

# Agenda Item #5



1 5. ASRS rejected Appellant's request on November 24, 2014, because the October  
2 2014 request was made more than fifteen (15) years after the employment from August  
3 1998, to May 1999, with the MCCCCD that Appellant was seeking to purchase and  
4 because Appellant had failed to provide credible evidence to support her request for  
5 correction of salary history and service credit.

6 6. On December 2, 2014, Appellant disagreed with the rejection and filed an "Appeal  
7 Letter" with the Director of ASRS.<sup>2</sup>

8 7. On December 12, 2014, the Assistant Director of ASRS's Member Services Division  
9 issued a letter again rejecting Appellant's request. The letter provided, in relevant part,  
10 as follows:

11 As part of your appeal, we researched your account to determine  
12 if you had inquired into purchasing the 1998-1999 time with  
13 MCCCCD as [Contributions Not Withheld ("CNW")] back in 2001.  
14 Our research shows that while you did inquire into purchasing this  
15 service in September 2001, you were looking to purchase the  
16 service as [OPS Non Participatory ("OPSNP")], which confirmed  
17 in the affidavit you attached to your appeal as well as the copy of  
18 [the] affidavit the ASRS has in your records. During this  
19 timeframe, you also inquired about purchasing time from Texas  
20 A&M, Delgado Community College, and McNeese State  
21 University and received cost invoices for each of these requests.  
22 You then asked the ASRS to send you a Payroll Deduction  
23 Authorization (PDA) of all of the combined public service credit  
24 you were eligible for, which included the 1.00 year of service from  
25 MCCCCD. However, you elected not to purchase all of the service  
26 you were eligible [for] and instead bought .48 years from Texas  
27 A&M using a direct rollover and set up a PDA for 3.78 years from  
28 Texas A&M, which you are currently paying for.

29 Based on this information, we cannot agree with your assertion  
30 that you did not receive the cost invoice for the 1.00 year from  
MCCCCD for the 1998-1999 time period and further, we show that  
you only ever represented to ASRS that this service was OPSNP,  
not CNW. It was not until your recent conversations with ASRS  
that you claimed this service was potentially CNW. Any  
discussion of CNW in your account prior to September 29, 2014,  
was in reference to the .33 years of CNW you are eligible to  
purchase from MCCCCD during fiscal year 2000. While it is

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<sup>2</sup> See Exhibit H (12/02/14 Letter).

1 possible that your employer made an error and did not withhold  
2 contributions from your wages from August 1998 through May  
3 1999 when they should have, you are not eligible to purchase this  
4 service as CNW as the time in question happened more than 15  
5 years ago.

6 Even though you are not eligible to purchase the MCCCCD 1998-  
7 1999 service as CNW, you are still eligible to purchase up to .74  
8 years as OPSNP to add to your account. A.R.S. § 38-743(A),  
9 revised in the 2011 legislative session, limits a member in  
10 purchasing, "up to sixty months of credited service for this prior  
11 employment." Due to this limitation, because you have already  
12 purchased 4.26 years of public service between your rollover and  
13 your active PDA contract, you are currently only eligible to  
14 purchase the .74 years with MCCCCD.

15 14. On February 17, 2015, Appellant filed a Formal Appeal Letter with ASRS.<sup>3</sup>

16 15. ASRS referred the matter to the Office of Administrative Hearings, an  
17 independent agency, for an evidentiary hearing, which was held on May 5, 2015.

18 16. ASRS presented the testimony of its employee, Jenna Orozco, Management  
19 Analyst for ASRS.

#### 20 **Additional Hearing Evidence**

21 17. Ms. Khorsandi testified that she had 8 years of service at Texas A&M University  
22 that she requested to purchase. She stated that she also had teaching positions at  
23 various other universities and community colleges that she also requested to purchase,  
24 including that she worked as an adjunct professor from August 1998, to May 1999, with  
25 MCCCCD. Appellant said, "Yes, I definitely requested that to be purchased."<sup>4</sup>

26 18. Ms. Khorsandi testified that over the years since August 1998, to May 1999, she  
27 had a year of sabbatical and a year of leave of absence and that during that time, she  
28 went through a marriage and divorce. At some point she checked to "see what is  
29 going on with my retirement." Appellant stated that she found out that ASRS had not  
30 given her the year that on contribution not withheld and was maintaining that she did  
not qualify for it anymore because 15 years had passed. Ms. Khorsandi said that she

<sup>3</sup> See Exhibit J (2/17/15 Appeal).

<sup>4</sup> See 5/11/15 Hearing Transcript (Page 14, l 10.)

1 had records of the information that she had submitted, including the paycheck stub that she  
2 received from MCCCCD for the time period at issue.

3 19. Ms. Khorsandi testified that she had already applied for year of contribution not  
4 withheld (August 1998 to May 1999) in a timely manner in September 2001, and that the  
5 expiration of the 15 year time limit should not apply to her.

6 20. Jenna Orozco (hereinafter "Ms. Orozco"), a Member Advocate for ASRS,  
7 testified that service purchase is an option for members to be able to consolidate their  
8 years of public service. Ms. Orozco explained that there are two advantages of  
9 consolidating public service. The first advantage is reaching a graded multiplier earlier,  
10 thereby increasing benefits. The second advantage is that it enables members to retire  
11 earlier.

12 21. Ms. Orozco testified that the cost of purchasing service for prior public  
13 employment as articulated in A.R.S. § 38-743 is based on an actual present value,  
14 which takes into account the member's current age, years of service, and salary at the  
15 time of the request. It uses it in a formula to determine, based off those factors, the  
16 monies that ASRS must have on hand today to pay an increased monthly benefit that  
17 additional service will provide to the ASRS member in the future.

18 22. Ms. Orozco testified that under the Contributions Not Withheld statute, A.R.S. §  
19 38-738, if either a member or an employer comes to the ASRS and states that for a  
20 specific period of time an employee should have been eligible for ASRS membership  
21 and the employers should have submitted contributions for the member, a correcting  
22 mechanism allows for that service to be added into the account for the member. Ms.  
23 Orozco stated that the cost to the employee is simply the contributions that would have  
24 been made during that timeframe based on his or her salary during the period of  
25 employment. The cost for the employer is those same contributions, but also interest  
26 that has accrued on those contributions from the date of the employment to the date  
27 that the member requested to purchase the service.

28 23. Ms. Orozco testified that for ASRS to issue a Contributions Not Withheld invoice,  
29 ASRS must receive sufficient proof from the member that the time period in question is, in  
30 fact, a time during which an employer made an error and should have submitted

1 contributions to the ASRS for the member. Such proof would require either written  
2 verification from the employer that supports that information, along with payroll records,  
3 verification of hours worked, the intent of employment, the member's position, and whether  
4 that position was covered under Section 218 of the Social Security Agreement.

5 24. Ms. Orozco testified that if there was inadequate documentation or if the 15-year  
6 statute of limitations has passed, an ASRS member could still purchase that timeframe as  
7 other public service under the Contributions Not Withheld statute.

8 25. Ms. Orozco testified that the ASRS Other Public Service Affidavit that was submitted  
9 by Ms. Khorsandi during the same timeframe in which she submitted Other Public Service  
10 Affidavits.<sup>5</sup> Ms. Orozco said that the Appellant was requesting to purchase 9 months during  
11 fiscal years 1998 and 1999, which does equate to one year of service because Appellant  
12 was a school employee. Ms. Orozco stated that the ASRS awards one year of service for  
13 school employees who do not work over the summer.

14 26. Ms. Orozco testified that the documents that Appellant submitted, including check  
15 stubs, were too ambiguous to prove that she should be able to purchase service under the  
16 Contributions Not Withheld statute. The work load hours that is projected for each 2-week  
17 period lists as unusual, there are some periods that Appellant worked 40 hours a week,  
18 some that she worked 80, others that she worked over 200 hours a week. The actual salary  
19 awarded for that timeframe does not seem to equate to the hours worked. Ms. Orozco  
20 testified that because Appellant's evidence was ambiguous, it did not provide clear  
21 evidence of Contributions Not Withheld.

22 27. Ms. Orozco testified that ASRS reviewed Appellant's application and determined  
23 that because the timeframe was more than 15 years ago, Appellant was only eligible to  
24 purchase that time as Other Public Service Non-Participatory. Ms. Orozco stated that  
25 ASRS research showed that while Appellant did inquire into purchasing the service in  
26 September of 2001, the documentation indicated she was looking to purchase this  
27 service as Other Public Service, which was confirmed in the affidavit that she attached  
28 to her appeal, as well as the copy of the affidavit that ASRS had in its records.  
29 Appellant also inquired to purchase other multiple periods of time as Other Public  
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<sup>5</sup> See Exhibit E (Other Public Service Affidavit).

1 Service. Appellant asked the ASRS to send her a Payroll Reduction Authorization  
2 Contact for all the combined public service credit for which she was eligible, which  
3 included the 1.00 year of service from MCCCCD.

4 28. Ms. Orozco said that ASRS denied Appellant's appeal because it was outside the  
5 15-year timeframe, that 13 years had passed since Appellant had initiated her request, and  
6 that Appellant had initially indicated that the service was to be purchased as Other Public  
7 Service.

8 29. Ms. Orozco's testimony is found to be credible

### 9 **CONCLUSIONS OF LAW**

10 1. Ms. Khorsandi bears the burden of proof and, as such, must establish by a  
11 preponderance of the evidence that ASRS improperly denied her ability to purchase  
12 her employment from August 1998 to May 1999 with the Maricopa County Community  
13 College District as Other Public Service pursuant to A.R.S. § 38-743.<sup>6</sup>

14 2. "A preponderance of the evidence is such proof as convinces the trier of fact that  
15 the contention is more probably true than not."<sup>7</sup> A preponderance of the evidence is  
16 "evidence which is of greater weight or more convincing than evidence which is offered  
17 in opposition to it; that is, evidence which as a whole shows that the fact sought to be  
18 proved is more probable than not."<sup>8</sup>

19 3. A.R.S. § 38-743 provides as follows:

20 A. If an active member of ASRS or a member who is receiving  
21 benefits pursuant to section 38-797.07 was previously employed  
22 by the United States government, a state, territory,  
23 commonwealth, overseas possession or insular area of the United  
24 States or a political subdivision of a state, territory,  
25 commonwealth, overseas possession or insular area of the United  
26 States, excluding any time worked for a prison while the member  
27 was incarcerated, the member may receive up to sixty months of  
28 credited service for this prior employment if the member pays into  
29 ASRS the amount prescribed in subsection B of this section.

30 <sup>6</sup> See A.R.S. § 41-1092.07(G)(3); A.A.C. R2-19-119; see also *Vazanno v. Superior Court*, 74 Ariz. 369,  
249 P.2d 837 (1952).

<sup>7</sup> Morris K. Udall, ARIZONA LAW OF EVIDENCE § 5 (1960).

<sup>8</sup> BLACK'S LAW DICTIONARY 1182 (6<sup>th</sup> ed. 1990).

1 B. A member who elects to receive credit for service with the  
2 United States government, a state, territory, commonwealth,  
3 overseas possession or insular area of the United States or a  
4 political subdivision of a state, territory, commonwealth, overseas  
5 possession or insular area of the United States shall pay to ASRS  
6 an amount equal to the present value of the additional benefit that  
7 is derived from the purchased credited service using the actuarial  
8 assumptions that are approved by the board.

9 C. A member who previously was a member of another public  
10 employee retirement system and who receives or is eligible to  
11 receive retirement benefits from that system for any period of  
12 employment is ineligible to receive retirement benefits from ASRS  
13 for the same period.

14 D. A member shall have at least five years of credited service in  
15 ASRS before electing to receive credit for service pursuant to this  
16 section.

17 8. Ms. Khorsandi contacted ASRS in September 2001, to purchase her employment  
18 from August 1998, to May 1999, with the MCCCCD as Other Public Service pursuant to  
19 A.R.S. § 38-743. ASRS processed Appellant's request and issued a service purchase  
20 invoice number 240150 dated January 7, 2002, in the amount of \$7,448.72. The due  
21 date on the invoice was February 6, 2002. ASRS did not receive payment from  
22 Appellant by the due date of February 6, 2002. Appellant again contacted ASRS in  
23 October 2014, to purchase her employment from August 1998, to May 1999, with  
24 MCCCCD as Other Public Service pursuant to A.R.S. § 38-743. ASRS rejected  
25 Appellant's request on November 24, 2014, because the October 2014 request was  
26 made more than fifteen (15) years after than the employment from August 1998, to May  
27 1999, with MCCCCD that Appellant was seeking to purchase and because Appellant  
28 failed to provide credible evidence to support her request for correction of salary history  
29 and service credit.

30 9. The Administrative Law Judge concludes that the weight of the evidence  
established that ASRS properly denied Appellant's request to purchase her  
employment from August 1998, to May 1999, with the Maricopa County Community  
College District as Other Public Service pursuant to A.R.S. § 38-743. Therefore,

1 Appellant has not sustained her burden to establish by a preponderance of the  
2 evidence that ASRS improperly denied her request to purchase her employment from  
3 August 1998, to May 1999, with the Maricopa County Community College District as  
4 Other Public Service pursuant to A.R.S. § 38-743.

5 **RECOMMENDED ORDER**

6 Based on the foregoing, it is recommended that the ASRS Board affirm its denial  
7 of Appellant's appeal.

8 *In the event of certification of the Administrative Law Judge Decision by the*  
9 *Director of the Office of Administrative Hearings, the effective date of the Order will be*  
10 *five (5) days from the date of that certification.*

11 Done this day, June 3, 2015.

12 /s/ M. Douglas  
13 Administrative Law Judge

14 Transmitted electronically to:

15 Paul Matson, Director  
16 Arizona State Retirement System  
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Re: Mehrzad Khorsandi V. Arizona State Retirement System  
OAH Case No. 15F-013-ARB

The Arizona State Retirement System Board,

I will be attending in person, the August 28, ASRS Public Board Hearing, at 8:30 am at the address provided. The following is a summary of my position and my recommended motion to the board.

1. In Year 2001, I Filed all the necessary forms to purchase the year of service 1998-99, where I worked as adjunct faculty for Maricopa Community Colleges at two campuses of Glendale college and Phoenix college.
2. At the time, ASRS representative, Amy Scalet, brought to my attention that I did not need to purchase that year, instead I could gather necessary information to do a Contribution Not Withheld (CNW) for it. Therefore, she had me get all my pay check information from Maricopa Community Colleges office from them and filled out a form and submitted them to her along with forms for the purchases of many other years of services.
3. Meanwhile I was able to rollover some money I had at a 403b plan with a company here in town to ASRS. Ms. Scalet who has looked at my paycheck stubs for that year, told me the money you just rolled over is enough to pay for purchase of the year of CNW and more, which they will end up giving me credit for.
4. After reviewing all the years I have submitted to purchase, ASRS gave me purchase amounts, for each one of services I have submitted and gave me time to make my payment towards them or if I chose to go to the methods of regular paycheck deduction, I should have let them know so they calculate that too. Meanwhile, we realized that my 8 years of services from Texas A&M would not transfer at all, because of reasons beyond my control. At the same time, Ms Scalet realized that she has mistakenly created a year of purchase for the year she wanted me to do CNW.
5. Therefore, at the time of calculating the paycheck deduction amount, she ended up taking the 8 years of Texas A&M and the one year of purchase she mistakenly had created for the CNW year of 1998-99. So those 9 years were not counted at all. But the rest were calculated for paycheck deduction, which I am still paying toward it.
6. I was ready to purchase all of those 8 years of Texas A&M, there wouldn't be any reasons not to purchase this one year if I was told to purchase it. But she pulled it out so that I could use my rollover money to pay for it as CNW, and kind of save some money there. In fact, that is how I have developed lots trust in the ASRS system, by the fair way she dealt with me. In fact I recently purchased a year of sabbatical for the full price of \$37634.86 dollars. So I do not see, how I would not do it if they have asked me to purchase it then.

7. At the same time, she told me she will take care of the CNW year of 1998-99 and will let me know about it. So I am under the impression that I am a member of ASRS, and Ms. Scalet is not going to forget about it. There are records of my application and my rollover money is recorded at ASRS. Therefore nothing should go wrong. At least that is the impression that Ms. Scalet has given me. I felt like my money was in a bank with them as far as the amount of trust I had in them.

8. Many things have happened to my life since then. I got married, went to a year of sabbatical and a year of leave of absence to Canada, got divorced. On Oct. of 2014, I contacted ASRS about the year of 1998-99. ASRS told me that year is older than 15 years now and as per the new law I could not do CNW for it any longer.

9. Meanwhile, ASRS has computerized and placed lots of their records on computer, but many of my records they have lost and I had to provide them to ASRS. Also Ms. Scalet no longer is with ASRS, either.

10. The ASRS says it is too expensive for Maricopa Community College (MCCCD) to have to pay for all those years. I have informed MCCCD of my intention of purchasing that year as CNW in 2001, when I got my pay check stubs from them.

11. Besides if I have come back to ASRS office only 5 months earlier, and looked into this MCCCD still had to pay almost the same amount. But I argue that this new policy should not even include me because I have applied for the year as CNW in timely manner, at the year 2001. Just because during these times, ASRS got computerized and lost my records and Ms. Scalet is no longer with ASRS, I should not be punished for it.

**I would recommend the motion to the board to please honor me the purchase of the year 1998-99 as CNW according to the year I applied for, which has application date of 2001.**

**I also move that ASRS Board to apply the new Law to the years after the year the law became effective and not to the years that this law was not even in effect.**



# ARIZONA STATE RETIREMENT SYSTEM

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Paul Matson  
Director

## MEMORANDUM

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

**FROM:** Mr. Paul Matson, Director  
Ms. Jothi Beljan, Assistant Attorney General

**DATE:** August 14, 2015

**RE:** **Agenda Item #5:** Approval, Modification, or Rejection of Administrative Law Judge's Decision Regarding Ms. Mehrzad Khorsandi's Appeal to Purchase August 1998 through May 1999 Employment as Contributions Not Withheld Service

### Purpose

To approve, modify or reject the Administrative Law Judge's Decision to uphold the Director's determination that Mehrzad Khorsandi is denied purchasing her employment from August 1998 to May 1999 with Maricopa County Community College District as a Contributions Not Withheld ("CNW") service pursuant to A.R.S. § 38-738.

### Applicable Law

The ASRS denied Ms. Khorsandi's request in October 2014 to purchase her August 1998 to May 1999 employment as a CNW because 1) A.R.S. § 38-738(C) and A.A.C. R2-8-702(A) limits purchase of eligible verified service to service that occurred less than or equal to fifteen (15) years before the date the initiator of the request provides the ASRS with credible evidence of eligibility and 2) Ms. Khorsandi failed to provide credible evidence to support her request for correction of salary history and service credit as required by A.R.S. § 38-738(B)(7).

### Facts of the Case

- A. Ms. Khorsandi contacted the ASRS in September 2001 to purchase her employment from August 1998 to May 1999 with Maricopa County Community College District as Other Public Service pursuant to A.R.S. § 38-743.
- B. The ASRS processed Ms. Khorsandi's request and issued a service purchase invoice number 240150 dated January 7, 2002 in the amount of \$7,448.72. The due date for payment stated on the invoice was February 6, 2002.
- C. The ASRS did not receive payment from Ms. Khorsandi by the due date February 6, 2002.
- D. In October 2014, Ms. Khorsandi contacted the ASRS to purchase her employment from August 1998 to May 1999 with Maricopa County Community College District as a CNW purchase pursuant to A.R.S. § 38-738.
- E. The ASRS rejected Ms. Khorsandi's request on November 24, 2014 because A.R.S. § 38-738(C) and A.A.C. R2-8-702(A) limits purchase of eligible verified service to service that

occurred less than or equal to fifteen years before the date the initiator of the request provides the ASRS with credible evidence of eligibility. The request in October 2014 was placed more than fifteen years than the employment in August 1998 to May 1999 that the Ms. Khorsandi was seeking to purchase, and she failed to provide credible evidence for the request for correction of salary history and service credit.

- F. Ms. Khorsandi may purchase her employment from August 1998 to May 1999 with Maricopa County Community College District as Other Public Service pursuant to A.R.S. § 38-743. See A.R.S. § 38-738(D). The cost to Ms. Khorsandi of purchasing the employment as Other Public Service is approximately \$37,000 to \$39,000. The cost to Ms. Khorsandi of purchasing the employment as CNW service is approximately \$2,000, and the cost to her employer, Maricopa County Community College District, is approximately \$11,700.
- G. In his Recommended Decision dated June 3, 2015, Administrative Law Judge Michael Douglas upheld the ASRS Director's determination and denied Ms. Mehrzad Khorsandi's appeal.

### **ASRS Recommended Motion**

The ASRS Board moves to modify the Administrative Law Judge's Decision by:

1. Correcting the phrase *from* "as Other Public Service pursuant to A.R.S. § 38-743" *to* "as a Contributions Not Withheld pursuant to A.R.S. § 38-738" in Finding of Fact No. 4 and Conclusion of Law No. 1 based on ASRS hearing exhibits H and I.
2. Deleting the content in Conclusion of Law No. 3 and inserting the following language in its place, "A.R.S. § 38-738(B), (C) and (D) provide as follows:" and inserting the statutory language of A.R.S. § 38-738(B), (C) and (D) in Conclusion of Law No. 3.
3. Correcting the phrase *from* "as Other Public Service pursuant to A.R.S. § 38-743" *to* "as a Contributions Not Withheld pursuant to A.R.S. § 38-738" in Conclusion of Law No. 8 to state, "Appellant again contacted ASRS in October 2014 to purchase her employment form August 1998, to May 1999 with MCCCCD as a *Contributions Not Withheld pursuant to A.R.S. § 38-738*" based on ASRS hearing exhibits H and I.
4. Inserting the phrase "as required by A.R.S. § 38-738(B)(7) and (C) and A.A.C. R2-8-702(A)" at the end of conclusion of Law No. 8.
5. Correcting the phrase used twice in Conclusion of Law No. 9 *from* "Other Public Service pursuant to A.R.S. § 38-743" *to* "a Contributions Not Withheld pursuant to A.R.S. § 38-738."

### **Attachments to this Memorandum**

1. Attachment 1 – Arizona Revised Statutes §§ 38-738 and 38-743.
2. Attachment 2 – ASRS Hearing Exhibits H and I.

# **ATTACHMENT 1-**

**ARIZONA REVISED  
STATUTES §§ 38-738 AND 38-743  
AND  
ARIZONA ADMINISTRATIVE  
CODE R2-8-702**

# ARIZONA STATE RETIREMENT STATUTES

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## **A.R.S. § 38-711. Definitions**

In this article, unless the context otherwise requires:

13. "Employer" means:

- (a) This state.
- (b) Participating political subdivisions.
- (c) Participating political subdivision entities.

**23. "Member":**

(a) Means any employee of an employer on the effective date.

**(b) Means all employees of an employer who are eligible for membership pursuant to section 38-727 and who are engaged to work at least twenty weeks in each fiscal year and at least twenty hours each week.**

## **A.R.S. § 38-727. Eligibility; options**

A. The following provisions apply to all employees hired on or after the effective date:

1. All employees and officers of this state and all officers and employees of political subdivisions establishing a retirement plan administered by the board pursuant to this article who as a result of state service or service for the political subdivision are included in agreements providing for their coverage under the federal old age and survivors insurance system are subject to this article, except that membership is not mandatory:

## **A.R.S. § 38-738. Adjustment and refund**

A. If more than the correct amount of employer or member contributions is paid into ASRS by an employer through a mistake of fact, ASRS shall return those contributions to the employer if the employer requests return of the contributions within one year after the date of overpayment. ASRS shall not pay an employer earnings attributable to excess contributions but shall reduce the amount returned to an employer pursuant to this section by the amount of losses attributable to the excess contributions.

B. If less than the correct amount of employer or member contributions is paid into ASRS by an employer, the following apply:

1. The member shall pay an amount that is equal to the amount that would have been paid in member contributions for the period in question. The member's payments shall be made as provided in section 38-747. If the member does not make the payment within ninety days of being notified by ASRS that the employer has paid all amounts due from the employer, the unpaid amount accrues interest until the amount is paid in full. The member is responsible for payment of the unpaid amount and interest. The interest rate is the interest rate assumption that is approved by the board for actuarial equivalency for the period in question to the date payment is received.

# ARIZONA STATE RETIREMENT STATUTES

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2. If the member contributions to ASRS made pursuant to this subsection exceed the limits prescribed in section 38-747, subsection E when taking into account other annual additions of the member for the limitation year, the amount to be paid by the member shall be adjusted as provided in section 38-747. For the purposes of this subsection, "limitation year" has the same meaning prescribed in section 38-769.

3. The employer shall pay to ASRS an amount equal to the amount that would have been paid in employer contributions for the period in question together with accumulated interest that would have accrued on both the employer and member contributions due. If the employer does not remit full payment of all employer contributions and all interest due within ninety days of being notified by ASRS of the amount due, the unpaid amount accrues interest until the amount is paid in full. The interest rate is the interest rate assumption that is approved by the board for actuarial equivalency for the period in question to the date payment is received.

4. On satisfaction of the requirements of this subsection, the member's salary history on the records of ASRS shall be adjusted and any additional service credits acquired by the member shall be reinstated.

5. If the member retires before all contributions are made pursuant to this subsection, the member's benefits shall be calculated only based on the contributions actually made.

6. Annual additions shall be determined as provided in section 38-747, subsection O.

7. The initiator of the request for correction of salary history and service credits on records of ASRS is responsible for providing credible evidence of past employment and compensation to ASRS in a form or forms that would lead a reasonable person to conclude that a period of employment occurred under circumstances that made the employee eligible for membership in ASRS during that period. A determination of eligibility by ASRS may be appealed to the ASRS board in a manner prescribed by the board.

C. Subsection B of this section applies to eligible verified service that occurred less than or equal to fifteen years before the date the initiator of the request for correction of salary history and service credits on the records of ASRS provides ASRS with credible evidence in writing that less than the correct amount of contributions were paid into ASRS or ASRS otherwise determines that less than the correct amount of contributions were made.

D. Eligible verified service that is more than fifteen years before the date the initiator of the request for correction of salary history and service credits on the records of ASRS provides ASRS with credible evidence in writing that less than the correct amount of contributions were paid into ASRS or ASRS otherwise determines that less than the correct amount of contributions were made is considered public service credit. The member may purchase this service pursuant to section 38-743.

## **A.R.S. § 38-743. Public service credit**

A. If an active member of ASRS or a member who is receiving benefits pursuant to section 38-797.07 was previously employed by the United States government, a state, territory, commonwealth, overseas possession or insular area of the United States or a political subdivision of a state, territory,

## ARIZONA STATE RETIREMENT STATUTES

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commonwealth, overseas possession or insular area of the United States, excluding any time worked for a prison while the member was incarcerated, the member may receive up to sixty months of credited service for this prior employment if the member pays into ASRS the amount prescribed in subsection B of this section.

B. A member who elects to receive credit for service with the United States government, a state, territory, commonwealth, overseas possession or insular area of the United States or a political subdivision of a state, territory, commonwealth, overseas possession or insular area of the United States shall pay to ASRS an amount equal to the present value of the additional benefit that is derived from the purchased credited service using the actuarial assumptions that are approved by the board.

C. A member who previously was a member of another public employee retirement system and who receives or is eligible to receive retirement benefits from that system for any period of employment is ineligible to receive retirement benefits from ASRS for the same period.

D. A member shall have at least five years of credited service in ASRS before electing to receive credit for service pursuant to this section.

**ATTACHMENT 2-**  
**ASRS HEARING EXHIBITS**  
**H & I**

12/16/2014



8872 E. Pershing Ave.  
Scottsdale, AZ 85260



12/02/2014

Dave King, Director  
Arizona State Retirement System  
3300 N. Central Ave.  
Phoenix, AZ 85067

**Director Appeal Letter**

Dear Mr. King,

On Monday, Nov. 24, 2014, I brought some of the issues I have been having on my years of services and years I have purchased to the attention of Mr. Scott James. He recommended directing my questions via a request of Director Appeal Letter to your attention. On Monday, Dec. 1, 2014, I met Rick Flores, ASRS rep. who has been most helpful so far in hearing me out, again, and brought to his attention some my issues. He agreed to take some of my issues forward himself, while recommended that I bring the following matter to your attention in an appeal letter.

The issue I am appealing is the fact that I filed with ASRS in 2001 for previous years of services to be purchased and contributions not withheld (CNW). Among those I applied for, was the year 1998-1999, where I worked as an adjunct faculty for Maricopa Community Colleges (both Phoenix College and Glendale College). I was told this year's services could not be under CNW category, since you still work for MCCD. They wanted me to get paycheck slip from MCCD, which I did and submitted at the time along with other forms, so my contribution portion can be calculated. As I remember, I submitted all the necessary forms needed at the time. I informed both ASRS and the HR office at MCCD, at the time, but I did not receive A Cost Letter from neither of the two agencies (ASRS & MCCD). Attached you will find all together another 12 sheets, as my records of what went on then, which I am hoping will clarify this issue, extensively.

You see, I might choose to retire this summer, therefore, I appreciate you speedy attention to this matter. Meanwhile, please do not hesitate to contact me with any comments or questions. I have provided my contact information on top of the page. Looking forward to hearing from you.

Sincerely,

Mehrzad Khorsandi

**RECEIVED**

DEC 03 2014

AZ STATE RETIREMENT SYS

**EXHIBIT H**

12/16/2014



# 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 Matron*  
Director

December 12, 2014

CERTIFIED MAIL

Ms. Mehrzad Khorsandi  
8872 East Pershing Avenue  
Scottsdale, AZ 85260

Dear Ms. Khorsandi:

Recently you contacted the Arizona State Retirement System (ASRS) regarding the years of service noted on your ASRS account. Specifically, you indicated that you are having issues regarding purchasing service under Contributions Not Withheld (CNW) for time you worked with Maricopa County Community College District (MCCCD) during the 1998-1999 school year. You stated that you applied to purchase this time in 2001 and, to your knowledge, you submitted all the required documents into the ASRS on time, but do not recall receiving an invoice. When you attempted to purchase this year as CNW recently, you were informed that the period was outside the 15-year statute of limitation and you could not purchase this time as CNW. You asked ASRS to review the payroll records you attached to your appeal and allow you to purchase the 1998-1999 school year as CNW.

Following a thorough review of your case, including each of the attachments you provided to the ASRS along with your appeal letter, we regret that we must deny your appeal to purchase the service as CNW.

Arizona Revised Statutes (A.R.S.) § 38-738(E) states, "eligible verified service that is more than fifteen years before the date the initiator of the request for correction of salary history and service credits on the records of ASRS provides ASRS with credible evidence in writing that less than the correct amount of contributions were paid into ASRS...is determined public service credit."

Essentially, this means that because the potential instance of CNW happened more than 15 years ago, the ASRS is mandated by statute to view it as Other Public Service Non-Participatory (OPSNP) only. When employers can make errors on members' accounts and do not send us the correct amount of contributions when a member is eligible to participate in the ASRS, Arizona Revised Statutes provides a correcting mechanism under CNW. If a member or an employer applies for CNW with the ASRS in the allotted period of time, and there is sufficient documentation in order to justify the CNW, the ASRS sends out an invoice to the member, for the total of what their contributions should have been for the timeframe, and an invoice to the employer, for the total of what their contributions would have been, plus interest, for the timeframe.

As part of your appeal, we researched your account to determine if you had inquired into purchasing the 1998-1999 time with MCCCD as CNW back in 2001. Our research shows that while you did inquire into purchasing this service in September 2001, you were looking to purchase the service as OPSNP, which is confirmed in the affidavit you attached to your appeal as well as the copy of this affidavit the ASRS has in your records. During this timeframe, you also inquired about purchasing time from Texas A&M, Delgado Community College, and McNeese State University and received cost invoices for each of these requests. You then asked the ASRS to send you a Payroll Deduction Authorization (PDA) for all of the combined public service credit you were eligible for, which included the 1.00 year of service from MCCCD. However, you elected not to purchase all of the service you were eligible and instead bought .48 years from Texas A&M using a direct rollover and set up a PDA for 3.78 years from Texas A&M, which you are currently paying for.

Based on this information, we cannot agree with your assertion that you did not receive the cost invoice for the 1.00 year from MCCCD for the 1998-1999 time period and further, we show that you only ever represented to the ASRS

12/16/2014

Ms. Mehrzad Khorsandi  
December 12, 2014  
Page 2 of 2

that this service was OPSNP, not CNW. It was not until your recent conversations with the ASRS that you claimed this service was potentially CNW. Any discussion of CNW in your account prior to September 29, 2014 was in reference to the .33 years of CNW you are eligible to purchase from MCCCCD during fiscal year 2000. While it is possible that your employer made an error and did not withhold contributions from your wages from August 1998 through May 1999 when they should have, you are not eligible to purchase this service as CNW as the time in question happened more than 15 years ago.

Even though you are not eligible to purchase the MCCCCD 1998-1999 service as CNW, you are still eligible to purchase up to .74 years as OPSNP to add to your account. A.R.S. §38-743 (A), revised in the 2011 legislative session, limits a member in purchasing, "up to sixty months of credited service for this prior employment." Due to this limitation, because you have already purchased 4.26 years of public service between your rollover and your active PDA contract, you are currently only eligible to purchase the .74 years with MCCCCD.

However, regarding the limitation on public service you can purchase, allow me to further expand on your request and the ASRS' current position regarding the limitations on purchasing service.

A.R.S. §38-743, §38-744 and §38-745 outline the ASRS service purchase process and limits the amount of service that can be bought for specific types of service to 60 months. The limitation on how much service credit can be purchased under these statutes is currently being challenged in the *Pendergast v. ASRS* case, which the ASRS has decided to Petition for Review to the Arizona Supreme Court on an Opinion from the Arizona Court of Appeals on this issue.

As of today, the ASRS does not have a timeframe for when we will hear from the Arizona Supreme Court regarding our Petition for Review in *Pendergast v. ASRS*. As such, please review the ASRS website ([www.AZASRS.gov](http://www.AZASRS.gov)) homepage in the "Latest News" section under the heading "Service Purchase Litigation" for updates. We will place an update under this section of any legal outcome as soon as we have been notified by the Arizona Supreme Court whether you will be allowed to purchase additional OPS service.

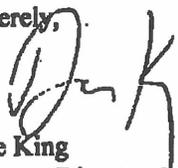
While we realize this is not the outcome you sought through your appeal, we sincerely hope you understand the reason for our decision. The ASRS cannot render a decision which conflicts with statute.

If you have questions concerning this appeal, please contact Ms. Jenna Orozco, Appeals Analyst, at (602) 240-2122.

A formal appeal process exists for members who do not agree with staff decisions. While you have been denied your appeal by the Assistant Director, should you wish to pursue this matter further you must appeal, in writing, to the Director of the ASRS.

If you have questions on other matters not related to the appeal, visit our website at [www.azasrs.gov](http://www.azasrs.gov) or contact our Member Advisory Center at (602) 240-2000.

Sincerely,



Dave King  
Assistant Director, Member Services Division

DK/JO/cm

cc: Jenna Orozco, ASRS  
Courtney Micheau, ASRS  
Member File

# Agenda Item #6



# 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. Anthony Guarino, Deputy Director and Chief Operations Officer

**DATE:** August 21, 2015

**RE:** **Agenda Item #6:** Presentation Regarding Government Finance Officers Association (GFOA) Financial Reporting Awards

### Purpose

To present to the ASRS the GFOA's Financial Reporting Awards.

### Recommendation

Informational only; no action required.

### Background

It is our pleasure to report to you that the ASRS received the GFOA Certificate of Achievement for Excellence in Financial Reporting for its June 30, 2014, Comprehensive Annual Financial Report (CAFR). This is the twenty-sixth consecutive year the ASRS has received this prestigious award. A Certificate of Achievement is presented by the GFOA to those government units whose annual financial reports are judged to adhere to program standards and represents the highest award in government financial reporting.

It takes many hours of hard work by the ASRS to produce the CAFR each year. Staff who had a substantial part in the ASRS receiving the CAFR award were Nancy Bennett, Liz Rozzell, Erin Higbee, John Maczko, Tonia Nemecek, Debbie Motta, Rebecca Fox, Kristin Berry, Lupita Breland, Kerry White and Michael Copeland.

The CAFR is intended to provide reliable information for decision making, to insure compliance with legal requirements, and is a means of measuring the responsible stewardship of the assets of the ASRS. For those reasons, the ASRS continually strives to improve upon the content and readability of the financial information presented in its CAFR.

In addition, I am pleased to report the ASRS also received the GFOA Award for Outstanding Achievement for the 2014 Popular Annual Financial Report (PAFR). Staff who had a significant part in the ASRS receiving the PAFR award were Nancy Bennett, Liz Rozzell, Erin Higbee, John Maczko and Rebecca Fox.

The GFOA established the Popular Annual Financial Reporting Awards Program in 1991 to encourage and assist state and local governments to extract information from their CAFR to produce high quality PAFRs specifically designed to be readily accessible and easily understandable to the general public and other interested parties without a background in public finance and then to recognize individual governments that are successful in achieving that goal.

Finally, I would like to thank the Board for its support and leadership in planning and conducting the financial affairs of the ASRS in a responsible and progressive manner. It is this support that enables us to publish such a high quality CAFR and PAFR.



Government Finance Officers Association

Award for  
Outstanding  
Achievement in  
Popular Annual  
Financial Reporting

Presented to

**Arizona State Retirement System**

For its Annual  
Financial Report  
for the Fiscal Year Ended

**June 30, 2014**

Executive Director/CEO



Government Finance Officers Association

**Certificate of  
Achievement  
for Excellence  
in Financial  
Reporting**

Presented to

**Arizona State Retirement System**

For its Comprehensive Annual  
Financial Report  
for the Fiscal Year Ended

**June 30, 2014**

Executive Director/CEO

# Agenda Item #7

# Arizona State Retirement System

## Board of Trustees

### Investment Program Updates

August 28, 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

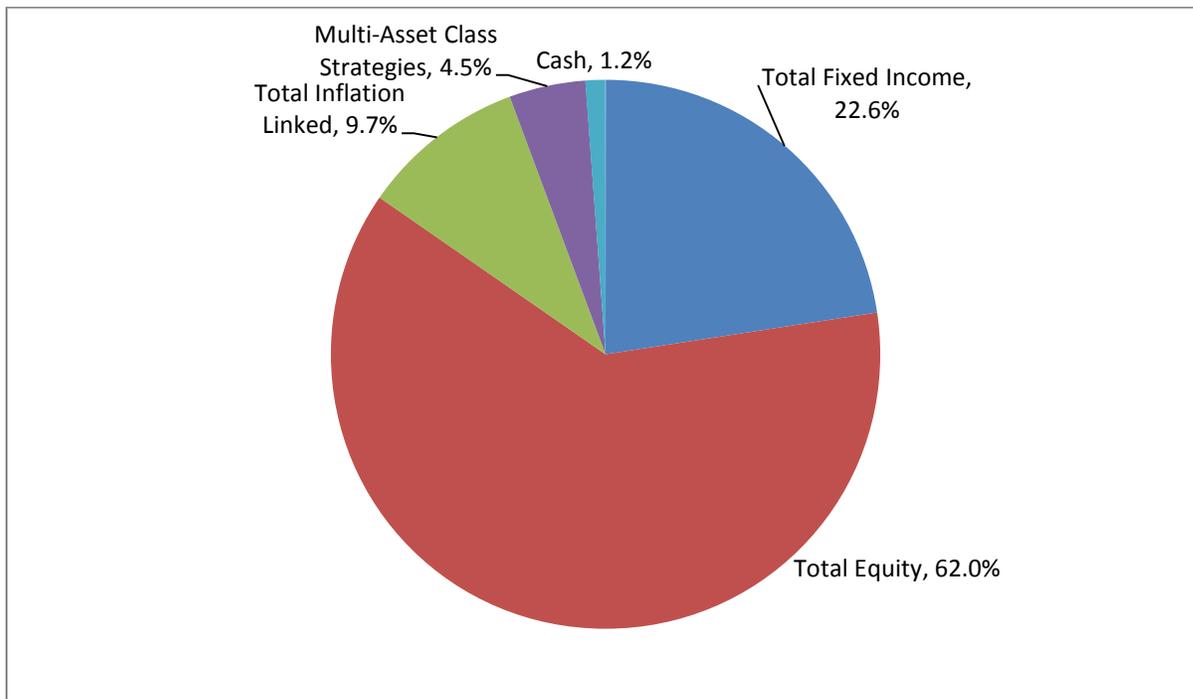
Eric Glass, Portfolio Manager of Private Markets, ASRS



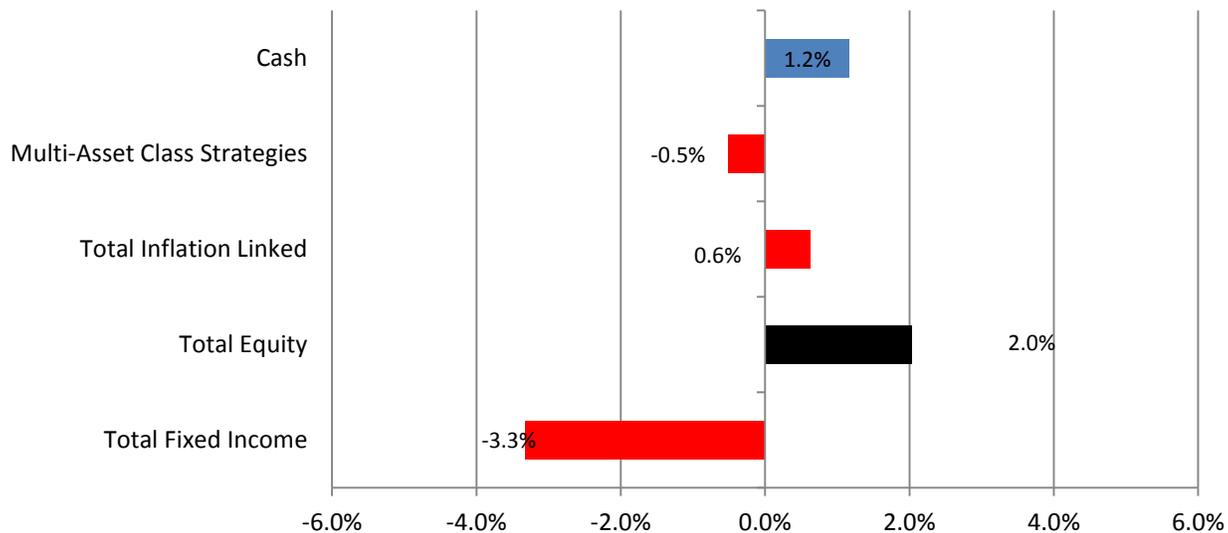
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**ACTUAL PORTFOLIO**



**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

Friday, July 31, 2015

Account Manager	Account Manager Style	Fixed Income		Equity		Inflation Linked	Multi-Asset	Total	Pct of Fund
		Active	Enh/Passive	Active	Enh/Passive				
State Street B&T: Boston	Tactical Cash (non-assetized)							0	0.00%
								Tactical Cash Policy Range: 0% - 3%	0.00%
	Operating Cash (non-assetized)		21,895,821					21,895,821	0.06%
	Operating Cash (assetized)		383,626,331					383,626,331	1.11%
	<b>Cash Total</b>							<b>\$405,522,152</b>	<b>1.17%</b>
								Cash Policy: 0%	0.00%
	<b>Treasuries (Long Duration) Total</b>							<b>\$0</b>	<b>0.00%</b>
								Treasuries (Long Duration) Policy Range: 0% - 10%	0.00%
Blackrock: San Francisco	Passive (Intermediate Gov Credit)		24,342,689					24,342,689	0.07%
ASRS: Phoenix	Enhanced Passive F2		1,869,170,593					1,869,170,593	5.39%
Blackrock: San Francisco	Passive (US Debt Index)		1,809,100,945					1,809,100,945	5.21%
	<b>Core Fixed Income Total</b>							<b>\$3,702,775,122</b>	<b>10.67%</b>
								Interest Rate Sensitive: 11%	11.00%
Columbia: Minneapolis	Active	818,006,292						818,006,292	2.36%
JP Morgan: Indianapolis	Active	486,455,003						486,455,003	1.40%
	<b>High Yield Fixed Income Total</b>							<b>\$1,304,475,050</b>	<b>3.76%</b>
								High Yield Fixed Income Policy	4.00%
	<b>Opportunistic Debt</b>	1,142,333,468						<b>\$1,142,333,468</b>	<b>3.29%</b>
								Opportunistic Debt Policy:	0.00%
	<b>Private Debt Total</b>	1,685,070,560						<b>\$1,685,070,560</b>	<b>4.86%</b>
								Total Private Debt: 8% - 12%	10.00%
	<b>Fixed Income Total</b>							<b>\$7,834,709,695</b>	<b>22.58%</b>
								Total Fixed Income Policy Range: 18% - 35%	25.00%
Intech: FL	Active (Growth)			435,762,644				435,762,644	1.26%
LSV: Chicago	Active (Value)			767,327,459				767,327,459	2.21%
ASRS: Phoenix	Passive E2				5,140,455,927			5,140,455,927	14.81%
ASRS: Phoenix	Enhanced Passive E7				656,773,432			656,773,432	1.89%
ASRS: Phoenix	Enhanced Passive E8				562,086,326			562,086,326	1.62%
ASRS: Phoenix	Risk Factor Portfolio				571,317,840			571,317,840	1.65%
	<b>Large Cap Equity Total</b>							<b>\$8,133,723,628</b>	<b>23.44%</b>
								Large Cap Policy	20.00%
Wellington: Boston	Active (Core)			287,545,406				287,545,406	0.83%
ASRS: Phoenix	Passive E3 (Growth)				398,081,085			398,081,085	1.15%
ASRS: Phoenix	Passive E4 (Value)				342,825,585			342,825,585	0.99%
	<b>Mid Cap Equity Total</b>							<b>\$1,028,508,981</b>	<b>2.96%</b>
								Mid Cap Policy	3.00%
TimesSquare: New York	Active SMID (Growth)			383,749,640				383,749,640	1.11%
DFA: Santa Monica	Active (Value)			281,365,536				281,365,536	0.81%
ASRS: Phoenix	Passive E6				333,831,140			333,831,140	0.96%
	<b>Small Cap Equity Total</b>							<b>\$999,008,988</b>	<b>2.88%</b>
								Small Cap Policy	3.00%
	<b>U.S. Equity Total</b>							<b>\$10,161,241,597</b>	<b>29.28%</b>
								US Equity Policy Range: 16% - 36%	26.00%
Brandes: San Diego	Active (Value)			609,646,537				609,646,537	1.76%
American Century	Active (EAFE)			597,800,193				597,800,193	1.72%
Trinity Street	Active (EAFE)			340,061,169				340,061,169	0.98%
Thompson Siegel Walmsley	Active (EAFE)			317,361,972				317,361,972	0.91%
Blackrock: San Francisco	Passive (EAFE)				4,296,143,145			4,296,143,145	12.38%
	<b>Large Cap Developed Non-US Equity Total</b>							<b>\$6,163,981,345</b>	<b>17.76%</b>
								Large Cap Developed Policy	17.00%
AQR: Greenwich	Active (EAFE SC)			98,818,518				98,818,518	0.28%
DFA: Santa Monica	Active (EAFE SC)			107,772,991				107,772,991	0.31%
Franklin Templeton: San Mateo	Active (EAFE SC)			230,996,862				230,996,862	0.67%
Blackrock: San Francisco	Passive (EAFE SC)				254,793,234			254,793,234	0.73%
	<b>Small Cap Developed Non-US Equity Total</b>							<b>\$692,384,042</b>	<b>2.00%</b>
								Small Cap Developed Policy	2.00%
William Blair: Chicago	Active (EM)			383,981,151				383,981,151	1.11%
Eaton Vance: Boston	Active (EM)			387,036,501				387,036,501	1.12%
LSV: Chicago	Active (EM)			233,630,595				233,630,595	0.67%
Blackrock: San Francisco	Passive (EM)				513,361,245			513,361,245	1.48%
	<b>Emerging Markets Equity Total</b>							<b>\$1,518,009,492</b>	<b>4.37%</b>
								Emerging Markets Policy	5.00%
	<b>Non-US Equity Total</b>							<b>\$8,374,374,879</b>	<b>24.13%</b>
								Non-US Equity Policy Range: 14% - 34%	24.00%
	<b>Private Equity Total</b>			2,506,234,221				<b>\$2,506,234,221</b>	<b>7.22%</b>
								Private Equity Policy Range: 6% - 10%	8.00%
	<b>Opportunistic Equity</b>			497,874,148				<b>\$497,874,148</b>	<b>1.43%</b>
								Opportunistic Equity Policy:	0.00%
	<b>Equity Total</b>							<b>\$21,539,724,844</b>	<b>62.07%</b>
								Total Equity Policy Range: 48% - 65%	58.00%
Gresham: New York	<b>Commodities Total</b>					453,637,265		453,637,265	1.31%
								<b>\$453,637,265</b>	<b>1.31%</b>
								Commodities Policy Range: 0% - 4%	2.00%
	<b>Real Estate Total</b>					2,431,643,668		<b>\$2,431,643,668</b>	<b>7.01%</b>
								Real Estate Policy Range: 8% - 12%	10.00%
	<b>Infrastructure Total</b>					294,905,096		<b>\$294,905,096</b>	<b>0.85%</b>
								Infrastructure Policy Range: 0% - 3%	0.00%
	<b>Farmland &amp; Timber Total</b>					182,544,404		<b>\$182,544,404</b>	<b>0.53%</b>
								Farmland & Timber Policy Range: 0% - 3%	0.00%
	<b>Inflation Linked Total</b>							<b>\$3,362,730,432</b>	<b>9.69%</b>
								Inflation Linked Policy Range: 10% - 16%	12.00%
Windham							425,036,587	425,036,587	1.22%
Bridgewater							1,134,704,288	1,134,704,288	3.27%
	<b>Multi-Asset Class Strategies</b>							<b>\$1,559,740,876</b>	<b>4.49%</b>
								Multi-Asset Class Policy Range: 0% - 12%	5.00%
	<b>TOTAL Amounts</b>	\$4,131,934,574	\$4,108,297,274	\$8,468,893,219	\$13,070,831,625	\$3,362,730,432	\$1,559,740,876	<b>\$34,702,428,000</b>	<b>Total Fund</b>
	<b>TOTAL Percent</b>	11.91%	11.84%	24.40%	37.67%	9.69%	4.49%		

Asset Class	Actual Portfolio	SAAP Target (Range)	Interim SAA* Adj Policy	Actual - Interim SAA**		Policy Band check Actual - Adj Policy
				% diff	\$ diff	
Tactical Cash	0.00%	0% (0-3%)	0.00%	0.00%		
Cash	1.17%	0.00%	0.00%	1.17%	405,522,152	
Interest Rate Sensitive	10.67%	11%	15.67%	-5.00%		
High Yield	3.76%	4%	5.37%	-1.61%		
Opportunistic Debt	3.29%	0%	0.00%	3.29%	\$1,142,333,468	
Private Debt	4.86%	10% (8-12%)	4.86% (3-7%)	0.00%		
<b>Total Fixed Income</b>	<b>22.58%</b>	<b>25% (18-35%)</b>	<b>25.9% (19-36%)</b>	<b>-3.32%</b>	<b>-\$1,152,477,044</b>	<b>OK</b>
Large Cap	23.44%	20%	21.95%	1.49%	\$518,224,347	
Mid Cap	2.96%	3%	3.00%	-0.04%	-\$12,563,859	
Small Cap	2.88%	3%	3.00%	-0.12%	-\$42,063,852	
US Equity	<b>29.28%</b>	<b>26% (16-36%)</b>	<b>27.95% (18-38%)</b>	<b>1.34%</b>	<b>\$463,596,636</b>	<b>OK</b>
Developed Large Cap	17.76%	17%	17.87%	-0.11%	-\$36,625,163	
Developed Small Cap	2.00%	2%	2.00%	0.00%	-\$1,664,518	
Emerging Markets	4.37%	5%	5.00%	-0.63%	-\$217,111,908	
Non-US Equity	<b>24.13%</b>	<b>24% (14-34%)</b>	<b>24.87% (15-35%)</b>	<b>-0.74%</b>	<b>-\$255,401,590</b>	<b>OK</b>
Private Equity	7.22%	8% (6-10%)	7.22%	0.00%	\$0	<b>OK</b>
Opportunistic Equity	1.43%	0%	0.00%	1.43%	\$497,874,148	
<b>Total Equity</b>	<b>62.07%</b>	<b>58% (48-65%)</b>	<b>60.04% (50-67%)</b>	<b>2.03%</b>	<b>\$706,069,195</b>	<b>OK</b>
Commodities	1.31%	2% (0-4%)	2.06%	-0.75%	-\$261,183,278	<b>OK</b>
Real Estate	7.01%	10% (8-12%)	7.01%	0.00%	\$0	<b>OK</b>
Infrastructure	0.85%	0% (0-3%)	0.00%	0.85%	\$294,905,096	<b>OK</b>
Farmland & Timber	0.53%	0% (0-3%)	0.00%	0.53%	\$182,544,404	<b>OK</b>
Opportunistic I/L	0.00%	0%	0.00%	0.00%	\$0	
<b>Total Inflation Linked</b>	<b>9.69%</b>	<b>12% (10-16%)</b>	<b>9.07% (7-11%)</b>	<b>0.62%</b>	<b>\$216,266,221</b>	<b>OK</b>
<b>Multi-Asset Strategies***</b>	<b>4.49%</b>	<b>5% (0-12%)</b>	<b>5% (0-12%)</b>	<b>-0.51%</b>	<b>-\$175,380,524</b>	<b>OK</b>
<b>Total</b>	<b>100.00%</b>	<b>100%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>\$0</b>	
						<b>Internally Managed Portfolios:</b>
						<b>\$9,303,224,088</b>
						<b>27%</b>
*Interim SAA includes a proration of unfunded Private Equity, Private Debt, and Real Estate						
**Private Equity is prorated to domestic equity; Real Estate is prorated to equity, commodities, and fixed income; Private Debt is prorated to Interest Rate Sensitive and High Yield						
<b>Opportunistic definitions:</b>						
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.						
Opportunistic investments have a 0% target (0%-10% range), regardless of asset class.						
<b>Total Opportunistic</b>						
Opportunistic Debt	\$1,142,333,468	3.3%				
Opportunistic Equity	\$497,874,148	1.4%				
Opportunistic IL	\$0	0.0%				
	<b>\$1,640,207,616</b>	<b>4.7%</b>				

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

## AUGUST 2015

### U.S. EQUITIES

#### Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**

- Economic data still shows stable, sub-trend growth in 2015.
- U.S. unemployment, is displaying sustained improvement. Income growth has not, although some localized instances of upward pressure has begun to surface.
- 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 growth has decelerated, mostly due to the impact of lower energy prices; revenues are still in a modest uptrend; high profit margins are no longer expanding.

2. Valuations: **NEUTRAL**

- U.S. equity markets have been trendless since reaching highs first in March, then and again in May, apparently buffeted by mixed macro data, downward revisions to earnings estimates and anxiety over the timing and scale of the first upward reset to interest rates and more volatility in foreign exchange markets.
- Though marginally rich, price/earnings multiples remain near historic averages: **S&P 500, 15.8x-17.6x; S&P MID, 16.0x-19.8x; S&P SC600, 17.8x-20.9x.**
- 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:

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

We reduced the allocation of U.S. equities during 1Q2015 to align toward the newly adopted Strategic Asset Allocation Policy (SAA) and use proceeds to fund private market capital calls and external cash flows.

Long-term prospects for the U.S. equities markets remain constructive even if the current phase of price fluctuations appear to weaken that case. The major indexes of U.S. stocks have responded generally as anticipated. Robust, macro-driven momentum of the past two years was overdue for some deceleration, even a downright pause, if only to allow fundamentals time to catch up with prices. Having reached an all-time high, prices have backed off a bit, snuffing out positive year-to-date returns and eroding investor confidence.

There is a positive macro environment for domestic equities, with an essentially sound U.S. economy in a setting of unusually low interest rates. Although some stumbling is likely as the cycle of rising interest rates gets underway, and perhaps the markets have prematurely telescoped-in some of that already this year, history has shown that stocks tend to fare reasonably well as interest rates ascend. Official Federal Reserve policy remains clear in its expectation to normalize the level of the federal funds rate only gradually and reflect the slow, but continuing diminution of economic headwinds. Thus any interest rates increases will be a function of sustained improvement in the U.S. economy, not because the FOMC wants to forestall an overheated economy and induce recession. That's hardly a precursor for falling corporate earnings and stock prices.

Almost perversely, analysts have been taking down 2015 earnings estimates since last November, coinciding with a period in which the both the rise of the exchange rate of the U.S. Dollars and the decline in oil prices accelerated. Reductions in estimates for energy sector earnings and the effects of the higher USD exchange rate account for the 2015 year-on-year growth rate of S&P 500 earnings tumbling to 2%. Viewed at the index level and not necessarily from a top-down context, nor sector by sector, the markets seemed to have inferred that business was undergoing a widespread weakening. However, the benefits derived from quantitative easing provoking global reflation haven't been translated into the present cohort of non-energy corporate earnings estimates. They are apt to be meaningful catalysts to stocks as 2015 rolls on.

Misconceptions about the speed and magnitude by which the FOMC will move interest rates upward, apprehension over the direction of earnings estimates revisions, and transient anxieties about the potential impact from fluctuating Chinese equity markets have triggered recent bouts of relatively minor volatility. This is likely to go on until visible signs appear later this year from the positive combined follow-on effects of ex-U.S. QE programs, of the favorable relative exchange rates engendered by those programs, and from low energy prices. As those signs appear, widespread U.S. corporate earnings growth rates should also turn up.

**CURRENT PORTFOLIO POSTURE: OVERWEIGHT vs. SAA target**

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## NON – U.S. EQUITIES

### Primary Market Metrics & Indicators:

1. Fundamentals: **POSITIVE**

- Eurozone and Japanese economic conditions are firming, if irregularly; they remain soft in lesser-developed economies.
- Relatively inexpensive and available money supports a shift toward risk assets.
- Monetary and economic policies are focused on promoting economic growth and stemming disinflation.

2. Valuations: **POSITIVE**

- Reasonable global valuations relative to U.S.; price-to-book values of 1.4x - 1.6x; P/Es of **11.9x – 15.2x** on trend earnings.

- Dividend yields are incrementally more favorable -ranging from 1.1x to 1.9x that of the S&P500.

3. Sentiment: **POSITIVE**

- With the exception of the emerging markets, money flows continue toward the developed counterparts, biased more toward non-U.S. equities than to domestic U.S. markets. Investors are less guarded and remain constructive on global risks despite some near term risk aversion volatility.
- Major non-U.S. markets performance have mostly strengthened in 2015.

**Commentary:**

The “POSITIVE” opinions on Fundamentals, Sentiment and Valuations are unchanged.

Staff raised the allocation to the overall Non-U.S. Equities class in April. It now more closely aligns with the SAA policy target. Later in the cycle it may exceed that slightly. We reduced both the Emerging Markets subclass and EAFE/Small-cap asset subclasses during June to move them to the new policy target weights. Proceeds were reapportioned to the developed markets EAFE asset subclass to also align its weight with the new policy target weight.

Overall Non-U.S. equities allocations have been more neutral to the (previous) SAA policy since late 4Q2013, awaiting sustainably stronger ex-U.S. economic growth before moving to increase the proportion relative to that of U.S. equities. **These preconditions are materializing, but remain challenged in the slow growth world.**

The case for global equities is still upbeat on the back of the global reflationary effort. Flow-driven major markets remain capable of posting high, single digit returns (in USD terms) by year-end. Both the distant past and recent history have shown that liquidity injections, when delivered in sufficient size and duration, can greatly surpass most other market influences. ECB quantitative easing of over a trillion Euros certainly meets those criteria.

Some risks still threaten, e.g.: Investor leverage, threats to profitability, crowding of trades and some geopolitical risks. The effects of moving foreign exchange rates dominate most factors and have led to Japanese and European equities responding to profitability-driven margin expansion. The markets don't seem to have priced this in completely, yet momentum risk-on, and reflation oriented strategies, especially in the European markets, seem to be prevailing.

Support from robust liquidity in Europe, and a stronger than expected economy, are impressive enticements to under-owned, low-leverage equities. Upside potential remains, although an overly strong rise too early in the process could burn that out. The impact of quantitative and qualitative easing in Japan has effectively collared the downside of its markets even as overall returns on corporate equity are normalizing further to the upside.

That large, globally-exposed corporations now face more significant revenue and earnings headwinds is one negative consequence in the U.S. from a stronger U.S. Dollar (USD). In contrast, the weakening of currencies against the USD should help augment the revenues of large, multinational equities based outside the U.S. Similarly, European corporate earnings are destined to grow at a double-digit pace, despite lingering weakness in the peripheral regional economies. European equities currently benefit from three significant tailwinds: the fall in the EUR exchange rate; a reduction in borrowing costs; and the resulting boost to growth from protracting lower oil prices. The European Central Bank's quantitative easing program should continue to support the first two tailwinds in the near term, while oil prices should continue to fall in year-on-year terms for several months, even should the clearing price cease falling further, which supports the third tailwind.

UK equities have fallen out of favor since the Scottish referendum in September last year. Although, the recent UK elections outcomes aren't necessarily capital markets friendly the markets seem discounted the political risks even though the UK market faces a zero expected return in 2015.

Emerging market economies are still beset by political interference, intractable labor markets and structural problems with what drives those economies. Despite sustained liquidity coursing through their capital markets, the stocks are largely unresponsive. Moreover, capital flows into the USD will continue weighing on the EMs.

A persistently rising USD is not a common theme in markets. It appears to be less prevalent during a "risk on" trend – driven by economics and fundamentals – rather than during a "risk-off" mode. Still, the ramifications of a strong USD in 2015 will be important globally and across assets. Many of the first-round consequences of a strong USD have already been felt. The strength of the USD has helped to push commodity prices and inflation down, restraining bond yields and leading to increased flows into U.S. equities and bonds. These trends should persist and even second-round influences may emerge. The latter might surface as financial conditions in some EM economies tighten further and should any further firming in U.S. consumption elevate the rate of GDP growth. Again, this bolsters the case for multinational non-U.S. companies with sizeable revenues from exports to the U.S.

Also, a rising USD has significant effect on the global flows of capital. The implications are substantial for financial conditions globally and probably felt most acutely by those countries running current account deficits and where a higher proportion of debt is issued in USD. Economic, asset price and currency outperformance in the U.S. may hinder domestic investors from aggressively deploying assets abroad. Meanwhile, investors in weak economies where currencies are depreciating and asset price performance is equally meager are apt to invest the U.S. These potential secondary forces suggest to us that the significant outperformance of U.S. and of developed non-U.S., equity markets relative to those of emerging economies is a multi-year, structural theme.

## **CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target**

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### **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. In addition, the Fed has kept the target Fed Funds rate at effectively zero for several years. With a seemingly improved economy, the bond market is facing the prospect that the accommodative Fed policy is likely near its end. Most economists believe the Fed will likely raise short-term rates in the next several months. It is possible that long-term rates may rise as well, which would be negative for the returns of core fixed income. That being said, long-term U.S. interest rates may remain relatively low by historical standards 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 very low competing long-term interest rates in other developed countries.

2. Valuations: **NEGATIVE**

- The core fixed income market is likely to generate low returns due to low overall yields as Treasury rates remain at low levels and investment-grade credit and agency MBS 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 much less attractive than in the immediate years after the credit crisis of 2008-2009. 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.
- Private debt offers the most attractive opportunity in the fixed income markets with double-digit yields readily available for investors willing to accept illiquidity.
- 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 Total Fixed Income relative to its SAAP policy. Core fixed income offers important defensive characteristics which help to balance out the overall risks of the total fund portfolio however the current low levels of U.S. Treasuries and tight spreads in the investment-grade bond markets are relatively unattractive compared to other 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 and that are not included in SAAP.

**CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target**

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## 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.
- In July, REITs were trading at an average dividend yield of 3.97% (161bp above 10y treasury) and a 3% discount to NAV. The dividend yield spread is above the historical average of 110 while the historical difference to NAV is a 4% premium.

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. The 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)

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**PRIVATE EQUITY**

**Primary Market Metrics & Indicators:**

1. Fundamentals: **POSITIVE**

- The U.S. economy continues to show steady improvement.

- ◇ Oil prices have remained in the range of their 2014 price correction which will result in reduced service costs and tempered 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.

2. Valuations: **NEUTRAL**

- U.S. 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 U.S. median Debt/EBITDA ratio of 5.8x in 2014 was down from 6.5X in 2013 (slightly above the previous peak).

3. 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 and continue to monitor Europe for a favorable reentry point and look for opportunities to capitalize upon distress. IMD’s pacing plan called for \$700M in commitments for 2015.

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

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## COMMODITIES

**Primary Market Metrics & Indicators:**

1. Fundamentals: **NEGATIVE**

- The US dollar has strengthened on a relative basis **as the Fed appears poised to raise interest rates. China’s economy has slowed down while** Europe has begun to deal with its economic weakness with stimulus.

- Most commodity sectors appear well supplied, particularly for the current global growth environment.
  - The decision by Saudi Arabia not to reduce production **with the potential addition of Iranian supply has kept energy markets depressed, resulting in** rig lay downs in the U.S. while the budgetary impacts globally continue 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 **global** production as WTI and Brent prices **are both below \$50**. Metals have weakened as precious metals have suffered from U.S. dollar strength while industrial metals still exhibit weak demand.
2. Valuations: **NEGATIVE (from NEUTRAL)**
- **The Bloomberg Commodities Index fallen to 12 year lows as global supplies outpace demand.**
  - **On a trailing twelve-month basis, commodities are down 30% with ags being the least impacted sector with a decline of 19%.**
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.
  - **The slowdown in the Chinese economy and its equity market has tempered enthusiasm for commodities.**
  - Geopolitical news **(particularly regarding Iran) has hurt energy prices**. Looking across the individual commodities, most remain well supplied, which is reflected in prices as inflationary fears **are muted**.

#### **Commentary:**

IMD has maintained a tactical underweight **relative to the SAA approved in 2015 which reduced the commodities target from 4% to 2%**, recognizing the effects of the Chinese **slowdown and sufficient global supplies**. As a result of the changing dynamics in the energy markets IMD reduced its exposure to commodities in December and **further reduced its exposure in July as inflationary pressures are still soft**.

The North American shale play has resulted in increased U.S. 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 U.S. 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 maintain a tactical underweight relative to the SAAP and look to potentially further underweight. Improving economic conditions and inflationary pressures would serve as a catalyst to initiate a neutral position should the conditions arise.

**CURRENT PORTFOLIO POSTURE: UNDERWEIGHT vs. SAA target**

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## 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. 5.5% of ASRS TOTAL MARKET VALUE**

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## 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.

## 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 <sup>st</sup>	January	01/23	01/29	2					
	February	02/27		1			02/09	02/23	2
	March	03/19	03/20	3					
03/27									
2 <sup>nd</sup>	April	04/21		1			04/20/15	1	
	May	05/18		1					
	June	06/04	06/23	1					
3 <sup>rd</sup>	July	07/20	07/29	2					
	August				08/14	1			
	September								
4 <sup>th</sup>	October								
	November								
	December								
<b>Totals</b>				11		1		3	15

## PRIVATE MARKETS COMMITTEE (PRIVMC)

### 6/23/2015

#### ➤ Real Estate

- The Committee approved an increase to \$300 million from \$200 million to an existing real estate manager. Legal negotiations are pending.
- The Committee approved granting a variance for a potential investment opportunity in downtown Los Angeles, CA.
- The Committee approved the proposed changes to the real estate strategic plan with changes to clarify the definition of “commercial” and “for sale” real estate, and with mention of the existing practice that real estate separate accounts will include a term allowing the termination of investment periods preventing new assets from being added to the account following such termination.
- The Committee confirmed a future meeting date of July 17, 2015. This meeting has since been canceled.

### 07/20/2015

#### ➤ Real Estate

- The Committee approved a \$200 million commitment in a niche neighborhood real estate opportunity in the Los Angeles market. Legal negotiations are pending.
- The Committee approved a \$200 million commitment in medical office buildings throughout the United States. Legal negotiations are pending.
- The Committee approved granting a variance to pursue a potential real estate investment located in Port St. Lucie, FL.
- The Committee approved granting a variance on a real estate investment located in San Antonio, TX.
- The Committee approved the termination of the investment period of a current real estate manager.
- The Committee confirmed the following future meeting date: July 29, 2015 (continuation of the meeting scheduled July 20<sup>t</sup>), August 17, 2015 and September 22, 2015.

#### ➤ Private Opportunistic Equity

- The Committee discussed a \$100 million commitment to a no-fee, no-carry co-investment with Pinebrook. The Committee continued the discussion of this agenda item on July 29, 2015.

### 07/29/2015

#### ➤ Private Opportunistic Equity

- The Committee approved a \$100 million commitment to a no-fee, no-carry co-investment with Pinebrook. Legal negotiations are pending.

## TACTICAL PORTFOLIO POSITIONING

Since the last IC meeting, no significant portfolio repositioning has occurred; however, selective asset classes and portfolios within these asset classes were the primary funding source to replenish ASRS Cash Assetization Program.

From an Investment House Views perspective, the Fund remains net underweight in total fixed income vs. policy with a bias to private/opportunistic over public debt; net overweight in total equity; slightly underweight net inflation-linked; and approximately a policy weight in the multi-asset strategies.

The CIO and his staff will discuss the rationale for asset class positioning and perspectives on ASRS strategic and tactical investments.

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

- Cole Smith, ASRS Equity Portfolio Manager, successfully passed the Level III CFA exam and, as a result, is expected to receive the distinguished Chartered Financial Analyst (CFA) designation in September.
- IMD has commenced discussions focusing on the continued issues in the Chinese economy, and the potential impact these may have on global growth and in the valuation of all risky assets particularly in non-U.S. and emerging markets. A series of conference calls have occurred with select knowledgeable external parties. The objective of these internal and external discussions is to affirm or potentially modify ASRS House Views which could result in subsequent tactically portfolio repositioning.
- IMD continues to fund ASRS private markets program (debt, equity and real estate); a formal review of implementation and pacing plans for CY 2016 are scheduled for Q4-15.
- IMD continues to manage the ASRS Securities Lending Program (base and opportunistic) consistent with a risk/return profile that reflects IMD's assessment of the opportunities and conditions present in the current lending market. During FY2015, the ASRS securities lending program earned approximately \$6.4 million.
- Operational and oversight enhancements to ASRS Cash Management "Assetization" Program have been implemented. The goals of this program are to provide Fund liquidity, mitigate cash drag, minimize transaction costs and optimize manager portfolios rebalancing. Rather than raising cash frequently from across the Fund to cover internal and external cash flow needs, monies are raised in a single funding, which approximates cash requirements for a 3-6 month period. Until drawn, those monies are assetized, i.e., exposed to the capital markets via index futures in proportions that reflect ASRS SAAP/Investment House Views.

- IMD participated in the ASRS Sunset Review and Performance Audit which included an operational review of ASRS investment strategies, alternative assets, investment procedures and fees paid to external investment managers. The report findings were favorable, recommended enhancements which will be implemented and was supportive of ASRS best practice.
- 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 112 investment managers: Private markets (RE, PE, Debt) – 41 and Public markets (Equity and Debt) – 73.
- IMD internally manages 7 public equities and fixed income portfolios which had an approximate aggregate market value of over \$10 billion or 30% of Total Fund. On a calendar year-to-date through June 30, 2015, 4 of 7 met or exceeded their benchmarks, and 7 of 7 portfolios met or exceeded their benchmarks on an inception-to-date basis.

# **Executive Presentation**

**To: Arizona State Retirement System**

**truView Risk Report June 30, 2015**

**Produced by State Street Investment Analytics, Risk Services**

## Monthly Reallocation Summary\*

## Month Ending June 30, 2015

### Portfolio Reductions

- TOTAL FIXED INCOME
  - \$20M – F2 (Core Fixed Income)
- TOTAL INTERNATIONAL EQUITY
  - \$2.8M – AQR (Intl Developed Small Cap Equity)
  - \$15M – Franklin Templeton (Intl Developed Small Cap Equity)
  - \$105M – Blackrock Emerging (Intl Emerging Equity)
  - \$62.5M – Eaton Vance (Intl Emerging Equity)
  - \$40M – LSV (Intl Emerging Equity)
  - \$62.5M – William Blair (Intl Emerging Equity)
- TOTAL CASH
  - \$170M – CASH–ASSETIZED
- **TOTAL REDUCTIONS\*\***
  - **\$477.8M**

### Portfolio Additions

- TOTAL INTERNATIONAL EQUITY
  - \$152.5M- – BGI EAFE (International Developed Equity)
- TOTAL TRANSITION
  - \$135.3M – TOTAL EQUITY TRANSITION
- TOTAL CASH
  - \$190M – CASH–UNASSETIZED
- **TOTAL ADDITIONS\*\***
  - **\$477.8M**

\*Based on State Street accounting records for public markets and therefore exclude private market drawdowns.

\*\*Reductions and additions do not include plan distributions.

## Monthly Reallocation Summary\*

Month Ending July 31, 2015

### Portfolio Reductions

- TOTAL US EQUITY
  - \$70M – E2 (US Large Cap)
  - \$50M – E7 (US Large Cap)
  - \$30M – INTECH (US Large Cap)
  - \$35M – LSV (US Large Cap)
  - \$19M – E3 (US Mid Cap)
  - \$19M – E4 (US Mid Cap)
  - \$15M – WELLINGTON (US Mid Cap)
  - \$20M – DFA (US Small Cap)
  - \$24M – E6 (US Small Cap)
  - \$18M – TIMESQUARE (US Small Cap)
- TOTAL INTERNATIONAL EQUITY
  - \$15.7M – BGI EAFE (International Developed Equity)
- TOTAL FIXED INCOME
  - \$100M – BGI US DEBT (Core Fixed Income)
- TOTAL MULTI-ASSET CLASS
  - \$150M – WINDHAM (MAC)
- TOTAL GLOBAL INFLATION LINKED
  - \$50M – GRESHAM (Global Inflation Linked)
- **TOTAL REDUCTIONS\*\***
  - **\$615.7M**

### Portfolio Additions

- TOTAL CASH
  - \$86M – CASH-ASSETIZED
  - \$514M – CASH-UNASSETIZED
- TOTAL TRANSITION
  - \$15.7M – TOTAL EQUITY TRANSITION
- **TOTAL ADDITIONS\*\***
  - **\$615.7M**

\*Based on State Street accounting records for public markets and therefore exclude private market drawdowns.

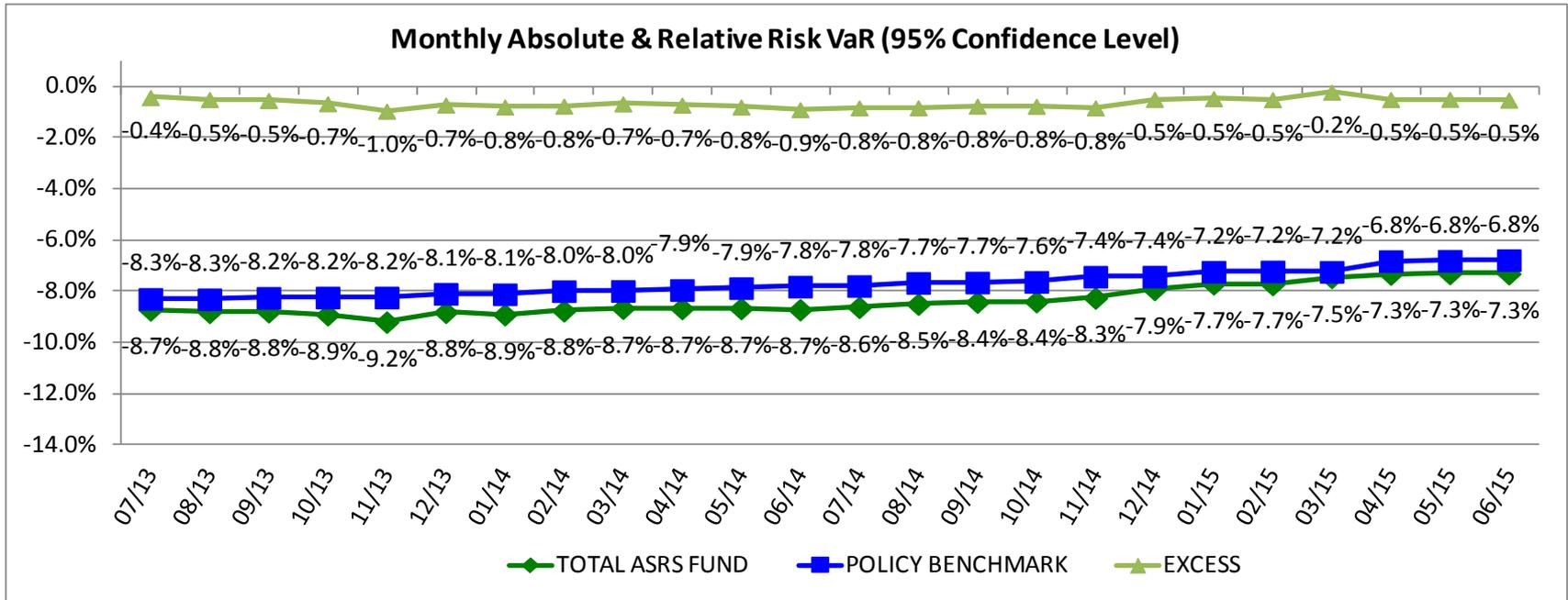
\*\*Reductions and additions do not include plan distributions.

# Monthly Risk Summary

Month Ending June 30, 2015

## Month-end Risk Profile

- Historical Risk (95% VaR) for all asset classes remain relatively constant from prior months. Total Plan risk increased a marginal 1bps and the Policy Benchmark decreased 2bps.
- Excess risk over the Policy Benchmark has stayed steady at -0.5%.



ARIZONA STATE RETIREMENT SYSTEM

TOTAL PLAN EXPOSURE OVERVIEW

As of June 30, 2015

Sector (Public US Equity Only)	\$ Value	% Value	**Blended US BM	Difference
CONSUMER NON-CYCLICAL	\$ 2,401,793,754	23.3%	24.0%	(0.6%)
FINANCIAL	\$ 1,661,221,218	16.1%	17.1%	(1.0%)
TECHNOLOGY	\$ 1,196,466,204	11.6%	13.4%	(1.8%)
INDUSTRIAL	\$ 1,075,853,064	10.5%	9.9%	0.6%
CONSUMER CYCLICAL	\$ 1,038,339,840	10.1%	10.2%	(0.1%)
COMMUNICATIONS	\$ 887,452,594	8.6%	11.8%	(3.2%)
ENERGY	\$ 701,954,091	6.8%	7.9%	(1.1%)
FUNDS	\$ 547,161,106	5.3%	0.0%	5.3%
UTILITIES	\$ 332,345,411	3.2%	2.8%	0.4%
BASIC MATERIALS	\$ 297,453,056	2.9%	2.8%	0.1%
CASH	\$ 110,355,804	1.1%	0.0%	1.1%
GOVERNMENT	\$ 28,112,561	0.3%	0.0%	0.3%
INDEX	\$ 7,487,263	0.1%	0.0%	0.1%
DIVERSIFIED	\$ 7,156,392	0.1%	0.0%	0.0%
<b>GRAND TOTAL</b>	<b>\$ 10,293,152,359</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

Country Category (Total Plan)	\$ Value	% Value	*Blended TOTAL BM	Difference
NORTH AMERICA	\$ 26,135,983,958	75.3%	66.9%	8.4%
EUROPE DEVELOPED	\$ 4,675,540,858	13.5%	17.1%	(3.7%)
ASIA DEVELOPED	\$ 2,427,038,914	7.0%	10.5%	(3.5%)
ASIA EM	\$ 868,918,850	2.5%	3.3%	(0.8%)
LATIN AMERICA	\$ 294,022,154	0.8%	1.2%	(0.4%)
AFRICA	\$ 162,164,189	0.5%	0.5%	(0.1%)
MIDDLE EAST	\$ 102,608,131	0.3%	0.3%	0.0%
EUROPE EM	\$ 52,068,518	0.1%	0.1%	0.0%
<b>GRAND TOTAL</b>	<b>\$ 34,718,345,571</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

Market Cap^ (Public Equities Only)	\$ Value	% Value	*Blended TOTAL BM	Difference
1) 0 - 100M	\$ 3,181,153	0.0%	0.0%	0.0%
2) 100M - 500M	\$ 228,977,453	1.2%	1.3%	(0.1%)
3) 500M - 1B	\$ 564,120,413	3.0%	2.9%	0.1%
4) 1B - 5B	\$ 2,788,691,129	14.7%	21.4%	(6.7%)
5) 5B - 10B	\$ 1,938,221,082	10.2%	9.7%	0.6%
6) 10B - 50B	\$ 6,490,961,659	34.3%	30.1%	4.2%
7) >50B	\$ 6,928,859,025	36.6%	34.6%	2.0%
<b>GRAND TOTAL</b>	<b>\$ 18,943,011,913</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

^Excludes cash and non-traded securities

Top 20 Issuer (Total Plan)	\$ Value	% Value	Market Cap	Sector	Industry Group
1 CASH**	\$ 1,752,403,873	5.1%		CASH	Cash
2 US TREASURY N/B	\$ 1,254,017,476	3.6%		GOVERNMENT	SOVEREIGN
3 FANNIE MAE	\$ 770,954,165	2.2%		MORTGAGE SECURITIES	COMMERCIAL MBS
4 TREASURY BILL	\$ 502,992,805	1.5%		GOVERNMENT	SOVEREIGN
5 FREDDIE MAC	\$ 257,737,092	0.7%		MORTGAGE SECURITIES	FHLMC COLLATERAL
6 APPLE INC	\$ 243,046,784	0.7%	7) 50B+	TECHNOLOGY	COMPUTERS
7 MICROSOFT CORP	\$ 170,324,116	0.5%	7) 50B+	TECHNOLOGY	SOFTWARE
8 GOVERNMENT NATIONAL MORTGAGE	\$ 152,918,396	0.4%		MORTGAGE SECURITIES	GNMA COLLATERAL
9 EXXON MOBIL CORP	\$ 152,059,315	0.4%	7) 50B+	ENERGY	OIL&GAS
10 ISHARES MSCI USA MOMENTUM FACTO	\$ 144,023,040	0.4%	3) 500M - 1B	FUNDS	EQUITY FUND
11 ISHARES MSCI USA QUALITY FACTOR I	\$ 137,997,200	0.4%	4) 1B - 5B	FUNDS	EQUITY FUND
12 JOHNSON & JOHNSON	\$ 133,980,499	0.4%	7) 50B+	CONSUMER NON-CYCLICAL	PHARMACEUTICALS
13 ISHARES MSCI USA VALUE FACTOR ET	\$ 133,469,550	0.4%	3) 500M - 1B	FUNDS	EQUITY FUND
14 ISHARES MSCI EMERGING MARKETS E	\$ 132,635,240	0.4%	6) 10B - 50B	FUNDS	EQUITY FUND
15 ISHARES MSCI USA SIZE FACTOR ETF	\$ 131,671,316	0.4%	2) 100M - 500M	FUNDS	EQUITY FUND
16 PFIZER INC	\$ 124,244,018	0.4%	7) 50B+	CONSUMER NON-CYCLICAL	PHARMACEUTICALS
17 JPMORGAN CHASE & CO	\$ 116,123,282	0.3%	7) 50B+	FINANCIAL	BANKS
18 AT&T INC	\$ 107,492,182	0.3%	7) 50B+	COMMUNICATIONS	TELECOMMUNICATIONS
19 PROCTER & GAMBLE CO/THE	\$ 95,066,628	0.3%	7) 50B+	CONSUMER NON-CYCLICAL	COSMETICS/PERSONAL CARE
20 VANGUARD TOTAL STOCK MARKET ET	\$ 94,665,718	0.3%	7) 50B+	FUNDS	EQUITY FUND

\*Blended TOTAL BM: 23% SP500, 3% SP400, 3% SP600, 7% R2000, 18% MSCI EAFE, 5% MSCI EM, 2% MSCI Sml Cap, 16% BC US AGG, 6% BC US HY, 6% FTSE NAREIT GLOBAL, 2% DJ-UBS COMMODITY, 5% CUSTOM MULTI-ASSET CLASS, 4% S&P/LSTA LEVERED LOAN.

\*\*Blended US BM: 80% SP500, 10% SP400, 10% SP600.

\*\*\*Cash does not represent an IMD tactical view; Cash includes the ASRS Cash balance, manager-level portfolio cash & equivalents and cash collateralizing sundry portfolio-level futures contracts.

## ARIZONA STATE RETIREMENT SYSTEM

As of June 30, 2015

Sector (Public Intl Equity Only)	\$ Value	% Value	*Blended NON-US BM	Difference
FINANCIAL	\$ 2,130,119,676	25.5%	26.5%	(1.0%)
CONSUMER NON-CYCLICAL	\$ 1,705,304,086	20.4%	20.5%	(0.2%)
CONSUMER CYCLICAL	\$ 1,155,023,242	13.8%	12.3%	1.5%
INDUSTRIAL	\$ 973,321,619	11.6%	11.5%	0.2%
COMMUNICATIONS	\$ 660,290,766	7.9%	8.5%	(0.6%)
BASIC MATERIALS	\$ 446,582,802	5.3%	6.5%	(1.2%)
ENERGY	\$ 435,686,853	5.2%	5.6%	(0.4%)
TECHNOLOGY	\$ 372,195,419	4.4%	4.5%	(0.1%)
UTILITIES	\$ 268,205,853	3.2%	3.3%	(0.1%)
CASH	\$ 141,848,327	1.7%	0.0%	1.7%
DIVERSIFIED	\$ 60,438,487	0.7%	0.7%	0.0%
INDEX	\$ 18,864,792	0.2%	0.0%	0.2%
FX	\$ 1,704	0.0%	0.0%	0.0%
<b>GRAND TOTAL</b>	<b>\$ 8,367,883,629</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

## INTERNATIONAL EQUITY EXPOSURE OVERVIEW

Country Category (Public Intl Equity Only)	\$ Value	% Value	*Blended NON-US BM	Difference
EUROPE DEVELOPED	\$ 4,303,551,190	51.4%	51.0%	0.4%
ASIA DEVELOPED	\$ 2,408,623,147	28.8%	32.2%	(3.4%)
ASIA EM	\$ 885,005,400	10.6%	10.9%	(0.3%)
LATIN AMERICA	\$ 276,280,180	3.3%	2.9%	0.4%
NORTH AMERICA	\$ 191,692,523	2.3%	0.1%	2.2%
AFRICA	\$ 149,925,003	1.8%	1.7%	0.1%
MIDDLE EAST	\$ 100,982,414	1.2%	0.9%	0.3%
EUROPE EM	\$ 51,823,773	0.6%	0.4%	0.2%
<b>GRAND TOTAL</b>	<b>\$ 8,367,883,629</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

Top 20 Industry Groups (Public Intl Only)	\$ Value	% Value	*Blended NON-US BM	Difference
1 BANKS	\$ 1,155,019,520	13.8%	14.3%	(0.5%)
2 PHARMACEUTICALS	\$ 627,199,405	7.5%	7.5%	0.0%
3 TELECOMMUNICATIONS	\$ 444,893,373	5.3%	5.7%	(0.4%)
4 INSURANCE	\$ 428,296,834	5.1%	5.1%	0.0%
5 OIL&GAS	\$ 401,844,083	4.8%	5.1%	(0.3%)
6 FOOD	\$ 400,660,936	4.8%	4.5%	0.3%
7 RETAIL	\$ 315,960,704	3.8%	2.9%	0.9%
8 AUTO MANUFACTURERS	\$ 293,500,134	3.5%	3.6%	(0.1%)
9 CHEMICALS	\$ 235,489,938	2.8%	3.3%	(0.5%)
10 DIVERSIFIED FINAN SERV	\$ 210,692,300	2.5%	2.6%	(0.1%)
11 SEMICONDUCTORS	\$ 192,095,418	2.3%	2.3%	(0.1%)
12 ELECTRIC	\$ 183,543,939	2.2%	2.2%	(0.0%)
13 REAL ESTATE	\$ 181,989,724	2.2%	2.3%	(0.2%)
14 COMMERCIAL SERVICES	\$ 176,000,942	2.1%	1.8%	0.3%
15 BEVERAGES	\$ 166,357,852	2.0%	2.2%	(0.2%)
16 CASH	\$ 141,848,327	1.7%	0.0%	1.7%
17 MINING	\$ 136,654,545	1.6%	2.1%	(0.4%)
18 TRANSPORTATION	\$ 136,401,689	1.6%	1.6%	(0.0%)
19 ELECTRONICS	\$ 133,905,502	1.6%	1.5%	0.1%
20 BUILDING MATERIALS	\$ 133,155,083	1.6%	1.2%	0.4%

Market Cap** (Public Intl Equities Only)	\$ Value	% Value	*Blended NON-US BM	Difference
1) 0 - 100M	\$ 2,803,608	0.0%	0.0%	0.0%
2) 100M - 500M	\$ 70,587,772	0.9%	0.4%	0.4%
3) 500M - 1B	\$ 160,224,219	2.0%	1.2%	0.8%
4) 1B - 5B	\$ 1,064,296,748	13.0%	11.7%	1.3%
5) 5B - 10B	\$ 1,074,580,997	13.1%	12.4%	0.7%
6) 10B - 50B	\$ 3,322,463,955	40.5%	39.3%	1.2%
7) >50B	\$ 2,507,239,068	30.6%	35.0%	(4.4%)
<b>GRAND TOTAL</b>	<b>\$ 8,202,196,367</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

\*\*Excludes cash and non-traded securities

\*Blended NON-US BM: 72% MSCI EAFE, 20% MSCI EM, 8% MSCI Sml Cap.

ARIZONA STATE RETIREMENT SYSTEM

TOTAL FIXED INCOME EXPOSURE OVERVIEW

As of June 30, 2015

Sector (Public Fixed Income Only)	\$ Value	% Value	*Blended FI BM	Difference
GOVERNMENT	\$ 1,633,544,401	32.1%	32.3%	(0.2%)
MORTGAGE SECURITIES	\$ 1,139,066,503	22.4%	21.9%	0.5%
FINANCIAL	\$ 437,726,258	8.6%	9.3%	(0.7%)
COMMUNICATIONS	\$ 386,771,658	7.6%	7.1%	0.5%
CONSUMER NON-CYCLICAL	\$ 368,948,480	7.2%	7.0%	0.2%
ENERGY	\$ 278,105,959	5.5%	6.3%	(0.8%)
CONSUMER CYCLICAL	\$ 240,041,751	4.7%	5.0%	(0.3%)
INDUSTRIAL	\$ 161,103,275	3.2%	3.8%	(0.6%)
TECHNOLOGY	\$ 118,548,442	2.3%	2.0%	0.3%
BASIC MATERIALS	\$ 99,414,387	2.0%	2.6%	(0.6%)
UTILITIES	\$ 89,094,078	1.7%	2.2%	(0.4%)
CASH	\$ 47,631,455	0.9%	0.0%	0.9%
BANK LOANS	\$ 38,898,344	0.8%	0.0%	0.8%
INDEX	\$ 31,791,223	0.6%	0.0%	0.6%
ASSET BACKED SECURITIES	\$ 16,060,456	0.3%	0.4%	(0.1%)
DIVERSIFIED	\$ 9,623,642	0.2%	0.2%	(0.0%)
<b>GRAND TOTAL</b>	<b>\$ 5,096,370,311</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

Top 20 Industry Groups (Public Fixed Income Only)	\$ Value	% Value	*Blended FI BM	Difference
1 SOVEREIGN	\$ 1,522,700,277	29.9%	30.2%	(0.3%)
2 FNMA COLLATERAL	\$ 673,138,569	13.2%	9.3%	3.9%
3 FGLMC COLLATERAL	\$ 221,418,198	4.3%	5.6%	(1.2%)
4 BANKS	\$ 212,294,503	4.2%	5.0%	(0.9%)
5 TELECOMMUNICATIONS	\$ 209,331,979	4.1%	4.0%	0.1%
6 OIL&GAS	\$ 188,356,841	3.7%	4.2%	(0.5%)
7 MEDIA	\$ 142,147,049	2.8%	2.6%	0.2%
8 DIVERSIFIED FINAN SERV	\$ 131,512,252	2.6%	2.3%	0.2%
9 GNMA2 COLLATERAL	\$ 114,468,096	2.2%	4.4%	(2.1%)
10 HEALTHCARE-SERVICES	\$ 109,226,321	2.1%	1.7%	0.5%
11 PHARMACEUTICALS	\$ 88,954,995	1.7%	1.5%	0.3%
12 COMMERCIAL MBS	\$ 88,211,548	1.7%	1.4%	0.3%
13 ELECTRIC	\$ 86,204,474	1.7%	2.0%	(0.3%)
14 PIPELINES	\$ 81,695,344	1.6%	1.5%	0.1%
15 RETAIL	\$ 80,809,958	1.6%	1.7%	(0.1%)
16 SOFTWARE	\$ 66,076,929	1.3%	0.9%	0.4%
17 CHEMICALS	\$ 62,282,401	1.2%	0.9%	0.3%
18 MUNICIPAL	\$ 54,844,660	1.1%	0.6%	0.4%
19 COMMERCIAL SERVICES	\$ 51,664,558	1.0%	1.1%	(0.0%)
20 REITS	\$ 49,752,045	1.0%	0.9%	0.1%

Credit Rating Group** (Public Fixed Income Only)	\$ Value	% Value	*Blended FI BM	Difference
01) AAA	\$ 2,764,493,838	54.2%	52.7%	1.6%
02) AA	\$ 207,346,774	4.1%	3.3%	0.8%
03) A	\$ 458,268,979	9.0%	8.3%	0.7%
04) BBB	\$ 430,819,574	8.5%	9.5%	(1.1%)
05) BB	\$ 554,098,449	10.9%	13.0%	(2.1%)
06) B	\$ 509,761,915	10.0%	9.7%	0.3%
07) CCC	\$ 152,959,477	3.0%	3.3%	(0.3%)
08) CC	\$ 289,595	0.0%	0.0%	(0.0%)
09) C	\$ -	0.0%	0.1%	(0.1%)
10) D	\$ 7,479,025	0.1%	0.1%	0.0%
11) Not Rated	\$ 10,852,684	0.2%	0.0%	0.2%
<b>GRAND TOTAL</b>	<b>\$ 5,096,370,311</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

Maturity Bucket (Public Fixed Income Only)	\$ Value	% Value	*Blended FI BM	Difference
0-1Y	\$ 169,078,623	3.3%	0.6%	2.7%
1Y-3Y	\$ 822,923,033	16.2%	19.8%	(3.6%)
3Y-5Y	\$ 745,156,940	14.7%	16.8%	(2.1%)
5Y-10Y	\$ 1,727,169,340	34.1%	30.3%	3.8%
10Y-15Y	\$ 193,581,572	3.8%	4.8%	(0.9%)
15Y+	\$ 1,414,148,605	27.9%	27.7%	0.2%
<b>GRAND TOTAL</b>	<b>\$ 5,072,058,113</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>

\*Blended TOTAL BM: 73% BC US AGG, 27% BC US HY.

ARIZONA STATE RETIREMENT SYSTEM  
As of June 30, 2015

TOTAL PLAN RISK 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
<b>MONTHLY RISK</b>																
CASH - UNASSETIZED	\$ 26,854,450	0%	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%
CASH - ASSETIZED	\$ 298,700,008	1%	(3.3%)	(0.0%)	0.4%	(3.0%)	(0.0%)	0.4%	(5.6%)	(0.0%)	0.4%	(11.7%)	2.0%	(1.8%)	(0.0%)	0.4%
TOTAL FIXED INCOME	\$ 5,096,370,311	15%	(2.2%)	(0.0%)	0.5%	(1.9%)	(0.0%)	0.3%	(2.9%)	(0.0%)	0.0%	(4.5%)	1.1%	(1.3%)	(0.0%)	0.6%
US EQUITY	\$ 10,293,152,359	30%	(8.7%)	(2.7%)	37.3%	(8.3%)	(2.4%)	34.5%	(15.0%)	(4.4%)	36.2%	(29.9%)	5.8%	(4.2%)	(1.2%)	34.8%
INTERNATIONAL EQUITY	\$ 8,367,883,629	24%	(10.4%)	(2.2%)	29.8%	(9.7%)	(2.2%)	32.4%	(15.7%)	(3.7%)	29.8%	(35.8%)	6.5%	(4.7%)	(1.1%)	31.6%
REAL ESTATE	\$ 2,337,033,840	7%	(11.5%)	(0.8%)	10.4%	(10.8%)	(0.7%)	9.9%	(19.2%)	(1.2%)	9.9%	(38.2%)	7.1%	(5.4%)	(0.3%)	9.8%
FARMLAND & TIMBER	\$ 170,400,180	0%	(12.5%)	(0.1%)	0.8%	(11.7%)	(0.1%)	0.8%	(20.8%)	(0.1%)	0.8%	(40.8%)	7.6%	(5.8%)	(0.0%)	0.8%
PRIVATE EQUITY	\$ 2,476,130,823	7%	(11.7%)	(0.8%)	11.0%	(10.7%)	(0.7%)	10.4%	(18.9%)	(1.3%)	10.9%	(36.4%)	7.1%	(5.4%)	(0.4%)	10.5%
PRIVATE DEBT	\$ 1,632,941,825	5%	(2.8%)	(0.0%)	0.4%	(3.9%)	(0.1%)	1.6%	(7.9%)	(0.3%)	2.2%	(16.4%)	2.7%	(2.2%)	(0.1%)	1.8%
OPPORTUNISTIC EQUITY	\$ 485,586,901	1%	(11.8%)	(0.2%)	2.2%	(10.7%)	(0.1%)	2.0%	(19.0%)	(0.3%)	2.1%	(36.5%)	7.1%	(5.4%)	(0.1%)	2.1%
OPPORTUNISTIC DEBT	\$ 1,080,595,253	3%	(6.7%)	(0.2%)	2.3%	(9.0%)	(0.2%)	3.1%	(14.9%)	(0.4%)	3.3%	(28.6%)	5.8%	(4.2%)	(0.1%)	3.1%
GLOBAL INFLATION LINKED	\$ 560,024,810	2%	(8.5%)	(0.1%)	1.5%	(8.2%)	(0.1%)	1.3%	(12.7%)	(0.2%)	1.3%	(26.5%)	5.0%	(4.1%)	(0.0%)	1.4%
INFRASTRUCTURE	\$ 294,905,100	1%	(9.8%)	(0.1%)	1.1%	(9.1%)	(0.1%)	1.1%	(15.8%)	(0.1%)	1.1%	(35.1%)	5.9%	(4.7%)	(0.0%)	1.1%
MULTI-ASSET CLASS	\$ 1,597,766,083	5%	(3.4%)	(0.2%)	2.1%	(3.3%)	(0.1%)	2.1%	(5.4%)	(0.2%)	2.0%	(12.9%)	2.1%	(1.8%)	(0.1%)	2.1%
<b>GRAND TOTAL</b>	<b>\$ 34,718,345,571</b>	<b>100%</b>	<b>(7.3%)</b>	<b>(7.3%)</b>	<b>100.0%</b>	<b>(6.9%)</b>	<b>(6.9%)</b>	<b>100.0%</b>	<b>(12.2%)</b>	<b>(12.2%)</b>	<b>100.0%</b>	<b>(26.6%)</b>	<b>4.7%</b>	<b>(3.5%)</b>	<b>(3.5%)</b>	<b>100.0%</b>
<b>INTERIM POLICY BENCHMARK</b>			<b>(6.8%)</b>			<b>(9.2%)</b>			<b>(10.5%)</b>			<b>(19.7%)</b>	<b>6.1%</b>	<b>(3.1%)</b>		

<b>ANNUALIZED RISK</b>																
CASH - UNASSETIZED	\$ 26,854,450	0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	N/A	0.0%	(2.2%)	(0.0%)	0.0%
CASH - ASSETIZED	\$ 298,700,008	1%	(11.5%)	(0.1%)	0.4%	(10.5%)	(0.1%)	0.4%	(19.3%)	(0.2%)	0.4%	N/A	7.0%	(6.1%)	(0.0%)	0.4%
TOTAL FIXED INCOME	\$ 5,096,370,311	15%	(7.5%)	(0.1%)	0.5%	(6.5%)	(0.1%)	0.3%	(10.0%)	(0.0%)	0.0%	N/A	3.9%	(4.3%)	(0.1%)	0.6%
US EQUITY	\$ 10,293,152,359	30%	(30.1%)	(9.5%)	37.3%	(28.6%)	(8.3%)	34.5%	(52.1%)	(15.4%)	36.2%	N/A	20.1%	(14.6%)	(4.3%)	34.8%
INTERNATIONAL EQUITY	\$ 8,367,883,629	24%	(36.2%)	(7.5%)	29.8%	(33.4%)	(7.8%)	32.4%	(54.5%)	(12.6%)	29.8%	N/A	22.4%	(16.2%)	(3.9%)	31.6%
REAL ESTATE	\$ 2,337,033,840	7%	(39.8%)	(2.6%)	10.4%	(37.5%)	(2.4%)	9.9%	(66.7%)	(4.2%)	9.9%	N/A	24.4%	(18.6%)	(1.2%)	9.8%
FARMLAND & TIMBER	\$ 170,400,180	0%	(43.4%)	(0.2%)	0.8%	(40.6%)	(0.2%)	0.8%	(72.0%)	(0.3%)	0.8%	N/A	26.4%	(20.0%)	(0.1%)	0.8%
PRIVATE EQUITY	\$ 2,476,130,823	7%	(40.7%)	(2.8%)	11.0%	(37.2%)	(2.5%)	10.4%	(65.6%)	(4.6%)	10.9%	N/A	24.5%	(18.6%)	(1.3%)	10.5%
PRIVATE DEBT	\$ 1,632,941,825	5%	(9.6%)	(0.1%)	0.4%	(13.5%)	(0.4%)	1.6%	(27.4%)	(0.9%)	2.2%	N/A	9.3%	(7.6%)	(0.2%)	1.8%
OPPORTUNISTIC EQUITY	\$ 485,586,901	1%	(40.7%)	(0.5%)	2.2%	(37.2%)	(0.5%)	2.0%	(65.7%)	(0.9%)	2.1%	N/A	24.6%	(18.6%)	(0.3%)	2.1%
OPPORTUNISTIC DEBT	\$ 1,080,595,253	3%	(23.2%)	(0.6%)	2.3%	(31.3%)	(0.8%)	3.1%	(51.7%)	(1.4%)	3.3%	N/A	20.0%	(14.5%)	(0.4%)	3.1%
GLOBAL INFLATION LINKED	\$ 560,024,810	2%	(29.4%)	(0.4%)	1.5%	(28.4%)	(0.3%)	1.3%	(44.0%)	(0.6%)	1.3%	N/A	17.3%	(14.3%)	(0.2%)	1.4%
INFRASTRUCTURE	\$ 294,905,100	1%	(33.9%)	(0.3%)	1.1%	(31.5%)	(0.3%)	1.1%	(54.8%)	(0.5%)	1.1%	N/A	20.3%	(16.1%)	(0.1%)	1.1%
MULTI-ASSET CLASS	\$ 1,597,766,083	5%	(11.9%)	(0.5%)	2.1%	(11.4%)	(0.5%)	2.1%	(18.8%)	(0.9%)	2.0%	N/A	7.3%	(6.4%)	(0.3%)	2.1%
<b>GRAND TOTAL</b>	<b>\$ 34,718,345,571</b>	<b>100%</b>	<b>(25.3%)</b>	<b>(25.3%)</b>	<b>100.0%</b>	<b>(24.0%)</b>	<b>(24.0%)</b>	<b>100.0%</b>	<b>(42.4%)</b>	<b>(42.4%)</b>	<b>100.0%</b>	<b>N/A</b>	<b>16.3%</b>	<b>(12.3%)</b>	<b>(12.3%)</b>	<b>100.0%</b>
<b>INTERIM POLICY BENCHMARK</b>			<b>(23.5%)</b>			<b>(31.8%)</b>			<b>(36.4%)</b>			<b>N/A</b>	<b>21.3%</b>	<b>(10.8%)</b>		

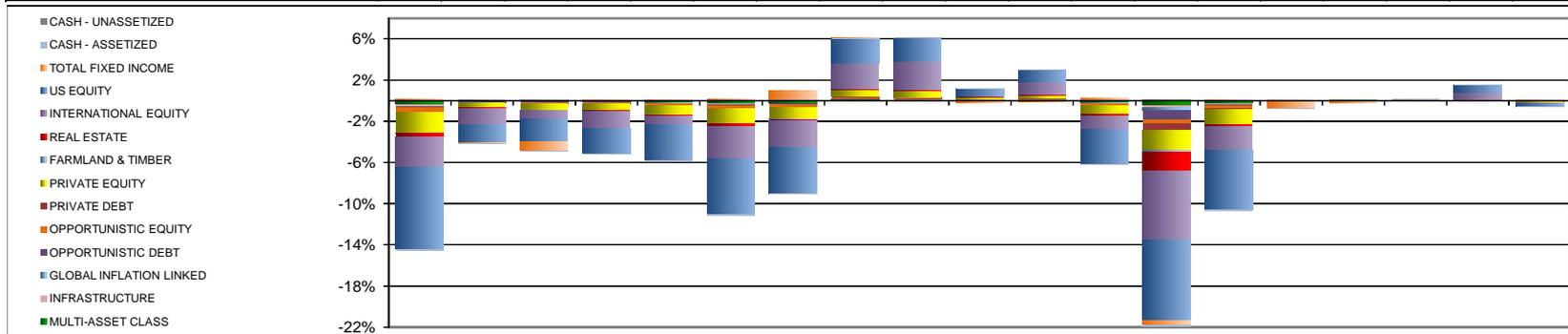
Strategy	\$ Value	% Value	Beta SP500	Corr SP500	Beta MSCI EAFE	Corr MSCI EAFE	Duration	Convexity	Notional Exposure	Gross Exposure	Gross Leverage
CASH - UNASSETIZED	\$ 26,854,450	0%	0.00		0.00				\$ 26,854,450	\$ 26,854,450	100.0%
CASH - ASSETIZED	\$ 298,700,008	1%	0.20	0.98	0.15	0.90			\$ 560,832,681	\$ 298,700,008	100.0%
TOTAL FIXED INCOME	\$ 5,096,370,311	15%	(0.00)	(0.02)	0.01	0.06	5.13	0.105	\$ 4,831,506,764	\$ 5,096,370,311	100.0%
US EQUITY	\$ 10,293,152,359	30%	1.05	0.99	0.81	0.90	0.52	0.003	\$ 10,457,002,017	\$ 10,293,152,359	100.0%
INTERNATIONAL EQUITY	\$ 8,367,883,629	24%	1.08	0.90	1.00	0.99	2.55	0.119	\$ 8,385,220,154	\$ 8,398,255,664	100.4%
REAL ESTATE	\$ 2,337,033,840	7%	1.15	0.88	0.98	0.89			\$ 2,337,033,840	\$ 2,337,033,840	100.0%
FARMLAND & TIMBER	\$ 170,400,180	0%	1.23	0.87	1.05	0.88			\$ 170,400,180	\$ 170,400,180	100.0%
PRIVATE EQUITY	\$ 2,476,130,823	7%	1.25	0.95	0.94	0.85			\$ 2,476,130,823	\$ 2,476,130,823	100.0%
PRIVATE DEBT	\$ 1,632,941,825	5%	0.30	0.60	0.24	0.58	0.57	0.004	\$ 1,632,727,294	\$ 1,632,979,670	100.0%
OPPORTUNISTIC EQUITY	\$ 485,586,901	1%	1.25	0.95	0.94	0.85			\$ 485,586,901	\$ 485,586,901	100.0%
OPPORTUNISTIC DEBT	\$ 1,080,595,253	3%	0.75	0.70	0.65	0.71			\$ 1,080,595,253	\$ 1,080,595,253	100.0%
GLOBAL INFLATION LINKED	\$ 560,024,810	2%	0.30	0.65	0.27	0.69	0.18	0.000	\$ 1,122,247,308	\$ 560,024,810	100.0%
INFRASTRUCTURE	\$ 294,905,100	1%	1.05	0.96	0.90	0.98			\$ 294,905,100	\$ 294,905,100	100.0%
MULTI-ASSET CLASS	\$ 1,597,766,083	5%	0.36	0.93	0.31	0.94	(6.57)	(1.912)	\$ 1,638,113,773	\$ 1,872,019,171	117.2%
<b>GRAND TOTAL</b>	<b>\$ 34,718,345,571</b>	<b>100%</b>	<b>0.82</b>	<b>0.97</b>	<b>0.68</b>	<b>0.95</b>	<b>4.57</b>	<b>0.082</b>	<b>\$ 35,499,156,537</b>	<b>\$ 35,023,008,539</b>	<b>100.9%</b>

ARIZONA STATE RETIREMENT SYSTEM  
As of June 30, 2015

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%
<b>Stress Test Stand Alone</b>																					
CASH - UNASSETIZED	\$ 26,854,450	0.1%	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	
CASH - ASSETIZED	\$ 298,700,008	0.9%	(13.0)	(3.0)	(5.9)	(3.8)	(5.7)	(12.3)	(5.8)	4.2	9.8	2.7	4.4	(5.3)	(17.2)	(9.7)	(1.2)	0.0	0.2	0.9	(0.4)
TOTAL FIXED INCOME	\$ 5,096,370,311	14.7%	1.0	(0.5)	(6.1)	0.7	0.6	0.9	6.7	0.0	(0.8)	(0.7)	(1.2)	1.4	(3.0)	0.0	(5.2)	(0.2)	0.6	0.0	0.3
US EQUITY	\$ 10,293,152,359	29.6%	(26.7)	(5.9)	(7.5)	(8.1)	(11.8)	(18.6)	(15.2)	8.3	7.7	2.7	4.1	(11.4)	(26.4)	(19.7)	0.0	0.0	0.0	2.6	(0.8)
INTERNATIONAL EQUITY	\$ 8,367,883,629	24.1%	(12.4)	(6.5)	(3.1)	(7.0)	(3.1)	(13.0)	(10.6)	10.2	11.5	(0.6)	5.3	(5.2)	(27.8)	(9.3)	0.0	0.0	0.0	3.1	(0.5)
REAL ESTATE	\$ 2,337,033,840	6.7%	(4.4)	(1.0)	(1.3)	(1.3)	(1.9)	(3.1)	(2.5)	1.4	1.3	0.5	0.7	(1.9)	(27.1)	(3.2)	0.0	0.0	0.0	0.0	(0.1)
FARMLAND & TIMBER	\$ 170,400,180	0.5%	(3.9)	(0.9)	(1.1)	(1.2)	(1.7)	(2.8)	(2.2)	1.2	1.1	0.4	0.6	(1.7)	(29.0)	(2.9)	0.0	0.0	0.0	0.0	(0.0)
PRIVATE EQUITY	\$ 2,476,130,823	7.1%	(28.6)	(6.3)	(8.2)	(8.7)	(12.7)	(20.2)	(16.3)	9.1	8.2	3.0	4.3	(12.2)	(27.1)	(21.1)	0.0	0.0	0.0	0.0	(0.9)
PRIVATE DEBT	\$ 1,632,941,825	4.7%	(1.0)	(0.2)	(0.3)	(0.3)	(0.4)	(0.7)	(0.5)	0.3	0.3	0.1	0.1	(0.4)	(14.6)	(0.7)	(0.0)	(0.0)	0.0	0.0	(0.0)
OPPORTUNISTIC EQUITY	\$ 485,586,901	1.4%	(28.6)	(6.3)	(8.2)	(8.7)	(12.7)	(20.2)	(16.3)	9.1	8.2	3.0	4.4	(12.2)	(27.1)	(21.1)	0.0	0.0	0.0	0.0	(0.9)
OPPORTUNISTIC DEBT	\$ 1,080,595,253	3.1%	(4.5)	(1.0)	(1.3)	(1.4)	(2.0)	(3.2)	(2.5)	1.4	1.3	0.5	0.7	(1.9)	(27.3)	(3.3)	0.0	0.0	0.0	0.0	(0.2)
GLOBAL INFLATION LINKED	\$ 560,024,810	1.6%	(0.0)	0.0	0.0	(0.0)	(0.0)	(0.0)	(0.1)	(0.0)	0.0	0.0	0.0	(0.0)	(17.5)	0.0	0.1	0.0	(0.0)	(6.1)	(5.7)
INFRASTRUCTURE	\$ 294,905,100	0.8%	(20.1)	(4.4)	(5.8)	(6.1)	(8.9)	(14.2)	(11.4)	6.4	5.8	2.1	3.1	(8.6)	(28.3)	(14.8)	0.0	0.0	0.0	0.0	(0.8)
MULTI-ASSET CLASS	\$ 1,597,766,083	4.6%	(8.2)	(1.8)	(2.1)	(2.5)	(3.7)	(5.8)	(4.8)	2.6	2.3	0.9	1.2	(3.5)	(10.1)	(6.0)	0.1	0.0	(0.0)	0.1	(0.5)
<b>GRAND TOTAL</b>	<b>\$ 34,718,345,571</b>	<b>100.0%</b>	<b>(14.4)</b>	<b>(4.2)</b>	<b>(4.9)</b>	<b>(5.1)</b>	<b>(5.8)</b>	<b>(11.1)</b>	<b>(8.1)</b>	<b>6.1</b>	<b>6.0</b>	<b>1.0</b>	<b>2.9</b>	<b>(6.0)</b>	<b>(21.9)</b>	<b>(10.7)</b>	<b>(0.8)</b>	<b>(0.2)</b>	<b>0.1</b>	<b>1.4</b>	<b>(0.5)</b>
<b>INTERIM POLICY BENCHMARK</b>			<b>(14.1)</b>	<b>(4.4)</b>	<b>(5.5)</b>	<b>(5.4)</b>	<b>(5.4)</b>	<b>(11.3)</b>	<b>(7.5)</b>	<b>6.7</b>	<b>6.7</b>	<b>0.7</b>	<b>3.0</b>	<b>(5.8)</b>	<b>(20.8)</b>	<b>(10.5)</b>	<b>(1.2)</b>	<b>(0.4)</b>	<b>0.1</b>	<b>1.7</b>	<b>(0.5)</b>

<b>Stress Test Contribution</b>																					
CASH - UNASSETIZED	\$ 26,854,450	0.1%	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
CASH - ASSETIZED	\$ 298,700,008	0.9%	(0.1)	(0.0)	(0.1)	(0.0)	(0.0)	(0.1)	(0.0)	0.0	0.1	0.0	0.0	(0.0)	(0.1)	(0.1)	(0.0)	0.0	0.0	0.0	(0.0)
TOTAL FIXED INCOME	\$ 5,096,370,311	14.7%	0.1	(0.1)	(0.9)	0.1	0.1	0.1	1.0	0.0	(0.1)	(0.1)	(0.2)	0.2	(0.4)	0.0	(0.8)	(0.2)	0.1	0.0	0.0
US EQUITY	\$ 10,293,152,359	29.6%	(7.9)	(1.7)	(2.2)	(2.4)	(3.5)	(5.5)	(4.5)	2.5	2.3	0.8	1.2	(3.4)	(7.8)	(5.8)	0.0	0.0	0.0	0.8	(0.2)
INTERNATIONAL EQUITY	\$ 8,367,883,629	24.1%	(3.0)	(1.6)	(0.8)	(1.7)	(0.8)	(3.1)	(2.6)	2.5	2.8	(0.1)	1.3	(1.3)	(6.7)	(2.2)	0.0	0.0	0.0	0.7	(0.1)
REAL ESTATE	\$ 2,337,033,840	6.7%	(0.3)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	0.1	0.1	0.0	0.0	(0.1)	(1.8)	(0.2)	0.0	0.0	0.0	0.0	(0.0)
FARMLAND & TIMBER	\$ 170,400,180	0.5%	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	0.0	0.0	0.0	0.0	(0.0)	(0.1)	(0.0)	0.0	0.0	0.0	0.0	(0.0)
PRIVATE EQUITY	\$ 2,476,130,823	7.1%	(2.0)	(0.4)	(0.6)	(0.6)	(0.9)	(1.4)	(1.2)	0.6	0.6	0.2	0.3	(0.9)	(1.9)	(1.5)	0.0	0.0	0.0	0.0	(0.1)
PRIVATE DEBT	\$ 1,632,941,825	4.7%	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	0.0	0.0	0.0	0.0	(0.0)	(0.7)	(0.0)	(0.0)	(0.0)	0.0	0.0	(0.0)
OPPORTUNISTIC EQUITY	\$ 485,586,901	1.4%	(0.4)	(0.1)	(0.1)	(0.1)	(0.1)	(0.2)	(0.3)	0.2	0.1	0.1	0.0	0.1	(0.2)	(0.4)	(0.3)	0.0	0.0	0.0	(0.0)
OPPORTUNISTIC DEBT	\$ 1,080,595,253	3.1%	(0.1)	(0.0)	(0.0)	(0.0)	(0.1)	(0.1)	(0.1)	0.0	0.0	0.0	0.0	(0.1)	(0.8)	(0.1)	0.0	0.0	0.0	0.0	(0.0)
GLOBAL INFLATION LINKED	\$ 560,024,810	1.6%	(0.0)	0.0	0.0	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	0.0	0.0	0.0	(0.0)	(0.3)	0.0	0.0	0.0	(0.0)	(0.1)	(0.1)
INFRASTRUCTURE	\$ 294,905,100	0.8%	(0.2)	(0.0)	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)	0.1	0.0	0.0	0.0	(0.1)	(0.2)	(0.1)	0.0	0.0	0.0	0.0	(0.0)
MULTI-ASSET CLASS	\$ 1,597,766,083	4.6%	(0.4)	(0.1)	(0.1)	(0.1)	(0.2)	(0.3)	(0.2)	0.1	0.1	0.0	0.1	(0.2)	(0.5)	(0.3)	0.0	0.0	(0.0)	0.0	(0.0)
<b>GRAND TOTAL</b>	<b>\$ 34,718,345,571</b>	<b>100.0%</b>	<b>(14.4)</b>	<b>(4.2)</b>	<b>(4.9)</b>	<b>(5.1)</b>	<b>(5.8)</b>	<b>(11.1)</b>	<b>(8.1)</b>	<b>6.1</b>	<b>6.0</b>	<b>1.0</b>	<b>2.9</b>	<b>(6.0)</b>	<b>(21.9)</b>	<b>(10.7)</b>	<b>(0.8)</b>	<b>(0.2)</b>	<b>0.1</b>	<b>1.4</b>	<b>(0.5)</b>
<b>INTERIM POLICY BENCHMARK</b>			<b>(14.1)</b>	<b>(4.4)</b>	<b>(5.5)</b>	<b>(5.4)</b>	<b>(5.4)</b>	<b>(11.3)</b>	<b>(7.5)</b>	<b>6.7</b>	<b>6.7</b>	<b>0.7</b>	<b>3.0</b>	<b>(5.8)</b>	<b>(20.8)</b>	<b>(10.5)</b>	<b>(1.2)</b>	<b>(0.4)</b>	<b>0.1</b>	<b>1.7</b>	<b>(0.5)</b>



GLOSSARY	DEFINITION	INTERPRETATION
Historical VaR 95%	A risk metric that is derived from a full revaluation historical simulation of the risk factors impacting a portfolio, <u>making no assumption of the tail distribution</u> , and reporting the largest loss likely to be suffered over a holding period (1Month for ASRS) 5 times out of 100, or 1 month out of 20	Value at Risk is a number, measured in price units or as percentage of portfolio value, which tells you that in a defined large percentage of cases (usually 95% or 99%) your portfolio is likely to not lose more than that amount of money. Or said the other way around, in a defined small percentage of cases (5% or 1%) your loss is expected to be greater than that number.
HVaR Contri 95%	This is the decomposition of the VaR, making it an additive measure, showing positive values where risk is decreased and correlations are negative.	
HVaR Contri % to Total	This is the VaR contribution displayed in percent.	
Parametric VaR 95%	A risk metric that is derived from a full revaluation historical simulation of the risk factors impacting a portfolio, <u>making a Normal distribution assumption of the tail distribution</u> , and reporting the largest loss likely to be suffered over a holding period (1Month for ASRS) 5 times out of 100, or 1 month out of 20.	Value at Risk is a number, measured in price units or as percentage of portfolio value, which tells you that in a defined large percentage of cases (usually 95% or 99%) your portfolio is likely to not lose more than that amount of money. Or said the other way around, in a defined small percentage of cases (5% or 1%) your loss is expected to be greater than that number.
PVaR Contri 95%	This is the decomposition of the VaR, making it an additive measure, showing positive values where risk is decreased and correlations are negative.	
PVaR Contri % to Total	This is the VaR contribution displayed in percent.	
Exp Tail Loss 95%	Also known as Conditional VaR or ETL, it is derived by taking a weighted average between the VaR and losses exceeding the VaR. If VaR is reported at 95.0%, then ETL will average the losses between 95.1% to 99.9%. It is a risk measure that assesses the risk beyond VaR and into the tail end of the distribution of loss.	A measure that produces better incentives for traders than VaR is expected shortfall. This is also sometimes referred to as Conditional VaR, or tail loss. <u>Where VaR asks the question 'how bad can things get?', expected shortfall asks 'if things do get bad, what is our expected loss?'</u>
Exp Tail Loss Contri 95%	This is the decomposition of the ETL making it an additive measure, showing positive values where risk is decreased and correlations are negative.	
Exp Tail Loss Contri % to Total	This is the ETL contribution displayed in percent.	
Max Loss	The maximum projected loss.	
Downside Risk (8.7%)	A risk metric that distinguishes between "good" and "bad" returns by assigning risk only to those returns below a return specified by an investor. Downside risk is considered a more effective risk measure than standard deviation (volatility) for two important reasons: 1) it is investor specific, and 2) it identifies return distributions that have higher probabilities for negative ("left tail") market events. Downside risk is also referred to as downside deviation or target semi-deviation.	A 5 % downside risk with an 8.7% MAR means that the conditional average underperformance (below 8.7% annual) is 5%, adjusted for a positive skew (greater than the MAR). Effectively, downside risk amplifies a big loss (by squaring the distance of that loss to the target) and smoothes out the risk measure by taking into account the gains setting them up to be equal to the target MAR.
Downside Risk Contri (8.7%)	This is the decomposition of the downside risk, making it an additive measure, showing positive values where risk is decreased and correlations are negative.	
Downside Risk Contri (8.7%) to Total	This is the downside risk contribution displayed in percent.	

## Short-Term Cash Management Risks

	2 – Year Swap Spread (bps)	S&P/ISDA U.S. Financials Select 10 Index	5-Year Financial OAS (bps)	TED Spread (bps)	CBOE VIX Index (vol)	Windham Systemic Risk	Windham Turbulance
7/31/2015	24	65	138	25	12	Low	High
6/30/2015	26	69	133	28	18	Low	Moderate
5/31/2015	24	61	119	28	14	Low	High
4/30/2015	25	60	118	28	15	Low	High
3/31/2015	25	62	118	25		High	High
2/28/2015	25	56	112	25	13	High	High
1/31/2015	24	62	123	25	21	High	High
12/31/2014	23	58	117	22	19	High	High
11/30/2014	22	55	113	22	13	Low	Moderate
10/31/2014	21	59	112	23	14	Low	Moderate
9/30/2014	25	67	107	22	16	Low	Low
8/31/2014	22	53	99	21	12	Low	Low
7/31/2014	20	59	95	22	17	Low	Low
6/30/2014	13	53	96	21	12	Low	Low
5/31/2014	14	54	99	20	11	Low	Low
4/30/2014	12	56	99	20	13	Low	Low
3/31/2014	13	61	103	20	14	Low	Low
2/28/2014	13	60	104	19	14	Low	Low
1/31/2014	13	71	111	22	18	Low	Low
12/31/2013	11	60	109	18	14	Low	Low
11/30/2013	9	68	118	18	14	Low	Low
10/31/2013	12	79	125	21	14	Low	Moderate
9/30/2013	14	90	139	24	17	Low	Moderate
8/31/2013	16	89	142	24	17	Low	High
7/31/2013	17	91	142	23	13	Low	High
6/30/2013	16	106	158	24	17	Low	High
5/31/2013	16	84	134	25	16	Low	Moderate
4/30/2013	14	91	137	23	14	Low	Moderate
3/31/2013	18	101	142	21	13	Low	Low
2/28/2013	15	99	141	18	16	Low	Low
1/31/2013	17	101	146	23	14	Low	Low
12/31/2012	14	116	155	27	18	Low	Low
11/30/2012	12	126	163	23	16	Low	Moderate
10/31/2012	10	130	158	21	19	Low	Moderate
9/30/2012	13	142	179	27	16	Low	Moderate
8/31/2012	18	164	206	35	17	Low	High
7/31/2012	20	179	223	35	19	Low	High
6/30/2012	25	191	253	38	17	Low	Moderate
5/31/2012	35	221	272	40	24	Low	Moderate
4/30/2012	29	179	239	37	17	Low	Moderate
3/31/2012	25	158	227	40	16	Low	Moderate
2/29/2012	26	171	245	41	18	Low	Moderate
1/31/2012	30	186	278	49	19	High	Moderate
12/31/2011	48	248	337	57	23	High	Moderate
11/30/2011	42	263	349	53	28	High	Moderate

## LEGEND

RISK FACTORS		Green	Yellow	Red
1	<b>2 – Year Swap Spread</b>	< 40 bps	40 - 60 bps	> 60 bps
2	<b>S&amp;P/ISDA US Financial Select 10</b>	< 100 bps	100 - 200 bps	> 200 bps
3	<b>5-Year Financial OAS</b>	< 125 bps	125 - 200 bps	> 200 bps
4	<b>TED Spread</b>	< 50 bps	50 - 100 bps	> 100 bps
5	<b>CBOE VIX Index</b>	< 25 Vol	25 - 35 Vol	> 35 Vol
6	<b>Windham Systemic Risk</b>	Low	n/a	High
7	<b>Windham Turbulence</b>	Low	Moderate	High

<b>2 – Year Swap Spread</b>	The spread paid by the fixed-rate payer of an interest rate swap over the rate of the 2-year Treasury. The reported 2-year swap spread from Bloomberg is a composite price - calculated average of best bid/ask pricing.
<b>S&amp;P/ISDA US Financial Select 10</b>	The S&P/ISDA US Financial Select 10 tracks major domestic financial 5-year CDS rates. The Index uses an average weighting methodology of the current liquid, "on the run" active contract.
<b>5-Year Financial OAS</b>	The Barclay's U.S. Aggregate Financial Average Option Adjusted Spread; the option adjusted investment grade financial corporate bond spread over 5-year Treasury bonds.
<b>TED Spread</b>	The TED Spread is calculated as the difference between three-month LIBOR expressed in USD and the corresponding yield on 3-month Treasury Bills, expressed in basis points.
<b>CBOE VIX Index</b>	The Chicago Board Options Exchange VIX Index measures the weighted average implied volatility of the S&P 500 using call and put prices over the front two months with a wide range of strike prices.
<b>Windham Systemic Risk</b>	Windham Capital's proprietary measure of the extent to which markets are unified or tightly coupled, called the absorption ratio. When markets are tightly coupled, they are more fragile and negative shocks propagate more quickly and broadly than when markets are loosely linked. Windham reports Systemic Risk as High or Low; there is no Moderate designation for Systemic Risk.
<b>Windham Turbulence</b>	Windham Capital's proprietary measure of the statistical unusualness of a set of returns given their historical pattern of behavior; including extreme price moves, decoupling of correlated assets and convergence of uncorrelated assets. Windham reports Turbulence as High, Moderate, or Low.

# Agenda Item #8



NEPC, LLC

**To:** Mr. Tom Manos, Chair, Arizona State Retirement System (ASRS) Board

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

**Date:** August 20, 2015

**Subject:** Agenda Item #8: Presentation, Discussion and Appropriate Action Regarding Independent Reporting, Monitoring and Oversight of the ASRS Investment Program – Includes Total Fund Q2-15

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### **Purpose**

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

### **Recommendation**

Informational only; no action required.

### **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 Investment Committee 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 Board.

As of June 30, 2015 the Total Fund's market value was approximately \$34.9 billion.

For the one-year period ending June 30, 2015, the Total Fund returned 3.2% (net of fees), outperforming the Interim SAA Policy by 1.6%. For the three-year period, the Total Fund produced a return of 11.4% per annum, outperforming the Interim SAA Policy by 0.9%. Over the past ten years, the Total Fund has returned 6.9% per annum, and since inception, the portfolio's performance is 9.9%.

NEPC will provide a review of Total Fund performance and an independent assessment of the ASRS investment program.

### **Attachments:**

- NEPC's Independent Reporting, Monitoring and Oversight reports

# Arizona State Retirement System

## Independent ASRS Investment Program Oversight for the Period Ending June 30, 2015

August 28, 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 June 30, 2015 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	8.1%
Constant 8%	<u>8.0%</u>
Excess Return	0.1%

**Goal Met: Yes**

**Total Fund Performance**

- 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)
<b>Total Fund</b>	0.6%	<b>3.2%</b>	<b>11.4%</b>	11.8%	6.9%	9.9%
<b>Interim SAA Policy<sup>1</sup></b>	0.7%	<b>1.6%</b>	<b>10.5%</b>	11.2%	6.6%	9.6%
<b>Excess Return</b>	<b>-0.1%</b>	<b>1.6%</b>	<b>0.9%</b>	0.6%	0.3%	0.3%

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

<sup>1</sup>Composition of SAA Policy can be found in the appendix.

Arizona State Retirement System  
**Total Fund Attribution Analysis**

<b>Total Plan</b>	<b>1 Year</b>	<b>3 Years</b>	<b>5 Years</b>
Allocation Effect <sup>1</sup>	0.88%	0.78%	0.54%
Manager Selection Effect <sup>2</sup>	0.69%	0.26%	0.20%
Residual <sup>4</sup>	0.03%	-0.10%	-0.10%
<b>Excess Return</b>	<b>1.60%</b>	<b>0.94%</b>	<b>0.64%</b>

*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 asset classes relative to Interim SAAP benchmark weights. (Return Asset Class Index – Total Interim Policy Index Return) × (Weight Asset Class Portfolio – Weight Asset Class Interim Policy Index)

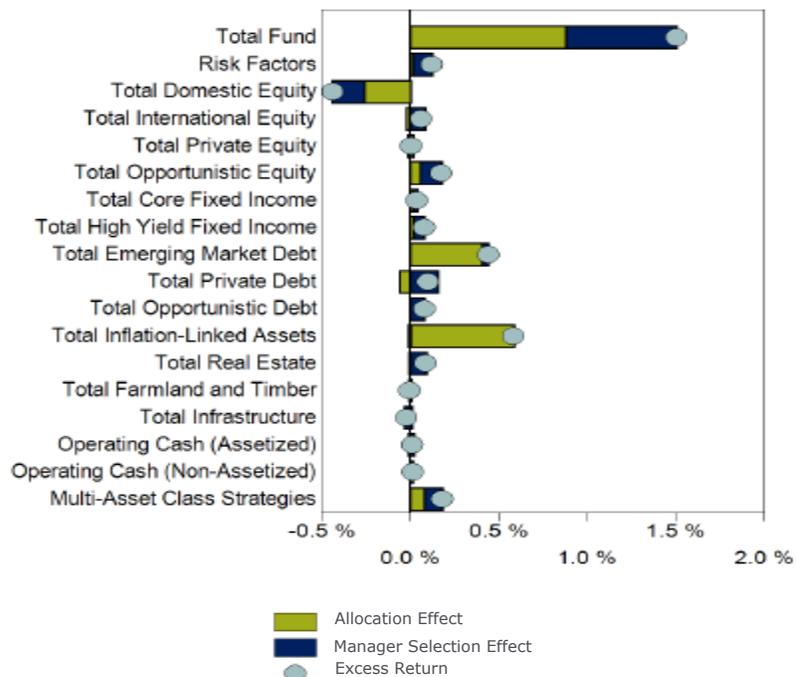
**Manager Selection Effect:** Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark. [Weight Asset Class Benchmark × (Return Portfolio Asset Class – Return Asset Class in Interim Policy Index)] + **Interaction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

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

# Arizona State Retirement System

## Total Fund Attribution Detail

**Attribution Effects**  
1 Year Ending June 30, 2015



### 1 Year Excess Return: +1.60%

- Allocation Effect: +0.88%
  - Commodities tactical underweight (+0.59%)
  - Emerging Market Debt tactical underweight (+0.41%)
  - Opportunistic Equity tactical overweight (+0.06%)
  - Domestic Equity tactical underweight (-0.26%)
- Manager Selection Effect: +0.69%
  - Opportunistic Equity outperformed due to various managers (+0.18%)
  - Private Debt outperformed due to various managers (+0.16%)
  - Public Markets Fixed Income outperformed due to various managers (+0.11%)
  - Multi-Asset Class outperformed due to Bridgewater (+0.10)
  - Risk Factors outperformed (+0.10%)
  - Real Estate outperformed due to various managers (+0.09%)
  - International Equity outperformed due to various managers (+0.08%)
  - Domestic Equity underperformed due to various managers (-0.18%)
- Residual: 0.03%

**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 asset 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.  $(\text{Return Asset Class Portfolio} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Policy Index})) - (\text{Return Asset Class Index} (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Index}))$

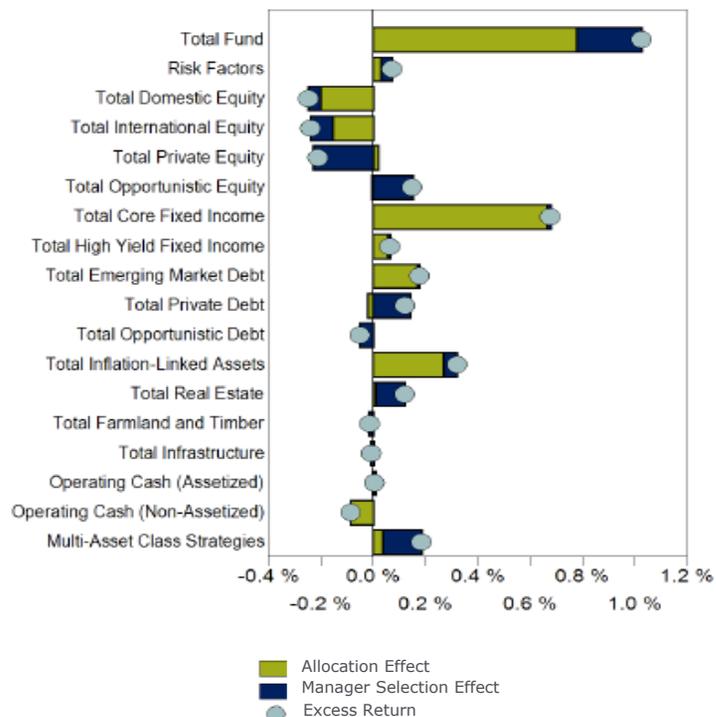
**Residual:** Contribution to excess return not captured in Allocation Effect and Manager Selection Effect.



# Arizona State Retirement System

## Total Fund Attribution Detail

**Attribution Effects**  
3 Years Ending June 30, 2015



### 3 Year Excess Return: +0.94%

- Allocation Effect: +0.78%
  - Public Markets Fixed Income tactical underweight (+0.89%)
  - Commodities tactical underweight (+0.27%)
  - Domestic Equity tactical underweight (-0.20%)
  - International Equity tactical overweight (-0.16%)
- Manager Selection Effect: +0.26%
  - Opportunistic Equity outperformed due to various managers (+0.18%)
  - Multi-Asset Class Strategies outperformed due to Bridgewater (+0.15%)
  - Private Debt outperformed due to various managers (+0.14%)
  - Real Estate outperformed due to various managers (+0.11%)
  - Private Equity underperformed due to various managers (-0.23%)
  - International Equity underperformed due to various managers (-0.08%)
- 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 asset classes relative to Interim SAAP benchmark weights.  $(\text{Return Asset Class Index} - \text{Total Interim Policy Index Return}) \times (\text{Weight Asset Class Portfolio} - \text{Weight Asset Class Interim Policy Index})$

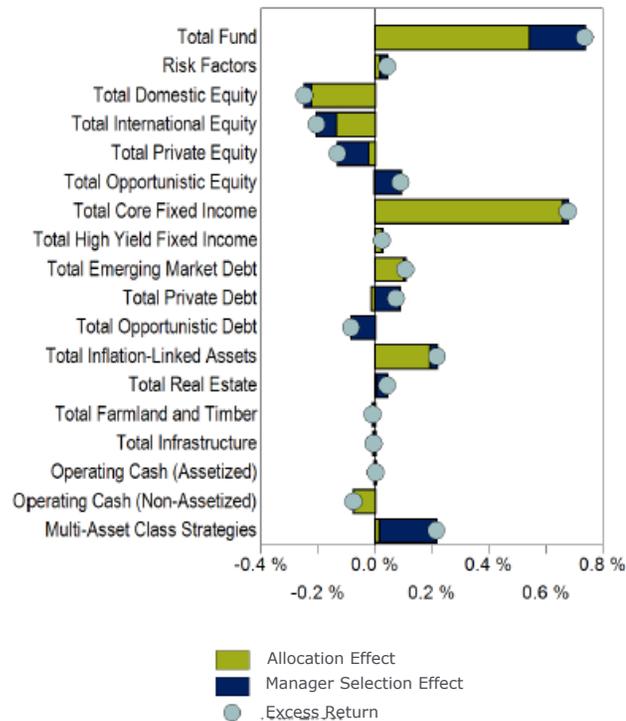
**Manager Selection Effect:** Measures the impact of over/under performance of asset classes in the portfolio relative to the asset class benchmarks in the Interim SAAP benchmark.  $[\text{Weight Asset Class Benchmark} \times (\text{Return Portfolio Asset Class} - \text{Return Asset Class in Interim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

# Arizona State Retirement System

## Total Fund Attribution Detail

Attribution Effects  
5 Years Ending June 30, 2015



### 5 Year Excess Return: +0.64%

- Allocation Effect: +0.54%
  - Public Markets Fixed Income tactical underweight (+0.78%)
  - Commodities tactical underweight (+0.19%)
  - Domestic Equity tactical underweight (-0.22%)
  - International Equity tactical overweight (-0.14%)
- Manager Selection Effect: +0.20%
  - Multi-Asset Class Strategies outperformed due to Bridgewater (+0.20%)
  - Opportunistic Equity outperformed due to various managers (+0.11%)
  - Private Debt outperformed due to various managers (+0.09%)
  - Private Equity underperformed due to various managers (-0.11%)
  - International Equity underperformed due to various managers (-0.07%)
- 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 asset 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 and Manager Selection 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 <sup>1</sup>	2.5%	14.5%
ASRS Custom Total Equity Benchmark	2.6%	14.8%
Excess Return	<b>-0.1%</b>	<b>-0.3%</b>
ASRS Domestic Equity	6.7%	17.6%
ASRS Custom Domestic Equity Benchmark	7.3%	17.8%
Excess Return	<b>-0.6%</b>	<b>-0.2%</b>
ASRS International Equity	<b>-3.8%</b>	10.0%
ASRS Custom Int'l Equity Benchmark	<b>-4.1%</b>	10.4%
Excess Return	0.3%	<b>-0.4%</b>
ASRS Public Markets Fixed Income	<b>-0.3%</b>	1.7%
ASRS Custom Fixed Income Benchmark	<b>-2.0%</b>	1.2%
Excess Return	1.7%	0.5%
ASRS Inflation-Linked	<b>-24.0%</b>	<b>-7.4%</b>
ASRS Custom Inflation-Linked Benchmark	<b>-23.7%</b>	<b>-8.8%</b>
Excess Return	<b>-0.3%</b>	1.4%
ASRS Multi-Asset Class Strategies	1.8%	11.6%
ASRS Multi-Asset Class Strategies Benchmark	1.1%	10.3%
Excess Return	0.7%	1.3%

<sup>1</sup>Performance 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 Markets<sup>1</sup>

- 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	9.7%	13.3%	12.1%	Oct-07
Russell 2000	7.2%	15.0%	14.2%	
Excess Return	2.5%	-1.7%	-2.1%	
ASRS Opportunistic Equity <sup>2</sup>	28.6%	35.6%	33.6%	Apr-11
ASRS Private Debt	9.8%	--	12.3%	Jul-12
S&P/LSTA Levered Loan Index + 250 bps	5.2%	--	6.5%	
Excess Return	4.6%	--	5.8%	
ASRS Opportunistic Debt <sup>2</sup>	6.5%	9.7%	11.4%	Jan-08
ASRS Real Estate	13.8%	13.5%	7.1%	Oct-05
NFI - ODCE Index	12.4%	11.6%	6.1%	
Excess Return	1.4%	1.9%	1.0%	
ASRS Farmland and Timber	4.3%	--	3.8%	Jul-13
CPI ex-Food and Energy + 350 bps	5.4%	--	5.4%	
Excess Return	-1.1%		-1.6%	
ASRS Total Infrastructure	--	--	-1.7%	Oct-14
CPI - Infrastructure + 350 bps	--	--	2.3%	
Excess Return			-4.0%	

1- Performance of private markets portfolios and corresponding benchmarks is reported on a one quarter lag. Performance shown as of March 31, 2015.

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

Note: 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.

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

**Goal Met:  
Partially**



Cash Management

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

Month	External CFs +	Internal CFs =	Total CFs during the Month	Last day of the Month Ending Balance*
Jul – 14	(\$153.7)	(\$59.0)	(\$212.7)	\$249.6
Aug – 14	(\$117.4)	(\$133.1)	(\$250.5)	\$141.8
Sep – 14	(\$84.7)	(\$6.8)	(\$91.5)	\$365.4
Oct – 14	(\$64.8)	\$57.7	(\$7.1)	\$139.9
Nov – 14	(\$109.5)	(\$72.2)	(\$181.7)	\$314.7
Dec – 14	(\$56.7)	(\$571.9)	(\$628.6)	\$467.3
Jan – 15	(\$82.9)	(\$39.8)	(\$122.7)	\$140.1
Feb – 15	(\$123.2)	\$7.2	(\$116.0)	\$80.4
Mar – 15	(\$64.8)	(\$19.3)	(\$84.1)	\$418.0
Apr – 15	(\$90.9)	(\$154.8)	(\$245.7)	\$550.1
May – 15	(\$47.8)	(\$37.8)	(\$85.6)	\$479.0
Jun – 15	(\$74.4)	(\$117.1)	(\$191.5)	\$318.3

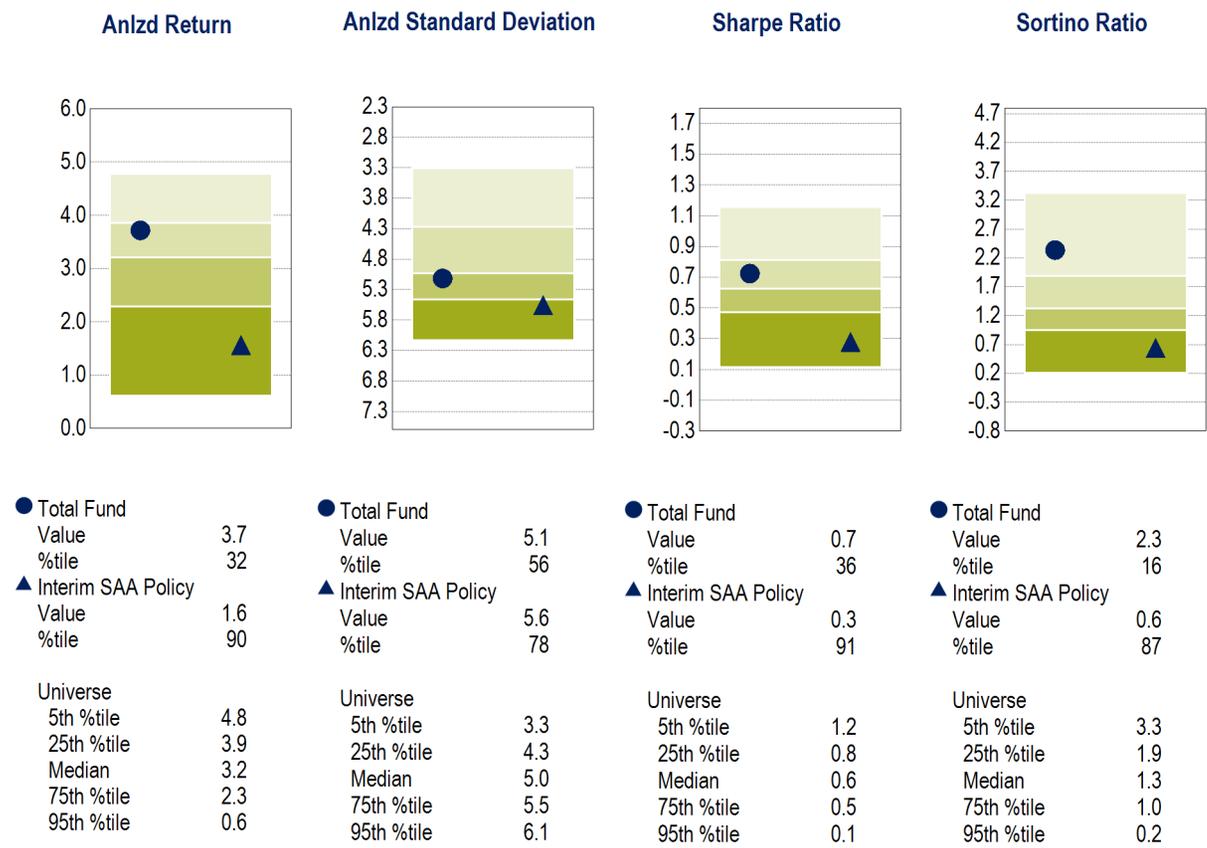
\* Includes assetized & unassetized cash balances (Inception of 1/26/15); represent monies to be used for funding needs that occur in subsequent month(s). Generally, monthly pension payments occur on the first day of month.

**Goal Met: Yes**

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.

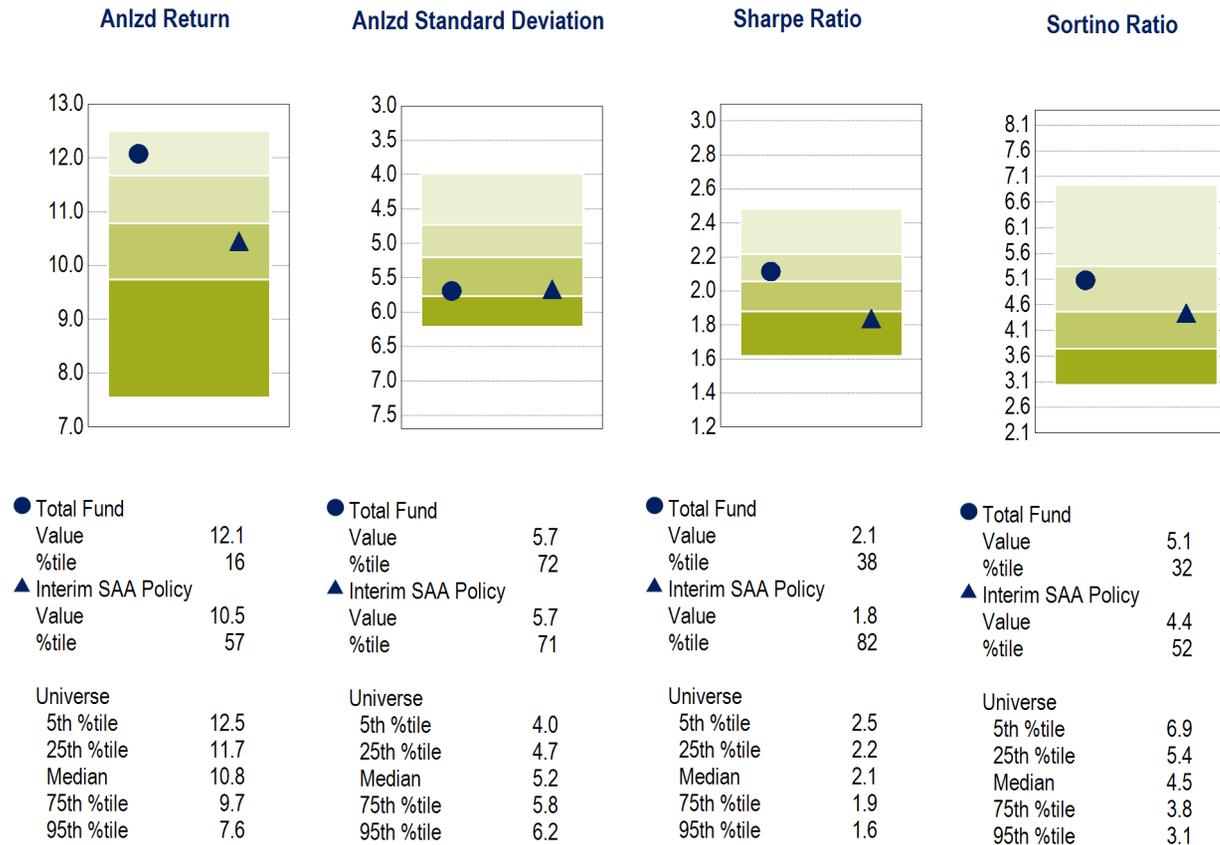
The InvestorForce Public Funds > \$1 Billion Universe contains 100 observations for the period ending June 30, 2015, with total assets of \$2,063 billion.

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



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.

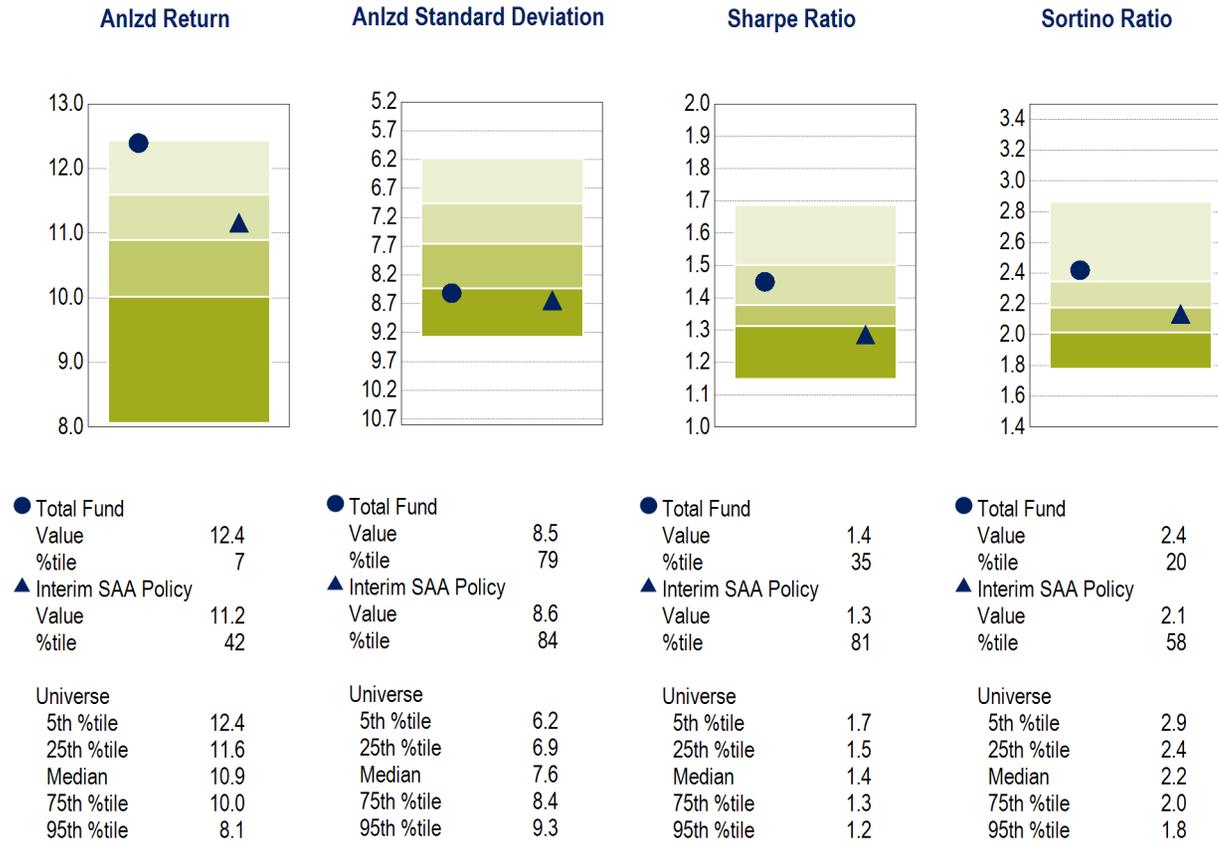
The InvestorForce Public Funds > \$1 Billion Universe contains 100 observations for the period ending June 30, 2015, with total assets of \$2,063 billion.

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.

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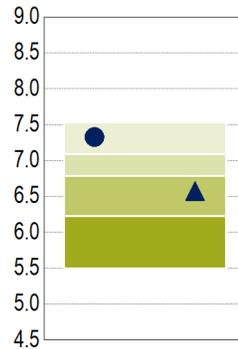
Composition of Interim SAA Policy can be found in the appendix.

Total Fund Risk Statistics vs. Peer Universe

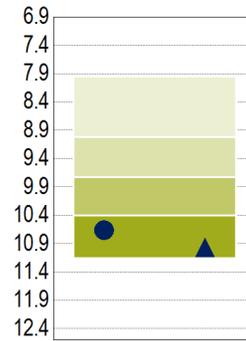
Total Fund vs. IFx Public DB > \$1B Gross(USD)(peer)

10 Year

Anlzd Return



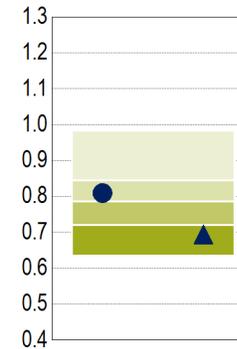
Anlzd Standard Deviation



Sharpe Ratio



Sortino Ratio



● Total Fund

Value 7.3  
%tile 17

▲ Interim SAA Policy

Value 6.6  
%tile 65

Universe

5th %tile 7.5  
25th %tile 7.1  
Median 6.8  
75th %tile 6.2  
95th %tile 5.5

● Total Fund

Value 10.7  
%tile 85

▲ Interim SAA Policy

Value 11.0  
%tile 90

Universe

5th %tile 7.9  
25th %tile 9.0  
Median 9.7  
75th %tile 10.4  
95th %tile 11.1

● Total Fund

Value 0.6  
%tile 51

▲ Interim SAA Policy

Value 0.5  
%tile 86

Universe

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

● Total Fund

Value 0.8  
%tile 39

▲ Interim SAA Policy

Value 0.7  
%tile 86

Universe

5th %tile 1.0  
25th %tile 0.8  
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.

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 100 observations for the period ending June 30, 2015, with total assets of \$2,063 billion.

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

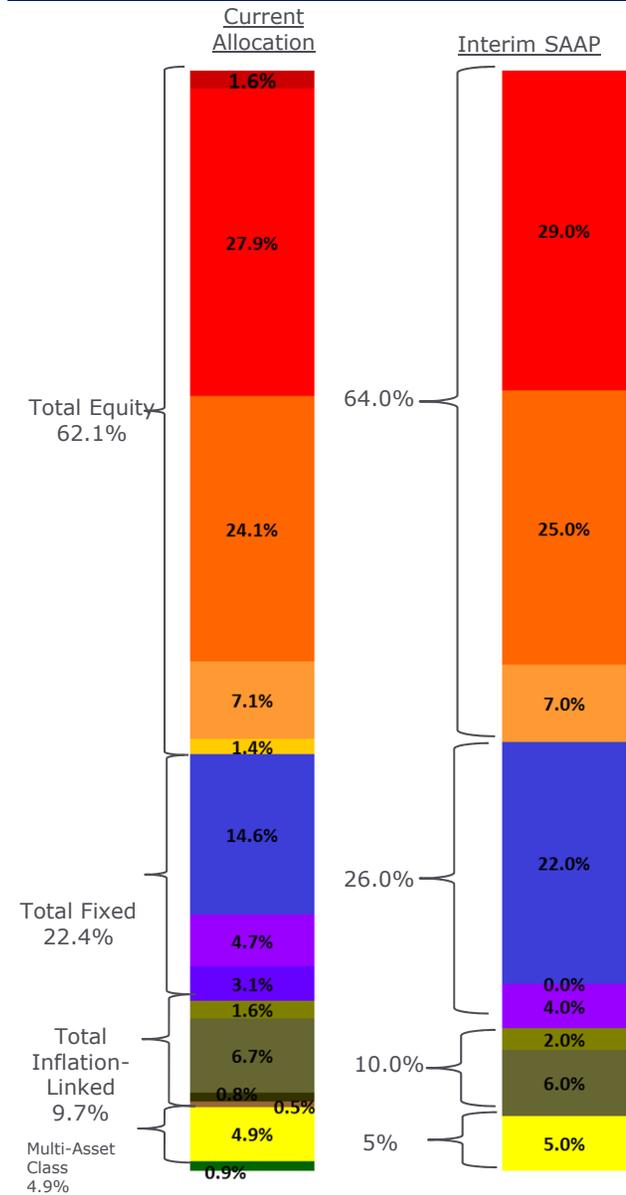
# Independent Oversight/Compliance

**Note: All of the data shown on the following pages is as of June 30, 2015 and reflects the deduction of investment manager fees, unless otherwise noted.**



# Arizona State Retirement System

## SAA Policy Compliance



	Current Mkt Value	Current Allocation	Interim SAAP	Difference	Policy Range	Within Range
<b>Total Domestic and International Equity<sup>1</sup></b>	<b>\$18,703,704,797</b>	<b>53.7%</b>	<b>54.0%</b>	<b>-0.3%</b>		
<b>Domestic Equity<sup>2</sup></b>	<b>\$9,738,087,643</b>	<b>27.9%</b>	<b>29.0%</b>	<b>-1.1%</b>	<b>16% - 36%</b>	<b>Yes</b>
U.S. Large Cap	\$7,588,764,370	21.8%	23.0%	-1.2%		
U.S. Mid Cap	\$1,073,753,486	3.1%	3.0%	0.1%		
U.S. Small Cap	\$1,075,569,787	3.1%	3.0%	0.1%		
<b>International Equity<sup>2</sup></b>	<b>\$8,407,598,048</b>	<b>24.1%</b>	<b>25.0%</b>	<b>-0.9%</b>	<b>14% - 34%</b>	<b>Yes</b>
Developed Large Cap	\$6,069,818,119	17.4%	18.0%	-0.6%		
Developed Small Cap	\$687,351,544	2.0%	2.0%	0.0%		
Emerging Markets	\$1,633,091,879	4.7%	5.0%	-0.3%		
<b>Private Equity<sup>3</sup></b>	<b>\$2,474,325,298</b>	<b>7.1%</b>	<b>7.0%</b>	<b>0.1%</b>	<b>6% - 10%</b>	<b>Yes</b>
<b>Opportunistic Equity<sup>3,5</sup></b>	<b>\$485,647,943</b>	<b>1.4%</b>	<b>0.0%</b>	<b>1.4%</b>	<b>0% - 3%</b>	<b>Yes</b>
<b>Total Equity</b>	<b>\$21,663,678,038</b>	<b>62.1%</b>	<b>61.0%</b>	<b>1.1%</b>	<b>48% - 65%</b>	<b>Yes</b>
<b>U.S. Fixed Income</b>	<b>\$5,081,547,655</b>	<b>14.6%</b>	<b>22.0%</b>	<b>-7.4%</b>	<b>8% - 28%</b>	<b>Yes</b>
Core	\$3,781,019,278	10.8%	17.0%	-6.2%		
High Yield	\$1,300,528,377	3.7%	5.0%	-1.3%		
<b>Private Debt<sup>3</sup></b>	<b>\$1,631,115,653</b>	<b>4.7%</b>	<b>4.0%</b>	<b>0.7%</b>	<b>8% - 12%</b>	
<b>Opportunistic Debt<sup>3,5</sup></b>	<b>\$1,089,167,963</b>	<b>3.1%</b>	<b>0.0%</b>	<b>3.1%</b>	<b>0% - 3%</b>	<b>Yes</b>
<b>Total Fixed Income</b>	<b>\$7,801,831,271</b>	<b>22.4%</b>	<b>26.0%</b>	<b>-3.6%</b>	<b>18% - 35%</b>	<b>Yes</b>
<b>Commodities</b>	<b>\$561,620,866</b>	<b>1.6%</b>	<b>2.0%</b>	<b>-0.4%</b>	<b>0% - 4%</b>	<b>Yes</b>
<b>Real Estate<sup>3</sup></b>	<b>\$2,343,221,525</b>	<b>6.7%</b>	<b>6.0%</b>	<b>0.7%</b>	<b>8% - 12%</b>	<b>Yes</b>
<b>Infrastructure</b>	<b>\$294,905,121</b>	<b>0.8%</b>	<b>0.0%</b>	<b>0.8%</b>	<b>0% - 3%</b>	<b>Yes</b>
<b>Farmland and Timber</b>	<b>\$170,400,209</b>	<b>0.5%</b>	<b>0.0%</b>	<b>0.5%</b>	<b>0% - 3%</b>	<b>Yes</b>
<b>Opportunistic Inflation-Linked<sup>4</sup></b>	<b>\$0</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0% - 3%</b>	<b>Yes</b>
<b>Total Inflation-Linked</b>	<b>\$3,370,147,721</b>	<b>9.7%</b>	<b>8.0%</b>	<b>1.7%</b>	<b>8% - 16%</b>	<b>Yes</b>
<b>Multi-Asset Class Strategies</b>	<b>\$1,703,372,187</b>	<b>4.9%</b>	<b>5.0%</b>	<b>-0.1%</b>	<b>0% - 12%</b>	<b>Yes</b>
<b>Cash<sup>4</sup></b>	<b>\$322,861,484</b>	<b>0.9%</b>	<b>0.0%</b>	<b>0.9%</b>		
Operating Cash (Non-Assetized)	\$26,878,039	0.1%	0.0%	0.1%		
Operating Cash (Assetized)	\$295,983,445	0.8%	0.0%	0.8%		
<b>Total</b>	<b>\$34,861,890,700</b>	<b>100.0%</b>	<b>100.0%</b>	<b>0.0%</b>		

<sup>1</sup>Total Domestic and International Equity includes Equity Risk Factor Portfolio with assets of \$558.2 million.

<sup>2</sup>Domestic Equity, International Equity and U.S. Fixed Income market values include residual values remaining in terminated manager accounts.

<sup>3</sup>Values shown for private markets portfolios include cash flows that occurred during 1Q 2015.

<sup>4</sup>Cash includes money for the upcoming monthly pension distribution.

<sup>5</sup>Aggregate Opportunistic asset classes not to exceed 10%.

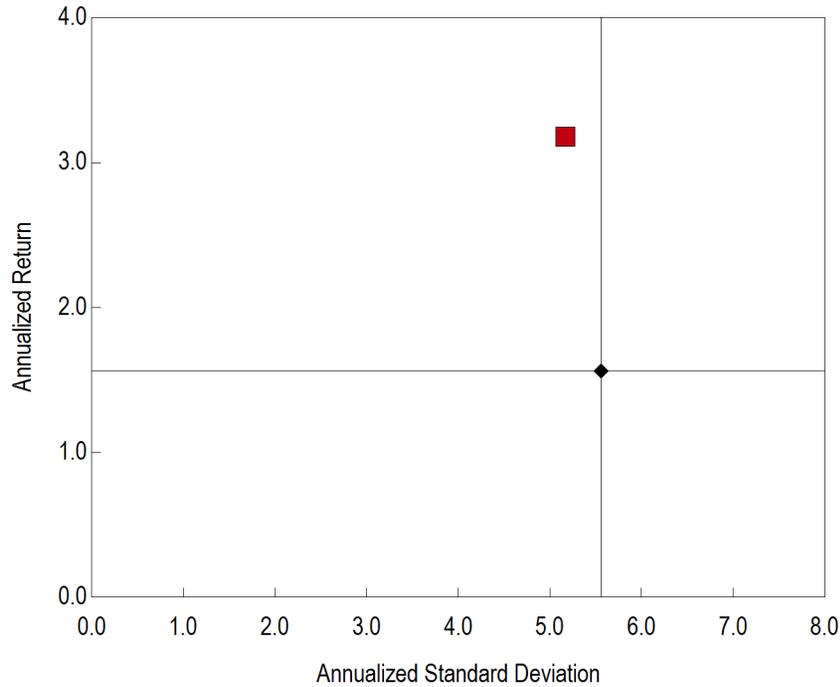
Note: Interim SAA Policy includes proration of 1% Private Equity and 2% Real Estate, which are unfunded.

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 June 30, 2015

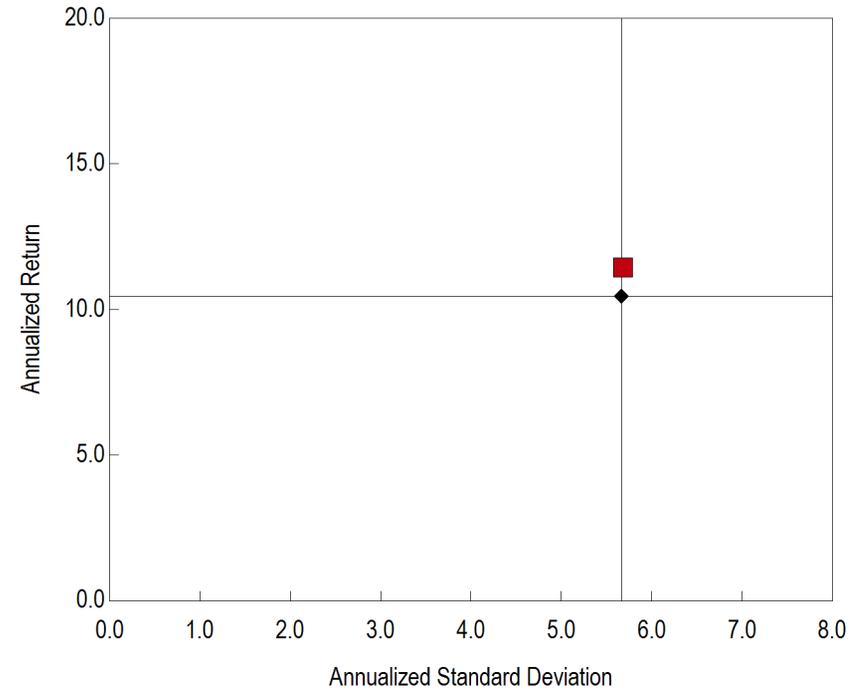


■ Total Fund  
◆ Interim SAA Policy

1 Year Ending June 30, 2015

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	3.2%	5.2%	0.6	1.5
Interim SAA Policy	1.6%	5.6%	0.3	0.6

3 Years Ending June 30, 2015



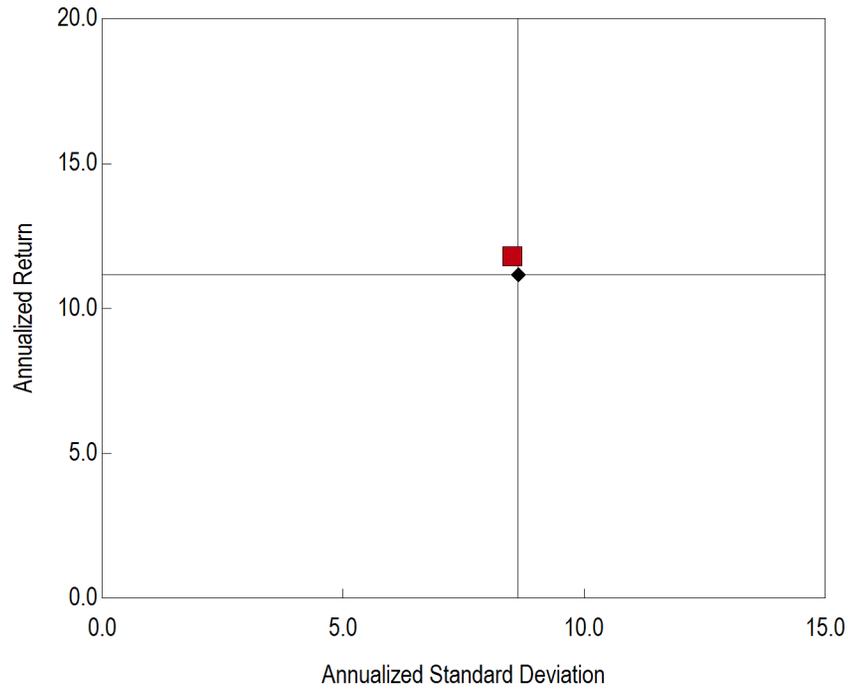
■ Total Fund  
◆ Interim SAA Policy

3 Years Ending June 30, 2015

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	11.4%	5.7%	2.0	4.4
Interim SAA Policy	10.5%	5.7%	1.8	4.4

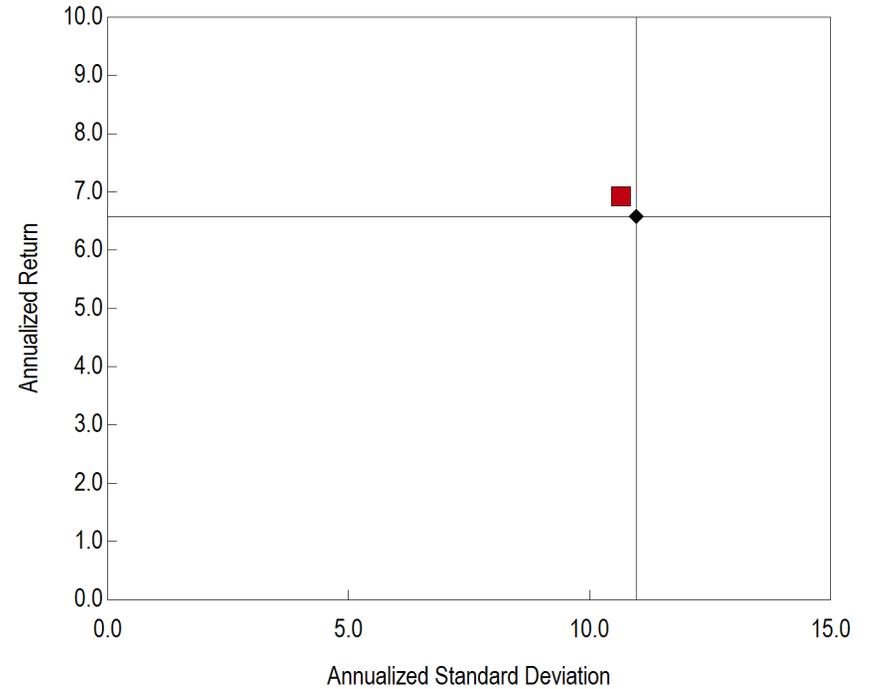
Total Fund Analysis

5 Years Ending June 30, 2015



■ Total Fund  
◆ Interim SAA Policy

10 Years Ending June 30, 2015



■ Total Fund  
◆ Interim SAA Policy

5 Years Ending June 30, 2015

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	11.8%	8.5%	1.4	2.3
Interim SAA Policy	11.2%	8.6%	1.3	2.1

10 Years Ending June 30, 2015

	Anlzd Return	Anlzd Standard Deviation	Sharpe Ratio	Sortino Ratio
Total Fund	6.9%	10.7%	0.5	0.8
Interim SAA Policy	6.6%	11.0%	0.5	0.7

# Arizona State Retirement System

## Asset Class Performance Summary - Public Markets

	Market Value (\$)	% of Portfolio	3 Mo (%)	Rank	FYTD (%)	Rank	1 Yr (%)	Rank	3 Yrs (%)	Rank	5 Yrs (%)	Rank	10 Yrs (%)	Rank	Inception (%)	Since	
<b>Total Fund</b>	<b>34,861,890,700</b>	<b>100.0</b>	<b>0.6</b>	<b>--</b>	<b>3.2</b>	<b>--</b>	<b>3.2</b>	<b>--</b>	<b>11.4</b>	<b>--</b>	<b>11.8</b>	<b>--</b>	<b>6.9</b>	<b>--</b>	<b>#</b>	<b>9.9</b>	<b>Jul-75</b>
<i>Interim SAA Policy</i>			<u>0.7</u>	--	<u>1.6</u>	--	<u>1.6</u>	--	<u>10.5</u>	--	<u>11.2</u>	--	<u>6.6</u>	--	<u>9.6</u>	<i>Jul-75</i>	
Over/Under			-0.1		1.6		1.6		0.9		0.6		0.3		0.3		
<i>Actual Benchmark</i>			<u>0.7</u>	--	<u>2.4</u>	--	<u>2.4</u>	--	<u>11.0</u>	--	<u>11.4</u>	--	<u>6.6</u>	--	--	<i>Jul-75</i>	
<b>Total Domestic and International Equity<sup>1</sup></b>	<b>18,703,704,797</b>	<b>53.7</b>	<b>0.7</b>	<b>--</b>	<b>2.5</b>	<b>--</b>	<b>2.5</b>	<b>--</b>	<b>14.5</b>	<b>--</b>	<b>14.3</b>	<b>--</b>	<b>7.2</b>	<b>--</b>	<b>#</b>	<b>6.8</b>	<b>Jan-98</b>
<i>ASRS Custom Total Equity Benchmark</i>			<u>0.6</u>	--	<u>2.6</u>	--	<u>2.6</u>	--	<u>14.8</u>	--	<u>14.4</u>	--	<u>7.4</u>	--	<u>6.2</u>	<i>Jan-98</i>	
Over/Under			0.1		-0.1		-0.1		-0.3		-0.1		-0.2		0.6		
<b>Total Domestic Equity</b>	<b>9,738,087,643</b>	<b>27.9</b>	<b>0.0</b>	<b>54</b>	<b>6.7</b>	<b>51</b>	<b>6.7</b>	<b>51</b>	<b>17.6</b>	<b>52</b>	<b>17.5</b>	<b>43</b>	<b>8.5</b>	<b>50</b>	<b>11.3</b>	<b>Jul-75</b>	
<i>ASRS Custom Domestic Equity Benchmark</i>			<u>0.1</u>	53	<u>7.3</u>	47	<u>7.3</u>	47	<u>17.8</u>	49	<u>17.6</u>	41	<u>8.4</u>	55	<u>11.4</u>	<i>Jul-75</i>	
Over/Under			-0.1		-0.6		-0.6		-0.2		-0.1		0.1		-0.1		
<i>eA All US Equity Net Median</i>			<u>0.2</u>		<u>6.8</u>		<u>6.8</u>		<u>17.7</u>		<u>17.1</u>		<u>8.5</u>		<u>12.7</u>	<i>Jul-75</i>	
<b>Total International Equity</b>	<b>8,407,598,048</b>	<b>24.1</b>	<b>1.7</b>	<b>46</b>	<b>-3.8</b>	<b>66</b>	<b>-3.8</b>	<b>66</b>	<b>10.0</b>	<b>70</b>	<b>8.4</b>	<b>80</b>	<b>5.2</b>	<b>90</b>	<b>6.2</b>	<b>Apr-87</b>	
<i>ASRS Custom Int'l Equity Benchmark</i>			<u>0.9</u>	63	<u>-4.1</u>	68	<u>-4.1</u>	68	<u>10.4</u>	68	<u>8.7</u>	77	<u>6.1</u>	65	<u>5.9</u>	<i>Apr-87</i>	
Over/Under			0.8		0.3		0.3		-0.4		-0.3		-0.9		0.3		
<i>eA All ACWI ex-US Equity Net Median</i>			<u>1.4</u>		<u>-2.3</u>		<u>-2.3</u>		<u>11.7</u>		<u>10.1</u>		<u>6.8</u>		<u>7.8</u>	<i>Apr-87</i>	
<b>Total Public Markets Fixed Income</b>	<b>5,081,567,512</b>	<b>14.6</b>	<b>-1.2</b>	<b>67</b>	<b>-0.3</b>	<b>90</b>	<b>-0.3</b>	<b>90</b>	<b>1.7</b>	<b>67</b>	<b>3.6</b>	<b>56</b>	<b>4.7</b>	<b>44</b>	<b>8.3</b>	<b>Jul-75</b>	
<i>ASRS Custom Fixed Income Benchmark</i>			<u>-1.2</u>	67	<u>-2.0</u>	96	<u>-2.0</u>	96	<u>1.2</u>	81	<u>3.0</u>	68	<u>4.3</u>	58	--	<i>Jul-75</i>	
Over/Under			0.0		1.7		1.7		0.5		0.6		0.4		--		
<i>eA All US Fixed Inc Net Median</i>			<u>-0.6</u>		<u>1.2</u>		<u>1.2</u>		<u>2.4</u>		<u>3.9</u>		<u>4.5</u>		<u>8.1</u>	<i>Jul-75</i>	
<b>Total Inflation-Linked Assets</b>	<b>561,620,866</b>	<b>1.6</b>	<b>4.2</b>	<b>--</b>	<b>-24.0</b>	<b>--</b>	<b>-24.0</b>	<b>--</b>	<b>-7.4</b>	<b>--</b>	<b>-4.3</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-3.5</b>	<b>Feb-10</b>	
<i>ASRS Custom Inflation-Linked Benchmark</i>			<u>4.7</u>	--	<u>-23.7</u>	--	<u>-23.7</u>	--	<u>-8.8</u>	--	<u>-5.8</u>	--	--	--	<u>-4.9</u>	<i>Feb-10</i>	
Over/Under			-0.5		-0.3		-0.3		1.4		1.5		--		1.4		
<b>Total Multi-Asset Class Strategies</b>	<b>1,703,372,187</b>	<b>4.9</b>	<b>-1.5</b>	<b>57</b>	<b>1.8</b>	<b>29</b>	<b>1.8</b>	<b>29</b>	<b>11.6</b>	<b>1</b>	<b>12.9</b>	<b>1</b>	<b>8.1</b>	<b>6</b>	<b>7.9</b>	<b>Jan-04</b>	
<i>Multi-Asset Class Strategies Custom Benchm:</i>			<u>-0.6</u>	26	<u>1.1</u>	31	<u>1.1</u>	31	<u>10.3</u>	14	<u>11.0</u>	6	<u>6.2</u>	58	<u>6.3</u>	<i>Jan-04</i>	
Over/Under			-0.9		0.7		3.2		1.3		1.9		1.9		1.6		
<i>eA Global TAA Net Median</i>			<u>-1.4</u>		<u>-0.3</u>		<u>-0.3</u>		<u>6.3</u>		<u>7.3</u>		<u>7.0</u>		<u>7.1</u>	<i>Jan-04</i>	
<b>Operating Cash (Assetized)</b>	<b>295,983,445</b>	<b>0.8</b>	<b>1.0</b>												<b>5.1</b>	<b>Feb-15</b>	
<i>ASRS Cash Assetization Custom Benchmark</i>			<u>-0.1</u>												<u>3.2</u>	<i>Feb-15</i>	
Over/Under			1.1												1.9		

<sup>1</sup>Performance 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 (%)	Since
<b>Total Fund</b>	<b>34,861,890,700</b>	<b>100.0</b>	<b>0.6</b>	<b>3.2</b>	<b>11.4</b>	<b>11.8</b>	<b>9.9</b>	<b>Jul-75</b>
<i>Interim SAA Policy</i>			<u>0.7</u>	<u>1.6</u>	<u>10.5</u>	<u>11.2</u>	<u>9.6</u>	<i>Jul-75</i>
Over/Under			-0.1	1.6	0.9	0.6	0.3	
<i>Actual Benchmark</i>			<u>0.7</u>	<u>2.4</u>	<u>11.0</u>	<u>11.4</u>	--	<i>Jul-75</i>
<b>Total Private Equity</b>	<b>2,440,430,496</b>	<b>7.0</b>	<b>1.8</b>	<b>9.7</b>	<b>13.3</b>	<b>14.3</b>	<b>12.1</b>	<b>Oct-07</b>
<i>Russell 2000 1 QTR Lagged</i>			<u>4.0</u>	<u>7.2</u>	<u>15.0</u>	<u>14.3</u>	<u>14.2</u>	<i>Oct-07</i>
Over/Under			-2.2	2.5	-1.7	0.0	-2.1	
<b>Total Opportunistic Equity<sup>1</sup></b>	<b>442,669,347</b>	<b>1.3</b>	<b>4.6</b>	<b>28.6</b>	<b>35.6</b>		<b>33.6</b>	<b>Apr-11</b>
<b>Total Private Debt</b>	<b>1,564,975,116</b>	<b>4.5</b>	<b>2.1</b>	<b>9.8</b>	<b>--</b>	<b>--</b>	<b>12.3</b>	<b>Jul-12</b>
<i>S&amp;P/LSTA Leveraged Loan Index + 250 bps 1 QTR Lagged</i>			<u>2.7</u>	<u>5.2</u>			<u>6.5</u>	<i>Jul-12</i>
Over/Under			-0.6	4.6			5.8	
<b>Total Opportunistic Debt<sup>1</sup></b>	<b>1,088,650,206</b>	<b>3.1</b>	<b>2.1</b>	<b>6.5</b>	<b>9.7</b>	<b>9.3</b>	<b>11.4</b>	<b>Jan-08</b>
<b>Total Real Estate</b>	<b>2,207,150,467</b>	<b>6.3</b>	<b>2.2</b>	<b>13.8</b>	<b>13.5</b>	<b>14.0</b>	<b>7.1</b>	<b>Oct-05</b>
<i>NCREIF ODCE 1 QTR Lagged (net)</i>			<u>3.2</u>	<u>12.4</u>	<u>11.6</u>	<u>13.2</u>	<u>6.1</u>	<i>Oct-05</i>
Over/Under			-1.0	1.4	1.9	0.8	1.0	
<b>Total Farmland and Timber</b>	<b>154,690,907</b>	<b>0.4</b>	<b>0.7</b>	<b>4.3</b>	<b>--</b>	<b>--</b>	<b>3.8</b>	<b>Jul-13</b>
<i>CPI ex-Food and Energy + 350 bps 1 QTR Lagged</i>			<u>1.4</u>	<u>5.4</u>	--	--	<u>5.4</u>	<i>Jul-13</i>
Over/Under			-0.7	-1.1			-1.6	
<b>Total Infrastructure</b>	<b>294,905,121</b>	<b>0.8</b>	<b>-2.0</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>-1.7</b>	<b>Oct-14</b>
<i>CPI - Infrastructure + 350 bps</i>			<u>1.7</u>				<u>2.3</u>	
Over/Under			-3.7				-4.0	

Note: Performance in private markets asset classes is based on net of fee money-weighted (IRR) performance data.

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

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 State Street.

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.

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.

# Arizona State Retirement System

## Public Market Asset Class Analysis

3 Years Ending June 30, 2015

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Rank	Info Ratio	Rank	Anlzd AJ	Rank	Beta	Sharpe Ratio
Total Fund	100.0%	11.4%	32	5.7%	72	1.1%	51	0.9	41	1.1%	21	1.0	2.0
Interim SAA Policy	--	10.5%	57	5.7%	71	--	--	--	--	--	74	--	1.8
Total Domestic and International Equity	53.7%	14.5%	--	8.6%	--	0.6%	--	-0.5	--	-0.1%	--	1.0	1.7
ASRS Custom Total Equity Benchmark	--	14.8%	--	8.7%	--	--	--	--	--	--	--	--	1.7
Total Domestic Equity	27.9%	17.6%	52	8.8%	16	0.5%	1	-0.4	--	0.0%	44	1.0	2.0
ASRS Custom Domestic Equity Benchmark	--	17.8%	49	8.9%	18	--	--	--	--	--	43	--	2.0
Total International Equity	24.1%	10.0%	70	10.2%	48	0.7%	1	-0.7	--	-0.3%	80	1.0	1.0
ASRS Custom Int'l Equity Benchmark	--	10.4%	68	10.3%	59	--	--	--	--	--	74	--	1.0
Total Public Markets Fixed Income	14.6%	1.7%	67	3.8%	72	0.6%	1	0.9	35	0.5%	88	1.0	0.4
ASRS Custom Public Markets Fixed Income Benchmark	--	1.2%	81	3.6%	70	--	--	--	--	--	96	--	0.3
Total Inflation-Linked Assets	1.6%	-7.4%	--	12.1%	--	2.5%	--	0.6	--	1.3%	--	1.0	-0.6
ASRS Custom Inflation-Linked Benchmark	--	-8.8%	--	11.9%	--	--	--	--	--	--	--	--	-0.7
Multi-Asset Class Strategies	4.9%	11.6%	1	7.1%	71	2.3%	9	0.6	1	0.0%	26	1.1	1.6
Multi-Asset Class Strategies Custom Benchmark	--	10.3%	14	6.0%	44	--	--	--	--	--	25	--	1.7

Note: Performance is reported net of fees.

Underlying composites do not add up to 100% because the chart excludes private market 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 June 30, 2015

	% of Tot	Anlzd Ret	Rank	Anlzd Std Dev	Rank	Tracking Error	Rank	Info Ratio	Rank	Anlzd AJ	Rank	Beta	Sharpe Ratio
Total Fund	100.0%	11.8%	20	8.5%	78	1.1%	29	0.6	40	0.9%	27	1.0	1.4
Interim SAA Policy	--	11.2%	42	8.6%	84	--	--	--	--	--	68	--	1.3
Total Domestic and International Equity	53.7%	14.3%	--	13.1%	--	0.6%	--	-0.3	--	0.0%	--	1.0	1.1
ASRS Custom Total Equity Benchmark	--	14.4%	--	13.2%	--	--	--	--	--	--	--	--	1.1
Total Domestic Equity	27.9%	17.5%	43	12.8%	29	0.5%	1	-0.2	--	-0.2%	37	1.0	1.4
ASRS Custom Domestic Equity Benchmark	--	17.6%	41	12.7%	27	--	--	--	--	--	34	--	1.4
Total International Equity	24.1%	8.4%	80	15.3%	37	0.8%	1	-0.4	--	-0.2%	80	1.0	0.5
ASRS Custom Int'l Equity Benchmark	--	8.7%	77	15.6%	53	--	--	--	--	--	77	--	0.6
Total Public Markets Fixed Income	14.6%	3.6%	56	3.4%	63	0.5%	1	1.1	11	0.5%	87	1.0	1.1
ASRS Custom Public Markets Fixed Income Benchmark	--	3.0%	68	3.3%	60	--	--	--	--	--	97	--	0.9
Total Inflation-Linked Assets	1.6%	-4.3%	--	13.9%	--	2.6%	--	0.6	--	1.3%	--	1.0	-0.3
ASRS Custom Inflation-Linked Benchmark	--	-5.8%	--	14.3%	--	--	--	--	--	--	--	--	-0.4
Multi-Asset Class Strategies	4.9%	12.9%	1	9.4%	85	2.2%	4	0.8	1	1.5%	19	1.0	1.4
Multi-Asset Class Strategies Custom Benchmark	--	11.0%	6	8.9%	74	--	--	--	--	--	51	--	1.2

Note: Performance is reported net of fees.

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

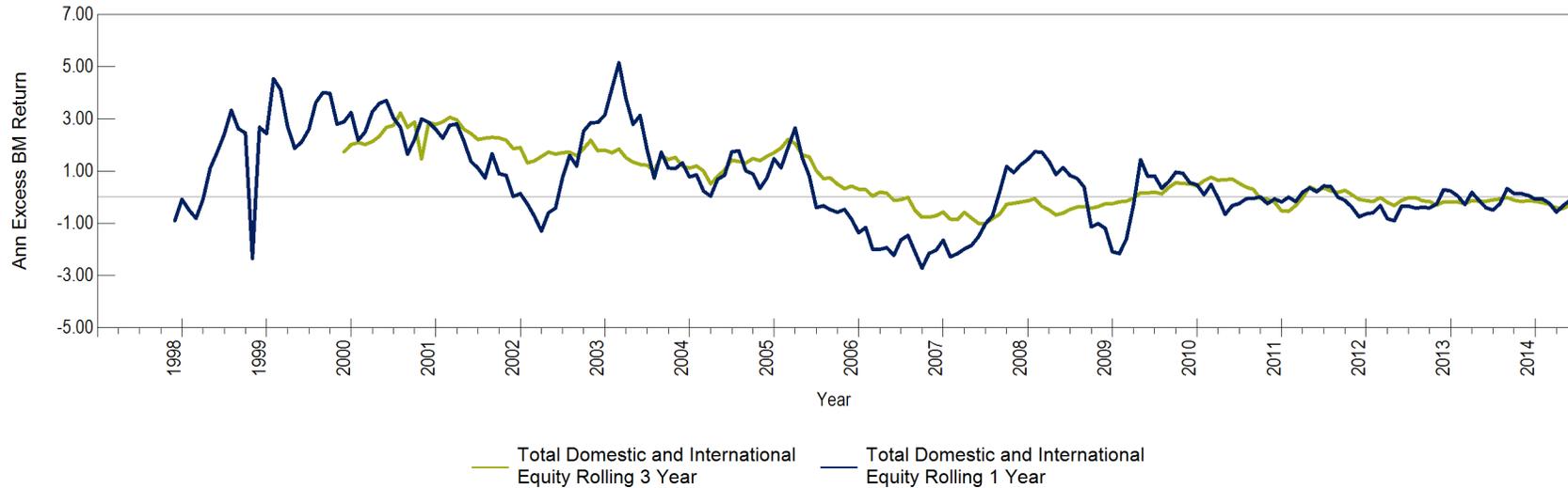
Ranks for statistics shown above are based on the respective universe against which the portfolio is ranked on the asset class performance summary that precedes this section of the analysis.

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

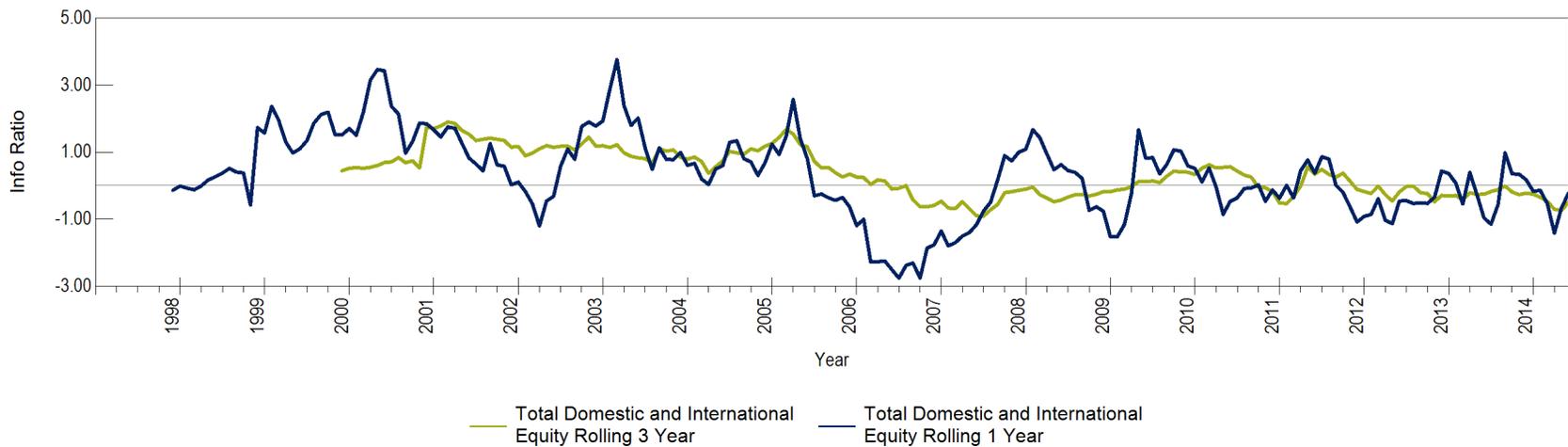
Composition of Interim SAA Policy and ASRS Custom Benchmarks can be found in the appendix.

Asset Class Analysis - Total Domestic and International Equity

Rolling Annual Excess Benchmark Return

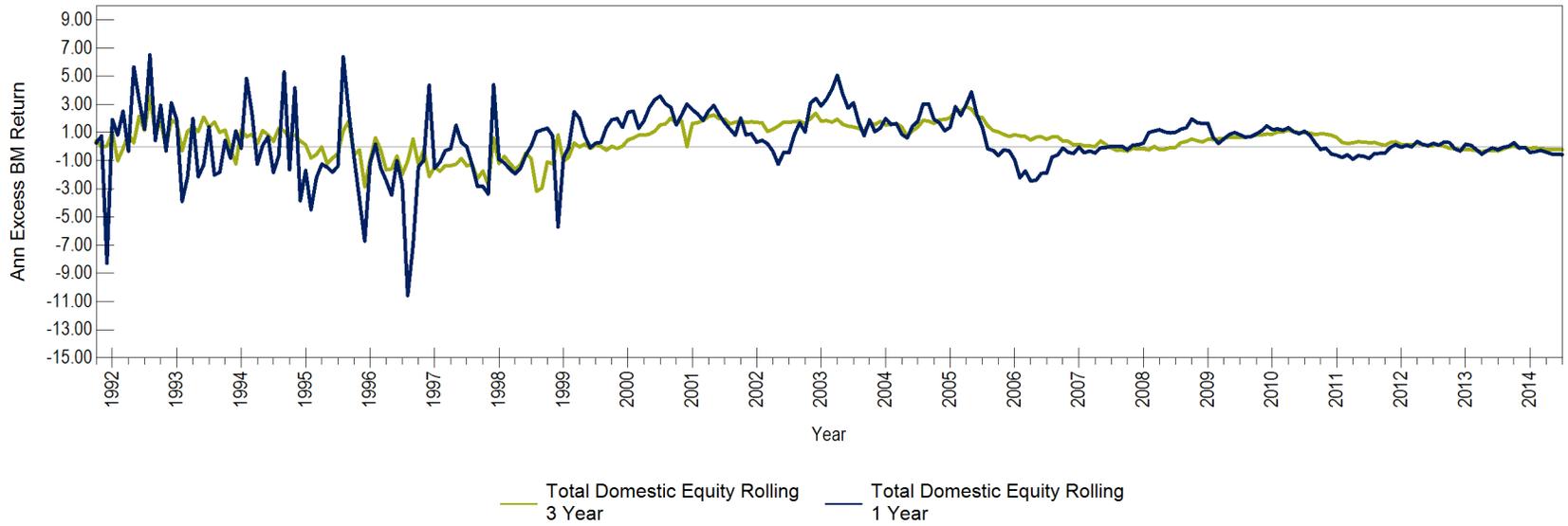


Rolling Information Ratio



Asset Class Analysis - Total Domestic Equity

Rolling Annual Excess Benchmark Return

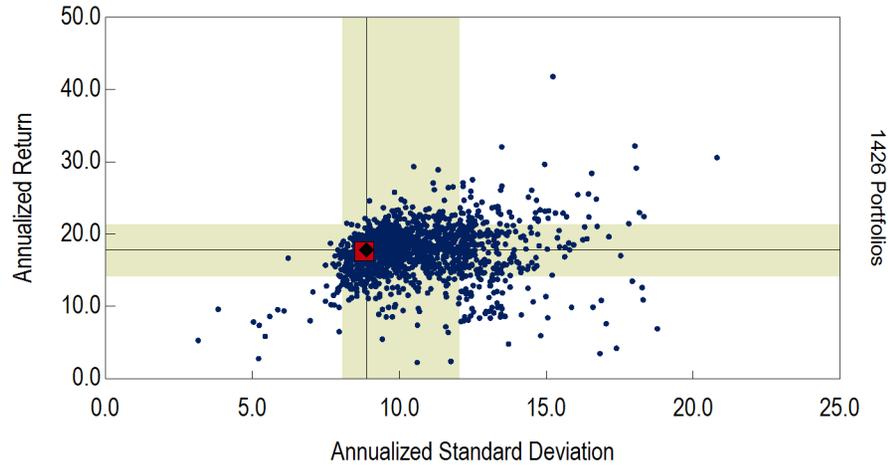


eA All US Equity Net Accounts



Asset Class Analysis - Total Domestic Equity

3 Year Risk Return

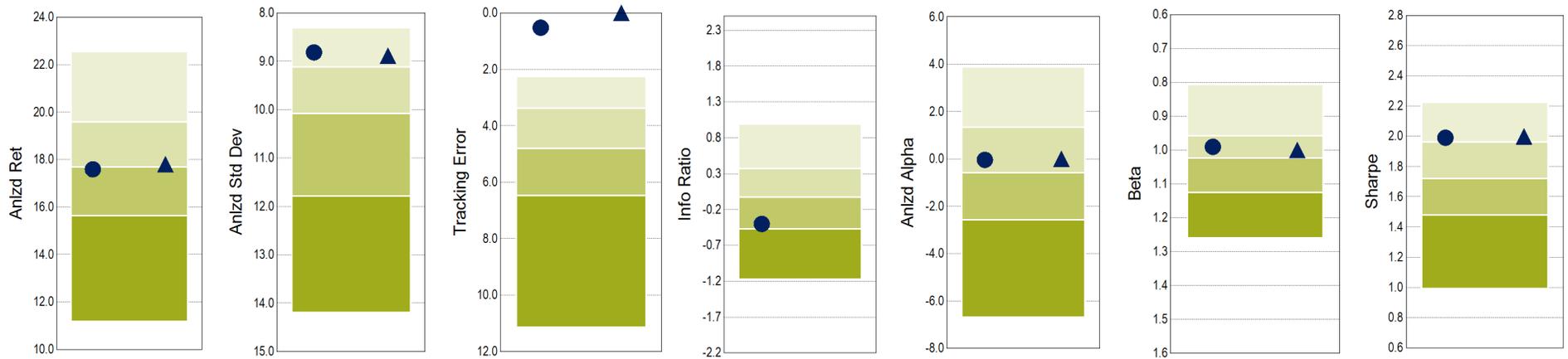


- Total Domestic Equity
- ◆ ASRS Custom Domestic Equity Benchmark
- 68% Confidence Interval
- eA All US Equity Net

3 Year Style Map



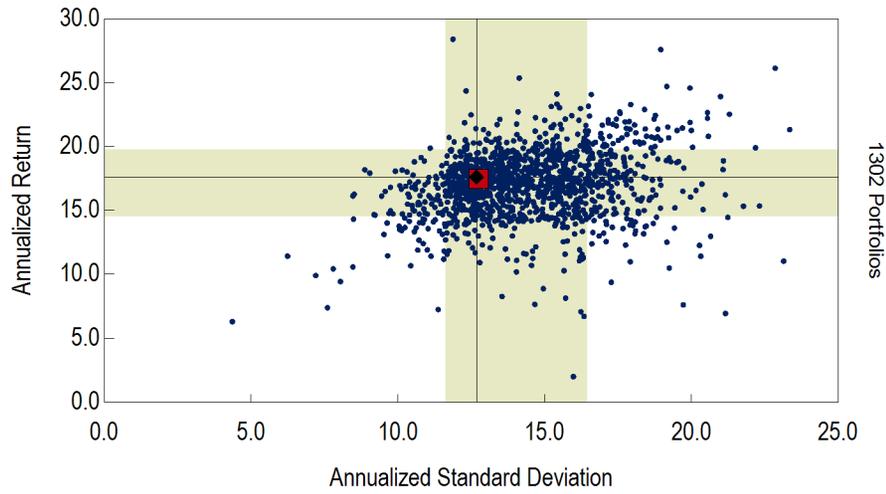
- First Rolling Period
- ◆ Last Rolling Period



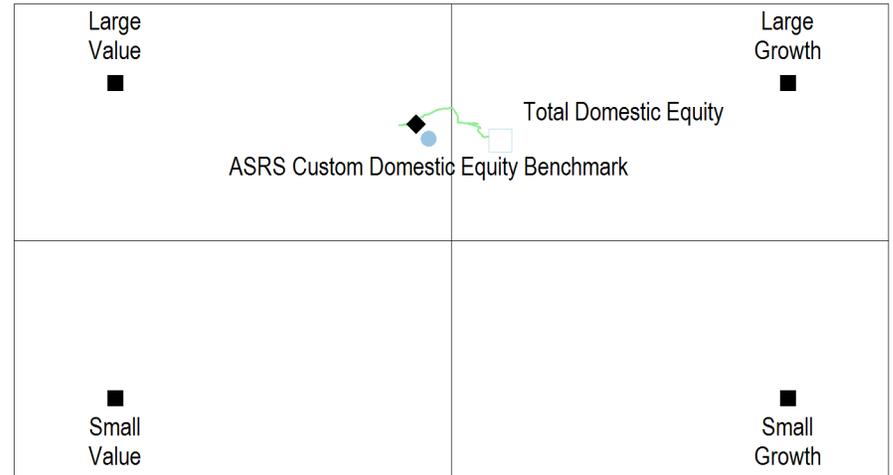
- Total Domestic Equity
- ▲ ASRS Custom Domestic Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

Asset Class Analysis - Total Domestic Equity

5 Year Risk Return

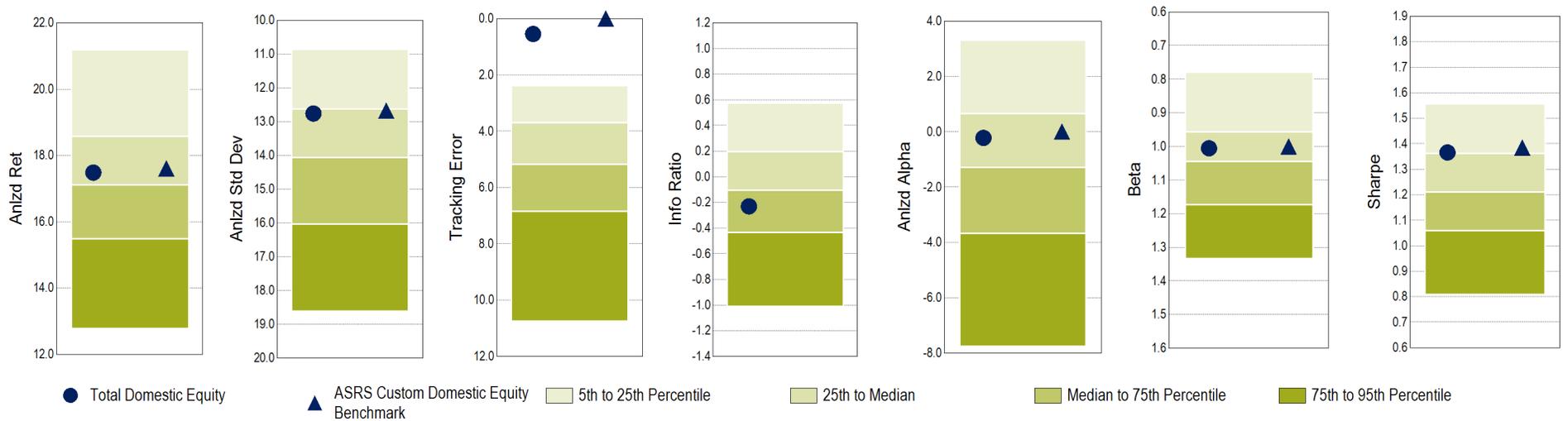


5 Year Style Map



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

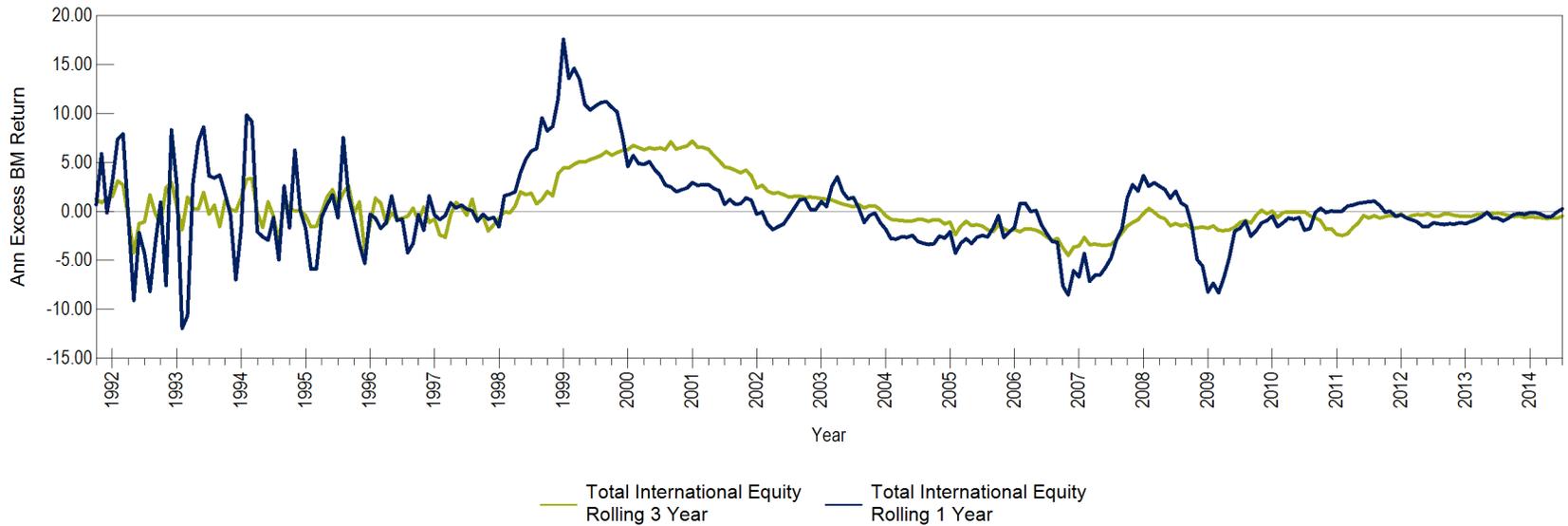
- First Rolling Period
- ◆ Last Rolling Period



- 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

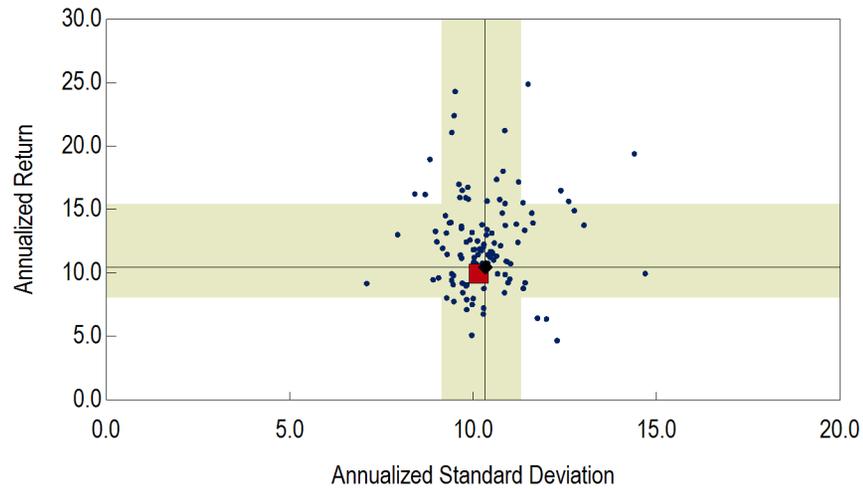
Rolling Annual Excess Benchmark Return



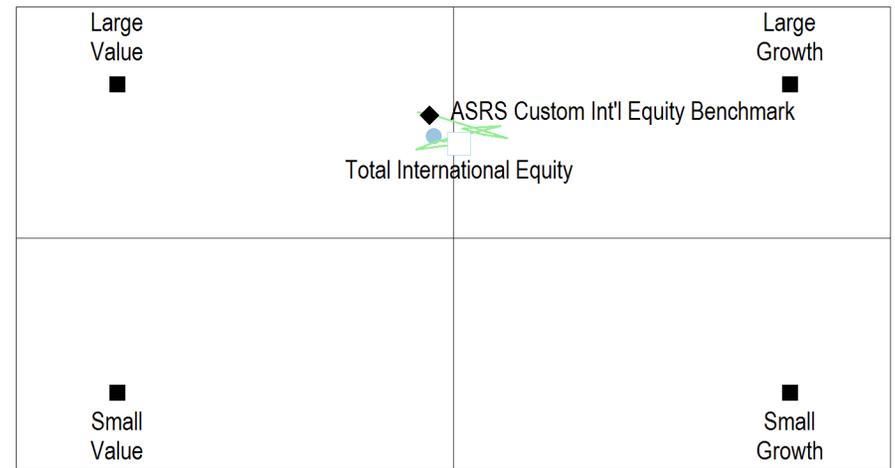
eA All ACWI ex-US Equity Net Accounts



3 Year Risk Return

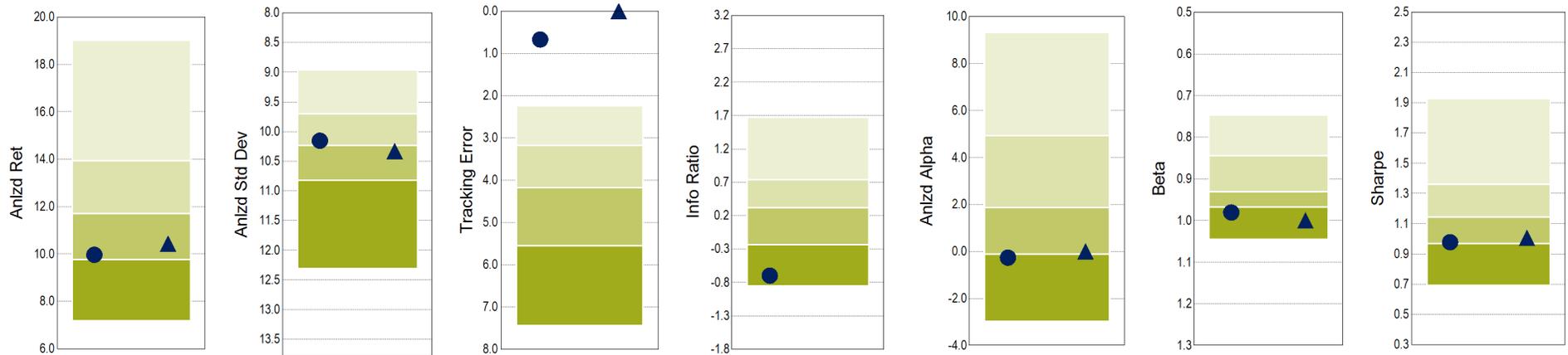


3 Year Style Map



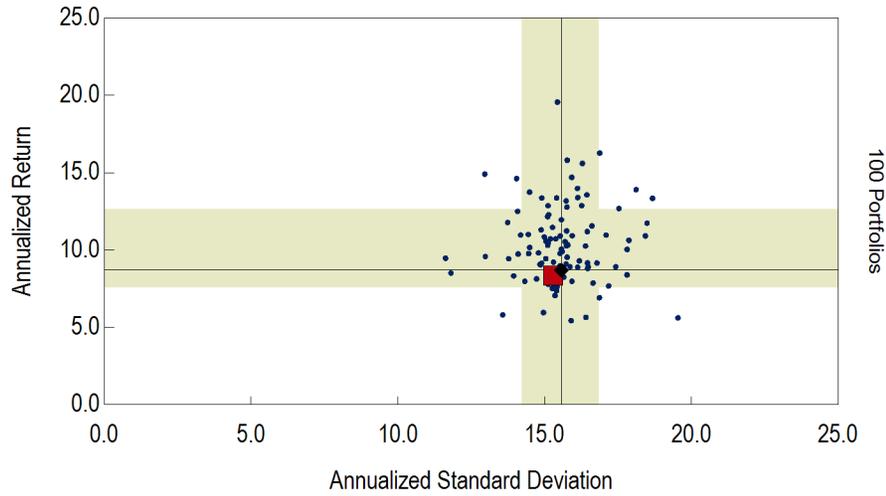
- Total International Equity
- ◆ ASRS Custom Int'l Equity Benchmark
- 68% Confidence Interval
- eA All ACWI ex-US Equity Net

- First Rolling Period
- ◆ Last Rolling Period



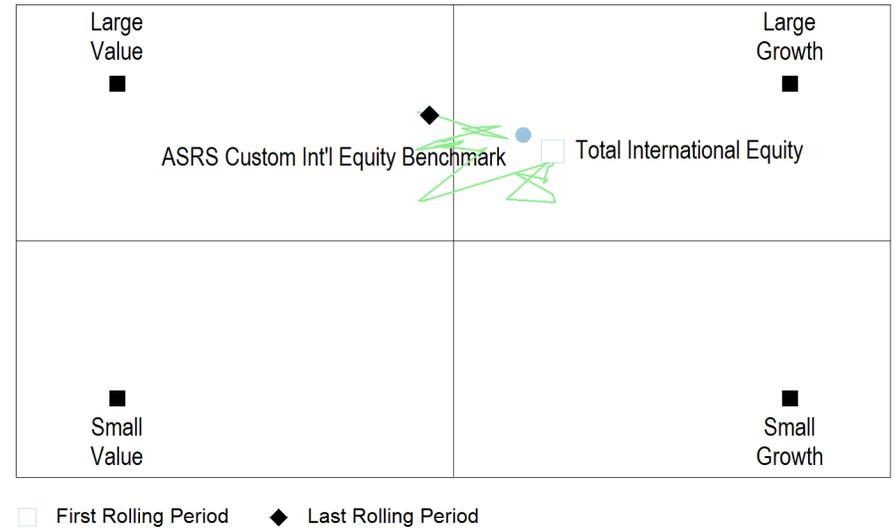
- Total International Equity
- ▲ ASRS Custom Int'l Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

5 Year Risk Return

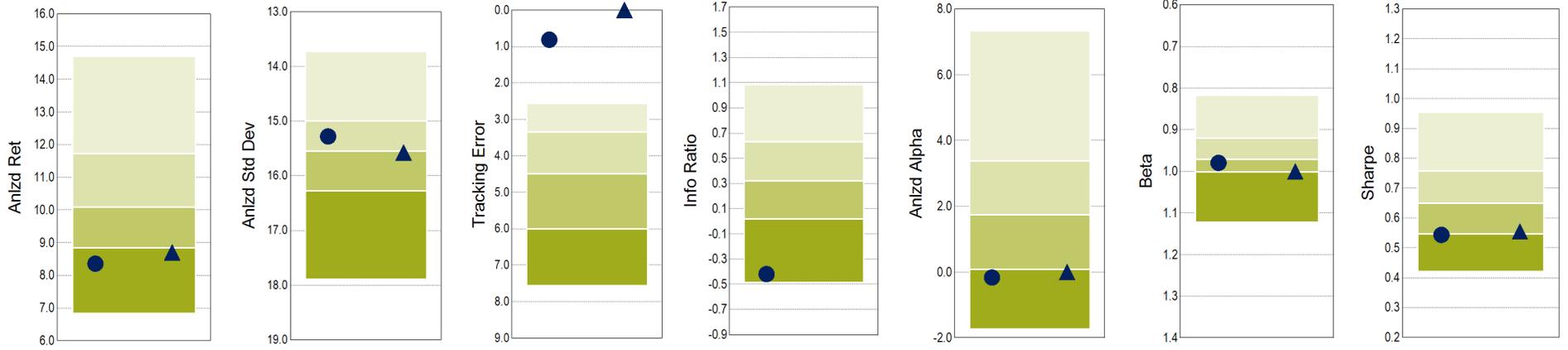


- Total International Equity
- ◆ ASRS Custom Int'l Equity Benchmark
- 68% Confidence Interval
- eA All ACWI ex-US Equity Net

5 Year Style Map



- First Rolling Period
- ◆ Last Rolling Period

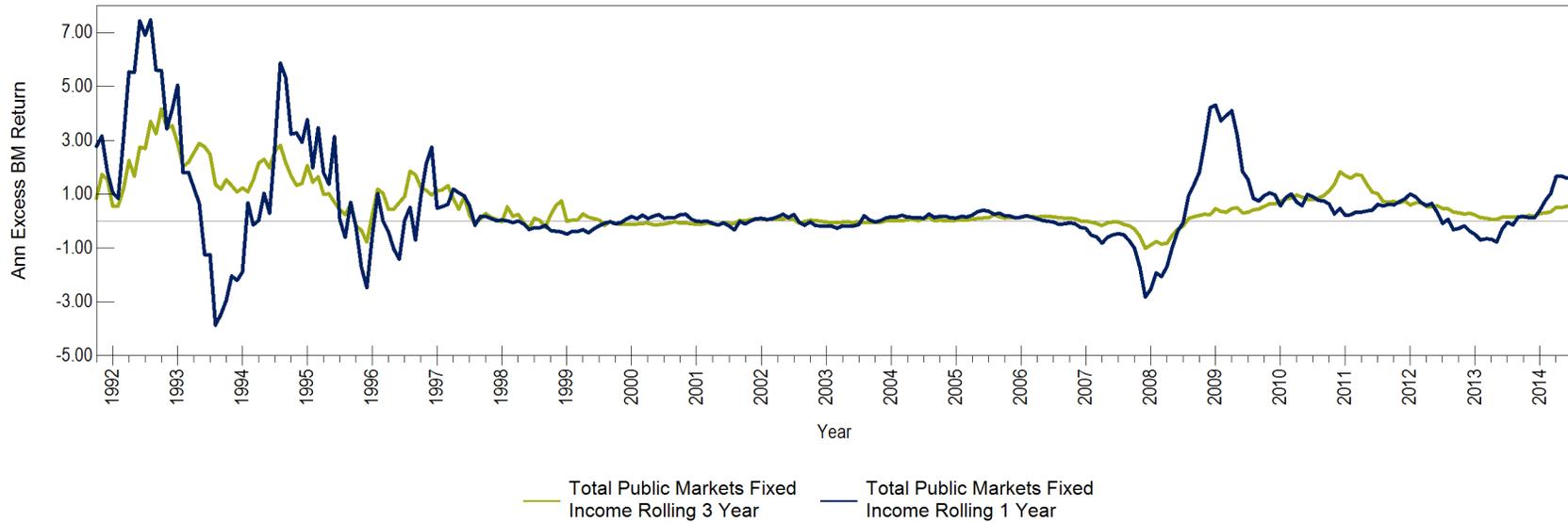


- Total International Equity
- ▲ ASRS Custom Int'l Equity Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

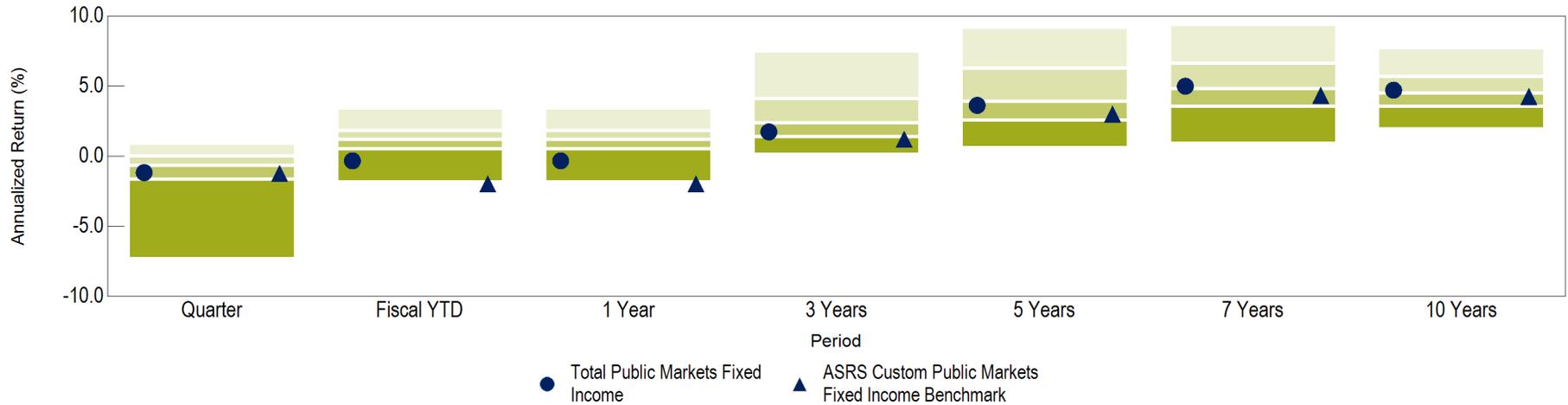


Asset Class Analysis - Total Public Markets Fixed Income

Rolling Annual Excess Benchmark Return

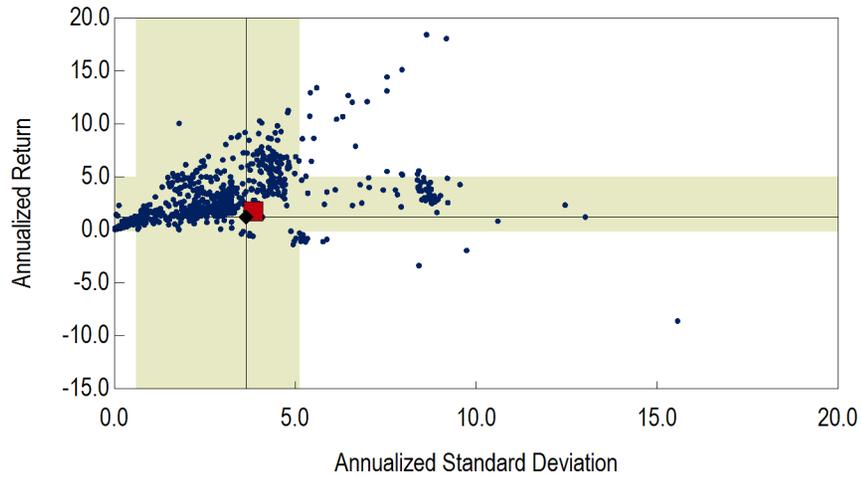


eA All US Fixed Inc Net Accounts



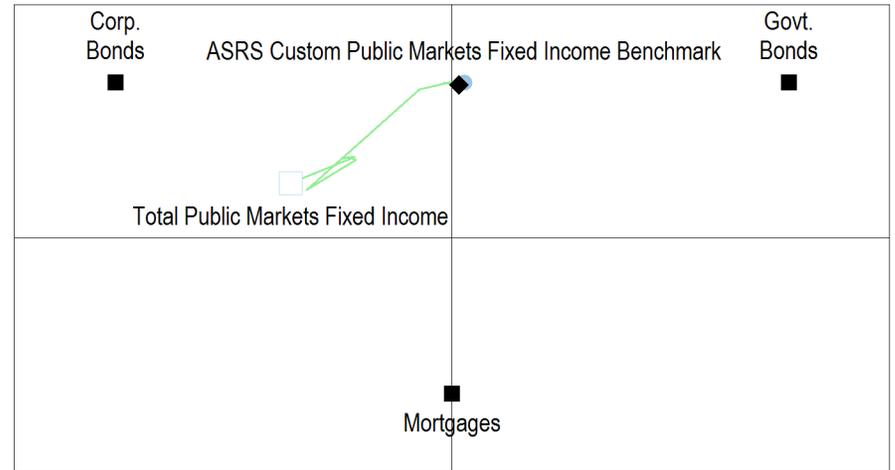
Asset Class Analysis - Total Public Markets Fixed Income

3 Year Risk Return

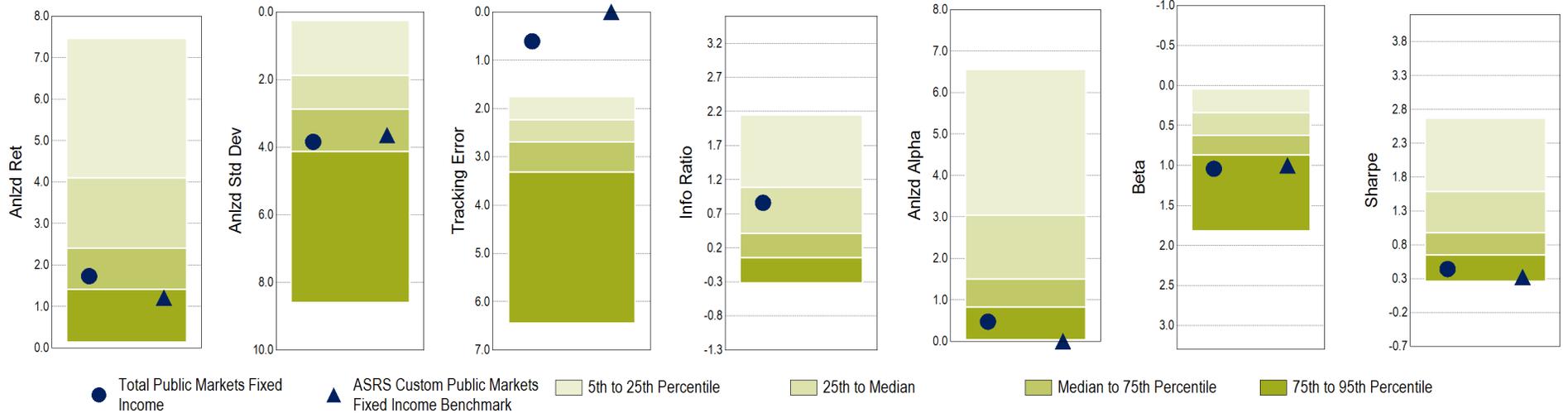


- Total Public Markets Fixed Income
- ◆ ASRS Custom Public Markets Fixed Income Benchmark
- 68% Confidence Interval
- eA All US Fixed Inc Net

3 Year Style Map

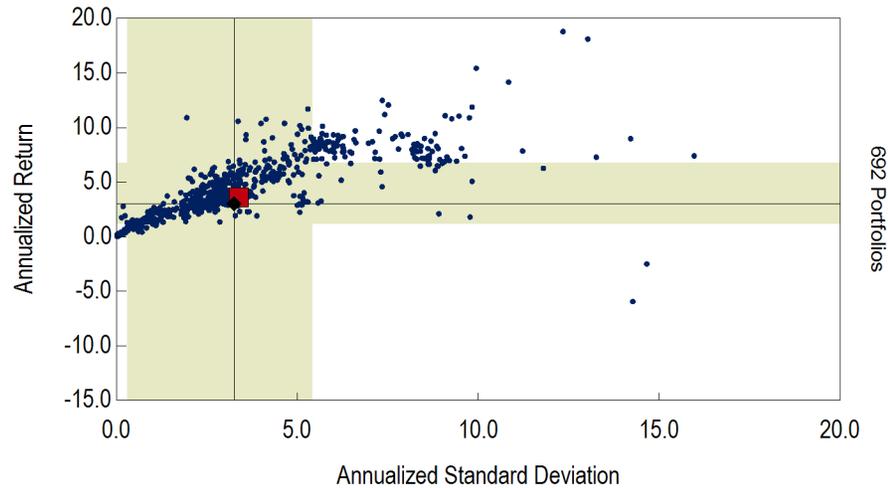


- First Rolling Period
- ◆ Last Rolling Period

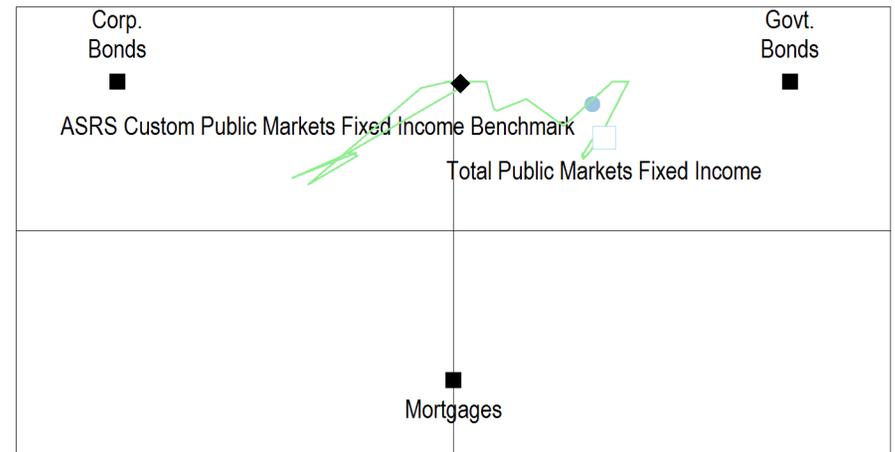


- Total Public Markets Fixed Income
- ▲ ASRS Custom Public Markets Fixed Income Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

5 Year Risk Return

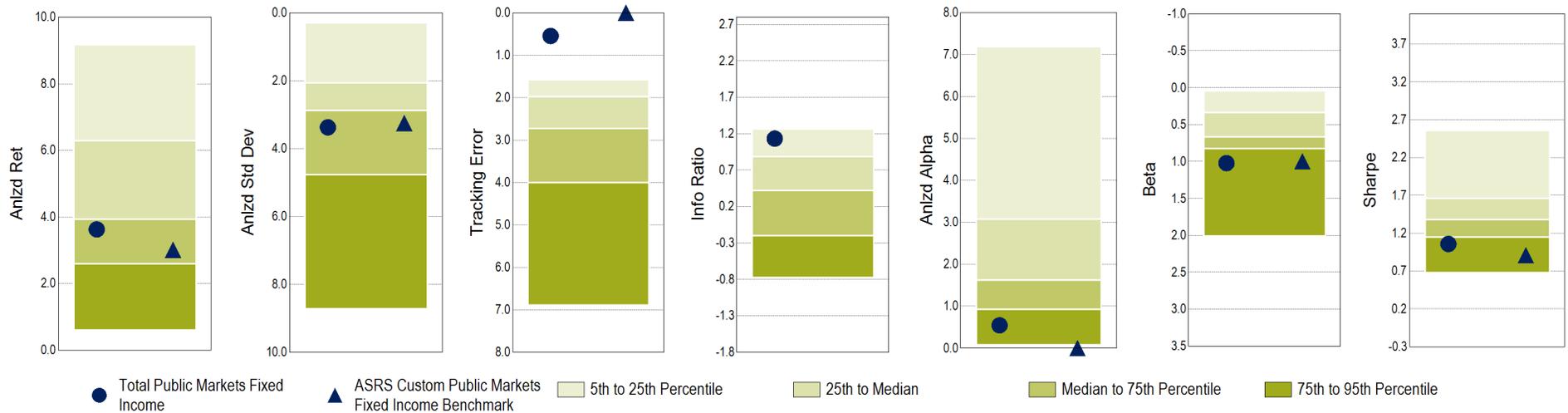


5 Year Style Map



- 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

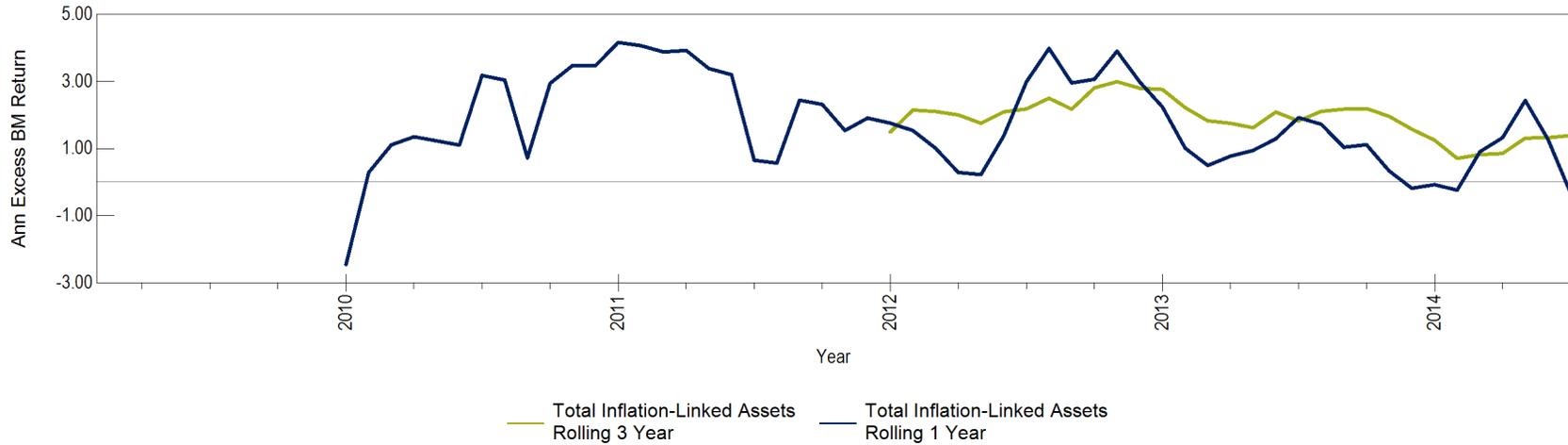


- Total Public Markets Fixed Income
- ▲ ASRS Custom Public Markets Fixed Income Benchmark
- 5th to 25th Percentile
- 25th to Median
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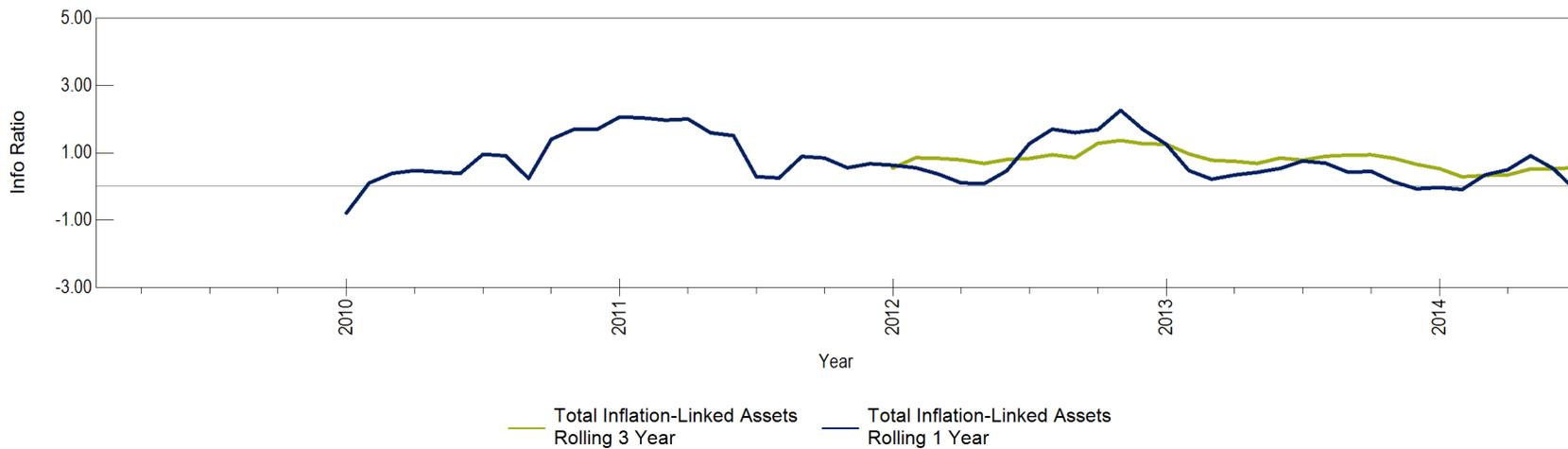


Asset Class Analysis - Total Inflation-Linked Assets

Rolling Annual Excess Benchmark Return

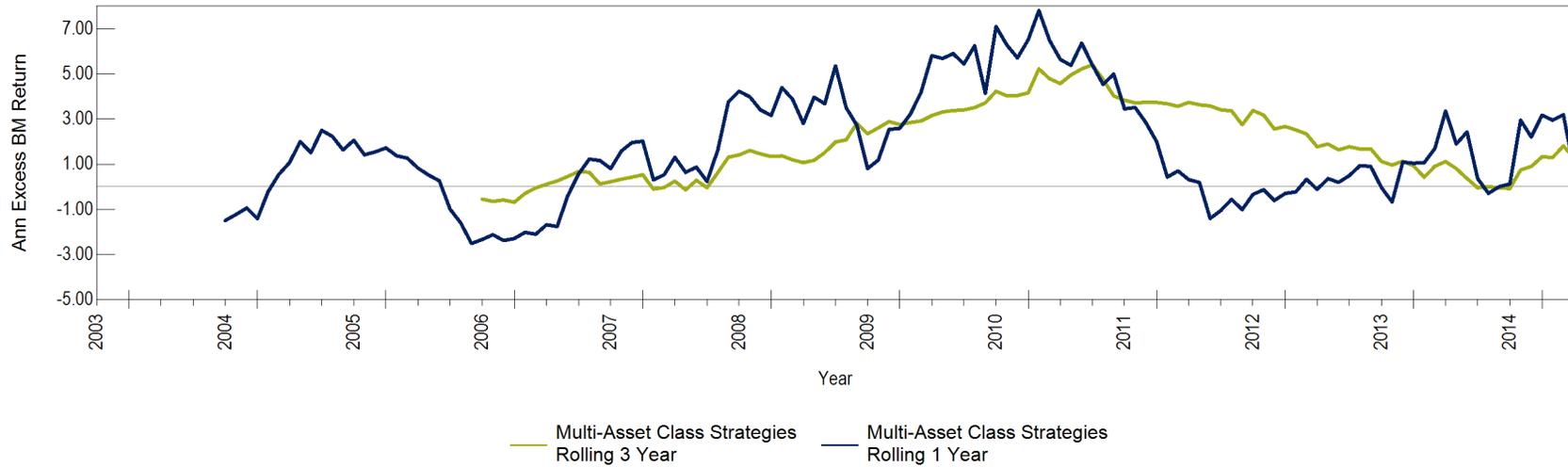


Rolling Information Ratio

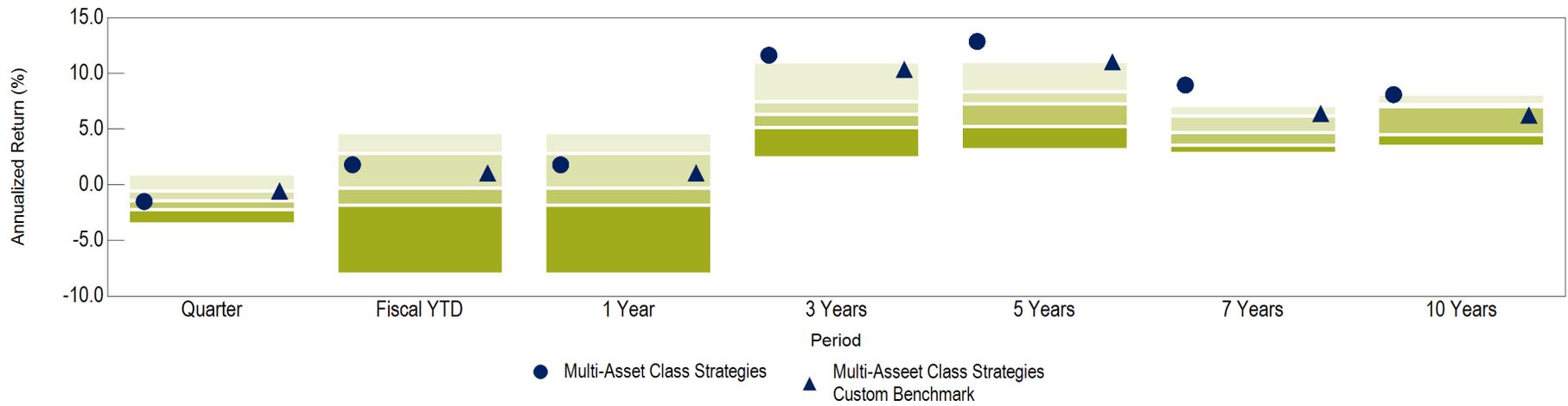


Asset Class Analysis - Multi-Asset Class Strategies

Rolling Annual Excess Benchmark Return

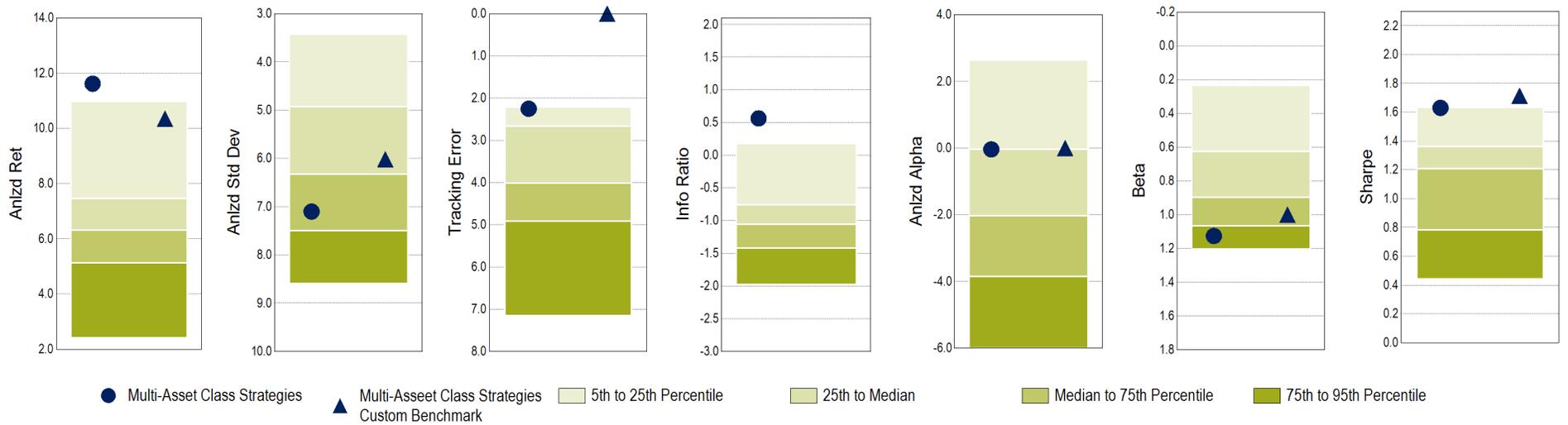
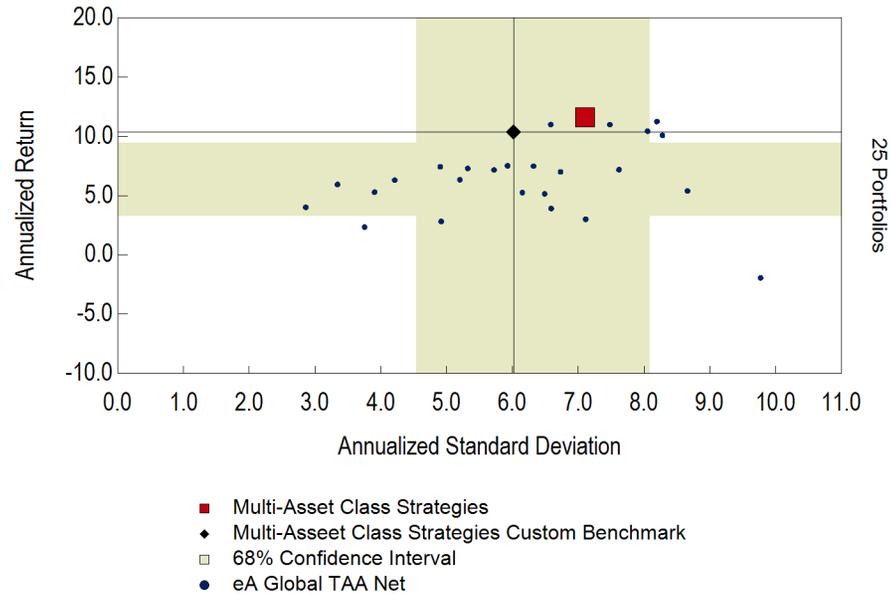


eA Global TAA Net Accounts



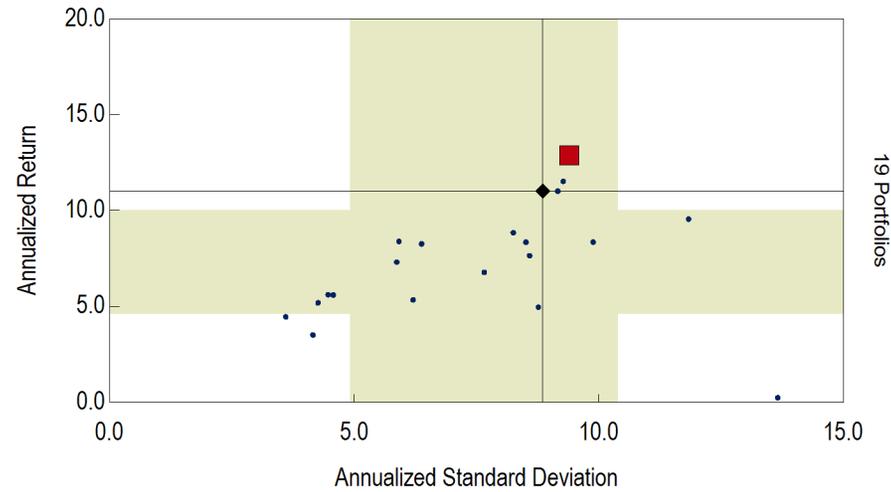
Asset Class Analysis - Multi-Asset Class Strategies

3 Years Ending June 30, 2015

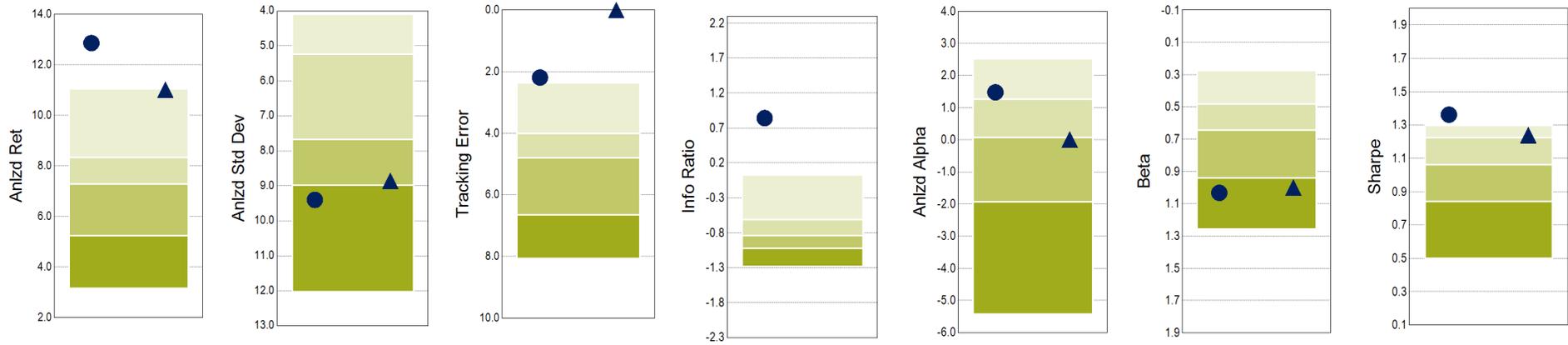


Asset Class Analysis - Multi-Asset Class Strategies

5 Years Ending June 30, 2015



- Multi-Asset Class Strategies
- ◆ Multi-Asset Class Strategies Custom Benchmark
- 68% Confidence Interval
- eA Global TAA Net



- Multi-Asset Class Strategies
- ▲ Multi-Asset Class Strategies Custom Benchmark
- 5th to 25th Percentile
- 25th to Median
- Median to 75th Percentile
- 75th to 95th Percentile

- **Two Asset Class Committee meetings have been held since the last time we provided an update on the ASRS Asset Class Committee Meetings.**
- **June 23, 2015 – Private Markets Committee**
  - Monthly Status Report, General Discussion and Deal Flow
  - Real Estate Pipeline Discussion
    - Informational item to provide an update on real estate investment pipeline and to solicit guidance as necessary
  - Real Estate Manager Recommendation (increase commitment to \$300 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 10%)
    - The ASRS has current commitments to this manager at \$100 million
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation
  - Variance Request
    - RCLCO and the ASRS private markets team recommended the ASRS approve a variance request from an existing real estate manager to amend the financing criteria required to make an investment
      - Equity ownership guidelines amended in order to proceed to diligence phase of the investment process
    - Committee approved the variance request to equity position cap allowing up to 35% of equity ownership
- **July 20, 2015 – Private Markets Committee**
  - Monthly Status Report, General Discussion and Deal Flow
  - Semi-Annual SMA review – the private markets committee reviewed market conditions, capital deployment and strategic outlook within the SMA program
  - Real Estate Manager Recommendation (\$200 million)
    - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 10%)
    - The ASRS is currently invested with this manager in multiple funds across the ASRS private markets landscape
    - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
    - Committee approved the recommendation

• **July 20, 2015 – Private Markets Committee (continued)**

- Real Estate Manager Recommendation (\$200 million)
  - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 10%)
  - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
  - Committee approved the recommendation
- Opportunistic Equity Manager Recommendation (20% of first round funding or \$100 million)
  - RCLCo and the Private Markets Committee recommended that a co-investment opportunity with a current ASRS manager be committed to within Opportunistic Equity
  - The private markets committee asked that more diligence be completed on items in the co-investment guidelines Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
  - Committee approved the recommendation at the July 29, 2015 meeting
- Variance Request
  - RCLCO and the ASRS private markets team recommended the ASRS approve a variance request from an existing real estate manager to amend the geographic investment guidelines criteria
    - Current guidelines did not allow for investment in this specific geographic region
  - Committee approved the variance request
- Variance Request
  - RCLCO and the ASRS private markets team recommended the ASRS approve a variance request from an existing real estate manager to amend the geographic and investment structure criteria in the investment guidelines
    - Variance would allow for updated term structure and geographic criteria
  - Committee approved the variance request
- Real Estate Manager Recommendation (termination of investment period)
  - RCLCo and ASRS private markets team recommended the ASRS approve termination of the investment period in an existing manager
  - Consistent with strategic plan at the Total Fund level (SAAP Target to Real Estate is 10%)
  - Due diligence process was followed in accordance with SIP 006 – Investment Manager, Partner, and Co-Investment Selection and Oversight
  - Committee approved the recommendation

## General Observations

- **The Fund continues to make significant progress moving the portfolio from the Interim SAAP toward the long-term SAAP. New long-term SAAP adopted as of April 1, 2015.**
  - Current Interim SAAP includes proration of 1.1% Private Equity, 4.1% Real Estate and 5.6% Private Debt which are unfunded. Continued build out of private markets asset classes provides opportunity to take advantage of illiquidity premium to produce expected returns in excess of what we believe can be achieved in the public markets.
- **IMD has already taken significant steps to move the Fund toward implementation of the recently approved SAAP.**
  - The largest single underweight position in the Fund is Private Debt, which was increased from a 3% SAAP target to a 10% SAAP target (current actual is 4.7%).
    - \$3.9 billion in commitments to private debt strategies equates to approximately 11.2% of Total Fund assets vs. the SAAP target of 10%.
  - Emerging Market Debt investment managers have been liquidated as the asset class was removed from the SAAP.
  - Multi-Asset Class Strategies (formerly GTAA) has been restructured and moved 'above the line' and now has an explicit 5% target within the SAAP.
- **Cash Assetization Program implemented:**
  - To facilitate fund liquidity by decreasing the settlement times and market frictions related to overall investment management.
  - To retain unleveraged Total Fund market (beta) exposure, and concurrently offset the hindrance on investment performance from maintaining sizeable transitional cash balances intended to meet fund payment obligations (e.g., pension, health supplement, LTD, fees, accounts payable and associated capital calls).
- **ASRS SAAP Benchmark evaluation is complete. New SAAP targets are effective April 1, 2015.**
- **Tactical positioning consistent with IMD House Views.**

# Market Environment Update and Outlook



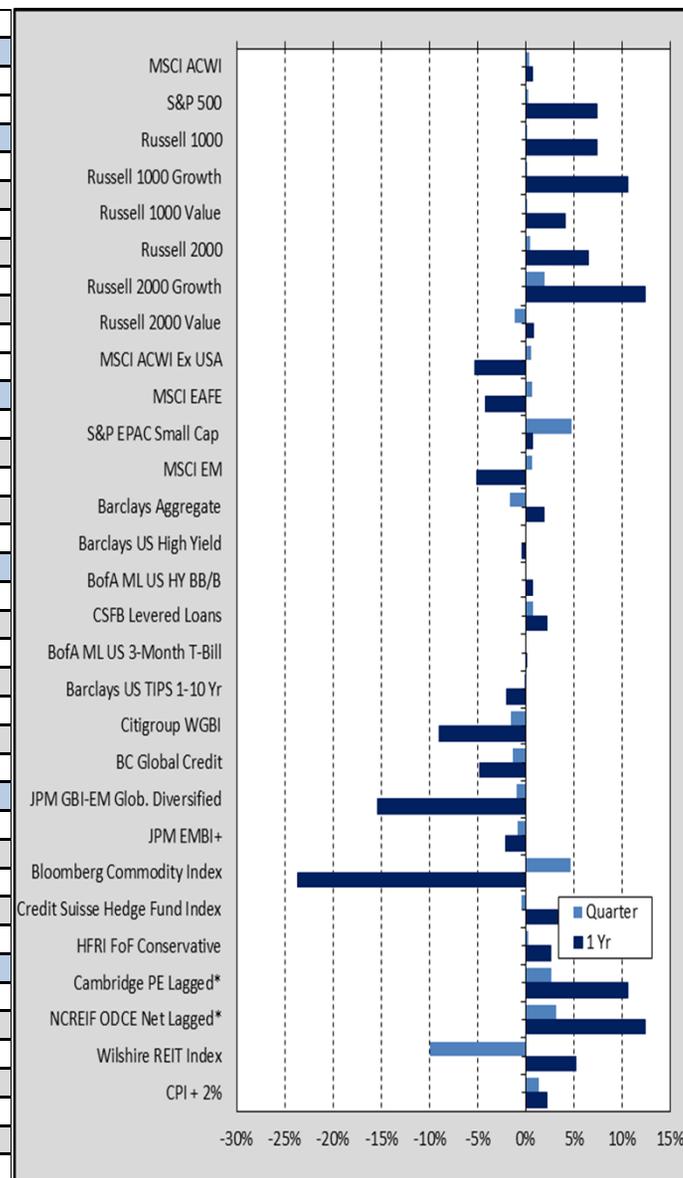
## Economic Environment

- **Second quarter GDP growth rate printed at +2.3%.**
  - Retail sales (ended May) at +1.6% on a year-over-year growth rate basis.
  - The inventory-to-sales ratio at May 31 was flat at 1.4 and has remained relatively flat since early 2010.
  - Corporate profits as a percent of GDP increased in the first quarter to 10.7% from 10.4% in the fourth quarter and remain elevated relative to historical levels.
  - The U.S. trade deficit widened slightly during May.
- **The unemployment rate fell to 5.3% in Q2 from 5.5% in Q1 2014; U-6, a broader measure of unemployment, fell to 10.5% during the second quarter.**
- **The Case-Shiller Home Price Index (as of 4/30) increased slightly to 170.0 from first quarter levels (168.2) and is at levels higher than that of pre-financial crisis levels of 150.92.**
- **Rolling 12-month seasonally adjusted CPI increased to +0.2% from -0.02% at the end of March; Capacity Utilization increased slightly to 77.8% in June.**
- **Fed Funds rate remains at 0.25%, while the 10-year Treasury Yield finished Q2 at 2.4% up 50 basis points from Q1.**
- **The Fed balance sheet declined slightly in Q2 2015, while the European Central Bank balance sheet increased in the same period.**
  - ECB continues asset purchases of €60 billion per month.
- **S&P valuations increased in June remaining above the 10-year and long-term averages**
  - Cyclically adjusted Shiller PE ratio (26.6x) is above the long-term average of 16.4x 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 and the ECB ramps up easing.**
  - Currency volatility has seen a sustained uptick since Q1.

# Arizona State Retirement System

## Market Environment – Q2 2015 Overview

		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>World Equity Benchmarks</b>						
MSCI ACWI	World	0.3%	0.7%	13.0%	11.9%	6.4%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>Domestic Equity Benchmarks</b>						
S&P 500	Large Core	0.3%	7.4%	17.3%	17.3%	7.9%
Russell 1000	Large Core	0.1%	7.4%	17.7%	17.6%	8.1%
Russell 1000 Growth	Large Growth	0.1%	10.6%	18.0%	18.6%	9.1%
Russell 1000 Value	Large Value	0.1%	4.1%	17.3%	16.5%	7.0%
Russell 2000	Small Core	0.4%	6.5%	17.8%	17.1%	8.4%
Russell 2000 Growth	Small Growth	2.0%	12.3%	20.1%	19.3%	9.9%
Russell 2000 Value	Small Value	-1.2%	0.8%	15.5%	14.8%	6.9%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>International Equity Benchmarks</b>						
MSCI ACWI Ex USA	World ex-US	0.5%	-5.3%	9.4%	7.8%	5.5%
MSCI EAFE	Int'l Developed	0.6%	-4.2%	12.0%	9.5%	5.1%
S&P EPAC Small Cap	Small Cap Int'l	4.7%	0.7%	16.3%	12.9%	7.7%
MSCI EM	Emerging Equity	0.7%	-5.1%	3.7%	3.7%	8.1%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>Domestic Fixed Income Benchmarks</b>						
Barclays Aggregate	Core Bonds	-1.7%	1.9%	1.8%	3.3%	4.4%
Barclays US High Yield	High Yield	0.0%	-0.4%	6.8%	8.6%	7.9%
BofA ML US HY BB/B	High Yield	0.0%	0.7%	6.8%	8.4%	7.2%
CSFB Levered Loans	Bank Loans	0.8%	2.2%	5.3%	5.7%	4.8%
BofA ML US 3-Month T-Bill	Cash	0.0%	0.0%	0.1%	0.1%	1.4%
Barclays US TIPS 1-10 Yr	Inflation	-0.1%	-1.9%	-0.5%	2.4%	3.7%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>Global Fixed Income Benchmarks</b>						
Citigroup WGBI	World Gov. Bonds	-1.5%	-9.0%	-2.4%	1.0%	3.1%
BC Global Credit	Global Bonds	-1.3%	-4.8%	2.2%	4.3%	4.2%
JPM GBI-EM Glob. Diversified	Em. Mkt. Bonds (Local)	-1.0%	-15.4%	-3.8%	0.9%	5.9%
JPM EMBI+	Em. Mkt. Bonds	-0.9%	-2.1%	2.8%	6.2%	7.2%
		Qtr.	1 Yr.	3 Yr.	5 Yr.	10 Yr.
<b>Alternative Benchmarks</b>						
Bloomberg Commodity Index	Commodity	4.7%	-23.7%	-8.8%	-3.9%	-2.6%
Credit Suisse Hedge Fund Index	Hedge Fund	-0.5%	3.3%	7.1%	6.2%	5.9%
HFRI FoF Conservative	Fund of Funds	0.2%	2.6%	5.5%	3.6%	2.6%
Cambridge PE Lagged*	Private Equity	2.6%	10.5%	14.4%	15.1%	13.7%
NCREIF ODCE Net Lagged*	Real Estate	3.2%	12.4%	11.6%	13.4%	6.0%
Wilshire REIT Index	REIT	-9.9%	5.2%	9.0%	14.7%	6.9%
CPI + 2%	Inflation/Real Assets	1.4%	2.2%	3.3%	3.9%	4.1%



\* As of 3/31/2015

## **Positives**

- **Divergence in monetary policies signaling different investment environments globally**
- **US Economy shows strength relative to other developed markets**
- **ECB monetary easing continues with €60 billion in monthly asset purchases**
  - ECB commits €1.3 trillion in asset purchases in the Eurozone
  - Global risk assets responding positively
  - Negative short dated interest rates in Eurozone
- **Contagion risk from Greece's Euro exit is largely contained**
  - Greece represents only 1.7% of total Eurozone GDP
- **Developed world inflation is low**
  - In US, CPI for all Urban Consumers on a seasonally adjusted basis bounced back to positive territory after posting negative results in Q1

## **Negatives**

- **Geopolitical instability continues to drive volatility**
  - Instability in the Mid-East, Eastern Europe, Greece, China
- **Slowing economic growth in China may have broad implications for many emerging economies**
  - Commodity producers impacted
- **Fed rate hike uncertainty contributed to volatility in domestic markets**
  - Market expecting a slow pace to rate increases
- **Valuations remain above 10 year and long term averages**
  - Developed Equity P/Es above median

### Global Equity

- **U.S. equities posted modest gains in the second quarter as global monetary accommodation ramped up.**
- **Small cap stocks outperformed large cap stocks during the quarter, with the Russell 2000 Index returning 0.4% and the Russell 1000 Index returning 0.1%.**
- **International equities outperformed U.S. markets during the quarter, returning 0.5%, as measured by the MSCI ACWI ex-U.S. Index.**
  - Developed markets returned 0.6% as measured by the MSCI EAFE Index. Relatively strong returns were posted by Hong Kong and Japan at +5.6% and +3.1% respectively.
  - Emerging markets returned +0.7% as measured by the MSCI Emerging Markets Index in U.S. dollar terms. Russia and China bolstered the quarter returning +7.6% and +6.0% respectively.

### Private Equity

- **New private equity commitments totaled \$101.5 billion in Q2 2015.**
  - Rapid fundraising pace continues for high demand managers.
- **Buyout and growth equity funds raised \$57 billion in Q2 2015.**
  - Very strong Q2 totals driven by one fund which raised \$17 billion.
- **Venture capital raised \$24.6 billion ended June.**
  - At 13% of total private equity raised, commitments are just below the 10-year historic relative average and are buoyed by strong IPO and M&A environment.
- **Energy funds raised \$30.1 billion representing 16% of capital raised in Q2.**
  - Investors are opportunistically approaching the energy market dislocation.
- **Asian private equity commitments slowed to total 6% of total funds raised down from 10% in 2014.**
- **European commitments comprised 17% of all new PE commitments in Q2 2015.**
  - 70% of European funds raised were based in the United Kingdom.

## Market Environment

### Fixed Income

- **The yield curve steepened amid global financial instability in the Eurozone and the Fed's rate hike signaling.**
- **The spread between two and 10-year rates increased to 176 basis points from 138 basis points ended March. Treasury Inflation-Protected Securities, or TIPS, returned -1.1% during the quarter, as measured by the Barclays US TIPS Index.**
- **The Barclays Long Duration Credit Index lost -7.3% as the long end of the curve ended the quarter 57 basis points higher.**
- **Long Treasuries fell -8.3% and investment-grade corporate debt lost -2.9%.**
  - Despite strong earnings and credit fundamentals, the overall performance of US high-grade corporate bonds was hindered by record new issuance, which contributed to 16 basis points of spread widening in the quarter. Issuance has totaled almost \$650 billion year-to-date (with a record issuance of \$155 billion in May). This issuance is over 20% higher than in the first half of 2014.
- **The Barclays 1-3 year Government/ Credit Index returned 0.1% and US high yield bonds were flat returning 0%.**
- **Emerging markets debt continued to slow in local and external currency as yields increased globally.**
  - US dollar-denominated debt, as measured by the JP Morgan EMBI Index, fell 34 basis points; local currency debt fell 96 basis points, according to the JP Morgan GBI-EM Index.
  - Emerging market currencies—in particular, the Mexican peso, Thai baht and Turkish Lira—weakens against the US dollar.

**Real Assets/Inflation-Linked Assets**

- **Massive energy market dislocation.**
  - Oil prices trending lower.
  - 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.
  - Softness in commodity prices may provide attractive entry point.
  
- **Timber opportunity set limited but warrants further review**
  - 45% increase in housing starts forecasted; timber prices highly correlated

### Commodities

- **Commodities broke their three quarter losing streak with the Bloomberg Commodity Index posting a 4.7% gain.**
  - Energy and agriculture led the way, while industrial metals, precious metals and livestock declined.
  - The Bloomberg WTI Crude Oil Index gained 17.5% for the quarter amid continued declines in rig counts and announced project deferrals, expectations of demand rebounding and lower US output.

### Real Estate

- **NEPC continues to be neutral on core real estate in the US 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.**
  - Real estate fundamentals and debt terms are attractive, however valuations are high and the possibility of rising interest rates and the impact on cap rates causes concern.
- **U.S. REITs posted a very weak quarter with a -9.9% return.**
  - FFO multiples are high, at approximately 15x but are decreasing.
  - REITs are trading at a discount to NAV.
- **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 and uneven with global markets experiencing large capital inflows.
  - Banks in EU are still overleveraged and have significant real estate exposure to jettison.

- **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)
  
- **Catalysts are present to drive international equity markets above pre-financial crisis highs**
  - Encourage an equal weight exposure to international developed and US equities
  - If currency hedged, encourage larger international developed equity exposure relative to US equities
  
- **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)

# NEPC Updates

June 30, 2015

## Highlights of Second Quarter Happenings at NEPC

### NEPC Research Recent White Papers

- 2015 2<sup>nd</sup> Quarter Market Thoughts
- *Rising Rates and Implications for Credit Investors* (April 2015) – Seth Bancroft, Senior Research Analyst, Traditional Research
- *Socially Responsible Investing in Action* (May 2015) – Sheila Healy Berube, CFA, Senior Consultant.
- *A Dynamic Approach to Pension Glide Paths* (May 2015) - Christopher A. Levell, ASA, CFA, CAIA, Partner, Client Strategy



### NEPC Client Recognitions

- NEPC is pleased to announce that two of our clients recently won *Institutional Investor Intelligence Awards*. Ruth Ryerson, Executive Director at Wyoming Retirement System, was a co-winner of the Executive Director of the Year award, along with Steve Yoakum from Public School and Education Employee Retirement Systems of Missouri. Dave Underwood, Deputy CIO and Portfolio Manager – Equities at Arizona State Retirement System, won the *Institutional Investor Intelligence Award: Innovator*.

### NEPC Recognitions

- We are pleased to announce that **NEPC has won two Alternative Investment Awards for 2015** from *Wealth & Finance International*, one for Sustained Excellence in Client Investment Management and the other for Macro Strategy Specialist of the Year – USA. Awards Coordinator Peter Rujveg commented, "The caliber of the 2015 nominees was simply outstanding and this ensured that the judging process was more than a little demanding. Put simply, our winners represent the very best of the best and with such a tremendous amount of competition, it is an honor to acknowledge them and wish them well for another award winning year ahead."

### News from NEPC

- **Doris Ewing honored by the NASP.** Please join us in congratulating retired NEPC Partner, Doris Ewing, who was honored as the first female African-American Partner of an Investment Consulting Firm at the NASP Women's Legends Tea on June 14 in Chicago. Congratulations Doris!

### Recent Events

- **NEPC Clients Invited to the White House.** A diverse group of NEPC clients were invited to the White House on June 16 for the Clean Energy Investment Summit. The goal of the event was to help address the fundraising gap for scalable investments in clean energy and catalyze more institutional investment. Attendees engaged with senior members of the Administration to discuss recent or potential clean energy investments.



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## 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.<sup>1</sup>/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 – 3/31/2015 – 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
- **4/1/2015 - present – 20% S&P 500/3% S&P 400/3% S&P 600/17% MSCI EAFE/2% MSCI EAFE Small Cap/5% MSCI Emerging Markets/8% Russell 2000 (lagged one quarter)/11% Barclays Capital Aggregate/4% Barclays Capital High Yield/10% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/10% NCREIF ODCE (lagged one quarter)/2% Bloomberg Commodities Index TR/5% Multi-Asset Class Custom Index**
- **\*Interim SAA Policy:** 23% S&P 500/3% S&P 400/3% S&P 600/18% MSCI EAFE/2% MSCI EAFE Small Cap/5% MSCI Emerging Markets/7% Russell 2000 (lagged one quarter)/17% Barclays Capital Aggregate/5% Barclays Capital High Yield/4% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter)/6% NCREIF ODCE (lagged one quarter)/2% Bloomberg Commodity Index/5% Multi-Asset Class Custom Index

Note: Interim SAA Policy includes proration of 1.1% Private Equity, 4.1% Real Estate and 5.6% Private Debt which are unfunded. Private Equity was prorated to domestic equity; Real Estate was prorated to domestic equity and fixed income; Private Debt was prorated to Core and High Yield Fixed Income. Recently approved Strategic Asset Allocation Policy effective April 1, 2015.

<sup>1</sup>MSCI 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 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.<sup>1</sup> 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 through 3/31/2015; 40% S&P 500, 6% S&P 400, 6% S&P 600, 34% MSCI EAFE, 4% MSCI EAFE Small Cap, 10% 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, 15% S&P 600 through 3/31/2015.; 77% S&P 500, 11.5% S&P 400, 11.5% 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 through 3/31/2015; 71% MSCI EAFE, 8% MSCI EAFE Small Cap and 21% 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 through 3/31/2015; 73% Barclays Capital U.S. Aggregate Index, 27% Barclays Capital U.S. High Yield Bond Index 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.
- **Multi-Asset Class Custom 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 through 3/31/2015; market value weighted average of the benchmarks for Bridgewater (91 Day T-Bill) and Windham (52% MSCI ACWI net, 30% Citi WGBI, 9% DJ US REIT, and 9% Bloomberg Commodities Index) thereafter.

<sup>1</sup>MSCI 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.

## Information Disclaimer and Reporting Methodology

### Information Disclaimer

- 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.
- 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 within.
- Some index returns displayed in this report or used in calculation of a policy, allocation or custom benchmark may be preliminary and subject to change.
- This report is provided as a management aid for the client's internal use only. Information contained in this report does not constitute a recommendation by NEPC.
- This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

### Reporting Methodology

- The client's custodian bank is NEPC's preferred data source unless otherwise directed. NEPC generally 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 manager fees as indicated on each page.
- 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 taken into account in all 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.

# Agenda Item #9



# ARIZONA STATE RETIREMENT SYSTEM

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*Paul Matson*  
Director

## MEMORANDUM

**TO:** The Arizona State Retirement System (ASRS) Operations Committee (OC)

**FROM:** Mr. Paul Matson, Executive Director

**DATE:** August 21, 2015

**RE:** **Agenda Item #9:** Presentation, Discussion and Appropriate Action Regarding ASRS Funding Policy

### Purpose

To review a draft funding policy that establishes a methodology for financing the pension, health insurance, and long-term disability obligations of the ASRS.

### Recommendation

Staff recommends the Board discuss, and possibly modify or approve, the draft funding policy for the ASRS.

### Background

Over the past decade or more, the ASRS has documented the key elements of its benefit funding decisions within its actuarial valuation, financial statements, and internal documents such as the Investment Policy Statement. Over the past several years, the Governmental Accounting Standards Board (GASB) has updated its statements to clarify that accounting standards do not constitute a funding requirement for public pensions.

Many professional pension organizations now recommend that public pension funds develop a formal funding policy which documents their overall funding objectives, which mechanisms they will use to achieve those funding objectives, and how the fund will manage the achievement of those objectives.

The draft Funding Policy was first presented at the April ASRS Board meeting, at which time additional positive insights were put forth by Board members. The current draft includes the insights discussed at the April Board meeting.



## Funding Policy

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### **Purpose:**

The intent of the ASRS funding policy is to establish a formal methodology for financing the pension, health insurance (HI), and long-term disability (LTD) obligations accruing under the ASRS. It is intended that current assets, plus future contributions from employees and employers, plus investment earnings, should be sufficient to finance all benefits provided by the ASRS for each of its various plans.

This funding policy is intended to reflect a reasonable approach for each generation of employees and employers to substantially pay the cost of the benefits accrued. This funding policy recognizes that there will be volatility with respect to investment returns, plan membership, membership demographics, mortality, and other variables that impact the long-term cost, and allocation of cost, of the programs.

The adoption of a funding policy is recommended by the Government Finance Officers Association (GFOA), the Governmental Accounting Standards Board (GASB), and the actuarial profession, and the ASRS also believes that it is a prudent action to take.

The ASRS funding policy has the following eleven components which are subsequently discussed.

Components 2 through 4 describe the perspectives of the ASRS in determining which approaches should be utilized in meeting the goal and objectives of this funding policy.

Components 5 through 9 describe the consequent approaches the ASRS utilizes in meeting the goal and objectives of this funding policy.

Components 10 through 11 describe the communication and management of this funding policy.

1. Goal and Objectives
2. Time Horizon and Volatility Perspective
3. Inter-Generational Equity (Time Series Equity) Perspective
4. Benefit Costing (Cross Sectional Equity) Perspective
5. Actuarial Methods and Funded Status
6. Actuarial Assumptions
7. Actuarial Process
8. Asset Approach to Portfolio Construction
9. Investment Beliefs and Investment Policy Statement
10. Transparency and Mutual Understanding
11. Governance

## **1. Goal and Objectives**

The goal of the ASRS funding policy is to ensure that a well thought through and documented process is in place that creates a reasonable expectation that the various ASRS benefits will be fully funded in a manner that is consistent with the capital market, demographic, risk tolerance, and other parameters of the ASRS.

Specifically, the ASRS will make funding decisions toward the following objectives:

- I. Ensuring long-term full funding
- II. Mitigating benefit costs, primarily through early contributions and a long term risk profile
- III. Mitigating contribution rate volatility
- IV. Mitigating inter-generational wealth transfers

## **2. Time Horizon and Volatility Perspective**

The ASRS believes that contribution rates are the primary economic financial outputs of funding and investment policies. The ASRS believes that a going concern (or long-term) and primarily asset-only approach to investment management can result in contribution rates that are both lower as well as being relatively insensitive to short and medium term portfolio volatilities. This enables the ASRS to combine the traditional cross-sectional diversification benefits found in large employee pooled plans with the time-series diversification benefits of multi-generational plans, thereby resulting in higher expected short-term investment volatility enabling higher expected long-term investment returns.

The impact on contribution rates of any realized short-term volatility of returns will be mitigated through actuarial time-series diversification (smoothing and amortizing), rather than by lowering short-term expected return volatility at the expense of lower expected returns (and therefore higher aggregate contribution rates).

As such, the ASRS is managed on a going-concern basis, with the following timeframes being utilized for portfolio construction decisions and contribution rate determination:

Portfolio Construction Decisions:

- Strategic asset allocation focuses on medium term (3-5 years) capital market assumptions, subject to achieving the long-term assumed actuarial rate based on long-term (30 year) capital market assumptions.
- Tactical deviation decisions are based on shorter term (less than 3-5years) capital market expectations.

Contribution Rate Determination:

- Liabilities are discounted based upon long-term (30 year) capital market expectations.
- Contribution rates are established using longer-term (currently 10 year) investment valuation smoothing periods, and longer-term (currently 30 years for Pension and 15 years for HI and LTD) closed period deficit/surplus amortization periods.

### **3. Inter-Generational Equity (Time Series Equity)**

Under normal conditions, the ASRS will strive to align the aggregate funding costs (normal costs plus amortization costs) over the generational period in which corresponding benefits accrue. During periods where the funded status deviates significantly from 100%, aggregate funding costs may expand beyond generational periods.

Once earned and actuarially determined, Permanent Benefit Increase (PBI) amounts will be amortization over a period of 15 years or less. The reason that the amortization period is less than the pension amortization period is due to the fact that PBI's are payable only to current retirees and therefore have a lower average duration. The reason that PBI's are not pre-funded by estimating their current expected present values is because PBI's will most typically be created during periods when there are repetitive years of high rates of return, which are more likely to be followed by falling contribution rates. As a result, by utilizing the shorter-term amortization method of funding rather than pre-funding, PBI's will more likely be funded during periods of lower contribution rates, therefore furthering the objective of inter-generational equity.

### **4. Benefit Costing (Cross Sectional Equity)**

The ASRS will consider fairness and appropriateness when determining whether or not to align the benefits accrued and costs paid by individual members for different programs.

The ASRS will also consider the various pricing and risk-sharing advantages that are afforded to groups (rather than individuals) for different programs.

### **5. Actuarial Methods and Funded Status**

#### *Actuarial Cost Allocation Method*

The primary purpose of an actuarial cost allocation method is to allocate the present value of future benefits to past, current, and future periods of time. ASRS was initially mandated by statute to use Entry Age Normal (EAN), and subsequently mandated by statute to use Projected Unit Credit (PUC). Legislation was successfully promulgated by the ASRS in 2015 to allow the ASRS itself to consider the most appropriate method for the June 30, 2016 period forward.

The ASRS currently utilizes the most recent statutorily mandated method (PUC) and will consider the EAN method in future years. Key factors that will be considered in determining a change in the actuarial cost allocation method are:

- Membership Demographics
- Impact on Contribution Rates
- Impact on Contribution Rate Volatility
- Impact on Intergenerational Equity
- Accounting Consistency
- Peer Consistency
- Impact on Funded Status

The Actuarial Cost Method adopted will be presented to, and discussed by, the Board every five years to ensure that it continues to be the most appropriate method. This presentation and discussion will occur within one year of the actuarial experience study, which is also conducted every five years.

Asset Value Smoothing

The primary purpose of the asset-value smoothing process is to mitigate contribution rate volatility.

The constraint applied to the length of the asset-value smoothing process is related to both the magnitude of, and the duration of, the dispersion between smoothed and un-smoothed asset values. In general, the smoothed and unsmoothed asset values should cross or become equal approximately every 10 years or less.

Shorter smoothing periods are preferred to longer smoothing periods, subject only to the primary purpose of mitigating contribution rate volatility and the absolute magnitude of the volatility.

Based upon the above, the following asset-smoothing periods are currently utilized:

- Pension: 10 Years
- Health Insurance: 10 Years
- LTD: 10 Years

Amortization of Unfunded Liabilities and Funded Status

The primary purpose of the amortizing process is to mitigate contribution rate volatility while ensuring that the unfunded liabilities are paid off in a reasonable period of time.

The constraint applied to the length of the amortization period is related to contribution rate volatility and magnitude, intergenerational equity, and desire to payoff deficits sooner rather than later.

Shorter amortization periods are preferred to longer amortization periods, subject only to the primary purpose of mitigating contribution rate volatility and the absolute magnitude of the volatility.

Unfunded liabilities shall be amortized utilizing the level dollar amortization method over a closed period, not to exceed 30 years, and are currently amortized according to the dates in the table below.

The employee and employer contribution rates will be modified through time to reflect actual experience and changing expectations, and will be set such that, in combination with investment returns, they will bring the funds to fully funded status within a reasonable period.

The unfunded liability amortization periods are shown in the table below, along with the dates on which the unfunded liabilities that existed as of June 30, 2014 are expected to be fully funded on an unsmoothed asset basis.

	<u>Amortization Period</u>	<u>Expected Full Funding Date</u>
• Pension:	30 Years	June 30, 2037
• Health Insurance:	15 Years	June 30, 2015
• LTD:	15 Years	June 30, 2025

## **6. Actuarial Assumptions**

The ASRS will utilize investment returns, mortality expectations, income adjusted mortality, benefit option choices, withdrawal option choices, and other assumptions that best reflect ASRS-specific expectations with respect to capital markets, and employee, retiree, and inactive member demographics. These assumptions may utilize ASRS-specific history, industry tables, as well as current and projected trends, to best determine and allocate benefit costs. The assumptions should be forward-looking with appropriate consideration given to past experience.

## **7. Actuarial Process**

The ASRS will retain an external independent actuary to conduct annual valuations of the ASRS Plans, specifically to calculate funded status and contribution rates. In addition, the external independent actuary will measure and report to the ASRS Board the annual progression towards a fully funded status, as measured on an unsmoothed asset basis.

The ASRS will retain an external independent actuary to conduct an experience study of the ASRS Plans every five years. This actuary may be the same actuary that conducts the annual valuations.

The ASRS will retain an external independent actuary to conduct an actuarial audit of the ASRS Plans every five years. The actuarial firm that performs the actuarial audit shall not be the same firm that performs the actuarial valuation or the actuarial experience study.

The purpose of the actuarial audit shall include:

- The validation and verification of actuarial valuation results for both funding and accounting.
- An evaluation of the reasonableness of actuarial assumptions and methods.
- Compliance with professional standards such as generally accepted actuarial standards.

Separate actuarial valuations shall be prepared for the following Plans:

- Pension Plan and Health Insurance Plan
- System
- Long Term Disability Plan

## **8. Asset Approach to Portfolio Construction**

The ASRS portfolio construction process will be substantially based upon a going-concern model where time-series diversifications of return are enabled by asset-valuation smoothing and surplus/deficit amortization.

This going concern model allows two fundamental strategies as follows:

1. Fundamentally asset-only approach to portfolio construction
2. Absorption of interim volatility

The above attributes allow for lower overall expected program costs, while maintaining reasonable contribution rate volatility.

## **9. Investment Beliefs and Investment Policy Statement (IPS)**

ASRS Investment Beliefs have been established to ensure the development of congruent and synergistic investment strategies, and to ensure the effective and efficient allocation of resources. These Investment Beliefs determine the general paradigm within which investment strategies are developed, investment ideas are reviewed, and investment decisions are implemented. [IQ Link to Investment Beliefs](#). The Investment Beliefs support the idea of a well-diversified portfolio utilizing a fundamentally asset-only portfolio construction approach. The ASRS recognizes that a well-articulated investment policy statement (IPS) is important to the long-term success of achieving the ASRS investment objectives and to meet the goal of this funding policy [IQ Link to IPS](#). As such, the ASRS has developed the IPS with the following goals:

- To clearly and explicitly establish the objectives and parameters which govern the investment of ASRS assets.
- To establish a target asset allocation that is long-term in nature but dynamic enough to allow the ASRS to take advantage of market opportunities which is expected to achieve its investment rate of return objectives.
- To help protect the financial health of the ASRS
- To establish a framework for monitoring investment activity, and promote effective communication between the Board, Staff, and other involved parties.

## **10. Transparency and Mutual Understanding**

This funding policy will be posted on the ASRS website for easy access.

This funding policy will enable a homogeneous understanding of how high-level funding decisions are contemplated at the ASRS by technical experts (e.g. actuaries), decision makers (e.g. ASRS Board and Director), internal policy makers (e.g. ASRS Board and Director) and external policy makers (e.g. Legislature and Executive Office).

## **11. Governance**

This funding policy will be referenced in the Governance Handbook [IQ Link to Governance Handbook](#) as a responsibility of the Board to approve, modify, and monitor.

This funding policy will be referenced in the Governance Handbook as a responsibility of the Director to review, analyze, implement, and present to the Board at the following time periods:

- Every three years,
- Whenever a significant event impacts the policy,
- Whenever the Director recommends a modification.

# Agenda Item #10



# 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  
Mr. Anthony Guarino, Deputy Director and Chief Operations Officer  
Ms. Sara Orozco, Strategic Planning Manager

**DATE:** August 20, 2015

**RE:** **Agenda Item #10:** Presentation, Discussion, and Appropriate Action Regarding Strategic Topics to be Discussed by the Board during Fiscal Year 2016

### Purpose

To gather ideas for any strategically focused topics the Board would like to discuss during the upcoming fiscal year.

### Recommendation

Information item only; no action required.

### Background

The Board Governance Handbook has assigned staff the responsibility of working with the Board each year to compile a list of strategically-focused topics that the Board would like to discuss in the upcoming fiscal year.

At the May 2015 Board meeting, staff reviewed the topics discussed in fiscal year 2015 and requested that Trustees provide feedback to the Director regarding their priorities for fiscal year 2016. Based on Trustee feedback and discussions with staff, the attached list of strategically focused topics has been drafted. These topics will be scheduled for discussion at a future Board or Committee meeting during fiscal year 2016 (July 1, 2015 – June 30, 2016).

Also attached you will find the following three documents for your reference:

1. The Strategic topics discussed in fiscal year 2015.
2. The Strategic Priorities outlined in the agency's 5-Year Strategic Plan (Attachment A).
3. The Strategic Planning Policy from the Board Governance Handbook (Attachment B).

## **Suggested Strategic Topics for Fiscal Year 2016**

### **1. Health Care – Part 3**

This agenda item is a follow-up to a discussion in June 2015 and will discuss staff recommendations for the following topics related to the ASRS health insurance program:

1. Reaffirm or not ASRS program goals: Accessible, Affordable, Reliable, and Efficiently Run
2. Whole Case Underwriting & Resulting Cross Subsidizations: Discuss future direction
3. Direction of non-Medicare and Medicare coverage
4. Retrospective Rate Adjustment Agreement Fund: Current balance, utilization options, allocation options
5. Other

### **2. Strategic Plan Reporting: Priority #3 – Optimize Investment Organization and Strategies**

This agenda item will provide the board with an annual update on the agency's ability to meet this strategic plan priority, including:

- Actual performance versus objectives.
- Potential changes to this priority (strategic plan language, objectives and measures).
- Actions currently planned or needed for this priority.

### **3. Employer Service Paradigm**

This agenda item will discuss the following topics related to ASRS Employer Services:

- Current Services Offered
- Current Challenges
- Efforts Underway

### **4. Strategic Plan Reporting: Priority #4 – Ensure Outstanding Customer Service**

This agenda item will provide the board with an annual update on the agency's ability to meet this strategic plan priority, including:

- Actual performance versus objectives.
- Potential changes to this priority (strategic plan language, objectives and measures).
- Actions currently planned or needed for this priority.

### **5. Strategic Plan Reporting: Priority #1 – Ensure Plan Sustainability**

This agenda item will provide the board with an annual update on the agency's ability to meet this strategic plan priority, including:

- Actual performance versus objectives.

- Potential changes to this priority (strategic plan language, objectives and measures).
- Actions currently planned or needed for this priority.

#### **6. Strategic Plan Reporting: Priority #2 – Optimize Risk Management**

This agenda item will provide the board with an annual update on the agency's ability to meet this strategic plan priority, including:

- Actual performance versus objectives.
- Potential changes to this priority (strategic plan language, objectives and measures).
- Actions currently planned or needed for this priority.

#### **7. Strategic Plan Reporting: Priority #5 – Ensure High Productivity**

This agenda item will provide the board with an annual update on the agency's ability to meet this strategic plan priority, including:

- Actual performance versus objectives.
- Potential changes to this priority (strategic plan language, objectives and measures).
- Actions currently planned or needed for this priority.

#### **8. Board Governance and Management Concepts and Practices**

For this agenda item, the agency will engage an external expert to make a presentation on Highly Effective Board (including private Boards) Governance and Management Concepts and Practices. (Trustee Request)

#### **9. Public Pension Landscape (national, state, local)**

For this agenda item, the agency will engage an external expert to make a presentation on the current legislative, legal, and political trends related to public pension funds. (Trustee Request)

## Strategic Topics Discussed in Fiscal Year 2015

### 1. Operational Capacity

This agenda item discussed the three keys that influence our ability to optimize operational capacity and performance at the ASRS:

- Access to Funding,
- Access to Qualified Staff,
- And Access to Safe, Modern Technology.

**Conclusion:** The ASRS is operating at an effective capacity and is able to achieve its priorities, goals and objectives.

*Presented to the Board: August 2014*

### 2. Membership Rules

This agenda item discussed ASRS membership rules, statutes, and associated concerns, including:

- Current definitions
- Administrative complexities and issues
- Part-time employment
- Possible options for the agency to consider in addressing the various issues
- Efforts currently underway

**Conclusion:** Currently, staff has no precise way to know the number of members who are currently working part-time, or have worked part-time during their career. Without this information it would be difficult to assess the impact to employers and the ASRS of any possible change in membership rules.

Currently, the ASRS is currently working with employers to expand the payroll reporting format to include the number of hours worked during a pay period. Once the new format is implemented, staff will need to collect the hours worked data for a number of years before it can assess the impact of part-time and limited time employment and make recommendations for future actions.

*Presented to the Board: December 2014*

### 3. Member Service Paradigm

This agenda item discussed the current state of the Member Services Division, including:

- Current member service model
- Current status of each program area
- Current administrative complexities and challenges
- Current efforts underway
- Strategic priorities and initiatives for member services for the next 3 to 5 years

**Conclusion:** The Member Services Division is performing at optimal levels and has been largely successful in meeting its strategic goals and objectives. Over the next several years, the ASRS will work on the following initiatives:

1. Examining how it uses Personally Identifiable Information (PII) in its various member interactions (member contacts, correspondence, internal reports etc.) to identify possibilities for reducing the need to request and use member PII.
2. Ensuring that the agency is capturing and recording all of its various member contacts
3. Continue its focus on expanding the use and effectiveness of online interactions; and
4. Maximizing agency efficiency and increasing customer service

*Presented to the Board: January 2015*

#### **4. Asset Allocation Study – Part 1 and 2**

**February 2015:** This agenda item discussed the most recent Asset Allocation Study and recommended changes to the Strategic Asset Allocation Policy.

**Conclusion:** 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
- Increase Allocations to Private Debt, Public Non-U.S. Equities, Real Estate, and Private Equity
- Add Treasuries as a separate asset class, and retain Infrastructure and Farmland/Timber, each with a 0% Target
- 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
- Establish Policy Target Ranges primarily at the broad asset class categories
- Remove Minimum Passive % Targets for public equity and fixed income

**March 2015:** This agenda item discussed recommended changes to the SAAP recommendation discussed in February. At the February 27 Board meeting, the Board approved a new Strategic Asset Allocation Policy (SAAP). It was subsequently determined that individual ranges for the three ‘Opportunistic Investments’ were incorrectly included.

**Conclusion:** The Director, CIO and General Investment Consultant recommended a modification to the February 27 approved SAAP Schematic that corrects and clarifies the original intent of the ranges for ASRS opportunistic investments as follows:

1. Maintain the aggregate policy target allocation of 0% and range of 0-10%. Rationale: to provide flexibility to evaluate and select opportunistic investments which may be temporarily available and may be relatively more attractive from a risk/return perspective than other investments. Aggregate Opportunistic Investments consists of Debt, Equity, and Inflation-Linked which are defined as investments that are not included in the ASRS Asset Allocation policy and represents investment opportunities that are tactical in nature.

2. Eliminate the policy ranges for each Opportunistic Investment asset class, i.e., the 0-3% policy ranges. Rationale: a) to correct the original intent of the 0-10% range which pertains to the aggregate opportunistic investments and not establish policy range limits for each subset of opportunistic investments by asset class and b) to clarify a mathematical inconsistency between the aggregate opportunistic policy range limit of 0-10%; and the underlying three asset class policy ranges limited of 0-3%, i.e.,  $3 \times 3\% = 9\%$ .

*Presented to the Board: February 2015 and March 2015*

## 5. Board Governance

The Director provided a high-level summary of the ASRS Board Governance process, stating that the creation of the ASRS Board Governance was based on five elements:

1. Determining the optimal and appropriate allocation of roles of the organization (Board and staff);
2. Determining effective controls;
3. Determining effective communication mechanisms;
4. Determining an efficient organizational structure; and
5. Documentation

The end result was the development of a strategic plan with the following priorities:

1. Sustainability
2. Risk Management
3. Investment Structure and Strategy
4. Customer Service
5. Productivity

**Conclusion:** The Director cited some of the differences between ASRS governance practices and those around the country, including:

- Although the ASRS does not have control over the determination and appointment of Trustees, the current system requiring both executive nomination and subsequent senatorial approval with staggered terms has worked well. De-politicizing Board appointments and staffing appears to be beneficial for pension funds.
- The delegation of investment decision-making is not common and has resulted in more timely decisions and a more action oriented framework. The Director indicated that this is unique and not the standard across the United States. Mr. Connelly added that separation of decision-making and oversight was an additional advantage of this level of delegation.
- In response to a question on whether the Director recommended any further changes, the Director responded by saying there were several items that should be periodically discussed but not necessarily on an annual basis. Those items are decision-making with respect to: procurement, staffing and compensation, and budget, each of which the ASRS does not have currently.

*Presented to Board: March 2015*

## 6. Fiduciary Role of Trustees

An external vendor, 3Ethos, made a presentation and facilitated a discussion regarding fiduciary education with a focus on integrating leadership, stewardship and governance. Some specific topics discussed were as follows:

- Fiduciary Evolution
- Decision-making Hierarchy
- 10 Attributes of Ethotic Leadership
- 10 Stewardship Attributes
- Two Faces of a fiduciary Standard: Positive and Punitive
- Uniform Fiduciary Requirements
- 12 Praxes-Experimental Lessons and Skills to practice daily to make leadership, stewardship and decision-making more authentic and aligned

**Conclusion:** The Trustees, Mr. Matson and Mr. Guarino participated in a leadership assessment days prior to the meeting, the results of which were briefly discussed in order to:

- Increase self-awareness
- Prompt conversations
- Provide suggestions in approaching others
- Resolve, prevent or minimize conflict
- Understand perspectives of clients or teams
- Find perspectives missing from teams

*Presented to Board: March 2015*

## 7. Health Care – Part 1

This agenda item discussed retiree health insurance and health benefit supplement programs, their histories, and current statuses. The ASRS has offered retiree health insurance plans and health benefit supplements since 1989. This meeting focused on the a high-level overview of:

### A. Programs Offered:

1. Current ASRS programs offered by coverage: medical, dental, vision, WellCard
2. Current ASRS programs offered by group: Medicare and non-Medicare programs
3. Current ASRS program designs: benefits, premiums, and copayments
4. Current Health Benefit Supplement levels
5. Current and Projected Funded Status
6. Current and Projected Contribution Rates
7. Other

## **B. Landscape & Impacts**

1. Federal Mandated Arizona Exchange: benefit designs and premiums compared to the ASRS program
2. ADOA Programs: benefit designs and premiums compared to the ASRS program
3. Marketplace cost trends
4. Marketplace product development and other dynamics
5. Other

**Conclusion:** An additional OAC meeting has been scheduled in June to discuss strategic items of interest.

*Presented to the Operations and Audit Committee: May 2015*

## **8. Health Care – Part 2**

This agenda item will discuss the following topics related to the ASRS health insurance program:

1. Reaffirm or not ASRS program goals: Accessible, Affordable, Reliable, and Efficiently Run
2. Whole Case Underwriting & Resulting Cross Subsidizations: Discuss future direction
3. Direction of non-Medicare and Medicare coverage
4. Retrospective Rate Adjustment Agreement Fund: Current balance, utilization options, allocation options
5. Other

**Conclusion:** This meeting focused on discussion related to these topics. A follow-up meeting is scheduled for September where recommendations will be made.

*Presented to the Operations and Audit Committee: June 2015*

# Strategic Priorities

The agency has identified 5 strategic priorities for the 5-year period. Priorities are set and initiatives launched at the ASRS in order to leverage limited resources, fulfill our vision and mission, and meet goals and objectives. These priorities are:

## 1. ENSURE PLAN SUSTAINABILITY

Sustainability refers to the ability of employees and employers to afford the cost and volatility of the programs with relative cost and benefit equity. The agency will perform regular analysis of ASRS benefit programs and make recommendations when necessary to ensure sustainability for the:

- a. Defined Benefit Plan
- b. Health Insurance Program and Health Benefit Supplement
- c. Long Term Disability Program
- d. The System (closed to new participants)
- e. Optional, Supplemental Defined Contribution plans

## 2. OPTIMIZE RISK MANAGEMENT

Effectively organize an enterprise-wide risk management program designed to provide reasonable assurance that the ASRS is taking appropriate steps to manage and mitigate risks. The agency will proactively monitor and mitigate risks, including those related to:

- a. Investment management and volatility
- b. Data and systems security
- c. Agency effectiveness and efficiency
- d. Customer service and satisfaction
- e. Diminished independence and autonomy of the ASRS
- f. Contribution rate volatility
- g. Benefit spiking

### 3. OPTIMIZE INVESTMENT ORGANIZATION AND STRATEGIES

In an increasingly sophisticated and complex investment environment, effectively organize, manage and motivate an investment management program that develops and supports investment strategies that outperform their benchmarks. The agency will:

- a. Design an organizational, staff, and consultant model that is congruent with the current, and forward-looking, relevant investment market place
- b. Develop a program to motivate, retain and attract top investment-related staff
- c. Implement investment strategies and manage returns for given levels of risk

### 4. ENSURE OUTSTANDING CUSTOMER SERVICE

A quality workforce will deliver outstanding customer service directed toward:

- a. Retirees
- b. Active members
- c. Inactive members
- d. Employers
- e. Other stakeholders

### 5. ENSURE HIGH PRODUCTIVITY

Maximize productivity by:

- a. Effective development and deployment of technology
- b. Reducing member reliance on physical and member contacts for service and transaction processing
- c. Developing alternate ways for members and employers to receive education and counseling services without having to rely upon in-person counseling
- d. Being a high-service, low-cost service provider when compared to other public retirement systems
- e. Consolidating and reducing the need for physical work space
- f. Mitigating the need for additional staff due to increases in service demand
- g. Recruit, engage, utilize and retain a high caliber, professional staff capable of optimizing performance

## **K. STRATEGIC PLANNING POLICY** (updated 10/25/2013)

### **General**

Strategic planning is essential to ensuring the sound governance, oversight, and management of the ASRS. Since 1998, the ASRS has built its operation around a strategic model based on five organizing principles:

1. Look ahead with clarity of purpose by establishing an agency Vision, Values, Priorities, and Goals
2. Measure performance
3. Initiate strategic initiatives, as needed
4. Construct cost-efficient budgets and an effective workforce; and
5. Implement strong governance practices

The objectives of this policy are to:

1. Ensure that strategic priorities of the ASRS are primarily determined by the Board of Trustees, with active engagement, including recommendations, by the Director and senior staff.
2. Outline the process the ASRS will utilize when developing a Strategic Plan.
3. Describe how the Director will communicate with the Board regarding the agency's progress implementing the plan.

### **Strategic Planning Policy**

The Board and Director will work collaboratively to ensure that:

1. Strategic priorities facing the ASRS over the short, medium, and long-term are identified, discussed, prioritized, and included in the Strategic Plan.
2. Strategic planning discussions remain focused on strategic issues that have been identified, and the strategic direction of the ASRS.
3. Strategies are developed and incorporated into the Strategic Plan to address the short, medium, and long-term priorities that have been identified by the Board.
4. The Board is updated at least annually regarding the agency's progress addressing strategic priorities.
5. Adequate resources are in place to support the successful execution of the Strategic Plan.
6. The agency's governance policy is periodically examined and updated to ensure that sound governance practices are in place.
7. Delineation of authority and autonomy is regularly discussed.

### **Strategic Planning Development Process**

1. In preparation for Board meetings with strategic planning agenda items, the Director will ask the Board Chair for direction on how to proceed in discussing, modifying, or developing strategic priorities.
2. At least once annually, during Board meetings with strategic planning agenda items, the Trustees and Director will determine:
  - a. Which strategic topics they would like discussed during the year.
  - b. The number of Board meetings they would like to devote to strategic planning.
  - c. Preferences for how strategic discussions should be facilitated.
  - d. To facilitate the discussion, the Director will provide Trustees with a recap of:
    - Strategically-focused topics that have been discussed at prior Board and Committee meetings,
    - Strategically focused topics that have been requested by Trustees, but not yet scheduled for discussion,
    - Strategically focused topics that the Director recommends be considered for discussion.
3. Based on Trustee feedback, staff will develop a planning schedule for the upcoming year.

4. During strategic planning sessions, staff will provide background information, if needed, on topic areas that have been scheduled for discussion. This background information could include topical research, performance data, or staff's current analysis of the organization's strengths, weaknesses, opportunities, and threats, or other material requested by Trustees.
5. The Strategic Plan can be modified iteratively over its term or it can be modified only in preparation for a new Strategic Plan.
6. In the final year of the current Strategic Plan, trustees and the Director will focus Board Meetings with strategic planning agenda items on the identification of priorities for the next Strategic Plan.

***Strategic Plan Reporting***

1. Once the Board has identified its strategic priorities, the Director will work with staff to develop implementation strategies and performance measures for each of the priorities.
2. Staff will report at least annually to the Board on its progress addressing the strategic priorities that have been identified.
3. Trustees or the Director may request that priorities be added or deleted as needed.

**Note: There are no  
materials for Agenda  
Item #11**

# Agenda Item #12

## Director's Report

**12a - Compliance**

**12b - Investments**

**12c - Operations**

**12d - Budget & Staffing**

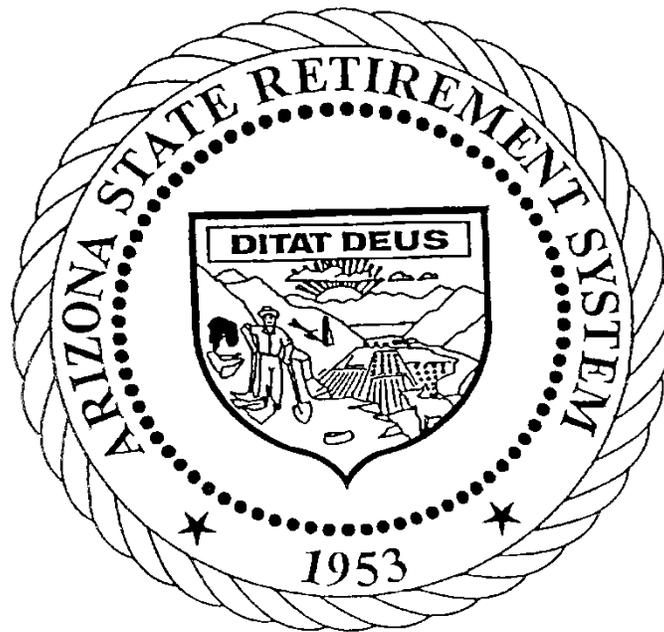
**12e - Cash Flow Statement**

**12f - Appeals**

**12g - Employers Reporting**

# Agenda Item #14a

## Director's Report Compliance





# ARIZONA STATE RETIREMENT SYSTEM

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*Paul Matson*  
Director

## MEMORANDUM

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

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

**DATE:** August 21, 2015

**RE:** Internal Audit Review of Refunds Processed for the Period January 1, 2015 to June 30, 2015

The Internal Audit Division (IAD) tested a sample of all refunds sent to members (7,955) for the period of January 1, 2015 through June 30, 2015. A total of 197 refunds were tested for accuracy of the calculation. We used judgmental sampling to determine our selection of refund recipients. A reportable error is one in which the error represents more than 1% of the gross refund.

From the testing of the 197 samples selected, we found no reportable errors for this time period.



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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. Bernard Glick, Chief Internal Auditor

**DATE:** August 21, 2015

**RE:** Tri-annual Review of Compliance Issues Regarding Total Fund Investments as of June 30, 2015

The Internal Audit Division is charged with the monitoring and reporting, every four months, of certain "compliance" related topics which are addressed in the Arizona Revised Statutes, Section 38-719.

These topics include, but are not limited to, the following;

- Investment in corporate stocks or equity equivalents is limited to no more than 80% of ASRS assets.
- Investment in foreign securities is limited to no more than 40% of ASRS assets.
- Internal investment is limited to 60% of total fund assets.
- No more than 5% of ASRS assets may be invested in securities issued by one institution, except for investments guaranteed by the US or federal agencies, measured at market value.
- No more than 10% of ASRS assets may be invested in bonds or other debt of multinational development banks, measured at market value.
- IMD staff acknowledge, in writing, that personal securities trading restrictions are being followed.
- Investments are not included in the Office of Foreign Asset Control (OFAC) prohibitions.

For the four month period ending June 30, 2015 we found no exception to these topics.



# 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

## MEMORANDUM

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

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

**DATE:** August 21, 2015

**RE:** Internal Audit Review of Internal Investment Validation for the month ending June 30, 2015

The Internal Audit Division reviewed 2757 trade transactions in the month of June 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.



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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. Bernard Glick, Chief Internal Auditor

**DATE:** August 21, 2015

**RE:** Internal Audit review of Service Purchase Cost Invoices for the six months ended June 30, 2015

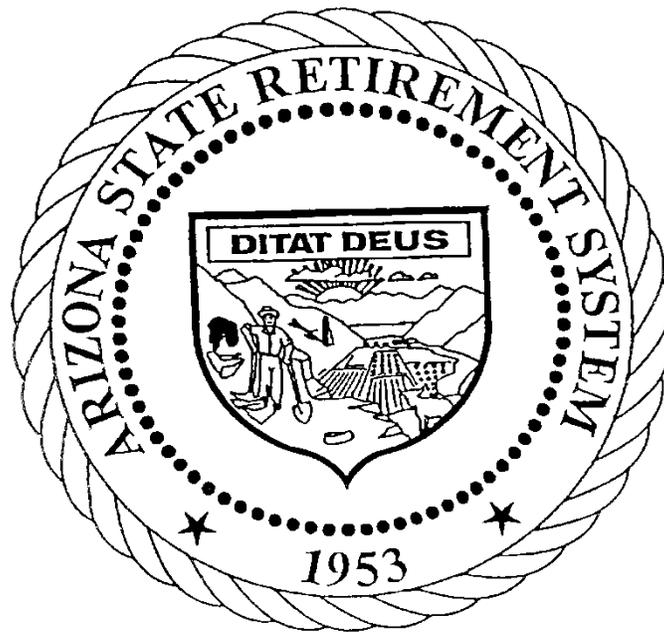
The Internal Audit Division randomly tested a sample of all service purchase invoices sent to members from January 1, 2015 – June 30, 2015 (1,337). A total of 180 invoices were tested. They were reviewed for accuracy of both the credited service to the member and the cost of the service purchased. The following is the breakdown of the invoices tested in our completed sample: 72 Forfeited Service (FS); 65 Other Public Service (OPS); 15 Military Service (MS); 8 Leave of Absence (LOA), and 20 Contributions Not Withheld (CNW). The sample size was determined based on the expected rate of an error occurring in relation to the entire population, (plus or minus 5 percent).

During the six months tested, we found no reportable errors.

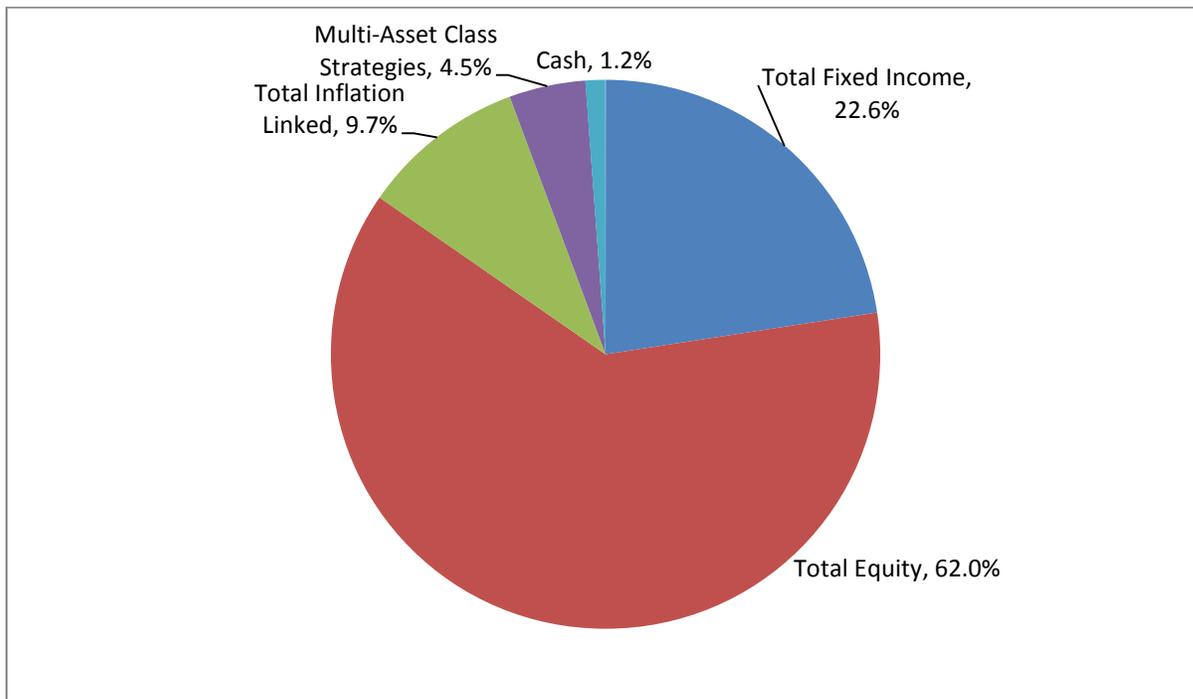
The agency standard for quality, based on the Strategic Plan, is 98 percent for the sample tested. 180 correct cost letters out of 180 sampled = 100 percent quality rating.

# Agenda Item #14b

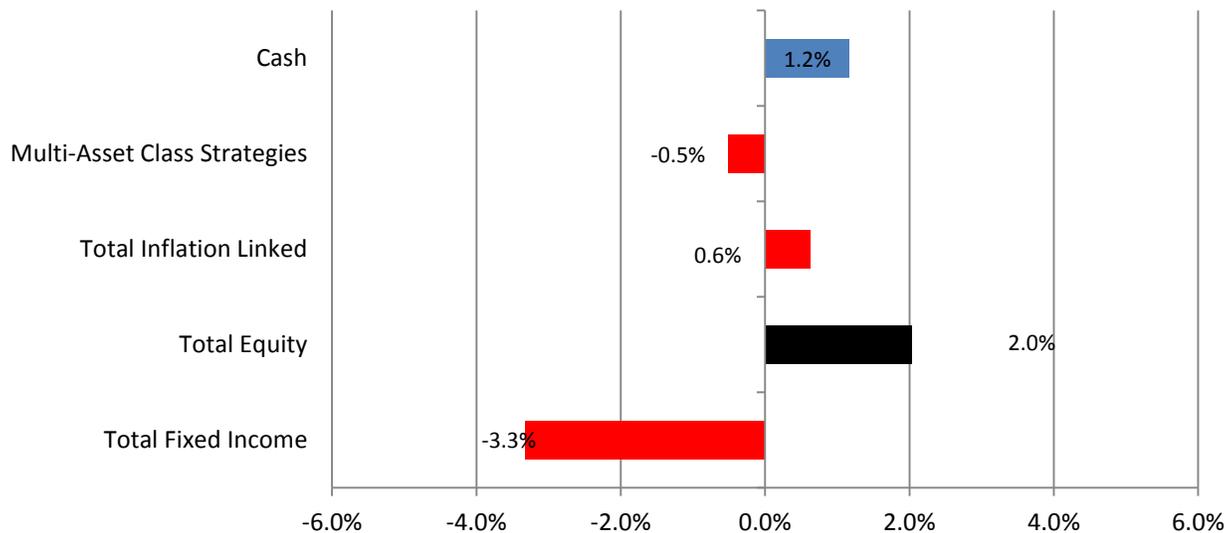
## Director's Report Investments



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

Friday, July 31, 2015

Account Manager	Account Manager Style	Fixed Income		Equity		Inflation Linked	Multi-Asset	Total	Pct of Fund
		Active	Enh/Passive	Active	Enh/Passive				
State Street B&T: Boston	Tactical Cash (non-assetized)							0	0.00%
								Tactical Cash Policy Range: 0% - 3%	0.00%
	Operating Cash (non-assetized)		21,895,821					21,895,821	0.06%
	Operating Cash (assetized)		383,626,331					383,626,331	1.11%
	<b>Cash Total</b>							<b>\$405,522,152</b>	<b>1.17%</b>
								Cash Policy: 0%	0.00%
	<b>Treasuries (Long Duration) Total</b>							<b>\$0</b>	<b>0.00%</b>
								Treasuries (Long Duration) Policy Range: 0% - 10%	0.00%
Blackrock: San Francisco	Passive (Intermediate Gov Credit)		24,342,689					24,342,689	0.07%
ASRS: Phoenix	Enhanced Passive F2		1,869,170,593					1,869,170,593	5.39%
Blackrock: San Francisco	Passive (US Debt Index)		1,809,100,945					1,809,100,945	5.21%
	<b>Core Fixed Income Total</b>							<b>\$3,702,775,122</b>	<b>10.67%</b>
								Interest Rate Sensitive: 11%	11.00%
Columbia: Minneapolis	Active	818,006,292						818,006,292	2.36%
JP Morgan: Indianapolis	Active	486,455,003						486,455,003	1.40%
	<b>High Yield Fixed Income Total</b>							<b>\$1,304,475,050</b>	<b>3.76%</b>
								High Yield Fixed Income Policy	4.00%
	<b>Opportunistic Debt</b>	1,142,333,468						<b>\$1,142,333,468</b>	<b>3.29%</b>
								Opportunistic Debt Policy:	0.00%
	<b>Private Debt Total</b>	1,685,070,560						<b>\$1,685,070,560</b>	<b>4.86%</b>
								Total Private Debt: 8% - 12%	10.00%
	<b>Fixed Income Total</b>							<b>\$7,834,709,695</b>	<b>22.58%</b>
								Total Fixed Income Policy Range: 18% - 35%	25.00%
Intech: FL	Active (Growth)			435,762,644				435,762,644	1.26%
LSV: Chicago	Active (Value)			767,327,459				767,327,459	2.21%
ASRS: Phoenix	Passive E2				5,140,455,927			5,140,455,927	14.81%
ASRS: Phoenix	Enhanced Passive E7				656,773,432			656,773,432	1.89%
ASRS: Phoenix	Enhanced Passive E8				562,086,326			562,086,326	1.62%
ASRS: Phoenix	Risk Factor Portfolio				571,317,840			571,317,840	1.65%
	<b>Large Cap Equity Total</b>							<b>\$8,133,723,628</b>	<b>23.44%</b>
								Large Cap Policy	20.00%
Wellington: Boston	Active (Core)			287,545,406				287,545,406	0.83%
ASRS: Phoenix	Passive E3 (Growth)				398,081,085			398,081,085	1.15%
ASRS: Phoenix	Passive E4 (Value)				342,825,585			342,825,585	0.99%
	<b>Mid Cap Equity Total</b>							<b>\$1,028,508,981</b>	<b>2.96%</b>
								Mid Cap Policy	3.00%
TimesSquare: New York	Active SMID (Growth)			383,749,640				383,749,640	1.11%
DFA: Santa Monica	Active (Value)			281,365,536				281,365,536	0.81%
ASRS: Phoenix	Passive E6				333,831,140			333,831,140	0.96%
	<b>Small Cap Equity Total</b>							<b>\$999,008,988</b>	<b>2.88%</b>
								Small Cap Policy	3.00%
	<b>U.S. Equity Total</b>							<b>\$10,161,241,597</b>	<b>29.28%</b>
								US Equity Policy Range: 16% - 36%	26.00%
Brandes: San Diego	Active (Value)			609,646,537				609,646,537	1.76%
American Century	Active (EAFE)			597,800,193				597,800,193	1.72%
Trinity Street	Active (EAFE)			340,061,169				340,061,169	0.98%
Thompson Siegel Walmsley	Active (EAFE)			317,361,972				317,361,972	0.91%
Blackrock: San Francisco	Passive (EAFE)				4,296,143,145			4,296,143,145	12.38%
	<b>Large Cap Developed Non-US Equity Total</b>							<b>\$6,163,981,345</b>	<b>17.76%</b>
								Large Cap Developed Policy	17.00%
AQR: Greenwich	Active (EAFE SC)			98,818,518				98,818,518	0.28%
DFA: Santa Monica	Active (EAFE SC)			107,772,991				107,772,991	0.31%
Franklin Templeton: San Mateo	Active (EAFE SC)			230,996,862				230,996,862	0.67%
Blackrock: San Francisco	Passive (EAFE SC)				254,793,234			254,793,234	0.73%
	<b>Small Cap Developed Non-US Equity Total</b>							<b>\$692,384,042</b>	<b>2.00%</b>
								Small Cap Developed Policy	2.00%
William Blair: Chicago	Active (EM)			383,981,151				383,981,151	1.11%
Eaton Vance: Boston	Active (EM)			387,036,501				387,036,501	1.12%
LSV: Chicago	Active (EM)			233,630,595				233,630,595	0.67%
Blackrock: San Francisco	Passive (EM)				513,361,245			513,361,245	1.48%
	<b>Emerging Markets Equity Total</b>							<b>\$1,518,009,492</b>	<b>4.37%</b>
								Emerging Markets Policy	5.00%
	<b>Non-US Equity Total</b>							<b>\$8,374,374,879</b>	<b>24.13%</b>
								Non-US Equity Policy Range: 14% - 34%	24.00%
	<b>Private Equity Total</b>			2,506,234,221				<b>\$2,506,234,221</b>	<b>7.22%</b>
								Private Equity Policy Range: 6% - 10%	8.00%
	<b>Opportunistic Equity</b>			497,874,148				<b>\$497,874,148</b>	<b>1.43%</b>
								Opportunistic Equity Policy:	0.00%
	<b>Equity Total</b>							<b>\$21,539,724,844</b>	<b>62.07%</b>
								Total Equity Policy Range: 48% - 65%	58.00%
Gresham: New York	<b>Commodities Total</b>					453,637,265		453,637,265	1.31%
								<b>\$453,637,265</b>	<b>1.31%</b>
								Commodities Policy Range: 0% - 4%	2.00%
	<b>Real Estate Total</b>					2,431,643,668		<b>\$2,431,643,668</b>	<b>7.01%</b>
								Real Estate Policy Range: 8% - 12%	10.00%
	<b>Infrastructure Total</b>					294,905,096		<b>\$294,905,096</b>	<b>0.85%</b>
								Infrastructure Policy Range: 0% - 3%	0.00%
	<b>Farmland &amp; Timber Total</b>					182,544,404		<b>\$182,544,404</b>	<b>0.53%</b>
								Farmland & Timber Policy Range: 0% - 3%	0.00%
	<b>Inflation Linked Total</b>							<b>\$3,362,730,432</b>	<b>9.69%</b>
								Inflation Linked Policy Range: 10% - 16%	12.00%
Windham							425,036,587	425,036,587	1.22%
Bridgewater							1,134,704,288	1,134,704,288	3.27%
	<b>Multi-Asset Class Strategies</b>							<b>\$1,559,740,876</b>	<b>4.49%</b>
								Multi-Asset Class Policy Range: 0% - 12%	5.00%
	<b>TOTAL Amounts</b>	\$4,131,934,574	\$4,108,297,274	\$8,468,893,219	\$13,070,831,625	\$3,362,730,432	\$1,559,740,876	<b>\$34,702,428,000</b>	<b>Total Fund</b>
	<b>TOTAL Percent</b>	11.91%	11.84%	24.40%	37.67%	9.69%	4.49%		

Asset Class	Actual Portfolio	SAAP Target (Range)	Interim SAA* Adj Policy	Actual - Interim SAA**		Policy Band check Actual - Adj Policy
				% diff	\$ diff	
Tactical Cash	0.00%	0% (0-3%)	0.00%	0.00%		
Cash	1.17%	0.00%	0.00%	1.17%	405,522,152	
Interest Rate Sensitive	10.67%	11%	15.67%	-5.00%		
High Yield	3.76%	4%	5.37%	-1.61%		
Opportunistic Debt	3.29%	0%	0.00%	3.29%	\$1,142,333,468	
Private Debt	4.86%	10% (8-12%)	4.86% (3-7%)	0.00%		
<b>Total Fixed Income</b>	<b>22.58%</b>	<b>25% (18-35%)</b>	<b>25.9% (19-36%)</b>	<b>-3.32%</b>	<b>-\$1,152,477,044</b>	<b>OK</b>
Large Cap	23.44%	20%	21.95%	1.49%	\$518,224,347	
Mid Cap	2.96%	3%	3.00%	-0.04%	-\$12,563,859	
Small Cap	2.88%	3%	3.00%	-0.12%	-\$42,063,852	
US Equity	<b>29.28%</b>	<b>26% (16-36%)</b>	<b>27.95% (18-38%)</b>	<b>1.34%</b>	<b>\$463,596,636</b>	<b>OK</b>
Developed Large Cap	17.76%	17%	17.87%	-0.11%	-\$36,625,163	
Developed Small Cap	2.00%	2%	2.00%	0.00%	-\$1,664,518	
Emerging Markets	4.37%	5%	5.00%	-0.63%	-\$217,111,908	
Non-US Equity	<b>24.13%</b>	<b>24% (14-34%)</b>	<b>24.87% (15-35%)</b>	<b>-0.74%</b>	<b>-\$255,401,590</b>	<b>OK</b>
Private Equity	7.22%	8% (6-10%)	7.22%	0.00%	\$0	<b>OK</b>
Opportunistic Equity	1.43%	0%	0.00%	1.43%	\$497,874,148	
<b>Total Equity</b>	<b>62.07%</b>	<b>58% (48-65%)</b>	<b>60.04% (50-67%)</b>	<b>2.03%</b>	<b>\$706,069,195</b>	<b>OK</b>
Commodities	1.31%	2% (0-4%)	2.06%	-0.75%	-\$261,183,278	<b>OK</b>
Real Estate	7.01%	10% (8-12%)	7.01%	0.00%	\$0	<b>OK</b>
Infrastructure	0.85%	0% (0-3%)	0.00%	0.85%	\$294,905,096	<b>OK</b>
Farmland & Timber	0.53%	0% (0-3%)	0.00%	0.53%	\$182,544,404	<b>OK</b>
Opportunistic I/L	0.00%	0%	0.00%	0.00%	\$0	
<b>Total Inflation Linked</b>	<b>9.69%</b>	<b>12% (10-16%)</b>	<b>9.07% (7-11%)</b>	<b>0.62%</b>	<b>\$216,266,221</b>	<b>OK</b>
<b>Multi-Asset Strategies***</b>	<b>4.49%</b>	<b>5% (0-12%)</b>	<b>5% (0-12%)</b>	<b>-0.51%</b>	<b>-\$175,380,524</b>	<b>OK</b>
<b>Total</b>	<b>100.00%</b>	<b>100%</b>	<b>100.00%</b>	<b>0.00%</b>	<b>\$0</b>	
						<b>Internally Managed Portfolios:</b>
						<b>\$9,303,224,088</b>
						<b>27%</b>
*Interim SAA includes a proration of unfunded Private Equity, Private Debt, and Real Estate						
**Private Equity is prorated to domestic equity; Real Estate is prorated to equity, commodities, and fixed income; Private Debt is prorated to Interest Rate Sensitive and High Yield						
<b>Opportunistic definitions:</b>						
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.						
Opportunistic investments have a 0% target (0%-10% range), regardless of asset class.						
<b>Total Opportunistic</b>						
Opportunistic Debt	\$1,142,333,468	3.3%				
Opportunistic Equity	\$497,874,148	1.4%				
Opportunistic IL	\$0	0.0%				
	<b>\$1,640,207,616</b>	<b>4.7%</b>				

ASRS Pension and HBS Assets  
Public Securities Markets  
Investment Managers Performance Summary

Period Ending Jul 31, 2015  
FINAL



	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		
<b>US EQUITY LARGE CAP</b>																				
E2 MODEL	INDEXED	04/01/1997	5,140	2.09	1.39	3.30	11.18	17.55	16.23	7.77	7.77	0	-2	-5	-3	-3	-2	5	7	
	<i>S&amp;P 500 INDEX</i>			2.10	1.41	3.35	11.21	17.58	16.24	7.72	---									
INTECH LARGE CAP	QUANTITATIVE	01/01/2003	436	3.72	3.99	6.56	12.68	16.74	16.64	8.15	10.06	10	54	5	-281	-173	-126	-82	30	
	<i>S&amp;P/CITIGROUP 500 GROWTH</i>			3.62	3.45	6.51	15.49	18.47	17.91	8.97	---									
LSV ASSET MANAGEMENT	QUANTITATIVE	01/01/2003	769	0.46	-0.25	1.80	6.91	21.00	16.64	8.29	11.25	8	62	187	32	434	212	189	233	
	<i>LSV CUSTOM INDEX</i>			0.38	-0.87	-0.07	6.59	16.65	14.52	6.40	---									
E7	INDEXED	08/01/2012	657	1.47	-1.46	-1.25	6.40	13.84	---	---	13.84	-8	-5	-9	-19	2	---	---	2	
	<i>MSCI USA High Dividend Yield Index</i>			1.54	-1.41	-1.16	6.59	13.82	---	---	---									
E8	INDEXED	08/01/2012	562	3.97	2.74	4.58	16.63	15.58	---	---	15.58	-1	-2	-8	-12	43	---	---	43	
	<i>MSCI USA Minimum Volatility Index</i>			3.98	2.76	4.66	16.76	15.14	---	---	---									
<b>TOTAL US EQUITY LARGE CAP</b>			<b>\$ 7,564</b>																	
<b>US EQUITY MID CAP</b>																				
WELLINGTON MANAGEMENT COMPANY LLP	FUNDAMENTAL	07/01/2002	288	2.34	2.96	8.26	13.74	21.15	16.67	10.71	11.74	220	238	393	244	248	38	151	128	
	<i>S&amp;P 400 MIDCAP INDEX</i>			0.14	0.57	4.34	11.30	18.67	16.29	9.20	---									
E3 MODEL	INDEXED	12/01/2000	398	2.29	4.01	9.05	16.46	19.29	17.61	10.61	9.03	-5	-4	1	-4	7	27	54	53	
	<i>S&amp;P/CITIGROUP 400 GROWTH</i>			2.35	4.04	9.03	16.50	19.22	17.34	10.07	---									
E4 MODEL	INDEXED	07/01/2002	343	-2.24	-3.04	-0.59	5.76	17.89	15.09	8.47	10.27	-3	-1	3	-8	-9	-9	23	19	
	<i>S&amp;P/CITIGROUP 400 VALUE</i>			-2.21	-3.03	-0.62	5.83	17.97	15.18	8.24	---									
<b>TOTAL US EQUITY MID CAP</b>			<b>\$ 1,028</b>																	
<b>US EQUITY SMALL CAP</b>																				
DIMENSIONAL FUND ADVISORS EQFD	QUANTITATIVE	09/01/1998	282	-3.11	-2.53	-0.22	2.43	19.34	15.29	7.97	11.84	-33	-100	180	-380	159	-5	13	100	
	<i>DFA BLENDED BENCHMARK</i>			-2.78	-1.53	-2.02	6.23	17.75	15.34	7.84	---									
E6	INDEXED	02/01/2007	334	-0.91	1.67	3.21	11.92	18.69	16.65	---	8.41	-7	-4	-7	-5	-8	-15	---	32	
	<i>S&amp;P 600 SMALL CAP</i>			-0.85	1.71	3.28	11.97	18.78	16.79	---	---									
TIMESQUARE CAPITAL MANAGEMENT	FUNDAMENTAL	04/01/2005	384	-0.19	3.54	9.82	16.35	20.57	19.18	11.94	12.67	-60	-196	-19	-292	-89	75	211	213	
	<i>TIMESQUARE BLENDED BENCHMARK</i>			0.41	5.50	10.01	19.27	21.46	18.43	9.82	---									
<b>TOTAL US EQUITY SMALL CAP</b>			<b>\$ 999</b>																	
<b>TOTAL US EQUITY</b>				<b>\$ 9,592</b>																
<b>INTERNATIONAL DEVELOPED LARGE CAP</b>																				
BRANDES INVESTMENT PARTNERS INT EQ	FUNDAMENTAL	10/01/1998	610	1.60	-0.43	11.43	1.67	14.88	7.97	5.33	9.25	-47	90	371	195	237	-16	-109	292	
	<i>BRANDES CUSTOM INDEX</i>			2.08	-1.32	7.72	-0.28	12.51	8.13	6.42	---									
AMERICAN CENTURY	FUNDAMENTAL	07/01/2014	598	2.92	1.79	9.24	5.41	---	---	---	2.24	85	312	152	569	---	---	---	430	
BGI EAFE INDEX	INDEXED	07/01/2009	4,344	2.07	-1.25	7.97	-0.04	12.59	8.31	---	9.48	-1	7	25	24	8	-2	---	-3	
THOMSON, SIEGEL & WALMSLEY	FUNDAMENTAL	07/01/2014	317	1.97	-1.31	8.99	1.44	---	---	---	-0.37	-11	1	127	172	---	---	---	169	

ASRS Pension and HBS Assets  
Public Securities Markets  
Investment Managers Performance Summary

Period Ending Jul 31, 2015  
FINAL



				Net Returns (%)								Excess Returns (basis points)							
	Style	Inception	Amount (\$mil.)	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
TRINITY STREET	FUNDAMENTAL	07/01/2014	340	0.80	-0.80	9.33	-0.33	---	---	---	-2.54	-128	52	161	-6	---	---	---	-47
<i>MSCI EAFE NET</i>				2.08	-1.32	7.72	-0.28	---	---	---	---								
<b>TOTAL INTERNATIONAL DEVELOPED LARGE CAP</b>			<b>\$ 6,209</b>																
<b>INTERNATIONAL DEVELOPED SMALL CAP</b>																			
AQR CAPITAL	FUNDAMENTAL	06/01/2013	99	2.53	3.15	13.33	5.94	---	---	---	13.02	168	254	226	345	---	---	---	235
BLACKROCK EAFE SMALL CAP	INDEXED	06/01/2010	258	0.87	0.61	11.18	2.81	15.99	10.79	---	12.18	2	0	10	32	-2	-18	---	-12
DIMENSIONAL FUND ADVISORS INTL SC	QUANTITATIVE	09/01/2005	108	-1.35	-1.79	7.38	-4.68	15.31	8.58	---	5.65	-220	-240	-370	-716	-70	-239	---	-61
FRANKLIN TEMPLETON INVESTMENTS	FUNDAMENTAL	04/01/2011	231	2.05	2.84	13.58	3.44	17.31	---	---	9.07	120	223	250	96	130	---	---	190
<i>MSCI EAFE SMALL CAP NET</i>				0.85	0.61	11.08	2.49	16.01	---	---	---								
<b>TOTAL INTERNATIONAL DEVELOPED SMALL CAP</b>			<b>\$ 695</b>																
<b>INTERNATIONAL EMERGING MARKETS</b>																			
BLACKROCK EMERGING MARKETS	INDEXED	10/01/2010	518	-7.07	-13.16	-4.48	-13.68	0.36	---	---	-1.40	-14	-18	-29	-31	-39	---	---	-44
EATON VANCE EMERGING MARKET EQUITY	QUANTITATIVE	12/01/2010	389	-4.68	-9.85	-4.32	-14.84	1.32	---	---	-0.96	225	313	-13	-147	56	---	---	7
LSV EMERGING MARKET EQUITY	QUANTITATIVE	12/01/2010	236	-8.65	-16.15	-7.79	-16.75	1.26	---	---	-0.80	-172	-317	-360	-337	50	---	---	23
WILLIAM BLAIR & COMPANY	FUNDAMENTAL	11/01/2010	386	-6.07	-10.86	-4.13	-7.28	4.52	---	---	1.38	87	212	6	609	376	---	---	296
<i>MSCI EMF NET</i>				-6.93	-12.98	-4.19	-13.38	0.76	---	---	---								
<b>TOTAL INTERNATIONAL EMERGING MARKETS</b>			<b>\$ 1,529</b>																
<b>TOTAL INTERNATIONAL EQUITY</b>			<b>\$ 8,433</b>																
<b>RISK FACTOR PORTFOLIO</b>																			
RISK FACTOR PORTFOLIO	OVERLAY	06/01/2013	571	2.38	2.72	4.77	13.28	---	---	---	15.47								
<i>MSCI EAFE NET</i>				---	---	---	---	---	---	---	---								
<b>TOTAL RISK FACTOR PORTFOLIO</b>			<b>\$ 571</b>																
<b>TOTAL EQUITY W/ RISK FACTOR OVERLAY</b>			<b>\$ 18,599</b>																
<b>CORE FIXED INCOME</b>																			
BGI US DEBT FD	INDEXED	05/01/2014	1,814	0.70	-0.69	0.63	2.93	---	---	---	3.18	0	-5	4	11	---	---	---	17
F2 MODEL	INDEXED	10/01/2000	1,869	0.76	-0.45	0.81	3.20	1.85	3.53	4.87	5.48	6	19	22	38	25	25	26	17
<i>Barclays Aggregate</i>				0.70	-0.64	0.59	2.82	1.60	3.27	4.61	---								
BGI GOVT/CRDTBD INDEX	INDEXED	11/01/2008	24	0.37	-0.23	1.21	2.38	1.51	2.76	---	4.61	1	0	4	11	12	12	---	10
<i>Barclays Gov/Credit Int</i>				0.36	-0.23	1.18	2.27	1.40	2.64	---	---								
<b>TOTAL CORE FIXED INCOME</b>			<b>\$ 3,708</b>																
<b>HIGH YIELD FIXED INCOME</b>																			
COLUMBIA MANAGEMENT INV. ADVISORS, LLC	FUNDAMENTAL	10/01/2009	818	0.46	-0.75	3.22	3.63	6.58	8.29	---	9.16	104	102	129	327	65	56	---	-1



	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	
JP MORGAN HIGH YIELD	FUNDAMENTAL	07/01/2013	486	0.04	-0.76	2.84	2.18	---	---	---	5.46	63	100	92	182	---	---	---	50
<i>Barclays Corp High Yield</i>				-0.58	-1.76	1.93	0.36	---	---	---	---								
<b>TOTAL HIGH YIELD FIXED INCOME</b>			<b>\$ 1,304</b>																
<b>TOTAL PUBLIC FIXED INCOME</b>			<b>\$ 5,012</b>																
<b>MULTI-ASSET CLASS STRATEGIES</b>																			
BRIDGEWATER ASSOCIATES GBL TAA	FUNDAMENTAL	01/01/2004	1,134	0.43	-1.10	4.38	5.41	11.94	12.87	8.81	8.90	43	-111	248	239	195	297	276	255
<i>BRIDGEWATER CUSTOM BENCHMARK</i>				0.00	0.00	1.90	3.02	10.00	9.91	6.04	---								
WINDHAM	QUANTITATIVE	10/01/2011	425	-1.15	-3.38	-1.32	-5.20	5.92	---	---	7.28	-132	-100	-279	-846	-406	---	---	-478
<i>WINDHAM CUSTOM INDEX</i>				0.17	-2.38	1.46	3.26	9.98	---	---	---								
<b>MULTI-ASSET CLASS STRATEGIES</b>			<b>\$ 1,559</b>																
<b>MULTI-ASSET CLASS STRATEGIES</b>			<b>\$ 1,559</b>																
<b>GLOBAL INFLATION LINKED</b>																			
GRESHAM	FUNDAMENTAL	09/01/2010	454	-10.85	-12.90	-12.50	-29.33	-12.48	---	---	-4.95	-23	-137	-48	-110	145	---	---	195
<i>Bloomberg Commodity Index Total Return</i>				-10.62	-11.53	-12.01	-28.23	-13.93	---	---	---								
<b>TOTAL GLOBAL INFLATION LINKED</b>			<b>\$ 454</b>																
<b>CASH ASSETIZATION</b>																			
SSGM CASH ASSETIZATION	FUNDAMENTAL	02/01/2015	384	0.85	-0.35	---	---	---	---	---	6.97	-7	20	---	---	---	---	---	284
<i>CASH ASSETIZATION CUSTOM INDEX</i>				0.92	-0.55	---	---	---	---	---	---								
<b>TOTAL CASH ASSETIZATION</b>			<b>\$ 384</b>																
<b>TOTAL PUBLIC MARKET</b>			<b>\$ 26,030</b>																



	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									
BLACKROCK - US DEBT FUND B	01/01/2011	27.3	0.70	-0.72	0.58	2.85	1.65	---	---	3.59	0	-7	-2	2	5	---	---	3
<i>Barclays Aggregate</i>			0.70	-0.64	0.59	2.82	1.60	3.27	4.61	---								
BLACKROCK - US HIGH YIELD FUND B	01/01/2011	18.2	-0.49	-2.00	1.57	0.48	5.65	---	---	6.76	9	-24	-36	12	-29	---	---	-25
<i>Barclays Corp High Yield</i>			-0.58	-1.76	1.93	0.36	5.93	7.73	7.64	---								
BLACKROCK-LTD-EM BD INDX FD B	01/01/2013	5.1	-2.70	-6.51	-7.81	-17.44	---	---	---	-9.28	-14	-27	-49	-76	---	---	---	-79
<i>JPM GBI-EM Global Diversified Index</i>			-2.56	-6.23	-7.32	-16.68	-5.31	-0.65	5.57	---								
BLACKROCK - RUSSELL 1000 FUND B	01/01/2011	85.7	1.93	1.34	3.69	11.23	18.00	---	---	14.34	1	2	3	0	-2	---	---	1
<i>RUSSELL 1000</i>			1.93	1.32	3.67	11.24	18.02	16.45	7.93	---								
BLACKROCK - RUSSELL 2000 FUND B	01/01/2011	16.8	-1.14	1.89	3.63	12.21	18.08	---	---	12.18	3	4	9	18	18	---	---	18
<i>RUSSELL 2000</i>			-1.16	1.85	3.54	12.03	17.90	15.27	7.61	---								
BLACKROCK - EAFE INDEX FUND B	01/01/2011	34.5	2.08	-1.30	7.75	-0.27	12.35	---	---	5.90	0	3	4	1	-16	---	---	-24
<i>MSCI EAFE NET</i>			2.08	-1.32	7.72	-0.28	12.51	8.33	5.42	---								
BLACKROCK EAFE SMALL CAP FUND B	01/01/2011	9.1	0.87	0.65	11.15	2.83	16.03	---	---	7.33	3	4	7	35	2	---	---	-14
<i>MSCI EAFE SMALL CAP NET</i>			0.85	0.61	11.08	2.49	16.01	10.97	6.51	---								
BLACKROCK MSCI EMERGING MARKETS FUND B	01/01/2011	13.9	-7.11	-13.24	-4.56	-13.79	0.29	---	---	-3.02	-17	-26	-37	-41	-46	---	---	-49
<i>MSCI EMF NET</i>			-6.93	-12.98	-4.19	-13.38	0.76	0.80	---	---								
BGI-LTD- R ESTATE FD	01/01/2005	20.7	5.92	1.14	-0.20	11.07	9.95	13.39	6.41	7.42	-3	-17	-51	-73	-142	-98	-51	-49
<i>WILSHIRE RESI</i>			5.95	1.31	0.31	11.80	11.37	14.37	6.91	---								
BLACKROCK DJ UBS COMM FUND B	01/01/2011	5.0	-10.59	-11.52	-12.06	-28.41	-14.14	---	---	-11.95	3	1	-5	-18	-21	---	---	-29
<i>Bloomberg Commodity Index Total Return</i>			-10.62	-11.53	-12.01	-28.23	-13.93	-7.27	-4.13	---								
LONG TERM DISABILITY - CASH	07/01/1995	1.6	0.00	0.00	0.00	0.00	0.01	0.05	1.48	2.64	0	0	0	-1	-5	-3	8	-5
<i>91 DAY TREASURY BILL</i>			0.00	0.00	0.00	0.01	0.06	0.08	1.41	---								
<b>TOTAL LTD</b>		<b>\$ 237.8</b>																

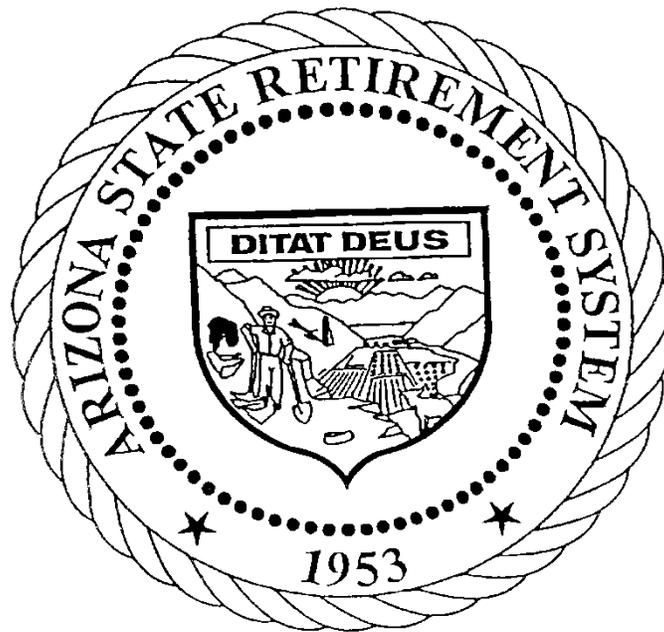
# Long Term Disability (LTD)

Friday, July 31, 2015

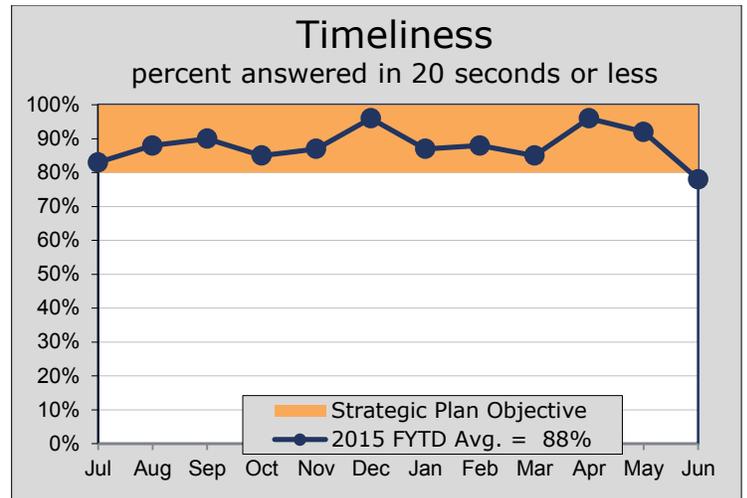
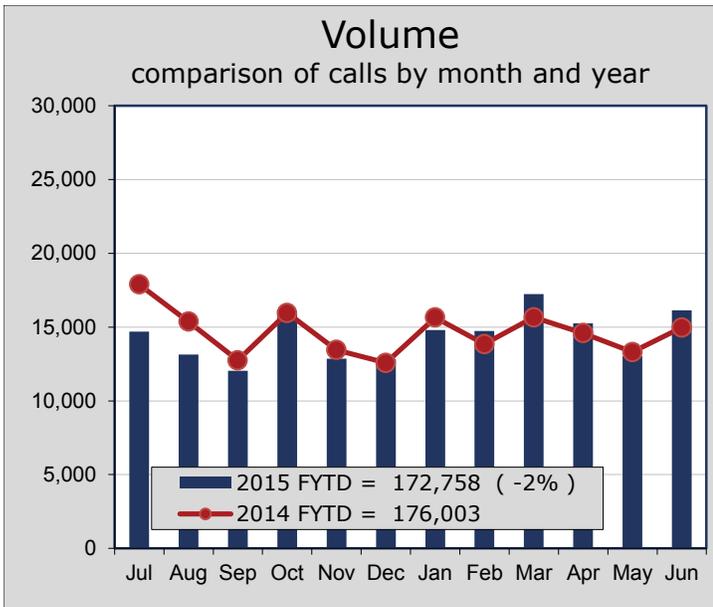
Account Manager	Account Manager Style	Fixed Income	Equity	Inflation Linked	Total	Pct of Fund	Target (Range)
StateStreet B&T: Boston	Cash	\$1,613,751			\$1,613,751	0.68%	
BlackRock: San Francisco	Fixed Core (Passive)	\$27,203,862			\$27,203,862	11.48%	13%
BlackRock: San Francisco	Fixed High Yield (Passive)	\$18,204,703			\$18,204,703	7.68%	8%
BlackRock: San Francisco	Emerging Market Debt (Passive)	\$5,053,368			\$5,053,368	2.13%	4%
						<b>21.29%</b>	<b>25% (15-35%)</b>
BlackRock: San Francisco	Russell 1000 (Passive)		\$85,864,887		\$85,864,887	36.22%	34%
BlackRock: San Francisco	Russell 2000 (Passive)		\$16,678,322		\$16,678,322	7.04%	6%
						<b>43.26%</b>	<b>40% (33-45%)</b>
BlackRock: San Francisco	EAFE (Passive)		\$34,116,397		\$34,116,397	14.39%	14%
BlackRock: San Francisco	EAFE SC (Passive)		\$9,011,133		\$9,011,133	3.80%	3%
BlackRock: San Francisco	Emerging Markets (Passive)		\$13,767,059		\$13,767,059	5.81%	6%
						<b>24.00%</b>	<b>23% (16-28%)</b>
BlackRock: San Francisco	Dow Jones UBS Commodities (Passive)			\$5,038,180	\$5,038,180	2.13%	4% (1-7%)
BlackRock: San Francisco	US Real Estate (Passive)			\$20,508,599	\$20,508,599	8.65%	8% (6-10%)
						<b>10.78%</b>	<b>12% (8-16%)</b>
	<b>TOTAL Amounts</b>	\$52,075,684	\$159,437,798	\$25,546,778	<b>\$237,060,261</b>		
	<b>TOTAL Percent</b>	21.97%	67.26%	10.78%			
	<b>Actual Portfolio</b>	<b>21.97%</b>	<b>67.26%</b>	<b>10.78%</b>			
	<b>Policy</b>	<b>25% (15-35%)</b>	<b>63% (53-70%)</b>	<b>12% (8-16%)</b>			

# Agenda Item #14c

## Director's Report Operations

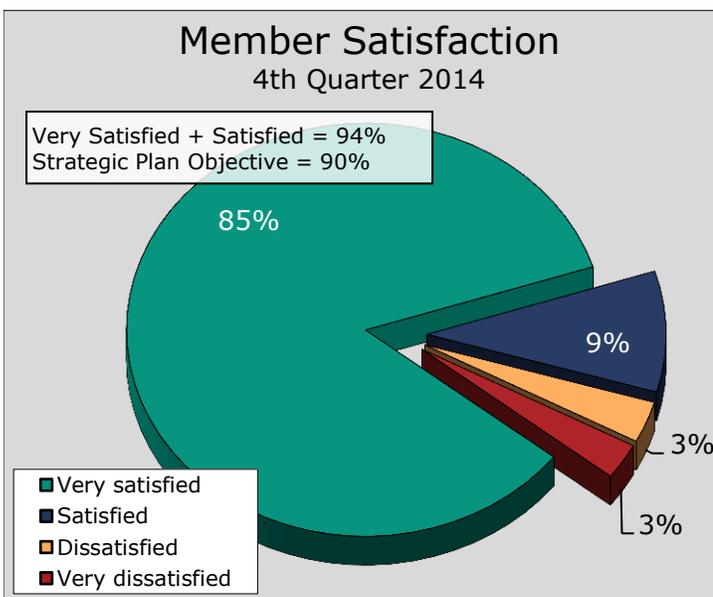
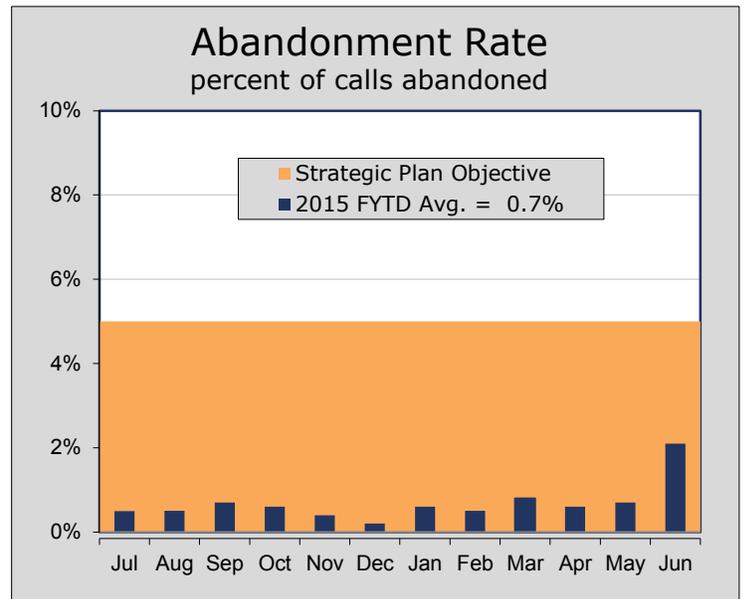
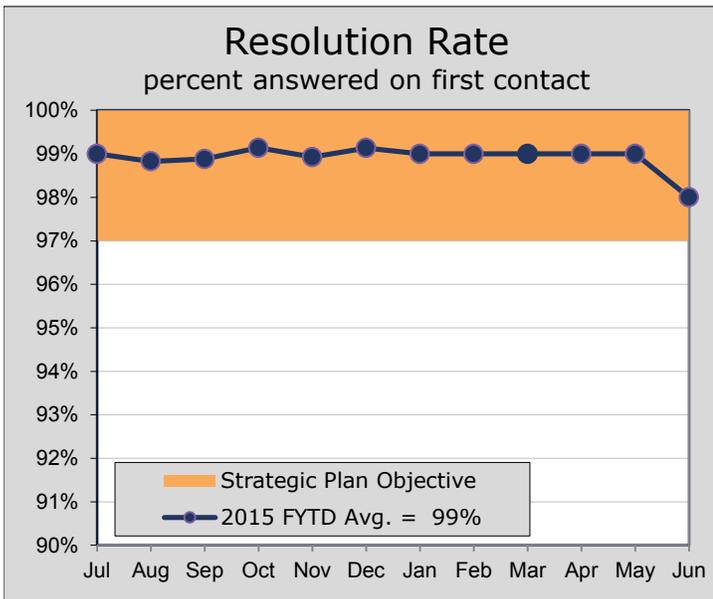


# Member Advisory Center: Phone



### Timeliness (average wait time in seconds)

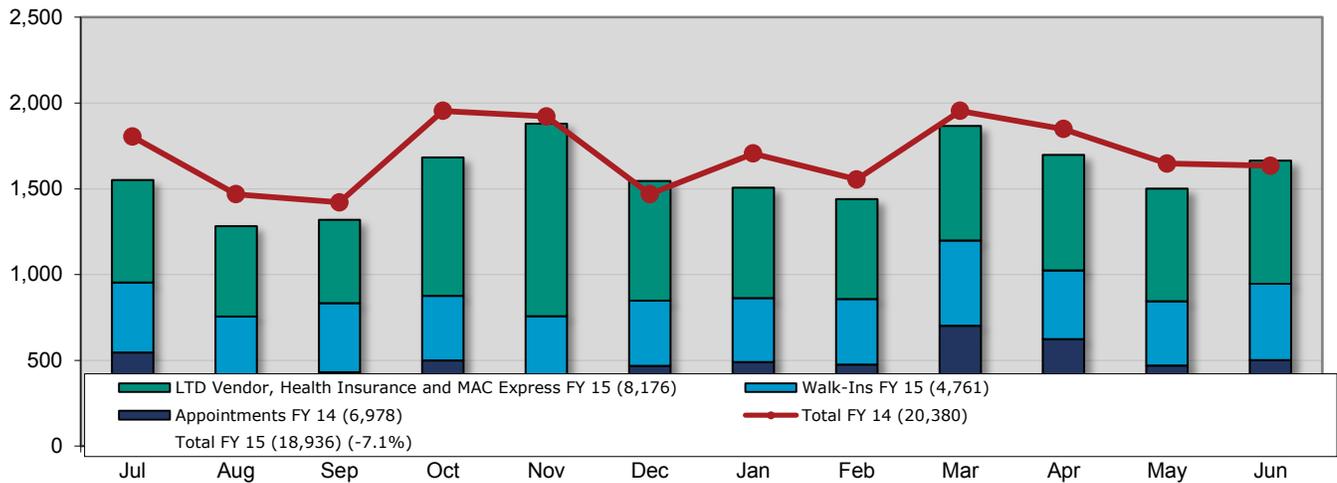
Month	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Avg. Wait Time (seconds)	12	10	9	13	10	2	13	11	14	10	12	27



# Member Advisory Center: One-on-One

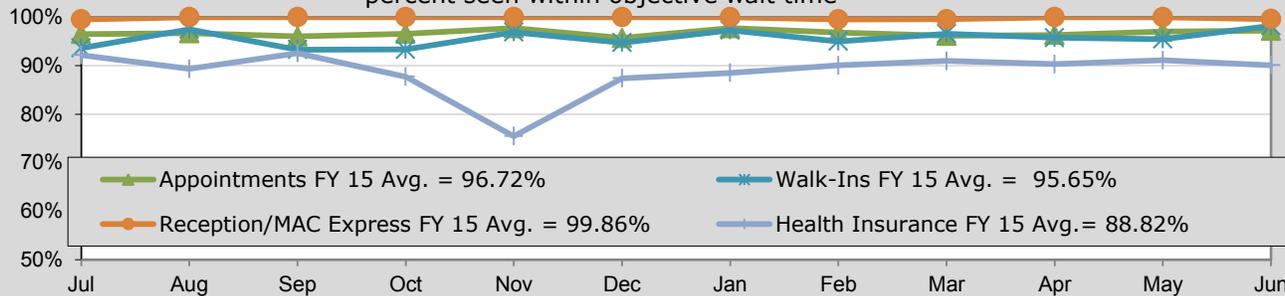
## Volume

number of one-on-one counseling sessions by type



## One-on-One Timeliness

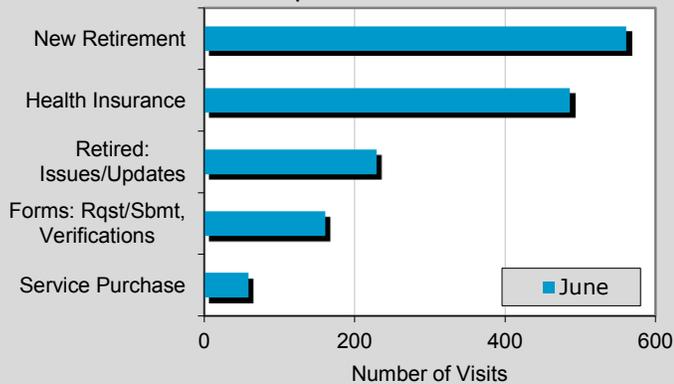
percent seen within objective wait time



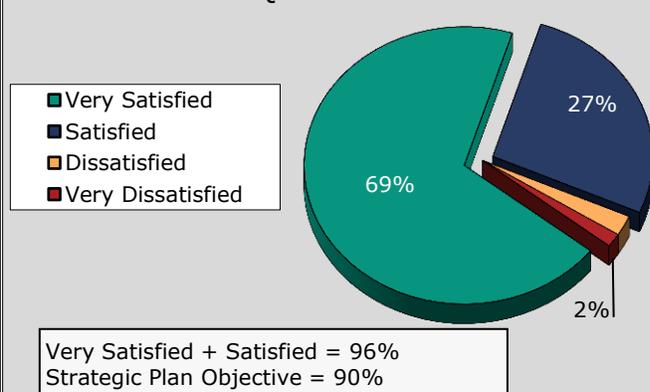
## Timeliness (average wait time in minutes)

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

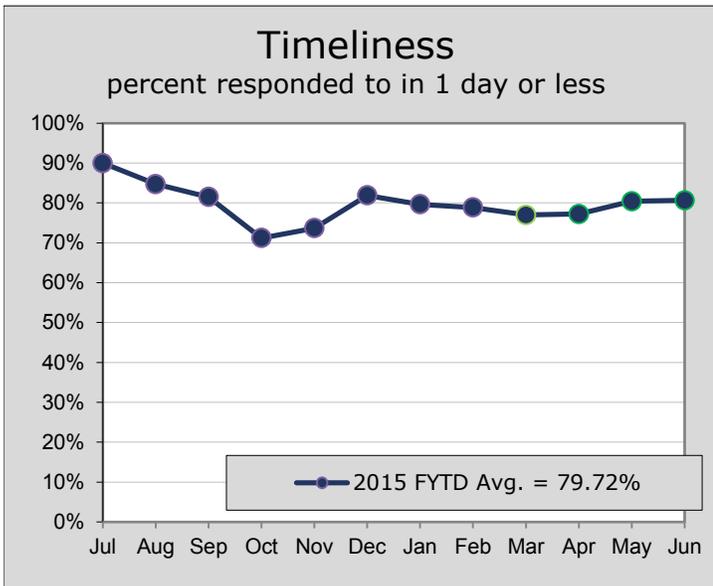
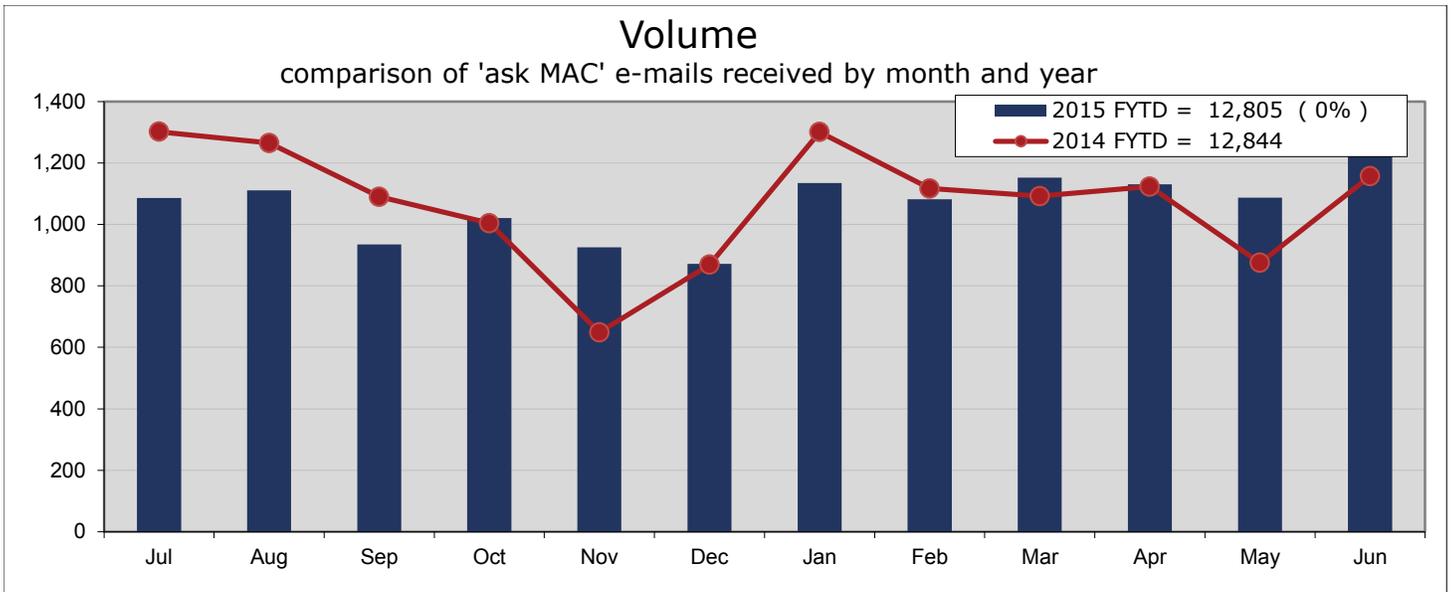
## Reasons for Visit top five reasons



## Member Satisfaction 1st Quarter 2015

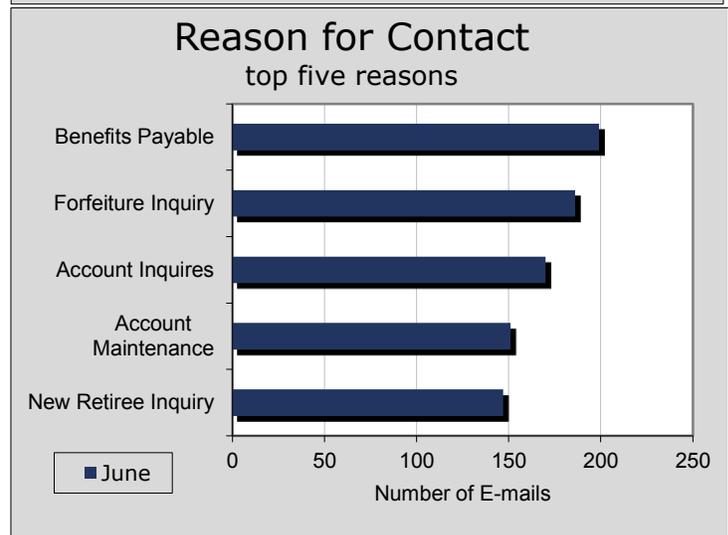
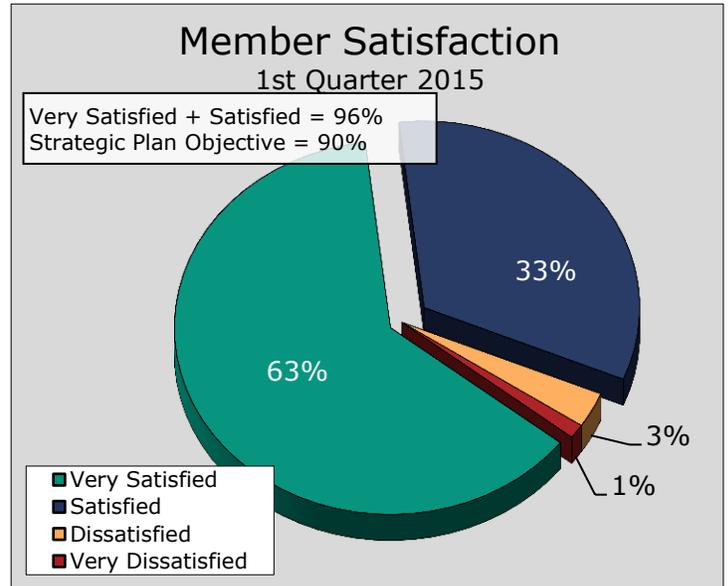


# Member Advisory Center: E-Mail



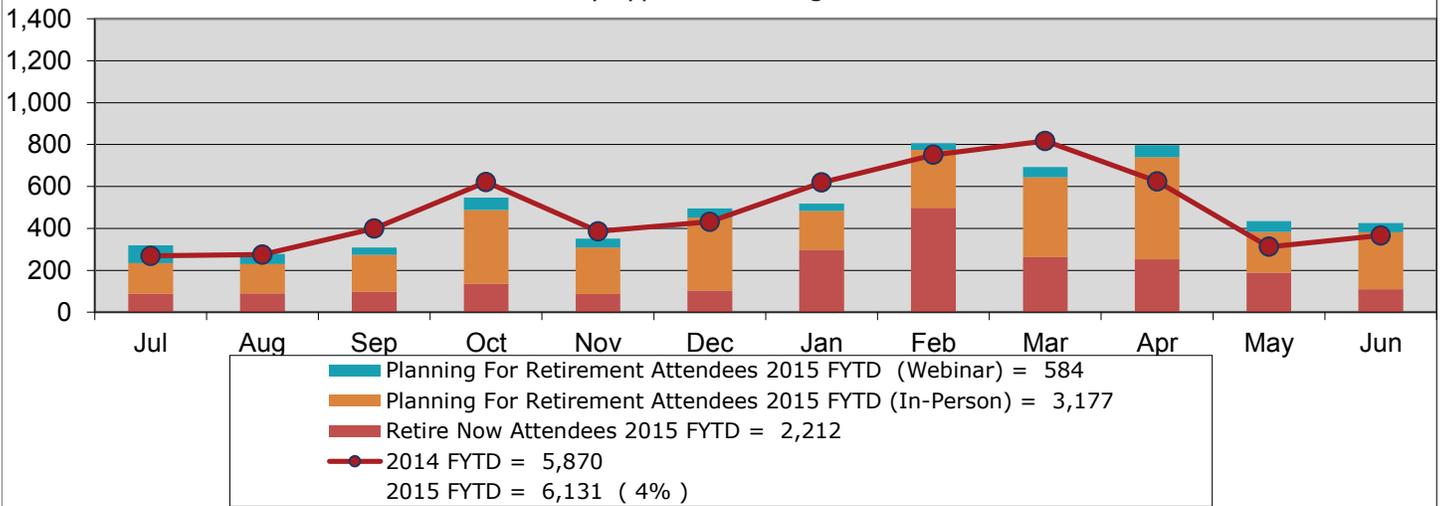
### Timeliness (average response in hours)

8	10	12	12	12	8	10	16	15	16	11	8
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun



# Outreach Education and Benefit Estimates

## Total Meeting Attendees by type of meeting

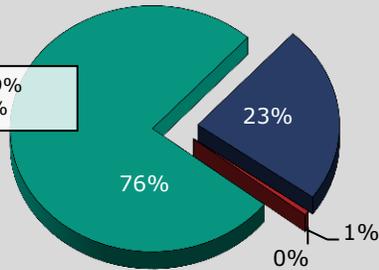


## Member Satisfaction

### Planning for Retirement Meetings 1st Quarter 2015

Very Satisfied + Satisfied = 99%  
Strategic Plan Objective = 90%

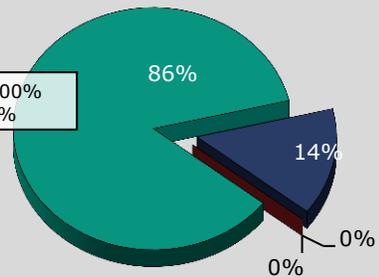
- Very Satisfied
- Satisfied
- Dissatisfied
- Very Dissatisfied



### Retire Now Meetings 1st Quarter 2015

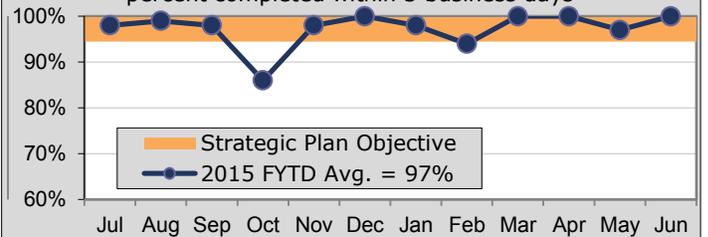
Very Satisfied + Satisfied = 100%  
Strategic Plan Objective = 90%

- Very Satisfied
- Satisfied
- Dissatisfied
- Very Dissatisfied



## Benefit Estimate Timeliness

percent completed within 3 business days



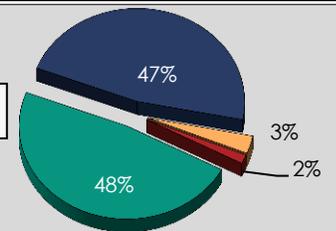
## Benefit Estimate Timeliness (average TAT in days)

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

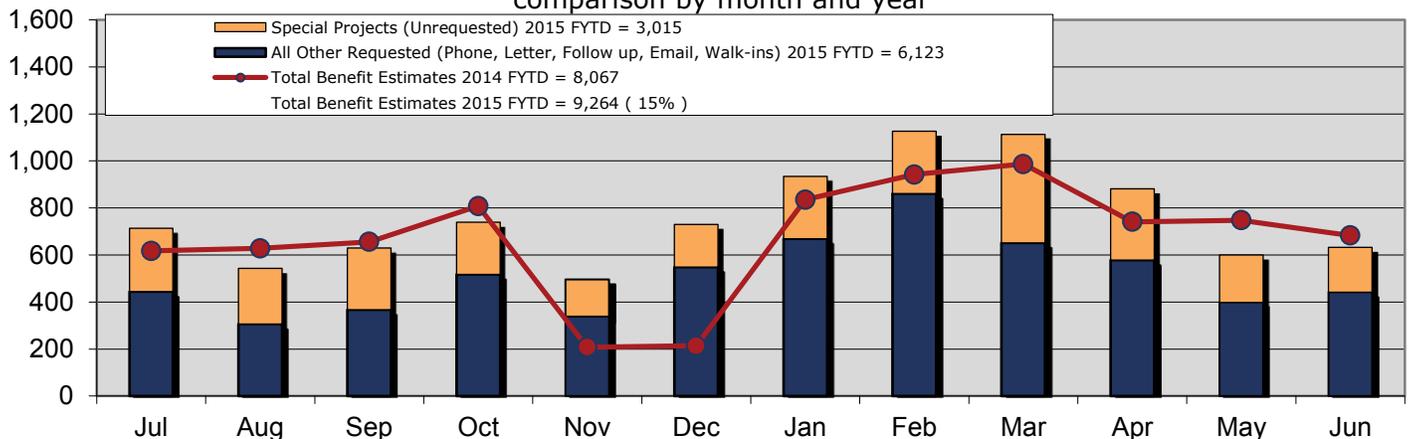
## Benefit Estimates 1st Quarter 2015

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

- Very Satisfied
- Satisfied
- Dissatisfied
- Very Dissatisfied

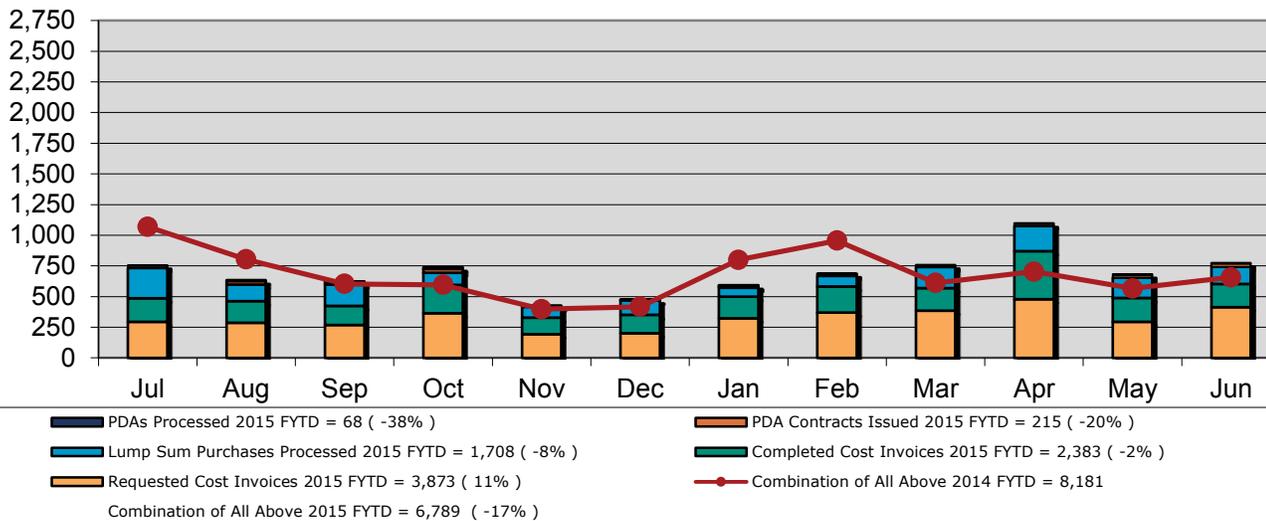


## Benefit Estimate Volume comparison by month and year



# Service Purchase

**Total Volume**  
comparison by month and year



Requests Pending  
as of  
June 30,  
2015

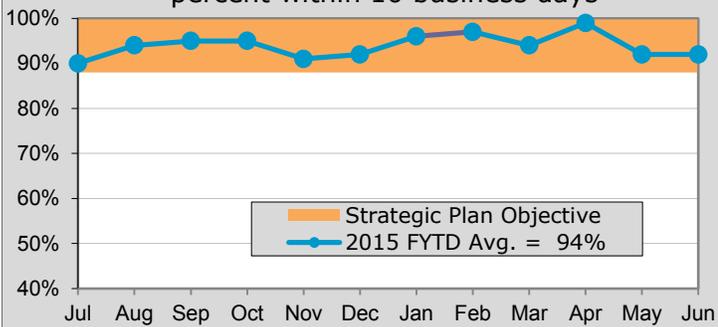
Cost Invoices Pending

539

Payments Pending

36

**Lump Sum Timeliness**  
percent within 10 business days



Timeliness (average turnaround time in business days)

4	2	2	2	3	3	2	2	2	1	3	2
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

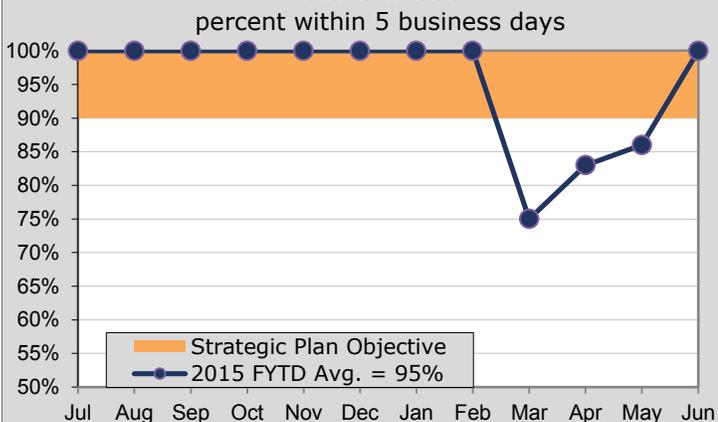
**Cost Invoices Timeliness**  
percent within 15 business days



Timeliness (average turnaround time in business days)

7	3	5	5	6	6	5	4	8	10	4	7
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

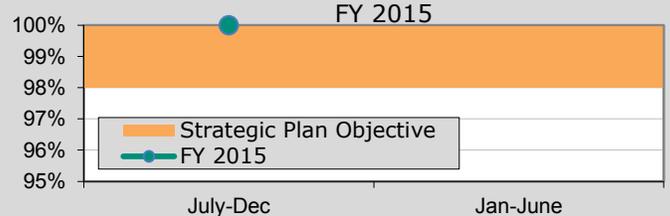
**Payroll Deduction Agreement Timeliness**  
percent within 5 business days



Timeliness (average turnaround time in business days)

2	1	1	1	1	3	1	1	4	2	2	1
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

**Cost Invoice Quality Rating**



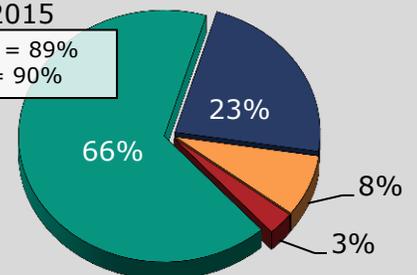
**Member Satisfaction**

1st Quarter 2015

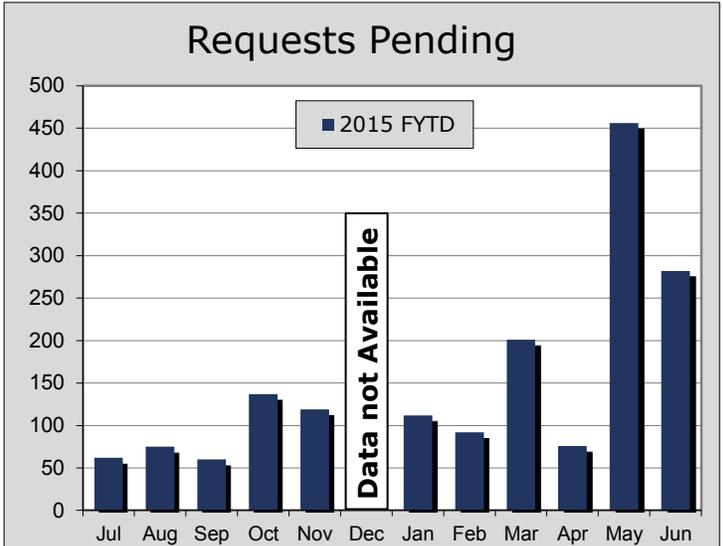
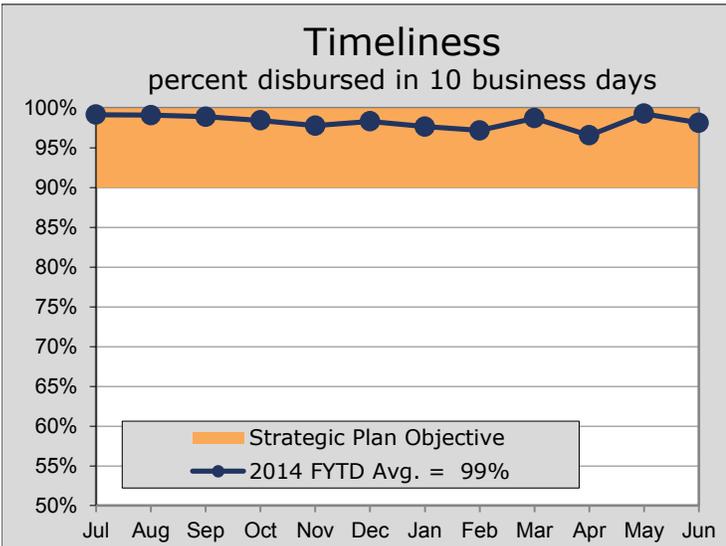
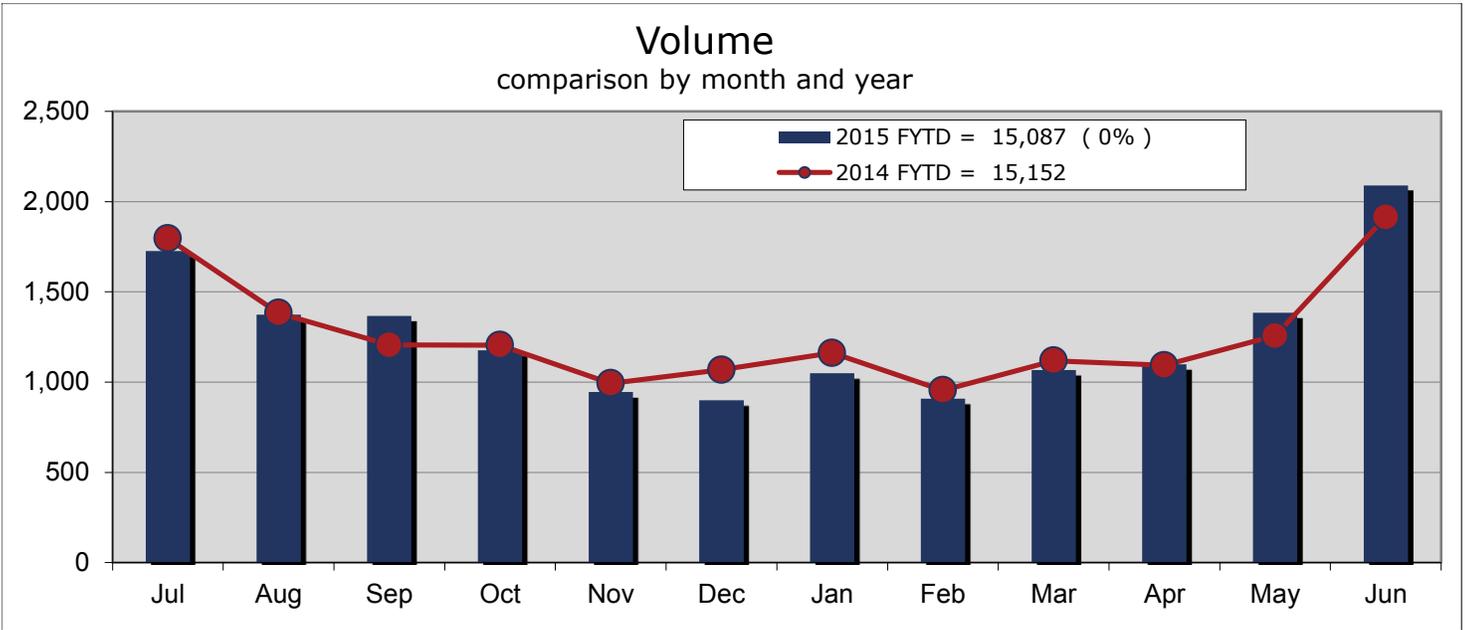
Very Satisfied + Satisfied = 89%

Strategic Plan Objective = 90%

- Very Satisfied
- Satisfied
- Dissatisfied
- Very Dissatisfied

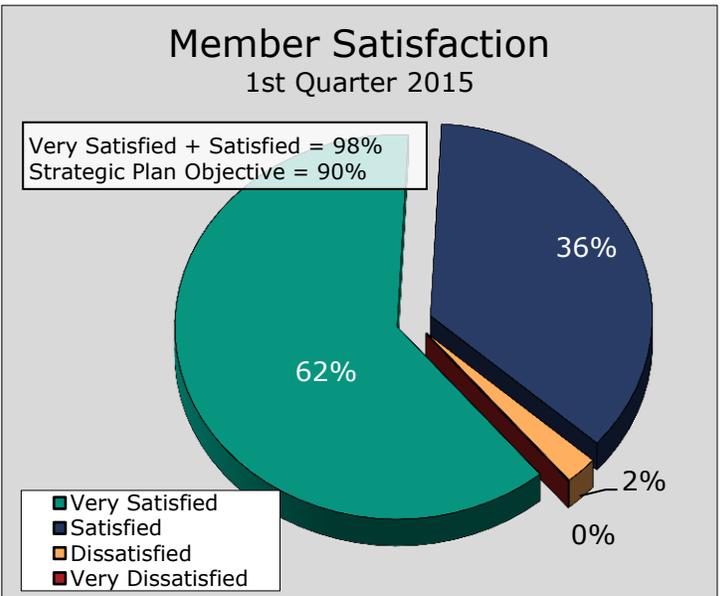
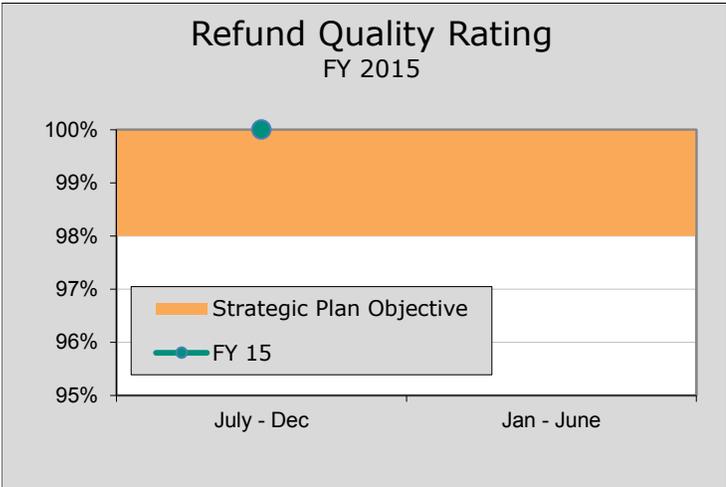


# Refunds



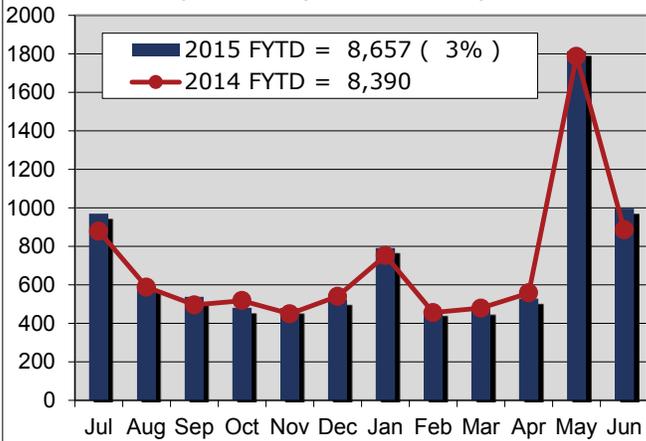
### Timeliness (average turnaround time in business days)

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

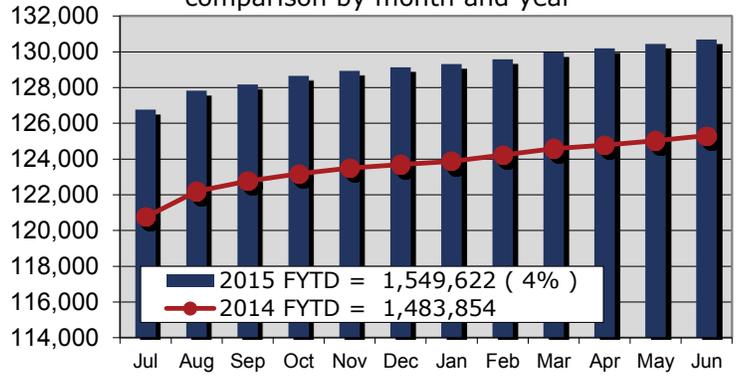


# New Retiree and Pension Payroll

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

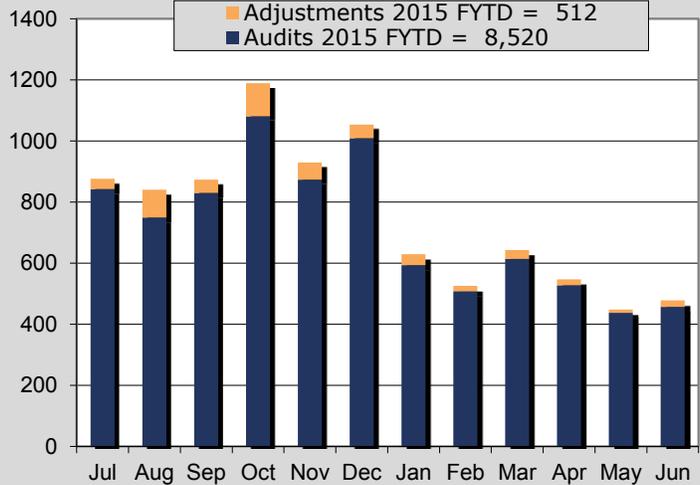
### First Payment Timeliness percent disbursed in 10 business days



### First Payment Timeliness (average turnaround time in days)

5	7	8	9	8	6	4	7	8	9	3	6
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

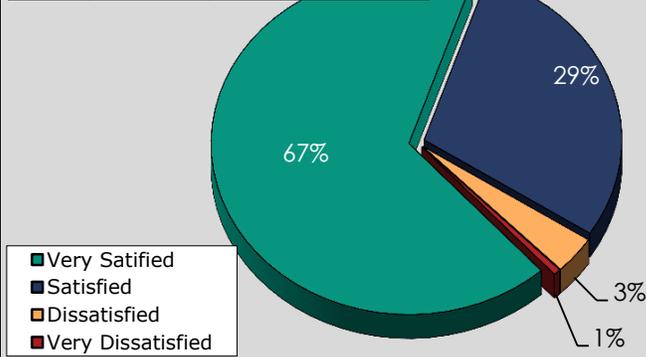
### Audits & Adjustments comparison by month and year



### Member Satisfaction

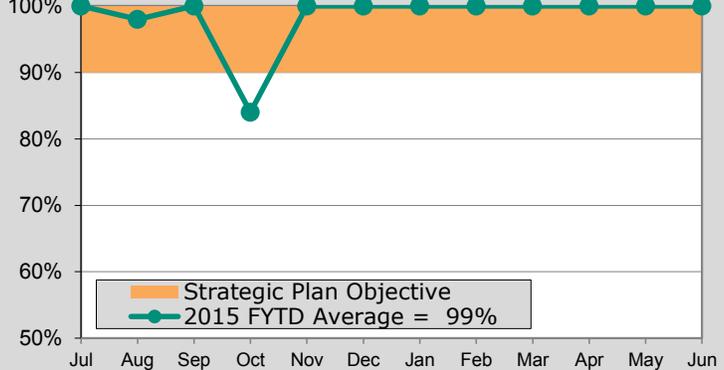
New Retiree  
1st Quarter 2015

Very Satisfied + Satisfied = 96%  
Strategic Plan Objective = 90%



### Adjustments Timeliness

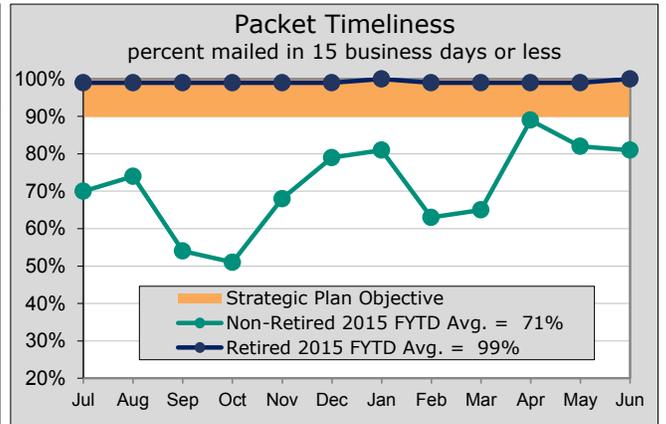
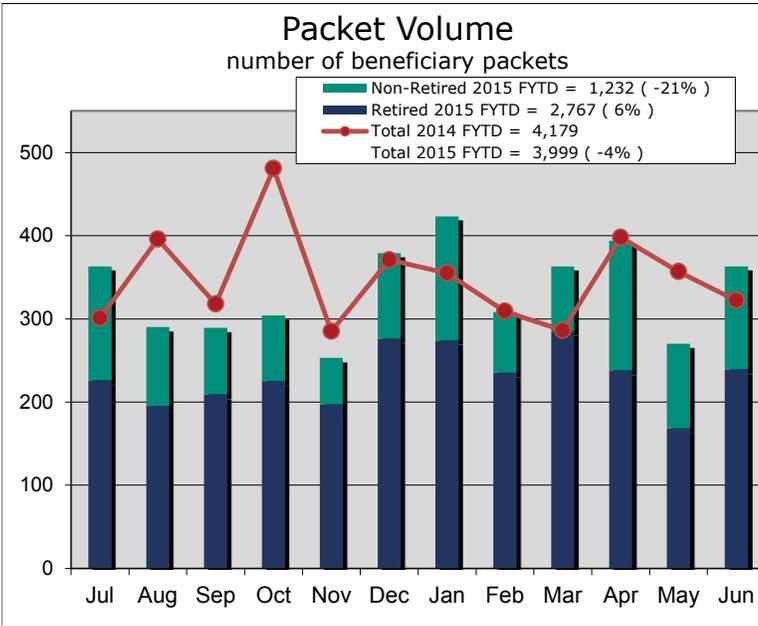
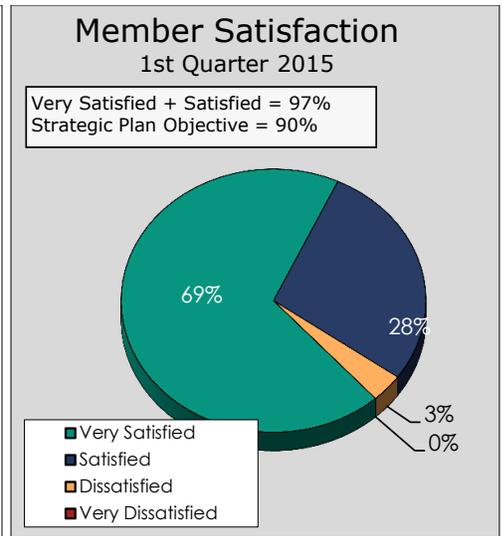
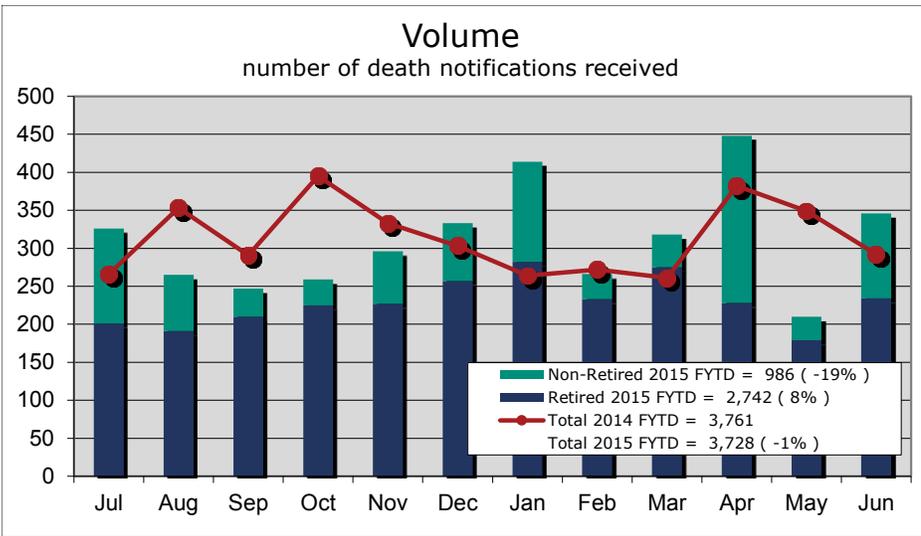
Percent completed in 20 business days



### Adjustments Timeliness (average turnaround time in days)

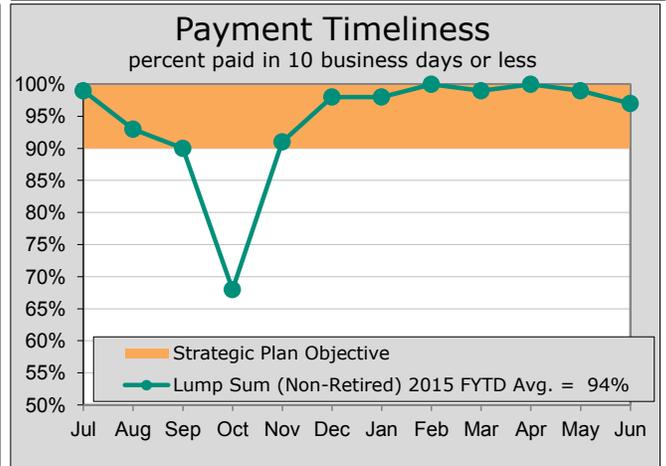
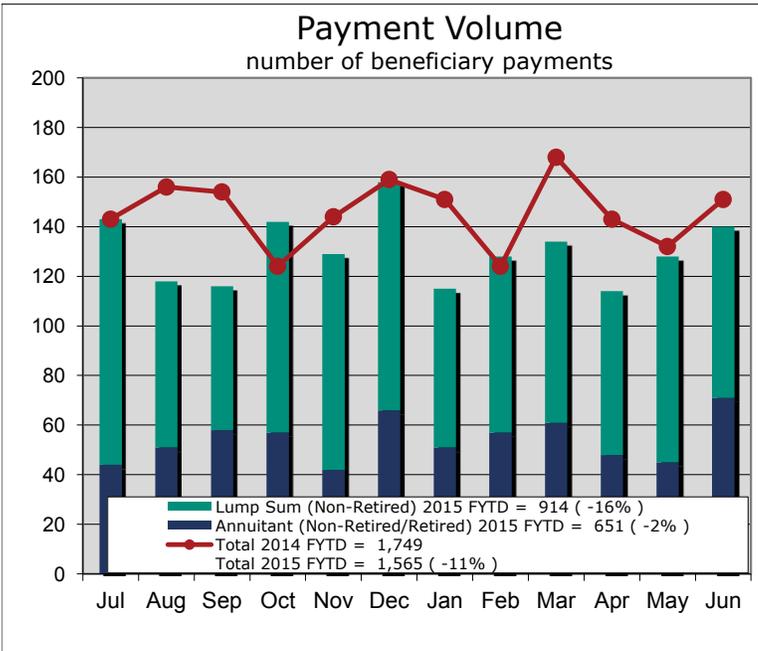
4	8	5	6	4	9	5	2	2	2	2	3
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun

# Survivor Benefits



### Packet Timeliness (average TAT in days)

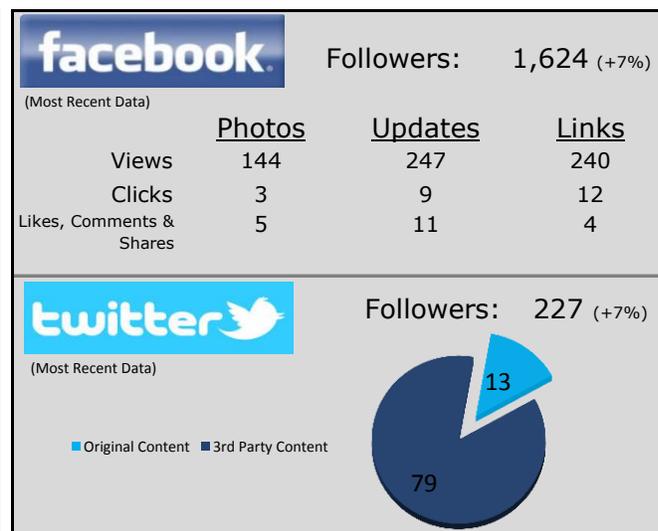
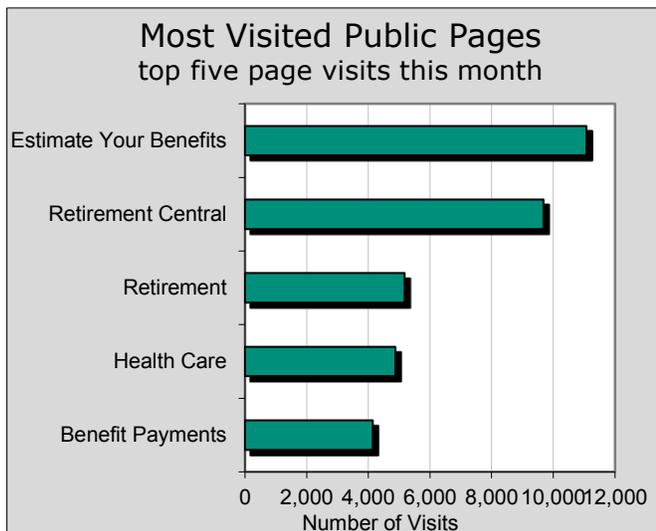
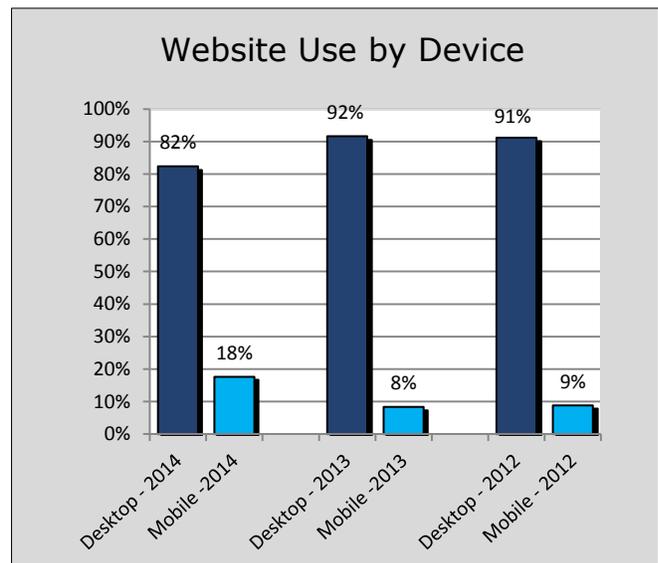
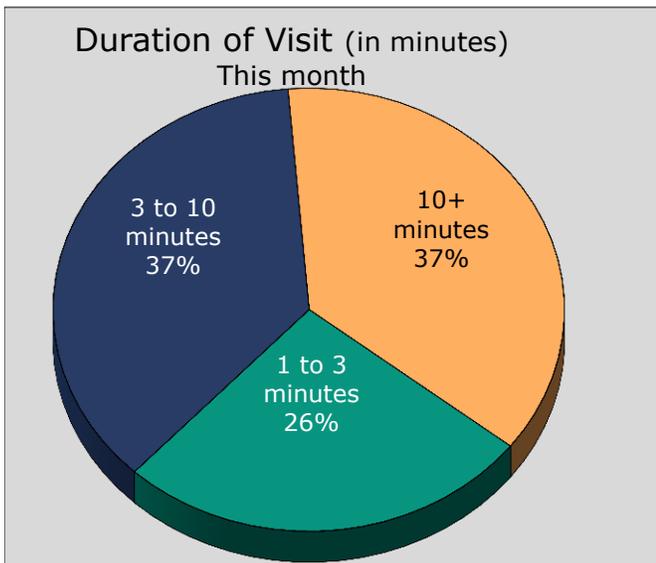
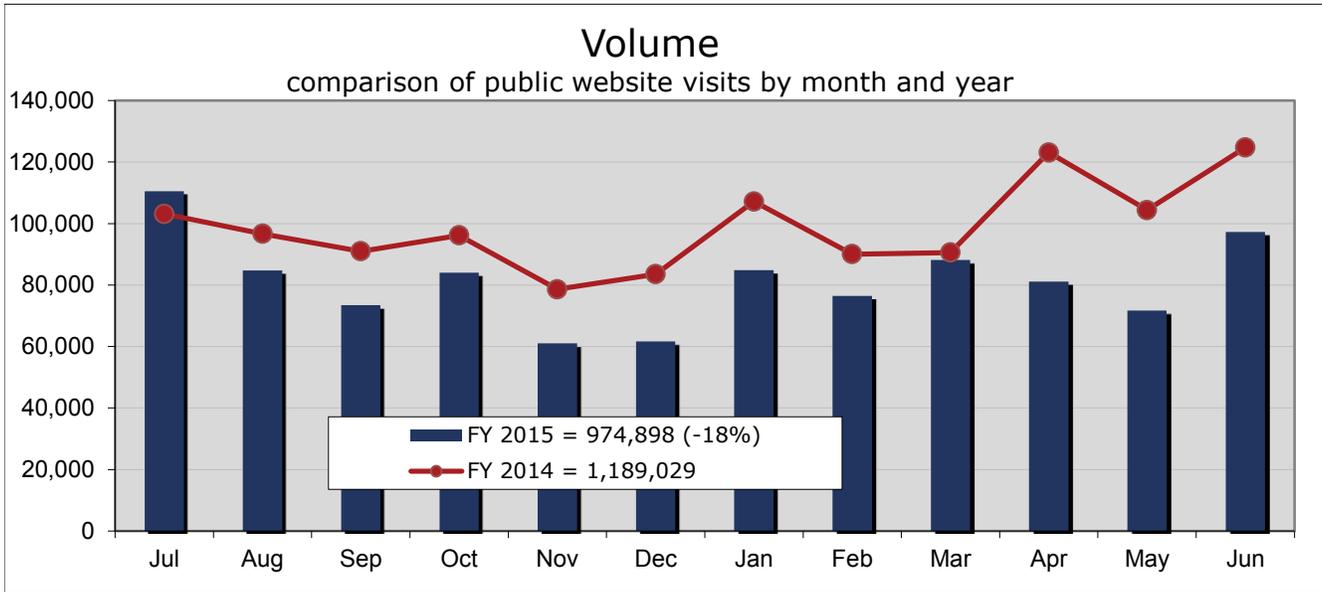
Month	Non Retired	Retired
Jul	18	2
Aug	14	1
Sep	19	1
Oct	17	2
Nov	16	2
Dec	10	3
Jan	7	2
Feb	19	2
Mar	16	2
Apr	12	2
May	10	2
Jun	13	2



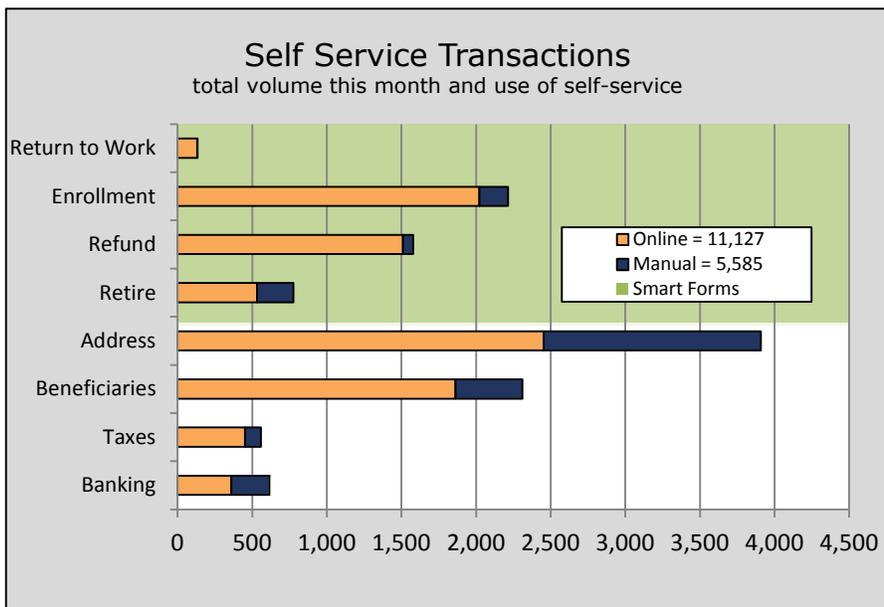
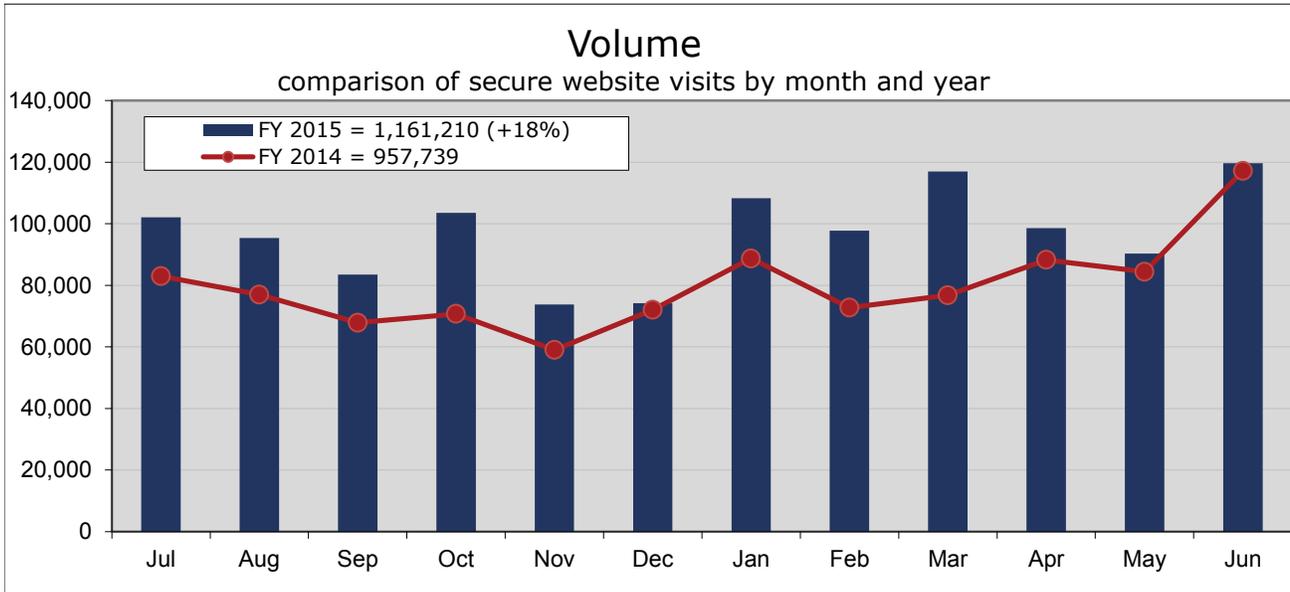
### Payment Timeliness (average TAT in days)

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

# Public Website: www.azasrs.gov



# Secure Website: secure.azasrs.gov

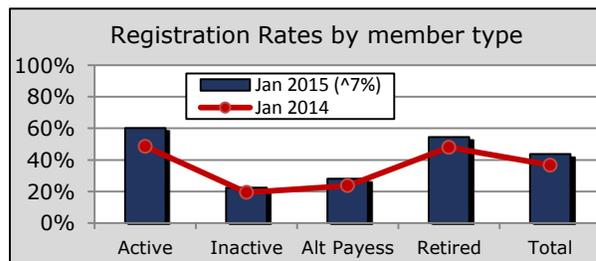
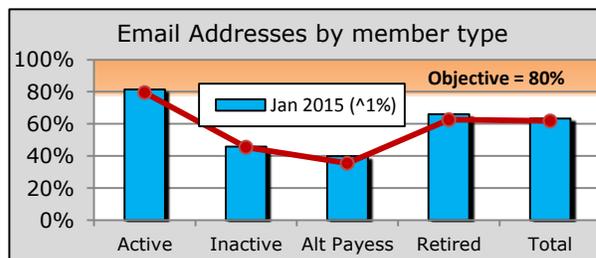
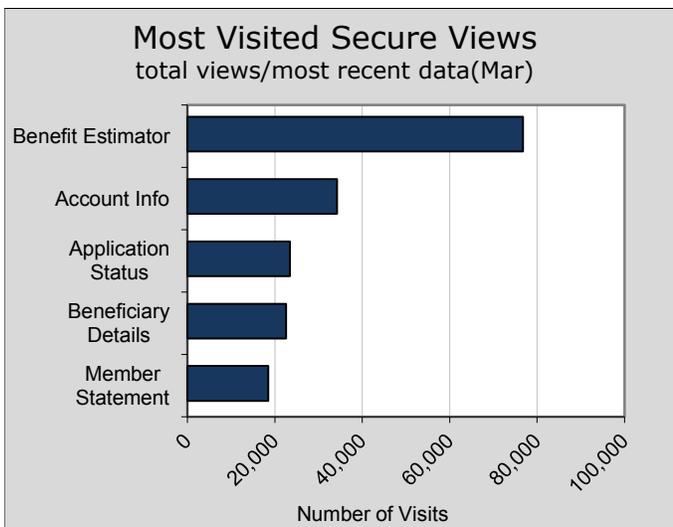


### Historical Comparison of Online Usage

	This month	12mo Min	12mo Max	12mo Avg	Objective
RTW	98%	39%	98%	77%	n/a
Enroll	91%	89%	99%	94%	99%
Ref	96%	88%	98%	92%	90%
Ret	69%	57%	70%	65%	90%
Add	69%	70%	88%	76%	75%
Bene	81%	52%	83%	70%	75%
Tax	81%	68%	88%	79%	75%
DD	58%	41%	58%	49%	75%

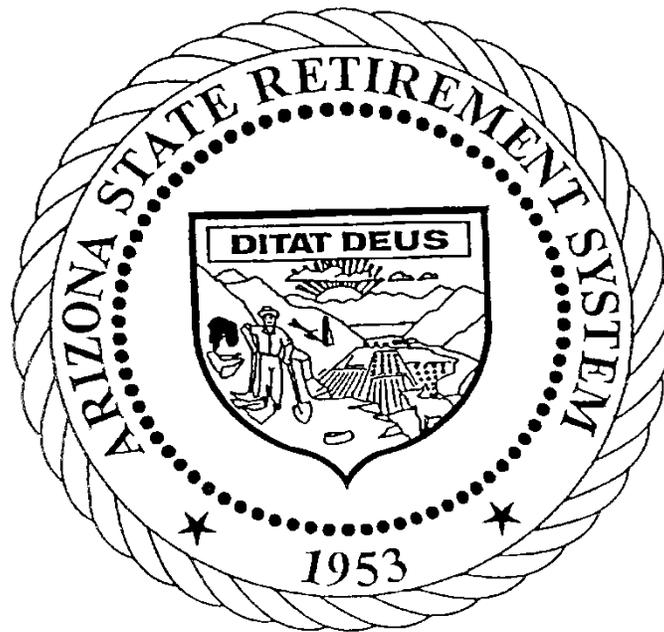
**Total online this month**

**77%**



# Agenda Item #14d

## **Director's Report Budget & Staffing**



## **Budget Summaries for Fiscal Year 2015**

Final expenditure budgetary estimates and accruals for Fiscal Year 2015 are unaudited as of this date. Final expenditure budget summaries for Fiscal Year 2015 will be available in the September 2015 Board materials.

**Arizona State Retirement System**  
**FY 2016 Appropriated Budget**  
**(as of July 31, 2015)**

	APPROPRIATIONS FISCAL YEAR 2016	EXPENDED YTD	% EXPENDED
<b>OPERATING BUDGET</b>			
Personal Services	\$ 13,091,900	\$ 912,000	6.97%
Employee Related Expenses	\$ 5,063,500	\$ 362,400	7.16%
Professional & Outside Services	\$ 1,292,400	\$ -	0.00%
Travel	\$ 79,900	\$ 600	0.75%
Other Operating Expenses	\$ 2,732,800	\$ -	0.00%
Equipment	\$ 651,100	\$ -	0.00%
Operating Subtotal	\$ 22,911,600	\$ 1,275,000	5.56%
<b>OTHER APPROPRIATIONS</b>			
Long Term Disability Administration	\$ 2,800,000	\$ -	0.00%
Oracle Forms and Reports Modernization (Yr. 3)	\$ 2,270,000	\$ 58,700	2.59%
<b>TOTAL FY 2016 Appropriated Funds</b>	<b>\$ 27,981,600</b>	<b>\$ 1,333,700</b>	<b>4.77%</b>

	APPROPRIATIONS PRIOR YEAR	EXPENDED TO DATE	% EXPENDED
<b>PRIOR YEAR LEGISLATIVE APPROPRIATIONS (NON-LAPSING)</b>			
FY 2015 - Oracle Forms and Reports Modernization (Yr. 2)	\$ 4,484,500	\$ 1,463,600	32.64%

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

## **Budget Summary for Fiscal Year 2016 As of July 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, 2015 through June 30, 2016. 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 two pay periods (8.3 % of the annual payrolls) of fiscal year 2016.

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

### **Non-Lapsing Appropriations for Legislative Initiatives**

The amount appropriated by the Legislature for the implementation of:

- FY 2015 - Oracle Forms and Reports Modernization (Yr. 2)
- 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 2016, 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 2016, CONTINUOUSLY APPROPRIATED REPORT

(with summarized Appropriated Expenses)

DESCRIPTION	ESTIMATED ANNUAL EXPENSES <small>(Projections updated quarterly)</small>	EST. ANNUAL EXPENSES AS % OF TOTAL AUM	EST. ANNUAL EXPENSES PER MEMBER
Custodial Banking, Security Lending and Master Cash STIF Fees	3,077,000		
Internal Investment Management (Salaries and Benefits)	1,750,900		
<i>Public Markets</i>			
External Investment Management Fees	70,320,800		
Transactional and Other Fees	2,109,600		
<i>Private Markets</i>			
Private Debt and Equity Management Fees	45,760,000		
Private Debt and Equity Performance Incentive and Other Fees	57,200,000		
Real Estate, Farmland and Timber and Infrastructure Management Fees	21,435,300		
Real Estate, Farmland and Timber and Infrastructure Performance Incentive and Other Fees	26,794,100		
Opportunistic Debt and Equity Management Fees	6,300,000		
Opportunistic Debt and Equity Performance Incentive and Other Fees	3,150,000		
<b>Investment Management Expenses</b>	<b>\$ 237,897,700</b>	<b>0.678%</b>	<b>\$ 432.31</b>
Investment Consulting Services	4,388,500		
Investment Related Legal Services	1,075,000		
Investment Electronic Information Services	2,000,000		
External Financial Consulting Services	75,000		
<b>Investment Related Consulting, Legal and Information Services</b>	<b>\$ 7,538,500</b>	<b>0.021%</b>	<b>\$ 13.70</b>
<b>Rent</b>	<b>1,505,000</b>	<b>0.004%</b>	<b>\$ 2.73</b>
<b>Actuarial Consulting Fees</b>	<b>925,000</b>	<b>0.003%</b>	<b>\$ 1.68</b>
<b>Retiree Payroll (Disbursement Administration)</b>	<b>3,655,400</b>	<b>0.010%</b>	<b>\$ 6.64</b>
<b>Total Continuously Appropriated Expenses</b>	<b>\$ 251,521,600</b>	<b>0.717%</b>	<b>\$ 457.06</b>
<b>*Total Current Year Appropriated Expenses</b>	<b>\$ 28,981,600</b>	<b>0.083%</b>	<b>\$ 52.67</b>
<small>* Includes estimated prior year non-lapsing appropriations of \$1,000,000 related to the Oracle Forms and Reports Modernization Project</small>			
<b>Total Expenses (Continuously Appropriated and Appropriated)</b>	<b>\$ 280,503,200</b>	<b>0.799%</b>	<b>\$ 509.73</b>

ASRS Estimated Total Market Value of Assets Under Management (AUM) as of June 30, 2015

\$ 35,101,600,000

ASRS Total Membership as of June 30, 2014

550,300

# Continuously Appropriated Expenses for FY 2016 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).
  - 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.

### *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 and the beginning phase of the ASRS Benefit Disbursement project.

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 ASRS Estimated Total Market Value of Assets Under Management (AUM) and ASRS Total Membership values are updated as period ending amounts are finalized.

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

ASRS by Division	251 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)	15	0.0	0.0	0.0	0.00%
External Affairs (EAD)	3	0.0	0.0	0.0	0.00%
Financial Services (FSD)	62	0.0	2.0	10.75	17.34%
Technology Services (TSD)	52	2.0	2.0	8.0	15.38%
Internal Audit (IAD)	6	0.0	0.0	1.0	16.67%
Investment Management (IMD)	11	0.0	0.0	1.0	9.09%
Member Services (MSD)	86	4.0	0.5	2.75	3.20%
	<b>251</b>	<b>6.00</b>	<b>4.50</b>	<b>25.00</b>	<b>9.96%</b>

Turnover	July 2015 New Hires	July 2015 Exits	Total Exits (Last 12 Months)	Annualized Turnover %
	6.0	4.5	22.25	9.61%

**Recruitments**

Beginning February 2015, All ASRS recruitments were 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.

To date, twenty-six positions have been approved as Mission Critical.

- Seventeen positions have been filled
  - Filled Internally (Current ASRS employees have been hired into the vacant positions, no change to ASRS FTE count)
    - FSD Accountant II, FSD Accounting Analyst (start date 08/15/2015), FSD Accounting Technology Specialist, FSD Investment Accountant, FSD Management Analyst III, FSD Membership Accounting Manager, MSD Retirement Advisor Supervisor
  - Filled Externally (New employee to the ASRS hired into the vacant position, increase to ASRS FTE count)
    - AUD Audit Officer (start date 09/14/2015), MSD Retirement Advisor Seniors (3), MSD Retirement Benefit Technician, TSD Senior Information Security Engineer, TSD Network Specialist II, TSD IT Security Engineer, TSD Software Engineers (2, start dates 08/03/2015 and 08/31/2015)
- Five positions are under recruitment – FSD Accountant I's (2), FSD Accountant II, TSD Information Security Engineer, TSD Project Manager/Business Analyst
- Three positions will be recruited for in the near future – FSD Accountant II, TSD Applications Developer, TSD SR Automation Developer
- One recruitment has been put on hold - FSD Management Analyst IV

## 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: <span style="color: green;">Green</span> = Normal risk <span style="color: orange;">Yellow</span> = Greater than normal risk <span style="color: red;">Red</span> = Negative impact			
MSD	MAC (Call Center)	○●○	During July 2015, MAC met their strategic objectives. Recruitment for three Retirement Advisors Seniors has been completed. Greater than normal risk will remain until the new FTEs are fully trained.
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	●○○	
MSD	Employer Relations	●○○	
MSD	Health Insurance/LTD Benefits Administration and Communication	●○○	
MSD	Survivor Benefit Processing	●○○	
MSD	Refund Processing	●○○	
MSD	New Retiree Processing	●○○	
MSD	LTD Member Contacts, Benefit 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: <span style="color: green;">Green</span> = Normal risk <span style="color: orange;">Yellow</span> = Greater than normal risk <span style="color: red;">Red</span> = Negative impact			
MSD	Health Insurance	<span style="color: green;">●</span> ○ ○	
MSD/FSD	Service Purchase Processing	○ <span style="color: orange;">●</span> ○	The Service Purchase process is going through a modernization project which is requiring significant staffing resources. Greater than normal risk will remain until the Service Purchase project is completed.
FSD	Monthly Pension Payroll Processing	<span style="color: green;">●</span> ○ ○	
FSD	New Retiree Processing	○ ○ <span style="color: red;">●</span>	During July 2015, the New Retiree strategic objectives were not met. Current staffing levels are unable to meet the business needs due to four vacant positions and an increased New Retiree volume. Negative impact will remain until vacant positions are filled and staff are fully trained.
FSD	Survivor Benefit Processing	<span style="color: green;">●</span> ○ ○	
FSD	Records Management (data processing/imaging)	<span style="color: green;">●</span> ○ ○	
FSD	Health Insurance Member Contacts, Benefit Processing Transfer Processing	<span style="color: green;">●</span> ○ ○	
FSD	Transfer Processing	<span style="color: green;">●</span> ○ ○	
FSD	General Accounting	○ <span style="color: orange;">●</span> ○	General Accounting is not meeting all of their strategic objectives. The team is working on a couple of major implementations (New AFIS, GASB 68) requiring significant staffing resources. In addition, the Investment Accountant is in training and an Accounting Analyst position is vacant. Greater than normal risk will remain until training for the

## 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: <b>Green</b> = Normal risk <b>Yellow</b> = Greater than normal risk <b>Red</b> = Negative impact			
			Investment Accountant is complete and the Accounting Analyst if filled.
FSD	Contribution Collections and Posting		
TSD	Network Support		The Network Support team continues to struggle to meet their business needs and strategic objectives due to insufficient staffing. Recruitments for three positions have been completed; Sr. Security Engineer (started May 2015), Security Engineer (started July 2015), and a Network Engineer (started July 2015). One recruitment for a Security Engineer is currently underway and recruitment for a Software Security Engineer is planned for late fall. Greater than normal risk will remain until the remaining positions are filled and staff is fully trained. Projected time frame for recruitment and training is 5-9 months.
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 July 2015 was 40 (26 FTEs and 14 external resources). One full time Project Manager/Business Analyst and one full time Technical Lead separated in July 2015. A full time Filenet Workflow developer will be separating in August 2015. Two full time Java developers have been hired and will start in August 2015. One external staff Oracle developer will start in August 2015. Recruitment for the full time Project Manager/Business Analyst position is currently underway.
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: <b>Green</b> = Normal risk <b>Yellow</b> = Greater than normal risk <b>Red</b> = Negative impact			
DIR	Communications/Media Relations	● ○ ○	
DIR	Web Services	● ○ ○	
IA	Internal Audit	● ○ ○	
EA	Rule Writing	● ○ ○	
EA	Legislative Relations	● ○ ○	
ASD	Human Resources	● ○ ○	
ASD	Training and Development	● ○ ○	
ASD	Contracts and Procurement	○ ● ○	Current staffing struggled to meet the strategic objectives in July 2015 due to the combined effect of the vacancy of the Chief Procurement Officer role, (that had previously been provided by ADOA), and the vacant ASRS Procurement Officer position. While a current ASRS team member is currently assuming the role of Chief Procurement Officer along with other duties, mission critical status will be requested in order to begin recruitment for the Procurement Officer position in August 2015. Greater than normal risk will remain until additional staffing has been hired and trained.
ASD	Facilities Management	● ○ ○	
ASD	Budget Administration	● ○ ○	

## ASRS Second Quarter 2015 Out of State Travel Expenditures

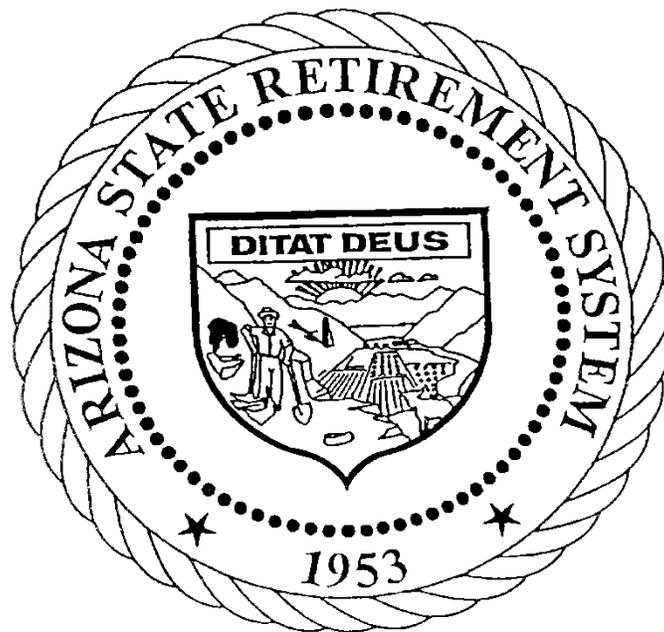
\*Numbers are Unaudited

<u>Date</u>	<u>Purpose</u>	<u>Location</u>	<u>Attendee</u>	<u>Cost</u>
March 29 - April 1, 2015	Q-Group Spring Summit	Amelia Island, FL	Tom Connelly	\$1,956.00
March 30 - April 1, 2015	Littlejohn Funds Advisory Committee Meeting	Greenwich, CT	Eric Glass	\$715.80
March 30 - April 1, 2015	AIMS Conference & Training	San Francisco, CA	Micheal Copeland	\$1,107.43
March 30 - April 1, 2015	AIMS Conference & Training	San Francisco, CA	Kerry White	\$1,111.63
April 21 - 24, 2015	Institutional Investor Annual Roundtable for Pulic & Taft-Hartley Plans	Los Angeles, CA	Dave Underwood	\$425.20
April 22 - 26, 2015	SIOP Conference	Philadelphia, PA	Karl Polen	\$1,551.81
April 28 - 30, 2015	MSCI Intitutional Investor Event	Austin, TX	Cole Smith	\$896.80
April 28 - May 2, 2015	NASIP	Sioux Falls, SD	Lupita Breland	\$1,541.70
May 3-6, 2015	APPFA Professional Development Conference	Portland, OR	Bernard Glick	\$1,252.68
May 3-6, 2015	APPFA Professional Development Conference	Portland, OR	Larry Rennaker	\$1,254.84
May 4-5, 2015	Speak at NCTR Conference	Nashville, TN	Dave King	\$146.00
May 11-14, 2015	CEM 2015Global Pension Conference	Sacramento, CA	Dave King	\$957.08
May 11-14, 2015	CEM 2015Global Pension Conference	Sacramento, CA	Jeremiah Scott	\$957.08
May 11-14, 2015	CEM 2015Global Pension Conference	Sacramento, CA	Brian Crockett	\$1,017.08
May 20-21, 2015	Due Diligence - CIM Annual Meeting	Los Angeles, CA	Karl Polen	\$570.50
May 31 - June 3, 2015	Government Finance Association-GFA Conference	Philadelphia, PA	Nancy Bennet	\$1,653.43
May 31 - June 3, 2015	National Notary Association-NNA Annual Conference	Orlando, FL	Gloria Trujillo	\$1,642.84
June 8-12, 2015	AICPA Business Valuation School	Denver, CO	Eric Glass	\$3,209.40
			<b>Total:</b>	<b>\$21,967.30</b>

\*Final amounts may vary due to adjustments in per diem and reimbursements.

# Agenda Item #14e

## **Director's Report Cash Flow Statement**



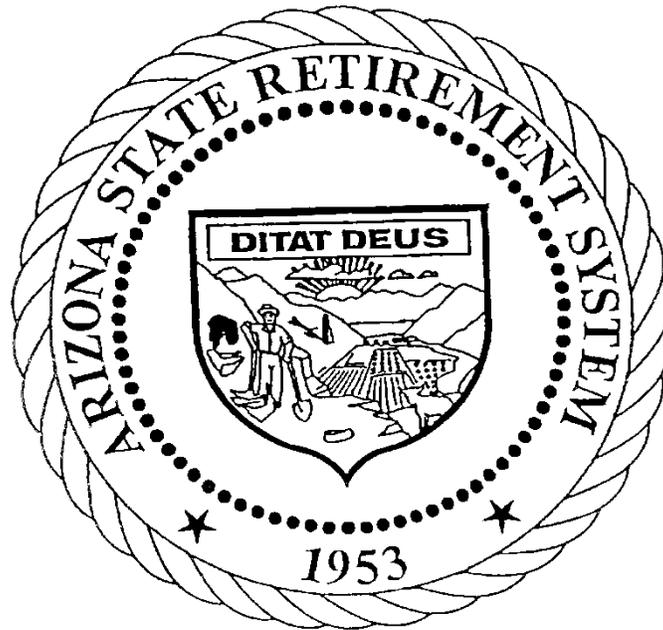
**ARIZONA STATE RETIREMENT SYSTEM**  
**COMBINED STATEMENT OF CHANGES IN TOTAL FUND CASH**  
**FOR THE MONTH ENDED JULY 31, 2015**

	Retirement Plan Fund	Retirement System Fund	Health Benefit Supplement Fund	Long-Term Disability Fund	Current Period July	Fiscal 2016 YTD July	Fiscal 2015 YTD July
<b>ADDITIONS</b>							
Contributions:							
Member contributions	\$ 68,920,479	\$ 2,630	\$ -	\$ 725,935	\$ 69,649,044	\$ 69,649,044	\$ 63,165,416
Employer contributions	67,363,393	2,630	3,199,285	725,942	71,291,250	71,291,250	63,750,828
Alternative contributions (ACR)	1,467,229	-	21,231	9,594	1,498,055	1,498,055	1,366,050
Transfers from other plans	61,861	-	-	-	61,861	61,861	46,317
Purchased service	3,567,470	-	-	-	3,567,470	3,567,470	3,459,494
<b>TOTAL CONTRIBUTIONS</b>	<b>141,380,433</b>	<b>5,260</b>	<b>3,220,516</b>	<b>1,461,472</b>	<b>146,067,680</b>	<b>146,067,680</b>	<b>131,788,105</b>
<b>DEDUCTIONS</b>							
Investment management fees	10,124,291	-	-	-	10,124,291	10,124,291	8,810,065
Custody fees	-	-	-	-	-	-	-
Consultant and legal fees	-	-	-	-	-	-	-
Internal Investment activity expense	115,390	-	-	-	115,390	115,390	116,919
Retirement and disability benefits	229,142,058	4,238,707	8,238,407	5,065,239	246,684,411	246,684,411	238,612,506
Survivor benefits	3,055,300	-	-	-	3,055,300	3,055,300	3,562,038
Refunds to withdrawing members, including interest	33,638,402	3,679	-	-	33,642,080	33,642,080	30,506,936
Administrative expenses	2,477,985	-	-	-	2,477,985	2,477,985	2,885,043
Transfers to other plans	16,612	-	-	-	16,612	16,612	86,825
Other	560	-	-	-	560	560	3,730
<b>TOTAL DEDUCTIONS</b>	<b>278,570,598</b>	<b>4,242,386</b>	<b>8,238,407</b>	<b>5,065,239</b>	<b>296,116,630</b>	<b>296,116,630</b>	<b>284,584,062</b>
<b>INCREASE (DECREASE)</b>	<b>(137,190,166)</b>	<b>(4,237,126)</b>	<b>(5,017,891)</b>	<b>(3,603,768)</b>	<b>(150,048,950)</b>	<b>(150,048,950)</b>	<b>(152,795,958)</b>
From securities lending activities:							
Security loan program	483,179	-	-	-	483,179	483,179	146,055
Security loan interest expense / (Rebate)	(304,624)	-	-	-	(304,624)	(304,624)	(31,859)
* Net income from securities lending activities	787,803	-	-	-	787,803	787,803	177,914
Capital Calls / (Distributions)							
Farmland and Timber	11,517,047	117,469	509,670	-	12,144,186	12,144,186	-
Infrastructure	-	-	-	-	-	-	-
Opportunistic Debt	43,330,696	442,200	1,969,711	-	45,742,607	45,742,607	56,779,596
Opportunistic Equity	8,374,788	84,333	372,493	-	8,831,614	8,831,614	(1,660,131)
Private Debt	34,332,149	357,853	1,556,327	-	36,246,329	36,246,329	(7,703,946)
Private Equity	22,224,800	-	988,362	-	23,213,162	23,213,162	21,635,253
Real Estate	75,470,341	766,894	3,422,362	-	79,659,597	79,659,597	(10,024,906)
<b>TOTAL Capital Calls</b>	<b>195,249,821</b>	<b>1,768,749</b>	<b>8,818,925</b>	<b>-</b>	<b>205,837,495</b>	<b>205,837,495</b>	<b>59,025,865</b>
<b>NET INCREASE (DECREASE)</b>	<b>\$ (331,652,184)</b>	<b>\$ (6,005,874)</b>	<b>\$ (13,836,816)</b>	<b>\$ (3,603,768)</b>	<b>\$ (355,098,642)</b>	<b>\$ (355,098,642)</b>	<b>\$ (211,643,909)</b>

\* Securities lending activities reported on a one month lag.

# Agenda Item #14f

## Director's Report Appeals



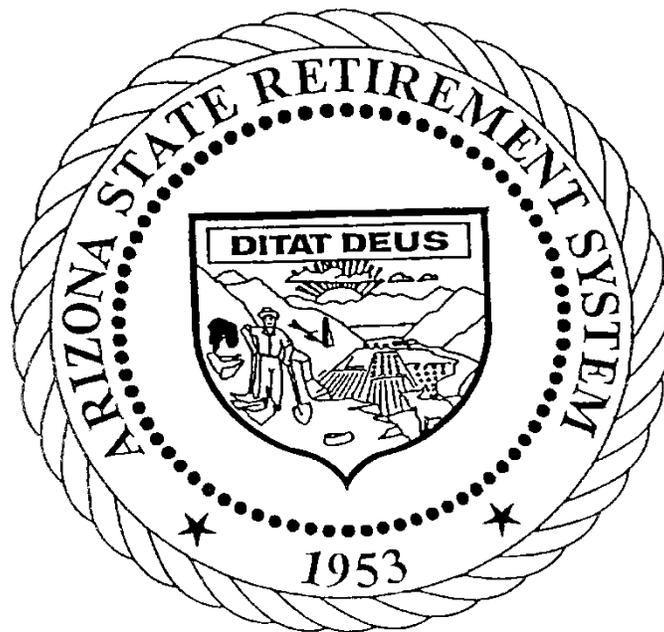
## OUTSTANDING ASRS APPEALS

Date Received	Appeals	Issues/Questions Regarding	Status/Comments
04/16/2012	Arizona State University	Appellant is disputing an ASRS employer termination incentive program invoice in the amount of \$1,149,000.	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. Oral Argument held on 04/08/2015. Final Opinion issued on 05/05/2015 reversing the Superior Court's decision affirming the ruling of the ASRS Board. ASRS Motion for Reconsideration filed in Court of Appeals on 05/19/2015. <b>ASRS Motion for Reconsideration Denied 05/21/2015. ASRS Petition for Review filed 6/29/2015. ASU Response due 9/2/15. ASU Application for Attorneys' Fees in the amount of \$114,493.00 denied on 7/24/2015.</b>
07/14/2014	Richard K. Hillis & Sharon Di Giacinto	Disputing the ASRS determination that a DRO term is unacceptable.	Board upheld Administrative Law Judge Decision on 01/30/2015. Appellant filed Notice of Appeal on 02/02/2015 with the AZ Superior Court, Case No. LC2015-000048. <b>Oral Argument held 07/29/2015. Awaiting Superior Court decision.</b>
12/17/2014	The Griffin Foundation	Appellant is appealing the ASRS determination that the Appellant owes contributions from October 2010 to present.	OAH hearing held on 05/14/2015 and 07/09/2015. <b>Written Closing Arguments by parties due in September 2015.</b>
02/06/2015	David Lara	Appealing ASRS method of payment of Maria Cardenas' refund benefit.	OAH hearing held on 03/31/2015. <b>Appellant filed an Application for Attorneys' Fees with OAH; ASRS Response due 9/11/2015. Recommended Decision on 8/28/2015 Board Agenda.</b>
03/16/2015	Mehrzad Korsandi	Disputing ASRS decision not to accept application for Contributions Not Withheld for Service 1998-1999.	OAH hearing held on 05/11/2015. <b>Recommended Decision on 08/28/2015 Board Agenda.</b>
05/11/2015	Robert Merritt	Disputing ASRS calculation method of service transfer credit.	OAH hearing held on 07/08/2015. <b>Recommended Decision on 9/25/2015 Board Agenda.</b>

- Please note any updates have been bolded.

# Agenda Item #14g

## **Director's Report Employers Reporting**





# ARIZONA STATE RETIREMENT SYSTEM

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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

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**TO:** Mr. Kevin McCarthy, Chair, Arizona State Retirement System (ASRS) Board  
**FROM:** Mr. Paul Matson, Director  
**DATE:** August 18, 2015  
**RE:** Delinquent Employers

The Financial Services Division of the Arizona State Retirement System has been working on the fiscal year end close for 2015. The main focus has been to ensure all payrolls from employers have been received and posted to member accounts. As a result, delinquent notifications are not sent during this time period. The delinquent notifications will continue next month following our posting of 2016 fiscal year contributions.