term while exploiting any asset mispricing that occurs. Fund managers anecdotally anticipate longer hold periods at lower return forecasts for their U.K. assets.

Europe

- Commercial real estate transaction volume in Europe was €54.0 billion during 2Q 2016, moderately better than the €50.3 posted during the prior quarter although down 19% over a record 2015.
- Europe's top two markets, UK (-24% y/y) and Germany (-4% y/y), saw investment dampen while France, Sweden, and other markets held up the Euro wide number, suggesting that outside of the UK, the Brexit effect might be somewhat muted. Of note was the 51% and 21% y/y declines in hotel and retail investment respectively, sectors most associated with Brexit effect.

Asia

- Asia Pacific investment ended the second quarter at \$28.4 billion, a 17% sequential growth rate, due to several large transactions such as the Qatar Investment Authority's record \$2.5 billion purchase of Singapore's Asia Square Tower 1 office property. Compared to prior year, investment was down 8% with China and Japan as the main laggards.
- Investment in China was down 24% y/y to \$6.0 billion, almost entirely made up of local capital as international inflow fell across Asia Pacific by 21% y/y. While institutional capital generally seeks core stabilized assets in primary cities, availability is tight following a strong 2015 and yields are tight given strong rent growth.
- Investment in Australia fell 3% y/y to \$4.4 billion, driven by a lack of assets after several years of record transaction volume from foreign capital inflows. A similar scenario is unfolding in Japan as single asset investments have dried up, resulting in a 12% decline in transactions year-to-date.
- Hong Kong recorded \$1.6 billion in investment during 2Q, a 59% decline from record 2Q15 levels. These declines follow recent strong performance with more prime assets expected to come online as some investors capitalize on high pricing.

Direct Commercial Real Estate Investment - Regional Volumes, 2015-2016

Direct Commercial Real Estate Investment - Regional Volumes, 2015-2016								% Change	
\$ US Billions	Q1 16	Q2 16	% Change		% Change		H1 2015	H1 2016	H1 2015 - H1 2016
			Q1 16 - Q2 16	Q2 15	Q2 15 - Q2 16				
Americas	61	69	13%	80	-14%	153	130	-15%	
EMEA	51	57	12%	58	-2%	115	109	-5%	
Asia Pacific	25	28	12%	31	-10%	56	54	-4%	
Total	137	154	12%	169	-9%	324	293	-10%	

Source: Jones Lang LaSalle, July 2016

Global Outlook - GDP (Real) Growth % pa, 2015-2017

	2015	2016	2017
Global	3.1	2.9	3.2
Asia Pacific	4.8	4.4	4.8
Australia	2.5	3.0	3.0
China	6.9	6.5	6.3
India	7.2	7.4	7.8
Japan	0.6	1.0	1.3
North America	1.9	1.5	2.2
US	1.9	2.0	2.0
MENA*	3.3	2.4	2.8
European Union	2.2	1.7	1.3
France	1.3	1.3	1.1
Germany	1.7	1.6	1.2
UK	2.2	0.7	1.7

*Middle East North Africa

Source: Bloomberg LP, August 2016

Portfolio Composition (\$)					
Total Plan Assets	Allocation		Market Value		Unfunded Commitments
23,064,794,547	1,372,355,276	6.0%	1,833,540,902	7.9%	143,764,883
					0.6%
					-604,950,509
					-2.6%

Performance Summary	Quarter (%)		1 Year (%)		3 Year (%)		5 Year (%)	
	TGRS	TNET	TGRS	TNET	TGRS	TNET	TGRS	TNET
ARMB Real Estate Portfolio	2.9	2.7	14.5	13.8	13.2	12.4	11.8	11.0
NCREIF Property Index "NPI"	2.0		10.6		11.6		11.5	

Funding Status (\$)	Investment Vintage Year	Commitment Amount	Funded Amount	Unfunded Commitments	Capital Returned	Market Value	Market Value (%)	Market Value + Unfunded Commitments (%)
Core Portfolio								
JP Morgan Strategic Property Fund*	1999	85,000,000	110,376,102	0	93,862,778	240,337,974	13.1	12.2
LaSalle I.M.A.	2003	0	340,858,323	0	289,117,389	221,230,636	12.1	11.2
Sentinel I.M.A.	2000	105,000,000	213,716,877	0	180,299,325	186,680,119	10.2	9.4
Sentinel I.M.A. (Takeover 2014)	2014	45,798,255	46,119,758	0	2,100,217	34,978,462	1.9	1.8
UBS Realty I.M.A. - ARMB 1997*	1998	305,000,000	314,863,072	0	331,144,586	404,474,853	22.1	20.5
UBS Realty IMA (Cornerstone Takeover 2014)	2014	0	76,919,872	0	1,869,911	84,234,148	4.6	4.3
UBS Trumbull Property Fund*	1980	45,000,885	45,004,072	0	93,947,629	98,641,901	5.4	5.0
Core Portfolio	1980	585,799,140	1,147,858,076	0	992,341,835	1,270,578,093	69.3	64.3
Non-Core Portfolio								
Almanac Realty Securities IV, LP	2004	50,000,000	54,377,177	0	80,886,987	52,485	0.0	0.0
Almanac Realty Securities V, LP	2008	30,000,000	35,250,734	0	40,735,328	9,098,723	0.5	0.5
Almanac Realty Securities VII	2015	50,000,000	12,052,049	38,247,759	299,808	12,705,674	0.7	2.6
BlackRock Diamond Property Fund	2007	75,000,000	75,023,221	0	22,561,759	3,115,750	0.2	0.2
Clarion Development Ventures III	2007	30,000,000	31,075,733	960,000	40,451,605	10,457,723	0.6	0.6
Clarion Ventures 4	2015	50,000,000	42,206,084	7,793,916	0	43,081,324	2.3	2.6
Colony Investors VIII	2007	68,000,000	72,248,907	2,251,100	18,881,744	13,414,200	0.7	0.8
Cornerstone Apartment Venture III	2007	50,000,000	32,560,555	17,439,445	39,063,892	46,304	0.0	0.9
Coventry Real Estate Fund II	2004	55,000,000	61,984,715	0	22,358,925	1,371,324	0.1	0.1
KKR Real Estate Partners Americas	2014	75,000,000	53,132,109	33,746,038	20,035,335	46,181,088	2.5	4.0
LaSalle Medical Office Fund II	2006	30,000,000	26,356,805	217,978	33,635,557	201,060	0.0	0.0
Lowe Hospitality Investment Partners	2004	50,000,000	71,797,637	0	40,198,103	984,276	0.1	0.0
Silverpeak Legacy Partners II	2005	150,000,000	154,005,289	16,025,285	182,195,925	16,636,286	0.9	1.7
Silverpeak Legacy Partners III	2008	50,000,000	22,634,384	26,668,731	2,094,968	6,715,323	0.4	1.7
Tishman Speyer Real Estate Venture VI	2004	100,000,000	180,453,152	0	169,182,807	39,341,386	2.1	2.0
Tishman Speyer Real Estate Venture VII	2008	30,000,000	30,037,851	414,631	23,439,145	8,096,272	0.4	0.4
Non-Core Portfolio	1998	943,000,000	955,196,402	143,764,883	736,021,888	211,499,198	11.5	18.0
ARMB Private Real Estate Portfolio	1980	1,528,799,140	2,103,054,478	143,764,883	1,728,363,723	1,482,077,291	80.8	82.2
ARMB Private Real Estate Portfolio w/o JPM SPF	1980	1,443,799,140	1,992,678,376	143,764,883	1,634,500,945	1,241,739,317	67.7	70.1
Public Investments								
ARMB REIT*	2004	0	539,868,752	0	345,137,024	351,463,611	19.2	17.8
Public Investments	2005	0	539,868,752	0	345,137,024	351,463,611	19.2	17.8
Total Current Portfolio								
ARMB Real Estate Portfolio	1980	1,528,799,140	2,642,923,230	143,764,883	2,073,500,747	1,833,540,902	100.0	100.0

Second Quarter 2021																						
Returns (%)	Market Value (\$)	Quarter				1 Year				3 Year				5 Year				Inception		TWR Calculation Inception	Net IRR	Equity Multiple
		INC	APP	TGRS	TNET	INC	APP	TGRS	TNET	INC	APP	TGRS	TNET	INC	APP	TGRS	TNET	TGRS	TNET			
Core Portfolio																						
JP Morgan Strategic Property Fund*	240,337,974	1.1	0.9	2.0	1.8	5.0	5.9	11.1	10.1	5.2	7.3	12.8	11.9	5.3	7.3	12.9	12.0	9.8	8.9	1Q98	9.5	3.0
LaSalle I.M.A.	221,230,636	0.9	1.0	1.9	1.8	3.7	4.3	8.1	7.5	4.0	2.6	6.7	6.1	5.0	3.3	8.4	7.7	8.0	7.3	4Q03	7.5	1.5
Sentinel I.M.A.	186,680,119	1.4	3.4	4.8	4.7	5.7	8.8	14.9	14.3	5.4	6.4	12.1	11.5	5.5	6.5	12.3	11.7	10.3	9.7	4Q00	9.4	1.7
Sentinel I.M.A. (Takeover 2014)	34,978,462	0.8	-18.9	-18.1	-18.2	3.4	-17.7	-14.8	-15.3									-11.7	-12.2	4Q14	-12.1	0.8
UBS Realty I.M.A. - ARMB 1997*	404,474,853	1.1	1.8	2.9	2.8	4.9	11.2	16.5	16.0	5.2	11.4	17.0	16.4	5.2	9.0	14.6	14.0	10.1	9.4	2Q98	9.3	2.3
UBS Realty IMA (Cornerstone Takeover 2014)	84,234,148	0.9	-4.6	-3.7	-3.8	4.0	1.0	5.1	4.5									7.3	6.7	4Q14	6.7	1.1
UBS Trumbull Property Fund* ⁷	98,641,901	1.2	0.6	1.8	1.5	4.9	5.6	10.7	9.5	5.0	6.0	11.2	10.1	5.1	5.6	10.9	9.8	8.8	7.7	4Q80	8.1	4.3
Core Portfolio ⁸	1,270,578,093	1.1	0.5	1.6	1.4	4.7	6.5	11.4	10.7	4.9	6.6	11.7	11.0	5.1	6.1	11.5	10.7	8.6	7.5	4Q80		
Non-Core Portfolio																						
Almanac Realty Securities IV, LP	52,485	-6.1	0.0	-6.1	-6.1	-5.2	0.0	-5.2	-5.2	0.3	5.9	6.1	5.6	2.7	4.7	7.4	6.7	10.2	7.8	1Q05	9.4	1.5
Almanac Realty Securities V, LP	9,098,723	2.8	-1.2	1.6	1.3	31.2	-19.4	7.6	6.4	15.7	-2.4	13.5	12.3	12.7	0.4	13.4	12.2	12.3	8.8	2Q08	11.6	1.4
Almanac Realty Securities VII	12,705,674	2.3	0.9	3.3	2.0	10.0	6.2	16.7	9.2									16.7	9.2	3Q15	9.4	1.1
BlackRock Diamond Property Fund	3,115,750	-0.9	0.4	-0.5	-0.5	2.1	-12.7	-10.7	-11.3	2.3	-5.0	-2.7	-3.7	1.7	0.4	2.1	0.9	-8.8	-10.0	1Q07	-12.6	0.3
Clarion Development Ventures III ³	10,457,723	1.6	12.2	13.8	13.8	-5.5	89.6	82.2	82.0	7.0	40.4	50.5	49.5	0.1	28.8	29.2	27.4			3Q09	13.1	1.6
Clarion Ventures 4	43,081,324	-0.1	0.1	0.0	-0.3	-1.3	12.4	11.1	10.0									7.9	6.8	2Q15	4.3	1.0
Colony Investors VIII	13,414,200	0.3	-1.1	-0.8	-1.1	1.3	-26.0	-24.9	-26.6	1.7	-0.1	1.7	-0.7	1.4	-3.0	-1.6	-4.1	-17.0	-20.3	4Q07	-12.5	0.4
Cornerstone Apartment Venture III	46,304	-4.0	0.0	-4.0	-4.0	-74.0	0.0	-74.0	-74.0	-48.1	-1.0	-48.6	-48.8	-31.1	2.2	-29.5	-30.0	-19.8	-20.6	3Q07	4.3	1.2
Coventry Real Estate Fund II ⁴	1,371,324	0.0	-32.0	-32.0	-33.4	0.3	-7.1	-7.0	-11.0	0.0	-2.7	-2.7	-5.8	0.5	-9.0	-8.6	-11.0			2Q04	-12.1	0.4
KKR Real Estate Partners Americas	46,181,088	1.4	1.6	3.0	2.0	6.7	4.8	11.7	7.8									15.0	9.5	2Q14	19.2	1.2
LaSalle Medical Office Fund II	201,060	-2.3	0.1	-2.2	-2.2	-10.8	-6.7	-16.8	-17.1	-0.1	7.9	7.6	6.4	3.5	5.6	9.2	7.9	5.8	1.7	1Q07	5.8	1.3
Lowe Hospitality Investment Partners	984,276	0.8	0.0	0.8	0.8	8.1	6.8	15.9	15.2	-16.6	16.9	-2.8	-3.6	-4.8	18.3	12.1	11.1	-11.7	-14.1	3Q04	-17.1	0.6
Silverpeak Legacy Partners II	16,636,286	-0.4	4.2	3.8	3.4	1.6	36.6	38.4	37.1	2.2	26.8	29.4	28.1	2.2	16.2	18.7	17.5	11.0	9.2	4Q05	4.8	1.3
Silverpeak Legacy Partners III	6,715,323	-0.2	-5.6	-5.8	-6.4	2.2	-3.4	-1.2	-3.5	1.1	-2.2	-1.1	-3.3	1.1	-5.0	-4.0	-5.8	-14.9	-17.5	2Q08	-12.6	0.4
Tishman Speyer Real Estate Venture VI	39,341,386	-0.1	5.4	5.3	5.1	-0.4	14.2	13.7	13.1	-0.4	15.9	15.5	14.7	-0.3	11.2	10.8	9.9	1.4	0.8	1Q05	4.4	1.2
Tishman Speyer Real Estate Venture VII	8,096,272	-0.1	4.2	4.1	3.8	-0.4	19.4	18.9	17.4	0.1	30.0	30.2	28.5	0.0	23.9	23.9	22.1	-18.0	-24.1	2Q08	0.9	1.0
Non-Core Portfolio ⁸	211,499,198	0.5	2.0	2.5	2.0	3.7	12.1	16.1	14.1	3.4	14.2	17.9	16.1	2.8	9.9	12.9	11.3	7.0	5.2	1Q98		
ARMB Private Real Estate Portfolio ⁸	1,482,077,291	1.0	0.7	1.7	1.5	4.6	7.4	12.2	11.4	4.5	8.2	13.0	12.1	4.5	6.8	11.6	10.7	8.3	7.1	4Q80		
ARMB Private Real Estate Portfolio w/o JPM SPF ⁸	1,241,739,317	1.0	0.7	1.6	1.5	4.5	7.7	12.5	11.6	4.4	8.4	13.0	12.1	4.4	6.8	11.4	10.5	8.2	7.1	4Q80		
Public Investments																						
ARMB REIT*	351,463,611			7.2	7.2			23.7	23.7			13.4	13.4			12.4	12.4	5.8	5.8	1Q05	8.3	1.3
Public Investments	351,463,611			7.2	7.2			23.7	23.7			13.4	13.4			12.4	12.4	5.8	5.8	1Q05	8.3	1.3
Total Portfolio																						
ARMB Real Estate Portfolio ⁸	1,833,540,902			2.8	2.7			14.5	13.8			13.1	12.4			11.8	11.0	8.3	7.1	4Q80		
Indices																						
NCREIF Property Index "NPI"		1.2	0.8	2.0		4.9	5.6	10.6		5.2	6.2	11.6		5.4	5.8	11.5		8.7		4Q80		
ARMB Custom Benchmark				2.6				11.9				11.8				11.7		8.8		4Q80		
Idx: FTSE NAREIT Equity REITs				7.4				23.6				13.3				12.5		12.2		4Q80		

Quarterly Cash Flow Activity (\$)	Beginning Market Value	Contributions	Distributions	Withdrawals	Gross Income	Manager Fees	Appreciation	Ending Market Value	LTV (%)
Core Portfolio									
JP Morgan Strategic Property Fund*	237,777,446	0	1,682,504	0	2,623,792	519,832	2,139,071	240,337,974	25.9
LaSalle I.M.A.	214,723,520	4,604,000	1,887,789	0	1,848,494	303,184	2,245,596	221,230,636	0.0
Sentinel I.M.A.	179,690,037	0	1,462,624	0	2,572,971	225,037	6,104,772	186,680,119	0.0
Sentinel I.M.A. (Takeover 2014)	43,078,152	0	277,948	0	349,200	61,636	-8,109,306	34,978,462	0.0
UBS Realty I.M.A. - ARMB 1997*	395,483,724	508,000	2,528,562	0	4,297,885	460,964	7,174,770	404,474,853	0.0
UBS Realty IMA (Cornerstone Takeover 2014)	88,039,404	0	463,478	0	813,117	120,364	-4,034,531	84,234,148	0.0
UBS Trumbull Property Fund*	97,923,681	0	754,329	0	1,188,598	257,042	540,994	98,641,901	15.6
Core Portfolio	1,256,715,964	5,112,000	9,057,234	0	13,694,057	1,948,059	6,061,366	1,270,578,093	7.4
Non-Core Portfolio									
Almanac Realty Securities IV, LP	55,897	0	0	0	-3,412	0	0	52,485	0.0
Almanac Realty Securities V, LP	11,320,970	0	622,409	1,748,448	306,111	27,522	-129,979	9,098,723	0.0
Almanac Realty Securities VII	11,739,112	812,356	0	79,949	277,330	155,396	112,221	12,705,674	0.0
BlackRock Diamond Property Fund	3,131,096	0	0	0	-27,149	0	11,803	3,115,750	0.0
Clarion Development Ventures III	9,193,282	0	0	0	145,453	0	1,118,988	10,457,723	43.3
Clarion Ventures 4	14,214,781	28,976,000	0	0	-41,457	94,092	26,092	43,081,324	14.2
Colony Investors VIII	13,568,200	0	0	0	43,500	43,500	-154,000	13,414,200	0.0
Cornerstone Apartment Venture III	48,218	0	0	0	-1,914	0	0	46,304	0.0
Coventry Real Estate Fund II	2,057,941	0	0	0	261	28,119	-658,759	1,371,324	89.0
KKR Real Estate Partners Americas	40,549,838	4,791,517	0	0	570,058	415,173	684,848	46,181,088	57.0
LaSalle Medical Office Fund II	205,607	0	0	0	-4,657	0	109	201,060	0.0
Lowe Hospitality Investment Partners	976,453	0	0	0	7,823	0	0	984,276	41.3
Silverpeak Legacy Partners II	29,536,521	0	0	13,908,664	-123,923	100,278	1,232,630	16,636,286	22.0
Silverpeak Legacy Partners III	7,252,589	0	0	79,180	-14,781	39,590	-403,715	6,715,323	19.0
Tishman Speyer Real Estate Venture VI	37,425,003	0	0	0	-37,835	54,175	2,008,393	39,341,386	25.0
Tishman Speyer Real Estate Venture VII	8,705,923	0	936,844	0	-8,542	27,614	363,349	8,096,272	35.0
Non-Core Portfolio	189,981,431	34,579,873	1,559,253	15,816,241	1,086,866	985,459	4,211,980	211,499,198	34.6
ARMB Private Real Estate Portfolio	1,446,697,395	39,691,873	10,616,487	15,816,241	14,780,923	2,933,518	10,273,346	1,482,077,291	12.6
ARMB Private Real Estate Portfolio w/o JPM SPF	1,208,919,949	39,691,873	8,933,983	15,816,241	12,157,131	2,413,686	8,134,275	1,241,739,317	9.5
Public Investments									
ARMB REIT*	378,386,195	3,344,765	3,344,765	0	0	0	27,250,295	351,463,611	0.0
Public Investments	378,386,195	3,344,765	3,344,765	0	0	0	27,250,295	351,463,611	0.0
Total Portfolio									
ARMB Real Estate Portfolio	1,825,083,590	43,036,638	13,961,252	15,816,241	14,780,923	2,933,518	37,523,641	1,833,540,902	10.4

Property Type Diversification (%)	Apartment	Office	Industrial	Retail	Hotel	Other
Core Portfolio						
JP Morgan Strategic Property Fund	20.9	46.2	7.9	24.5	-	0.6
LaSalle I.M.A.	-	46.5	-	53.5	-	-
Sentinel I.M.A.	100.0	-	-	-	-	-
Sentinel I.M.A. (Takeover 2014)	100.0	-	-	-	-	-
UBS Realty I.M.A. - ARMB 1997	23.7	12.1	49.2	15.0	-	-
UBS Realty IMA (Cornerstone Takeover 2014)	-	100.0	-	-	-	-
UBS Trumbull Property Fund	31.0	29.9	12.2	23.2	3.8	-
Core Portfolio	31.3	29.5	18.2	20.5	0.3	0.1
Non-Core Portfolio						
Almanac Realty Securities IV, LP	-	-	-	-	-	100.0
Almanac Realty Securities V, LP	-	41.1	56.7	-	-	2.3
Almanac Realty Securities VII	44.0	23.5	-	-	3.6	28.9
BlackRock Diamond Property Fund	100.0	-	-	-	-	-
Clarion Development Ventures III	0.1	-	-	0.0	45.1	54.9
Clarion Ventures 4	37.0	37.7	-	25.3	-	-
Colony Investors VIII	-	-	-	-	-	100.0
Cornerstone Apartment Venture III	-	-	-	-	-	-
Coventry Real Estate Fund II	-	-	-	100.0	-	-
KKR Real Estate Partners Americas	5.0	9.6	1.3	32.2	7.1	44.8
LaSalle Medical Office Fund II	-	-	-	-	-	-
Lowe Hospitality Investment Partners	-	-	-	-	100.0	-
Silverpeak Legacy Partners II	5.3	19.3	-	17.4	27.3	30.6
Silverpeak Legacy Partners III	1.6	58.8	-	29.3	9.1	1.2
Tishman Speyer Real Estate Venture VI	-	29.1	-	-	-	70.9
Tishman Speyer Real Estate Venture VII	-	36.0	-	-	-	64.0
Non-Core Portfolio	13.3	22.9	3.1	15.7	6.4	38.6
ARMB Private Real Estate Portfolio	29.0	28.7	16.2	19.9	1.1	5.1
NPI	24.5	36.9	14.2	23.2	1.1	-

Geographic Diversification (%)	North East	Mid East	East North Central	West North Central	South East	South West	Mountain	Pacific	Ex-US
Core Portfolio									
JP Morgan Strategic Property Fund	21.3	7.6	5.2	0.2	8.9	15.5	3.1	38.2	-
LaSalle I.M.A.	-	30.5	22.8	-	12.0	-	-	34.7	-
Sentinel I.M.A.	40.5	-	-	-	28.3	-	-	31.1	-
Sentinel I.M.A. (Takeover 2014)	100.0	-	-	-	-	-	-	-	-
UBS Realty I.M.A. - ARMB 1997	16.3	-	7.9	-	12.9	6.6	20.6	35.8	-
UBS Realty IMA (Cornerstone Takeover 2014)	-	-	-	-	-	-	-	100.0	-
UBS Trumbull Property Fund	25.7	8.9	10.6	0.9	8.2	6.4	9.8	29.4	-
Core Portfolio	19.9	7.5	8.4	0.1	12.7	5.4	8.0	38.1	-
Non-Core Portfolio									
Almanac Realty Securities IV, LP	-	-	-	-	-	-	-	-	-
Almanac Realty Securities V, LP	-	-	-	-	-	-	-	-	-
Almanac Realty Securities VII	-	-	-	-	-	-	-	-	-
BlackRock Diamond Property Fund	100.0	-	-	-	-	-	-	-	-
Clarion Development Ventures III	68.3	-	-	-	31.7	-	-	0.0	-
Clarion Ventures 4	62.3	-	-	-	-	-	37.7	-	-
Colony Investors VIII	-	-	-	-	-	-	-	20.7	79.3
Cornerstone Apartment Venture III	-	-	-	-	-	-	-	-	-
Coventry Real Estate Fund II	-	-	100.0	-	-	-	-	-	-
KKR Real Estate Partners Americas	15.9	-	11.0	1.7	4.9	30.9	-	4.3	31.3
LaSalle Medical Office Fund II	-	-	-	-	-	-	-	-	-
Lowe Hospitality Investment Partners	100.0	-	-	-	-	-	-	-	-
Silverpeak Legacy Partners II	11.5	12.4	12.0	-	-	0.2	-	6.2	57.7
Silverpeak Legacy Partners III	17.8	-	-	-	1.6	6.4	4.8	-	69.4
Tishman Speyer Real Estate Venture VI	-	17.6	-	-	6.0	-	-	76.4	-
Tishman Speyer Real Estate Venture VII	-	35.6	0.4	-	-	-	-	64.0	-
Non-Core Portfolio	26.3	5.6	4.1	0.5	4.0	9.7	9.3	21.0	19.6
ARMB Private Real Estate Portfolio	20.6	7.3	7.9	0.2	11.7	5.9	8.1	36.1	2.3
NPI	21.2	12.2	7.6	1.4	9.7	10.6	5.7	31.6	-

Metropolitan Statistical Area Diversification

As of June 30, 2016

ARMB Total Portfolio: Largest Metro Concentrations		
MSA Title%	% of Current NAV	NCREIF Weight
CA - San Francisco	14.1%	6.8%
CO - Denver	10.3%	2.8%
CA - Los Angeles	10.0%	9.8%
IL - Chicago	8.5%	6.1%
DC - Washington	5.4%	8.2%
WA - Seattle	5.2%	4.3%
MA - Boston	4.9%	4.0%
CA - Sacramento	3.4%	0.4%
FL - Tampa	3.2%	0.6%
TX - Dallas	2.4%	3.9%

ARMB I.M.A. Portfolio: Largest Metro Concentrations		
MSA Title%	% of Current NAV	NCREIF Weight
CA - Los Angeles	13.5%	9.8%
CA - San Francisco	11.1%	6.8%
CO - Denver	9.0%	2.8%
IL - Chicago	8.8%	6.1%
DC - Washington	7.2%	8.2%
MA - Boston	7.1%	4.0%
CA - Sacramento	6.2%	0.4%
FL - Tampa	5.6%	0.6%
WA - Seattle	4.5%	4.3%
TN - Memphis	4.0%	0.2%

NOTES:

- 1) Does not include partial periods.
- 2) Private real estate performance calculated quarterly. Public performance provided from State Street and calculated monthly.
- 3) Clarion Development Ventures III ("CDV III") reported performance in Q3 2009 that resulted in a negative market value. Based on industry reporting standards, a Fund level negative market value ends a time weighted series. The first quarter with a positive market value begins a new inception period, but returns may not be immediately meaningful therefore since inception returns are not displayed. The analysis of this fund should be done on an IRR basis.
- 4) Coventry Real Estate Fund II began investing in 2Q04 and suffered significant value losses beginning in 4Q08. At the request of ARMB, Fund II was written down to \$0 in 2Q09. ARMB has requested that the Fund II values be adjusted and added back into the portfolio as of 2Q11 due to Fund II recovery. As a result, Coventry Real Estate Fund II has a series of returns from 2Q04-4Q08, a stub quarter to add the Fund value back into the portfolio and a series of returns beginning in 2Q11 which will reflect actual quarterly returns. All quarterly returns are included in the total Portfolio but they are not meaningful due to the gaps in quarterly returns.
- 5) 90% NPI/10% NAREIT since 1/1/2005, 100% NPI back to inception.
- 6) IRR after advisory fees, incentive and promote. This includes actual cash flows and a reversion representing the LP Net Assets at market value as of the period and reporting date.
- 7) Townsend calculates performance data and investment values based on actual cash flows, rather than accruals. UBS TPF reflects management fees payable to the manager within capital account statements as accrued fees in the quarter in which they are earned. Quarterly fees are typically paid in arrears within the following quarter. Thus, the NAV shown in Townsend’s report may differ from the capital account statements provided by the manager. One additional quarter of management fees would also need to be recognized within the Townsend data if the position were fully liquidated.
- 8) IRR and equity multiple figures are unavailable for these composites due to missing historic cash flow data within several legacy funds.

* Hardcoded data

Advisory Disclosures and Definitions

Disclosure

Trade Secret and Confidential.

Past performance is not indicative of future results.

Investing involves risk, including the possible loss of principal.

Returns are presented on a time weighted basis and shown both gross and net of underlying third party fees and expenses and may include income, appreciation and/or other earnings. In addition, investment level Net IRR's and equity multiples are reported.

The Townsend Group, on behalf of its client base, collects quarterly limited partner/client level performance data based upon inputs from the underlying investment managers. Data collection is for purposes of calculating investment level performance as well as aggregating and reporting client level total portfolio performance. Quarterly limited partner/client level performance data is collected directly¹ from the investment managers via a secure data collection site.

¹In select instances where underlying investment managers have ceased reporting limited partner/client level performance data directly to The Townsend Group via a secure data collection site, The Townsend Group may choose to input performance data on behalf of its client based upon the investment managers quarterly capital account statements which are supplied to The Townsend Group and the client alike.

Benchmarks

The potential universe of available real asset benchmarks are infinite. Any one benchmark, or combination thereof, may be utilized on a gross or net of fees basis with or without basis point premiums attached. These benchmarks may also utilize a blended composition with varying weighting methodologies, including market weighted and static weighted approaches.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Fiscal Year 2017 Real Assets Annual
Investment Plan

ACTION: X

DATE: September 29, 2016

INFORMATION:

BACKGROUND

Staff prepares an Annual Real Assets Investment Plan to review performance, structure, objectives, and strategy of the portfolio. The plan establishes the Board-approved plan for the portfolio for the upcoming fiscal year.

STATUS

Staff, with the assistance of The Townsend Group, Callan, and ARMB's real assets advisors, has developed the Real Assets Annual Investment Plan for Fiscal Year 2017. The Real Assets Annual Investment Plan includes a presentation of historical performance, investment background, current market conditions and Fiscal Year 2017 investment strategy. Specific recommendations for the Real Assets Fiscal Year 2017 Investment Plan are as follows:

Real Estate

- Continue strategy of managing existing core separate account portfolios and allocations toward core assets located in markets with high barriers to entry.
- Invest an additional \$100 million in UBS Trumbull Property Fund using REITS as a source of funds.
- Staff will continue to explore new value-add and opportunistic real estate investments.

Timberland

- Decrease timberland target allocation by 5% from 15% to 10%.
- Reduce Hancock remaining allocation by \$150 million in recognition of decrease in target allocation.

Farmland

- Increase allocation to UBS separate account by \$100 million.

Infrastructure

- Increase infrastructure target allocation by 5% from 12.5% to 17.5%.

- Increase commitment to IFM Global Infrastructure Fund by \$50 million.

TIPS/Energy

- No recommendations.

RECOMMENDATION

The ARMB approve Resolution 2016-18 which adopts the Real Assets Annual Investment Plan for Fiscal Year 2017.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Real Assets Annual Investment Plan

Resolution 2016-18

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 2017, attached hereto and made a part hereof.

DATED at Anchorage, Alaska this ____ day of September, 2016.

Chair

ATTEST:

Secretary

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Real Assets Investment Guidelines
Policies, Procedures and Guidelines

ACTION: X

DATE: September 29, 2016

INFORMATION:

BACKGROUND

As part of the annual planning process for Real Assets, proposed changes to the Real Estate, Farmland, Timberland, and Infrastructure Policies, Procedures and Guidelines (Guidelines) are recommended by staff.

STATUS

The Timberland and Farmland Guidelines have been revised to require CIO approval for separate account investment managers to reinvest investment allocation.

No other substantive changes are being proposed to the Guidelines.

RECOMMENDATION

The ARMB approve:

Resolution 2016-19 which adopts the revised Real Estate Investment Guidelines;

Resolution 2016-20 which adopts the revised Farmland Investment Guidelines;

Resolution 2016-21 which adopts the revised Timberland Investment Guidelines; and,

Resolution 2016-22 which adopts the revised Infrastructure Investment Guidelines.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Real Estate Investment Guidelines

Resolution 2016-19

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 replaces Resolution 2015-16, which is hereby repealed.

DATED at Anchorage, Alaska this ____ day of September, 2016.

Chair

ATTEST:

Secretary

ALASKA RETIREMENT MANAGEMENT BOARD REAL ESTATE INVESTMENT POLICIES, PROCEDURES AND GUIDELINES

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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 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 5 year periods, the equity real estate investment portfolio is expected to generate a minimum total real rate of return (net of investment management fees) of 5% using a time-weighted rate of return calculation. The inflation index used to calculate the actual real rate of return is the CPI All Urban.

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 90% NCREIF Property Index and 10% NAREIT 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 %
Public Equity:	50 %
Public Debt:	0 %
Private Equity:	100 %
Private Debt:	0 %

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:	40 %

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

The ARMB will implement an investment process for real estate which will, over time, include a minimum of three (3) qualified Separate Account Investment Managers who have been selected on a competitive basis. The ARMB will endeavor to allocate specific funds to qualified managers on a separate account basis. Selected managers will seek real estate investment opportunities in publicly-traded equity and/or privately-placed equity sectors. Investments will be made on a discretionary basis subject to Staff approval of the Annual Strategic/Tactical Plans prepared by Separate Account Investment Managers and ARMB's approval of the Annual Investment Plan prepared by Staff. In addition to separate accounts, ARMB will selectively consider investments in "pooled/commingled" investment vehicles.

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

The total amount of leverage placed on the aggregate separate account assets will not exceed thirty five percent (35%) of the total market value of the real estate separate account portfolio. Directly-owned properties will not be leveraged by the Separate Account Investment Manager. 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 Chief Investment Officer approval. With authorization by the ARMB, the Chief Investment Officer may place leverage on a pool of existing core real estate assets held in ARMB's separate account portfolio in a manner consistent with the ARMB's Guidelines.

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 equity 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 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 ~~24~~¹⁸, 201~~5~~⁴. 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 – David Weiner
Managing Director
1251 Avenue of the Americas
New York, NY 10020
Telephone: 212-408-2913
Fax: 212-603-5961
E-mail: weiner@sentinelcorp.com
Web site: www.sentinelcorp.com

LaSalle Investment Management

Property type – Core/apartments, industrial, retail and office (includes Takeover Assets)
Attn: George Duke
Managing Director
100 East Pratt Street, 20th Floor
Baltimore, MD 21202
Telephone: (410) 878-4810
Facsimile: (410) 878-4910
E-mail: George.Duke@lasalle.com
Web site: www.lasalle.com

XII. REAL ESTATE COMMINGLED ACCOUNT INVESTMENT MANAGERS

UBS Realty Investors LLC

Contact: Thomas J. Anathan,
Managing Director
10 State House Square
Hartford, CT 06103-3604
Telephone: 860-616-9128;
Facsimile: 860-616-9104
E-mail: thomas.anathan@ubs.com

J.P. Morgan Asset Management

Contact: Ann Cole, Managing Director Portfolio Manager; Kimberly Adams, Managing Director Portfolio Manager, Strategic Property Fund
270 Park Avenue, 7th Floor
New York, NY 10017
Telephone: (AC) 212-648-2152
Telephone: (KA) 312-732-6366
Facsimile: 917-464-7449
ann.e.cole@jpmorgan.com
kimberly.a.adams@jpmorgan.com

Clarion Partners

Contact: Doug Bowen
Managing Director
230 Park Avenue
New York, NY 10169
Telephone: 212-883-2506
Facsimile: 212-883-2806
E-mail:
doug.bowen@clarionpartners.com

Tishman Speyer Properties

Contact: Julie Lurie
45 Rockefeller Plaza, 7th Floor
New York, NY 10020
Telephone: 212-715-0329
Facsimile: 212-895-0129
E-mail: JRLurie@tishmanspeyer.com

Almanac Realty Investors, LLC

Contact: Matt Kaplan, Managing Partner
1140 Avenue of the Americas, 17th Floor
New York, NY 10036
Telephone: 212-403-3522
Facsimile: 212-403-3520
E-mail:
matthew.kaplan@almanacrealty.com

ColonyCapital, LLC

Contact: Andrea Nicholas
2450 Broadway, 6th Floor
515 S. Flower
Street, 44th Floor
Santa Monica
Los Angeles, CA
90071-494
Telephone: 310-552-7191
Facsimile: 310-407-7391
E-mail: ANicholas@colonyinc.com

LaSalle Investment Management

Contact: Steve Bolen, President
100 East Pratt Street, 20th Floor
Baltimore, MD 21202
Telephone: 410-347-0660
Facsimile: 410-347-0612 fax
E-mail: steve.bolen@lasalle.com

KKR & Co. L.P.

Contact: Dan McLaughlin, Director
555 California Street
San Francisco, CA 94101

Silverpeak Legacy Partners

Contact: ~~Brett Bossung~~Colleen Fennerty
Managing Director
1330 Avenue of the Americas, Suite 1200
40 West 57th Street, 29th Floor
New York, NY 10019
Telephone: 212-716-206450
Facsimile: (646) 285-9271
E-mail: investorrelations@silverpeakre.com

Cornerstone Real Estate Advisers LLC

Contact: Patrick T. Kendall, Vice President
One Financial Plaza, Suite 1700
Hartford, CT 06103
Telephone: 310-234-2525
Facsimile: 949-852-9804
E-mail: pkendall@Cornerstoneadvisors.com

Coventry Real Estate Fund II, LLC

Contact: Peter Henkel
888 Seventh Avenue, 12th Floor
1 East 52nd
Street, 4th Floor
New York, NY 1002249
Telephone: 212-699-4109
Facsimile: 212-699-4124
E-mail: phenkel@coventryadvisors.com

BlackRock, Inc.

Contact: Ted Koros, Managing Director
50 California Street, Suite 300
San Francisco, CA 94111
Telephone: 415-670-6210
Facsimile: 646-521-4982
E-mail: theodore.koros@blackrock.com

Lowe Hospitality Investment Partners, LLC

Contact: Bleecker P. Seaman, Executive VP
11777 San Vicente Boulevard, Suite 900
P.O. Box 49021
Los Angeles, CA 90049-6615
Telephone: 310-571-4263
Facsimile: 310-207-1132
bseaman@loweenterprises.com

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Telephone: 415-315-6573
E-mail: dan.mclaughlin@kkr.com

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 G = Grade M = Monitor P = Prepares R = Recommends						* Grade Semi-finalists only ** Investment Decision (Shaded)

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Farmland Investment Guidelines

Resolution 2016-20

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 farmland 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 farmland;

NOW THEREFORE BE IT RESOLVED THAT THE ALASKA RETIREMENT MANAGEMENT BOARD adopt the Farmland Investment Policies, Procedures, and Guidelines, attached hereto and made a part hereof.

This resolution repeals and replaces Resolution 2015-17.

DATED at Anchorage, Alaska this ____ day of September, 2016.

Chair

ATTEST:

Secretary

APPENDIX E

ALASKA RETIREMENT MANAGEMENT BOARD FARMLAND INVESTMENT POLICIES, PROCEDURES AND GUIDELINES

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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 5 year periods, the equity Farmland investment portfolio is expected to generate a minimum total real rate of return (net of investment management fees) of 5% using a time-weighted rate of return calculation. The inflation index used to calculate the actual real rate of return is the CPI All Urban.

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 for individual properties after fees and projected capital expenditures.

3. Minimum Going-In Yields

The investment manager's initial three-year period projection will equal or exceed 5.0% income before fees for the entire portfolio, but individual properties may have a projected current income as low as 4.0%.

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 %
<i>(ARMB can liquidate within 180 days –targeted, not guaranteed))</i>	
Non-Controlled Investments:	50%
<i>(ARMB cannot liquidate within 180 days)</i>	
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:*	15%
<i>(acquisition cost plus projected capital additions and improvements)</i>	
Single-Tenant/Sub-Tenant (any one firm):	15%
Crop Type (with a band of +/- 10%)	
Row Crop	80%
Permanent Crop	20%
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 implement an investment process for Farmland which will, over time, include a minimum of two (2) qualified investment managers who have been selected on a competitive basis. 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. 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.

F. 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.

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 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.

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 Farmland 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 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.

J. 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.

K. 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 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.

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:

Hancock Agricultural Investment Group Oliver Williams ~~99 High Street, 26th Floor~~ 197 Clarendon Street C-08-99	UBS AgriVest LLC James B. McCandless 10 State House Square, 15 th Floor Hartford, CT 06103-3604 Telephone: 860-616-9200

Boston, MA 0211~~06-2320~~5010
Telephone: 617-747-1645
Fax: 617-747-8645
E-mail: owilliams@hnrq.com
Web site: www.haig.jhancock.com

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 G = Grade P = Prepare	R = Recommend M = Monitor				

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Timberland Investment Guidelines

Resolution 2016-21

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 2015-18.

DATED at Anchorage, Alaska this ____ day of September, 2016.

Chair

ATTEST:

Secretary

Appendix C – Exhibit B

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 minimum 5% net real total rate of return over rolling five-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").

ARMB will implement an investment process for Timberland which will, over time, include a minimum of two (2) qualified ARMB Timberland Advisors who have been selected on a competitive basis. 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:

Hancock Timber Resource Group ~~99 High Street, 26th Floor~~ <u>197 Clarendon Street</u> <u>C-08-99</u> Boston, MA ~~02110~~ <u>02116</u> -2320 <u>5010</u> Telephone: 617-747-1600 Fax: 617-747-1516 www.hancocktimber.com	Timberland Investment Resources, LLC 115 Perimeter Center Place, Suite 940 Atlanta, GA 30346 Telephone: 404-848-2000 Fax: 404-848-2006 www.tirlc.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.

State of Alaska
ALASKA RETIREMENT MANAGEMENT BOARD
Relating to Infrastructure Investment Guidelines

Resolution 2016-22

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 2015-19.

DATED at Anchorage, Alaska this ____ day of September, 2016.

Chair

ATTEST:

Secretary

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 minimum 5% net real total rate of return over rolling five-year periods. Portfolio risk shall reflect the lowest expected risk profile required to achieve the return objectives. 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 and two public investment qualified 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 the S&P Global Infrastructure Index. 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.

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 10% 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 47 th Street New York, NY 10036 Phone: 212-784-2260 www.ifminvestors.com	Lazard Asset Management LLC 30 Rockefeller Plaza, 57 th Floor New York, NY 10112 Phone: 212-632-6519 www.lazardnet.com
JPMorgan Asset Management 270 Park Avenue, 7 th Floor, NY1-K141 New York, NY 10017 Phone: 212-648-2219 www.jpmorgan.com	Brookfield Investment Management Inc. 250 Vesey Street New York, NY 10281-1023 Phone: 212-978-1794 www.brookfieldim.com

September 2016



ARMB Board Meeting

Investment Performance
Periods Ended June 30, 2016

Paul Erlendson
Senior Vice President

Steve Center, CFA
Senior Vice President

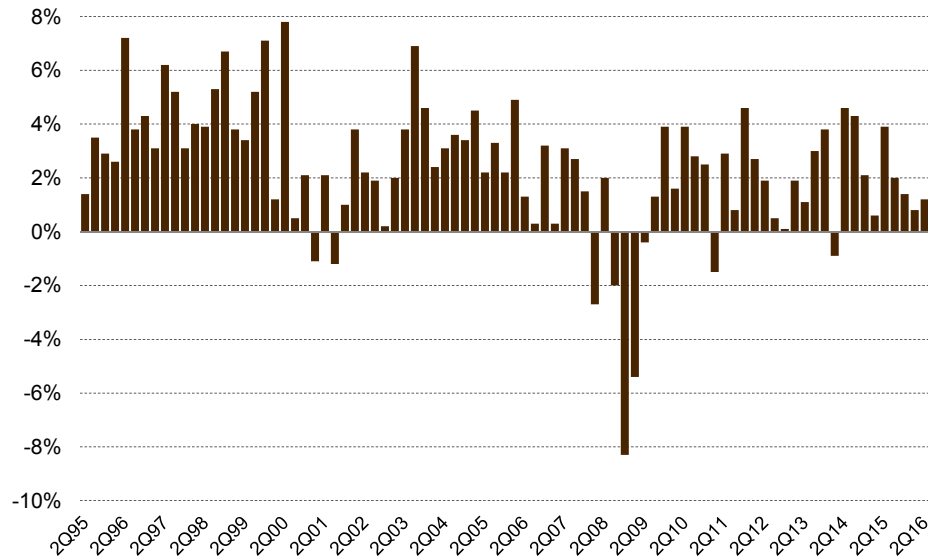
Agenda

- Market and Economic Environment
- Total Fund Performance
 - Major Asset Classes
- Review of Major Activities

U.S. Economy

Periods Ending June 30, 2016

Quarterly Real GDP Growth (20 Years)



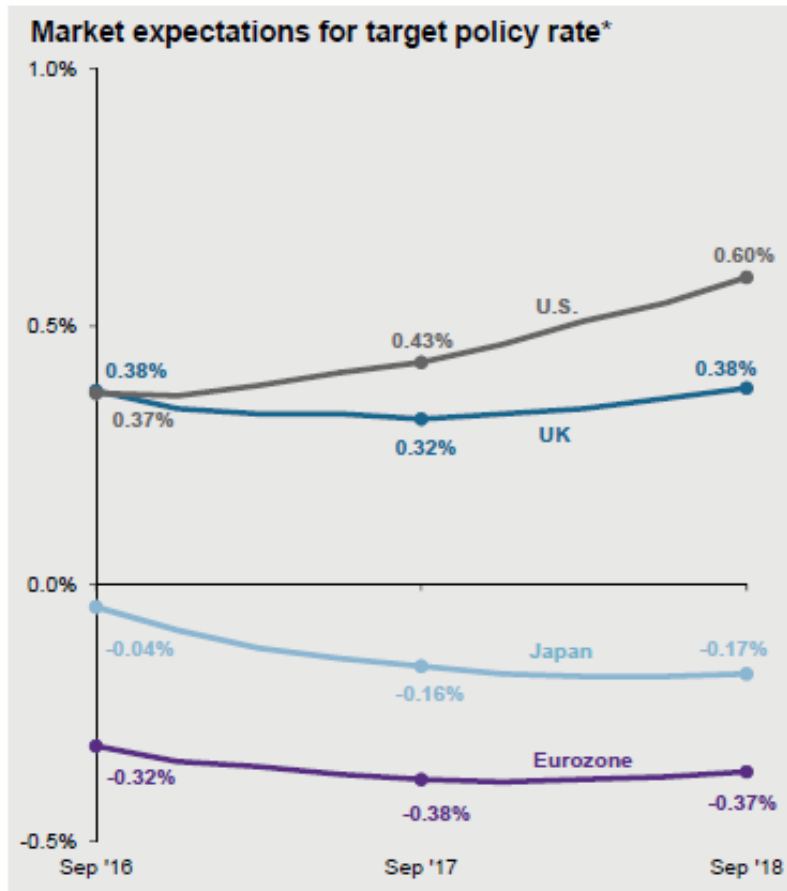
Source: Bureau of Economic Analysis



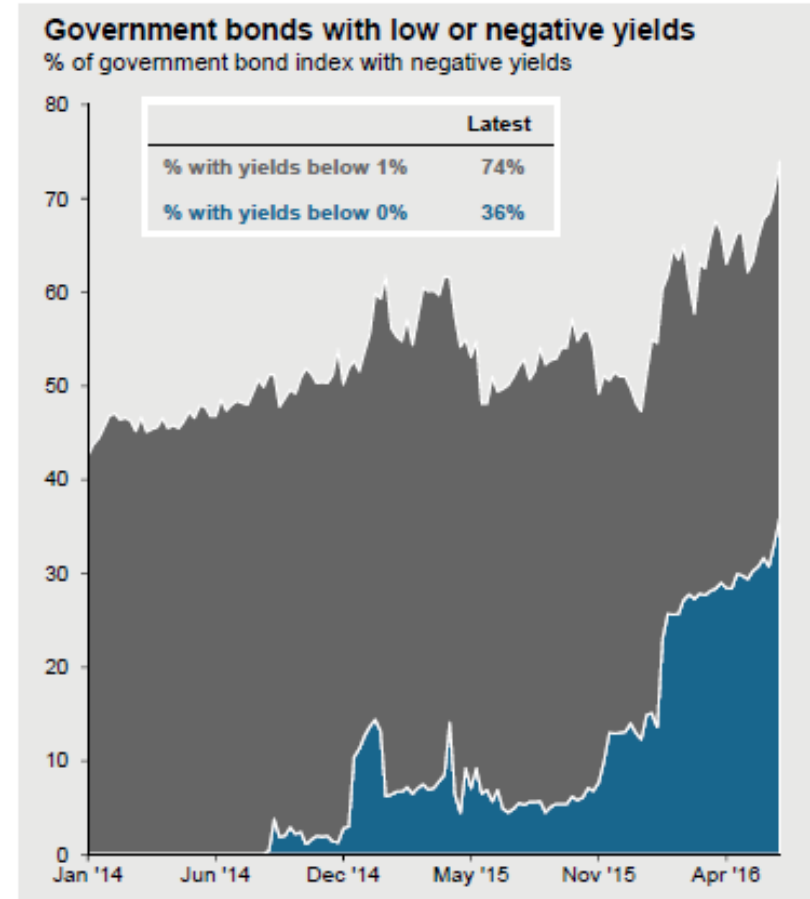
Source: Bureau of Labor Statistics

- Initial estimate of second quarter GDP came out at 1.2%, up from a first quarter reading of 0.8%.
- June headline inflation rose 1.0% over the trailing twelve months. Core CPI Increased 2.3%.
- June unemployment was 4.9% (down 0.1% from March) and the labor force participation rate dropped to 62.7% (down 0.3%).
- The Fed maintained a target rate of 0.25% - 0.50%.

Global Rate Expectations and Current Environment



* Target policy rates for Japan are estimated using EuroYen 3-month futures contracts less a 6 bps risk premium.



Sources: JP Morgan, Guide to the Markets, June 30, 2016. Bank of America / Merrill Lynch Global Government Bond Index

Increasing Volume of Global Bonds Have Negative Yields

German bonds dipped below zero interest rates in June, 2016

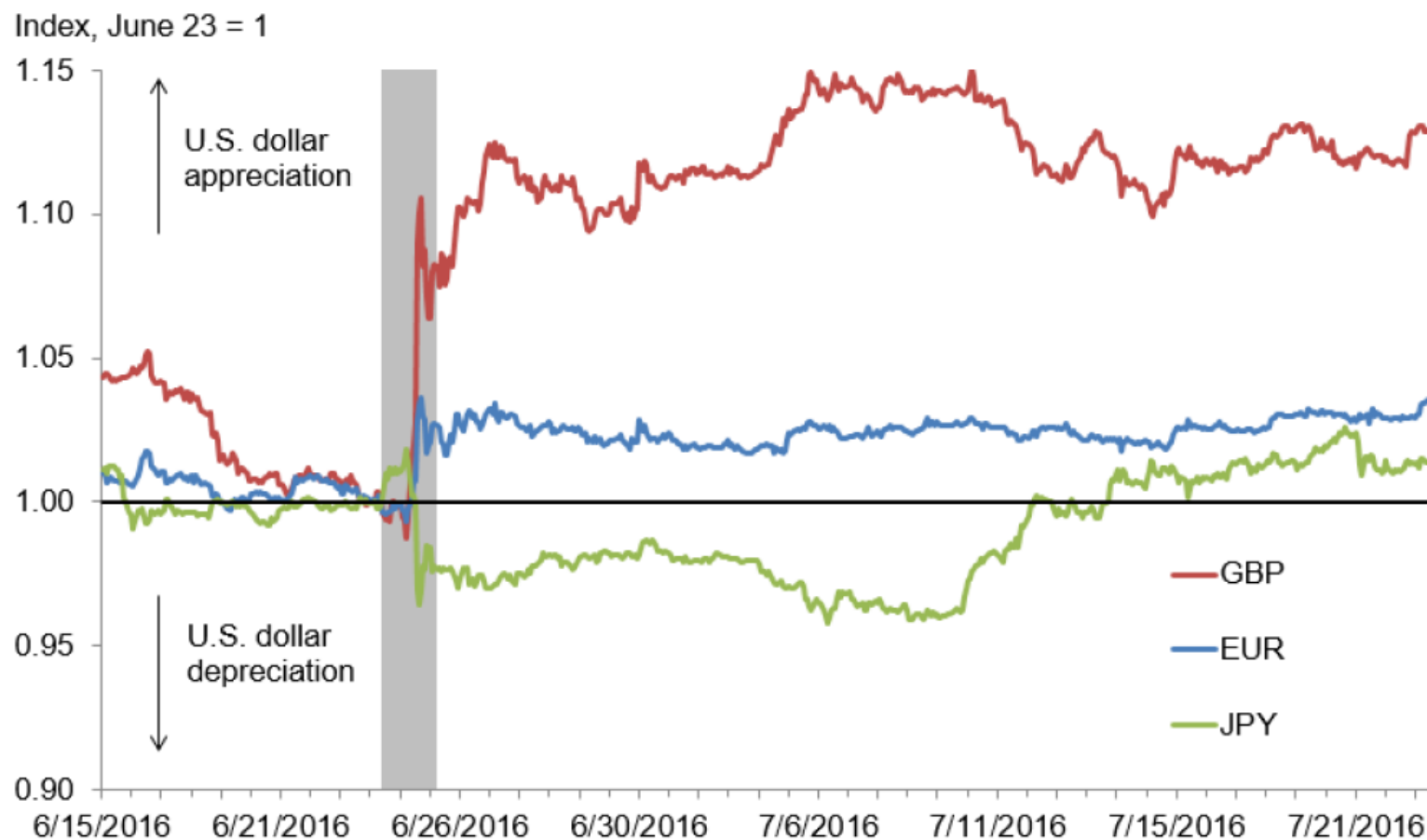
	1-YR	2-YR	3-YR	4-YR	5-YR	6-YR	7-YR	8-YR	9-YR	10-YR	PROPORTION OF MARKET TRADING BELOW 0% YIELD
Switzerland											94%
Japan											81%
Germany											82%
Denmark											71%
Finland				NEGATIVE YIELDS							66%
Belgium											63%
Netherlands											62%
Sweden											60%
France											58%
Austria											53%
Spain											29%
Italy											19%
Norway											0%
U.K.											0%
U.S.											0%

Sources: Neuberger Berman; Bloomberg. Data as of 5/31/16.

- Negative yields tended to be the province of sovereign issuers. However, some European credit bonds have begun to yield less than zero as they are part of the ECB's asset purchase program.
- Approximately \$11 Trillion (that's 11,000 billions) of global government debt has negative yields.

Impact of Brexit on U.S. Dollar

Brexit vote uncertainty led to turbulent foreign exchange markets



Sources: Dallas Federal Reserve and Bloomberg

Note: The start date is 10 a.m. June 15, 2016. Shaded bar represents the time between the Brexit vote and final results. Currencies used are the British pound (GBP), the Euro (EUR) and Japanese Yen (JPY).

Asset Class Performance

- Small Cap was best performer last quarter, returning 3.8%.
- Emerging markets rose 0.7% in quarter; remain a laggard over last one, three, and five years.
- Aggregate Bond Index was third best in first quarter (+2.2%) and produced the best return over the last 12 months (6.0%).
- Developed international equities trailed all other categories last quarter (-1.5 %).
- S&P 500 rose 2.5% in quarter; best performer over the three-, five-, and 10-year time frames.

	August	YTD (09/06/16)
Russell 3000	0.3%	8.9%
S&P 500	0.1%	8.6%
Russell 2000	1.8%	11.4%
MSCI EAFE	0.1%	3.1%
MSCI EM	2.5%	18.5%
BC Aggregate	-0.1%	6.0%

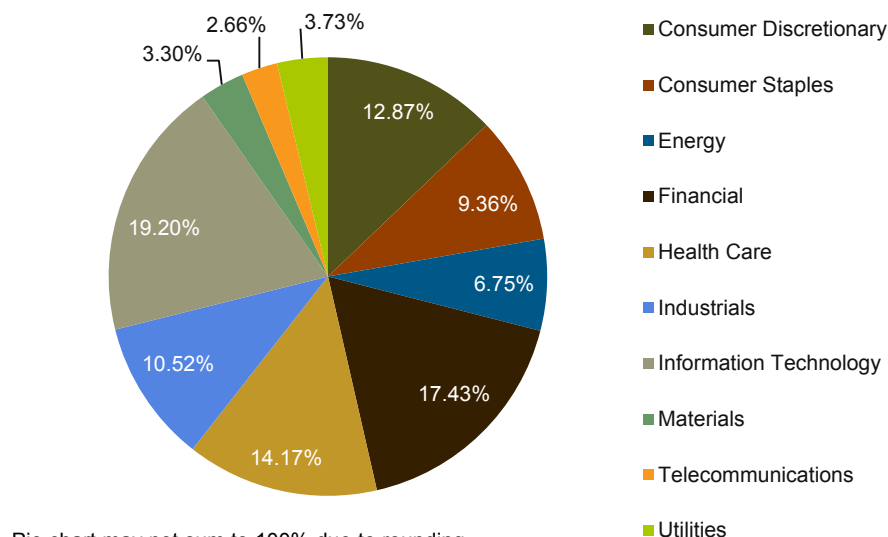
**Periodic Table of Investment Returns
for Periods Ended June 30, 2016**

Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Russell:2000 Index 3.8%	Barclays:Aggregate Index 6.0%	S&P:500 11.7%	S&P:500 12.1%	S&P:500 7.4%
S&P:500 2.5%	S&P:500 4.0%	Russell:2000 Index 7.1%	Russell:2000 Index 8.4%	Russell:2000 Index 6.2%
Barclays:Aggregate Index 2.2%	3 Month T-Bill 0.2%	Barclays:Aggregate Index 4.1%	Barclays:Aggregate Index 3.8%	Barclays:Aggregate Index 5.1%
MSCI:EM 0.7%	Russell:2000 Index (6.7%)	MSCI:EAFE 2.1%	MSCI:EAFE 1.7%	MSCI:EM 3.5%
3 Month T-Bill 0.1%	MSCI:EAFE (10.2%)	3 Month T-Bill 0.1%	3 Month T-Bill 0.1%	MSCI:EAFE 1.6%
MSCI:EAFE (1.5%)	MSCI:EM (12.1%)	MSCI:EM (1.6%)	MSCI:EM (3.8%)	3 Month T-Bill 1.0%

U.S. Equity Returns

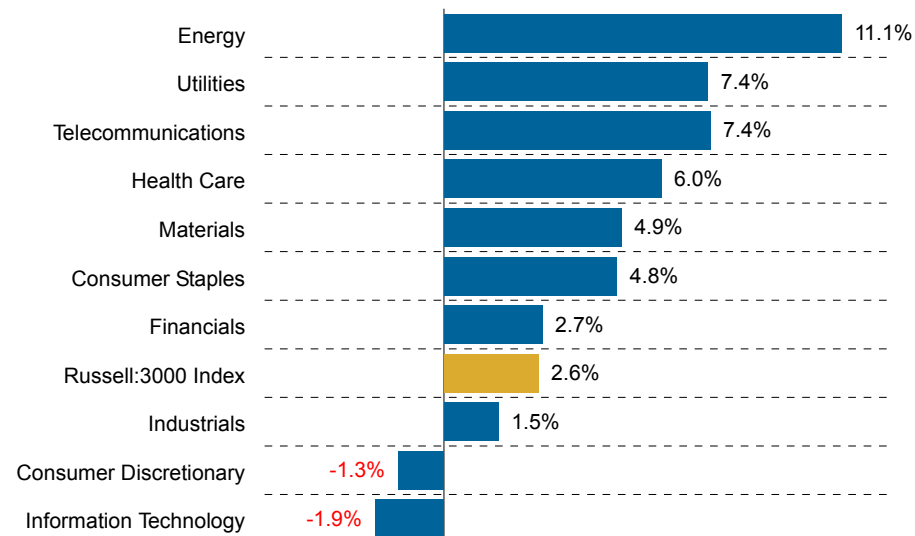
Periods Ending June 30, 2016

Economic Sector Exposure (Russell 3000)



Pie chart may not sum to 100% due to rounding
Source: Russell Investment Group

Quarterly Returns (Russell 3000)



- Sectors with low foreign earnings and high yield outperformed. Energy rebounded.
- The RU 1000 was up 2.5% - high P/E, low quality and low beta were the best performing factors.
 - Best performing sector: Energy (+11.1%); Worst: Information Technology (-2.3%).
- The RU 2000 was up 3.8% - high P/E, low quality and low beta were the best performing factors.
 - Best performing sectors: Utilities (+10.3%) and Materials (+10.2%); Worst: Consumer Discretionary (-1.4%)

U.S. Equity Style Returns

Periods Ending June 30, 2016

2Q 2016				Annualized 1 Year Returns				
	Value	Core	Growth		Value	Core	Growth	
Large	4.6%	2.5%	0.6%	Large	2.9%	2.9%	3.0%	Represents 3 best performing asset classes in time period
Mid	4.8%	3.2%	1.6%	Mid	3.3%	0.6%	-2.1%	Represents 3 middle performing asset classes in time period
Small	4.3%	3.8%	3.2%	Small	-2.6%	-6.7%	-10.8%	Represents 3 worst performing asset classes in time period

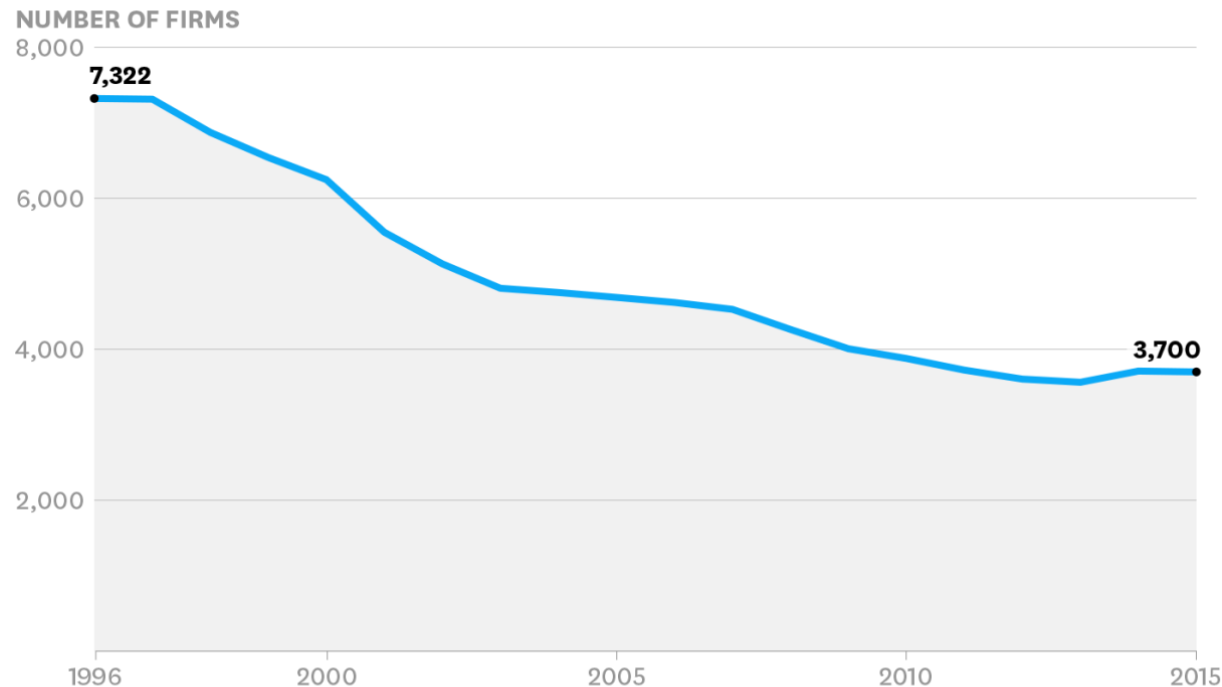
Large Cap Core is represented by the Russell 1000 Index, Large Cap Value is represented by the Russell 1000 Value Index and Large Cap Growth is represented by the Russell 1000 Growth Index. Mid Cap Core is represented by the Russell Midcap Index, Mid Cap Value is represented by the Russell Midcap Value Index and Mid Cap Growth is represented by the Russell Midcap Growth Index. Small Cap Core is represented by the Russell 2000 Index, Small Cap Value is represented by the Russell 2000 Value Index and Small Cap Growth is represented by the Russell 2000 Growth Index.

- Last Quarter: Size mixed; value outperformed
- Last Year: Small cap underperformed; style mixed

Fewer opportunities for public equity investors

The number of US listed companies is down by half since 1996

The Number of Publicly Traded Firms in the U.S. Is Declining



NOTE EXCLUDING INVESTMENT FUNDS AND TRUSTS

SOURCE DATA FROM 1996–2012 VIA CRAIG DROIDGE ET AL.; DATA FROM 2013–2015 VIA WILSHIRE ASSOCIATES

© HBR.ORG

Source: “Private Equity’s New Phase,” Harvard Business Review, 9 August 2016

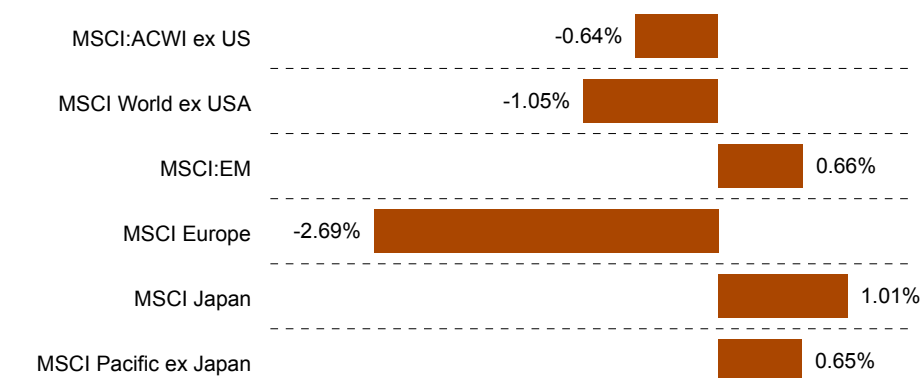
According to the authors:

- “Some of this ownership shift includes failure of firms or acquisition of firms into larger conglomerates (either domestic or foreign), but much of the de-listing shift comes from publicly traded firms becoming private.”
- “A major catalyst for this shift has been private equity firms, which take companies private and incorporate them into their own portfolios.”

International Equity Returns

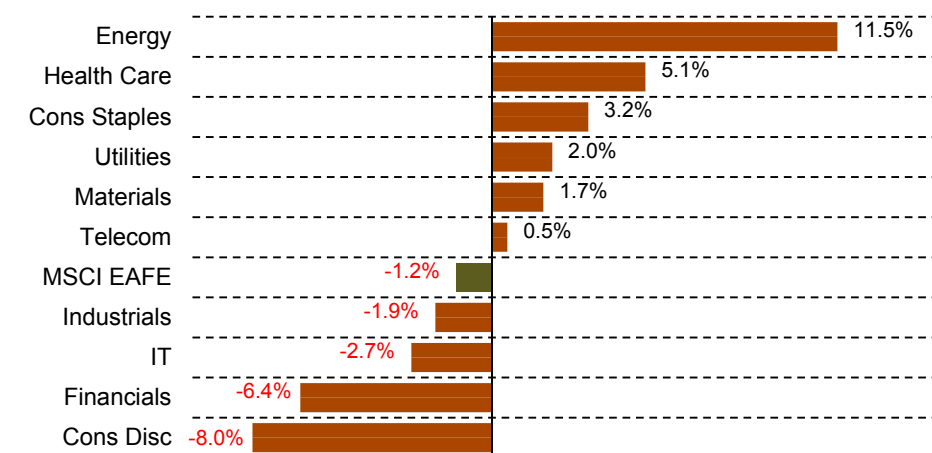
Periods Ending June 30, 2016

Regional Quarterly Performance (U.S. Dollar)



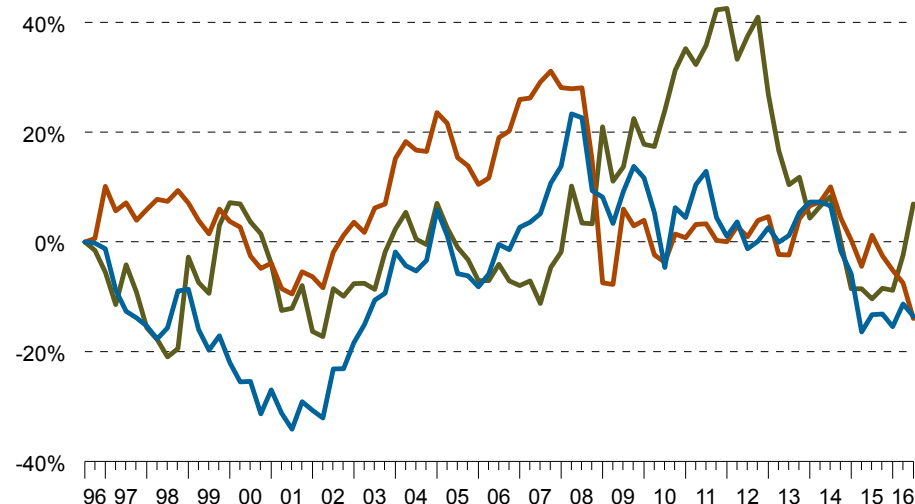
Source: MSCI

MSCI EAFE Sector Returns



Source: Barrow Hanley Quarterly Benchmark Review

Major Currencies' Cumulative Returns (vs. U.S. Dollar)



Japanese yen U.K. sterling Euro

*Euro returns from 1Q99. German mark prior to 1Q99.

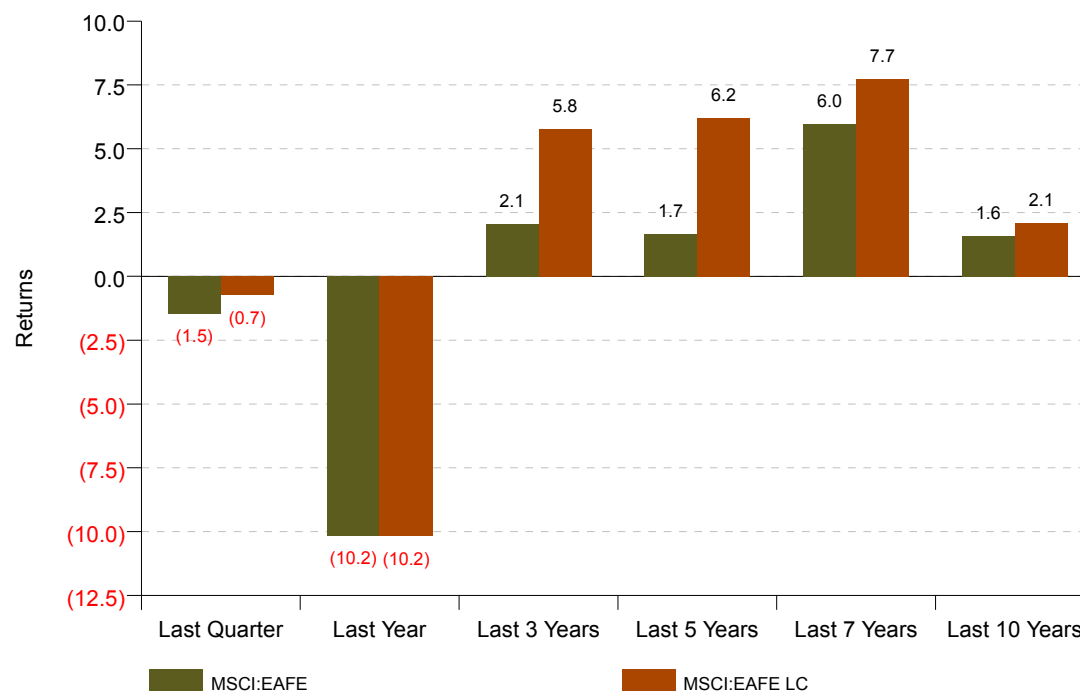
Source: MSCI

- Best performing region was Japan.
- The yen strengthened (+9.1%) and the euro weakened (-2.4%) vs the U.S. dollar.
- Sterling fell 7% coming mostly post-Brexit.
- Energy was the top sector performer in both the U.S. and non-U.S. markets.

Domestic vs. Local Currency Returns

Currency Effect on U.S. Investors' International Equity Returns

Returns for Various Time Periods
Current Quarter Ending June 30, 2016

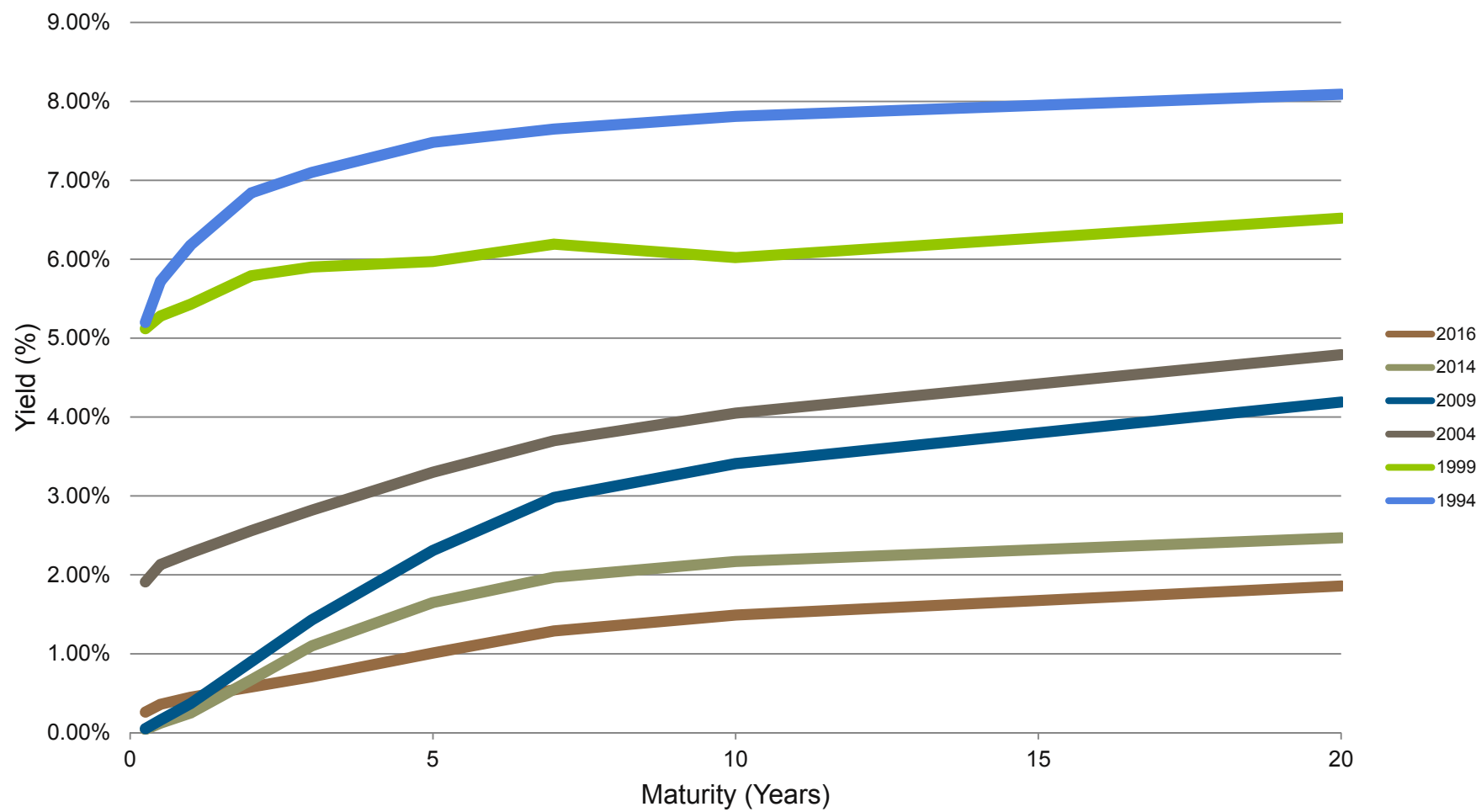


- During second quarter, the dollar strengthened against the euro and weakened against the yen.
- U.S. investors' losses on international equities were magnified relative to local currency losses by currency fluctuation.
- Over the last five years the dollar has cost U.S. investors 4.5% annualized.

Historic Yield Curves

As of June 30, 2016

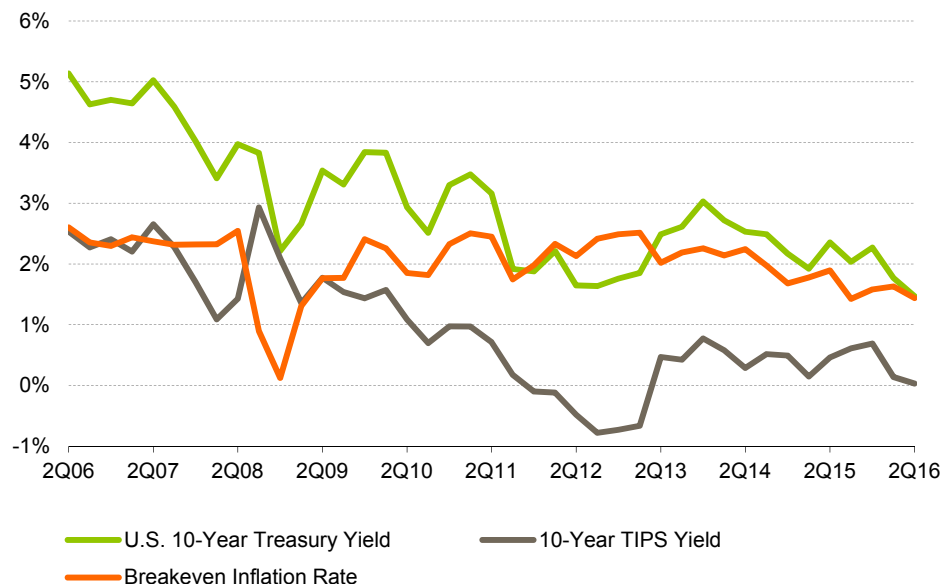
Treasury Yield Curve



Yield Curve Changes

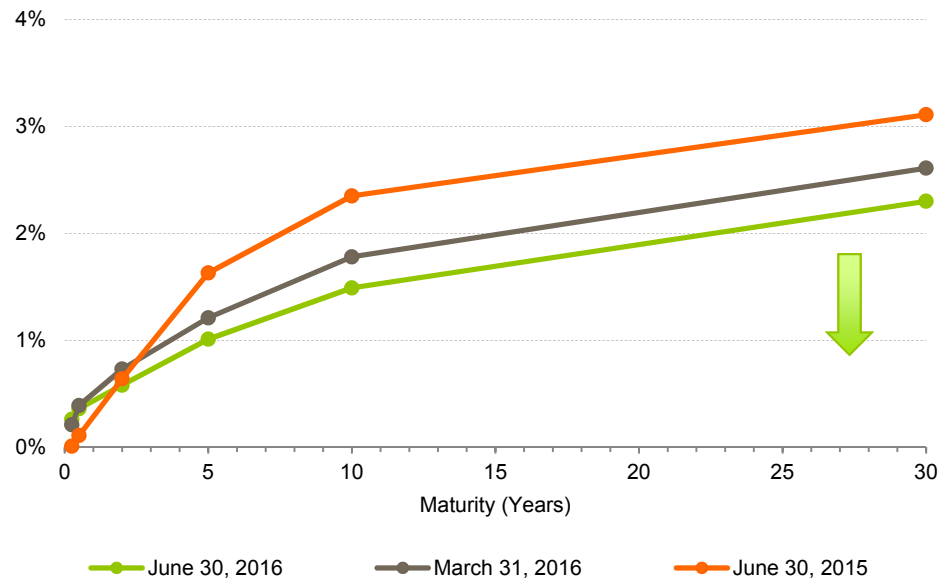
Periods Ending June 30, 2016

Historical 10-Year Yields



Source: Bloomberg

U.S. Treasury Yield Curves

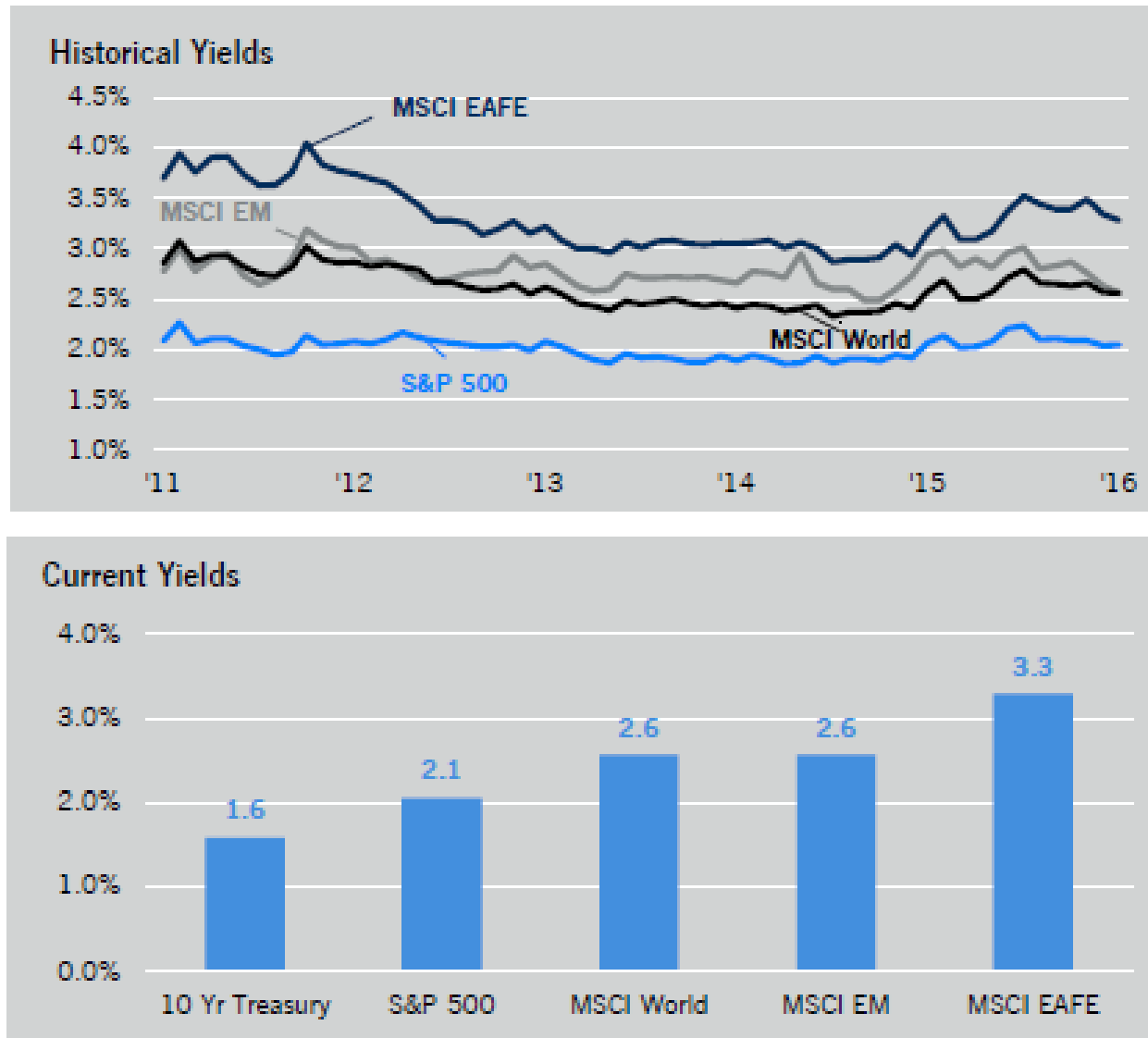


Source: U.S. Department of the Treasury

- Low rates abroad kept demand for U.S. assets strong. The German 10-year sovereign bond traded at a negative yield for the first time ever.
- The decline in Treasury yields boosted returns across all segments, with longer maturities posting the biggest gains. The 10-year dropped 29 basis points to a low not seen since 2012, finishing June at 1.49%.
- Breakeven inflation ended lower despite a climb in oil prices and healthy core inflation numbers.

Bond Yields: Lower Than Equity Yields

Data as of August 31, 2016

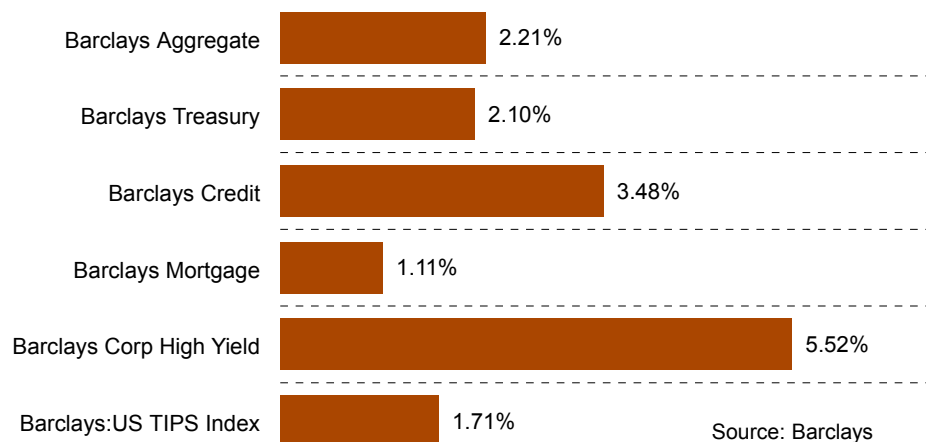


Sources: Eaton Vance, "Monthly Market Monitor," August 31, 2016. FactSet; Ned Davis Research

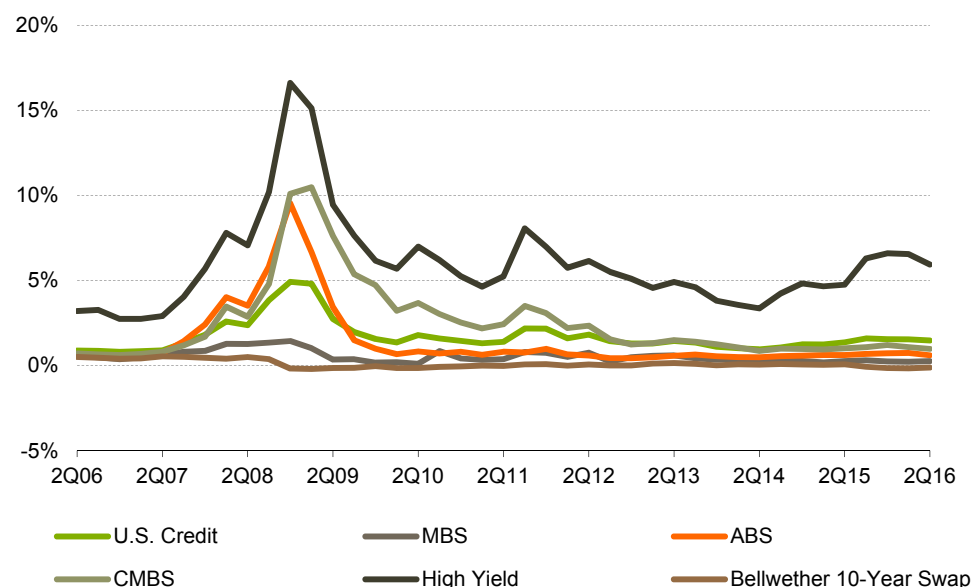
Total Rates of Return by Bond Sector

Periods Ending June 30, 2016

Absolute Returns for Quarter ended June 30, 2016



Effective Yield Over Treasuries



- Aggregate gained 2.2% on declining rates and tightening credit spreads.
- Best performing sector of the Aggregate was investment grade credit (+3.5%).
- High yield was the best segment of the bond market with a gain of 5.5% on spread narrowing.
- Treasury Inflation Protected Securities (TIPS) kept pace with Treasuries.

Real Estate

Style medians and index returns

Style Median and Index Returns* for Periods ended June 30, 2016

	Last Quarter	Year to Date	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
Private Real Estate							
Real Estate Database (net of fees)	2.17	4.38	11.86	13.09	12.23	4.89	7.36
NCREIF Property**	2.03	4.29	10.64	11.61	11.51	7.40	8.91
NFI-ODCE (value wtd-net)	1.91	3.89	10.80	11.97	11.66	5.19	6.95
Public Real Estate							
REIT U.S. Database	5.91	11.24	23.23	13.97	12.99	8.24	12.57
FTSE NAREIT Equity	6.96	13.38	24.04	13.58	12.60	7.45	11.29
Global Real Estate							
Global REIT Database	2.96	7.74	10.87	9.50	9.24	5.56	10.14
EPRA/NAREIT Developed REITs	3.74	9.38	12.57	8.95	8.63	5.00	9.81
EPRA/NAREIT Developed REITs ex-US	0.68	5.91	1.40	4.26	4.97	3.12	9.31

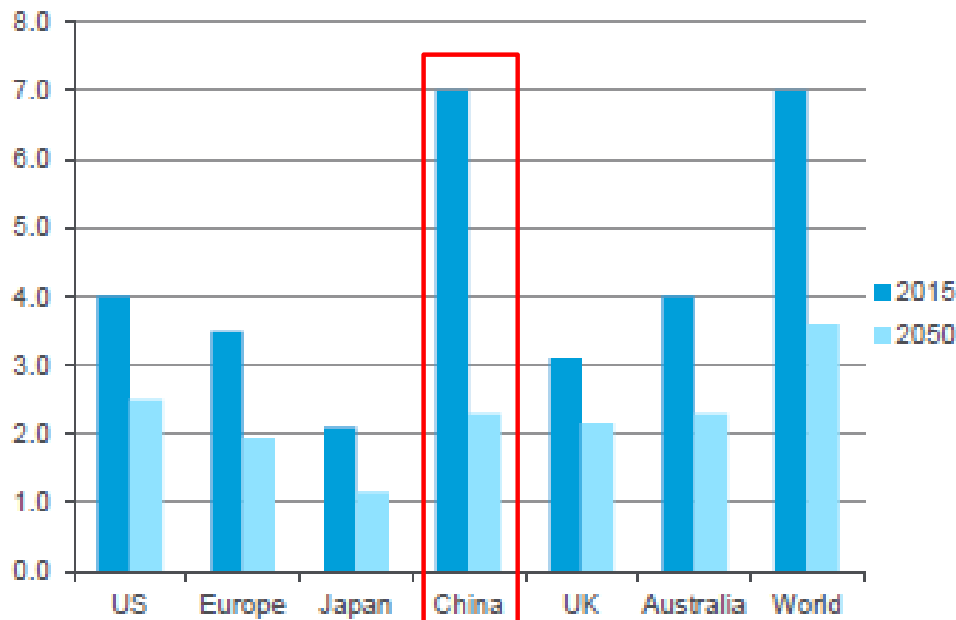
Sources: Callan, Citigroup, JPMorgan Chase & Co.

- The NCREIF Property index's 2.03% return in the second calendar quarter of 2016 was split between a 1.19% income return and a 0.84% appreciation return.
- A preliminary query of NCREIF tracked institutional asset trades representing \$9.0 billion in volume during the second quarter.
 - This is a 25% increase over second quarter 2015.
 - Appraisal capitalization rates increased to 4.60%, up from last quarter's all-time low of 4.55%.
- As of June 30th, U.S. REITs were trading at 7.1% premium to NAV

The Dynamics and Nature of Retirement Funding

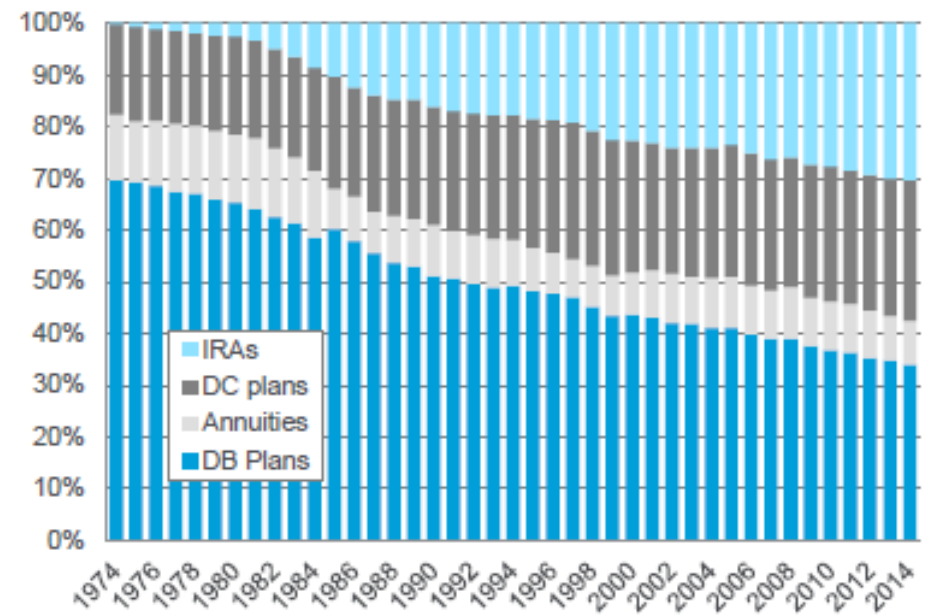
Fundamental changes are afoot

Ratio of Workers (15-64) to Retired (+65)



Sources: Citi, "The Coming Pensions Crisis," March 2016; UN.

Mix of US Retirement Assets

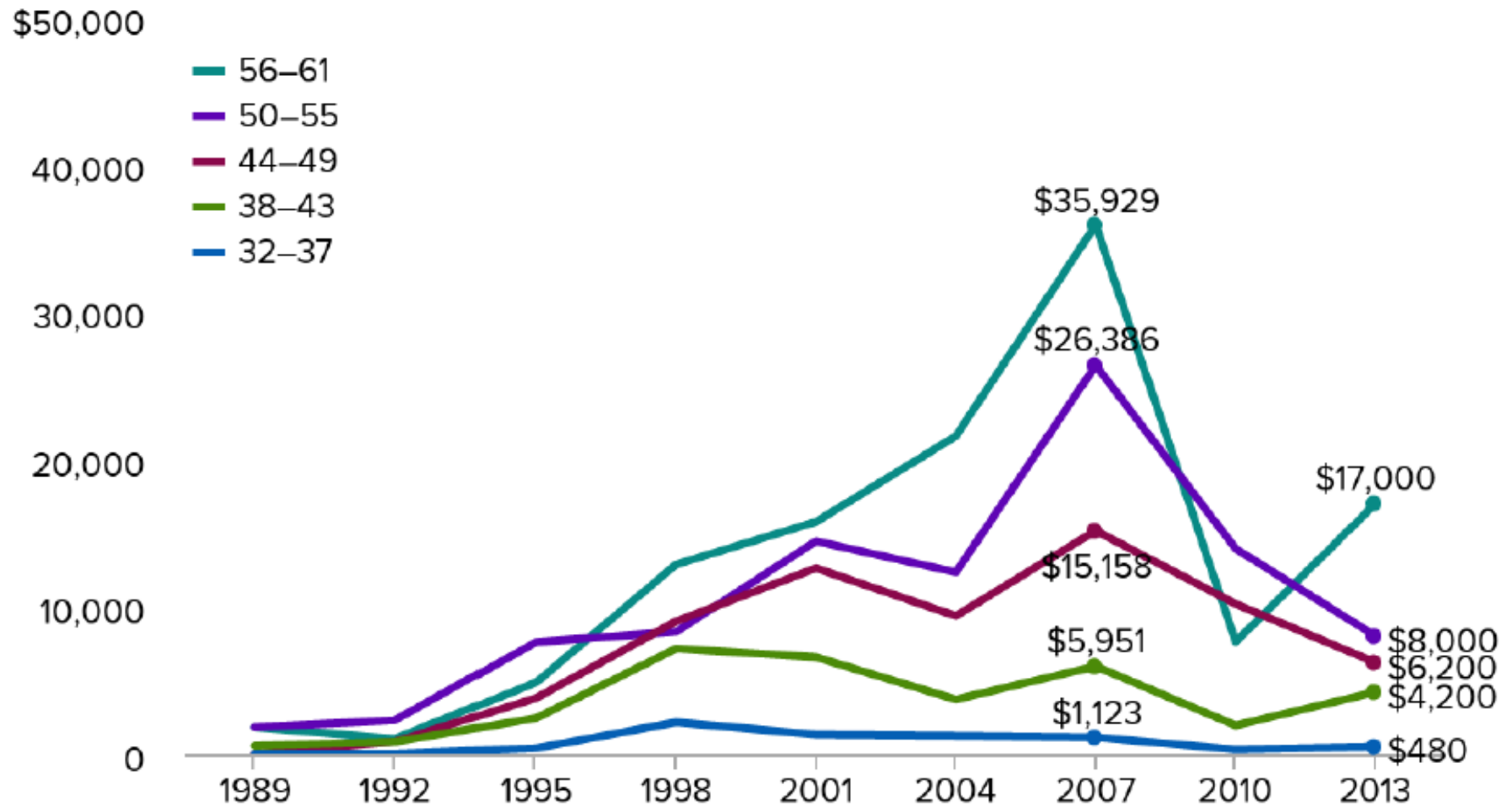


Sources: Citi, "The Coming Pensions Crisis," March 2016; Investment Company Institute (ICI).

- The cost of supporting retirees is shifting from the many to the few, particularly in China.
- Within the US, the retirement wealth accumulation is shifting from a group risk/insurance model (i.e.—Defined Benefit plans) to an individual risk model (i.e.—IRAs, Defined Contribution plans).

Why DB Plans matter: people save too little to retire

Median retirement account savings¹ of families by age, 1989-2013 (in 2013 dollars)

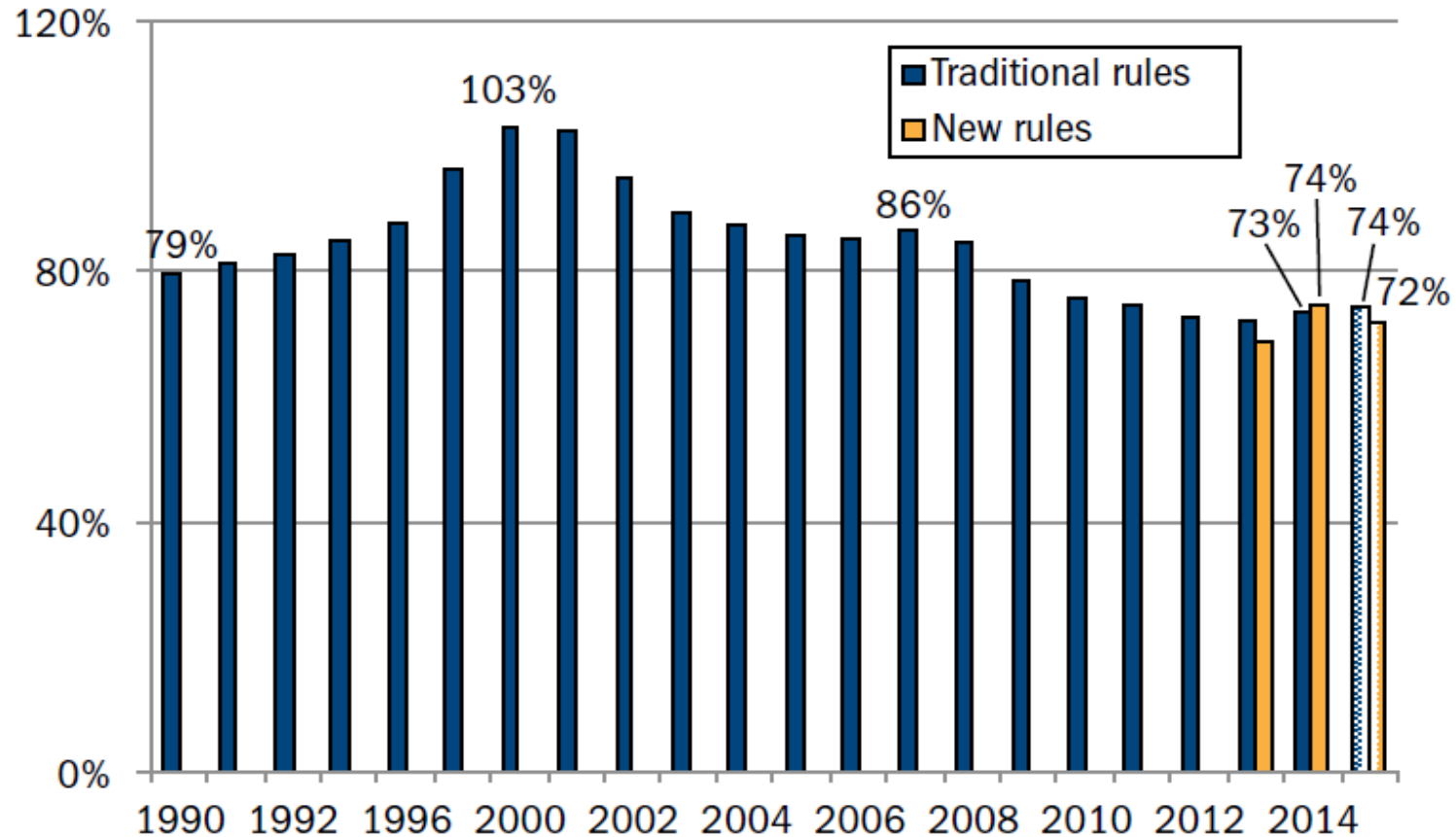


¹ Retirement account savings include 401(k)s, IRAs, and Keogh plans

Source: Economic Policy Institute analysis of "Survey of Consumer Finances" data, 2013. The Survey is conducted every three years for the Federal Reserve Board. The 2016 survey is expected to be conducted from April through December 2016.

The State of Public Pension Funds, Fiscal Years 1990 - 2015

Nearly two-thirds of public pension plans (65%) remain below 80% funded.



Sources: The Center for State & Local Government Excellence, "The Funding of State and Local Pensions: 2015 – 2020." 2015 actuarial valuations; Public Plans Database (2001-2015); "Survey of State and Local Government Retirement Systems," Zorn (1990-2000).

- The survey covered 160 public pension plans with \$3.2 trillion in assets and \$4.5 trillion in liabilities as determined using the new GASB 67 rules.
- The 'average' discount rate used by Public Plans dropped from 8.1% in 2001 to 7.6% in 2015.

How big is the post-retirement bill?

A relative comparison of the 50 states' payment obligations

The state of the states: how much states spend on debt, pensions and retiree healthcare

% of state revenue collections required to pay the sum of interest on bonds, the state's share of unfunded pension and retiree healthcare liabilities, and defined contribution plan payments



Source: J.P. Morgan Asset Management, state/pension plan Comprehensive Annual Financial Reports, Census, Loop Capital Markets. FY 2015.

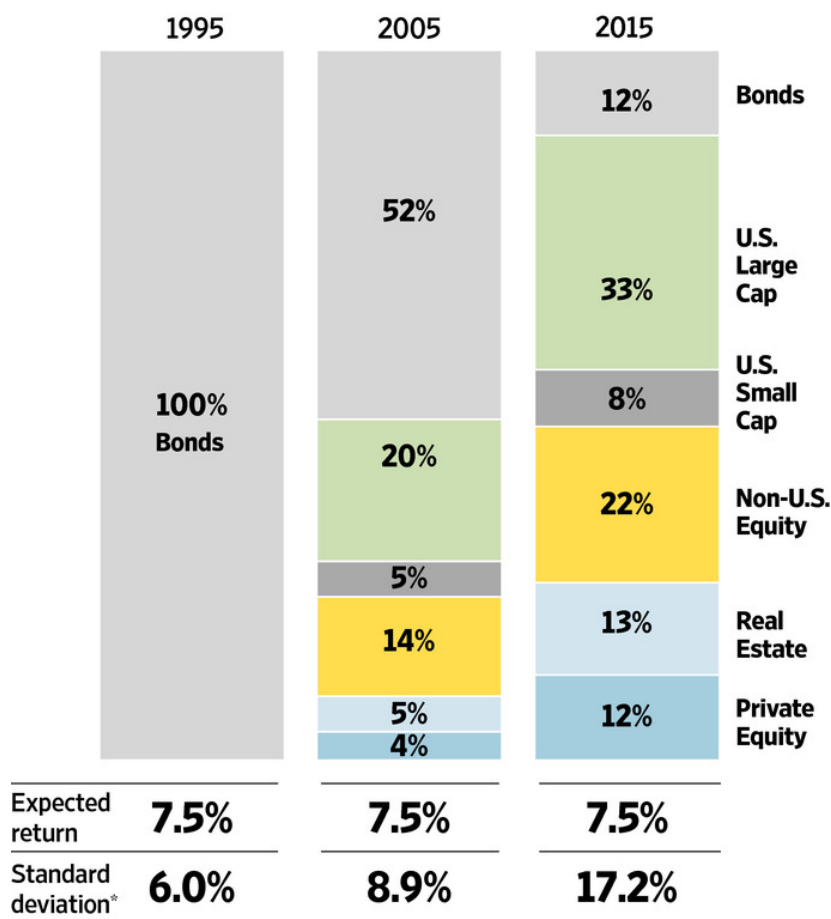
- Bars that appear above the **red line** indicate a level at which states face critical challenges in meeting an ability to service their debt and post-retirement benefit obligations.
- Bars that appear below the **green line** identify states not viewed as requiring “a disproportionate share of revenues to service their debts.”
- Note that Alaska’s overall funding obligations are comparatively manageable (14th from the left).

A lot has changed in 20 years

Rolling the Dice

Investors grappling with lower interest rates have to take bigger risks if they want to equal returns of two decades ago.

Estimates of what investors needed to earn 7.5%



*Likely amount by which returns could vary

Source: Callan Associates

THE WALL STREET JOURNAL.

- As the Wall Street Journal said in an article published on May 31, 2016:

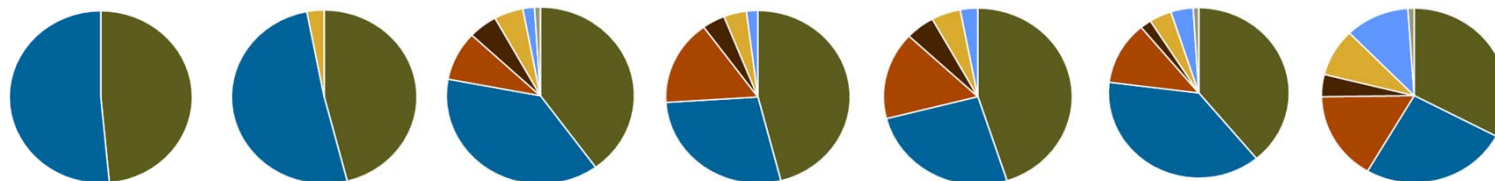
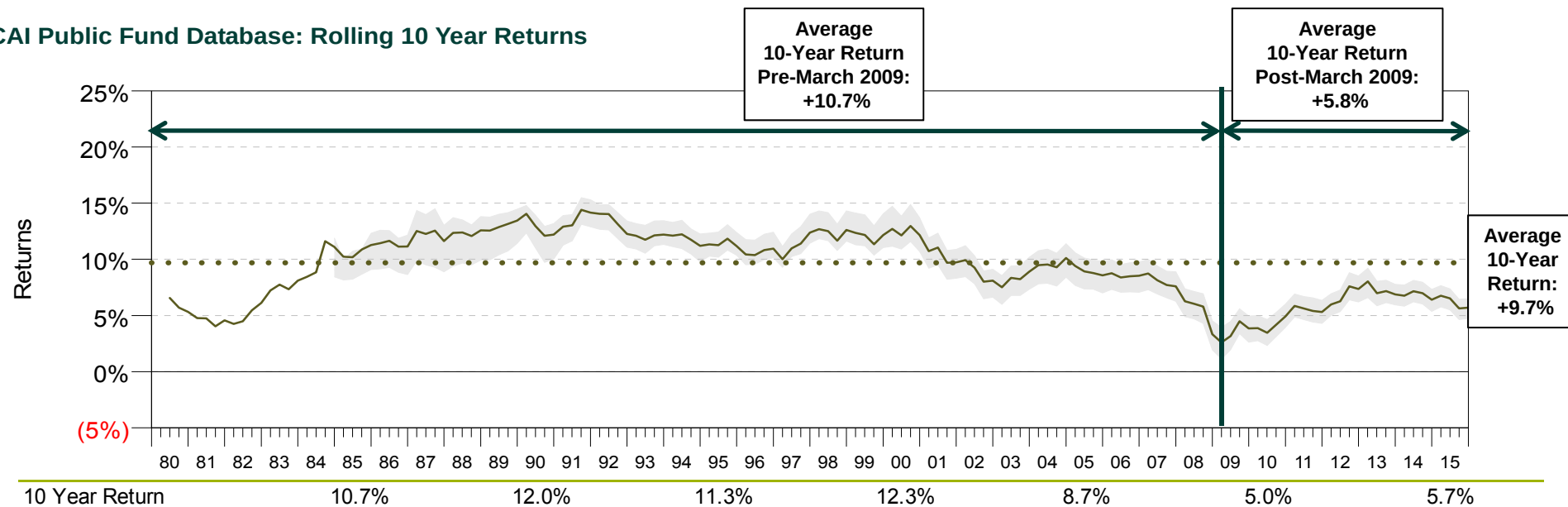
“What it means to be a successful investor in 2016 can be summed up in four words: **bigger gambles, lower returns.**”

- The chart to the left indicates that an investor could have achieved a 7.5% return by investing 100% of Plan assets in fixed-income in 1995.
- To achieve a 7.5% return in 2005, nearly half the assets would have to have been invested in return-seeking (i.e.—equity) assets. The volatility for that same return would have gone up by half: from 6.0% in 1995 to 8.9% in 2005.
- In 2015, an investor would have had to invest nearly 90% of Plan assets in riskier assets than bonds to achieve a 7.5% return. And the commensurate expected volatility would have **tripled**.

Historical Public Fund Asset Allocation and Returns

Lower returns but higher investment costs?

CAI Public Fund Database: Rolling 10 Year Returns



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

Allocations are as of December 31 of the applicable year.

Source: Callan

Role of Asset Classes/Strategies

- Capital Accumulation

- U.S. equity
- Non-U.S. equity
- Emerging markets
- Private equity
- High yield
- Public/private real estate

- Diversification/Expand Opportunity Set

- TIPS
- High yield
- Non-U.S. equity
- Emerging markets
- Global
- Non-U.S. fixed income
- Commodities
- Private equity
- Private real estate
- Hedge funds
- Infrastructure
- Timber

- Lower Volatility

- Stable value
- Short duration fixed income
- Hedge funds

- Flight to Quality

- Treasury bonds
- Cash equivalents

- Alpha Generation

- Small/Mid Cap U.S. equity
- Non-U.S. equity
- Emerging markets
- Private equity
- Private real estate
- Hedge funds

- Inflation hedge

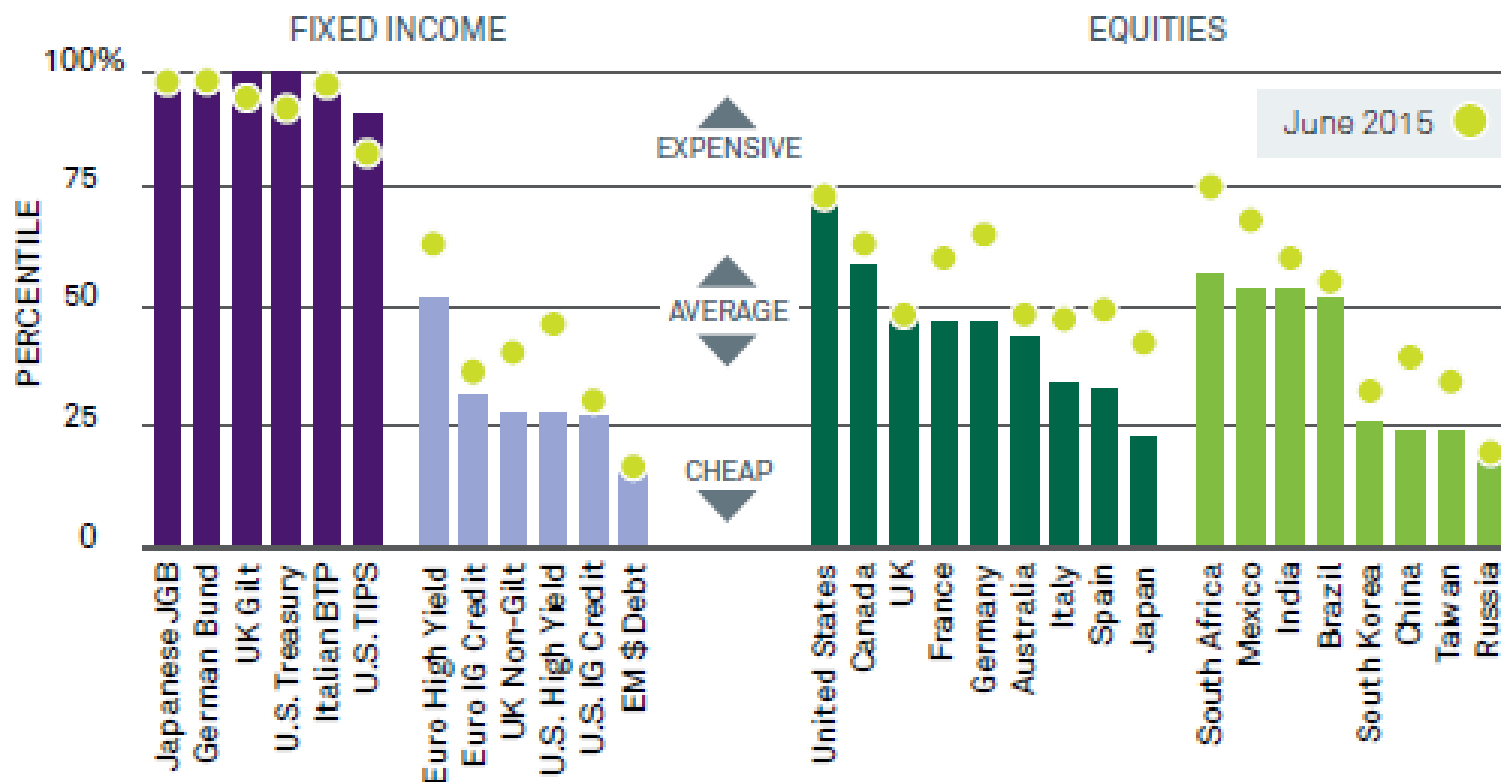
- TIPS
- REITs
- Private real estate
- Infrastructure
- Commodities
- Timber
- Equity
- Other real assets

Note: Colored strategies denote illiquid investments

As of June 2016: few bargains in which to invest

Maybe European credit? How's your appetite for emerging market equities?

Valuations by Percentile vs. Historical Norms, June 2016



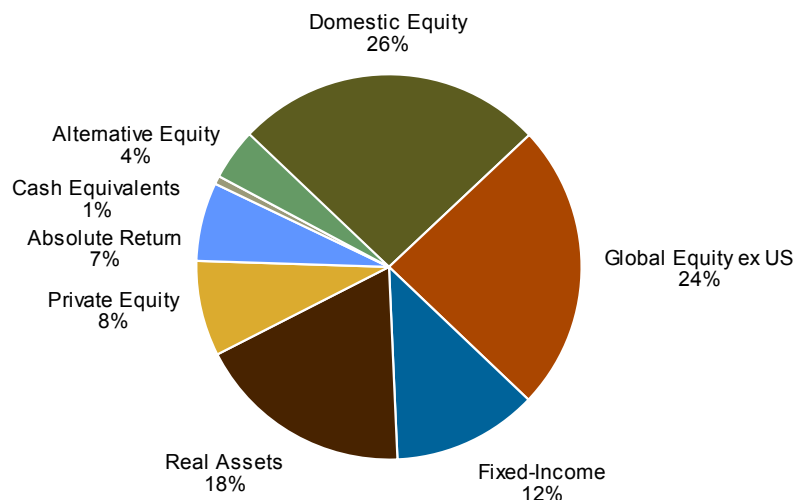
Sources: Blackrock Investment Institute, "Global Investment Outlook: Midyear 2016" and Thomson Reuters, June 2016.

- Dots illustrate where valuations were on an historical basis one year ago, as of June 30, 2015.
- "Government Bonds" are 10-year benchmark issues.
- Fixed income credit series reflect Barclays indices and the spread over government bonds.
- Equity valuations are based on MSCI index series data.

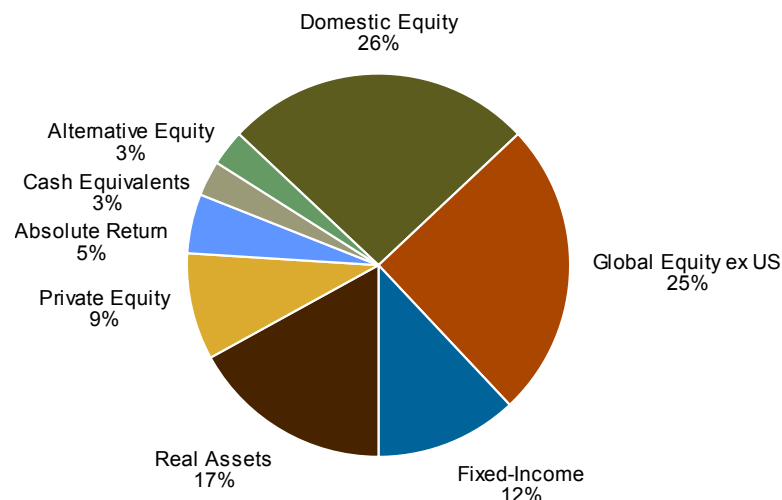
Asset Allocation – Public Employees’ Retirement System

Quarter Ending June 30, 2016

Actual Asset Allocation



Target Asset Allocation



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	2,143,940	26.1%	26.0%	0.1%	6,652
Global Equity ex US	1,982,608	24.1%	25.0%	(0.9%)	(72,477)
Fixed-Income	1,003,689	12.2%	12.0%	0.2%	17,248
Real Assets	1,488,945	18.1%	17.0%	1.1%	91,487
Private Equity	655,867	8.0%	9.0%	(1.0%)	(83,963)
Absolute Return	541,239	6.6%	5.0%	1.6%	130,222
Cash Equivalents	54,115	0.7%	3.0%	(2.3%)	(192,495)
Alternative Equity	349,936	4.3%	3.0%	1.3%	103,326
Total	8,220,340	100.0%	100.0%		

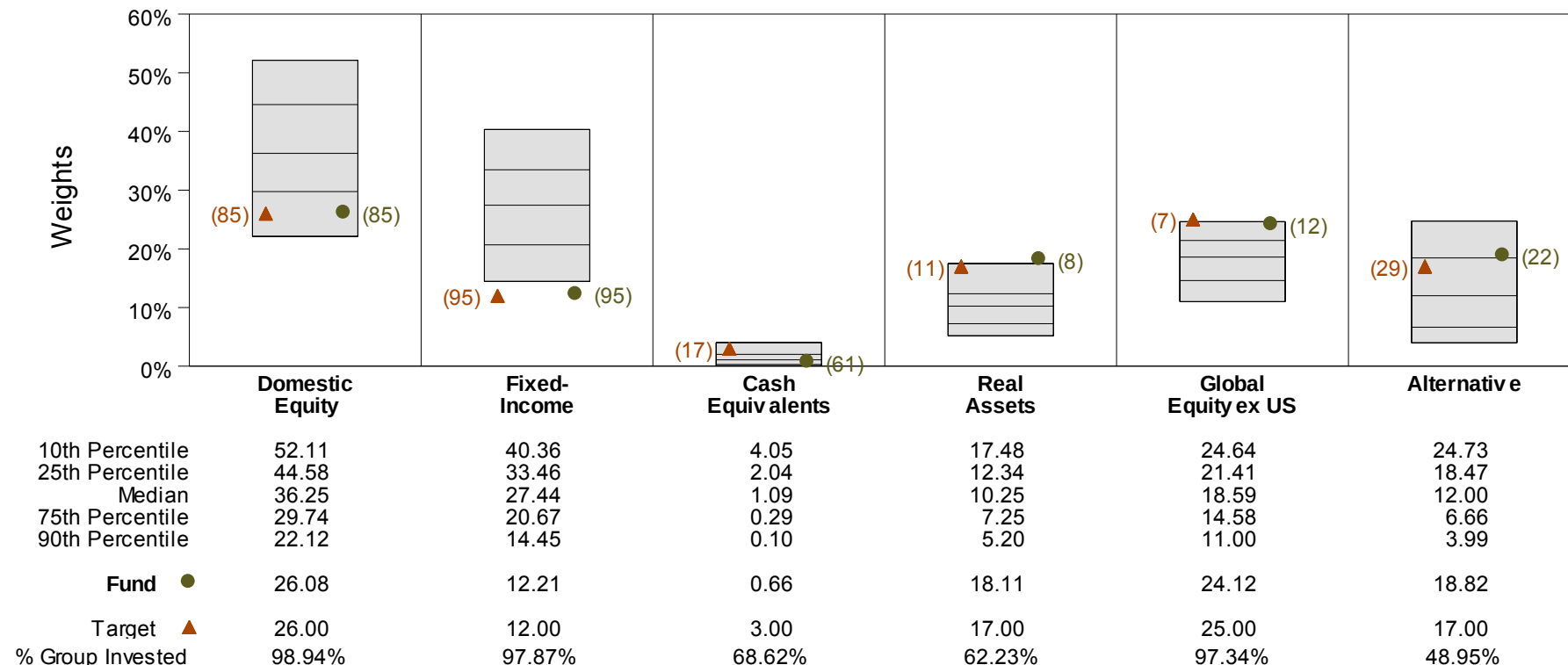
PERS is used as illustrative throughout the presentation.

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

Asset Allocation vs. Public Funds (PERS)

Callan Public Fund Database

Asset Class Weights vs CAI Public Fund Sponsor Database



- Total domestic equity is nearly at target while international equity lags the target. Fixed is above target, yet a low allocation when compared to other public funds. Real assets are high when compared to other public funds. Policy is “growth” oriented as opposed to “income” oriented.

*Note that “Alternative” includes private equity and absolute return

PERS Performance – 2nd Quarter 2016 & Trailing Year

Relative Attribution Effects for Quarter ended June 30, 2016

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return	Target Return	Manager Effect	Asset Allocation	Total Relative Return
Domestic Equity	26%	26%	2.41%	2.63%	(0.06%)	(0.00%)	(0.06%)
Fixed-Income	12%	12%	2.69%	1.98%	0.09%	0.00%	0.09%
Real Assets	18%	17%	3.81%	2.38%	0.25%	0.00%	0.26%
Global Equity ex US	25%	25%	(0.79%)	(0.40%)	(0.10%)	0.00%	(0.10%)
Private Equity	8%	9%	0.11%	1.59%	(0.12%)	(0.00%)	(0.12%)
Absolute Return	6%	5%	2.02%	1.30%	0.05%	(0.00%)	0.04%
Alternative Equity	4%	3%	2.08%	3.27%	(0.05%)	0.02%	(0.03%)
Cash Equivalents	1%	3%	0.21%	0.07%	0.00%	0.02%	0.03%
Total			1.64%	= 1.53%	+ 0.07%	+ 0.04%	0.10%

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	26%	26%	0.58%	2.14%	(0.40%)	(0.02%)	(0.43%)
Fixed-Income	12%	12%	5.15%	4.47%	0.07%	(0.03%)	0.04%
Real Assets	18%	17%	4.76%	8.87%	(0.71%)	0.06%	(0.65%)
Global Equity ex US	24%	25%	(9.15%)	(9.80%)	0.17%	0.03%	0.20%
Private Equity	8%	9%	4.71%	(4.41%)	0.69%	0.09%	0.79%
Absolute Return	6%	5%	(3.09%)	5.19%	(0.49%)	0.03%	(0.46%)
Alternative Equity	4%	3%	3.41%	2.09%	0.05%	0.03%	0.08%
Cash Equivalents	1%	3%	0.55%	0.19%	0.00%	0.01%	0.02%
Total			(0.36%)	= 0.05%	+ (0.62%)	+ 0.21%	(0.41%)

PERS Performance – 2nd Quarter 2016 & Fiscal Year

Net of Fees

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return*	Actual Net Return	Target Return	Total Relative Net Return
Domestic Equity	26%	26%	2.41%	2.36%	2.63%	(0.27%)
Fixed Income	12%	12%	2.69%	2.64%	1.98%	0.66%
Real Assets	18%	17%	3.81%	3.80%	2.38%	1.42%
Global Equity ex US	25%	25%	(0.79%)	(0.87%)	(0.40%)	(0.47%)
Private Equity	8%	9%	0.11%	0.05%	1.59%	(1.54%)
Absolute Return	6%	5%	2.02%	2.02%	1.30%	0.72%
Alternative Equity	4%	3%	2.08%	2.02%	3.27%	(1.25%)
Cash Equivalents	1%	3%	0.21%	0.21%	0.07%	0.14%
Total			1.64%	1.59%	1.53%	0.06%

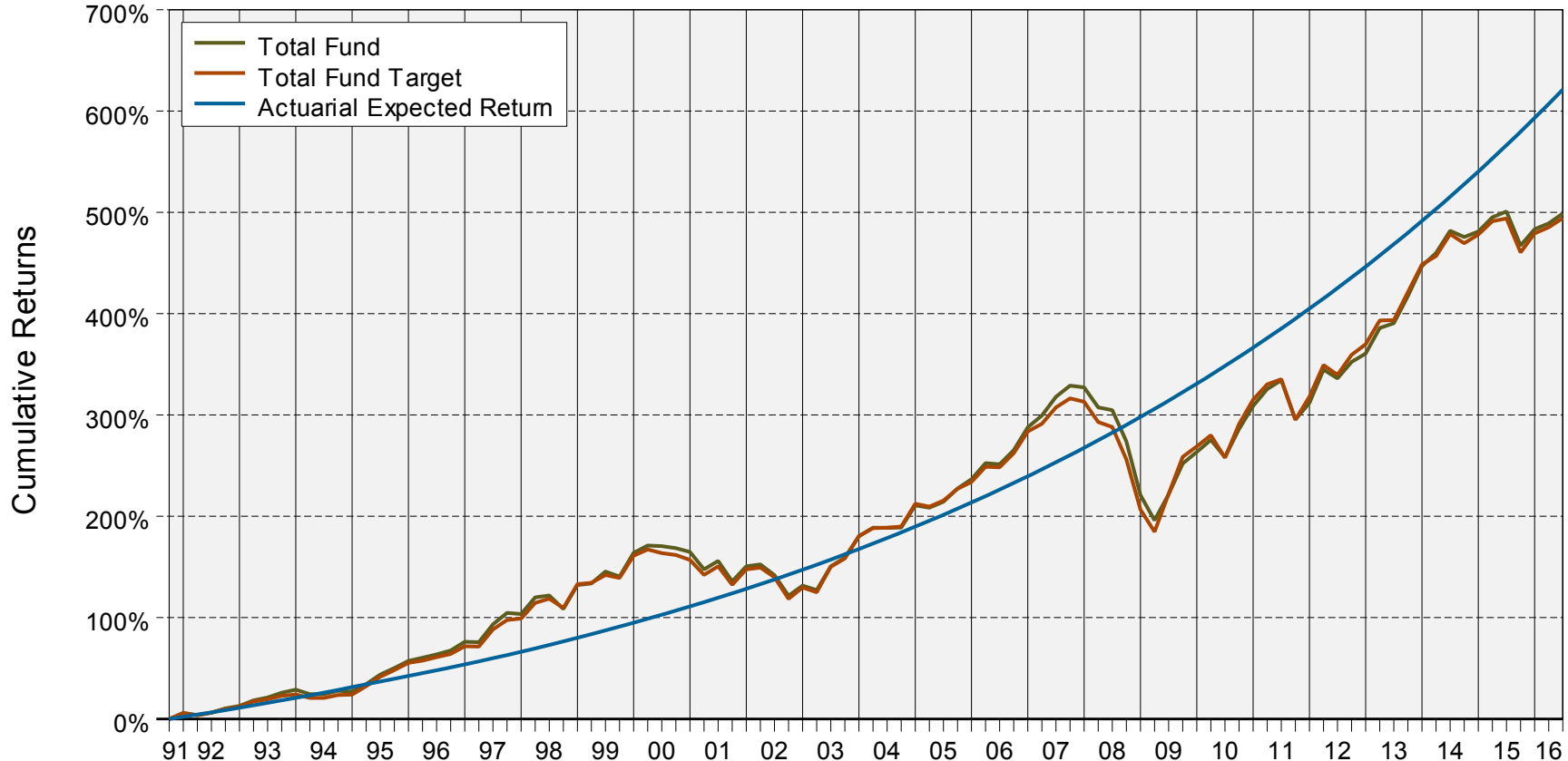
Relative Returns for One Year ended June 30, 2016

Asset Class	Effective Actual Weight	Effective Target Weight	Actual Return*	Actual Net Return	Target Return	Total Relative Net Return
Domestic Equity	26%	26%	0.58%	0.38%	2.14%	(1.76%)
Fixed Income	12%	12%	5.15%	4.93%	4.47%	0.46%
Real Assets	18%	17%	4.76%	4.66%	8.87%	(4.21%)
Global Equity ex US	24%	25%	(9.15%)	(9.42%)	(9.80%)	0.38%
Private Equity	8%	9%	4.71%	4.45%	(4.41%)	8.86%
Absolute Return	6%	5%	(3.09%)	(3.09%)	5.19%	(8.28%)
Alternative Equity	4%	3%	3.41%	3.19%	2.09%	1.10%
Cash Equivalents	1%	3%	0.55%	0.55%	0.19%	0.36%
Total			(0.36%)	(0.55%)	0.05%	(0.60%)

* “Actual Return” includes impact of fees for Absolute Return strategies, partnership-level fees for Private Equity Fund-of-Funds, all private Real Asset investments, and any commingled vehicle that reports on a net of fee basis (i.e. mutual funds)..

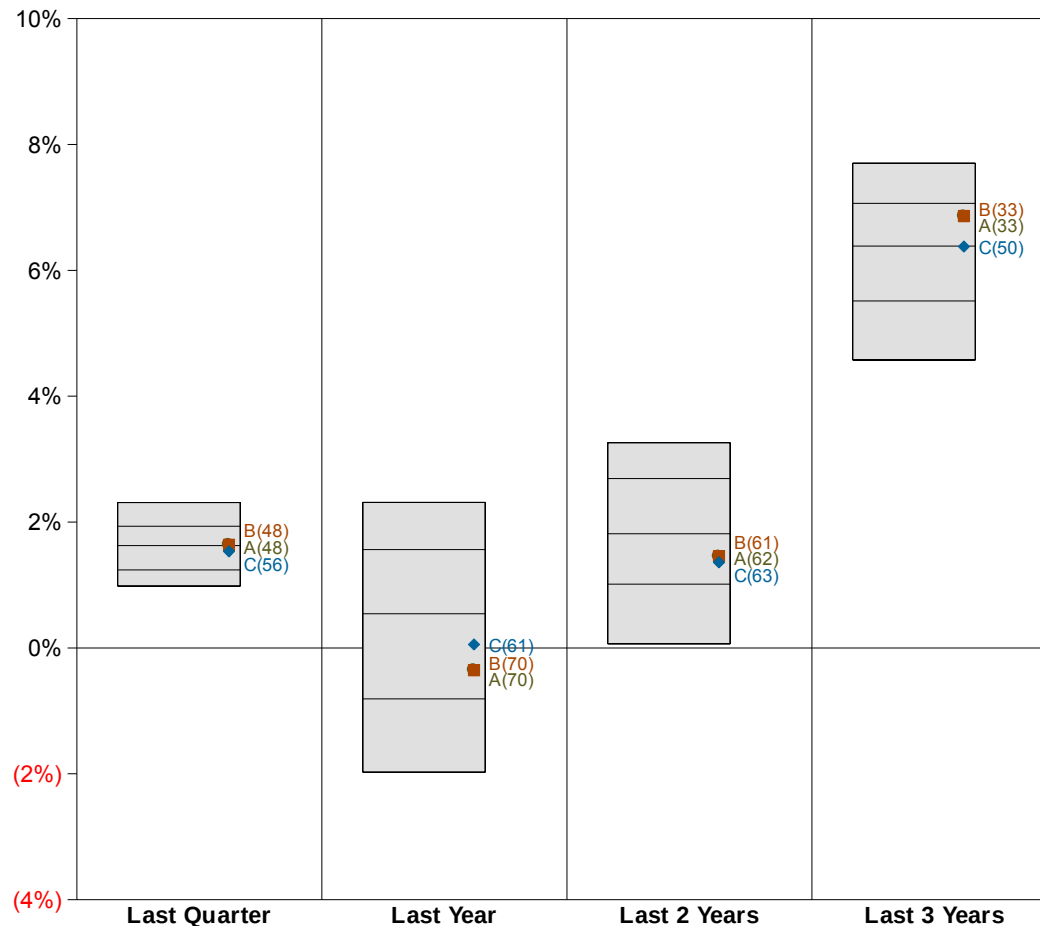
PERS Long-Term Performance as of 6/30/16

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.
- Since the volatile 2008/2009 period, the Total Fund performance has been closing the gap versus the actuarial return with a temporary setback in the third calendar quarter of 2015.

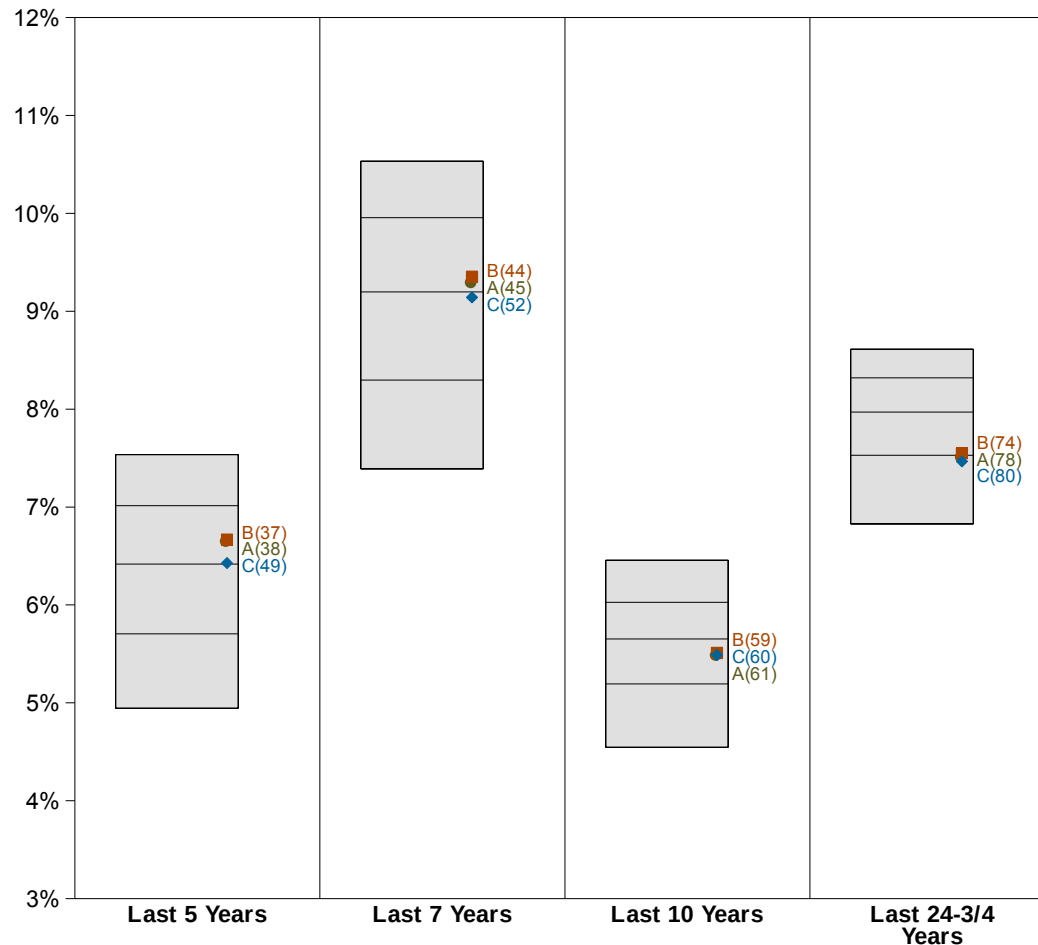
Cumulative Total Fund Returns as of 6/30/16



- PERS and TRS have outperformed their target for the last quarter, two, and three year time frames.
- 2nd quarter performance beats the target by 11 basis points.

	Last Quarter	Last Year	Last 2 Years	Last 3 Years
10th Percentile	2.31	2.31	3.26	7.70
25th Percentile	1.93	1.56	2.69	7.06
Median	1.62	0.54	1.81	6.39
75th Percentile	1.24	(0.81)	1.01	5.51
90th Percentile	0.98	(1.97)	0.06	4.57
PERS Total Plan ● A	1.64	(0.36)	1.45	6.86
TRS Total Plan ■ B	1.64	(0.35)	1.45	6.86
Target Index ◆ C	1.53	0.05	1.36	6.38

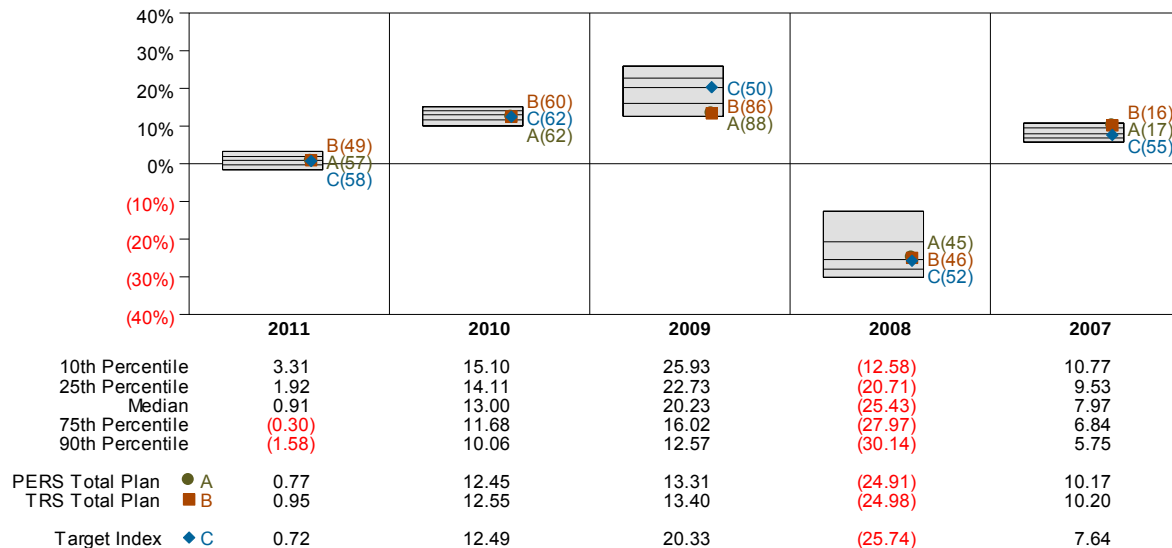
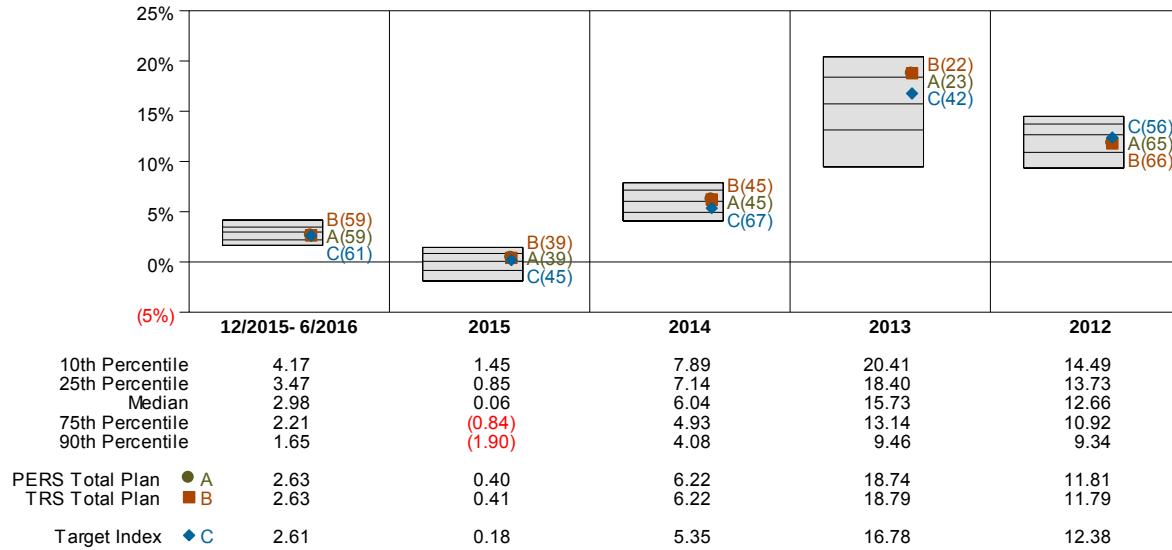
Longer-Term Returns as of 6/30/16



10th Percentile	7.53	10.53	6.46	8.61
25th Percentile	7.02	9.96	6.03	8.32
Median	6.42	9.20	5.65	7.97
75th Percentile	5.70	8.30	5.19	7.53
90th Percentile	4.94	7.39	4.55	6.83
PERS Total Plan ● A	6.64	9.28	5.47	7.50
TRS Total Plan ■ B	6.67	9.35	5.51	7.55
Target Index ◆ C	6.43	9.14	5.49	7.47

- Five-year performance is above target and median.
- Seven-year performance still affected by 2009 timing related issues.
- 10-year return a bit below median. PERS slightly trails the target return.
- 24 ³/₄ -year return beats target.

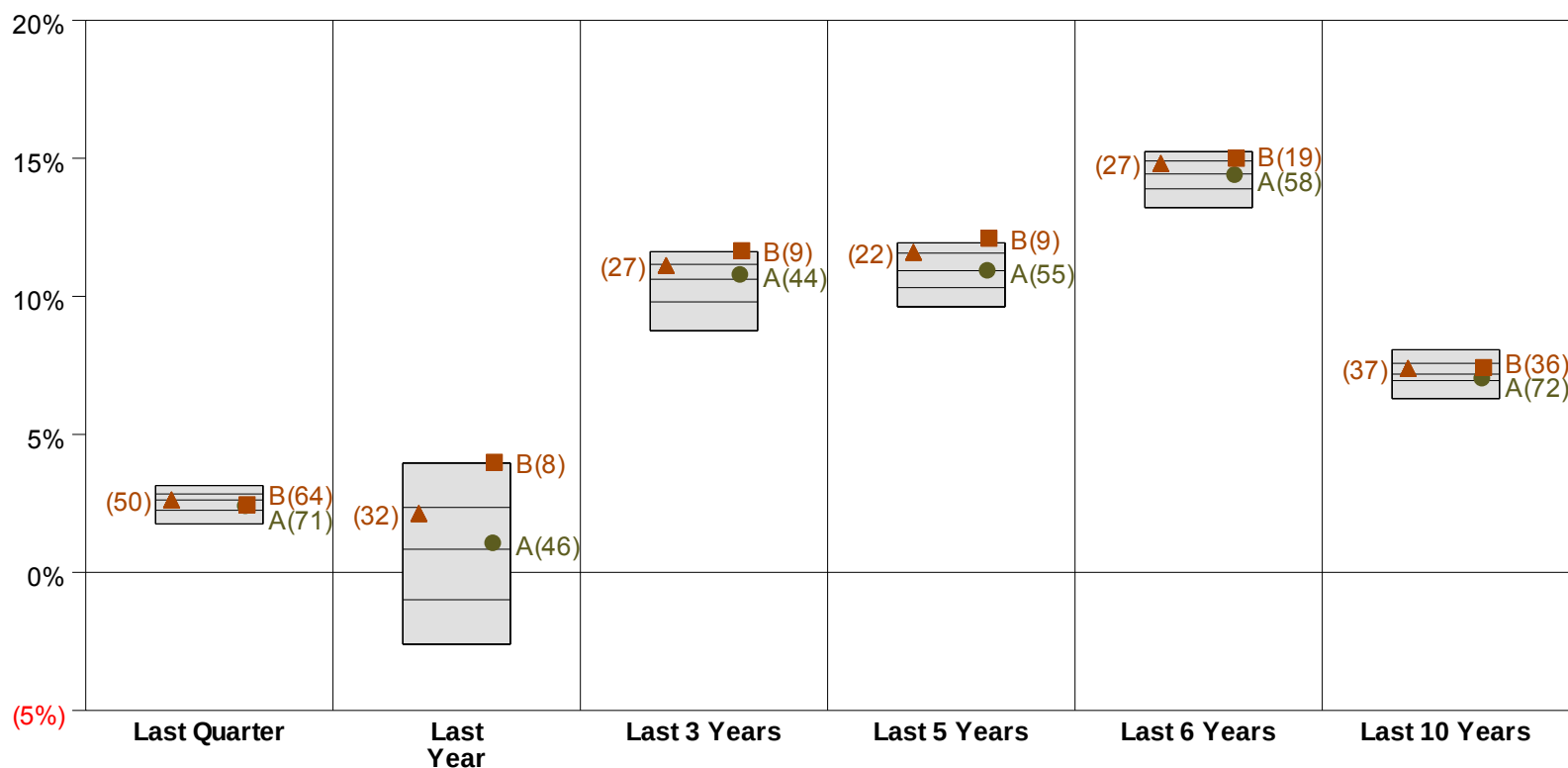
Calendar Period Performance



- PERS and TRS had the same return during 2014.
- Peer group range of returns during 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.
- PERS ranks above median in five and TRS ranks above median in six of the ten periods shown.

Total Domestic Equity through 6/30/16

Performance vs Pub Pln- Domestic Equity (Gross)



10th Percentile	3.14	3.96	11.61	11.94	15.24	8.07	
25th Percentile	2.84	2.36	11.16	11.57	14.91	7.57	
Median	2.63	0.84	10.62	10.93	14.44	7.18	
75th Percentile	2.25	(0.99)	9.80	10.32	13.90	6.94	
90th Percentile	1.76	(2.60)	8.75	9.62	13.21	6.30	
Domestic Equity Pool	● A	2.35	1.01	10.73	10.88	14.34	6.98
Standard							
& Poor's 500	■ B	2.46	3.99	11.66	12.10	15.00	7.42
Russell 3000 Index	▲	2.63	2.14	11.13	11.60	14.82	7.40

Domestic Equity Component Returns

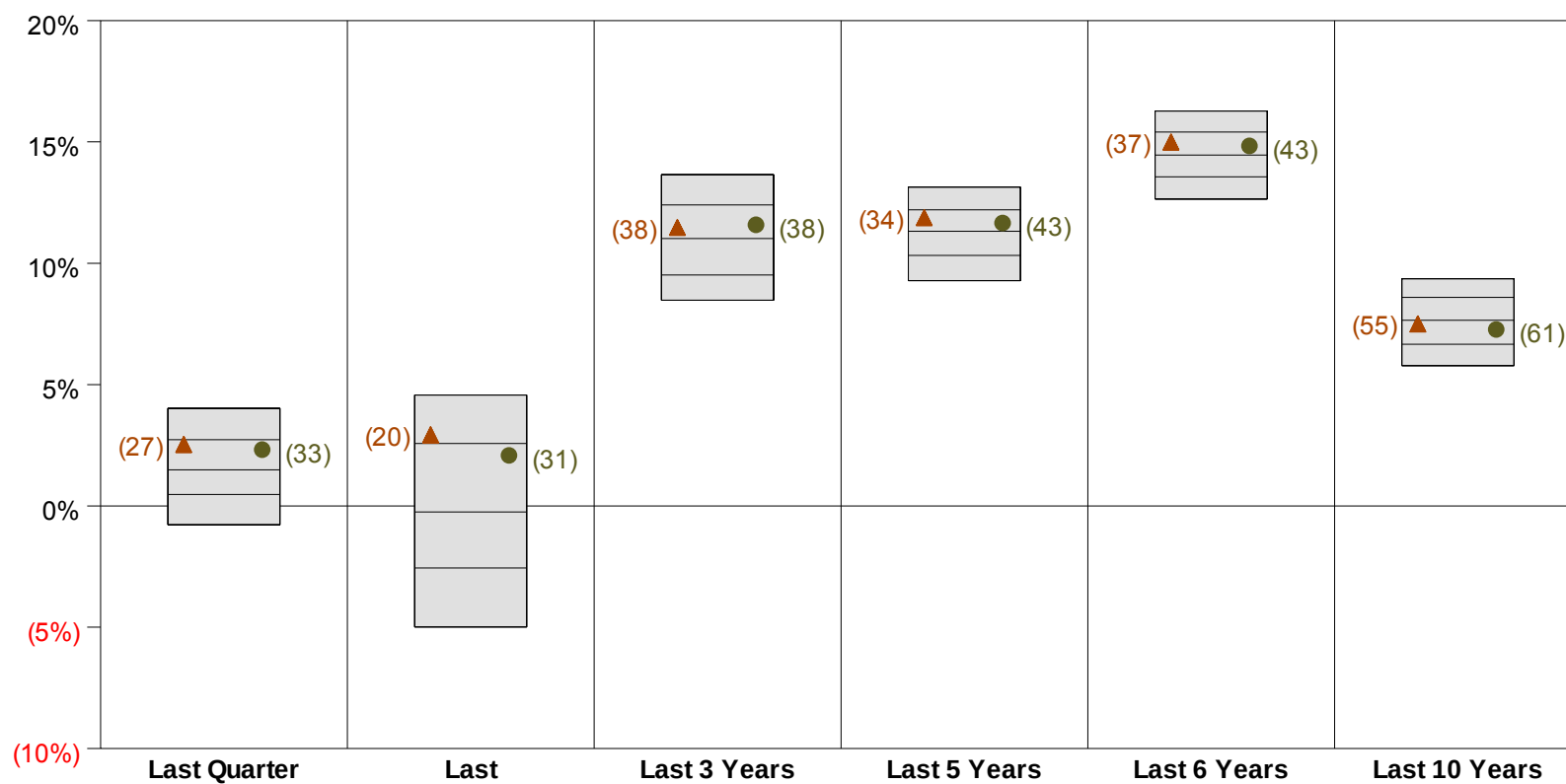
Returns for Periods Ended June 30, 2016

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 6 Years
Total Dom Equity Pool	2.35%	1.01%	10.73%	10.88%	14.34%
Russell 3000 Index	2.63%	2.14%	11.13%	11.60%	14.82%
Large Cap Managers	2.24%	2.00%	11.50%	11.58%	14.76%
Large Cap Active	1.61%	(0.81%)	11.10%	10.83%	14.39%
Large Cap Passive	2.41%	3.14%	11.58%	12.00%	14.87%
Russell 1000 Index	2.54%	2.93%	11.48%	11.88%	15.00%
Small Cap Managers	3.77%	(6.56%)	7.81%	8.87%	13.31%
Small Cap Active	3.69%	(7.97%)	7.62%	8.78%	13.78%
Small Cap Passive	4.43%	2.05%	8.55%	9.24%	12.68%
Russell 2000 Index	3.79%	(6.73%)	7.09%	8.35%	12.73%
Alternative Equity	2.08%	3.54%	8.24%	7.13%	9.18%

- Newly adopted policy (effective 7-1-13) alters cosmetics of “true” traditional active & passive returns.
 - *Alternative Equity* category includes defensive equity oriented portfolios, including the Analytic Buy/Write portfolio, QMA Market Participation strategy, and in-house equity yield portfolio.
- Alternative Equity continues to mute overall volatility within the equity portfolio.
- Alternative equity performance contributed positively to the Total Domestic Equity portfolio during quarter.

Large Cap Domestic Equity Pool through 6/30/16

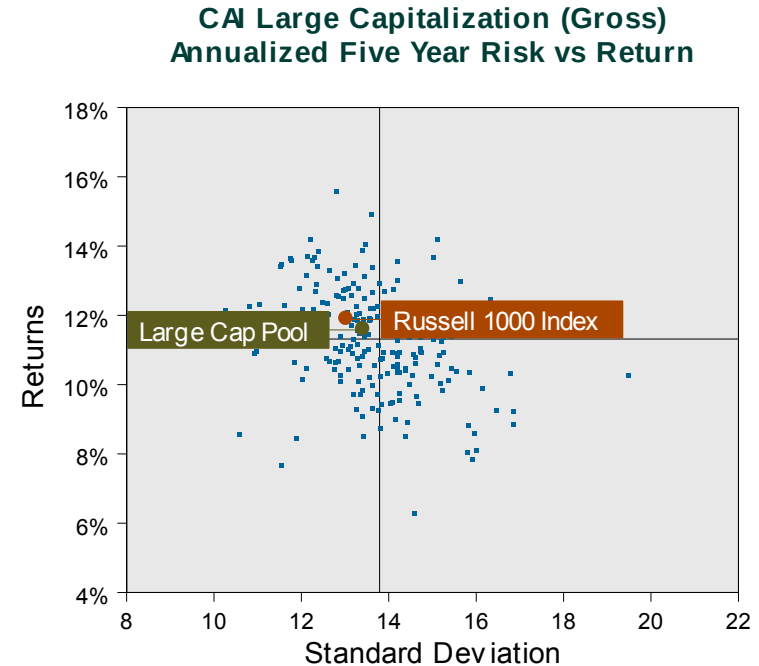
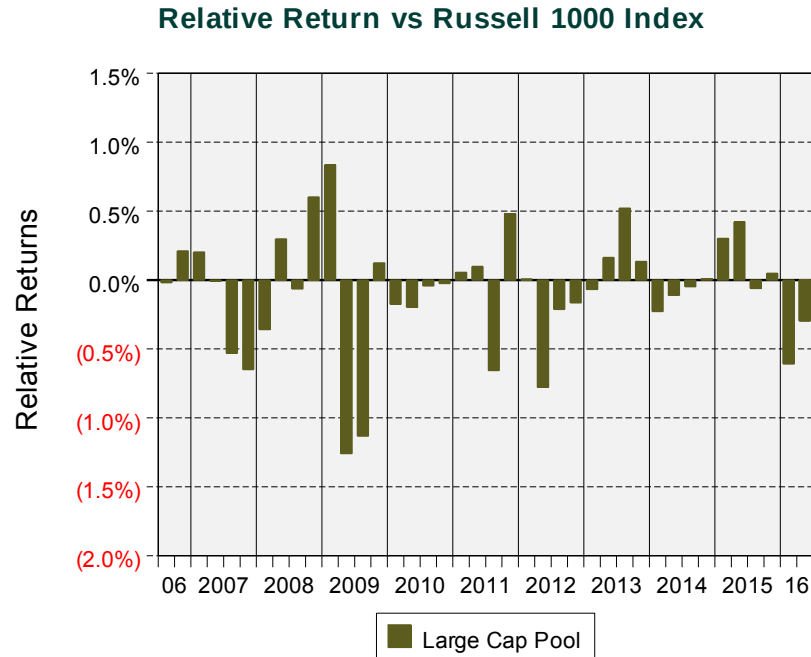
Performance vs CAI Large Capitalization (Gross)



10th Percentile	4.02	4.57	13.66	13.14	16.28	9.36
25th Percentile	2.73	2.57	12.41	12.20	15.41	8.59
Median	1.49	(0.25)	11.02	11.32	14.46	7.66
75th Percentile	0.47	(2.56)	9.52	10.33	13.56	6.66
90th Percentile	(0.78)	(4.99)	8.48	9.29	12.65	5.78

Large Cap Pool ●	2.24	2.00	11.50	11.58	14.76	7.20
Russell 1000 Index ▲	2.54	2.93	11.48	11.88	15.00	7.51

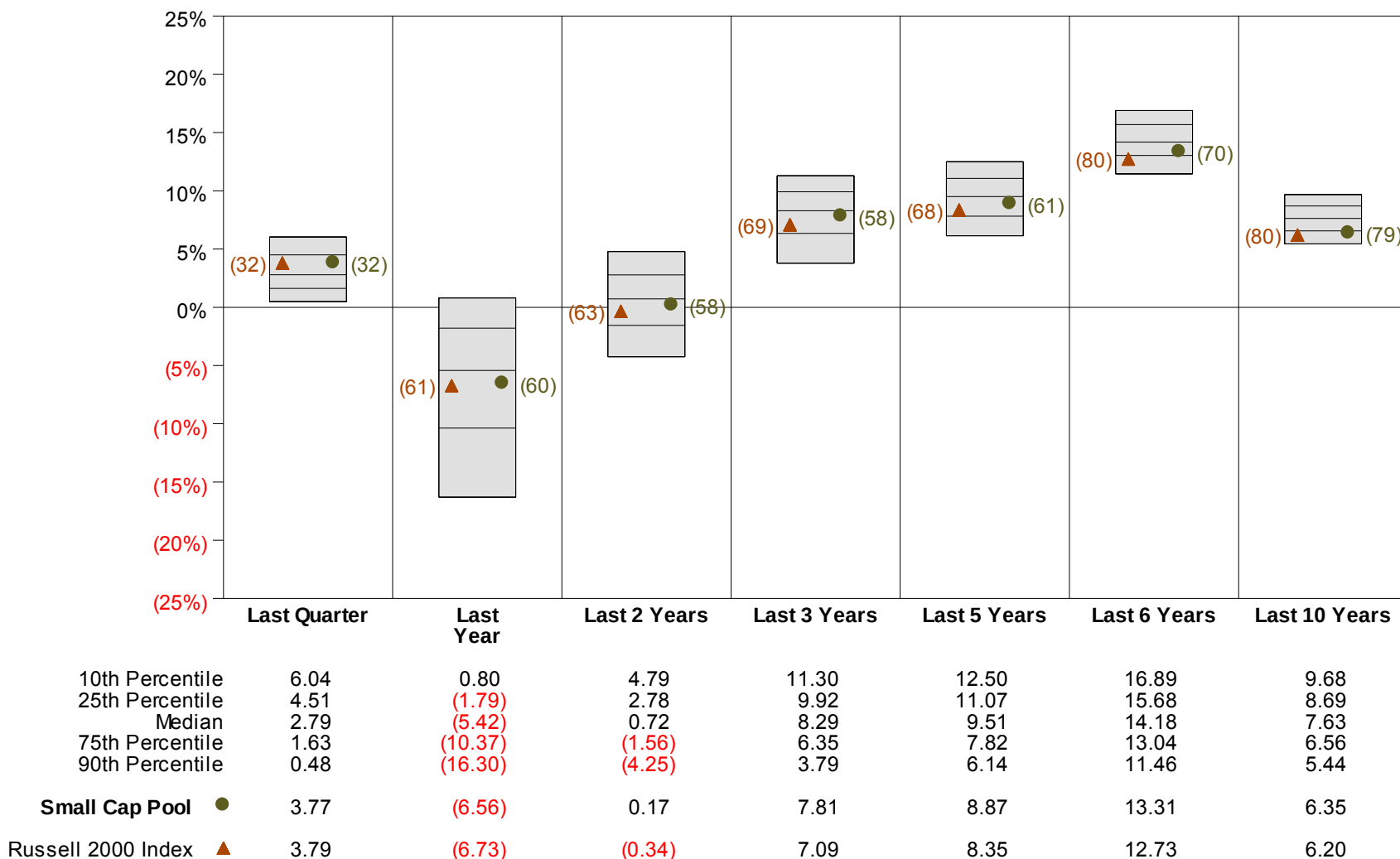
Large Cap Domestic Equity Pool as of 6/30/16



- Nearly two-thirds of the Large Cap Domestic Equity allocation is passively managed.
- As expected, long-term performance reflects market-like returns with similar risk.

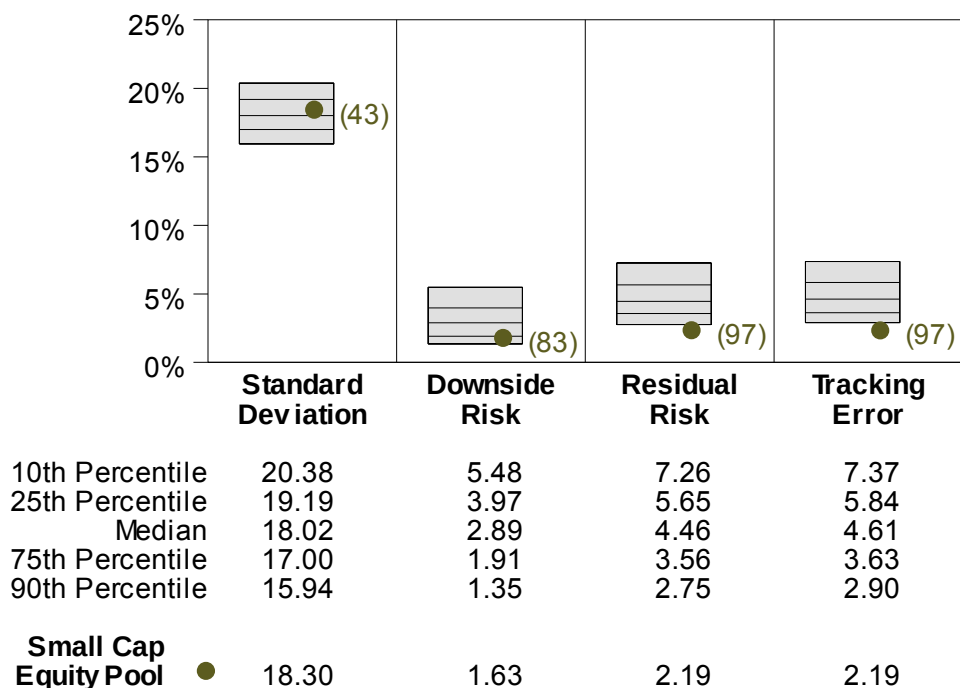
Small Cap Domestic Equity Pool through 6/30/16

Performance vs CAI Small Capitalization (Gross)

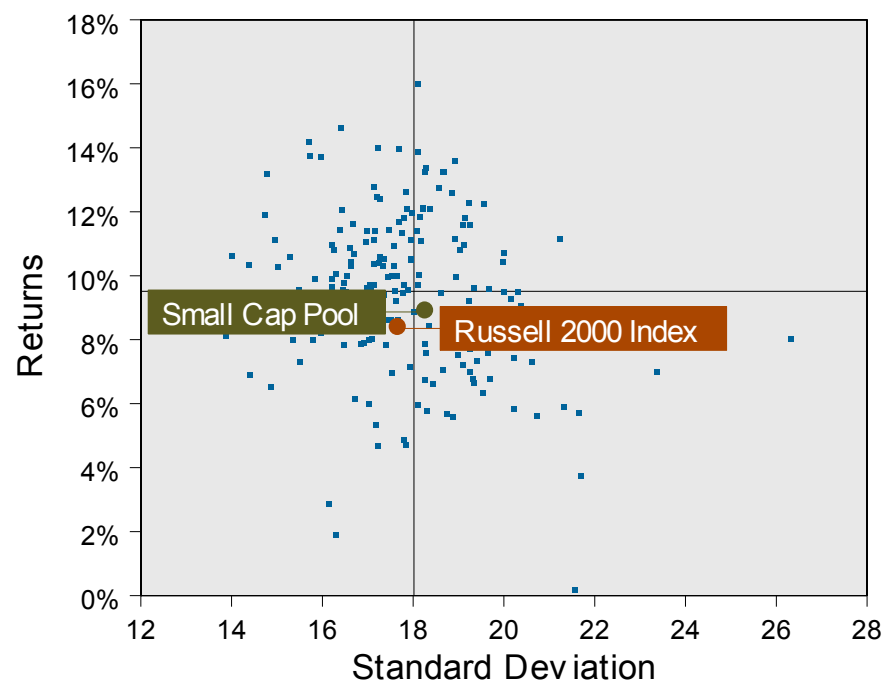


- The Small Cap Equity Pool's results compare favorably versus the index across all time periods.
- Peer group rankings are below median for cumulative periods beyond the current quarter.

Small Cap Pool through 6/30/16



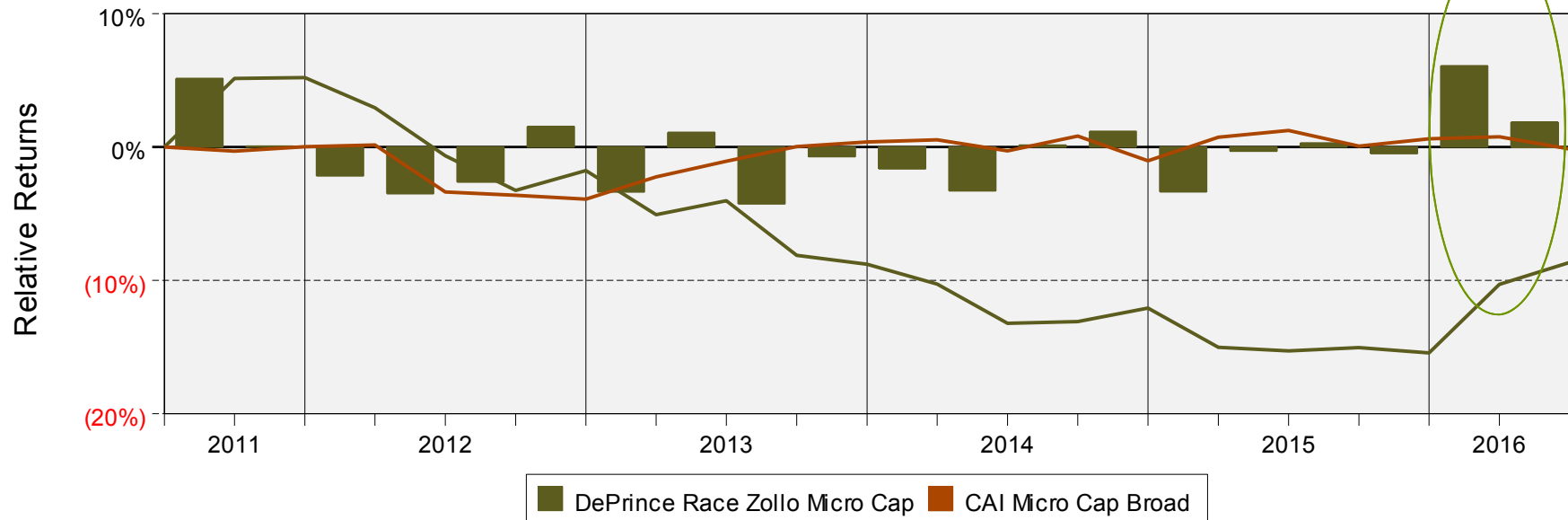
CAI Small Capitalization (Gross)
Annualized Five Year Risk vs Return



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

DePrince, Race & Zollo MicroCap Value

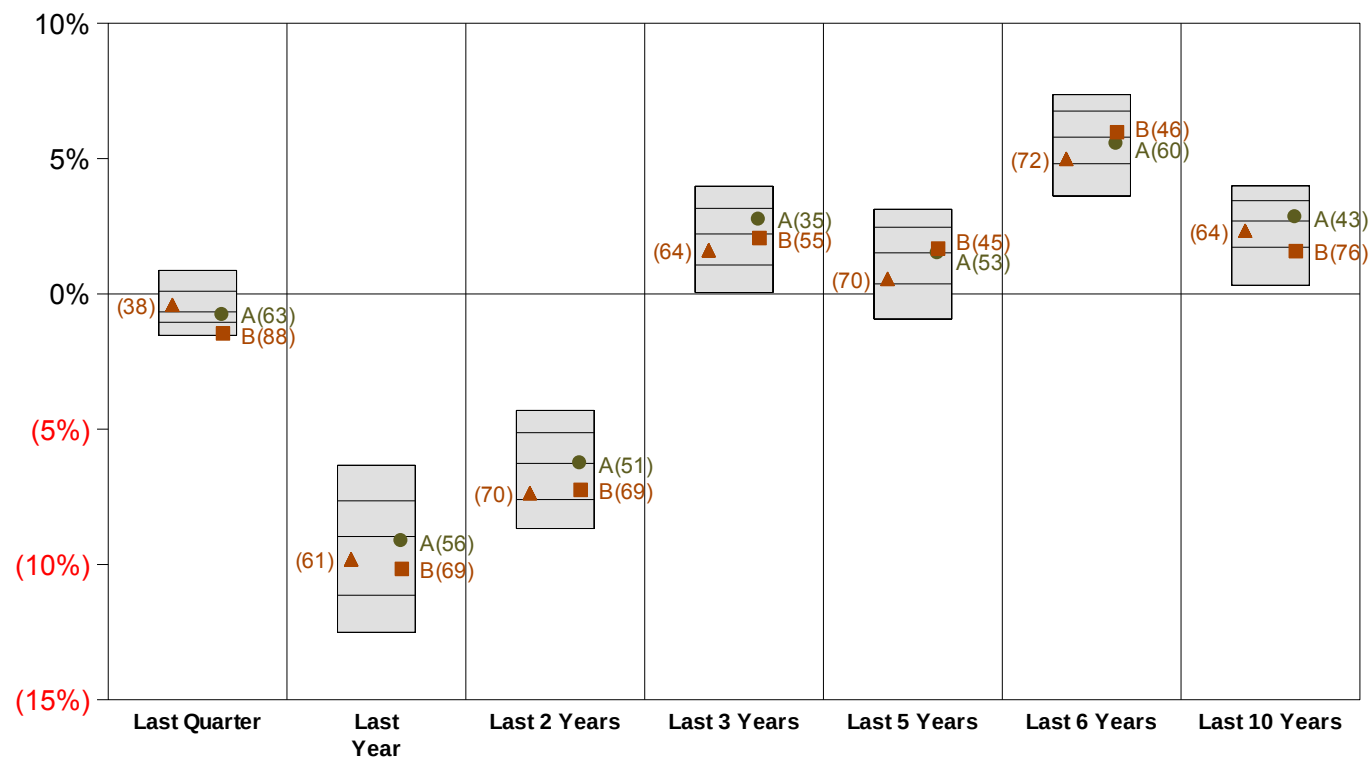
Cumulative and Quarterly Relative Return vs Russell Micro Value Index



- DePrince, Race & Zollo has struggled to outperform the benchmark in several recent quarters, but had very strong first and second quarters of 2016.
- DRZ remains confident that increasing M&A activity will result in performance improvement.

International Equity through 6/30/16

Performance vs Pub Pln- International Equity (Gross)

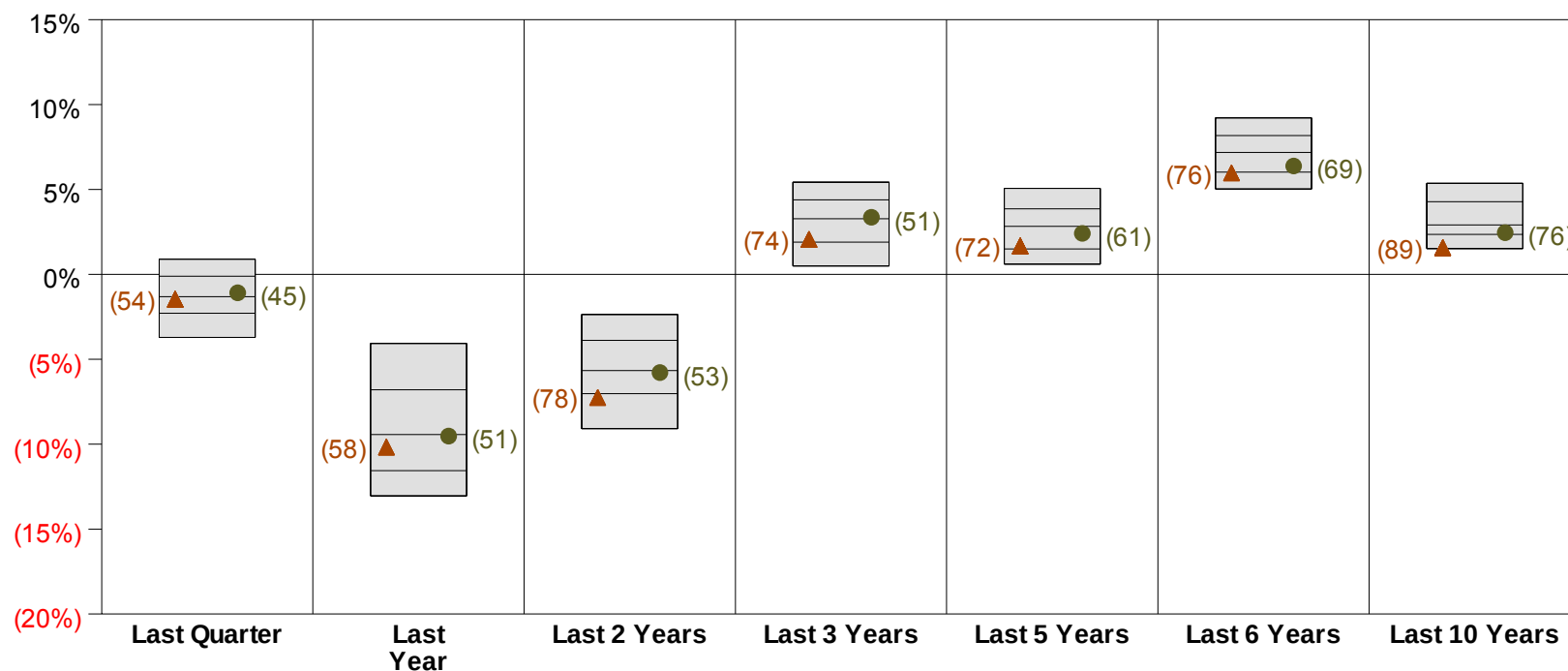


- Second quarter performance figures were bolstered by strong performance in emerging markets.

10th Percentile	0.87	(6.34)	(4.31)	3.98	3.12	7.37	3.99
25th Percentile	0.10	(7.65)	(5.13)	3.16	2.47	6.75	3.44
Median	(0.66)	(8.97)	(6.26)	2.22	1.52	5.79	2.69
75th Percentile	(1.05)	(11.13)	(7.60)	1.07	0.37	4.81	1.73
90th Percentile	(1.53)	(12.50)	(8.67)	0.05	(0.93)	3.62	0.32
Employees' Total Int'l Equity	● A (0.79)	(9.15)	(6.28)	2.73	1.48	5.52	2.81
MSCI EAFE Index	■ B (1.46)	(10.16)	(7.24)	2.06	1.68	5.98	1.58
MSCI ACWIxUS Gross	▲ (0.40)	(9.80)	(7.36)	1.62	0.56	4.99	2.33

International Equity ex Emerging Markets through 6/30/16

Performance vs CAI Non-U.S. Equity Style (Gross)



10th Percentile	0.90	(4.07)	(2.36)	5.44	5.06	9.21	5.37
25th Percentile	(0.10)	(6.80)	(3.88)	4.39	3.86	8.18	4.28
Median	(1.31)	(9.43)	(5.67)	3.27	2.83	7.18	2.91
75th Percentile	(2.29)	(11.56)	(7.03)	1.90	1.49	6.02	2.36
90th Percentile	(3.72)	(13.04)	(9.08)	0.49	0.60	5.03	1.52

Int'l Equity Pool (ex Emerging. Mkt)	●	(1.19)	(9.63)	(5.89)	3.24	2.31	6.27	2.35
MSCI EAFE	▲	(1.46)	(10.16)	(7.24)	2.06	1.68	5.98	1.58

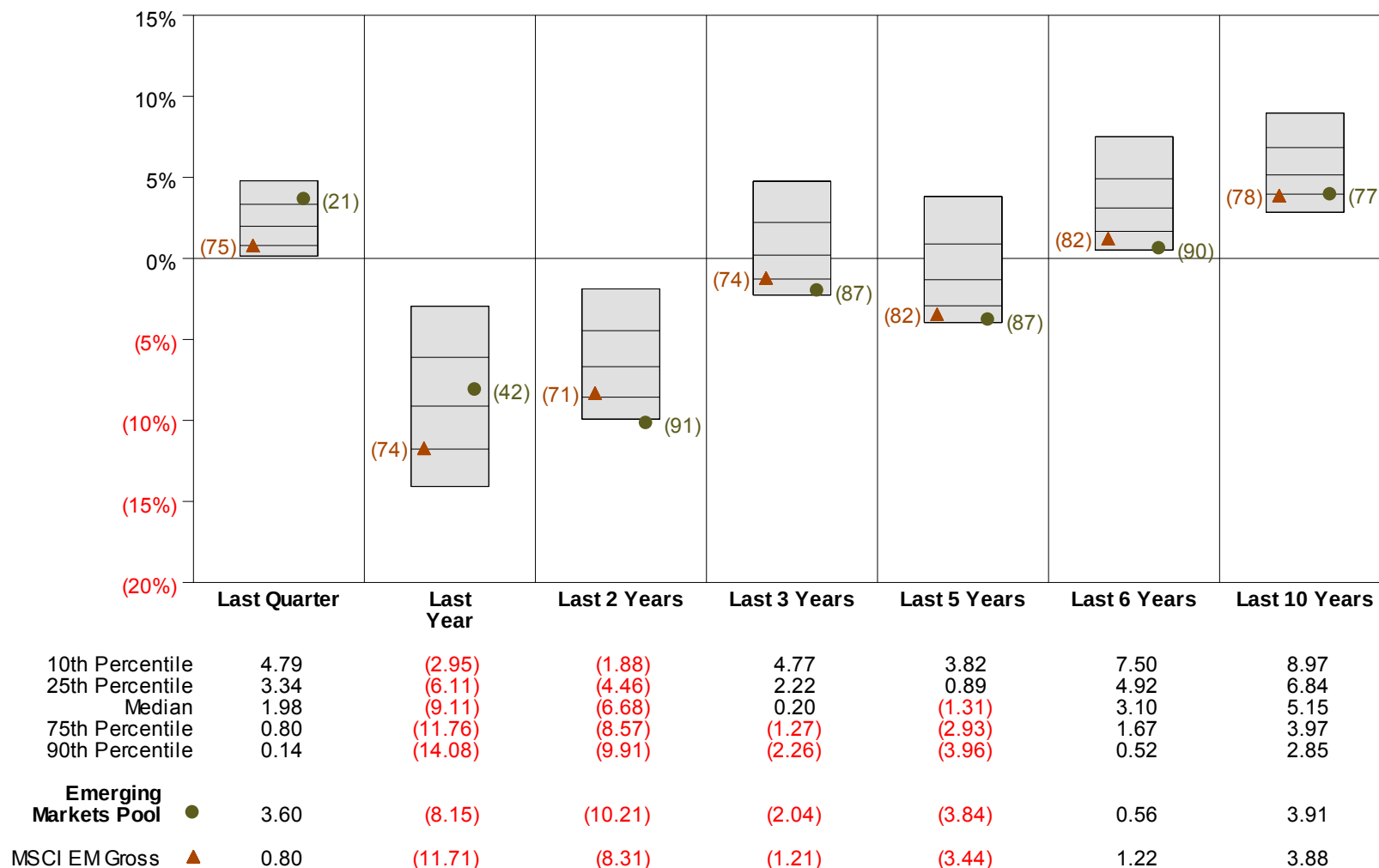
International Equity ex Emerging Markets through 6/30/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Int'l Equity Pool (ex Emerging Market)	(1.19%)	(9.63%)	3.24%	2.31%	2.35%
Allianz Global Investors	(4.36%)	(20.36%)	-	-	-
Arrowstreet ACWI ex -US	1.14%	(8.95%)	-	-	-
Baillie Gifford ACWI ex US	(0.30%)	(4.12%)	-	-	-
Blackrock ACWI ex US IMI	(0.52%)	(9.42%)	1.87%	-	-
Brandes Investment	(3.03%)	(10.64%)	4.36%	3.21%	2.92%
Capital Guardian	(1.88%)	(11.39%)	1.87%	2.29%	2.47%
Lazard Asset Intl	(0.43%)	(7.67%)	4.31%	3.74%	3.73%
McKinley Capital	(1.17%)	(7.64%)	6.41%	3.19%	1.95%
SSgA Int'l	(0.58%)	(9.39%)	1.95%	0.69%	-
Schroder Inv Mgmt	(4.88%)	(6.20%)	7.95%	4.84%	-
Mondrian Intl Sm Cap	(2.18%)	(2.40%)	5.36%	4.77%	-
MSCI EAFE Index	(1.46%)	(10.16%)	2.06%	1.68%	1.58%
MSCI ACWI ex-US IMI Index	(0.68%)	(9.61%)	1.65%	0.39%	2.16%

- The International Equity ex-Emerging Markets has produced returns greater than its benchmark, the MSCI EAFE index, over all periods.
- Returns over the last year have been negative, though above benchmark.

Emerging Markets Pool through 6/30/16

Performance vs Emerging Markets Equity DB (Gross)



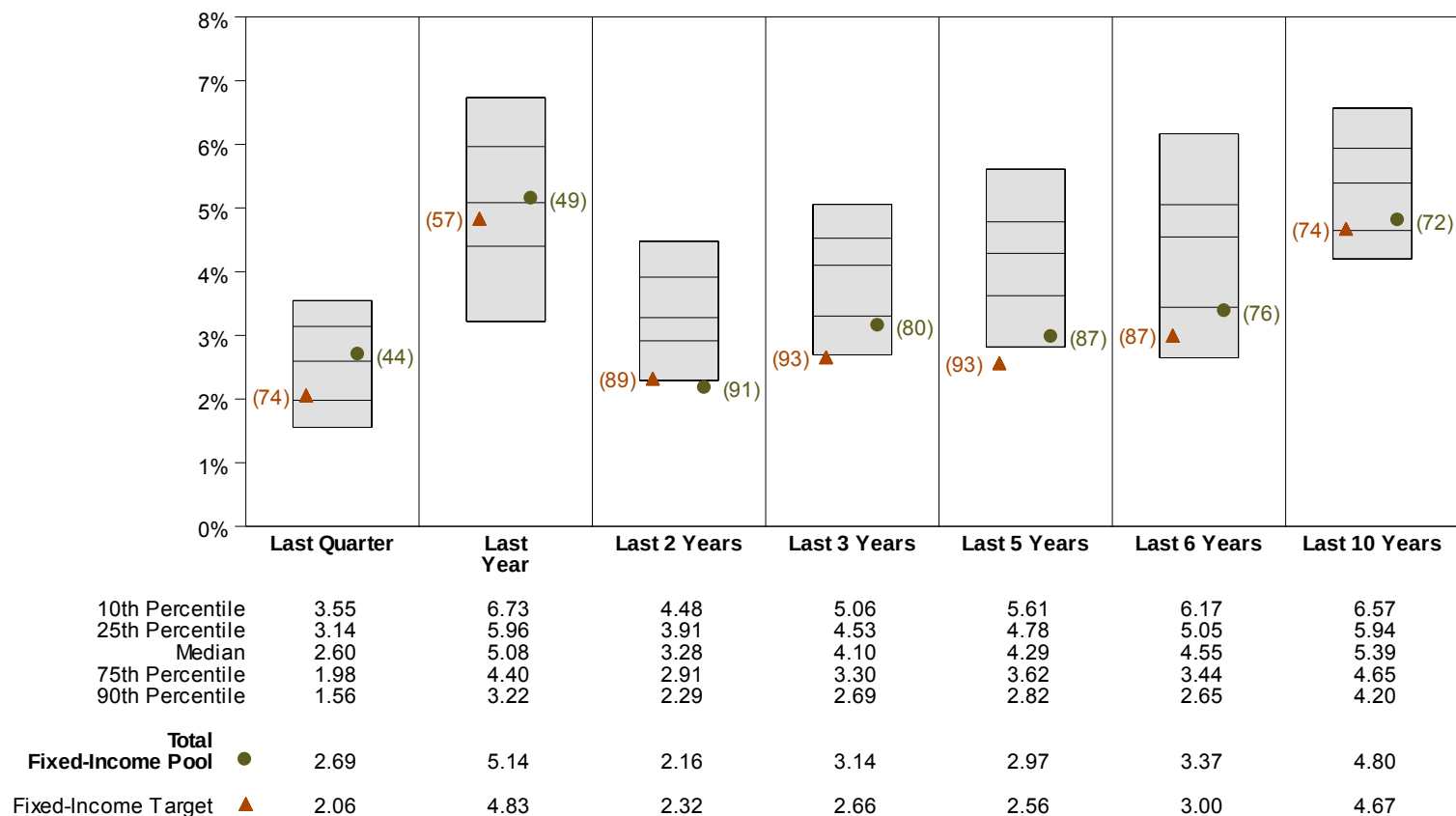
- The EM Pool exceeded index and the peer group median during the second quarter and last year
- The EM Pool lags both its index and peer group median for periods greater than two (2) years.

Emerging Markets Pool through 6/30/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Emerging Markets Pool	3.60%	(8.15%)	(2.04%)	(3.84%)	3.91%
Lazard Emerging	4.79%	(8.08%)	(1.89%)	(2.69%)	-
Eaton Vance Emerging(net)	1.12%	(8.91%)	(1.80%)	(3.12%)	-
MSCI Emerging Mkts Idx	0.80%	(11.71%)	(1.21%)	(3.44%)	3.88%

Total Bond as of 6/30/16

Performance vs Pub Pln- Domestic Fixed (Gross)



- The Total Bond portfolio has a custom target, intermediate in nature, that reflects a cautious view on the risk of rising rates.
- The strategy's returns outperformed the benchmark last quarter, year, and over long-term periods.
- Columbia Threadneedle High Yield strategy was funded during 1Q16

Note: Includes In-House and External Portfolios

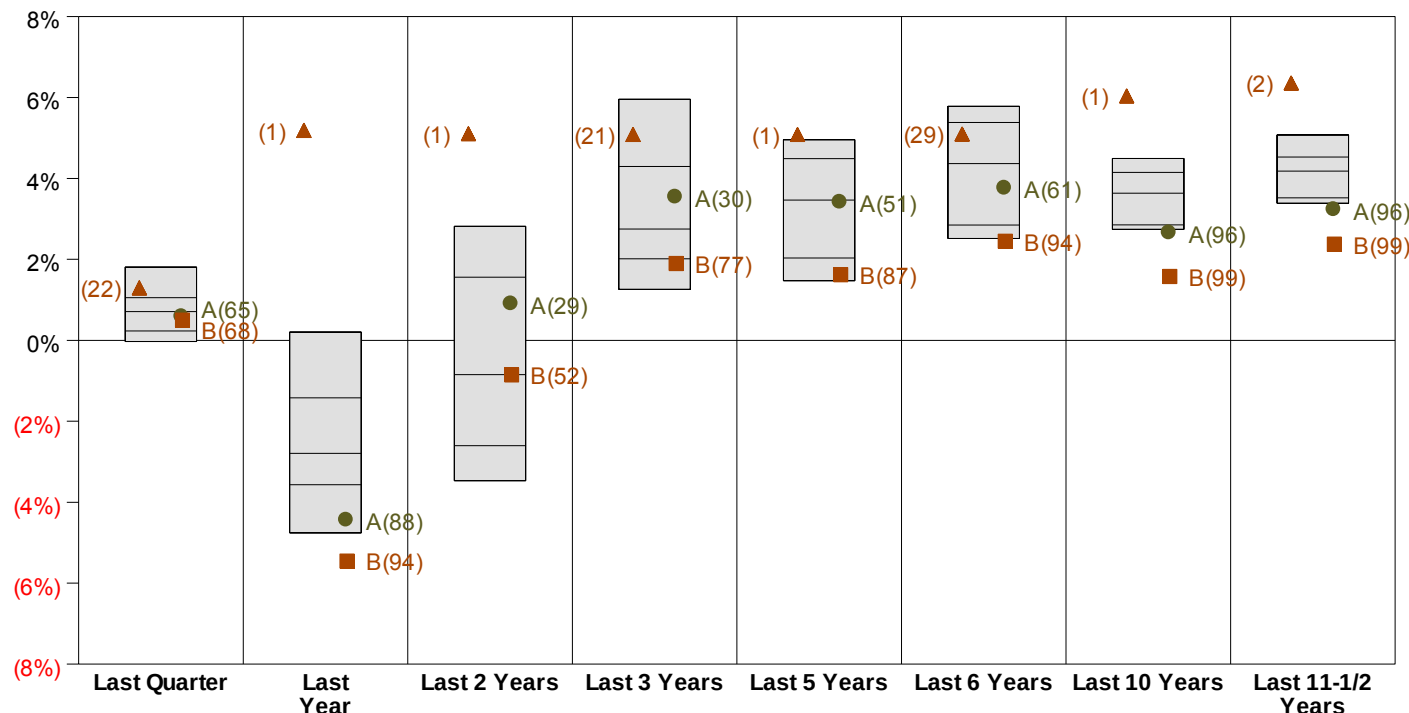
Real Assets through 6/30/16

	Last Quarter	Fiscal Year	Last 3 Years	Last 5 Years
Real Assets	3.78%	4.81%	7.14%	8.38%
Real Assets Target (1)	2.38%	8.87%	9.27%	9.51%
Real Estate Pool	2.67%	13.78%	12.43%	11.02%
Real Estate Target (2)	2.57%	11.91%	11.84%	11.72%
Private Real Estate	1.51%	11.38%	12.12%	10.69%
NCREIF Total Index	2.03%	10.64%	11.61%	11.51%
REIT Internal Portfolio	7.20%	23.70%	13.37%	12.43%
NAREIT Equity Index	7.41%	23.62%	13.31%	12.52%
 Total Farmland	 0.82%	 5.99%	 6.61%	 10.04%
UBS Farmland	1.05%	6.44%	7.26%	11.23%
Hancock Agricultural	0.35%	5.04%	5.27%	7.93%
ARMB Farmland Target (3)	1.38%	6.39%	8.01%	11.83%
 Total Timber	 2.03%	 0.24%	 6.27%	 6.22%
Timberland Investment Resources	2.77%	1.13%	6.15%	5.40%
Hancock Timber	(0.03%)	(2.23%)	6.00%	7.39%
NCREIF Timberland Index	1.09%	3.49%	7.77%	6.72%
 TIPS Internal Portfolio	 1.71%	 4.36%	 2.28%	 2.77%
BC US TIPS Index	1.71%	4.35%	2.31%	2.63%
 Total Energy Funds *	 (11.62%)	 (35.72%)	 (20.06%)	 (10.72%)
CPI + 5%	2.52%	5.65%	5.77%	6.13%
 MLP Composite	 19.50%	 (17.91%)	 (0.91%)	 -
Advisory Research (FKA FAMCO) MLP	22.32%	(21.74%)	(3.23%)	-
Tortoise Capital Adv MLP	17.16%	(14.24%)	1.28%	-
Alerian MLP Index	19.70%	(13.11%)	(5.38%)	3.24%
 Total Infrastructure	 5.09%	 7.31%	 -	 -
Brookfield	9.32%	1.43%	-	-
Lazard	(3.85%)	8.68%	-	-
JPM Infrastructure	2.39%	10.11%	-	-
IFM Infrastructure (funded May 2015)	9.61%	10.77%	-	-
Global Infrastructure Idx	4.99%	3.71%	8.66%	6.16%

Note: Real estate returns are provided to Callan by ARMB's real estate consultant.

Absolute Return Composite through 6/30/16

Performance vs CAI Absolute Return Hedge Fund of Funds (Net)



10th Percentile	1.81	0.20	2.82	5.96	4.96	5.78	4.49	5.07	
25th Percentile	1.05	(1.42)	1.56	4.30	4.49	5.38	4.15	4.53	
Median	0.71	(2.79)	(0.85)	2.75	3.47	4.36	3.64	4.18	
75th Percentile	0.23	(3.57)	(2.60)	2.01	2.03	2.85	2.85	3.52	
90th Percentile	(0.03)	(4.76)	(3.47)	1.26	1.47	2.52	2.74	3.39	
Absolute Return Composite	● A	0.57	(4.45)	0.89	3.53	3.40	3.75	2.64	3.21
HFRI Fund of Funds Compos	■ B	0.50	(5.45)	(0.85)	1.90	1.62	2.45	1.58	2.37
T-Bills + 5%	▲	1.30	5.19	5.11	5.09	5.09	5.10	6.04	6.36

- Absolute return allocation has exceeded HFRI Fund of Funds Index over trailing time periods.

Absolute Return Composite through 6/30/16

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Absolute Return	2.02%	(3.09%)	4.08%	3.67%	2.83%
Crestline ABS	1.20%	1.27%	7.78%	5.33%	3.72%
Glob Asset Mgt	1.52%	(3.34%)	2.60%	3.82%	-
Prisma ABS	(0.65%)	(8.65%)	1.90%	2.80%	-
HFRI Fund of Funds Index	0.56%	(5.40%)	1.92%	1.63%	1.58%

Individual Account Option Performance: 6/30/16

Balanced & Target Date Funds

Investment Manager	Market Value (\$mm)	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
Balanced & Target Date Funds											
Alaska Balanced Fund	\$1,202	1.6 82	2.5 24	5.3 15	5.6 12	7.5 26	4.5 77		0.4 4	0.2 100	1.2 4
Lipper: Mixed-Asset Target Alloc Cons											
Passive Target		1.5 87	2.4 27	5.2 16	5.5 13	7.4 31	4.3 86				1.3 3
Long Term Balanced Fund	\$599	1.7 68	1.0 33	6.5 21	7.1 17	9.7 19	7.9 64		0.3 10	0.2 100	0.9 18
Lipper: Mixed-Asset Target Alloc Mod											
Passive Target		1.6 71	1.0 33	6.5 21	7.0 19	9.6 21	7.7 69				0.9 18
Target 2010 Trust	\$16	1.5 100	1.4 50	5.6 18	6.0 7	8.5 20	6.5 52		0.4 4	0.2 100	0.9 20
CAI Tgt Date 2010											
Custom Index		1.4 100	1.2 56	5.6 19	6.0 7	8.5 19	6.6 51				0.9 20
Target 2015 Trust	\$109	1.6 95	1.1 55	6.3 11	6.8 4	9.0 24	7.8 25		0.5 2	0.2 100	0.9 20
CAI Tgt Date 2015											
Custom Index		1.5 100	0.8 60	6.2 12	6.7 6	9.0 25	7.9 25				0.8 23
Target 2020 Trust	\$122	1.7 81	0.8 52	6.9 10	7.4 2	10.2 9	8.9 23		0.4 1	0.2 100	0.8 10
CAI Tgt Date 2020											
Custom Index		1.6 87	0.5 60	6.8 12	7.3 4	10.2 9	9.0 23				0.8 16
Target 2025 Trust	\$101	1.7 78	0.4 47	7.3 10	7.9 4	11.1 4	9.9 40		0.2 2	0.3 100	0.8 6
CAI Tgt Date 2025											
Custom Index		1.6 88	0.1 55	7.3 12	7.8 4	11.2 4	10.1 26				0.8 7
Target 2030 Trust	\$86	1.8 64	0.0 42	7.7 6	8.3 2	11.6 3	10.8 39		0.3 1	0.3 100	0.8 7
CAI Tgt Date 2030											
Custom Index		1.7 73	-0.3 47	7.6 7	8.2 3	11.5 4	10.9 28				0.7 8
Target 2035 Trust	\$92	1.8 46	-0.2 20	8.0 6	8.6 2	12.0 2	11.5 55		0.3 1	0.3 100	0.7 5
CAI Tgt Date 2035											
Custom Index		1.7 60	-0.6 31	7.9 7	8.5 2	11.9 2	11.7 41				0.7 6
Target 2040 Trust	\$100	1.8 46	-0.6 22	8.0 5	8.7 1	12.1 1	11.8 61		0.2 1	0.3 100	0.7 5
CAI Tgt Date 2040											
Custom Index		1.7 55	-0.9 27	8.0 5	8.6 1	12.1 1	12.0 57				0.7 6
Target 2045 Trust	\$122	1.8 42	-0.6 16	8.1 5	8.7 1		11.8 78		0.3 1	0.3 100	0.7 3
CAI Tgt Date 2045											
Custom Index		1.7 52	-0.9 22	8.0 6	8.6 2		12.0 71				0.7 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

Investment Manager	Market Value (\$mm)	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	\$147	1.8 43	-0.6 19	8.1 6	8.7 2		11.8 76		0.3 1	0.3 100	0.7 4
CAI Tgt Date 2050											
Custom Index		1.7 53	-0.9 24	8.0 7	8.6 2		12.0 76				0.7 6
Target 2055 Trust	\$89	1.8 42	-0.6 17	8.1 7	8.7 3		11.8 74		0.3 1	0.3 100	0.7 4
CAI Tgt Date 2055											
Custom Index		1.7 53	-0.9 22	8.0 8	8.6 4		12.0 73				0.7 5

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: 6/30/16

Active Equity, Stable Value, and Interest Income

Investment Manager	Market Value (\$mm)	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											
AK International Equity CAI Mut Fd: Non-U.S. Equity Style MSCI EAFE Index	\$25	-3.4 92	-16.5 96								
		-1.5 51	-10.2 58	2.1 64	1.7 57	6.0 70	14.8 78				0.1 56
Allianz/RCM Soc Resp CAI Mut Fd: Core Equity Style MSCI USA ESG	\$39	1.8 50	1.3 45	9.0 73	8.7 89	12.4 84	14.0 35		-0.7 97	1.8 87	0.6 94
		2.3 33	3.4 27	10.2 47	11.2 35	14.3 31	12.6 84				0.9 38
T. Rowe Price Small Cap CAI Mut Fd: Sm Cap Broad Style Russell 2000 Index	\$121	4.3 34	-2.2 22	9.2 16	10.6 7	17.1 6	17.6 58		1.4 1	1.7 100	0.6 13
		3.8 43	-6.7 43	7.1 53	8.4 46	13.9 51	17.7 55				0.5 43
T. Rowe Price Stable Value Fd CAI Stable Value Database 5 Yr U.S. Treas Rolling	\$374	0.6 1	2.4 1	2.4 1	2.6 1	3.0 5	0.2 51		9.7 14	0.1 69	16.3 13
		0.3 91	1.3 91	1.4 82	1.7 67	2.2 52	0.2 26				6.9 93
Def Comp Interest Income Fund CAI Stable Value Database 5 Yr U.S. Treas Rolling	\$183	0.7 1	2.8 1	2.8 1	3.1 1	3.4 1	0.2 49		18.3 6	0.0 92	17.3 8
		0.3 91	1.3 91	1.4 82	1.7 67	2.2 52	0.2 26				6.9 93

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

Passive Options: 6/30/16

Investment Manager	Market Value (\$mm)	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											
State Street S&P Index Fund (i)	\$340	2.4 28	4.0 20	11.6 31	12.1 39	14.9 39	12.7 77		-0.5 73	0.0 100	0.9 34
CAI Large Cap Core Style											
S&P 500 Index		2.5 27	4.0 20	11.7 31	12.1 38	14.9 39	12.7 77				0.9 34
BlackRock S&P 500 Index Fund (i)	\$180	2.5 34	4.0 27	11.6 37	12.1 31	15.0 36	12.7 83		0.2 19	0.0 99	0.9 24
CAI Mut Fd: Core Equity Style (Gross)											
S&P 500 Index		2.5 34	4.0 27	11.7 36	12.1 32	14.9 36	12.7 83				0.9 24
SSgARussell 3000 Index (i)	\$71	2.6 20	2.2 17	11.1 35	11.6 17	15.0 13	13.3 76		0.3 5	0.1 100	0.9 15
CAI Mut Fd: Large Cap Broad Style (Net)											
Russell 3000 Index		2.6 20	2.1 18	11.1 36	11.6 18	14.9 13	13.3 75				0.9 16
SSgAWorld Equity ex-U.S. Index (i)	\$29	0.1 19	-9.6 48	1.5 70	0.3 82	5.4 72	15.2 64		0.2 71	0.8 100	0.0 81
CAI MF: Non-U.S. Equity Style (Net)											
MSCI ACWI x U.S. Index (Net)		-0.6 30	-10.2 57	1.2 73	0.1 86	5.3 72	15.0 70				0.0 86
SSgAGlobal Balanced Index (i)	\$51	1.9 44	1.5 18	5.5 21	5.0 34		7.8 55		0.9 7	0.2 100	0.6 42
CAI Int'l/Global Balanced Database											
Global Balanced Custom Benchmark		1.7 49	1.0 23	5.2 24	4.7 42		7.8 56				0.6 47
SSgALong U.S. Treasury Index (i)	\$27	6.4 65	19.5 24	10.5 21	10.3 24	8.8 72	14.8 30		0.1 22	0.1 99	0.7 49
CAI Mut Fd: Extended Mat Fixed Income											
Barclay's Long Treasury Index		6.4 65	19.3 26	10.5 21	10.3 24	8.8 72	14.8 31				0.7 49
SSgAU.S. TIPS Index (i)	\$22	1.7 41	4.2 11	2.2 16	2.5 9	4.2 17	5.4 42		-4.3 97	0.0 100	0.4 8
Lipper: TIPS Funds											
Barclay's U.S. TIPS Index		1.7 38	4.4 10	2.3 11	2.6 6	4.3 7	5.4 42				0.5 2
SSgAWorld Gov't Bond Ex-U.S. Index (i)	\$9	4.0 1	13.8 1	2.3 35	0.3 83	2.2 90	7.2 4		-0.7 100	0.1 100	0.0 84
CAI Mut Fd: Global Fixed Income Style											
Citi WGBI Non-U.S. Index		4.0 1	13.8 1	2.4 33	0.3 83	2.3 88	7.2 4				0.0 83
U.S. Real Estate Investment Trust (i)	\$47	5.4 57	22.5 30	13.3 46	12.0 38	20.2 44	15.0 50		-2.1 100	0.1 99	0.8 40
CAI Mut Fd: Real Estate Database											
U.S. Select REIT Index		5.4 56	22.9 23	13.6 36	12.3 26	20.8 20	15.1 40				0.8 36

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

Investment Manager	Market Value (\$mm)	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
BlackRock Govt/Credit Bond Fund (i)	\$43	2.7 20	6.7 8	4.1 35	4.0 40	4.7 80	3.5 5		-1.9 98	0.1 99	1.1 84
CAI Mut Fd: Core Bond Style											
Barclay's Gov't/Credit Bd		2.7 20	6.7 8	4.2 17	4.1 26	4.8 72	3.5 5				1.1 83
BlackRock Int. Govt Bond Fund (i)	\$20	1.2 60	3.8 39	2.3 67	2.2 71	2.7 78	2.1 49		-4.0 100	0.0 98	1.0 78
CAI MF: Intermediate Fixed Income Style											
Barclay's Gov Inter		1.2 59	3.9 38	2.4 59	2.3 67	2.8 75	2.1 50				1.0 71
State Street Inst Trsry MM (i)	\$39	0.0 8	0.1 9	0.0 10	0.0 10	0.0 9	0.0 9		-3.6 93	0.0 92	-2.9 9
Lipper: US Treas Money Mk											
3-Month T-Bills		0.1 1	0.1 2	0.1 1	0.1 1	0.1 1	0.0 4				-0.7 1

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 differ by less than +/- 10 percentiles; Yellow: manager and index differ by +/- 20 percentiles; Red: manager & index differ by more than 20 percentiles.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT:	<u>BMO Global Asset Management</u>	ACTION:	<u>X</u>
	<u>Domestic Small Cap</u>		
DATE:	<u>September 29, 2016</u>	INFORMATION:	<u> </u>

BACKGROUND

At the February 2016 Alaska Retirement Management Board (ARMB) meeting, the Board approved staff engaging in a portable alpha strategy. In execution of the portable alpha strategy, staff will employ a portfolio of existing ARMB small cap equity managers to generate the alpha component.

At the April 2016 ARMB meeting, the Board authorized Callan Associates (Callan) to conduct due diligence on BMO Global Asset Management's Disciplined Small Cap Core strategy (DSCC). In June 2016 Callan submitted a report concluding that the DSCC strategy is "a reasonable and viable option for a diversified institutional portfolio like that of the Alaska Retirement Management Board." The Callan report is attached.

STATUS:

BMO Global Asset Management (BMO) is a global asset management firm headquartered in Chicago with 27 offices in 17 countries. BMO has investment capabilities spread across multiple assets classes including equity, fixed income, and alternative/multi-asset.

BMO's Disciplined Small Cap Core strategy's investment process seeks to exploit inefficiencies across the domestic small cap marketplace by assessing securities on three groups of metrics: attractive valuation, quality and sustainability of fundamentals, and improving investor interest. BMO employs a proprietary multi-factor investment model to assign a ranking of stocks in the investable universe. The small cap portfolio is then constructed based on security rankings, risk controls, and a qualitative review to validate trades and situations that may not be captured by the investment model.

RECOMMENDATION:

The Alaska Retirement Management Board hire BMO Global Asset Management to manage \$75 million in their Disciplined Small Cap Core strategy, subject to successful contract and fee negotiations.

September 30, 2016



Alaska Retirement Management Board Administration Review

Executive Summary

Steve Center, CFA
Fund Sponsor Consulting

Paul Erlendson
Fund Sponsor Consulting

Lori Lucas, CFA
Fund Sponsor Consulting

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Agenda

- Recordkeeper Review
- Distribution Counseling Services Overview
- Retirement Income Solutions Review



Recordkeeper Review

Overview

- The Alaska Retirement Management Board engaged Callan Associates to assist in reviewing the Plans' current recordkeeper, Empower.
- Key plan statistics:
 - Four ARMB plans administered by Empower: Supplemental Annuity Plan (SBS-AP), 457 Deferred Compensation Plan, Public Employees' Retirement System (PERS) IV Defined Contribution Retirement Plan, Teachers' Retirement System (TRS) III Defined Contribution Retirement Plan.
 - 89,500 participant accounts (3/31/2016)
 - \$5.8 billion in assets (6/30/2016)
 - Services provided by Empower: core recordkeeping, participant communication, and plan delivery.
- In Callan's review, we compared Empower's services, capabilities, and fees against the broad DC recordkeeper industry (20 large plan oriented recordkeepers).

Scoring Approach

- Callan scored Empower's recordkeeping services based on:
 - Callan's knowledge of the recordkeeper marketplace.
 - Our search and RFI activity.
 - Client experience.
 - Off-site and on-site recordkeeper meetings.
 - Callan's proprietary recordkeeper database of over 1,000 questions that is updated at least once annually by all major providers.
 - Additionally, we used information provided by ARMB.
- Scoring approach:
 - 21 categories were scored.
 - Categories scored on scale from 1 to 3:
 - 2 = what would be expected from an average recordkeeper.
 - 1 = below average.
 - 3 = above average.
 - Additionally, a weight of 1 (lowest) to 4 (highest) was assigned to each category. Weights are:
 - Based on standard weightings used in recordkeeper reviews.
 - Adjusted based on our understanding of the ARMB Plans.

Empower Scoring

- Empower ranked above average as shown by the below summary score of 2.4.
- On the following slides, we provide the detailed scoring summary and outline the key strengths and weaknesses of Empower.

	Empower
Total Weighted Score	2.4

Scoring Comparison: Empower vs. Recordkeeper Peers

Category	Weight	Empower Score	Empower Weighted Score
Recordkeeping: Processing	4	3	12
Recordkeeping: Functionality	4	3	12
Communications	4	3	12
Advice/Managed Accounts	4	1	4
Participant Web Site	4	3	12
Investments	4	2	8
Fees	4	1	4
Organization	3	2	6
Market Positioning	3	3	9
Client Service & Quality Assurance: Quality Assurance	3	3	9
Client Service Model and Client Relationship Manager	3	2	6
Compliance	3	3	9
Plan Sponsor Reporting	3	2	6
Call Center	3	3	9
Contract & SLAs	3	1	3
Client Base / Asset Breakdown	2	3	6
Recordkeeping: Staffing	2	2	4
Recordkeeping: Systems	2	3	6
Plan Sponsor Web Site	2	2	4
Participant Transactions	1	2	2
Voice Response Unit (VRS)	1	3	3
TOTAL SCORE	--	50	146
TOTAL WEIGHTED SCORE	--		2.4

Notes: Empower was scored on a scale of 1 to 3, with 3 being the highest score. Additionally, a *weight* to the score of 1 to 4 was assigned for each category, with 4 being the highest weight. Color coding is by category where green represents above average, yellow is average, and red represents below average.

Scoring Overview for Empower

Pros	Cons
• Known ability to handle ARMB's plan provisions and processing needs • Familiarity with the staff, ppts, and geography of the State • Among top 3 administrators of statewide and public DC plans • Strong commitment to the DC recordkeeping market • Significant focus on recordkeeping business • Strong multi-channel communications with ability to fully customize and brand to ARMB (including custom website, communications campaigns, and semi-dedicated representatives) • Highly functional, usable, and modern participant website • Customized and informative pre login participant site • Among more advanced mobile capabilities with responsive design • Strong call center statistics • Meets all insurance and contracting requirements • Strong, proprietary recordkeeping system • Open architecture fund platform and known ability to recordkeep current fund lineup • Reasonable experience with custom, multi-manager funds	• No service level agreements (SLAs) or fees at risk, which are becoming increasingly common in the industry • Organization is still navigating recent acquisitions and there are some capacity constraints (due both to the large influx of new business and the JPM conversion waves taking additional time/resources (final wave postponed until 2017, with some of the conversion waves having significant challenges)) • Client servicing team can lack responsiveness • Asset-based fees are within range, but higher than median • Some concern over representatives' compensation structure and potential for promoting Managed Accounts • Uncertainty as to how participants enroll in and are using Managed Accounts • Plan sponsor reporting capabilities are adequate, but not as strong as other recordkeepers (and timing appears slower)

Recordkeeping Fee Comparison

Plan administration fee benchmarking employs Callan's proprietary DC fee database.

- Database houses plan fees from fee RFIs and RFPs.
- Goes back 5 years
- Over 500 data points.
- 16 observations fit the profile of the ARMB Plans.

Sample Statistics

Average Assets:	\$6,027,675,382
Average Participants:	57,823
Sample Count:	16

Comparison Plans

Per Participant Administration Fees

90th	\$51
75th	\$48
50th	\$43
25th	\$38
10th	\$35

Empower
current:
\$44

Administration Fees (bps)

90th	0.07%
75th	0.05%
50th	0.04%
25th	0.03%
10th	0.03%

Empower current:
0.0675%

- Admin fees that Empower currently collects are within the range of similarly sized plans, but above median.
- ARMB has certain complexities that other plans may not have (e.g., complex vesting schedules, consolidated statements, four field reps, travel to Alaska, etc.).



Distribution Counseling Services Overview

Retirement Solutions Group (“RSG”) Service

Overview of the RSG Service

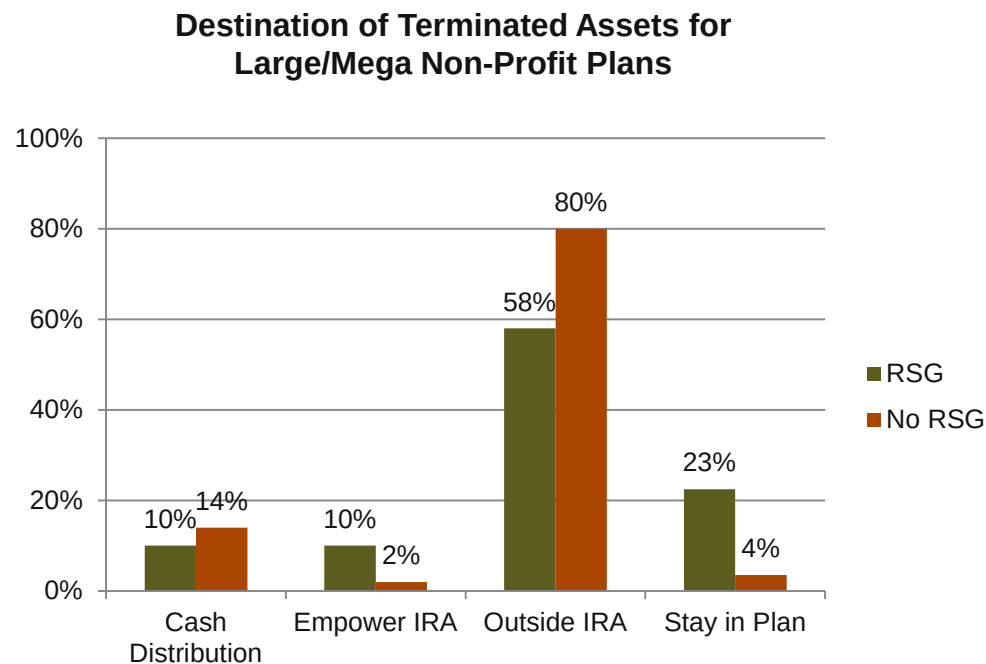
In September 2014, Empower rolled out its RSG service.

- Provides education and guidance to participants on DC plan distribution decisions.
- Employees targeted:
 - Joining an Empower recordkept plan with distributable retirement accounts from prior plans.
 - Retiring or terminating from their employer, and need to make a decision on what to do with their DC assets.
- Combination of targeted communication and a dedicated group of 200 licensed phone reps.
 - Representatives are salaried with a bonus.
 - Bonuses based on two primary measures: Call Quality and Asset Retention (includes the participant staying in the plan and the participant moving to an Empower IRA).
 - Representatives do not follow an exact script, but instead follow a call model.
- There is no direct cost to participants or the plan sponsor for the RSG service.
- Utilization:
 - 99% of large/mega, corporate plans.
 - 75% of government plans.
 - Another large recordkeeper with a similar service indicated that 91% of corp. and govt. clients use the service.
- The recent DOL Fiduciary Rule may impact the RSG model/service (applies to IRA rollovers).

Impact of RSG Service on Participant Distributions

Empower 2015 Data

- Experience of plans using RSG services:
 - Little change in cash distributions.
 - Increase in participants leaving their assets in their employer's plan.
 - Increase in participants rolling over to a proprietary Empower IRA.
 - However, most distributions still directed to non-proprietary IRAs.



Source: Empower 2015 Data

RSG Services

Potential Benefits and Challenges

Potential Benefits

- Provides education and guidance to participants for potentially complex decisions.
- Ability for plan sponsors to monitor the service and participant outcomes.
- Potential to have more assets remain in plan upon severance.

Potential Challenges

- Representative incentives (bonuses) are based on asset retention within Empower, which includes the Empower IRA.
- Results of the RSG service show increased usage of an Empower IRA.
- Some uncertainty around the service offering in light of the new Fiduciary Rule.
- Limited historical participant data as a result of the recent 2014 rollout.

Distribution Counseling Best Practices

- Many state plans have adopted in-house retirement educators
 - Paid for by funds from a hybrid pension budget, or from their recordkeepers as part of their contracts.
 - Most common when staff administer both DB and DC, and retirement decisions are made from both.
- To avoid conflicts of interest among retirement counselors, plan sponsors have taken the following steps:
 - Obtained information pertaining to the compensation of representatives that counsel participants.
 - Weighed in on whether they are permitted to offer proprietary products or cross-sell, and, if so, which products.
 - Followed policies pertaining to personally identifiable information, and whether client information can be used to identify sales targets across an organization or not. Direction is given to vendors in the contracting phase.
- Examples:
 - When one government plan went out to bid, they were clear on conflicts in the RFP process, and lack of cross-selling options. The plan sponsor uses representatives from its recordkeeper, but the plan sponsor retains the right to designate different IRA rollover out contractors.
 - Another government plan sponsor does all communication and education in house, and does not employ managed accounts. They also retain the right to determine preferred rollover providers and annuity providers.



Retirement Income Solutions Review

Retirement Income Solutions Overview

- Regulators, plan sponsors, and participants like the concept of guaranteed income for life.
- While retirement income solutions are popular in theory, we find that they are not broadly offered by plan sponsors—and when they are, participant utilization is low.
 - 30% of public plans offer a guaranteed retirement income solution product.
 - 9% that currently do not offer a such a product are considering adding one.
 - Of those offering: 54% stated that their guaranteed retirement income solution product was offered ‘outside” of the plan and 43% was ‘inside” of the plan (4% weren’t sure).
 - 47% of responding plans that offered a guaranteed retirement income solutions product reported that less than 1% of participants used it.

Source: NAGDCA's March 2015 Public DC Plan Survey Report.

Products Offered by Empower

Similar to other major recordkeepers, only a handful of retirement income options are available at Empower, which we list below.

- Services with Income Strategies:
 - Financial Engines Income+
 - Morningstar Spend Down Tool (note that this service can be combined with the below products)
- Products with Income Guarantees:
 - SecureFoundation Portfolios, a guaranteed lifetime withdrawal benefit (GLWB)
 - In development for 2017: In-Plan Qualified Longevity Annuity Contract (QLAC)

In-Plan Annuities Available from Recordkeepers (among those offering)

Proprietary GMWB (3 of 7)

Non-Proprietary GMWB (2 of 7)

Proprietary Deferred Income Annuity (1 of 7)

Non-Proprietary Deferred Income Annuity (1 of 7)

Products Offered by Empower: Prevalence & Utilization

An income strategies tool is currently available within the ARMB Plans – participants who use the AAG / Morningstar managed account service have access to this feature.

Product	Prevalence	Participant Utilization (when product is offered)
SecureFoundation GLWB	1,813 clients	0.88%
Financial Engines Income+	36 clients	14.49%
Empower Retirement Advisory Services/ Morningstar Spend Down Tool (standalone)	Not available	Not available
Empower Retirement Advisory Services/ Morningstar spend down with SF GLWB	Not available	Not available



Next Steps

Next Steps

The ARMB Plans are Complex as are Their Service Requirements

Recordkeeper Review

- While Empower recordkeeping services score slightly above average when compared to peers, there are some areas for improvement. Recommendations include:
 - Implement Service Level Agreements with fees at risk regarding service delivery quality and timing.
 - Continue to closely evaluate client team on ongoing basis.
 - Review managed account services relative to ARMB participant needs.
- Recordkeeping fees are at the high end of the range, but the plans have an above average level of complexity:
 - On an ongoing basis, conduct annual fee and services due diligence.

Distribution Counseling Services Overview

- Additional due diligence on the RSG service is required to determine fit with best practices:
 - Review the “call model” in greater depth, including ARMB’s ability to craft the message to plan participants.
 - Review approach to representatives’ incentives and bonuses – ideally tie to client satisfaction.
 - Confirm impact of DOL Fiduciary Rule on RSG model.
- Consider in-house retirement education.

Next Steps

Retirement Income Solutions Review

Given low utilization of guaranteed products, next steps are best focused on the existing managed account drawdown service:

- As part of overall managed account review, evaluate available drawdown services.



Appendix

Products Offered by Empower: Financial Engines

● Financial Engines Income+

- Must offer Financial Engines Advice/Managed Accounts in the plan to be able to access Income+. Since Income+ is a feature of the managed account program, there is no additional fee.
 - *Fees for the managed account service can range from 10 bps to 60 bps, depending on the participant's asset levels and the implementation type (opt-in vs. opt-out). Additionally, there may be a charge (up to \$10/participant) for advice, which Financial Engines couples with managed accounts.*
- Income+ advises on the participant's drawdown strategy with the goal of providing steady monthly payouts from the DC plan with the optional purchase of an out-of-plan annuity.
- Payout amounts follow the tax source hierarchy specified for a given member account. Income+ does not aim to optimize the order of liquidations from pre-tax, after-tax, and Roth balances.
- Does not require plan sponsors to add an annuity or change the fund lineup in their plan.
 - *Developed an optimization approach to approximate the properties of a Treasury bond ladder with the use of existing fixed income fund options in the DC plan (note that different fixed income lineups in a plan will result in slightly different income payout rates for participants).*
 - *While an annuity is not required, in order to provide a lifetime income guarantee, Financial Engines requires an out-of-plan annuity purchase.*
- Unlimited access to Financial Engines' advisors for one-on-one counseling.
- Annual checkups with an advisor to determine the potential for annual raises in the monthly payout and to discuss whether or not it makes sense to exercise the lifetime income option through the purchase of an out-of-plan annuity.
- Once an Income+ participant is ready to retire, at their request, a monthly payout from their retirement plan is automatically generated.

Products Offered by Empower: Morningstar Spend Down Tool

- Morningstar Spend Down Tool

- The Spend Down Tool is offered through Advised Assets Group, LLC (AAG), a registered investment adviser and fiduciary, and is powered by an independent financial expert, Morningstar/Ibbotson.
 - Similar to Financial Engine's Income+, the Spend Down Tool advises on the participant's drawdown strategy.
 - This tool is an add-on for plans that use the managed account program.
 - *Fees for the managed account services generally range from 10 bps to 50 bps depending on the implementation type (opt-in vs. opt-out).*
 - Participants receive dynamic recommendations for a sustainable withdrawal amount and a tax-efficient drawdown of available income sources.
 - The spending plan includes a detailed overview of the income sources that comprise the participant's annual income so they know how much to withdraw each year from their various accounts. As part of their spending plan, the Spend Down Tool provides participants with an investment strategy for assets within their retirement plan.
 - Participants can access Spend Down Tool either online or through Empower's Participant Advisory Services Education Call Center (as opposed to Morningstar advisors), and are encouraged to access the service annually online.
 - May require plan sponsors to change the fund lineup in their plan (depends on the current lineup).
 - The Spend Down Tool can accommodate a range of in-plan annuity products, and can be combined with the SecureFoundation Portfolios (or the In-Plan QLAC that is in development). When combined with SecureFoundation Portfolios, a participant will not be charged a managed account fee in addition to the GLWB fee.
- This spend down tool is currently turned on for the ARMB Plans – participants who use the AAG / Morningstar managed account service have access to this feature.

Products Offered by Empower: SecureFoundation Portfolios

- SecureFoundation Portfolios (GLWB)

- A Group Fixed Deferred Annuity Contract with a Guaranteed Lifetime Withdrawal Benefit (GLWB), issued by Great-West Life & Annuity Insurance Company.
- Goal is to protect against longevity risk and the risk of downward fluctuations in retirement income due to changes in market performance.
- Fees can range from 0.7% to 1.5% in addition to the Covered Funds' investment management & trustee fees.
 - *Currently, fees are at 0.9%.*
 - *The Covered Funds are proprietary Great-West target date funds that would need to be added to the fund lineup.*
- The GLWB has three phases: Accumulation, Guaranteed Annual Withdrawal (GAW), and Settlement.
- The product has a number of risks including, but not limited to the following:
 - *Participant may lose the entire benefit if the plan sponsor selects a new recordkeeper, cancels the contract, or removes Covered Funds.*
 - *The participant may die before receiving payments or may not live long enough to receive enough income to exceed the amount of the fees paid.*
 - *The Covered Funds may perform well enough so that the participant may not need the guarantee.*
 - *The participant may need to make excess withdrawals, which has the potential to substantially reduce or terminate the benefits.*
 - *The participant might not begin making GAWs at the most financially beneficial time.*
 - *If the participant changes his or her recordkeeper, the participant may never receive a benefit.*
 - *Great-West reserves the right to increase the fee at any time.*
 - *The receipt of payments is subject to Great-West's claims paying ability.*
- In pursuing a product such as this, these are all areas to explore in further detail (e.g., fees, provisions around changing fees, provisions around making excess withdrawals, covered funds, inflation adjustment provisions and costs, claims paying ability of insurer).

September 30, 2016



Alaska Retirement Management Board Investments Review

Executive Summary

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Agenda

- Investment Structure Evaluation
- Target Date Fund Suitability Review
- Managed Account Review



Investment Structure Review

Lessons from Behavioral Finance

How Behavioral Finance Can Inform Plan Design

● Inertia:

- Research by John Beshears et.al., of the National Bureau of Economic Research shows that default options tend to attract assets, and participants often remain wholly invested in the default investment option.
- Research by David Laibson et. al., of Harvard University found that it takes an average of 371 days for the average participant in a DC plan to allocate to newly introduced investments in the plan (barring a reenrollment).
 - *As an example, since 2006 Real Return/TIPS fund prevalence in DC plans has increased from 5% to 33%. However, over the same time period, utilization of such funds has decreased and stands at just 1%.*

● Momentum Market Timing:

- Those who invest in emerging market equities frequently over-allocate to them. Morningstar found that over the ten-year period ending December 31, 2014, adverse timing decisions have cost diversified emerging markets investors 1.7% percentage points annually.

● Framing Effects:

- DC participants are prone to use mental shortcuts and naive diversification strategies, often based on the design of the investment menu. For example, if the plan offers more stock funds than bond funds, participants allocate more heavily to stocks than bonds (and vice versa).
- Such research suggests that plan sponsors would do well to consider choice architecture, or the influence of menu design on participant investment behavior.

● Overwhelming Choice:

- Individuals often desire a wide array of choices, yet are easily overwhelmed by them. According to one study, choice overload results in decreased plan participation. According to another study, participation rates were highest among plans with just four funds.

One goal of the structure review is to use the Plans' structure to limit the impact of these behavioral biases and how they can adversely affect participant outcomes.

Investment Structure Evaluation

Callan's Philosophical Tenets:

Building upon these behavioral finance lessons, Callan believes:

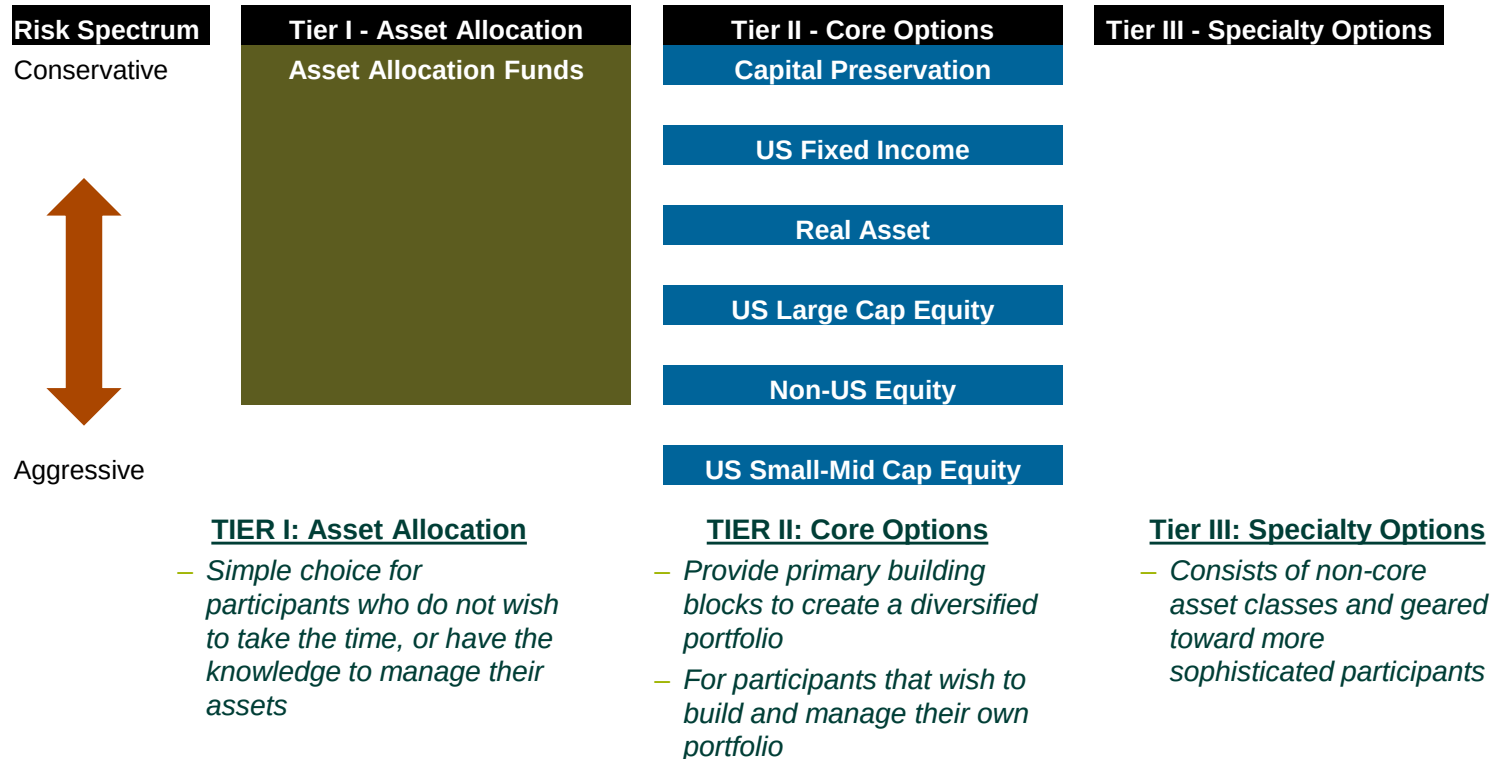
- **Investment structures should be built for the long term**
 - An investment structure should be built within the context of legal and regulatory trends, product development and innovation, and in adherence to a three-tier framework that facilitates plan usage by everyone from do-it-for-me to do-it-yourself types of participants.
- **Simpler can be better**
 - The number of choices affects participants' allocation decisions.
 - The optimal number of investments for a plan will offer sufficient diversification opportunity while minimizing participant confusion.
- **Utilize scale**
 - Given their combined size, the Plans can make further use of multi-manager, white label funds to bring further diversification *within* the Plans' investment options.
- **Cost is important**
 - Investment structures should seek to minimize cost. This may be through effective use of investment vehicles or share classes.

Three-Tier Framework

Clean Sheet Investment Structure

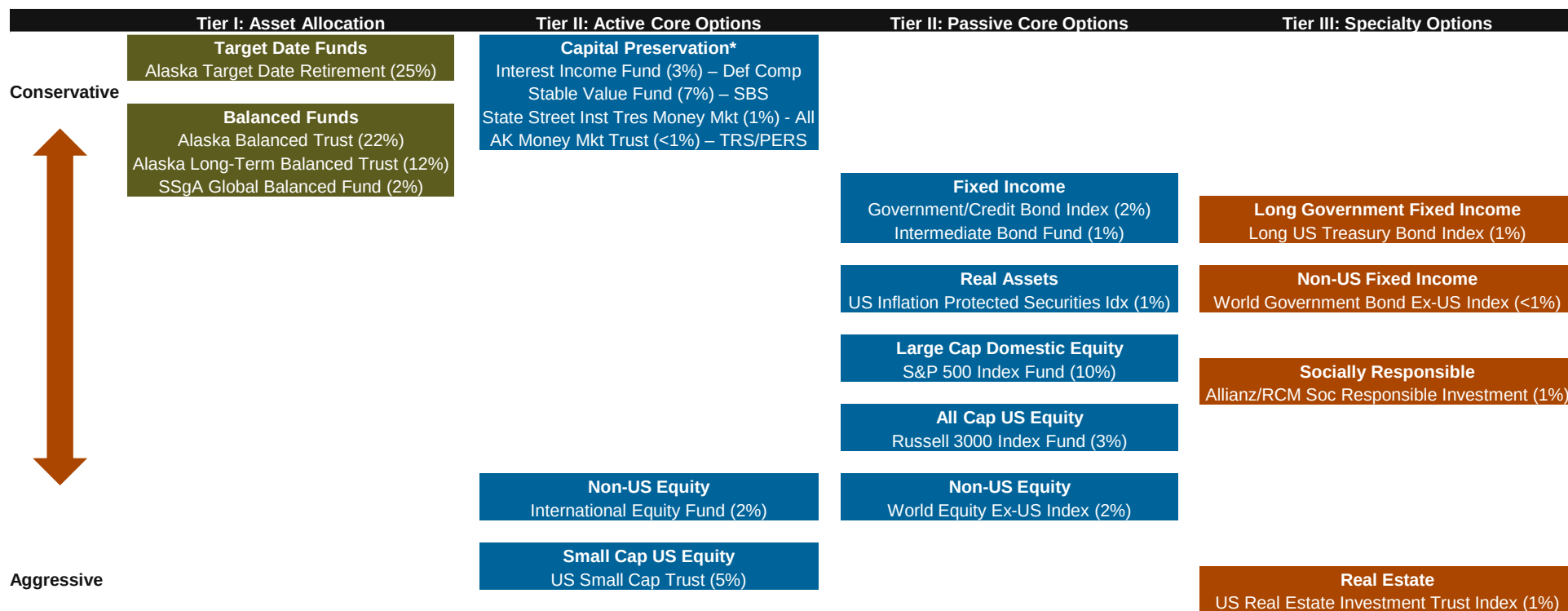
- Callan's preference is to utilize a three-tiered framework to depict a defined contribution plan's fund choices and to evaluate the overall plan investment structure. This approach addresses the varied needs of each constituency in an employee population.
- This study examines the ARMB defined contribution Plans within the context of Callan's three-tier structure philosophy. The chart below illustrates a "clean sheet" investment structure. Few plan structures resemble Callan's "clean sheet" due to individual investment preferences as well as a history of offering a larger number of investment options.
- This study primarily addresses the plans' structure and is agnostic with regard to individual fund performance.

Callan's Clean Sheet Lineup



The ARMB Defined Contribution Plans

ARMB Plans' Structure



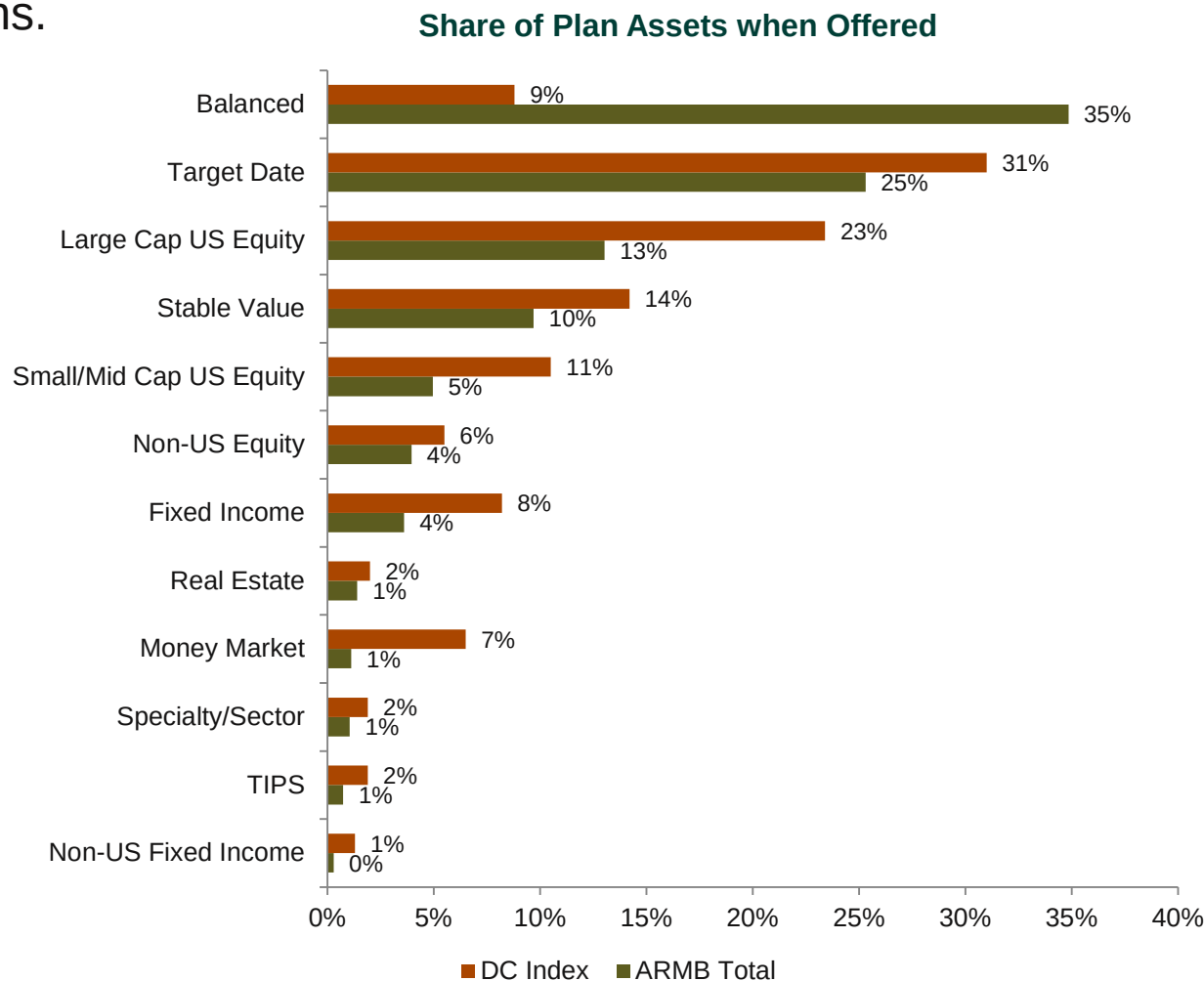
(Percentage of combined Plans' assets in parenthesis)

*Note capital preservation is one area from a structure standpoint where the 4 underlying plans differ. The offering plans are listed after the percentage of assets.

Comparison to Industry Averages

Prevalence of options in DC plans.

- The figures for the “Callan DC Index” represent the average allocation across roughly 100 defined contribution plans representing over \$150 billion in assets. This will serve as a proxy for the wider DC universe.
- Across the plans the utilization of the balanced funds outstrips that of the other options and accounts for nearly 4 times the assets as in a typical DC plan.
- As assets are concentrated in the balanced options, relative to the typical DC plan, the Plans have a lower allocation across all other asset classes.
- The Plans offer 17 options. 26% of public plans offer between 16 and 20 core funds. 39% offer fewer options and 34% offer more*.

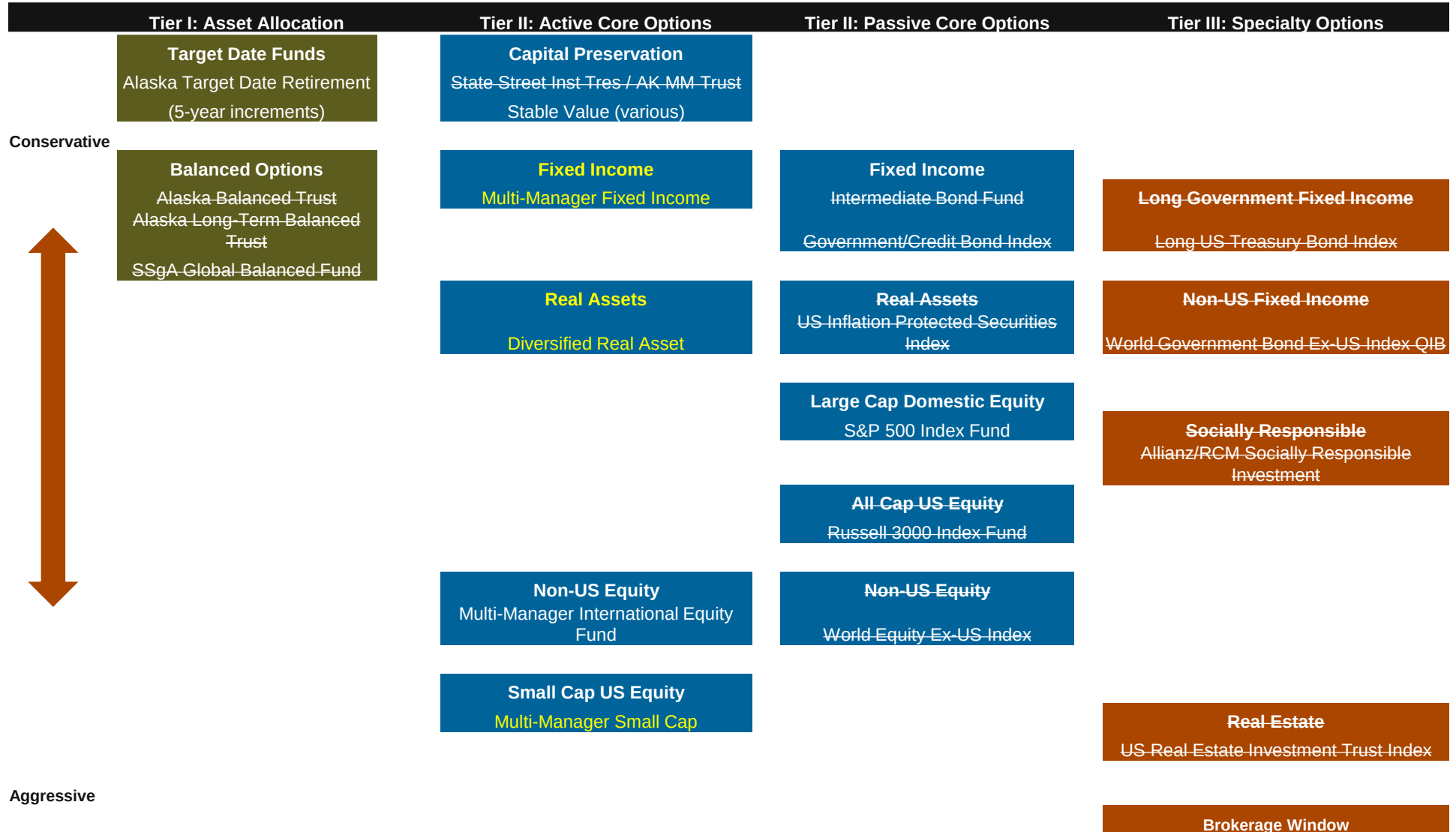


(allocations as of 3/31/16)

*NAGDCA 2015 Public Sector Defined Contribution Plan Survey. 17 options does not count target date funds.

Alternative Structure

Enhanced Use of Multi-Manager Structure





Target Date Suitability Analysis

Target Date Review – Introduction

In February 2013, the Employee Benefits Security Administration (EBSA) released its guide on Target Date Retirement Funds - Tips for ERISA Plan Fiduciaries. According to the EBSA, the general guidance is geared "to assist plan fiduciaries in selecting and monitoring TDFs and other investment options in 401(k) and similar participant-directed individual account plans."

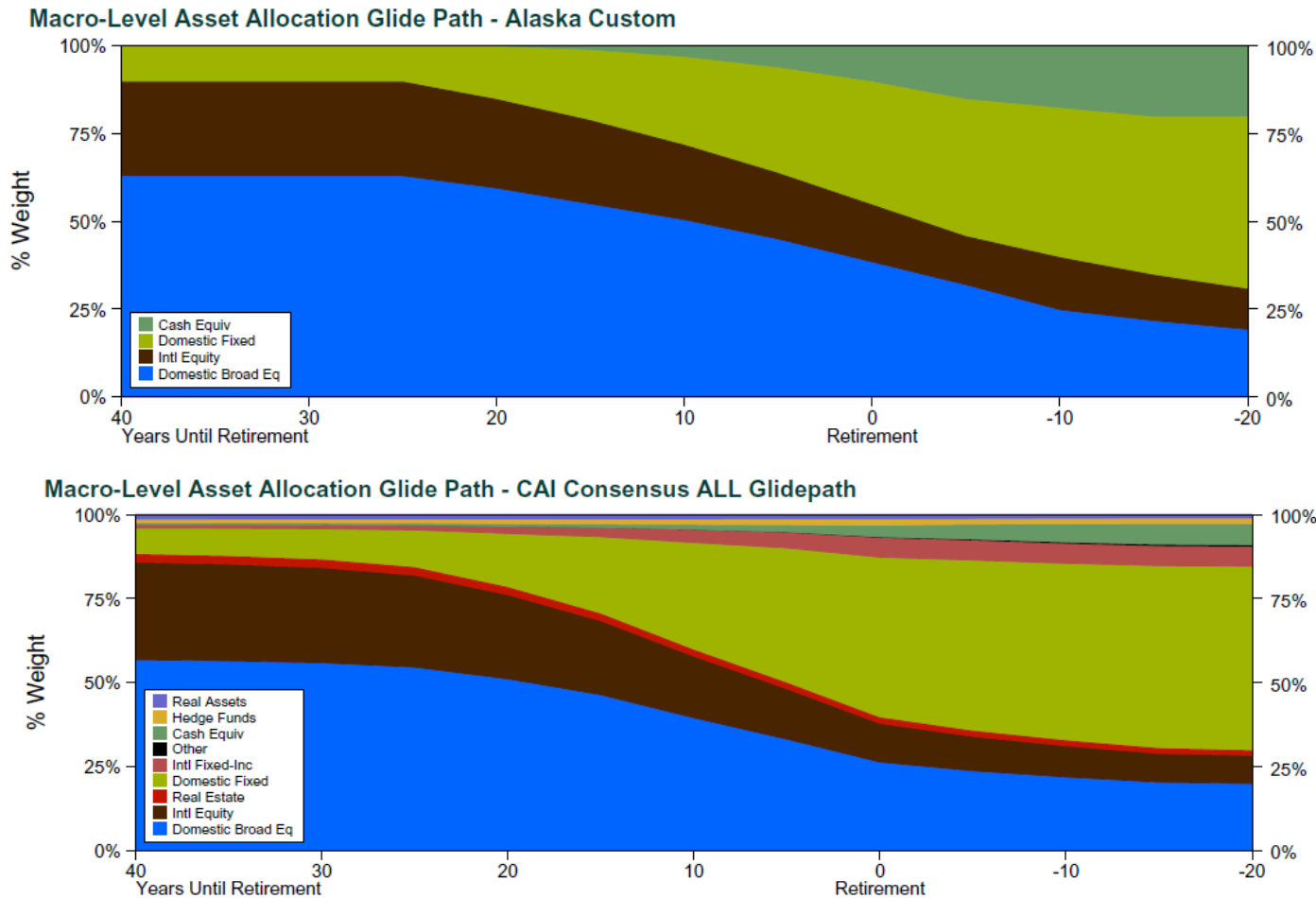
The guide establishes eight elements for plan sponsors to remember when choosing target date funds (TDFs):

1. Establish a process for comparing and selecting TDFs.
2. Establish a process for the periodic review of selected TDFs.
3. Understand the fund's investments – the allocation in different asset classes (stocks, bonds, cash), individual investments, and how these will change over time.
4. Review the fund's fees and investment expenses.
5. Inquire about whether a custom or non-proprietary target date fund would be a better fit for your plan.
6. Develop effective employee communications.
7. Take advantage of available sources of information to evaluate the TDF and recommendations you received regarding the TDF selection.
8. Document the process.

Callan believes that from the Department of Labor's (DOL) perspective, a higher standard may apply to target date fund decision-making going forward than has been applied in the past. This study reviews the suitability of the Alaska Target Retirement Trusts using this DOL perspective as we believe this framework represents best practice (although the ARMB plans are not ERISA plans) and the Plans' particular demographics and qualitative factors. We also review their construction, past performance and fees.

EBSA in a letter to the Government Accountability Office (in response to the GAO's letter on QDIAs) voiced support for innovative QDIA approaches.

Asset Roll Down

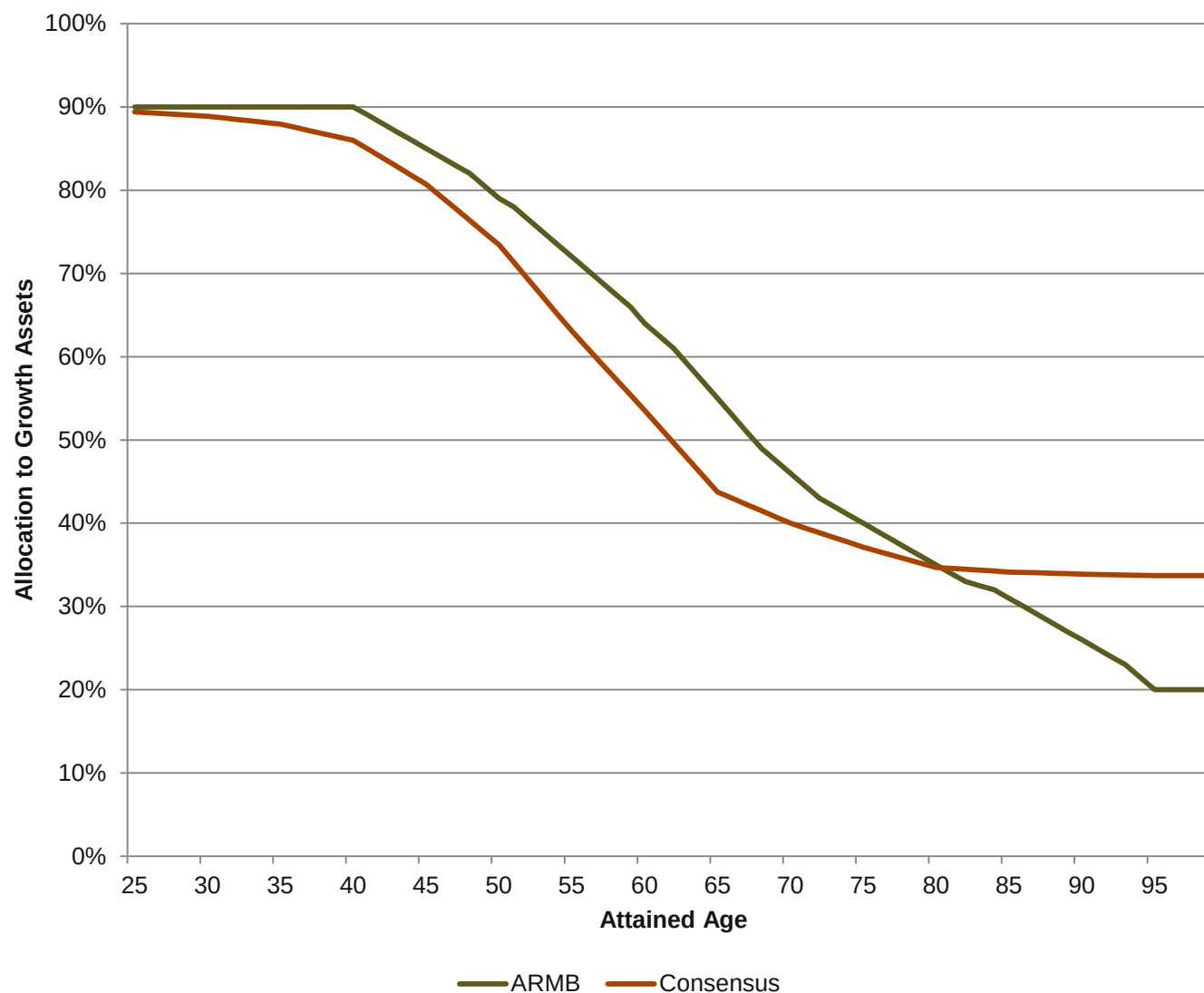


This roll down chart illustrates how the underlying asset allocation evolves as a participant ages.

As the allocation to fixed income (green shades) increases, the allocation to equity (international and domestic) decreases.

Relative to the Callan Consensus, the custom Alaska Funds have a higher allocation to cash, entering the glide path at roughly 10 years prior to retirement.

Growth Asset Rolldown*



This rolldown chart takes into consideration equity as well as equity-like asset classes (e.g., high yield fixed income and REITs) and gives a more accurate image of a “risk rolldown” than equity only illustrations.

As shown, for much of the glide path the Target Retirement Trusts have a higher growth asset allocation relative to the Callan Consensus. This is consistent with T. Rowe Price’s belief in the long-term benefits of the equity risk premium.

The glide path continues to roll down until age 95. This is also the case with the flagship off-the-shelf T. Rowe Price target date fund.

**See Appendix II for full definition.*

Target Date Review – Fees

- The table contains the investment management fee distribution across the entire off-the-shelf target date universe. This universe includes mutual funds as well as collective trusts.
- The Target Retirement Trusts utilize a mostly passive implementation with the underlying Bond Trust being actively managed. The fee illustrated for the Target Retirement Trusts is a weighted average across the entire suite and reflects the total fees for portfolio management, custody, and accounting charges associated with the portfolios.

Investment Management Fees Across Target Date Universe

Percentile	Median Fee
90 th	0.75%
75 th	0.72%
Median	0.60%
25 th	0.39%
10 th	0.18%
Target Retirement Trusts	0.16%

Risk-Taking Profile Summary

Choosing the Appropriate Glide Path – Program Characteristics and Glide Path Risk

Factors that argue for a less aggressive glide path are:

- A portion of the underlying population for the deferred compensation and SBS-AP plan have access to a defined benefit plan. For the 457, where there is data for hire dates, 62% of those currently employed have access to a defined benefit plan (and 82% of the terminated population).

A more aggressive glide path is preferable based on the following program characteristics:

- Going forward (and for many since 2006) the various defined contribution plans are expected to be the main funding source for retirement. Those in the SBS-AP plan do not contribute to Social Security, therefore the defined contribution plans will be the predominant source of funding.

**According to the EBRI, the median contribution level across the broad DC universe is 5.9%.*

Summary – Forward Looking Risk Assessment

	Shortfall Risk	Downside Risk	Inflation Risk	Longevity Risk
Target Retirement Trusts	Below Average	Above Average	Average	Average
Callan Consensus	Average	Average	Average	Average

- The Target Retirement Trusts feature a more aggressive glide path relative to many off-the-shelf peers (as represented by the Callan Consensus). Due largely to the heavier equity allocation, the accumulation metrics over a long time horizon prove more robust. However these accumulation metrics come with the associated cost of higher volatility and higher potential drawdowns.
- For those where the defined contribution plan is the main source of retirement savings, the Target Retirement Trusts provide a greater chance of successfully reaching the target income replacement ratio relative to the Callan Consensus.
- Although tenure for several of the plans is skewed by the fact that the plans have only existed for 10 years, public plans tend to have longer tenure than the typical private defined contribution plan.* This longer tenure may help participants ride out market volatility, especially since contributions are mandatory.

**"Employee Tenure Trends, 1983-2014", Employee Benefit Research Institute Newsletter February 2015.*

Summary

Consideration	Target Retirement Trusts
Historical Performance	Strong historical performance driven by their more aggressive orientation.
Team and Organization	Long tenured and stable
Number, type and quality of underlying funds	The Trusts utilize custom funds as building blocks. These funds mix both active and passive implementations.
Glide path construction	In 2014, several changes were made to glide path which looked to reduce the sensitivity of the Trusts to rising interest rates, increase the inflation sensitivity of the Trusts and more fully benefit from global investment opportunities. Overall the glide path is notably more aggressive than the Callan Consensus.
Forward looking projections	Lower shortfall risk comes at cost of higher downside risk for both populations.
Fees	Low cost due to scale and heavy use of passive implementations
Pros	• The use of passive implementations allows for lower fees • Straight-forward easy to understand implementation
Cons	• In some asset classes the use of passive allows no chance for alpha generation



Managed Account Review

Advice and Managed Accounts: ARMB-Specific

Opt In or Out?	Opt In (though managed accounts was the default up to July 2009)	
Number of Participants Using Advice (as of 12/31/2015; amount in parenthesis is % of ppts)	457 Plan: 99 ppts (0.9%)	SBS Plan: 141 ppts (0.3%)
	PERS Plan: 33 ppts (0.1%)	TRS Plan: 3 ppts (0.04%)
Number of Participants Using Managed Accounts (as of 12/31/2015; amount in parenthesis is % of ppts)	457 Plan: 1,140 ppts (10.4%)	SBS Plan: 1,150 ppts (2.6%)
	PERS Plan: 5,731 ppts (20.8%)	TRS Plan: 1,573 ppts (23.0%)
Estimated Number of Participants Defaulted into Managed Accounts Prior to July 2009	Roughly 75% of participants using managed accounts appear to be defaulted in.	
Can participants be in Advice and Managed Accounts at the same time?	No. A participant can only be in one or the other at one time.	
% of Participants electing Advice/Managed Accounts on their own vs. through a representative	Unable to provide this data currently – they are looking at this as a future enhancement	
Frequency of Review	Advice: as requested by participant Managed Accounts: annually	

- For the ARMB plans, the managed account solution is proved through the Empower participant website by their wholly owned subsidiary, Advised Assets Group, LLC (AAG), which uses a program powered by Morningstar/Ibbotson.
- Less than 1% of the population use Advice across the four Plans.
- For the PRS and TRS Plans, over 20% of participants use Managed Accounts. It is notably less for the SBS and 457 Plans.

Advice Managed Account Fee Application and Comparison

Advice/Managed Accounts	Empower	Industry Comps
Guidance	Included	Typically included
Advice Annual Fee	\$25 (only assessed to those that use it)	Typically \$0 to \$10 per participant
Managed Account Fee	Tiered Schedule: Up to \$100,000: 0.45% of assets \$100,000 to \$250,000: 0.35% of assets \$250,000 to \$400,000: 0.25% of assets Over \$400,000: 0.15% of assets	0 bps to 60 bps (typically 10 to 50 bps)

	SBS Plan	457 Plan	PERS Plan	TRS Plan	<u>Total</u> ARMB Plans
Estimated Advice Fees	\$3,525	\$2,475	\$825	\$75	\$6,900
Estimated Managed Account Fees*	\$390,867	\$369,941	\$566,468	\$261,088	\$1,588,363
TOTAL ESTIMATED REVENUE	\$394,392	\$372,416	\$567,293	\$261,163	\$1,595,263

- With Empower, Advice fees are only charged to those participants that use Advice. With other recordkeepers, they typically charge the Advice fee across the entire participant base (whether or not the participant uses the service). While the \$25 Advice fee is higher than the typical industry fee, it is more favorable overall given the low participant use of Advice (less than 1%).
- Managed account fees fall within range of that of the market.

*To estimate the aggregate managed account fees, we used the average participant balance (by Plan) and applied the managed account fee schedule. In all Plans, the average balance was below the \$100,000 threshold.

Fees at a Glance

Example of the Tiered Fee Schedule in Practice

Balance	Blended Basis Points	Dollar Equivalent
\$50,000	0.45%	\$225
\$150,000	0.42%	\$625
\$250,000	0.39%	\$975
\$500,000	0.30%	\$1,500

- The above fees are for the asset allocation piece only. They do not include the underlying investment management fees. The combined fee on the underlying portfolios can range from 15 to 32 basis points. The total is range is: **45 to 77 basis points.**
- This is well above the existing target date funds where the stated fees range from **13 to 16 basis points.**

Overview of the Managed Account Program

Underlying Methodology – Human Capital Approach

- Based on these inputs and the underlying building blocks available, the Managed Account platform builds out an allocation aimed at reaching the participant's retirement goals with a 70% probability. The goal is by default set to be 100% final income replacement.
- The allocations are based on a human capital approach. This assumes that participants retirement needs are met through a combination of human and financial capital.
 - Under this framework human capital is defined as the present value of future savings directed a retirement needs. Financial capital are the actual present savings at a given point in time.
 - Human capital in this framework is modeled as 70% equity-30% fixed income.
 - The implication is that those who are younger (and have more human capital) have higher allocations to equity while those who are older (with less remaining human capital) have higher allocations to fixed income.
 - This approach is also similar to that of T.Rowe Price in the target date offering. In both cases, the less that is needed from a retirement income standpoint from the DC plan, the more risk a participant can take.

The human capital approach also informs most target date funds and helps to explain the theory behind downward sloping glide paths which de-risk as a participant approaches retirement.

Overview of the Managed Account Program

Inputs that Drive Outcomes

- The custom portfolios are driven by inputs from both Empower’s record keeping platform as well as data inputted by participants. These include:

From Empower	From Participant
• Participant balance	• Spousal assets
• Assets	• Dependents
• Contributions	• Outside assets
• Age	• Cash flows
	• Pension data
	• Risk preference
	• Desired retirement income

In addition to the above data, ARMB feeds in participants’ estimated pension data if applicable.

Example Allocations

- The allocations below represent hypothetical allocations for someone starting out a career (“accumulation”) and someone at retirement (“decumulation”). At point there are conservative, moderate and aggressive variations:

State of Alaska Funds	Dynamic Model Portfolio Fund Allocations					
↓ Funds	Accumulation %			Decumulation %		
	Conservative	Moderate	Aggressive	Conservative	Moderate	Aggressive
Russell 3000 Index	0%	5%	19%	0%	9%	19%
S & P 500 Stock Index Fund	3%	8%	13%	4%	6%	21%
US Small Cap Trust	3%	13%	25%	0%	12%	27%
International Equity Fund	3%	6%	17%	3%	6%	13%
World Equity Ex-US Index	0%	5%	18%	0%	0%	12%
Alaska Balanced Trust	3%	10%	0%	4%	10%	0%
Alaska Long-Term Balanced Trust	0%	5%	0%	0%	6%	0%
SSgA Global Balanced Fund	3%	6%	0%	0%	7%	0%
Government/Credit Bond Index Fund	21%	9%	3%	0%	0%	0%
Intermediate Bond Fund	21%	7%	0%	33%	20%	3%
State Street Inst Treasury Money Market	3%	0%	0%	11%	0%	0%
US Treasury Inflation Protected Sec Indx	7%	3%	0%	27%	10%	0%
Stable Value Fund	20%	12%	0%	12%	9%	0%
US Real Estate Investment Trust Index	0%	3%	5%	3%	5%	5%
World Government Bond Ex-US Index QIB	13%	8%	0%	3%	0%	0%
Total	100%	100%	100%	100%	100%	100%

Source: Advised Asset Group's Advisory Services Review for Callan

Investment Review Conclusions

ISE Observations

- As currently constituted, the lineup can appear confusing to participants without basic investment knowledge.
- The lineup can be redesigned to cater to those who:
 - ❖ wish to delegate asset allocation decisions (Tier I)
 - ❖ those who wish to make high level asset allocation decisions (Tier II)
 - ❖ those who want access to more specific investment themes (Tier III)
- The changes outlined below strike a balance between these three groups and their objectives.

ISE Recommendations

- Remove the balanced funds and map participants to the age-appropriate target date fund.
- Remove the money market options and proceed with stable value as the principal protection option.
- Consolidate the existing fixed income options into a custom multi-manager fixed income fund.
- Combine the existing TIPS and REIT options into a single multi-asset class real asset fund.
- Combine the passive international fund with the active counterpart into a single multi-manager offering.
- Map assets from the Russell 3000 to the S&P 500 Index.
- Remove the socially responsible fund.
- Add a brokerage window

Investment Review Conclusions

Target Date Review Observations

- These custom funds provide participants a reasonable probability of reaching a successful retirement. Much of this depends on the continuation of the current mandatory deferral rates and match structure.

Target Date Review Recommendations

- Given the high predicted replacement ratios along with the fact that there is some overlap between the SBS and PERS plan populations, the Plans could explore whether there is room to take less risk throughout the glide path and still reach successful outcomes with a reasonable degree of certainty.
- On a periodic basis revisit the glide path and implementation of the funds given the Plans' underlying demographics and plan design.

Investment Review Conclusions

Managed Account Review Observations

- Roughly 75% of participants using managed accounts appear to be defaulted in.
- The participant inputs are vital to calibrating the asset allocation. Given the range of possible portfolios, it is up to the participant to supply accurate data to build out the best possible allocation. At issue though is whether or not participants actually take the time to input their data.
- Although Empower was not able to provide statistics on the number of participants using managed accounts who proactively enter their personal data in order to tailor the managed account to their situation, Callan's understanding based on conversations with Empower is that the number is low.

Managed Account Recommendations

- Issue a managed account RFI to fully understand the capabilities of the existing managed account provider compared to others that are available.
- Consider an asset re-enrollment given that some participants, particularly those defaulted (roughly 75% of users), may not have re-evaluated their managed account settings.

September 30, 2016



Alaska Retirement Management Board: Recordkeeper Review

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Overview

Overview

- The Alaska Retirement Management Board (ARMB) engaged Callan Associates (Callan) to assist in reviewing the Plans' current recordkeeper, Empower.
- Empower currently administers the following four ARMB Plans:
 - The Alaska Supplemental Annuity Plan (SBS-AP)
 - The State of Alaska 457 Deferred Compensation Plan
 - The Alaska Public Employees' Retirement System (PERS) IV Defined Contribution Retirement Plan
 - The Alaska Teachers' Retirement System (TRS) III Defined Contribution Retirement Plan
- As of March 31, 2016, there were nearly 89,500 participant accounts. As of June 30, 2016, assets across the Plans were at approximately \$5.8 billion.
- This report provides our evaluation of Empower in terms of their services and pricing, including an evaluation of their core recordkeeping capabilities, participant experience, and plan delivery. We provide a scoring summary, recordkeeper comparisons where available, and an overview on the current fees.
 - In scoring Empower, we compared their services, capabilities, and fees against the broad DC recordkeeper industry.

Overview of Plans

	SBS-AP	457 Deferred Compensation Plan	PERS IV	TRS III
Full Plan Name	The Alaska Supplemental Annuity Plan	The State of Alaska 457 Deferred Compensation Plan	The Alaska Public Employees' Retirement System (PERS) IV Defined Contribution Retirement Plan	The Alaska Teachers' Retirement System (TRS) III Defined Contribution Retirement Plan
Plan Type	401(a)	457	401(a)	401(a)
Total Participant Accounts*	44,106	10,986	27,524	6,828
Assets (6/30/16)	\$4,081,285,976	\$808,795,366	\$667,523,128	\$286,112,303
Eligibility	Employees of state and 20 political subdivisions	Voluntary, any permanent, long-term non-permanent employee as well as elected officials.	Public employees	Teachers/educators at participating employers
Deferral	6.13% mandatory	Variable	8.00% mandatory	8.00% mandatory
Match	6.13%	None	5.00%	7.00%

*Some participants are in multiple plans.

Empower Overview

Empower Overview

● Company Background/History

- Empower, previously Great-West, is the retirement services business of Great-West Financial, which offers the products and services provided by Great-West Life & Annuity Insurance Company (GWL&A). GWL&A is an indirect, wholly owned subsidiary of Great-West Lifeco, Inc., a holding company, owned by the Power Corporation of Canada. Rebranding to the Empower name occurred in October 2014.
- Empower has revenue of over \$2 billion with about 4,100 employees dedicated to DC recordkeeping services. This includes the approximately 1,000 additional employees gained with the acquisition of JPMorgan.
- On 3/20/2014, Bob Reynolds was appointed as President and CEO of Great-West Lifeco, Inc., the holding company that owns Great-West Financial and Putnam Investments, succeeding Mitchell Graye who retired. Additionally, it was announced that the businesses of Denver-based Great-West Financial and Boston-based Putnam Investments would be aligned. Putnam and Great-West Financial had worked together under Great-West Lifeco since 2007, and shared a recordkeeping platform since 2009.
- On 4/3/2014, Great-West Financial announced that they would acquire JPMorgan Retirement Plan Services, gaining 1,000+ employees and 200 clients with about 2 million participants and \$167 billion assets under administration. In April 2015, JPMorgan clients began converting to the Empower Administrative System (EAS). The full conversion is expected to be complete by February 2017. Approximately 72% of legacy JPMorgan revenue has been retained as of mid 2016.

● Experience

- Empower covers the full DC market in terms of size and plan types
 - The majority of plans are in the small market space, with over 93% of plans having less than 500 participants. While less than 1% of their DC business is made up of clients with above 50,000 participants, in absolute terms, this represents a reasonable number, at 19 clients.
 - Across plan types, 401(k) plans are the most common type of plan that Empower recordkeeps. On a combined basis, 401(a) and 457 plans make up less than 10% of Empower's total plans, which on an absolute basis, represents over 2,500 plans.

● Systems

- Use their proprietary recordkeeping system, Empower Administrative System (EAS), which was designed and developed internally, specifically for the defined contribution and deferred compensation markets.
- Data required for daily processing is stored on-site. Duplicate backup files are securely transported to an off-site storage facility. Backup categories that Empower use include: Full Backup, Differential Backup (since last full backup), Incremental Backup (since last backup), Year-End Backup, and One-Time Backups. The primary data center is in Greenwood Village, CO while the alternate data center is in Andover, MA. Others have been added with the integration.
- Business Continuity Plan is tested at least two times per year.

● Third Parties and Investments

- For large/mega plans, fully flexible with investments (though Empower does provide investment product).
- DC Trust/Custody services are typically provided in-house through Empower (though they will work with outside providers).
- Advice and Managed Accounts can be provided through Financial Engines or Morningstar.

Empower Plan Type Comparison

- Below are the total number of DC plans that Empower services, by plan type.
- Plans that are of the same type as which ARMB offers (i.e., 401(a) and 457 plans) are outlined in **blue**.

Total DC Plans (types of plans)	Empower	
	#	%
401(k)	27,316	76.3%
401(a)	1,204	3.4%
403(b)	3,589	10.0%
457	1,349	3.8%
NQDC	284	0.8%
Other	2,065	5.8%
DC TOTAL	35,807	--

Empower Recordkeeper Comparison

- Below are the number of total, 401(a), and 457 plans that Empower services, by participant count and assets.
- Plans of similar size to ARMB are outlined in the rows highlighted in blue.
 - Assets across the three 401(a) Plans are approximately \$5.0 billion and there are about 78,500 participant accounts.
 - Assets in the Alaska 457 Plan are approximately \$809 million and there are about 11,000 participant accounts.

Total DC Plans (by # of participants)	Empower	
	#	%
Less than 500	33,561	93.7%
501 to 1,000	645	1.8%
1,001 to 5,000	526	1.5%
5,001 to 10,000	75	0.2%
10,001 to 50,000	981	2.7%
50,001 to 100,000	12	0.0%
100,000+	7	0.0%
DC TOTAL	35,807	--

By Participants	Empower Total 401(a) Plans		Empower Total 457 Plans	
	#	%	#	%
Less than 500	1,086	90.2%	1,214	90.0%
501 to 1,000	49	4.1%	47	3.5%
1,001 to 5,000	44	3.7%	49	3.6%
5,001 to 10,000	8	0.7%	13	1.0%
10,001 to 50,000	15	1.2%	18	1.3%
50,001 to 100,000	2	0.2%	6	0.4%
100,000+	0	0.0%	2	0.1%
DC TOTAL	1,204	--	1,349	--

Total DC Plans (by assets)	Empower	
	#	%
Less than \$100 million	35,426	98.9%
\$100 to \$500 million	257	0.7%
\$500 million to \$1 billion	56	0.2%
\$1+ billion	68	0.2%
DC TOTAL	35,807	--

By Assets	Empower Total 401(a) Plans		Empower Total 457 Plans	
	#	%	#	%
Less than \$100 million	1,172	97.3%	1,299	96.3%
\$100 to \$500 million	21	1.7%	30	2.2%
\$500 million to \$1 billion	4	0.3%	10	0.7%
\$1+ billion	7	0.6%	10	0.7%
DC TOTAL	1,204	--	1,349	--

DC Recordkeeper Comparison – 401(a) Plans

- Below is an overview of how Empower compares to other major recordkeepers in the industry. This includes recordkeepers who have over \$5 billion in combined 401(a) and 457 plan assets.
- ARMB has approximately \$5.8 billion in total plan assets and 89,500 participant accounts.
 - Assets across the three 401(a) Plans are approximately \$5.0 billion and there are about 78,500 participant accounts.

	Empower	Empower Rank	Aon Hewitt	Fidelity	ICMA-RC	NRS	Prudential	T. Rowe	TIAA	Trans-america	Vanguard	Voya
Total Plan Overview												
Total: Number of Plans	33,807	2 of 11	551	22,551	6,935	28,105	4,217	902	24,412	2,929	6,853	46,694
Total: Number of Participants	7.5 million	2 of 11	5.7 million	18.1 million	1.0 million	2.7 million	2.7 million	1.8 million	5.8 million	3.8 million	4.2 million	4.5 million
Total: Amount of Assets (bil)	\$392.8	4 of 11	\$377.2	\$1,431.9	\$43.7	\$115.0	\$170.8	\$144.0	\$437.2	\$173.6	\$392.9	\$288.7
401(a) Plan Overview												
401(a): Number of Plans	1,204	4 of 10	3	327	2,136	218	Not tracked	12	1,243	169	23	1,656
401(a): Number of Participants	476,292	4 of 9	356,931	1,245,601	337,360	120,866	--	19,115	1,162,830	564,197	73,463	n/a
401(a): Amount of Assets (bil)	\$14.8	3 of 9	\$10.4	\$40.0	\$9.6	\$3.1	--	\$1.0	\$83.7	\$4.3	\$4.9	n/a
401(a) Plans by Assets												
Small (Under \$100 mil)	1,172	4 of 10	1	21,083	1,325	214	--	10	1,115	164	12	1,654
Core (\$100 to \$500 mil)	21	4 of 10	0	1,200	809	2	--	1	89	4	8	12
Large (\$500 mil to \$1 bil)	4	3 of 10	0	259	2	1	--	1	22	0	2	0
Mega (Greater than \$1 bil)	7	3 of 10	2	229	0	1	--	0	17	1	1	0
401(a) Plans by Participants												
Under 500 participants	1,086	4 of 10	0	18,919	2,091	203	--	10	970	74	6	1,615
501 to 1,000 participants	49	3 of 10	0	1,408	26	6	--	0	78	17	4	22
1,001 to 5,000 participants	44	4 of 10	0	1,712	15	4	--	0	147	52	7	23
5,001 to 10,000 participants	8	4 of 10	0	394	0	1	--	1	23	16	4	5
10,001 to 50,000 participants	15	3 of 10	1	304	2	4	--	1	23	9	2	1
50,001 to 100,000 participants	2	Tied for 2	0	24	2	0	--	0	2	1	0	0
Over 100,000 participants	0	Tied for 3	2	10	0	0	--	0	0	0	0	0

DC Recordkeeper Comparison – 457 Plans

- Below is a comparison of how Empower compares to other major recordkeepers in the industry. This includes recordkeepers who have over \$5 billion in combined 401(a) and 457 plan assets.
- ARMB has approximately \$5.8 billion in total plan assets and 89,500 participant accounts.
 - Assets in the Alaska 457 Plan are approximately \$809 million and there are about 11,000 participant accounts.

	Empower	Empower Rank	Aon Hewitt	Fidelity	ICMA-RC	NRS	Prudential	T. Rowe	TIAA	Trans-america	Vanguard	Voya
457 Plan Overview												
457: Number of Plans	1,349	5 of 11	4	790	4,799	7,275	284	34	1,839	446	78	4,866
457: Number of Participants	1,463,708	2 of 11	403,595	203,919	695,650	1,506,752	297,719	94,093	110,151	61,745	17,812	1,269,863
457: Amount of Assets (bil)	\$69.9	1 of 11	\$14.9	\$11.8	\$34.1	\$65.6	\$21.0	\$7.9	\$5.9	\$2.4	\$1.2	\$40.9
457 Plans by Assets												
Small (Under \$100 mil)	1,299	5 of 11	1	764	2,609	7,322	268	28	1,830	444	76	4,816
Core (\$100 to \$500 mil)	30	3 of 11	0	23	2,184	30	6	1	8	2	2	35
Large (\$500 mil to \$1 bil)	10	1 of 11	0	2	3	3	2	3	1	0	0	8
Mega (Greater than \$1 bil)	10	1 of 11	3	1	3	9	8	1	0	0	0	7
457 Plans by Participants												
Under 500 participants	1,214	5 of 11	0	728	4,606	7,098	256	24	1,802	418	70	4,709
501 to 1,000 participants	47	3 of 11	0	20	112	127	6	3	18	13	4	44
1,001 to 5,000 participants	49	4 of 11	0	35	73	117	13	3	16	14	4	58
5,001 to 10,000 participants	13	2 of 11	0	3	3	7	3	2	3	1	0	38
10,001 to 50,000 participants	18	1 of 11	2	3	3	14	4	1	0	0	0	11
50,001 to 100,000 participants	6	1 of 11	0	0	2	0	2	1	0	0	0	4
Over 100,000 participants	2	Tied for 1	2	0	0	2	0	0	0	0	0	2

Summary Scoring

Scoring Summary

- Callan scored Empower based on our knowledge of the recordkeeper marketplace, through our research, our search and RFI activity, client experience, off-site and on-site recordkeeper meetings, and Callan's proprietary recordkeeper database of over 1,000 questions that is updated at least once annually by all major providers. Additionally, we used information provided by ARMB.
- In scoring Empower, we compared their services, capabilities, and fees against the broad DC recordkeeper industry.
 - There are 21 categories that were scored (see next slide for a list of the categories).
 - Each category was scored on the 1 to 3 scale, with 3 being the highest:
 - A score of 2 is equivalent to that of what would be expected from an average recordkeeper.
 - A score of 1 indicates below average while a score of 3 indicates above average.
 - Additionally, a weight of 1 to 4 (4 being the highest) was assigned to each category. Weights are based on standard weightings used in RK reviews, adjusted based on our understanding of the ARMB Plans.
 - Based on the above, a total weighted score was calculated.
- Below is a summary of Empower's score for DC services. On the following slides, we provide the detailed scoring summary and outline the key strengths and weaknesses of Empower. Further detail on the scoring can be found in the appendices.

	Empower
Total Weighted Score	2.4

Scoring Comparison: Empower vs. Recordkeeper Industry

Category	Weight	Empower Score	Empower Weighted Score
Recordkeeping: Processing	4	3	12
Recordkeeping: Functionality	4	3	12
Communications	4	3	12
Advice/Managed Accounts	4	1	4
Participant Web Site	4	3	12
Investments	4	2	8
Fees	4	1	4
Organization	3	2	6
Market Positioning	3	3	9
Client Service & Quality Assurance: Quality Assurance	3	3	9
Client Service Model and Client Relationship Manager	3	2	6
Compliance	3	3	9
Plan Sponsor Reporting	3	2	6
Call Center	3	3	9
Contract & SLAs	3	1	3
Client Base / Asset Breakdown	2	3	6
Recordkeeping: Staffing	2	2	4
Recordkeeping: Systems	2	3	6
Plan Sponsor Web Site	2	2	4
Participant Transactions	1	2	2
Voice Response Unit (VRS)	1	3	3
TOTAL SCORE	--	50	146
TOTAL WEIGHTED SCORE	--		2.4

- Empower was scored on a scale of 1 to 3, with 3 being the highest score.
 - A score of 2 is equivalent to that of what would be expected from an average recordkeeper. A score of 1 is below average whereas a score of 3 is above average.
 - Color coding is by category where green represents above average, yellow is average, and red represents below average.
- Additionally, a weight of 1 to 4 was assigned for each category, with 4 being the highest weight. Detailed scoring can be found in Appendix III.

Scoring Overview for Empower

Pros	Cons
• Known ability to handle ARMB's plan provisions and processing needs • Familiarity with the staff, participants, and geography of the State • Among top three administrators of statewide and public DC plans • Strong commitment to the DC recordkeeping market • Significant focus on recordkeeping business • Strong multi-channel communications with ability to fully customize and brand to ARMB (including custom website, communications campaigns, and semi-dedicated representatives) • Highly functional, usable, and modern participant website • Customized and informative pre login participant site • Among more advanced mobile capabilities with responsive design • Strong call center statistics • Meets all insurance and contracting requirements • Strong, proprietary recordkeeping system • Open architecture fund platform and known ability to recordkeep current fund lineup • Reasonable experience with custom, multi-manager funds	• No service level agreements (SLAs) or fees at risk, which are becoming increasingly common in the industry • Organization is still navigating recent acquisitions and there are some capacity constraints (due both to the large influx of new business and the JPM conversion waves taking additional time/resources (final wave postponed until 2017, with some of the conversion waves having significant challenges)) • Client servicing team can lack responsiveness • Asset-based fees are within range, but higher than median • Some concern over representatives' compensation structure and potential for promoting Managed Accounts • Uncertainty as to how participants enroll in and are using Managed Accounts • Plan sponsor reporting capabilities are adequate, but not as strong as other recordkeepers (and timing appears slower)

- Empower ranks above average, with a total weighted score of 2.4 out of 3

Fees

Recordkeeping Fee Summary

- The table below provides a summary of the estimated annual revenue received by Empower for recordkeeping services. See the following slide for additional detail.

	SBS Plan	457 Plan	PERS Plan	TRS Plan	<u>Total</u> ARMB Plans
Recordkeeping Revenue	\$2,812,721	\$560,936	\$458,198	\$195,487	\$4,027,342

- Empower charges a 0.0675% asset-based fee for recordkeeping services (plus some additional fees noted in this presentation). While this is the fee that Empower collects, participants pay a different amount to cover administrative costs.
 - Participant fees include recordkeeping fees to Empower plus ARMB administrative fees.
 - Administrative fees include fees for plan administration, salaries, publications, and ARMB expenses.
 - For the SBS, PERS, and TRS Plans, participants pay an asset-based fee of 0.11% plus a fixed annual fee (\$35 for contributing participants and \$25 for non-contributing participants).
 - For the 457 Plan, participants pay an asset-based fee of 0.17% with no fixed annual fee.

Empower Recordkeeping Fees Applied

	SBS Plan	457 Plan	PERS Plan	TRS Plan	Total ARMB Plans
Recordkeeping Fee (0.0675% bps)	\$2,754,868	\$545,937	\$450,578	\$193,126	\$3,944,509
Trust/Custody/Unitization Fees*	\$21,103	\$4,583	\$3,870	\$1,944	\$31,500
Education/Communication Fees	\$0	\$0	\$0	\$0	\$0
Semi-Dedicated Field Representatives	\$0	\$0	\$0	\$0	\$0
Postage/Printing Fees	\$0	\$0	\$0	\$0	\$0
Total Required Revenue	\$2,775,971	\$550,520	\$454,448	\$195,070	\$3,976,009
Total Basis Points Fee (estimated)	0.068%	0.068%	0.068%	0.068%	0.0680%
Total Per Participant Fee (estimated)	\$62.94	\$50.11	\$16.51	\$28.57	\$44.45
Transaction Fees	--	--	--	--	--
Terminated Distributions	\$0	\$0	\$0	\$0	\$0
In-Service Withdrawals	\$0	\$0	\$0	\$0	\$0
QDRO Fees	\$36,750	\$10,417	\$3,750	\$417	\$51,333
Total Transaction Fees	\$36,750	\$10,417	\$3,750	\$417	\$51,333
TOTAL REVENUE COLLECTED	\$2,812,721	\$560,936	\$458,198	\$195,487	\$4,027,342

- Above, we show the application of the fees based on ARMB's Plan assets and prior transaction history.
 - We apply the fees based on approximately \$5.8 billion in assets as of June 30, 2016.
 - Additionally, for transaction fees, we estimate these based on the average number of transactions over 2013, 2014 and 2015, which were provided as a part of the data gathering process.
 - More information on the fees and assumptions can be found in Appendix II.

*Unitization fees of \$3,500 applied across seven State Street funds and \$5,000 for the International Equity Fund. Spread across plans on a pro rata basis. Additionally, a \$500 trust/custody fee per Plan.

Recordkeeping Fee Comparison

Comparison Plans

Per Participant Administration Fees

90th	\$51
75th	\$48
50th	\$43
25th	\$38
10th	\$35

Administration Fees (bps)

90th	0.07%
75th	0.05%
50th	0.04%
25th	0.03%
10th	0.03%

Sample Statistics

Average Assets: \$6,027,675,382

Average Participants: 57,823

Sample Count: 16

- We benchmark Empower's fee against Callan's proprietary DC fee database for a high level comparison.
 - The database houses actual plan fee information over the past 5 years, with over 500 data points.
 - The benchmarking analysis above is based on 16 observations from Callan fee mini-surveys and recordkeeper RFP bids.
- Empower's asset-based fee of 0.0675% is within the range of similarly sized plans, but above the median.
 - Note that the plans in the database have a range of complexity levels and may not be a fully apples-to-apples comparison to the ARMB Plans. For example, ARMB has certain complexities that other plans may not have (e.g., complex vesting schedules, consolidated statements, four field reps, travel to Alaska, etc.).

Advice Managed Account Fee Application and Comparison

Advice/Managed Accounts	Empower	Industry Comps
Guidance	Included	Typically included
Advice Annual Fee	\$25 (only assessed to those that use it)	Typically \$0 to \$10 per participant
Managed Account Fee	Tiered Schedule: Up to \$100,000: 0.45% of assets \$100,000 to \$250,000: 0.35% of assets \$250,000 to \$400,000: 0.25% of assets Over \$400,000: 0.15% of assets	0 bps to 60 bps (typically 10 to 50 bps)

	SBS Plan	457 Plan	PERS Plan	TRS Plan	<u>Total</u> ARMB Plans
Estimated Advice Fees	\$3,525	\$2,475	\$825	\$75	\$6,900
Estimated Managed Account Fees*	\$390,867	\$369,941	\$566,468	\$261,088	\$1,588,363
TOTAL ESTIMATED REVENUE	\$394,392	\$372,416	\$567,293	\$261,163	\$1,595,263

- With Empower, Advice fees are only charged to those participants that use Advice. With other recordkeepers, they typically charge the Advice fee across the entire participant base (whether or not the participant uses the service). While the \$25 Advice fee is higher than the typical industry fee, it is more favorable overall given the low participant use of Advice (less than 1%).
- Managed account fees fall within range of that of the market.

*To estimate the aggregate managed account fees, we used the average participant balance (by Plan) and applied the managed account fee schedule. In all Plans, the average balance was below the \$100,000 threshold.

Next Steps

Next Steps

- Identify any outstanding items/questions and any potential areas of improvement. This may include the following areas:
 - Client Team: is current client team satisfactory? Continue to evaluate on ongoing basis.
 - Advice/Managed Account Reporting Request – request that Empower provide additional information on managed accounts, including building a report that indicates the way in which participants are enrolled in these services and how they use them (e.g., do they provide outside information?)
 - To the extent that there is a change to managed accounts, revisit overall Empower fees
 - Implementation of Service Level Agreements with fees at risk
- Review and potentially implement the above with Empower
- On an ongoing basis, conduct:
 - Annual fee due diligence
 - Periodic recordkeeper searches/reviews
 - Review the outcomes/reports from AAG advisory services

APPENDIX I:

Recordkeeper Information & Comparisons

Recordkeeper Key Statistics

- Below are firm wide and system statistics on Empower.

	Empower
Year Empower Began Servicing DC Plans	1940
Year Empower Began Servicing 401(a) Plans	1940
Year Empower Began Servicing 457 Plans	1976
Total Number of Employees (# Dedicated to DC Recordkeeping)	5,397 at Great-West Financial (4,102)
Amount Invested in Technology	\$46 million in 2013 \$49 million in 2014 \$62 million in 2015
Planned Future Investment in Technology	Not disclosed (continuous investment)
Total DC Participants (12/31/15)	7.5 million
Total DC Assets (12/31/15)	\$392.8 billion
Provide SSAE16? (Preparer)	Yes (Deloitte & Touche LLP)
Recordkeeping System	Proprietary: Empower Administrative System (EAS)
System Maximum Fund/Account Combination	Unlimited

DC Recordkeeper Comparison: 401(a) and 457 Plans

	Aon Hewitt	Empower	Fidelity	ICMA-RC	NRS	Prudential	T. Rowe	TIAA	Transamerica	Vanguard	Voya
401(a) Plan Overview											
401(a): Number of Plans	3	1,204	327	2,136	218	Not tracked	12	1,243	169	23	1,656
401(a): Number of Participants	356,931	476,292	1,245,601	337,360	120,866	--	19,115	1,162,830	564,197	73,463	n/a
401(a): Amount of Assets (bil)	\$10.4	\$14.8	\$40.0	\$9.6	\$3.1	--	\$1.0	\$83.7	\$4.3	\$0.5	n/a
401(a) Plans By Asset Size											
Small (Under \$100 mil)	1	1,172	21,083	1,325	214	--	10	1,115	164	12	1,654
Core (\$100 to \$500 mil)	0	21	1,200	809	2	--	1	89	4	8	12
Large (\$500 mil to \$1 bil)	0	4	259	2	1	--	1	22	0	2	0
Mega (Greater than \$1 bil)	2	7	229	0	1	--	0	17	1	1	0
401(a) Plans By Participants											
Under 500 participants	0	1,086	18,919	2,091	203	--	10	970	74	6	1,615
501 to 1,000 participants	0	49	1,408	26	6	--	0	78	17	4	22
1,001 to 5,000 participants	0	44	1,712	15	4	--	0	147	52	7	23
5,001 to 10,000 participants	0	8	394	0	1	--	1	23	16	4	5
10,001 to 50,000 participants	1	15	304	2	4	--	1	23	9	2	1
50,001 to 100,000 participants	0	2	24	2	0	--	0	2	1	0	0
Over 100,000 participants	2	0	10	0	0	--	0	0	0	0	0

	Aon Hewitt	Empower	Fidelity	ICMA-RC	NRS	Prudential	T. Rowe	TIAA	Transamerica	Vanguard	Voya
457 Plan Overview											
457: Number of Plans	4	1,349	790	4,799	7,275	284	34	1,839	446	78	4,866
457: Number of Participants	403,595	1,463,708	203,919	695,650	1,506,752	297,719	94,093	110,151	61,745	17,812	1,269,863
457: Amount of Assets (bil)	\$14.9	\$69.9	\$11.8	\$34.1	\$65.6	\$21.0	\$7.9	\$5.9	\$2.4	\$1.2	\$40.9
457 Plans By Asset Size											
Small (Under \$100 mil)	1	1,299	764	2,609	7,322	268	28	1,830	444	76	4,816
Core (\$100 to \$500 mil)	0	30	23	2,184	30	6	1	8	2	2	35
Large (\$500 mil to \$1 bil)	0	10	2	3	3	2	3	1	0	0	8
Mega (Greater than \$1 bil)	3	10	1	3	9	8	1	0	0	0	7
457 Plans By Participants											
Under 500 participants	0	1,214	728	4,606	7,098	256	24	1,802	418	70	4,709
501 to 1,000 participants	0	47	20	112	127	6	3	18	13	4	44
1,001 to 5,000 participants	0	49	35	73	117	13	3	16	14	4	58
5,001 to 10,000 participants	0	13	3	3	7	3	2	3	1	0	38
10,001 to 50,000 participants	2	18	3	3	14	4	1	0	0	0	11
50,001 to 100,000 participants	0	6	0	2	0	2	1	0	0	0	4
Over 100,000 participants	2	2	0	0	2	0	0	0	0	0	2

Proposed Team

- Below are Empower's key team members for servicing ARMB.

Name (Title)	Title / Role	Location	# Years with Firm	Industry # Years	# Client Assignments
Liz Davidsen	Manager of Government Client Services; Oversight for all government clients in the Western region	Denver, CO	14 years	17 years	59
Mike Forster	Senior Client Services Manager	Denver, CO	10 years (1 year with ARMB)	15 years	5
Bruce Dale	Assistant Vice President, Partner Strategy	Denver, CO	25 years	12 years	59
John Borne	Vice President, Government Markets	San Diego, CA	4 years	16 years	59
Lisa Hoxsa	Communications	Hawaii	19 years	22 years	15
Mitch Jones	Director of Client Relations and Plan Counseling; Oversees the field representatives	Anchorage, AK	2 years	10 years	3
Jazmine Williams	Field Representative	Anchorage, AK	1.5 years	1.5 years	3
Pamela Bosch	Field Representative	Anchorage, AK	2.5 years	2.5 years	3
Thai Walty	Field Representative	Anchorage, AK	4 years	4 years	3

Recordkeeper Staffing Statistics

- We outline key statistics around staffing for other major recordkeepers.
- For the industry range and averages, this includes 16 recordkeeper firms.

	Empower	Industry Range	Industry Average
<u>Relationship Managers</u>			
-How many?	46	14 to 213	65
-Average tenure?	13.5 years	7 to 16 years	11.5 years
-Turnover?	13%	1 to 12%	6.8%
-Average # of clients assigned?	5 to 10	3 to 12	7
<u>Administration Staff</u>			
-How many?	3,564	73 to 4,433	1,250
-Average tenure?	14 years	5 to 15 years	10 years
-Turnover?	6%	3 to 18%	8.4%
-Average # of clients assigned?	8	3 to 13	6
<u>Conversion Staff</u>			
-How many?	22	13 to 518	103
-Average tenure?	7 years	6 to 25 years	10 years
-Turnover?	3%	2.3 to 10%	6.8%
-Average # of simultaneous conversions?	3 to 5	1 to 4	2
<u>Compliance Staff</u>			
-How many ERISA attorneys?	16	3 to 43	11
-How many total in compliance?	30	6 to 144	49
<u>IT Staff</u>			
-How many?	392	14 to 667	295
-Average tenure?	10 years	5 to 13 years	10 years
<u>Communications Staff</u>			
-How many?	40	13 to 300	99
-Average tenure?	15 years	5 to 15 years	9 years
-Turnover?	7%	1 to 35%	7.9%
-Average # of clients assigned?	6	2 to 22	7
<u>Call Center Staff</u>			
-How many?	587	43 to 1,233	373
-Average tenure?	3 years	2 to 7 years	4 years
-Turnover?	40% external (16% internal)	6.3 to 40%	17.1%

Recordkeeper Key Communications Overview

- Below is general information for Empower regarding customization, participant meetings, communications materials, and VRS.

	Empower	Industry
Can custom brand to ARMB?	Yes: with logos, colors, general look & feel. Also create annual communication campaign, conduct group/individual meetings, webinars, etc.	Yes, typically this is standard for mega clients
Ability to send quarterly participant statements no later than 15 days following quarter end?	Yes	Typically yes
Can customize participant statement?	Yes, to an extent (can elect to show/suppress certain features, availability of narrative box, logo/colors)	Typically yes, to an extent
Able to pull HRA information on participant statement?	Yes (ARMB administers the HRA and will send information to Empower)	Most recordkeepers able to pull in outside information
Ability to provide Field Representatives?	Yes: 4 semi-dedicated field reps (mainly used for the State but the reps also cover the City and School District too)	Yes (numbers and levels of dedication widely vary)
Are Field Representatives Licensed?	Yes (Series 6 & 63)	Typically yes
Field Representative Compensation	Salary + Bonus (targeted at 85% salary and 15% bonus)	Typically salaried with a bonus
Bonus Factors	Measurable objectives that are established to coincide with the overall growth of the plan, such as asset diversification and plan growth	Varies
Can Field Representatives cross sell?	Reps are intended for educational purposes (they do not provide advice)	Varies
VRS Maximum number of simultaneous calls handled	408	Widely varies (50 to 5,000, some unlimited)
VRS touchtone, voice, both?	Both	Touchtone across the industry and some and/or voice
Can the VRS password be the same as web password?	Yes	Typically yes
Transactions available on VRS?	Yes	Varies from none to many

Recordkeeper Web Overview

- Below is information for Empower's participant website as well as for the sponsor websites (including reporting).

	Empower	Industry
Can custom brand to ARMB?	Yes: fully custom website	Yes, typically standard for mega clients
Vanity website available?	Yes (www.akdrb.com)	Typically yes for mega clients
Any standard transactions unavailable on web?	No	Varies
Web Scheduled Maintenance?	Yes (generally between 1am and 1pm on Sunday)	Varies, but typically Sunday (sometimes Saturday/Sunday)
Mobile Web Technology	Yes (responsive design)	Yes, to varying degrees
Is Mobile inquiry-only or transactional?	Both	Varies (more are adding transactional functionality)
Time periods over which ROR can be viewed?	Drop down selections & custom time period going back to inception of plan at Empower	Ability to view over custom time periods is becoming more standard
Single Sign-On Available?	Yes	Typically yes
Provide estimated income in retirement? If so, monthly or annually?	Yes: monthly and annually	Typically yes (monthly and/or annually)

	Empower	Industry
Plan sponsor website available?	Yes	Yes
How long is data available on sponsor website?	36 months	18 months to unlimited
Standard turnaround time for reports?	Standard requests are generally provided same day. Customized reports are 5 business days.	Standard requests are generally provided same day, with custom request typically between 1 and 5 business days
Ability to benchmark against peers?	Yes - average	Varies widely (seeing notable enhancements in this area)
Can provide a report of rollover amounts and where sent to?	Yes	Typically yes (and becoming a more common reporting request)
Payroll Processing	2-3 business days	Same day to 3 business days

Recordkeeper Call Center Comparison

	Empower	Industry
Call Center Staff -How many? -Average tenure? -Turnover?	587 3 years 40% external (16% internal)	Range: 43 to 1,233 2 to 7 years 6.3% to 40%
Call Center Locations	Greenwood Village, CO Milwaukee, WI Overland Park, KS Andover, MA	Varies, but typically more than one location (and in many cases, more than two)
Call Center Location for ARMB	Primarily Greenwood Village, CO	n/a
Vanity 800 # provided?	Yes (1-800-232-0859)	Typically yes for mega clients
Call Center Hours	5 am – 5:30 pm Alaska Time, Monday through Friday	Varies, but generally a minimum of 12 hours daily
Call Center Model	Semi-dedicated (six representatives)	Varies, but typically semi-designated for large/mega plans
Calls recorded?	Yes	Yes
How long to pull a recorded participant call?	Immediately (kept for 7 years)	Mostly immediate or within 24 hours, but can be up to 7 business days
ARMB allowed to listen to calls?	Prefer to provide call summary, but will allow ARMB to listen after call is scrubbed of personal information	Typically yes, but a few recordkeepers who will not
Average Time to Answer a Call	24 seconds	32 seconds (range of 15 to 73 seconds)
Average Length of Calls	420 seconds	Widely varies
% of Calls Requiring Follow-Up	2.8%	Average 3.6% (range of 0.75% to 9.3%)
Call Abort Rate	1.6%	Average 2.8% (range of 0.8% to 6.4%)
Chat	Yes	Increasingly yes
Avg # Calls Monitored/Rep/Month	7 calls/month	Average 6.4 calls (range of 4 to 10)
Screen Capture Monitoring?	No	Typically yes

Investments, Custody, and Third Parties

	Empower	Industry
Can maintain current fund lineup and any fund restrictions?	Yes	Likely yes, but ARMB-specific
Ability to recordkeep institutional investments (e.g., collective trusts, separate accounts)?	Yes (and do so for ARMB)	Varying capabilities (few to over 70% of clients using institutional products)
Ability to recordkeep custom funds? How many custom funds?	Yes (and do so for ARMB) 216 unique funds across the client base	Yes: Widely varies (none to 100s)
Provide fund fact sheets?	Yes – information is provided to Empower and Empower creates custom fact sheets for ARMB	Varies depending on vehicle type; typically use Morningstar or Lipper
Use proprietary custodian? Ability to work with outside custodians?	ARMB uses Great West's proprietary custodian. Note that Empower can work with outside custodians, but it is not a standard practice	Varies
Advice/Managed Account Provider Name	Reality Investing Advisory Services by their wholly owned subsidiary, Advised Assets Group, LLC (AAG), which uses a program powered by Morningstar/Ibbotson and Financial Engines (ARMB uses the AAG Morningstar product)	Varies, but most commonly Financial Engines, Morningstar, Guided Choice, or proprietary provider
Ability to handle multiple payrolls?	Yes	Typically yes, to an extent

Advice and Managed Accounts

	Empower	Industry
Advice/Managed Account Provider Name	Their wholly owned subsidiary, Advised Assets Group, LLC (AAG), which can use one of two engines, both of which act as 3(38) fiduciaries: Morningstar/Ibbotson (ARMB uses) and Financial Engines	Varies, but most commonly Financial Engines, Morningstar, Guided Choice, or proprietary provider
Methods of access	Website and Representatives (focus appears to be more web-oriented)	Website and Representatives
Who do participants call for the service?	AAG/Empower representatives	Varies between Advice/Managed Account provider & recordkeepers' representatives
Number of representatives	15 AAG call center reps and 6 AAG field representatives (representatives only focus on the advisory service, and can talk to both Morningstar and Financial Engines)	Varies
Are representatives licensed?	Yes – Series 65 at a minimum	Typically yes
How are representatives compensated?	Market competitive salaries and may be eligible for incentive compensation (IC). IC primarily based on call quality and deferral increases. Field reps also receive IC based on conducting meetings.	Varies
Frequency of Rebalancing	Quarterly	Typically quarterly or as necessary
Considers outside assets?	Yes. Participant can input. Also, DB information is provided to AAG/Empower by ARMB.	Typically yes
Communications?	Yes – adequate levels: Welcome Kit and Annual Kit based on birth date. Annual Kit tries to re-engage the participant, showing them if they are on track, and having them double check that their information is up-to-date. Field reps also conduct meetings (with intent to review accounts, not enrollment). Looking to expand services for participants closer to retirement.	Typically, but to varying degrees – across the major providers, Financial Engines tends to be the most robust with communications while Guided Choice has the least amount.
Plan sponsor report provided?	Yes	Yes

Advice and Managed Accounts: ARMB-Specific

	ARMB
Opt In or Out?	Opt In (though managed accounts was the default up to July 2009)
Number of Participants Using Advice (as of 12/31/2015; amount in parenthesis is % of ppts)	457 Plan: 99 ppts (0.9%) SBS Plan: 141 ppts (0.3%) PERS Plan: 33 ppts (0.1%) TRS Plan: 3 ppts (0.04%)
Number of Participants Using Managed Accounts (as of 12/31/2015; amount in parenthesis is % of ppts)	457 Plan: 1,140 ppts (10.4%) SBS Plan: 1,150 ppts (2.6%) PERS Plan: 5,731 ppts (20.8%) TRS Plan: 1,573 ppts (23.0%)
Can participants be in Advice and Managed Accounts at the same time?	No. A participant can only be in one or the other at one time.
% of Participants electing Advice/Managed Accounts on their own vs. through a representative	Unable to provide this data currently – they are looking at this as a future enhancement
Fees	Guidance: None Advice: \$25 annually for those who elect service Managed Accounts: Tiered* fee schedule as follows: Up to \$100,000: 0.45% of assets \$100,000.01 to \$250,000: 0.35% of assets \$250,000.01 to \$400,000: 0.25% of assets Over \$400,000: 0.15% of assets
Application of Fees	Advice: Quarterly (\$6.25) Managed Accounts: Quarterly Only applied to those who use the service. Typically charged at the end of the quarter, on the 23 rd
Frequency of Review	Advice: as requested by participant Managed Accounts: annually

- Less than 1% of the population use Advice across the four Plans.
- For the PRS and TRS Plans, over 20% of participants use Managed Accounts. It is notably less for the SBS and 457 Plans.

*The tiered schedule is applied for the total balances of a participant across all of the plans for which they receive managed account services.

APPENDIX II: Additional Fee Detail

Recordkeeper Fees

- Below we show key fee-related items. On the following slides, we provide additional detail on the fees.
- In addition to the direct fees charged by Empower, there may also be indirect costs (for example, from participant rollovers).

	Empower
	Fee schedule as follows: 7/1/15 – 6/30/16: 0.0685% on assets 7/1/16 – 6/30/17: 0.0675% on assets 7/1/17 – 6/30/18: 0.0665% on assets 7/1/18 – 6/30/19: 0.0657% on assets
ARMB Empower Recordkeeping Fee	
Fee Paid By Participants	SBS, PERS, and TRS Plans: Participants pay an asset-based fee of 0.11% plus a fixed annual fee (\$35 for contributing participants and \$25 for non-contributing participants) 457 Plan: Participants pay an asset-based fee of 0.17% with no fixed annual fee
Compliance	Included
Trust/Custody Fees	\$500 annually per Plan
Fund Unitization	\$3,500 per State Street funds (7 funds) and \$5,000 for the International Equity Fund
Education/Communication Fee (including vanity website, 800 number, custom communications, fund fact sheets, etc.)	Included
Cost Associated with Field Representatives	Four (4) included (semi-dedicated)
Postage/Printing Fees	Included
Fees at Risk	None
Out-of-Scope Assumptions / Plan Amendments Fee	Generally included, but depends on the type of project or plan change

DC Transaction Fees

	Empower	Industry Range	Industry (Common)
Unforeseeable Emergency Withdrawals	\$0	\$0 to \$125	Widely varies
Term Total Distributions	\$0	\$0 to \$75	\$0
Term Periodic Distributions	\$0	\$0 to \$50	\$0
RMDs	\$0	\$0 to \$75	\$0
QDRO Split Fees	\$250	\$0 to \$1,200	\$300 to \$750
QDRO Processing Fees	\$0	\$0 to \$400	\$0

- The transaction fees that Empower assesses to the ARMB Plans are in line with or more competitive than the market.
- In addition to the above transaction fees, Empower will charge a fee for distributions if the participant wants a check delivered by express mail or ACH. ACH distributions are \$15 and the fee for express mail is \$25. These are pass through expenses and used to varying degrees.

Advisory Services Fees

Advice/Managed Accounts	Empower	Industry Comps
Guidance	Included	Typically included
Advice Annual Fee	\$25 (only assessed to those that use it)	Typically \$0 to \$10 per participant (typically assessed across the entire participant base)
Managed Account Fee	Tiered Schedule*: Up to \$100,000: 0.45% of assets \$100,000 to \$250,000: 0.35% of assets \$250,000 to \$400,000: 0.25% of assets Over \$400,000: 0.15% of assets	0 bps to 60 bps (typically 10 to 50 bps)
Revenue Received from Advice/Managed Accts	Empower states that as the recordkeeper, they do not keep any of the managed account revenue - they only physically debit the participant account. The collected money is then provided to AAG who retains any revenue in addition to paying all service support fees including cost of the advice engine. Empower does not receive any form of payment from AAG. While that is the case, AAG is a wholly owned subsidiary of Great-West Life & Annuity Insurance Company.	Varies

*The tiered schedule is applied for the total balances of a participant across all of the plans for which they receive managed account services.

APPENDIX III: Detailed Scoring

DC Scoring

Category	Empower Score	Empower Comments
Organization	2	Empower is an indirect, wholly owned subsidiary, owned by the Power Corporation of Canada. Empower is dedicated to gaining the second place in market positioning in recordkeeping behind Fidelity, and is rapidly achieving that goal. The organization has consistently grown its business and invested heavily in technology through recent years. Has ties to asset management division. The firm as currently comprised reflects the recent merger with sister company Putnam and the 2014 purchase of JPMorgan's DC recordkeeping business. While the organizations are coming together as planned, there are still 3 organizations coming together, ongoing systems conversions until 2017 (with some of the conversion waves having significant challenges), potential distraction, and potential resource constraints. Additionally, high potential for additional future acquisitions. Furthermore, there has been a large influx of new business, which can create capacity issues. While these are all notable factors, Empower has a clear dedication to the DC recordkeeping space and is significantly growing and investing in this area. The pros and cons of the organization somewhat offset each other, reflecting a score of 2.
Market Positioning	3	Significant DC focus and commitment, with retirement being a core growth strategy. By bringing together Great-West Financial, JPMorgan, and Putnam, Empower has gained a lot of scale and shows a clear commitment to the recordkeeping business (additional acquisitions are expected). \$62 million in technology spend for 2015, an increase from prior years. Empower provides retirement solutions to all types of organization, and their platform allows them to service plans across a wide spectrum. Largest number of plans fall in the small market space, but Empower also has a significant focus on the large/mega market space (with some recent notable wins). Of their 5,397 employees, 4,102 are focused on retirement administration.
Client Base / Asset Breakdown	3	Notable number of 401(a) and 457 plans recordkept by Empower. While most plans fall in the "under 500 participant" category, there is an adequate absolute number of large/mega plans, particularly in the 457 space where they have the most number of plans with over 50,000 participants. On the government size, Empower recordkeeps 24 of the 50 states.
Client Service & Quality Assurance: Quality Assurance	3	Covered in terms of insurance and in terms of ARMB's insurance and liability requirements. Takes responsibility for their own errors, but not errors due to client errors. Disclaim fiduciary duty, except when acting with discretion. Clear SSAE 16 provided.

DC Scoring (cont'd)

Category	Empower Score	Empower Comments
Client Service Model and Client Relationship Manager	2	See slide 26 of the presentation for additional detail on the ARMB Empower team. Multi-person team with each person covering different functions (e.g., oversight, communication, 4 field reps, etc.). Senior Client Manager was recently added to the ARMB relationship within the last year and he has 5 total clients. Responsiveness of team was below average in obtaining information for this project. We understand that Empower can also have a lack of responsiveness with ARMB staff as well, although this has been improving recently. Other Callan clients have had mixed experiences.
Recordkeeping: Staffing	2	Empower's RMs have a higher average tenure than the industry at 13.5 years; however, they also have higher turnover at 13% (compared to the industry of 6.8%), which could be partially due to the combining of three organizations. They average 5 to 10 clients. Reasonable IT, communications, and call center staff, though lighter in terms of compliance staff (30).
Recordkeeping: Processing	3	Ability to handle ARMB's plan processing requirements as evidenced by historical relationship (and recent renewal). For payroll processing, Empower notes a 2-3 day timeframe whereas some other recordkeepers can process within one day. Able to process over 200 payrolls. Would also like to factor in ARMB's assessment of Empower's processing capabilities and if they are satisfied.
Recordkeeping: Functionality (ability to handle plan provisions)	3	Ability to handle ARMB's plan provisions as evidenced by historical relationship (and recent renewal). Would also like to factor in ARMB's assessment of Empower's capabilities and if they are satisfied (for example, did the addition of the new Roth In Plan Conversion plan provision go smoothly).
Recordkeeping: Systems	3	Empower is one of the leading providers of recordkeeping technology in the market, and have developed and maintained their own proprietary system (EAS), thus making it extremely flexible and under their control. There are no significant limitations on money types or sources. All systems store data for more than 36 months. Physical security and redundancy are top of the line. Only drawback is that while the system is highly capable, from a risk perspective, Empower may steer clients away from highly customized/unique features.

DC Scoring (cont'd)

Category	Empower Score	Empower Comments
Compliance	3	Empower provides compliance support to ARMB. Provides annual 408(b)2 disclosure by plan. Approximately 30 employees work within the Compliance department with 16 ERISA attorneys (with average of 17.5 years industry experience). Very active in lobbying regarding legislation that affects the government retirement plans market. They publish regulatory legal guidebooks annually. One contributor is Marilyn Collister who is well-respected across the industry and her group offers broad-based webinars, legislative updates, and will act as individual resource to clients. While they have lesser in numbers (which was reflected in the staffing score), quality of professionals is high.
Plan Sponsor Reporting	2	Provide similar reporting capabilities as the other providers. Plan sponsors are able to benchmark their plan data relative to other plans - while Empower has adequate capabilities here, other firms have been making substantial improvements in this area. Provide "Retirement Readiness" reports highlighting progress toward replacing current income in retirement. Quarterly reports available no later than 30 days after the end of the quarter. Ad hoc reports are available within 5 business days (or sooner). Archived data goes back 7 years. In terms of reporting, there have been some challenges Empower's ability to report on certain data elements as a part of the recordkeeper review.
Plan Sponsor Web Site	2	The opening page features a summary dash board that gives useful plan metrics (overall progress towards pre-set targets, participation rates over time, lifetime income score, etc.) and can be further customized. They treaded the line between overwhelming information and ease of use well. The demo was robust and allowed for interaction with reporting capabilities which were reasonably user friendly and intuitive.
Communications	3	Very comprehensive range of services, from custom communication campaigns, to newsletters, to having four semi-designated field representatives. While the field reps are semi-designated, the majority of their time is dedicated to ARMB. ARMB colors and logos are used and materials can be tailored further. Custom website. There is a comprehensive library of services and educational materials. Measurement capabilities average but improving rapidly with new investments in technology. Able to pull Health Reimbursement Arrangement (HRA) balances on statements (ARMB recordkeeps the HRA and will send information to Empower).

DC Scoring (cont'd)

Category	Empower Score	Empower Comments
Advice/Managed Accounts	1	Empower offers advice/managed account services through Advised Assets Group, LLC (AAG), a federally registered investment adviser and fiduciary, powered by Morningstar Investment Management or Financial Engines. ARMB uses the latter: Morningstar. The financial advice engine uses methodologies developed and maintained by Morningstar Investment Management - see the target date fund suitability report for additional information on the methodology. Participants may access their AAG account through an integrated experience provided on the Empower website and AAG call center reps are also available. The regular call center reps can provide general managed account assistance. However, for a more detailed conversation, the rep will warm transfer the call to an AAG rep. It appears that there is a heavier push towards online access (vs. speaking to a rep). Communications via email and/or postal mail is less than other managed account providers. There is also some uncertainty around how much reps are pushing this service and Empower is unable to provide data to show how participants are accessing the tool. This lowered their score. DB plan information is fed from ARMB to Empower/AAG and included in the assessment. Fees are comparable to that of the market - see Managed Account fee slide for additional detail. Empower notes that they keep none of the managed account revenue - they only physically debit the participant account. The collected money is then provided to AAG who retains any revenue in addition to paying all service support fees including cost of the advice engine. Empower does not receive any form of payment from AAG. While that is the case, AAG is a wholly owned subsidiary of Great-West Life & Annuity Insurance Company. ARMB has difficulty in obtaining information from AAG.
Participant Transactions	2	Empower handles plan transactions via VRS, the web, mobile, and benefit service reps in-house. All key transactions are available across the various channels. Mobile usage is available and allows for inquiry and transactional capabilities (i.e., contribution rate change, fund transfers, investment elections, etc.).
Call Center	3	Participant calls are routed primarily to Greenwood Village (with six semi-designated representatives). Upon overflow, calls may go to any of the alternate service centers which are located in Greenwood Village, CO, Glendale, WI, Overland Park, KS, and Andover, MA. Customer Service Associates are available Monday through Friday, from 5:00 a.m. through 5:30 p.m. Alaska time, excluding most financial market holidays. Overall strong call center statistics. Average time to answer: 24 seconds (compared to industry average of 32 seconds). Call abort rate of 1.6% vs 2.8% industry average. 587 dedicated call center representatives with an average company tenure of 3 years. High turnover for reps compared to industry average.

DC Scoring (cont'd)

Category	Empower Score	Empower Comments
Voice Response Unit (VRS)	3	The voice response system can handle up to 408 simultaneous calls and is available 24/7. The VRS is integrated with the recordkeeping system. Offers voice recognition and touchtone. Access requires authentication with the appropriate Username and PIN. The system has not experienced any security breaches. Reasonable level of inquiry and transactional features (more transactions available than industry standard as industry is tending to move away from VRS).
Participant Web Site	3	Empower continues to combine the best-of-the-best across the Putnam, JPM, and Great-West web platforms, leaning heavily on Putnam's site, which was the most advanced. The website has a great array of functionality, and can be customized. Two years ago it was substantially redesigned: the front-end pages received complete redesign, while deeper in the site it retained an older, more menu-driven functionality. While it is somewhat indirect to navigate, it is very capable, and more updates are forthcoming. Participants are able to access information both pre and post-login. Reasonable tools & calculators. Can calculation rate of return over custom time periods. Displays balance prominently on front page along with expected monthly income. Use responsive design for mobile. Says no security breaches. Customizes the site further for ARMB and provides vanity web address.
Investments	2	Investment flexibility through Empower's fund platform. No proprietary fund requirements. Ability to use the current fund lineup, which include institutional investments and multi-manager funds. However, has less experience than other recordkeepers - Empower only has 8 clients with multi-manager funds (though 216 actual funds). Trust/custody and check writing performed in house.
Contract & SLAs	1	Only made modest changes to ARMB's proposed contract terms as a part of the most recent RFP (see "Exceptions" documentation). Other recordkeepers who typically work with State plans would probably be similar, but for recordkeepers that are more corporate-oriented, they may have more input on the contract language. Does not provide Service Level Agreements (SLAs) with fees at risk for ARMB - this is becoming an increasingly common feature, so they were dinged for not providing this.
Fees	1	For asset-based fee, within range, but on high end of fee range and above median. See fee pages for additional detail.

APPENDIX IV: Sample SLAs

Sample SLAs

Plan Sponsor & Participant service	Minimum service Standard	Performance measurement	Fees at risk
Participant Contact Center Hours of Availability	Retirement Representatives available 99% of time during regular hours of service (8 a.m. to 10 p.m. EST, Monday through Friday) except for closings of NYSE, holidays and shortened hours associated with early market close or holiday eves	Metric provided as part of the quarterly Empower Service Level Report	0.25% of quarterly plan fees for each 0.1% below the 99% benchmark with maximum fee reduction of 1%
Call Abandon Rate	Less than 3% of participant calls abandoned (Empower complex wide)	Metric provided as part of the quarterly Empower Service Level Report	1% of quarterly fees
Call Answering Speed	80% of participant calls answered within 20 seconds (Empower complex wide)	Metric provided as part of the quarterly Empower Service Level Report	1% of Empower quarterly revenue 1% of quarterly fees
First Call Resolution for participants	90% of participant questions resolved during first call	Metric provided as part of the quarterly Empower Service Level Report	1% of quarterly fees
IVR / Internet Availability	99% of the time IVR/Internet available excluding regularly scheduled maintenance	Metric provided as part of the quarterly Empower Service Level Report	1% of quarterly fees
Plan Level Reporting for Plan Sponsor	99% of the time reports available online - updated monthly and nightly excluding regularly scheduled maintenance	Metric provided as part of the quarterly Empower Service Level Report	1% of quarterly fees
Participant Level Reporting for Plan Sponsor	99% of the time administrative plan reports available online - updated monthly and nightly excluding regularly scheduled maintenance	Ongoing evaluation by Plan Sponsor and Relationship Manager Metric provided as part of the quarterly Empower Service Level Report	1% of quarterly fees
Distribution of Form 1099R	Delivered prior to January 31 of each calendar year, excluding corrected 1099Rs	Metric provided as part of the quarterly Empower Client Service Report	1% of quarterly fees
Participant Confirmation Statement	Mailed or available online on within 2 business days following completion of transaction processing.	Executed as part of automated processes. Accuracy consistent with minimum service standard unless otherwise disclosed.	1% of quarterly fees

Appendix A – SLAs for greater than \$500M
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Sample SLAs (cont'd)

Sample

Plan Sponsor & Participant Service	Minimum Service Standard	Performance Measurement	Fees at Risk
Distribution Upon Request of Generic and/or Participant Specific Documents Including Administrative Forms, Enrollment and Termination Materials, and Participant Statement Copies	99% of documents distributed within one business day of participant request.(Excludes enrollment material delays directly related to quarterly performance information updates required by FINRA)	Executed as part of automated processes. Accuracy consistent with minimum service standard unless otherwise disclosed.	1% of quarterly fees
Participant Statement Mailing / Availability	DC Plan statements mailed and made available electronically, if applicable, 15 business days after quarter-end. TRS Statements, if selected by the plan sponsor, mailed and made available electronically, if applicable, 20 business days after quarter-end. 20 business days allowed for first statement coming out of implementation of new services effective January 1, 2010.	Metric provided as part of the quarterly Empower Client Service Report	1% of quarterly fees
Participant Issue Resolution (inquires not handled on first call)	Average resolution time complex wide will be within 5 business days of participant first call reporting issue assuming timely responses from Plan Sponsor (excludes death cases)	Evaluated as part of standard business process. Accuracy consistent with minimum service standard unless otherwise disclosed. Reported as part of the quarterly Empower Service Level Report	1% of quarterly fees
Timeliness of Callbacks to Plan Sponsor	Same day assuming message left before 1 p.m. EST; if after noon, call will be returned no later than 2 p.m. EST the following business day excluding PTO days of Relationship Manager or Client Service Manager.	Ongoing, joint evaluation by Plan Sponsor and Relationship Manager	

September 30, 2016



Alaska Retirement Management Board: Distribution Counseling Services Overview

Steve Center, CFA
Fund Sponsor Consulting

Paul Erlendson
Fund Sponsor Consulting

Lori Lucas, CFA
Fund Sponsor Consulting

Jamie McAllister
Defined Contribution Consulting

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Retirement Solutions Group (“RSG”) Service

Overview of the RSG Service

- In this presentation, we provide an overview of Empower’s Retirement Solution Group (RSG) service.
- In September 2014, Empower formally rolled out the RSG service across their broad client base.
 - 99% of large/mega, corporate plans utilize the RSG service.
 - 75% of government plans utilize the RSG service.
 - In talking to another large recordkeeper with a similar service, 91% of their clients use the service (it is fairly consistent between their corporate and government plans).
- The RSG service provides education and guidance to participants on their DC plan distribution decisions. When a plan implements the RSG service, it is primarily intended for use by the plan’s employees who are either:
 - Joining a new DC plan that is recordkept at Empower AND have prior distributable retirement accounts that can be consolidated.
 - Retiring or terminating from their employer, and need to make a decision on what to do with their DC assets.
- The RSG service is provided through a combination of targeted participant communications and a dedicated group of licensed phone representatives.
- There is no direct cost to participants or the plan sponsor for the RSG service.

RSG Services Offered

Active vs. Terminated/Retired Participants

- For active, new hire participants who have a prior distributable retirement account, an RSG representative proactively reaches out to the participant via phone and encourages them to consolidate their DC plans into one plan.
 - The representative answers questions and talks to the benefits of asset consolidation.
 - The representative also provides hands-on assistance by walking the participant through the forms to fill out and what documentation is needed.
- For terminating or retiring participants, the RSG service informs the participant of the options they have available to them for their DC plan assets.
 - Upon termination or retirement, the participant receives a “Your Options” letter, which acknowledges their change in status and lays out the different scenarios that are available to the participant:
 - *Remain in the current plan (if allowed)*
 - *Consolidate into a new employer’s plan*
 - *Roll assets over to an IRA, including the proprietary Empower Retirement IRA*
 - *Take a cash distribution*
 - This letter is mailed out every week until the participant takes some type of action.
 - RSG representatives take any inbound calls regarding the letter or they proactively reach out to the participant. In either case, the RSG representative’s goal is to provide fair and balanced information and to help the participant understand the pros and cons of all their options, including the tax implications.
- Plan sponsors are provided with documentation on the overall outcomes (see slide 6 for sample output).

RSG Services

RSG Representatives & Call Information

- Empower has approximately 200 licensed employees who are dedicated to RSG services.
 - Required to have at least three (3) years of experience in the financial services industry. Bachelor's degree preferred and must hold FINRA Series 6 or 7 and 63 licenses. Some have additional certifications.
 - Representatives complete training over an initial three week period, and receive ongoing training on a variety of topics at least quarterly.
 - Of the 200 representatives, 75 focus on asset protection, 33 focus on asset capture, and the remainder focus on other areas such as IRAs.
 - *Average tenure: Five (5) years for asset protection representatives and two (2) years for asset capture representatives*
 - Additionally, five (5) representatives are further specialized and only handle governmental plan calls.
 - *The licensing credentials for government representatives are the Series 6 (not 7) and 63 licenses since government plans don't have company stock. In addition to the requisite three week training, government representatives have an additional week focusing on government plan rules and requirements.*
- RSG services are only provided via the phone. Representatives do not follow an exact script, but instead follow a call model.
 - There is no script given that the plans and their options are so different, and Empower doesn't want the conversation to sound mechanical.
 - The call model categories include: introducing themselves, asking permission to ask questions, reviewing the options, help in executing the decision, etc. See the Appendix for additional detail on the model.
 - Given that representatives are governed by FINRA, they are required to conduct fair and balanced conversations, clearly covering the pros and cons of each option on every phone call.

RSG Services (cont'd)

RSG Representatives & Call Information

- Representatives are salaried with a bonus. For their bonus, representatives are evaluated on two primary measures:
 - Call Quality (supervisors monitor on monthly basis, giving each representative a score)
 - Asset Retention (includes the participant staying in the plan and the participant moving to an Empower IRA)
- Call Statistics
 - 35,000 calls per month (between 25,000 and 30,000 of the calls are inbound calls)
 - All calls are recorded, stored for seven years, and can be reviewed by the plan sponsor
 - Call time is not a focus area – they want the call to be right, not short. While that's the case, Empower still tracks the call length. Common call lengths are provided below:
 - *Asset Protection Call:* 8 to 9 minutes
 - *Asset Capture Call:* 11 minutes
 - *IRA Call:* 6 to 7 minutes

Sample Brochure: Description of Empower IRA

The Empower Retirement IRA



Understand the benefits of rolling your balance into an IRA and call Empower at **877-534-4569** to learn more today. You are encouraged to discuss rolling money from one account to another with your financial advisor/planner, considering any potential fees and/or limitation of investment options.

Continued tax benefits

The money you rollover from a qualified plan and your future contributions remain tax-deferred in an IRA. This means you don't pay taxes on that money until you take a distribution. And if you are in a lower tax bracket at retirement, you may pay fewer taxes then, too.

More fund options

Typically, IRAs offer more fund choices than your previous employer's plan. With an Empower Retirement IRA, this means you will have more control over where you invest your money — and you can choose from more than 130 mutual funds across a variety of asset classes.

Even more fund options with an Empower Brokerage IRA!

If you would like even more options, like additional mutual funds, stocks and exchange-traded funds (ETFs), please contact us at **877-534-4569** for more information about the Empower Brokerage IRA, our brokerage option.

It goes with you

Make sure you retain control over your money. Having a rollover IRA means you are in charge and it goes where you go. No matter what job or career path you take, your IRA stays with you.

Access to your money

With an Empower Retirement IRA, access is easy. Once you've reached age 59½, you can access your account without incurring an early withdrawal penalty.⁴ You've earned it. Now enjoy it.

Access to your account

You have 24/7 online access to your Empower Retirement IRA.⁵ Whether you want to make account transactions, check your balance, or initiate transfers, all of that is available on your schedule.

Award-winning service

Want help? Our dedicated Retirement Consultants are there for you, whether you want to walk through options around investing or need help with any transactions. They are just a call away and are conveniently available between the hours of 8 a.m. and 7 p.m. Central time at **877-534-4569**.⁶

Also, for more than two decades we have won the DALBAR Mutual Fund Service Award given to firms that deliver industry-leading service to their customers, based on testing done by DALBAR — an independent market research company.

To open an IRA or to discuss your choices further, call Empower at **877-534-4569** and talk with a Retirement Consultant who can make this easy for you.

- **Empower IRA is heavily featured in the materials**
- **See Appendix for additional samples**

Get started!



Guess what? You can open an Empower Retirement IRA in 10 minutes...really, it's that easy!

□ Step One

Call **877-534-4569** between the hours of 8 a.m. and 7 p.m. Central time, Monday through Friday.

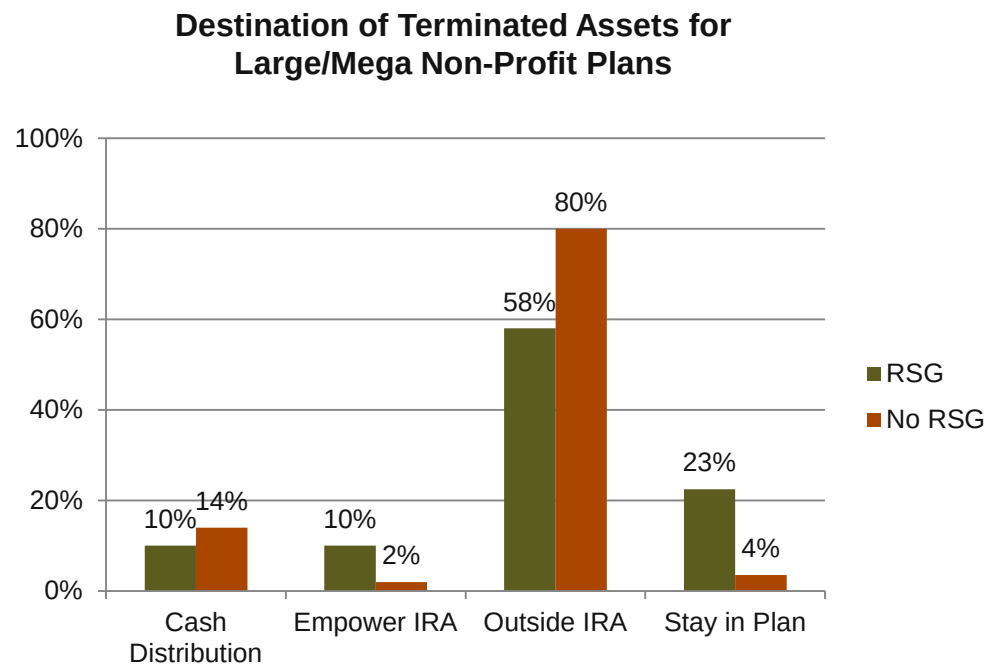
□ Step Two

A Retirement Consultant will discuss all your options, including their pros and cons, and can assist you with the process of opening your Empower Retirement IRA.

Impact of RSG Service on Participant Assets

Empower 2015 Data

- Experience of plans using RSG services:
 - Little change in cash distributions.
 - Increase in participants leaving their assets in their employer's plan.
 - Increase in participants rolling over to a proprietary Empower IRA.
 - However, most distributions still directed to non-proprietary IRAs.



Source: Empower 2015 Data

RSG Services

Other Considerations

- Impact of the Fiduciary Rule

- Empower indicated that they intend to function as fiduciaries and comply with the regulations. They believe their goals already align with new rules.
 - *While this is the case, it remains unsettled whether IRA rollovers out of a non-ERISA plan qualify under the new Fiduciary Rule. Given that the applicability and scope of the Fiduciary Rule remains unclear, we suggest ARMB consult legal counsel should ARMB decide to implement this service.*
- Need to continue to monitor any changes to their model/service as a result of the Fiduciary Rule.

- Ability for Client Monitoring

- Clients are able to listen to recorded participant calls. While Empower offers this option, they noted that few clients actually do so.
- Empower provides a Plan Optics Report specific to each client, which measures the participant outcomes (similar to what is shown on slide 6).

RSG Services

Potential Benefits and Challenges

Potential Benefits

- Provides education and guidance to participants for potentially complex decisions.
- Ability for plan sponsors to monitor the service and participant outcomes.
- Potential to have more assets remain in plan upon severance.

Potential Challenges

- Representative incentives (bonuses) are based on asset retention within Empower, which includes the Empower IRA
- Results of the RSG service show increased usage of an Empower IRA
- Some uncertainty around the service offering in light of the new DOL Fiduciary Rule
- Limited historical participant data as a result of the recent 2014 rollout

Distribution Counseling Best Practices

- Many state plans have adopted in-house retirement educators
 - Paid for by funds from a hybrid pension budget, or from their recordkeepers as part of their contracts.
 - Most common when staff administer both DB and DC, and retirement decisions are made from both.
- To avoid conflicts of interest among retirement counselors, plan sponsors have taken the following steps:
 - Obtained information pertaining to the compensation of representatives that counsel participants.
 - Weighed in on whether they are permitted to offer proprietary products or cross-sell, and, if so, which products.
 - Followed policies pertaining to personally identifiable information, and whether client information can be used to identify sales targets across an organization or not. Direction is given to vendors in the contracting phase.
- Examples:
 - When one government plan went out to bid, they were clear on conflicts in the RFP process, and lack of cross-selling options. The plan sponsor uses representatives from its recordkeeper, but the plan sponsor retains the right to designate different IRA rollover out contractors.
 - Another government plan sponsor does all communication and education in house, and does not employ managed accounts. They also retain the right to determine preferred rollover providers and annuity providers.

Next Steps

- Action Items

- Review the “call model” in greater depth, including ARMB’s ability to craft the ultimate message to plan participant.
- Listen to sample RSG calls (Empower must first obtain permission from a participant or a sponsor in order for ARMB to listen to a call from another plan).
- Determine whether representatives’ bonuses can be tied to client satisfaction (e.g., include this metric in the service level agreements (SLAs)).
- Confirm impact of Fiduciary Rule on RSG model.
- Consider the recordkeeper’s business goals and how those are communicated by retirement counselors.



Appendix

Call Model

1 Open the conversation

- Greeting
- Role statement
- Credibility
- Retirement planning solutions
 - Greet the participant.
 - Build a rapport.
 - Establish your credibility: "I am a retirement specialist, and I help people prepare for retirement every day."
 - State your objective: "My job is to answer your questions, review your options and provide education so you can make an informed decision."

2 Conduct an assessment

- Open-ended questions
- Positioning of your questioning
- Distribution motive
 - Ask open-ended questions.
 - Manage the conversation.
 - Uncover desire, need, ability and authority.
 - Discuss any special circumstances the participant may have so that he or she can determine if a specific option aligns more with his or her needs.
 - Listen intently. Replay the facts.
 - Use silence effectively. Pause effectively.

3 Share solutions

- Best interest of participant
- Integrity and honesty
- Solutions
 - Provide four general and plan-specific distribution options every time.
 - Understand intent and address need. Provide education on available options to assist participant in his or her decision.
 - Explain why staying in plan may be an appropriate and cost-effective solution.
 - When discussing fees, be specific. Don't make any misleading statements.
 - State any tax implications, an early withdrawal penalty, and the loss of access to local field office.

4 Understand objections

- The move forward
 - Anticipate objections. Prepare for objections.
 - Remember ACE: acknowledge, clarify and explain.

5 Present a stay-in plan

- Clear, plain language
- Directive speak
- Keeping the business
 - Validate the decision. Describe the process and any follow-up.
 - Thank the participant every time.

6 Detail next steps and track results

- Relationship management
 - Provide direct contact information.
 - Set a future appointment.
 - Manage each relationship in CIRRU.

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Source: Empower

Sample Brochure: Display of Options

Your choices – which one is best for you?

- ☐ Keep your money in your previous employer's plan.¹
- ☐ Roll the money you've saved into an Empower Retirement IRA or another IRA.
- ☐ Move your money to your new employer's plan.²
- ☐ Make a cash withdrawal.³



Evaluate your options

Use this checklist to determine if an IRA might just be the answer. If you relate to any of these statements, you may want to contact a Retirement Consultant to discuss further.

- ☐ I want more investment choices than my plan offers.
- ☐ I want to control my investments.
- ☐ I have multiple retirement accounts and want to consolidate my money.
- ☐ I may retire early and need to tap into my retirement savings.
- ☐ I want more flexibility in when and how much to withdraw.
- ☐ I want to choose which investment to draw from for my required minimum distributions (RMDs).
- ☐ My previous employer's plan doesn't allow for monthly (or other periodic) distributions.

Now use this checklist to determine if keeping your money in plan is right for you. If you check any of them, you may want to contact a Retirement Consultant to explore that option.

- ☐ I want to keep my money with my former employer's plan.
- ☐ I want to maintain my current investments within the plan's fund line-up.
- ☐ I have company stock and a special federal tax law (the NUA rule) applies.
- ☐ I left my employer between the ages of 55 and 59 ½ and may need to take withdrawals from time to time.
- ☐ I have an active loan in the plan and my plan allows me to pay it off gradually but does not allow me to take partial distributions.
- ☐ I am currently in proprietary funds or share classes not offered in other retirement vehicles and do not want to make changes.
- ☐ I like the features and services in my plan.

Source: Empower

Sample Brochure: Pros and Cons



There are pros and cons to the options you are considering so read the information below to learn about the advantages and disadvantages of each.

OPTION 1 - Roll your money into an IRA:

One option for preserving the tax-deferred status of your retirement money is to transfer your retirement plan assets to a rollover IRA. It is important to find out about the range of investments and services available through a particular IRA and the fees for that IRA before choosing your rollover IRA.

Advantages:

- This is your account and you have discretion over your money - including deciding which financial institution, investments and services to use—and whether to make changes in the future.
- If you select a Managed Account option, a dedicated advisor for a rollover IRA may be able to give you personalized advice about investing and retirement planning. This service is available through Advised Assets Group, LLC (AAG), a federally registered investment adviser.
- A rollover IRA may allow you to consolidate your other tax-deferred retirement accounts in one place. This may be helpful for your financial and retirement planning. It may also prove helpful in managing the required minimum distributions (RMDs) you will have to start taking from an IRA when you reach age 70½.
- A rollover IRA may also enable you to place all your investments in one place which could be better to coordinate your overall financial and investment planning.
- IRAs may be more flexible than retirement plans on withdrawals and distributions, e.g., setting up regular periodic payments or an unscheduled withdrawal.
- IRAs are easily transferable between financial institutions—so if you decide you don't like the one you're with, changing to another provider is usually easy.
- If you select an individual retirement annuity, the insurance company will guarantee lifetime income.

Disadvantages:

- There isn't a plan fiduciary who prudently monitors the investments, and their cost and quality, in your rollover IRA. Also, there may be more choices through an IRA and you will need to select your own investments. However, if you have a third party advisor for your IRA, he or she can help you with the investment decisions.
- You may pay more in a rollover IRA for investments, services and advice than you pay through your retirement plan (or a successor plan). Compare those costs to your plan's fees for services, investments and administration.
- You can't borrow from an IRA—you can only access the money in an IRA by taking a taxable distribution (which may also subject you to tax penalties if you are younger than 59½).
- Generally, rollover IRAs are protected in bankruptcy, but may not otherwise offer the same level of creditor protection as employer-sponsored retirement plans.

OPTION 2 - Keep your money in your previous employer's plan:

Generally, you may leave your money in your plan and retain the tax deferred status (until it is ultimately distributed). However, some plans have mandatory distributions for accounts worth less than \$5,000. Check with your employer's plan administrator.

Advantages:

- The federal law governing the plan—ERISA—requires that the plan fiduciaries prudently monitor the cost and quality of the investment options in the plan.
- Your plan may offer investment choices and other services that are less expensive than those available to you outside of the plan.
- Employer-sponsored plans may offer better creditor protection than rollover IRAs (but both are generally protected in bankruptcy). If this is of concern, you should consult with a lawyer.

Source: Empower

Sample Brochure: Pros and Cons (cont'd)

- If you have a participant loan, you may be able to continue to make payments on the loan rather than having to take a taxable distribution of the loan amount. However, some plans require payment of the loan when you leave your job. Check with your plan administrator.
- If you're at least 55 years old when you leave your job (or you are disabled), you may be eligible to take penalty-free withdrawals from the plan, but the withdrawals will be subject to ordinary income taxation.

Disadvantages:

- If you are retiring, the plan may not permit periodic (e.g., monthly) payments to you and/or may not allow one-time withdrawals for special needs. Check with the plan administrator.
- You have limited control over the plan investments or services available to you. Your former employer, as the plan fiduciary, will make decisions about available funds and services.
- The plan may offer a limited number of investment choices (unless it permits you to use a brokerage account).
- The plan may assess fees to your account for administrative or other reasons.
- You may not have access through the plan to a dedicated representative, personalized investment advice or advice that takes into account your other assets or particular needs.

OPTION 3 – Move your money into your new employer's plan:

The third way to preserve the tax-deferred benefit of your retirement plan assets is to transfer the money in your account to a new employer's plan. While most employer plans allow new employees to roll their accounts in, not all do and it's important that you ask. (This option is not available if you are retiring and won't be working for a new employer.)

Advantages:

- You will be able to make contributions to your retirement plan account at your new employer when you become eligible to participate in that plan and, as a result, you can have all of your retirement plan monies in one place.

- The new plan could potentially offer lower cost investment options and services.
- Many retirement plans have loan provisions. If you transfer your retirement funds to a new employer's plan that permits loans, you may be able to borrow from the money in the new plan.
- If you have an existing loan, you may be able to roll it over to your new employer's plan through a "direct" rollover. Check with the plan administrator at both your former employer and your new employer.
- In some states, retirement plans offer better creditor protection than IRAs. (However, both rollover IRAs and qualified retirement plans are generally protected under federal bankruptcy laws.) Keeping your retirement money in another employer-sponsored plan helps you maintain the creditor protection.
- You should ask about the administrative and other fees assessed to participant accounts in the new employer's plan and compare them to your alternatives.
- As long as you are working at the employer, you will not be required to take minimum distributions when you reach age 70½ (unless you are a 5% or more owner of the business).

Disadvantages:

- The new plan may not allow rollovers into the plan or if it does, there may be a waiting period.
- The new plan might offer fewer or more expensive options than your former plan. Make sure that the option you choose has the right investments (at the right cost) for your needs.
- The new plan may not offer a dedicated representative or personalized advice on investments, retirement planning or your other investments.
- You'll have limited control over the expenses, services or investments in the new plan.

OPTION 4 – Withdraw your money from your account:

It's your money and you get to choose what's right for you. One decision you could make is to simply take a taxable distribution.

Source: Empower

Sample Brochure: Pros and Cons (cont'd)

Advantages:

- You can use the money as you wish, for example, to pay off existing debt, bills or other expenses.
- If you have made after-tax contributions, you will be able to take these amounts tax-free though you will be required to pay tax on the earnings on those amounts. (Special withdrawal rules apply to ROTH 401(k) contributions and may or may not be taxable at the time withdrawn. Consult your tax advisor for special rules.)
- If you have employer stock that is substantially appreciated, there may be significant tax advantages in taking a distribution of those shares. Check with your tax advisor.

Disadvantages:

- You'll owe federal (and possibly state) income taxes on the money you withdraw. The government requires 20% withholding for federal income taxes, so the amount you receive will automatically be reduced. Also, the withdrawn money could put you in a higher tax bracket and you may owe more taxes.
- If you're under the age of 59½, you could also owe 10% early distribution tax penalty, in addition to the income taxes. Some exceptions exist to this penalty.
- The money is not protected from creditors.
- Once you spend the withdrawal, you will need to begin saving for retirement again, but with fewer years left to save—and without the spent savings — it may delay your retirement date or result in a lower standard of living in retirement.
- Look at this chart to see the different outcomes possible in this scenario:

Source: Empower

September 30, 2016



Alaska Retirement Management Board: Retirement Income Solutions Review

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Fund Sponsor Consulting

Paul Erlendson
Fund Sponsor Consulting

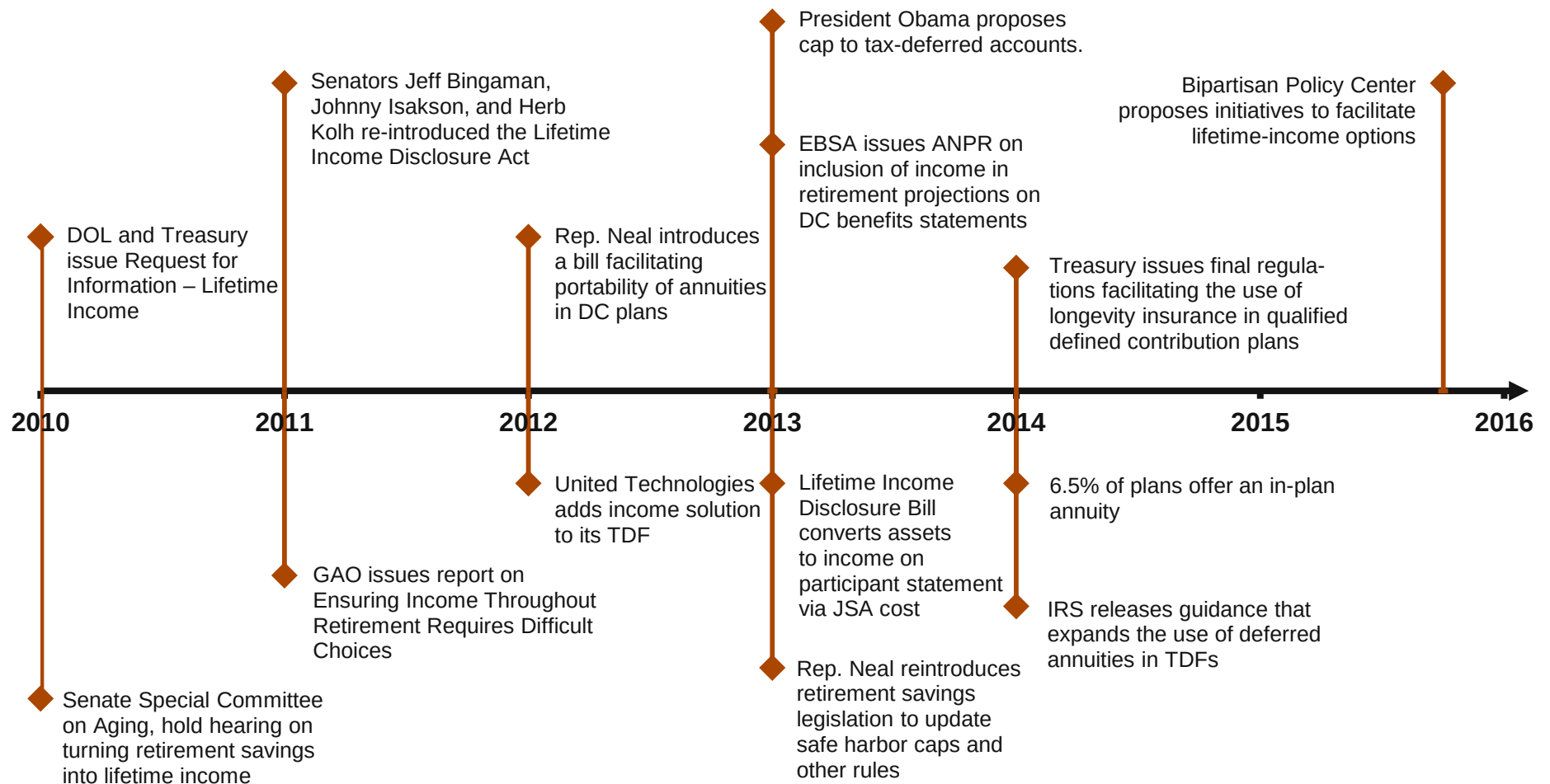
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Retirement Income Solutions Timeline



*Formula based on cost to purchase joint survivor annuity (JSA), moves with interest rates

Source: 2015 Callan DC Trends Survey, Callan Analysis, DOL, IRS, U.S Congress

Retirement Income Solutions Overview

- Regulators, plan sponsors, and participants like the concept of guaranteed income for life.
 - The Department of Labor and the U.S. Treasury launched a campaign supporting guaranteed income solutions within DC plans in 2010 when they issued a Request for Information on Lifetime Income Solutions.
 - Several years later, in 2014, the Treasury issued guidance expanding the use of deferred annuities in target date funds, and separately, issued final regulations facilitating the use of longevity insurance in qualified DC plans (QLACs).
 - During the intervening time, a number of bills were introduced by legislators seeking to facilitate the use of annuities in DC plans such as the Retirement Plan Simplification and Enhancement Act (Representative Richard Neal) and the SAFE Retirement Act (Senator Orrin Hatch).
 - A Blackrock survey finds that 89% of DC participants agree they would like their plan sponsor to provide them with income-generating options in their retirement plan.
 - The Defined Contribution Institutional Investment Association's (DCIIA) informal polling of DC plan sponsors routinely finds that income in retirement is a top subject of interest.
- While retirement income solutions are popular in theory, we find that they are not broadly offered by plan sponsors (and when they are, participant utilization is low). While there are a number of factors that may contribute to this, one key factor is the availability of retirement income options that recordkeepers will support.
- Throughout this presentation, we address the broad set of solutions available, prevalence data for retirement income solutions, and the currently available products at Empower.

Retirement Income Solutions

Guaranteed versus Non-Guaranteed Retirement Income Solutions

Non-Guaranteed

Retirement Income Projections
Retirement Income Calculators
“Through” Target Date Funds
Managed Payout Funds
Managed Account Services / Drawdown Solutions

Guaranteed

Annuity as a Form of Payment
Annuity as a Voluntary Benefit (rollover annuity platform)
Longevity Insurance
In-Plan Annuities (Standalone)
In-Plan Annuities (as part of a target date fund)

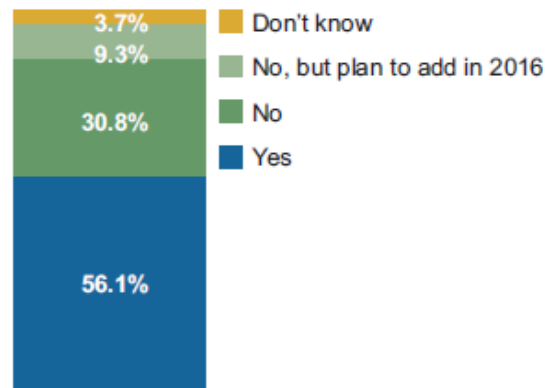
- Guaranteed retirement income solutions typically guarantee a stream of income for life – participants will receive a specified amount given that certain assumptions are met. On the other hand, non-guaranteed solutions do not provide a guarantee.
- On the following slides, we outline the differences between the various guaranteed and non-guaranteed solutions.

Prevalence of Retirement Income Projections

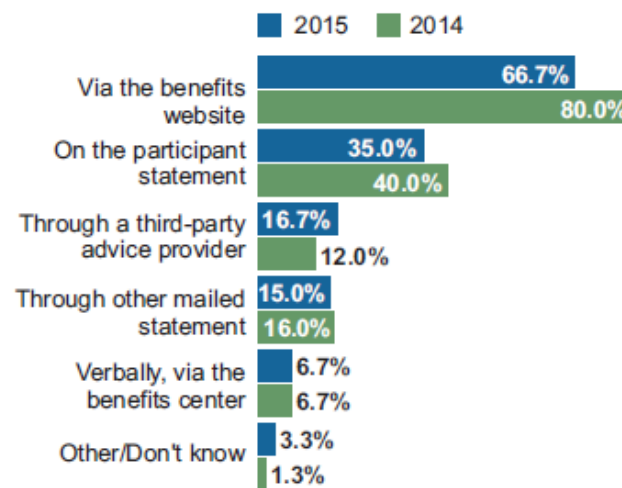
- More than half of plan sponsors (56.1%) provide a retirement income projection showing plan participants how their current balance may translate into monthly income in retirement.
 - In only looking at government plans that responded, 64% provide a projection (with 21% planning to add this in the next 12 months).
- NAGDCA reports similar, though slightly more robust usage results in their March 2015 Public Sector DC Plan Survey Report: of the responding plans, 67% provide income projection information, with 12% considering providing it in the next twelve months.
- Research does not demonstrate that retirement income projections do much to change participant behavior.

Sources: Callan 2016 DC Trends Survey & NAGDCA 2015 Public Sector DC Survey
What Will My Account Really Be Worth? Experimental Evidence on How Retirement Income Projections Affect Saving (2012, Goda et al).

Do you provide a retirement income projection for participants?



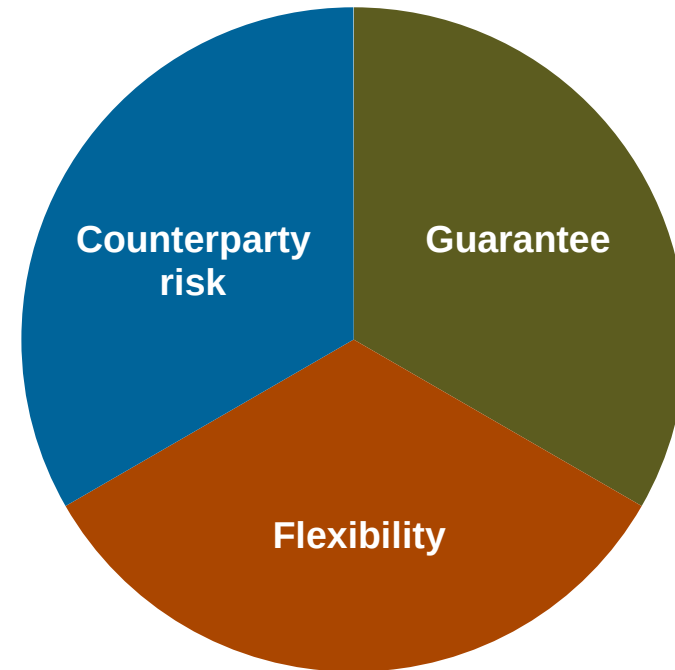
How is the retirement income projection provided?*



*Multiple responses were allowed

What Do DC Participants Want in a Retirement Income Solution?

- **Research shows that investors highly value retirement income solutions that:**
 - Provide guaranteed inflation-protected income for life
 - Are flexible and allow investors to maintain control
 - Have low counterparty risk



Source: *What Makes Annuitization More Appealing?* Beshears et al. 2013 White Paper.

Managed Payout Funds

- Designed to offer a choice of potential risk/return profiles for investors in or near retirement seeking an investment for use with a periodic withdrawal program.
- May have a managed distribution policy.
 - Endowment model: fixed: 3-5% of the fund's value per year
 - Fund depletion model: a percentage of the fund's value, until the value is zero
- Systematic withdrawal can mimic periodic “paycheck.”
- Essentially, target date funds for the drawdown phase—geared for do-it-yourselfers.

Managed Payout Funds

Pros and Cons

Pros

- Professionally managed portfolios
- Offer retirees lots of flexibility
- As an out-of-plan option, managed payout funds expose plans sponsors to little by way of potential fiduciary liability*
- Point of time risk is not an issue because these are managed funds
- Portability not an issue out of plan

Cons

- Investors still have to figure out whether they can afford to retire or not.
- No guarantees
- May be difficult for retirees to select the right fund/payout schedule
- Not designed to comply with required minimum distribution rules
- Generally not supported by DC recordkeepers as an in-plan option (rollover only)

*This could change under the new Definition of a Fiduciary rule.

Managed Account Drawdown Solutions

- Combines the *managed payout fund* concept with the *retirement income calculator* concept.
 - Helps participants understand how much money they may have in retirement
 - Creates a personalized portfolio for pre-retirees and retirees
 - Develops a drawdown plan for retirees
 - Generates periodic “paychecks” for retirees
 - May provide help with selecting an annuity
- Geared for the do-it-for-me investor.

Managed Accounts

Pros and Cons

Pros

- Easy to use: Helps employees know whether they can afford to retire or not.
- Professionally managed portfolios
- Offer retirees lots of flexibility
- SunAmerica Opinion is written for ERISA plans, but still a fiduciary best practice

Cons

- No guarantees, but may advise on annuity products in retirement.
- Depends on discipline of retirement to maintain drawdown schedule
- Can be costly
- Availability and portability may be dependent on record keeper connectivity.

Guaranteed Income Solutions

- Rollover solutions:
 - Annuities as a form of distribution
 - Rollover annuity platforms
- Stand alone in-plan annuities:
 - Deferred Fixed Annuities
 - Guaranteed Minimum Withdrawal Products
- Annuities as a component of Target Date Funds
- Longevity insurance (e.g., Qualifying Longevity Annuity Contracts (QLACs))

The Annuity Puzzle

- 89% of DC participants agree they would like their plan sponsor to provide them with income-generating options in their retirement plan.*
- 85% of DC participants find the idea of a fund that automatically converts savings to guaranteed income in retirement appealing.*
- 10% of participants who leave their job after age 65 annuitize their assets.**
 - In NAGDCA's March 2015 Public Sector DC Plan Survey Report, 47% of responding plans that offered a guaranteed retirement income solutions product reported that less than 1% of participants used it.

Conclusion: people like guarantees but they don't like annuities.

*BlackRock's Annuity Retirement Survey, 2009

**Johnson, Burman, and Kobes, 2004

Guaranteed Income Solutions

Rollover Solutions

- **Annuities as a Form of Distribution**

- An out-of-plan solution where the participant elects to distribute their assets and directly buy a guaranteed annuity outside of the plan.

- **Rollover Annuity Platforms**

- A platform that provides access to a wide range of out-of-plan retirement income annuity options.
- Offered as a voluntary benefit that allows participants the ability to obtain competitively quoted retirement income annuities.
- Participants can research and request annuity quotes from multiple insurance companies. Platforms may have access to immediate income annuities, fixed deferred annuities, deferred income annuities, and longevity insurance.

Guaranteed Income Solutions

Stand Alone In-Plan Annuities

Deferred Fixed Annuity

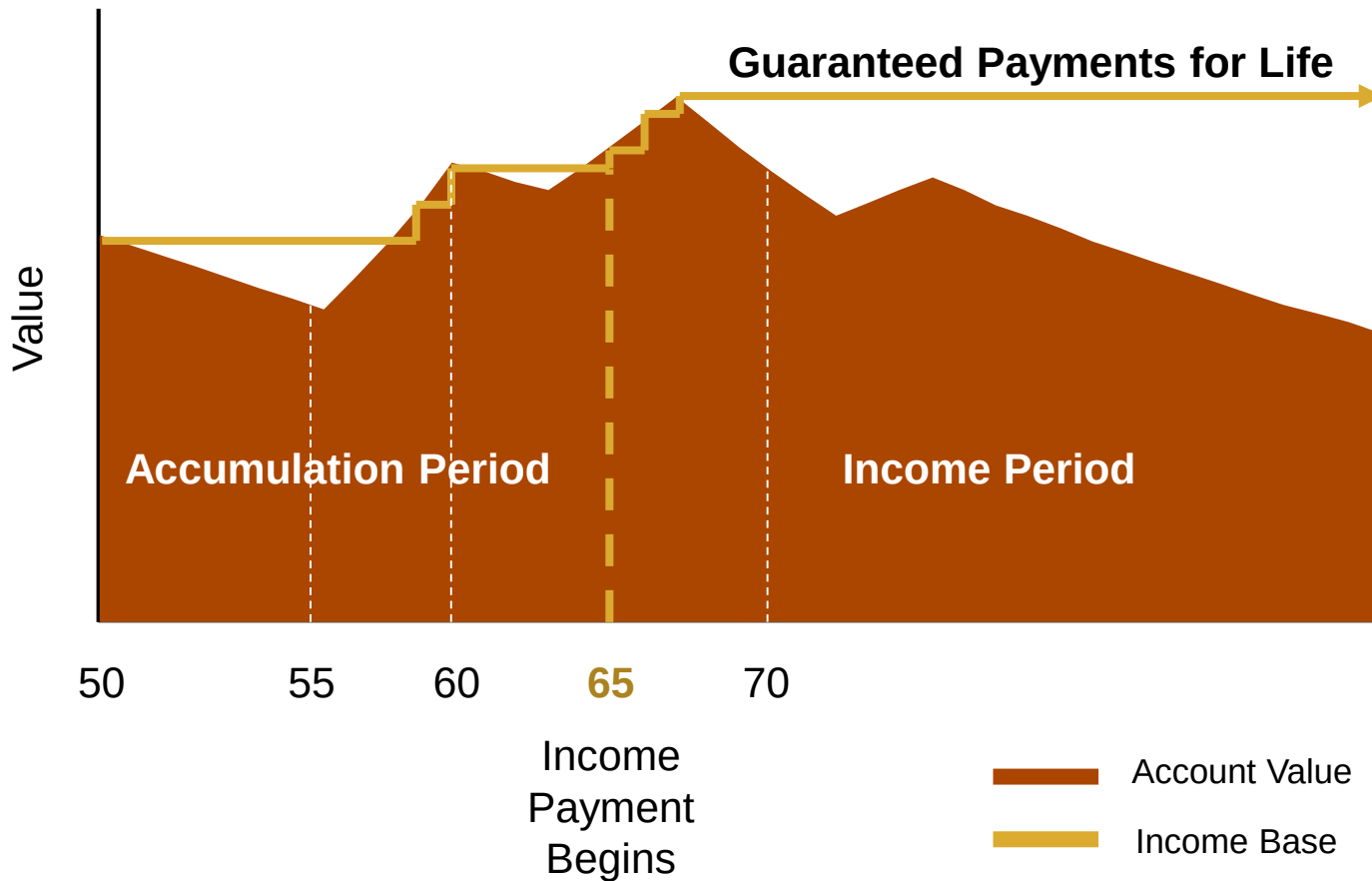
- Provides a guaranteed interest rate for a set period of time.
- Participant can defer the payment of income taxes since taxes aren't assessed until the money is withdrawn from the annuity.
- The guarantee is subject to the insurance company's claims paying ability.

Guaranteed Minimum Withdrawal Products

- Generally become available to workers near retirement: age 50+
- Participants invest in a balanced or target date fund with an associated guarantee.
- The guarantee is that income in retirement is tied to an "income base."
 - Each year, the guaranteed "income base" is reset to the account value, if higher than the current income base.
 - The investment's market value can decline, but the income base remains intact.
- Once the participant retires or separates from service, guaranteed payments begin—e.g., 4% per year.
- The arrangement could involve single or multiple insurers.

Sample Guaranteed Minimum Withdrawal Product

Each year, on the participant's date of birth, the income base is reset to the account value, if higher.



Guaranteed Income Solutions

Longevity Insurance

- An annuity that is purchased at or around retirement, but does not pay out until much later when the risk of outliving one's assets is high.
 - Commonly payouts start at age 80 or 85.
- Because annuity payments do not begin immediately, longevity insurance costs could be considerably less than other annuities— as much as 35% to 40% lower by one insurer's estimate.
- Essentially, similar to catastrophic health insurance with a high deductible.
- Structure of longevity insurance creates a much easier retirement income management equation: Instead of an open-ended pay-down period for retirement savings (i.e., until one dies), longevity insurances provides a finite timeframe for the pay-down period.

Longevity Insurance

Qualifying Longevity Annuity Contracts

- 2014 regulations by IRS created Qualifying Longevity Annuity Contracts (QLACs), which are exempt from required minimum distribution (RMD)* calculations.
- QLACs are designed to protect against the risk of outliving retirement savings. They are an annuity contract purchased within a DC plan where the annuity payments are deferred until the participant reaches age 85.
- QLACs must conform to specific requirements, such as:
 - Premiums must be limited to \$125,000, or no more than 25% of the plan account balance
 - Distributions must commence no later than age 85
 - Still, limited product availability.

*An RMD is the minimum amount a participant must withdraw from their DC plan each year, starting at age 70.5.

Guaranteed Income Solutions

Pros and Cons

- Below, we list the broad pros and cons of the overall array of guaranteed solutions (as listed on slide 10). Not all pros and cons apply to each type of solution.

Pros

- Guarantees that participant won't run out of money in retirement
- Certain guaranteed solutions, such as GMWB's, can be more flexible in terms of portability
- Can be integrated into existing investment options, such as target date funds

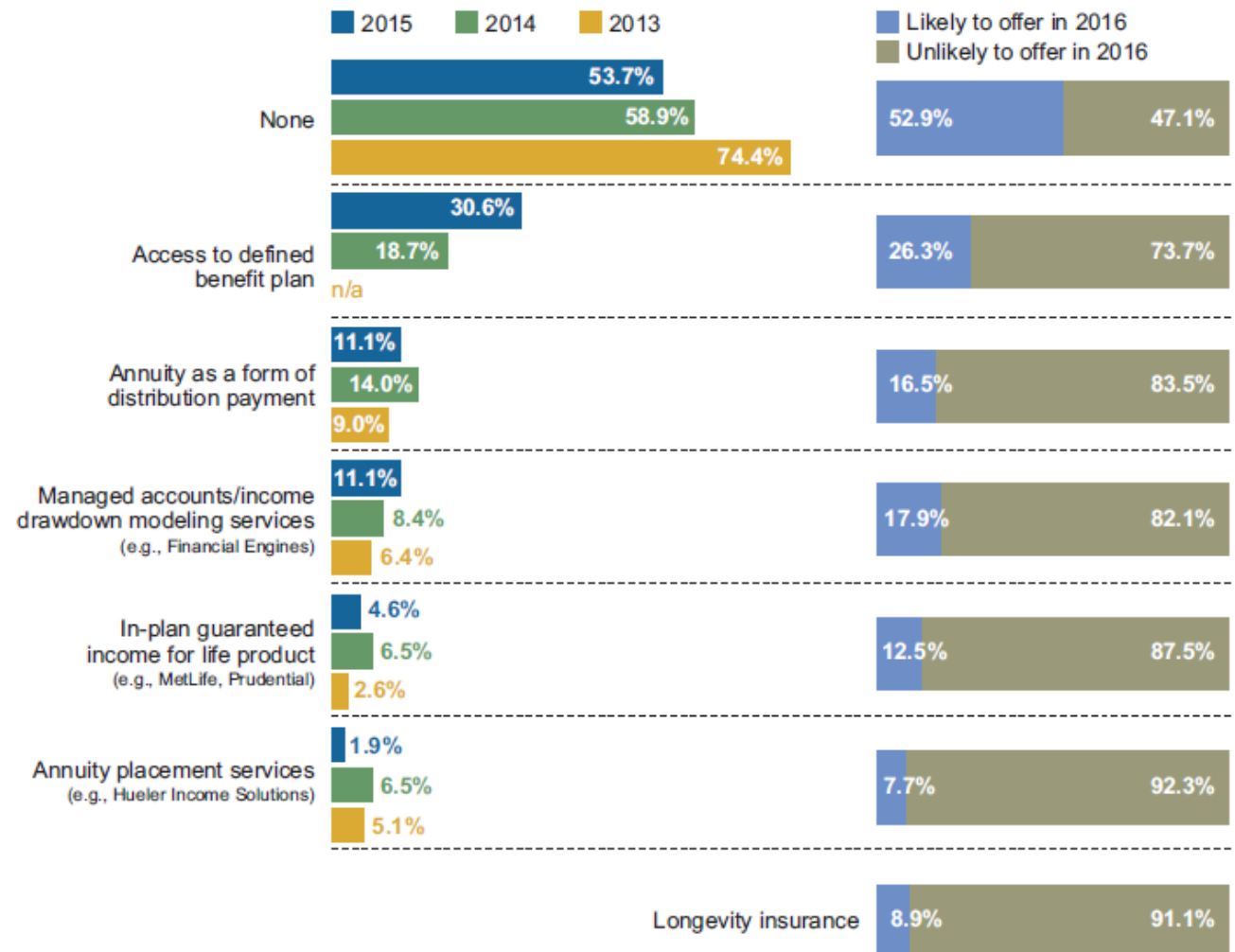
Cons

- Investors dislike annuities
- May be complex and difficult for participants to understand
- Counterparty risk (the chance that the insurer could become insolvent)
- May be costly
- Potential fiduciary liability issues
- May lack portability

Retirement Income Solutions: Where is the Focus?

- Most plan sponsors (53.7%) do not offer retirement income solutions within the DC plan.
 - In only looking at government plans that responded, 33.3% do not offer a retirement income solution.
 - The most commonly cited retirement income solution for government plans is access to a DB plan (46.7%), following by an annuity as a form of distribution (26.7%).

What retirement income solution(s) do you currently offer to employees?*



Source: Callan 2016 DC Trends Survey.

*Multiple responses were allowed.

Retirement Income Solutions: Public Plans

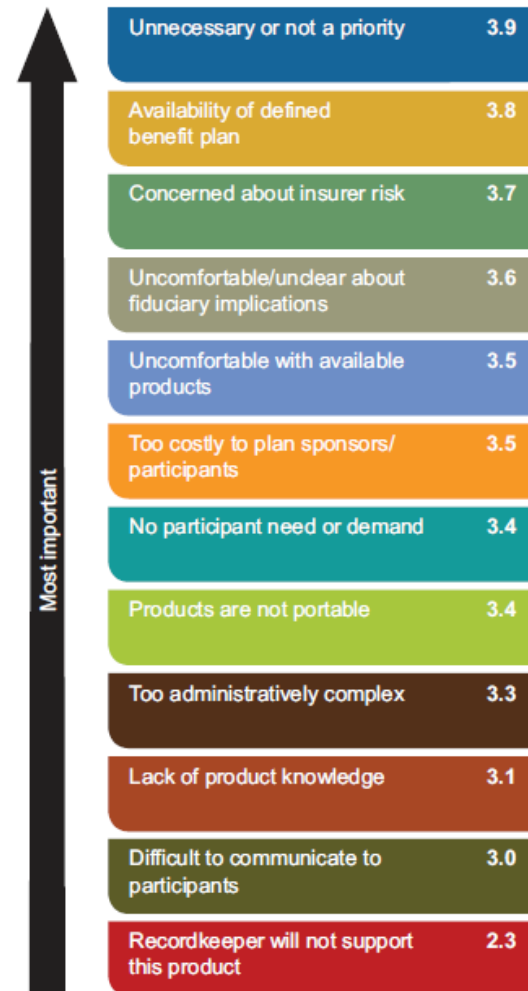
- Results from NAGDCA's March 2015 Public DC Plan Survey Report also provide prevalence information around retirement income solutions:
 - When asked if the plan offered a guaranteed retirement income solution product, 30% did, while 61% did not.
 - An additional 9% that currently do not offer a guaranteed retirement income solution product were considering adding one.
- Of the plans offering a guaranteed retirement income solution product or considering adding one, 91% responded that it is a fixed pay-out product, and 35% responded that the product has inflation protection features.
- 54% of responding plans stated that their guaranteed retirement income solution product was offered 'outside" of the plan and 43% was 'inside" of the plan (and 4% weren't sure).
- 47% of responding plans that offered a guaranteed retirement income solutions product reported that less than 1% of participants used it.
 - Retirees utilize the guaranteed retirement income solution product more than active plan participants.

Source: NAGDCA March 2015 Public Sector Defined Contribution Plan Survey Report, covering 129 government defined contribution plans.

Retirement Income Solutions

- Many plan sponsors continue to focus on helping workers accumulate sufficient assets in their DC plans and do not have the resources available to expend on workers' "decumulation" phase.

If your DC plan is unlikely to offer an annuity-type product in 2016, please indicate why by rating the following choices



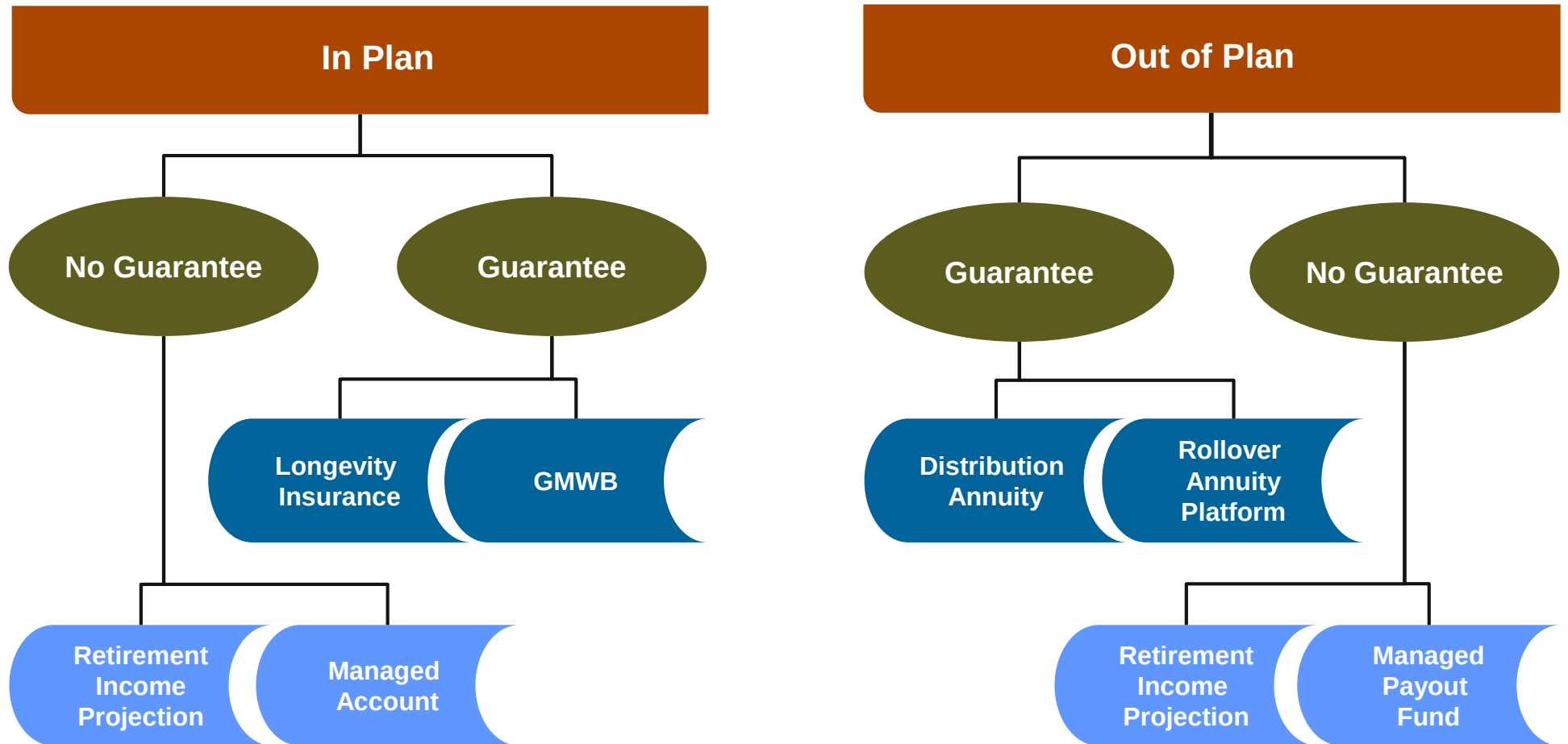
Weighted Average Score (5=Most important)

Source: Callan 2016 DC Trends Survey.

What Does the Future Hold?

- The next generation of retirement income solutions involve hybrids of various approaches
- Examples:
 - Guidance or advice + managed-payout type fund
 - Managed retirement income account + longevity insurance

Retirement Income Decision Tree



Products Offered by Empower

Similar to other major recordkeepers, only a handful of retirement income options are available at Empower, which we list below. Additional information is provided on the following slides.

- Services with Income Strategies:
 - Financial Engines Income+
 - Morningstar Spend Down Tool (note that this service can be combined with the below products)
- Products with Income Guarantees:
 - SecureFoundation Portfolios, a guaranteed lifetime withdrawal benefit (GLWB)
 - In development for 2017: In-Plan Qualified Longevity Annuity Contract (QLAC)

In-Plan Annuities Available from Recordkeepers (among those offering)

Proprietary GMWB (3 of 7)

Non-Proprietary GMWB (2 of 7)

Proprietary Deferred Income Annuity (1 of 7)

Non-Proprietary Deferred Income Annuity (1 of 7)

Products Offered by Empower: Prevalence & Utilization

- Below we outline the prevalence of the retirement income options offered at Empower. Additionally, we show participant utilization of those products in cases where they are offered.
- The spend down tool is currently turned on for the ARMB Plans – participants who use the AAG / Morningstar managed account service have access to this feature.

Product	Prevalence	Participant Utilization (when product is offered)
SecureFoundation GLWB	1,813 clients	0.88%
Financial Engines Income+	36 clients	14.49%
Empower Retirement Advisory Services/ Morningstar Spend Down Tool (standalone)	Not available	Not available
Empower Retirement Advisory Services/ Morningstar spend down with SF GLWB	Not available	Not available

Products Offered by Empower: Financial Engines

● Financial Engines Income+

- Must offer Financial Engines Advice/Managed Accounts in the plan to be able to access Income+. Since Income+ is a feature of the managed account program, there is no additional fee.
 - *Fees for the managed account service can range from 10 bps to 60 bps, depending on the participant's asset levels and the implementation type (opt-in vs. opt-out). Additionally, there may be a charge (up to \$10/participant) for advice, which Financial Engines couples with managed accounts.*
- Income+ advises on the participant's drawdown strategy with the goal of providing steady monthly payouts from the DC plan with the optional purchase of an out-of-plan annuity.
- Payout amounts follow the tax source hierarchy specified for a given member account. Income+ does not aim to optimize the order of liquidations from pre-tax, after-tax, and Roth balances.
- Does not require plan sponsors to add an annuity or change the fund lineup in their plan.
 - *Developed an optimization approach to approximate the properties of a Treasury bond ladder with the use of existing fixed income fund options in the DC plan (note that different fixed income lineups in a plan will result in slightly different income payout rates for participants).*
 - *While an annuity is not required, in order to provide a lifetime income guarantee, Financial Engines requires an out-of-plan annuity purchase.*
- Unlimited access to Financial Engines' advisors for one-on-one counseling.
- Annual checkups with an advisor to determine the potential for annual raises in the monthly payout and to discuss whether or not it makes sense to exercise the lifetime income option through the purchase of an out-of-plan annuity.
- Once an Income+ participant is ready to retire, at their request, a monthly payout from their retirement plan is automatically generated.

Products Offered by Empower: Empower Retirement Advisory Services / Morningstar Spend Down Tool

- Morningstar Spend Down Tool

- The Spend Down Tool is offered through Advised Assets Group, LLC (AAG), a registered investment adviser and fiduciary, and is powered by an independent financial expert, Morningstar/Ibbotson.
 - Similar to Financial Engine's Income+, the Spend Down Tool advises on the participant's drawdown strategy.
 - This tool is an add-on for plans that use the managed account program.
 - *Fees for the managed account services generally range from 10 bps to 50 bps depending on the implementation type (opt-in vs. opt-out).*
 - Participants receive dynamic recommendations for a sustainable withdrawal amount and a tax-efficient drawdown of available income sources.
 - The spending plan includes a detailed overview of the income sources that comprise the participant's annual income so they know how much to withdraw each year from their various accounts. As part of their spending plan, the Spend Down Tool provides participants with an investment strategy for assets within their retirement plan.
 - Participants can access Spend Down Tool either online or through Empower's Participant Advisory Services Education Call Center (as opposed to Morningstar advisors), and are encouraged to access the service annually online.
 - May require plan sponsors to change the fund lineup in their plan (depends on the current lineup).
 - The Spend Down Tool can accommodate a range of in-plan annuity products, and can be combined with the SecureFoundation Portfolios (or the In-Plan QLAC that is in development). When combined with SecureFoundation Portfolios, a participant will not be charged a managed account fee in addition to the GLWB fee.
- This spend down tool is currently turned on for the ARMB Plans – participants who use the AAG / Morningstar managed account service have access to this feature.

Products Offered by Empower: SecureFoundation Portfolios

- SecureFoundation Portfolios (GLWB)

- A Group Fixed Deferred Annuity Contract with a Guaranteed Lifetime Withdrawal Benefit (GLWB), issued by Great-West Life & Annuity Insurance Company.
- Goal is to protect against longevity risk and the risk of downward fluctuations in retirement income due to changes in market performance.
- Fees can range from 0.7% to 1.5% in addition to the Covered Funds' investment management & trustee fees.
 - *Currently, fees are at 0.9%.*
- The GLWB has three phases:
 - *Accumulation*
 - *Guaranteed Annual Withdrawal GAW*
 - *Settlement*
- In the Accumulation phase, the participant directs contributions to a Covered Fund, which establishes the Benefit Base (i.e., the sum of all contributions minus any withdrawals/adjustments). At age 55, they can begin to take GAWs, which are annual withdrawals not to exceed a specified amount, without reducing the Benefit Base. If/when the Settlement phase begins, Great West makes installment payments to the participant for life.
 - *The Covered Funds are proprietary Great-West target date funds that would need to be added to the fund lineup. See Appendix for additional detail.*
- Great West only begins using their money to make installment payments to the participant if the Covered Fund Value is reduced to zero due to Covered Fund performance, the Guarantee Benefit Fee, certain other fees that are not directly associated with the GLWB, and/or GAWs. They are able to limit their risk by limiting the amount the participant may withdraw each year. If the participant needs to take excess withdrawals, they may not receive the full benefit of the GLWB.

Products Offered by Empower: SecureFoundation Portfolios

- SecureFoundation Portfolios (continued)

- The product has a number of risks including, but not limited to the following:
 - *Participant may lose the entire benefit if the plan sponsor selects a new recordkeeper, cancels the contract, or removes Covered Funds.*
 - *The participant may die before receiving payments or may not live long enough to receive enough income to exceed the amount of the fees paid.*
 - *The Covered Funds may perform well enough so that the participant may not need the guarantee.*
 - *The participant may need to make excess withdrawals, which has the potential to substantially reduce or terminate the benefits.*
 - *The participant might not begin making GAWs at the most financially beneficial time.*
 - *If the participant changes his or her recordkeeper, the participant may never receive a benefit.*
 - *Great-West reserves the right to increase the fee at any time.*
 - *The receipt of payments is subject to Great-West's claims paying ability.*
- In pursuing a product such as this, these are all areas to explore in further detail (e.g., fees, provisions around changing fees, provisions around making excess withdrawals, covered funds, inflation adjustment provisions and costs, claims paying ability of insurer).

Next Steps

- Should ARMB wish to continue to pursue retirement income products for the Plans, we suggest:
 - Conducting an in-depth analysis of the available products.
 - Reviewing all aspects of the products including investment approach, product provisions, communications, fees, portability, etc.
 - Evaluating the participant education and communications given these are critical factors in implementing a retirement income solution.
 - Evaluating and understanding how the advisors who communicate these products are compensated.
 - Include a further evaluation of the spend down strategy as a part of the overall managed account service review.



Appendix

What Can Make Annuities Appealing to Investors?

- Beshears et al. conducted two large surveys of hypothetical annuitization choices to learn what motives are important in annuitization choices, product design, and communication.
- Features that are important to investors:
 - Flexibility and control
 - Availability of partial annuitization
 - Inflation protection and growth in real income
 - Low counterparty risk

Source: What Makes Annuitization More Appealing? Beshears et al. 2013 White Paper.

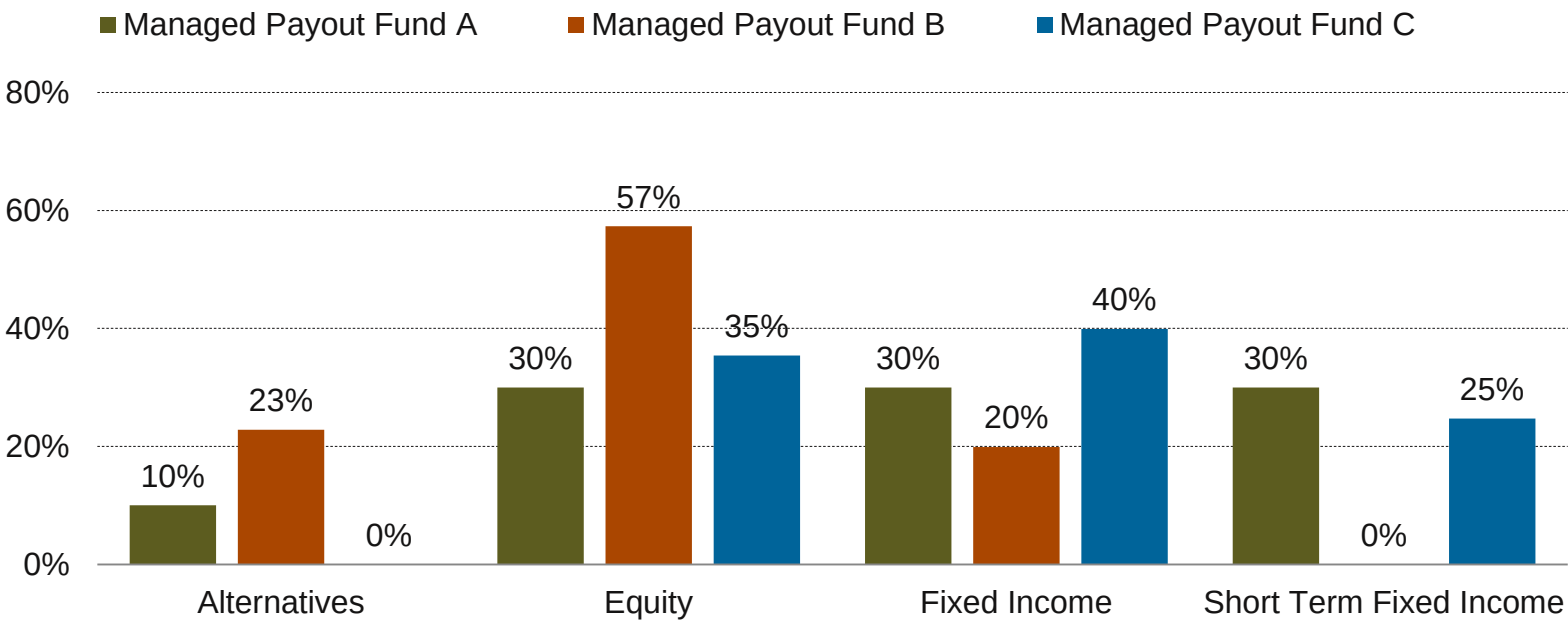
Fixed Annuities in DC Plans

- The participant systematically purchases a deferred fixed annuity through regular DC plan contributions.
 - Annuity can represent as much or as little of the retirement nest-egg as desired.
- Guaranteed income in retirement is based on the prevailing interest rate at the time the contribution is made.
 - This “laddered approach” helps mitigate point-in-time risk
- Participant annuitizes at retirement.
- Can be part of a target date fund or a standalone option.

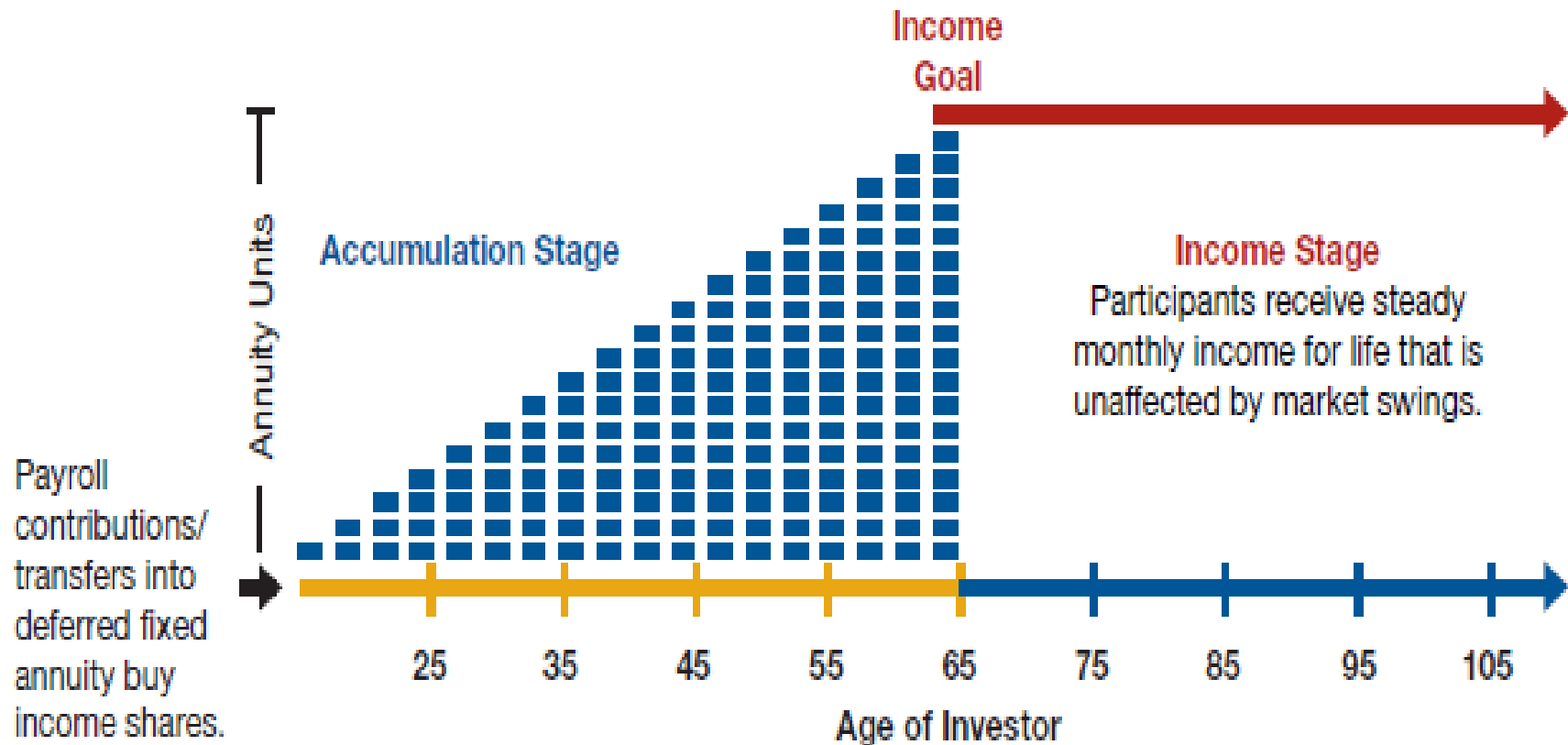
Managed Payout Funds

Sample Asset Allocations

Asset Allocations of Managed Payout Funds



In-Plan Deferred Fixed Annuities



SecureFoundation Portfolios

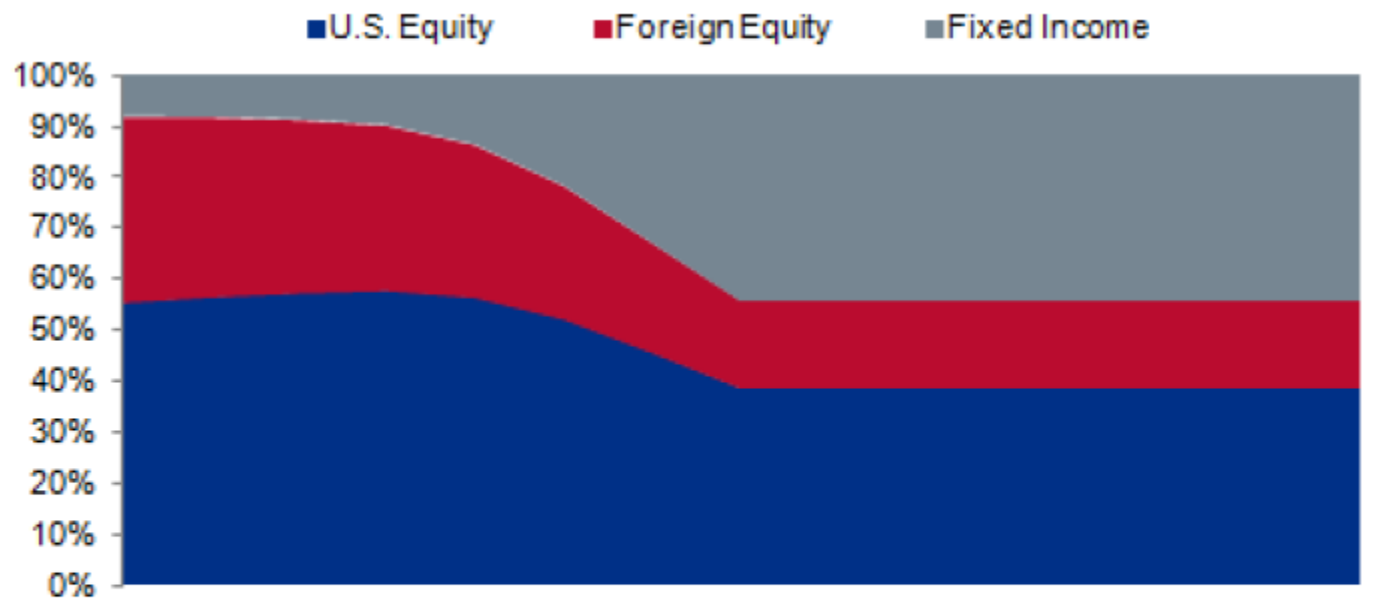
List of Covered Funds

- Great-West SecureFoundation® Lifetime 2015 Fund
- Great-West SecureFoundation® Lifetime 2020 Fund
- Great-West SecureFoundation® Lifetime 2025 Fund
- Great-West SecureFoundation® Lifetime 2030 Fund
- Great-West SecureFoundation® Lifetime 2035 Fund
- Great-West SecureFoundation® Lifetime 2040 Fund
- Great-West SecureFoundation® Lifetime 2045 Fund
- Great-West SecureFoundation® Lifetime 2050 Fund
- Great-West SecureFoundation® Lifetime 2055 Fund
- Great-West SecureFoundation® Balanced Fund
- Great-West SecureFoundation® Lifetime 2015 Trust
- Great-West SecureFoundation® Lifetime 2020 Trust
- Great-West SecureFoundation® Lifetime 2025 Trust
- Great-West SecureFoundation® Lifetime 2030 Trust

SecureFoundation Portfolios

Covered Funds

Great-West SecureFoundation Lifetime Glidepath



	Years to Age 65									Age 65	Years Past 65				
	45	40	35	30	25	20	15	10	5		5	10	15	20	25
U.S. Equity	55.4%	56.5%	57.3%	57.8%	56.4%	52.2%	45.6%	38.6%	38.6%	38.6%	38.6%	38.6%	38.6%	38.6%	38.6%
Foreign Equity	36.6%	35.4%	34.1%	32.5%	30.1%	26.3%	21.7%	17.4%	17.4%	17.4%	17.4%	17.4%	17.4%	17.4%	17.4%
Fixed Income	8.0%	8.1%	8.6%	9.7%	13.5%	21.5%	32.7%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%

Source: 3/31/2016 Prospectus

September 30, 2016

**Alaska Retirement Management
Board: *Defined Contribution
Plans Investment Structure
Evaluation***

Paul Erlendson
Fund Sponsor Consulting

Steve Center, CFA
Fund Sponsor Consulting

Lori Lucas, CFA
Fund Sponsor Consulting

James Veneruso, CFA, CAIA
Fund Sponsor Consulting

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Plan Summary

This study looks at the unified investment option structure which covers 4 underlying plans. The details on the plans are as follows:

Table 1: Summary of Plans

	SBS-AP	457 Deferred Compensation Plan	PERS IV	TERS III
Plan Type	401(a)	457	401(a)	401(a)
Deferral	6.13% mandatory	Variable	8.00% mandatory	8.00% mandatory
Match	6.13%	None	5.00%	7.00%
Eligibility	Employees of state and 20 political subdivisions	Voluntary, any permanent, long-term non-permanent employee as well as elected officials.	Public employees	Teachers/educators at participating employers
Total Participants (3/31/16)	44,106	10,986	27,524	6,828
Assets (6/30/16)	\$4,081,285,976	\$808,795,366	\$667,523,128	\$286,112,303

The plans have a combined \$5.8 billion in assets.



Investment Structure Philosophy and Considerations

Lessons from Behavioral Finance

How Behavioral Finance Can Inform Plan Design

● Inertia:

- Research by John Beshears et.al., of the National Bureau of Economic Research shows that default options tend to attract assets, and participants often remain wholly invested in the default investment option.
- Research by David Laibson et. al., of Harvard University found that it takes an average of 371 days for the average participant in a DC plan to allocate to newly introduced investments in the plan (barring a reenrollment).
 - *As an example, since 2006 Real Return/TIPS fund prevalence in DC plans has increased from 5% to 33%. However, over the same time period, utilization of such funds has decreased and stands at just 1%.*

● Momentum Market Timing:

- Those who invest in emerging market equities frequently over-allocate to them. Morningstar found that over the ten-year period ending December 31, 2014, adverse timing decisions have cost diversified emerging markets investors 1.7% percentage points annually.

● Framing Effects:

- DC participants are prone to use mental shortcuts and naive diversification strategies, often based on the design of the investment menu. For example, if the plan offers more stock funds than bond funds, participants allocate more heavily to stocks than bonds (and vice versa).
- Such research suggests that plan sponsors would do well to consider choice architecture, or the influence of menu design on participant investment behavior.

● Overwhelming Choice:

- Individuals often desire a wide array of choices, yet are easily overwhelmed by them. According to one study, choice overload results in decreased plan participation. According to another study, participation rates were highest among plans with just four funds.

One goal of the structure review is to use the Plans' structure to limit the impact of these behavioral biases and how they can adversely affect participant outcomes.

Investment Structure Evaluation

Callan's Philosophical Tenets:

Building upon these behavioral finance lessons, Callan believes:

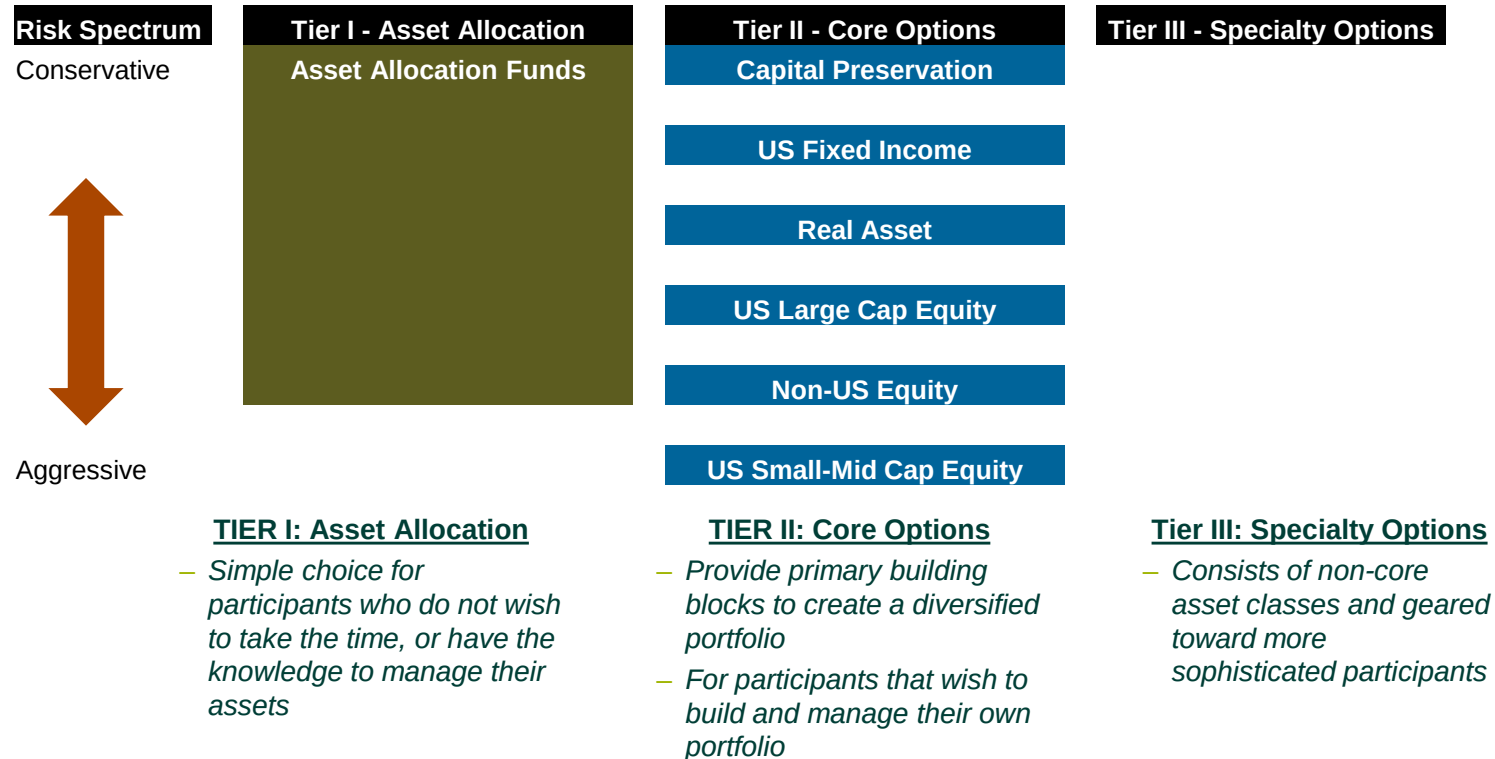
- **Investment structures should be built for the long term**
 - An investment structure should be built within the context of legal and regulatory trends, product development and innovation, and in adherence to a three-tier framework that facilitates plan usage by everyone from do-it-for-me to do-it-yourself types of participants.
- **Simpler can be better**
 - The number of choices affects participants' allocation decisions.
 - The optimal number of investments for a plan will offer sufficient diversification opportunity while minimizing participant confusion.
- **Utilize scale**
 - Given their combined size, the Plans can make further use of multi-manager, white label funds to bring further diversification *within* the Plans' investment options.
- **Cost is important**
 - Investment structures should seek to minimize cost. This may be through effective use of investment vehicles or share classes.

Three-Tier Framework

Clean Sheet Investment Structure

- Callan's preference is to utilize a three-tiered framework to depict a defined contribution plan's fund choices and to evaluate the overall plan investment structure. This approach addresses the varied needs of each constituency in an employee population.
- This study examines the ARMB defined contribution Plans within the context of Callan's three-tier structure philosophy. The chart below illustrates a "clean sheet" investment structure. Few plan structures resemble Callan's "clean sheet" due to individual investment preferences as well as a history of offering a larger number of investment options.
- This study primarily addresses the plans' structure and is agnostic with regard to individual fund performance.

Table 2: Callan's Clean Sheet Lineup



The ARMB Defined Contribution Plans

Table 3: ARMB Plans' Structure

	Tier I: Asset Allocation	Tier II: Active Core Options	Tier II: Passive Core Options	Tier III: Specialty Options
Conservative	Target Date Funds Alaska Target Date Retirement (25%)	Capital Preservation* Interest Income Fund (3%) – Def Comp Stable Value Fund (7%) – SBS State Street Inst Tres Money Mkt (1%) - All AK Money Mkt Trust (<1%) – TRS/PERS		
	Balanced Funds Alaska Balanced Trust (22%) Alaska Long-Term Balanced Trust (12%) SSgA Global Balanced Fund (2%)			
Aggressive			Fixed Income Government/Credit Bond Index (2%) Intermediate Bond Fund (1%)	Long Government Fixed Income Long US Treasury Bond Index (1%)
			Real Assets US Inflation Protected Securities Idx (1%)	Non-US Fixed Income World Government Bond Ex-US Index (<1%)
			Large Cap Domestic Equity S&P 500 Index Fund (10%)	Socially Responsible Allianz/RCM Soc Responsible Investment (1%)
			All Cap US Equity Russell 3000 Index Fund (3%)	
		Non-US Equity International Equity Fund (2%)	Non-US Equity World Equity Ex-US Index (2%)	
		Small Cap US Equity US Small Cap Trust (5%)		Real Estate US Real Estate Investment Trust Index (1%)

(Percentage of combined Plans' assets in parenthesis)

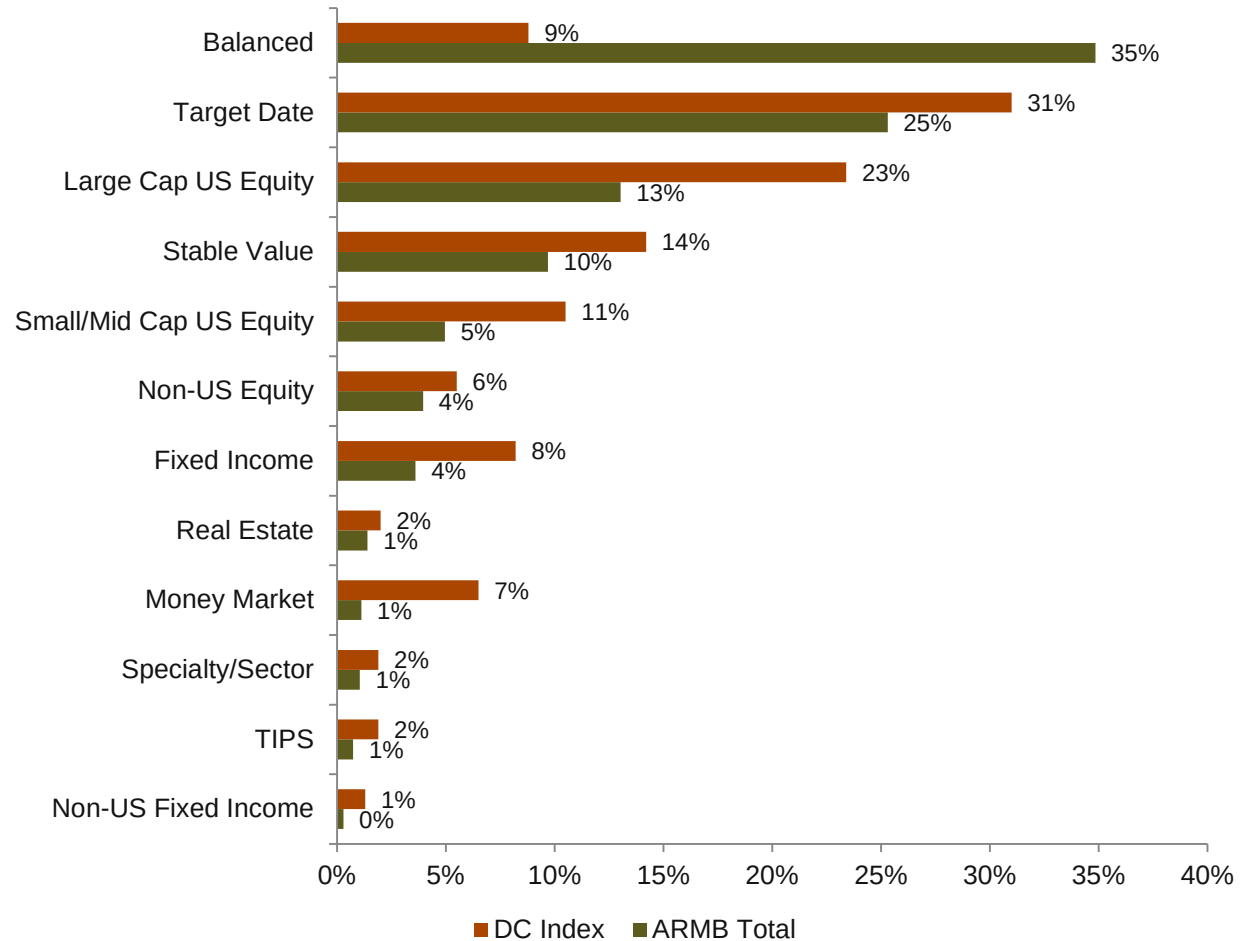
*Note capital preservation is one area from a structure standpoint where the 4 underlying plans differ. The offering plans are listed after the percentage of assets.

Comparison to Industry Averages

Prevalence of options in DC plans.

- The figures for the “Callan DC Index” represent the average allocation across roughly 100 defined contribution plans representing over \$150 billion in assets. This will serve as a proxy for the wider DC universe.
- Across the plans the utilization of the balanced funds outstrips that of the other options and accounts for nearly 4 times the assets as in a typical DC plan.
- As assets are concentrated in the balanced options, relative to the typical DC plan, the Plans have a lower allocation across all other asset classes.
- The Plans offer 17 options. 26% of public plans offer between 16 and 20 core funds. 39% offer fewer options and 34% offer more*.

Chart 1: Share of Plan Assets when Offered



(allocations as of 3/31/16)

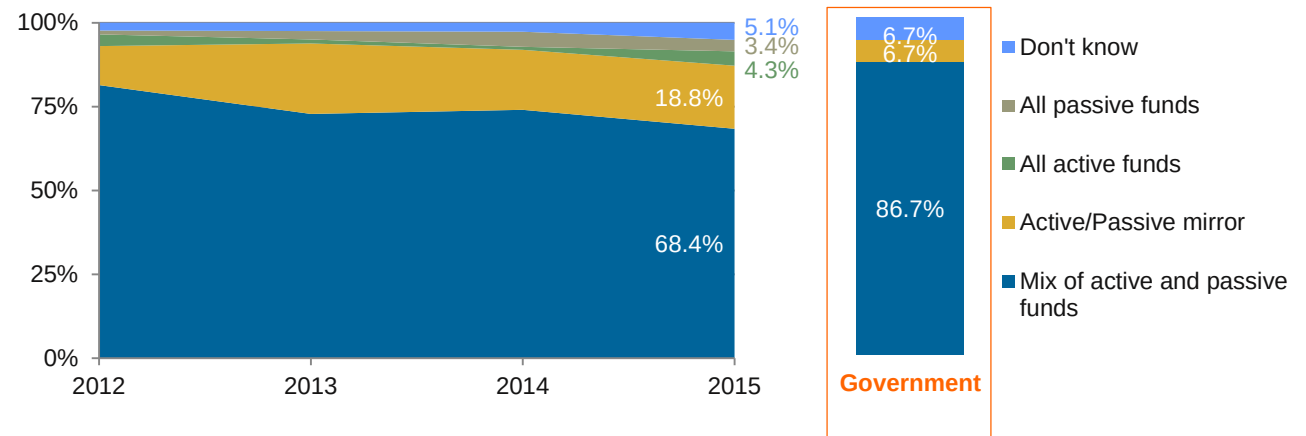
*NAGDCA 2015 Public Sector Defined Contribution Plan Survey. 17 options does not count target date funds.

Callan 2016 DC Trends Survey

Active-Passive Mirror

- Within the government industry, it is common to offer a mix of active and passive funds.
- A full-blown active passive mirror remains less common.
- An active-passive mirror allows participants to choose between low-cost beta exposure or the pursuit of alpha through active managers.

Chart 2: What best describes your plan's investment menu approach?

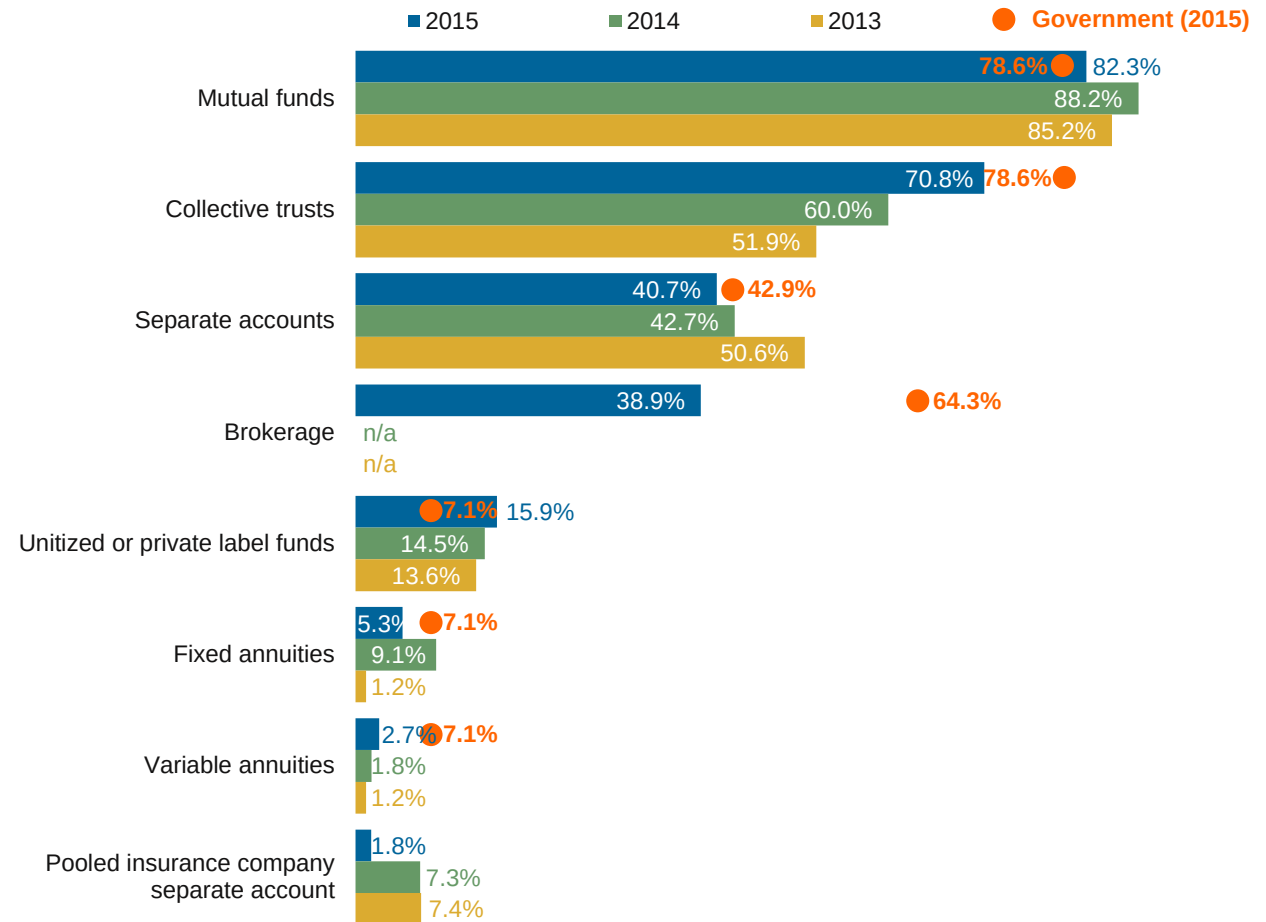


Callan 2016 DC Trends Survey

Prevalence of Investment Vehicles

- Mutual funds remain commonplace DC plan options at 82.3%. Collective trusts notably increased in prevalence, with 70.8% of plans offering them in 2015, up from 60.0% in 2014. Collective trusts are a common stable value option (43.4%) but more often are used for other (i.e., non-stable value) funds (49.6%).

Chart 3: Does your plan offer the following investment types within the fund lineup?*



Additional categories (2015 data): Other (2.7%), ETFs (0.0%)

*Multiple responses were allowed.



Investment Structure Review

Tier I: Asset Allocation Options

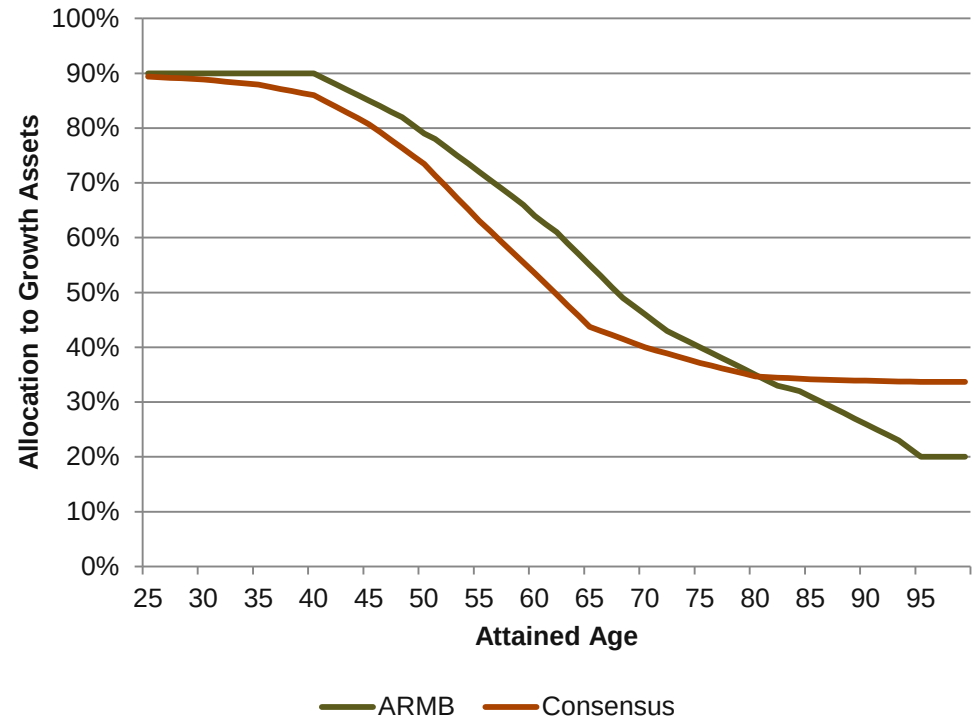
Target Date Fund - Observations

- In the target date space, the Plans offer the Alaska Target Retirement Trusts.
- The funds are managed by T. Rowe Price.
- Target date funds are diversified, professionally managed solutions that harness participant inertia by de-risking participant allocations over time.
- Callan supports offering target date funds as the Tier I asset allocation option.

Options to Consider:

- Concurrent with the structure review, the Plans are reviewing the suitability of the existing target date fund.

Chart 4: Growth Asset Rolldown



Tier I: Asset Allocation Options

Balanced Options - Observations

- The Plans offer 3 balanced options:
 - Alaska Long-Term Balanced Trust (T. Rowe Price)
 - Alaska Balanced Trust (T. Rowe Price)
 - SSgA Global Balanced Fund
- The underlying makeup of the funds is illustrated in Table I.
- The main drawback of balanced funds relative to target date funds is that unlike target date funds, balanced funds do not shift their asset allocation as a participant ages. Therefore participant inertia, whereby participants do not revisit their allocations, can lead to inappropriate allocations as participants age and their risk profile changes.

Options to Consider:

- In general Callan does not recommend offering balanced funds in tandem with target date funds due to overlap in these strategies' objectives and role within the plan.
- To streamline the line-up, the Plans could remove all the balanced options and map assets to the target date fund.
- Given how significant a portion of Plans' assets the balanced funds are, the Plans could also streamline the balanced options by eliminating only the less-utilized global balanced option.

Table 4: Underlying Balanced Fund Exposure (3/31/16)

	US Equity	Non-US Equity	Fixed Income
AK Long-Term Balanced Trust	40%	20%	40%
Alaska Balanced Trust	23%	15%	62%
SSgA Global Balanced Fund	32%	28%	40%*

**The Global Balanced Fund has a 10% allocation to non-US fixed income. The other two balanced funds do not feature any non-US fixed income*

Tier II: Core Options – Capital Preservation

Observations

- The Plans offer several capital preservation options. The options offered within each of the Plans are illustrated in the table to the right.
 - SSgA Institutional Treasury Money Market Fund: this fund invests solely in direct obligations of the US Treasury and other mutual funds that invest exclusively in such obligations.
 - Alaska Money Market Master Trust: the fund is benchmarked to the Citigroup 3-Month Treasury Bill Index. The fund is managed by T. Rowe Price.
 - Interest Income Fund – The fund invests primarily (currently 96%) in synthetic investment contracts (“SICs”). The fund is managed by T. Rowe Price.
 - Stable Value Fund: This fund too invests primarily in SICs (currently 87% with remained in cash and equivalents). This fund is managed by T. Rowe Price

Table 5: Availability of Capital Preservation Options

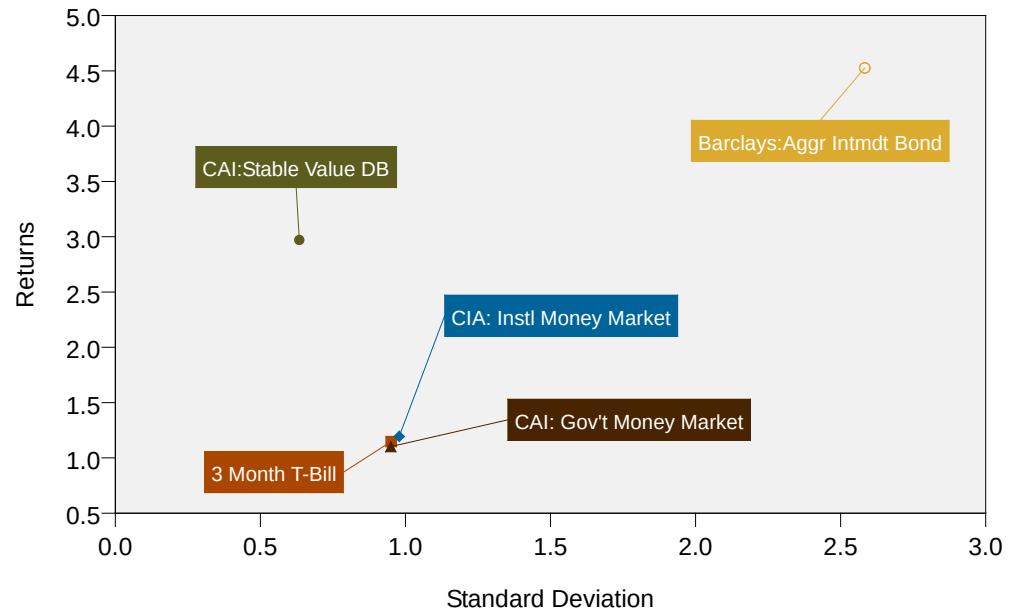
	SBS-AP	Deferred Comp	PERS IV TERs III
AK Money Market Trust			X
SSgA Instl Treasury Money Market	X	X	X
Interest Income Fund		X	
Stable Value Fund	X		

Tier II: Core Options – Capital Preservation

Observations

- In 2014, the SEC adopted amendments to the rules governing money market funds, including:
 - Institutional money market funds will have a floating net asset value.
 - Retail and institutional non-government funds will be able to impose liquidity fees and redemption gates to address investor runs. These can be enacted at the fund board's discretion if a fund's level of weekly liquid assets fall below a certain threshold.
 - Government money market funds MAY impose a fee or gate if their ability to do so is disclosed.
- Stable value funds, as represented by the Callan Associates Stable Value Style group (CAI:Stable Value), have exhibited returns slightly lower than the Barclays Intermediate Index, with risk similar to cash investments, over the most recent ten year period.
- Stable value is not without its issues. These include:
 - Wrap contracts – wrap contracts often forbid plan sponsors from offering “competing options”. In some cases low duration bond funds, TIPS options and even managed accounts are considered “competing options” and could require an equity-wash provision.
 - Performance – In a rapidly rising interest rate environment, the crediting rate for stable value will typically lag the increase in money market yields due to the longer duration of the underlying portfolio.
- Due to the improved risk/return tradeoff relative to money market, Callan generally recommends including stable value as a preferred capital preservation option.

Chart 6: Risk & Returns
for 10 Years Ended March 31, 2016



Tier II: Core Options – Capital Preservation

Considerations

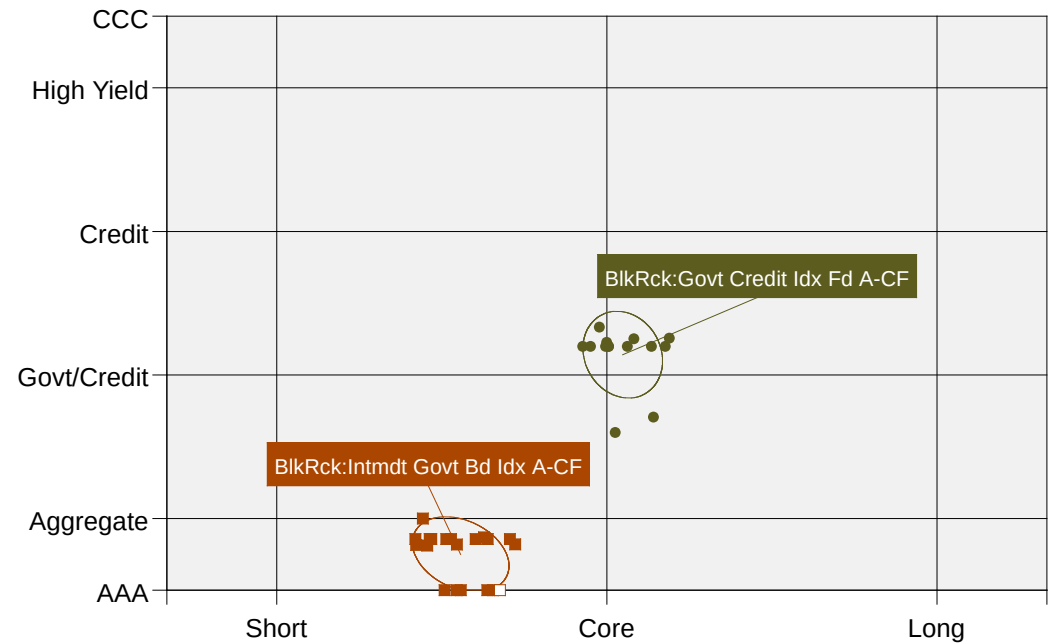
- **Since the capital preservation options within each plan differ, each will be treated separately:**
 - **SBS-AP:** This plan offers participants the choice of a money market (SSgA Institutional Treasury Money Market) and stable value (Interest Income Fund). Given the yield advantage in stable value, Callan recommends eliminating the money market option.
 - **Deferred Compensation Plan:** As with the SBS-AP, participants in the Deferred Compensation Plan have access to both a money market (SSgA Institutional Treasury Money Market) and stable value (Stable Value Fund). As with the SBS-AP plan, Callan recommends eliminating the money market option.
 - **PERS IV & TERS III:** Both Plans offer participants access to a treasury money market option (SSgA Institutional Treasury Money Market) as well as a non-government money market option (Alaska Money Market Master Trust). Callan recommends eliminating the money market options and offering a stable value option.
 - In addition the Plans can explore offering a single unified stable value option rather than the two options as is currently the case.

Tier II: Core Options – Fixed Income

Observations

- The Plans currently offer two core fixed income options:
 - Intermediate Bond Fund
 - Government/Credit Bond Index
- The Government/Credit Bond Index tracks the performance of the Barclay's Capital Government/Credit Bond Index. The fund sports an effective duration of 5.8 as of 3/31/16.
- The Intermediate Bond Fund is entirely composed of the BlackRock Intermediate Government Bond (non-lending) Index. It holds representative securities (government issued) from the Barclays Intermediate Bond Index. The effective duration as of 3/31/16 was 3.8 years.

Chart 7: Fixed Income Style Map
for 5 Years Ended March 31, 2016



Tier II: Core Options – Fixed Income

Core Plus Bond Style Peer Group versus Barclays Aggregate

- Callan generally supports active management in fixed income in the form of core plus portfolios. As shown in the table, such funds have shown an ability to outperform the benchmark.
- Offering a core plus option would allow for further diversification as opposed to the current two passive government offerings in which duration is the largest differentiator.

Table 6: Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

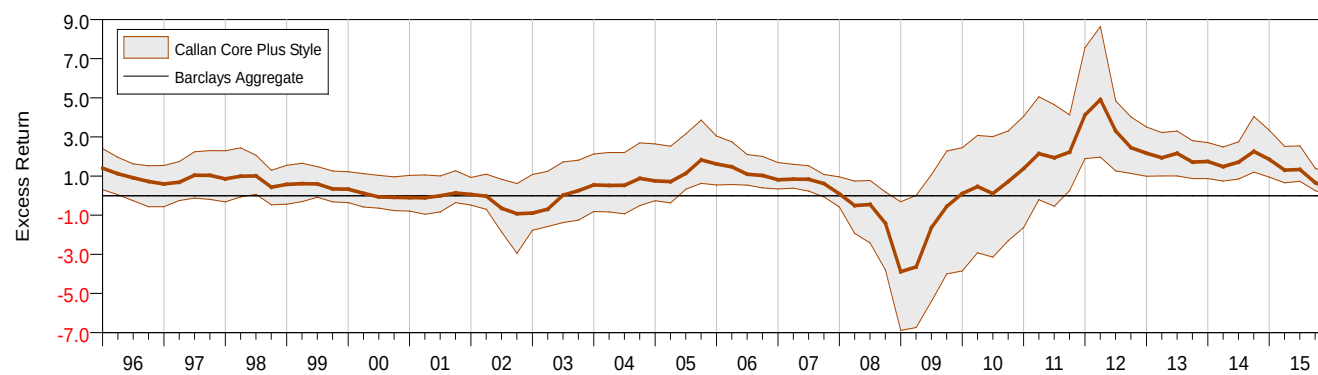
Hurdle	0.20%	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%
Median	70%	70%	69%	65%	65%	64%	63%	60%	58%	53%
45th Percentile	73%	71%	69%	69%	69%	66%	64%	64%	61%	61%
40th Percentile	76%	74%	74%	73%	73%	71%	70%	66%	66%	66%
35th Percentile	80%	79%	76%	75%	74%	74%	74%	73%	70%	66%
30th Percentile	84%	83%	83%	81%	80%	79%	76%	75%	75%	71%
25th Percentile	90%	88%	88%	88%	84%	81%	81%	80%	78%	76%

Average Annualized Excess Return – Median Manager: 0.71%

Options to Consider:

- The Plans can look to offer an actively managed core plus option while eliminating the passive government-only option.
- The Plans could explore the viability of offering a multi-manager fixed income option that could blend various exposures, such as those currently offered in the Plans (e.g., passive, long government, world ex-US).

Rolling 12 Quarter Excess Return relative to Barclays Aggregate for 20 Years ended December 31, 2015



Tier II: Diversified Real Assets

Observations

- The Plans offer the U.S Treasury Inflation Protected Securities Index Fund. The fund is managed by State Street Global Investors and is benchmarked to the Barclay's U.S. TIPS Index. The fund carries an effective duration of 4.8 as of 3/31/16.
- Compared to a single asset, a diversified approach to inflation protection may offer benefits as different asset classes behave differently (see Table 7) at various points in an inflationary cycle as well as to different types of inflation (expected vs. unexpected).
- However:
 - Utilization is often low for such funds. According to Callan's DC Index™ TIPS/Real Asset funds are offered in 33% of plans, but when offered, garner only 1% of plan assets. Within the Plans, the U.S Treasury Inflation Protected Securities Index Fund has attracted less than 1% of assets.
 - The recent track record for multi-asset class funds is poor given the current commodity cycle and persistently low inflation.
 - Participant communication and performance benchmarking can present complications.

Options to Consider:

- Callan supports the inclusion of a fund that looks to mitigate inflation risk.
- The Plans can explore the different types of diversified real asset funds that exist and possibly replace the current TIPS fund.
- This fund could be either actively or passively implemented.

Table 7: 10 Year Return Correlations as of 3/31/16

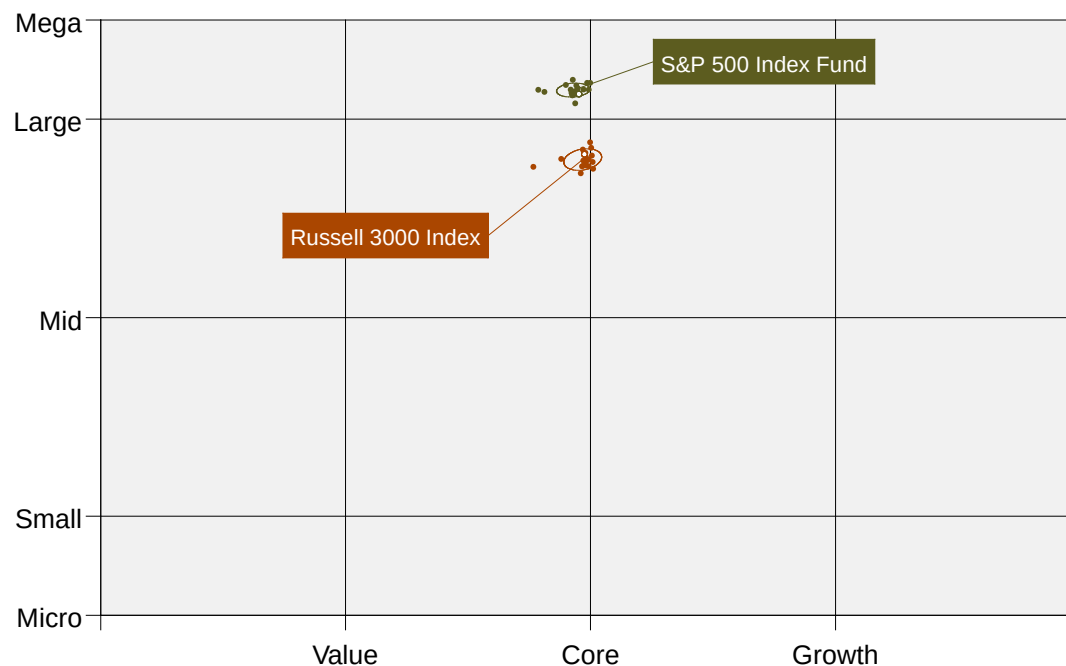
	Bloomberg Commodity Index	NAREIT Index	Barclays: US TIPS Index	S&P:500	3 Month T-Bill	CPI-U
Bloomberg Commodity Index	1.000					
NAREIT Index	0.176	1.000				
Barclays: US TIPS Index	0.287	0.189	1.000			
S&P:500	0.450	0.655	-0.216	1.000		
3 Month T-Bill	0.064	-0.050	0.261	-0.158	1.000	
CPI-U	0.571	-0.079	0.243	0.055	0.056	1.000

Tier II: Core Options – US Large and All Cap Equity

Observations

- Within the domestic equity space the Plans offer passively implemented S&P 500 and Russell 3000 funds.
- Additionally the Plans offer the actively managed Small Cap Trust (managed by T. Rowe Price) and Allianz/RCM Socially Responsible Fund.
- The latter two funds are discussed later on.

Chart 8: Style Map
for 5 Years Ended March 31, 2016



Tier II: Core Options – US Large and All Cap Equity

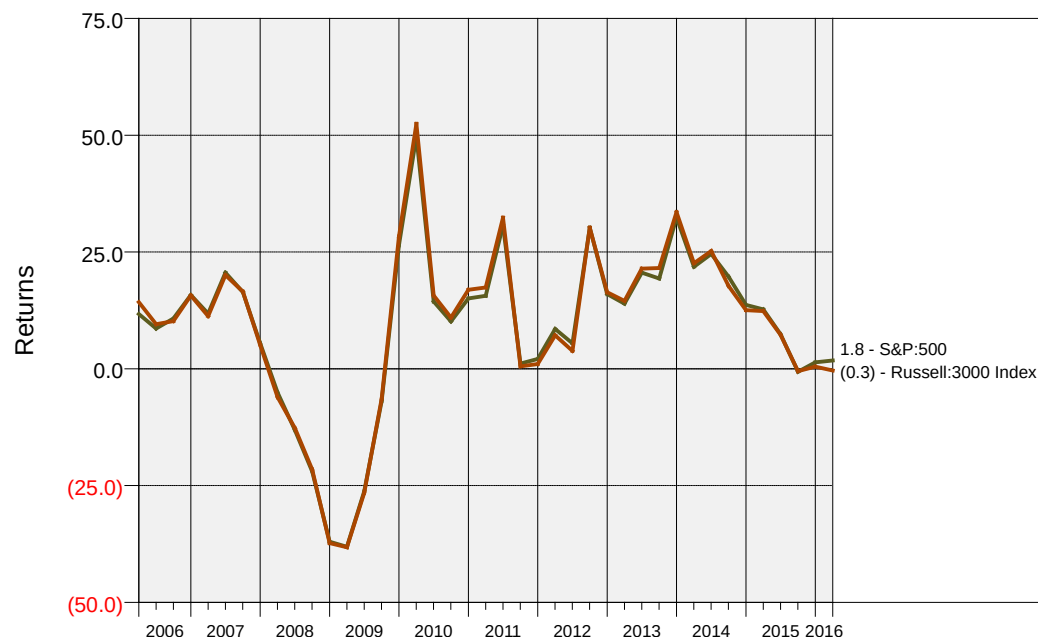
Observations

- Over a 10 year period the returns of both the Russell 3000 and S&P 500 have closely tracked one another.
- Their returns over the past 10 years differ by a mere 11 basis points (7.01% for the S&P 500 vs. 6.90% for the Russell 3000) and their 10 year correlation stands at 0.998.

Options to Consider:

- These two indices are highly correlated and do not offer much in the way of diversified returns.
- As such Callan recommends removing the all-cap Russell 3000 Index and retaining the S&P 500 as an alternative to the other existing domestic equity options.
- The remaining S&P 500 will have less overlap than the Russell 3000 with the existing small cap offering.

Chart 9: Rolling 4 Quarter Returns for 10 Years Ended March 31, 2016



Tier II: Core Options – US Small Cap Equity

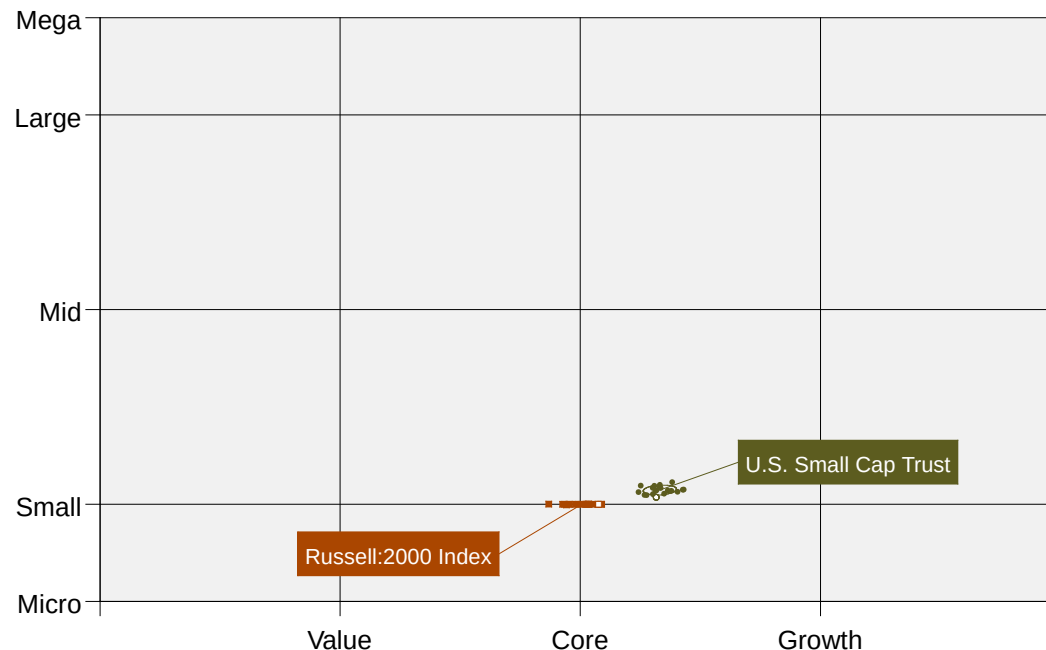
Observations

- The Plans offer the U.S. Small Cap Trust which is sub-advised by T. Rowe Price.

Options to Consider:

- Callan supports the inclusion of the current option.
- Given the Plans' collective scale, incorporating a multi-manager structure could be evaluated to add underlying diversification and manage future capacity.

Chart 10: Style Map
for 5 Years Ended March 31, 2016

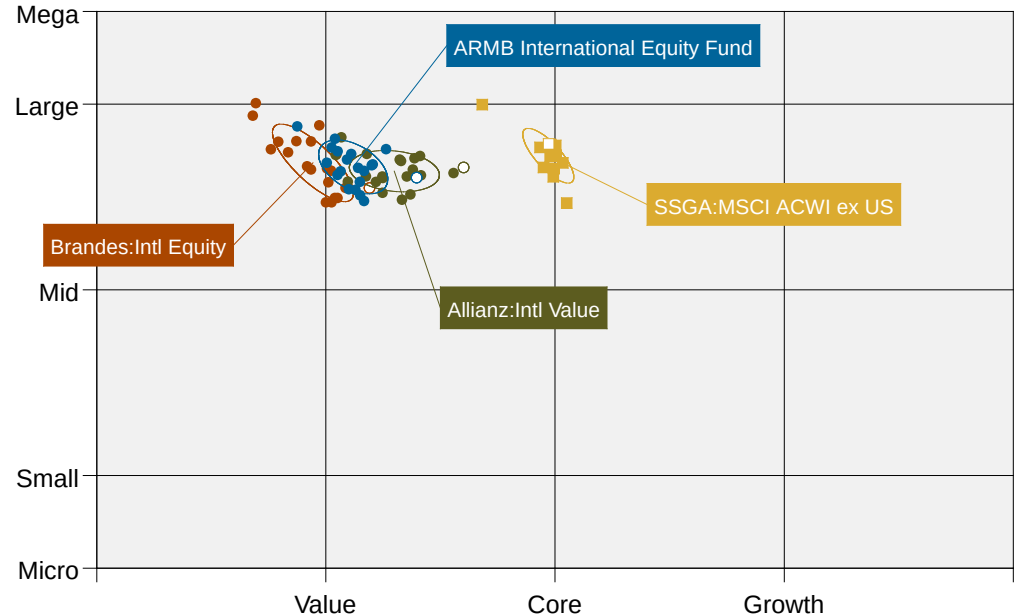


Tier II: Core Options – Non-US Equity

Observations

- The Plans offer two international equity options:
 - World Equity Ex-US Fund: A passively managed option that tracks the performance of the MSCI ACWI Ex-U.S. Index. This option is managed by State Street Global Advisors and has 1.6% of the Plans' assets.
 - The International Equity Fund is an active, multi-manager option composed of equal parts Brandes International Equity and Allianz International Value. This fund contains 2.3% of the Plans' assets.
 - Overall the blended fund has a 21.6% allocation to emerging market equity which closely mirrors that of the ACWI-ex US benchmark (21.8%).
- Given that international equity managers have been able to add value, net of fees, Callan supports an active fund in this space (see Appendix).

Chart 11: International Equity Style Map for 5 Years Ended March 31, 2016



Options to Consider

- The Plans should consider eliminating the passive non-U.S. equity fund in favor of active management in this area..
- The Plans may wish to re-evaluate the current makeup of the multi-manager fund which--as currently constitute--displays a value bias.
- As part of this re-evaluation, the Plans could consider incorporating a passive component which could help alleviate the value bias and drive cost even lower.

Tier III: Long U.S. Government Fixed Income

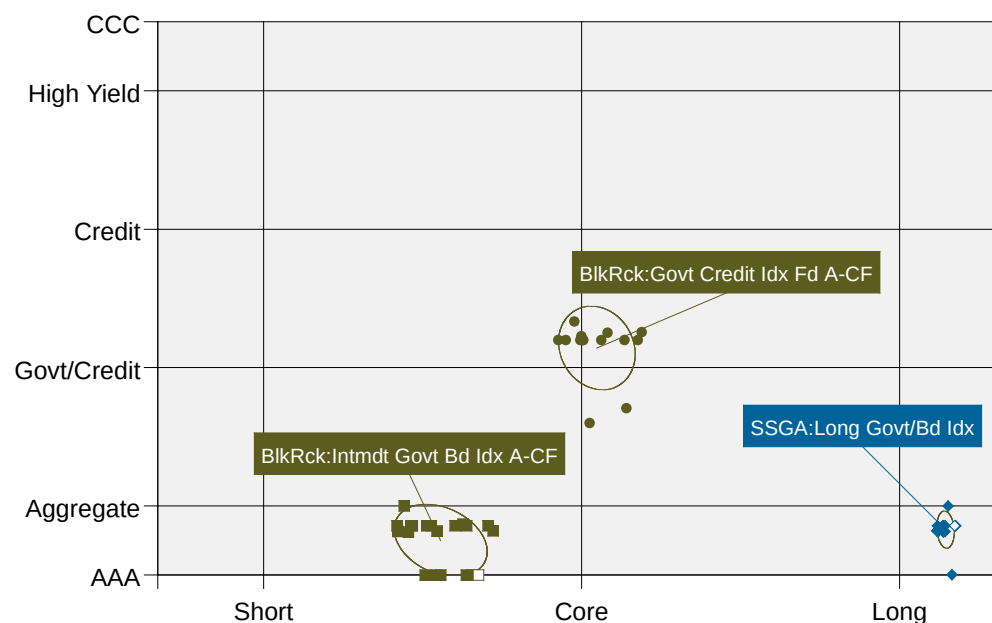
Observations

- The Plans offer a standalone long U.S. Treasury Bond Index fund.
- The fund is managed by State Street Global Advisors. It tracks the performance of the Barclays Capital Long Treasury Bond Index.
- The fund contains 0.3% of the Plans' assets and has an effective duration of 17.6.

Options to Consider:

- Given the low utilization and the long duration, Callan recommends eliminating this option.
- Participants utilizing the fund may not fully grasp the significant interest rates risk present. Taken further, the presence of the word "U.S. Treasury" in the name may lead some participants to not fully realize the potential volatility inherent in a long duration bond fund (especially as it relates to the other options offered in the Plans).
- This fund could be used as a component of a multi-manager fixed income solution.

Chart 12: Fixed Income Style Map
for 5 Years Ended March 31, 2016



Tier III: World ex-US Bond

Observations

- The Plans offer a standalone world ex-US bond fund.
- The fund is managed by State Street Global Advisors and looks to track the performance of the Citigroup World Government Ex-U.S. Index.
- It also has very low utilization.

Options to Consider:

- The Plans could offer a core plus fixed income option that provides some non-US fixed income exposure instead of a standalone non-US fixed income option.
- In another scenario, non-US fixed income could be a sleeve of a multi-manager fixed income option.

Table 8: Geographic Diversification of World Ex-US Bond Index - Top Ten Countries (3/31/16)

Japan	34%
France	12%
Italy	11%
United Kingdom	9%
Germany	9%
Spain	6%
Belgium	3%
Netherlands	3%
Canada	2%
Australia	2%

Tier III: Socially Responsible

Observations

- The Plans offer a standalone socially responsible option, the Allianz/RCM Socially Responsible Fund. The Fund is actively managed, and only invests in companies contained within the MSCI USA ESG Index. The fund contains 1.0% of the Plans' assets.
- Since there are so many interpretations of “socially responsible” investing, it can be difficult to meet socially responsible investors' needs with one fund in a DC plan.
- Some plan sponsors prefer to allow participants to access socially responsible funds through a brokerage window rather than add to fund proliferation in the core investment options.

Options to Consider:

- Given lack of interest in the Allianz/RCM Socially Responsible Fund, the plan may wish to eliminate this fund in order to streamline the fund line-up.

Tier III: REITs

Observations

- The Plans offer a standalone REITs fund, the passively managed SSgA US REIT Index Fund. This fund accounts for 1.4% of the Plans' assets.
- According to Callan's DC Index and Callan's DC Trends Survey:
 - REITs are offered in 23% of plans.
 - When the typical DC plan offers a standalone REIT option, the option garners 2% of assets.
- Typically when participants make allocation decisions they tend to chase returns. For this reason Callan advises plan sponsors to limit participant access to specialty options.

Options to Consider:

- The Plans should consider eliminating the standalone REIT option.

Tier III: Self Directed Brokerage

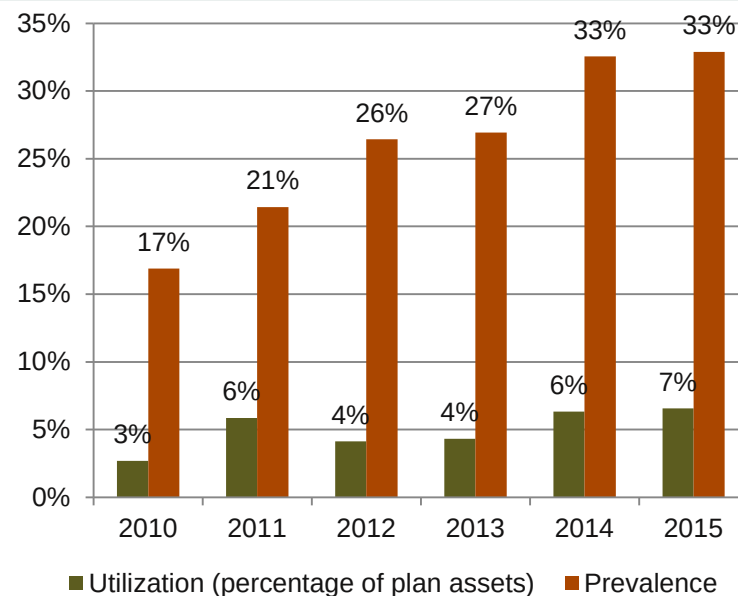
Observations

Although SDBA prevalence post-crisis has increased, utilization when offered remains low.

Regulatory Front

- The DOL sought to require greater oversight of brokerage windows in a 2012 field assistance bulletin.
- The DOL subsequently reversed its position. However, it continues to evaluate this area. Therefore, plan sponsors should monitor developments closely.

Chart 13: Prevalence & Utilization of Self-Directed Brokerage*



Source: Callan DC Index

Options to Consider:

- Given that a number of funds are potentially going to be removed the Plans could consider adding a brokerage window to allow participants access to any removed funds (albeit with potentially higher retail share class fees).
- According to the NAGDCA survey of public DC plans, 37% of governmental plans offer a self-directed brokerage account. Of those that offer a self-directed brokerage account, 86% reported that fewer than 2% of plan participants utilize the self-directed brokerage account.



Alternative Structure

Conclusions

Observations

- As currently constituted, the lineup can appear confusing to participants without basic investment knowledge.
- The lineup can be redesigned to cater to those who:
 - ❖ wish to delegate asset allocation decisions (Tier I)
 - ❖ those who wish to make high level asset allocation decisions (Tier II)
 - ❖ those who want access to more specific investment themes (Tier III)
- The changes outlined below strike a balance between these three groups and their objectives.

Recommendations

- Remove the balanced funds and map participants to the age-appropriate target date fund.
- Remove the money market options and proceed with stable value as the principal protection option.
- Consolidate the existing fixed income options into a custom multi-manager fixed income fund.
- Combine the existing TIPS and REIT options into a single multi-asset class real asset fund.
- Combine the passive international fund with the active counterpart into a single multi-manager offering.
- Map assets from the Russell 3000 to the S&P 500 Index.
- Remove the socially responsible fund.
- Add a brokerage window

Alternative Structure

Enhanced Use of Multi-Manager Structure

Table 9: Enhanced Multi-Manager Lineup

	Tier I: Asset Allocation	Tier II: Active Core Options	Tier II: Passive Core Options	Tier III: Specialty Options
Conservative Aggressive	Target Date Funds Alaska Target Date Retirement	Capital Preservation Interest Income Fund / Stable Value Fund		
	Balanced Options Alaska-Balanced-Trust Alaska Long-Term-Balanced-Trust SSgA Global-Balanced-Fund	Fixed Income Multi-Manager Fixed Income	Fixed Income Intermediate Bond Fund Government/Credit Bond Index	Long Government Fixed Income Long US Treasury Bond Index
		Real Assets Diversified Real Asset	Real Assets US Inflation-Protected Securities Index	Non-US Fixed Income World Government Bond Ex-US Index QIB
			Large Cap Domestic Equity S&P 500 Index Fund	Socially Responsible Allianz/RCM Socially Responsible Investment
		Non-US Equity Multi-Manager International Equity Fund	All Cap US Equity Russell 3000 Index Fund	
		Small Cap US Equity Multi-Manager Small Cap	Non-US Equity World Equity Ex-US Index	Real Estate US Real-Estate Investment Trust Index
				Brokerage Window



Appendix

Fixed Income

Roles and Opportunities for Participants

- Fixed income is typically a low risk, diversifying asset for a participant's equity allocation rather than a primary source of additional return
 - Bonds offer protection in the short run
 - Dependable income provides comfort in economic downturns or sudden market corrections
- The three main factors that define fixed income strategies are:
 - Active versus passive implementation
 - Use of tactical “core plus” mandates versus dedicated allocations to securities outside of the benchmark, primarily high yield (in the case of the Barclays Aggregate) and non-U.S. bonds
 - Broad market exposure versus one narrowed by sector or duration
- The most commonly employed strategies include passive (benchmarked to the Barclays Aggregate), active core, active core plus, and specialty
 - Investment managers should be allowed to make tactical sector decisions
 - Managers have the knowledge, experience, tools and focus to make quick value-adding decisions on sector allocations that reflect the relative attractiveness of the sectors
 - Overvalued sectors can be underweighted to limit losses consistent with the stabilizing role of fixed income
 - Limiting managers to specific sectors often results in more complex structures due to the need for an increased number of managers

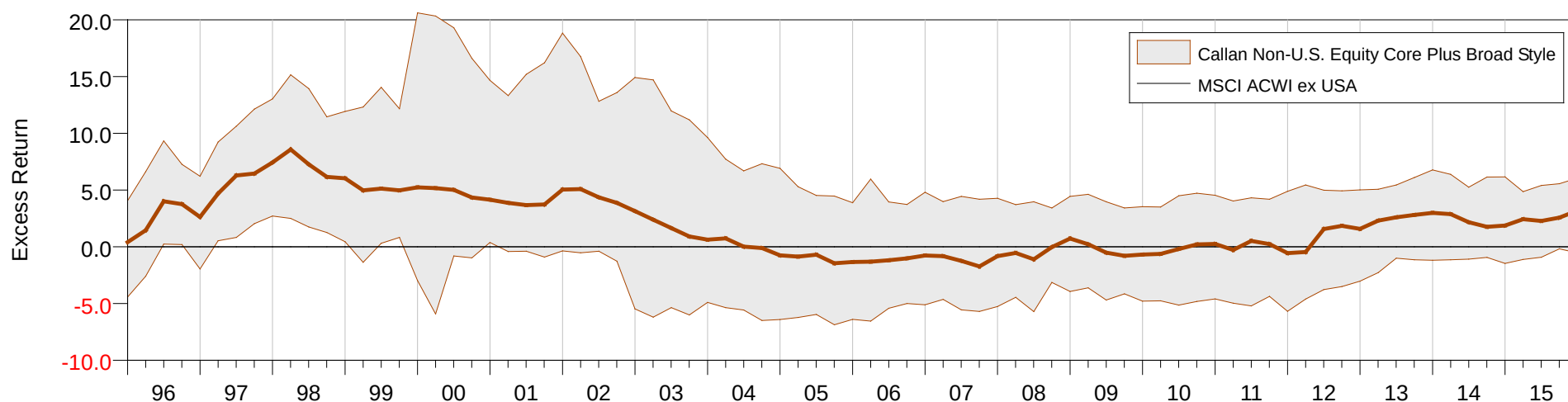
Non-U.S. Equity Core Plus Broad Style vs MSCI ACWI ex USA

Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

Hurdle	0.45%	0.50%	0.55%	0.60%	0.65%	0.70%	0.75%	0.80%	0.85%	0.90%
Median	63%	63%	61%	61%	60%	60%	59%	58%	58%	58%
45th Percentile	68%	68%	68%	68%	64%	61%	61%	61%	61%	61%
40th Percentile	75%	74%	74%	74%	74%	71%	71%	70%	68%	66%
35th Percentile	86%	84%	83%	81%	80%	79%	79%	78%	78%	76%
30th Percentile	96%	96%	96%	95%	95%	95%	95%	94%	89%	84%
25th Percentile	100%	100%	100%	100%	100%	100%	100%	99%	99%	99%

Average Annualized Excess Return – Median Manager: **2.01%**

Rolling 12 Quarter Excess Return relative to MSCI ACWI ex USA for 20 Years ended December 31, 2015



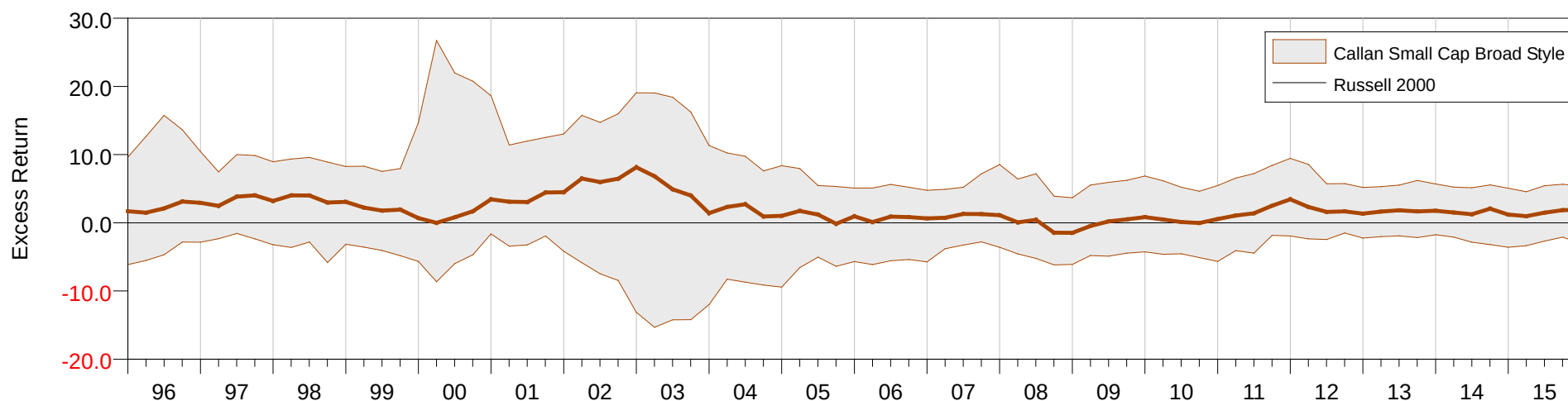
Small Cap Broad Equity Style versus Russell 2000

Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

Hurdle	0.50%	0.55%	0.60%	0.65%	0.70%	0.75%	0.80%	0.85%	0.90%	0.95%
Median	85%	84%	83%	83%	80%	80%	79%	75%	75%	73%
45th Percentile	95%	93%	93%	91%	90%	89%	89%	89%	89%	88%
40th Percentile	98%	98%	98%	98%	98%	98%	96%	93%	93%	93%
35th Percentile	98%	98%	98%	98%	98%	98%	98%	98%	98%	98%
30th Percentile	99%	98%	98%	98%	98%	98%	98%	98%	98%	98%
25th Percentile	100%	100%	100%	100%	100%	99%	99%	99%	99%	99%

Average Annualized Excess Return – Median Manager: **2.02%**

Rolling 12 Quarter Excess Return relative to Russell 2000 for 20 Years ended December 31, 2015



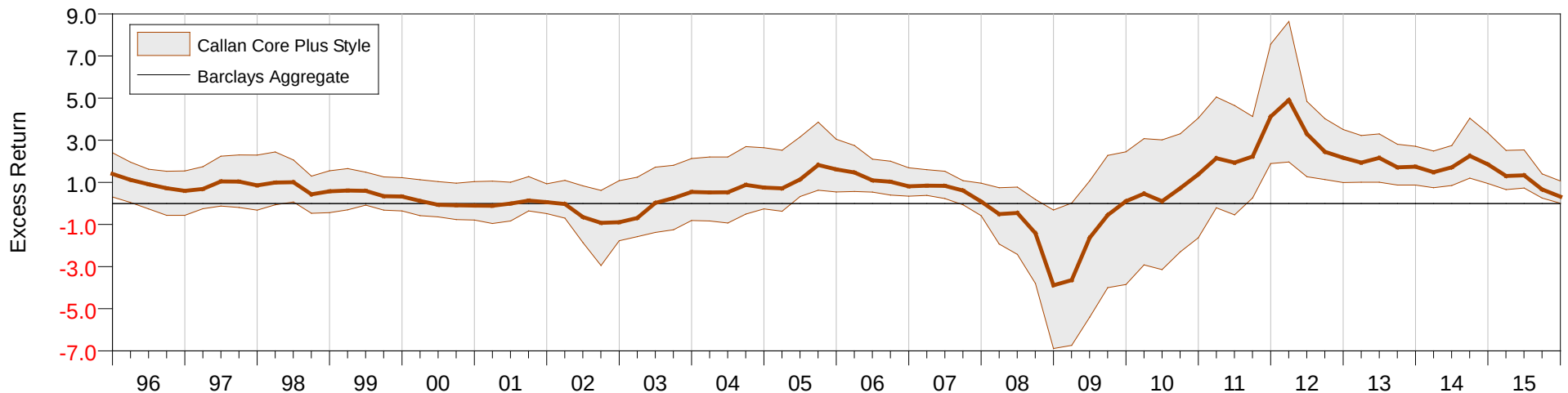
Core Plus Bond Style versus Barclays Aggregate

Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

Hurdle	0.20%	0.25%	0.30%	0.35%	0.40%	0.45%	0.50%	0.55%	0.60%	0.65%
Median	70%	70%	69%	65%	65%	64%	63%	60%	58%	53%
45th Percentile	73%	71%	69%	69%	69%	66%	64%	64%	61%	61%
40th Percentile	76%	74%	74%	73%	73%	71%	70%	66%	66%	66%
35th Percentile	80%	79%	76%	75%	74%	74%	74%	73%	70%	66%
30th Percentile	84%	83%	83%	81%	80%	79%	76%	75%	75%	71%
25th Percentile	90%	88%	88%	88%	84%	81%	81%	80%	78%	76%

Average Annualized Excess Return – Median Manager: **0.71%**

Rolling 12 Quarter Excess Return relative to Barclays Aggregate for 20 Years ended December 31, 2015





Alaska Retirement Management Board Defined Contribution Plans Target Date Suitability Study

Steve Center, CFA
Fund Sponsor Consulting

Paul Erlendson
Fund Sponsor Consulting

Lori Lucas, CFA
Fund Sponsor Consulting

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Defined Contribution Consulting

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Target Date Review – Agenda

- Plans' Background
- Product Composition
- Past Performance & Fees
- Forward Looking Assumptions and Analysis
- Summary

Plans' Summary

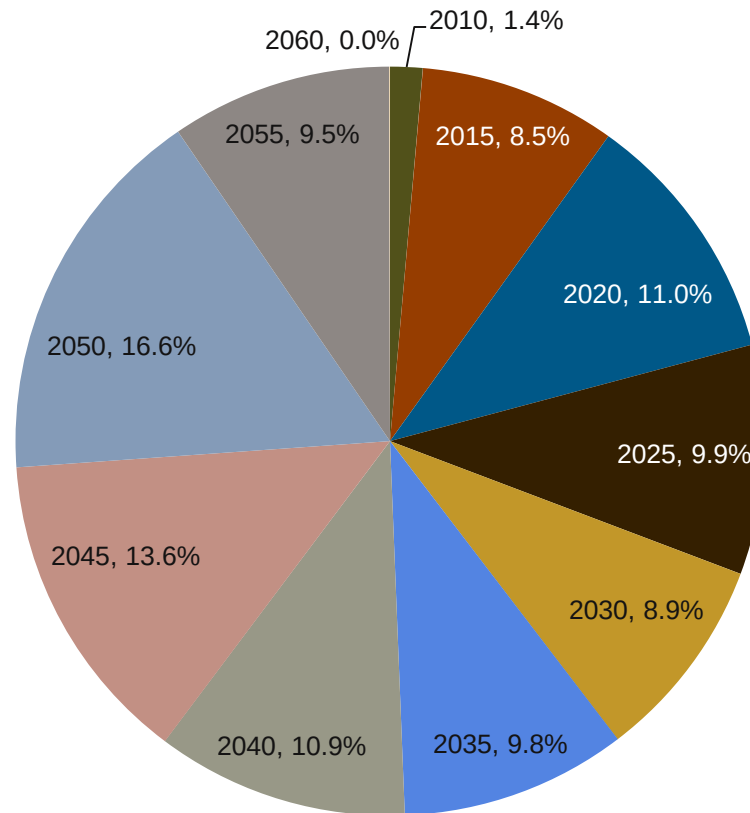
Alaska Retirement Management Board DC Plans (unless noted plan data as of 1Q 2016)

Total Balances	89,444
Target Date Funds Assets	\$1,534,879,845 (26%)
Target Date Option	Alaska Target Retirement Trusts
Status	Default

Plan	SBS-AP	457 Deferred Compensation Plan	PERS IV	TRS III
Plan Type	401(a)	457	401(a)	401(a)
Balances	44,106	10,986	27,524	6,828
Assets (6/30/16)	\$4,081,285,976	\$808,795,366	\$667,523,128	\$286,112,303
Target Date Assets (6/30/16)	\$984,234,993	\$64,202,699	\$339,996,512	\$146,445,641
Target Date Asset (as percentage of plan assets, 6/30/16)	24%	8%	51%	51%
Contribution	6.13% mandatory	Variable	8.00% mandatory	8.00% mandatory
Match	6.13%	None	5.00%	7.00%
Eligibility	Employees of state and 20 political subdivisions	Voluntary, permanent, long-term, non-permanent employee as well as elected officials.	Public employees hired after July 1, 2006.	Teachers/educators at participating employers hired after July 1, 2006.
Social Security	No	Varies	Varies	No
Defined Benefit	Varies	Varies	No	No
Average Balance	\$75,530	\$72,113	\$21,965	\$36,895
Percent Male	45.9%	50.7%	42.9%	28.0%
Average Age	45	51	40	39

Target Date Assets by Vintage

Percentage of Target Date Assets within Each Vintage (6/30/16)



- The later dated funds (2040+) account for over 50% of target date assets. This implies that younger participants tend to more heavily utilize the target date funds.



Product Composition

Target Date Review – Introduction

In February 2013, the Employee Benefits Security Administration (EBSA) released its guide on Target Date Retirement Funds - Tips for ERISA Plan Fiduciaries. According to the EBSA, the general guidance is geared "to assist plan fiduciaries in selecting and monitoring TDFs and other investment options in 401(k) and similar participant-directed individual account plans."

The guide establishes eight elements for plan sponsors to remember when choosing target date funds (TDFs):

1. Establish a process for comparing and selecting TDFs.
2. Establish a process for the periodic review of selected TDFs.
3. Understand the fund's investments – the allocation in different asset classes (stocks, bonds, cash), individual investments, and how these will change over time.
4. Review the fund's fees and investment expenses.
5. Inquire about whether a custom or non-proprietary target date fund would be a better fit for your plan.
6. Develop effective employee communications.
7. Take advantage of available sources of information to evaluate the TDF and recommendations you received regarding the TDF selection.
8. Document the process.

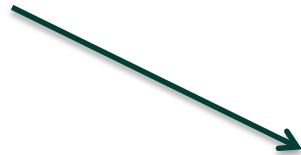
Callan believes that from the Department of Labor's (DOL) perspective, a higher standard may apply to target date fund decision-making going forward than has been applied in the past. This study reviews the suitability of the Alaska Target Retirement Trusts using this DOL perspective as we believe this framework represents best practice (although the ARMB plans are not ERISA plans) and the Plans' particular demographics and qualitative factors. We also review their construction, past performance and fees.

EBSA in a letter to the Government Accountability Office (in response to the GAO's letter on QDIAs) voiced support for innovative QDIA approaches.

Asset Class Exposure

DOL Tip: Understand the fund's investments – the allocation in different asset classes (stocks, bonds, cash), individual investments, and how these will change over time.

- Although made up of only four building blocks, these are custom funds with underlying diversification.



Asset Class	AK Target Retirement Trusts
Domestic Equity	U.S. Equity Market Trust
Non-US Equity	International Trust
US Fixed Income	Bond Trust
Money Market	Money Market Trust

Fund	Underlying Exposure
U.S. Equity Market Trust	Large, Mid and Small-Cap Domestic Equity
International Trust	Developed and Emerging Markets
Bond Trust	Government (Nominal Treasuries, Short-Term TIPS, Floating Rate Notes, Long-Term Treasuries) Corporates, Mortgages, Asset-Backed Securities, Commercial Mortgage-Backed Securities
Money Market Trust	U.S. and International Money Market Securities

Recent Developments

The funds are overseen by Charles Shriver and Toby Thompson. Mr. Shriver has been with T. Rowe Price for 23 years and Mr. Thompson has been with the firm for 7 years.

1. In June 2014 several changes were made to the underlying components. These changes looked to:

- Reduce the sensitivity of the Trusts to rising interest rates
- Increase the inflation sensitivity of the Trusts
- More fully benefit from global investment opportunities

To implement these changes the **Bond Trust** was altered in the following ways:

- Adjusted the profile of the Trust to shorten its duration exposure.
- Included a 15% allocation to floating rate note securities (FRN) to provide protection from rising interest rates.
- Included a 10% allocation to short-term treasury inflation protection securities (TIPS) to protect against rising inflation.
- Included a 5% allocation to long-term treasury securities (greater than 10 year maturities).

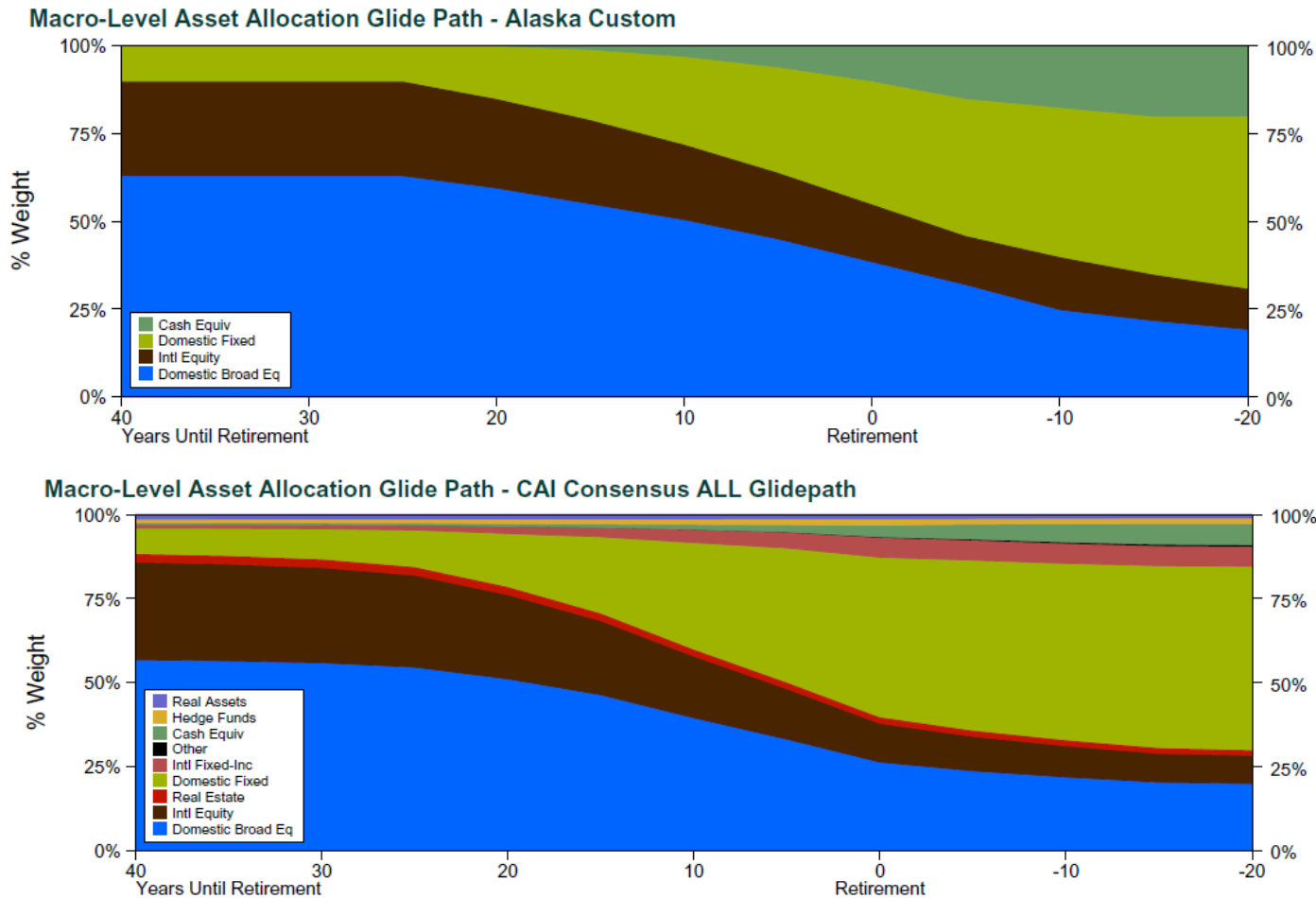
The **International Trust** was altered as follows:

- Increased international equity to 30% of equities from 20%.
- Introduce Emerging Markets by changing from the MSCI EAFE Index to the MSCI ACWI ex-U.S. Index.

2. Effective January 1, 2017, Sebastien Page will become head of the Asset Allocation Group as well as chair of the Asset Allocation Steering Committee.

The Asset Allocation Committee will be headed by **Charles Shriver** (one of the named portfolio managers for the custom Target Retirement Trusts) and **David Giroux**. Effective December 31, 2016, Rich Whitney will retire from T. Rowe Price. Whitney, a 30-year veteran of T. Rowe Price, currently serves as the co-head of the Asset Allocation Committee as well as serving as co-chair on the Asset Allocation Steering Committee. He does not have any direct portfolio management responsibilities. Sebastien Page, who joined the firm last summer from PIMCO and currently serves as the co-head of the Asset Allocation Committee will become head of the Asset Allocation Group as well as chair of the Asset Allocation Steering Committee. There are no plans to name additional committee members.

Asset Roll Down

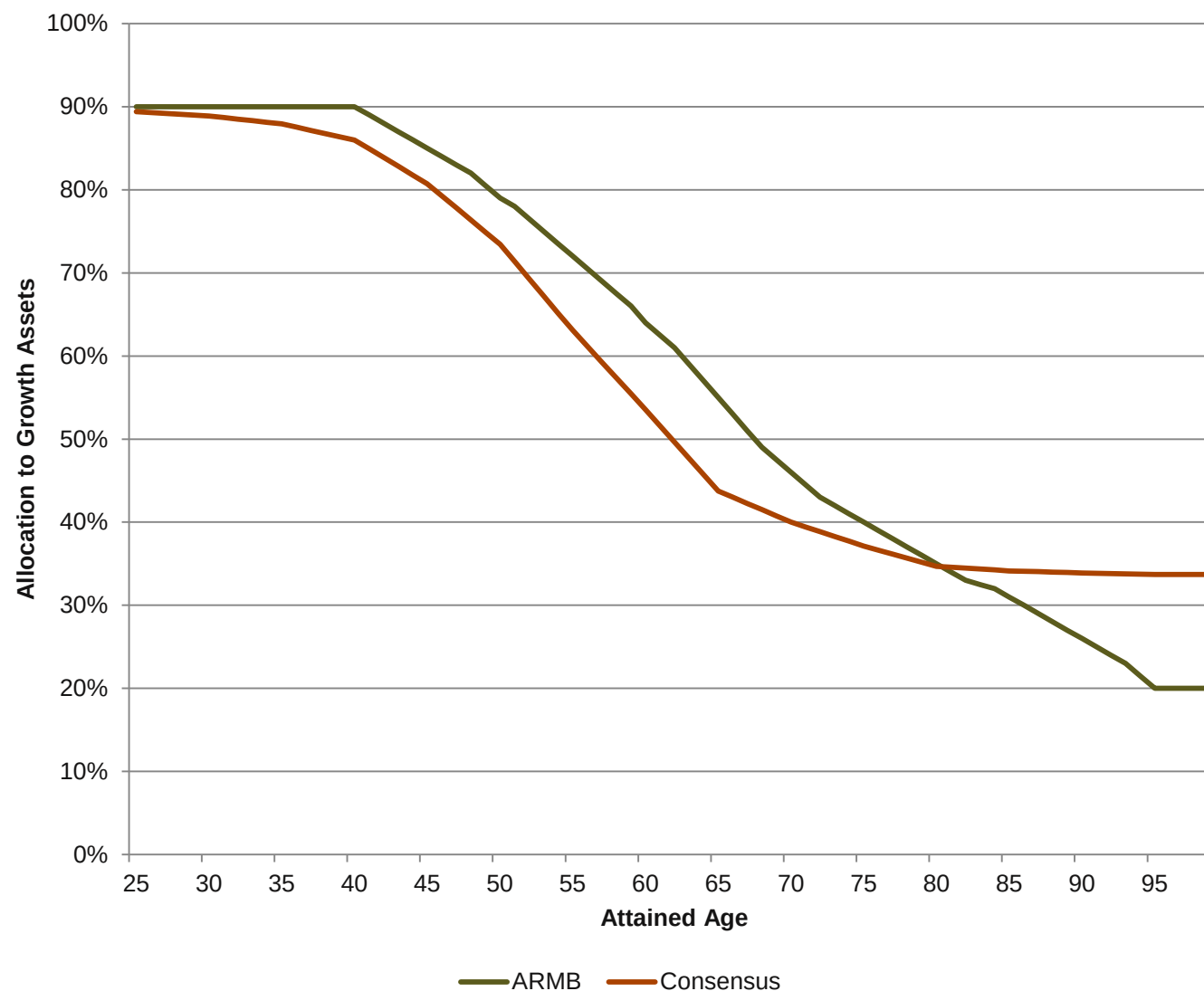


This roll down chart illustrates how the underlying asset allocation evolves as a participant ages.

As the allocation to fixed income (green shades) increases, the allocation to equity (international and domestic) decreases.

Relative to the Callan Consensus, the custom Alaska Funds have a higher allocation to cash, entering the glide path at roughly 10 years prior to retirement.

Growth Asset Rolldown*



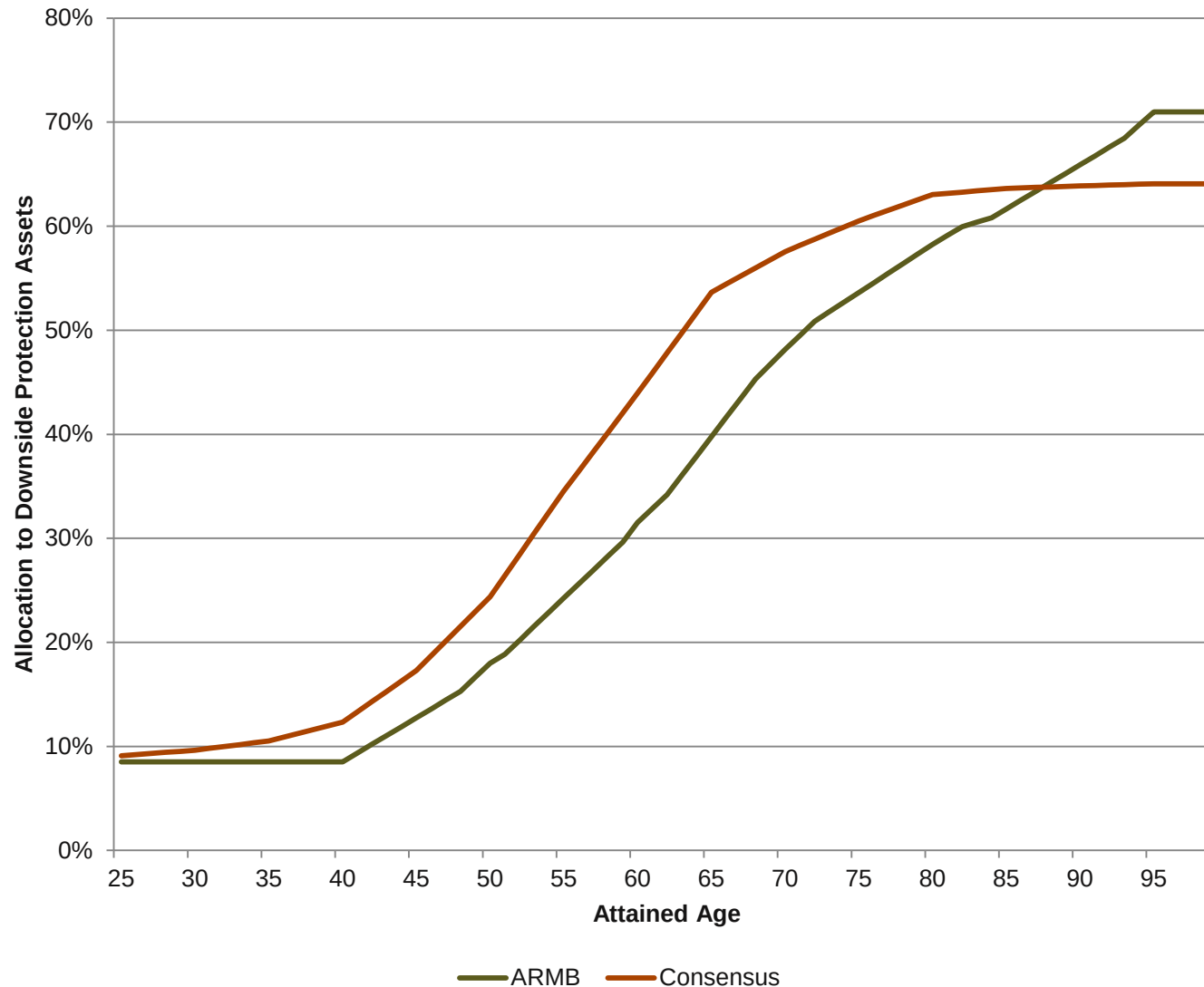
This rolldown chart takes into consideration equity as well as equity-like asset classes (e.g., high yield fixed income and REITs) and gives a more accurate image of a “risk rolldown” than equity only illustrations.

As shown, for much of the glide path the Target Retirement Trusts have a higher growth asset allocation relative to the Callan Consensus. This is consistent with T. Rowe Price’s belief in the long-term benefits of the equity risk premium.

The glide path continues to roll down until age 95. This is also the case with the flagship off-the-shelf T. Rowe Price target date fund.

**See Appendix II for full definition.*

Downside Protection Assets*



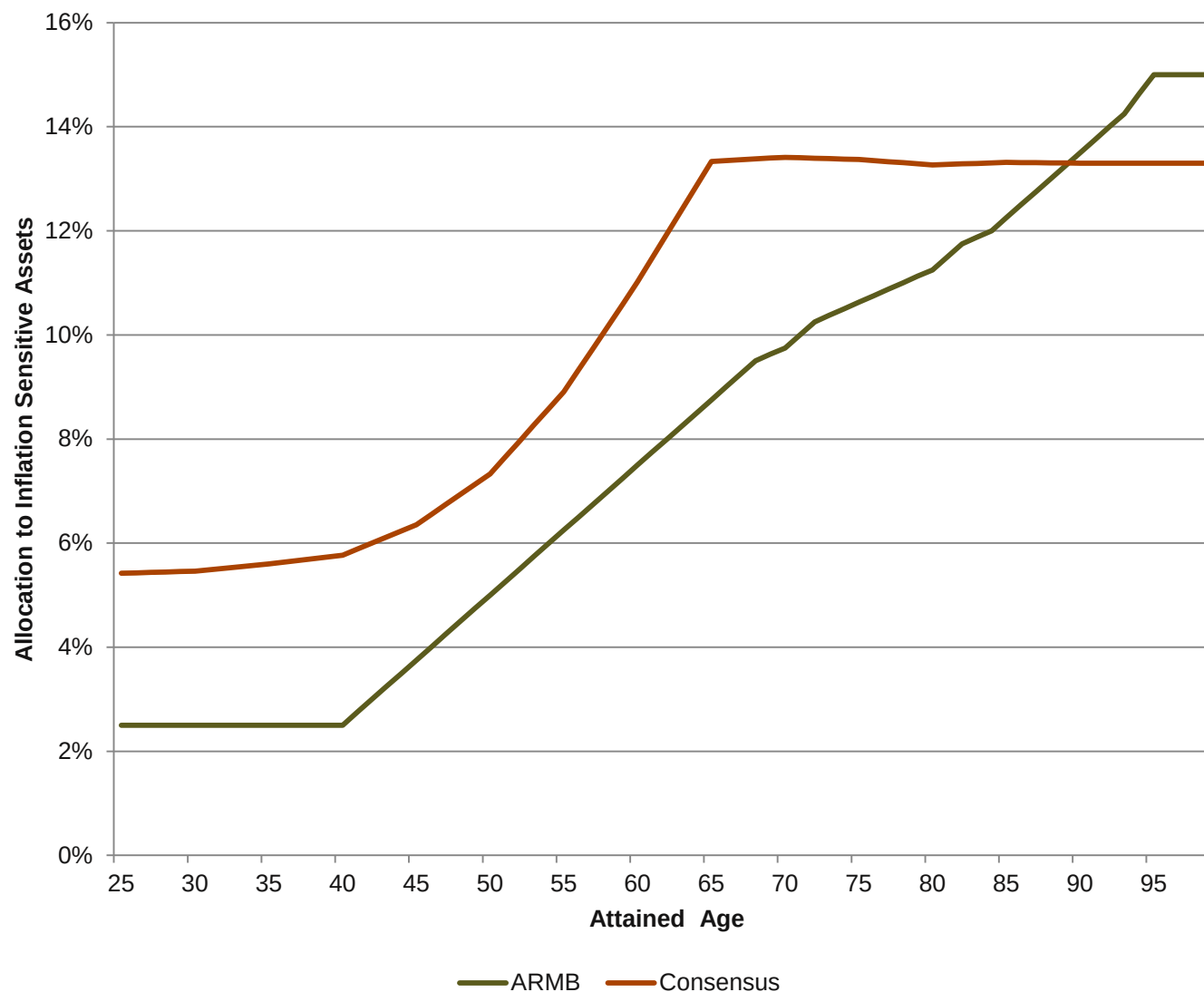
Downside protection assets include core and short-term fixed income, international fixed income as well as cash.

The Target Retirement Trusts' Bond Trust contains underlying allocations to: Government (Nominal Treasuries, Short-Term TIPS, Floating Rate Notes, Long-Term Treasuries) Corporates, Mortgages, Asset-Backed Securities and Commercial Mortgage-Backed Securities.

The Target Retirement Trusts' allocation to downside protection is composed of the Bond Trust and the Money Market Trust. As the glide path de-risks, it eventually outpaces the Consensus allocation to downside protection assets around age 75.

**See Appendix II for precise definition*

Inflation Protection Assets*



Inflation protection for the Target Retirement Trusts is composed entirely of TIPS and floating rate notes. This allocation is contained within the Bond Trust and is composed of short-term TIPS and floating-rate notes.

These allocations are below that of the Consensus for much of the glide path.

The allocation to inflation protection assets is less robust than that of the typical provider. However over the long term, equity itself may also provide a correlated return to inflation. Please see appendix VIII for Callan's expected correlations with inflation.

**See Appendix II for precise definition*



Past Performance and Fees

Target Date Review – Fees

DOL Tip: Review the fund's fees and investment expenses.

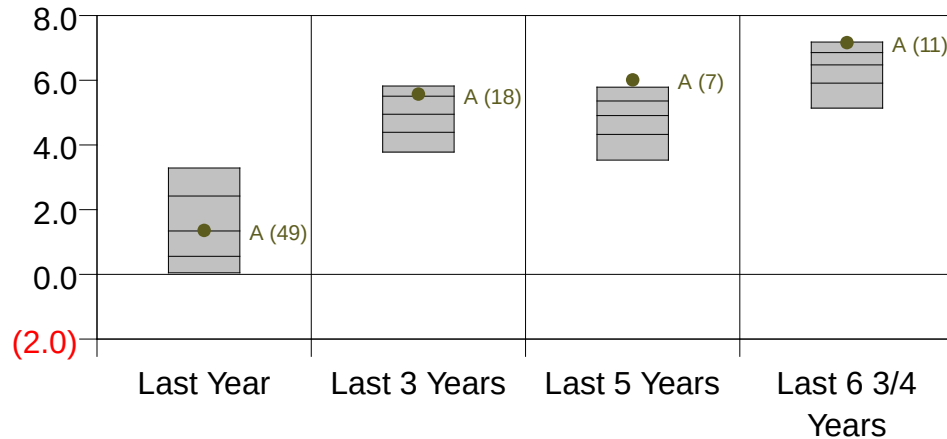
Investment Management Fees
Across Target Date Universe

Percentile	Median Fee
90 th	0.75%
75 th	0.72%
Median	0.60%
25 th	0.39%
10 th	0.18%
Target Retirement Trusts	0.16%

- The table to the left contains the investment management fee distribution across the entire off-the-shelf target date universe. This universe includes mutual funds as well as collective trusts.
- The Target Retirement Trusts utilize a mostly passive implementation with the underlying Bond Trust being actively managed. The fee illustrated for the Target Retirement Trusts is a weighted average across the entire suite and reflects the total fees for portfolio management, custody, and accounting charges associated with the portfolios.

Target Date Review – Past Performance 2010

Net of Fee Returns
for Periods Ended June 30, 2016
Group: CAI Target Date 2010

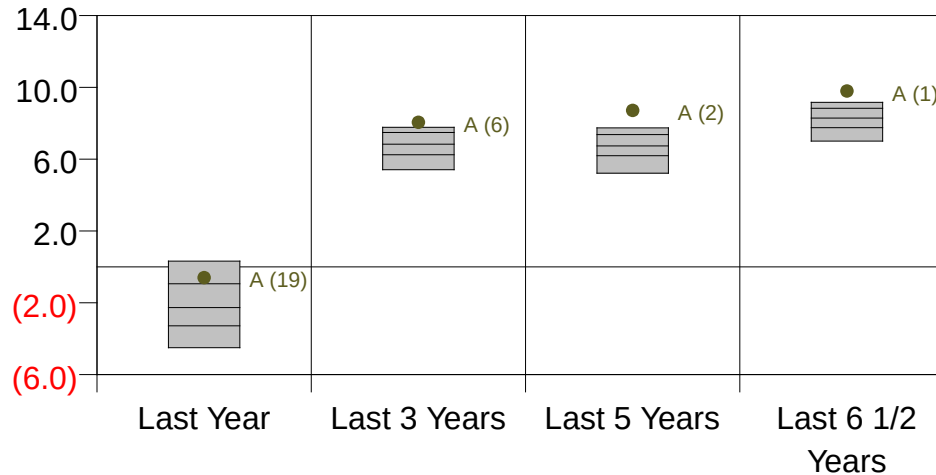


Alaska Trgt Rtmnt 2010 Trust ● A	1.36	5.58	6.01	7.17

- The 2010 trust is the most conservative in the series. It has bested the median peer in all the timeframes examined.

Target Date Review – Past Performance 2050

Net of Fee Returns
for Periods Ended June 30, 2016
Group: CAI Target Date 2050



10th Percentile	0.33	7.79	7.75	9.17
25th Percentile	(0.94)	7.49	7.38	8.84
Median	(2.26)	6.84	6.75	8.29
75th Percentile	(3.28)	6.25	6.19	7.76
90th Percentile	(4.50)	5.41	5.23	7.01
Alaska Trgt Rtmnt 2050 Trust ● A	(0.59)	8.06	8.72	9.80

- The 2050 Trust is among the most aggressive and is the most commonly held portfolio in the series.
- It has performed in the top quartile in all periods examined.

Target Date Review – Risk Adjusted Performance

Periods Ended June 30, 2016

- Using the Sharpe ratio to gauge risk-adjusted performance, Target Retirement Trusts have bested peers over the 3-year and since inception. Inception for all but the 2050 trust is 3Q 2009. For the 2050 trust, inception is 4Q 2009.

	3 Year	Inception
2010 Median Peer	1.13	0.99
2010 Target Retirement	1.29	1.11
2020 Median Peer	1.03	0.91
2020 Target Retirement	1.16	1.01
2030 Median Peer	0.90	0.82
2030 Target Retirement	1.06	0.95
2040 Median Peer	0.82	0.78
2040 Target Retirement	0.99	0.82
2050 Median Peer	0.81	0.77
2050 Target Retirement	0.99	0.82



Qualitative & Demographic Considerations

Program Specific Considerations

DOL Tip: Establish a process for comparing and selecting TDFs. Plan sponsors should discuss the significance of other characteristics of the participant population, such as participation in a traditional defined benefit pension plan offered by the employer, salary levels, turnover rates, contribution rates and withdrawal patterns.

Consideration	Notes
Assumed retirement age	Participants are assumed to retire at age 65.
Average total contribution of active employees	Total deferrals and match are quite high in the plans that have mandatory rates. This is especially the case in instances where participants take part in both the SBS-AP as well as the PERS IV plan.
Post-retirement health care benefits	Although provided by the State, this study does not assume any post-retirement health care benefits
Presence of a Defined Benefit Plan	Those in the PERS IV and TRS III plans do not participate in any defined benefit plan.
Age concentration	Participants are skewed younger in the PERS IV and TRS III plans. Those in SBS-AP are fairly evenly spread across age cohorts.
Male : Female Ratio	Male: female levels for all but the TRS III plan hover near 50%. For the TRS III plan, males make up only 28% of the population. This will help frame the discussion of longevity risk as females have longer life expectancy.

For the purposes of the study three populations will be examined:

	SBS-AP	PERS IV	TRS III
Percent of Population	49.31%	30.77%	7.63%
Deferral	6.13% mandatory	8.00% mandatory	8.00% mandatory
Match	6.13%	5.00%	7.00%

**"Employee Tenure Trends, 1983-2014", Employee Benefit Research Institute Newsletter February 2015.*

Risk-Taking Profile Summary

Choosing the Appropriate Glide Path – Program Characteristics and Glide Path Risk

Factors that argue for a less aggressive glide path are:

- A portion of the underlying population for the deferred compensation and SBS-AP plan have access to a defined benefit plan. For the 457, where there is data for hire dates, 62% of those currently employed have access to a defined benefit plan (and 82% of the terminated population). However, going forward this group will be shrinking while those relying solely on the various defined contribution plans is growing. There is also overlap between the SBS-AP and PERS populations.

A more aggressive glide path is preferable based on the following program characteristics:

- As mentioned above, going forward (and for many since 2006) the various defined contribution plans are expected to be the main funding source for retirement. Those in the SBS-AP plan do not contribute to Social Security, therefore the defined contribution plans will be the predominant source of funding.

**According to the EBRI, the median contribution level across the broad DC universe is 5.9%.*



Forward Looking Assumptions and Analysis

Target Income Replacement Assumptions

- The following pages take the Plans' demographics and project outcomes based on a 40-year holding period and Callan's capital market expectations (full details in the appendix)
- The income replacement ratio is equal to projected post-retirement annual income divided by projected final salary in the year before retirement
- Typically, an individual needs less than 100% income replacement in retirement to maintain the same standard of living. The primary reasons for this are:
 - A decrease in income taxes
 - Social Security taxes cease at retirement
 - Social Security benefit may be tax-free or only partially taxed
 - Saving for retirement ceases
- Studies have found that income replacement ratios in the range of 80-90% are generally required to maintain one's same standard of living in retirement¹. For the purposes of this study a target of 85% will be used. This study address each plan population separately.

The following table outlines the assumptions used to arrive at target replacement for each plan population. PERS is modeled two ways: for populations with SBS and for those with Social Security. The Deferred Comp plan is not included in this analysis, as it is a supplemental plan.

Plans	Estimated Social Security ²	Income in Retirement Goals		Notes
		Target DC Replacement	Total Income Replacement Targeted	
SBS-AP & PERS	0%	85%	85%	Part of PERS population has no SS and are in SBS.
PERS	35%	50%	85%	Part of PERS population has SS and are not in SBS.
TRS	0%	85%	85%	

1: *Measuring Retirement Income Adequacy: Calculating Realistic Income Replacement Rates*, EBRI 2006 2: Social Security assumptions are from Callan's proprietary Social Security calculator

Projection Analysis*

Decision Variables: Evaluating the Efficacy of a Glide Path

Wealth Accumulation (**Shortfall Risk**)

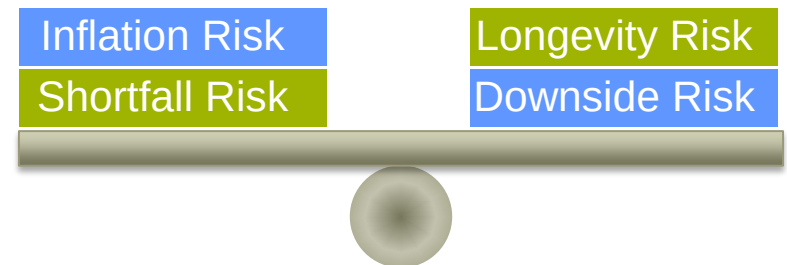
- Expected long-term replacement ratio
- Probability of meeting replacement ratio target
- Exposure to growth assets

Downside Risk (Short-Term Volatility)

- Worst-case annual return (2 standard deviation event)
- Dollar-weighted risk
- Multi-year drawdown
- Roll-down rate
- Exposure to downside protection assets

Post-Retirement (**Inflation Risk** and **Longevity Risk**)

- Probability of outliving assets
- Asset-life expectancy
- Dollar-weighted risk
- Multi-year drawdown
- Breadth and level of inflation sensitive asset exposure



**Refer to Appendix IV for complete assumptions used in forward looking simulations*

Shortfall Risk

Risk of not accumulating enough assets to retire

		% Growth Assets at age 60	% Growth Assets at age 65	Expected Replacement Ratio *	Worst Case Replacement Ratio	Percentage Above Target	Probability of Meeting/Exceeding Target	Shortfall Risk
Target Retirement Trusts	SBS-AP & PERS	64%	55%	187%	64%	102%	91%	Below Average
	PERS			93%	30%	86%	87%	
	TRS			110%	34%	25%	67%	
Callan Consensus	SBS-AP & PERS	54%	44%	170%	65%	100%	91%	Average
	PERS			88%	30%	76%	85%	
	TRS			100%	34%	18%	63%	

- Relative to the Callan Consensus and due largely to the equity/growth asset allocation and the assumed deferral rates, both the Target Retirement Trusts and the Callan Consensus project robust accumulation metrics. The Target Retirement Trusts though have a higher likelihood of meeting or exceeding the target.
- Although the total deferrals are higher in the TRS plan relative to the PERS plan (on a standalone basis), due to the higher target replacement rate, the TRS plan has a lower likelihood of success. Still, all plans have a projected success rate well in excess of 50%.
- These results are driven largely by the assumed total deferrals (participant + employer match).

Columns with blue labels reflect the assumed retirement age of 65. "Expected" is the median result of simulations. 'Worst-Case' is the 95th percentile outcome *These replacement ratios consider only the DC plan assets.

Downside Risk

Risk of volatility, particularly in the preretirement period

	Number of Downside Protection Assets	Age 50 to 65				Downside Risk
		Roll Down Rate	Average % of Downside Protection Assets	Expected Dollar Weighted Risk	Worst Case Drawdown	
Target Retirement Trusts	2	1.6%	32%	12	-39%	Above Average
Callan Consensus	3	1.9%	41%	10	-31%	Average

- Due to the slightly higher allocation to growth assets in the period before retirement, the Target Retirement Trusts have a higher downside risk relative to the consensus.
- The contrast between shortfall risk (below average) and downside risk (above average) illustrates how there is a clear tradeoff between these two risks.
- Although the Target Retirement Trusts provide two explicit downside protection building blocks, the Bond Trust does have varied underlying exposures (see slide 7).

**Rolldown Rate is the slope of growth assets from age 50 to age 65.*

"Worst Case" is defined as the 95th percentile worse case drawdown. "Expected" is the median result.

Glide path allocations reflect benchmark glide path weights

Inflation Risk

Risk of inflation adversely affecting outcomes

	Average Inflation Assets (65-85)	% of Inflation Protection Assets at Age 60	% of Inflation Protection Assets at Age 65	Number of Inflation Protection Assets	Inflation Risk
Target Retirement Trusts	11%	8%	9%	2	Average
Callan Consensus	11%	9%	10%	2	Average

- The ability to respond to inflation is a function not only of a glide path's exposure to inflation sensitive assets but also of the breadth of this exposure. Various asset classes respond to different types of inflation at different times.
- The Target Retirement Trusts though the Bond Trust have underlying exposure to both TIPS and floating-rate notes.
- In the long-term, the Target Retirement Trusts' equity exposure may provide a hedge against inflation.

Glide path allocations reflect benchmark glide path weights

Longevity Risk

Risk of assets being depleted in retirement

		Probability of outliving assets at 95*	Worst Case Drawdown (65-75)	Worst Case Drawdown at Age 75+	Longevity Risk
Target Retirement Trusts	SBS-AP & PERS	8%	-24%	-16%	Average
	PERS	11%			
	TRS	30%			
Callan Consensus	SBS-AP & PERS	9%	-17%	-15%	Average
	PERS	14%			
	TRS	38%			

There is a balance between generating returns in retirement and avoiding potential losses.

- Taken in the aggregate, participants in the plans have a marginally lower chance of outliving assets with the Target Retirement Trusts.
- But worst case drawdown is higher for the Target Retirement Trusts—especially between ages 65-75.
- If the PERS III and TRS IV populations follow the trend in of the other plans (which have been in existence longer) roughly 8-10% of population may remain in the plans post age-65. This study assumed an age-65 retirement date.

**Assumes annual spend down equal to the target replacement rate*

“Worst Case” is defined as the 95th percentile. “Expected” is the median result.

Glide path allocations reflect benchmark glide path weights

Summary – Forward Looking Risk Assessment

	Shortfall Risk	Downside Risk	Inflation Risk	Longevity Risk
Target Retirement Trusts	Below Average	Above Average	Average	Average
Callan Consensus	Average	Average	Average	Average

- The Target Retirement Trusts feature a more aggressive glide path relative to many off-the-shelf peers (as represented by the Callan Consensus). Due largely to the heavier equity allocation, the accumulation metrics over a long time horizon prove more robust. However these accumulation metrics come with the associated cost of higher volatility and higher potential drawdowns.
- For those where the defined contribution plan is the main source of retirement savings, the Target Retirement Trusts provide a greater chance of successfully reaching the target income replacement ratio relative to the Callan Consensus.
- Although tenure for several of the plans is skewed by the fact that the plans have only existed for 10 years, public plans tend to have longer tenure than the typical private defined contribution plan.* This longer tenure may help participants ride out market volatility, especially since contributions are mandatory.

**"Employee Tenure Trends, 1983-2014", Employee Benefit Research Institute Newsletter February 2015.*

Summary

Consideration	Target Retirement Trusts
Historical Performance	Strong historical performance driven by their more aggressive orientation.
Team and Organization	Long tenured and stable
Number, type and quality of underlying funds	The Trusts utilize custom funds as building blocks. These funds mix both active and passive implementations.
Glide path construction	In 2014, several changes were made to glide path which looked to reduce the sensitivity of the Trusts to rising interest rates, increase the inflation sensitivity of the Trusts and more fully benefit from global investment opportunities. Overall the glide path is notably more aggressive than the Callan Consensus.
Forward looking projections	Lower shortfall risk comes at cost of higher downside risk for both populations.
Fees	Low cost due to scale and heavy use of passive implementations
Pros	• The use of passive implementations allows for lower fees • Straight-forward easy to understand implementation
Cons	• In some asset classes the use of passive allows no chance for alpha generation

Conclusions

Target Date Review Observations

- These custom funds provide participants a reasonable probability of reaching a successful retirement. Much of this depends on the continuation of the current mandatory deferral rates and match structure.

Target Date Review Recommendations

- Given the high predicted replacement ratios along with the fact that there is some overlap between the SBS and PERS plan populations, the Plans could explore whether there is room to take less risk throughout the glide path and still reach successful outcomes with a reasonable degree of certainty.
- On a periodic basis revisit the glide path and implementation of the funds given the Plans' underlying demographics and plan design.

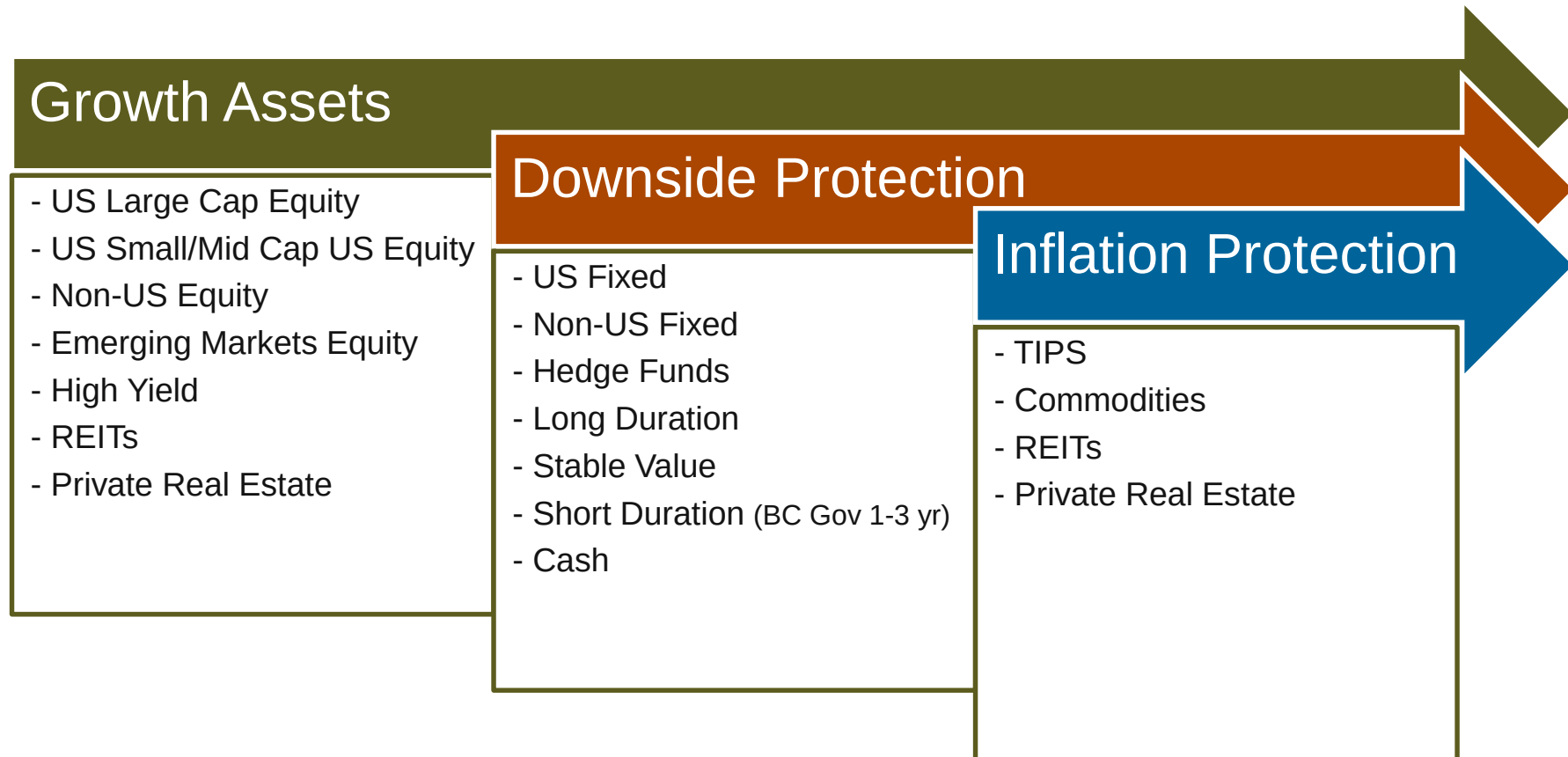


Appendix

Appendix I: Long-Term Callan Capital Market Expectations

		2016 - 2025		Long-Term (2036 - 2096)		Change from 10-year to Long-Term	
Asset Class	Index	10-Year Annualized Return	10-Year Standard Deviation	Long-Term Annualized Return*	Long-Term Standard Deviation*	Annualized Return	Standard Deviation
Equities							
Large Cap US Equity	S&P 500	7.25%	17.95%	8.25%	17.95%	1.00%	0.00%
Small/mid Cap US Equity	Russell 2500	7.55%	22.75%	9.00%	22.75%	1.45%	0.00%
Non-US Equity (Developed)	MSCI EAFE	7.25%	20.05%	8.25%	20.05%	1.00%	0.00%
Emerging Equity	MSCI EMF	7.60%	27.85%	9.50%	27.85%	1.90%	0.00%
Global ex-US Equity	MSCI ACWI ex-US	7.55%	21.30%	8.90%	21.30%	1.35%	0.00%
Int'l Small Cap Equity	MSCI ACWI ex-US Small	7.60%	24.70%	9.25%	24.70%	1.65%	0.00%
Fixed Income							
Cash Equivalents	90-Day T-Bill	2.25%	0.90%	3.25%	0.90%	1.00%	0.00%
Stable Value	n/a	2.30%	1.50%	3.80%	1.50%	1.50%	0.00%
Short Duration (Gov/Credit 1-3 year)	BC Gov't/Credit 1-3 Year	2.60%	2.25%	4.00%	2.25%	1.40%	0.00%
Non-US Fixed (Hdgd)	BC Global Aggregate ex-US (Hdgd)	1.40%	3.70%	4.20%	3.70%	2.80%	0.00%
US Fixed Income	BC Aggregate	3.00%	3.75%	5.00%	3.75%	2.00%	0.00%
Non-US Fixed	BC Global Aggregate ex-US	1.40%	9.20%	4.25%	9.20%	2.85%	0.00%
Long Gov	BC Long Gov't	2.00%	13.20%	5.00%	13.20%	3.00%	0.00%
Long Credit	BC Long Credit	4.50%	11.40%	6.00%	11.40%	1.50%	0.00%
High Yield	BC High Yield	5.00%	10.50%	6.50%	10.50%	1.50%	0.00%
Bank Loans	S&P/LSTA Leveraged Loan Index	4.00%	9.00%	5.50%	9.00%	1.50%	0.00%
Emerging Markets Debt	JPM EMBI Global Diversified	4.60%	9.90%	6.25%	9.90%	1.65%	0.00%
Real Assets							
TIPS	BC US TIPS	3.00%	5.30%	4.75%	5.30%	1.75%	0.00%
Commodities (GSCI)	GSCI Total Return	2.60%	25.00%	3.75%	25.00%	1.15%	0.00%
Commodities (Blmbrg)	Bloomberg Commodity	2.75%	18.50%	3.75%	18.50%	1.00%	0.00%
US REITS	NAREIT All Equity	7.00%	21.00%	8.00%	21.00%	1.00%	0.00%
Global REITS	EPRA/NAREIT Developed	7.00%	22.00%	8.00%	22.00%	1.00%	0.00%
Natural Resources Equity	S&P500 Global Nat. Res.	6.80%	24.00%	7.85%	24.00%	1.05%	0.00%
Direct Real Estate	70% NCREIF / 25% REITS / 5% Cash	6.15%	10.00%	7.25%	10.00%	1.10%	0.00%
Alternative Investments							
Absolute Return	Absolute Return	5.00%	7.00%	5.75%	7.00%	0.75%	0.00%
Inflation	CPI-U	2.25%	1.50%	2.25%	1.50%	0.00%	0.00%

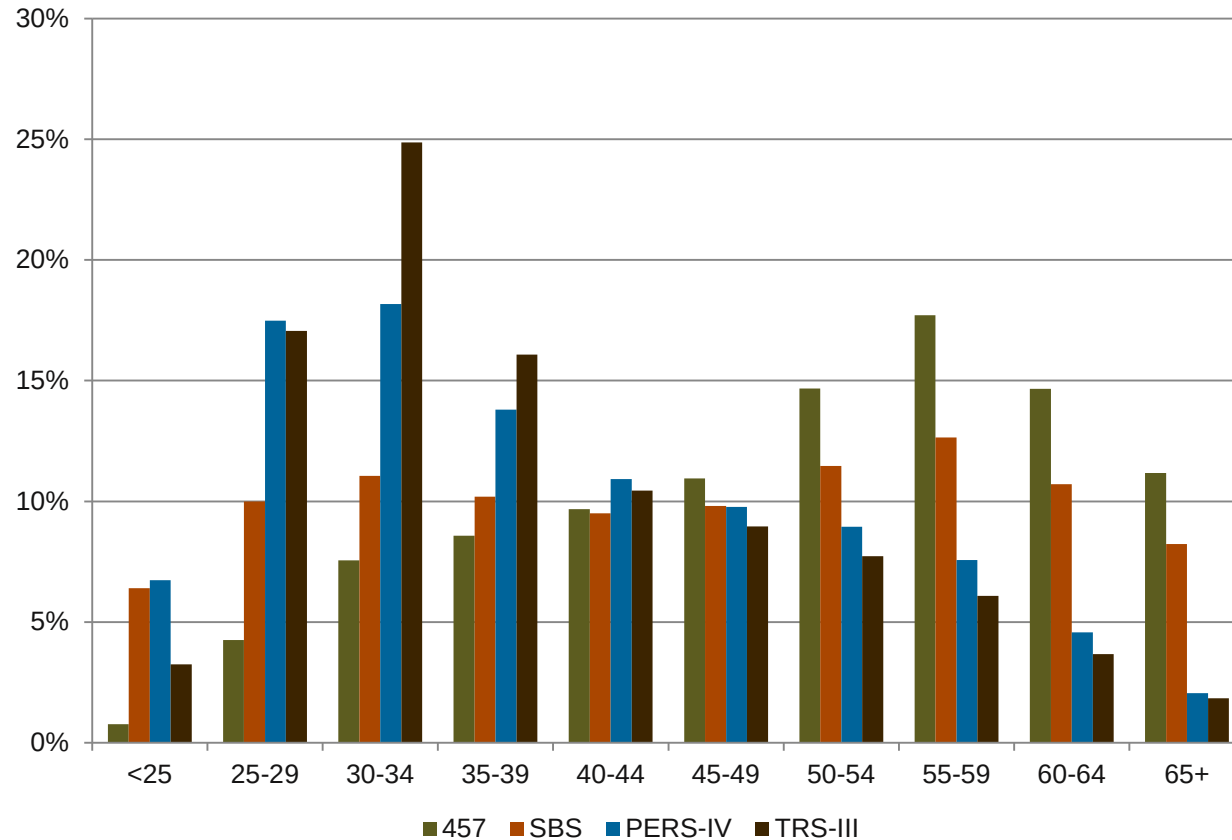
Appendix II: Callan Glide Path Asset Classes



- Callan's Glide Path model currently simulates 24 asset classes as shown above
- Asset classes are categorized as Growth assets, Downside Protection assets or Inflation Protection assets.
 - REITs and Private Real Estate fall under two categories – they can play a dual role in the glide path

Appendix III: Underlying Demographics

Participant Status by Age Cohort



- The percentage of participants in the 457 gradually increases with age.
- Due to the PERS IV and TRS III being available to those hired after 7/1/06, their participant base is skewed towards younger age cohorts.
- SBS membership is fairly even across the various age cohorts.

Appendix IV: Underlying Modelling Assumptions

	SBS-AP/PERS	PERS IV	TRS III
Starting Age	25		
Retirement Age	65		
Total Contribution	12.26% + 13.0%	13.0%	15.0%
Male: Female Ratio	42.9%	42.9%	28.0%
Starting Salary	\$45,196	\$45,196	\$63,724
Salary Growth	0.50% real	0.50% real	0.50% real

Appendix V: Glossary

CAI Consensus Glide Path Index – An equally weighted index of the universe of available TDF “series” or “families” (currently 43)—including both mutual funds and collective trusts. The funds’ glide paths are mapped into 24 asset classes. The CAI Consensus Glide Path Index is created as an equal-weighted average of all the provider glide paths, and will change dynamically over time as provider glide path evolve and/or the provider universe expands.

CAI Glide Path Universe – The TDF peer group. Represents the same universe of TDF funds found in the CAI Consensus Glide path Index. This includes both “To” and “Through” funds. This is the peer group used throughout the report.

Risk Terms

Shortfall Risk – The risk of not accumulating enough assets in the period leading up to retirement. This metric looks at a variety of factors including the expected return, the probability of exceeding the target replacement ratio as well as accumulation metrics such as expected assets/final salary and expected assets/total cumulative contributions (TCC) expect replacement ratio.

Downside Risk is the risk of short-term volatility and its possible impact on projected outcomes. To evaluate downside risk the construction of the glide path near retirement is evaluated, in particular its exposure to downside protection assets, the breadth of this exposure and the steepness of rolldown of growth assets. Additionally various risk metrics are utilized including standard deviation, dollar weighted risk, point-in-time worse case return and peak-to-trough worse case returns.

Inflation Risk evaluates how a target date suite is positioned to respond to a high inflationary regime. Criteria examined are the breadth and exposure to inflation sensitive asset classes.

Longevity Risk is the risk of outliving one’s assets. To evaluate longevity risk, traditional downside risk metrics such as standard deviation and worse-case returns during retirement are utilized. In addition the probability of outliving one’s assets given the target spending rate is also evaluated.

Appendix VI: Simulation Disclaimer

Callan's TDVantage analytics project a range of wealth accumulation and risk outcomes for target date fund glide paths over various capital market scenarios and time periods. Callan utilizes a proprietary Monte Carlo simulation model and proprietary capital market assumptions for return, risk and correlations to generate these analytics. The simulations require assumptions relating to the underlying demographics of the ARMB populations.

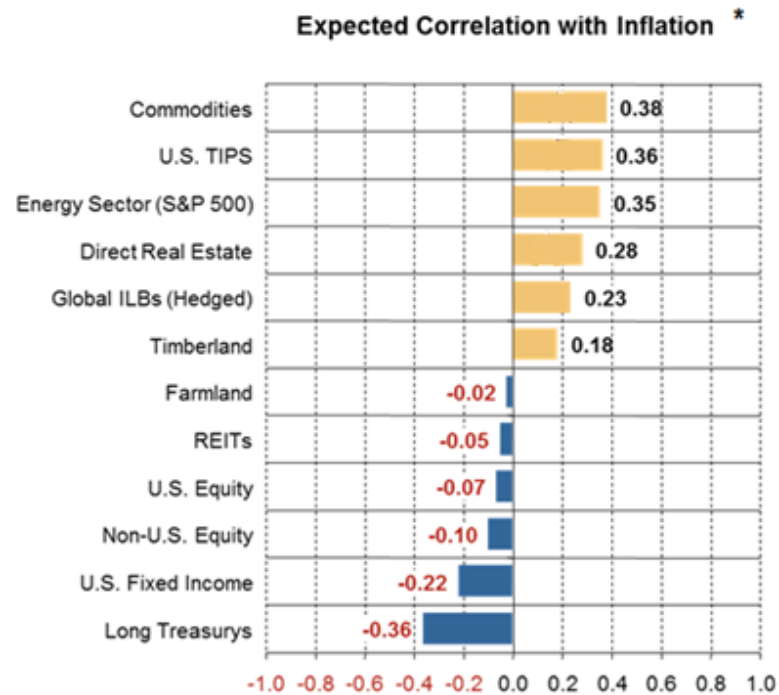
For purposes of determining income replacement ratios, annuities are based on simulated 30-year Treasury Yields and RP-2014 with fully generational mortality improvement (MP-2014). The annuity is payable for a single life only and provides contractual indexing of 2.5% per annum.

No participant loans are reflected in the projections. Any applicable taxes are not reflected in asset projections or upon spending of assets. Thus, investment earnings accrue tax-free and spending is expressed pre-tax. IRS tax deductibility contribution limits are not applicable due to the assumptions employed (i.e., simulated annual contributions are always less than \$17,500 with median 2.5% inflation going forward). Finally, a 10% federal premature withdrawal penalty is not applied to withdrawals before age 59 1/2.

Callan projects capital markets and various metrics over an 80-year horizon (age 25 to age 105) across 1,000 economic scenarios. Capital market forecasting is based on Callan's proprietary 10-year forward looking expectations (2013 – 2022) and very long-term capital market expectations. The 10-year capital market outlook gradually blends into the long-term capital market outlook from year 11 to year 19.

Wealth accumulation and risk metrics shown in this document and reflect the assumptions outlined above.

Appendix VII: Expected Correlations with Inflation



* Expectations are developed by Callan's Capital Markets Group. They correspond closely with historical experience, but take into account the fact that robust long-term historical data is not available for all asset classes.

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.

September 30, 2016



Managed Account Review

Steve Center, CFA
Fund Sponsor Consulting

Paul Erlendson
Fund Sponsor Consulting

Lori Lucas, CFA
Fund Sponsor Consulting

Jamie McAllister
Fund Sponsor Consulting

James Veneruso, CFA, CAIA
Fund Sponsor Consulting

Managed Account Services

For the ARMB plans, the managed account solution is provided through the Empower participant website by their wholly owned subsidiary, Advised Assets Group, LLC (AAG), which uses a program powered by Morningstar/Ibbotson.

The managed account offering includes the following services:

- Retirement readiness forecast
- Retirement spend-down projection
- Portfolio rebalancing & monitoring
- Communication package
- Allocation and construction of customized portfolios

Advice and Managed Accounts: ARMB-Specific

Opt In or Out?	Opt In (though managed accounts was the default up to July 2009)	
Number of Participants Using Advice (as of 12/31/2015; amount in parenthesis is % of ppts)	457 Plan: 99 ppts (0.9%)	SBS Plan: 141 ppts (0.3%)
	PERS Plan: 33 ppts (0.1%)	TRS Plan: 3 ppts (0.04%)
Number of Participants Using Managed Accounts (as of 12/31/2015; amount in parenthesis is % of ppts)	457 Plan: 1,140 ppts (10.4%)	SBS Plan: 1,150 ppts (2.6%)
	PERS Plan: 5,731 ppts (20.8%)	TRS Plan: 1,573 ppts (23.0%)
Estimated Number of Participants Defaulted into Managed Accounts Prior to July 2009	Roughly 75% of participants using managed accounts appear to be defaulted in.	
Can participants be in Advice and Managed Accounts at the same time?	No. A participant can only be in one or the other at one time.	
% of Participants electing Advice/Managed Accounts on their own vs. through a representative	Unable to provide this data currently – they are looking at this as a future enhancement	
Frequency of Review	Advice: as requested by participant Managed Accounts: annually	

- For the ARMB plans, the managed account solution is proved through the Empower participant website by their wholly owned subsidiary, Advised Assets Group, LLC (AAG), which uses a program powered by Morningstar/Ibbotson.
- Less than 1% of the population use Advice across the four Plans.
- For the PRS and TRS Plans, over 20% of participants use Managed Accounts. It is notably less for the SBS and 457 Plans.

Advice Managed Account Fee Application and Comparison

Advice/Managed Accounts	Empower	Industry Comps
Guidance	Included	Typically included
Advice Annual Fee	\$25 (only assessed to those that use it)	Typically \$0 to \$10 per participant
Managed Account Fee	Tiered Schedule: Up to \$100,000: 0.45% of assets \$100,000 to \$250,000: 0.35% of assets \$250,000 to \$400,000: 0.25% of assets Over \$400,000: 0.15% of assets	0 bps to 60 bps (typically 10 to 50 bps)

	SBS Plan	457 Plan	PERS Plan	TRS Plan	<u>Total</u> ARMB Plans
Estimated Advice Fees	\$3,525	\$2,475	\$825	\$75	\$6,900
Estimated Managed Account Fees*	\$390,867	\$369,941	\$566,468	\$261,088	\$1,588,363
TOTAL ESTIMATED REVENUE	\$394,392	\$372,416	\$567,293	\$261,163	\$1,595,263

- With Empower, Advice fees are only charged to those participants that use Advice. With other recordkeepers, they typically charge the Advice fee across the entire participant base (whether or not the participant uses the service). While the \$25 Advice fee is higher than the typical industry fee, it is more favorable overall given the low participant use of Advice (less than 1%).
- Managed account fees fall within range of that of the market.

*To estimate the aggregate managed account fees, we used the average participant balance (by Plan) and applied the managed account fee schedule. In all Plans, the average balance was below the \$100,000 threshold.

Fees at a Glance

Example of the Tiered Fee Schedule in Practice

Balance	Blended Basis Points	Dollar Equivalent
\$50,000	0.45%	\$225
\$150,000	0.42%	\$625
\$250,000	0.39%	\$975
\$500,000	0.30%	\$1,500

- The above fees are for the asset allocation piece only. They do not include the underlying investment management fees. The combined fee on the underlying portfolios can range from 15 to 32 basis points. The total is range is: **45 to 77 basis points.**
- This is well above the existing target date funds where the stated fees range from **13 to 16 basis points.**

Overview of the Managed Account Program

Underlying Methodology – Human Capital Approach

- Based on these inputs and the underlying building blocks available, the Managed Account platform builds out an allocation aimed at reaching the participant's retirement goals with a 70% probability. The goal is by default set to be 100% final income replacement.
- The allocations are based on a human capital approach. This assumes that participants retirement needs are met through a combination of human and financial capital.
 - Under this framework human capital is defined as the present value of future savings directed a retirement needs. Financial capital are the actual present savings at a given point in time.
 - Human capital in this framework is modeled as 70% equity, 30% fixed income.
 - The implication is that those who are younger (and have more human capital) have higher allocations to equity while those who are older (with less remaining human capital) have higher allocations to fixed income.
 - This approach is also similar to that of T.Rowe Price in the target date offering. In both cases, the less that is needed from a retirement income standpoint from the DC plan, the more risk a participant can take.

The human capital approach also informs most target date funds and helps to explain the theory behind downward sloping glide paths which de-risk as a participant approaches retirement.

Overview of the Managed Account Program

Inputs that Drive Outcomes

- The custom portfolios are driven by inputs from both Empower's record keeping platform as well as data inputted by participants. These include:

From Empower	From Participant
• Participant balance	• Spousal assets
• Assets	• Dependents
• Contributions	• Outside assets
• Age	• Cash flows
	• Pension data
	• Risk preference
	• Desired retirement income

In addition to the above data, ARMB feeds in participants' estimated pension data if applicable.

Overview of the Managed Account Program

Further Use of Assumptions

- The managed account program then makes further assumptions around:
 - IRS Contribution Limitations
 - Minimum Required Distributions
 - Estimated taxes: based on participant's address on file
 - Social Security: based on current salary information and salary growth
 - Salary growth: assumed to grow at the long-term rate of inflation

Overview of the Managed Account Program

Underlying Funds

Once the higher level asset allocation model is built using the aforementioned inputs, the underlying funds options are analyzed to build out the asset allocation. This step uses both:

- Quantitative
 - Returns based style analysis
 - Forward-looking alpha
 - Style consistency
 - Performance analysis
 - Peer group screening
- Qualitative
 - style changes
 - holdings based analysis,
 - People
 - Process
 - Philosophy

ARMB Underlying Funds

- Morningstar recommends a minimum of 5 asset classes from which to build a portfolio:

- Large Cap
- Small/Mid Cap
- Foreign Equity
- Bonds
- Cash Alternatives

As currently constituted within the ARMB the managed account system allocation among:

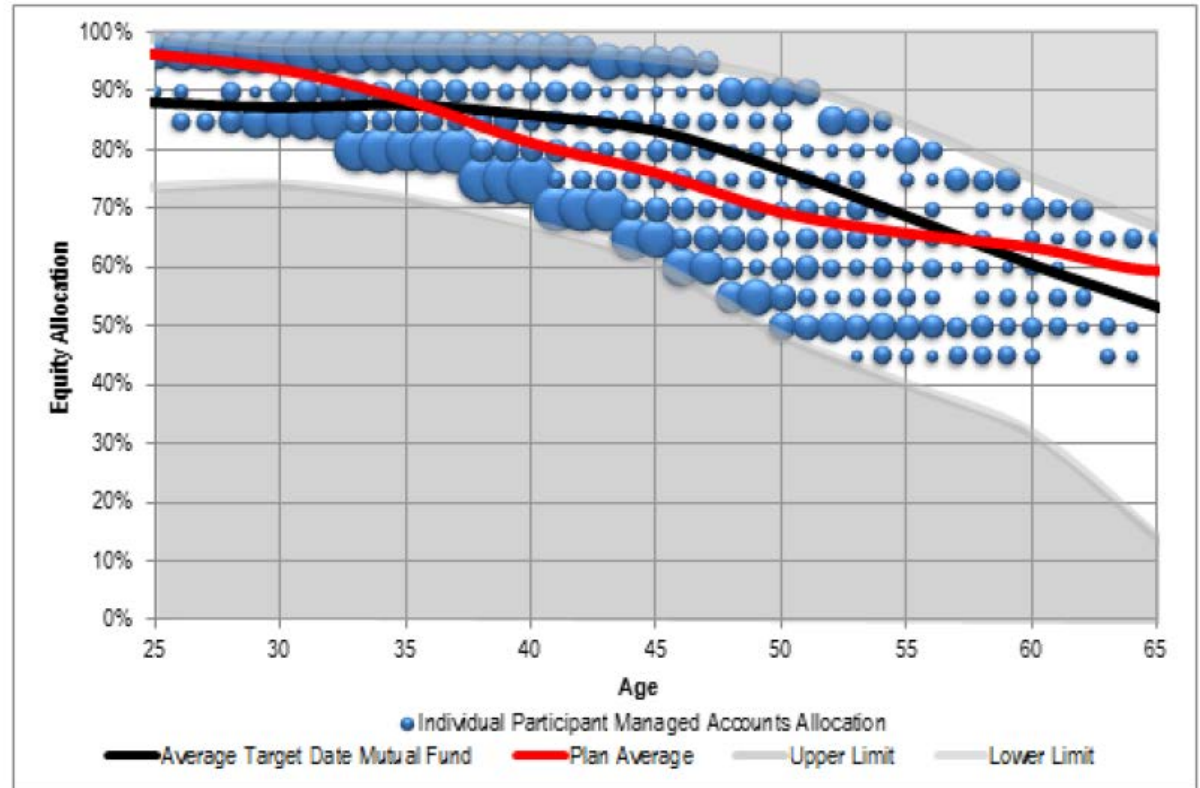
- Cash Alternatives (2)
 - *Stable Value, Money Market*
- TIPS (1)
 - *US Inflation Protected Securities*
- Bond Funds (4)
 - *Government/Credit Bond Index, Intermediate Bond Fund, Long Treasury Bond, World Government Bond ex-US Index*
- Large Cap Funds (3)
 - *S&P 500 Index Fund, Russell 3000 Index Fund, Allianz/RCM Socially Responsible Investment*
- International Equity (2)
 - *World Ex-US Index, International Equity Fund*
- REITS (1)
 - *US Real Estate Investment Trust Index*
- Small/Mid Cap Fund (1)
 - *US Small Cap Trust*

The managed account platform can also allocate to the three balanced funds.

Range of Allocations

- Based on participant data, actual allocations are formed.
- These allocations feature an equity/fixed income mix that can vary widely depending on the inputs.
- For example, an individual at age 65 could have an allocation ranging from roughly 15% to nearly 70%.
- This range includes the T.Rowe Price target date allocation where at age 65, the allocation to equity is roughly 55%.

Possible Allocations



Source: Advised Asset Group, LLC

On Going Monitoring

On an ongoing basis

- Portfolios are monitored
- Funds are rebalanced (quarterly)
- Capital market expectations are updated (annually)

Example Allocations

- The allocations below represent hypothetical allocations for someone starting out a career (“accumulation”) and someone at retirement (“decumulation”). At point there are conservative, moderate and aggressive variations:

State of Alaska Funds	Dynamic Model Portfolio Fund Allocations					
↓ Funds	Accumulation %			Decumulation %		
	Conservative	Moderate	Aggressive	Conservative	Moderate	Aggressive
Russell 3000 Index	0%	5%	19%	0%	9%	19%
S & P 500 Stock Index Fund	3%	8%	13%	4%	6%	21%
US Small Cap Trust	3%	13%	25%	0%	12%	27%
International Equity Fund	3%	6%	17%	3%	6%	13%
World Equity Ex-US Index	0%	5%	18%	0%	0%	12%
Alaska Balanced Trust	3%	10%	0%	4%	10%	0%
Alaska Long-Term Balanced Trust	0%	5%	0%	0%	6%	0%
SSgA Global Balanced Fund	3%	6%	0%	0%	7%	0%
Government/Credit Bond Index Fund	21%	9%	3%	0%	0%	0%
Intermediate Bond Fund	21%	7%	0%	33%	20%	3%
State Street Inst Treasury Money Market	3%	0%	0%	11%	0%	0%
US Treasury Inflation Protected Sec Indx	7%	3%	0%	27%	10%	0%
Stable Value Fund	20%	12%	0%	12%	9%	0%
US Real Estate Investment Trust Index	0%	3%	5%	3%	5%	5%
World Government Bond Ex-US Index QIB	13%	8%	0%	3%	0%	0%
Total	100%	100%	100%	100%	100%	100%

Source: Advised Asset Group's Advisory Services Review for Callan

Historical Performance Comparison

- On a net-of fee performance standpoint, the performance for managed accounts has been a mixed bag.
- While the past year was a favorable period, over the longer term, performance has lagged the most comparable target date option (based on allocations to equity and growth assets).
- On a risk-adjusted basis though, even net-of-fees, performance for the managed account is favorable relative to the most comparable target date vintage. This further bolsters the case, that there is value for those taking the time to tailor the allocations to their particular circumstances.

	1-Year Return	3-Year Return	5-Year Return	5-Year Sharpe Ratio
Target Date 2010	1.36	5.58	6.01	0.91
Accumulation - Conservative	4.46	3.33	3.22	1.18
Decumulation – Conservative	3.64	2.99	3.09	1.08
Target Date 2015	1.08	6.32	6.77	0.86
Accumulation – Moderate	2.1	5.35	5.56	0.86
Decumulation – Moderate	2.26	5.7	6.11	0.98
Target Date 2055	-0.58	8.07	8.71	0.73
Accumulation – Aggressive	-0.66	6.44	6.77	0.60
Decumulation - Aggressive	0.16	7.4	7.85	0.66

Conclusions

Observations

- Roughly 75% of participants using managed accounts appear to be defaulted in.
- The participant inputs are vital to calibrating the asset allocation. Given the range of possible portfolios, it is up to the participant to supply accurate data to build out the best possible allocation. At issue though is whether or not participants actually take the time to input their data.
- Although Empower was not able to provide statistics on the number of participants using managed accounts who proactively enter their personal data in order to tailor the managed account to their situation, Callan's understanding based on conversations with Empower is that the number is low.

Recommendations

- Advice/Managed Account Reporting Request – request that Empower provide additional information on managed accounts on periodic basis, including building a report that indicates the way in which participants are enrolled in these services and how they use them (e.g., do they provide outside information?).
- Consider an asset re-enrollment given that some participants, particularly those defaulted (roughly 75% of users), may not have re-evaluated their investment options since they were defaulted into managed accounts prior to July 2009.

ALASKA RETIREMENT MANAGEMENT BOARD

SUBJECT: Callan DC Plans Report

ACTION: X

DATE: September 30, 2016

INFORMATION:

BACKGROUND

Alaska statute establishes the Alaska Retirement Management Board (ARMB) with a primary mission to serve as trustee of the assets of the state's retirement systems, the State of Alaska Supplemental Annuity Plan, and the deferred compensation program for state employees. Provided in statute, ARMB may employ outside investment advisors to review investment policies and contract for other services necessary to execute ARMB's powers and duties.

During the September 2015 Defined Contribution Plan Committee meeting, Callan presented best practices in defined contribution plans and discussed the results of Callan's Defined Contribution Survey. During the presentation, trustees expressed interest in seeing a formal proposal from Callan for evaluating the defined contribution plans. The proposal submitted by Callan was approved at the February 2016 ARMB meeting.

STATUS

The Callan proposal accepted by the ARMB listed seven governance and quality issues for review:

1. Develop an investment policy statement*
2. Review the investment structure
3. Enhance the performance report
4. Engage in a record keeper review
5. Review target date and managed solutions suitability
6. Review retirement income solutions suitability
7. Review distribution counseling services

*The investment policy statement will be completed once the Board has reviewed and taken action on the recommendations in other sections of the report.

In collaboration with the Department of Administration, staff worked with Callan and provided necessary information and data to construct the report. On August 19, 2016, staff from Department of Revenue and Department of Administration met with Lori Lucas, Jamie McAllister and James Veneruso of Callan Associates to review the draft report for accuracy, context and clarity. Each section of the report contains suggestions and recommendations that may reflect best practices, better governance, or provide efficiencies that will improve the retirement systems' defined contribution plans, options and services. Staff recommends that the Defined Contribution Committee, working with staff from the Departments of Revenue and Administration, analyze the recommendations and return to the full Board with an assessment for action to be taken on each.

RECOMMENDATION

That the Alaska Retirement Management Board directs that staff, working with the Department of Administration and the Defined Contribution Committee, return with assessments of the recommendations contained in the report.

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

To: ARMB Trustees
From: Judy Hall
Date: September 16, 2016
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.

Name	Position Title	Disclosure Type	Disclosure Date
Scott Jones	Comptroller	Equities	7/19/16
Bob Mitchell	Deputy CIO	Equities	6/14/16 8/1/16
Gary Bader	CIO	Equities	6/20/16 7/14/16 7/29/16
Victor Djajalie	Investment Officer	Equities	8/9/16

Alaska Retirement Management Board
2016 Meeting Calendar

September 28 – Wednesday	Committee Meetings: Actuarial Audit Budget Defined Contribution
September 29-30 Thursday-Friday Anchorage	*Audit Results/Assets – KPMG *Approve Budget *Performance Measurement – 2 nd Quarter *Real Estate Annual Plan *Real Estate Evaluation – Townsend Group *Manager Presentations *Education Topics
November 3 Telephonic	Audit Committee
December 7 – Wednesday	Committee Meetings: Actuarial Audit Legislative
December 8-9 Thursday-Friday Anchorage	Audit Report - KPMG Performance Measurement – 3 rd Quarter Manager Review (Questionnaire) Private Equity Review *Manager Presentations

Alaska Retirement Management Board
2017 Meeting Calendar

March 1 – Wednesday	Committee Meetings: Actuarial Audit Defined Contribution Plan
March 2-3 Thursday-Friday Juneau	*Review Capital Market Assumptions *Manager Presentations
April 19 – Wednesday	Committee Meetings: Actuarial Committee
April 20-21 Thursday-Friday Anchorage	*Adopt Asset Allocation *Performance Measurement – 4 th Quarter *Buck Consulting Actuary Report *GRS Actuary Certification *Review Private Equity Annual Plan *Manager Presentations
June 21 – Wednesday	Committee Meetings: Actuarial Audit
June 22-23 Friday Anchorage	*Final Actuary Report/Adopt Valuation *Performance Measurement – 1 st Quarter *Manager Presentations
October 4 – Wednesday	Committee Meetings: Actuarial Audit Budget Defined Contribution
October 5-6 Thursday-Friday Anchorage	*Audit Results/Assets – KPMG *Approve Budget *Performance Measurement – 2 nd Quarter *Real Estate Annual Plan *Real Estate Evaluation – Townsend Group *Manager Presentations
November ____	Audit Committee
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