

HOW...

ASRS Employees Deliver Service With PRIDE!

PROFESSIONALISM

We promote, strive for and expect individuals, teams, and divisions to possess professional qualities and skills to lead the organization.

- Displays a friendly, respectful and courteous demeanor even when confronted by adversity
- Has proactive and responsive approach to internal and external customer needs
- Possesses good communication and active listening skills
- Is a trusted contributor (manager, leader, SME, analyst, teammate)
- Takes personal accountability • Has subject matter expertise
- Has critical thinking skills • Has an honest, fair, non-judgmental mind-set
- Is adaptable to beneficial change • Adheres to the ASRS Code of Conduct

RESULTS

We treasure the achievements of individuals, teams, divisions and the agency that energize the organization.

- Meets goals and objectives
- Completes projects
- Produces quality work products
- Satisfies customers
- Attains individual accomplishments
- Manages risks successfully

IMPROVEMENT

We appreciate individuals, teams or divisions who drive the agency forward with new, innovative ideas and solutions.

- Promotes new ideas
- Enhances outcomes and performance
- Solves problems
- Enhances morale
- Improves relationships
- Increases efficiency, effectiveness or reduces costs

DIVERSITY

We recognize that utilizing different talents, strengths and points of view, strengthens the agency and helps propel outcomes greater than the sum of individual contributors.

- Encourages an attitude of openness and a free flow of ideas and opinions
- Treats others with dignity and respect
- Works effectively to accomplish goals with teams comprised of dissimilar individuals
- Recognizes and promotes skills in others attained on and off the job

EXCELLENCE

We celebrate individuals, teams and divisions who exceed expectations and deliver service with a PRIDE that permeates the organization.

- Surpasses member, stakeholder and associate expectations
- Demonstrates a willingness to go the extra mile to engender a positive public image
- Embraces change in a manner that inspires others
- Accepts responsibility and challenges with enthusiasm
- Takes a personal interest in promoting teamwork through effective use of communication (verbal, non-verbal, written and technological techniques)
- Creates a motivated, healthy and productive work environment that celebrates and rewards the accomplishments of others



**ARIZONA STATE
RETIREMENT SYSTEM**



ARIZONA STATE RETIREMENT SYSTEM

3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000
7660 EAST BROADWAY BOULEVARD • SUITE 108 • TUCSON, AZ 85710-3776 • PHONE (520) 239-3100
TOLL FREE OUTSIDE METRO PHOENIX AND TUCSON 1 (800) 621-3778
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Paul Matson
Director

AGENDA

NOTICE OF COMBINED PUBLIC MEETING AND EXECUTIVE SESSION(S) OF THE ARIZONA STATE RETIREMENT SYSTEM BOARD

3300 North Central Avenue, 10th Floor Board Room
Phoenix, AZ 85012

February 27, 2015
8:30 a.m.

Pursuant to A.R.S. § 38-431.02 (F), notice is hereby given to the Trustees of the Arizona State Retirement System (ASRS) Board and to the general public that the ASRS Board will hold a meeting open to the public on Friday, February 27, 2015, beginning at 8:30 a.m., in the 10th Floor Board Room of the ASRS offices at 3300 N. Central Avenue, Phoenix, Arizona 85012. Trustees of the Board may attend either in person or by telephone conference call.

The Chair may take public comment during any agenda item. If any member of the public wishes to speak to a particular agenda item, they should complete a "Request To Speak" form indicating the item and provide it to the Board Administrator.

This meeting will be teleconferenced to the ASRS Tucson office at 7660 East Broadway Boulevard, Suite 108, Tucson, Arizona 85710.

The Agenda for the meeting is as follows:

1. Call to Order; Roll Call; Opening RemarksMr. Kevin McCarthy
Board Chair
2. Approval of the Minutes of the January 30, 2015 Public Meeting and Executive Sessions of the ASRS Board (*estimated time 1 minute*)Mr. Kevin McCarthy
3. Presentation Regarding the Showcase in Excellence Awards from the Southwest Alliance for Excellence (SWAE) for Online Statements and Online Refunds (*estimated time 5 minutes*)
.....Mr. Paul Matson
Director
.....Mr. Anthony Guarino
Deputy Director and Chief Operations Officer

4. Presentation, Discussion, and Appropriate Action Regarding 2015 ASRS Legislative Initiatives and Legislative Update (estimated time 15 minutes) Mr. Patrick Klein
Assistant Director, External Affairs
..... Mr. Nick Ponder
Government Relations Officer

5. Presentation, Discussion, and Appropriate Action Regarding ASRS Investment Program Updates (estimated time 20 minutes) Mr. Paul Matson
..... Mr. Gary Dokes
Chief Investment Officer
..... Mr. Dave Underwood
Assistant Chief Investment Officer
 - a. ASRS Fund Positioning
 - b. IMD Investment House Views
 - c. Asset Class Committee (ACC) Activities
 - d. Tactical Portfolio Positioning
 - e. Strategic Asset Allocation Policy (SAAP) Implementation
 - f. IMD Projects, Research, and Initiatives

6. Presentation, Discussion and Appropriate Action Regarding Independent Reporting, Monitoring, and Oversight of the ASRS Investment Program (estimated time 20 minutes)
..... Mr. Allan Martin
Partner, NEPC

7. Presentation, Discussion and Appropriate Action Regarding the Asset Allocation Study Recommendations (estimated time 10 minutes) Mr. Tom Connelly
IC Chair
..... Mr. Paul Matson
..... Mr. Gary Dokes
..... Mr. Allan Martin

8. Presentation, Discussion, and Appropriate Action Regarding the Director's Report as well as Current Events (estimated time 5 minutes) Mr. Paul Matson
..... Mr. Anthony Guarino
 - A. 2015 Compliance Report
 - B. 2015 Investments Report
 - C. 2015 Operations Report
 - D. 2015 Budget and Staffing Reports
 - E. 2015 Cash Flow Statement
 - F. 2015 Appeals Report
 - G. 2015 Employers Reporting

9. Presentation and Discussion with Regard to Informational Updates from Prior and Upcoming Committee Meetings (*estimated time 15 minutes*)
- a. Operations and Audit Committee (OAC)Mr. Jeff Tyne, Chair
..... Mr. Anthony Guarino
The next OAC Meeting will be held on March 13, 2015
 - b. External Affairs Committee (EAC) Dr. Richard Jacob, Acting Chair
..... Mr. Patrick Klein
The next EAC Meeting will be held on March 13, 2015
 - c. Investment Committee (IC) Mr. Tom Connelly, Chair
..... Mr. Gary Dokes
The next IC Meeting will be held on April 20, 2015
10. Board Requests for Agenda ItemsMr. Kevin McCarthy
11. Call to the PublicMr. Kevin McCarthy

Those wishing to address the ASRS Board are required to complete a Request to Speak form before the meeting indicating their desire to speak. Request to Speak forms are available at the sign-in desk and should be given to the Board Administrator. Trustees of the Board are prohibited by A.R.S. § 38-431.01(G) from discussing or taking legal action on matters raised during an open call to the public unless the matters are properly noticed for discussion and legal action. As a result of public comment, the Board may direct staff to study and/or reschedule the matter for discussion and decision at a later date.

12. The next public ASRS Board meeting is scheduled for Friday, March 27, 2015, at 8:30 a.m., at 3300 N. Central Avenue, in the 10th Floor Board room, Phoenix, Arizona.

The balance of the meeting and executive session(s) will take place in the 14th floor conference room.

Regarding the following agenda item, pursuant to A.R.S. § 38-431.03(A)(2), notice is hereby given to Trustees of the ASRS Board and the general public that the ASRS Board shall vote to go into executive session, which will not be open to the public, for the purpose of discussion or consideration of records exempt by law from public inspection.

13. Presentation, Discussion and Appropriate Action Regarding the Office of the Auditor General's Sunset Review of the Arizona State Retirement System, including the Arthur J. Gallagher & Company Investment Management Audit (*estimated time 30 minutes*).....Mr. Kevin McCarthy
.....Arthur J. Gallagher & Co.
.....Auditor General

Regarding the following agenda item, pursuant to A.R.S. § 38-431.03(A)(3), notice is hereby given to Trustees of the ASRS Board and the general public that the ASRS Board may vote to go into executive session for the purpose of discussion or consultation for legal advice with the attorney of the public body, which will not be open to the public.



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Paul Matson
Director

MINUTES PUBLIC MEETING ARIZONA STATE RETIREMENT SYSTEM BOARD

Friday, January 30, 2015
8:30 A.M., MST

The Arizona State Retirement System (ASRS) Board met in the 10th Floor Board Room, 3300 N. Central Avenue, Phoenix, Arizona. Mr. Kevin McCarthy, Chair of the ASRS Board, called the meeting to order at 8:30 A.M., Arizona Time.

The meeting was teleconferenced to the ASRS office at 7660 E. Broadway, Tucson, Arizona 85710.

1. Call to Order; Roll Call; Opening Remarks

Present: Mr. Kevin McCarthy, Chair
Mr. Jeff Tyne
Mr. Tom Manos
Mr. Tom Connelly
Professor Dennis Hoffman (arrived at 8:32 a.m.)
Dr. Richard Jacob
Mr. Brian McNeil

A quorum was present for the purpose of conducting business.

2. Presentation Regarding PRIDE Award for Excellence

Mr. Anthony Guarino, Deputy Director and Chief Operations Officer, recognized the following nominees for the PRIDE Excellence award: Courtney Micheau, Marina Keith, Dave King and Sarah Korish, Liz Rozzell, Erin Higbee, Tanya Wright, Nancy Bennett, LaToya Charles, Pam Vozza, and Bernie Glick (GASB Team), Erin Higbee, Tonia Nemecek and Rebecca Fox (Stale Checks Team).

The nominees were recognized by their peers as exemplifying the following PRIDE qualities of diversity:

- Surpass member, stakeholder and associate expectations
- Embrace positive changes in a manner which inspires others
- Demonstrate a willingness to go the extra mile to engender a positive public image that solidifies the perception the ASRS is a trusted brand that members, stakeholders and associates will recognize
- Create a motivated, healthy and productive work environment that celebrates and rewards the accomplishments and contributions of others
- Take a personal interest in promoting teamwork through effective use of communication methods within the ASRS to ensure the effective flow of information and knowledge (This includes verbal, non-verbal, written and technological communication techniques)
- Accept personal responsibility and challenges with enthusiasm

Mr. Guarino presented the PRIDE Award for Excellence to the award winner, Courtney Micheau.

3. Approval of the Minutes of the December 5, 2014 Public Meeting and the October 24, 2014 Public Meeting and Executive Sessions of the ASRS Board

Motion: Mr. Tom Manos moved to approve the Minutes of the October 24, 2014 Public Meeting of the ASRS Board. Prof. Dennis Hoffman seconded the motion.

By a vote of 7 in favor, 0 opposed, and 0 abstentions, the motion was approved.

This item was placed on the January 30, 2015, Board agenda for an amended motion of approval due to the December 5, 2014 motion including an incorrect meeting date (by staff), which was not discovered until after the December meeting was adjourned.

Motion: Mr. Tom Manos moved to approve the Minutes of the October 24, 2014 Executive Sessions of the ASRS Board. Prof. Dennis Hoffman seconded the motion.

By a vote of 7 in favor, 0 opposed, and 0 abstentions, the motion was approved.

Motion: Mr. Tom Manos moved to approve the Minutes of the December 5, 2014 Public Meeting of the ASRS Board. Prof. Dennis Hoffman seconded the motion.

By a vote of 7 in favor, 0 opposed, and 0 abstentions, the motion was approved.

4. Approval, Modification, or Rejection of Recommended Administrative Law Judge's Decision Regarding Ms. Sharon Di Giacinto's Appeal Regarding the ASRS's Determination that the Domestic Relations Order Requirement Sharon Di Giacinto Remain the contingent Annuitant on ASRS Member Richard Hillis' Joint and Survivor 100% Annuity Option is an Impermissible Domestic Relations Order Term

Mr. Chris Munns, Assistant Attorney General, Solicitor General Section, was present for agenda item #4, to provide legal advice to the Board, if requested.

Ms. Jothi Beljan, Assistant Attorney General, made note to the Board that although the appellant in this case is Ms. Sharon Di Giacinto, Dr. Richard Hillis is the member and this decision directly and financially impacts him; therefore, Dr. Hillis was permitted to present his own case to the Office of Administrative Hearings (OAH). This will allow Dr. Hillis, if he is dissatisfied with the Board's decision, to have standing to appeal it to Superior Court.

Mr. Thomas Griffin, attorney for Ms. Di Giacinto, and Dr. Richard Hillis introduced themselves to the Board.

Mr. Griffin referred to his submission to the Board that outlined the specific amendments he is requesting on behalf of Ms. Di Giacinto and highlighted case law he believes supports this request. Specifically, Ms. Di Giacinto is requesting modifications to Conclusions of Law #14 and #15, of the Administrative Law Judge's Decision, to state that Ms. Di Giacinto has established a valid claim of equitable estoppel against the ASRS and because of that, Ms. Di Giacinto has met her burden of establishing that ASRS' June 2014 determination was improper or contrary to law.

Prior to presenting her position, Ms. Beljan requested that the Board not consider Dr. Richard Hillis' submission when making their decision on the basis that it is irrelevant to the case and Dr. Hillis had the opportunity to provide the supporting documents to the OAH prior to the hearing and he did not. Ms. Beljan proceeded in presenting her position while citing case law she believes contradicts Mr.

Griffin's conclusions, in addition to current statute, A.R.S. § 38-773 that does not provide any exceptions for the ASRS to grant Ms. Di Giacinto's request.

Prior to Dr. Hillis being provided an opportunity to address the Board, Mr. Munns advised the Board that they are limited to considering only the information that was presented for the OAH hearing; therefore, any new information received cannot be considered when making a decision.

Dr. Hillis advised the Board that he did not have a clear understanding that he would be allowed to participate in the OAH hearing based on the language in the letter from Ms. Beljan indicating that it would be up to the ALJ to determine if Dr. Hillis could participate. Based on this, Dr. Hillis believes the Board should be able to consider his submission. Dr. Hillis proceeded to address the Board providing background regarding the Domestic Relations Order (DRO) and his attempts to request a change to a straight life annuity.

Ms. Beljan requested to address some of Dr. Hillis' comments. Ms. Beljan stated that she advised Dr. Hillis approximately two months prior to the hearing date that there is not typically three parties involved in an appeal and she was unsure how the ALJ would handle the issue but that he should be prepared to present three copies of exhibits he wished to present at the hearing. She further stated that Dr. Hillis had the ability to file a motion with OAH and seek clarification. Ms. Beljan responded to questions from the Board.

Motion: Mr. Brian McNeil moved to go into Executive Session. Dr. Richard Jacob seconded the motion.

By a vote of 7 in favor, 0 opposed, and 0 abstentions, the motion was approved.

The Board convened to Executive Session at 9:21 a.m.

The Board reconvened to Public Session at 10:09 a.m.

Motion: Mr. Brian McNeil moved to reject the ruling of the Administrative Law Judge's Recommended Decision and modify the Decision pursuant to the appellant's request. The basis for the motion is the belief there was a reasonable reliance on what the parties were told by ASRS when accepting the Domestic Relations Order. Dr. Richard Jacob seconded the motion.

Prior to the vote, Mr. McNeil stated that although he made the motion, he did not feel it was complete. His intention is to reject only the portion of the ALJ Decision that address the issue of estoppel, specifically paragraph #14, page 7 and would be open to retracting his motion to present more specific modifications to the Decision. Mr. Munns advised the Board that they could vote on the motion before them and then make additional motions to clarify the modifications. Mr. Munns also provided the Board with some guidance regarding the language for the modifications based on their discussion.

Motion: Mr. Brian McNeil amended his motion and moved to reject the ruling of the Administrative Law Judge's Recommended Decision with respect to paragraphs #14 and #15, beginning with line 2, page 7, to add a period after "agency" and strike the remainder of the line, strike lines 3 and 4 in their entirety, and strike "not" in line 5. Additionally, strike "though" from line 1 of paragraph #14 to read, "It was acknowledged that equitable estoppel is a possible argument against a governmental agency." Paragraph #15 would read, "Therefore, Ms. Di Giacinto has met her burden to establish that the ASRS determination that the DRO was unacceptable was improper contrary to law."

Prior to a second to the amended motion, Mr. Munns advised that in order for paragraph #15 to read as dictated, paragraph #14 would need to be amended to reflect that equitable estoppel was established.

Mr. McNeil withdrew his motions. Dr. Jacob withdrew his second to the first motion.

Motion: Mr. Kevin McCarthy moved to modify the ruling of the Administrative Law Judge to specifically replace the phrase “is no longer financially feasible” with “may no longer be financially feasible” in Conclusion of Law #11 and correct Finding of Fact #11 to read, “An acceptable DRO is defined as an order that does not require the ASRS to provide any type, form, or time of payment of retirement benefit or retirement benefit option that is not provided under ASRS statutes and administrative rules.” Prof. Dennis Hoffman seconded the motion.

By a vote of 4 in favor, 3 opposed, and 0 abstentions, the motion was approved.

Mr. McNeil expressed that additional oversight by staff might be necessary.

5. Presentation, Discussion, and Appropriate Action Regarding 2015 ASRS Legislative Initiatives and Legislative Update

Mr. Pat Klein, Assistant Director, External Affairs, and Mr. Nicholas Ponder, Government Relations Officer, addressed the Board regarding the 2015 Legislative Session and the ASRS Legislative initiatives. Mr. Klein and Mr. Ponder presented the Bill Tracker, which summarizes ASRS 2015 legislative initiatives as well as other bills affecting the ASRS. Mr. Ponder advised the Board that the ASRS has secured sponsorship of its six bills.

The following bills have been assigned to the Government and Higher Education Committee:

- HB2338, ASRS; Disability Program – to remove “total” as it precedes “disability” to reduce confusion to members who may think they must be totally disabled to qualify for disability benefits. Currently there is not a meeting date set for this bill.
- HB2339, ASRS; Rules – ASRS 2015 Legislative Initiatives – remove “provided in rules” in A.R.S. § 38-703 due to this being related to something that the Social Security Administration has jurisdiction over, not the ASRS. Strike “subject to rules prescribed by the Board” in A.R.S. § 38-755. Currently there is not a meeting date set for this bill.
- HB2340 - ASRS 2015 Legislative Initiatives – protects the ASRS or the LTD Program from bad faith claims and requests the ASRS have the same protection from liability as ERISA Plans. Currently there is not a meeting date set for this bill.

The following Senate bills passed out of the Senate Finance Committee:

- SB1095, Community Colleges; Optional Retirement Plans – to specify the ASRS transfer member accounts of NON-RETIRED members only. The ASRS currently does not have a method for transferring the account of a retired member.
- SB1096 – ASRS 2015 Legislative Initiatives – to allow the ASRS to change its actuarial evaluation methods from Projected Unit Credit to Entry Age Normal or some other method as determined by the Board.
- SB1097 – ASRS; Health Insurance Benefits - ASRS 2015 Legislative Initiatives – a conforming legislation bill.

The following are bills that affect the ASRS but not initiated by the ASRS:

- HB2137, sponsored by Rep. McCune Davis, was presented last year as HB2212 and attached to HB2058 as an amendment which failed last year. This bill, if passed, would reduce the threshold from 30% to 15% and define “promotion”. Rep. McCune Davis believes this will address salary spiking.
- HB2351, sponsored by Rep. Fann, would change the definition of a member of PSPRS as it relates to fire chiefs based on whether they are regularly assigned to hazardous duty, as determined by that individual’s local board.
- SB1121, sponsored by Sen. Lesko, to strike the language “before July 1, 2015” from the statute thereby allowing anyone 65 and older to opt-out as long as they have not had prior ASRS membership and there will be an emergency effective date.

Mr. Ponder presented the Board with two newly proposed 2015 legislative initiatives as recommended by the External Affairs Committee (EAC). The first proposal addresses issues that arose from the 2011 SB1609, as well as the 2009 HB2118 regarding service purchase. The second proposal requests a modification to A.R.S. § 38-765 to not require the ASRS to pay interest on overpayments or underpayments to an individual.

Motion: Dr. Richard Jacob moved to approve the two additional 2015 legislative initiatives presented by staff. Permit staff to make all language changes and negotiate as necessary to obtain the most effective and efficient legislative provisions within the construct of today's discussion. Prof. Dennis Hoffman seconded the motion.

By a vote of 7 in favor, 0 opposed, and 0 abstentions, the motion was approved.

6. Presentation, Discussion, and Appropriate Action Regarding the Current Performance and Future Strategic Priorities of the Member Services Division (a FY15 Strategic Topic)

Mr. Dave King, Assistant Director, Member Services and Mr. Jeremiah Scott, Management Analyst, were present to discuss the current performance and strategic priorities of the Member Services Division (MSD) with the Board. They discussed the three program areas within the MSD, the accomplishments, challenges and efforts to continue to improve work processes and service level of the MSD.

Accomplishments that were highlighted were: the cross-training of staff within MSD in order to fill voids when necessary, service level goals continuously being met, and implementation of online processes and interactive tools for ASRS members to include the GPS, which is the first of its kind for public retirement systems in the nation. Mr. King and Mr. Scott also shared with the Board that the ASRS was recently honored with two Showcase in Excellence Awards from the Southwest Alliance for Excellence for the online refund process improvements and the online member statement processing improvements.

The challenges the MSD faces are: the shifting of more member contacts to online and lower-cost services, retaining a knowledgeable workforce and the shortage of the Technical Services Division development hours. Mr. King and Mr. Scott also identified efforts the MSD currently has underway: ASRS forms online initiative, MAC improvement plan and retiree secure site enhancements.

Mr. King addressed the strategic priorities for the MSD over the next three to five years. The top focus is to review how the ASRS uses Personal Identifying Information (PII) and how to move away from using social security numbers of its members, when not required, to improve auditing efforts with regard to member contacts and continue to get more members online.

Mr. King and Mr. Scott responded to questions from the Board. Mr. Tom Manos extended his appreciation for the efforts of the MSD and shared that he receives nothing but positive feedback from his employees regarding their experience with the ASRS.

7. Presentation, Discussion, and Appropriate Action Regarding the Director's Report as well as Current Events

Mr. Paul Matson provided a summary of the internal audit reports and the cash flow reports in the Director's Report, noting there were no errors or concerns found.

Mr. Matson advised the Board that Mike Smarik's last day as a Trustee was January 19, 2015, as he opted not to seek re-appointment due to his extremely heavy work load, with respect to a project that is of critical importance to the State. Mr. Matson stated that Mr. Smarik served the ASRS Board from March 21, 2012 to January 19, 2015. During his term, Mr. Smarik served three terms as Vice-Chair of the Board, three terms as Vice-Chair of the Operations and Audit committee, both from 2012-2015 and served one term on the Investment Committee. Mr. Matson expressed that Mr. Smarik has been a tremendous asset to the ASRS and has always acted in an extremely ethical and diligent manner during his tenure with the ASRS Board. Mr. Matson shared the following comments by himself and staff:

"The impact of Mr. Smarik's efforts significantly and positively affected the performance of a \$34 billion dollar fund, the Pension Fund, Health Insurance and Disability and the wellbeing of over half a million individuals and their families, and as a result assisted the overall health of the State."

"Mike was a soft spoken leader who earned the respect of staff and fellow Trustees with the unobtrusive way he added clarity and value to every discussion he participated in. He was a consistent proponent, and always supportive of efforts to raise the caliber of the agency's productivity, sustainability, customer service, risk management and overall effectiveness, in order that the ASRS remain a trusted State institution."

"Mike's involvement on the Operations and Audit Committee as well as the ASRS Board provided a practical and business-oriented knowledge base that was truly appreciated by staff. Mike offered insights that were specific to our employer-partners' needs that helped staff identify inclusive approaches to problem solving. Mike consistently presented a calm, professional, and credible demeanor in all situations and his business expertise will be missed by the Board and this agency."

"As a result and on behalf of the staff, I [Mr. Paul Matson] would like to say that it has been a tremendous pleasure to have worked with Mike and the ASRS will wish him well in the future and look forward to our continuing relationship."

The Board thanked Mr. Matson for his comments and shared his sentiments. Mr. Matson advised the Board that he does not have an indication regarding when the Trustees vacancies will be filled at this time.

8. Presentation and Discussion with Respect to Informational Updates from Prior and Upcoming Committee Meetings

a. Operations and Audit Committee (OAC)

Mr. Jeff Tyne announced that the next OAC meeting will be held on March 10, 2015 at 10:30 a.m. in the 14th floor conference room and will focus on the five-year strategic initiatives plan.

b. External Affairs Committee (EAC)

Mr. Brian McNeil announced that the next EAC meeting will be held on February 13, 2015 at 10:30 a.m. in the 14th floor conference room and will include updates regarding the legislative session and initiatives.

c. Investment Committee (IC)

Tom Connelly announced that the next IC meeting will be held on February 23, 2015 at 2:30 p.m. in the 14th floor conference room and will focus on the strategic asset allocation plan.



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Paul Matson
Director

MEMORANDUM

TO: Mr. Kevin McCarthy, Chair, Arizona State Retirement System (ASRS) Board

FROM: Mr. Paul Matson, Director

DATE: February 18, 2015

RE: **Agenda Item #3:** Presentation Regarding the Showcase in Excellence Awards from the Southwest Alliance for Excellence (SWAE) for Online Statements and Online Refunds

The Southwest Alliance for Excellence, formerly the Arizona Quality Alliance, recognizes organizations for excellence in quality, performance and outcomes through a program modeled after the Malcom Baldrige Award. The SWAE multi-tiered process "assists organizations in Arizona, Nevada and Utah along their path to achieving performance excellence, which means being role models in customer and employee satisfaction, sound management, innovation and results," the organization noted in its announcement of the awards.

The **Showcase in Excellence Award** recognizes a team for one specific process that is innovative or a cutting-edge approach. It may be used as a role model in comparison to competitors or result in exceptional performance. It could also be a routine process performed in an extraordinary manner.

The Arizona State Retirement System (ASRS) was one of five organizations honored through the Southwest Alliance for Excellence (SWAE) 2014 Performance Excellence Program. The ASRS was recognized for two process improvement awards: 1) Online Member Statements, and 2) Online Refund Applications.

Online Member Statements. This project involved discontinuing the mailing of more than 400,000 individual member statements in favor of greatly enhanced online statements. Members now have real-time data related to their ASRS account and retirement benefits. Moving to online statements and annual birthday email cards to members encouraging them to check their statement online has produced more than \$200,000 in annual savings while maintaining overall member satisfaction.

Online Refund Process. This project involved creating an online application for members to use to apply for a refund of their contributions. The user-friendly application takes members step-by-step through the refund application, replacing a previous paper version that was sometimes difficult to navigate and prone to errors. The online application is faster, more accurate and requires substantially less staff processing and has proven popular with members.



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Paul Matson
Director

MEMORANDUM

TO: Mr. Kevin McCarthy, Chair, Arizona State Retirement System (ASRS) Board

FROM: Mr. Paul Matson, Director
Mr. Patrick Klein, Assistant Director, External Affairs Division
Mr. Nick Ponder, Government Relations Officer

DATE: February 13, 2015

RE: **Agenda Item #4:** Presentation, Discussion and Appropriate Action Regarding 2015 ASRS Legislative Initiatives and Legislative Update

Purpose

To discuss ASRS 2015 legislative initiatives as well as discuss legislative proposals by other organizations or persons that affect the ASRS.

Recommendation

Information item only; no action required.

Background

The ASRS staff has been working with Legislative Counsel, legislative staff, and legislator's to move ASRS 2015 legislative initiatives forward.

An updated hard copy of the ASRS Bill Tracker will be provided at the meeting. The link to the most up-to-date bill tracker can be found any time at <https://www.azasrs.gov/content/legislation>.

Arizona State Retirement System

Board of Trustees

Investment Program Updates

February 27, 2015

Presented by:

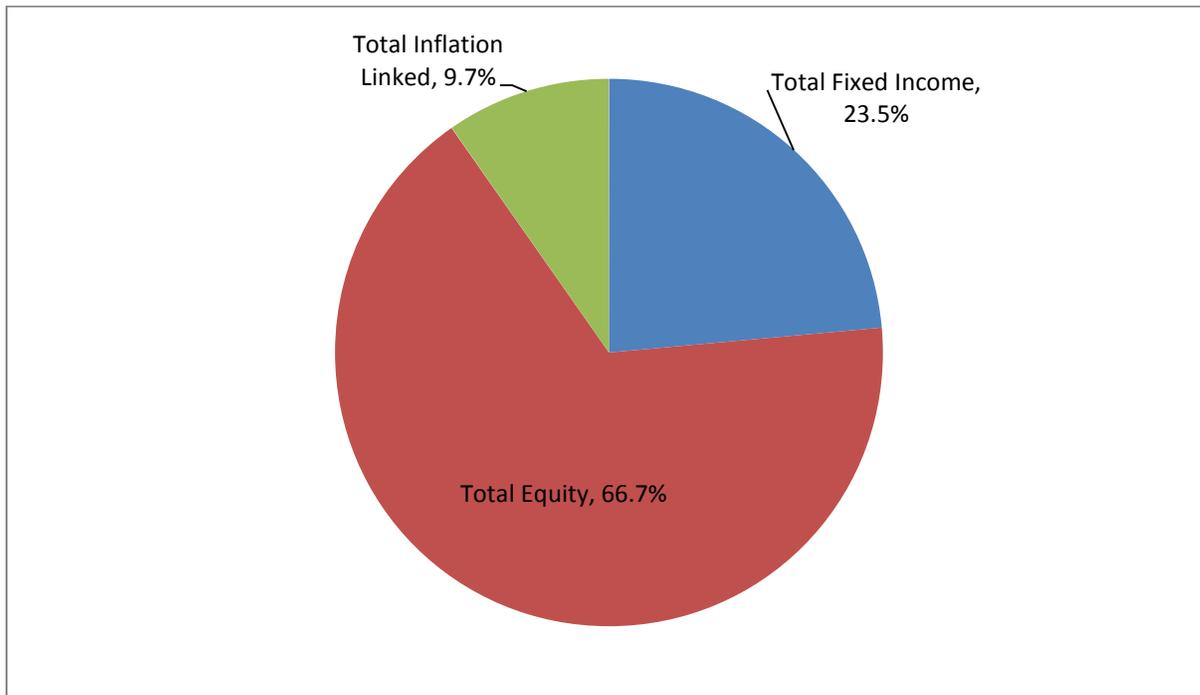
Gary R. Dokes, Chief Investment Officer, ASRS
David Underwood, Assistant Chief Investment Officer, ASRS
Karl Polen, Head of Private Markets Investing, ASRS
Al Alaimo, Fixed Income Portfolio Manager, ASRS
Eric Glass, Portfolio Manager of Private Markets, ASRS



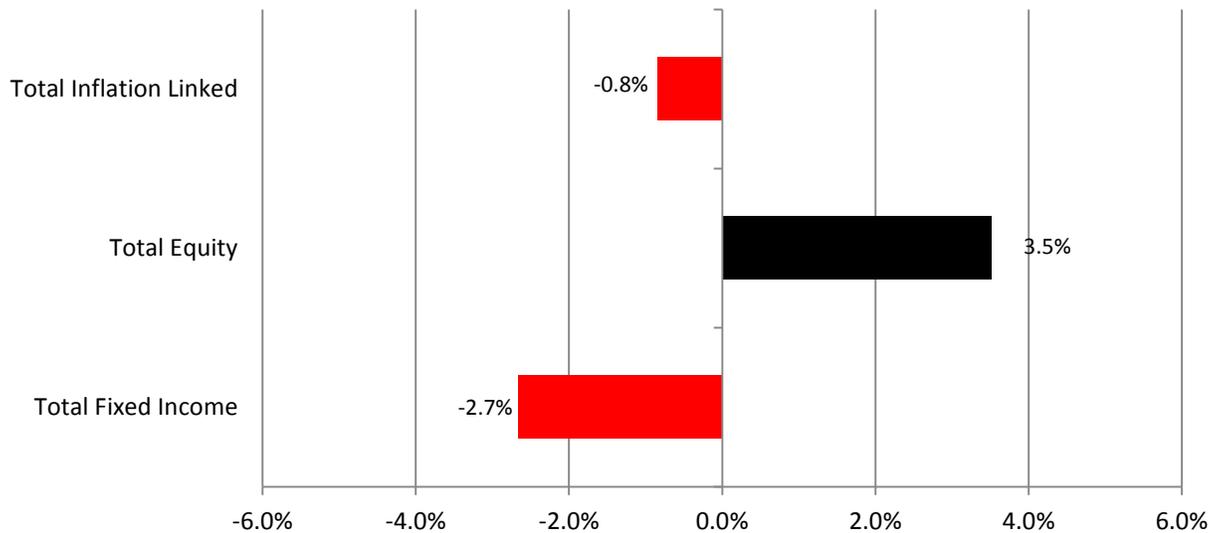
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ACTUAL PORTFOLIO



ACTUAL PORTFOLIO (ASSUMED GTAA ALLOCATION VS. ADJUSTED SAA POLICY *)



*Real Estate and Private Equity actual weight is equal to policy weight during the implementation of the asset class.

*Over/Underweights include both GTAA positions as well as IMD tactical considerations.

Note: Opportunistic & Private Debt, Opportunistic Private Equity, Farmland & Timber, Real Estate and Private Equity market values are reported on a quarter-lag and adjusted to include the current quarter's cash flows. Within the Assumed GTAA Allocation vs. Adjusted SAA Policy chart, Real Estate was prorated to domestic equity, international equity and fixed income. Private Equity was prorated to domestic equity.

Pension (Plan, System, HBS Assets) ASRS Market Value Report As of: Friday, January 30, 2015

Account Manager	Account Manager Style	Fixed Income		Equity		Inflation Linked		Total	Pct of Fund
		Active	Enh/Passive	Active	Enh/Passive	Active	Enh/Passive		
State Street B&T: Boston	Operating Cash (non-assetized)		54,125,995					54,125,995	0.16%
	Operating Cash (assetized)		84,754,003					84,754,003	0.25%
	Cash Total							\$138,879,997	0.41%
	Cash Policy Range								0.00%
GTAA Managers (2)	Active GTAA	1,134,132,831						1,134,132,831	3.37%
Blackrock: San Francisco	Passive (Intermediate Gov Credit)		24,435,446					24,435,446	0.07%
ASRS: Phoenix	Enhanced Passive F2		1,913,120,766					1,913,120,766	5.68%
Blackrock: San Francisco	Passive (US Debt Index)		447,481,884					447,481,884	1.33%
	Core Fixed Income Total							\$3,519,170,928	10.45%
	Core Fixed Income Policy								13.00%
Columbia: Minneapolis	Active	801,832,454						801,832,454	2.38%
JP Morgan: Indianapolis	Active	476,627,006						476,627,006	1.42%
	High Yield Fixed Income Total							\$1,278,473,215	3.80%
	High Yield Fixed Income Policy								5.00%
	US Fixed Income Total							\$4,797,644,142	14.25%
	US Fixed Income Policy Range: 8% - 28%								18.00%
PIMCO (local): Newport Beach	Active	211,533,020						211,533,020	0.63%
Ashmore (blended): London	Active	209,160,811						209,160,811	0.62%
	EM Debt Total							\$420,693,830	1.25%
	EM Debt Policy								4.00%
	Opportunistic Debt							\$1,092,834,407	3.25%
	Opportunistic Debt Policy Range: 0% - 10%								0.00%
	Private Debt Total							\$1,478,310,235	4.39%
	Private Debt Policy								3.00%
	Fixed Income Total							\$7,928,362,612	23.54%
	Total Fixed Income Policy Range: 15% - 35%								25.00%
Intech: FL	Active (Growth)			477,289,652				477,289,652	1.42%
LSV: Chicago	Active (Value)			799,259,047				799,259,047	2.37%
GTAA Managers (2)	Active GTAA			867,983,607				867,983,607	2.58%
ASRS: Phoenix	Passive E2				5,011,472,705			5,011,472,705	14.88%
ASRS: Phoenix	Enhanced Passive E7				778,643,247			778,643,247	2.31%
ASRS: Phoenix	Enhanced Passive E8				538,220,000			538,220,000	1.60%
ASRS: Phoenix	Risk Factor Portfolio				534,422,530			534,422,530	1.59%
	Large Cap Equity Total							\$9,007,313,796	26.75%
	Large Cap Policy								23.00%
Wellington: Boston	Active (Core)			415,048,895				415,048,895	1.23%
CRM: New York	Active (Value)			99,511,937				99,511,937	0.30%
ASRS: Phoenix	Passive E3 (Growth)				517,397,104			517,397,104	1.54%
ASRS: Phoenix	Passive E4 (Value)				514,318,044			514,318,044	1.53%
	Mid Cap Equity Total							\$1,546,275,980	4.59%
	Mid Cap Policy								5.00%
TimesSquare: New York	Active SMID (Growth)			451,835,103				451,835,103	1.34%
DFA: Santa Monica	Active (Value)			371,319,595				371,319,595	1.10%
Champlain:Vermont	Active (Core)			91,582,683				91,582,683	0.27%
ASRS: Phoenix	Passive E6				475,972,183			475,972,183	1.41%
	Small Cap Equity Total							\$1,390,709,564	4.13%
	Small Cap Policy								5.00%
	U.S. Equity Total							\$11,944,299,340	35.47%
	US Equity Policy Range: 26% - 38%								33.00%
Brandes: San Diego	Active (Value)			548,532,560				548,532,560	1.63%
GTAA Managers (2)	Active GTAA			970,613,062				970,613,062	2.88%
American Century	Active (EAFE)			498,314,634				498,314,634	1.48%
Trinity Street	Active (EAFE)			308,842,731				308,842,731	0.92%
Thompson Siegel Walmsley	Active (EAFE)			148,531,185				148,531,185	0.44%
Blackrock: San Francisco	Passive (EAFE)				2,241,260,342			2,241,260,342	6.66%
	Large Cap Developed Non-US Equity Total							\$4,718,315,181	14.01%
	Large Cap Developed Policy								14.00%
AQR: Greenwich	Active (EAFE SC)			167,957,574				167,957,574	0.50%
DFA: Santa Monica	Active (EAFE SC)			197,314,274				197,314,274	0.59%
Franklin Templeton: San Mateo	Active (EAFE SC)			371,514,033				371,514,033	1.10%
Blackrock: San Francisco	Passive (EAFE SC)				430,709,757			430,709,757	1.28%
	Small Cap Developed Non-US Equity Total							\$1,167,498,233	3.47%
	Small Cap Developed Policy								3.00%
William Blair: Chicago	Active (EM)			472,216,275				472,216,275	1.40%
Eaton Vance: Boston	Active (EM)			468,496,496				468,496,496	1.39%
LSV: Chicago	Active (EM)			293,819,765				293,819,765	0.87%
Blackrock: San Francisco	Passive (EM)				655,703,864			655,703,864	1.95%
	Emerging Markets Equity Total							\$1,890,236,399	5.61%
	Emerging Markets Policy								6.00%
	Non-US Equity Total							\$7,776,049,813	23.09%
	Non-US Equity Policy Range: 16% - 28%								23.00%
	Private Equity Total							\$2,369,211,641	7.04%
	Private Equity Policy Range: 5% - 9%								7.00%
	Opportunistic Equity							\$382,378,334	1.14%
	Opportunistic Equity Policy Range: 0% - 3%								0.00%
	Equity Total							\$22,471,939,128	66.73%
	Total Equity Policy Range: 53% - 73%								63.00%
Gresham: New York						545,199,435		545,199,435	1.62%
GTAA Managers (2)	Active GTAA					211,964,872		211,964,872	0.63%
	Commodities Total							\$757,164,307	2.25%
	Commodities Policy Range: 1% - 7%								4.00%
GTAA Manager (1)	Active GTAA					36,775,802		36,775,802	0.11%
	Real Estate Total							\$2,065,223,972	6.13%
	Real Estate Policy Range: 6% - 10%								8.00%
	Infrastructure Total							\$300,000,000	0.89%
	Infrastructure Policy Range: 0% - 3%								0.00%
	Farmland & Timber Total					151,503,684		\$151,503,684	0.45%
	Farmland & Timber Policy Range: 0% - 3%								0.00%
	Opportunistic Inflation Linked Total							\$0	0.00%
	Inflation Linked Total							\$3,273,891,963	9.72%
	Inflation Linked Policy Range: 7%-15%								12.00%
	TOTAL Amounts	\$4,311,610,111	\$3,616,752,501	\$10,773,796,344	\$11,698,142,784	\$3,425,395,647	\$0	\$33,674,193,703	Total Fund
	TOTAL Percent	12.80%	10.74%	31.99%	34.74%	10.17%	0.00%		

Asset Class	Actual Portfolio	SAA Policy: Target (Range)	Rebalancing		Assumed - Adjusted		Policy Band check	Passive Min	Passive Actual
			Assumed Port	Adj Policy	% diff	\$ diff			
Cash	0.41%	0%	0.00%		0.00%				
Core	10.45%	13%						50%	73%
High Yield	3.80%	5%							
US Fixed Income	14.25%	18% (8-28%)	13.97%	18.52% (9-29%)	-4.55%	-\$1,532,991,136	OK		
EM Debt	1.25%	4%		4.00%					
Opportunistic Debt	3.25%	0% (0-10%)	3.25%	0% (0-10%)	3.25%	\$1,092,834,407	OK		
Private Debt	4.39%	3%		3.00%					
Total Fixed Income	23.54%	25% (15-35%)	22.86%	25.52% (16-36%)	-2.67%	-\$898,346,223	OK		
Large Cap	26.75%	23%							
Mid Cap	4.59%	5%							
Small Cap	4.13%	5%							
US Equity	35.47%	33% (26-38%)	37.01%	33.77% (27-39%)	3.24%	\$1,090,736,112	OK	50%	67%
Developed Large Cap	14.01%	14%							
Developed Small Cap	3.47%	3%							
Emerging Markets	5.61%	6%							
Non-US Equity	23.09%	23% (16-28%)	22.60%	23.47% (16-28%)	-0.87%	-\$291,438,138	OK	30%	50%
Private Equity	7.04%	7% (5-9%)	7.04%	7.04% (5-9%)	0.00%	\$0	OK		
Opportunistic Equity	1.14%	0% (0-3%)	1.14%	0% (0-3%)	1.14%	\$382,378,334	OK		
Total Equity	66.73%	63% (53-70%)	67.78%	64.27% (54-71%)	3.51%	\$1,181,676,308	OK		
Commodities	2.25%	4% (1-7%)	2.00%	4.07% (1-7%)	-2.07%	-\$698,057,968	OK		
Real Estate	6.13%	8% (6-10%)	6.02%	6.13% (4-8%)	-0.11%	-\$36,775,802	OK		
Infrastructure	0.89%	0% (0-3%)	0.89%	0% (0-3%)	0.89%	\$300,000,000	OK		
Farmland & Timber	0.45%	0% (0-3%)	0.45%	0% (0-3%)	0.45%	\$151,503,684	OK		
Opportunistic I/L	0.00%	0% (0-3%)	0.00%	0% (0-3%)	0.00%	\$0	OK		
Total Inflation Linked	9.72%	12% (8-16%)	9.37%	10.21% (6-14%)	-0.84%	-\$283,330,085	OK		
Total	100.00%	100%	100%	100%	0.00%	\$0		30%	43%
								Internally Managed Portfolios:	
								\$9,749,144,048	
								29%	
Total GTAA									
Bridgewater	\$2,642,323,685	7.8%							
Windham	\$579,146,489	1.7%							
Total	\$3,221,470,175	9.6%							
Policy	10% ±5%	OK							
								Opportunistic definitions:	
An investment in a category that is not included in the ASRS Asset Allocation policy and represents an investment opportunity that is tactical in nature.									

(Notable changes from the previous month are highlighted in RED)

FEBRUARY 2015

U.S. EQUITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**

- Economic data suggests stable, sub-trend growth into 2015.
- U.S. unemployment, persistently high until recently is displaying sustained improvement although income growth has not despite some anecdotal evidence of isolated upward pressure on wages.
- At risk longer term due to stimulus measures, inflation remains generally subdued.
- Liquidity remains ample; Federal Reserve policy remains accommodative without its asset purchases program.
- Overall U.S. corporate profits are still growing, but with decelerating momentum; revenues have begun trending up modestly although high profit margins are no longer expanding.

2. Valuations: **NEUTRAL**

- US equity markets backpedaled coming in 2015 as macro data and earnings reports were mixed, oil and copper prices continued to fall, and foreign exchange market volatility rose.
- Though marginally rich, they remain near historic averages: S&P 500, 14.3x- 6.1x, S&P MID, 16.8x-19.1x; S&P SC600, 17.0x-19.9x.
- Historic P/Es imply advances of 5-10% for mid and small caps; 9-12% for S&P 500.
- Still rising earnings and low yields on 10-Yr Treasury notes combine for equity risk premiums that are favorably above the 4.0% long-range average for large caps, whereas those of mid- and small-caps are around 4.0%.

3. Sentiment: **NEUTRAL**

- Short-term caution has moved up a notch following the sustained advance of equity markets without a significant pullback throughout 2013 and 2014.
- Lessened near-term equity market volatility (i.e., VIX Index) still reflects growing acceptance of risk-oriented assets.
- The relative strength of the U.S. Dollar continues to encourage assets into U.S. equities.

Commentary:

Early in to 2015, over-all allocation to U.S. stocks is 31.9% of Total Fund ("Plan"), reflecting both 2014's tactical views and the result of porting assets from the class to the Plan's private equity and real estate asset classes. By sub-class, the large-cap component is 23.0% of Plan; mid-cap is 4.6% and small 4.2%, respectively.

Large-cap stocks outperformed small-cap and mid-cap stocks over the course of 2014, the reverse of that seen in 2013, as the latter recalibrated comparatively rich valuations. Asset flows into passive index funds also drove some of that outperformance and in the process elevated valuations of all classes of U.S. stocks. Although more upwardly biased in mid-February, the US equity markets had trailed off in January as

participants weighed mixed earnings reports and the macro implications of sliding oil and commodity prices. Volatility ticked up as well, affected by an abrupt rise in foreign exchange market volatility brought on by dual surprise policy announcements from the Swiss National Bank and the Bank of Canada.

Nonetheless, valuations of domestic equities are nearly unchanged from late 2104, as are underlying fundamentals. Though they are ample, valuations still don't greatly surpass long-range levels. Top down 2015 EPS growth estimates are a generally bullish 9%. The positive impact from lower oil price, whose sectors have seen the greatest downgrades, is expected to feed through into upgrades to sectors outside of energy as 2015 progresses. The current economic environment in the U.S. looks fairly good in comparison to most alternatives. Payout ratios are still conservative; ongoing dividend growth should also support equities prices. Interestingly, cash levels in U.S. institutional portfolios have stayed at a relatively defensive average 10.6% of portfolio assets, similar to four to six months ago and versus an historic 5.0% median.

A strong USD is often a counterpart for weak USD commodity prices; this seems to be the case now. Whether driven by cyclical forces or secular factors, prices of commodities overall, are suppressed most visibly the energy-related. These soft prices confirm a low inflation setting, which, together with responsible monetary policy is helping to firm-up the USD despite a tepid economic setting. Robust investment flows into equities from outside the U.S., substantiated by anecdotal evidence, are more than counterbalancing whatever headwinds the USD makes for corporations. **Moreover, U.S. small and mid-cap firms derive fewer revenues from abroad than large-cap multinationals, an advantage amid USD strength and the stronger U.S. economic backdrop.**

Concern in the U.S. about deflation, as opposed to disinflation, has crept in, accelerated by the fall-off in the prices of oil and other commodities. The annualized CPI rate moving below 1% in December added to this concern. The U.S. isn't immune to deflation, appearing better protected than other economies, but it seems odd against a previous recent worry that (U.S.) QE would instead spark inflation. Consequences of deflation are penchants to delay, in aggregate, personal consumption and business spending (foregoing near term purchase awaiting sale prices); and weakened capacity to justify, or sustain, debt (debt costs remain fixed; value of purchases fall). Although the U.S. is experiencing an economic sector-specific decline in prices, not deflation, none of the propensities to slow spending have yet to surface. They do, however, bear monitoring as they can be one indication of a weakening capital market.

The "NEUTRAL" opinions on Sentiment and Valuations are unchanged as is the "POSITIVE" opinion on Fundamentals.

CURRENT PORTFOLIO POSTURE: OVERWEIGHT vs. SAA target

NON – U.S. EQUITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **NEUTRAL**
 - Eurozone GDP growth remains subpar and that of the lesser-developed economies also remains off pace.
 - Relatively inexpensive and available money supports a shift toward risk assets.
 - Monetary and economic policies are focused on controlling economic growth and fiscal stability.

2. Valuations: **POSITIVE**

- Reasonable global valuations relative to U.S.; price-to-book values of **1.5x - 1.8x**; P/Es of **13.7x – 15.4x** on trend earnings.
- Dividend yields are incrementally more favorable -ranging from 1.5x to 1.6x that of the S&P500.

3. Sentiment: **POSITIVE**

- Money flows continue toward both U.S. and developed markets non-U.S. equities; excepting the emerging economies markets. investors are less guarded and remain constructive on global risks despite some near term risk aversion volatility.
- **Major non-U.S. markets performance has strengthened early in to 2015.**

Commentary:

Global growth is languishing in the low 3% range and is destined for some time to grow slowly. Of the big economies, the US and UK look most solid. Japan is suffering from adverse demographics, the euro area from poor past policy. China is slowing and might be weaker than it looks. Lower oil prices will subdue inflation for now. USD strength and weaker-than-forecast Chinese demand threaten commodity exporters. The US is the ray of hope among the advanced countries, followed by the UK; both are moving towards higher interest rates in mid-2015.

Now that U.S. QE is holstered and US monetary policy inches toward normalcy, the markets – currencies, commodities, stocks and high-yield bonds – have responded with renewed volatility. Foreign exchange has also played a part. The relative valuation of the USD is pivotal for US-based investors. Expectations are for continued USD strength well into 2015. Sensing this may blunt potentially solid returns resulting from attractive valuations, the equity markets are churning over the short run.

Coming in to 2015, investors misinterpreted the decline in oil and other energy prices since mid-2014 as a symptom of weakening global economic activity. That was understandable since these declines were the third largest since 1980 and there isn't much economic momentum outside the U.S. Instead, these price declines are supply-driven, much like the late 1980s.

The price decline will no doubt help petroleum importing economies. Yet capital markets are wary seeing these declines not as supply driven, but a symptom of underlying global economic weakness. It has been apparent that global growth is tepid and irregular. But that is less of a factor in affecting the demand side of the oil and natural gas situation. In contrast, many companies, capital markets and economies benefit from lower oil prices. Yet persistence of the weak global economic growth effect case has meant most haven't yet experienced a response to lower energy prices. Prices of oil have moved below the marginal cost of supply high cost venues like shale and offshore. As well, Saudi Arabia is firm in its stance of maintaining share at the expense of both OPEC peers and non-OPEC producers. This will only hasten the shake out of marginal producers, but sets the stage for a sustained period of lower oil prices.

Despite the complicated market environment and recent volatility across the capital markets, the case is still favorable for equities, especially non-U.S. markets. Central bankers globally are starting to take the lead of the U.S. in managing QE against weak economic. Several have initiated more accommodation in monetary policies. While results might be obscure, monetary stimulus has proven to elevate equities prices. Bank of Japan and European Central Bank QE programs support the broader risk taking even if it comes at the expense of weakened currency exchange rates. The prospect of somewhat better relative growth and lower capital markets valuations make Europe and Japan attractive over the short term, but other obstacles may hinder

economic progress. With little growth, no inflation and scant job creation, the Eurozone is subject to political risk. This is one risk that could temper investor sentiment.

The paradox is that available liquidity is supportive for re-rating equity risk premiums. Equity risk premiums on international stocks of over 5% exceed those of the U.S. by about 100 basis points. Both imply ample compensation for investment, more so for the former. Falling yields among high-yield bonds and other compressions of credit spreads are further magnifying the relative advantage available in current equity risk premiums.

For the capital markets, the diverging growth prospects of the US, on one hand, and the Eurozone and Japan, on the other, add up to one thing: dollar strength. Add to that, that the Fed will be tightening rates while the BOJ and ECB will be on a balance-sheet expansion tack, then the scope for considerable and extended USD strength is magnified. With the Fed likely to raise rates more slowly than in previous cycles, stock values and bond yields will move according to the USD. Risk assets are likely to continue attracting investment.

Emerging markets (EM) overall, are enigmatic, but of late are trading more favorably. Having undergone two years of price correction, valuations for the most part remain attractive as compared to those of the developed economies. But an inherent “value trap” persists, as economic fundamentals continue to shift about for the larger countries, weaken for those with large external debt balances, yet are surprisingly solid for many others. Up until recently, capital was withdrawn indiscriminately from EM equity markets, despite select opportunities at the specific company level. Risk of capital flight from EM lingers. Therefore, Staff intends to maintain the modest under-allocation versus SAA policy target while these countervailing forces play out.

Staff has kept U.S. and overall Non-U.S. equities allocations more neutral to SAA policy since late 4Q2013. It had wanted to see sustainably stronger global economic growth relative to that of the U.S. before increasing the relative proportion of Non-U.S. equities. **As those preconditions have yet to materialize, it will continue the current neutral versus policy stance.**

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target

FIXED INCOME

Primary Markets Metrics & Indicators:

1. Fundamentals: **NEUTRAL**

- Over the past few years, fundamentals in the fixed income markets have been dominated by an extremely accommodative monetary policy by the Federal Reserve. This has included massive, unprecedented bond buying programs of both treasury bonds and agency MBS securities known as “quantitative easing” that began in 2009 during the credit crisis and ended for the most part in 2014. The fear for bond investors had been that the cessation of quantitative easing by the Fed would lead to higher long-term rates. **Despite the effective end of quantitative easing by the Fed and the possibility of further tightening in monetary policy later this year through the raising of the Fed Funds rate from near zero levels, long-term U.S. interest rates have recently fallen to record lows and may remain low by historical standards for quite some time for a number of reasons. These include slowing growth and disinflationary (or deflationary) pressures in many regions of the world including Europe and China, accommodative monetary policies in other countries including**

most notably the recent adoption of quantitative easing by the European Central Bank (“ECB”), and exceptionally low competing long-term interest rates in other developed countries.

2. Valuations: **NEGATIVE**

- The core fixed income market is relatively unattractive due to low overall yields as Treasury rates remain at low levels and investment-grade credit spreads are relatively tight. That being said, core fixed income remains a safe haven in times of market turbulence and tends to perform well when risky assets such as equities sell off.
- With a benign outlook for corporate defaults (excluding the energy sector of the high yield market) and an overall demand in the market for yield, the valuation of high yield bonds is less attractive than in the immediate years after the credit crisis of 2008-2009. That being said, in the fourth quarter of 2014, both spreads and yields spiked in the high yield market as due to technical selling pressure and a sharp drop in oil prices which hurt the outlook for bonds in the energy sector. Despite the potential for defaults in the energy sector, the outlook for the vast majority of industries the high yield market remains quite favorable and we believe the high yield market will likely achieve low to mid-single-digit returns this year.
- While emerging market debt denominated in local currencies offers attractive yields, it comes with the added risk that emerging market currencies depreciate in value relative to the U.S. dollar resulting in poor returns as had happened both in 2013 and 2014. Of most concern is the potential for a sustained period of US dollar appreciation as has occurred periodically in the past (such as the 1990’s) that could adversely affect the returns of EM local currency debt going forward. In December 2014, we withdrew \$275 million from our emerging market debt managers to fund capital calls from a number of strategies including private debt.
- Private debt offers the most attractive opportunity in the fixed income markets with double-digit yields readily available for investors willing to accept illiquidity. We continue to identify new opportunities to increase our overweight in this asset class vs. the 3% SAAP target.
- Select areas of opportunistic debt such as distressed debt (both corporate and structured credit) and excess mortgage-servicing rights (“MSRs”) also offer opportunities to potentially achieve double-digit returns.

3. Sentiment: **NEUTRAL**

- Following a multi-decade period of declining interest rates, IMD has modest concerns that investors sentiment is shifting away from fixed income. That being said, going forward, IMD believes demand will continue for income producing assets particularly those which offer a yield premium.

Commentary:

IMD remains underweight in its overall fixed income target due to the relatively low yields offered in the public fixed income markets as well as the risk of potentially higher treasury rates at some point in the future. ASRS is currently underweight in its SAAP target for core fixed income, high yield and emerging market debt while being overweight in private debt. While core fixed income offers important defensive characteristics to potentially balance out the overall risks of the total fund portfolio, low levels of U.S. Treasuries and generally tight spreads in the investment-grade bond markets make it generally unattractive. In high yield, which historically is less sensitive to higher interest rates, spreads have compressed to levels which make potential returns less compelling than in prior years. In emerging market debt, we are concerned about the currency risk embedded in the local currency bond markets of this asset class as well as weakened fundamentals in a number of major emerging market countries.

IMD sees the most attractive opportunities in fixed income in select credit markets -- particularly private debt and opportunistic debt -- where compelling yield and total return opportunities exist. Opportunistic debt includes a number of mandates mostly in distressed debt that are likely to provide very attractive returns.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target

REAL ESTATE

Primary Market Metrics & Indicators:

1. Fundamentals: POSITIVE

- Improved levels of demand and easing credit conditions, combined with broad improvement in the economy, are supportive of continued expansion of commercial lending and building. Better levels of occupancy while there is a lack of construction has resulted in rising rents.
- Our review of property market fundamentals leads to emphasize apartments, industrial properties, medical office buildings, senior housing self-storage, and student housing in our current investing efforts for demographic and macro policy reasons.
- There are relatively few foreclosures on high quality property, but there continues to be pressures on refinancing of legacy leverage structures and we participate in those transactions through several of our manager relationships.
- Single family housing continues to exhibit tight supply and moderate demand driven by healing household balance sheets, improved employment conditions, and continued affordability. This should lead to reacceleration of new construction and continued moderate price increases. Recovery in construction and NOI has been led by apartments to date.

2. Valuations: NEUTRAL

- On a total market basis, valuations have recovered from recession lows but are still about 5% below prior peak. However, coastal markets have rebounded more strongly than interior markets.
- High quality coastal market properties are trading at historic low cap rates; however these cap rates still reflect approximately a normal spread to treasury. The financing market for assets of this quality has recovered and supports these valuations by providing fixed rate financing that mitigates the risk of later cap rate expansion. International investors looking for safe assets have contributed to demand in the coastal markets.
- Recent increases in treasury rates do not appear to have affected commercial real estate valuations. Many observers believe that ~100bps of rate increase was already discounted into cap rates.
- At the end of **December**, REITs are trading at a **7% premium** to NAV with an average dividend yield of **3.7%**. This reflects a **148bps** spread to the 10 year treasury, which is a bit higher than the historical average of 108bps.

3. Sentiment: POSITIVE

- U.S. focused real estate fund raising rose 13% to \$76 billion per year. U.S. focused dry powder has trended down to approximately \$80 billion.
- Global commercial real estate transaction volume peaked at around \$700 billion in 2007, but dropped to about a third of that during the global financial crisis. Current volume of approximately \$550 billion is double the recession trough, but still well below the peak.
- Debt availability has improved considerably since the depth of the recession, but is still tight by historic standards for all but the most desirable properties. Construction financing remains a considerable challenge, even for well justified projects.

Commentary:

IMD continues to implement its separate account real estate strategic manager program. ASRS 2015 real estate pacing plan called for \$700 million to \$1.2 billion in new commitments; including \$500 to \$750M allocated to new managers, \$100M to \$200M in closed-end funds, and \$100M to \$300M to existing separate account managers.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target (in program funding/build-out phase)

PRIVATE EQUITY

Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**

- The U.S. economy continues to show steady improvement.
 - ◇ Oil has recently undergone a significant price correction which will reduce service costs and temper production growth in the medium term. Debt markets have locked up and equity transactions will take time to sort out. We expect industry consolidation at the margin favoring low cost producers with less leverage and more production hedged.
 - ◇ Healthcare is being reshaped to implement the requirements of “Obamacare”
 - ◇ The U.S. continues to be a global leader in technology innovation.
- Europe continues to struggle in recovering from the financial crisis with the ECB increasing its stimulus efforts by buying €60B per month. Its problems are exacerbated by a unified currency without unified fiscal policy and it is expected to experience a very slow recovery.
- Emerging markets have slowed while the largest emerging markets are transitioning to focus on domestic consumption.

1. Valuations: **NEUTRAL**

- US median purchase price multiples in 2014 were 8.9x, down from the 10.0x 2013 levels (which were close to the previous peak).
- The leveraged loan and high yield debt markets were active in 2014 but down from 2013 highs. Single B high yield spreads have widened to ~530bps.
- The US median Debt/EBITDA ratio of 5.8x in 2014 was down from 6.5X in 2013 (slightly above the previous peak).

2. Sentiment: **NEUTRAL**

- Globally, \$495B (994 funds) have closed in 2014 compared to \$528B (1,187 funds) in 2013. Dry powder of nearly \$1.2T globally has remained flat.
- The global number of buyout deals rose from 3,260 in 2013 to 3,423 in 2014 while the aggregate value of deals increased from \$302B to \$332B.
- Exits were up in 2014 to 1,691 from 1,622 in 2013 while the 2014 aggregate value of \$441B was considerably higher than the \$330B in 2013.
- The IPO market in 2014 remained strong (\$87B) but was down slightly from the 2013 level (\$91B).

Commentary:

Areas of emphasis are U.S middle market buyout with focus on managers with strong operational capability. Vertical strategies in energy, healthcare and technology are under consideration. IMD will reduce emphasis on large buyout strategies though larger managers with specialized deal flow remain of interest. IMD will continue to monitor Europe for a favorable reentry point **and look for opportunities to capitalize upon distress**. IMD's pacing plan called for \$600M in commitments for 2015.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target (in program funding/build-out phase)

COMMODITIES

Primary Market Metrics & Indicators:

1. Fundamentals: **NEGATIVE**

- The Fed ended its tapering program in November but reiterated that inflation continues to run below the FOMC's long-term objective. As Europe has begun to deal with its economic weakness with stimulus, the US dollar has strengthened on a relative basis.
- Most commodity sectors appear well supplied, particularly for the current global growth environment.
- **The decision by Saudi Arabia not to reduce production in spite of increased global supply growth has roiled the energy markets with the short term effect of rig lay downs in the US while the budgetary impacts globally begin to add up.**
- Corn and wheat stockpiles have recently hit multi-year highs while world food prices continue to slide. Energy markets reflect the continued growth in US production as WTI and Brent prices have fallen by more than **\$50** from their June highs. Metals have weakened as precious metals have suffered from US dollar strength while industrial metals still exhibit weak demand.

2. Valuations: **NEUTRAL**

- The index **fell to a low of 203 in January 2015, which hadn't been seen since February 2009.**
- **TTM:** coffee and cattle have been the leaders while **the energy complex has been** the biggest laggard.
- The index on a YTD (TTM) basis is **down 2.1% (19.2%) as all of the index sub-groups have posted negative returns but most markedly in energy.**

3. Sentiment: **NEGATIVE**

- The moderate growth and weak inflation environment in the U.S. has tempered investor enthusiasm for commodities and resulted in outflows from commodities.
- Exogenous geopolitical shocks have not resulted in price spikes; weather has been favorable.
- Looking across the individual commodities, most remain well supplied, which has been reflected in prices as inflationary fears have abated.

Commentary:

IMD has maintained a tactical underweight relative to the SAAP during 2013 and into 2014 after recognizing the potential effects of Fed tapering and Chinese transition. IMD recognizes that Fed's actions will be data dependent but the QE program has ended. **As a result of the changing dynamics in the energy markets IMD reduced its exposure to commodities in December and will continue to monitor the situation closely.**

The North American shale play has resulted in increased US energy production and represents a long-term phenomenon. China's growth rate is also moderating and the era of infrastructure build-out which fueled a portion of the demand for commodities (particularly industrial metals) is abating. Precious metals may also be challenged as the US has moved to the front of the global recovery and other countries' stimulus should result in US dollar strength at the margin. While grains are currently well supplied, the unpredictability of weather inhibits long-term forecasting.

IMD will closely monitor the growth and inflation dynamics globally with improving economic conditions and inflationary pressures serving as a catalyst which may initiate a neutral position.

CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target

OPPORTUNISTIC INVESTMENTS

IMD continues to monitor and assess co-investment flow from real estate, private equity and debt managers for select opportunistic investments with favorable capital market dynamics. Opportunistic investments are tactical in nature AND are outside ASRS SAAP benchmarks or absolute return oriented.

CURRENT PORTFOLIO POSTURE: Approx. 4.5% of ASRS TOTAL MARKET VALUE

GLOSSARY

Commentary: Provides verbiage on 1) the current asset class market environment and possible changes to this environment and 2) ASRS asset class portfolio positioning relative to ASRS SAA policy, its rationale for positioning and anticipated changes which may occur in such positioning.

Current Portfolio Posture: Indicates ASRS asset class position relative to its asset allocation policy weight. "Overweight" indicates an asset class weight is greater than its policy target, "Neutral" indicates an equal weight and "Underweight" indicates a lesser weight than its policy target.

Investment House Views: Synthesizes IMD's current and forward-looking investment perspectives and tactical positioning in asset classes and investment strategies in which the ASRS invests.

Primary Market Metrics and Indicators: Broadly-defined metrics (Fundamentals, Valuations, and Sentiments) applied universally to ASRS asset classes and used collectively to evaluate existing market conditions. Indicators ("Positive," "Neutral" and "Negative") reflect IMD's existing views of these metrics and, in addition to other factors, generally determine the basis for the existing (and possible future changes) to ASRS aggregate portfolio position relative to or within ASRS SAA policy targets.

2014 ASSET CLASS COMMITTEE AND IC MEETINGS

2014		Asset Class Committees				Board Committee		Grand Totals	
		Private Market Committee (PRIVMC)		Public Market Committee (PUBMC)		Investment Committee (IC)			
Quarter	Month	Dates		Total	Dates		Total		
1 st	January	1/15	1/31	2	1/31		1	9	
	February	2/21		1	2/20 2/24		2		
	March	3/24		1	3/27		1		
2 nd	April	04/22		1	04/17		1	9	
	May	05/12	05/27	3					
		05/28							
June	06/19	06/26	2			06/23	1		
3 rd	July	07/01	07/14	3				7	
		07/21							
	August	08/08	08/20	2			08/18		1
September	09/23		1						
4 th	October	10/17	10/23	2			10/20	1	6
	November	11/19	11/21	2	11/13		1		
	December	12/18		1			12/01	1	
Totals				19			4	8	31

2015 ASSET CLASS COMMITTEE AND IC MEETINGS

2015		Asset Class Committees				Board Committee		Grand Totals
		Private Market Committee (PRIVMC)		Public Market Committee (PUBMC)		Investment Committee (IC)		
Quarter	Month	Dates		Total	Dates	Total	Dates	Total
1 st	January	01/23	01/29	2				3
	February	02/27		1				
	March							
2 nd	April							
	May							
	June							
3 rd	July							
	August							
	September							
4 th	October							
	November							
	December							
Totals				3				3

PRIVATE MARKETS COMMITTEE (PRIVMC)

11/19/14

➤ Real Estate Investments

- The Committee approved granting Forest City variances permitting investment in a property located near Oakland, CA. It was noted that the Oakland market is performing well with rental increases in the market amongst the highest in the country.
- The Committee approved granting Ventas a variance permitting investment in a property located near the New Orleans market.

➤ Private Equity Program

- The Committee approved providing direction to the private markets investment team to proceed with investments for the 2015 calendar year with guidance of anticipated investment levels of \$600 million of new commitments during the year.
- The Committee confirmed the following future meeting dates: Dec 18, 2014 and Jan 23, 2015

11/21/14

➤ Private Debt Program

- The Committee approved a \$300 million commitment to a European direct lending mandate utilizing up to 1.0x leverage.

12/18/14

➤ Real Estate Investments

- The Committee approved granting Ventas a variance permitting an investment in a project located in Palm Beach, FL.
- The Committee approved a co-investment of up to \$70 million in a lower Manhattan redevelopment converting a former office building to retail and condos. It was noted that the acquisition and redevelopment of the property is at an investment cost below the cost of new construction.
- The Committee approved a plan of investments for the 2015 calendar year with guidance on investment amounts targeted at \$500 million to \$1 billion in new separate account investments, \$100 to \$300 million in addition to existing separate account relationships and \$100 to \$300 million in comingled fund investments for a total amount of investment ranging from \$700 million to \$1.6 billion.

01/23/15

➤ **Private Equity Program**

- The Committee approved a \$50 million dollar investment in a high performing transatlantic middle market buyout firm. Final legal negotiations are pending.
- The Committee approved a \$50 million dollar investment in a top performing energy fund manager with which ASRS has prior investment experience.
- The Committee approved an increase to \$401 million in the ASRS commitment with a firm pursuing a European direct lending mandate.
- The Committee approved a \$500 million commitment to a senior secured direct lending mandate with a firm with which ASRS has prior investment experience. Final legal negotiations are pending.
- The Committee approved a \$300 million commitment to a separate account to invest in grocery anchored shopping centers. Final legal negotiations are pending.

The Committee confirmed the following future meeting dates: February 27, 2015; March 20, 2015; April 23, 2015 and May 18, 2015.

01/29/2015

➤ **Private Debt Program**

- The Committee approved a proposed waiver to the concentration limits for the RFM Cactus Private Debt Mandate to accommodate a pending transaction. Final legal negotiations are pending.

TACTICAL PORTFOLIO POSITIONING

Asset class tactical positioning is a function of Investment House Views and an assessment of relative value between ASRS asset classes and their positioning to ASRS Strategic Asset Allocation Policy (SAAP).

The Total Fund carries more notable SAA policy relative underweights in core fixed income, high yield, EM debt, and commodities, and higher relative over-weights in opportunistic debt, large-cap domestic equities. The CIO will discuss this more detail at the IC meeting.

Note: tactical portfolio positioning is captured in the ASRS Asset Allocation report; the performance results of tactical positioning (vs. policy targets) are reflected in the ASRS Quarterly Total Fund Performance Attribution Analysis.

IMD (INVESTMENT MANAGEMENT DIVISION) ACTIVITIES, PROJECTS AND RESEARCH INITIATIVES

- ASRS and NEPC presented for discussion and engagement ASRS proposed new Strategic Asset Allocation Policy (SAAP) Study to the Investment Committee on February 9. As result, the IC approved the recommendation to present the SAAP Study to the full Board for approval on February 27. Implementation will occur consistent with IMD Investment House Views and ability to prudently reallocate between public and private investment strategies.
- The redesigned ASRS securities lending program began lending securities in November. The program includes two parts: 'agency lending' via State Street to create a conservative strategic lending program and 'opportunistic lending' to profit from relatively large or one-off individual lending transactions, the latter of which will be evaluated and approved on a case-by-case basis by the Director and CIO.
- ASRS Cash Management Program has been implemented. The goals of the program are to provide required Fund liquidity, mitigate cash drag, minimize transaction costs and optimize manager portfolios rebalancing. The CIO and IMD staff will be making a presentation to the IC in February.
- As a standard course of business, IMD meets with both incumbent and potential investment managers to discuss macro-economies and capital markets as well as providing a means to review new initiatives, relationships and new strategy offerings. Since the last IC meeting, IMD has met via conference call or in-person with a total of 99 investment managers: Private markets (RE, PE, Debt) – 72 and Public markets (Equity and Debt) – 27.
- IMD internally manages 7 public equities and fixed income portfolios which had an aggregate market value of over \$10 billion or 29% of Total Fund. For the 1-year ending December 31, 3 of 7 met or exceeded their benchmarks, and 7 of 7 portfolios met or exceeded their benchmarks on an inception-to-date basis.

- In January, 2015 the IMD held an educational seminar on energy markets with presentations by sector leaders from Blackstone, Highbridge and EnCap.
- IMD hosted a (Listed) Options Theory Seminar for staff jointly with the Options Industry Council, the CBOE and Deutsche Bank.



NEPC, LLC

To: The Arizona State Retirement System (ASRS) Investment Committee (IC)

From: Mr. Allan Martin, Partner, Consultant, NEPC
Mr. Dan LeBeau, Consultant, NEPC

Date: February 18, 2015

Subject: Agenda Item #6: Presentation, Discussion and Appropriate Action Regarding Independent Reporting, Monitoring and Oversight of the ASRS Investment Program – Includes Total Fund and Investment Performance Report Q4-14

Purpose

To present and discuss information regarding the independent reporting, monitoring and oversight of the ASRS Investment Program.

In addition to the Total Fund Report, NEPC and IMD Staff will provide a detailed review of the quarterly ASRS Investment Performance Report (IPR).

Recommendation

Informational only; no action required.

Notice

Regarding this agenda item, pursuant to A.R.S. § 38-431.03(A)(2) and A.R.S. § 38-718(P) notice is hereby given to Trustees of the ASRS Investment Committee and the general public that the ASRS Investment Committee may vote to go into executive session, in the event specific manager data is discussed that is deemed confidential/non-public information.

Background

NEPC is responsible for providing an independent reporting, monitoring and oversight function from the Investment Program information which is presented by the CIO and IMD.

As a result, NEPC has developed reports for both the IC and Board designed to 1) provide the appropriate level of investment information for the purposes of independent oversight (ASRS SAAP compliance, Asset Class Committee minutes review, investment selection due diligence packet compliance, etc.); 2) provide ASRS investment program performance relative to its goals/objectives (presented quarterly); and 3) communicate NEPC's perspectives on the market environment, investment outlook or other initiatives or topics they believe are important to convey to the IC and Board.

More specific to the IC, NEPC will provide the IC with an ASRS Investment Performance Report (IPR) on a quarterly basis, which will provide investment manager-level detail information for discussion by NEPC and IMD staff. In addition, IMD will provide one or more staff reports related to ASRS private investments or other asset class/managers. These



reports will be marked as confidential/non-public and, prior to a discussion of individual manager performance, the IC will move to executive session.

As of December 31, 2014 the Total Fund's market value was approximately \$34.2 billion.

For the one-year period ending December 31, 2014, the Total Fund returned 6.2% (net of fees), outperforming the Interim SAA Policy by 1.9%. For the three-year period, the Total Fund produced a return of 12.4% per annum, outperforming the Interim SAA Policy by 0.7%. Over the past ten years, the Total Fund has returned 6.6% per annum, and since inception, the portfolio's performance is 9.9%.

Attachments:

- NEPC's Independent Reporting, Monitoring and Oversight reports
- ASRS Investment Performance Report (IPR) for period ending December 31, 2014. (Confidential/Non-Public) – distributed at the meeting

Arizona State Retirement System

Independent ASRS Investment Program Oversight for the Period Ending December 31, 2014

February 27, 2015

Allan Martin, Partner, NEPC
Dan LeBeau, Consultant, NEPC



- ASRS Investment Objectives/Performance
- Independent Oversight/Compliance
 - SAA Policy Compliance
 - Total Fund and Asset Class Analysis
 - Asset Class Committee Monitoring
- Market Environment Update and Outlook
- Appendix: SAA Policy History

ASRS Investment Objectives/Performance

Note: All of the data shown on the following pages is as of December 31, 2014 and reflects the deduction of investment manager fees, unless otherwise noted.



Macro

- Objective #1: Achieve a twenty-year rolling annual total fund net rate of return equal to or greater than the actuarial assumed interest rate.
- Objective #2: Achieve one- and three-year rolling annual total fund net rates of return equal to or greater than the return of the ASRS Strategic Asset Allocation Policy (SAAP) Benchmark.
- Objective #3: Achieve one- and three-year rolling annual net rates of return for ASRS strategic asset classes that are equal to or greater than their respective strategic asset class benchmarks.
- Objective #4: Ensure sufficient monies are available to meet pension benefits, health insurance, member refunds, administrative payments, and other cash flow requirements.

Micro

Source: ASRS Strategic Plan, March 2013

- Objective #1: Achieve a twenty-year rolling annual total fund net rate of return equal to or greater than the actuarial assumed interest rate.

	<u>20 Year Annualized Return</u>
Total Fund	8.7%
Constant 8%	<u>8.0%</u>
Excess Return	0.7%

Goal Met: Yes

- Objective #2: Achieve one- and three-year rolling annual total fund net rates of return equal to or greater than the return of the ASRS Strategic Asset Allocation Policy (SAAP) Benchmark.

	Quarter	1 Year	3 Years	5 Years	10 Years	Since Inception (6/30/75)
Total Fund	1.1%	6.2%	12.4%	10.5%	6.6%	9.9%
Interim SAA Policy¹	0.4%	4.3%	11.7%	9.8%	6.3%	9.6%
Excess Return	0.7%	1.9%	0.7%	0.7%	0.3%	0.3%

1 Year Goal Met: Yes
3 Year Goal Met: Yes

¹Composition of SAA Policy can be found in the appendix.

Arizona State Retirement System
Total Fund Attribution Analysis

Total Plan	1 Year	3 Years	5 Years
Allocation Effect ¹	0.35%	0.69%	0.32%
Manager Selection Effect ²	0.86%	-0.03%	0.11%
Interaction Effect ³	0.66%	0.11%	0.35%
Residual ⁴	-0.02%	-0.09%	-0.10%
Excess Return	1.85%	0.68%	0.68%

The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

1. Allocation Effect: Measures the impact of the decision to over/under weight assets classes relative to Interim SAAP weights. (Return Asset Class Index – Total Interim Policy Index Return) × (Weight Asset Class Portfolio – Weight Asset Class Interim Policy Index)

2. Manager Selection Effect: Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. [Weight Asset Class Benchmark × (Return Portfolio Asset Class – Return Asset Class in Interim Policy Index)]

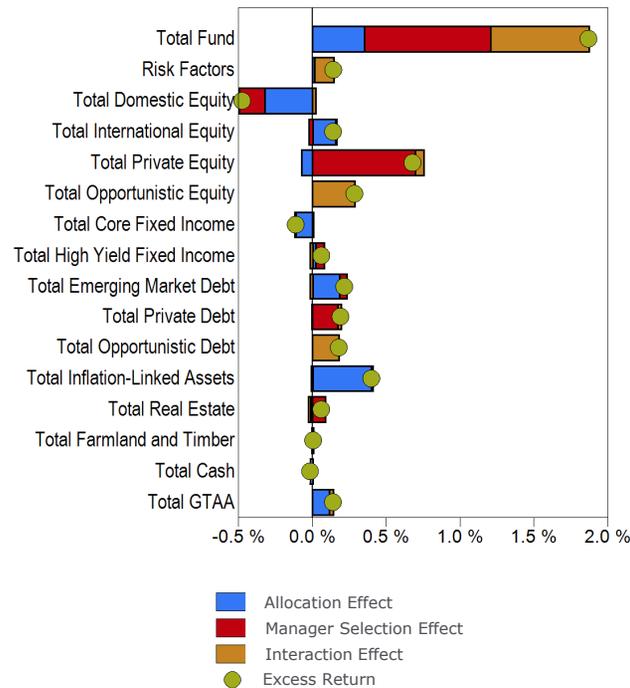
3. Interaction Effect: Measures the impact of over/under weighting decisions and over/under performance. (Return Asset Class Portfolio (Weight Asset Class Portfolio – Weight Asset Class Policy Index)) – (Return Asset Class Index (Weight Asset Class Portfolio – Weight Asset Class Index))

4. Residual: Contribution to excess return not captured in Allocation Effect, Manager Selection Effect and Interaction Effect.

Arizona State Retirement System

Total Fund Attribution Detail

Attribution Effects
1 Year Ending December 31, 2014



1 Year Excess Return: +1.85%

- Allocation Effect: +0.35%
 - Commodities tactical underweight (+0.40%)
 - Emerging Market Debt tactical underweight (+0.19%)
 - Domestic Equity tactical underweight (-0.32%)
- Manager Selection Effect: +0.86%
 - Private Equity outperformed due to various managers (+0.70%)
 - Private Debt outperformed due to various managers (+0.17%)
 - Real Estate outperformed due to various managers (+0.08%)
 - Domestic Equity underperformed due to various managers (-0.17%)
- Interaction Effect: +0.66%
 - Opportunistic Equity outperformed due to various managers (+0.28%)
 - Opportunistic Debt outperformed due to various managers (+0.18%)
 - Equity Risk Factor Portfolio outperformed due to various exposures (+0.13%)
- Residual: -0.02%

The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

Allocation Effect: Measures the impact of the decision to over/under weight assets classes relative to Interim SAAP benchmark weights. $(\text{Return Asset Class Index} - \text{Total Interim Policy Index Return}) \times (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Interim Policy Index})$

Manager Selection Effect: Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. $[\text{Weight Asset Class Benchmark} \times (\text{Return Portfolio Asset Class} - \text{Return Asset Class in Interim Policy Index})]$

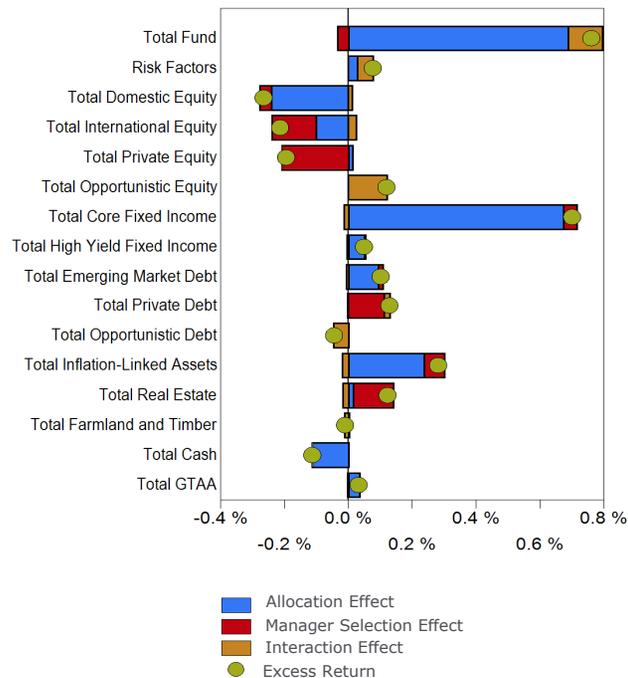
Interaction Effect: Measures the impact of over/under weighting decisions and over/under performance. $(\text{Return Asset Class Portfolio} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Policy Index})) - (\text{Return Asset Class Index} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Index}))$

Residual: Contribution to excess return not captured in Allocation Effect, Manager Selection Effect and Interaction Effect.

Arizona State Retirement System

Total Fund Attribution Detail

Attribution Effects
3 Years Ending December 31, 2014



3 Year Excess Return: +0.68%

- Allocation Effect: +0.69%
 - Public Markets Fixed Income tactical underweight (+0.81%)
 - Commodities tactical underweight (+0.24%)
 - Domestic Equity tactical underweight (-0.24%)
- Manager Selection Effect: -0.03%
 - Private Equity underperformed due to various managers (-0.21%)
 - International Equity underperformed due to various managers (-0.14%)
 - Real Estate outperformed due to various managers (+0.12%)
 - Private Debt outperformed due to various managers (+0.11%)
 - Commodities outperformed due to Gresham (+0.06%)
- Interaction Effect: +0.10%
 - Opportunistic Equity outperformed due to various managers (+0.12%)
 - Opportunistic Debt underperformed due to various managers (-0.05%)
- Residual: -0.09%

The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

Allocation Effect: Measures the impact of the decision to over/under weight assets classes relative to Interim SAAP benchmark weights. $(\text{Return Asset Class Index} - \text{Total Interim Policy Index Return}) \times (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Interim Policy Index})$

Manager Selection Effect: Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. $[\text{Weight Asset Class Benchmark} \times (\text{Return Portfolio Asset Class} - \text{Return Asset Class in Interim Policy Index})]$

Interaction Effect: Measures the impact of over/under weighting decisions and over/under performance. $(\text{Return Asset Class Portfolio} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Policy Index})) - (\text{Return Asset Class Index} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Index}))$

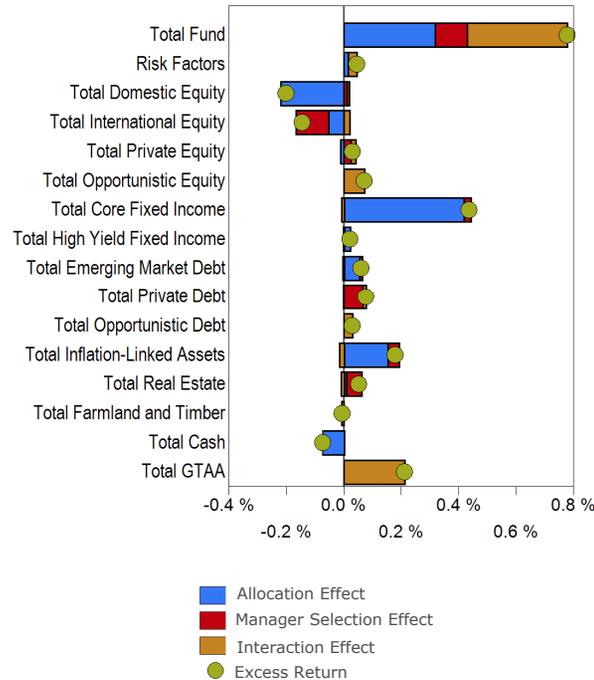
Residual: Contribution to excess return not captured in Allocation Effect, Manager Selection Effect and Interaction Effect.



Arizona State Retirement System

Total Fund Attribution Detail

Attribution Effects
5 Years Ending December 31, 2014



5 Year Excess Return: +0.68%

- Allocation Effect: +0.32%
 - Public Markets Fixed Income tactical underweight (+0.50%)
 - Commodities tactical underweight (+0.15%)
 - Domestic Equity tactical underweight (-0.22%)
- Manager Selection Effect: +0.11%
 - Private Debt outperformed due to various managers (+0.07%)
 - Real Estate outperformed due to various managers (+0.05%)
 - Commodities outperformed due to Gresham (+0.04%)
 - International Equity underperformed due to various managers (-0.11%)
- Interaction Effect: +0.35%
 - GTAA outperformed due to Bridgewater (+0.21%)
 - Opportunistic Equity outperformed due to various managers (+0.07%)
 - Opportunistic Debt outperformed due to various managers (+0.03%)
- Residual: -0.10%

The Brinson-Fachler Attribution model explains excess return by identifying the size of contributors or detractors from excess return based on the three effects defined below:

Allocation Effect: Measures the impact of the decision to over/under weight assets classes relative to Interim SAAP benchmark weights. $(\text{Return Asset Class Index} - \text{Total Interim Policy Index Return}) \times (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Interim Policy Index})$

Manager Selection Effect: Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. $[\text{Weight Asset Class Benchmark} \times (\text{Return Portfolio Asset Class} - \text{Return Asset Class in Interim Policy Index})]$

Interaction Effect: Measures the impact of over/under weighting decisions and over/under performance. $(\text{Return Asset Class Portfolio} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Policy Index})) - (\text{Return Asset Class Index} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Index}))$

Residual: Contribution to excess return not captured in Allocation Effect, Manager Selection Effect and Interaction Effect.



Asset Class Performance vs. Benchmark – Public Markets

- Objective #3: Achieve one- and three-year rolling annual net rates of return for ASRS strategic asset classes that are equal to or greater than their respective strategic asset class benchmarks.

	1 Year Return	3 Year Return
ASRS Total Domestic and Int'l Equity ¹	5.2%	16.1%
ASRS Custom Total Equity Benchmark	5.1%	16.2%
Excess Return	0.1%	-0.1%
ASRS Domestic Equity	11.5%	20.3%
ASRS Custom Domestic Equity Benchmark	12.0%	20.4%
Excess Return	-0.5%	-0.1%
ASRS International Equity	-4.2%	9.4%
ASRS Custom Int'l Equity Benchmark	-4.1%	9.9%
Excess Return	-0.1%	-0.5%
ASRS Public Markets Fixed Income	3.6%	2.6%
ASRS Custom Fixed Income Benchmark	3.1%	2.3%
Excess Return	0.5%	0.3%
ASRS Inflation-Linked	-17.1%	-8.2%
ASRS Custom Inflation-Linked Benchmark	-17.0%	-9.4%
Excess Return	-0.1%	1.2%
ASRS GTAA	5.5%	12.0%
ASRS Custom GTAA Benchmark	5.4%	12.0%
Excess Return	0.1%	0.0%

¹Performance of ASRS Total Domestic and Int'l Equity includes the performance of the ASRS Domestic Equity and ASRS International Equity asset classes and the Equity Risk Factor Portfolio with an inception date of 6/1/2013.

Note: Composition of ASRS Custom Asset Class Benchmarks can be found in the appendix.

**Goal Met:
Partially**

Asset Class Performance vs. Benchmark – Private Markets¹

- Objective #3: Achieve one- and three-year rolling annual net rates of return for ASRS strategic asset classes that are equal to or greater than their respective strategic asset class benchmarks.

	1 Year Return	3 Year Return	IRR Since Inception	Inception Date
ASRS Private Equity	16.7%	16.2%	13.0%	Oct-07
Russell 2000	3.9%	21.3%	12.3%	
Excess Return	12.8%	-5.1%	0.7%	
ASRS Opportunistic Equity ²	45.7%	28.2%	31.9%	Apr-11
ASRS Private Debt	12.9%	--	14.1%	Jul-12
S&P/LSTA Levered Loan Index + 250 bps	6.4%	--	6.6%	
Excess Return	6.5%	--	7.5%	
ASRS Opportunistic Debt ²	11.0%	11.3%	12.1%	Jan-08
ASRS Real Estate	12.9%	13.3%	6.2%	Oct-05
NFI - ODCE Index	11.4%	11.3%	5.8%	
Excess Return	1.5%	2.0%	0.4%	
ASRS Farmland and Timber	4.6%	--	1.6%	Jul-13
CPI ex-Food and Energy + 350 bps	5.2%	--	5.3%	
Excess Return	-0.6%	--	-3.7%	

¹Performance of private markets portfolios and corresponding benchmarks are reported on a one quarter lag. Performance shown as of September 30, 2014.

²Net absolute rate of return expectations range from 10-14% per annum.

Note: Time-weighted performance of private markets portfolios shown for the one- and three-year periods to reconcile Total Fund performance as it is reported on a time-weighted basis. Due to the drawdown nature of private markets portfolios in which the investment managers call capital over time, dollar-weighted performance, or internal rate of return (IRR) is a more appropriate measure of the performance of ASRS private markets portfolios.

**Goal Met:
Partially**

- Objective #4: Ensure sufficient monies are available to meet pension benefits, health insurance, member refunds, administrative payments, and other cash flow requirements.

Month	Cash In	Cash Out	Balance as of 1st Business Day
Jan-14	\$386,764,591	(\$190,949,369)	\$352,809,530
Feb-14	\$210,787,413	(\$191,680,149)	\$189,010,112
Mar-14	\$679,587,225	(\$192,454,469)	\$486,243,101
Apr-14	\$455,478,123	(\$192,789,720)	\$246,095,874
May-14	\$328,489,975	(\$193,063,809)	\$162,815,927
Jun-14	\$143,781,061	(\$193,481,152)	\$90,885,762
Jul-14	\$249,555,269	(\$196,223,085)	\$101,745,713
Aug-14	\$196,994,381	(\$198,736,874)	\$141,827,348
Sep-14	\$365,370,874	(\$199,232,408)	\$165,530,449
Oct-14	\$321,707,041	(\$200,104,305)	\$139,949,815
Nov-14	\$314,711,411	(\$200,572,009)	\$111,628,426
Dec-14	\$467,265,987	(\$200,810,121)	\$275,989,580

All Pension Obligations, Capital Calls and Other Requirements Met with Available Cash

Goal Met: Yes

Note:

Cash In - The balance as of the business day prior to the monthly pension run payment, comprised of month-to-date contributions and excess cash held to fund manager(s) or as a tactical allocation.

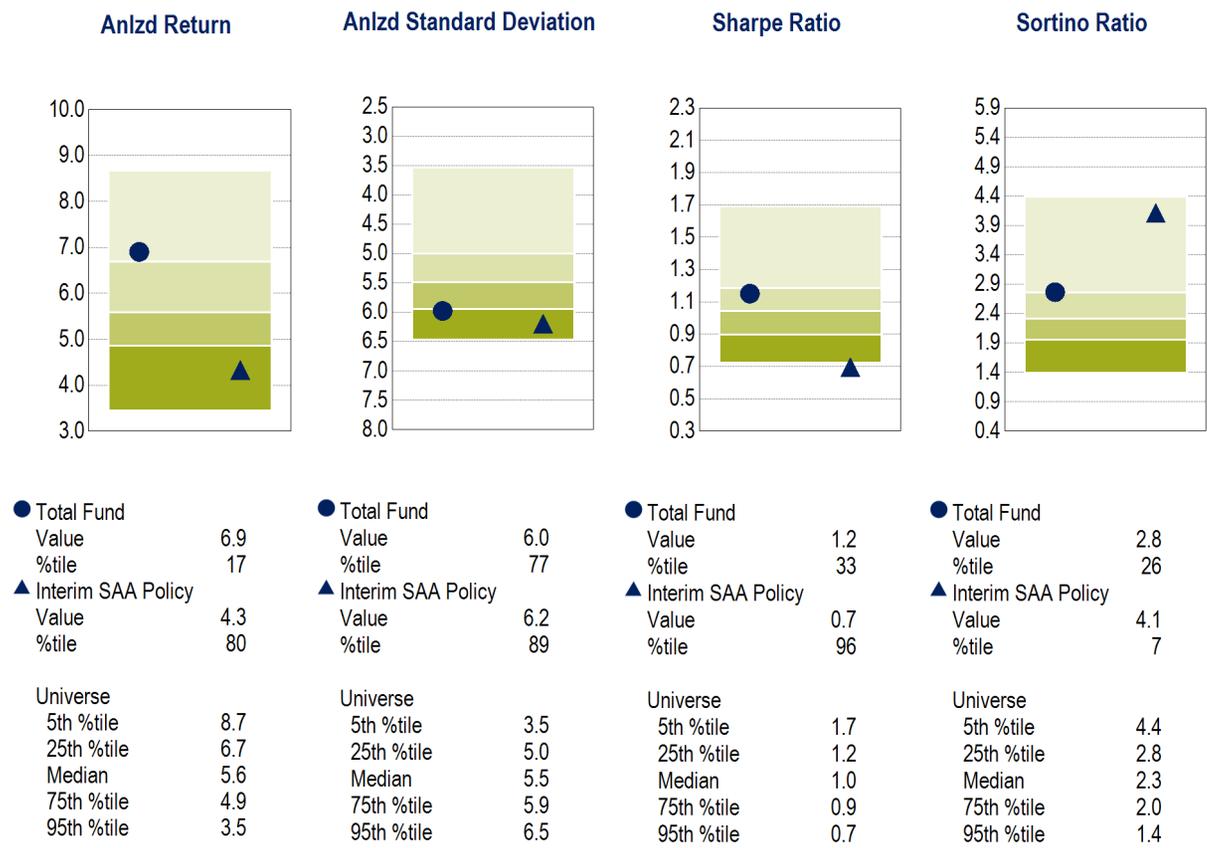
Cash Out - The monthly pension run payment.



Total Fund Risk Statistics vs. Peer Universe

Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)

1 Year



Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may no longer report results.

Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.

Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > \$1 Billion Universe.

The InvestorForce Public Funds > \$1 Billion Universe contains 67 observations for the period ending December 31, 2014, with total assets of \$617.9 billion.

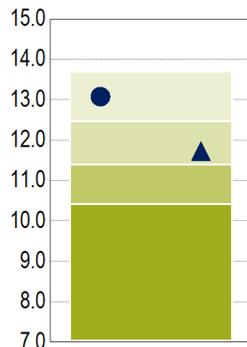
Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

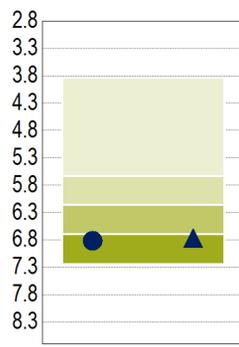
Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)

3 Year

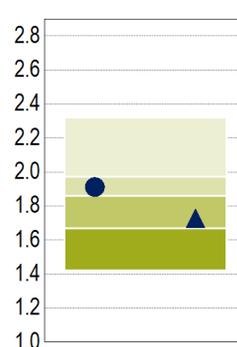
Anlzd Return



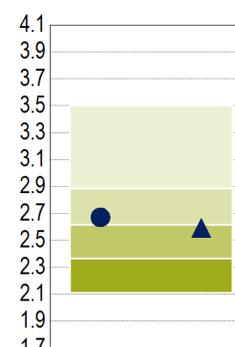
Anlzd Standard Deviation



Sharpe Ratio



Sortino Ratio



● Total Fund	
Value	13.1
%tile	17
▲ Interim SAA Policy	
Value	11.7
%tile	42

● Total Fund	
Value	6.8
%tile	87
▲ Interim SAA Policy	
Value	6.8
%tile	85

● Total Fund	
Value	1.9
%tile	43
▲ Interim SAA Policy	
Value	1.7
%tile	69

● Total Fund	
Value	2.7
%tile	41
▲ Interim SAA Policy	
Value	2.6
%tile	59

Universe	
5th %tile	13.7
25th %tile	12.5
Median	11.4
75th %tile	10.4
95th %tile	7.1

Universe	
5th %tile	3.8
25th %tile	5.6
Median	6.1
75th %tile	6.7
95th %tile	7.2

Universe	
5th %tile	2.3
25th %tile	2.0
Median	1.9
75th %tile	1.7
95th %tile	1.4

Universe	
5th %tile	3.5
25th %tile	2.9
Median	2.6
75th %tile	2.4
95th %tile	2.1

Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may no longer report results.

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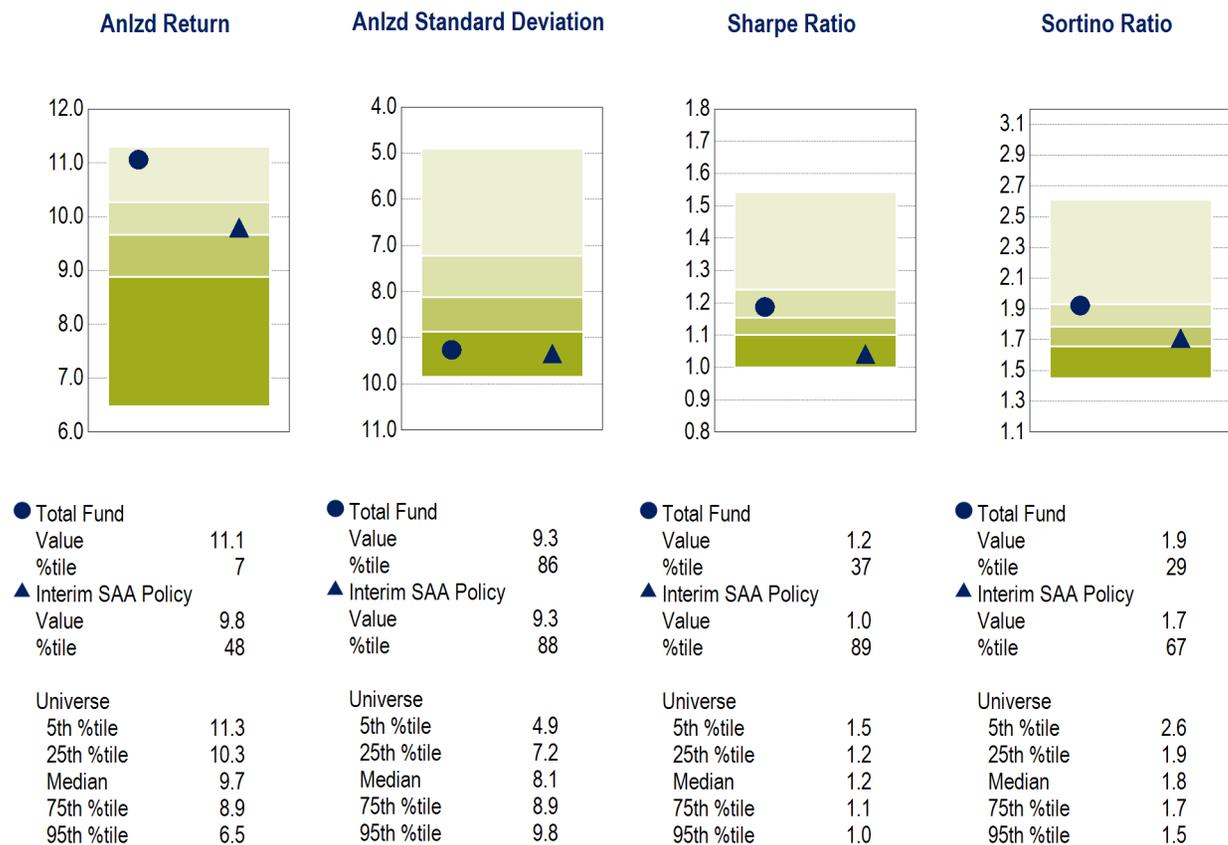
Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > \$1 Billion Universe.

The InvestorForce Public Funds > \$1 Billion Universe contains 67 observations for the period ending December 31, 2014, with total assets of \$617.9 billion.

Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)
5 Year



Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may no longer report results.

Universes are constructed using gross of fee returns; therefore, ASRS rank is based on gross of fee returns.

Rankings are from highest (1) to lowest (100) in the InvestorForce Public Funds > \$1 Billion Universe.

The InvestorForce Public Funds > \$1 Billion Universe contains 67 observations for the period ending December 31, 2014, with total assets of \$617.9 billion.

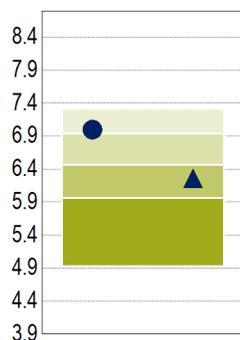
Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

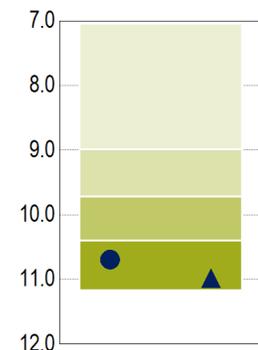
Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)

10 Year

Anlzd Return



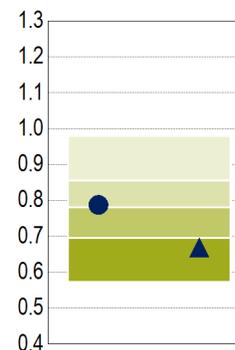
Anlzd Standard Deviation



Sharpe Ratio



Sortino Ratio



● Total Fund

Value 7.0
%tile 22

▲ Interim SAA Policy

Value 6.3
%tile 65

Universe

5th %tile 7.3
25th %tile 7.0
Median 6.5
75th %tile 6.0
95th %tile 4.9

● Total Fund

Value 10.7
%tile 88

▲ Interim SAA Policy

Value 11.0
%tile 91

Universe

5th %tile 7.0
25th %tile 9.0
Median 9.7
75th %tile 10.4
95th %tile 11.2

● Total Fund

Value 0.5
%tile 57

▲ Interim SAA Policy

Value 0.4
%tile 85

Universe

5th %tile 0.7
25th %tile 0.6
Median 0.5
75th %tile 0.5
95th %tile 0.4

● Total Fund

Value 0.8
%tile 45

▲ Interim SAA Policy

Value 0.7
%tile 85

Universe

5th %tile 1.0
25th %tile 0.9
Median 0.8
75th %tile 0.7
95th %tile 0.6

Note: The information contained herein is for comparison purposes only and is not a Total Fund benchmark. Peer universe comparisons are subject to several limitations, including: peer groups are not comprehensive; several funds are included in multiple peer groups; peer groups are constructed using gross of fee returns; and survivorship bias in that poorly performing funds may no longer report results.

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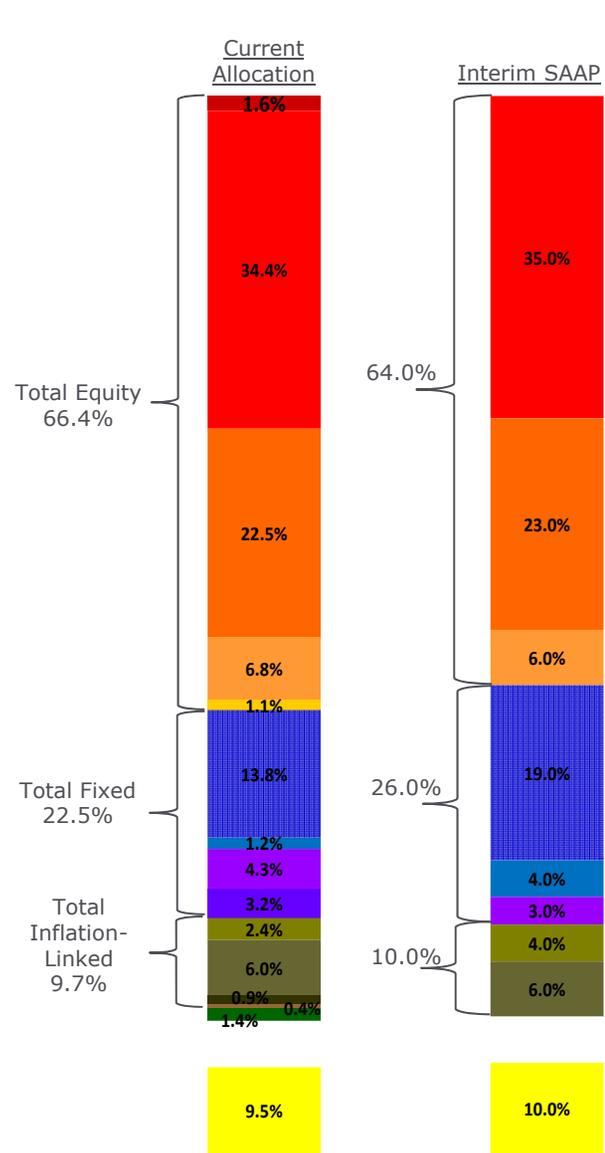
Composition of Interim SAA Policy can be found in the appendix.

Independent Oversight/Compliance

Note: All of the data shown on the following pages is as of December 31, 2014 and reflects the deduction of investment manager fees, unless otherwise noted.



SAA Policy Compliance

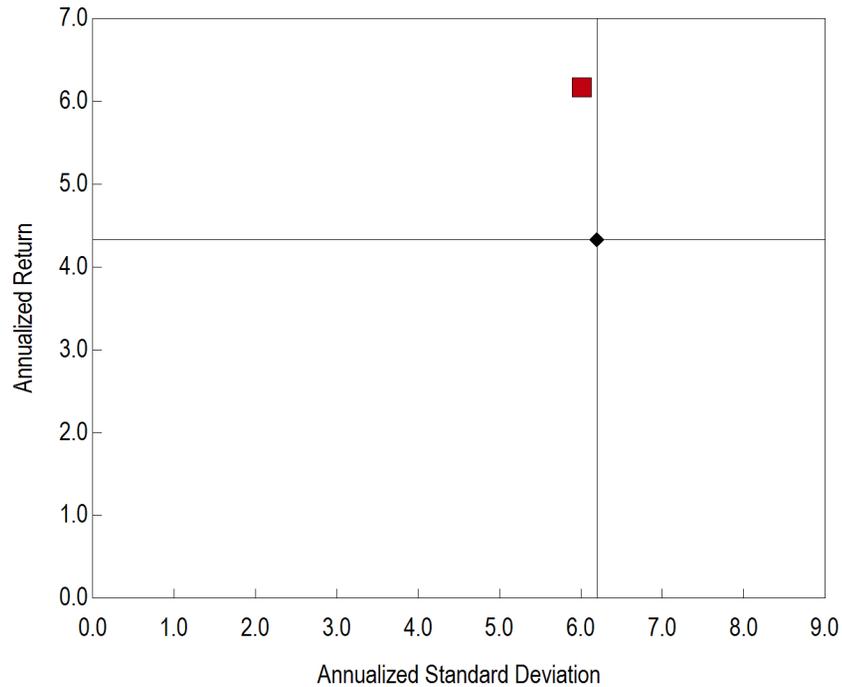


	Current Mkt Value	Current Allocation	Interim SAAP	Difference	Policy Range	Within Range
Total Domestic and International Equity¹	\$20,014,156,499	58.5%	58.0%	0.5%		
Domestic Equity³	\$11,761,599,199	34.4%	35.0%	-0.6%	26% - 38%	Yes
U.S. Large Cap ²	\$8,744,595,200	25.6%	25.0%	0.6%		
U.S. Mid Cap	\$1,574,006,298	4.6%	5.0%	-0.4%		
U.S. Small Cap	\$1,442,997,701	4.2%	5.0%	-0.8%		
International Equity³	\$7,707,235,911	22.5%	23.0%	-0.5%	16% - 28%	Yes
Developed Large Cap ²	\$4,675,963,159	13.7%	14.0%	-0.3%		
Developed Small Cap	\$1,169,023,387	3.4%	3.0%	0.4%		
Emerging Markets	\$1,862,249,364	5.4%	6.0%	-0.6%		
Private Equity⁴	\$2,334,272,042	6.8%	6.0%	0.8%	5% - 9%	Yes
Opportunistic Equity^{4,6}	\$374,912,037	1.1%	0.0%	1.1%	0% - 3%	Yes
Total Equity	\$22,723,340,578	66.4%	64.0%	2.4%	53% - 70%	Yes
U.S. Fixed Income	\$4,715,578,932	13.8%	19.0%	-5.2%	8% - 28%	Yes
Core ²	\$3,452,110,205	10.1%	14.0%	-3.9%		
High Yield	\$1,263,468,727	3.7%	5.0%	-1.3%		
Emerging Market Debt	\$418,364,158	1.2%	4.0%	-2.8%		
Private Debt⁴	\$1,474,167,707	4.3%	3.0%	1.3%		
Opportunistic Debt^{4,6}	\$1,089,483,616	3.2%	0.0%	3.2%	0% - 10%	Yes
Total Fixed Income	\$7,697,594,412	22.5%	26.0%	-3.5%	15% - 35%	Yes
Commodities²	\$815,809,393	2.4%	4.0%	-1.6%	1% - 7%	Yes
Real Estate^{2,4}	\$2,065,827,277	6.0%	6.0%	0.0%	6% - 10%	Yes
Infrastructure	\$300,000,000	0.9%	0.0%	0.9%	0% - 3%	Yes
Farmland and Timber	\$151,503,742	0.4%	0.0%	0.4%	0% - 3%	Yes
Opportunistic Inflation-Linked⁵	\$0	0.0%	0.0%	0.0%	0% - 3%	Yes
Total Inflation-Linked	\$3,333,140,412	9.7%	10.0%	-0.3%	8% - 16%	Yes
Cash⁵	\$467,270,100	1.4%	0.0%	1.4%		
Total	\$34,221,345,501	100.0%	100.0%	0.0%		
Global Tactical Asset Allocation (GTAA)²	\$3,242,787,016	9.5%	10.0%	-0.5%	5% - 15%	Yes

¹Total Domestic and International Equity includes Equity Risk Factor Portfolio with assets of \$545.3 million.
²GTAA allocation distributed into U.S. Large Cap Equity, Int'l Developed Large Cap Equity, Core Fixed Income, Commodities and Real Estate.
³Domestic Equity, International Equity and U.S. Fixed Income market values include residual values remaining in terminated manager accounts.
⁴Values shown for private markets portfolios include cash flows that occurred during 4Q 2014.
⁵Cash includes money for the upcoming monthly pension distribution.
⁶Aggregate Opportunistic asset classes not to exceed 10%.
 Note: Interim SAA Policy includes proration of 1% Private Equity and 2% Real Estate, which are unfunded.
 Policy Ranges shown are relative to the long-term SAAP, causing some asset classes to be out of range while implementation of the long-term SAAP is in process.
 Market values include manager held cash.

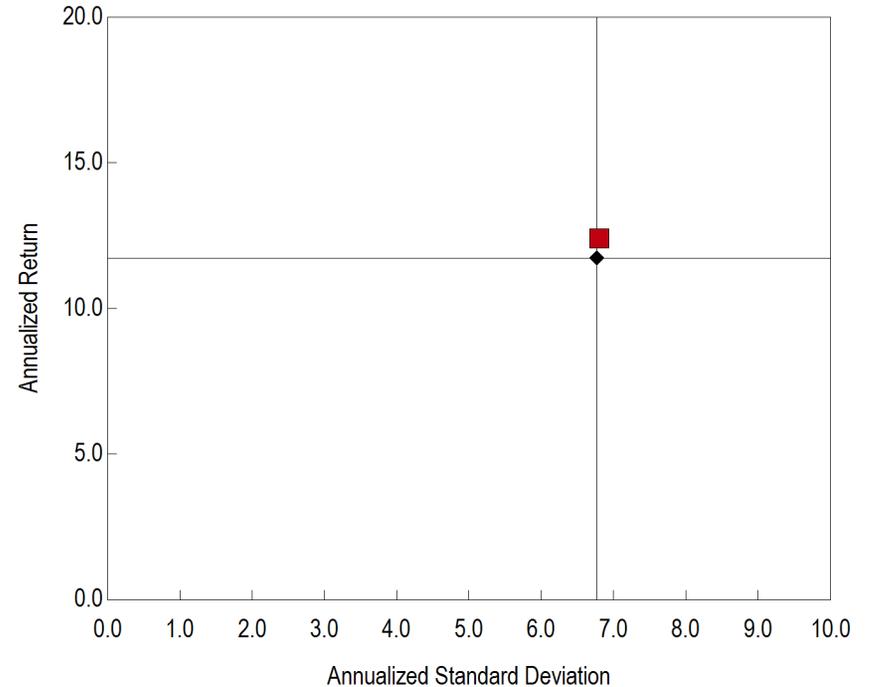
Total Fund Analysis

1 Year Ending December 31, 2014



■ Total Fund
◆ Interim SAA Policy

3 Years Ending December 31, 2014



■ Total Fund
◆ Interim SAA Policy

1 Year Ending December 31, 2014

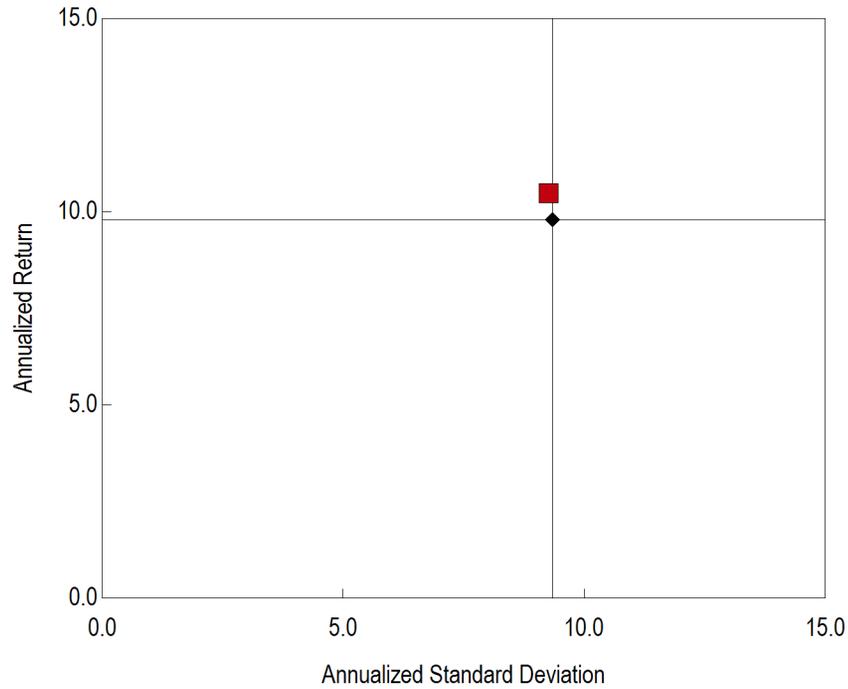
	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	6.2%	6.0%	1.0	2.5
Interim SAA Policy	4.3%	6.2%	0.7	4.1

3 Years Ending December 31, 2014

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	12.4%	6.8%	1.8	2.5
Interim SAA Policy	11.7%	6.8%	1.7	2.6

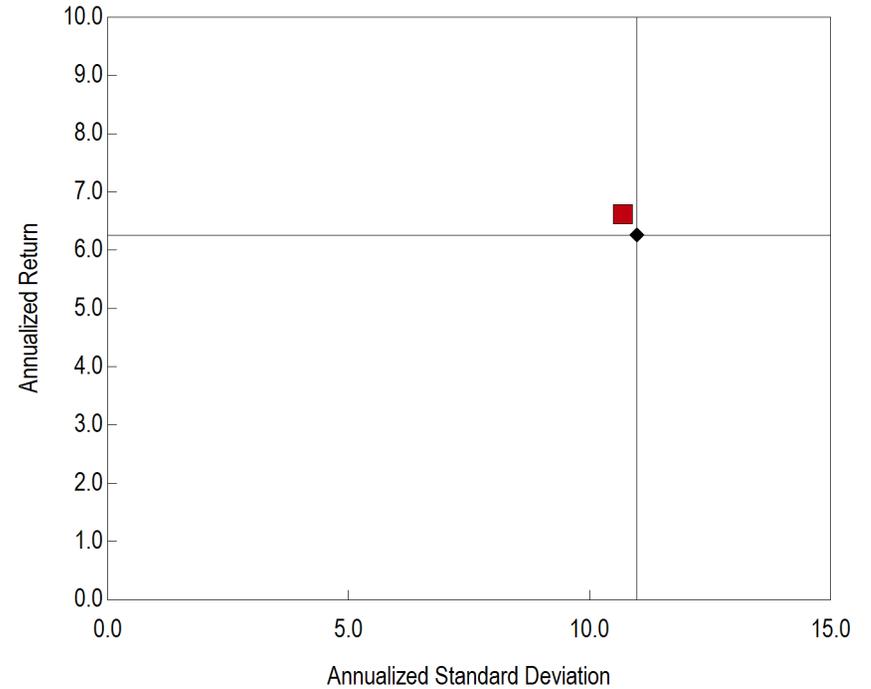
Total Fund Analysis

5 Years Ending December 31, 2014



■ Total Fund
◆ Interim SAA Policy

10 Years Ending December 31, 2014



■ Total Fund
◆ Interim SAA Policy

5 Years Ending December 31, 2014

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	10.5%	9.3%	1.1	1.8
Interim SAA Policy	9.8%	9.3%	1.0	1.7

10 Years Ending December 31, 2014

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	6.6%	10.7%	0.5	0.7
Interim SAA Policy	6.3%	11.0%	0.4	0.7

Arizona State Retirement System

Asset Class Performance Summary - Public Markets

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	6 Mo (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Since
Total Fund	34,221,345,501	100.0	1.1	--	-0.2	--	6.2	--	12.4	--	10.5	--	6.6	--	9.9	Jul-75
<i>Interim SAA Policy</i>			<u>0.4</u>	--	<u>-1.6</u>	--	<u>4.3</u>	--	<u>11.7</u>	--	<u>9.8</u>	--	<u>6.3</u>	--	<u>9.6</u>	<i>Jul-75</i>
Over/Under			0.7		1.4		1.9		0.7		0.7		0.3		0.3	
<i>Actual Benchmark</i>			<u>0.6</u>	--	<u>-1.0</u>	--	<u>5.1</u>	--	<u>12.1</u>	--	<u>9.9</u>	--	<u>6.3</u>	--	--	<i>Jul-75</i>
Total Domestic and International Equity¹	18,164,680,985	53.1	1.7	--	-0.9	--	5.2	--	16.1	--	12.0	--	6.8	--	6.8	Jan-98
<i>ASRS Custom Total Equity Benchmark</i>			<u>1.9</u>	--	<u>-0.9</u>	--	<u>5.1</u>	--	<u>16.2</u>	--	<u>12.0</u>	--	<u>6.9</u>	--	<u>6.1</u>	<i>Jan-98</i>
Over/Under			-0.2		0.0		0.1		-0.1		0.0		-0.1		0.7	
Total Domestic Equity	10,867,172,487	31.8	5.3	51	4.6	38	11.5	33	20.3	38	15.9	38	8.3	52	11.4	Jul-75
<i>ASRS Custom Domestic Equity Benchmark</i>			<u>5.9</u>	42	<u>5.0</u>	33	<u>12.0</u>	30	<u>20.4</u>	36	<u>15.8</u>	39	<u>8.1</u>	58	<u>11.5</u>	<i>Jul-75</i>
Over/Under			-0.6		-0.4		-0.5		-0.1		0.1		0.2		-0.1	
<i>eA All US Equity Net Median</i>			<u>5.3</u>		<u>3.6</u>		<u>9.1</u>		<u>19.3</u>		<u>15.3</u>		<u>8.4</u>		<u>12.6</u>	<i>Jul-75</i>
Total International Equity	6,752,187,108	19.7	-3.7	75	-9.1	72	-4.2	61	9.4	72	4.8	77	4.4	86	6.1	Apr-87
<i>ASRS Custom Int'l Equity Benchmark</i>			<u>-3.6</u>	74	<u>-8.9</u>	71	<u>-4.1</u>	59	<u>9.9</u>	65	<u>5.2</u>	69	<u>5.5</u>	72	<u>5.8</u>	<i>Apr-87</i>
Over/Under			-0.1		-0.2		-0.1		-0.5		-0.4		-1.1		0.3	
<i>eA All ACWI ex-US Equity Net Median</i>			<u>-2.5</u>		<u>-7.9</u>		<u>-3.4</u>		<u>10.9</u>		<u>6.5</u>		<u>6.0</u>		<u>7.7</u>	<i>Apr-87</i>
Total Public Markets Fixed Income	4,019,981,496	11.7	0.3	65	-0.8	84	3.6	55	2.6	63	4.5	55	4.9	42	8.4	Jul-75
<i>ASRS Custom Fixed Income Benchmark</i>			<u>-0.2</u>	87	<u>-1.6</u>	88	<u>3.1</u>	60	<u>2.3</u>	69	<u>4.2</u>	61	<u>4.6</u>	54	--	<i>Jul-75</i>
Over/Under			0.5		0.8		0.5		0.3		0.3		0.3		--	
<i>eA All US Fixed Inc Net Median</i>			<u>0.7</u>		<u>0.7</u>		<u>3.9</u>		<u>3.5</u>		<u>4.8</u>		<u>4.6</u>		<u>8.2</u>	<i>Jul-75</i>
Total Inflation-Linked Assets	570,997,289	1.7	-13.1	--	-22.6	--	-17.1	--	-8.2	--	-3.4	--	--	--	-3.4	Feb-10
<i>ASRS Custom Inflation-Linked Benchmark</i>			<u>-12.1</u>	--	<u>-22.5</u>	--	<u>-17.0</u>	--	<u>-9.4</u>	--	<u>-4.7</u>	--	<u>-0.1</u>	--	<u>-5.1</u>	<i>Feb-10</i>
Over/Under			-1.0		-0.1		-0.1		1.2		1.3		--		1.7	
Total GTAA	3,242,787,016	9.5	0.9	43	-1.8	56	5.5	11	12.0	1	11.8	1	7.8	9	8.0	Jan-04
<i>ASRS Custom GTAA Benchmark</i>			<u>1.2</u>	30	<u>-0.3</u>	37	<u>5.4</u>	12	<u>12.0</u>	1	<u>9.8</u>	1	<u>6.1</u>	36	<u>6.5</u>	<i>Jan-04</i>
Over/Under			-0.3		-1.5		0.1		0.0		2.0		1.7		1.5	
<i>eA Global TAA Net Median</i>			<u>0.7</u>		<u>-1.6</u>		<u>3.3</u>		<u>6.7</u>		<u>5.3</u>		<u>5.8</u>		<u>6.4</u>	<i>Jan-04</i>

¹Performance of ASRS Total Domestic and International Equity includes the performance of the ASRS Domestic and International Equity asset classes and the Equity Risk Factor Portfolio with an inception date of 6/1/2013. NEPC began calculating Total Domestic and International Equity performance in January 2009. Monthly performance data from January 1998 - December 2008 was provided by State Street.

Note: Performance, ranks and medians are based on net of fee performance data. Rankings are from highest (1) to lowest (100) in the eVestment Universe.

Composition of Interim SAA Policy and ASRS Custom Asset Class Benchmarks can be found in the appendix.

Arizona State Retirement System

Asset Class Performance Summary - Private Markets

	Market Value (\$)	% of Portfolio	3 Mo (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	IRR (%)	Since
Total Fund	34,221,345,501	100.0	1.1	6.2	12.4	10.5	9.9	--	Jul-75
<i>Interim SAA Policy</i>			<u>0.4</u>	<u>4.3</u>	<u>11.7</u>	<u>9.8</u>	<u>9.6</u>	--	<i>Jul-75</i>
Over/Under			0.7	1.9	0.7	0.7	0.3	--	
<i>Actual Benchmark</i>			0.6	5.1	12.1	9.9	--	--	<i>Jul-75</i>
Total Private Equity	2,296,309,757	6.7	1.7	16.7	16.2	15.7	5.3	13.0	Oct-07
<i>Russell 2000 1 QTR Lagged</i>			<u>-7.4</u>	<u>3.9</u>	<u>21.3</u>	<u>14.3</u>	<u>6.0</u>	<u>12.3</u>	<i>Oct-07</i>
Over/Under			9.1	12.8	-5.1	1.4	-0.7	0.7	
Total Opportunistic Equity¹	372,297,570	1.1	-1.8	45.7	28.2	--	23.7	31.9	Apr-11
Total Private Debt	1,265,984,479	3.7	2.0	12.9	--	--	15.3	14.1	Jul-12
<i>S&P/LSTA Leveraged Loan Index + 250 bps 1 QTR Lagged</i>			<u>0.2</u>	<u>6.4</u>	<u>--</u>	<u>--</u>	<u>8.0</u>	<u>6.6</u>	<i>Jul-12</i>
Over/Under			1.8	6.5	--	--	7.3	7.5	
Total Opportunistic Debt¹	1,074,792,940	3.1	1.5	11.0	11.3	--	9.1	12.1	Jan-08
Total Real Estate	2,045,413,190	6.0	2.0	12.9	13.3	12.4	4.1	6.2	Oct-05
<i>NCREIF ODCE 1 QTR Lagged</i>			<u>3.0</u>	<u>11.4</u>	<u>11.3</u>	<u>11.3</u>	<u>5.2</u>	<u>5.8</u>	<i>Oct-05</i>
Over/Under			-1.0	1.5	2.0	1.1	-1.1	0.4	
Total Farmland and Timber	116,439,488	0.3	0.2	4.6	--	--	-39.1	1.6	Jul-13
<i>CPI ex-Food and Energy + 350 bps 1 QTR Lagged</i>			<u>1.1</u>	<u>5.2</u>	<u>--</u>	<u>--</u>	<u>5.2</u>	<u>5.3</u>	<i>Jul-13</i>
Over/Under			-0.9	-0.6	--	--	-44.3	-3.7	

¹Net absolute rate of return expectations range from 10-14% per annum.

Note: Performance is based on net of fee performance data.

Performance data for Total Private Equity, Total Opportunistic Equity, Total Private Debt, Total Opportunistic Debt, Total Real Estate, and Total Farmland and Timber and corresponding benchmarks is lagged by one quarter. Performance data and market values provided by Grosvenor Capital Management.

Prior to 3Q 2012, the performance of the Total Private Debt and Total Opportunistic Debt asset classes was reported in aggregate. Effective 6/30/2012, the Fund's allocations to Private Debt and Opportunistic Debt were separated and will be reported separately going forward.

Time-weighted performance of private markets portfolios shown to reconcile Total Fund performance as it is reported on a time-weighted basis. Due to the drawdown nature of private markets portfolios in which the investment managers call capital over time, dollar-weighted performance, or internal rate of return (IRR) is a more appropriate measure of ASRS private markets portfolios.

Composition of Interim SAA Policy can be found in the appendix.

Arizona State Retirement System

Public Market Asset Class Analysis

3 Years Ending December 31, 2014

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Tracking Error	Rank	Info Ratio	Rank	Beta	Sharpe Ratio
Total Fund	100.0%	12.4%	--	6.8%	--	0.8%	--	1.2%	--	0.6	--	1.0	1.8
Interim SAA Policy	--	11.7%	--	6.8%	--	--	--	--	--	--	--	--	1.7
Total Domestic and International Equity	53.1%	16.1%	--	10.0%	--	0.2%	--	0.6%	--	-0.2	--	1.0	1.6
ASRS Custom Total Equity Benchmark	--	16.2%	--	10.2%	--	--	--	--	--	--	--	--	1.6
Total Domestic Equity	31.8%	20.3%	38	9.5%	19	0.1%	31	0.6%	1	-0.2	50	1.0	2.1
ASRS Custom Domestic Equity Benchmark	--	20.4%	36	9.6%	20	--	32	--	--	--	--	--	2.1
Total International Equity	19.7%	9.4%	72	12.8%	55	-0.3%	80	0.7%	1	-0.8	96	1.0	0.7
ASRS Custom Int'l Equity Benchmark	--	9.9%	65	13.1%	70	--	76	--	--	--	--	--	0.8
Total Public Markets Fixed Income	11.7%	2.6%	63	3.8%	71	0.2%	92	0.5%	1	0.6	49	1.0	0.7
ASRS Custom Public Markets Fixed Income Benchmark	--	2.3%	69	3.6%	69	--	96	--	--	--	--	--	0.6
Total Inflation-Linked Assets	1.7%	-8.2%	--	12.4%	--	0.9%	--	2.4%	--	0.5	--	1.0	-0.7
ASRS Custom Inflation-Linked Benchmark	--	-9.4%	--	12.7%	--	--	--	--	--	--	--	--	-0.7
Total GTAA	9.5%	12.0%	1	8.0%	79	-1.5%	33	1.5%	1	-0.1	1	1.1	1.5
ASRS Custom GTAA Benchmark	--	12.0%	1	7.1%	58	--	23	--	--	--	--	--	1.7

Note: Performance is reported net of fees.

Underlying composites do not add up to 100% because the chart excludes private markets composites.

Ranks for statistics shown above are based on the respective universe against which the portfolio is ranked on the asset class performance summary that precedes this section of the analysis.

Rankings are from highest (1) to lowest (100) in the eVestment Universe.

Composition of Interim SAA Policy and ASRS Custom Benchmarks can be found in the appendix.

Arizona State Retirement System

Public Market Asset Class Analysis

5 Years Ending December 31, 2014

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Anlzd AJ	Rank	Tracking Error	Rank	Info Ratio	Rank	Beta	Sharpe Ratio
Total Fund	100.0%	10.5%	--	9.3%	--	0.8%	--	1.0%	--	0.7	--	1.0	1.1
Interim SAA Policy	--	9.8%	--	9.3%	--	--	--	--	--	--	--	--	1.0
Total Domestic and International Equity	53.1%	12.0%	--	14.1%	--	0.2%	--	0.6%	--	0.0	--	1.0	0.8
ASRS Custom Total Equity Benchmark	--	12.0%	--	14.2%	--	--	--	--	--	--	--	--	0.8
Total Domestic Equity	31.8%	15.9%	38	13.8%	31	0.0%	34	0.6%	1	0.0	35	1.0	1.1
ASRS Custom Domestic Equity Benchmark	--	15.8%	39	13.7%	30	--	33	--	--	--	--	--	1.1
Total International Equity	19.7%	4.8%	77	16.1%	38	-0.3%	76	1.0%	1	-0.4	95	1.0	0.3
ASRS Custom Int'l Equity Benchmark	--	5.2%	69	16.5%	52	--	71	--	--	--	--	--	0.3
Total Public Markets Fixed Income	11.7%	4.5%	55	3.3%	63	0.3%	92	0.6%	1	0.6	38	1.0	1.3
ASRS Custom Public Markets Fixed Income Benchmark	--	4.2%	61	3.2%	62	--	97	--	--	--	--	--	1.3
Total Inflation-Linked Assets	1.7%	-3.4%	--	13.2%	--	1.0%	--	2.5%	--	0.5	--	0.9	-0.3
ASRS Custom Inflation-Linked Benchmark	--	-4.7%	--	13.8%	--	--	--	--	--	--	--	--	-0.3
Total GTAA	9.5%	11.8%	1	9.9%	86	1.9%	9	1.9%	1	1.1	1	1.0	1.2
ASRS Custom GTAA Benchmark	--	9.8%	1	9.6%	82	--	36	--	--	--	--	--	1.0

Note: Performance is reported net of fees.

Underlying composites do not add up to 100% because the chart excludes private markets composites.

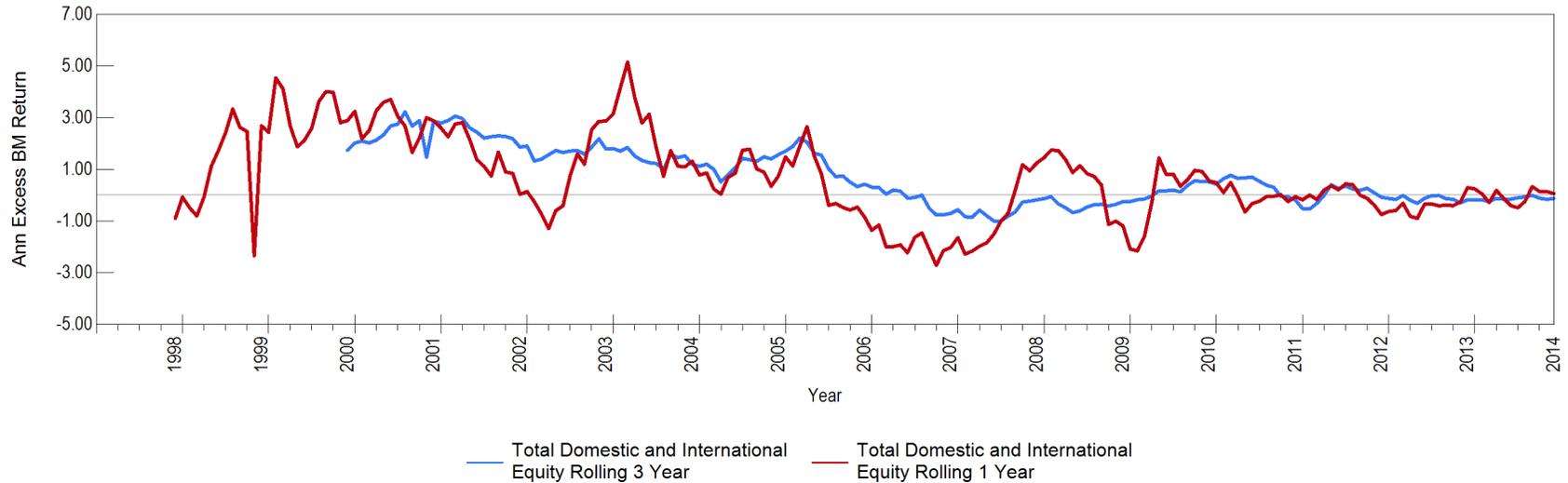
Ranks for statistics shown above are based on the respective universe against which the portfolio is ranked on the asset class performance summary that precedes this section of the analysis.

Rankings are from highest (1) to lowest (100) in the eVestment Universe.

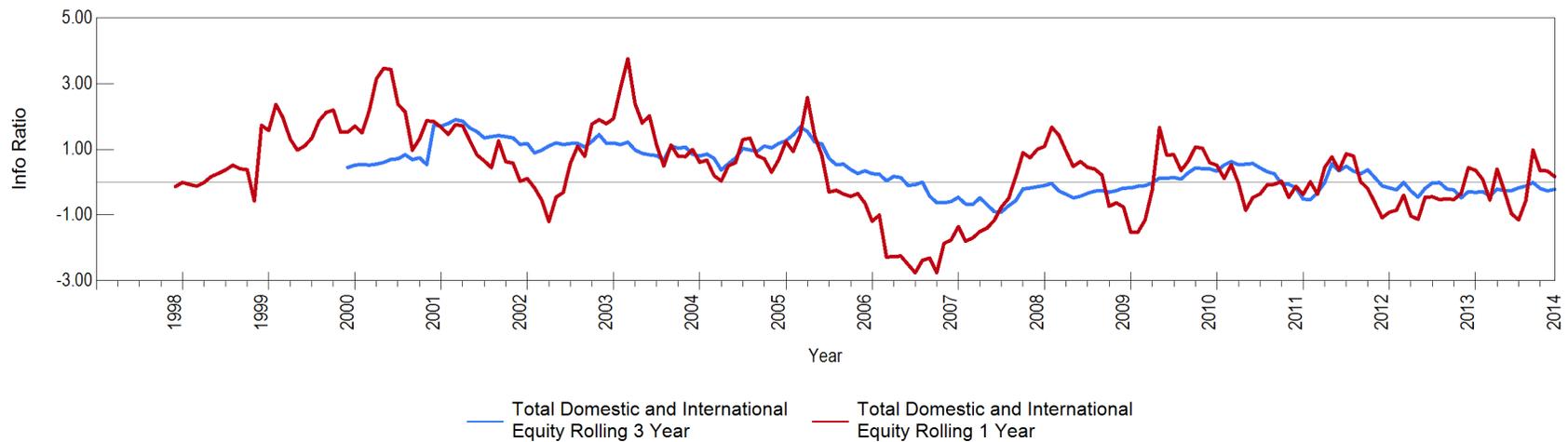
Composition of Interim SAA Policy and ASRS Custom Benchmarks can be found in the appendix.

Asset Class Analysis - Total Domestic and International Equity

Rolling Annual Excess Benchmark Return

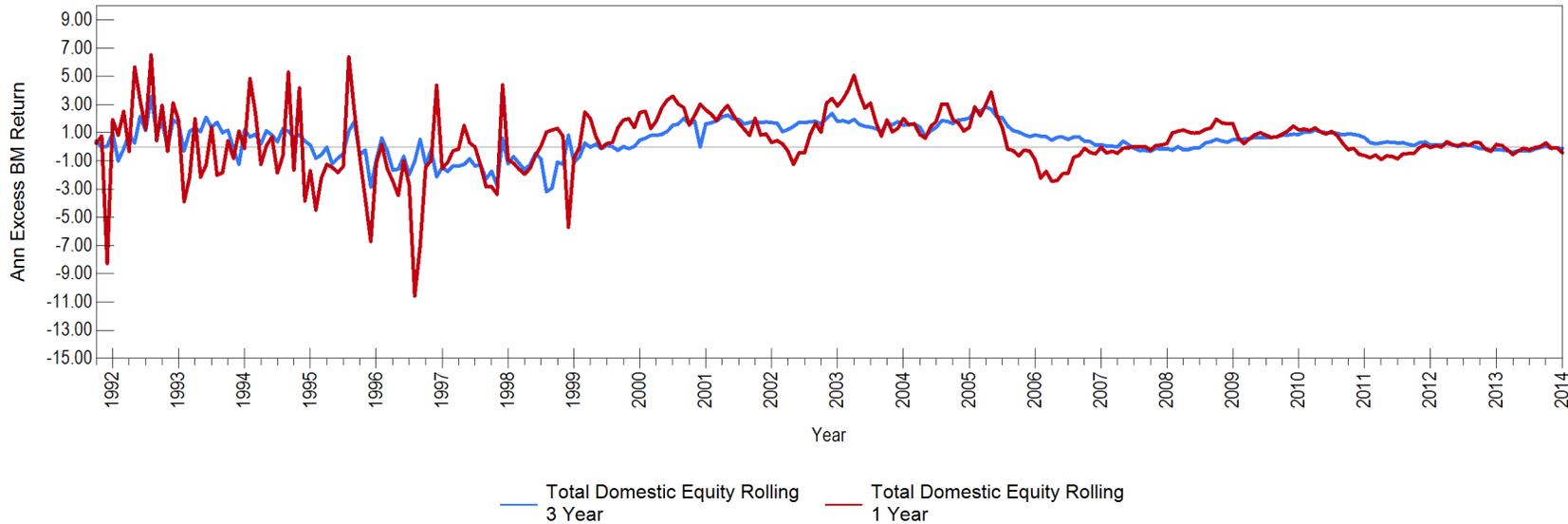


Rolling Information Ratio



Asset Class Analysis - Total Domestic Equity

Rolling Annual Excess Benchmark Return

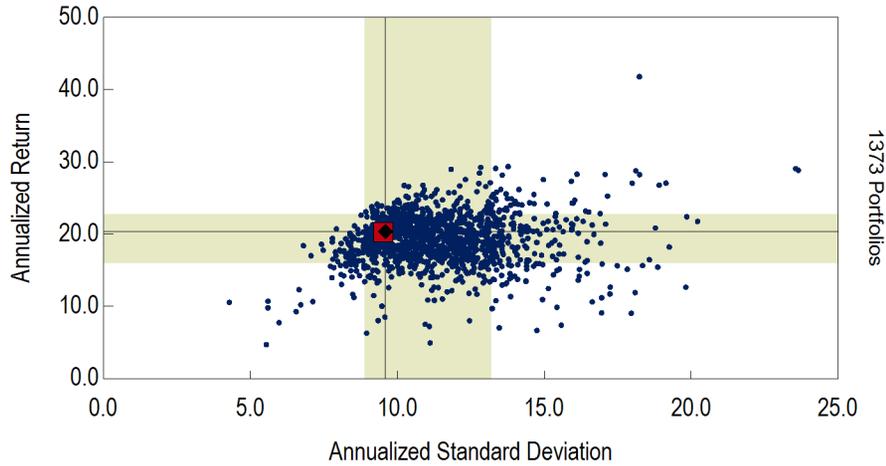


eA All US Equity Net Accounts



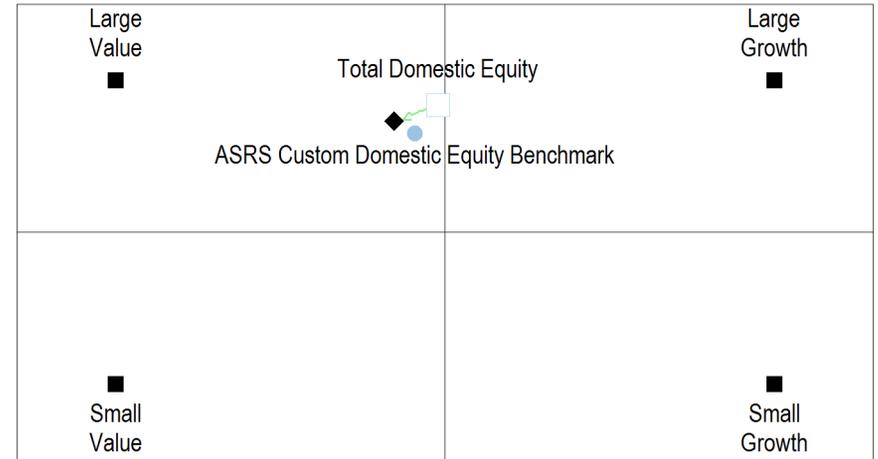
Asset Class Analysis - Total Domestic Equity

3 Year Risk Return



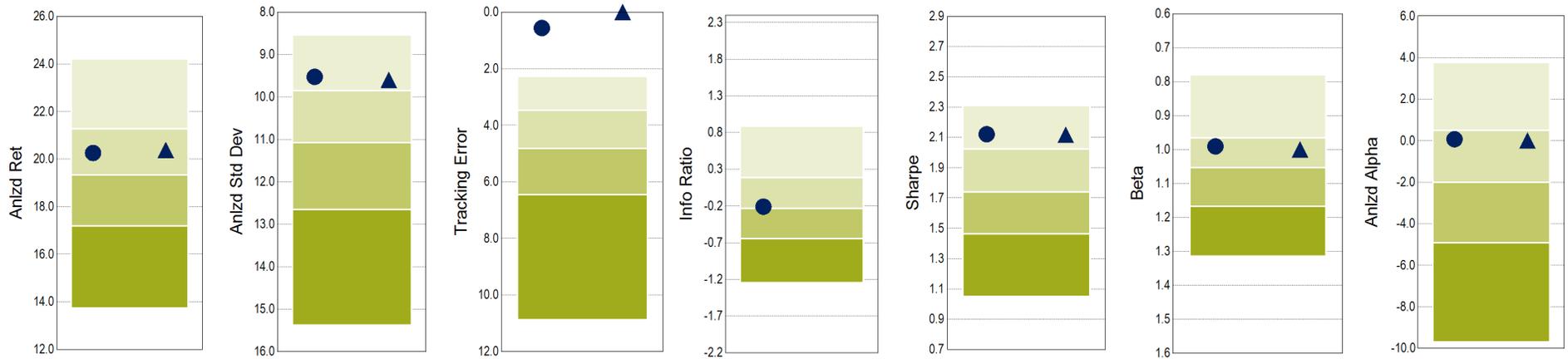
- Total Domestic Equity
- ◆ ASRS Custom Domestic Equity Benchmark
- 68% Confidence Interval
- eA All US Equity Net

3 Year Style Map



- First Rolling Period
- ◆ Last Rolling Period

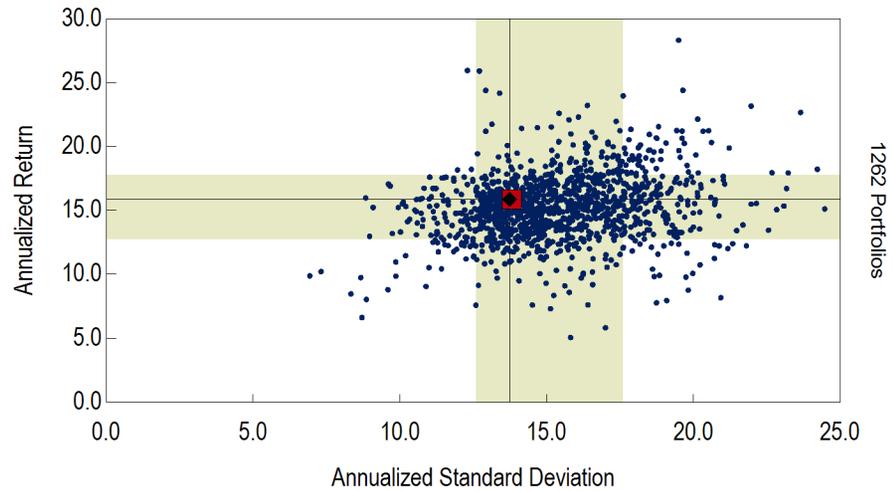
*Style map is returns based.



- Total Domestic Equity
- ▲ ASRS Custom Domestic Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

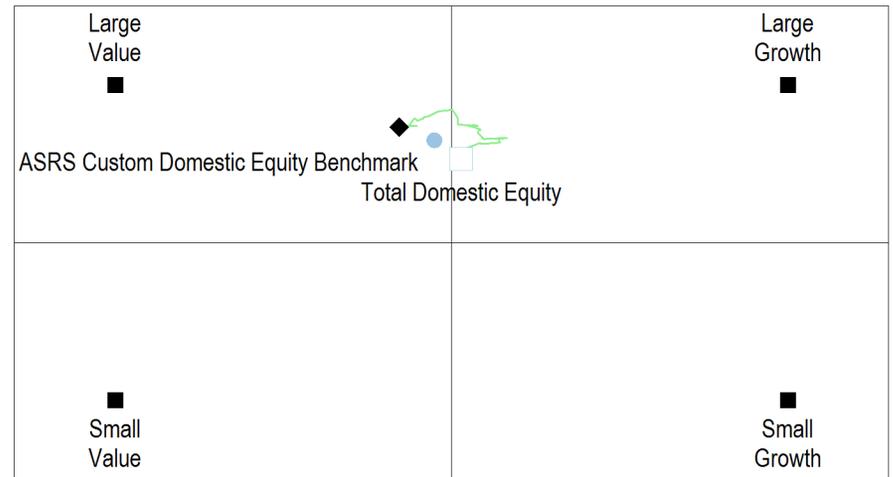
Asset Class Analysis - Total Domestic Equity

5 Year Risk Return



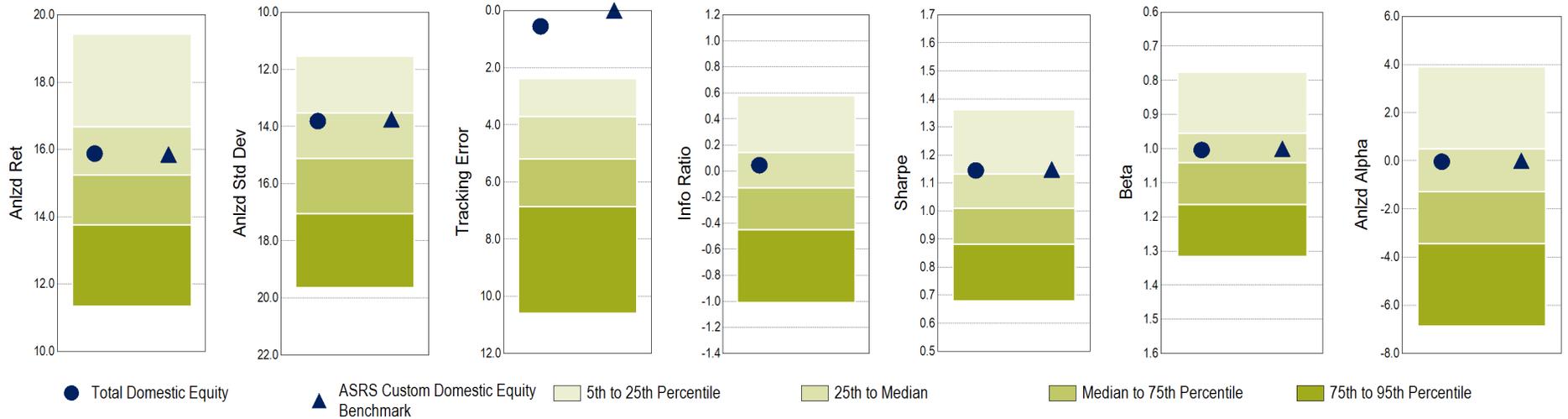
- Total Domestic Equity
- ◆ ASRS Custom Domestic Equity Benchmark
- 68% Confidence Interval
- eA All US Equity Net

5 Year Style Map



- First Rolling Period
- ◆ Last Rolling Period

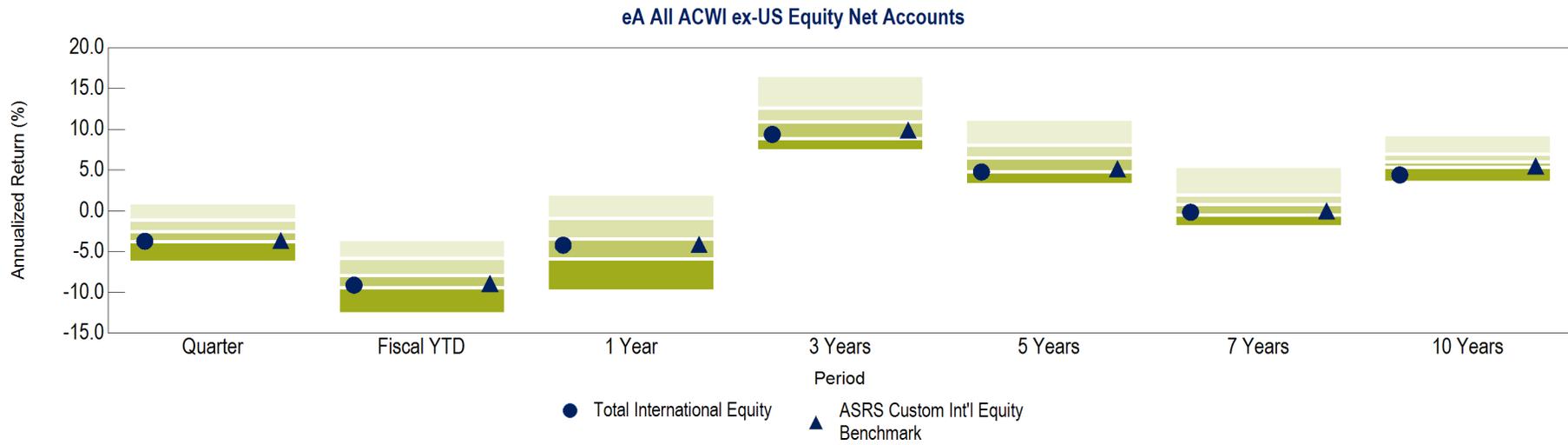
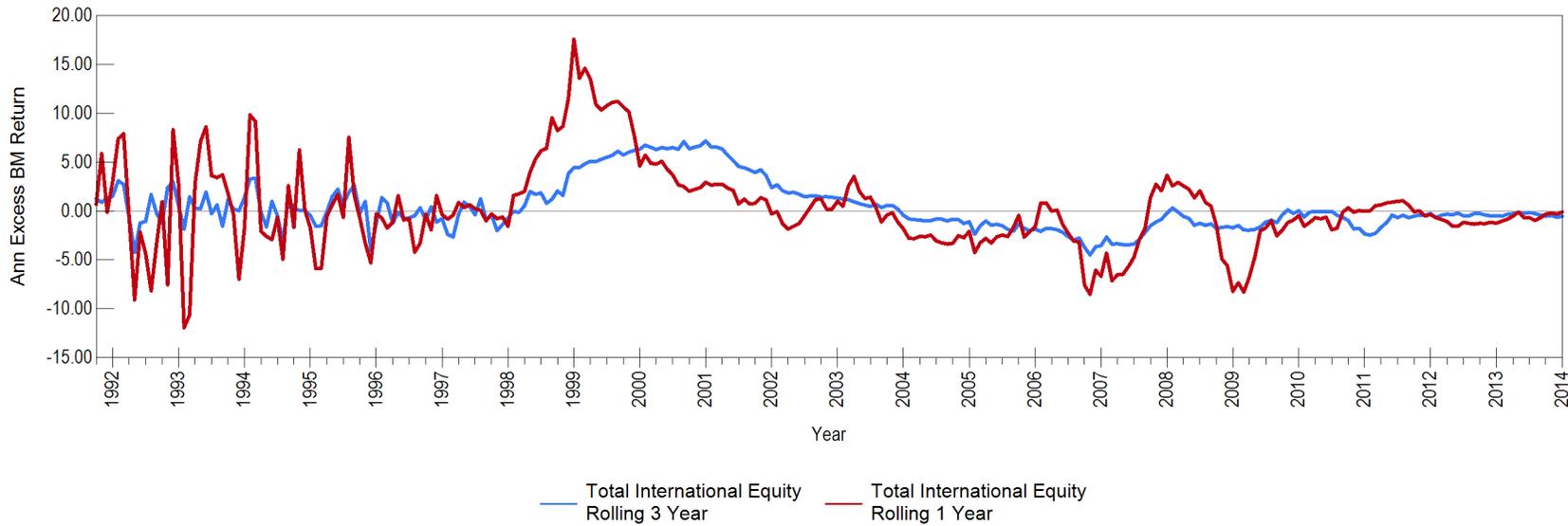
*Style map is returns based.



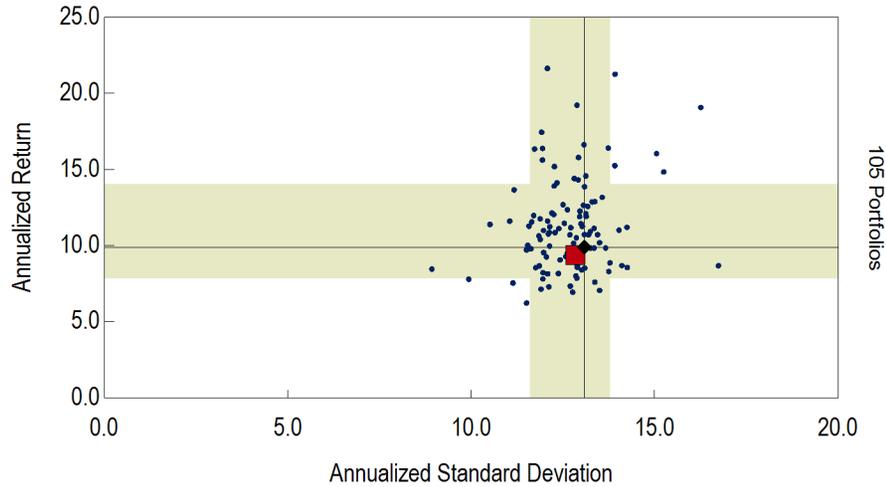
- Total Domestic Equity
- ▲ ASRS Custom Domestic Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

Asset Class Analysis - Total International Equity

Rolling Annual Excess Benchmark Return

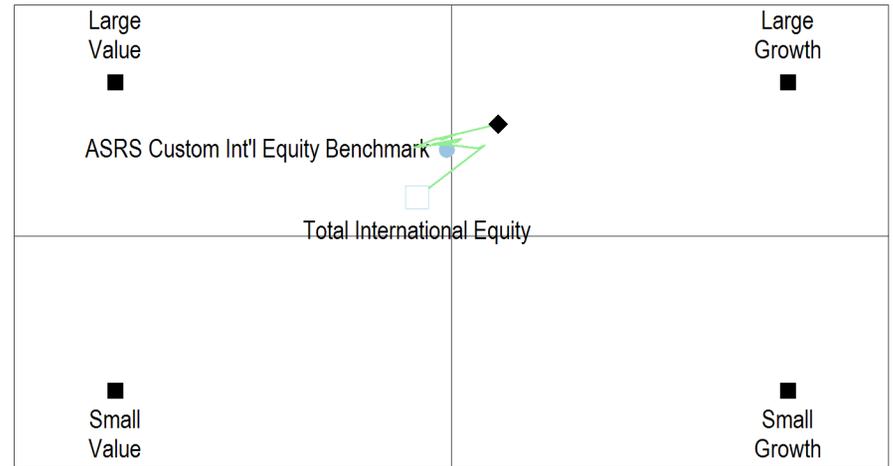


3 Year Risk Return



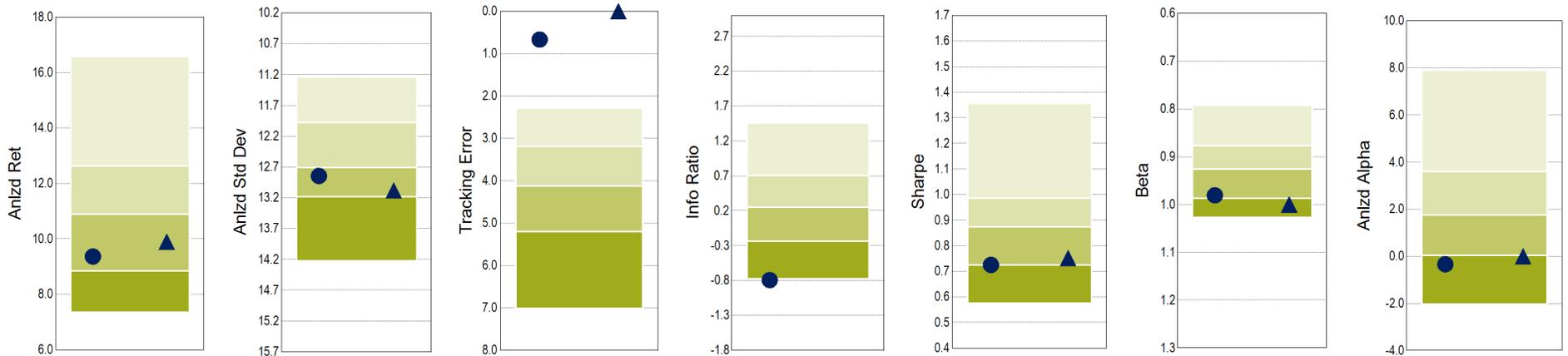
- Total International Equity
- ◆ ASRS Custom Int'l Equity Benchmark
- 68% Confidence Interval
- eA All ACWI ex-US Equity Net

3 Year Style Map



- First Rolling Period
- ◆ Last Rolling Period

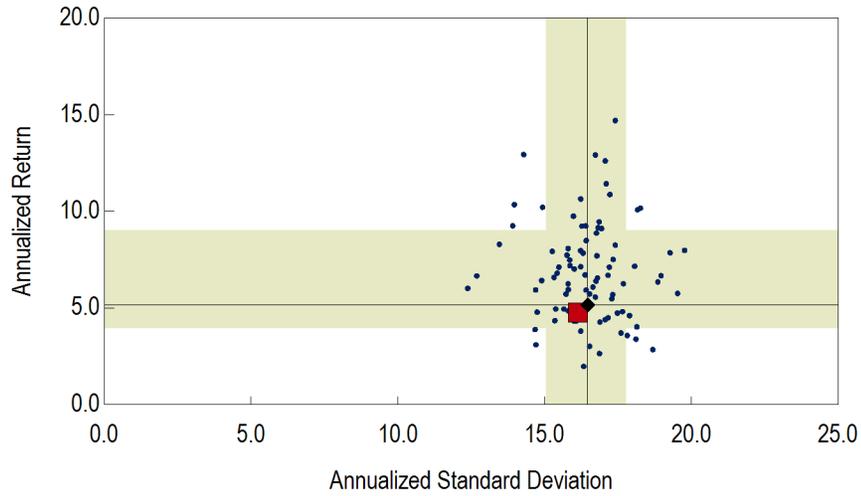
*Style map is returns based.



- Total International Equity
- ▲ ASRS Custom Int'l Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

Asset Class Analysis - Total International Equity

5 Year Risk Return

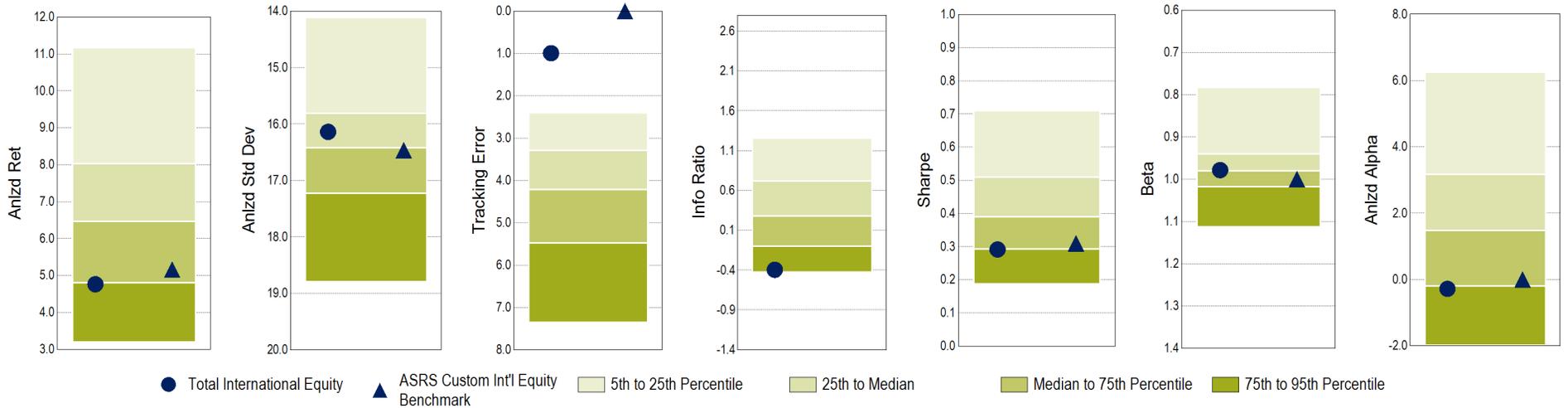


- Total International Equity
- ◆ ASRS Custom Int'l Equity Benchmark
- 68% Confidence Interval
- eA All ACWI ex-US Equity Net

5 Year Style Map



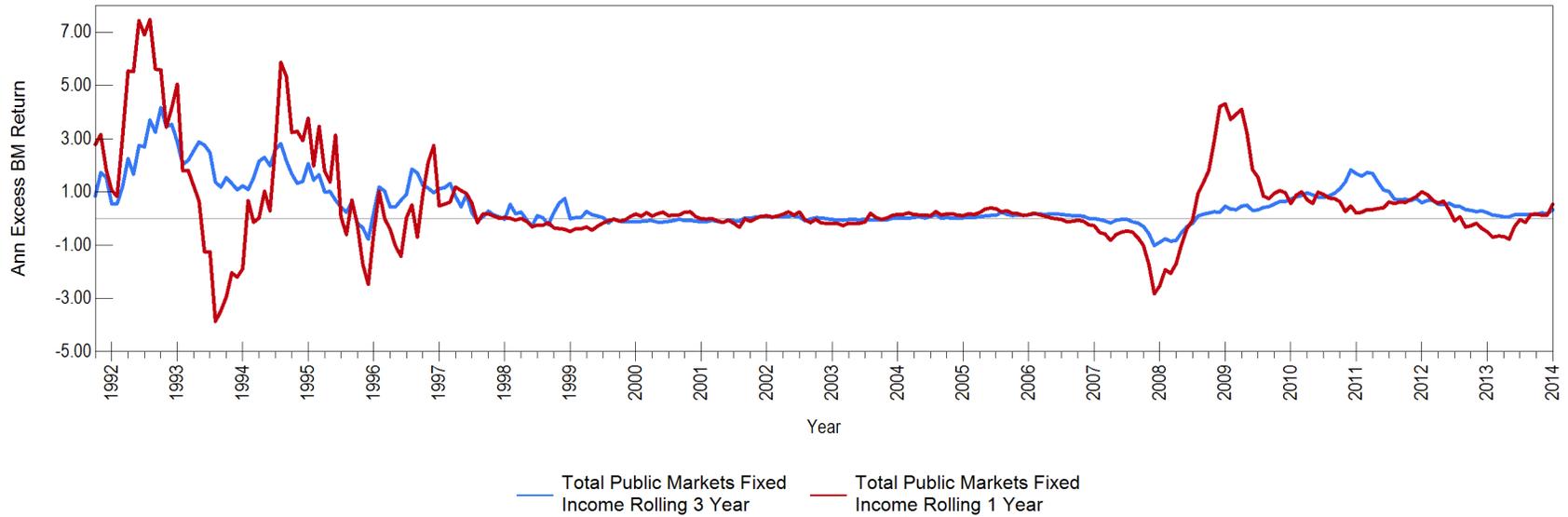
*Style map is returns based.



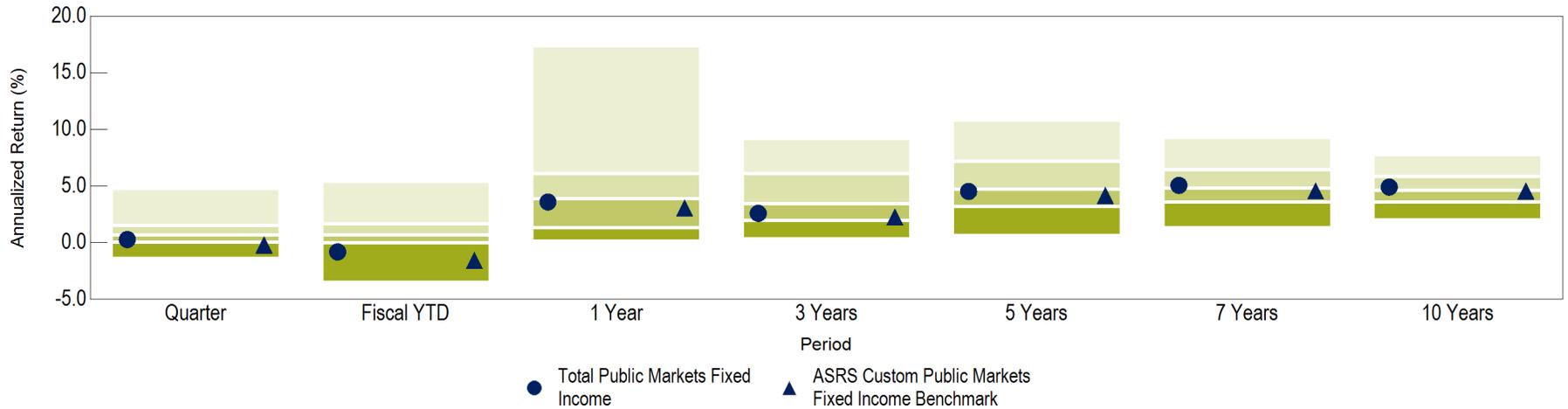
- Total International Equity
- ▲ ASRS Custom Int'l Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

Asset Class Analysis - Total Public Markets Fixed Income

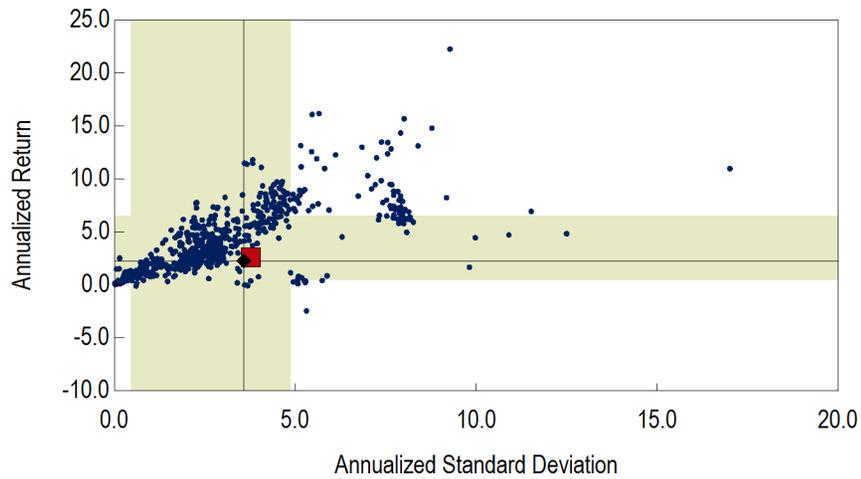
Rolling Annual Excess Benchmark Return



eA All US Fixed Inc Net Accounts

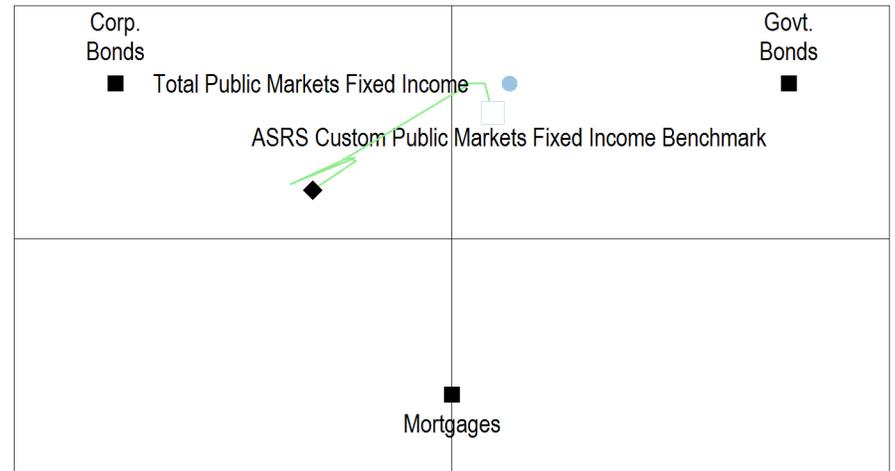


3 Year Risk Return



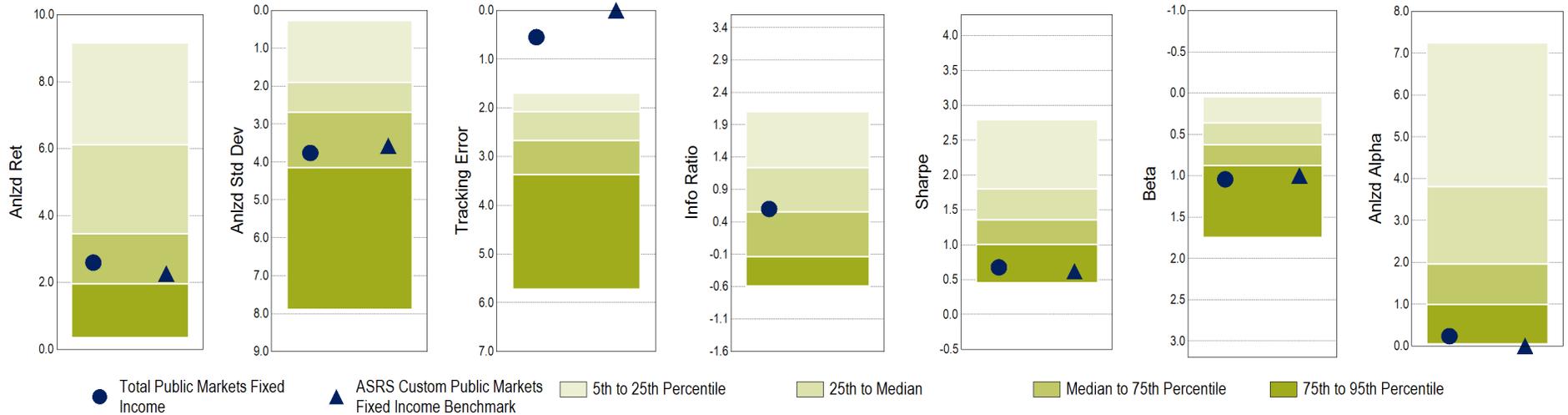
- Total Public Markets Fixed Income
- ◆ ASRS Custom Public Markets Fixed Income Benchmark
- 68% Confidence Interval
- eA All US Fixed Inc Net

3 Year Style Map



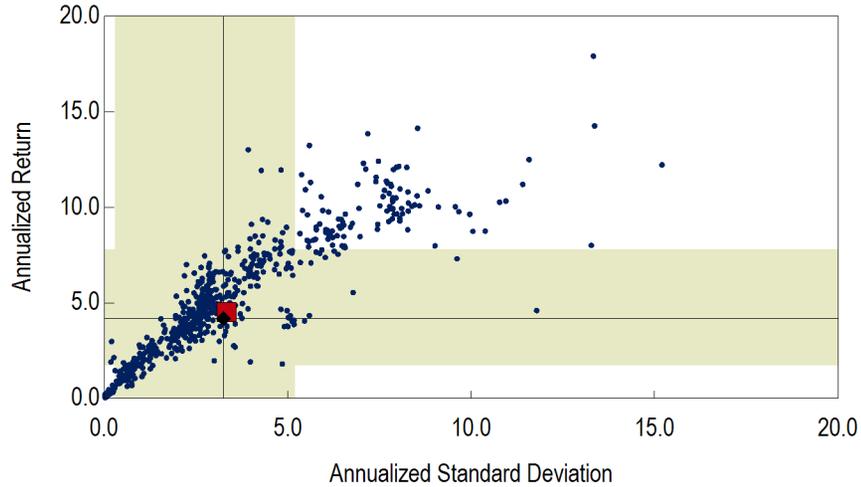
- First Rolling Period
- ◆ Last Rolling Period

*Style map is returns based.

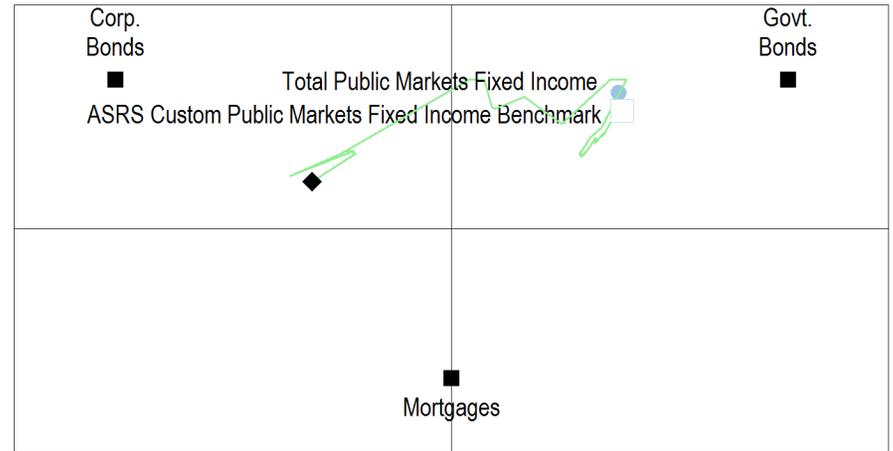


- Total Public Markets Fixed Income
- ▲ ASRS Custom Public Markets Fixed Income Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

5 Year Risk Return



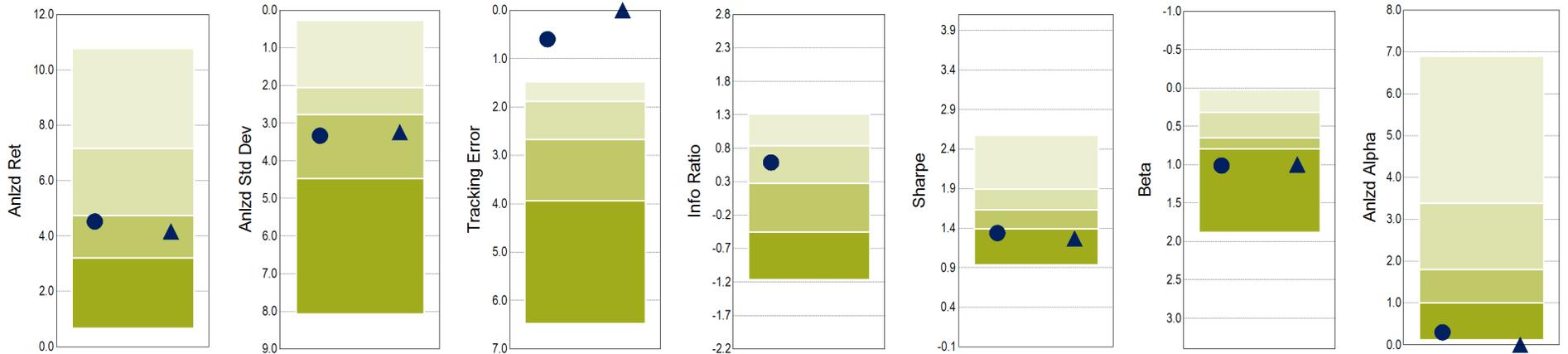
5 Year Style Map



- Total Public Markets Fixed Income
- ◆ ASRS Custom Public Markets Fixed Income Benchmark
- 68% Confidence Interval
- eA All US Fixed Inc Net

- First Rolling Period
- ◆ Last Rolling Period

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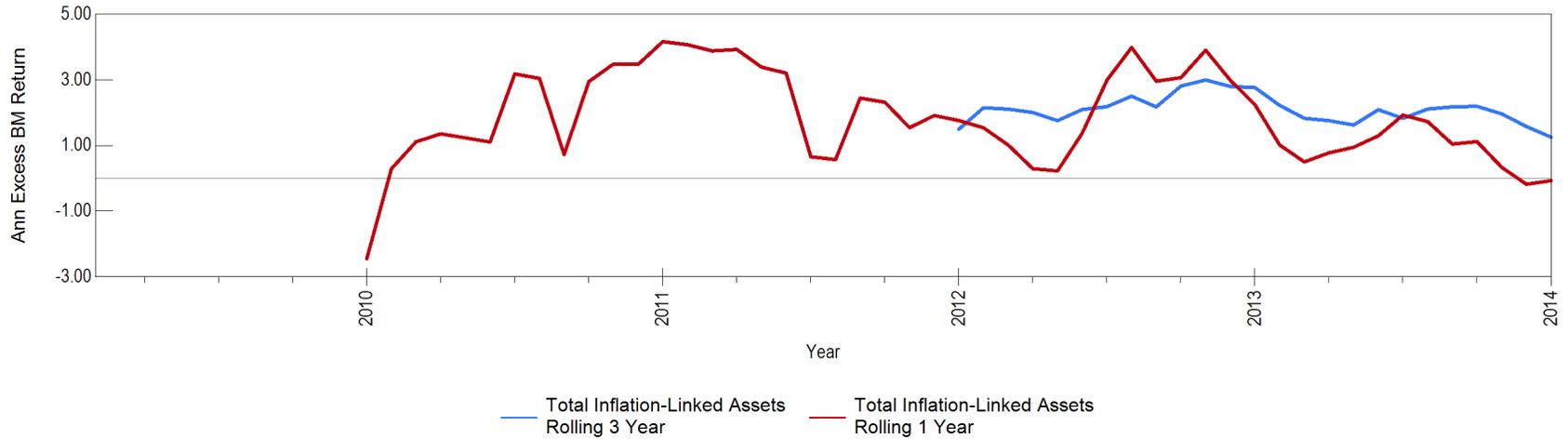


- Total Public Markets Fixed Income
- ▲ ASRS Custom Public Markets Fixed Income Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

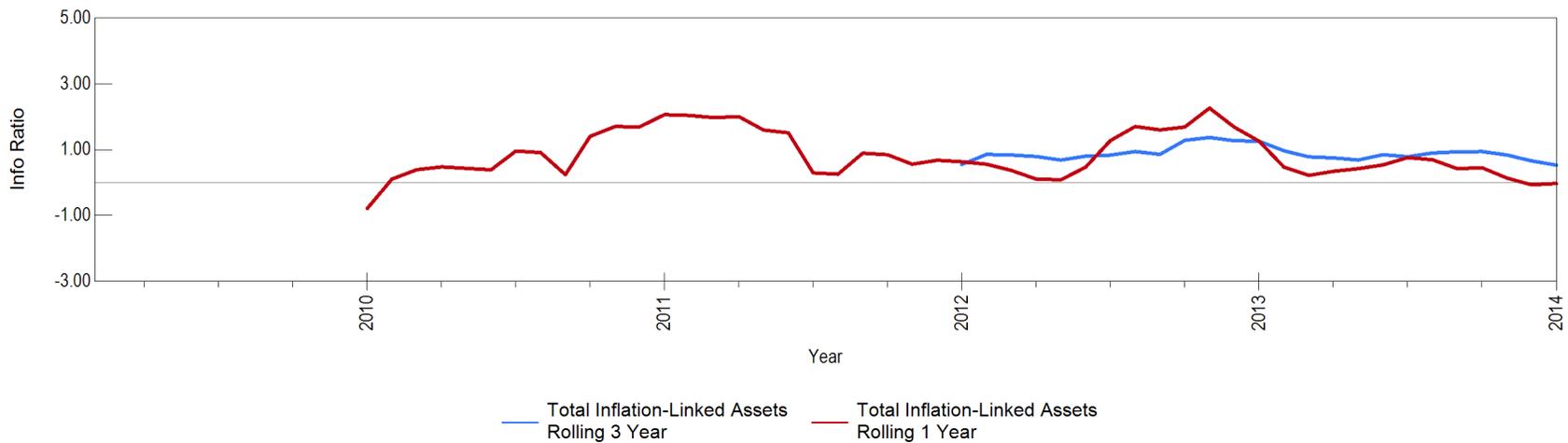


Asset Class Analysis - Total Inflation-Linked Assets

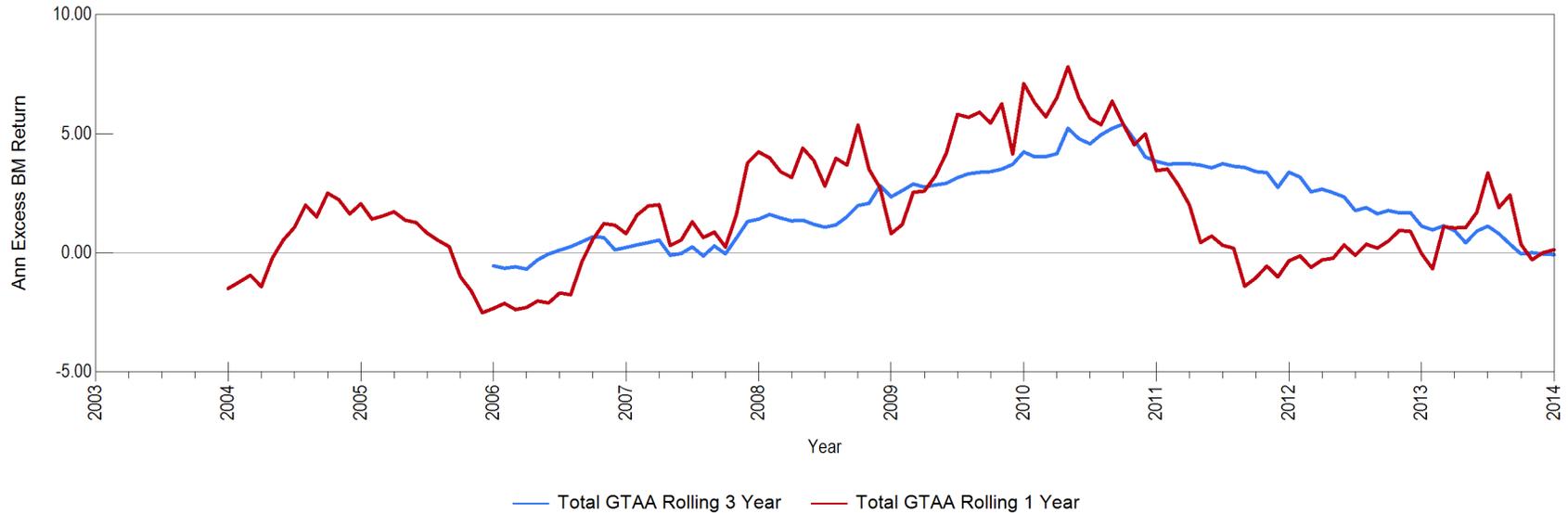
Rolling Annual Excess Benchmark Return



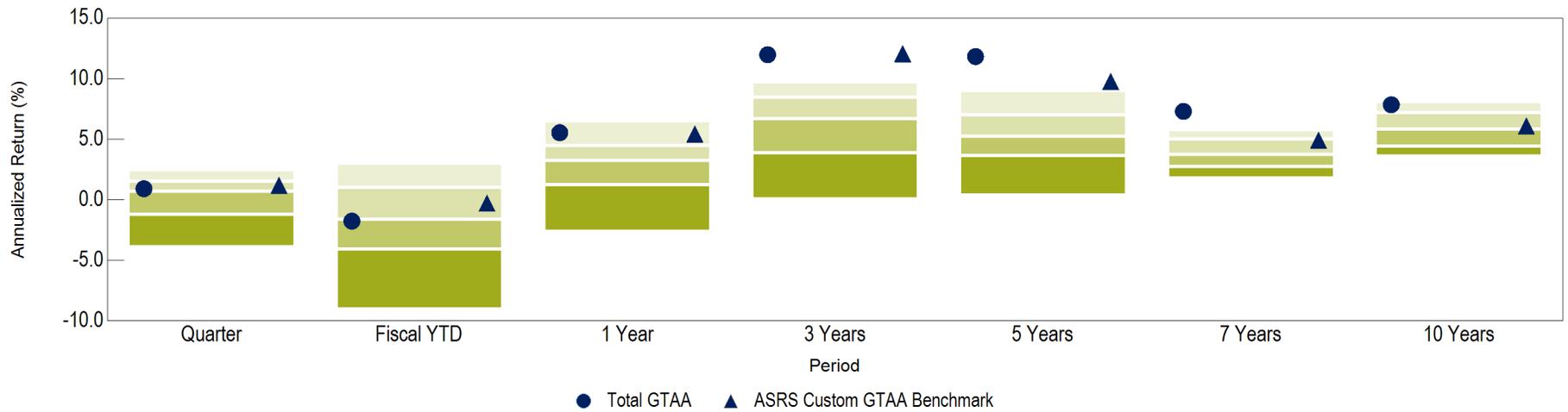
Rolling Information Ratio

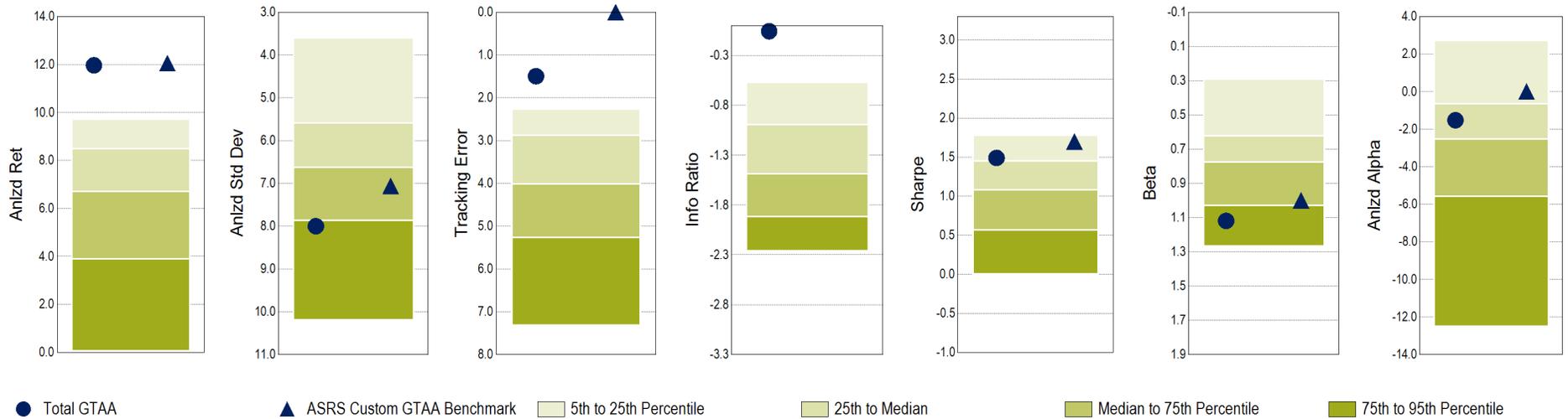
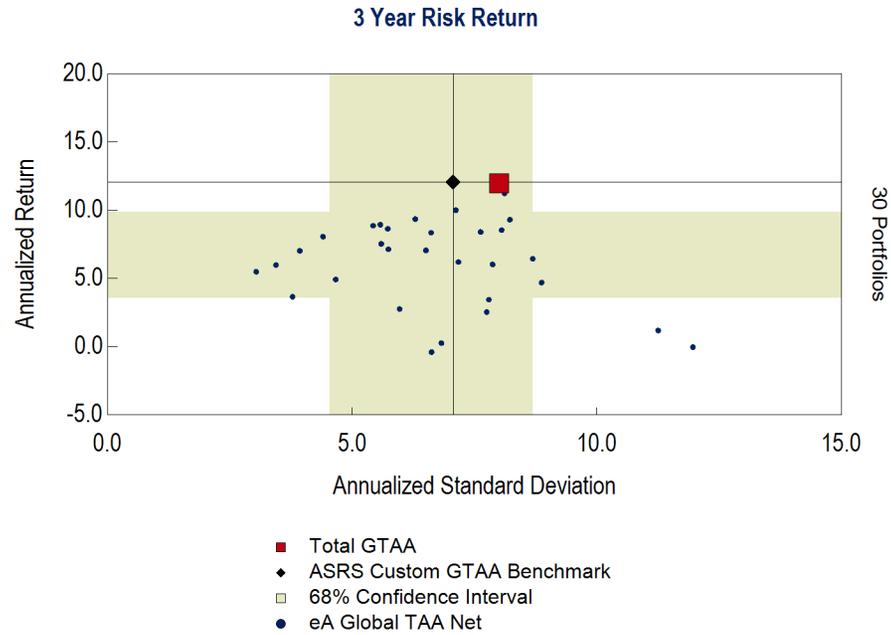


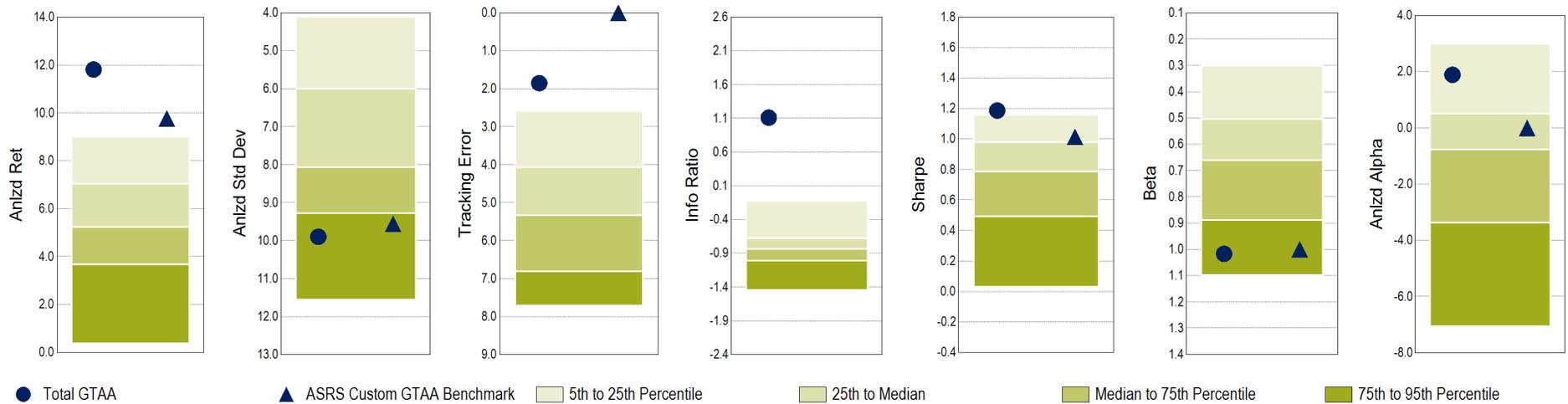
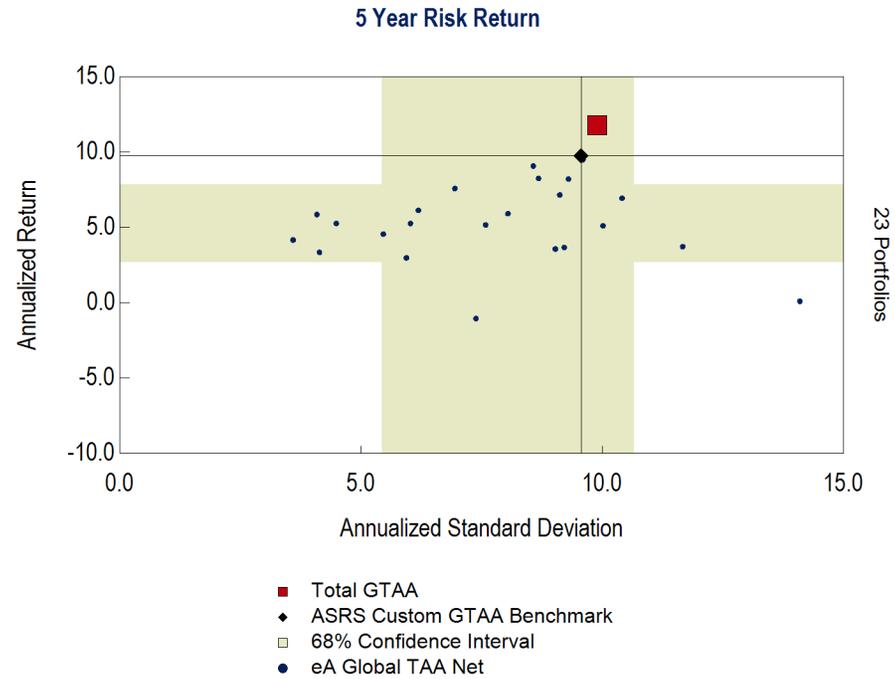
Rolling Annual Excess Benchmark Return



eA Global TAA Net Accounts







- **Six Asset Class Committee meetings have been held since the last time we provided an update on the ASRS Asset Class Committee Meetings.**

- **November 13, 2014 – Public Markets Committee**
 - Review of Public Equity Program Staff Report
 - Public Equities Asset Class
 - Public Fixed Income Asset Class

- **November 19, 2014 – Private Markets Committee**
 - Monthly Status Report, General Discussion and Deal Flow
 - Anticipated investment levels of Private Debt and Opportunistic Fixed Income asset classes and pipeline for investments in private debt space reviewed
 - Variance Requests
 - RCLCO recommended the ASRS approve three variance requests from existing real estate managers to invest in properties that do not meet the investment criteria of the respective portfolios
 - Variance Request 1 – not required after further review and determination that property in question does indeed reside within a pre-approved market for investment
 - Variance Request 2 – required as apartment building investment under review is complete and stable and the assumable loan on the property exceeds 50% of acquisition price
 - Investment leverage risk is mitigated by the fact that the property was recently appraised at a value higher than the acquisition price, the loan has a favorable interest rate, and the building is complete and stable in a market with growing rents
 - Variance Request 3 – required as medical office building investment under review has lease rollover that exceeds 20% in the next two years
 - Risks associated with exceeding the lease rollover limit mitigated by the fact that the building is in a superior location near a hospital campus and the manager has interviewed tenants with expiring leases, and tenants occupying 30,000 sq. feet of the 33,000 sq. feet in expiring leases intend to renew
 - Committee approved the recommendation
 - 2015 Private Equity Pacing Model and Implementation Plan
 - Anticipate \$600 million of new private equity commitments during the year
 - Committee approved the recommended commitment pace for 2015, noting that the actual amount may differ as determined by the committee as market conditions evolve throughout the year

- **November 21, 2014 – Ad Hoc Private Markets Committee**

- Private Debt Manager Recommendation (\$300 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 3%)
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
 - Committee approved the recommendation

- **December 18, 2014 – Private Markets Committee**

- Monthly Status Report, General Discussion and Deal Flow
- Variance Request
 - RCLCO recommended the ASRS approve two variance requests from an existing real estate manager to invest in properties that do not meet the investment criteria of the portfolio
 - Variance Request 1 – required as senior housing development investment under review includes a third party developer with a promoted return structure that exceeds the maximum return structure allowed in the investment guidelines and a 10% equity contribution, which is below the 15% minimum
 - The investment potentially offers an attractive risk-adjusted return compared to other development opportunities being evaluated
 - Variance Request 2 – not required after further review and manager’s decision to not proceed with the transaction
 - Committee approved the recommendation
- Niche and Tactical Real Estate Co-Investment Recommendation (\$50 - \$70 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 8%)
 - The ASRS is currently invested with this manager in multiple funds
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
 - Committee approved the recommendation pending legal approvals under the Niche and Tactical Real Estate Program
- REIT Analysis Discussion
 - Review of Staff analysis of REITs

- **December 18, 2014 – Private Markets Committee (cont.)**

- 2015 Real Estate Pacing Model and Implementation Plan
 - Anticipate \$700 million - \$1.6 billion of new real estate commitments during the year
 - Target \$500 million to \$1 billion in new separate account investments;
 - \$100 million to \$300 million in additions to existing separate account relationships; and
 - \$100 million to \$300 million in new commingled fund investments
 - Committee approved the recommended commitment pace for 2015, noting that the actual amount may differ as determined by the committee as market conditions evolve throughout the year
- Opportunistic Equity Disposition Discussion
 - Staff provided a review of the holding's characteristics and recommended a disposition plan according to guidelines outlined within the recommendation
 - No action was taken on this item

- **January 23, 2015 – Private Markets Committee**

- Monthly Status Report, General Discussion and Deal Flow
 - Discussion included a review of private markets investments that may be directly or tangentially impacted by changes in energy expectations (oil, natural gas, etc.)
- Private Equity Manager Recommendation (\$50 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
 - Committee approved the recommendation
- Private Equity Manager Recommendation (\$50 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Equity is 7%)
 - The ASRS has invested with this manager in a prior fund
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
 - Committee approved the recommendation

• **January 23, 2015 – Private Markets Committee (cont.)**

- Private Debt Manager Recommendation – Additional Commitment (\$101 million; \$300 million original commitment)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 3%)
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
 - Committee approved the recommendation
 - The Committee approved the original \$300 million investment at the November 21, 2014 PRIVMC meeting
- Private Debt Manager Recommendation (\$500 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Private Debt is 3%)
 - The ASRS has invested with this manager in a prior fund
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
 - Committee approved the recommendation
- Niche and Tactical Real Estate Investment Recommendation (\$300 million)
 - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 8%)
 - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
 - Committee approved the recommendation
- Separately Managed Account Portfolio Review
 - RCLCO presented the results of its semi-annual portfolio review of the separately managed real estate accounts
- Real Estate Pipeline Discussion

- **January 29, 2015 – Ad Hoc Private Markets Committee**

- Private Debt Variance Request and Investment Guideline Amendment
 - Staff recommended the ASRS approve a variance request from an existing private debt manager to make an investment that would cause the overall portfolio to exceed concentration limits
 - Required because investment would exceed the maximum position limit for any single investment in the portfolio and maximum limit on preferred equity investments in the portfolio
 - While structured as preferred equity, the investment has mezzanine loan characteristics
 - Committee approved the recommendation
 - In addition to approving the variance request, the Committee also authorized an amendment to the manager’s investment guidelines allowing similar preferred equity investments having mezzanine loan characteristics be treated as mezzanine for concentration limit purposes

- **The Fund continues to make significant progress moving the portfolio from the Interim SAAP toward the long-term SAAP.**
 - Full implementation results in a further reduction of 2% within U.S. Equities and 1% within U.S. Core Fixed Income and an addition of 2% to Real Estate and 1% to Private Equity.
- **The Fund's performance for calendar year 2014 was driven by the Fund's allocation to private markets asset classes and U.S. equities.**
 - Private market asset classes account for approximately 20% of the Total Fund, with one-year returns ranging from 11.0% for opportunistic debt to 45.7% for opportunistic equity.
 - Underweight allocations to core, high yield and emerging market debt in favor of private and opportunistic debt strategies has proved to be a source of significant value add at the Total Fund level.
 - Generally, active managers across public equities underperformed their benchmarks, whereas collectively, active emerging markets equities managers were able to add significant value.
- **Additional \$901 million in commitments to Private Debt asset class during Q4 consistent with House Views on the asset class's relative attractiveness and desire to increase overweight vs. current SAAP target.**
 - Continued build-out of private debt asset class provides an opportunity to generate equity-like returns with less volatility.
- **Tactical positioning consistent with IMD House Views.**
 - Opportunistic Equity, Opportunistic Debt and Equity Risk Factor portfolios have performed well, adding value on both a relative and absolute basis.
- **ASRS SAAP Benchmark evaluation is complete and a recommendation was made to the Investment Committee by Staff and NEPC on February 9, 2015.**

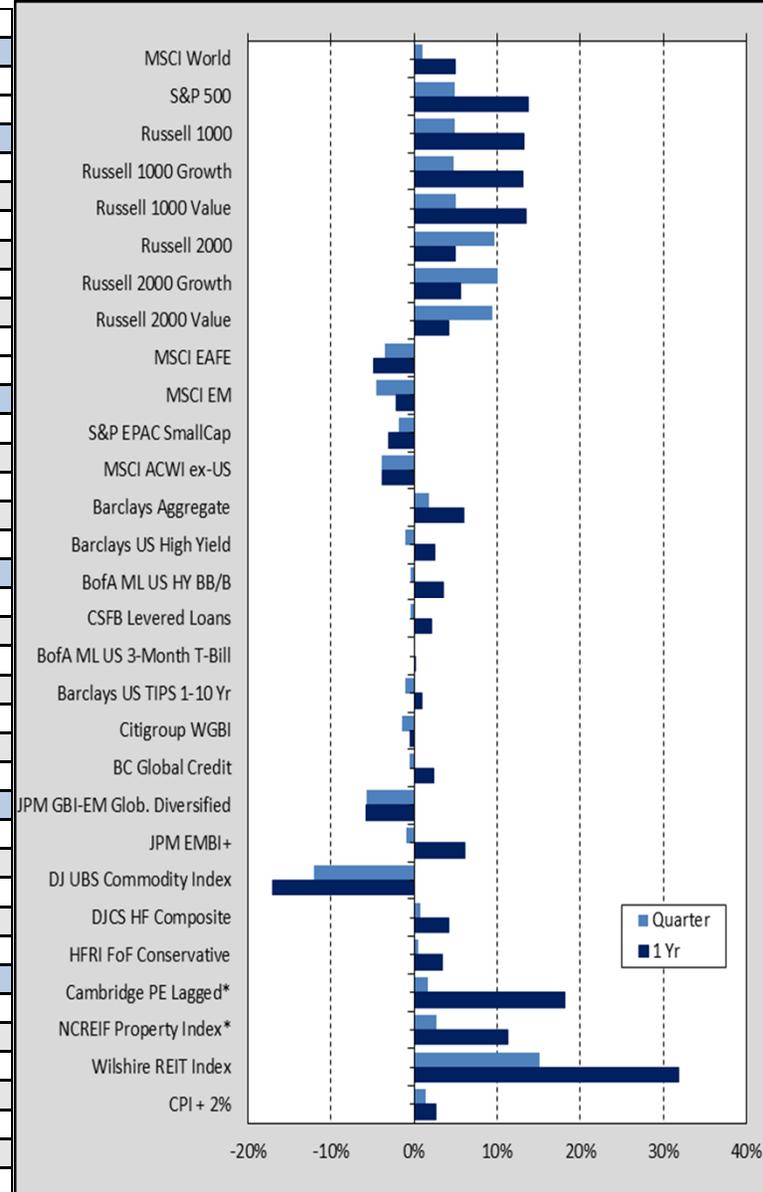
Market Environment Update and Outlook

- **Fourth quarter “advanced” estimate of GDP growth remained positive, but decreased to an annual rate of +2.6%.**
 - Retail sales (ended December) rose to 1.9% on a year-over-year growth rate basis.
 - The inventory-to-sales ratio has remained mostly flat since early 2010 and closed at 1.3 in November.
 - Corporate profits as a percent of GDP increased, ending the fourth quarter at 12.2% and remain elevated relative to historical levels.
 - The U.S. trade deficit increased slightly in December.
- **The unemployment rate fell to 5.8% in December; U-6, a broader measure of unemployment, fell to 11.2% the fourth quarter.**
- **The Case-Schiller Home Price Index (as of 12/31) declined slightly to 167.11 from third quarter levels and is at levels higher than that of pre-financial crisis levels of 150.92.**
- **Rolling 12-month CPI decreased to 0.8% at the end of December; Capacity Utilization declined slightly to 79.7% in December.**
- **Fed Funds rate remains at 0.25%, while the 10-year Treasury Yield finished Q4 at 2.17%.**
- **The Fed balance sheet continued to grow in 2014, while the European Central Bank balance sheet decreased in 2014.**
 - ECB announced it will be embarking on an asset purchasing stimulus plan.
- **S&P valuations decreased in December, remaining above the 10-year and long-term averages, which are nearly equal at 16.4x, using current price/earnings ratios.**
 - Cyclically-adjusted Shiller PE ratio is above the long-term average of 17.6x and above the 10-year average of 22.9x.
- **The U.S. Dollar continues to strengthen against a basket of major currencies as the Fed ends its quantitative easing program.**

Market Environment – Q4 2014 Overview

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
World Equity Benchmarks						
MSCI World	World	1.0%	4.9%	15.5%	10.2%	6.0%
Domestic Equity Benchmarks						
S&P 500	Large Core	4.9%	13.7%	20.4%	15.5%	7.7%
Russell 1000	Large Core	4.9%	13.2%	20.6%	15.6%	8.0%
Russell 1000 Growth	Large Growth	4.8%	13.1%	20.3%	15.8%	8.5%
Russell 1000 Value	Large Value	5.0%	13.5%	20.9%	15.4%	7.3%
Russell 2000	Small Core	9.7%	4.9%	19.2%	15.6%	7.8%
Russell 2000 Growth	Small Growth	10.1%	5.6%	20.1%	16.8%	8.5%
Russell 2000 Value	Small Value	9.4%	4.2%	18.3%	14.3%	6.9%
International Equity Benchmarks						
MSCI EAFE	International Developed	-3.6%	-4.9%	11.1%	5.3%	4.4%
MSCI EM	Emerging Equity	-4.5%	-2.2%	4.0%	1.8%	8.4%
S&P EPAC SmallCap	Small Cap Int'l	-1.9%	-3.1%	14.4%	8.9%	6.9%
MSCI ACWI ex-US	World ex-US	-3.9%	-3.9%	9.0%	4.4%	5.1%
Domestic Fixed Income Benchmarks						
Barclays Aggregate	Core Bonds	1.8%	6.0%	2.7%	4.5%	4.7%
Barclays US High Yield	High Yield	-1.0%	2.5%	8.4%	9.0%	7.7%
BofA ML US HY BB/B	High Yield	-0.4%	3.5%	8.1%	8.8%	7.2%
CSFB Levered Loans	Bank Loans	-0.4%	2.1%	5.8%	5.8%	4.7%
BofA ML US 3-Month T-Bill	Cash	0.0%	0.0%	0.1%	0.1%	1.5%
Barclays US TIPS 1-10 Yr	Inflation	-1.0%	0.9%	0.0%	2.8%	3.8%
Global Fixed Income Benchmarks						
Citigroup WGBI	World Gov. Bonds	-1.5%	-0.5%	-1.0%	1.7%	3.1%
BC Global Credit	Global Bonds	-0.5%	2.4%	5.1%	5.3%	4.8%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local)	-5.7%	-5.7%	0.1%	2.6%	6.7%
JPM EMBI+	Em. Mkt. Bonds	-0.9%	6.2%	4.7%	7.0%	7.7%
Alternative Benchmarks						
DJ UBS Commodity Index	Commodity	-12.1%	-17.0%	-9.4%	-5.5%	-1.9%
DJCS HF Composite	Hedge Fund	0.7%	4.1%	7.2%	5.9%	5.8%
HFRI FoF Conservative	Fund of Funds	0.5%	3.4%	5.1%	3.3%	2.5%
Cambridge PE Lagged*	Private Equity	1.7%	18.1%	17.1%	16.6%	15.1%
NCREIF Property Index*	Real Estate	2.6%	11.3%	11.1%	11.0%	8.1%
Wilshire REIT Index	REIT	15.1%	31.8%	16.4%	17.3%	8.3%
CPI + 2%	Inflation/Real Assets	1.4%	2.7%	3.3%	3.7%	4.3%

* As of 9/30/2014



Positives

- **Fed asset purchases come to an end**
 - Divergence in monetary policies signaling different investment environments globally
- **Q4 GDP growth estimated at 2.6%**
 - U.S. employment continues to gain
- **ECB announces further monetary easing through asset purchases in addition to negative short dated interest rates**
- **Developed world inflation is low**
 - In U.S., CPI for all Urban Consumers was negative in Q4 driven by lower energy

Negatives

- **Geopolitical instability drives volatility**
 - Instability in the Mid-East, Eastern Europe, Greece
- **Europe continues to see ongoing political and economic growth challenges**
- **U.S. Dollar strength continues to translate into negative dollar denominated returns in international markets**
- **Valuations remain above 10 year and long-term averages**
 - Developed Equity P/Es above median
 - Credit spreads near historically low levels
- **Volatility re-emerges; the VIX spiked substantially toward the end of the fourth quarter**
 - VIX spiked approximately 100% in mid-December

Global Equity

- **U.S. equities advanced in the fourth quarter amid increasing volatility.**
- **Small cap stocks outperformed large cap stocks during the quarter, with the Russell 2000 Index returning 9.7% and the S&P 500 Index returning 4.9%.**
- **International equities underperformed U.S. markets during the quarter, returning -3.9%, as measured by the MSCI ACWI ex-U.S. Index.**
 - Developed markets returned -3.6% as measured by the MSCI EAFE Index. Europe was the worst performing region returning -4.6%.
 - Emerging markets returned -4.5% as measured by the MSCI Emerging Markets Index in U.S. dollar terms. In local currency terms emerging markets were up 0.1%. Emerging countries in Europe (-6.45%) and Latin America (-6.13%) were the largest detractors in local currency terms.

Private Equity

- **New private equity commitments totaled \$83 billion in Q4 2014, bringing total new commitments to \$348 billion for the year, making 2014 the fifth straight year of increasing commitments.**
 - 2014 global PE fundraising pace increased 7% over 2013; U.S. fundraising exceeded 2013 totals by 4% or \$9.4 billion.
- **Buyout and growth equity fund deal volume in both the U.S. and Europe gradually declined throughout 2014.**
 - Buyout and growth equity deals totaled \$181 billion, approximately \$3.0 billion less than 2013.
- **Venture capital commitments totaled \$44.9 billion, outpacing total 2013 commitments by 33%.**
 - At 13% of total private equity raised, commitments are just below the 10-year historic relative average.
- **Mezzanine funds continue to face strong headwinds from a robust high yield market and an expanding supply of private debt.**
 - Mezzanine funds raised \$16.5 billion or 5% of total private equity funds raised, \$8.8 billion less than in 2013.
- **Asian private equity commitments accelerated in 2014 to \$38.1 billion.**
 - Represents 11% of the 2014 total across all geographies. Asian funds raised \$27.5 billion in 2013, with 70% by China-based firms.

Fixed Income

- **Risk aversion permeated fixed income markets in the fourth quarter amid growing concerns around global economic growth and geopolitical events.**
- **2 and 3 year Treasury yields increased by 20 basis points while the 10-year Treasury yield fell 33 basis points during the quarter, finishing at 2.17%.**
- **The Treasury yield curve flattened with the spread between two- and ten-year rates falling to 1.50%.**
- **Treasury Inflation-Protected Securities, or TIPS, underperformed nominal Treasuries due to lower inflation (expectations and actual), with the Barclays U.S. TIPS Index posting a loss of 1.0% during the quarter.**
- **Investment grade credit spreads continued to widen, ending December at 125 basis points.**
- **High yield bonds returned -1.0% as spreads increased to 483 basis points, up from 424 basis points, nearly 59 basis points wider than September 2014 levels.**
 - High yield markets were most significantly impacted by the decline of oil prices as energy makes up approximately 14% of the Barclays U.S. High Yield Bond Index.
- **Emerging markets debt continued to slow in the fourth quarter after a strong first half of the year.**
 - Concerns over geopolitical events, economic growth and a Fed rate increase caused local currency (JP Morgan GBI-EM Global Diversified – Unhedged) to fare worse than external currency (JP Morgan EMBI+) emerging markets debt, resulting in losses of 5.7% and 0.9%, respectively.

Commodities

- **Commodities sold off in the fourth quarter with the Bloomberg Commodity Index losing 12.1%.**
 - Oil continued to be the headline story with a decline of approximately 40% in the quarter on negative supply pressure from OPEC and on lower demand growth expectations.

Real Estate

- **NEPC continues to be neutral on core real estate in the U.S. and remains positive on non-core real estate, that is, value-add and opportunistic strategies.**
- **Within U.S. core real estate, strong fundamentals continue to be the story along with attractive income spreads relative to interest rates.**
 - The concerns for U.S. core real estate (and U.S. real estate, broadly) continues to be plentiful capital that is driving up pricing; and the market's expectation for higher future interest rates and their impact on capitalization rates and capital values.
- **U.S. REITs traded up relative to net asset values ending Q4 at a slight premium to NAV (long-term average is 2.4% above NAV).**
 - The Wilshire REIT Index ended the quarter up 15.1% and ended the year with a gain of 31.8%.
 - FFO multiples are up to approximately 18x remaining above the average of 12.5x since 2000.
- **Overall, the non-core real estate investment environment in the U.S. is normalizing; however, select areas remain attractive.**
- **Europe is viewed as the best place for a marginal dollar of non-core real estate investment.**
 - Europe is emerging from multi-year recession, but recovery is slow.
 - Banks in EU are still overleveraged and have significant real estate exposure (banks in Europe hold 90%+ of real estate debt or €2,300B; in the U.S. banks hold 49% of real estate debt).

Real Assets/Inflation-Linked Assets

- **Massive energy market dislocation.**
 - Private equity and private debt opportunities attractive.
 - Potential for public stressed/distressed credit, equity and commodity plays.
- **OPEC and Saudi Arabia have indicated a willingness to allow lower oil prices to persist in efforts to cement market share and reduce marginal supply.**
- **Select infrastructure opportunities are attractive.**
 - Target opportunistic strategies in niche sub-sectors to take advantage of market dislocations.
- **NEPC continues to believe in the long-term demand drivers in agriculture.**
 - Long-term commodity prices driven by growing emerging market demand.
- **Timber opportunity set limited but warrants further review**
 - 45% increase in housing starts forecasted; timber prices highly correlated

- **Be judicious with risk**
 - Avoid chasing risk for only marginal return enhancements
 - Less liquid opportunities may provide the best risk-adjusted approach, but liquidity needs should be incorporated (e.g., substituting direct lending for high yield)
- **Question the “traditional” approach; different investment environments require different perspectives of risk and return**
 - A low-return environment may require a fresh perspective
 - Continue to remove traditional portfolio constraints by adding active managers with skill to exploit inefficiencies within and across asset classes (e.g., flexible global equity, global asset allocation, absolute return fixed income)
- **Rethink fixed income portfolio structure in light of current market environment**
 - Use of an unconstrained/multi-sector fixed income portfolio may provide sound diversification and enhanced liquidity
 - Examine if alternatives are available to traditional portfolio positions (e.g., combining cash and long treasuries vs. holding core bond portfolio)
- **Review inflation hedging allocations in light of recent market action**
 - Some areas have likely sold off more than is warranted
- **Consider market weight or slightly over-weighted target allocation to developed non-U.S. equity**
 - Consider reducing the risk of the position by allocating to a currency hedged portfolio or implementing a currency hedge overlay

NEPC Updates

Fourth Quarter 2014

Highlights of Fourth Quarter Happenings at NEPC

NEPC Research

Recent White Papers Posted

- *Improving Asset Allocation with Factor Analysis (November 2014)* – Mark Cintolo, CAIA, Research Consultant
- *Improving Governance Under an OCIO Structure (October 2014)* – Steven Charlton, CFA, Director of Consulting Services
- *NEPC 2014 Defined Contribution Plan & Fee Survey: What Plan Sponsors Are Doing Now (October 2014)* – Ross Bremen, CFA, Partner; Dan Beaton, Senior Analyst



Professional Staff Updates

- **New Partner:** Sean Ruhmann, Partner, Director of Real Assets Research
- **New Principals:** Jeffrey Mitchell, CFA, CAIA, Principal, Senior Consultant ; Terri Sacramone, SPHR, Principal, Senior Human Resources Manager; and Michael Sullivan, Principal, Senior Consultant
- We are also pleased to announce that Daniel Hennessy has joined NEPC as a Senior Consultant located in our Redwood City, CA office. Daniel will be focusing on Taft-Hartley and Public Funds in the West.

Recent/Upcoming Events

- 2015 Market Outlook Webinar - January 22, 2015 at 3:00 PM EST.
- NEPC's 20th Annual Client Conference – May 19-20, 2015 in Boston at the Boston Convention & Exhibition Center (BCEC)

NEPC Gives Back

A team of NEPC employees participated in November once again this year. November is a global men's health charity requiring each 'Mo Bro' to sport a well-groomed mustache during the entire month of November to raise funds and awareness for men's prostate cancer, testicular cancer, and mental health. The team raised about \$20,000 this year and ranked #49 nationally! Additionally, NEPC employees participated in Lee National Denim Day once again this year and raised \$1,745. Lee National Denim Day is a fundraiser that takes place in October and was created by Lee Jeans to support the American Cancer Society's breast cancer programs.

NEPC Client Recognitions

Several of NEPC's clients were recognized by CIO Magazine recently. First, the October 2014 issue of CIO Magazine ranked the Power 100 CIOs, which included Tim Barrett, CIO of Texas Tech University System (#59), and Don Pierce, CIO of San Bernardino County Employees' Retirement Association (#61). Next, several NEPC clients were nominated for the CIO 2014 Industry Innovation Awards. Additionally, NEPC's client SBCERA was nominated for an Investor Intelligence Award in 'Portfolio Design'.

Appendix: SAA Policy History

Strategic Asset Allocation Policy (SAAP) History

- 7/1/75 – 12/31/79 – 40% S&P 500/60% Barclays Capital Aggregate
- 1/1/80 – 12/31/83 – 50% S&P 500/50% Barclays Capital Aggregate
- 1/1/84 – 12/31/91 – 60% S&P 500/40% Barclays Capital Aggregate
- 1/1/92 – 12/31/94 – 50% S&P 500/10% MSCI EAFE/40% Barclays Capital Aggregate
- 1/1/95 – 6/30/97 – 45% S&P 500/15% MSCI EAFE/40% Barclays Capital Aggregate
- 7/1/97 – 12/31/99 – 50% S&P 500/15% MSCI EAFE/35% Barclays Capital Aggregate
- 1/1/00 – 9/30/03 – 53% S&P 500/17% MSCI EAFE/30% Barclays Capital Aggregate
- 10/1/03 – 12/31/06 – 53% S&P 500/15% MSCI EAFE/ACWI ex-U.S.¹/26% Barclays Capital Aggregate/6% NCREIF ODCE (lagged one quarter)
- 1/1/07 – 10/31/2009 – 31% S&P 500/7% S&P 400/7% S&P 600/18% MSCI ACWI ex-U.S./5% Russell 2000 (lagged one quarter)/26% Barclays Capital Aggregate/6% NCREIF ODCE (lagged one quarter)
- 11/1/2009 – 6/30/2012 – 28% S&P 500/6% S&P 400/6% S&P 600/13% MSCI EAFE/2% MSCI EAFE Small Cap/3% MSCI Emerging Markets/7% Russell 2000 (lagged one quarter)/24% Barclays Capital Aggregate/2% Barclays Capital High Yield/6% NCREIF ODCE (lagged one quarter)/3% Bloomberg Commodity Index
- **7/1/2012 – Present – 23% S&P 500/5% S&P 400/5% S&P 600/14% MSCI EAFE/3% MSCI EAFE Small Cap/6% MSCI Emerging Markets/7% Russell 2000 (lagged one quarter)/13% Barclays Capital Aggregate/5% Barclays Capital High Yield/4% JP Morgan GBI-EM Global Diversified/3% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/8% NCREIF ODCE (lagged one quarter)/4% Bloomberg Commodity Index**
- *Interim SAA Policy: 25% S&P 500/5% S&P 400/5% S&P 600/14% MSCI EAFE/3% MSCI EAFE Small Cap/6% MSCI Emerging Markets/6% Russell 2000 (lagged one quarter)/14% Barclays Capital Aggregate/5% Barclays Capital High Yield/4% JP Morgan GBI-EM Global Diversified/3% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/6% NCREIF ODCE (lagged one quarter)/4% Bloomberg Commodity Index

Note: Interim SAA Policy includes a proration of 1% Private Equity and 2% Real Estate, which are unfunded. Private Equity was prorated to domestic equity; Real Estate was prorated to domestic equity and fixed income. Recently approved Strategic Asset Allocation Policy effective July 1, 2012.

¹MSCI EAFE/ACWI ex-U.S. Benchmark is the MSCI EAFE Index prior to 10/1/2005 and the MSCI ACWI ex-U.S. thereafter.

Note: All MSCI indices changed from Gross to Net of dividend withholding taxes effective 1/1/2014.

ASRS Custom Asset Class Benchmark History

- **ASRS Custom Total Equity Benchmark** was 77% S&P 500, 23% MSCI EAFE through 12/31/1999; 76% S&P 500, 24% MSCI EAFE through 9/30/2003; 78% S&P 500, 22% MSCI EAFE/ACWI ex-U.S.¹ through 12/31/2006; 49% S&P 500, 11% S&P 400, 11% S&P 600, 29% MSCI ACWI ex-U.S. through 10/31/2009; 48% S&P 500, 10% S&P 400, 10% S&P 600, 23% MSCI EAFE, 4% MSCI EAFE Small Cap, 5% MSCI Emerging Markets through 6/30/2012; 41% S&P 500, 9% S&P 400, 9% S&P 600, 25% MSCI EAFE, 5% MSCI EAFE Small Cap, 11% MSCI Emerging Markets thereafter.
- **ASRS Custom Domestic Equity Benchmark** was S&P 500 through 12/31/2006; 74% S&P 500, 13% S&P 400, 13% S&P 600 through 12/31/2010; 70% S&P 500, 15% S&P 400, and 15% S&P 600 thereafter.
- **ASRS Custom International Equity Benchmark** was MSCI EAFE through 9/30/2005; MSCI ACWI ex-U.S. through 12/31/2010; 72% MSCI EAFE, 11% MSCI EAFE Small Cap and 17% MSCI Emerging Markets through 6/30/2012; 61% MSCI EAFE, 13% MSCI EAFE Small Cap and 26% MSCI Emerging Markets thereafter.
- **ASRS Custom Public Markets Fixed Income Benchmark** was Barclays Capital U.S. Aggregate Index through 12/31/2010; 93% Barclays Capital U.S. Aggregate Index, 7% Barclays Capital U.S. High Yield Bond Index through 12/31/2012; 59% Barclays Capital U.S. Aggregate Index, 23% Barclays Capital U.S. High Yield Bond Index, 18% JP Morgan GBI-EM Global Diversified thereafter.
- **ASRS Custom Inflation-Linked Benchmark** was 100% Barclays Capital U.S. TIPS through 7/31/2010; 50% Barclays Capital U.S. TIPS, 50% Bloomberg Commodity Index through 8/31/2010; 30% Barclays Capital U.S. TIPS, 70% Bloomberg Commodity Index through 5/31/2011; 100% Bloomberg Commodity Index thereafter.
- **ASRS Custom GTAA Benchmark** was 56% S&P 500, 16% MSCI EAFE, 28% Barclays Capital Aggregate through 9/30/2011; 50% S&P 500, 19% MSCI EAFE, 28% Barclays Capital Aggregate, and 3% Bloomberg Commodity Index through 06/30/2012; 43% S&P 500, 25% MSCI EAFE, 28% Barclays Capital Aggregate, and 4% Bloomberg Commodity Index thereafter.

¹MSCI EAFE/ACWI ex-U.S. Benchmark is the MSCI EAFE Index prior to 10/1/2005 and the MSCI ACWI ex-U.S. thereafter.

Note: All MSCI indices changed from Gross to Net of dividend withholding taxes effective 1/1/2014.



- **The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.**
- **Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of Return are annualized when the time period is longer than a year. Performance is presented gross and/or net of fees as indicated.**
- **For managers funded in the middle of a month, the 'since inception' return will start with the first full month, although actual inception dates and cash flows are included in all respective Composite calculations.**
- **This report may contain forward-looking statements that are based on NEPC's estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.**

- **Past performance is no guarantee of future results.**
- **All investments carry some level of risk. Diversification and other asset allocation techniques are not guaranteed to ensure profit or protect against losses.**
- **Some index returns displayed in this report or used in calculation of a policy, allocation or custom benchmark may not be available from the source or may be preliminary and subject to change.**
- **NEPC's source for portfolio pricing, calculation of accruals, and transaction information is the Plan's custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained herein.**
- **This report is provided as a management aid for the client's internal use only. Performance in this report does not constitute a recommendation by NEPC.**
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ARIZONA STATE RETIREMENT SYSTEM

3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000
7660 EAST BROADWAY BOULEVARD • SUITE 108 • TUCSON, AZ 85710-3776 • PHONE (520) 239-3100
TOLL FREE OUTSIDE METRO PHOENIX AND TUCSON 1 (800) 621-3778
EMAIL ADDRESS: ASKMAC@AZASRS.GOV • WEB ADDRESS: WWW.AZASRS.GOV

Paul Matson
Director

MEMORANDUM

TO: The Arizona State Retirement System (ASRS) Investment Committee (IC)

FROM: Mr. Paul Matson, Director
Mr. Gary R. Dokes, Chief Investment Officer (CIO)
Mr. Allan Martin, NEPC
Mr. Chris Levell, NEPC

DATE: February 9, 2015

RE: **Agenda Item # 7:** Presentation, Discussion, and Appropriate Action Regarding the ASRS Asset Allocation Study

Purpose

To present the Asset Allocation Study analyses for discussion with IC Trustees.

Recommendation

IC recommends to the Board the approval of the ASRS Asset Allocation Policy Schematic as denoted in Exhibit A in the presentation.

Background

As a result of many discussions and analyses over the past several months, NEPC and ASRS developed a final recommended new Strategic Asset Allocation Policy (SAAP) which incorporates strategic investment themes while providing the ability to take advantage of present and anticipated opportunities in the financial markets

The proposed primary changes (and rationale) to ASRS existing asset allocation policy are as follows:

- Reduce Allocations to Public U.S. Equities, Emerging Market Debt, Commodities, Core Bonds, Emerging Market Equity, and High Yield Debt
 - Rationale: Reduce growth-reliant and higher volatility exposures, and allow for increased allocation to credit opportunities.
- Increase Allocations to Private Debt, Public Non-U.S. Equities, Real Estate, and Private Equity
 - Rationale: Reduce net foreign exposures, reallocate foreign exposures to developed equity markets, and maintain a comprehensive set of asset class exposures especially to private markets where capital availability is needed.
- Add Treasuries as a separate asset class, and retain Infrastructure and Farmland/Timber, each with a 0% Target
 - Rationale: Increase the inflation linked and real asset opportunity-set while maintaining sensitivity to timing of entry and alignment of interest between asset class vehicle and underlying long-lived assets.

- Rename “GTAA” to “Multi-Asset Class Strategies” and reduce allocation from 10% to 5% with a 0-12% target range, and partially restructure by replacing some beta exposure with alpha exposure
 - Rational: Denoting these strategies “above-the-line” more clearly reflects the nature of the beta or alpha strategies risk/return profiles and improves operational management and reporting.
- Establish Policy Target Ranges primarily at the broad asset class categories
 - Rational: Controls for risk while still maintaining flexibility for tactical opportunities.
- Remove Minimum Passive % Targets for public equity and fixed income
 - Rationale: Consistent with Investment Beliefs and reflects ASRS perspectives on asset class efficiencies.

Attachments:

1. ASRS/NEPC Asset Allocation Study – PowerPoint
2. ASRS Portfolio Risk Reports - State Street Analytic System

Arizona State Retirement System

Asset Allocation Study

February 9, 2015

Paul Matson, Director, ASRS

Gary Dokes, Chief Investment Officer, ASRS

Allan Martin, Partner, NEPC

Chris Levell, ASA, CFA, CAIA, Partner, NEPC



Background

- **Dynamic Strategic Asset Allocation Policy (SAAP) Study Approach**
 - Periodicity of the study should be better aligned to capture evolving or changing investment opportunities.
 - ASRS SAAP Study to be conducted as warranted or triennially, whichever is shorter.
 - Reasonable to be initiated by the Director and CIO with the concurrence of the Investment Committee and Board Chairs.
- **Decision Making Methodology**
 - Identify available asset classes and investing strategies
 - Analyze primary characteristics; assess their suitability and comprehensiveness for institutional portfolios.
 - Evaluate sources of returns, risks, and diversification in terms of quantitative and qualitative considerations.
 - Utilize breadth of asset allocation tools for additional analysis
 - Mean-variance optimization, risk budgeting, factor analysis, scenario analysis, probabilities, etc.
 - Understand limitations of each to construct inclusive view
- **Asset Allocation Policy Investment Themes**
 - Increase Diversification
 - Capture Tactical Opportunities Available as a Result of Market Dislocation
 - Optimize Risk-Adjusted Return in an Expected Low Return Environment
 - Maintain Significant Liquidity
 - Remain Fee and Cost Conscious

- **Asset allocation discussions have occurred over the past several months between Investment Committee Trustees, ASRS Staff, and NEPC to understand and develop the proposed changes to the ASRS Strategic Asset Allocation Policy (SAAP) Benchmark.**
- **ASRS Staff and NEPC worked closely to identify key themes and proposed changes to the ASRS SAAP.**
 - ASRS Staff developed consensus asset class assumptions for comparison with a focus on each IMD portfolio manager's view of the asset classes they cover.
 - NEPC's assumptions are more conservative (lower returns, higher volatility) across most asset classes utilized.
- **Analysis completed using NEPC 5-7 year assumptions**
 - Despite being more conservative than ASRS Staff assumptions, broad asset allocation conclusions were similar.
 - Optimizing sub-asset class structure was very different.
 - Time horizon provides balance between strategic views and long-term return target.
 - 5-7 year assumptions maintains strategic business cycle focus without being too focused on very near-term.
 - 30 year assumptions considered for efficiency, long term target, and actuarial purposes, but not for strategic analysis.
 - Allows for direct comparisons across analysis types.

Geometric Returns

	IMD 3 Yr	IMD 30 Yr	NEPC 5-7 Yr	NEPC 30 Yr
Cash	1.03%	3.42%	1.75%	3.25%
LIBOR	1.35%	3.63%	2.00%	3.50%
Treasuries	2.03%	4.01%	1.75%	3.50%
IG Corp Credit	3.47%	5.22%	3.25%	4.75%
MBS	2.30%	4.28%	2.00%	3.75%
TIPS	2.53%	4.50%	2.25%	4.00%
High-Yield Bonds	4.47%	6.00%	4.00%	5.75%
Global Bonds (U)	1.34%	3.07%	1.00%	2.25%
Global Bonds (H)	1.45%	3.16%	1.17%	2.42%
EMD (External)	5.00%	7.01%	4.50%	6.00%
EMD (Loc Currency)	5.64%	7.19%	5.50%	6.75%
Large Cap Equities	8.62%	9.85%	6.00%	7.50%
SMid Cap Equities	9.62%	10.85%	6.00%	7.75%
Int'l Equities (U)	9.05%	10.68%	7.00%	8.00%
Int'l Equities (H)	9.67%	11.30%	7.49%	8.48%
EM Int'l Equities	9.40%	11.72%	9.00%	9.25%
Private Equity	8.48%	9.97%	8.50%	9.50%
Private Debt	9.00%	8.00%	7.50%	8.00%
Private Real Assets	7.23%	7.81%	8.00%	7.75%
Real Estate	8.00%	9.00%	6.50%	6.50%
Commodities	4.09%	5.55%	5.25%	5.75%
Hedge Funds	5.41%	7.17%	5.75%	6.75%
Long Treasuries	3.03%	4.33%	2.50%	4.00%
Long Credit	4.85%	5.92%	5.25%	5.75%
Core Bonds	2.60%	4.43%	2.30%	3.98%

Volatility

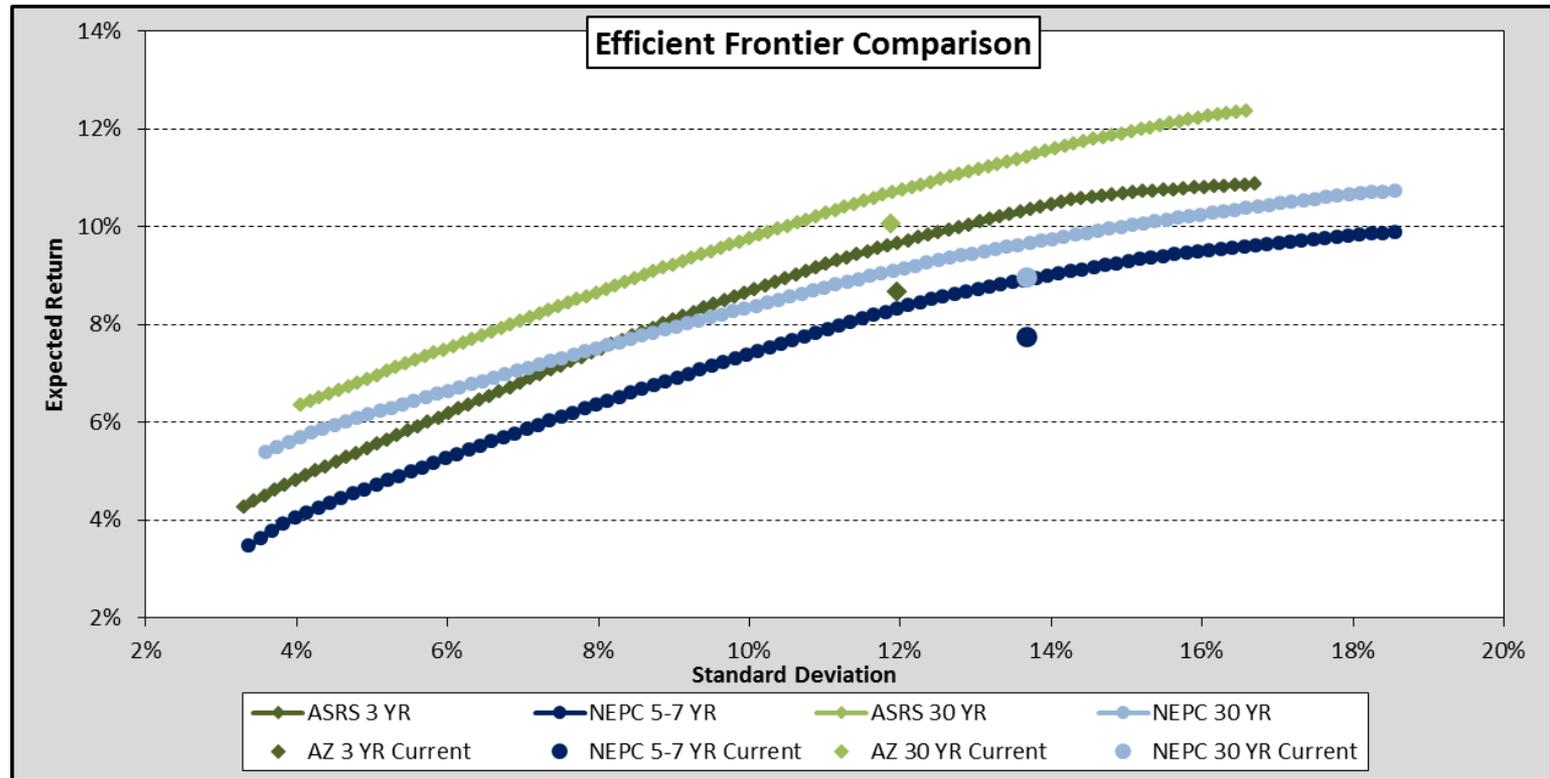
	IMD 3 Yr	IMD 30 Yr	NEPC 5-7 Yr	NEPC 30 Yr
	0.96%	0.93%	1.00%	1.00%
	1.38%	1.38%	1.00%	1.00%
	5.85%	5.70%	5.50%	5.50%
	7.38%	7.18%	7.50%	7.50%
	6.59%	6.17%	7.00%	7.00%
	7.34%	7.17%	7.50%	7.50%
	12.86%	12.46%	13.00%	13.00%
	8.48%	8.43%	9.00%	9.00%
	5.10%	4.88%	5.00%	5.00%
	12.06%	12.06%	12.00%	12.00%
	14.78%	14.78%	15.00%	15.00%
	15.03%	15.03%	17.50%	17.50%
	18.12%	18.12%	21.00%	21.00%
	17.56%	17.56%	21.00%	21.00%
	17.56%	17.56%	17.50%	17.50%
	23.20%	23.20%	26.00%	26.00%
	24.51%	23.51%	27.00%	27.00%
	8.13%	8.13%	17.00%	17.00%
	21.22%	20.22%	23.00%	23.00%
	12.00%	12.00%	15.00%	15.00%
	17.60%	17.60%	18.00%	18.00%
	9.90%	9.90%	9.00%	9.00%
	11.81%	11.60%	12.00%	12.00%
	13.59%	13.07%	14.00%	14.00%
	6.32%	6.27%	6.03%	6.03%

Note:

NEPC inflation assumption is 3.0% for 5-7 year period and 3.25% for 30 year period.

Returns shown are geometric.

Volatility defined as standard deviation of investment returns.



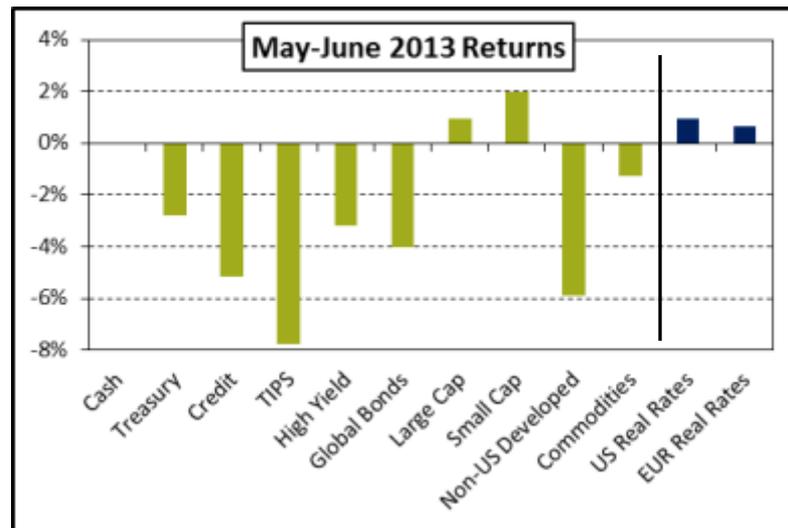
- **Significant variation in assumptions leads to wide range of efficient frontiers and expected risk/return levels for current target.**
- **Portfolios are all below respective efficient frontiers – partially due to strategic decisions, partially due to frontier constraints.**

Note:
Efficient frontiers based on arithmetic returns.

- **Balance potential for short-term strength with an acknowledgement of lofty recent returns relative to global growth**
 - Reallocate risk as appropriate while maintaining downside protection as a counterweight
- **Public U.S. equity and credit markets similarly valued vs. history; near-term favors stocks**
 - Credit's limited upside from potential investment grade spread compression, overall reduction in liquidity and proliferation of ETFs contribute to asymmetry
 - Real estate and direct lending (though less liquid) can be a substitute for high yield
 - Manage private commitments and maintain liquidity to exploit downturns
- **Non-U.S. equity markets have not experienced the same rally as U.S. equities**
 - Valuations and monetary easing support overweight; downside risks point to caution
 - Muted return expectations are sensitive to binary policy decisions (upside and downside)
 - Emerging growth expectations have compressed
 - Commodity driven countries face pressures but U.S. strength supports exporters
 - Fundamental strength vs. developed world likely to win in the long run
 - Be globally diversified, hedge developed currency risks, and don't flee emerging markets
- **We are one year closer to rate hikes by the Federal Reserve**
 - Curve has shifted in anticipation making both cash/short duration and long bonds relatively more attractive than core duration
 - Long rates likely range bound due to dynamics of supply (shrinking deficits) and demand (increasing LDI hedgers, global investors, aging population of savers)
 - Barbell of long treasuries and cash can offer similar core bond duration, volatility, yield, and a higher sensitivity to recession protection (counterweight)

- **Many investors surprised by market impact of Bernanke's taper comments in Spring 2013**

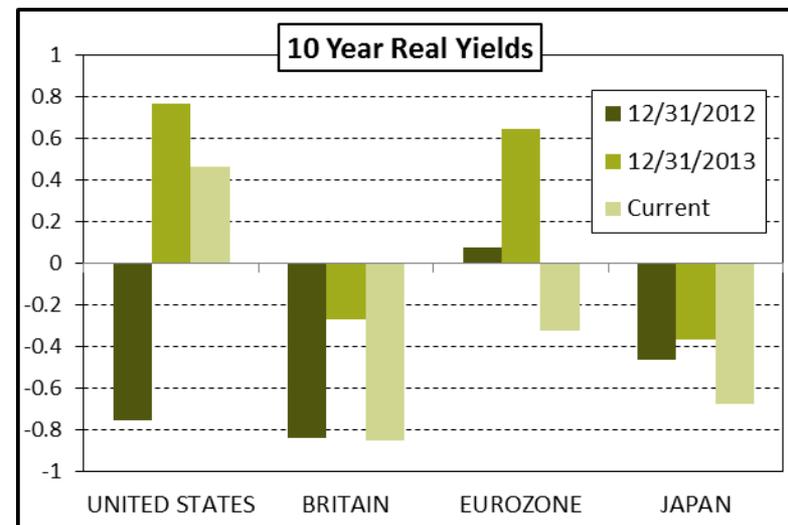
- The primary driver was a change in underlying global real yields
- Market discount rates increased driving down present values
- And the surprise change in expectations of tighter policy spooked sentiment
- U.S. market strength may not persist with a repeat occurrence



Source: Bloomberg as of 11/30

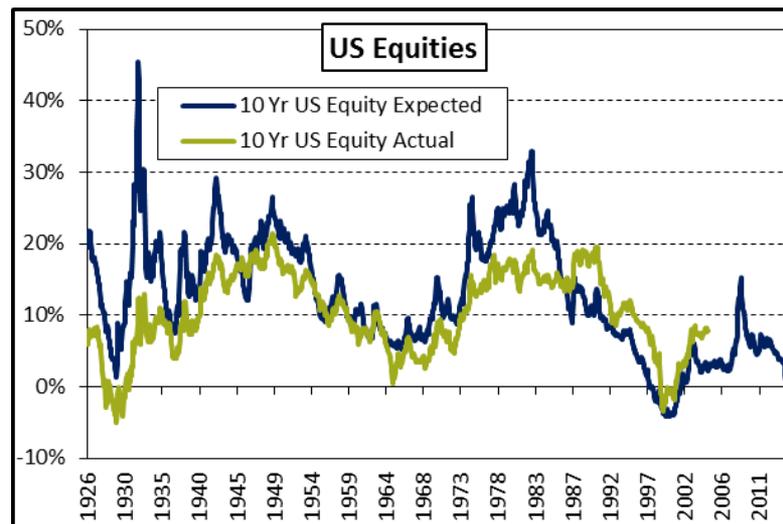
- **Real yields in 2014 reversed the normalization trend of 2013 and are a key component of lower 5-7 year expected returns in 2015**

- U.S. gave up far less than other developed markets
- Gravity of low interest rates in Germany and Japan may draw U.S. rates lower

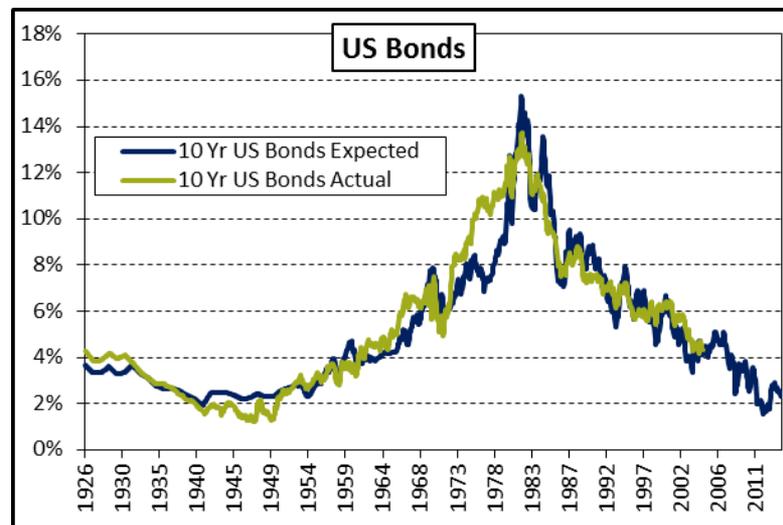


Source: Bloomberg as of 11/30

- **Investors must adjust to changing global market environment to meet return objectives and/or balance risk**
 - Financialization of markets, secular decline in risk-free rates, central bank driven financial repression
- **Expected low return world creates challenges that investors must address in order to effectively meet and exceed long-term objectives**
 - Take more risk
 - Take risk more efficiently
 - Increase funding/contributions
- **Traditional approaches will likely be challenged**
 - Particularly true of strategies reliant on index construction independent of investor objectives



Source: Shiller Data, Morningstar Direct, NEPC as of 11/30



Source: Shiller Data, Morningstar Direct, NEPC as of 11/30

SAAP Recommendation and Analysis

Note: All of the analysis provided on the following pages is based on NEPC's 5-7 Year Capital Market Assumptions, except where noted.

- **NEPC and ASRS Staff recommend that the Investment Committee “Recommend to the full Board the approval of the ASRS Strategic Asset Allocation Policy Schematic as denoted in Exhibit A”.**

ASRS Strategic Asset Allocation Policy Schematic (Exhibit A)

Asset Class	Policy	Range	Benchmark
Tactical Cash (Unassetized)	0%	(0 - 3%)	
Operating Cash (Unassetized)	0%		
Operating Cash (Assetized)	<u>0%</u>		
Total Cash	0%		
<hr/>			
Treasuries (Long Duration)	0%	(0 - 10%)	Barclays LT Treasuries
Core Bonds	<u>11%</u>		Barclays Aggregate
Interest Rate Sensitive	11%		
High Yield	4%		Barclays High Yield
Private Debt	10%	(8 - 12%)	S&P/LSTA Leveraged Loan Index+ 2.5%
Opportunistic Debt	0%	(0 - 3%)	Investment Specific
Total Fixed Income	25%	(18 - 35%)	
<hr/>			
Large Cap	20%		S&P 500
Mid Cap	3%		S&P 400
Small Cap	<u>3%</u>		S&P 600
US Public Equity	26% ▲	(16 - 36%)	
Developed Large Cap	17%		MSCI EAFE
Developed Small Cap	2%		MSCI EAFE Small Cap
Emerging	<u>5%</u>		MSCI EM
Non-US Public Equity	24% ▲	(14 - 34%)	
Private Equity	8%	(6 - 10%)	Russell 2000
Opportunistic Equity	0%	(0 - 3%)	Investment Specific
Total Equity	58%	(48 - 65%)	
<hr/>			
Commodities	2%	(0 - 4%)	Bloomberg Total Return
Real Estate	10%	(8 - 12%)	NCREIF ODCE
Infrastructure	0%	(0 - 3%)	Investment Specific
Farmland and Timber	0%	(0 - 3%)	Investment Specific
Opportunistic Inflation Linked	<u>0%</u>	(0 - 3%)	Investment Specific
Total Inflation Linked Assets	12%	(10 - 16%)	
<hr/>			
Multi-Asset Class strategies	5%	(0 - 12%)	Investment Specific
<hr/>			
TOTAL	100%		

Notes:

- 1) Total Opportunistic Equity, Debt and Inflation-Linked in aggregate will not exceed 10% of the Total Fund market value and is a) tactical in nature, outside of the SAAP benchmark and b) within the SAAP benchmark but are absolute return oriented.
- 2) Tactical cash viewed as a defensive and tactical vehicle, will be consistent with House Views and may be employed as a hedge to dampen the effects of anticipated negative returns to the aggregate market value of the Total Fund.
- 3) Operating cash includes a nominal balance to cover unexpected derivations in cash flow requirements. Equitized operating cash includes excess cash balances that are exposed to the markets using futures and/or ETFs to minimize cash drag while facilitating larger internal and external fund obligations.
- 4) Multi-Asset Class strategies invest tactically within and across asset classes, seeking to exploit quantitative or fundamental drivers of asset class returns or risk allocations as market conditions warrant.

Allocations for Analysis and Discussion

	Current Target	NEPC & Staff Recommendation
Cash	0%	0%
Large Cap Equities	23%	20%
Small/Mid Cap Equities	10%	6%
Int'l Equities (Unhedged)	14%	17%
Int'l Equities Small Cap (U)	3%	2%
Int'l Equities (Hedged)	0%	0%
Emerging Int'l Equities	6%	5%
Total Public Equity	56%	50%
Private Equity	7%	8%
Total Equity	63%	58%
Core Bonds	13%	11%
Treasuries	0%	0%
IG Corp Credit	0%	0%
High-Yield Bonds	5%	4%
MBS	0%	0%
Global Bonds (Unhedged)	0%	0%
EMD	4%	0%
TIPS	0%	0%
Global I/L	0%	0%
US 10 Yr Treasuries	0%	0%
US 10 Yr Sovereigns	0%	0%
Long Duration (Treas)	0%	0%
Global Multi-Sector Fixed Income	0%	0%
Absolute Return Fixed Income	0%	0%
Total Public Fixed Income	22%	15%
Private Debt	3%	10%
Total Fixed Income	25%	25%
Real Assets	0%	0%
Real Estate	8%	10%
REITs	0%	0%
Commodities	4%	2%
Total Inflation Linked	12%	12%
Hedge Funds	0%	0%
Hedge Funds - Macro	0%	0%
Global Asset Allocation	0%	0%
Risk Parity	0%	0%
GTAA/Multi-Asset	0%	5%
Total Other	0%	5%
Sec Lending Financing	-20%	-10%
Sec Lending	20%	10%

Expected Return (5-7 Yrs)	6.5%	7.0%
Standard Deviation (5-7 Yrs)	13.7%	13.6%
Sharpe Ratio (5-7 Yrs)	0.35	0.39
Expected Return (30 Yrs)	7.8%	8.1%

60/40	Alternative	Risk Parity
0%	0%	-90%*
35%	15%	14%
10%	5%	4%
12%	5%	1%
0%	0%	0%
0%	5%	16%
3%	5%	6%
60%	35%	41%
0%	10%	0%
60%	45%	41%
25%	0%	0%
0%	0%	-6%
0%	0%	7%
5%	0%	2%
0%	0%	2%
5%	0%	1%
0%	0%	3%
0%	0%	24%
0%	0%	10%
0%	0%	29%
0%	0%	48%
0%	5%	5%
0%	10%	0%
0%	5%	0%
35%	20%	125%
0%	5%	0%
35%	25%	125%
0%	0%	0%
0%	0%	0%
5%	0%	1%
0%	0%	20%
5%	0%	21%
0%	10%	0%
0%	0%	2%
0%	10%	0%
0%	10%	0%
0%	0%	0%
0%	30%	2%
0%	0%	0%
0%	0%	0%

5.4%	6.4%	5.6%
12.3%	12.2%	12.4%
0.30	0.38	0.31
6.9%	7.6%	7.0%

Note:

- 1) Current Target includes 0% allocation to GTAA/Multi-Asset to account for change in methodology going forward with respect to treatment of GTAA/Multi-Asset strategies.
- 2) Some totals may not add exactly due to rounding.
- 3) 'Alternative' allocation represents commonly used themes from NEPC observations and actions to reflect a diversified alternative to a traditional 60/40 portfolio.

*Negative cash figure represents financing costs of leverage from shorting LIBOR and Global LIBOR.

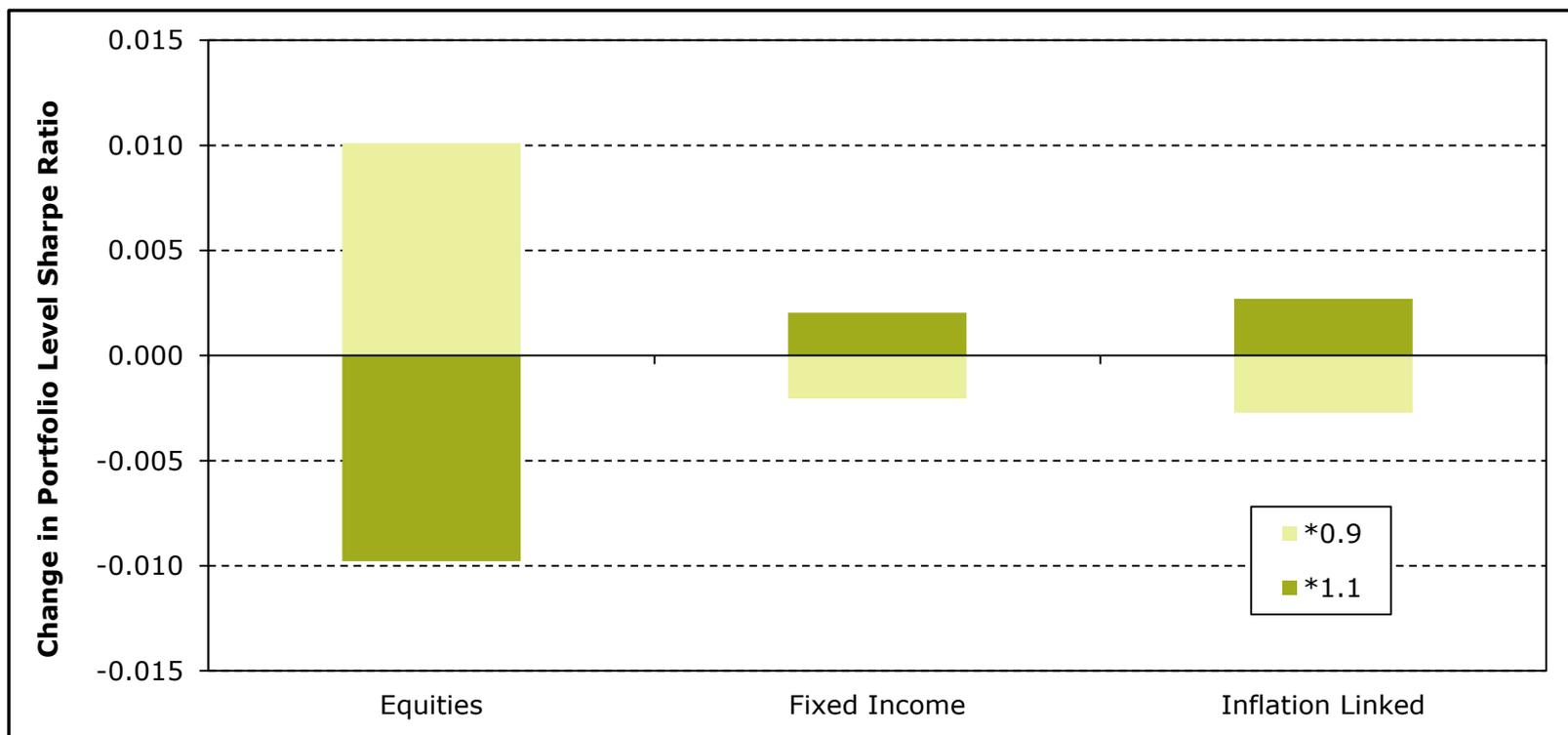
Expectations based on geometric return assumptions.

Summary of Recommended Changes

	Current Target	NEPC & Staff Recommendation	Change
Cash	0%	0%	-
Large Cap Equities	23%	20%	-3%
Small/Mid Cap Equities	10%	6%	-4%
Int'l Equities (Unhedged)	14%	17%	3%
Int'l Equities Small Cap (U)	3%	2%	-1%
<i>Int'l Equities (Hedged)</i>	0%	0%	-
Emerging Int'l Equities	6%	5%	-1%
Total Public Equity	56%	50%	-6%
Private Equity	7%	8%	1%
Total Equity	63%	58%	-5%
Core Bonds	13%	11%	-2%
<i>Treasuries</i>	0%	0%	-
<i>IG Corp Credit</i>	0%	0%	-
High-Yield Bonds	5%	4%	-1%
<i>MBS</i>	0%	0%	-
<i>Global Bonds (Unhedged)</i>	0%	0%	-
EMD	4%	0%	-4%
<i>TIPS</i>	0%	0%	-
<i>Global I/L</i>	0%	0%	-
<i>US 10 Yr Treasuries</i>	0%	0%	-
<i>US 10 Yr Sovereigns</i>	0%	0%	-
Long Duration (Treas)	0%	0%	-
<i>Global Multi-Sector Fixed Income</i>	0%	0%	-
<i>Absolute Return Fixed Income</i>	0%	0%	-
Total Public Fixed Income	22%	15%	-7%
Private Debt	3%	10%	7%
Total Fixed Income	25%	25%	-
Real Assets	0%	0%	-
Real Estate	8%	10%	2%
<i>REITs</i>	0%	0%	-
Commodities	4%	2%	-2%
Total Inflation Linked	12%	12%	-
<i>Hedge Funds</i>	0%	0%	-
<i>Hedge Funds - Macro</i>	0%	0%	-
<i>Global Asset Allocation</i>	0%	0%	-
<i>Risk Parity</i>	0%	0%	-
GTAA/Multi-Asset	0%	5%	5%
Total Other (Multi-Asset)	0%	5%	5%

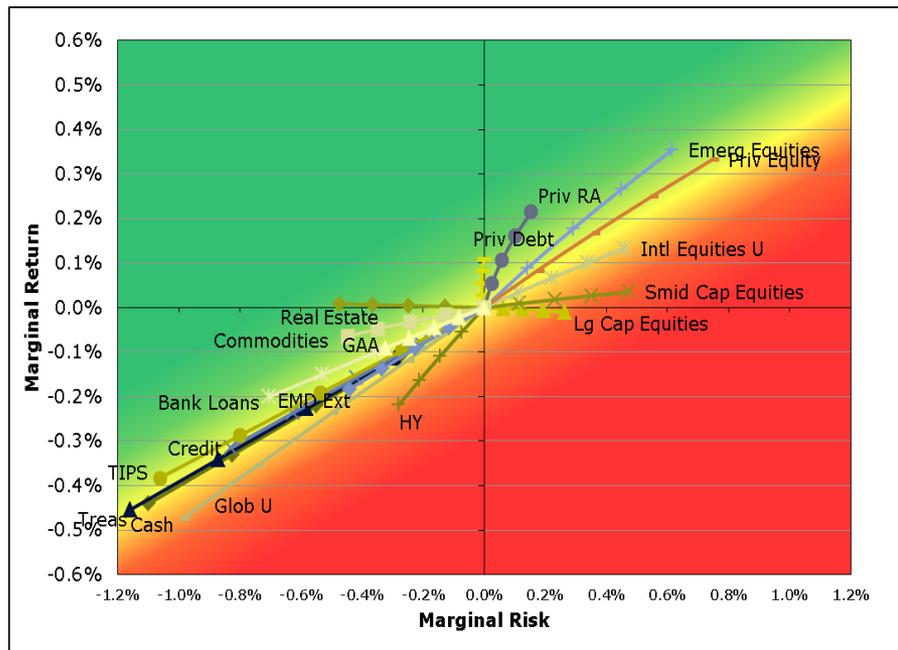
- Reduction in traditional U.S. equities
 - Reflects lower return outlook after strong rally over recent years, as well as higher valuations
 - Reduction is moderated by stronger U.S. economic outlook
- Increase in international equities
 - Represents globally diversified orientation
- Modest increase to private equity allocation
 - Seek alternative option to maintain return target
 - Understanding of stretched valuations in public markets
- Reduction across traditional U.S. fixed income assets
 - Core reduction recognizes low starting point for yields
- Significant increase to private debt target
 - Seek robust returns in low yield environment
 - Consistent with theme of diversifying equity risk
- Addition of Long Duration line item with 0% target
 - Long treasuries offer an attractive correlation profile and deflationary hedge in relation to portfolio growth orientation – but entry point is not currently attractive
- Decrease to commodities target; add to real estate
 - Energy environment provides roll yield headwind for liquid commodity strategies
 - Opportunities may be better accessed through illiquids
- Bring GTAA/Multi-Asset 'above the line'
 - Consistent with change in portfolio evaluation

*Asset classes in italics are representative of those used in comparable portfolios, but not applicable to current target or NEPC & Staff Recommended asset mix.

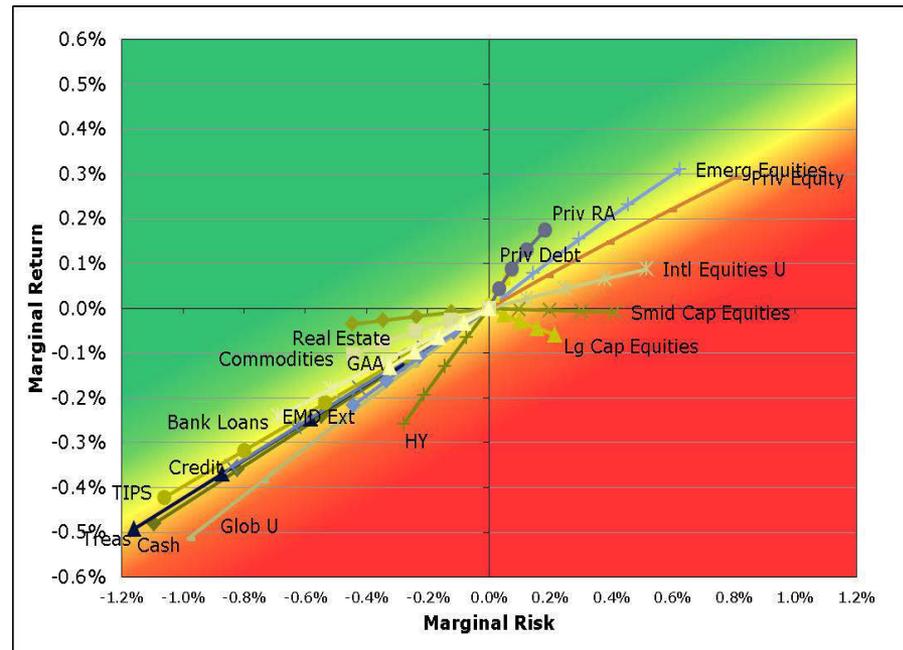


- **All else equal, an increase in absolute equity exposure would cause a decline in expected Sharpe ratio**
 - Supports small adjustment to upper bound of equity range
- **Potential increases to fixed income and inflation linked show expected efficiency gains**
 - Supports similar ranges to both sleeves but a small increase in lower bounds of each range to reflect the diversification benefits of each

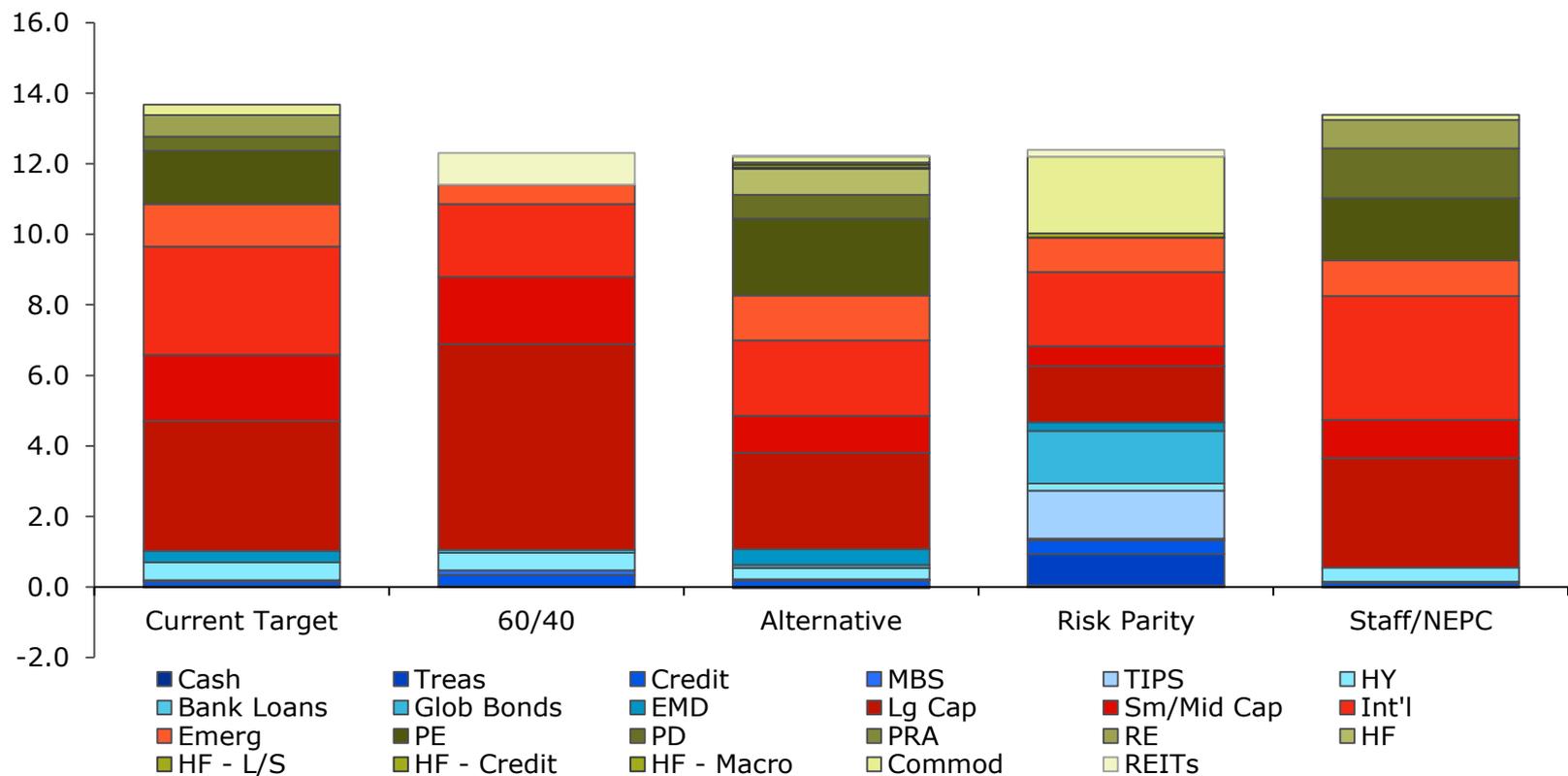
Current Target



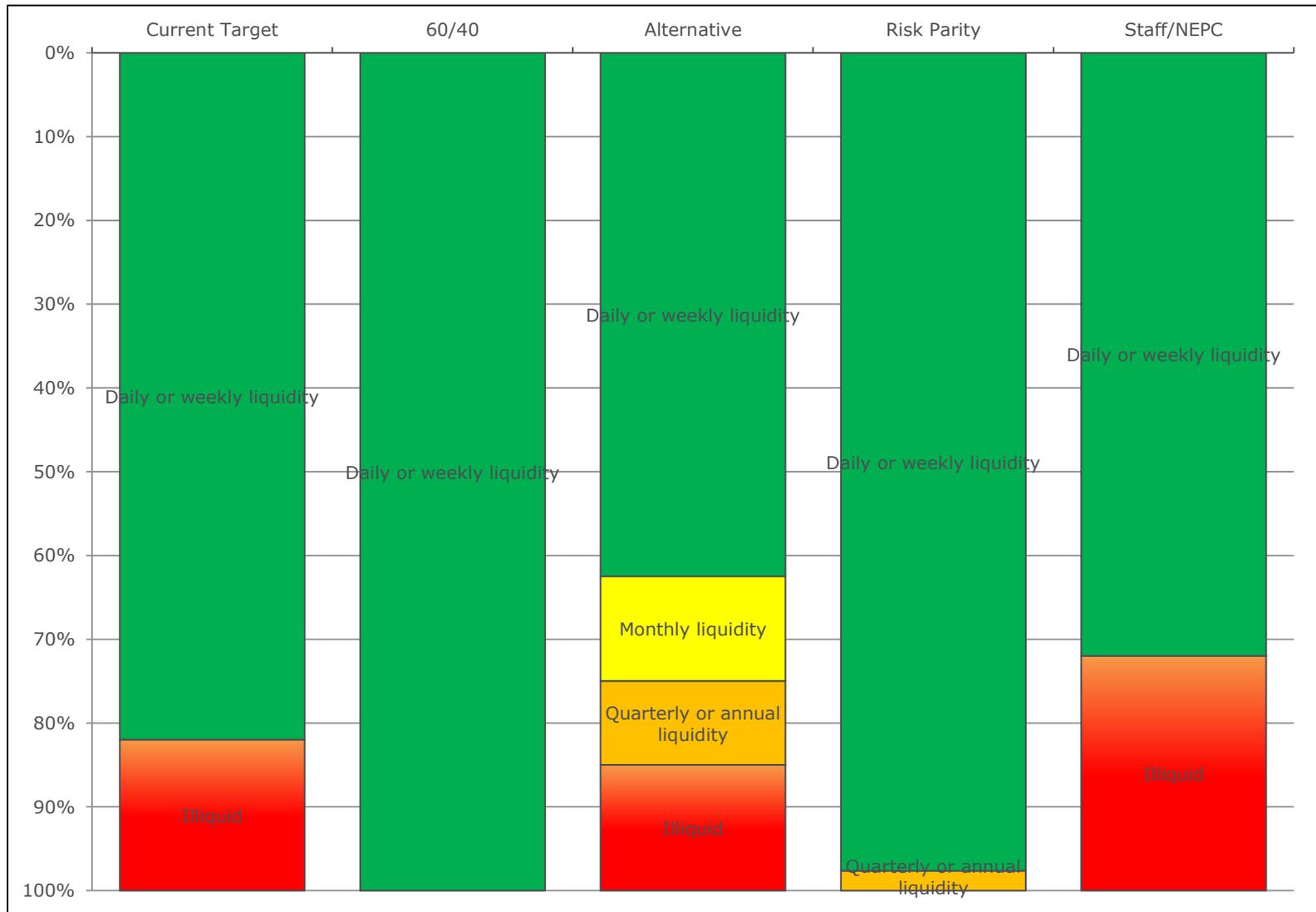
NEPC & Staff Recommendation



- **Current target is well diversified with marginal opportunities to increase portfolio efficiency**
- **Higher allocation to private markets 'flattens' the opportunity set in the NEPC & Staff Recommended asset mix**



- **Recommendation carries similar level of risk as current target**
 - Higher risk budget allocated to private markets
 - Comparison portfolios have lower absolute risk but lower expected returns
- **Despite traditional equity reduction, recommendation still heavily biased toward long equity risk**
 - Consistent with historical orientation and long-term goals



*Based on target allocations, actual implementation may vary

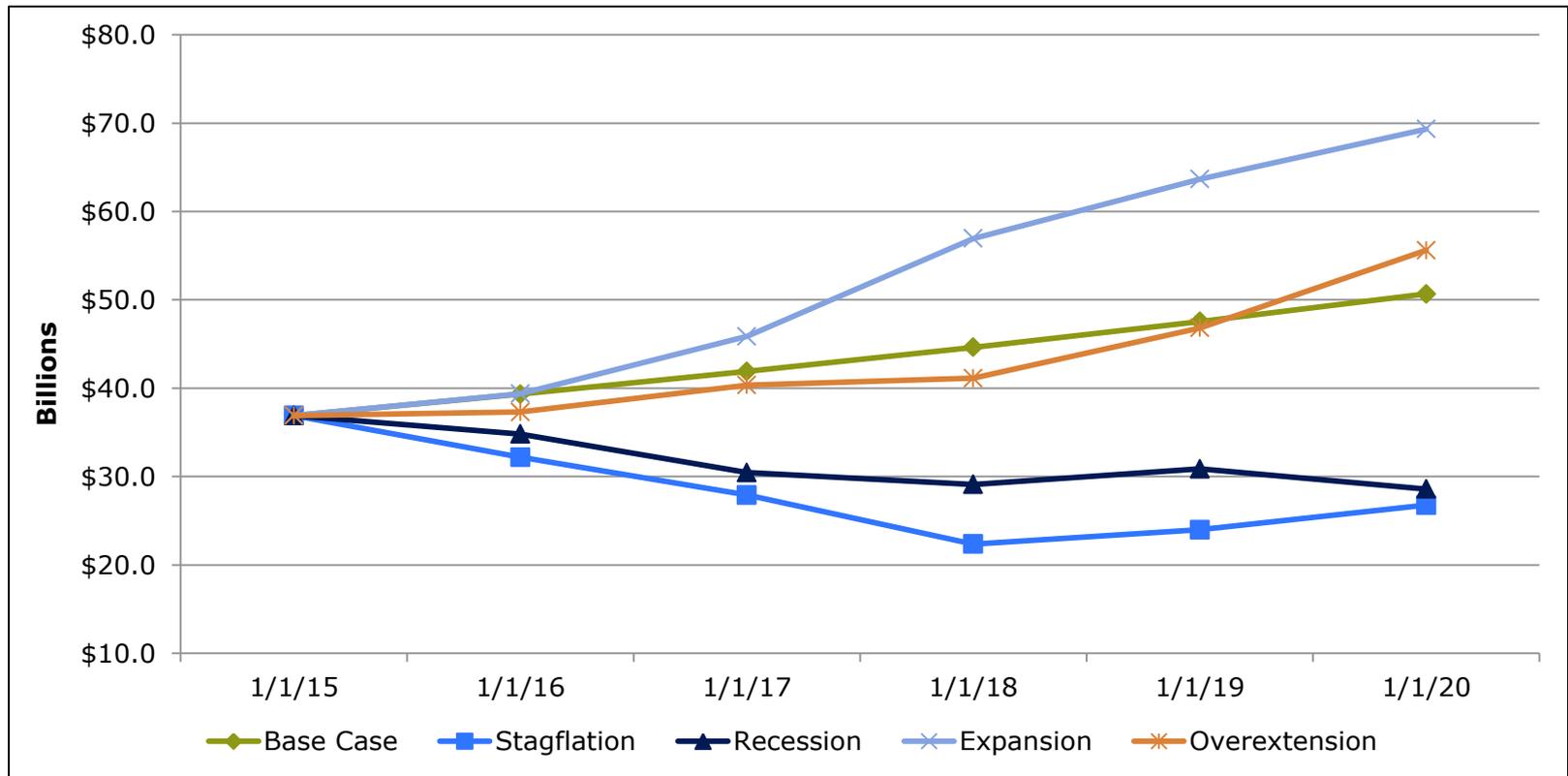
	Using NEPC 5-7 Year Assumptions				NEPC & Staff Recommendation
	Current Target	60/40	Alternative	Risk Parity	
Probability of 1-Year Return Under -5%	19.9%	19.9%	17.6%	19.6%	18.8%
Probability of 1-Year Return Under 0%	31.6%	33.0%	30.1%	32.5%	30.2%
Probability of 1-Year Return Over 5%	54.5%	51.3%	54.5%	52.0%	56.0%
Probability of 1-Year Return Over 8%	45.8%	41.6%	44.7%	42.4%	47.2%
Probability of 3-Year Return Under -5%	7.2%	7.2%	5.3%	6.9%	6.2%
Probability of 3-Year Return Under 0%	20.3%	22.4%	18.3%	21.6%	18.4%
Probability of 3-Year Return Over 5%	57.8%	52.3%	57.7%	53.4%	60.3%
Probability of 3-Year Return Over 8%	42.7%	35.7%	40.9%	37.0%	45.2%
Probability of 5-Year Return Under -5%	2.9%	2.9%	1.9%	2.8%	2.4%
Probability of 5-Year Return Under 0%	14.2%	16.3%	12.1%	15.5%	12.3%
Probability of 5-Year Return Over 5%	60.0%	52.9%	59.9%	54.4%	63.2%
Probability of 5-Year Return Over 8%	40.6%	31.8%	38.3%	33.4%	43.8%

Relatively high potential upside but less relative downside protection

Best downside protection but absolute risk limits upside

Good downside protection while providing most upside

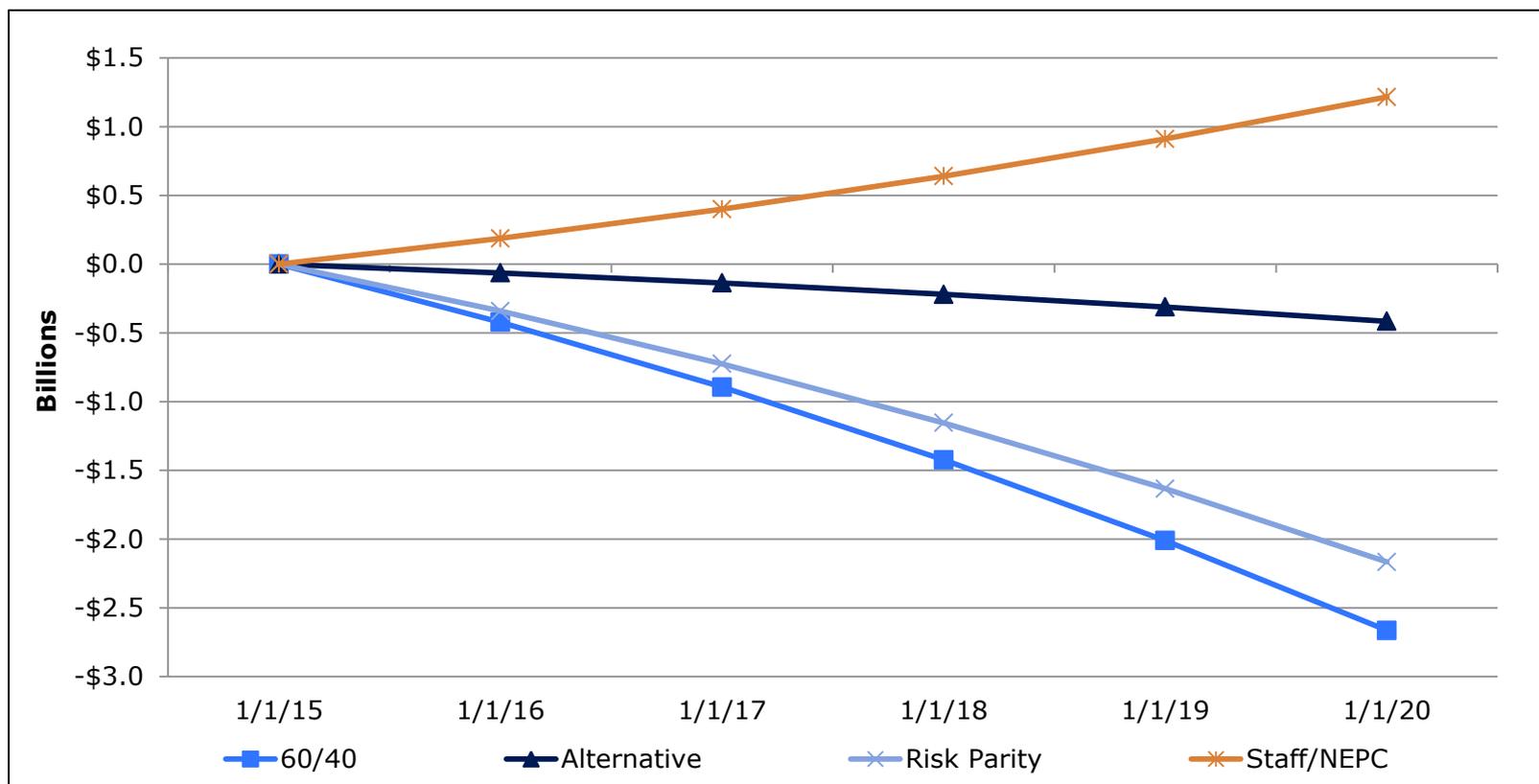
	Using NEPC 30 Year Assumptions				NEPC & Staff Recommendation
	Current Target	60/40	Alternative	Risk Parity	
Probability of 30-Year Return Under 0%	0.1%	0.1%	0.0%	0.1%	0.1%
Probability of 30-Year Return Under 5%	13.5%	20.2%	12.0%	19.2%	10.7%
Probability of 30-Year Return Over 8%	46.1%	30.8%	43.2%	32.5%	51.3%
Probability of 30-Year Return Over 10%	18.4%	8.2%	14.3%	9.0%	22.0%



Note: Analysis does not include assumptions for liabilities or other cash flow items and is calculated using current assets (as of 12/31) only

- Strong equity bias means portfolio loses assets in lower than expected growth scenarios and performs positively when growth meets or exceeds expectations**

Scenario Analysis – Base Case (Change from Current Target)

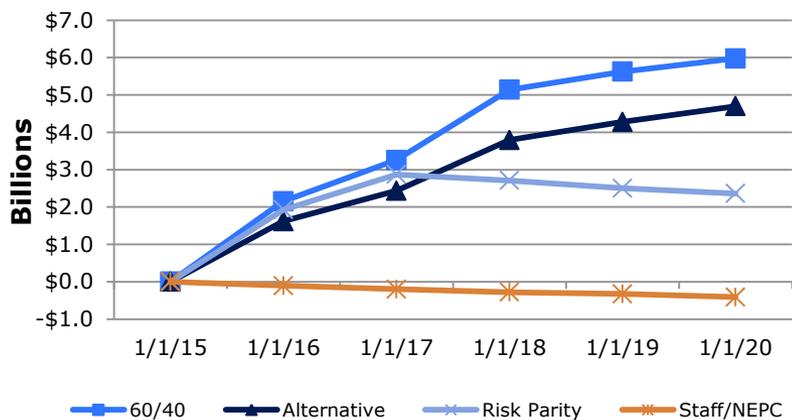


Note: Analysis does not include assumptions for liabilities or other cash flow items and is calculated using current assets (as of 12/31) only

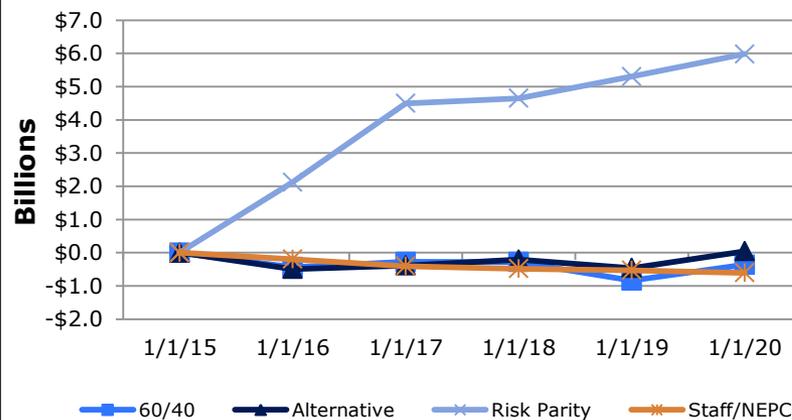
- **Recommendation outperforms current target in the base case**
 - Higher expected return achieved with similar risk target
- **Other mixes have lower return expectations**

Scenario Analysis – Change from Current Target

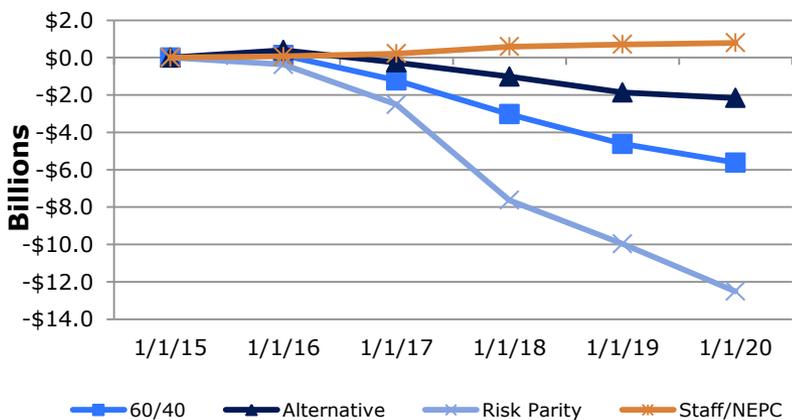
Stagflation



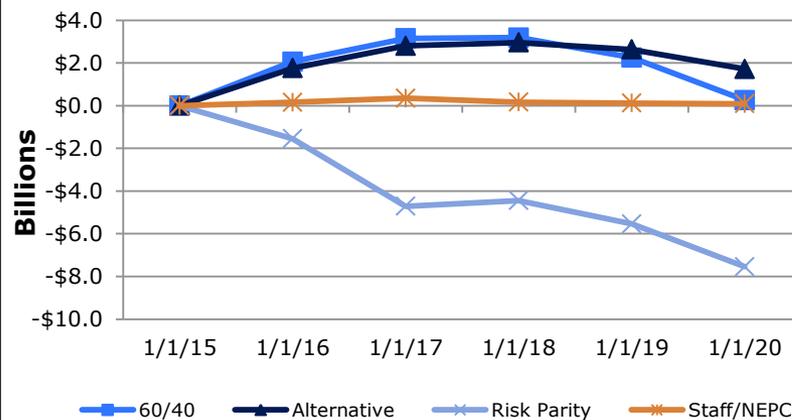
Recession



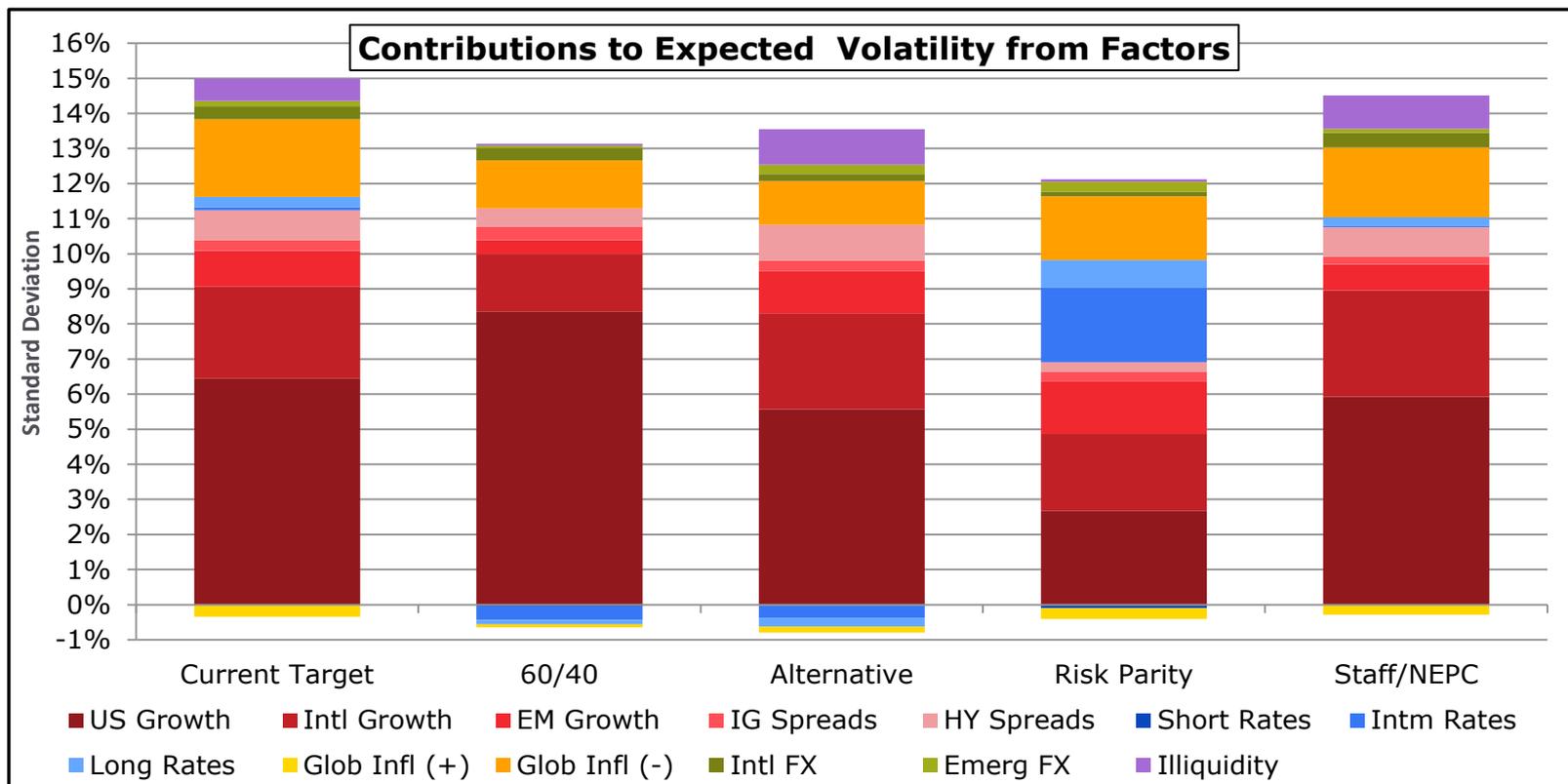
Expansion



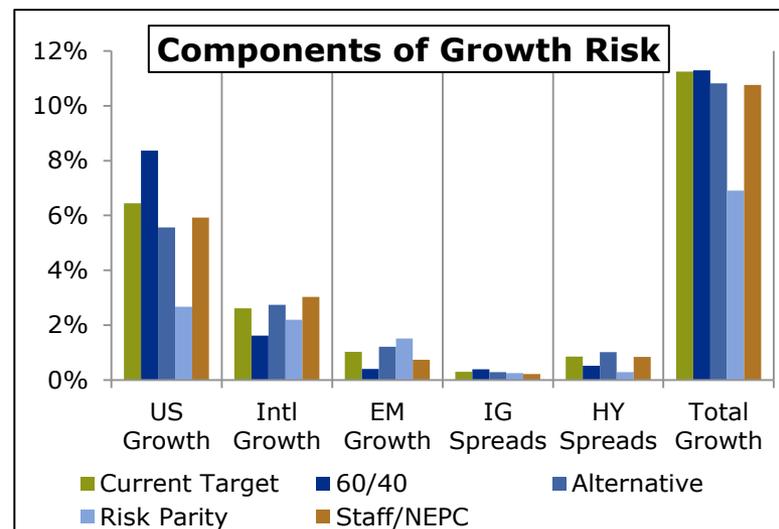
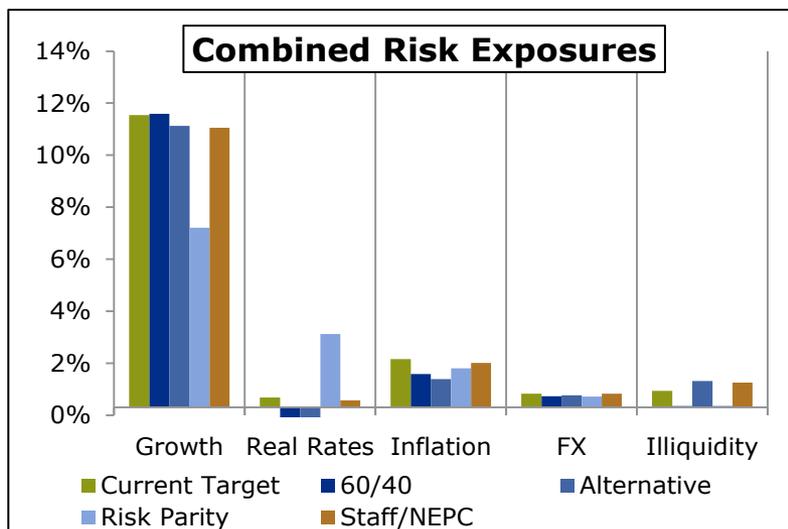
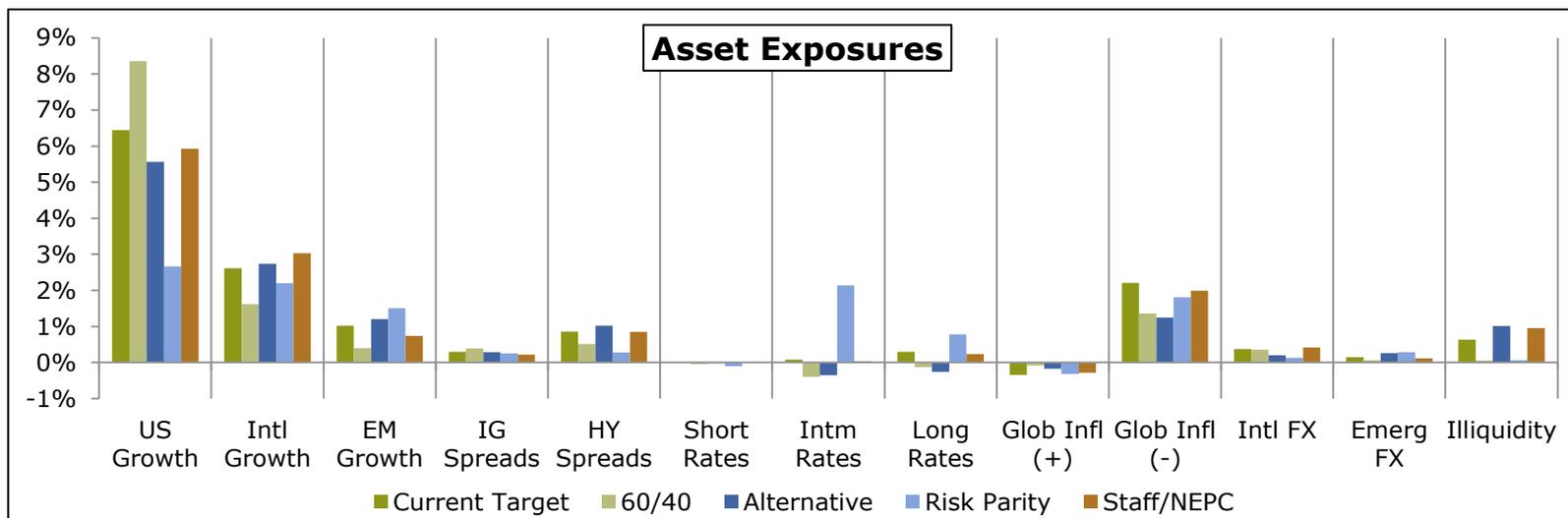
Overextension



Note: Analysis does not include assumptions for liabilities or other cash flow items and is calculated using current assets (as of 12/31) only



- **Large majority exposure to growth in all mixes except risk parity**
- **Recommended mix carries slightly lower growth exposure and increases risk exposure to illiquidity**



Appendix: SAA Policy History

Strategic Asset Allocation Policy (SAAP) History

- 7/1/75 – 12/31/79 – 40% S&P 500/60% Barclays Capital Aggregate
- 1/1/80 – 12/31/83 – 50% S&P 500/50% Barclays Capital Aggregate
- 1/1/84 – 12/31/91 – 60% S&P 500/40% Barclays Capital Aggregate
- 1/1/92 – 12/31/94 – 50% S&P 500/10% MSCI EAFE/40% Barclays Capital Aggregate
- 1/1/95 – 6/30/97 – 45% S&P 500/15% MSCI EAFE/40% Barclays Capital Aggregate
- 7/1/97 – 12/31/99 – 50% S&P 500/15% MSCI EAFE/35% Barclays Capital Aggregate
- 1/1/00 – 9/30/03 – 53% S&P 500/17% MSCI EAFE/30% Barclays Capital Aggregate
- 10/1/03 – 12/31/06 – 53% S&P 500/15% MSCI EAFE/ACWI ex-U.S.¹/26% Barclays Capital Aggregate/6% NCREIF ODCE (lagged one quarter)
- 1/1/07 – 10/31/2009 – 31% S&P 500/7% S&P 400/7% S&P 600/18% MSCI ACWI ex-U.S./5% Russell 2000 (lagged one quarter)/26% Barclays Capital Aggregate/6% NCREIF ODCE (lagged one quarter)
- 11/1/2009 – 6/30/2012 – 28% S&P 500/6% S&P 400/6% S&P 600/13% MSCI EAFE/2% MSCI EAFE Small Cap/3% MSCI Emerging Markets/7% Russell 2000 (lagged one quarter)/24% Barclays Capital Aggregate/2% Barclays Capital High Yield/6% NCREIF ODCE (lagged one quarter)/3% Dow Jones/UBS Commodities Index
- **7/1/2012 – Present – 23% S&P 500/5% S&P 400/5% S&P 600/14% MSCI EAFE/3% MSCI EAFE Small Cap/6% MSCI Emerging Markets/7% Russell 2000 (lagged one quarter)/13% Barclays Capital Aggregate/5% Barclays Capital High Yield/4% JP Morgan GBI-EM Global Diversified/3% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/8% NCREIF ODCE (lagged one quarter)/4% Dow Jones/UBS Commodities Index**
- *Interim SAA Policy: 25% S&P 500/5% S&P 400/5% S&P 600/14% MSCI EAFE/3% MSCI EAFE Small Cap/6% MSCI Emerging Markets/6% Russell 2000 (lagged one quarter)/14% Barclays Capital Aggregate/5% Barclays Capital High Yield/4% JP Morgan GBI-EM Global Diversified/3% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/6% NCREIF ODCE (lagged one quarter)/4% Dow Jones/UBS Commodities Index

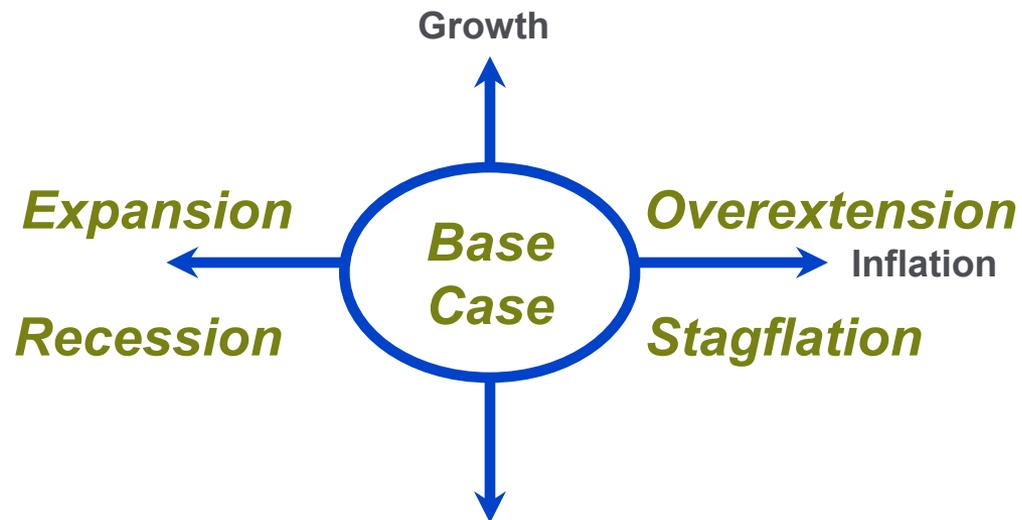
Note: Interim SAA Policy includes a proration of 1% Private Equity and 2% Real Estate, which are unfunded. Private Equity was prorated to domestic equity; Real Estate was prorated to domestic equity and fixed income. Recently approved Strategic Asset Allocation Policy effective July 1, 2012.

¹MSCI EAFE/ACWI ex-U.S. Benchmark is the MSCI EAFE Index prior to 10/1/2005 and the MSCI ACWI ex-U.S. thereafter.

Note: All MSCI indices changed from Gross to Net of dividend withholding taxes effective 1/1/2014.

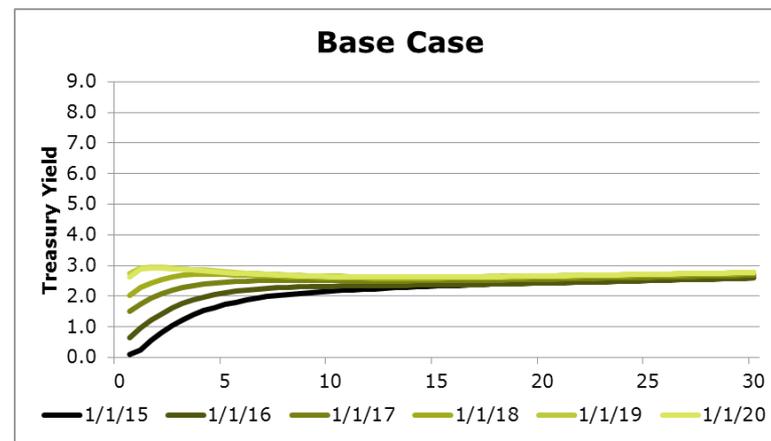
Appendix: Scenario and Factor Assumptions

- **NEPC Scenario Analysis tests the viability of alternative asset mixes under multiple economic scenarios**
 - Allows better understanding of risk exposures under contrasting inflation and economic growth regimes
 - Can understand the effect on both assets and liabilities (funded status)



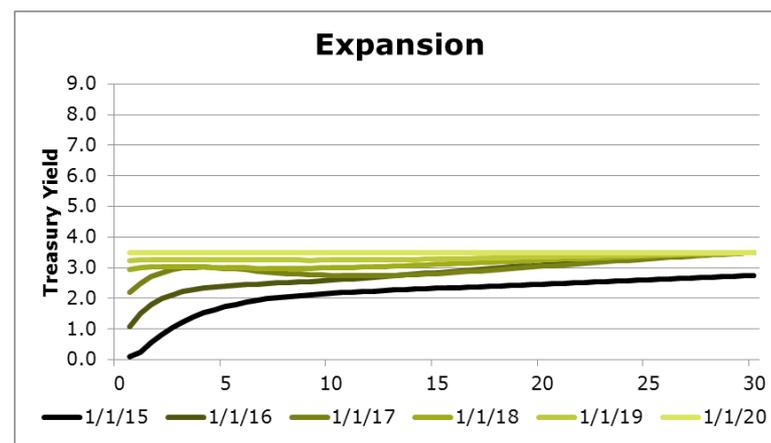
- **Base Case**

- Asset returns over 5 year period in line with NEPC 2015 5-7 Year Assumptions
- No volatility



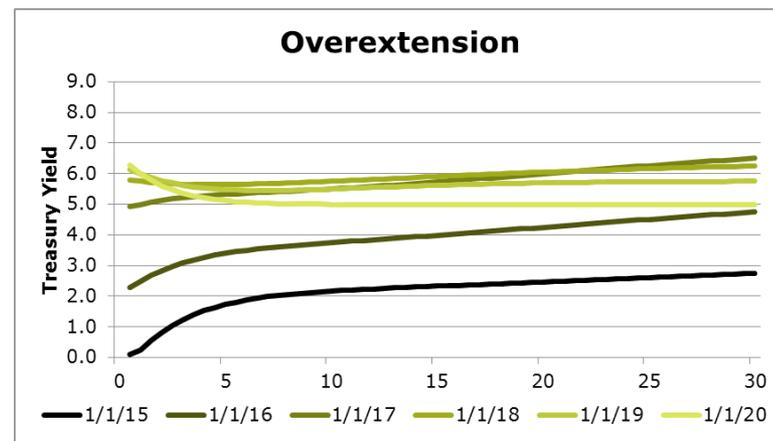
- **Expansion**

- Economy is growing by a strong, but seemingly sustainable level
- Bond yields are stable, inflation is manageable, equities and other high volatility asset classes perform quite well in this environment
- Historical example: 2004-2006
- *Large cap equities time-series: 10%, 17%, 28%, 12%, 10%*



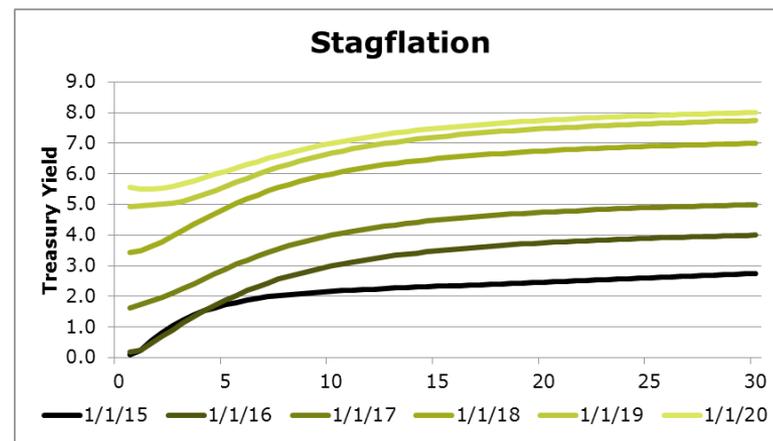
• Overextension

- Economy is growing at a rapid pace, inflation increases significantly – booming times but at the cost of future growth
- Bond yields move higher as a result of inflation; high yield does well with confidence in the economy
- Equities, real estate, and commodities fuel rapid expansion
- Historical example: Vietnam War era (1967-1971)
- *Large cap equities time-series: 12%, 16%, 0%, 12%, 16%*



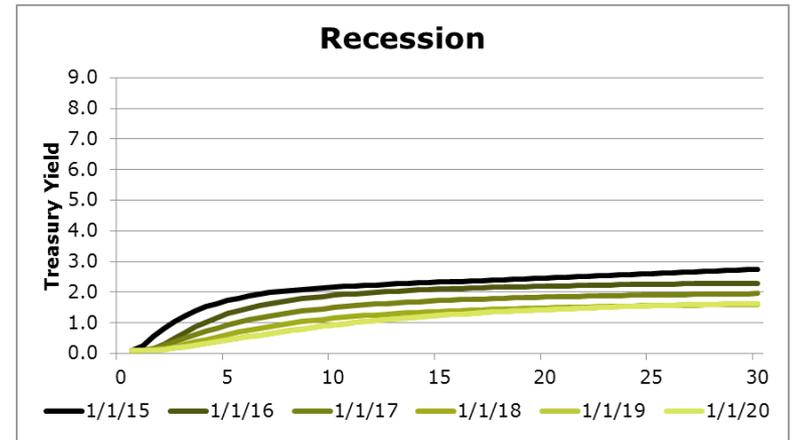
• Stagflation

- Two problems – (1) the economy is not growing, (2) inflation has skyrocketed
 - Inflation is sticky – once it gets high, it stays high for several years
 - Fed has limited options to kick-start economy because easing only promotes further inflation
- Equities sag; bonds lose real value; real assets such as TIPS perform well on a relative basis because they are linked to inflation
- Historical example: flat stock market and double digit inflation of the mid-1970s
- *Large cap equities time-series: -8%, -12%, -15%, 9%, 12%*



- **Recession**

- Economy stalls – there is a flight to quality as investors lose confidence
 - Equity markets fall
 - Bond yields fall
- Interest-sensitive securities (bonds, especially long duration bonds) will perform well in this environment
- Historical example: early 1990s
- *Large cap equities time-series: -8%, -18%, -8%, 4%, -10%*



- **We focus on five key underlying macroeconomic risk factors**
 - Sub-factors used for modeling purposes in order to express differences in risk outlook
- **Volatility becomes a function of factor movements relative to expectations**
 - Example: Experience volatility when real rates rise more than expected; not necessarily when any rise occurs
- **Factor analysis is a risk exercise**
 - Investment recommendations also reflect how we expect an investor will be compensated for holding each risk factor

Growth	Real Rates	Inflation	Currency	Illiquidity
Domestic Growth	Short Real Rates	Rising Global Inflation	Developed vs. Base	Contractual Illiquidity
Developed Int'l Growth	Intermediate Real Rates	Falling Global Inflation	Emerging vs. Base	Pricing Illiquidity
Emerging Growth	Long Real Rates			
IG Credit Spreads				
HY Credit Spreads				

Growth

- **Common and easily obtainable source of return, but brings volatility that may be difficult to hedge away without sacrificing return**

Real Rates

- **Generally lower return and volatility than growth factor; may be a lone bright spot in low/negative growth environment**

Inflation

- **Sensitivity to higher inflation is present in almost all investments but can be partially offset through a real assets program**

Currency

- **Introduces additional volatility with a small risk premium from emerging currencies but without a positive expected return from developed currencies**

Illiquidity

- **Attractive supplemental return source from being willing to lock up money contractually or taking on investments with lower market liquidity, but may introduce additional risks beyond traditional measures of volatility**

Benefits

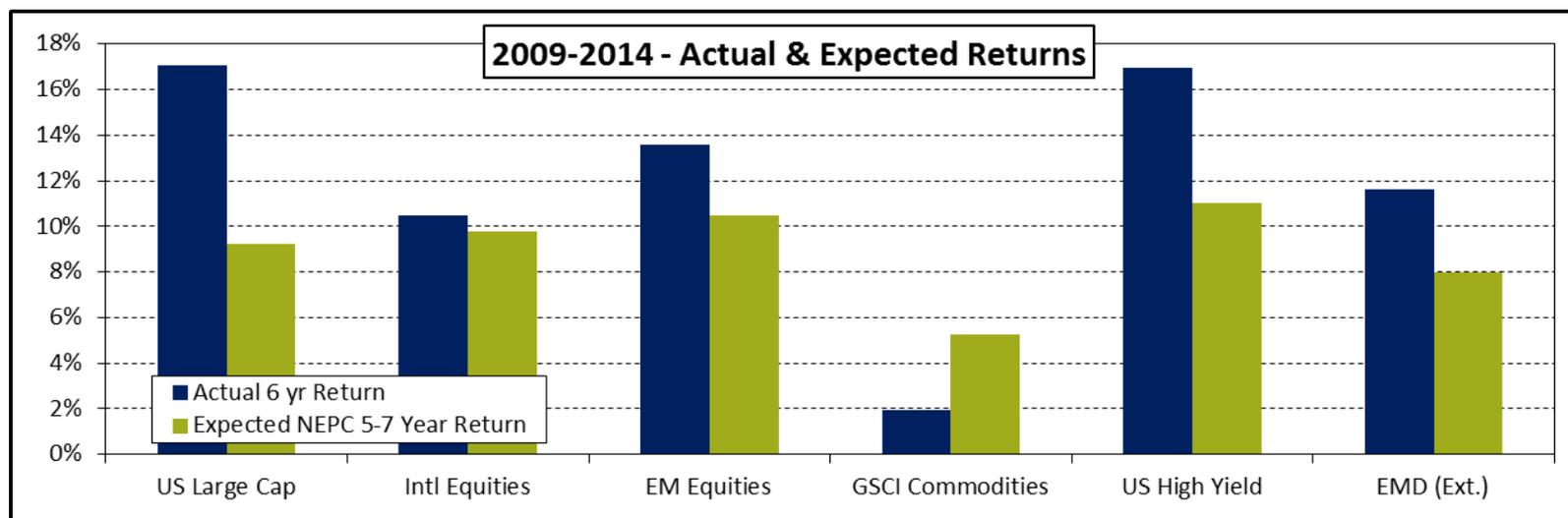
- **Avoid misleading diversification**
- **Improved perspective on where risk is being taken and how changing market conditions will impact the portfolio**
- **Understand benefits of adding new asset classes**

Challenges

- **May be difficult to obtain (or even define) data for investment program's unique definition of risk factors, particularly inflation**
- **Traditional ways of "bucketing" asset classes may be difficult**
- **Still uses portfolio theory framework which can oversimplify risk, particularly over shorter time periods**

Appendix: NEPC 2015 Capital Market Assumptions Development

- **Returns have been exceptional since the global financial crisis**
 - Results dramatically outpaced expectations during a period of elevated uncertainty
 - Volatility spiked at times but overall experience well below expectations
- **Low realized volatility fuels shortsighted view for long-term investors**
 - Benefits of diversification are questioned but should be a cornerstone of success
- **NEPC's capital market forecasts cover a 5-7 year horizon which is unlikely to look like most recent trailing periods**
 - End point sensitivity pronounced; annualized returns for diversified investors show an 11.9% return for 3 years, 9.2% return for 5 years and 4.7% for 7 years
 - Last three years' results unlikely to continue for the next 5-7 years
- **Easy monetary policy supports near-term returns beyond what fundamentals may otherwise indicate**
 - Europe and Japan may provide further stimulus but effectiveness of extended easy monetary policy wanes in today's low yield environment
 - U.S. strength can spur consumption and buoy global growth but profit margins may compress impacting valuations
 - Timing is key, but difficult to pinpoint; risk balance is encouraged
- **30 year forecasts are lower, challenging feasibility of success**
 - Extension of easy monetary policy has stymied expectations of higher yields
 - Low long-term rates drive return expectations back towards levels seen prior to 2013
 - Conventional approaches may fall short going forward



Source: Bloomberg and NEPC as of 11/30

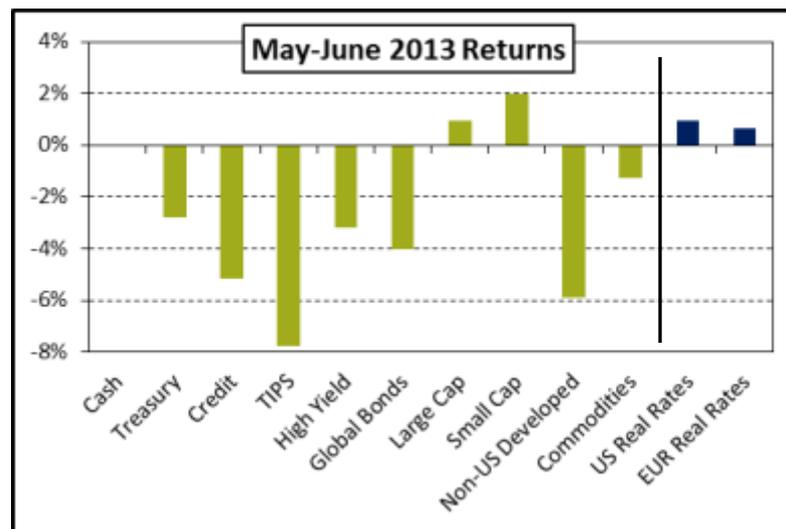
- **NEPC's 2009 5-7 assumptions were eye-popping relative to previous years**
 - Result of significant sell-off in the midst of the global financial crisis
- **Most fundamental forecasting models suggested even higher returns**
 - We discounted original expectations heavily given tremendous path uncertainty at that time
 - Still in the midst of drawdowns, frozen credit markets, unprecedented monetary policy
 - If we could have offered certainty of our expectations, most would have seized it
- **Patient, long-term investors have been rewarded beyond our expectations**
 - Tremendously beneficial in healing balance sheets, funded positions, grant making stability, etc.
 - But important to recall the range of outcomes that have been in play along the way
 - Quantitative Easing, Eurozone stability, etc.
- **Low yields and core fundamentals suggest muted returns looking forward**

- **Since the crisis, we expected and experienced a range of outcomes**
 - Great uncertainty was a dominant theme over the last 6 years
- **Burned by losses and illiquidity, many institutions exercised caution**
 - Participate smartly in upside with dislocated credit markets but mitigate potential downside by diversifying growth risk away from long-only equity
- **Unconventional global monetary policies were unfamiliar & untested**
 - Diverse underlying economic conditions across regions complicated the issue
- **Politics, both national and “geo”, have proven to be a challenge**
 - “Fiscal cliff”, debt ceiling, socio-economic divide
 - European “dis-union”, austerity measures, periphery unemployment
 - Japan’s lost (two plus) decade(s), Abenomics
 - Unpredictable state actors such as Russia, Iran, North Korea, etc.
- **Markets have forged ahead with cautious optimism tied to improving U.S. economic conditions and continued easy global monetary policy**
 - Still a large range of outcomes
 - Complacency is fertile ground for volatility and loss
 - Tilt towards fundamental strength as U.S. recovers
 - Maintain diversification (economic hedges) to mitigate tail risk

- **Balance potential for short-term strength with an acknowledgement of lofty recent returns relative to global growth**
 - Reallocate risk as appropriate while maintaining downside protection as a counterweight
- **Public U.S. equity and credit markets similarly valued vs. history; near-term favors stocks**
 - Credit's limited upside from potential investment grade spread compression, overall reduction in liquidity and proliferation of ETFs contribute to asymmetry
 - Real estate and direct lending (though less liquid) can be a substitute for high yield
 - Manage private commitments and maintain liquidity to exploit downturns
- **Non-U.S. equity markets have not experienced the same rally as U.S.**
 - Valuations and monetary easing support overweight; downside risks point to caution
 - Muted return expectations are sensitive to binary policy decisions (upside and downside)
 - Emerging growth expectations have compressed
 - Commodity driven countries face pressures but U.S. strength supports exporters
 - Fundamental strength vs developed likely to win in the long run
 - Be globally diversified, hedge developed currency risks, and don't flee emerging markets
- **We are one year closer to rate hikes by the Federal Reserve**
 - Curve has shifted in anticipation making both cash/short duration and long bonds relatively more attractive than core duration
 - Long rates likely range bound due to dynamics of supply (shrinking deficits) and demand (increasing LDI hedgers, global investors, aging population of savers)
 - Barbell of long treasuries and cash can offer similar core bond duration, volatility, yield, and a higher sensitivity to recession protection (counterweight)

- Many investors surprised by market impact of Bernanke's taper comments in Spring 2013**

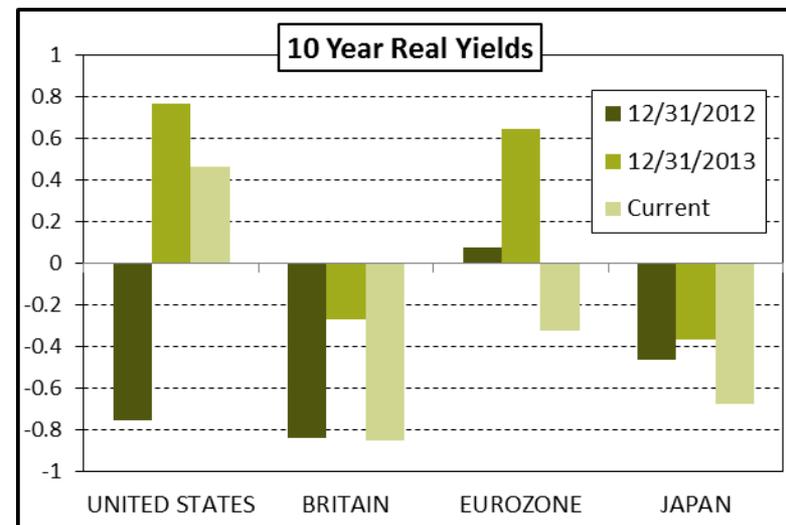
- The Primary driver was a change in underlying global real yields
 - Market discount rates increased driving down present values
 - And the surprise change in expectations of tighter policy spooked sentiment
 - U.S. market strength may not persist with a repeat occurrence



Source: Bloomberg as of 11/30

- Real yields in 2014 reversed the normalization trend of 2013 and are a key component of lower 5-7 year expected returns in 2015**

- U.S. gave up far less than other developed markets
 - Gravity of low interest rates in Germany and Japan may draw U.S. rates lower



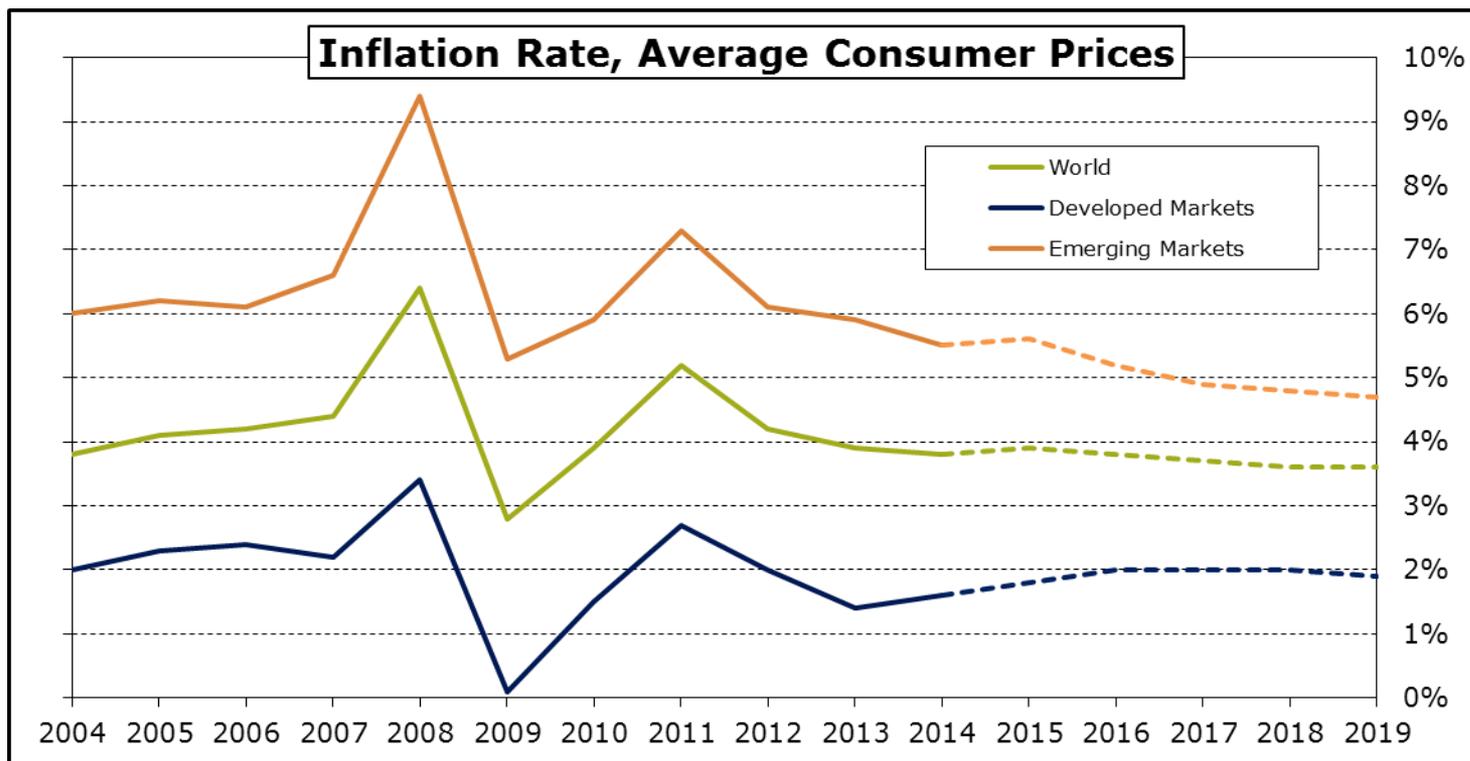
Source: Bloomberg as of 11/30

- **Combination of historical data and forward looking analysis**
 - Expected returns based on current market pricing and forward looking estimates
 - Volatility based on history, while recognizing current uncertainty
 - Correlations based on a mix of history and current trend
- **Historical data is used to frame current market environment as well as to compare to similar historical periods**
 - Historical index returns, volatility, correlations, valuations, and yields
- **Forward-looking analysis is based on current market pricing and a building blocks approach**
 - Return equals yield + changes in price (valuation, defaults, etc.)
 - Use of key economic observations (inflation, real growth, dividends, etc.)
 - Structural themes (supply and demand imbalances, capital flows, etc.)
- **Assumptions prepared by Asset Allocation Committee**
 - Asset Allocation team plus members of various consulting practice groups meet throughout Q4 to develop themes and assumptions
 - Public markets, hedge funds and private markets teams provide market insights
- **Assumptions and Actions reviewed and approved by Partners Research Committee**

- **5-7 year return expectations lower relative to prior year**
 - Broadly expected return outlook remains subdued
 - Strong performance of domestic equity markets leads to reduction in expectations
 - Lower yields relative to prior year reduce bond market forecasts
 - Decrease in expectations for credit markets reflect normalization of default rates
 - Hedge Fund expectations increased due to anticipation of greater divergences across and within global markets
 - Private asset class adjustments mirror changes in liquid risky asset classes
- **30-year returns have similar themes to 5-7 year forecasts**
 - Yield decreases flow through to longer-term returns in fixed income
 - Equity markets reduced modestly
- **Volatility expectations reduced incrementally in certain asset classes**
 - Real Estate and Private Debt reductions echo more normalized asset class environment
 - Volatility increased for unhedged asset classes to reflect central bank divergences

- **We continue to refine and enhance our process where appropriate**
 - Changes are evolutionary rather than revolutionary
 - Global Inflation-Linked Bonds now represent a USD hedged exposure
- **Improved modeling of Real Estate to more accurately reflect the underlying economic and market fundamentals**
 - Refined model sensitivity to changes in occupancy rates, supply, and new construction
 - Enhanced Cap Rate assumption to better reflect forward Treasury rates and spreads
- **Added Real Estate Investment Trust (REITs)**
 - Recognizing the unique role of REITs within a broad real estate allocation
- **Refined Emerging Market Debt Local Currency forecast model to better reflect underlying country forward rates**
 - Developed improved local yield curve forecast for major EM countries
 - Accounts for the significant exposure of a select number of countries in the index
- **Further refined term premium adjustment in fixed income model**
 - Accounts for the higher risk of longer dated maturities
- **Enhanced Risk Parity portfolio construction with the addition of a global cash and LIBOR assumption to reflect global leverage rates**
 - Divergence in expected global cash rates between the U.S. and develop world necessitated the change to reflect implicit leverage costs

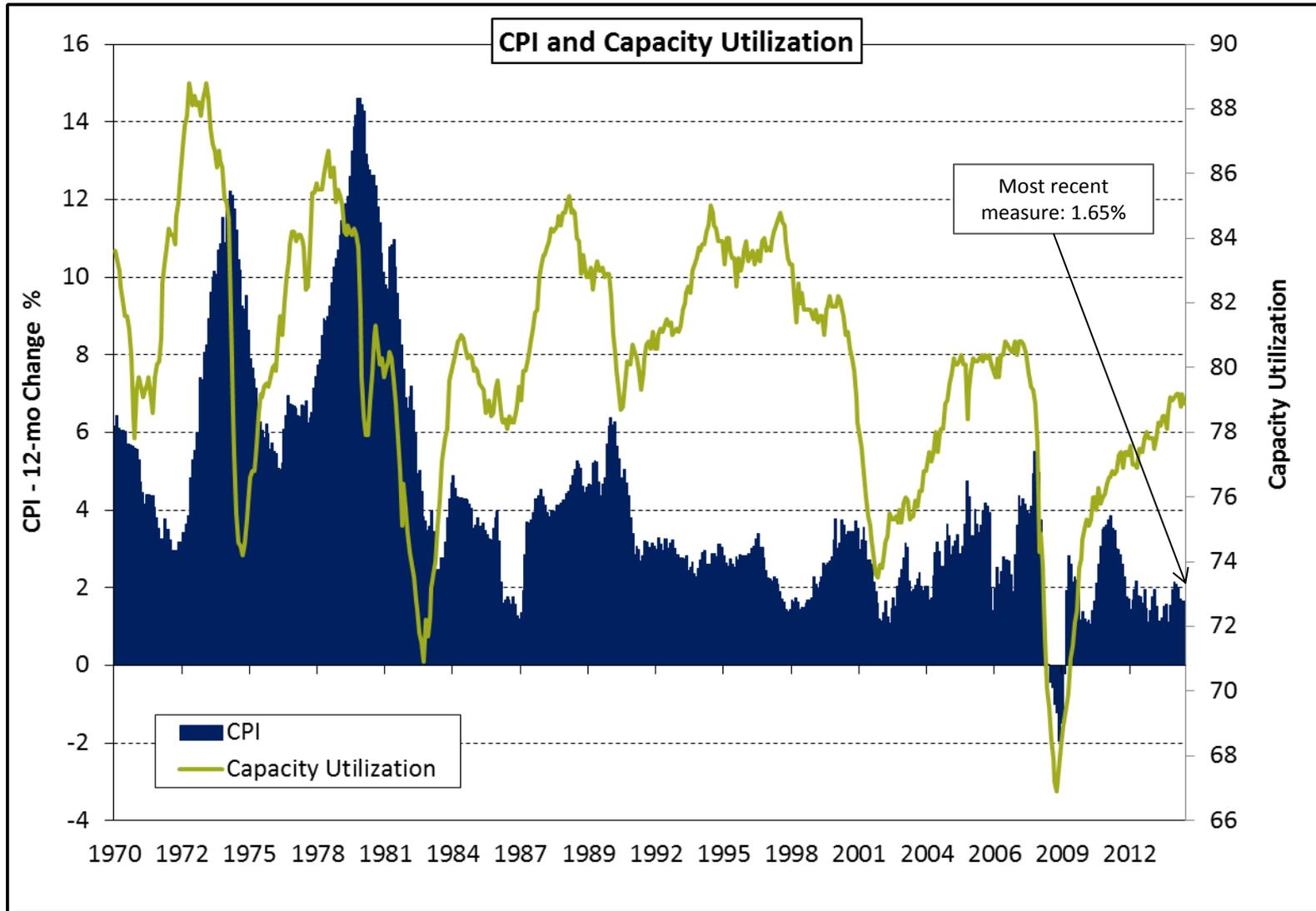
- **Inflation is an integral component of our asset allocation assumptions**
 - An essential building block for projecting returns in stocks, bonds, and commodities
- **There are several measures of inflation used to inform our view, all with some type of shortcomings**
 - Global forecasts, local consumer and producer price indices, TIPS break-even inflation
- **Institutional investment pools will experience asset inflation globally, encompassing both developed and emerging countries**
 - We use a 3% global inflation projection over the next 5-7 years
 - Akin to assuming purchasing power parity holds across markets
 - Can be different from inflation experienced in local country liabilities or spending needs
 - For example our expectation of U.S. CPI is 2.25% over 5-7 years
- **Muted credit growth leaves inflation expectations unchanged in the near term, pressure for higher long-term inflation continues to build**
 - Money supply (M2) continued to expand in 2014 while velocity remains depressed
 - Global monetary policy likely to remain stimulative in 2015
- **Given increasing long-term inflation pressures, a modestly higher inflation assumption (3.25%) is used for determining 30 year return expectations**



Source: IMF

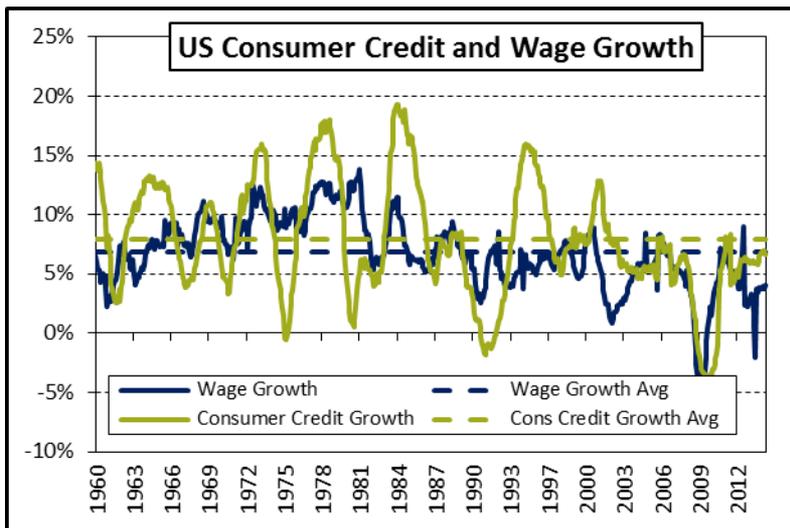
- **World inflation forecasts range from 3.6-3.9% annually over the next five years**
 - Investment programs biased toward developed markets would likely experience something less than the global average

Realized Inflation Has Stayed Low

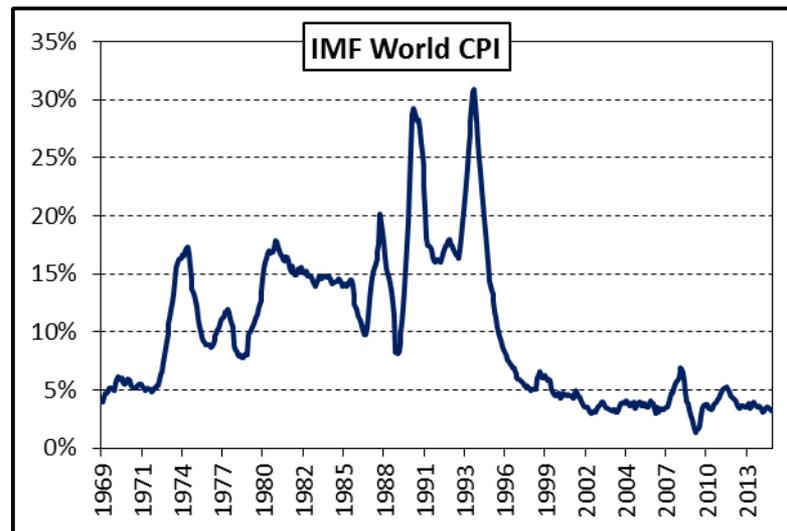


Source: St. Louis Fed as of 11/30

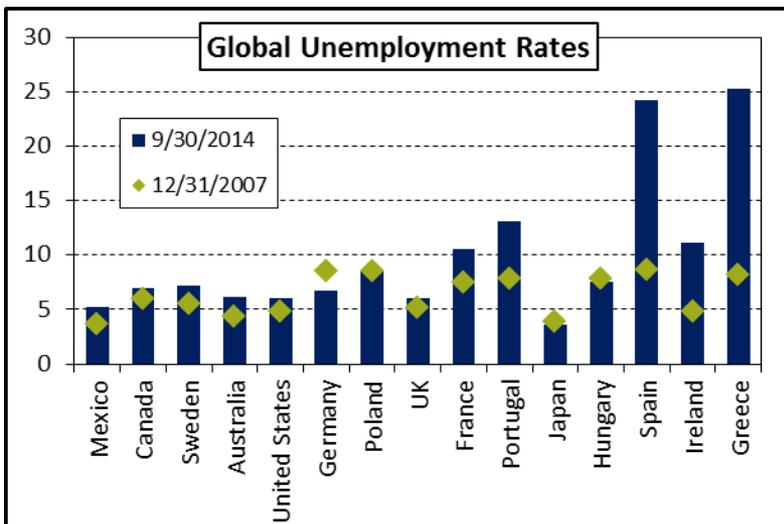
Economic Factors Driving Inflation Remain Subdued



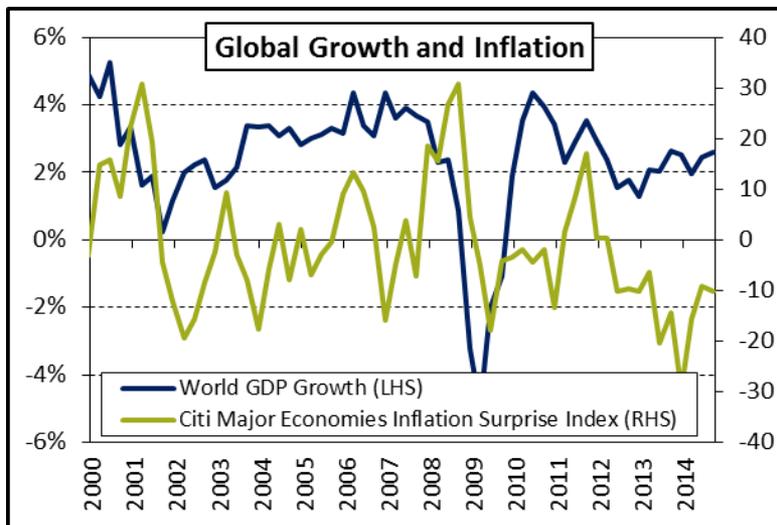
Source: Board of Governors of the Federal Reserve System as of 10/1



Source: Bloomberg as of 9/30



Source: Bloomberg as of 9/30



Source: Bloomberg as of 9/30

Geometric Expected Return			
Asset Class	2014	2015	2015-2014
Cash	1.50%	1.75%	0.25%
Treasuries	2.00%	1.75%	-0.25%
IG Corp Credit	3.50%	3.25%	-0.25%
MBS	2.25%	2.00%	-0.25%
<i>Core Bonds*</i>	<i>2.53%</i>	<i>2.30%</i>	<i>-0.23%</i>
TIPS	2.50%	2.25%	-0.25%
High-Yield Bonds	4.50%	4.00%	-0.50%
Bank Loans	5.00%	4.50%	-0.50%
Global Bonds (Unhedged)	1.25%	1.00%	-0.25%
Global Bonds (Hedged)	1.38%	1.17%	-0.21%
EMD External	5.00%	4.50%	-0.50%
EMD Local Currency	5.75%	5.50%	-0.25%
Large Cap Equities	6.25%	6.00%	-0.25%
Small/Mid Cap Equities	6.25%	6.00%	-0.25%
Int'l Equities (Unhedged)	7.25%	7.00%	-0.25%
Int'l Equities (Hedged)	7.50%	7.50%	0.00%
Emerging Int'l Equities	9.50%	9.00%	-0.50%
Private Equity	8.75%	8.50%	-0.25%
Private Debt	8.00%	7.50%	-0.50%
Private Real Assets	7.75%	8.00%	0.25%
Real Estate	6.25%	6.50%	0.25%
Commodities	5.00%	5.25%	0.25%
Hedge Funds	5.50%	5.75%	0.25%

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

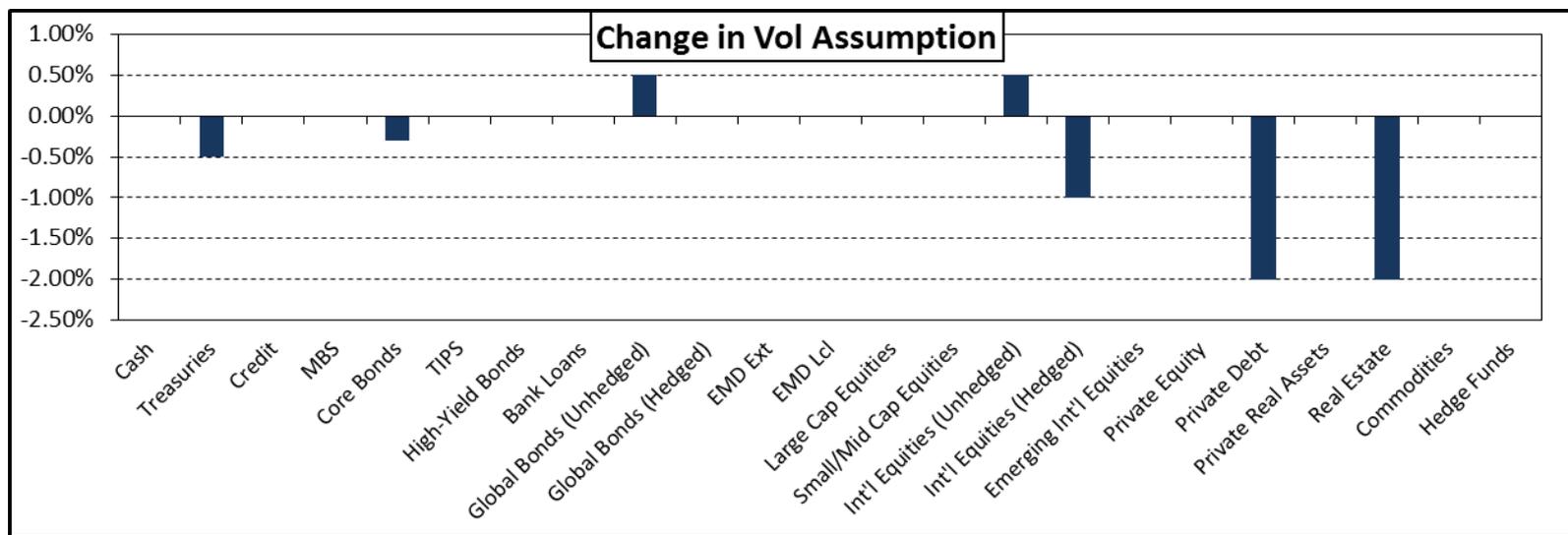
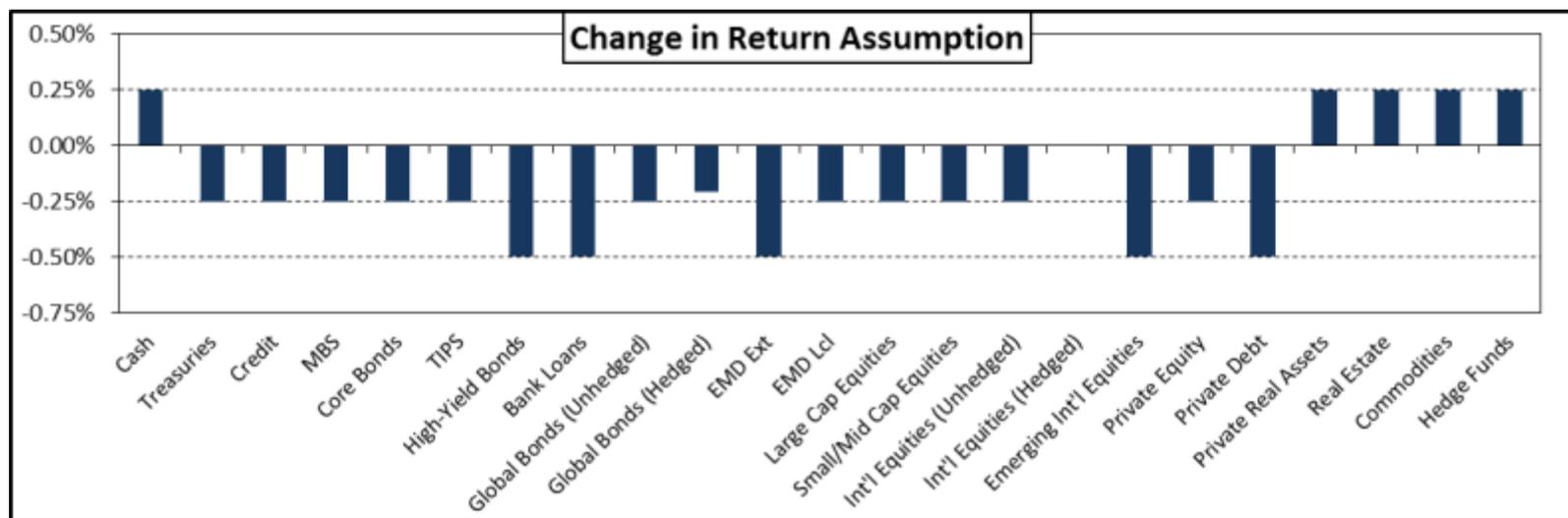
Geometric Expected Return			
Asset Class	2014	2015	2015-2014
Cash	3.75%	3.25%	-0.50%
Treasuries	4.00%	3.50%	-0.50%
IG Corp Credit	5.25%	4.75%	-0.50%
MBS	4.25%	3.75%	-0.50%
<i>Core Bonds*</i>	<i>4.40%</i>	<i>3.98%</i>	<i>-0.42%</i>
TIPS	4.50%	4.00%	-0.50%
High-Yield Bonds	6.00%	5.75%	-0.25%
Bank Loans	6.25%	6.00%	-0.25%
Global Bonds (Unhedged)	3.00%	2.25%	-0.75%
Global Bonds (Hedged)	3.13%	2.42%	-0.71%
EMD External	7.00%	6.00%	-1.00%
EMD Local Currency	7.25%	6.75%	-0.50%
Large Cap Equities	7.75%	7.50%	-0.25%
Small/Mid Cap Equities	8.00%	7.75%	-0.25%
Int'l Equities (Unhedged)	8.25%	8.00%	-0.25%
Int'l Equities (Hedged)	8.50%	8.49%	-0.01%
Emerging Int'l Equities	9.50%	9.25%	-0.25%
Private Equity	9.75%	9.50%	-0.25%
Private Debt	8.25%	8.00%	-0.25%
Private Real Assets	7.75%	7.75%	0.00%
Real Estate	6.50%	6.50%	0.00%
Commodities	6.00%	5.75%	-0.25%
Hedge Funds	7.00%	6.75%	-0.25%

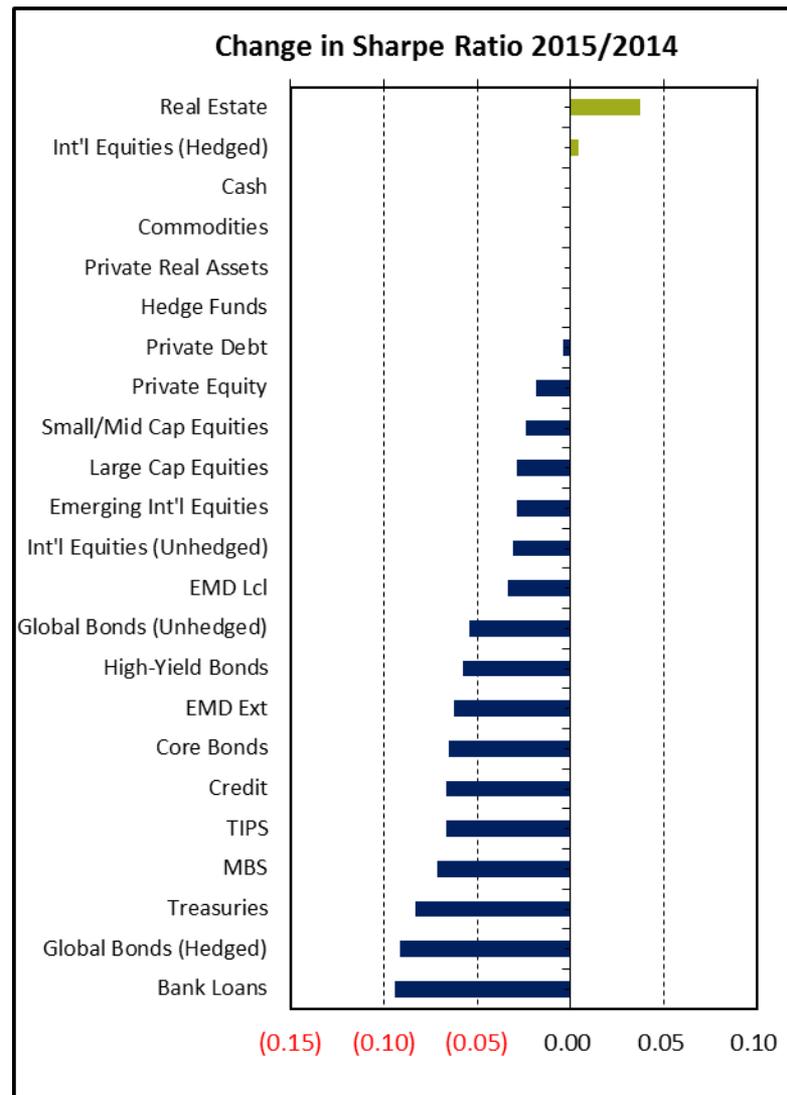
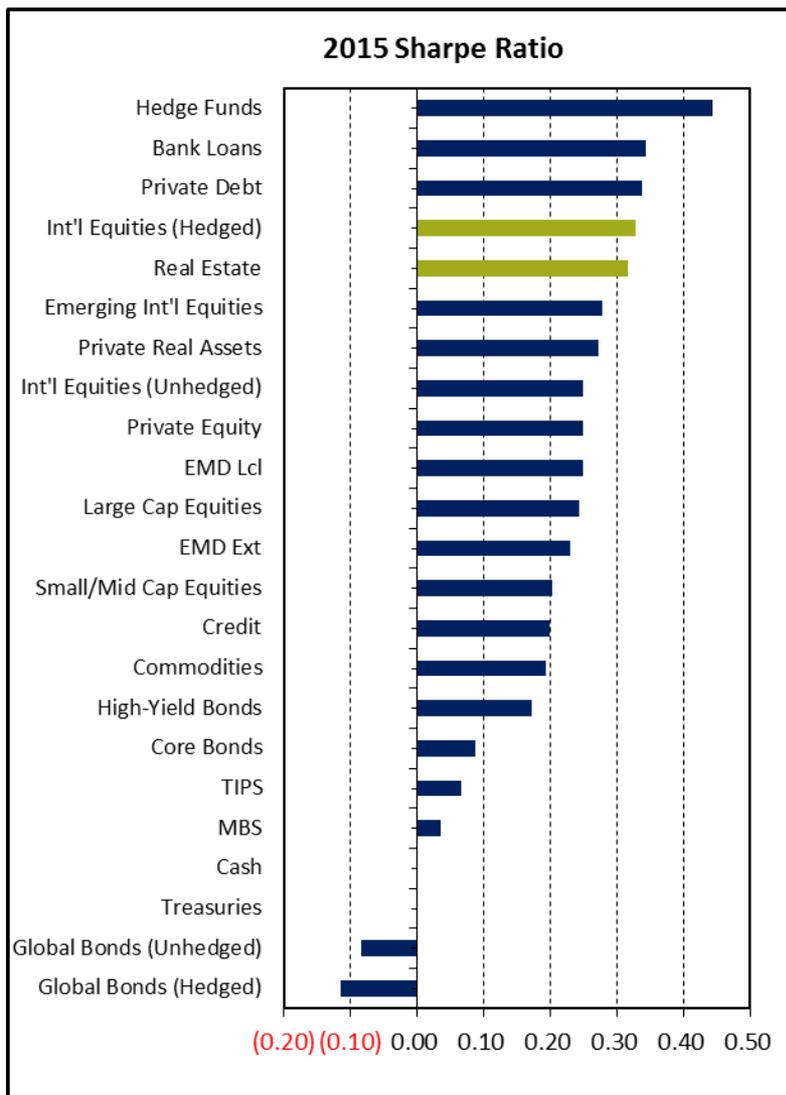
* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

Volatility			
Asset Class	2014	2015	2015-2014
Cash	1.00%	1.00%	
Treasuries	6.00%	5.50%	-0.50%
IG Corp Credit	7.50%	7.50%	
MBS	7.00%	7.00%	
<i>Core Bonds*</i>	6.32%	6.03%	-0.29%
TIPS	7.50%	7.50%	
High-Yield Bonds	13.00%	13.00%	
Bank Loans	8.00%	8.00%	
Global Bonds (Unhedged)	8.50%	9.00%	0.50%
Global Bonds (Hedged)	5.00%	5.00%	
EMD External	12.00%	12.00%	
EMD Local Currency	15.00%	15.00%	
Large Cap Equities	17.50%	17.50%	
Small/Mid Cap Equities	21.00%	21.00%	
Int'l Equities (Unhedged)	20.50%	21.00%	0.50%
Int'l Equities (Hedged)	18.50%	17.50%	-1.00%
Emerging Int'l Equities	26.00%	26.00%	
Private Equity	27.00%	27.00%	
Private Debt	19.00%	17.00%	-2.00%
Private Real Assets	23.00%	23.00%	
Real Estate	17.00%	15.00%	-2.00%
Commodities	18.00%	18.00%	
Hedge Funds	9.00%	9.00%	

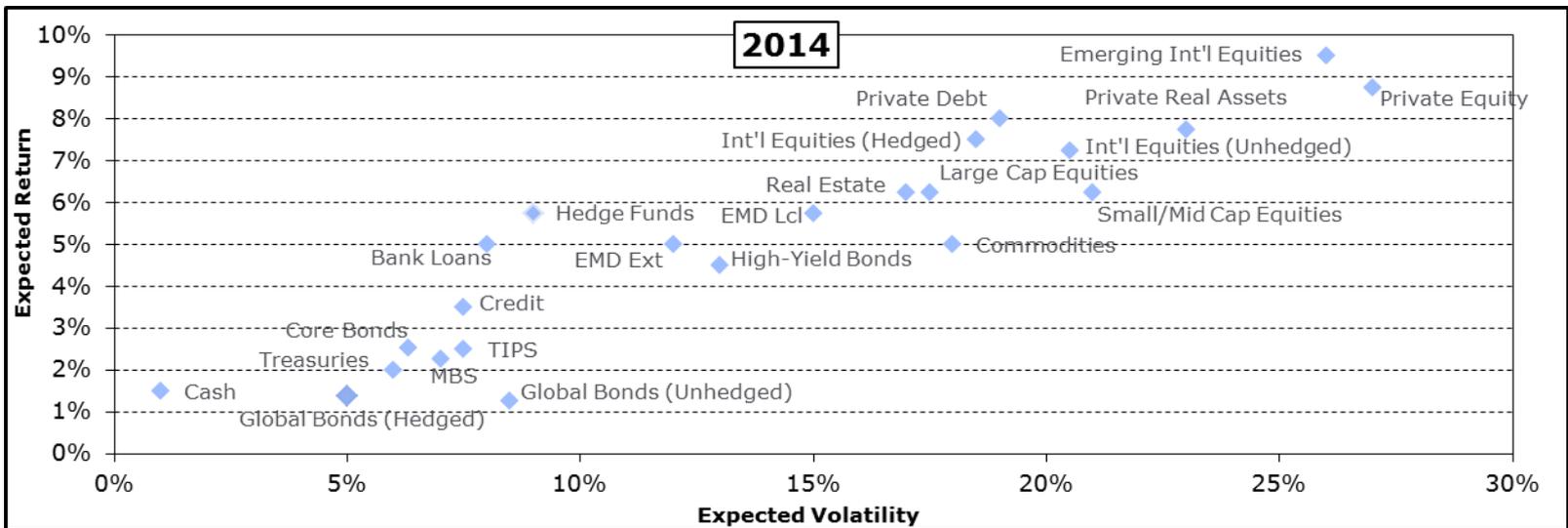
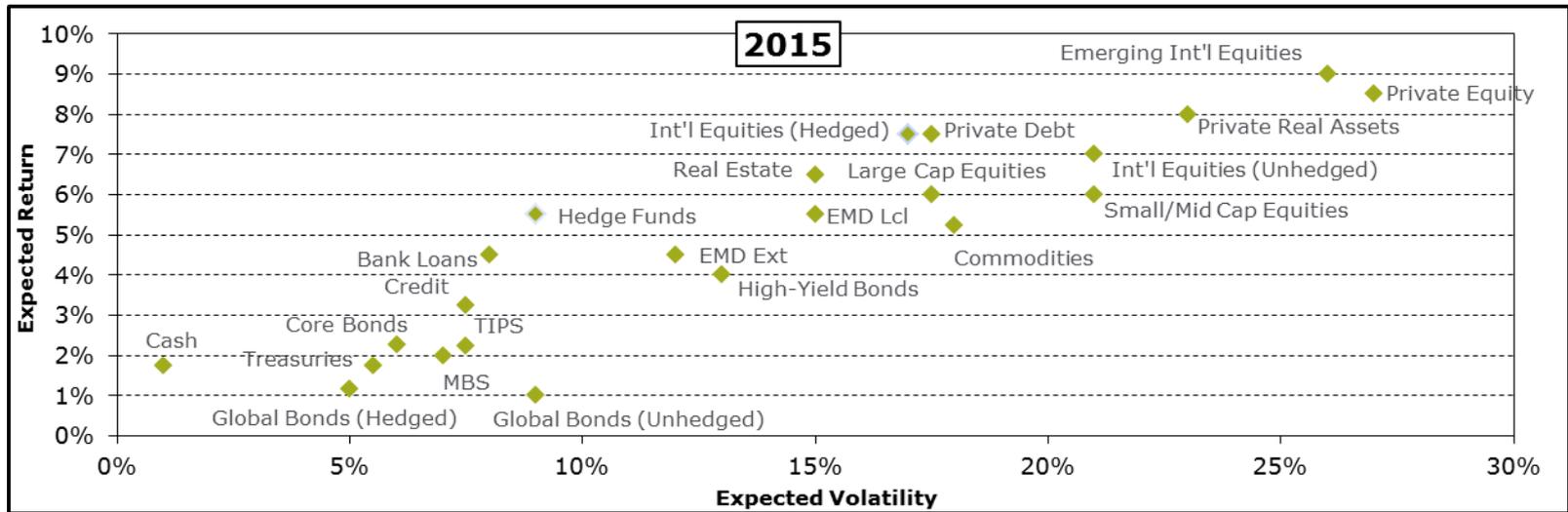
* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).

Summary of Changes to 2015 Return and Volatility Expectations



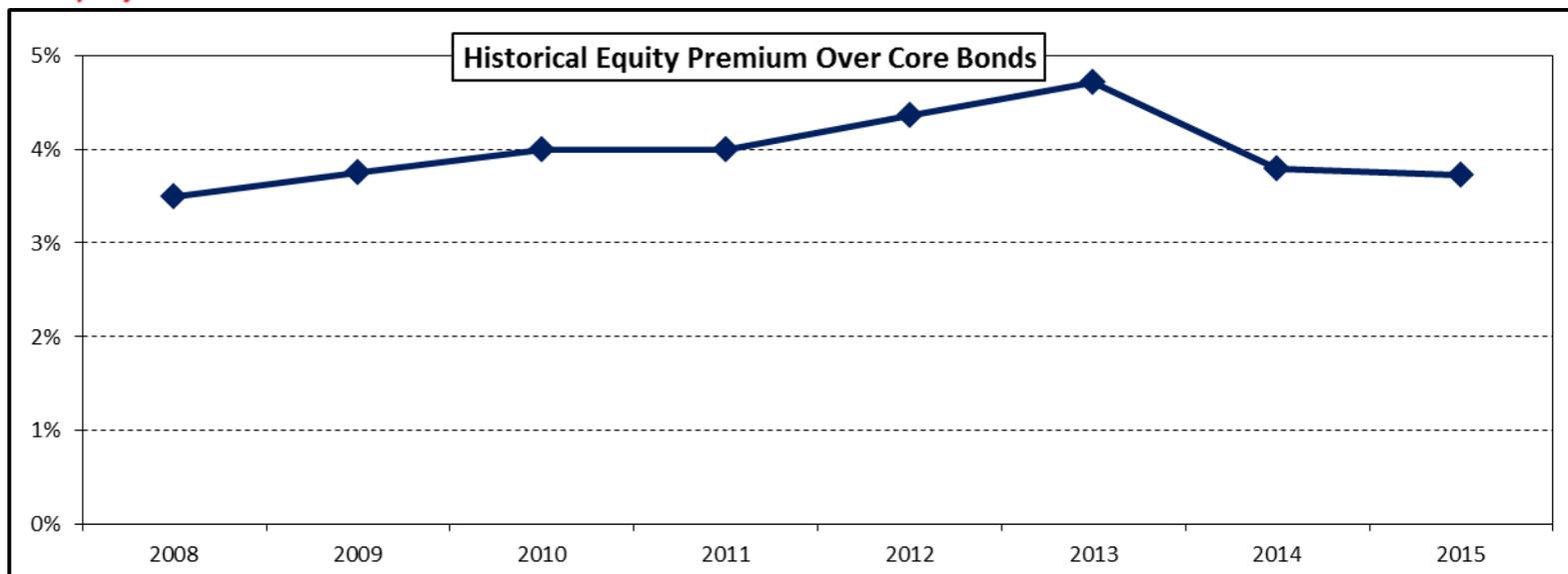


Risk/Reward Comparison

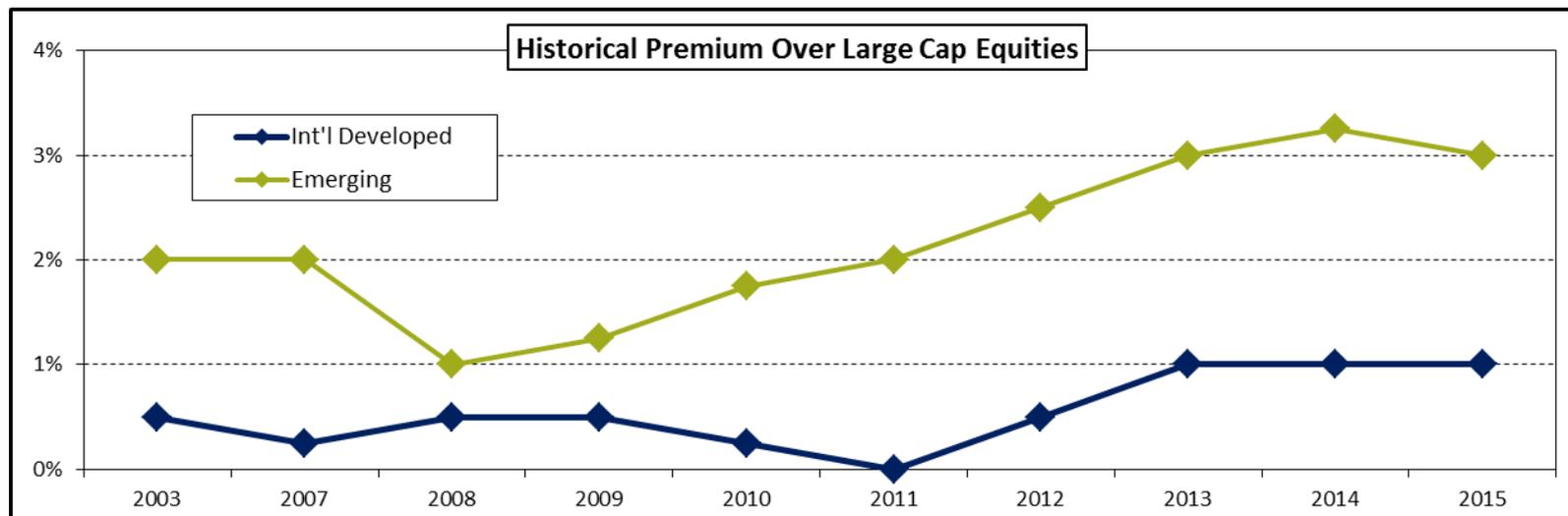


Asset Class	Historical Long Term Geometric Average ¹	5-to-7 Year NEPC Assumptions							
		2008	2009	2010	2011	2012	2013	2014	2015
Cash	3.5%	4.00%	3.00%	2.00%	2.00%	1.25%	0.75%	1.50%	1.75%
Core Bonds ²	7.9%	5.00%	5.50%	3.75%	3.00%	2.88%	2.03%	2.53%	2.30%
Large Cap	10.1%	8.50%	9.25%	7.75%	7.00%	7.25%	6.75%	6.25%	6.00%
International ³	9.1%	9.00%	9.75%	8.00%	7.00%	7.75%	7.75%	7.25%	7.00%

US Equity Premium Over Core Bonds 3.50% 3.75% 4.00% 4.00% 4.37% 4.72% 3.72% 3.70%



1. Reflects average since inception (1926 except as noted below) of the respective index through 11/30/2014
2. LB/BC Aggregate reflects average compound annual return since 1976
3. International reflects average annual return since 1970

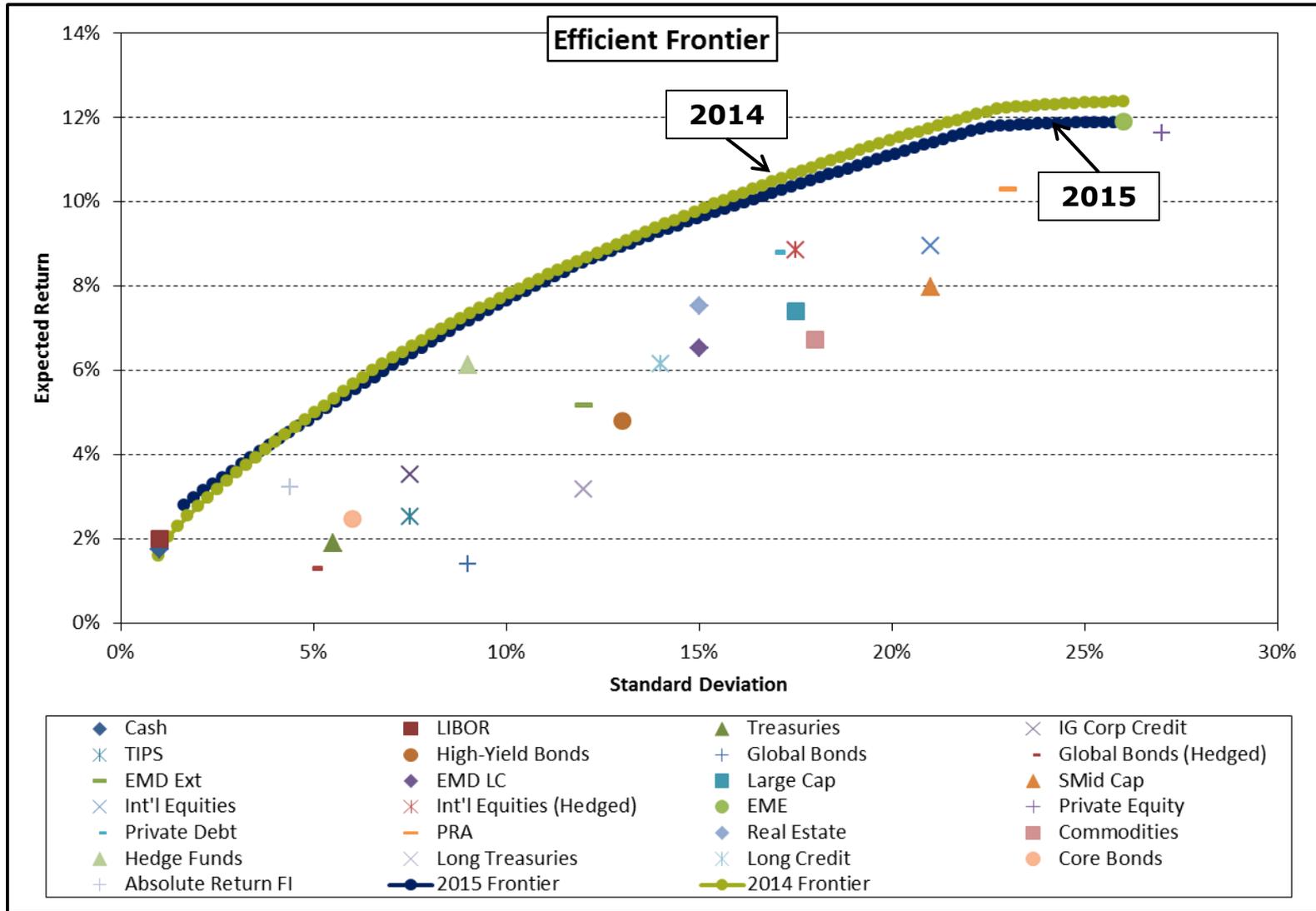


- **Total return expectations for non-U.S. Equities are lower vs. last year**
- **Yet expectations for U.S. equities are reduced as well**
 - Consistent spread of 1% for developed non-U.S. relative to U.S. Large Cap
 - Decreased premium for emerging equity as growth expectations shrank further
- **Meaningful downside risks remain in developed and emerging world**
- **While we expect investors to be compensated over 5-7 years with a higher relative return for holding non-U.S. equities, it is appropriate to use active management to mitigate exposure to downside risks**

2015 Correlations

Asset Class	Cash	Treas	Credit	MBS	TIPS	HY	Glob Bonds	Glob (H)	EMD (Ext)	EMD (Loc)	Large Cap	Sm/Mid	Intl Eq	Intl Eq (H)	EM Eq	Priv Eq	Priv Debt	Priv Real	Real Estate	Comdy	Hedge Funds	
Cash	1.00																					
Treasuries	0.20	1.00																				
IG Corp Credit	0.10	0.65	1.00																			
MBS	0.25	0.90	0.75	1.00																		
TIPS	0.00	0.65	0.60	0.70	1.00																	
High-Yield Bonds	-0.05	0.20	0.55	0.30	0.20	1.00																
Global Bonds (Unhedged)	0.10	0.50	0.50	0.45	0.40	0.10	1.00															
Global Bonds (Hedged)	0.15	0.80	0.65	0.70	0.65	0.20	0.60	1.00														
EMD (External)	0.05	0.35	0.65	0.35	0.30	0.60	0.25	0.35	1.00													
EMD (Local Currency)	0.05	0.30	0.60	0.25	0.25	0.60	0.30	0.25	0.80	1.00												
Large Cap Equities	-0.10	-0.10	0.45	0.10	0.00	0.65	0.00	-0.10	0.55	0.65	1.00											
Small/Mid Cap Equities	-0.15	-0.15	0.45	0.10	-0.10	0.70	-0.05	-0.15	0.55	0.60	0.90	1.00										
Int'l Equities (Unhedged)	-0.10	0.00	0.30	0.05	-0.05	0.65	0.35	0.00	0.60	0.70	0.70	0.60	1.00									
Int'l Equities (Hedged)	0.00	0.00	0.30	0.05	-0.05	0.65	0.05	0.00	0.60	0.65	0.75	0.65	0.85	1.00								
Emerging Int'l Equities	-0.10	-0.10	0.25	-0.10	-0.10	0.70	0.05	-0.05	0.70	0.80	0.60	0.65	0.70	0.70	1.00							
Private Equity	-0.20	-0.15	0.30	0.10	-0.10	0.60	-0.15	-0.20	0.35	0.40	0.70	0.75	0.60	0.65	0.45	1.00						
Private Debt	0.00	-0.35	0.15	-0.15	-0.10	0.65	-0.10	-0.10	0.50	0.60	0.60	0.65	0.75	0.75	0.80	0.65	1.00					
Private Real Assets	0.15	-0.20	0.05	-0.15	0.00	0.40	-0.05	-0.05	0.40	0.40	0.55	0.60	0.50	0.50	0.50	0.65	0.60	1.00				
Real Estate (Core)	0.25	-0.05	0.15	0.05	0.10	0.25	0.05	-0.05	0.20	0.30	0.40	0.40	0.35	0.40	0.30	0.50	0.40	0.40	1.00			
Commodities	0.10	-0.10	0.10	-0.10	0.30	0.20	0.10	-0.10	0.35	0.45	0.30	0.30	0.35	0.35	0.40	0.25	0.30	0.45	0.30	1.00		
Hedge Funds	0.00	-0.20	0.35	-0.15	0.20	0.60	0.05	-0.20	0.55	0.60	0.60	0.65	0.70	0.65	0.70	0.75	0.80	0.65	0.25	0.50	1.00	

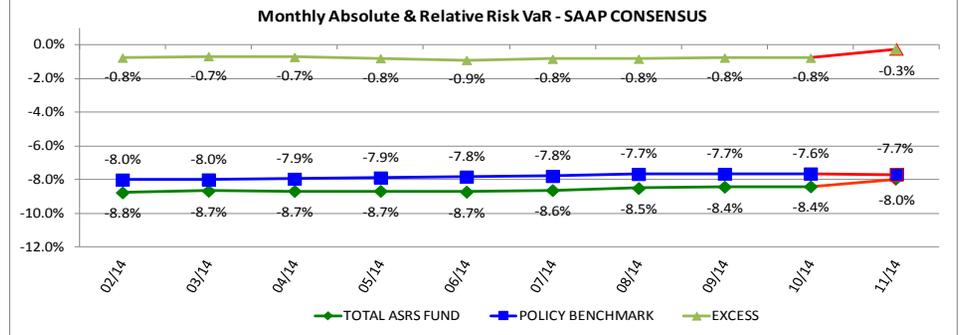
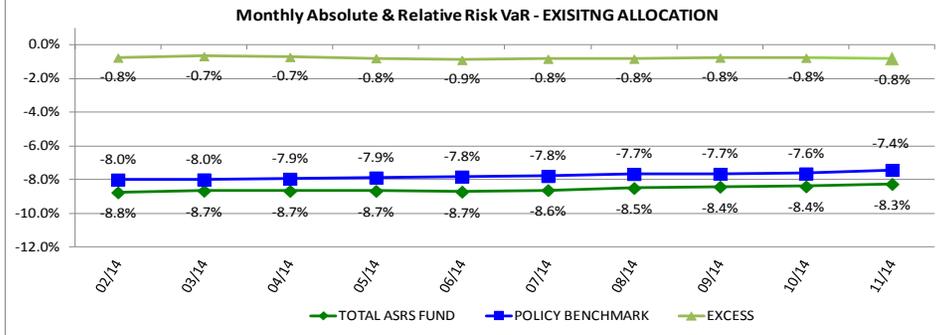
Efficient Frontier Comparison



TOTAL PLAN RISK ALLOCATION OVERVIEW

Strategy	\$ Value	% Value	Historical VaR 95%	HVaR Contri 95%	HVaR Contri % to Total	Parametric VaR 95%	PVaR Contri 95%	PVaR Contri % to Total	Exp Tail Loss 95%	Exp Tail Loss Contri 95%	Exp Tail Loss Contri % to Total	Max Loss	Std Dev	Downside Risk (8%)	Downside Risk Contri (8%)	Downside Risk Contri (8%) to Total
EXISTING ALLOCATION MONTHLY RISK																
MASTER CASH	\$ 314,709,480	1%	(0.0%)	(0.0%)	0.0%	(0.0%)	(0.0%)	0.0%	(0.0%)	(0.0%)	0.0%	(0.0%)	0.0%	(0.6%)	(0.0%)	0.0%
TOTAL FIXED INCOME	\$ 4,343,894,317	13%	(2.4%)	(0.1%)	1.6%	(2.1%)	(0.1%)	1.9%	(3.7%)	(0.2%)	1.7%	(5.6%)	1.3%	(1.4%)	(0.1%)	2.1%
US EQUITY	\$ 11,387,229,162	34%	(9.5%)	(3.4%)	41.2%	(8.9%)	(2.9%)	38.4%	(15.8%)	(5.3%)	39.6%	(30.6%)	6.2%	(4.5%)	(1.5%)	28.1%
INTERNATIONAL EQUITY	\$ 6,959,931,665	21%	(10.5%)	(1.9%)	22.9%	(10.2%)	(2.0%)	26.3%	(16.3%)	(3.2%)	24.1%	(36.8%)	6.8%	(4.9%)	(1.0%)	25.4%
REAL ESTATE	\$ 1,734,432,272	5%	(12.6%)	(0.7%)	7.9%	(11.5%)	(0.6%)	7.4%	(20.3%)	(1.0%)	7.4%	(39.0%)	7.5%	(5.7%)	(0.3%)	7.3%
FARMLAND & TIMBER	\$ 146,009,313	0%	(9.4%)	(0.0%)	0.5%	(8.4%)	(0.0%)	0.5%	(15.3%)	(0.1%)	0.5%	(29.8%)	5.6%	(4.4%)	(0.0%)	0.5%
PRIVATE EQUITY	\$ 2,172,192,527	6%	(12.4%)	(0.8%)	9.6%	(11.1%)	(0.7%)	8.9%	(19.2%)	(1.2%)	9.1%	(36.1%)	7.3%	(5.5%)	(0.4%)	9.0%
PRIVATE DEBT	\$ 1,282,068,751	4%	(7.2%)	(0.2%)	2.7%	(6.6%)	(0.2%)	3.1%	(12.4%)	(0.5%)	3.4%	(25.1%)	4.4%	(3.5%)	(0.1%)	3.2%
OPPORTUNISTIC EQUITY	\$ 338,102,859	1%	(11.6%)	(0.1%)	1.4%	(10.2%)	(0.1%)	1.3%	(18.1%)	(0.2%)	1.3%	(34.3%)	6.8%	(5.2%)	(0.1%)	1.3%
OPPORTUNISTIC DEBT	\$ 1,035,665,948	3%	(6.1%)	(0.2%)	2.0%	(5.9%)	(0.2%)	2.3%	(11.4%)	(0.3%)	2.6%	(23.8%)	4.1%	(3.3%)	(0.1%)	2.4%
GLOBAL INFLATION LINKED	\$ 724,820,162	2%	(7.3%)	(0.1%)	1.3%	(7.4%)	(0.1%)	1.5%	(11.8%)	(0.2%)	1.5%	(24.9%)	4.6%	(3.8%)	(0.1%)	1.6%
GTA	\$ 3,314,886,024	10%	(7.3%)	(0.7%)	8.9%	(6.8%)	(0.7%)	8.6%	(11.8%)	(1.2%)	8.6%	(25.8%)	4.4%	(3.6%)	(0.3%)	8.9%
GRAND TOTAL	\$ 33,753,942,480	100%	(8.3%)	(8.3%)	100.0%	(7.6%)	(7.6%)	100.0%	(13.4%)	(13.4%)	100.0%	(28.2%)	5.2%	(3.9%)	(3.9%)	100.0%
POLICY BENCHMARK (EXISTING)			(7.4%)			(6.8%)			(11.9%)			(25.4%)	5.9%	(3.5%)		

SAAP CONSENSUS REALLOCATION SCENARIO RISK																
MASTER CASH	\$ 314,709,480	1%	(0.0%)	(0.0%)	0.0%	(0.0%)	(0.0%)	0.0%	(0.0%)	(0.0%)	0.0%	(0.0%)	0.0%	(0.6%)	(0.0%)	0.0%
TOTAL FIXED INCOME	\$ 5,414,391,944	16%	(2.3%)	(0.1%)	1.7%	(1.9%)	(0.1%)	2.0%	(3.3%)	(0.2%)	1.7%	(5.2%)	1.3%	(1.3%)	(0.1%)	2.2%
US EQUITY	\$ 8,107,431,014	24%	(9.5%)	(2.4%)	30.2%	(8.8%)	(2.1%)	27.6%	(15.7%)	(3.7%)	28.7%	(30.4%)	6.2%	(4.5%)	(1.1%)	27.6%
INTERNATIONAL EQUITY	\$ 7,483,782,476	22%	(10.8%)	(2.2%)	27.3%	(10.2%)	(2.2%)	29.1%	(16.3%)	(3.5%)	26.6%	(36.3%)	6.8%	(4.9%)	(1.1%)	28.2%
REAL ESTATE	\$ 3,118,242,698	9%	(12.6%)	(1.1%)	13.3%	(11.5%)	(1.0%)	13.6%	(20.3%)	(1.8%)	13.7%	(39.0%)	7.5%	(5.7%)	(0.5%)	13.5%
FARMLAND & TIMBER	\$ 146,009,313	0%	(9.4%)	(0.0%)	0.6%	(8.4%)	(0.0%)	0.5%	(15.3%)	(0.1%)	0.5%	(29.8%)	5.6%	(4.4%)	(0.0%)	0.5%
PRIVATE EQUITY	\$ 2,494,594,158	7%	(12.4%)	(0.9%)	11.2%	(11.1%)	(0.8%)	10.4%	(19.2%)	(1.4%)	10.8%	(36.1%)	7.3%	(5.5%)	(0.4%)	10.5%
PRIVATE DEBT	\$ 3,118,242,698	9%	(7.2%)	(0.5%)	6.5%	(6.6%)	(0.6%)	7.8%	(12.4%)	(1.1%)	8.5%	(25.1%)	4.4%	(3.5%)	(0.3%)	8.0%
OPPORTUNISTIC EQUITY	\$ 338,102,859	1%	(11.6%)	(0.1%)	1.5%	(10.2%)	(0.1%)	1.3%	(18.1%)	(0.2%)	1.4%	(34.3%)	6.8%	(5.2%)	(0.1%)	1.3%
OPPORTUNISTIC DEBT	\$ 1,035,665,948	3%	(6.1%)	(0.2%)	2.1%	(5.9%)	(0.2%)	2.3%	(11.4%)	(0.3%)	2.6%	(23.8%)	4.1%	(3.3%)	(0.1%)	2.5%
GLOBAL INFLATION LINKED	\$ 623,648,539	2%	(7.3%)	(0.1%)	1.2%	(7.4%)	(0.1%)	1.3%	(11.8%)	(0.2%)	1.3%	(24.9%)	4.6%	(3.8%)	(0.1%)	1.4%
MULTI-ASSET CLASS	\$ 1,559,121,349	5%	(7.3%)	(0.4%)	4.5%	(6.8%)	(0.3%)	4.1%	(11.8%)	(0.5%)	4.2%	(25.8%)	4.4%	(3.6%)	(0.2%)	4.3%
GRAND TOTAL (SAAP CON)	\$ 33,753,942,480	100%	(8.0%)	(8.0%)	100.0%	(7.5%)	(7.5%)	100.0%	(13.0%)	(13.0%)	100.0%	(27.5%)	5.2%	(3.8%)	(3.8%)	100.0%
POLICY BENCHMARK (SAAP CONSENSUS)			(7.7%)			(7.3%)			(12.8%)			(27.3%)	6.0%	(3.8%)		



Observations assuming an instantaneous allocation change to the SAAP CONSENSUS

- Total Plan Risk drops from -8.26% to -7.98% resulting in a 28bps risk reduction.
 - This is supported by the allocation reduction in US EQUITIES which is the largest contributor to risk. The current allocation of 34% is reduced to 24% for a 10% allocation decrease.
 - Increasing the PRIVATE DEBT exposure from the current 4% allocation to 9%, helps further reduce Total Plan Risk due to its relatively lower correlation and risk in comparison to US EQUITIES.
 - The risk reduction is mitigated by the increased allocation to riskier asset classes such as REAL ESTATE, currently 5% to 9%, and INTL EQUITY from 21% to 22%.

- The Policy Benchmark increases from -7.42% to -7.71% resulting in a 29bps risk increase.
 - This is supported due to the reduction in the US FIXED INCOME asset class, and the the increase into REAL ESTATE.

TOTAL PLAN STRESS TESTS

Strategy	\$ Value	% Value	Historical Scenarios												Predictive Scenarios							
			Black Monday - 5 Day	Gulf War - 5 Day	Bond Crash: Feb 94 - May 94	Asian Crisis 97-98 - 5 day	Russian Crisis - 5 Day	Nasdaq Correction: July 98 - Aug 98	Russian Debt Crisis Aug- Oct	IR Steepening: Sept 98 - Nov 98	Emerging Markets Rally: Jan 99 - May 99	Fed Tightening: April - June 99	Nasdaq Rally: Nov 99 - Jan 00	9/11 Attack - 5 Day	09-10-2008	S&P 500 -20%	IR Parallel Shift +100bps	Spread Up 100bps	Inflation +1%	Gold Shock -20%	Oil Shock -20%	
EXISTING ALLOCATION STRESS TESTS																						
MASTER CASH	\$ 314,709,480	1%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
TOTAL FIXED INCOME	\$ 4,343,894,317	13%	1.0	(0.6)	(3.7)	1.0	0.7	2.5	6.9	(0.6)	(1.6)	(0.8)	(1.1)	1.6	(5.0)	(0.1)	(4.7)	(0.3)	0.3	0.0	(0.0)	
US EQUITY	\$ 11,387,229,162	34%	(27.4)	(6.0)	(7.7)	(8.3)	(12.1)	(19.3)	(15.6)	8.6	7.9	2.8	4.1	(11.7)	(26.7)	(20.2)	0.0	0.0	(0.0)	3.0	(1.2)	
INTERNATIONAL EQUITY	\$ 6,959,931,665	21%	(11.8)	(5.9)	(3.4)	(6.8)	(2.9)	(12.8)	(9.6)	10.1	11.6	(0.3)	5.9	(4.8)	(28.5)	(7.1)	0.0	(0.0)	(0.0)	1.3	(0.2)	
REAL ESTATE	\$ 1,734,432,272	5%	(12.2)	(2.7)	(3.5)	(3.7)	(5.4)	(8.6)	(6.9)	3.9	3.5	1.3	1.9	(5.2)	(28.0)	(9.0)	0.0	0.0	0.0	0.0	0.0	
FARMLAND & TIMBER	\$ 146,009,313	0%	(27.2)	(6.0)	(7.8)	(8.2)	(12.0)	(19.1)	(15.4)	8.6	7.8	2.8	4.1	(11.6)	(27.0)	(20.0)	0.0	0.0	0.0	0.0	0.0	
PRIVATE EQUITY	\$ 2,172,192,527	6%	(32.4)	(7.1)	(9.3)	(9.8)	(14.3)	(22.8)	(18.4)	10.3	9.3	3.3	4.9	(13.8)	(26.9)	(23.8)	0.0	0.0	0.0	0.0	(0.0)	
PRIVATE DEBT	\$ 1,282,068,751	4%	(10.6)	(2.3)	(3.1)	(3.2)	(4.7)	(7.5)	(6.0)	3.4	3.1	1.1	1.6	(4.5)	(20.1)	(7.8)	(0.0)	(0.0)	0.0	0.0	0.0	
OPPORTUNISTIC EQUITY	\$ 338,102,859	1%	(31.1)	(6.9)	(8.9)	(9.4)	(13.8)	(21.9)	(17.7)	9.9	8.9	3.2	4.7	(13.3)	(27.1)	(22.9)	0.0	0.0	0.0	0.0	0.0	
OPPORTUNISTIC DEBT	\$ 1,035,665,948	3%	(13.9)	(3.1)	(4.0)	(4.2)	(6.2)	(9.8)	(7.9)	4.4	4.0	1.4	2.1	(5.9)	(22.4)	(10.2)	(0.0)	0.0	0.0	0.0	0.0	
GLOBAL INFLATION LINKED	\$ 724,820,162	2%	(0.0)	0.0	0.0	(0.0)	(0.0)	(0.0)	0.0	(0.0)	0.0	0.0	0.0	(0.0)	(16.5)	0.0	(0.0)	0.0	0.0	(3.9)	(3.6)	
GTA	\$ 3,314,886,024	10%	(14.9)	(4.4)	(5.7)	(5.3)	(6.4)	(11.8)	(8.4)	6.0	5.4	0.8	2.8	(6.5)	(21.8)	(11.2)	(1.0)	0.0	0.1	1.4	(0.8)	
GRAND TOTAL	\$ 33,753,942,480	100.0%	(17.0)	(4.7)	(5.5)	(5.8)	(7.0)	(12.8)	(9.4)	6.7	6.5	1.3	3.3	(7.1)	(23.1)	(12.3)	(0.7)	(0.3)	0.0	1.3	(0.6)	
POLICY BENCHMARK (EXISTING)			(14.7)	(4.4)	(6.1)	(5.4)	(5.8)	(11.7)	(7.4)	6.7	6.5	1.0	3.1	(6.0)	(20.5)	(10.5)	(1.4)	(0.8)	0.1	1.4	(0.7)	

SAAP CONSENSUS REALLOCATION STRESS TESTS																						
MASTER CASH	\$ 314,709,480	1%	0.0	(0.0)	(0.0)	0.0	0.0	0.0	0.0	(0.0)	(0.0)	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	0.0	0.0	0.0	0.0	
TOTAL FIXED INCOME	\$ 5,414,391,944	16%	0.9	(0.6)	(4.0)	0.8	0.6	2.0	6.9	(0.4)	(1.4)	(0.7)	(1.1)	1.5	(4.4)	(0.1)	(4.9)	(1.8)	0.3	0.0	(0.1)	
US EQUITY	\$ 8,107,431,014	24%	(27.3)	(6.0)	(7.7)	(8.3)	(12.1)	(19.0)	(15.5)	8.5	7.8	2.8	4.1	(11.7)	(26.6)	(20.1)	0.0	0.0	(0.0)	3.3	(1.2)	
INTERNATIONAL EQUITY	\$ 7,483,782,476	22%	(12.4)	(6.3)	(3.1)	(7.0)	(3.2)	(13.3)	(10.7)	10.1	11.6	(0.6)	5.6	(5.2)	(28.1)	(8.2)	(0.0)	0.0	0.0	2.1	(0.8)	
REAL ESTATE	\$ 3,118,242,698	9%	(12.7)	(2.8)	(3.6)	(3.8)	(5.6)	(8.9)	(7.2)	4.0	3.6	1.3	1.9	(5.4)	(28.0)	(9.3)	(0.0)	0.0	0.0	0.0	(0.4)	
FARMLAND & TIMBER	\$ 146,009,313	0%	(27.2)	(6.0)	(7.8)	(8.2)	(12.0)	(19.1)	(15.4)	8.6	7.8	2.8	4.1	(11.6)	(27.0)	(20.0)	0.0	0.0	0.0	0.0	(1.2)	
PRIVATE EQUITY	\$ 2,494,594,158	7%	(32.3)	(7.1)	(9.2)	(9.8)	(14.3)	(22.7)	(18.3)	10.2	9.3	3.3	4.9	(13.8)	(26.9)	(23.7)	(0.0)	0.0	0.0	0.0	(1.5)	
PRIVATE DEBT	\$ 3,118,242,698	9%	(11.0)	(2.4)	(3.2)	(3.3)	(4.9)	(7.8)	(6.2)	3.5	3.2	1.1	1.7	(4.7)	(20.4)	(8.1)	(0.0)	(0.2)	0.0	0.0	(0.5)	
OPPORTUNISTIC EQUITY	\$ 338,102,859	1%	(31.0)	(6.8)	(8.9)	(9.4)	(13.7)	(21.9)	(17.6)	9.8	8.9	3.2	4.7	(13.2)	(27.1)	(22.8)	0.0	0.0	0.0	0.0	(1.4)	
OPPORTUNISTIC DEBT	\$ 1,035,665,948	3%	(14.1)	(3.1)	(4.0)	(4.3)	(6.3)	(10.0)	(8.0)	4.5	4.1	1.5	2.1	(6.0)	(22.5)	(10.4)	(0.0)	0.0	0.0	0.0	(0.6)	
GLOBAL INFLATION LINKED	\$ 623,648,539	2%	(0.0)	0.0	0.0	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	0.0	0.0	0.0	(0.0)	(16.2)	0.0	0.0	0.0	0.0	(4.1)	(3.6)	
MULTI-ASSET CLASS	\$ 1,559,121,349	5%	(15.5)	(4.5)	(5.4)	(5.5)	(6.7)	(12.3)	(9.2)	6.2	5.6	0.9	2.9	(6.8)	(22.3)	(11.7)	(0.7)	0.2	0.1	1.7	(1.0)	
GRAND TOTAL (SAAP CON)	\$ 33,753,942,480	100.0%	(15.3)	(4.3)	(5.0)	(5.3)	(6.2)	(11.6)	(8.5)	6.2	6.1	1.0	3.0	(6.3)	(22.2)	(11.2)	(0.8)	(0.3)	0.1	1.3	(0.8)	
POLICY BENCHMARK (SAAP CONSENSUS)			(14.3)	(4.4)	(5.1)	(5.6)	(5.6)	(11.7)	(8.1)	6.8	6.9	0.9	3.3	(5.9)	(22.3)	(10.3)	(0.8)	(0.3)	0.1	0.9	(0.8)	

Observations of Stress Scenarios assuming an instantaneous allocation change to the SAAP CONSENSUS

- Scenarios including broad equity declines such as the Lehman Crisis and Black Monday see an improvement with losses reduced in the range of 30bps to 165bps.
- Fixed Income scenarios such as Interest Rate Increases and Spread Increases have minimal increased losses in the range of 1bps to 10bps.
- Commodity scenarios such as Oil and Gold shocks have marginal increased losses ranging from 10bps to 20bps.



ARIZONA STATE RETIREMENT SYSTEM

3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000
7660 EAST BROADWAY BOULEVARD • SUITE 108 • TUCSON, AZ 85710-3776 • PHONE (520) 239-3100
TOLL FREE OUTSIDE METRO PHOENIX AND TUCSON 1 (800) 621-3778
EMAIL ADDRESS: ASKMAC@AZASRS.GOV • WEB ADDRESS: WWW.AZASRS.GOV

Paul Matson
Director

MEMORANDUM

TO: Mr. Kevin McCarthy, Chair, Arizona State Retirement System (ASRS) Board

FROM: Mr. Paul Matson, Director
Mr. Bernard Glick, Chief Internal Auditor

DATE: February 17, 2015

RE: Internal Audit Review of Internal Investment Validation for the month ending January 31, 2015

The Internal Audit Division reviewed 3876 trade transactions in the month of January on all the activity in the E2, E3, E4, E6, E7, E8, E9 and F2 accounts. Our review included:

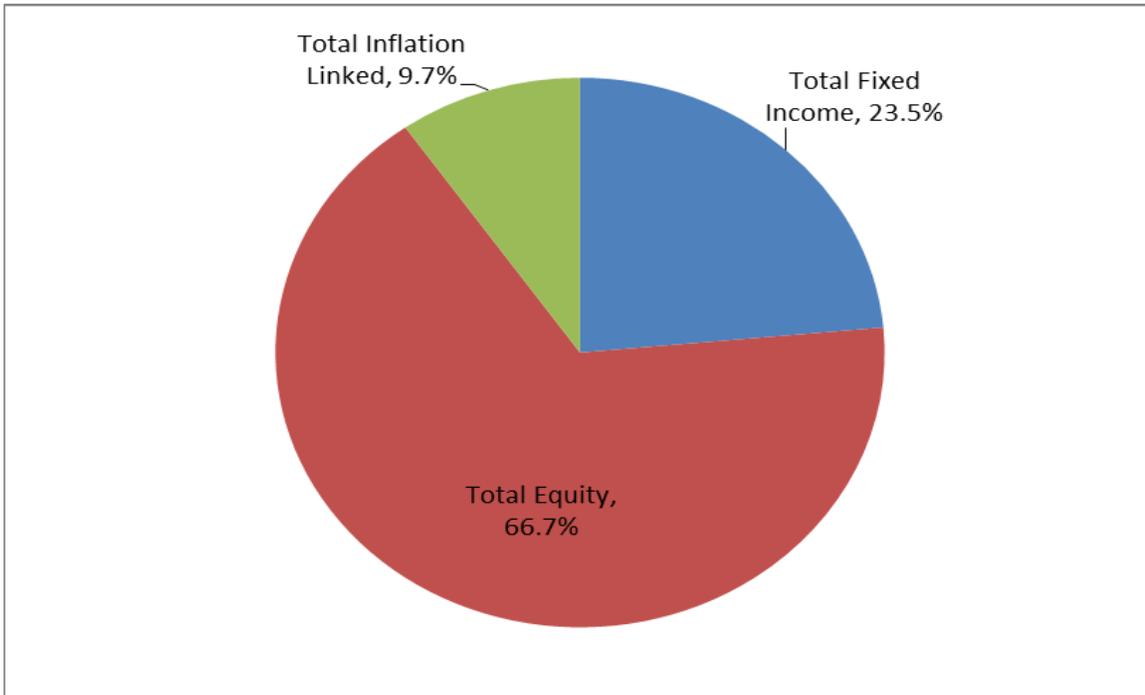
- Determining that the transaction was properly approved.
- Reviewing the transaction for mathematical accuracy.
- Ensuring that the description and ticker symbol matched the CUSIP number.
- Reconciliation of transaction from trade ticket to custody bank transaction download
- Other tests that we deemed appropriate

No infractions were noted during our review. Based on this review, we believe the procedures for executing and reporting internal investment transactions have been followed for this time reportable period.

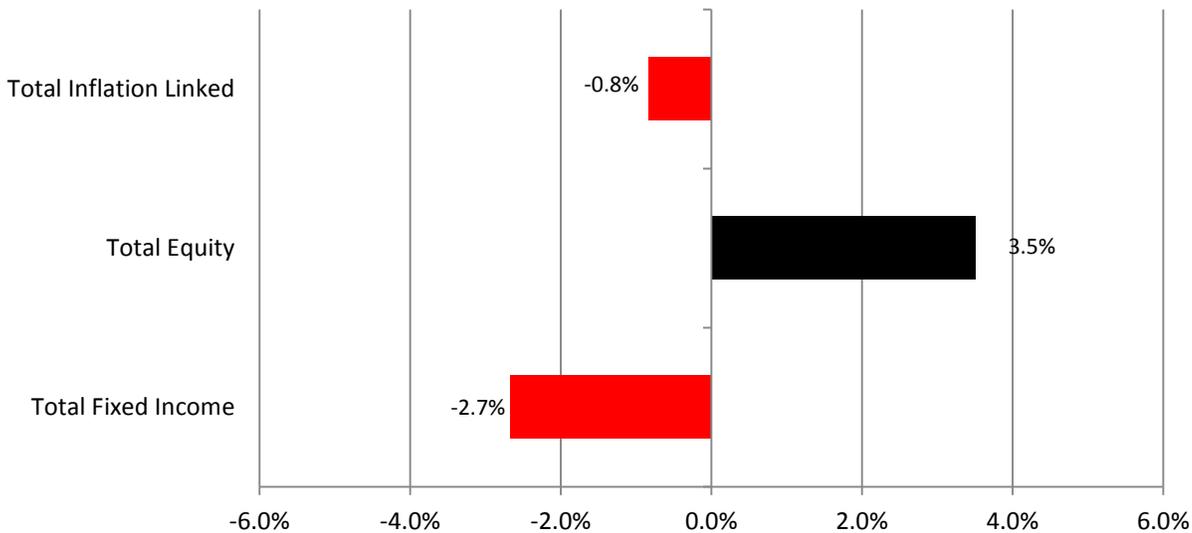
Cc: Gary Dokes, Chief Investment Officer
Gloria Trujillo, Administrative Project Analyst

TOTAL FUND POSITIONING – 1/30/2015

ACTUAL PORTFOLIO



ACTUAL PORTFOLIO (ASSUMED GTAA ALLOCATION VS. ADJUSTED SAA POLICY *)



*Real Estate and Private Equity actual weight is equal to policy weight during the implementation of the asset class.

*Over/Underweights include both GTAA positions as well as IMD tactical considerations.

Note: Opportunistic & Private Debt, Opportunistic Private Equity, Farmland & Timber, Real Estate and Private Equity market values are reported on a quarter-lag and adjusted to include the current quarter's cash flows. Within the Assumed GTAA Allocation vs. Adjusted SAA Policy chart, Real Estate was prorated to domestic equity, international equity and fixed income. Private Equity was prorated to domestic equity.

Pension (Plan, System, HBS Assets)		ASRS Market Value Report				As of: Friday, January 30, 2015			
Account Manager	Account Manager Style	Fixed Income		Equity		Inflation Linked		Total	Pct of Fund
		Active	Enh/Passive	Active	Enh/Passive	Active	Enh/Passive		
State Street B&T: Boston	Operating Cash (non-assetized)		54,125,995					54,125,995	0.16%
	Operating Cash (as assetized)		84,754,003					84,754,003	0.25%
	Cash Total							\$138,879,997	0.41%
	Cash Policy Range								0.00%
GTAA Managers (2)	Active GTAA	1,134,132,831						1,134,132,831	3.37%
Blackrock: San Francisco	Passive (Intermediate Gov/Credit)		24,435,446					24,435,446	0.07%
ASRS: Phoenix	Enhanced Passive F2		1,913,120,766					1,913,120,766	5.68%
Blackrock: San Francisco	Passive (US Debt Index)		447,481,884					447,481,884	1.33%
	Core Fixed Income Total							\$3,519,170,928	10.45%
	Core Fixed Income Policy								13.00%
Columbia: Minneapolis	Active	801,832,454						801,832,454	2.38%
JP Morgan: Indianapolis	Active	476,627,006						476,627,006	1.42%
	High Yield Fixed Income Total							\$1,278,473,215	3.80%
	High Yield Fixed Income Policy								5.00%
	US Fixed Income Total							\$4,797,644,142	14.25%
	US Fixed Income Policy Range: 8% - 28%								18.00%
PIMCO (local): New port Beach	Active	211,533,020						211,533,020	0.63%
Ashmore (blended): London	Active	209,160,811						209,160,811	0.62%
	EM Debt Total							\$420,693,830	1.25%
	EM Debt Policy								4.00%
	Opportunistic Debt							\$1,082,834,407	3.25%
	Opportunistic Debt Policy Range: 0% - 10%								0.00%
	Private Debt Total							\$1,478,310,235	4.39%
	Private Debt Policy								3.00%
	Fixed Income Total							\$7,928,362,612	23.54%
	Total Fixed Income Policy Range: 15% - 35%								25.00%
Intech: FL	Active (Growth)			477,289,652				477,289,652	1.42%
LSV: Chicago	Active (Value)			799,259,047				799,259,047	2.37%
GTAA Managers (2)	Active GTAA			867,983,607				867,983,607	2.58%
ASRS: Phoenix	Passive E2				5,011,472,705			5,011,472,705	14.88%
ASRS: Phoenix	Enhanced Passive E7				778,643,247			778,643,247	2.31%
ASRS: Phoenix	Enhanced Passive E8				538,220,000			538,220,000	1.60%
ASRS: Phoenix	Risk Factor Portfolio				534,422,530			534,422,530	1.59%
	Large Cap Equity Total							\$9,007,313,796	26.75%
	Large Cap Policy								23.00%
Wellington: Boston	Active (Core)			415,048,895				415,048,895	1.23%
CRM: New York	Active (Value)			99,511,937				99,511,937	0.30%
ASRS: Phoenix	Passive E3 (Growth)				517,397,104			517,397,104	1.54%
ASRS: Phoenix	Passive E4 (Value)				514,318,044			514,318,044	1.53%
	Mid Cap Equity Total							\$1,546,275,980	4.59%
	Mid Cap Policy								5.00%
Times Square: New York	Active SMID (Growth)			451,835,103				451,835,103	1.34%
DFA: Santa Monica	Active (Value)			371,319,595				371,319,595	1.10%
Champlain Vermont	Active (Core)			91,582,683				91,582,683	0.27%
ASRS: Phoenix	Passive E6				475,972,183			475,972,183	1.41%
	Small Cap Equity Total							\$1,390,709,564	4.13%
	Small Cap Policy								5.00%
	U.S. Equity Total							\$11,944,299,340	35.47%
	US Equity Policy Range: 26% - 38%								33.00%
Brandes: San Diego	Active (Value)			548,532,560				548,532,560	1.63%
GTAA Managers (2)	Active GTAA			970,613,062				970,613,062	2.88%
American Century	Active (EAFE)			498,314,634				498,314,634	1.48%
Trinity Street	Active (EAFE)			308,842,731				308,842,731	0.92%
Thompson Siegel Walmsley	Active (EAFE)			148,531,185				148,531,185	0.44%
Blackrock: San Francisco	Passive (EAFE)				2,241,260,342			2,241,260,342	6.66%
	Large Cap Developed Non-US Equity Total							\$4,718,315,181	14.01%
	Large Cap Developed Policy								14.00%
AQR: Greenwich	Active (EAFE SC)			167,957,574				167,957,574	0.50%
DFA: Santa Monica	Active (EAFE SC)			197,314,274				197,314,274	0.59%
Franklin Templeton: San Mateo	Active (EAFE SC)			371,514,033				371,514,033	1.10%
Blackrock: San Francisco	Passive (EAFE SC)				430,709,757			430,709,757	1.28%
	Small Cap Developed Non-US Equity Total							\$1,167,488,233	3.47%
	Small Cap Developed Policy								3.00%
William Blair: Chicago	Active (EM)			472,216,275				472,216,275	1.40%
Eaton Vance: Boston	Active (EM)			468,496,496				468,496,496	1.39%
LSV: Chicago	Active (EM)			293,819,765				293,819,765	0.87%
Blackrock: San Francisco	Passive (EM)				655,703,864			655,703,864	1.95%
	Emerging Markets Equity Total							\$1,890,236,399	5.61%
	Emerging Markets Policy								6.00%
	Non-US Equity Total							\$7,776,049,813	23.09%
	Non-US Equity Policy Range: 16% - 28%								23.00%
	Private Equity Total							\$2,369,211,641	7.04%
	Private Equity Policy Range: 5% - 9%								7.00%
	Opportunistic Equity							\$382,378,334	1.14%
	Opportunistic Equity Policy Range: 0% - 3%								0.00%
	Equity Total							\$22,471,939,128	66.73%
	Total Equity Policy Range: 53% - 73%								63.00%
Gresham: New York	Active GTAA					545,199,435		545,199,435	1.62%
GTAA Managers (2)	Commodities Total					211,964,872		211,964,872	0.63%
	Commodities Policy Range: 1% - 7%							\$757,164,307	2.25%
	Commodities Policy Range: 1% - 7%								4.00%
GTAA Manager (1)	Active GTAA					36,775,802		36,775,802	0.11%
	Real Estate Total							\$2,065,223,972	6.13%
	Real Estate Policy Range: 6% - 10%								8.00%
	Infrastructure Total							\$300,000,000	0.89%
	Infrastructure Policy Range: 0% - 3%								0.00%
	Farmland & Timber Total					151,503,684		\$151,503,684	0.45%
	Farmland & Timber Policy Range: 0% - 3%								0.00%
	Opportunistic Inflation Linked Total							\$0	0.00%
	Opportunistic I/L Policy Range: 0% - 3%								0.00%
	Inflation Linked Total							\$3,273,891,963	9.72%
	Inflation Linked Policy Range: 7% - 15%								12.00%
	TOTAL Amounts	\$4,311,610,111	\$3,616,752,501	\$10,773,796,344	\$11,698,142,784	\$3,425,395,647	\$0	\$33,674,193,703	Total Fund
	TOTAL Percent	12.80%	10.74%	31.99%	34.74%	10.17%	0.00%		

Asset Class	Actual	SAA Policy:	Rebalancing		Assumed - Adjusted		Policy Band check	Passive	Passive
	Portfolio	Target (Range)	Assumed Port	Adj Policy	% diff	\$ diff		Actual - Adj	Min
Cash	0.41%	0%	0.00%		0.00%				
Core	10.45%	13%						50%	73%
High Yield	3.80%	5%							
US Fixed Income	14.25%	18% (8-28%)	13.97%	18.52% (9-29%)	-4.55%	-\$1,532,991,136	OK		
EM Debt	1.25%	4%		4.00%					
Opportunistic Debt	3.25%	0% (0-10%)	3.25%	0% (0-10%)	3.25%	\$1,092,834,407	OK		
Private Debt	4.39%	3%		3.00%					
Total Fixed Income	23.54%	25% (15-35%)	22.86%	25.52% (16-36%)	-2.67%	-\$898,346,223	OK		
Large Cap	26.75%	23%							
Mid Cap	4.59%	5%							
Small Cap	4.13%	5%							
US Equity	35.47%	33% (26-38%)	37.01%	33.77% (27-39%)	3.24%	\$1,090,736,112	OK	50%	67%
Developed Large Cap	14.01%	14%							
Developed Small Cap	3.47%	3%							
Emerging Markets	5.61%	6%							
Non-US Equity	23.09%	23% (16-28%)	22.60%	23.47% (16-28%)	-0.87%	-\$291,438,138	OK	30%	50%
Private Equity	7.04%	7% (5-9%)	7.04%	7.04% (5-9%)	0.00%	\$0	OK		
Opportunistic Equity	1.14%	0% (0-3%)	1.14%	0% (0-3%)	1.14%	\$382,378,334	OK		
Total Equity	66.73%	63% (53-70%)	67.78%	64.27% (54-71%)	3.51%	\$1,181,676,308	OK		
Commodities	2.25%	4% (1-7%)	2.00%	4.07% (1-7%)	-2.07%	-\$698,057,968	OK		
Real Estate	6.13%	8% (6-10%)	6.02%	6.13% (4-8%)	-0.11%	-\$36,775,802	OK		
Infrastructure	0.89%	0% (0-3%)	0.89%	0% (0-3%)	0.89%	\$300,000,000	OK		
Farmland & Timber	0.45%	0% (0-3%)	0.45%	0% (0-3%)	0.45%	\$151,503,684	OK		
Opportunistic I/L	0.00%	0% (0-3%)	0.00%	0% (0-3%)	0.00%	\$0	OK		
Total Inflation Linked	9.72%	12% (8-16%)	9.37%	10.21% (6-14%)	-0.84%	-\$283,330,085	OK		
Total	100.00%	100%	100%	100%	0.00%	\$0		30%	43%
Total GTAA								Internally Managed Portfolios:	
Bridgewater	\$2,642,323,685	7.8%						\$9,749,144,048	29%
Windham	\$579,146,489	1.7%							
Total	\$3,221,470,175	9.6%							
Policy	10% ±5%	OK							
								Opportunistic definitions:	
								An investment in a category that is not included in the ASRS Asset Allocation policy and represents an investment opportunity that is tactical in nature.	



	Style	Inception	Amount (\$mil.)	Net Returns (%)								Excess Returns (basis points)								
				Month	3 Months	YTD	1 Year	Annualized				Month	3 Months	YTD	1 Year	Annualized				
								3 Years	5 Years	10 Years	ITD					3 Years	5 Years	10 years	ITD	
US EQUITY LARGE CAP																				
E2 MODEL	INDEXED	04/01/1997	5,026	-3.03	-0.67	-3.03	14.23	17.44	15.58	7.66	7.61	-2	-2	-2	0	-3	-1	4	7	
	<i>S&P 500 INDEX</i>			-3.00	-0.64	-3.00	14.22	17.47	15.60	7.61	---									
INTECH LARGE CAP	QUANTITATIVE	01/01/2003	477	-1.52	-0.64	-1.52	11.52	17.24	16.08	7.82	9.77	15	-100	15	-489	-95	-81	-82	32	
	<i>S&P/CITIGROUP 500 GROWTH</i>			-1.67	0.36	-1.67	16.41	18.19	16.89	8.64	---									
LSV ASSET MANAGEMENT	QUANTITATIVE	01/01/2003	799	-4.07	-2.08	-4.07	11.40	19.89	16.25	8.64	11.19	37	-36	37	-44	318	197	212	229	
	<i>LSV CUSTOM INDEX</i>			-4.44	-1.72	-4.44	11.85	16.71	14.29	6.52	---									
E7	INDEXED	08/01/2012	782	-3.30	-1.39	-3.30	15.79	---	---	---	15.82	-3	-10	-3	-19	---	---	---	5	
	<i>MSCI USA High Dividend Yield Index</i>			-3.27	-1.29	-3.27	15.98	---	---	---	---									
E8	INDEXED	08/01/2012	538	-0.56	3.02	-0.56	19.61	---	---	---	16.57	-8	-4	-8	5	---	---	---	52	
	<i>MSCI USA Minimum Volatility Index</i>			-0.48	3.06	-0.48	19.56	---	---	---	---									
TOTAL US EQUITY LARGE CAP			\$ 7,623																	
US EQUITY MID CAP																				
WELLINGTON MANAGEMENT COMPANY LLP	FUNDAMENTAL	07/01/2002	415	-1.38	-0.07	-1.38	9.15	18.91	16.16	10.88	11.40	-26	-161	-26	-175	189	-88	101	98	
	<i>S&P 400 MIDCAP INDEX</i>			-1.12	1.54	-1.12	10.89	17.01	17.04	9.86	---									
E3 MODEL	INDEXED	12/01/2000	520	0.53	3.18	0.53	10.90	16.49	18.11	10.91	8.74	-4	-8	-4	-13	11	33	56	55	
	<i>S&P/CITIGROUP 400 GROWTH</i>			0.57	3.26	0.57	11.03	16.38	17.78	10.35	---									
CRM MID CAP VALUE	FUNDAMENTAL	01/01/2004	100	-3.71	-0.15	-3.71	5.79	14.90	13.08	8.21	9.45	-71	22	-71	-477	-272	-321	-110	-34	
E4 MODEL	INDEXED	07/01/2002	517	-2.97	-0.38	-2.97	10.41	17.54	16.22	9.57	10.48	3	-1	3	-15	-8	-7	26	19	
	<i>S&P/CITIGROUP 400 VALUE</i>			-3.00	-0.37	-3.00	10.56	17.62	16.29	9.31	---									
TOTAL US EQUITY MID CAP			\$ 1,551																	
US EQUITY SMALL CAP																				
DIMENSIONAL FUND ADVISORS EQFD	QUANTITATIVE	09/01/1998	371	-4.78	-4.21	-4.78	3.49	17.04	16.28	8.65	11.90	46	-186	46	-225	97	-6	5	94	
	<i>DFA BLENDED BENCHMARK</i>			-5.23	-2.35	-5.23	5.73	16.07	16.34	8.60	---									
TIMESQUARE CAPITAL MANAGEMENT	FUNDAMENTAL	04/01/2005	452	-2.05	-0.71	-2.05	4.21	17.51	17.66	---	12.04	-51	-208	-51	-322	59	-23	---	219	
	<i>RUSSELL 2500 GROWTH</i>			-1.54	1.37	-1.54	7.43	16.92	17.89	---	---									
CHAMPLAIN INVESTMENT PARTNERS LLC	FUNDAMENTAL	01/01/2008	92	-4.60	-3.01	-4.60	4.24	13.40	15.37	---	9.27	-110	-200	-110	-192	-292	-188	---	18	
E6	INDEXED	02/01/2007	479	-3.51	-1.01	-3.51	6.08	16.27	17.11	---	8.04	-1	0	-1	-7	-6	-13	---	34	
	<i>S&P 600 SMALL CAP</i>			-3.49	-1.01	-3.49	6.15	16.33	17.24	---	---									
TOTAL US EQUITY SMALL CAP			\$ 1,393																	
TOTAL US EQUITY				\$ 10,567																
INTERNATIONAL DEVELOPED LARGE CAP																				
BRANDES INVESTMENT PARTNERS INT EQ	FUNDAMENTAL	10/01/1998	549	0.49	-1.49	0.49	-0.68	9.71	5.94	4.60	8.86	0	18	0	-25	5	-118	-151	278	
	<i>BRANDES CUSTOM INDEX</i>			0.49	-1.67	0.49	-0.43	9.66	7.12	6.11	---									
AMERICAN CENTURY	FUNDAMENTAL	07/01/2014	498	0.03	-1.28	0.03	---	---	---	---	-6.20	-45	39	-45	---	---	---	---	260	
BGI EAFE INDEX	INDEXED	07/01/2009	2,230	0.51	-1.64	0.51	-0.14	9.62	6.70	---	8.96	3	3	3	28	-4	-7	---	-7	
THOMSON, SIEGEL & WALMSLEY	FUNDAMENTAL	07/01/2014	149	0.29	-0.76	0.29	---	---	---	---	-8.35	-20	91	-20	---	---	---	---	45	



				Net Returns (%)							Excess Returns (basis points)								
	Style	Inception	Amount (\$mil.)	Month	3 Months	YTD	1 Year	Annualized			ITD	Month	3 Months	YTD	1 Year	Annualized			ITD
								3 Years	5 Years	10 Years						3 Years	5 Years	10 years	
TRINITY STREET	FUNDAMENTAL	07/01/2014	309	-0.03	-3.41	-0.03	---	---	---	---	-11.07	-52	-174	-52	---	---	---	---	-228
MSCI EAFE NET				0.49	-1.67	0.49	---	---	---	---	---								
TOTAL INTERNATIONAL DEVELOPED LARGE CAP				\$ 3,734															
INTERNATIONAL DEVELOPED SMALL CAP																			
AQR CAPITAL	FUNDAMENTAL	06/01/2013	168	0.18	-0.72	0.18	-2.15	---	---	---	8.86	1	-60	1	115	---	---	---	165
BLACKROCK EAFE SMALL CAP	INDEXED	06/01/2010	432	0.17	-0.17	0.17	-3.05	10.99	---	---	11.05	1	-4	1	26	-16	---	---	-15
DIMENSIONAL FUND ADVISORS INTL SC	QUANTITATIVE	09/01/2005	197	-1.31	-3.23	-1.31	-7.14	9.99	6.74	---	5.01	-147	-310	-147	-384	-116	-242	---	-42
FRANKLIN TEMPLETON INVESTMENTS	FUNDAMENTAL	04/01/2011	372	0.31	0.75	0.31	-6.82	13.11	---	---	6.79	15	88	15	-351	196	---	---	153
MSCI EAFE SMALL CAP NET				0.16	-0.13	0.16	-3.31	11.15	---	---	---								
TOTAL INTERNATIONAL DEVELOPED SMALL CAP				\$ 1,169															
INTERNATIONAL EMERGING MARKETS																			
BLACKROCK EMERGING MARKETS	INDEXED	10/01/2010	648	0.57	-5.09	0.57	5.07	0.36	---	---	-0.38	-3	-4	-3	-17	-45	---	---	-43
EATON VANCE EMERGING MARKET EQUITY	QUANTITATIVE	12/01/2010	462	-0.82	-8.84	-0.82	0.19	1.41	---	---	-0.22	-142	-379	-142	-504	60	---	---	-23
LSV EMERGING MARKET EQUITY	QUANTITATIVE	12/01/2010	290	-0.96	-6.08	-0.96	6.24	1.62	---	---	0.82	-156	-102	-156	100	81	---	---	81
WILLIAM BLAIR & COMPANY	FUNDAMENTAL	11/01/2010	468	1.50	-1.96	1.50	14.36	6.62	---	---	2.92	91	309	91	913	582	---	---	354
MSCI EMF NET				0.60	-5.05	0.60	5.23	0.81	---	---	---								
TOTAL INTERNATIONAL EMERGING MARKETS				\$ 1,868															
TOTAL INTERNATIONAL EQUITY				\$ 6,770															
RISK FACTOR PORTFOLIO																			
RISK FACTOR PORTFOLIO	OVERLAY	06/01/2013	534	-2.00	0.83	-2.00	14.86	---	---	---	15.78								
TOTAL RISK FACTOR PORTFOLIO				\$ 534															
TOTAL EQUITY W/ RISK FACTOR OVERLAY				\$ 17,874															
CORE FIXED INCOME																			
BGI US DEBT FD	INDEXED	05/01/2014	449	2.10	3.00	2.10	---	---	---	---	5.52	0	8	0	---	---	---	---	18
F2 MODEL	INDEXED	10/01/2000	1,913	2.07	3.02	2.07	6.65	3.28	4.73	5.10	5.77	-2	10	-2	3	21	16	24	16
Barclays Aggregate				2.10	2.92	2.10	6.61	3.07	4.57	4.86	---								
BGI GOVT/CRDTBD INDEX	INDEXED	11/01/2008	25	1.63	1.90	1.63	4.02	2.36	3.70	---	5.06	-3	5	-3	13	11	11	---	10
Barclays Gov/Credit Int				1.66	1.85	1.66	3.89	2.25	3.60	---	---								
TOTAL CORE FIXED INCOME				\$ 2,387															
HIGH YIELD FIXED INCOME																			
COLUMBIA MANAGEMENT INV. ADVISORS, LLC	FUNDAMENTAL	10/01/2009	802	1.35	0.13	1.35	4.89	7.99	9.19	---	9.67	69	164	69	247	39	29	---	-13
JP MORGAN HIGH YIELD	FUNDAMENTAL	07/01/2013	477	0.92	-0.67	0.92	2.95	---	---	---	5.96	26	85	26	54	---	---	---	23
Barclays Corp High Yield				0.66	-1.52	0.66	2.41	---	---	---	---								
TOTAL HIGH YIELD FIXED INCOME				\$ 1,278															



	Style	Inception	Amount (\$mil.)	Net Returns (%)								Excess Returns (basis points)							
				Month	3 Months	YTD	1 Year	Annualized			ITD	Month	3 Months	YTD	1 Year	Annualized			ITD
								3 Years	5 Years	10 Years						3 Years	5 Years	10 years	
EMERGING MARKETS DEBT																			
ASHMORE EMERGING MKT DBT BLEND	FUNDAMENTAL	01/01/2013	209	0.24	-5.84	0.24	-0.36	---	---	---	-4.32	-21	-134	-21	-309	---	---	---	-146
<i>EMERGING MARKETS BLENDED INDEX</i>																			
PIMCO EMERGING MARKET DEBT LC	FUNDAMENTAL	01/01/2013	212	0.45	-4.50	0.45	2.73	---	---	---	---	30	-27	30	21	---	---	---	-66
<i>JPM GBI-EM Global Diversified Index</i>																			
TOTAL EMERGING MARKETS DEBT			\$ 420																
TOTAL PUBLIC FIXED INCOME			\$ 4,085																
GTAA																			
BRIDGEWATER ASSOCIATES GLBL TAA	FUNDAMENTAL	01/01/2004	2,711	1.78	2.71	1.78	11.14	12.22	14.00	8.97	9.06	250	317	250	427	174	389	278	268
<i>GTAA CUSTOM BENCHMARK</i>																			
WINDHAM	QUANTITATIVE	10/01/2011	579	-0.72	-0.46	-0.72	6.87	10.48	10.11	6.19	---	11	-272	11	-479	-446	---	---	-459
<i>WINDHAM CUSTOM INDEX</i>																			
TOTAL GTAA			\$ 3,290																
GLOBAL INFLATION LINKED																			
GRESHAM	FUNDAMENTAL	09/01/2010	545	-4.52	-16.16	-4.52	-20.26	-10.77	---	---	-3.60	-118	-182	-118	-24	41	---	---	205
<i>Bloomberg Commodity Index Total Return</i>																			
TOTAL GLOBAL INFLATION LINKED			\$ 545																
TOTAL PUBLIC MARKET			\$ 25,849																



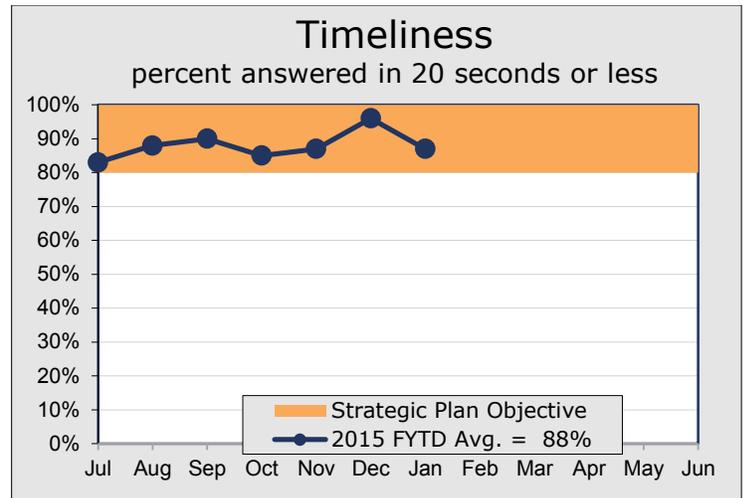
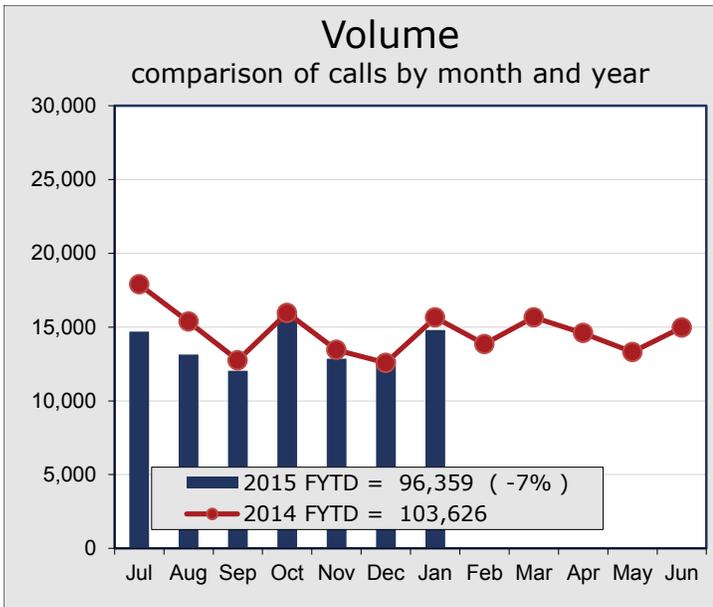
	Inception Amount (\$mil.)		Net Returns (%)									Excess Returns (basis points)							
			Annualized									Annualized							
			Month	3 Months	YTD	1 Year	3 Years	5 Years	10 Years	ITD	Month	3 Months	YTD	1 Year	3 Years	5 Years	10 years	ITD	
BLACKROCK - US DEBT FUND B	01/01/2011	30.9	2.11	2.99	2.11	6.77	3.14	---	---	4.42	1	8	1	16	6	---	---	4	
<i>Barclays Aggregate</i>			2.10	2.92	2.10	6.61	3.07	4.57	4.86	---									
BLACKROCK - US HIGH YIELD FUND B	01/01/2011	18.1	0.86	-1.23	0.86	3.12	7.36	---	---	7.43	20	29	20	71	-24	---	---	-14	
<i>Barclays Corp High Yield</i>			0.66	-1.52	0.66	2.41	7.59	8.90	7.82	---									
BLACKROCK-LTD-EM BD INDX FD B	01/01/2013	9.1	0.26	-7.06	0.26	-1.47	---	---	---	-7.72	-8	-22	-8	-66	---	---	---	-80	
<i>JPM GBI-EM Global Diversified Index</i>			0.34	-6.85	0.34	-0.81	-2.18	2.65	6.72	---									
BLACKROCK - RUSSELL 1000 FUND B	01/01/2011	92.5	-2.74	-0.42	-2.74	13.74	17.61	---	---	14.41	0	1	0	-2	-2	---	---	1	
<i>RUSSELL 1000</i>			-2.75	-0.43	-2.75	13.76	17.62	15.84	7.93	---									
BLACKROCK - RUSSELL 2000 FUND B	01/01/2011	16.1	-3.20	-0.33	-3.20	4.61	15.45	---	---	11.88	2	4	2	20	18	---	---	18	
<i>RUSSELL 2000</i>			-3.22	-0.37	-3.22	4.41	15.27	15.66	7.87	---									
BLACKROCK - EAFE INDEX FUND B	01/01/2011	34.2	0.50	-1.68	0.50	-0.37	9.38	---	---	4.84	1	-1	1	6	-27	---	---	-28	
<i>MSCI EAFE NET</i>			0.49	-1.67	0.49	-0.43	9.66	6.77	5.11	---									
BLACKROCK EAFE SMALL CAP FUND B	01/01/2011	8.2	0.19	-0.15	0.19	-2.97	11.02	---	---	5.54	3	-2	3	34	-12	---	---	-16	
<i>MSCI EAFE SMALL CAP NET</i>			0.16	-0.13	0.16	-3.31	11.15	9.16	6.17	---									
BLACKROCK MSCI EMERGING MARKETS FUND B	01/01/2011	14.6	0.58	-5.11	0.58	5.01	0.35	---	---	-2.13	-2	-6	-2	-22	-46	---	---	-46	
<i>MSCI EMF NET</i>			0.60	-5.05	0.60	5.23	0.81	3.33	---	---									
BGI-LTD- R ESTATE FD	01/01/2005	22.1	6.72	10.88	6.72	35.17	16.01	19.69	9.53	8.52	17	11	17	10	-120	-86	-46	-45	
<i>WILSHIRE RESI</i>			6.55	10.77	6.55	35.07	17.21	20.55	9.99	---									
BLACKROCK DJ UBS COMM FUND B	01/01/2011	5.5	-3.32	-14.41	-3.32	-20.20	-11.39	---	---	-11.26	2	-6	2	-18	-21	---	---	-31	
<i>Bloomberg Commodity Index Total Return</i>			-3.34	-14.34	-3.34	-20.02	-11.18	-4.74	-2.29	---									
LONG TERM DISABILITY - CASH	07/01/1995	1.3	0.00	0.00	0.00	0.00	0.01	0.07	1.63	2.71	0	-1	0	-3	-7	-2	8	-5	
<i>91 DAY TREASURY BILL</i>			0.00	0.01	0.00	0.03	0.07	0.09	1.55	---									
TOTAL LTD		\$ 252.5																	

Long Term Disability (LTD)

Friday, January 30, 2015

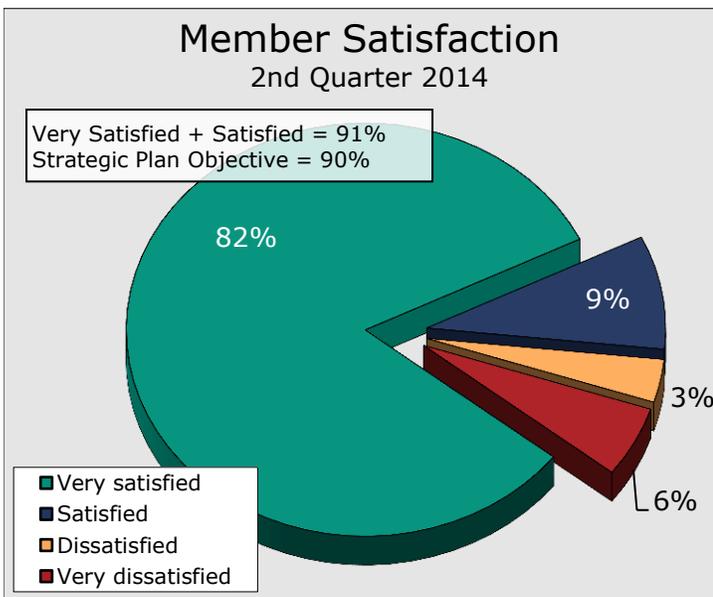
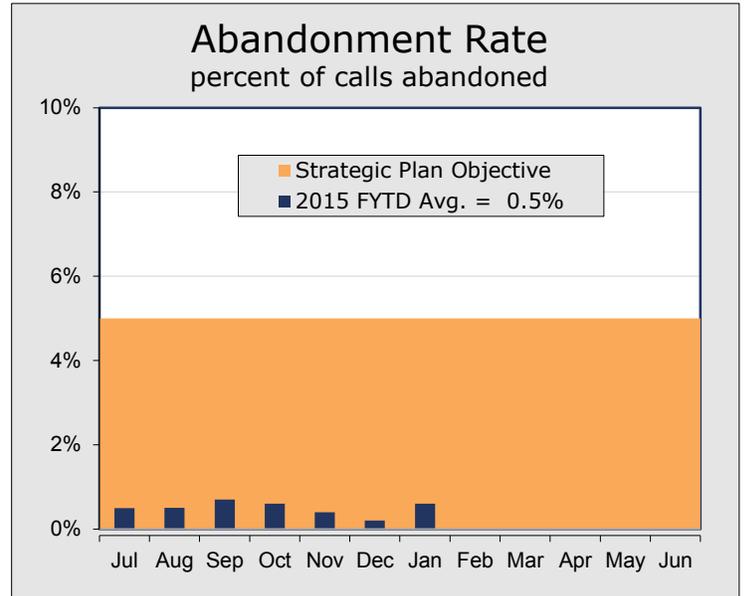
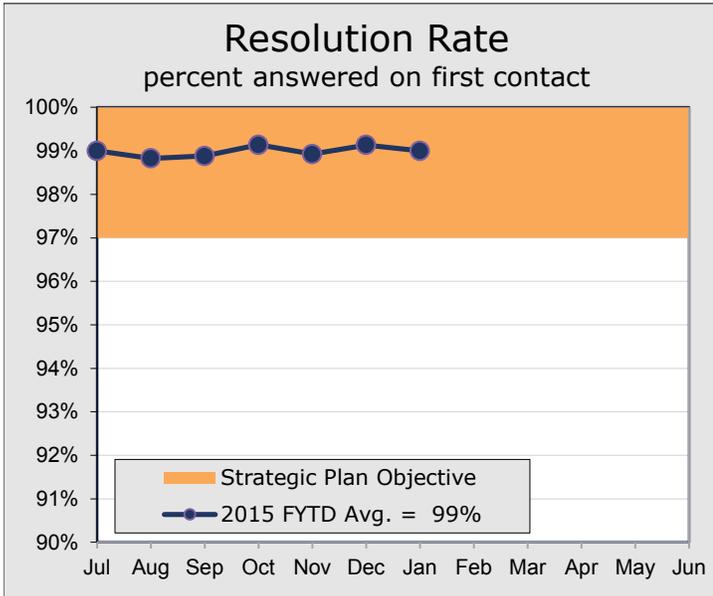
Account Manager	Account Manager Style	Fixed Income	Equity	Inflation Linked	Total	Pct of Fund	Target (Range)
StateStreet B&T: Boston	Cash	\$1,282,507			\$1,282,507	0.51%	
BlackRock: San Francisco	Fixed Core (Passive)	\$30,925,549			\$30,925,549	12.25%	13%
BlackRock: San Francisco	Fixed High Yield (Passive)	\$18,064,222			\$18,064,222	7.15%	8%
BlackRock: San Francisco	Emerging Market Debt (Passive)	\$9,091,964			\$9,091,964	3.60%	4%
						23.00%	25% (15-35%)
BlackRock: San Francisco	Russell 1000 (Passive)		\$92,451,745		\$92,451,745	36.61%	34%
BlackRock: San Francisco	Russell 2000 (Passive)		\$16,116,893		\$16,116,893	6.38%	6%
						42.99%	40% (33-45%)
BlackRock: San Francisco	EAFE (Passive)		\$34,225,775		\$34,225,775	13.55%	14%
BlackRock: San Francisco	EAFE SC (Passive)		\$8,206,595		\$8,206,595	3.25%	3%
BlackRock: San Francisco	Emerging Markets (Passive)		\$14,619,520		\$14,619,520	5.79%	6%
						22.59%	23% (16-28%)
BlackRock: San Francisco	Dow Jones UBS Commodities (Passive)			\$5,479,054	\$5,479,054	2.17%	4% (1-7%)
BlackRock: San Francisco	US Real Estate (Passive)			\$22,080,884	\$22,080,884	8.74%	8% (6-10%)
						10.91%	12% (8-16%)
	TOTAL Amounts	\$59,364,243	\$165,620,527	\$27,559,939	\$252,544,709		
	TOTAL Percent	23.51%	65.58%	10.91%			
	Actual Portfolio	23.51%	65.58%	10.91%			
	Policy	25% (15-35%)	63% (53-70%)	12% (8-16%)			

Member Advisory Center: Phone



Timeliness (average wait time in seconds)

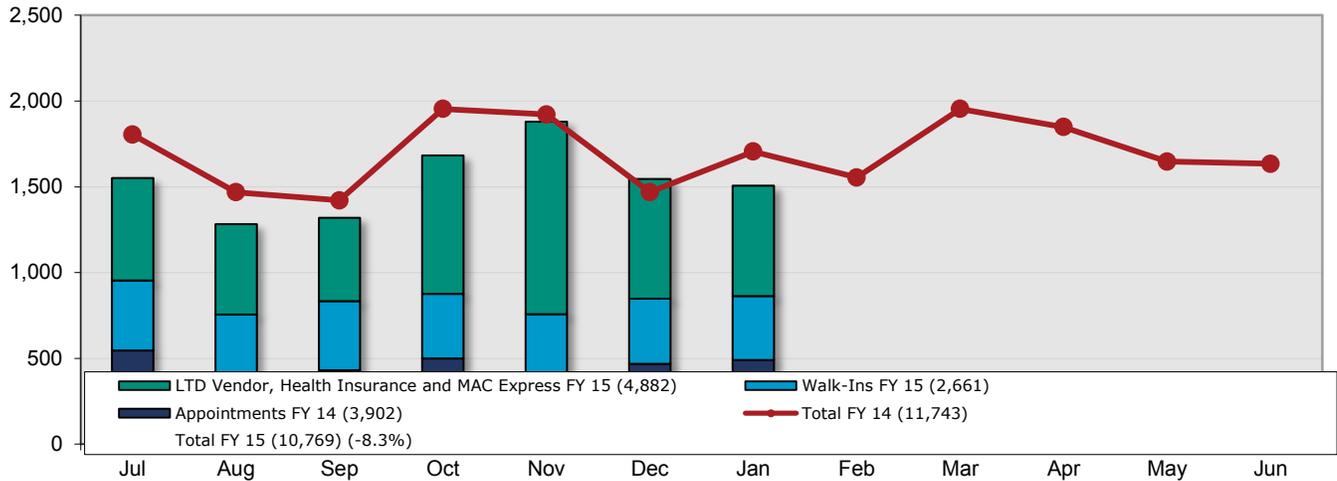
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Avg. Wait Time (seconds)	12	10	9	13	10	2	13					



Member Advisory Center: One-on-One

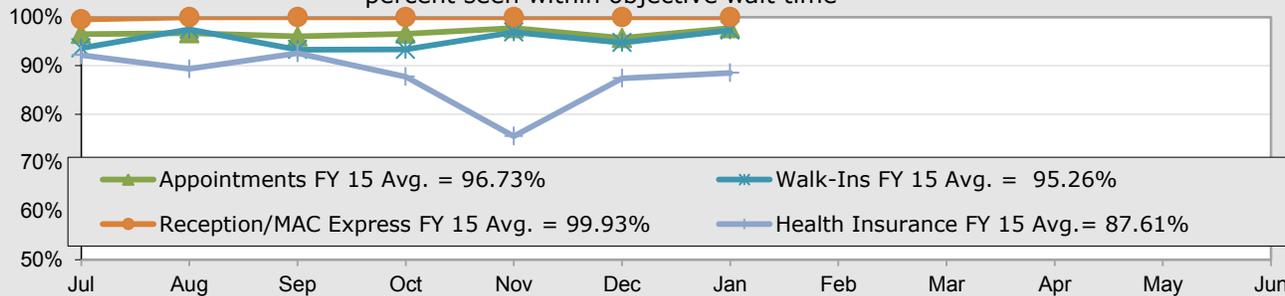
Volume

number of one-on-one counseling sessions by type



One-on-One Timeliness

percent seen within objective wait time

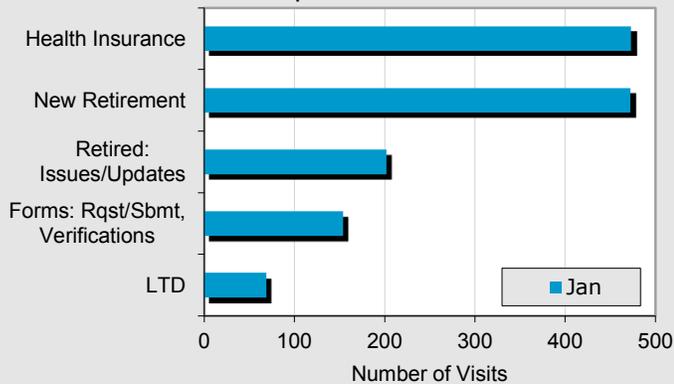


Timeliness (average wait time in minutes)

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Appointments	1	1	0	1	1	1	1					
Walk-Ins	7	8	8	8	6	7	5					
Reception/Express	0	0	0	0	0	0	0					
Health Insurance	4	5	5	6	8	5	6					
LTD Vendor	0	0	0	0	0	0	1					

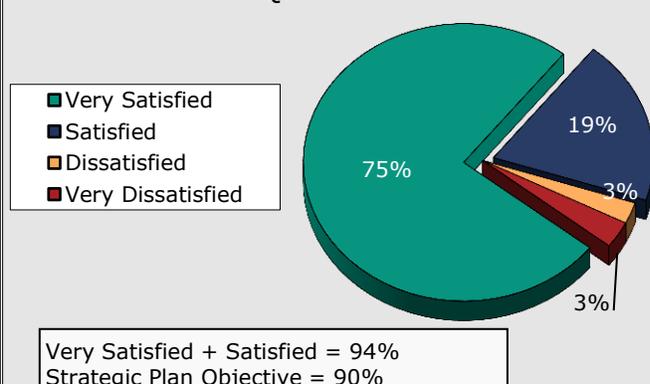
Reasons for Visit

top five reasons

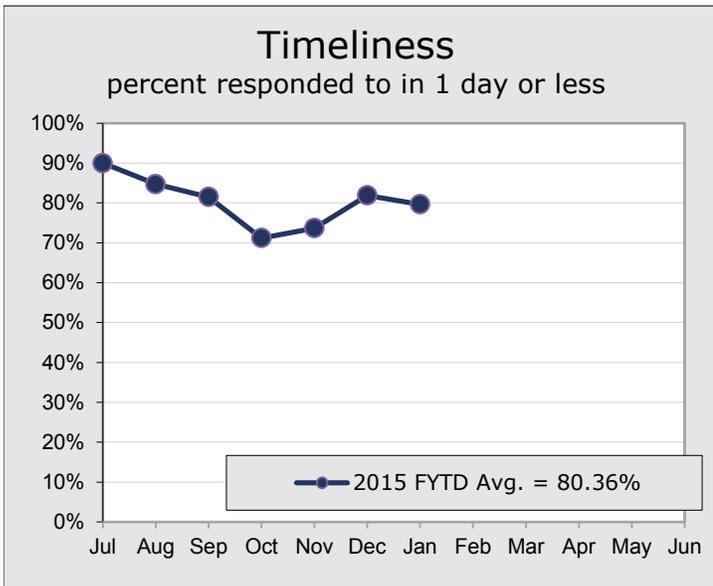
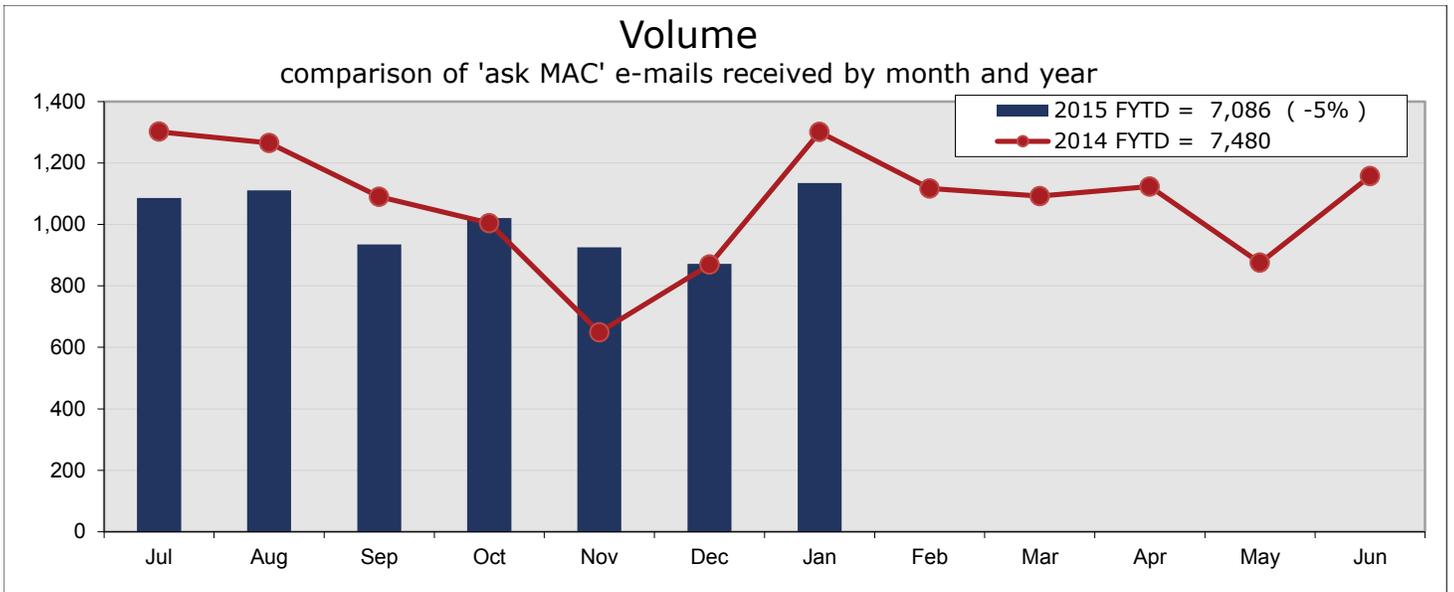


Member Satisfaction

2nd Quarter 2014

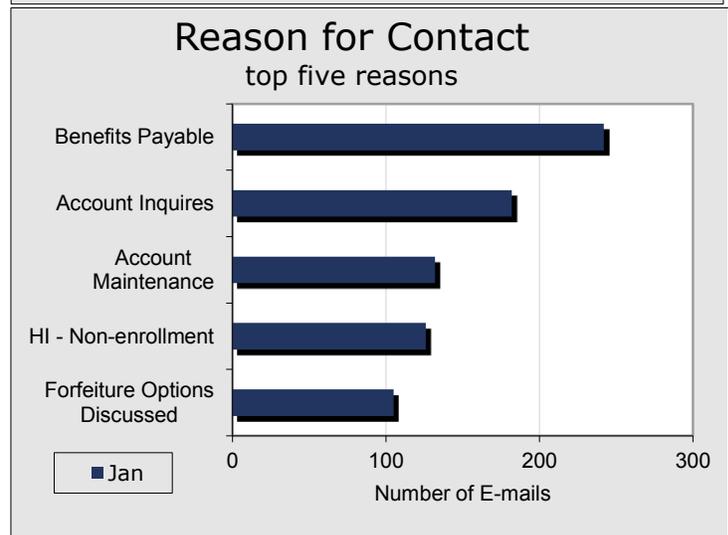
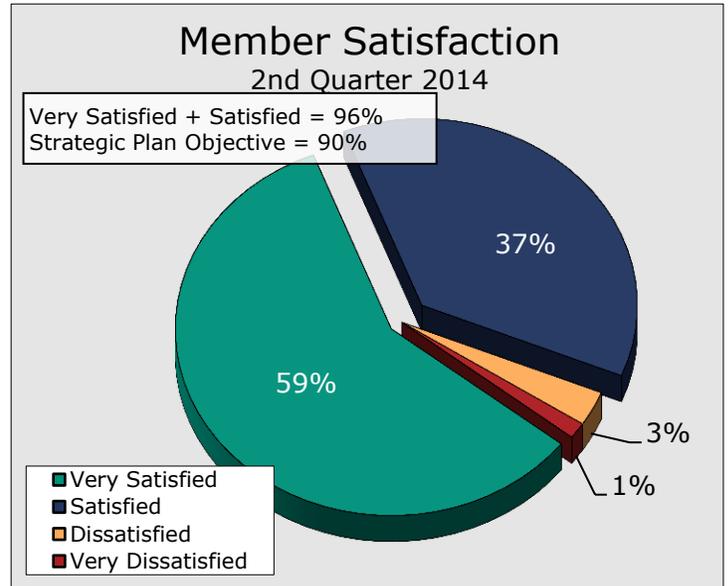


Member Advisory Center: E-Mail



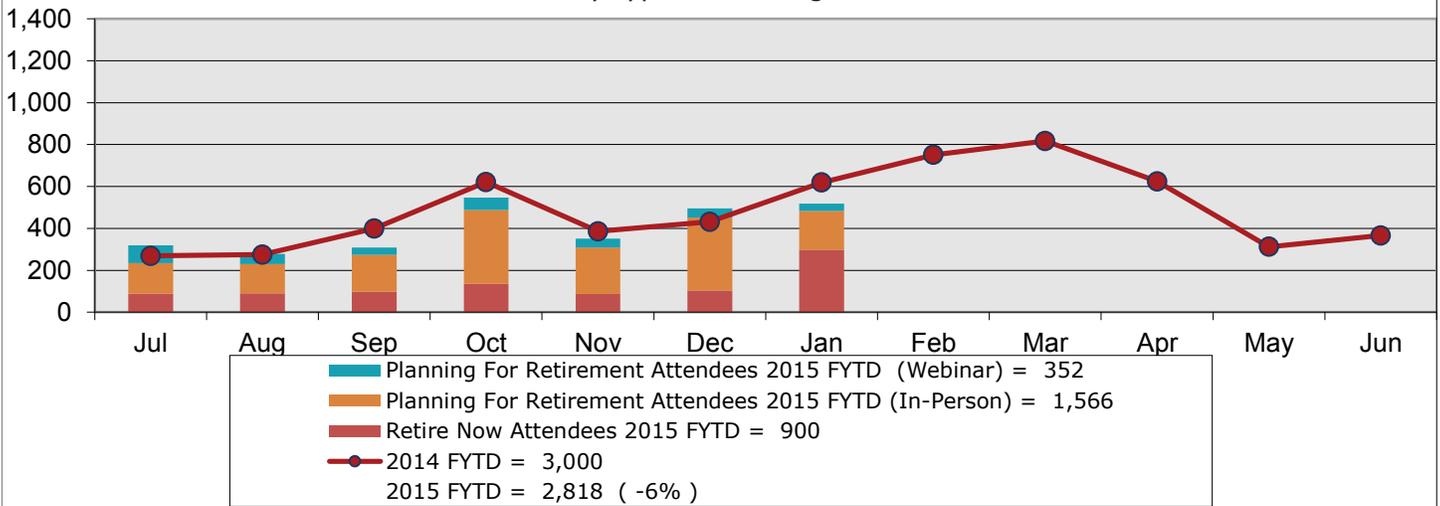
Timeliness (average response in hours)

8	10	12	12	12	8	9.7					
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun



Outreach Education and Benefit Estimates

Total Meeting Attendees by type of meeting

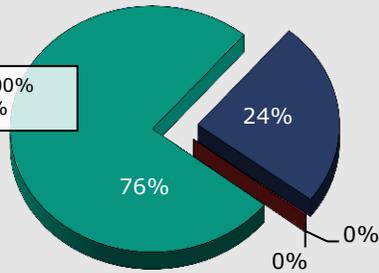


Member Satisfaction

Planning for Retirement Meetings 2nd Quarter 2014

Very Satisfied + Satisfied = 100%
Strategic Plan Objective = 90%

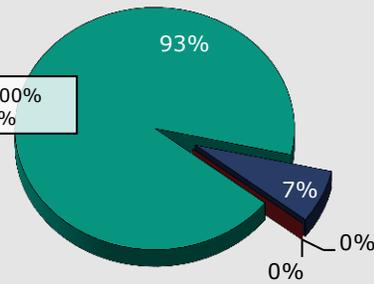
- Very Satisfied
- Satisfied
- Dissatisfied
- Very Dissatisfied



Retire Now Meetings 2nd Quarter 2014

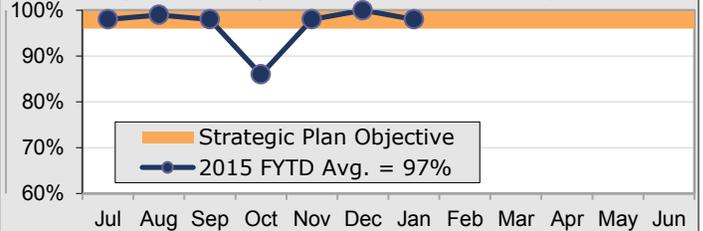
Very Satisfied + Satisfied = 100%
Strategic Plan Objective = 90%

- Very Satisfied
- Satisfied
- Dissatisfied
- Very Dissatisfied



Benefit Estimate Timeliness

percent completed within 3 business days



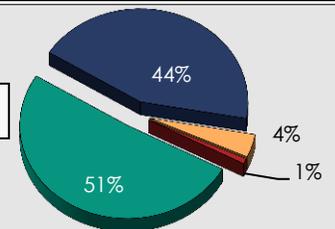
Benefit Estimate Timeliness (average TAT in days)

Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Average TAT (days)	1	1	1	1	1	1	1	1	1	1	1	1

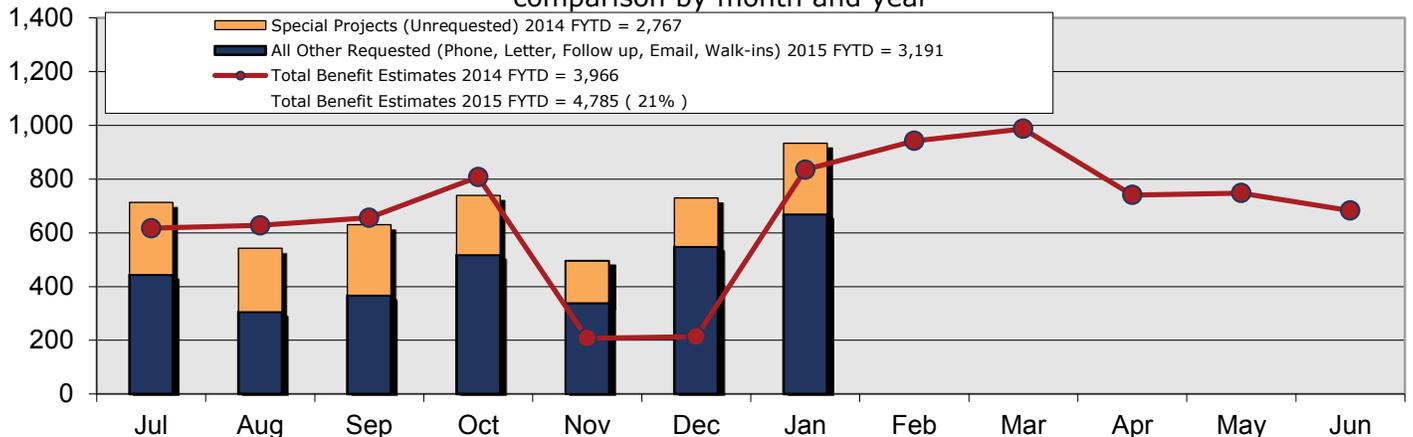
Benefit Estimates 2nd Quarter 2014

Very Satisfied + Satisfied = 95%
Strategic Plan Objective = 90%

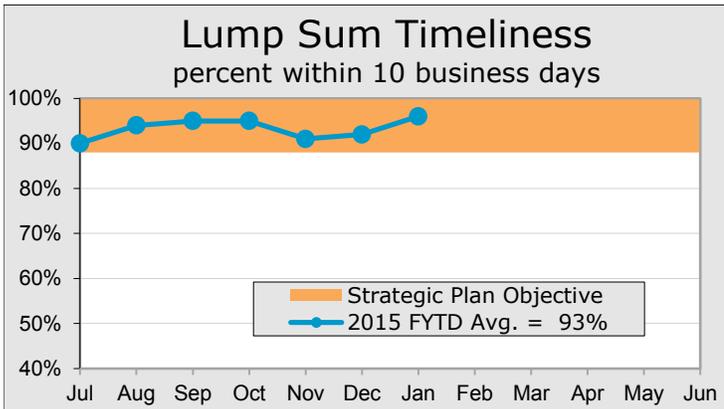
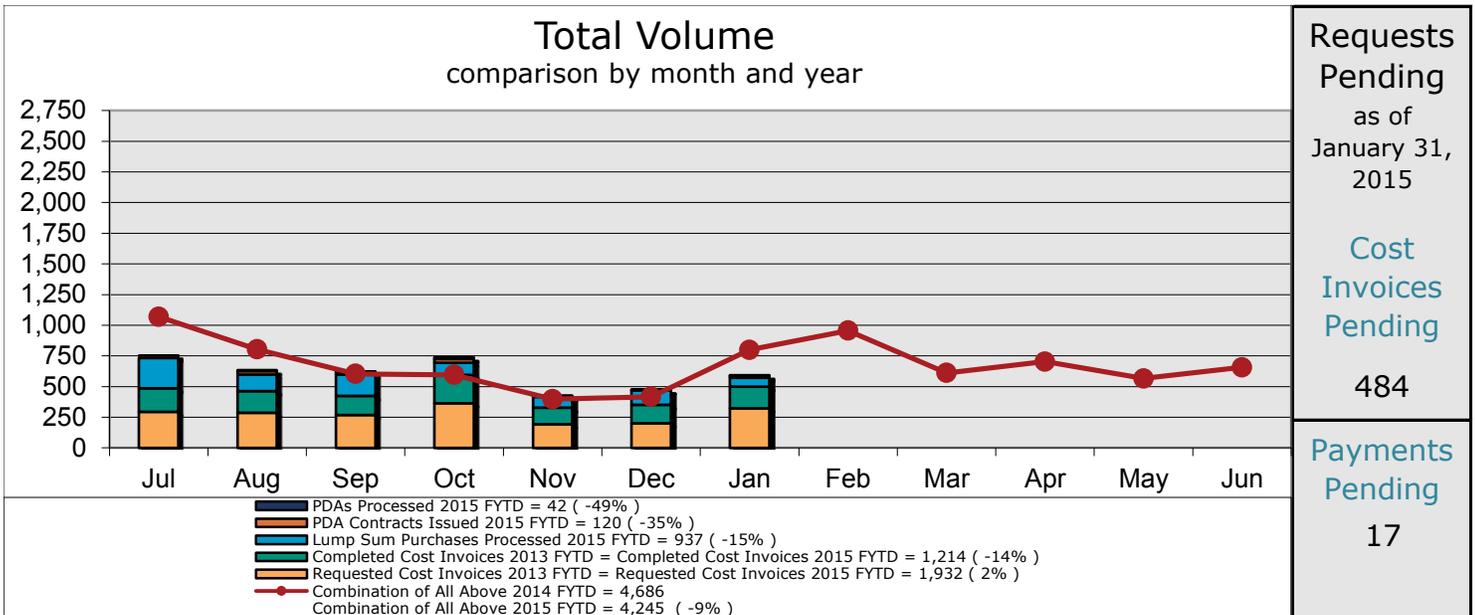
- Very Satisfied
- Satisfied
- Dissatisfied
- Very Dissatisfied



Benefit Estimate Volume comparison by month and year

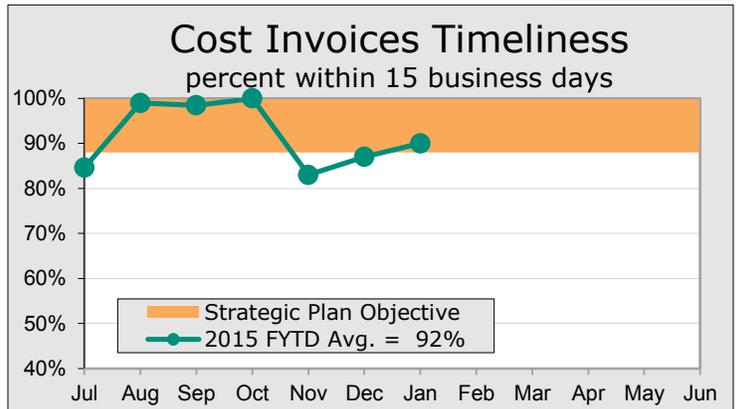


Service Purchase



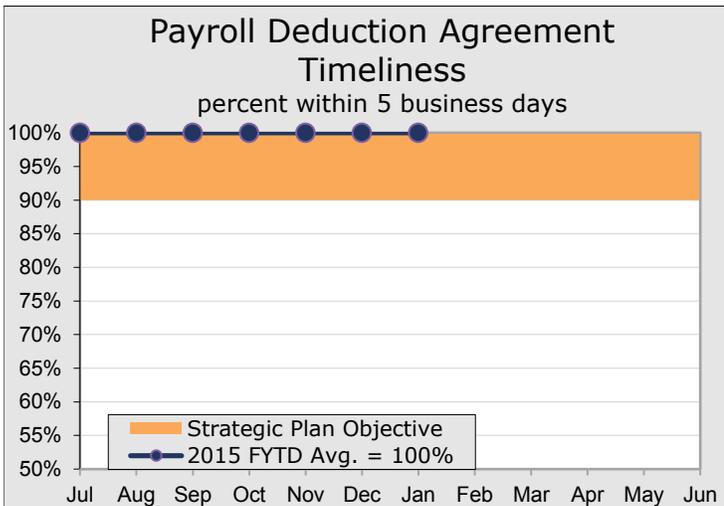
Timeliness (average turnaround time in business days)

4	2	2	2	3	3	2					
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun



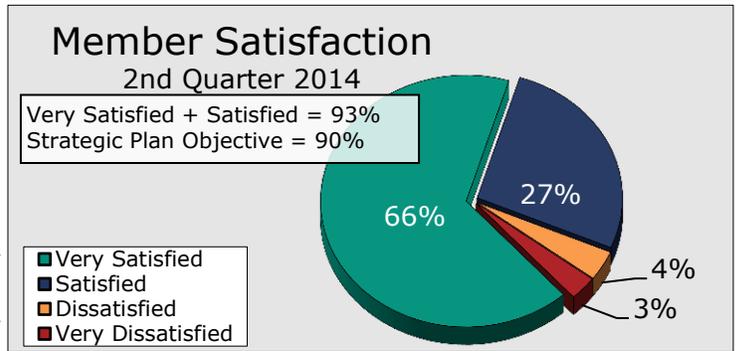
Timeliness (average turnaround time in business days)

7	3	5	5	6	6	5					
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun



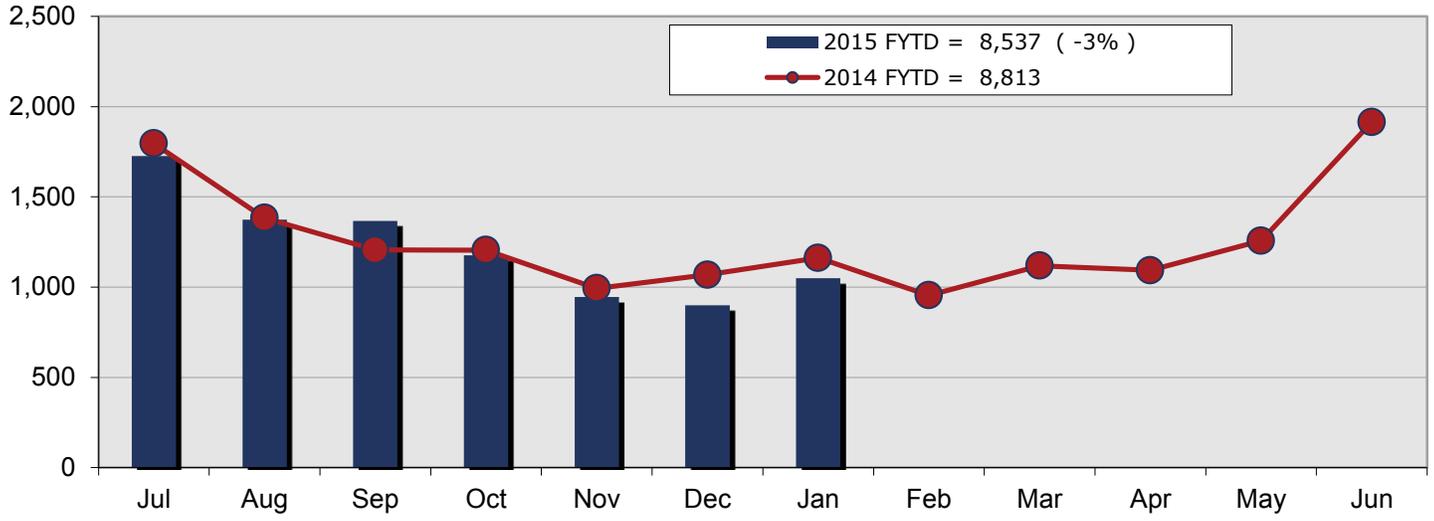
Timeliness (average turnaround time in business days)

2	1	1	1	1	3	1					
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun



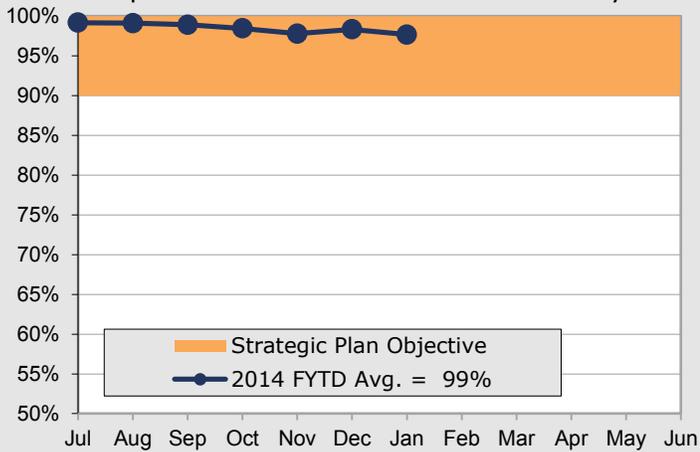
Refunds

Volume
comparison by month and year

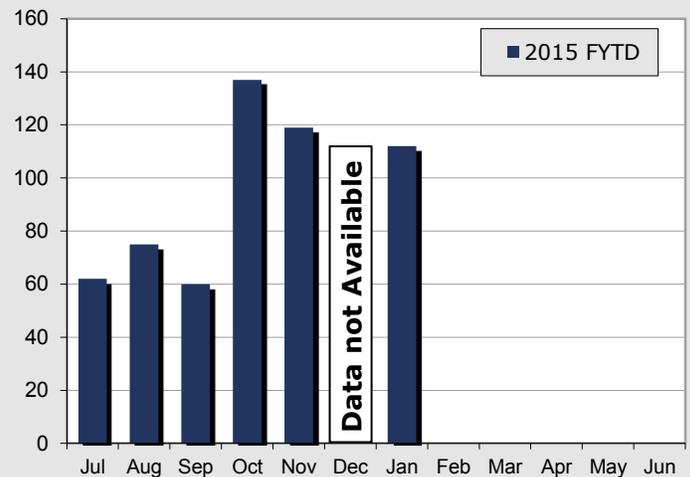


Timeliness

percent disbursed in 10 business days



Requests Pending



Timeliness (average turnaround time in business days)

Month	Turnaround Time (Business Days)
Jul	2
Aug	2
Sep	1
Oct	2
Nov	2
Dec	2
Jan	2
Feb	
Mar	
Apr	
May	
Jun	

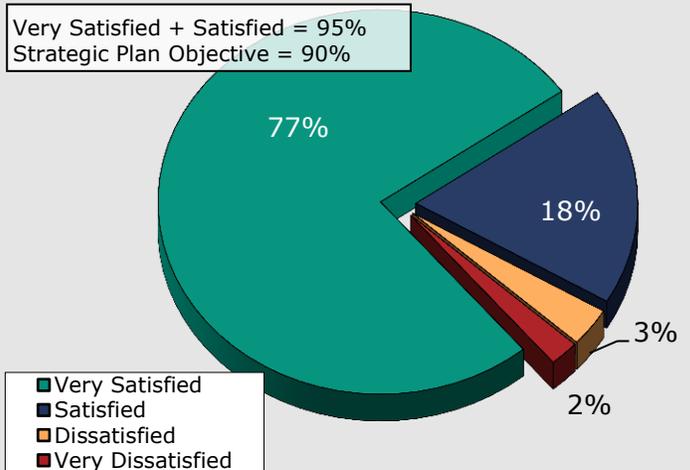
Refund Quality Rating

FY 2015



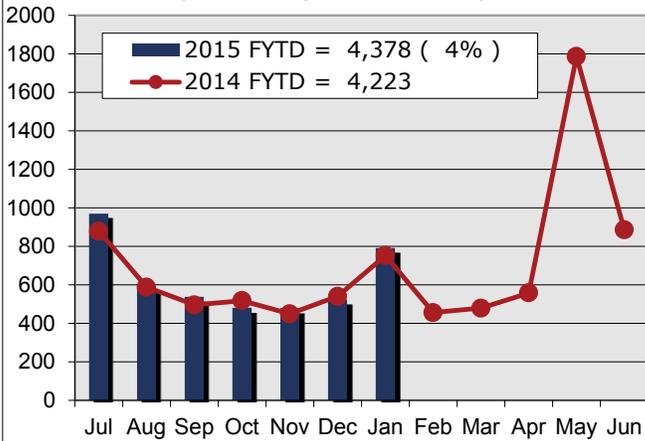
Member Satisfaction

2nd Quarter 2014

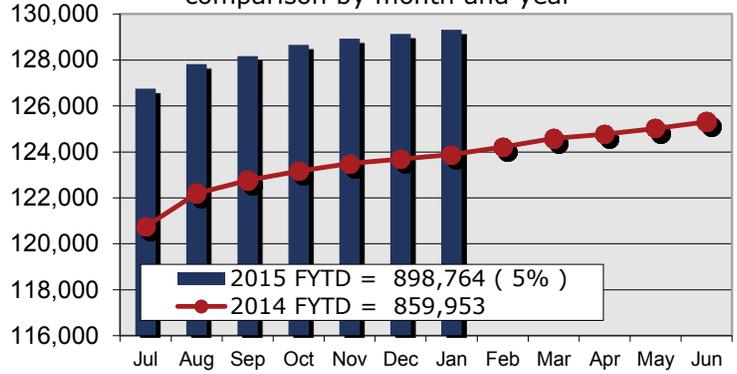


New Retiree and Pension Payroll

First Payment Volume comparison by month and year



Pension Volume comparison by month and year



Pension Payment (percent disbursed by 1st of the months)

100%	100%	100%	100%	100%	100%	100%						
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	

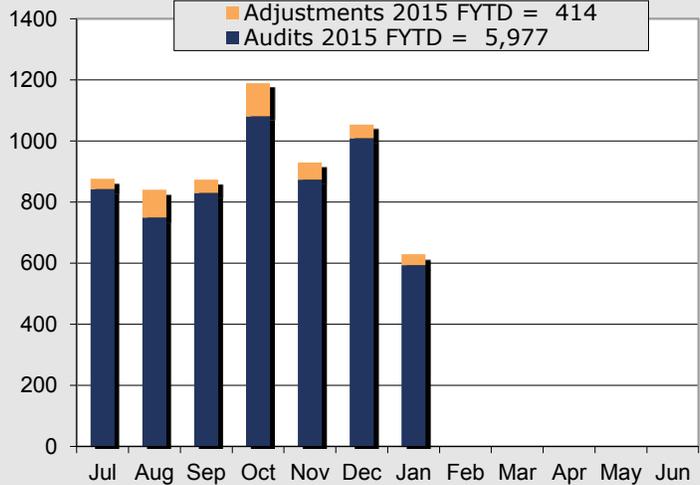
First Payment Timeliness percent disbursed in 10 business days



First Payment Timeliness (average turnaround time in days)

5	7	8	9	8	6	4						
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	

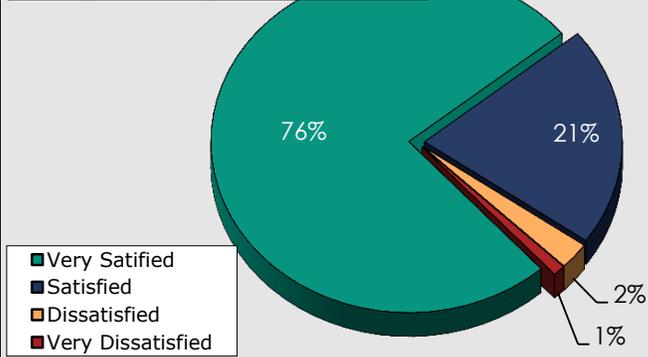
Audits & Adjustments comparison by month and year



Member Satisfaction

New Retiree
2nd Quarter 2014

Very Satisfied + Satisfied = 97%
Strategic Plan Objective = 90%



Adjustments Timeliness

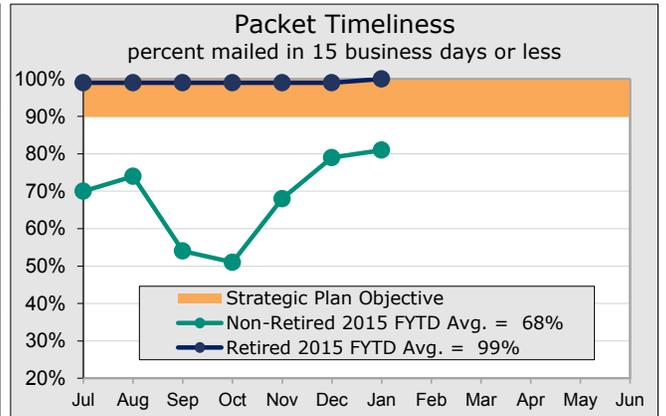
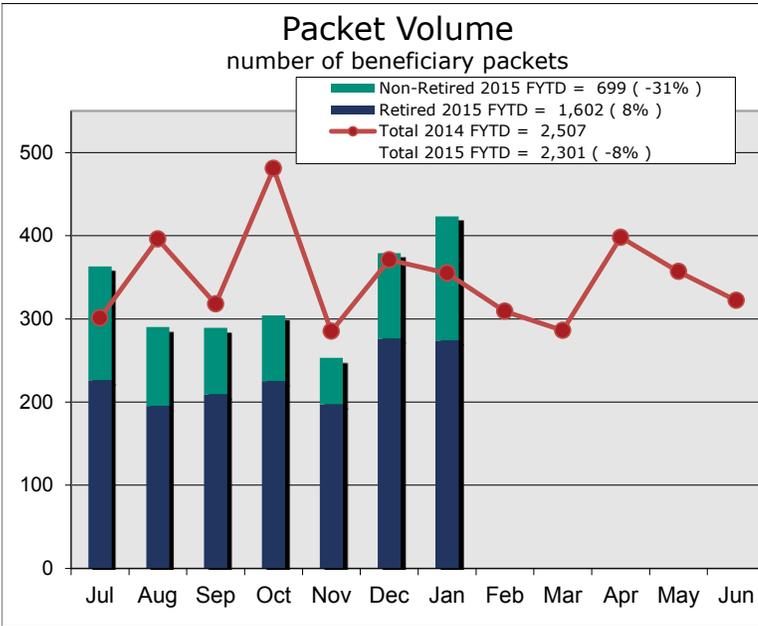
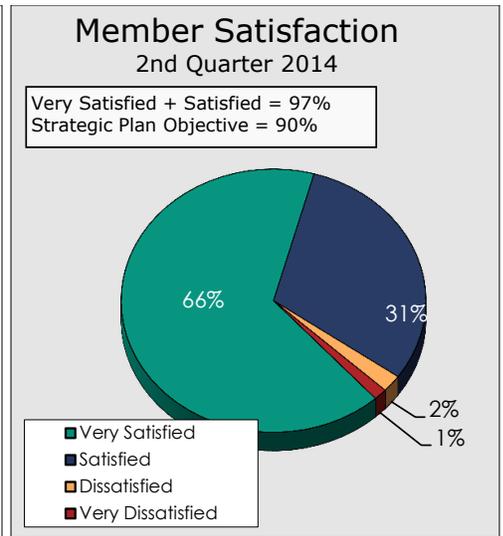
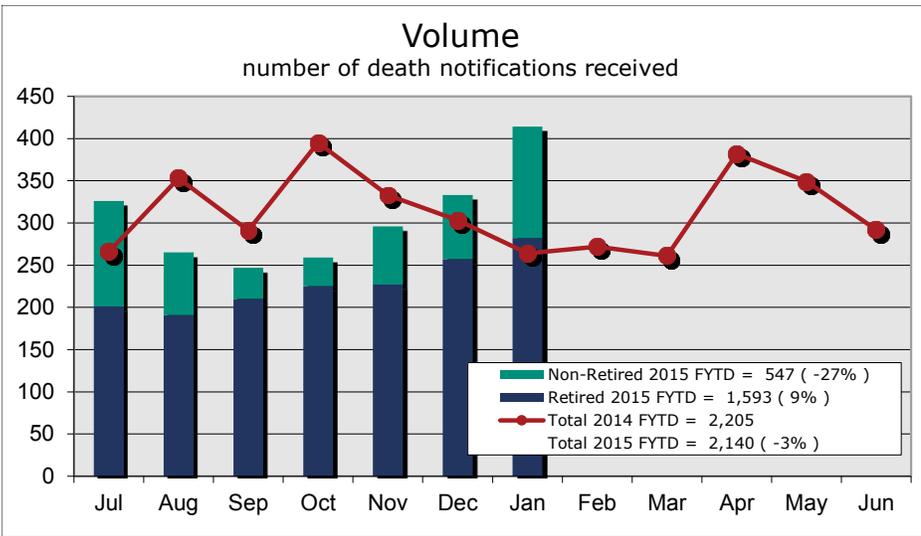
Percent completed in 20 business days



Adjustments Timeliness (average turnaround time in days)

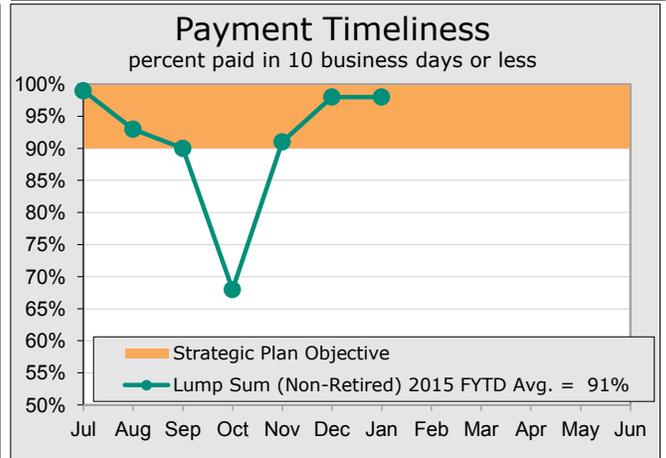
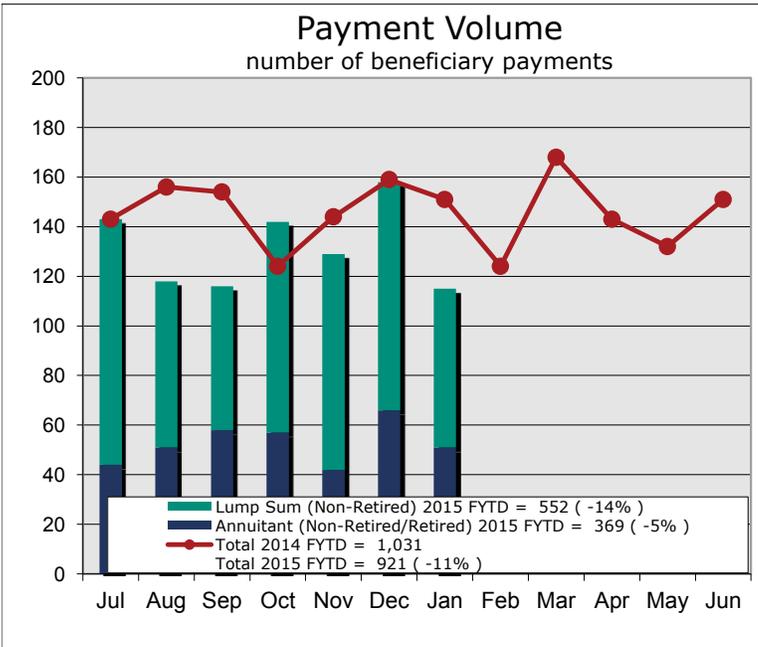
4	8	5	6	4	9	5						
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	

Survivor Benefits



Packet Timeliness (average TAT in days)

Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Non Retired	18	14	19	17	16	10	7					
Retired	2	1	1	2	2	3	2					



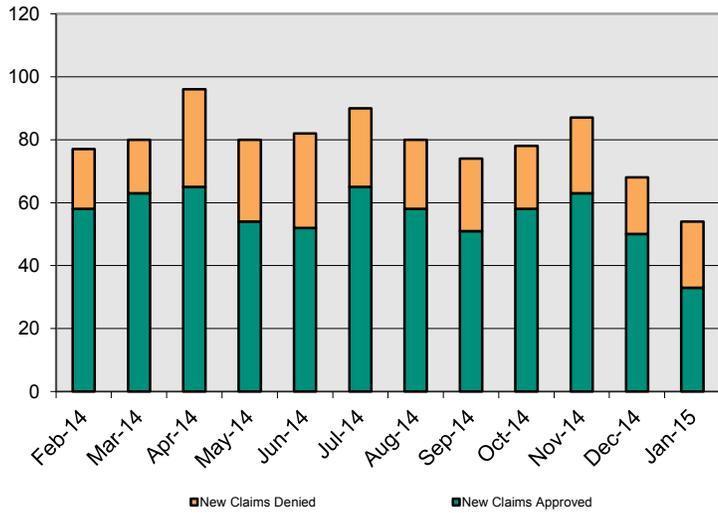
Payment Timeliness (average TAT in days)

Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Lump Sum (Non-Retired)	3	5	6	8	4	2	2					
Annuity (Retired and Non-Retired)	2	3	3	3	3	1	1					

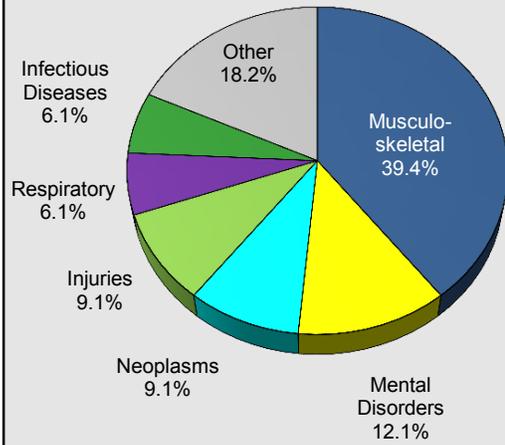
ASRS Disability Plans - Monthly Highlights

January 2015

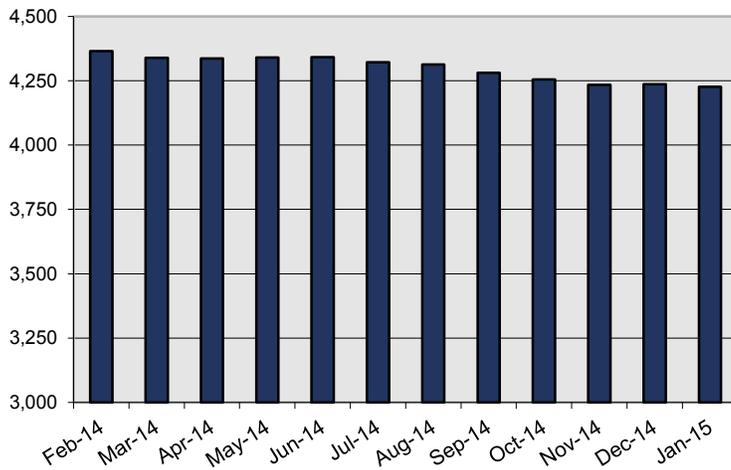
New Claims Processed



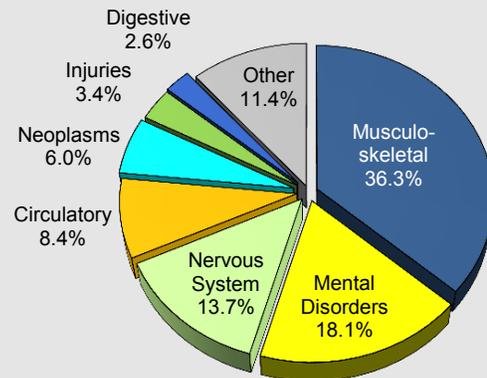
New Claims Approved



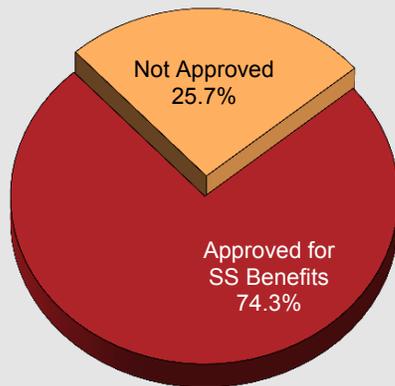
Open LTD Claims



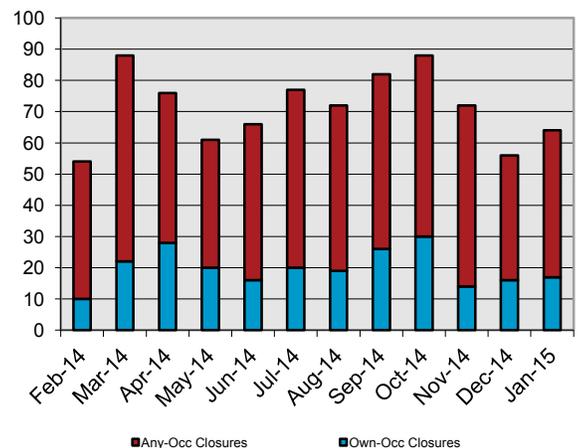
Open LTD Claims



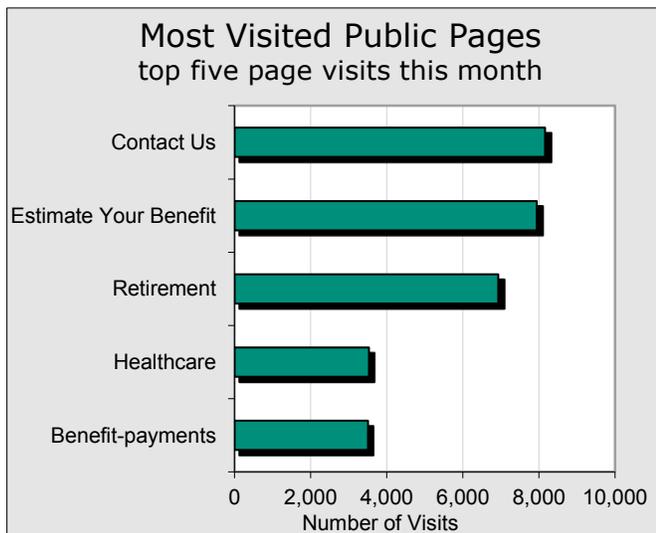
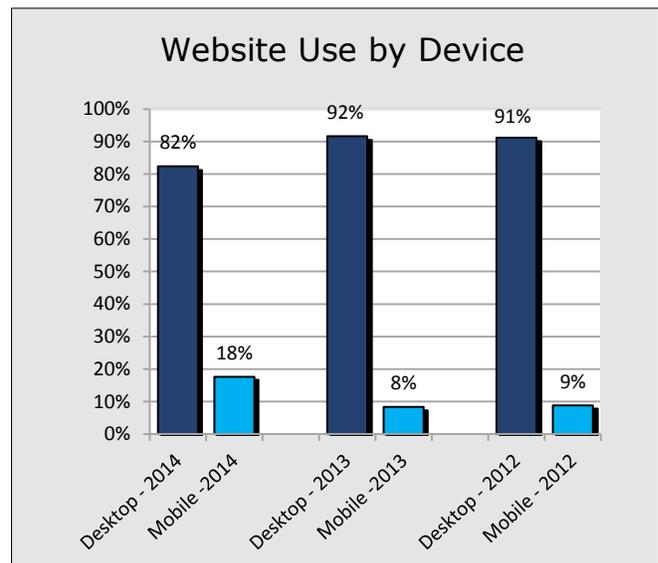
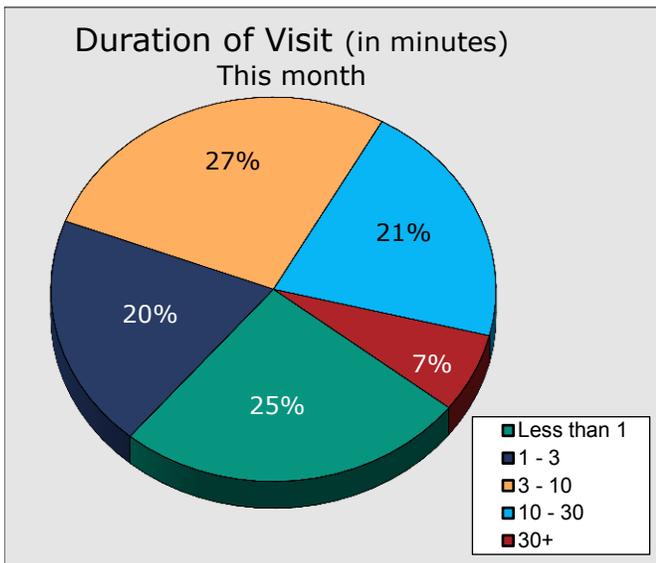
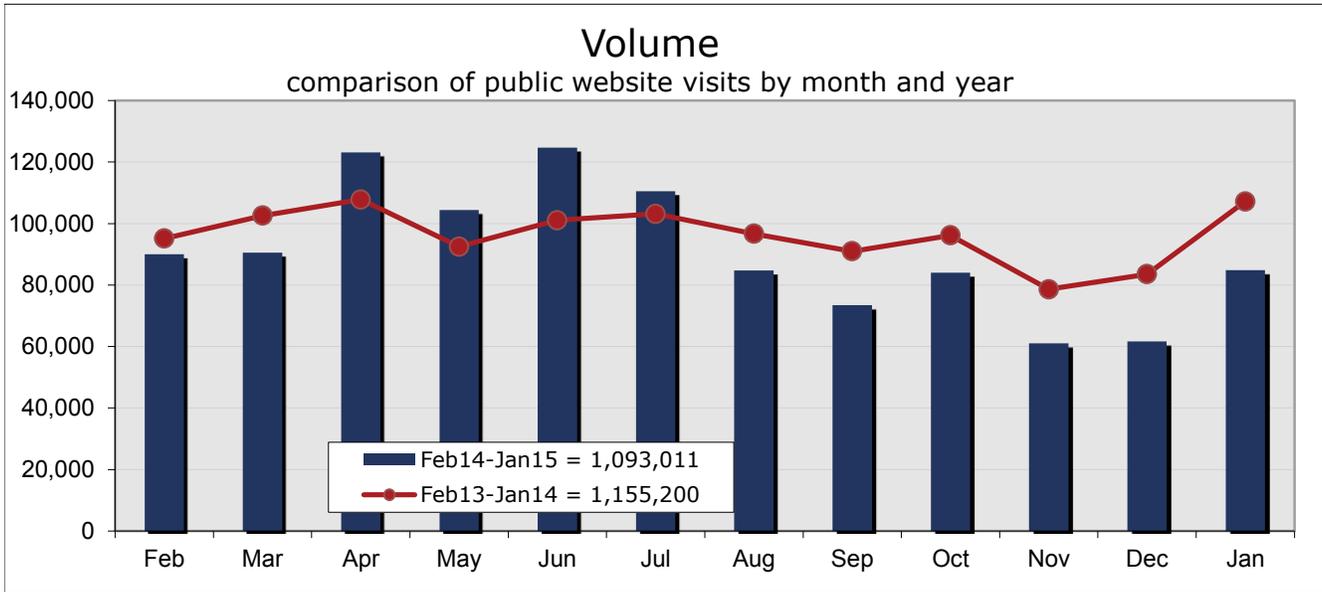
SS Approval Percentage



Active Claim Closures



Public Website: www.azasrs.gov



Followers: 1,328

(Most Recent Data)

Photo
 Reach: 214
 Post Clicks: 14
 Likes, Comments & Shares: 4

Status
 206
 3
 3

Link
 160
 13
 5

Followers: 119

Impressions per day: 27

Engagement Rate: 5.0%

Link Clicks: 1

Retweets: 1

Favorites: 0

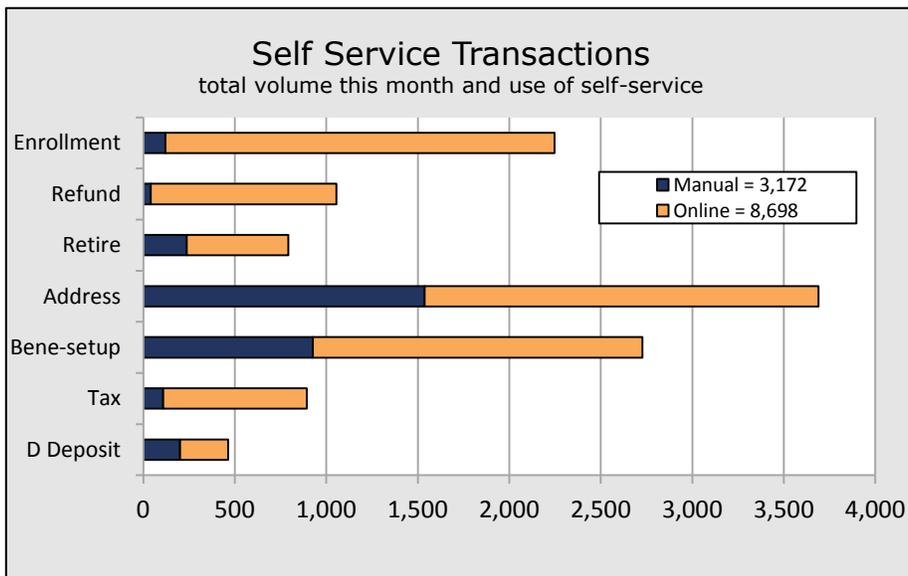
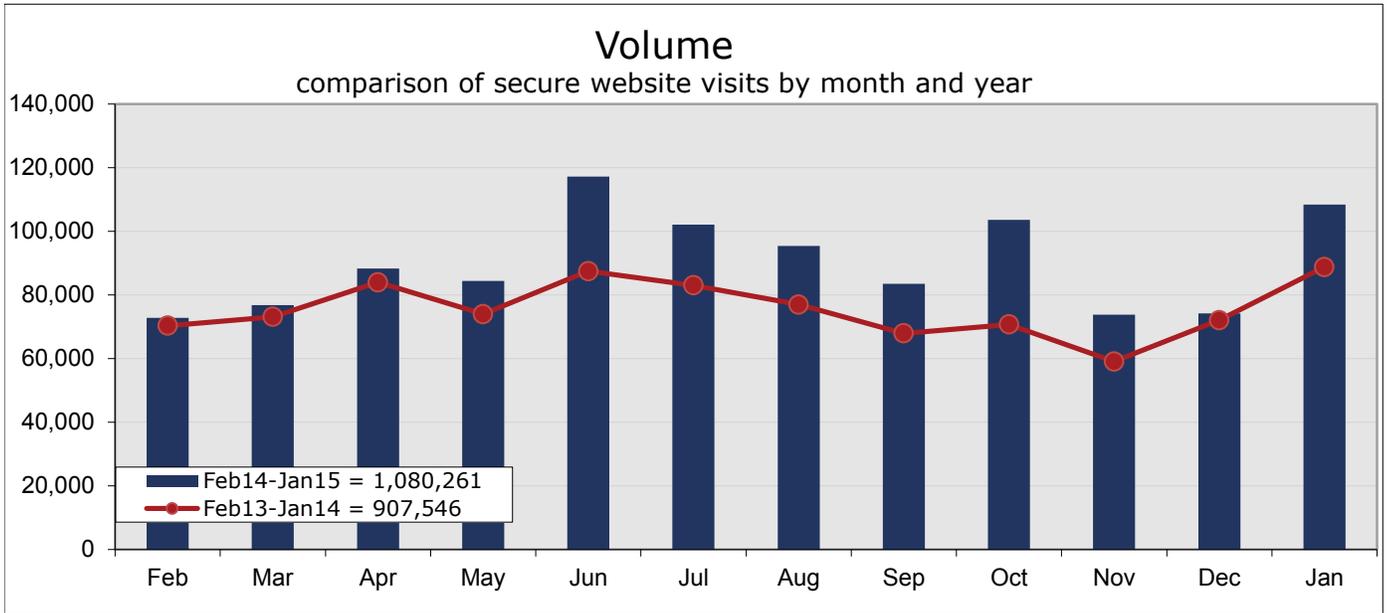
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(Most Recent Data)

■ Original Content

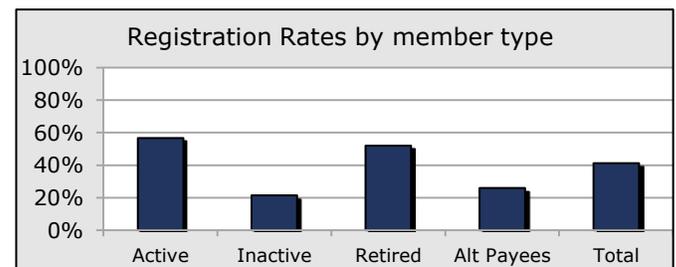
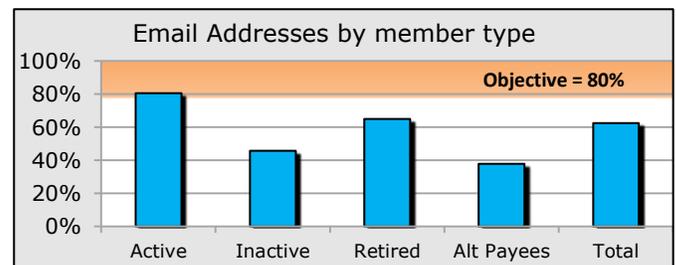
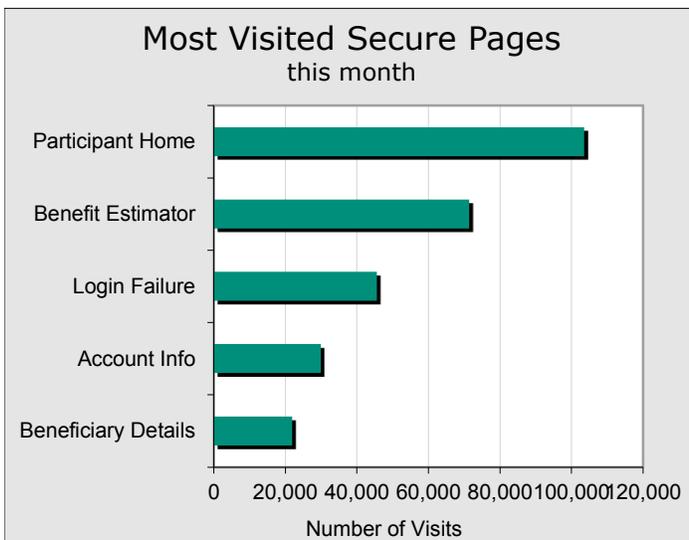
■ 3rd Party Content

Secure Website: secure.azasrs.gov



Historical Comparison of Online Usage

	This month	Last month	Same mo last yr	Objective
Enroll	95%	95%	99%	99%
Ref	96%	91%	92%	90%
Ret	62%	65%	41%	90%
Add	76%	77%	77%	75%
Bene	58%	75%	68%	75%
Tax	79%	76%	72%	75%
DD	48%	49%	44%	75%
Total % online				
	73%	68%	79%	



Arizona State Retirement System
FY 2015 Appropriated Budget
(as of January 31, 2015)

	APPROPRIATIONS FISCAL YEAR 2015	EXPENDED YTD	% EXPENDED
OPERATING BUDGET			
Personal Services	\$ 12,757,000	\$ 6,717,500	52.66%
Employee Related Expenses	\$ 5,021,000	\$ 2,701,200	53.80%
Professional & Outside Services	\$ 1,079,300	\$ 757,400	70.18%
Travel	\$ 78,600	\$ 55,200	70.23%
Other Operating Expenses	\$ 2,684,800	\$ 909,000	33.86%
Equipment	\$ 389,500	\$ 78,100	20.05%
Operating Subtotal	\$ 22,010,200	\$ 11,218,400	50.97%
OTHER APPROPRIATIONS			
Long Term Disability Administration	\$ 2,800,000	\$ 986,400	35.23%
Oracle Forms and Reports Modernization (Yr. 2)	\$ 4,484,500	\$ 745,500	16.62%
TOTAL FY 2014 Appropriated Funds	\$ 29,294,700	\$ 12,950,300	44.21%

	APPROPRIATIONS PRIOR YEAR	EXPENDED TO DATE	% EXPENDED
PRIOR YEAR LEGISLATIVE APPROPRIATIONS (NON-LAPSING)			
FY 2014 - Oracle Forms and Reports Modernization (Yr. 1)	\$ 1,390,000	\$ 1,390,000	100.00%
FY 2014 - HB 2562 - 401(a) and LTD for Ineligibles	\$ 502,400	\$ 67,300	13.40%
FY 2012 - SB 1614 - ASRS Contribution Rate	\$ 600,000	\$ 595,700	99.28%
FY 2011 - HB 2389 - ASRS Plan Design Changes	\$ 1,341,700	\$ 1,247,100	92.95%

	APPROPRIATIONS REMAINING	EXPENDED YTD	% EXPENDED
PRIOR YEAR OPERATING APPROPRIATIONS (NON-LAPSING)			
FY 2011, ASRS Operating Budget & LTD Admin	\$ 796,800	\$ -	0.00%

Budget Summary for Fiscal Year 2015 As of January 31, 2015

Operating Budget

The operating budget information on the previous page is based on funding approved by the Board and the Legislature for fiscal year July 1, 2014 through June 30, 2015. These ASRS operating expenses are distinguished from other areas of ASRS spending authority: such as expenditures for investment management and benefits payments. Administrative salaries and employee benefits, supplies, equipment and ongoing operational costs associated with information and financial systems for the ASRS Board and ASRS employees are funded from the operating budget. Expenditures to date include fifteen pay periods (58 % of the annual payrolls) of fiscal year 2015.

Other Appropriations

Other appropriations, which are considered part of the annual budget, represent other appropriations for specific programs or services authorized by the Board and the Legislature.

- **Long Term Disability Administration Fund**
The amount appropriated for the administration costs of the LTD program. Expended year-to-date amounts reflect payments for services through 11/30/2014.

- **Oracle Forms and Reports Modernization**
The amount appropriated (non-lapsing) for the second year of the software modernization project.

Non-Lapsing Appropriations for Legislative Initiatives

The amount appropriated by the Legislature for the implementation of:

- FY 2014 - Oracle Forms and Reports Modernization (Yr. 1)
- FY 2014 - HB 2562 - 401(a) and LTD for Ineligibles
- FY 2012 - SB 1614 - ASRS Contribution Rate
- FY 2011 - HB 2389 - ASRS Plan Design Changes
- FY 2011 - ASRS Operating Budget and LTD Admin
 - HB 2024, Section 93 modified the FY 2011 ASRS appropriations to be non-lapsing appropriations. The ASRS has the ability to utilize the unspent portion of these appropriations in ensuing fiscal years.

Explanation of Columns

- 1) The *Appropriations* column represents funds that have been approved by the Legislature and the ASRS Board for FY 2015, and includes prior year legislative appropriations.
- 2) The *Expended* column represents the expenditures to date.
- 3) The *% Expended* column identifies the portion of each line item that has been expended to date. This column is intended to be a guide to the rate of spending during the fiscal year.

ASRS FISCAL YEAR 2015, CONTINUOUSLY APPROPRIATED REPORT

(with summarized Appropriated Expenses)

DESCRIPTION	EXPENDED YTD as of 01/31/15	ESTIMATED ANNUAL EXPENSES <small>(Projections updated quarterly)</small>	EST. ANNUAL EXPENSES AS % OF AUM	EST. ANNUAL EXPENSES PER MEMBER
Custodial Banking, Security Lending and Master Cash STIF Fees	816,000	2,692,000		
Internal Investment Management (Salaries and Benefits)	843,000	1,500,000		
<i>Public Markets</i>				
External Investment Management Fees	21,734,000	72,155,000		
Transactional and Other Fees	910,000	3,608,000		
<i>Private Markets</i>				
Private Debt and Equity Management Fees	20,400,000	39,160,000		
Private Debt and Equity Performance Incentive and Other Fees	28,742,000	33,286,000		
Real Estate, Farmland and Timber and Infrastructure Management Fees	11,954,000	25,523,000		
Real Estate, Farmland and Timber and Infrastructure Performance Incentive and Other Fees	15,358,000	24,246,000		
Opportunistic Debt and Equity Management Fees	5,691,000	15,000,000		
Opportunistic Debt and Equity Performance Incentive and Other Fees	7,112,000	30,000,000		
Investment Management Expenses	\$ 113,560,000	\$ 247,170,000	0.719%	\$ 449.16
Investment Consulting Services	1,953,000	4,648,000		
Investment Related Legal Services	425,000	1,736,000		
Investment Electronic Information Services	769,000	1,618,000		
External Financial Consulting Services	33,000	75,000		
Investment Related Consulting, Legal and Information Services	\$ 3,180,000	\$ 8,077,000	0.024%	\$ 14.68
Rent	753,000	1,505,000	0.004%	\$ 2.73
Actuarial Consulting Fees	501,000	1,225,000	0.004%	\$ 2.23
Retiree Payroll (Disbursement Administration)	1,519,000	2,216,000	0.006%	\$ 4.03
Total Continuously Appropriated Expenses	\$ 119,513,000	\$ 260,193,000	0.757%	\$ 472.82
*Total Current Year Appropriated Expenses	\$ 13,336,500	\$ 29,794,700	0.087%	\$ 54.14
<i>*Includes estimated prior year non-lapsing legislative appropriations of \$500,000</i>				
Total Expenses (Continuously Appropriated and Appropriated)	\$ 132,849,500	\$ 289,987,700	0.844%	\$ 526.96

ASRS Estimated Total Market Value of Assets Under Management (AUM) as of December 31, 2014

\$ 34,368,355,000

ASRS Total Membership as of June 30, 2014

550,300

Continuously Appropriated Expenses for FY 2015 Estimated Expenditures

The Arizona State Retirement System (ASRS) investment and administrative costs are expended in accordance with Arizona Revised Statutes (A.R.S.), Title 38, Chapter 5, Article 2, Section 38-721. A.R.S. Section 38-721, Subsection C, lists specific expenditures that are continuously appropriated and are allowable in the amount deemed necessary by the Board.

These specific expenditures are described below:

1. Investment management fees and related consulting fees necessary to meet the Board's investment objectives

Internal Investment management

- ASRS Investment Management Division staff base salaries and employer portion of staff benefits and payroll taxes.

External investment management fees

- Public Markets
 - External investment management fees (public).
 - Management fees (public) year-to-date expenditure amounts reflect the fees due for the first quarter of FY 2015 and fifteen percent of the fees due for the second quarter of FY 2015.
 - Transactional and other fees include foreign taxes and commissions on derivatives and other incidental costs.
- Private Markets
 - Private Debt and Equity, Real Estate, Farmland and Timber and Infrastructure and Opportunistic Debt and Equity investment management fees.
 - Performance incentive fees include performance incentives and carried interest, which are only paid upon successful performance of the manager after other return hurdles are met. Other fees are the ASRS proportional share of the transactional and operational cost of the underlying investment structure. Each of these fees is only paid if earned or incurred, and therefore may vary each quarter.
 - Management and performance incentive fees year-to-date expenditure amounts reflect the fees due for the first two quarters of FY 2015.

Consulting fees

- Includes investment related consulting and legal fees, electronic information services and subscriptions, custodial banking administrative fees, external auditing service fees.

2. Rent

- Costs associated with rent as tenants for occupancy in the 3300 Tower in Phoenix and in the satellite office in Tucson.

3. Actuarial consulting fees

- Costs associated with actuarial services related to plan design, administration and valuations.

4. Retiree Payroll

- Costs associated with administering retiree pension benefits and disbursements, including third-party payroll administration fees, postage and benefit related consulting fees.

The report includes projected expenditures for the current fiscal year. Actual expenditures are reported monthly and estimated annual expenses are reviewed and adjusted quarterly. The estimated annual expenses reflected were last updated as of the close of the quarter ending December 31, 2014.

**Arizona State Retirement System
Staffing Report
(January 31, 2015)**

ASRS by Division	247 Full Time Equivalents (FTEs)	New Hires	New Exits	Vacancies	Vacancy Rate
Administrative Services Division (ASD)	16	0.0	0.0	1.5	9.38%
Director's Office (DIR)	12	0.0	0.0	0.0	0.00%
External Affairs (EAD)	11	0.0	0.0	0.0	0.00%
Financial Services (FSD)	62	0.0	1.0	6.75	10.89%
Technology Services (TSD)	49	0.0	0.0	3.0	6.12%
Internal Audit (IAD)	5	0.0	0.0	0.0	0.00%
Investment Management (IMD)	11	0.0	0.0	1.0	9.09%
Member Services (MSD)	81	0.0	0.0	2.25	2.78%
	247	0.0	1.00	14.50	5.87%

Turnover	January 2015 New Hires	January 2015 Exits	Total Exits (Last 12 Months)	Annualized Turnover %
	0.0	1.0	24.25	10.50%

Recruitments

All ASRS recruitments have been placed on hold until further notice due to the State of Arizona hiring freeze. Specific ASRS positions are critical to the core functions and operations of the agency and if left unfilled will cause a significant impact to the agency. Recruitment for these "Mission Critical" positions may proceed upon approval of the agency director. Of the recruitments placed on hold, six are under review to determine if they meet the criteria of Mission Critical. These positions include: Senior Information Security Engineer, Software Engineer (2), Investment Accountant, Accounting Technology Specialist, and Membership Accounting Program Manager. If deemed Mission Critical, recruitment for the position(s) will resume.

Impact of Staffing (Vacancies, Recruitments, Internal Transfers) on ASRS Operational Performance

Agency Divisions	Services and Functions	Staffing Impact	Comments
Impact of Staffing on ASRS Operations: Green = Normal risk Yellow = Greater than normal risk Red = Negative impact			
MSD	MAC (Call Center)	● ○ ○	
MSD	One-on-one Counseling (Appointments/Walk-ins)	● ○ ○	
MSD	E-mail and Written Correspondence	● ○ ○	
MSD	Outreach Education	● ○ ○	
MSD	Tucson: Appointments/Walk-ins/Outreach	● ○ ○	
MSD	Benefit Estimates	● ○ ○	
FSD	Monthly Pension Payroll Processing	● ○ ○	
FSD	New Retiree Processing	● ○ ○	
MSD	New Retiree Processing	● ○ ○	
FSD	Survivor Benefit Processing	● ○ ○	
MSD	Survivor Benefit Processing	● ○ ○	
MSD	Refund Processing	● ○ ○	

Impact of Staffing (Vacancies, Recruitments, Internal Transfers) on ASRS Operational Performance

Agency Divisions	Services and Functions	Staffing Impact	Comments
Impact of Staffing on ASRS Operations: Green = Normal risk Yellow = Greater than normal risk Red = Negative impact			
MSD/FSD	Service Purchase Processing	● ○ ○	
FSD	Records Management (data processing/imaging)	● ○ ○	
IA	Internal Audit	● ○ ○	
EA	Employer Relations	● ○ ○	
EA	Rule Writing	● ○ ○	
EA	Legislative Relations	● ○ ○	
EA	Communications/Media Relations	● ○ ○	
EA	Web Services	● ○ ○	
EA	Health Insurance/LTD Benefits Administration and Communication	● ○ ○	
MSD	LTD Member Contacts, Benefit Processing	● ○ ○	
FSD	Health Insurance Member Contacts, Benefit Processing Transfer Processing	● ○ ○	

Impact of Staffing (Vacancies, Recruitments, Internal Transfers) on ASRS Operational Performance

Agency Divisions	Services and Functions	Staffing Impact	Comments
Impact of Staffing on ASRS Operations: Green = Normal risk Yellow = Greater than normal risk Red = Negative impact			
MSD	Health Insurance	● ○ ○	
FSD	Transfer Processing	● ○ ○	
FSD	General Accounting	● ○ ○	
FSD	Contribution Collections and Posting	● ○ ○	
TSD	Network Support	○ ● ○	NIS continues to struggle with security activities. Additional security resources are necessary to meet the business needs. Recruitment for one newly added security related position is on hold due to the State of Arizona hiring freeze. Additional positions were requested in the ASRS budget request for FY 16. At this time, the Governor's Office of Strategic Planning and Budget recommends/supports the ASRS request for additional resources for FY 16.
TSD	Business Applications Development and Support	● ○ ○	The planned workload requires a complement of 44 total resources (31 FTEs and 13 external resources). Our current complement of resources for January 2015 was 44 (29 FTEs and 15 external resources). Recruitment for two Software Engineer positions has been put on hold due to the State of Arizona hiring freeze.
IMD	Investment Management	● ○ ○	
DIR	Board/Executive Staff Support	● ○ ○	
DIR	Strategic Planning/Analysis	● ○ ○	

Impact of Staffing (Vacancies, Recruitments, Internal Transfers) on ASRS Operational Performance

Agency Divisions	Services and Functions	Staffing Impact	Comments
Impact of Staffing on ASRS Operations: Green = Normal risk Yellow = Greater than normal risk Red = Negative impact			
ASD	Human Resources	● ○ ○	
ASD	Training and Development	● ○ ○	
ASD	Contracts and Procurement	● ○ ○	
ASD	Facilities Management	● ○ ○	
ASD	Budget Administration	● ○ ○	

ARIZONA STATE RETIREMENT SYSTEM
COMBINED STATEMENT OF CHANGES IN TOTAL FUND CASH
FOR THE MONTH ENDED JANUARY 31, 2015

	Retirement Plan Fund	Retirement System Fund	Health Benefit Supplement Fund	Long-Term Disability Fund	Current Period January	Fiscal 2015 YTD January	Fiscal 2014 YTD January
ADDITIONS							
Contributions							
Member contributions	\$ 87,340,661	\$ 3,608	\$ -	\$ 897,313	\$ 88,241,583	\$ 585,705,546	\$ 570,716,635
Employer contributions	79,345,106	3,608	4,417,010	897,303	84,663,028	584,485,805	570,648,905
Alternative contributions (ACR)	1,849,414	-	39,730	11,919	1,901,063	14,384,929	13,469,841
Transfers from other plans	4,089	-	-	-	4,089	295,610	655,968
Purchased service	1,157,757	-	-	-	1,157,757	14,067,270	19,865,658
TOTAL CONTRIBUTIONS	169,697,028	7,217	4,456,740	1,806,535	175,967,520	1,198,939,160	1,175,357,006
DEDUCTIONS							
Investment management fees	3,203,759	-	-	-	3,203,759	40,279,957	46,592,069
Custody fees	5,000	-	-	-	5,000	5,000	608,947
Consultant and legal fees	45,816	-	-	-	45,816	2,594,341	1,609,622
Internal investment activity expense	517,650	-	-	-	517,650	2,161,822	2,079,813
Retirement and disability benefits	214,039,909	3,211,885	8,005,705	5,270,009	230,527,508	1,641,530,589	1,571,145,586
Survivor benefits	2,030,609	1,222	-	-	2,031,832	21,610,694	22,340,996
Refunds to withdrawing members, including interest	20,020,076	-	-	-	20,020,076	147,732,531	146,522,268
Administrative expenses	2,330,392	-	-	183,257	2,513,649	17,707,134	16,901,000
Transfers to other plans	7,013	-	-	-	7,013	342,210	353,625
Other	236	-	-	-	236	6,706	24,377
TOTAL DEDUCTIONS	242,200,461	3,213,107	8,005,705	5,453,266	258,872,539	1,873,970,983	1,808,178,302
INCREASE (DECREASE)	(72,503,433)	(3,205,891)	(3,548,965)	(3,646,731)	(82,905,019)	(675,031,823)	(632,821,296)
From securities lending activities:							
Security loan program	621,559	-	-	-	621,559	2,310,892	1,238,610
Security loan interest expense / (Rebate)	(97,233)	-	-	-	(97,233)	(145,251)	(2,608)
Net income from securities lending activities	718,792	-	-	-	718,792	2,456,144	1,241,218
Capital Calls / (Distributions)							
Farmland and Timber	-	-	-	-	-	45,442,161	94,458,518
Infrastructure	-	-	-	-	-	300,000,000	-
Opportunistic Debt	2,202,199	22,681	95,506	-	2,320,387	144,385,962	5,110,048
Opportunistic Equity	5,978,559	63,018	263,579	-	6,305,156	28,055,869	66,279,745
Private Debt	(1,503,198)	(19,197)	(66,777)	-	(1,589,172)	243,899,003	295,402,876
Private Equity	33,107,835	-	1,474,220	-	34,582,054	141,437,541	32,229,276
Real Estate	(1,680,634)	13,399	(109,276)	-	(1,776,510)	(78,009,586)	1,676,568
TOTAL Capital Calls	38,104,762	79,902	1,657,252	-	39,841,915	825,210,950	495,157,030
NET INCREASE (DECREASE)	\$ (109,889,402)	\$ (3,285,792)	\$ (5,206,217)	\$ (3,646,731)	\$ (122,028,142)	\$ (1,497,786,629)	\$ (1,126,737,108)

OUTSTANDING ASRS APPEALS

Date Received	Appeals	Issues/Questions Regarding	Status/Comments
04/16/2012	Arizona State University	Appellant is disputing an ASRS employer termination incentive program invoice.	ASU appealed to the Court of Appeals 02/12/2014. Court of Appeals case number is CA-CV 14-0083. Briefing completed 09/03/2014.
07/14/2014	Richard K. Hillis & Sharon Di Giacinto	Disputing the ASRS determination that a DRO term is unacceptable.	Recommended decision on 01/30/2015 agenda for Board action. Appellant filed Notice of Appeal with the AZ Superior Court. Case no. LC2015-000048-001 02/02/2015.
10/20/2014	Doug Campos-Outcalt	Disputing official retirement date.	Requested to Waive Time Requirement received from appellant 11/03/2014. Awaiting response from appellant to schedule hearing date. OAH Hearing scheduled for 2/02/2015. Appellant failed to appear for OAH hearing. ALJ dismissed appeal.
12/17/2014	The Griffin Foundation	Appellant is appealing the ASRS finding that the Griffin Foundation's employees were not "leased employees."	Informal Settlement Conference held on 01/09/2015. OAH hearing scheduled for 03/23/2015.
01/07/2015	Janet L. Miller	Appellant is appealing the denial of LTD benefits.	OAH hearing scheduled for 03/05/2015.
01/02/2015	Joseph R. Kennedy	Appellant is appealing the denial of LTD benefits.	Informal Settlement Conference held 01/21/2015. Settlement granting LTD benefits.
01/12/2015	Melissa Berner	Appealing ASRS determination that appellant's claim should be handled by AZ Superior Court, not the ASRS.	OAH hearing date scheduled for 03/17/2015.
02/06/2015	David Lara	Appealing ASRS method of payment of Maria Cardenas refund benefit.	Awaiting hearing date.

- Please note any updates have been bolded.



ARIZONA STATE RETIREMENT SYSTEM

3300 NORTH CENTRAL AVENUE • PO BOX 33910 • PHOENIX, AZ 85067-3910 • PHONE (602) 240-2000
7660 EAST BROADWAY BOULEVARD • SUITE 108 • TUCSON, AZ 85710-3776 • PHONE (520) 239-3100
TOLL FREE OUTSIDE METRO PHOENIX AND TUCSON 1 (800) 621-3778
EMAIL ADDRESS: ASKMAC@AZASRS.GOV • WEB ADDRESS: WWW.AZASRS.GOV

*Paul Matson
Director*

MEMORANDUM

TO: Mr. Kevin McCarthy, Chair, Arizona State Retirement System (ASRS) Board
FROM: Mr. Paul Matson, Director
DATE: February 12, 2015
RE: Delinquent Employers

As of February 12, 2015, the following employers have failed to remit contributions by a date certain. These employers have received a letter advising them that the ASRS will initiate collection procedures unless they contact us within five days:

Quartsite Elementary District	\$ 35,000*
Harquahala Valley Irrigation District	\$ 5,400*
Caurus Academy	\$ 5,000*
Starshine Academy	\$ 8,400*
Chevelon Butte Elementary District	\$ 600*
Total	\$ 54,400*

*Estimated amount

Additionally, the following employer has filed for Chapter 11 Bankruptcy Protection and are delinquent in their ASRS contributions:

Luz Academy of Tucson	\$ 18,600
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Total **\$ 73,000***



ARIZONA STATE RETIREMENT SYSTEM

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Paul Matson
Director

MEMORANDUM

TO: Mr. Kevin McCarthy, Chair, Arizona State Retirement System (ASRS) Board

FROM: Mr. Paul Matson, Director

DATE: February 10, 2015

RE: **Agenda Item #13:** Presentation, Discussion and Appropriate Action Regarding the Office of the Auditor General's Sunset Review of the Arizona State Retirement System, including the Arthur J. Gallagher & Company Investment Management Audit

Purpose

The Office of the Auditor General will provide an update regarding the ongoing sunset review, with Arthur J. Gallagher & Company providing an update regarding the investment management portion of the sunset audit.

Recommendation

Information item only; no action required.

Background

Arizona Revised Statute §41-2951 has established a sunset review process to ensure state agencies, boards and commissions are meeting statutory responsibilities, operating efficiently and effectively, and should continue operations. Most sunset reviews are conducted once every 10 years. The last sunset review report for the Arizona State Retirement System (ASRS) was issued in September 2005.

In October 2013 the Joint Legislative Audit Committee assigned the sunset review of the ASRS to the Office of the Auditor General (OAG). The review is currently underway and will result in a publically released report which is due to the Legislature by October 1, 2015.

If no legislative action is taken the ASRS will sunset on July 1, 2016.

As a part of the audit, the OAG auditors review state statutes, administrative rules, policies, procedures, and analyze ASRS records and data. Additionally, the OAG conducts interviews and obtains criteria from other states, best practices, and literature. The OAG will make recommendations for improvements and identify best practices, as appropriate.

Arthur J. Gallagher & Company was hired by the OAG to conduct an audit of the investment management functions of both the ASRS and the Public Safety Personnel Retirement System (PSPRS). PSPRS is undergoing a concurrent sunset review by the OAG.

The ASRS is committed to cooperating fully and positively with Arthur J. Gallagher & Company and the OAG.

Arthur J. Gallagher & Company and the OAG offered to provide the Board an update in Executive Session. The OAG previously provided an update to the Board in the October 2014.

Meeting Attendees

Arthur J. Gallagher & Company (via teleconference):

Ryan Lennie, CFA, AIF, Lead Analyst
Mark Melnychuk, AIF, Project Coordinator
Julie Wenzlick, Project Coordination

Office of the Auditor General (in person)

Dale Chapman, Performance Audit Director
Dot Reinhard, Performance Audit Manager
Laura Long, Frankie Cruz, and Paul Bergelin – Performance Auditors
Jay Zsorey, Financial Audit Director

A.R.S. § 38-714. Powers and duties of ASRS and board

A. ASRS shall have the powers and privileges of a corporation, shall have an official seal and shall transact all business in the name "Arizona state retirement system", and in that name may sue and be sued.

B. The board is responsible for supervising the administration of this article by the director of ASRS.

C. The board is responsible for the performance of fiduciary duties and other responsibilities required to preserve and protect the retirement trust fund established by section 38-712.

D. The board shall not advocate for or against legislation providing for benefit modifications, except that the board shall provide technical and administrative information regarding the impact of benefit modification legislation.

E. The board may:

1. Determine the rights, benefits or obligations of any person under this article and afford any person dissatisfied with a determination a hearing on the determination.

2. Determine the amount, manner and time of payment of any benefits under this article.

3. Recommend amendments to this article and articles 2.1 and 7 of this chapter that are required for efficient and effective administration.

4. Adopt, amend or repeal rules for the administration of the plan, this article and articles 2.1 and 7 of this chapter.

F. The board shall submit to the governor and legislature for each fiscal year no later than eight months after the close of the fiscal year a report of its operations and the operations of ASRS. The report shall follow generally accepted accounting principles and generally accepted financial reporting standards and shall include:

1. A report on an actuarial valuation of ASRS assets and liabilities.

2. Any other statistical and financial data that may be necessary for the proper understanding of the financial condition of ASRS and the results of board operations.

3. On request of the governor or the legislature, a list of investments owned. This list shall be provided in electronic format.

G. The board shall:

1. Prepare and publish a synopsis of the annual report for the information of ASRS members.

2. Contract for a study of the mortality, disability, service and other experiences of the members and employers participating in ASRS. The study shall be conducted for fiscal year 1990-1991 and for at least every fifth fiscal year thereafter. A report of the study shall be completed within eight months of the close of the applicable fiscal year and shall be submitted to the governor and the legislature.

3. Conduct an annual actuarial valuation of ASRS assets and liabilities.

H. The auditor general may make an annual audit of ASRS and transmit the results to the governor and the legislature.

ARIZONA ADMINISTRATIVE CODE

TITLE 2. ADMINISTRATION

CHAPTER 8. STATE RETIREMENT SYSTEM BOARD

ARTICLE 4. PRACTICE AND PROCEDURE BEFORE THE BOARD

R2-8-401. Definitions

The following definitions apply to this Article unless otherwise specified:

1. "Appealable agency action" has the same meaning as in A.R.S. § 41-1092.
2. "Board" has the same meaning as in A.R.S. § 38-711.
3. "Director" means the Director appointed by the Board as provided in A.R.S. § 38-715.
4. "Party" has the same meaning as in A.R.S. § 41-1001.
5. "Person" has the same meaning as in A.R.S. § 41-1001.

R2-8-402. General Procedures

In computing any time period, parties shall exclude the day from which the designated time period begins to run. Parties shall include the last day of the period unless it falls on a Saturday, Sunday, or legal holiday. When the time period is 10 days or less, parties shall exclude Saturdays, Sundays, and legal holidays.

R2-8-403. Request for a Hearing of an Appealable Agency Action

- A. A person who is not satisfied with a decision by the Director that is an appealable agency action may file a Request for a Hearing, in writing, with the Director. The request shall include the following:
1. The name and mailing address of the member, employer, or other person filing the request;
 2. The name and mailing address of the attorney for the person filing the request, if applicable;
 3. A concise statement of the reasons for the appeal.
- B. The person requesting a hearing shall file the Request for a Hearing with the ASRS Office of the Director within 30 days after receiving a decision of the Director and a Notice of an Appealable Agency Action. The date the request is filed is established by the Director's date stamp on the face of the first page of the request.
- C. Upon receipt of the Request for a Hearing, the ASRS shall notify the Office of Administrative Hearings as required in A.R.S. § 41-1092.03.

R2-8-404. Board Decisions on Hearings before the Office of Administrative Hearings

A recommended decision from the Office of Administrative Hearings that is sent to ASRS at least 30 days before the Board's next regular monthly meeting, shall be reviewed by the Board at that monthly meeting. At the monthly meeting, the Board shall render a decision to accept, reject, or modify the findings of fact, conclusions of law and recommendations in whole or in part. If the Board modifies or rejects a recommended decision, the Board shall state the reasons for the modification or rejection. The Board shall deliver the Board's final decision to the Office of Administrative Hearings within five days after the monthly meeting at which the Board made the final decision.

R2-8-405. Rehearing; Review of a Final Decision

- A. Except as provided in subsection (H), any party in an appealable agency action aggrieved by a final decision may file with the Board a written motion for rehearing or review of the final decision specifying the particular grounds not later than 30 days after service of the decision.
- B. A party may amend a motion for rehearing or review at any time before the Board rules on the motion. A party may file a response within 15 days after the motion or amended motion is filed. The Board may require the filing of written briefs upon the issues raised in the motion and may provide for oral argument.
- C. The Board may grant a rehearing or review of a decision for any of the following causes materially affecting the moving party's rights:
 - 1. Irregularity in the administrative proceedings of the agency or the hearing officer, or any order or abuse of discretion that deprives the moving party of a fair hearing;
 - 2. Misconduct of the Board, the hearing officer, or the prevailing party;
 - 3. Accident or surprise that could not have been prevented by ordinary prudence;
 - 4. Newly discovered material evidence that could not with reasonable diligence have been discovered and produced at the original hearing;
 - 5. Excessive or insufficient penalties;
 - 6. Error in the admission or rejection of evidence or other errors of law occurring at the administrative hearing; or
 - 7. That the decision is not justified by the evidence or is contrary to law.
- D. The Board may affirm or modify the decision or grant a rehearing or review to all or any of the parties on all or part of the issues for any of the reasons in subsection (C). An order granting a rehearing or review shall specify with particularity the grounds for the order.
- E. Not later than 10 days after the decision, the Board may, after giving each party notice and an opportunity to be heard, order a rehearing or review of its decision for any reason for which it might have granted a rehearing or review on motion of a party. After giving the parties or their counsel notice and an opportunity to be heard on the matter, the Board may grant a motion for rehearing or review for a reason not stated in the motion. In either case, the order granting a rehearing or review shall specify the grounds on which it is granted.
- F. When a motion for rehearing or review is based upon an affidavit, the affidavit shall be filed with the motion. An opposing party may, within 15 days after filing, file an opposing affidavit. The Board may extend the period for filing an opposing affidavit for not more than 20 days for good cause shown or by written stipulation of the parties. The Board may permit a reply affidavit.
- G. The Board shall rule on the motion within 15 days after the response to the motion is filed or if a response is not filed, within five days of the expiration of the response period.
- H. If the Board makes a specific finding that the immediate effectiveness of a particular decision is necessary for the preservation of the public peace, health, and safety and that a rehearing or review of the decision is impracticable, unnecessary, or contrary to the public interest, the decision may be issued as a final decision without an opportunity for a rehearing or review. If a decision is issued as a final decision without an opportunity for rehearing or review, an application for judicial review of the decision may be made within the time limits permitted for applications for judicial review of the Board's final decisions.

A.R.S. § 41-1092. Definitions

In this article, unless the context otherwise requires:

1. "Administrative law judge" means an individual or an agency head, board or commission that sits as an administrative law judge, that conducts administrative hearings in a contested case or an appealable agency action and that makes decisions regarding the contested case or appealable agency action.
2. "Administrative law judge decision" means the findings of fact, conclusions of law and recommendations or decisions issued by an administrative law judge.
3. **"Appealable agency action" means an action that determines the legal rights, duties or privileges of a party** and that is not a contested case. Appealable agency actions do not include interim orders by self-supporting regulatory boards, rules, orders, standards or statements of policy of general application issued by an administrative agency to implement, interpret or make specific the legislation enforced or administered by it or clarifications of interpretation, nor does it mean or include rules concerning the internal management of the agency that do not affect private rights or interests. For the purposes of this paragraph, administrative hearing does not include a public hearing held for the purpose of receiving public comment on a proposed agency action.
4. "Director" means the director of the office of administrative hearings.
5. "Final administrative decision" means a decision by an agency that is subject to judicial review pursuant to title 12, chapter 7, article 6.
6. "Office" means the office of administrative hearings.
7. "Self-supporting regulatory board" means any one of the following:
 - (a) The Arizona state board of accountancy.
 - (b) The state board of appraisal.
 - (c) The board of barbers.
 - (d) The board of behavioral health examiners.
 - (e) The Arizona state boxing and mixed martial arts commission.
 - (f) The state board of chiropractic examiners.
 - (g) The board of cosmetology.
 - (h) The state board of dental examiners.
 - (i) The state board of funeral directors and embalmers.
 - (j) The Arizona game and fish commission.
 - (k) The board of homeopathic and integrated medicine examiners.
 - (l) The Arizona medical board.
 - (m) The naturopathic physicians medical board.
 - (n) The state board of nursing.
 - (o) The board of examiners of nursing care institution administrators and adult care home managers.
 - (p) The board of occupational therapy examiners.
 - (q) The state board of dispensing opticians.
 - (r) The state board of optometry.
 - (s) The Arizona board of osteopathic examiners in medicine and surgery.
 - (t) The Arizona peace officer standards and training board.
 - (u) The Arizona state board of pharmacy.
 - (v) The board of physical therapy.
 - (w) The state board of podiatry examiners.
 - (x) The state board for private postsecondary education.
 - (y) The state board of psychologist examiners.
 - (z) The board of respiratory care examiners.
 - (aa) The office of pest management.
 - (bb) The state board of technical registration.
 - (cc) The Arizona state veterinary medical examining board.

- (dd) The acupuncture board of examiners.
- (ee) The Arizona regulatory board of physician assistants.
- (ff) The board of athletic training.
- (gg) The board of massage therapy.

A.R.S. § 41-1092.01. Office of administrative hearings; director; powers and duties; fund

A. An office of administrative hearings is established.

B. The governor shall appoint the director pursuant to section 38-211. At a minimum, the director shall have the experience necessary for appointment as an administrative law judge. The director also shall possess supervisory, management and administrative skills, as well as knowledge and experience relating to administrative law.

C. The director shall:

1. Serve as the chief administrative law judge of the office.
2. Make and execute the contracts and other instruments that are necessary to perform the director's duties.
3. Subject to chapter 4, article 4 of this title, hire employees, including full-time administrative law judges, and contract for special services, including temporary administrative law judges, that are necessary to carry out this article. An administrative law judge employed or contracted by the office shall have graduated from an accredited college of law or shall have at least two years of administrative or managerial experience in the subject matter or agency section the administrative law judge is assigned to in the office.
4. Make rules that are necessary to carry out this article, including rules governing ex parte communications in contested cases.
5. Submit a report to the governor, speaker of the house of representatives and president of the senate by November 1 of each year describing the activities and accomplishments of the office. The director's annual report shall include a summary of the extent and effect of agencies' utilization of administrative law judges, court reporters and other personnel in proceedings under this article and recommendations for changes or improvements in the administrative procedure act or any agency's practice or policy with respect to the administrative procedure act.
6. Secure, compile and maintain all decisions, opinions or reports of administrative law judges issued pursuant to this article and the reference materials and supporting information that may be appropriate.
7. Develop, implement and maintain a program for the continuing training and education of administrative law judges and agencies in regard to their responsibilities under this article. The program shall require that an administrative law judge receive training in the technical and subject matter areas of the sections to which the administrative law judge is assigned.
8. Develop, implement and maintain a program of evaluation to aid the director in the evaluation of administrative law judges appointed pursuant to this article that includes comments received from the public.
9. Annually report the following to the governor, the president of the senate and the speaker of the house of representatives by December 1 for the prior fiscal year:
 - (a) The number of administrative law judge decisions rejected or modified by agency heads.
 - (b) By category, the number and disposition of motions filed pursuant to section 41-1092.07, subsection A to disqualify office administrative law judges for bias, prejudice, personal interest or lack of expertise.
 - (c) By agency, the number and type of violations of section 41-1009.

10. Schedule hearings pursuant to section 41-1092.05 upon the request of an agency or the filing of a notice of appeal pursuant to section 41-1092.03.

D. The director shall not require legal representation to appear before an administrative law judge.

E. Except as provided in subsection F of this section, all state agencies supported by state general fund sources, unless exempted by this article, and the registrar of contractors shall use the services and personnel of the office to conduct administrative hearings. All other agencies shall contract for services and personnel of the office to conduct administrative hearings.

F. An agency head, board or commission that directly conducts an administrative hearing as an administrative law judge is not required to use the services and personnel of the office for that hearing.

G. Each state agency, and each political subdivision contracting for office services pursuant to subsection I of this section, shall make its facilities available, as necessary, for use by the office in conducting proceedings pursuant to this article.

H. The office shall employ full-time administrative law judges to conduct hearings required by this article or other laws as follows:

1. The director shall assign administrative law judges from the office to an agency, on either a temporary or a permanent basis, at supervisory or other levels, to preside over contested cases and appealable agency actions in accordance with the special expertise of the administrative law judge in the subject matter of the agency.

2. The director shall establish the subject matter and agency sections within the office that are necessary to carry out this article. Each subject matter and agency section shall provide training in the technical and subject matter areas of the section as prescribed in subsection C, paragraph 7 of this section.

I. If the office cannot furnish an office administrative law judge promptly in response to an agency request, the director may contract with qualified individuals to serve as temporary administrative law judges. These temporary administrative law judges are not employees of this state.

J. The office may provide administrative law judges on a contract basis to any governmental entity to conduct any hearing not covered by this article. The director may enter into contracts with political subdivisions of this state, and these political subdivisions may contract with the director for the purpose of providing administrative law judges and reporters for administrative proceedings or informal dispute resolution. The contract may define the scope of the administrative law judge's duties. Those duties may include the preparation of findings, conclusions, decisions or recommended decisions or a recommendation for action by the political subdivision. For these services, the director shall request payment for services directly from the political subdivision for which the services are performed, and the director may accept payment on either an advance or reimbursable basis.

K. The office shall apply monies received pursuant to subsections E and J of this section to offset its actual costs for providing personnel and services.

A.R.S. § 41-1092.02. Appealable agency actions; application of procedural rules; exemption from article

A. This article applies to all contested cases as defined in section 41-1001 and all appealable agency actions, except contested cases with or appealable agency actions of:

1. The state department of corrections.
2. The board of executive clemency.
3. The industrial commission of Arizona.
4. The Arizona corporation commission.
5. The Arizona board of regents and institutions under its jurisdiction.
6. The state personnel board.
7. The department of juvenile corrections.
8. The department of transportation.
9. The department of economic security except as provided in section 46-458.
10. The department of revenue regarding:
 - (a) Income tax or withholding tax.
 - (b) Any tax issue related to information associated with the reporting of income tax or withholding tax unless the taxpayer requests in writing that this article apply and waives confidentiality under title 42, chapter 2, article 1.
11. The board of tax appeals.
12. The state board of equalization.
13. The state board of education, but only in connection with contested cases and appealable agency actions related to applications for issuance or renewal of a certificate and discipline of certificate holders pursuant to sections 15-203, 15-534, 15-534.01, 15-535, 15-545 and 15-550.
14. The board of fingerprinting.
15. The department of child safety except as provided in sections 8-506.01 and 8-811.

B. Unless waived by all parties, an administrative law judge shall conduct all hearings under this article, and the procedural rules set forth in this article and rules made by the director apply.

C. Except as provided in subsection A of this section:

1. A contested case heard by the office of administrative hearings regarding taxes administered under title 42 shall be subject to the provisions under section 42-1251.
2. A final decision of the office of administrative hearings regarding taxes administered under title 42 may be appealed by either party to the director of the department of revenue, or a taxpayer may file and appeal directly to the board of tax appeals pursuant to section 42-1253.

D. Except as provided in subsections A, B, E, F and G of this section and notwithstanding any other administrative proceeding or judicial review process established in statute or administrative rule, this article applies to all appealable agency actions and to all contested cases.

E. Except for a contested case or an appealable agency action regarding unclaimed property, sections 41-1092.03, 41-1092.08 and 41-1092.09 do not apply to the department of revenue.

F. The board of appeals established by section 37-213 is exempt from:

1. The time frames for hearings and decisions provided in section 41-1092.05, subsection A, section 41-1092.08 and section 41-1092.09.

2. The requirement in section 41-1092.06, subsection A to hold an informal settlement conference at the appellant's request if the sole subject of an appeal pursuant to section 37-215 is the estimate of value reported in an appraisal of lands or improvements.

G. Auction protest procedures pursuant to title 37, chapter 2, article 4.1 are exempt from this article.

A.R.S. § 41-1092.03. Notice of appealable agency action or contested case; hearing; informal settlement conference; applicability

A. Except as provided in subsection D of this section, an agency shall serve notice of an appealable agency action or contested case pursuant to section 41-1092.04. The notice shall:

1. Identify the statute or rule that is alleged to have been violated or on which the action is based.
2. Identify with reasonable particularity the nature of any alleged violation, including, if applicable, the conduct or activity constituting the violation.
3. Include a description of the party's right to request a hearing on the appealable agency action or contested case.
4. Include a description of the party's right to request an informal settlement conference pursuant to section 41-1092.06.

B. A party may obtain a hearing on an appealable agency action or contested case by filing a notice of appeal or request for a hearing with the agency within thirty days after receiving the notice prescribed in subsection A of this section. The notice of appeal or request for a hearing may be filed by a party whose legal rights, duties or privileges were determined by the appealable agency action or contested case. A notice of appeal or request for a hearing also may be filed by a party who will be adversely affected by the appealable agency action or contested case and who exercised any right provided by law to comment on the action being appealed or contested, provided that the grounds for the notice of appeal or request for a hearing are limited to issues raised in that party's comments. The notice of appeal or request for a hearing shall identify the party, the party's address, the agency and the action being appealed or contested and shall contain a concise statement of the reasons for the appeal or request for a hearing. The agency shall notify the office of the appeal or request for a hearing and the office shall schedule an appeal or contested case hearing pursuant to section 41-1092.05, except as provided in section 41-1092.01, subsection F.

C. If good cause is shown an agency head may accept an appeal or request for a hearing that is not filed in a timely manner.

D. This section does not apply to a contested case if the agency:

1. Initiates the contested case hearing pursuant to law other than this chapter and not in response to a request by another party.
2. Is not required by law, other than this chapter, to provide an opportunity for an administrative hearing before taking action that determines the legal rights, duties or privileges of an applicant for a license.

A.R.S. § 41-1092.04. Service of documents

Unless otherwise provided in this article, every notice or decision under this article shall be served by personal delivery or certified mail, return receipt requested, or by any other method reasonably calculated to effect actual notice on the agency and every other party to the action to the party's last address of record with the agency. Each party shall inform the agency and the office of any change of address within five days of the change.

A.R.S. § 41-1092.05. Scheduling of hearings; prehearing conferences

A. Except as provided in subsections B and C, hearings for:

1. Appealable agency actions shall be held within sixty days after the notice of appeal is filed.

2. Contested cases shall be held within sixty days after the agency's request for a hearing.

B. Hearings for appealable agency actions of or contested cases with self-supporting regulatory boards that meet quarterly or less frequently shall be held at the next meeting of the board after the board receives the written decision of an administrative law judge or the issuance of the notice of hearing, except that:

1. If the decision of the administrative law judge is received or the notice of hearing is issued within thirty days before the board meets, the hearing shall be held at the following meeting of the board.

2. If good cause is shown, the hearing may be held at a later meeting of the board.

C. The date scheduled for the hearing may be advanced or delayed on the agreement of the parties or on a showing of good cause.

D. The agency shall prepare and serve a notice of hearing on all parties to the appeal or contested case at least thirty days before the hearing. The notice shall include:

1. A statement of the time, place and nature of the hearing.

2. A statement of the legal authority and jurisdiction under which the hearing is to be held.

3. A reference to the particular sections of the statutes and rules involved.

4. A short and plain statement of the matters asserted. If the agency or other party is unable to state the matters in detail at the time the notice is served, the initial notice may be limited to a statement of the issues involved. After the initial notice and on application, a more definite and detailed statement shall be furnished.

E. Notwithstanding subsection D, a hearing shall be expedited as provided by law or upon a showing of extraordinary circumstances or the possibility of irreparable harm if the parties to the appeal or contested case have actual notice of the hearing date. Any party to the appeal or contested case may file a motion with the director asserting the party's right to an expedited hearing. The right to an expedited hearing shall be listed on any abatement order. The Arizona health care cost containment system administration may file a motion with every member grievance and eligibility appeal that cites federal law and that requests that a hearing be set within thirty days after the motion is filed.

F. Prehearing conferences may be held to:

1. Clarify or limit procedural, legal or factual issues.

2. Consider amendments to any pleadings.

3. Identify and exchange lists of witnesses and exhibits intended to be introduced at the hearing.
4. Obtain stipulations or rulings regarding testimony, exhibits, facts or law.
5. Schedule deadlines, hearing dates and locations if not previously set.
6. Allow the parties opportunity to discuss settlement.

A.R.S. § 41-1092.06. Appeals of agency actions and contested cases; informal settlement conferences; applicability

A. If requested by the appellant of an appealable agency action or the respondent in a contested case, the agency shall hold an informal settlement conference within fifteen days after receiving the request. A request for an informal settlement conference shall be in writing and shall be filed with the agency no later than twenty days before the hearing. If an informal settlement conference is requested, the agency shall notify the office of the request and the outcome of the conference, except as provided in section 41-1092.01, subsection F. The request for an informal settlement conference does not toll the sixty day period in which the administrative hearing is to be held pursuant to section 41-1092.05.

B. If an informal settlement conference is held, a person with the authority to act on behalf of the agency must represent the agency at the conference. The agency representative shall notify the appellant in writing that statements, either written or oral, made by the appellant at the conference, including a written document, created or expressed solely for the purpose of settlement negotiations are inadmissible in any subsequent administrative hearing. The parties participating in the settlement conference shall waive their right to object to the participation of the agency representative in the final administrative decision.

A.R.S. § 41-1092.07. Hearings

A. A party to a contested case or appealable agency action may file a nonperemptory motion with the director to disqualify an office administrative law judge from conducting a hearing for bias, prejudice, personal interest or lack of technical expertise necessary for a hearing.

B. The parties to a contested case or appealable agency action have the right to be represented by counsel or to proceed without counsel, to submit evidence and to cross-examine witnesses.

C. The administrative law judge may issue subpoenas to compel the attendance of witnesses and the production of documents. The subpoenas shall be served and, on application to the superior court, enforced in the manner provided by law for the service and enforcement of subpoenas in civil matters. The administrative law judge may administer oaths and affirmations to witnesses.

D. All parties shall have the opportunity to respond and present evidence and argument on all relevant issues. All relevant evidence is admissible, but the administrative law judge may exclude evidence if its probative value is outweighed by the danger of unfair prejudice, by confusion of the issues or by considerations of undue delay, waste of time or needless presentation of cumulative evidence. The administrative law judge shall exercise reasonable

control over the manner and order of cross-examining witnesses and presenting evidence to make the cross-examination and presentation effective for ascertaining the truth, avoiding needless consumption of time and protecting witnesses from harassment or undue embarrassment.

E. All hearings shall be recorded. The administrative law judge shall secure either a court reporter or an electronic means of producing a clear and accurate record of the proceeding at the agency's expense. Any party that requests a transcript of the proceeding shall pay the costs of the transcript to the court reporter or other transcriber.

F. Unless otherwise provided by law, the following apply:

1. A hearing may be conducted in an informal manner and without adherence to the rules of evidence required in judicial proceedings. Neither the manner of conducting the hearing nor the failure to adhere to the rules of evidence required in judicial proceedings is grounds for reversing any administrative decision or order if the evidence supporting the decision or order is substantial, reliable and probative.
2. Copies of documentary evidence may be received in the discretion of the administrative law judge. On request, parties shall be given an opportunity to compare the copy with the original.
3. Notice may be taken of judicially cognizable facts. In addition, notice may be taken of generally recognized technical or scientific facts within the agency's specialized knowledge. Parties shall be notified either before or during the hearing or by reference in preliminary reports or otherwise of the material noticed including any staff memoranda or data and they shall be afforded an opportunity to contest the material so noticed. The agency's experience, technical competence and specialized knowledge may be used in the evaluation of the evidence.
4. On application of a party or the agency and for use as evidence, the administrative law judge may permit a deposition to be taken, in the manner and on the terms designated by the administrative law judge, of a witness who cannot be subpoenaed or who is unable to attend the hearing. Subpoenas for the production of documents may be ordered by the administrative law judge if the party seeking the discovery demonstrates that the party has reasonable need of the materials being sought. All provisions of law compelling a person under subpoena to testify are applicable. Fees for attendance as a witness shall be the same as for a witness in court, unless otherwise provided by law or agency rule. Notwithstanding section 12-2212, subpoenas, depositions or other discovery shall not be permitted except as provided by this paragraph or subsection C of this section.
5. Informal disposition may be made by stipulation, agreed settlement, consent order or default.
6. Findings of fact shall be based exclusively on the evidence and on matters officially noticed.
- 7. A final administrative decision shall include findings of fact and conclusions of law, separately stated. Findings of fact, if set forth in statutory language, shall be accompanied by a concise and explicit statement of the underlying facts supporting the findings.**

G. Except as otherwise provided by law:

1. At a hearing on an agency's denial of a license or permit or a denial of an application or request for modification of a license or permit, the applicant has the burden of persuasion.
2. At a hearing on an agency action to suspend, revoke, terminate or modify on its own initiative material conditions of a license or permit, the agency has the burden of persuasion.
3. At a hearing on an agency's imposition of fees or penalties or any agency compliance order, the agency has the burden of persuasion.

4. At a hearing held pursuant to title 41, chapter 23 or 24, the appellant or claimant has the burden of persuasion.

H. Subsection G of this section does not affect the law governing burden of persuasion in an agency denial of, or refusal to issue, a license renewal.

A.R.S. § 41-1092.08. Final administrative decisions; review

A. The administrative law judge of the office shall issue a written decision within twenty days after the hearing is concluded. The written decision shall contain a concise explanation of the reasons supporting the decision. The administrative law judge shall serve a copy of the decision on the agency. Upon request of the agency, the office shall also transmit to the agency the record of the hearing as described in section 12-904, except as provided in section 41-1092.01, subsection F.

B. Within thirty days after the date the office sends a copy of the administrative law judge's decision to the head of the agency, executive director, board or commission, the head of the agency, executive director, board or commission may review the decision and accept, reject or modify it. If the head of the agency, executive director, board or commission declines to review the administrative law judge's decision, the agency shall serve a copy of the decision on all parties. If the head of the agency, executive director, board or commission rejects or modifies the decision the agency head, executive director, board or commission must file with the office, except as provided in section 41-1092.01, subsection F, and serve on all parties a copy of the administrative law judge's decision with the rejection or modification and a written justification setting forth the reasons for the rejection or modification.

C. A board or commission whose members are appointed by the governor may review the decision of the agency head, as provided by law, and make the final administrative decision.

D. Except as otherwise provided in this subsection, **if the head of the agency or a board or commission does not accept, reject or modify the administrative law judge's decision within thirty days after the date the office sends a copy of the administrative law judge's decision to the head of the agency, executive director, board or commission, as evidenced by receipt of such action by the office by the thirtieth day the office shall certify the administrative law judge's decision as the final administrative decision.** If the board or commission meets monthly or less frequently, if the office sends the administrative law judge's decision at least thirty days before the next meeting of the board or commission and if the board or commission does not accept, reject or modify the administrative law judge's decision at the next meeting of the board or commission, as evidenced by receipt of such action by the office within five days after the meeting the office shall certify the administrative law judge's decision as the final administrative decision.

E. For the purposes of subsections B and D of this section, a copy of the administrative law judge's decision is sent on personal delivery of the decision or five days after the decision is mailed to the head of the agency, executive director, board or commission.

F. The decision of the agency head is the final administrative decision unless either:

1. The agency head, executive director, board or commission does not review the administrative law judge's decision pursuant to subsection B of this section or does not

reject or modify the administrative law judge's decision as provided in subsection D of this section, in which case the administrative law judge's decision is the final administrative decision.

2. The decision of the agency head is subject to review pursuant to subsection C of this section.

G. If a board or commission whose members are appointed by the governor makes the final administrative decision as an administrative law judge or upon review of the decision of the agency head, the decision is not subject to review by the head of the agency.

H. A party may appeal a final administrative decision pursuant to title 12, chapter 7, article 6, except as provided in section 41-1092.09, subsection B and except that if a party has not requested a hearing upon receipt of a notice of appealable agency action pursuant to section 41-1092.03, the appealable agency action is not subject to judicial review.

I. This section does not apply to the Arizona peace officer standards and training board established by section 41-1821.

A.R.S. § 41-1092.09. Rehearing or review

A. Except as provided in subsection B of this section:

1. A party may file a motion for rehearing or review within thirty days after service of the final administrative decision.

2. The opposing party may file a response to the motion for rehearing within fifteen days after the date the motion for rehearing is filed.

3. After a hearing has been held and a final administrative decision has been entered pursuant to section 41-1092.08, a party is not required to file a motion for rehearing or review of the decision in order to exhaust the party's administrative remedies.

B. A party to an appealable agency action of or contested case with a self-supporting regulatory board shall exhaust the party's administrative remedies by filing a motion for rehearing or review within thirty days after the service of the administrative decision that is subject to rehearing or review in order to be eligible for judicial review pursuant to title 12, chapter 7, article 6. The board shall notify the parties in the administrative decision that is subject to rehearing or review that a failure to file a motion for rehearing or review within thirty days after service of the decision has the effect of prohibiting the parties from seeking judicial review of the board's decision.

C. Service is complete on personal service or five days after the date that the final administrative decision is mailed to the party's last known address.

D. Except as provided in this subsection, the agency head, executive director, board or commission shall rule on the motion within fifteen days after the response to the motion is filed or, if a response is not filed, within five days of the expiration of the response period. A self-supporting regulatory board shall rule on the motion within fifteen days after the response to the motion is filed or at the board's next meeting after the motion is received, whichever is later.

A.R.S. § 41-1092.10. Compulsory testimony; privilege against self-incrimination

A. A person may not refuse to attend and testify or produce evidence sought by an agency in an action, proceeding or investigation instituted by or before the agency on the ground that the testimony or evidence, documentary or otherwise, required of the person may tend to incriminate the person or subject the person to a penalty or forfeiture unless it constitutes the compelled testimony or the private papers of the person that would be privileged evidence either pursuant to the fifth amendment of the Constitution of the United States or article II, section 10, Constitution of Arizona, and the person claims the privilege before the production of the testimony or papers.

B. If a person asserts the privilege against self-incrimination and the agency seeks to compel production of the testimony or documents sought, the office or agency as provided in section 41-1092.01, subsection F may issue, with the prior written approval of the attorney general, a written order compelling the testimony or production of documents in proceedings and investigations before the office or agency as provided in section 41-1092.01, subsection F or apply to the appropriate court for such an order in other actions or proceedings.

C. Evidence produced pursuant to subsection B of this section is not admissible in evidence or usable in any manner in a criminal prosecution, except for perjury, false swearing, tampering with physical evidence or any other offense committed in connection with the appearance made pursuant to this section against the person testifying or the person producing the person's private papers.

A.R.S. § 41-1092.11. Licenses; renewal; revocation; suspension; annulment; withdrawal

A. If a licensee makes timely and sufficient application for the renewal of a license or a new license with reference to any activity of a continuing nature, the existing license does not expire until the application has been finally determined by the agency, and, in case the application is denied or the terms of the new license limited, until the last day for seeking review of the agency order or a later date fixed by order of the reviewing court.

B. Revocation, suspension, annulment or withdrawal of any license is not lawful unless, before the action, the agency provides the licensee with notice and an opportunity for a hearing in accordance with this article. If the agency finds that the public health, safety or welfare imperatively requires emergency action, and incorporates a finding to that effect in its order, the agency may order summary suspension of a license pending proceedings for revocation or other action. These proceedings shall be promptly instituted and determined.

A.R.S. § 41-1092.12. Private right of action; recovery of costs and fees; definitions

A. If an agency takes an action against a party that is arbitrary, capricious or not in accordance with law, the action is an appealable agency action if all of the following apply:
1. Within ten days after the action that is arbitrary, capricious or not in accordance with law, the party notifies the director of the agency in writing of the party's intent to file a claim pursuant to this section. This notice shall include a description of the action the party claims

to be arbitrary, capricious or not in accordance with law and reasons why the action is arbitrary, capricious or not in accordance with law.

2. The agency continues the action that is arbitrary, capricious or not in accordance with law more than ten days after the agency receives the notice.

3. The action is not excluded from the definition of appealable agency action as defined in section 41-1092.

B. This section only applies if an administrative remedy or an administrative or a judicial appeal of final agency action is not otherwise provided by law.

C. If the party prevails, the agency shall pay reasonable costs and fees to the party from any monies appropriated to the agency and available for that purpose or from other operating monies of the agency. If the agency fails or refuses to pay the award within fifteen days after the demand, and if no further review or appeal of the award is pending, the prevailing party may file a claim with the department of administration. The department of administration shall pay the claim within thirty days in the same manner as an uninsured property loss under title 41, chapter 3.1, article 1, except that the agency is responsible for the total amount awarded and shall pay it from its operating monies. If the agency had appropriated monies available for paying the award at the time it failed or refused to pay, the legislature shall reduce the agency's operating appropriation for the following fiscal year by the amount of the award and shall appropriate that amount to the department of administration as reimbursement for the loss.

D. If the administrative law judge determines that the appealable agency action is frivolous, the administrative law judge may require the party to pay reasonable costs and fees to the agency in responding to the appeal filed before the office of administrative hearings.

E. For the purposes of this section:

1. "Action against the party" means any of the following that results in the expenditure of costs and fees:

(a) A decision.

(b) An inspection.

(c) An investigation.

(d) The entry of private property.

2. "Agency" means the department of environmental quality established pursuant to title 49, chapter 1, article 1.

3. "Costs and fees" means reasonable attorney and professional fees.

4. "Party" means an individual, partnership, corporation, association and public or private organization at whom the action was directed and who has expended costs and fees as a result of the action against the party.

A.R.S. § 12-910. Scope of review

A. An action to review a final administrative decision shall be heard and determined with convenient speed. If requested by a party to an action within thirty days after filing a notice of appeal, the court shall hold an evidentiary hearing, including testimony and argument, to the extent necessary to make the determination required by subsection E of this section. The court may hear testimony from witnesses who testified at the administrative hearing and witnesses who were not called to testify at the administrative hearing.

B. Relevant and admissible exhibits and testimony that were not offered during the administrative hearing shall be admitted, and objections that a party failed to make to evidence offered at the administrative hearing shall be considered, unless either of the following is true:

1. The exhibit, testimony or objection was withheld for purposes of delay, harassment or other improper purpose.
2. Allowing admission of the exhibit or testimony or consideration of the objection would cause substantial prejudice to another party.

C. For review of final administrative decisions of agencies that are exempt from sections 41-1092.03 through 41-1092.11, pursuant to section 41-1092.02, the trial shall be de novo if trial de novo is demanded in the notice of appeal or motion of an appellee other than the agency and if a hearing was not held by the agency or the proceedings before the agency were not stenographically reported or mechanically recorded so that a transcript might be made. On demand of any party, if a trial de novo is available under this section, it may be with a jury, except that a trial of an administrative decision under section 25-522 shall be to the court.

D. The record in the superior court shall consist of the record of the administrative proceeding, and the record of any evidentiary hearing, or the record of the trial de novo.

E. The court may affirm, reverse, modify or vacate and remand the agency action. **The court shall affirm the agency action unless after reviewing the administrative record and supplementing evidence presented at the evidentiary hearing the court concludes that the action is not supported by substantial evidence, is contrary to law, is arbitrary and capricious or is an abuse of discretion.**