ARIZONA STATE RETIREMENT SYSTEM

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Paul Matson
Director

AGENDA

NOTICE OF A PUBLIC MEETING
OF THE ARIZONA STATE RETIREMENT SYSTEM
OPERATIONS AND AUDIT COMMITTEE

14th Floor Conference Room
3300 North Central Avenue
Phoenix, AZ 85012

September 8, 2015
10:30 a.m. Arizona Time

Pursuant to A.R.S. § 38-431.02, notice is hereby given to the Trustees of the Arizona State Retirement System (ASRS) Operations and Audit Committee (OAC) and to the general public that the ASRS OAC will hold a meeting open to the public on Tuesday, September 8, 2015, beginning at 10:30 a.m. Arizona Time in the 14th Floor Conference Room of the ASRS office, 3300 North Central Avenue, Phoenix, AZ 85012. Trustees of the Committee may attend either in person or by telephone conference call.

This is a regularly scheduled meeting of the OAC; however, due to possible attendance by other ASRS Board Trustees, this meeting may technically become a meeting of the Board or one of its committees. Actions taken will be consistent with OAC governance procedures. Actions requiring Board authority will be presented to the full Board for final decision.

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

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

The Agenda for the meeting is as follows:

1. Call to Order; Roll Call; Opening Remarks .... Mr. Jeff Tyne
Operations and Audit Committee Chair

2. Approval of the July 14, 2015 Public Meeting Minutes and Executive Session of the OAC .....
.... Mr. Jeff Tyne

3. Presentation and Discussion Regarding the Performance Audit and Sunset Review Reports Published by the Office of the Auditor General.. Mr. Paul Matson
Director
.... Mr. Anthony Guarino
Deputy Director and Chief Operations Officer
.... Mr. Gary Dokes
Chief Investment Officer
.... Ms. Lisa King
Policy Analyst

4. Review of Recently Conducted Audits
   - Central AZ Irrigation and Drainage District – Employer Audit
   - Town of Miami – Employer Audit
   - Qualified Domestic Relations Orders – ASRS Processes

   .... Mr. Anthony Guarino
   .... Mr. Bernard Glick
   Chief Internal Auditor

5. Requests for Future Agenda Items .... Mr. Jeff Tyne
   .... Mr. Anthony Guarino

6. Call to the Public .... Mr. Jeff Tyne

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

7. Adjournment of the OAC

A copy of the agenda background material provided to the OAC Trustees (with the exception of material relating to possible executive sessions) is available for public inspection at the ASRS offices located at 3300 North Central Avenue, 14th Floor, Phoenix, Arizona and 7660 East Broadway Boulevard, Suite 108, Tucson, Arizona. The agenda is subject to revision up to 24 hours prior to meeting. These materials are also available on the ASRS website (https://www.azasrs.gov/web/BoardCommittees.do) approximately 48 hours prior to the meeting.

Persons(s) with disabilities may request a reasonable accommodation such as a sign language interpreter or alternate formats of this document by contacting Tracy Darmer, ADA Coordinator at (602) 240-5378 in Phoenix, at (520) 239-3100, ext. 5378 in Tucson or 1-800-621-3778, ext. 5378 outside metro Phoenix or Tucson. Requests should be made as early as possible to allow time to arrange the accommodations.

Dated September 1, 2015

ARIZONA STATE RETIREMENT SYSTEM

Melanie Alexander Committee Administrator	Anthony Guarino Deputy Director and Chief Operations Officer

ARIZONA STATE RETIREMENT SYSTEM

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Paul Matson
Director

MINUTES OF A PUBLIC MEETING OF THE
ARIZONA STATE RETIREMENT SYSTEM
OPERATIONS AND AUDIT COMMITTEE

HELD ON
Tuesday, July 14, 2015
10:30 A.M., Arizona Time

The Operations and Audit Committee (OAC) of the Arizona State Retirement System (ASRS) met in public session in the 14th Floor Conference Room of the ASRS Office, 3300 North Central Avenue, Phoenix, Arizona 85012. Mr. Jeff Tyne, Chair, called the meeting to order at 10:30 A.M.

1. Call to Order; Roll Call; Opening Remarks

Present: Mr. Jeff Tyne, Chair
Dr. Richard Jacob

A quorum of the Committee was present for the purpose of conducting business.

2. Approval of the Minutes of the May 12, 2015 Public Meeting and Executive Session and the June 9, 2015 Public Meeting of the OAC

Motion: Dr. Richard Jacob moved to approve the minutes of the May 12, 2015 OAC public meeting and executive session and the June 9, 2015 public meeting of the OAC. Mr. Jeff Tyne seconded the motion.

By a vote of 2 in favor, 0 opposed, 0 abstentions, 0 excused, and 1 vacancy, the motion was approved.

3. Presentation, Discussion and Appropriate Action Regarding the ASRS Appropriated Budget and the Estimated Administrative and Investment Spending Plans for Fiscal Years (FY) 2015 - 2017

After opening remarks on the topic, Mr. Anthony Guarino, Deputy Director and Chief Operations Officer, introduced Ms. Martha Rozen, Chief of Administrative Services and Mr. Russ Levine, Procurement and Budget Manager, who addressed the Committee regarding the Fiscal Years (FY) 2015-2017 appropriated budget and the estimated administrative and investment spending plans for the FY 2015-2017. Mr. Levine highlighted the following:

- FY 2015 - closed out under budget. Unspent funds attributed to vacancy savings from the statewide hiring freeze as well as technology related expenditures (spending below projections for select technology positions and software licensing and support expenditures).
- FY 2016 - received four new FTEs; one for the Internal Audit Division and three for the Technology Services Division (TSD). Two of the TSD positions have already been filled.

- FY 2016 - first year to begin the ASRS benefits disbursement project which will span over three and a half years, with a target date of January 2019 to bring benefit disbursements in-house.
- FY 2016 - Oracle Modernization Project is in its third year, coming in under budget and on schedule.
- FY 2017 – budget has already been approved.

Mr. Levine concluded by responding to questions from the Trustees.

4. Presentation, Discussion and Appropriate Action Regarding the ASRS Compensation Strategies and Staffing Conditions for Fiscal Year 2015

After opening remarks on the topic, Mr. Guarino introduced Ms. Tracy Darmer, Human Resources Manager, who addressed the Committee regarding the ASRS compensation strategies and staffing conditions for FY 2015. Ms. Darmer addressed the following items:

- Base Salary Adjustment History – Aside from Personnel Reform, over the last five years the ASRS has received approval for and implemented base salary adjustments for 64 employees. The goal of the ASRS is to continue its efforts to obtain base salary adjustments for employees throughout FY 2016 & 2017.
- Variable Compensation Plan – Arizona Department of Administration (ADOA) has approved the plan submitted by the ASRS.
- Current Staffing Conditions & Turnover – Staff turnover has decreased, specifically in the Call Center. Recruitment, specifically for TSD Software Engineers, is taking longer than most but the ASRS has been successful in hiring two new engineers recently. Current recruitment time average for non-TSD positions is 60 days and 109 days for TSD positions.
- Hiring Freeze – The ASRS has been fortunate to be able to promote from within; however, will need to start external recruiting soon.

Mr. Guarino provided closing remarks indicating that management is monitoring staff satisfaction closely. He further stated that it is the goal of the ASRS to bring 100% of the staffs' base salaries to a competitive market level, commensurate with the duties of the position, within budget constraints.

Ms. Darmer, Ms. Rozen, and Mr. Guarino responded to questions from the Trustees and agreed to provide periodic updates regarding the aforementioned items.

5. Review of Recently Conducted Audits

Mr. Glick reviewed the following audits conducted by the IAD.

- **Mingus UHSD – Employer Audit**

The IAD had three findings from the Mingus UHSD audit. The employer agreed with the findings and IAD's recommendations.

- **Paramount Education Studies, Inc. – Employer Audit**

The IAD had no findings from the employer audit.

- **Accelerated Learning Center – Employer Audit**

The IAD had four findings from the Accelerated Learning Center audit. The employer agreed with the findings and the IAD's recommendations.

- **ASRS Data Security – ASRS Processes**

Motion: Dr. Richard Jacob moved to go into executive session to discuss confidential information regarding the ASRS Data Security audit. Mr. Jeff Tyne seconded the motion.

By a vote of 2 in favor, 0 opposed, 0 abstentions, 0 excused, and 1 vacancy, the motion was approved.

The Committee convened to Executive Session at 11:03 A.M.

The Committee reconvened to Regular Session at 11:23 A.M.

6. Presentation, Discussion and Appropriate Action Regarding the Internal Audit Quarterly Update

Mr. Glick presented the Quarterly Internal Audit report. The IAD has completed the Qualified Domestic Relations Orders (QDRO) audit and is expected to have the closing conference later this week. Mr. Glick advised the Committee the IAD is assisting the external auditors with the Financial Statement Plan in which GASB 68 is identified that must be completed by mid-August 2015. Because of this, the Software Licensing audit has been pushed back for completion in FY 2016.

7. Request for Future Agenda Items

None requested.

8. Call to the Public

There were no members of the public in Phoenix or Tucson.

9. Adjournment of the OAC

Motion: Dr. Richard Jacob moved to adjourn the meeting at 11:25 a.m. Mr. Jeff Tyne seconded the motion.

By a vote of 2 in favor, 0 opposed, 0 abstentions, 0 excused, and 1 vacancy, the motion was approved.

Respectfully Submitted,

ARIZONA STATE RETIREMENT SYSTEM

Melanie Alexander Committee Administrator	Anthony Guarino Deputy Director and Chief Operations Officer

ARIZONA STATE RETIREMENT SYSTEM

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Paul Matson
Director

MEMORANDUM

TO: Mr. Jeff Tyne, Chair, ASRS Operations and Audit Committee (OAC)

FROM: Mr. Paul Matson, Director
Mr. Anthony Guarino, Deputy Director and Chief Operations Officer
Mr. Gary Dokes, Chief Investment Officer
Ms. Lisa King, Policy Analyst

DATE: September 1, 2015

RE: **Agenda Item #3**: Presentation and Discussion Regarding the Performance Audit and Sunset Review Reports Published by the Office of the Auditor General

Purpose
Staff will provide an overview of the audit process, a summary of the reports' recommendations, a summary of management's responses, management's overall perspective, and respond to any questions from Trustees.

Recommendation
Informational only, no action required.

Background
In October 2013, the Joint Legislative Audit Committee (JLAC) assigned the sunset review of the ASRS to the Office of the Auditor General (OAG). Arizona Revised Statute §41-2951 has established a sunset review process to ensure state agencies, boards and commissions are meeting statutory responsibilities, operating efficiently and effectively, and should continue operations.

Most sunset reviews are conducted once every 10 years. The last sunset review report for the ASRS was issued in September 2005. If no legislative action is taken, the ASRS will sunset on July 1, 2016.

AUDIT PROCESS:
The sunset review period covered fiscal years 2005 through 2014. The OAG retained a consultant, Arthur J. Gallagher & Company (AJG), to conduct the investment management operational review; therefore, two separate reports were created.

For their report, the OAG auditors ultimately focused on the agency's financial condition and long-term sustainability. State statutes, administrative rules, policies, procedures, and ASRS records were reviewed and interviews were conducted. Additionally, criteria from other states, best practices, and literature were obtained. For comparison purposes, peer retirement plans were selected based primarily on market value of assets, retired to active member ratio and investment return assumption. Based on these criteria, the ASRS peers were identified as:

- Public Employees' Retirement System of Mississippi
- Public Employees' Retirement System of Nevada-Regular Employees
- South Carolina Retirement System

- Tennessee State Employees, Teachers and Higher Education Employees' Pension Plan

The AJG report focus was the agency's investment strategies, alternative asset investment procedures, and fees paid to external investment managers. Materials reviewed included investment policies and procedures, due diligence reports, consultant and investment manager contracts, meeting minutes, performance reports, benchmark returns, and external manager fees negotiated/paid. For each investment reviewed, AJG was looking for:

- Sourcing
- Due Diligence
- Decision Making
- Governance
- Monitoring

During the review process, periodic meetings were held with agency, OAG, and AJG staff to discuss findings to date and clarify issues. The Board was kept abreast of proceedings via Executive Session updates in February and May 2015.

Draft reports were issued by the OAG and AJG in June 2015. Constructive discussions were held during in-person exit conferences and the agency continued to work with both the OAG and AJG until the final reports were issued. The agency's written responses to the findings and recommendations were published as a section in both final reports.

The Public Safety Personnel Retirement System (PSPRS) underwent a concurrent sunset review. AJG also performed their investment management audit. The OAG anticipates publishing the PSPRS performance audit and sunset review reports in mid-September.

<u>FINAL REPORT FINDINGS AND RECOMMENDATIONS</u>:
The final reports were published on the OAG website on August 20, 2015. In the Sunset Factor Analysis section of their report the OAG cites that "ASRS has generally met its statutory objective and purpose…" (see Sunset Factor #2) and that "terminating the ASRS would significantly harm the public welfare" (see Sunset Factor #10).

Highlights of the reports' findings and recommendations include:

- *Performance Audit and Sunset Review* report by the OAG:
    - The ASRS plan is not fully funded, but steps have been taken to improve its long-term sustainability;
    - Additional actions can enhance ASRS plan's financial condition and long-term sustainability;
    - The ASRS and Board should periodically review its actuarial cost method;
    - The ASRS should ensure future permanent benefit increases do not impact plan sustainability;
    - The ASRS should enhance procedures surrounding the employer termination incentive program; and
    - The ASRS should enhance some of its information technology (IT) practices.

- *Independent Operational Review of the Arizona State Retirement System's (ASRS) Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers* report by AJG:
    - The eight percent actuarial rate should be discussed annually with the actuary to ensure appropriateness;
    - The ASRS should conduct annual reviews of the Strategic Investment Policy;
    - Sourcing information and screening criteria should be included in the final investment memo for each partnership;

  - All specialty consultants should adopt a due diligence checklist; and
  - A standard method for documenting fee negotiations should be implemented.

For the 10 years evaluated:

- The ASRS plan's funded status decline was less severe than three of four peers; only Tennessee had a consistently higher funded status. As of June 30, 2014 ASRS's funded status was 76.3 percent; Tennessee's funded status was 93.34 percent as of July 1, 2013 (last valuation available).
- Of the four peers, only Mississippi had a larger percentage point decline in funded status (16%). ASRS experienced a 10.8 percent decline.

AJG found that current ASRS "practices and procedures are reasonably consistent with industry standards and generally in line with many best practices." Additionally, it was cited that the agency has a well-diversified asset allocation and investment structure and investment staff follow a comprehensive performance monitoring policy.

Overall, the results in both reports were positive and implementing the recommendations may further enhance ASRS operations and sustainability. The findings and recommendations of both the OAG and AJG were agreed to by the agency although in a few instances the agency will implement the recommendations using a different method or will wait to implement until pending litigation is concluded.

- Review of service providers (both investment and legal) will coincide with the procurement cycle rather than every three years as recommended by AJG.
- The ASRS will determine how best to implement the OAG recommendation to enhance procedures to identify employer termination incentive programs and assess the cost of any resulting unfunded liability to employers once current legal proceedings conclude.

<u>NEXT STEPS</u>:
The next step in the process will be a public hearing before the joint house and senate committee of reference (COR). At this hearing the COR is expected to vote on whether to recommend the full Legislature continue, modify, or terminate the agency. It is anticipated the vote will be to continue the ASRS at which time the COR will be responsible for preparing the related legislation.

The JLAC requires the agency submit to the OAG a written explanation of the status of all recommendations within six months after the August 20, 2015 publication date of the audit reports. Depending on the progress reported at six months, the ASRS may be required to provide additional information to the OAG at 18 months and again until the recommendations are implemented.

A REPORT
TO THE
ARIZONA LEGISLATURE

Performance Audit Division

Performance Audit and Sunset Review

Arizona State Retirement System

The ASRS defined benefit plan is not fully funded, but steps have been taken to improve its long-term sustainability and some additional actions can further strengthen its financial condition

August • 2015
Report No. 15-106

Debra K. Davenport
Auditor General

The **Auditor General** is appointed by the Joint Legislative Audit Committee, a bipartisan committee composed of five senators and five representatives. Her mission is to provide independent and impartial information and specific recommendations to improve the operations of state and local government entities. To this end, she provides financial audits and accounting services to the State and political subdivisions, investigates possible misuse of public monies, and conducts performance audits of school districts, state agencies, and the programs they administer.

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DEBRA K. DAVENPORT, CPA
AUDITOR GENERAL

STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

MELANIE M. CHESNEY
DEPUTY AUDITOR GENERAL

August 20, 2015

Members of the Arizona Legislature

The Honorable Doug Ducey, Governor

Mr. Paul Matson, Director
Arizona State Retirement System

Transmitted herewith is a report of the Auditor General, *A Performance Audit and Sunset Review of the Arizona State Retirement System*. This report is in response to an October 3, 2013, resolution of the Joint Legislative Audit Committee and was conducted as part of the sunset review process prescribed in Arizona Revised Statutes §41-2951 et seq. I am also transmitting within this report a copy of the Report Highlights for this audit to provide a quick summary for your convenience.

As outlined in its response, the Arizona State Retirement System agrees with all of the findings and plans to implement all of the recommendations.

My staff and I will be pleased to discuss or clarify items in the report.

Sincerely,

Debbie Davenport
Auditor General

Attachment

cc: Arizona State Retirement System Board of Trustees

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STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

Arizona State Retirement System

REPORT HIGHLIGHTS
PERFORMANCE AUDIT

Our Conclusion

The Arizona State Retirement System (ASRS) defined benefit plan's (ASRS plan) ratio of assets to estimated pension obligations (i.e., the ASRS plan's funded status) declined between June 30, 2005 through June 30, 2012, similar to the nation-wide trend for that time period. The decline was partially the result of unmet investment return expectations during this period. The ASRS and Legislature have taken several steps to improve the ASRS plan's funded status and long-term sustainability by increasing contribution rates and, for recent ASRS plan members, raising eligibility requirements and eliminating permanent benefit increases. In line with best practices, the ASRS should continue with its plans to adopt a funding policy, which outlines how it will improve the ASRS plan's funded status. The ASRS should also develop a method to ensure that future benefit increases do not impact the ASRS plan's sustainability. Finally, the ASRS should implement additional controls to minimize the impact of non-promotional salary increases.

2015

August • Report No. 15-106

ASRS plan is not fully funded, but steps have been taken to improve its long-term sustainability

The ASRS plan is a defined benefit retirement plan that provides a guaranteed life-long pension benefit. This is in contrast to a defined contribution retirement plan, such as a 401(k), where the employee directs where the contributions are invested, and benefits depend on the investments' financial performance. As of June 30, 2014, there were over 550,000 ASRS plan members, including over 119,000 retirees.

Decline of ASRS plan's funded status not as severe as most peers' and is improving—Based on the actuarial value of assets, the ASRS plan's funded status decreased from 86.1 percent as of June 30, 2005, to 75.3 percent as of June 30, 2012.[1] This decline is similar to the decline experienced by public pension plans nation-wide during the same time period. Also, of the four peer states we identified, Arizona's decline was less severe than three of the four peers'. A pension plan's funded status is the ratio of assets to estimated pension obligations and is a measure of the financial health of the pension plan at a point in time. Ideally, the funded status should be 100 percent; in other words, assets are sufficient to cover all of the estimated pension obligations of a pension plan's members. As of June 30, 2014, the ASRS plan's funded status had increased slightly to 76.3 percent.

One reason for the decline in the ASRS plan's funded status is that the ASRS did not always meet its 8 percent expected rate of return on its investments. The average investment return rate for the ASRS plan from June 30, 2005 through June 30, 2014, was 7.53 percent. Although the 8 percent expected rate reflects the investment return that the ASRS plan expects to achieve on average over a rolling 20-year period of time, if the ASRS plan does not meet this rate in any year, its funded status may decline.

ASRS plan's actual and expected rates of investment returns
As of June 30, 2005 through June 30, 2014

[1] The actuarial funded status is calculated using the ASRS plan's actuarial value of assets. When determining the actuarial value of assets, the ASRS' actuary recognizes investment losses and/or gains over a rolling 10-year period.

ASRS and Legislature have taken steps to improve ASRS plan's sustainability—Consistent with best practices, the ASRS has taken several steps to improve the ASRS plan's funded status, including increasing the number and complexity of its investment strategies and developing a draft pension funding policy that identifies strategies for achieving a 100 percent funded status by fiscal year 2037. The ASRS plans to formally adopt the draft funding policy in August 2015. In addition, the ASRS increased contribution rates when recommended by its actuary. From June 30, 2005 to June 30, 2014, the combined employer and employee contribution rate for the pension plan rose from 9.3 percent to 22 percent to help improve the ASRS plan's funded status and sustainability.

The Legislature has also amended statutes to improve the ASRS plan's sustainability. Beginning with employees hired on or after July 1, 2011, they must be older or work longer to be eligible for pension benefits. According to the ASRS' actuary, this change will result in an estimated future cost savings of about $587 million over 30 years. The Legislature also eliminated permanent benefit increases, which are increases to retired members' pension benefits, for employees who become members on or after September 13, 2013.

Recommendation

The ASRS should continue with its plan to formally adopt its draft pension funding policy.

Additional actions can enhance ASRS plan's financial condition and long-term sustainability

ASRS should ensure permanent benefit increases do not impact ASRS plan's sustainability going forward—ASRS plan members who were hired before September 13, 2013, may receive a permanent benefit increase to their pensions if specific conditions outlined in statute are met, including investments exceeding the 8 percent expected rate of return on average over a rolling 10-year period. As of June 2015, there were 491,220 members who were eligible for a permanent benefit increase sometime in the future. Because permanent benefit increases are likely in the future and a large number of members remain eligible for such increases, the ASRS should work with its actuary to develop a method for ensuring that the cost of any future benefit increases do not impact the ASRS plan's sustainability.

Additional controls are needed to minimize the impact of preretirement salary increases—Pension benefits are calculated using a member's average salary over the last 3 or 5 years of employment depending on the date an employee was hired. Because the salary is averaged over 3 or 5 years, a normal promotional salary increase before retirement would not have much impact on a retiree's pension benefits—however, employer termination incentive programs, such as providing anything of value conditioned on a person's retirement or nonpromotion salary increases of 30 percent or more, would. To determine the ASRS plan's estimated pension obligations and contributions necessary to meet those obligations, the ASRS' actuary uses statistical data to estimate various factors, including mortality rates and increases in members' compensation over time. When a member's compensation experiences a greater-than-expected increase during the time period that determines average salary, this increase may generate an unfunded liability to the ASRS plan. Statute permits the ASRS to require the employer to cover the unfunded liability created. The ASRS indicated such increases are rare, but it should enhance its procedures for identifying them and assessing the employer the costs of any unfunded liabilities created.

Recommendations

The ASRS should:

- Work with its actuary to develop a method for ensuring that the cost of any future benefit increases do not impact the ASRS plan's sustainability; and
- Enhance its procedures for identifying employer termination incentive programs and assessing the cost of unfunded pension liabilities to the employers.

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INTRODUCTION
Scope and Objectives

The Office of the Auditor General has conducted a performance audit and sunset review of the Arizona State Retirement System (ASRS) pursuant to an October 3, 2013, resolution of the Joint Legislative Audit Committee. This audit was conducted as part of the sunset review process prescribed in Arizona Revised Statutes (A.R.S.) §41-2951 et seq. This performance audit and sunset review:

- Reports on the ASRS' ability to meet pension obligations and assesses the actions the ASRS and/or the Legislature have taken to improve the defined benefit plan's (ASRS plan) financial condition and ensure its long-term sustainability (see Finding 1);
- Recommends additional actions the ASRS should take to further enhance the ASRS plan's long-term sustainability (see Finding 2); and
- Provides responses to the statutory sunset factors.

ASRS provides retirement, long-term disability, survivor, and retiree health insurance benefits to public employees

Established in 1953, the ASRS contributes to its members' long-term financial security by providing retirement, long-term disability, survivor, and retiree health insurance benefits. ASRS benefits are available to employees of participating employers, including the State and the State's counties, universities, community colleges, school districts, and municipalities.[1] As of June 2014, there were 690 participating employers and more than 550,000 active, inactive, retired, and disabled members and other beneficiaries.

Defined benefit plan—The ASRS plan is a defined benefit plan. A defined benefit plan is distinct from a defined contribution plan in part because it provides a guaranteed life-long pension benefit (see textbox). The ASRS plan became effective on July 1, 1971. Specifically, in 1970, the Legislature agreed to enact the ASRS plan if 70 percent or more of state employees and teachers voted to transfer to it. More than 80 percent did so. Prior to this time, members were served by a hybrid defined contribution/defined benefit plan, referred to as the System.[2] The ASRS plan provides a fixed monthly benefit upon retirement that a formula specified in statute determines. The benefit formula is based on a member's length of government service and average monthly compensation during a defined period (see Table 1, page 2).

Defined benefit plan—An employee retirement plan that provides a guaranteed lifetime retirement benefit of an amount calculated by a predetermined formula. The plan directs how contributions are invested.

Defined contribution plan—An individual retirement account, such as a 401(k), where the employee directs how contributions are invested. Retirement income is based solely on the amount contributed and is dependent on investment performance.

Source: Auditor general staff review of Olleman, M., & Boivie, I. (2011). *Decisions, decisions: Retirement plan choices for public employees and employers*. Washington, DC: National Institute on Retirement Security and Seattle, WA: Milliman.

Although the ASRS plan provides a lifelong monthly benefit, according to A.R.S. §38-712(A)(5), it is not expected to meet all of a member's post-retirement income requirements. Rather it is expected that a member's

[1] Another state retirement system, the Public Safety Personnel Retirement System, provides retirement benefits for public safety personnel, correctional officers and employees, and elected officials and judges. In addition, two larger Arizona municipalities do not participate in the ASRS. Employees of the Cities of Phoenix and Tucson are members of the City of Phoenix Employees' Retirement System and the Tucson Supplemental Retirement System, respectively. Also, other political subdivision entities, such as charter schools, may choose but are not required to become an ASRS participating employer.

[2] Because not all of the System's members opted to join the ASRS plan, some members remain in the System. As of June 30, 2014, there were 1,353 system members including 9 active members, 30 inactive members, and 1,314 retired members.

Table 1: Statutory formula for pension benefit determinations As of May 2015 (Unaudited)

Benefit factors	Description		
Total credited service	The total number of years the member worked for a participating employer plus any purchased and credited service.[1]		
Service multiplier	A percentage multiplier based on total credited service.		
	•	Up to 19.99 years	2.10%
	•	20 to 24.99 years	2.15%
	•	25 to 29.99 years	2.20%
	•	30 plus years	2.30%
Average monthly compensation	Depending on the date ASRS plan membership started, the average is based on the member's highest compensation during a consecutive 3- or 5-year period within the last 10 years of credited service.		
Example benefit formula	20.00	years total credited service	
	x 2.15%	service multiplier	
	x $3,813.00	average monthly compensation	
	$1,639.59	monthly benefit	

1 Credited service is earned for time worked for a participating employer.

Source: Auditor General staff illustration of benefit calculation requirements outlined in A.R.S. §§38-711 and 38-757.

retirement income would be supplemented by Social Security and personal savings. According to an ASRS document, the average ASRS plan benefit provides about 40 percent of what a retiree earned before retirement. In fiscal year 2014, the ASRS plan's average retirement benefit was approximately $1,640 per month, or about $19,500 per year.

The ASRS plan's lifetime monthly pension payments are funded through employer and employee contributions and investment earnings from the ASRS-managed investment portfolio. For all members who are actively employed, statute requires equal monetary contributions from both the employee and employer. Each year, an actuary weighs a number of factors, including the amount of money needed to pay for current and future pension obligations, projected investment performance, and member lifespans to determine how much employees and employers should contribute (see page 6 for more information on actuarial services). As shown in Table 2 (see page 3), for fiscal year 2014, both employees and employers were each required to contribute 11.54 percent of an employee's salary for the ASRS plan and other benefits, with most of the contribution supporting the retirement benefit.

The ASRS plan is a cost-sharing, multiple-employer plan where participating employers' and their members' contributions are pooled. All ASRS plan assets are equally shared and are used to pay the pension benefits of any participating employer's retirees as well as the costs of administering the ASRS plan, including asset management.[1]

Table 2: Required contribution rates of employees' salaries Fiscal year 2014 (Unaudited)

Benefit	Employee rate	Employer rate
Retirement	11.30%	10.70%
Long-term disability	0.24	0.24
Health insurance premium[1]		0.60
Total[2]	11.54%	11.54%

1 According to the ASRS, 100 percent of the health insurance premium contribution is reflected under the employer balance to comply with U.S. Internal Revenue Code requirements.

2 For fiscal year 2015, the total employer and employee contribution rate increased slightly to 11.60 percent.

Source: Auditor General staff illustration of information in the ASRS *Popular Annual Financial Report For Fiscal Year Ended June 30, 2014.*

Other benefits—The ASRS also provides long-term disability, health insurance, and survivor benefits to its ASRS plan members. Specifically:

- **Long-term disability benefit**—Active ASRS plan members who become unable to perform their job duties because of a disability are eligible for a benefit equal to two-thirds of their pay at the time of the disablement. The ASRS contracts for this benefit's administration. Members must apply for this benefit, and the contractor determines eligibility. As of June 30, 2014, about 4,300 ASRS plan members were receiving disability benefits. For eligible members, disability payments are made for as long as members meet requirements, including being under a licensed physician's care and unable to perform work for compensation, and providing evidential documents as requested. In most cases, disability payments will stop when the member no longer meets the criteria or when the member reaches his or her normal retirement date, whichever is earlier. A separate equal contribution from ASRS plan employees and employers pays for the long-term disability benefit (see Table 2).

- **Health insurance premium benefit**—The ASRS offers optional medical and dental insurance, as well as hearing and vision benefits, to ASRS plan members who are receiving benefits and their eligible dependents. Although statute permits the ASRS to self-insure its retired members, it contracts for medical and dental plans. For calendar year 2014, premiums for medical plans ranged from about $200 per month for single coverage for Medicare Advantage plans to about $2,000 per month for family coverage outside of Arizona for non-Medicare plans. Medical insurance premium costs are deducted from members' pension checks.

  Additionally, statute requires that the ASRS provide a premium benefit to offset the cost of health insurance premiums for healthcare coverage offered by ASRS or members' former employers. In calendar year 2014, the premium benefit amount ranged from $50 to $260 per month.[2] According to the ASRS, member and employer contributions fund the premium

1 Other plan types include single employer, which include the assets and pension obligations of only a single employer, and agent multiple employer, whereby assets are pooled but pension obligations are each employer's responsibility.

2 The amount of this benefit depends on a member's years of service, number of dependents, and Medicare status.

benefit equally, but compliance with U.S. Internal Revenue Code regulations require accounting for the contribution under the employer balance (see Table 2, page 3).

- **Survivor benefits**—The benefits available to an ASRS plan member's survivors depend on various factors. If a member dies prior to becoming eligible for retirement, the member's beneficiary receives a benefit equal to the sum of contributions made by both the member and employer as well as service purchased by the member plus interest at the time of the member's death. When a member retires, he/she may choose to reduce his/her monthly pension payments to provide an annuity to a beneficiary at the time of the member's death.[1] Similarly, members who are eligible for a health insurance premium benefit may reduce that benefit and pass it on to a survivor after his/her death.

Members—As of June 30, 2014, the ASRS reported that it served more than 550,000 members (see Table 3, page 5, for membership types). To become an ASRS plan member, employees must work for a participating employer at least 20 hours each week for 20 weeks in a fiscal year. State and local government employers may participate in the ASRS plan, which included 690 participating employers as of June 30, 2014. The participating employers with the most employees enrolled in the ASRS plan are the Arizona Department of Administration, which includes many state agency employees, Maricopa County, Mesa Unified School District, the University of Arizona, and Tucson Unified School District.

Board membership, responsibilities, and staffing

A.R.S. §38-713 establishes a nine-member Board of Trustees (Board) to oversee the ASRS. Trustees are appointed by the Governor and serve 3-year terms. Five of the trustees must be ASRS plan members, while the remaining four trustees represent the public and cannot be ASRS plan members. Statute also requires that four of the nine trustees have at least 10 years of substantial experience in a field or fields related to public or private finances, such as experience as a portfolio manager in a fiduciary capacity, chartered financial analyst, or economist. In addition to overseeing the ASRS, the Board is responsible for setting investment policy goals and objectives, allocating assets to meet the investment goals and objectives, and reviewing the performance of investment managers to ensure their attainment of and adherence to the board-approved investment policy's goals and objectives. The Board also sets the annual member and employer contribution rates based on its contracted actuarial firm's recommendation and may accept or modify the recommendation.

In addition, the Board appoints a director to oversee the ASRS staff and operations. As of June 2015, the ASRS reported that it had 246.9 full-time equivalent positions of which 20.5 were vacant. The ASRS is organized as follows:

- **Member, Financial, and Technology Services (192 FTE, 18 vacant)**—This division is responsible for the ASRS' core functions, including the calculation, disbursement, and coordination of retirement, health, disability, and survivor benefits as well as refunds of

[1] Pursuant to A.R.S. §38-711(22), a life annuity pays equal monthly installments for the member's lifetime after retirement. The annuity is one of several options a member may choose at retirement. See A.R.S. §38-760.

Table 3: ASRS plan's membership types, descriptions, and number of members As of June 30, 2014 (Unaudited)

Membership type	Description	Number of members
Active	Members who are working for a participating employer and are contributing to the ASRS.	207,556
Inactive	Members who are not making contributions but did so in the past. They have not removed their contributions and are not drawing pension benefits from the ASRS.	211,546
Retiree	Members who are retired and receive a lifetime monthly benefit from the ASRS.	119,356
Survivor beneficiary	Deceased members' surviving beneficiaries who are receiving a monthly benefit from the ASRS.	7,345
Qualified domestic relations order	Alternate payees who receive a portion of a member's benefit based on a qualified domestic relations order or other court document.	1,180
Long-term disability	Active members who are unable to work who receive monthly benefits to partially replace lost income.	4,313
Total members		551,296[1]

[1] This total includes 1,353 system members. For more information on the System, see footnote 2 on page 1.

Source: Auditor General staff review of A.R.S. §§38-711, 38-762, 38-773, 38-797 et seq., and the ASRS *Popular Annual Financial Report For Fiscal Year Ended June 30, 2014*.

contributions by members who withdraw from the ASRS plan. Member Services also responds to telephone, Internet, and in-person questions and complaints (see Sunset Factor 6, pages 30 through 31, for more information on how inquiries are handled).

- **Investment Management (11 FTE, 1 vacant)**—This division is responsible for overseeing the investment of assets. The ASRS uses external investment managers and also employs its own staff who choose and manage investments designed to meet the board-approved investment policy's goals and objectives.

  The ASRS competes with the private financial market for professionals to staff this division. As a result, in 2013, the ASRS implemented an incentive compensation plan that provides investment staff an incentive of up to 25 percent of base salary for exceeding investment performance measures.[1] The authorizing statute allowing for such incentive plans was enacted

[1] As required, the ASRS' Incentive Compensation Plan was developed with Arizona Department of Administration consultation. For fiscal year 2014, the total incentive amount provided to division staff was approximately $226,000 and investment staff salaries ranged from $70,000 to $194,250. Salaries were established under Arizona Department of Administration oversight.

as part of the State's 2012 personnel system reform, and in part, this reform's intent was to recruit and retain qualified staff.

- **Administration and Support (43.9 FTE, 1.5 vacant)**—Comprises the various administrative functions needed to support the agency such as human resources, budgeting, internal auditing, and legal counsel.

The ASRS also contracts with professional advisors for services to assist staff with operations and investments. For a list of these services, see Sunset Factor 12, pages 33 through 34. These include actuarial services such as an annual actuarial valuation of estimated pension obligations and assets. To calculate estimated pension obligations, the ASRS' actuary uses statistical data to estimate various factors, including inflation, changes in ASRS plan member salaries, and mortality rates. To determine how well-funded the ASRS plan is, its actuary measures estimated pension obligations against assets. For more information on the ASRS' financial condition, see Finding 1, pages 11 through 18.

Budget

As illustrated in Table 4 (see page 7), the ASRS does not receive any State General Fund appropriations. Rather, its revenues consist of ASRS plan employer and member contributions and investment income. Fiscal year 2014 net revenues totaled nearly $8 billion. Expenditures totaled about $3 billion in fiscal year 2014 and included retirement and disability benefits, survivor benefits, and refunds to withdrawn members. Expenditures also include administrative expenses for personnel and professional and outside services. The Legislature appropriates the ASRS' administrative expenses. At the end of fiscal year 2014, the ASRS' fund balance was more than $35.5 billion.

ASRS' investments

As shown in Table 4 (see page 7), investment income generally has been the ASRS' largest source of revenues and is used along with contributions to cover the ASRS plan's benefits and other costs. As of June 30, 2014, the ASRS held investments with a value of more than $35.5 billion. Approximately $34 billion of these assets belonged to the ASRS plan with the remaining belonging to the health insurance premium and long-term disability benefits. The ASRS invests this money according to a board-approved investment policy, which is required to be consistent with statutory requirements.[1] See Figure 3, page 14, for more information on the ASRS' return on investment for fiscal years 2005 through 2014.

The ASRS investment portfolio is composed of six types of assets that fall within three broad asset classes (see Figure 1, page 8). Specifically:

[1] The ASRS investment policy is subject to some statutory investment limitations. For example, A.R.S. §38-718 includes limitations on how much of the portfolio value may consist of equities and non-U.S. equities.

Table 4: Schedule of changes in fiduciary net position Fiscal years 2012 through 2014 (In thousands) (Unaudited)

	2012	2013	2014
Revenue (additions)[1]			
Contributions:			
Member contributions	$ 926,966	$ 968,885	$ 1,016,435
Employer contributions	927,628	989,790	1,041,002
Federal government reimbursement	19,978	-	-
Retrospective rate adjustment reimbursement[2]	15,495	25,826	-
Transfers from other plans	2,236	1,233	1,044
Purchased service[3]	51,423	70,790	32,441
Total contributions	1,943,726	2,056,524	2,090,922
Net investment income	338,728	3,569,876	5,799,734
Other income	-	-	29,848
Total additions	2,282,454	5,626,400	7,920,504
Expenses (deductions)[1]			
Retirement and disability benefits	2,457,052	2,566,275	2,690,828
Survivor benefits	29,731	38,442	39,334
Refunds to withdrawing members, including interest	207,289	218,607	246,201
Administrative expenses:			
Personal services and related benefits	16,174	16,991	17,153
Professional and outside services	12,822	13,747	8,443
Other operating	6,166	6,291	4,190
Total administrative expenses	35,162	37,029	29,786
Transfers to other plans	5,024	725	915
Other	767	4,174	1,361
Total deductions	2,735,025	2,865,252	3,008,425
Net increase in net position	(452,571)	2,761,148	4,912,079
Net position restricted for benefits, beginning of year	28,314,807	27,862,236	30,623,384
Net position restricted for benefits, end of year	$ 27,862,236	$ 30,623,384	$ 35,535,463

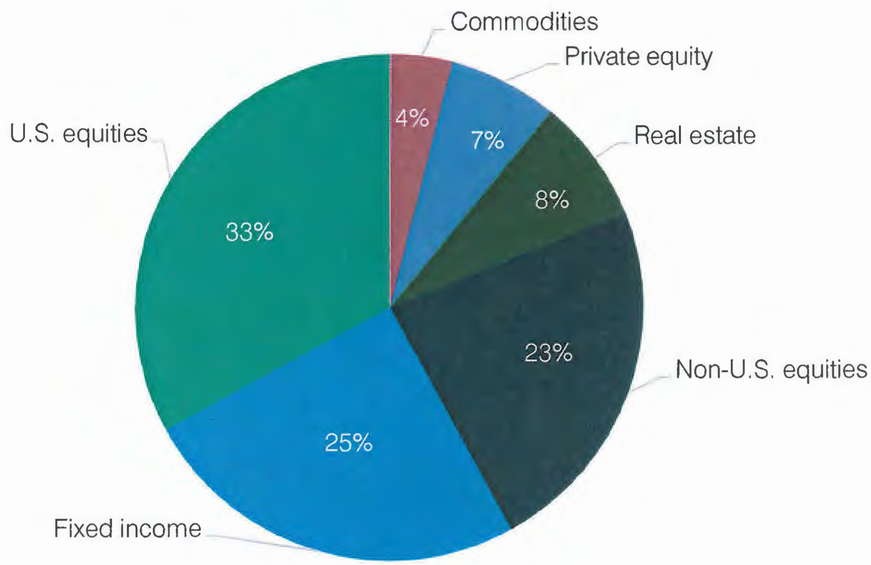
1 In accordance with governmental accounting standards for financial reporting for pension plans, the ASRS financial statements report revenues as additions and expenses as deductions.

2 Amount represents a reimbursement from the contracted health insurance provider. The ASRS' contract with its health insurance provider allowed for a portion of the difference between the total revenues and total claims expense incurred by the provider to be returned to the ASRS in the form of a retrospective rate adjustment reimbursement. The amount was calculated based on a targeted retention ratio as agreed upon in the contract.

3 Amount consists of contributions from active members for the purchase of past service time under specific qualified categories, including employment with other public entities, active and reserve military service, approved and unpaid leaves of absence from an ASRS employer, forfeited service from a termination, and periods of employment when an ASRS employer failed to withhold ASRS contributions, in accordance with A.R.S. §§38-738 and 38-742 through 38-745.

Source: Auditor General staff analysis of the ASRS' fiscal years 2012, 2013, and 2014 financial statements audited by an independent certified public accounting firm.

Figure 1: Composition of ASRS investment portfolio As of June 30, 2014 (Unaudited)



Source: The ASRS *Popular Annual Financial Report For Fiscal Year Ended June 30, 2014.*

- **Equities**—This investment class accounts for nearly two-thirds of the ASRS portfolio and includes U.S. equities, non-U.S. equities, and private equity. Equities are shares of ownership in businesses. U.S. equities are publicly traded in domestic stock markets, non-U.S. equities are publicly traded in foreign stock markets, and private equity shares are not publicly traded but are instead purchased through partnership agreements. Private equity partnerships vary depending on contract terms, but typically require investors to make long-term investments to purchase a company with the objective of reselling the company for a profit in the future

- **Fixed income**—This investment class accounts for one quarter of the ASRS portfolio and includes investments in bonds that governments and private businesses issue to borrow money from investors. These investments pay fixed, regular payments.

- **Commodities and real estate**—This investment class accounts for about 12 percent of the ASRS portfolio and includes natural resources (such as timber), residential real estate, and commercial real estate (office, retail, and industrial).

Consultant review of selected ASRS areas

As a part of the ASRS' sunset review, the Office of the Auditor General retained Gallagher Fiduciary Advisors, LLC (Gallagher), a subsidiary of Arthur J. Gallagher & Co., to conduct an operational review of the following three areas:

- Determine the ASRS plan's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance, and make recommendations for improving the ASRS plan's investment performance as appropriate;

- Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments, identify the reasons for and impact of any inadequate controls, and make recommendations for improving controls, as appropriate; and

- Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate.

Gallagher's observations and recommendations in these areas are published separately from this report. See the *Independent Operational Review of the Arizona State Retirement System's Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers* (Report No. 15-CR2).

FINDING 1

From June 30, 2005 to June 30, 2012, the Arizona State Retirement System's (ASRS) defined benefit plan (ASRS plan) experienced a decline in funded status (see footnotes 1 and 2), but the ASRS and Legislature have taken several steps to improve the ASRS plan's funded status and long-term sustainability. A pension plan's funded status is a general indicator of its financial health, reflecting the extent to which a plan's assets can cover its estimated pension obligations. Best practice organizations recommend that public pension plans target a 100 percent funded status. The ASRS plan's funded status decreased from 86.1 percent as of June 30, 2005, to a low of 75.3 percent as of June 30, 2012, but has since increased to 76.3 percent as of June 30, 2014. Unmet investment return expectations during this period are in part responsible for the decline in the ASRS plan's funded status. However, the ASRS has taken several steps to improve the ASRS plan's funded status, such as drafting a funding policy and increasing the percentage of an employee's salary that is contributed to pay for the ASRS plan's costs. In addition, the Legislature has enacted statutory changes that will help improve the ASRS plan's long-term sustainability over time, such as eliminating permanent benefit increases for members who joined the ASRS plan on or after September 13, 2013. The ASRS should continue with its plans to formally adopt its funding policy and make it publicly available by posting the policy on its Web site.

ASRS plan is not fully funded, but steps have been taken to improve its long-term sustainability

ASRS plan's funded status decline similar to national trend but less severe than most peers'

Based on the actuarial value of assets, the ASRS plan experienced a decline in funded status between June 30, 2005 and June 30, 2012, that was similar to the nation-wide trend, but as of June 30, 2014, it had a higher funded status than three of four peer pension plans identified by auditors.[1,2] Funded status, which measures the sufficiency of a pension plan's assets to meet its estimated pension obligations, is a general indicator of a pension plan's health at a specific point in time (see textbox for how to calculate funded status). Although funded status will vary over time, best practice organizations indicate that public pension plans target a 100 percent funded status.[3] As of

Calculating funded status

A typical method for determining funded status is to divide a pension plan's assets by its liabilities, or the amount needed to pay its estimated pension obligations for benefits that have been earned by all plan members (active, inactive, and retired), at a particular point in time. For example:

$90 billion in assets ÷ $100 billion in estimated pension obligations = 90 percent funded status

The deficit between a pension plan's assets and its estimated pension obligations is called an unfunded liability. In the example above, the pension plan has an unfunded liability of $10 billion.

Source: Auditor General staff analysis of information from: Society of Actuaries. (2014). *Report of the blue ribbon panel on public pension plan funding;* and National Institute on Retirement Security. (2014). *2014 NIRS/NRTA pension education toolkit.*

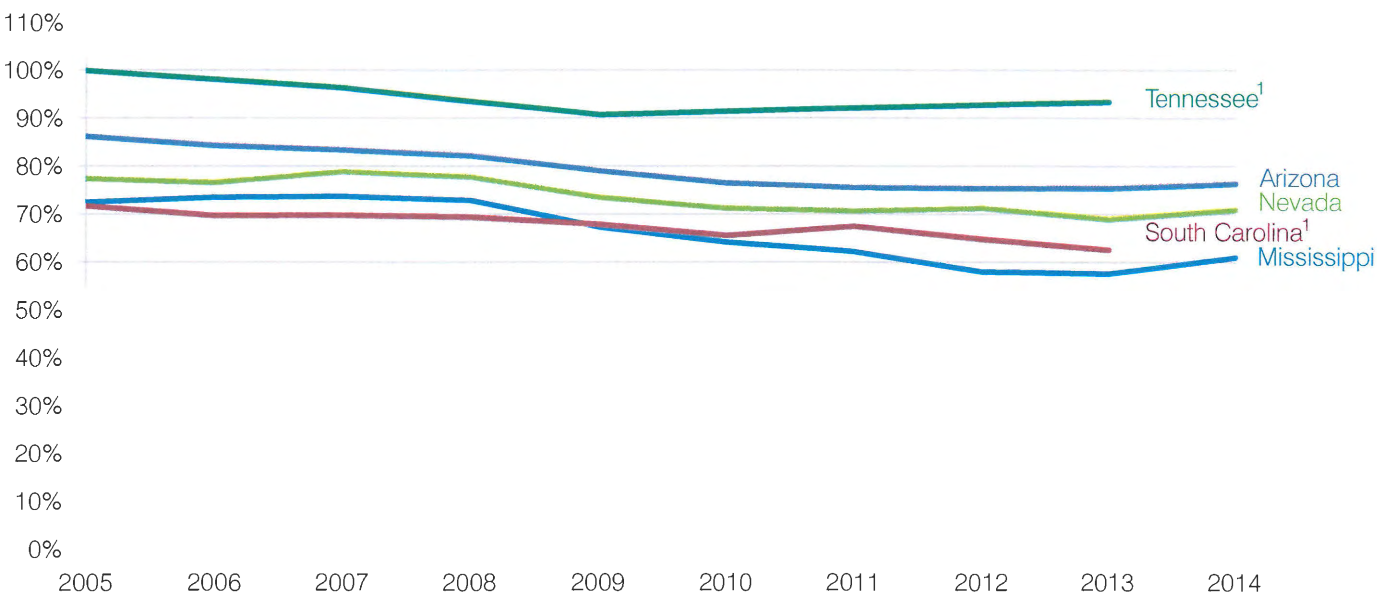
1 The actuarial funded status is calculated using the ASRS plan's actuarial value of assets. When determining the actuarial value of assets, the ASRS' actuary recognizes investment losses and/or gains over a rolling 10-year period. The ASRS plan's actuarial value of assets and funded status are critical for ASRS' operations because they are used to determine contribution rates and are also important factors in making funding decisions and establishing funding goals and objectives, such as those outlined in the ASRS' draft funding policy (see pages 15 through 16). Therefore, throughout this report, any discussions regarding funded statuses are based on the actuarial value of assets. Funded status can also be calculated using the market value of assets, which represents the fair market value of assets at a point in time, such as at fiscal year-end. The market value of assets is a more volatile measure because it can shift at any point in time because of market conditions. For example, the ASRS plan's funded status based on market value at June 30, 2005 through June 30, 2014, fluctuated up and down from a high of approximately 87 percent (2007) to a low of approximately 57 percent (2009). As of June 30, 2014, the ASRS plan's funded status was 81.5 percent based on market value of assets.

2 This report focuses solely on the ASRS' pension plan, and therefore any values presented, including funded statuses and contribution rates, pertain only to the pension plan. ASRS also administers a health insurance premium benefit (see Introduction, pages 3 through 4) that is a separately reported program with its own funded status. For example, as of June 30, 2014, this program was approximately 93 percent funded based on the actuarial value of assets.

3 Government Finance Officers Association. (2009). *Sustainable funding practices of defined benefit pension plans*; American Academy of Actuaries Issue Brief. (2012). *The 80% pension funding standard myth.*

June 30, 2014, the ASRS plan is below this target. As shown in Figure 2, the ASRS plan's funded status declined 10.8 percentage points, from 86.1 percent as of June 30, 2005, to 75.3 percent as of June 30, 2012, but it has since increased to 76.3 percent as of June 30, 2014. However, a decline in the ASRS plan's funded status means that its assets have not kept pace with its estimated pension obligations. Specifically, as of June 30, 2014, the ASRS plan had only about $31.5 billion in assets but $41.3 billion in estimated pension obligations, or, 76.3 percent of the assets needed to pay the estimated pension obligations to its more than 550,000 members.

Figure 2: ASRS plan's and other state peer plans' funded statuses As of June 30, 2005 through June 30, 2014 (Unaudited)



[1] Unlike the other ASRS peer plans, the funded statuses for the Tennessee State Employees, Teachers and Higher Education Employees Pension Plan and the South Carolina Retirement System are calculated as of July 1. The funded statuses for both of these plans were not available for July 1, 2014.

Source: Auditor General staff analysis of the ASRS plan's and Public Employees' Retirement System of Mississippi's actuarial valuation as of June 30, 2014; the Public Employees' Retirement System of Nevada's comprehensive annual financial report for the fiscal year ended June 30, 2014; the South Carolina Retirement System's actuarial valuation report as of July 1, 2013; and the Tennessee Consolidated Retirement System valuations and reports as of July 1, 2005, 2007, 2009, 2011, and 2013.

Auditors compared the ASRS plan's funded status to funded statuses of pension plans nation-wide and more specifically, to four plans that can be considered as peers because they are similar to the ASRS plan in a number of ways.[1] Specifically:

- **ASRS plan's trend in funded status similar to public pension plans nation-wide**—A national comparison indicated that the ASRS plan's decline in funded status is similar to the nation-wide trend. According to a 2015 report by the Public Fund Survey, the average funded status of 126 public pension plans throughout the nation declined by 13 percentage

[1] The four peer plans are the Public Employees' Retirement System of Mississippi, Public Employees' Retirement System of Nevada–Regular Employees, South Carolina Retirement System, and Tennessee State Employees, Teachers and Higher Education Employees Pension Plan. These plans were selected based on similarities in areas such as the market value of assets and retired-to-active member ratio (see Appendix A, pages a-1 through a-2, for additional information).

points, from 86.5 percent in fiscal year 2005 to 73.5 percent in fiscal year 2012.[1] This trend is similar to the ASRS plan's decline in funded status of approximately 10.8 percentage points from 86.1 percent as of June 30, 2005, to 75.3 percent as of June 30, 2012.

- **ASRS plan's funded status better than three of four peers**—As shown in Figure 2 (see page 12), the ASRS plan had a higher funded status compared to three of four peer pension plans identified by auditors. However, only one of these peer pension plans experienced a decline in funded status between June 30, 2005 and June 30, 2014, that was greater than what the ASRS plan experienced. Specifically, the Public Employees' Retirement System of Mississippi's funded status declined 16 percentage points, from 73.7 percent as of June 30, 2007, to 57.7 percent as of June 30, 2013. Of the four peers, only the Tennessee State Employees, Teachers and Higher Education Employees Pension Plan has had a consistently higher funded status than the ASRS plan. Although this plan's funded status decreased 9.19 percentage points from 99.83 percent as of July 1, 2005, to 90.64 percent as of July 1, 2009, its funded status had since risen to 93.34 percent as of July 1, 2013.[2]

Unmet 10-year investment return expectations have reduced ASRS plan's actuarial funded status

During June 30, 2005 through June 30, 2014, unmet investment return expectations were in part responsible for the decline in the ASRS plan's funded status. Specifically, the ASRS plan has fewer assets than expected to pay for its estimated pension obligations, in part because it did not always meet the expected rate of return on its investments during this 10-year period. The expected rate of return reflects the investment return that the ASRS plan expects to achieve, on average, over a rolling 20-year period of time. However, if the ASRS plan does not meet this rate in any year, its funded status may decline. To achieve this return, the ASRS invests contributions it receives. Based on information in the ASRS' comprehensive annual financial reports for the fiscal years ended June 30, 2005 through June 30, 2014, and as illustrated in Figure 3 (see page 14), the ASRS plan exceeded its expected rate of investment return for seven of the ten fiscal years between fiscal year 2005 and 2014. However, the average investment return during this 10-year period was 7.53 percent, which is below the expected rate of return of 8.00 percent. Since investment returns are a primary source of increasing the assets that the ASRS plan uses to pay estimated pension obligations, this underperformance has negatively affected its funded status during this 10-year period. Additionally, according to the ASRS and information in the ASRS' comprehensive annual financial reports, investment losses that occurred during fiscal years 2001, 2002, and 2003 also impacted the ASRS plan's funded status during the time frame analyzed in this audit report because of the continued recognition of those losses.[3] Finally, according to Gallagher Fiduciary Advisors, LLC (Gallagher), the economic crisis of 2008 and 2009 caused the ASRS plan to underperform its expected rate of investment return in those years. For more specific information on the ASRS plan's investment performance during fiscal years 2005 through 2014, see the *Independent Operational Review of the*

1 Public Fund Survey. (2015). *Summary of findings for FY 2013.*

2 The most recent actuarial valuation available for the Tennessee State Employees, Teachers and Higher Education Employees Pension Plan was as of July 1, 2013. The plan undergoes an actuarial valuation once every 2 years.

3 As indicated on page 11 (see footnote 1), the ASRS' actuary recognizes investment losses and/or gains over a rolling 10-year period.

Figure 3: ASRS plan's actual and expected rates of investment returns
As of June 30, 2005 through June 30, 2014
(Unaudited)

1 Between June 30, 2005 and June 30, 2014, the ASRS plan maintained an 8.00 percent expected rate of investment return.

Source: Auditor General staff analysis of investment results based on market value of assets as reported in the ASRS' comprehensive annual financial reports for the fiscal years ended June 30, 2005 through June 30, 2014.

Arizona State Retirement System's Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers (Gallagher Report).

In addition to investment losses, according to the ASRS, low contribution rates in the 1990s, and enactment of statutes that provided benefit increases without stipulating how to fund the increases were also a contributing factor to the ASRS plan's decline in funded status. However, these statutes were enacted prior to fiscal year 2005 through fiscal year 2014, the time frame analyzed in this audit report. For information about these benefit increases and their impact on the ASRS plan's funded status, see the Office of the Auditor General's performance audit and sunset review completed in 2005 (Report No. 05-09, page 49).

Although not a direct impact on the ASRS plan's funded status, the active-to-retired member ratio has declined. Specifically, the ASRS plan's active-to-retired member ratio has declined steadily over the past 10 fiscal years, from 2.87:1 as of June 30, 2005, to 1.61:1 as of June 30, 2014. This is due to a large increase in retired members while active members have decreased. For example, between fiscal years 2005 through 2014, the retired member population grew by approximately 52,000, or nearly 71 percent; whereas, the number of active members decreased by approximately 9,000, or about 4 percent. Although a declining active-to-retired member ratio by itself does not pose a direct problem to sustainability, it can result in relatively high contribution rates.[1]

1 Public Fund Survey. (2015). *Summary of findings for FY 2013.*

ASRS and Legislature have taken several actions to improve ASRS plan's sustainability

The ASRS, its Board of Trustees (Board), and the Legislature have taken several actions to improve the ASRS plan's long-term sustainability. Specifically, the ASRS and the Board have processes in place and have taken actions that are consistent with best practices to help improve the ASRS plan's funded status and help enhance its long-term sustainability, such as changing investment strategies; developing a draft funding policy, which it should formally adopt; and increasing contribution rates. In addition, the ASRS has recommended and the Legislature has enacted some statutory changes that will help the ASRS plan's sustainability over time, including changing retirement eligibility requirements such as how long a person must work before he/she can retire.

Consistent with best practices, the ASRS has taken steps to improve the ASRS plan's funded status

—To help increase the ASRS plan's funded status and promote its long-term sustainability, the ASRS has taken actions that are consistent with best practices. Specifically:

- **Changing investment strategies**—In its review of the ASRS' investment strategies for fiscal years 2005 through 2014, Gallagher reported that the number and complexity of investment strategies utilized by the ASRS has increased during this time to include emerging markets, private markets, global tactical asset allocation, and opportunistic investments. Gallagher noted that the ASRS' investment strategies and overall asset allocation appear to be reasonable and in line with industry standards and peers. For more information regarding the ASRS' asset allocation and other aspects of its investment strategies, see the Gallagher Report.

- **Developing a pension funding policy**—According to best practice literature, pension plans should have a documented strategy to attain or maintain a funded status of 100 percent or greater over a reasonable period of time and should adopt a pension funding policy as a strategy to help achieve these funding objectives.[1] According to the Pension Funding Task Force, a clear pension funding policy is important because it outlines a strategy to fund pensions, provides guidance in making annual budget decisions, demonstrates prudent financial management practices, and shows employees and the public how pensions will be funded.[2] Based on auditors' recommendations, the ASRS and the Board developed a draft pension funding policy during the audit. Consistent with best practices, the ASRS' policy explains its funding objectives and the elements that will be used to meet such objectives. For example, as recommended by the American Academy of Actuaries, the ASRS' draft funding policy includes an objective to achieve a 100 percent funded status and indicates that through a modification of contribution rates in combination with investment returns, the ASRS plan is expected to be fully funded by 2037. According to the ASRS, it plans to formally adopt this

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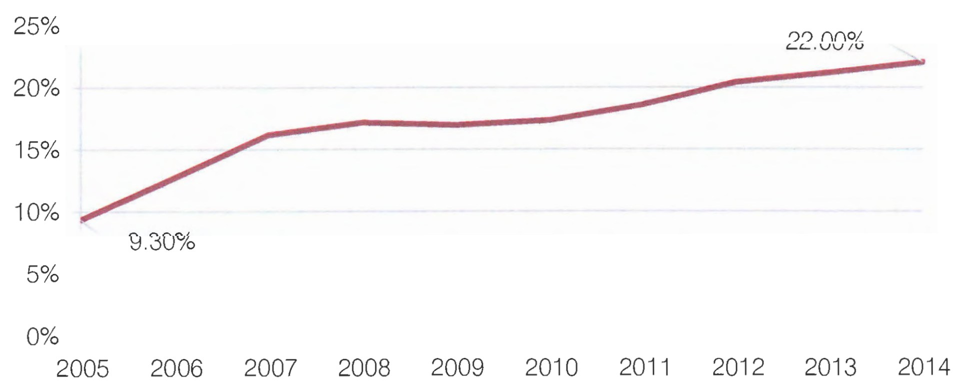
[1] American Academy of Actuaries Issue Brief. (2012). *The 80% pension funding standard myth*; Government Finance Officers Association (2013). *GFOA best practice: Core elements of a funding policy.*

[2] Pension Funding Task Force. (2013). *Pension funding: A guide for elected officials*. The Pension Funding Task Force was established in 2012 by the National Governors Association, National Conference of State Legislatures, Council of State Governments, National Association of Counties, National League of Cities, U.S. Conference of Mayors, the International City/County Management Association, and the Government Finance Officers Association. The National Association of State Auditors, Comptrollers and Treasurers; the National Association of State Retirement Administrators; and the National Council on Teacher Retirement also serve on the Task Force. The Center for State and Local Government Excellence is the convening organization for the Task Force.

draft funding policy in August 2015 and make it publicly available on its Web site. The ASRS should continue with its plans to formally adopt its draft funding policy and make it publicly available by posting the policy on its Web site.

- **Increasing contribution rates**—The Board increases contribution rates when its actuary recommends to do so. Consistent with best practices, statute requires that the member and employer contribution rates be determined by an annual valuation by the Board's actuary.[1] Based on a number of factors including the expected rate of investment return, the ASRS plan's actuary annually determines the contribution rates that will help pay for 100 percent of the ASRS plan's estimated pension obligations over time. Therefore, when the ASRS plan does not meet its expected rate of investment return, the actuary will recommend increasing contributions to ensure that the ASRS plan will have enough assets to pay for its estimated pension obligations. For example, in an effort to improve the ASRS plan's funded status and ensure its long-term sustainability, member and employer contributions have generally increased during fiscal years 2005 through 2014. Specifically, as illustrated in Figure 4, during this time, the total contribution rate for the ASRS plan has increased from 9.3 percent of an employee's salary to 22.0 percent.[2]

Figure 4: ASRS plan's total (member and employer) contribution rate Fiscal years 2005 through 2014 (Unaudited)



Source: Auditor General staff analysis of contribution rates as reported in the ASRS' comprehensive annual financial reports for the fiscal year ended June 30, 2014.

- **Reviewing actuarial assumptions**—The ASRS also undergoes two separate reviews that can help ensure the soundness of its actuarial assumptions. The first review is required by statute and the Board's actuary complies by reviewing the ASRS plan's actual experience in relation to the assumptions employed in preparing annual actuarial valuations at least once every 5 years.[3] In this experience study, the actuary compares the ASRS plan's actual experiences over a period of time with the assumptions in effect at that time. There are many assumptions used to develop the ASRS plan's annual

[1] Arizona Revised Statutes (A.R.S.) §§38-714(G)(3), 38-736(A), and 38-737(C).

[2] A.R.S. §38-736(A) provides that member contributions are a percentage of a member's compensation that is equal to an employer's contribution. The member's contribution rate is deducted from his/her pay, and the employer's contribution is made from other monies. For more information on employee and employer contribution rates in fiscal year 2014, see the Introduction, pages 2 through 3.

[3] A.R.S. §38-714(G)(2).

actuarial valuations, including the expected rates of retirement among active members and the long-term rate of investment return (see textbox for examples of actuarial assumptions). Based on the results of this analysis, the actuary may make recommendations to the Board to change certain assumptions. For instance, one of the actuary's recommendations to the Board in the experience study for the period between July 1, 2007 and June 30, 2012, was to lower active, retired, and disabled members' mortality rates. Lowering these assumptions means that members are living longer. The Board accepted these recommendations at its May 2013 meeting. The actuary projected that changing the mortality assumptions would increase the ASRS plan's pension obligations by approximately $967 million.

Examples of actuarial assumptions

Withdrawal rates—Projects the number of members who leave a plan before retiring and receiving a pension benefit.

Mortality rates—Projects the number of members who will die based on their age.

Disability rates—Projects the number of active members who will become disabled based on their age.

Salary increase—Projects members' salary increases from the date of valuation to when these members stop contributing to a plan.

Source: Auditor General staff analysis of the ASRS plan's actuarial experience study for the period July 1, 2007 through June 30, 2012.

For the second review, consistent with best practice, the ASRS contracts with a separate actuarial firm every 5 years to provide an independent review or audit of the analyses and methodologies used in the experience study and corresponding valuations.[1] These audits may include recommendations for the ASRS plan's actuary to consider in future actuarial valuations. For example, one of the findings in a 2014 actuarial audit recommended that the ASRS plan's actuary should provide a thorough analysis of the ASRS plan's inflation assumption that includes separate analyses of price inflation and wage inflation components.[2]

Legislature also enacted changes to improve the ASRS plan's sustainability—

Arizona has taken actions consistent with actions taken in other states to help manage costs and improve plan sustainability over the long term.[3] Specifically, in 2010 and 2013, the ASRS recommended and the Legislature enacted the following legislative changes to improve the ASRS plan's funded status and enhance its sustainability:

- **Raised eligibility requirements**—Laws 2010, Ch. 50, amended statute to increase the number of years an ASRS plan member must work to be eligible for pension benefits. These changes apply to individuals who become members on or after July 1, 2011. Specifically, individuals who became ASRS plan members on or after this date must be older or work longer before they can retire than those who became members before this date. ASRS' actuary has estimated that increasing age and service requirements will result in future cost savings of approximately $587 million.[4]

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1 Government Finance Officers Association. (2013). *GFOA best practice: The role of the actuarial valuation report in plan funding*.

2 Gabriel Roeder Smith & Company, Consultants & Actuaries. (2014). *Arizona State Retirement System report of an actuarial audit, June 13, 2014*. Separating the price inflation and wage inflation components would allow the ASRS plan's actuary and the ASRS Board to closely monitor members' salary increases in the current economic cycle to determine whether this underlying long-term assumption is reasonable.

3 United States Government Accountability Office. (2012). *State and local government pension plans: Economic downturn spurs efforts to address costs and sustainability.* Washington, DC.

4 The cost savings that the ASRS' actuary estimated were based on changes in contribution rates over a 30-year period using the same actuarial assumptions that determine these contribution rates.

- **Adjusted the pension benefit formula**—Laws 2010, Ch. 50, also changed the formula for calculating ASRS plan pension benefits.[1] This change applies to individuals who become members on or after July 1, 2011. For example, for those who became ASRS plan members on or after this date, the legislation increased the time period used to calculate average monthly compensation from the highest 36 months to the highest 60 months of compensation in the last 120 months of service. Expanding the time period for calculating final average salaries generally results in reduced pension benefits because a lower average salary is used to determine these benefits.

- **Eliminated permanent benefit increases**—Laws 2013, Ch. 110, eliminated permanent benefit increases for individuals whose ASRS plan membership began on or after September 13, 2013. For members who joined the ASRS plan before this date, statute directs the ASRS to provide a permanent increase in retired members' pension benefits of up to 4 percent, when specific conditions are met such as exceeding the expected investment rate of return over a rolling 10-year period.[2] Although providing benefit increases can help retain the value of a retiree's benefit over time, these increases can also create unfunded liabilities, thus reducing a pension plan's funded status (see Finding 2, pages 19 through 20, for more information on the permanent benefit increases).

Although many states have made changes to their plans' pension benefits, legal constraints have limited these changes to new plan members. According to a 2012 report by the National Conference of State Legislatures, from 2009 to 2011, 43 states (including Arizona) modified at least one state-sponsored defined benefit system to reduce member benefits and lower future pension obligations by either adjusting the pension benefit formula, raising eligibility requirements, and/or limiting post-retirement benefits.[3] As was the case with the Arizona legislative changes noted earlier, a 2012 Center for Retirement Research report noted that these types of benefit changes are generally limited to new plan members because of legal constraints.[4] Specifically, the U.S. Constitution's Contract Clause and similar provisions in many state constitutions prohibit the enactment of laws that would impair existing public or private contracts. However, according to a 2012 U.S. Government Accountability Office report, although these types of benefit reductions for new employees can reduce plans' pension obligations, it can take a decade or more for the changes to make any significant reduction because it takes time for new employees to represent a significant portion of the workforce.[5]

Recommendation:

1.1. The ASRS should continue with its plans to formally adopt its funding policy and make it publicly available by posting the policy on its Web site.

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1 A member's retirement benefit is calculated using a statutory formula that includes three main elements: years of credited service, a multiplier, and average monthly compensation. For an example of calculated benefits, see the Introduction, page 2.

2 See A.R.S. §38-767. The ASRS last provided a permanent benefit increase to ASRS plan members in 2005.

3 Snell, R. (2012). *State pension reform, 2009-2011*. Washington, DC: National Conference of State Legislatures.

4 Munnell, A.H. & Quinby, L. (2012). *Legal constraints on changes in state and local pensions*. Boston, MA: Boston College, Center for Retirement Research.

5 U.S. GAO, 2012.

FINDING 2

Although the Arizona State Retirement System (ASRS) and the Legislature have taken several steps to improve the defined benefit plan's (ASRS plan) long-term sustainability, some additional actions would strengthen these efforts. First, although permanent benefit increases did not impact the ASRS plan's sustainability during the time period auditors reviewed, since increases are likely in the near future, the ASRS should ensure these increases do not impact the ASRS plan's sustainability going forward. Second, to determine which actuarial cost method is most appropriate for determining contribution rates and helping it meet its funding policy objectives, the ASRS and its Board of Trustees (Board) should develop and implement a policy and procedure for periodically reviewing its actuarial cost method. Third, to help prevent inappropriate preretirement salary increases (i.e., pension spiking), the ASRS should implement additional controls, such as establishing a methodology to identify such increases and clarifying procedures to investigate them.

Additional actions can enhance ASRS plan's financial condition and long-term sustainability

ASRS should develop method to ensure future benefit increases do not impact ASRS plan's sustainability

The ASRS and the Board should work with its actuary to ensure the cost of expected future benefit increases do not impact the ASRS plan's sustainability. Permanent benefit increases are permanent increases provided to retired members' pensions.[1] The ASRS last provided a benefit increase to retired members in 2005. As a result, permanent benefit increases did not impact the ASRS plan's sustainability during the time period auditors reviewed—June 30, 2005 to June 30, 2014. The ASRS plan's permanent benefit increase structure includes features that help limit the impact of increases on the ASRS plan's sustainability. Specifically, permanent benefit increases are not provided unless the ASRS plan's investment performance exceeds 8 percent on average over a rolling 10-year period and/or a separate account reserved for benefit increases has sufficient monies available to provide at least a 1 percent increase for retired members.[2]

Although Laws 2013, Ch.110, eliminated permanent benefit increases for individuals whose ASRS plan membership began on or after September 13, 2013 (see Finding 1, page 18), permanent benefit increases still would be available to ASRS plan members who started before that date. According to the ASRS, as of June 2015, there were 491,220 ASRS plan members who were eligible for a permanent benefit increase in the future.[3] In addition, the ASRS' actuary estimated that a small benefit increase, such as a 2 percent increase, may be available to eligible members on July 1, 2019, if the ASRS plan's investment returns are at least 8 percent during fiscal years 2015 through 2018 and the other permanent benefit increase conditions are met (see previous paragraph).[4] If these conditions are met, the ASRS must provide a permanent benefit increase. Thus, even though this increase is not provided annually, it could be considered automatic as opposed to an increase that would be

1 For some public pension plans, increases to members' pensions are sometimes referred to as cost-of-living adjustments, or COLAs; however, unlike the ASRS plan's permanent benefit increase, COLAs are often tied to the consumer-price index and designed to help ensure benefits keep pace with cost-of-living increases.

2 Arizona Revised Statutes (A.R.S.) §38-767 outlines the conditions that must be met to require the ASRS to provide permanent benefit increases to ASRS plan retired members and specifies how the increases are determined.

3 This consists of 100,264 retired members and 390,956 nonretired members.

4 These estimates are based on ASRS plan data and provisions, and actuarial methods and assumptions for the ASRS plan's June 30, 2014, valuation.

considered ad hoc, meaning that it is granted at the ASRS' or Legislature's discretion (see textbox). According to the National Institute on Retirement Security, automatic increases should be prefunded, meaning they should be incorporated into the calculation of employer and employee contribution rates, and the unfunded liabilities created by an ad hoc increase can be amortized over a shorter period than the traditional 30-year period.[1] Both automatic and ad hoc increases cost money. The ASRS has not incorporated benefit increases into its contribution rates since 2005. However, since increases in the future are likely and a large number of members remain eligible for such increases for many years into the future, the ASRS and its Board should work with its actuary to develop a method for ensuring that the cost of any future benefit increases do not impact the ASRS plan's sustainability. In developing this method, the ASRS should ensure that it aligns with its funding policy's goals and objectives.

Automatic benefit increase—A retiree's pension benefit increases automatically every year by a certain percentage.

Ad hoc benefit increase—A benefit increase that is granted at the discretion of the plan sponsor, and usually when the plan is close to being fully funded and investment gains have exceeded expectations.

Source: Auditor General staff analysis of Peng, J., & Boivie, I. (2011). *Lessons from well-funded public pensions: An analysis of six plans that weathered the financial storm*. Washington, DC: National Institute on Retirement Security.

ASRS and Board should periodically review its actuarial cost method

The ASRS and its Board should periodically determine which actuarial cost method is appropriate for determining contributions and achieving its policy objectives. A core element of a pension funding policy is an actuarial cost method, which is a technique actuaries use to determine the contribution requirements necessary to fund estimated pension obligations. In 1989, the ASRS was mandated by statute to use the Projected Unit Credit actuarial cost method to determine contribution requirements. This actuarial cost method estimates lower contribution requirements early in an employee's career and higher contribution requirements as an employee nears retirement. The ASRS is required by statute to use this method through the end of June 2016.

Beginning in July 2016, the ASRS will have more flexibility in selecting an actuarial cost method. Starting June 30, 2016, Laws 2015, Ch. 65, §2, authorizes the Board to select and use any generally accepted actuarial cost method when determining contribution rates.[2,3] This will allow the Board to align its actuarial cost method with the ASRS plan's member population and funding objectives. Although in the future the Board will be able to select different actuarial cost methods, it should not change these methods just to obtain a more favorable funded status.

1 Peng, J., & Boivie, I. (2011). *Lessons from well-funded public pensions: An analysis of six plans that weathered the financial storm*. Washington, DC: National Institute on Retirement Security.

2 Actuarial Standards Board, Actuarial Standards of Practice (ASOP) No. 4: Measuring Pension Obligations and Determining Pension Plan Costs or Contributions, provides criteria to select an actuarial cost method for determining contribution requirements.

3 Actuarial cost methods estimate an employee's salary and years of service at retirement and then spread the cost of the estimated pension obligation over the employee's career. Based on auditors' review of data from the 2013 Public Fund Survey, an online compendium of data from 126 public pension plans in the United States, the Entry Age Normal actuarial cost method is the most common method among the pension plans listed. The Entry Age Normal cost method allocates costs evenly as a level percentage of pay throughout an employee's projected career.

Specifically, the Pension Funding Task Force states that the actuarial cost method adopted should be consistent with funding policy objectives.[1] To determine which generally accepted actuarial cost method is appropriate for determining contributions and helping meet these objectives, the ASRS and its Board should develop and implement a policy and procedure for periodically reviewing its actuarial cost method. In developing this procedure, the ASRS should ensure that its adopted policy and procedures include a time frame to review the appropriateness of the actuarial cost method periodically, such as every 5 years when it conducts actuarial experience studies, as required by statute.[2] In addition, the ASRS should ensure that its adopted policy and procedures do not allow the Board and/or the actuary to change actuarial methods for the sole purpose of achieving a more favorable funded status, or fiscal result.

ASRS should implement additional controls for minimizing the impact of preretirement salary increases

The ASRS should enhance its efforts to identify and resolve potential instances of pension spiking. Although statutes provide some protections to limit pension spiking and the ASRS has two processes that can help identify pension spiking, these processes lack important components. As a result, ASRS should enhance its procedures for identifying pension spiking and assessing the costs of any resulting unfunded liabilities, including developing a new process for regularly querying its data to look for potential instances of pension spiking.

ASRS plan has some protections to limit pension spiking—Statutes and some ASRS processes help identify or prevent pension spiking. Statutes establish a formula for determining an ASRS plan member's pension benefit (see Introduction, pages 1 through 2). This formula considers a member's years of service and average monthly compensation, or final average salary. According to a 2011 report by the National Institute on Retirement Security, pension spiking refers to the practice of substantially increasing an employee's final average salary beyond what is expected from normal salary increases.[3] This substantial increase can happen when the final average salary includes unusually large overtime payments, payments for unused sick leave or vacation time, or a larger-than-normal salary increase.

Statutes provide some protections to limit pension spiking. In particular, A.R.S. §38-711(7) forbids including lump sum payments for accumulated vacation, sick leave, and compensatory time when calculating an ASRS plan member's pension benefit. In addition, for those who became ASRS plan members between January 1, 1984 and July 1, 2011, A.R.S. §38-711(5) minimizes the impact of any potential pension spiking by using a 36-month period to determine a member's average monthly compensation. For those who became ASRS plan members after July 1, 2011, the statute

[1] Pension Funding Task Force. (2013). *Pension funding: A guide for elected officials*. The Pension Funding Task Force was established in 2012 by the National Governors Association, National Conference of State Legislatures, Council of State Governments, National Association of Counties, National League of Cities, U.S. Conference of Mayors, International City/County Management Association, and Government Finance Officers Association. The National Association of State Auditors, Comptrollers and Treasurers; National Association of State Retirement Administrators; and National Council on Teacher Retirement also serve on the Task Force. The Center for State and Local Government Excellence is the convening organization for the Task Force.

[2] A.R.S. §38-714(G)(2) requires the Board to contract with an actuary at least once every 5 years to review the ASRS plan's actual experience in relation to the assumptions employed in preparing its annual actuarial valuations. See Finding 1, page 16 through 17, for more information on the actuarial experience study.

[3] Peng & Boivie, 2011.

lengthens this period to 60 months. Finally, A.R.S. §38-749 allows the ASRS to recover the costs of larger-than-normal salary increases from employers by regulating what statute calls "employer termination incentive programs" (see textbox for the definition of these programs). Specifically, A.R.S. §38-749(A)(C) states that when the ASRS identifies employer termination incentive programs, it must assess the cost of any resulting unfunded liabilities to the employer. To determine the ASRS plan's estimated pension obligations and contributions necessary to meet those obligations, the ASRS' actuary uses statistical data to estimate various factors, including mortality rates and increases in members' compensation over time. When a member's compensation experiences a greater-than-expected increase during the time period that determines average monthly compensation, this increase may generate an unfunded liability to the ASRS plan.

Employer termination incentive programs

Termination incentive—An employer offers anything of value that is conditioned on the member's termination.

Example: An employer provides a member with a $30,000 lump sum payment if that member retires.

Salary increase—A member receives a 30 percent or greater, nonpromotion salary increase that occurs during the time period used to determine the member's final average salary and thus factors into his/her pension benefit calculation.

Source: Auditor General staff analysis of A.R.S. §38-749(D).

Additionally, the ASRS has two processes to identify employer termination incentive programs.[1] First, ASRS staff may identify these programs by reviewing a member's salary history when processing a member's application for retirement benefits. The system that staff use to process these benefits will also highlight any pay periods with salary increases that are 30 percent or greater than the average in a fiscal year. Second, the ASRS may identify termination incentive programs when it conducts audits of employers for compliance with ASRS policies and relevant statutes.[2] As part of these audits, staff review payroll records of employers for evidence of termination incentive programs.[3] Employer termination incentive programs that auditors identify are noted in reports to the Board, which include recommendations that the employer pay for any unfunded liabilities.

ASRS' processes lack some important components—Although the ASRS has established some processes to identify employer termination incentive programs, these processes lack important components for effectively regulating these programs. Specifically:

- **Procedures for processing retirement benefits unclear**—The ASRS' procedures for processing retirement benefits do not fully address salary increases that may indicate termination incentive programs. Specifically, although these procedures direct staff to look for some abnormal salary increases, they do not specifically direct staff to look for or provide guidance on how to identify a termination incentive program. Additionally, these procedures instruct staff to contact employers for explanations on abnormal salary

[1] A.R.S. 38-749(B) requires ASRS employers to self-report any employer termination incentive programs.

[2] As indicated in the Introduction (see page 1), ASRS employers include the State and the State's counties, universities, community colleges, school districts, most municipalities, and other political subdivision entities, such as charter schools.

[3] According to the ASRS' internal audit plan, of its 690 participating employers, ASRS planned to audit ten employers in fiscal year 2015. In addition to conducting employer audits, ASRS internal auditors also conduct audits of high-risk areas within the ASRS as well as annually reviewing certain functions for compliance with statutes and agency policies.

increases, but they do not provide instructions on who within ASRS these staff should notify to handle a potential termination incentive program. Further, ASRS staff reported that the decisions to investigate abnormal or irregular increases were ultimately left to their discretion rather than being guided by a specific procedure.

- **Procedures for determining programs and assessing employers for the resulting pension obligations lacking**—Even when the ASRS may have identified employer termination incentive programs, it has not always determined and assessed the cost of any resulting unfunded liabilities. Between September 2009 and September 2012, the ASRS reported that it had invoiced 17 participating employers for approximately $20 million in unfunded liabilities resulting from employers providing termination incentives to employees. However, the ASRS has not determined and assessed the cost of any unfunded liabilities in instances where nonpromotion salary increases of 30 percent or greater may have occurred (see employer termination incentive programs textbox, page 22). Specifically, ASRS staff reported that the ASRS has not yet established a method for determining when a 30 percent or greater increase in compensation has occurred. Additionally, auditor's review of ASRS policies and procedures did not identify guidance or instruction for making this determination. Consequently, even though a 2012 ASRS employer audit may have identified five recent retirees who experienced salary increases between 32 and 63 percent in their final years of employment, the ASRS did not determine and invoice the employer for the cost of the resulting unfunded liabilities.

ASRS should enhance its procedures for identifying pension spiking and assessing the costs of any resulting unfunded liabilities—Although ASRS staff indicated that employer termination incentive programs are rare, public trust may be undermined if the ASRS does not effectively address this issue, and ASRS members may unfairly bear the cost of these undetected programs. According to the National Institute on Retirement Security, even though pension spiking is not common, a few isolated instances can create the impression of widespread abuse.[1] In addition, because the ASRS is a cost-sharing plan, if an employer is not assessed the cost of the unfunded liabilities that result from an employer termination incentive program, all participating employers and members will share the cost of these unfunded liabilities.[2] To address these issues, the ASRS should enhance its procedures for identifying employer termination incentive programs and assessing the cost of any resulting unfunded liabilities. Specifically, the ASRS should:

- Determine a methodology for calculating when a 30 percent or greater increase in a member's compensation not attributable to a promotion occurs. However, the ASRS is party to outstanding litigation regarding whether it needs to adopt administrative rules on how to calculate the unfunded liability and assess the cost of this unfunded liability to the employer as required by A.R.S. §38-749.[3] Depending on the outcome of this litigation, the ASRS may also need to adopt rules for calculating when this 30 percent increase occurs;

1 Peng & Boivie, 2011.

2 See the Introduction, pages 2 through 3, for more information about cost-sharing plans.

3 In May 2015, the Arizona Court of Appeals ruled in *Arizona State University ex rel. Arizona Board of Regents v. Arizona State Retirement System* that the ASRS' policy for calculating unfunded liability was a rule that it had adopted without following the rule-making procedure provided in Arizona's Administrative Procedure Act and was therefore invalid. The ASRS filed an appeal of this decision with the Arizona Supreme Court on June 29, 2015.

- Develop and implement policy and procedures for executing the methodology for determining when a 30 percent or greater nonpromotion salary increase has occurred, and train staff on these policy and procedures;

- Assess the feasibility of implementing this procedure for all members who have retired since September 30, 2009. This represents the date when the current termination incentive programs requirements outlined in A.R.S. §38-749 became effective. Accordingly, the ASRS should identify and investigate potential instances of employer termination incentive programs that may have occurred since September 30, 2009, including those involving nonpromotion salary increases of 30 percent or more. Further, when an instance is identified, the ASRS should assess the cost of any resulting unfunded liabilities to the employer;

- Include information in its retirement benefit processing procedures on how to identify and what its staff should do when they identify salary increases that appear to qualify as an employer termination incentive program, such as nonpromotion salary increases of 30 percent or greater. These procedures should also identify which ASRS staff are responsible for conducting further investigations of such cases and which staff are responsible for assessing the cost of the unfunded liability to the employer; and

- Develop and implement a policy and procedures for regularly querying the ASRS contribution accounting system for increases in compensation that could indicate employer termination incentive programs. Beginning in calendar year 2013, the ASRS began expanding the capabilities of its contribution accounting system so that it will collect information on the number of hours members work and the types of pay members receive, such as base pay, overtime pay, and performance pay. According to the ASRS, 85 percent of employers were included in the system as of July 1, 2015, and it will continue working to include the remaining employers. The adopted policy and procedures should also state which ASRS staff are responsible for conducting further investigations on potential cases identified through its queries, and which staff are responsible for assessing the cost of any unfunded liability to the employer.

Recommendations:

2.1. The ASRS and its Board should work with its actuary to develop a method for ensuring the cost of future benefit increases do not impact the ASRS plan's sustainability. In developing this method, the ASRS should ensure that it aligns with its funding policy's goals and objectives.

2.2. The ASRS and its Board should develop and implement a policy and procedure for periodically reviewing its actuarial cost method to determine which generally accepted actuarial cost method is appropriate for determining contributions and helping to meet its Funding Policy's objectives. In developing this procedure, the ASRS should ensure that its adopted policy and procedures:

a. Establish a time frame to review the appropriateness of the actuarial cost method periodically, such as every 5 years when it conducts actuarial experience studies; and

b. Do not allow the Board and/or the actuary to change actuarial methods for the sole purpose of achieving a more favorable funding status, or fiscal result.

2.3. The ASRS should enhance its procedures for identifying employer termination incentive programs and assessing the cost of any resulting unfunded liability to an employer. Further, depending on the final resolution of outstanding litigation, the ASRS may also need to adopt administrative rules in order to legally enforce A.R.S. §38-749. Specifically, the ASRS should:

a. Determine a methodology for calculating when a 30 percent or greater increase in a member's compensation not attributable to a promotion has occurred;

b. Develop and implement written policy and procedures executing the methodology to determine when a 30 percent or greater nonpromotion salary increase has occurred, and train staff on the policy and procedures;

c. Assess the feasibility of implementing this procedure for all members who have retired since September 30, 2009. Accordingly, the ASRS should identify and investigate potential instances of employer termination incentive programs, including those involving nonpromotion salary increases of 30 percent or more. Further, when an instance is identified, the ASRS should assess the cost of any resulting unfunded liabilities to the employer;

d. Include information in its retirement benefit processing procedures on how to identify and what ASRS staff should do when they identify salary increases that appear to be a result of an employer termination incentive program or an inappropriate preretirement salary increase, as well as which staff are responsible for conducting further investigations on such cases and for assessing the cost of the unfunded liability to the employer; and

e. Develop and implement a policy and procedures for regularly querying the ASRS contribution accounting system for increases in compensation that could indicate employer termination incentive programs. The adopted policy and procedures should also state which ASRS staff are responsible for conducting further investigations on potential cases identified through its queries, and which staff are responsible for assessing the cost of any unfunded liability to the employer.

SUNSET FACTORS

In accordance with Arizona Revised Statutes (A.R.S.) §41-2954, the Legislature should consider the following factors in determining whether the Arizona State Retirement System (ASRS) should be continued or terminated.

This analysis includes recommendations for the ASRS to enhance some of its information technology (IT) practices (see Sunset Factor 2, pages 28 through 29).

Sunset factor analysis

1. **The objective and purpose in establishing the ASRS and the extent to which the objective and purpose are met by private enterprises in other states.**

   Established in 1953, the ASRS' primary statutory objective is to provide and administer a defined benefit retirement (pension) plan (ASRS plan) for general employees of the State, counties, municipalities, universities, community colleges, and school districts.[1] All 50 states sponsor at least one defined benefit retirement plan for their general (i.e., nonpublic safety) employees. Auditors did not identify any state retirement plans that meet their objective and purpose entirely through private enterprise. However, the ASRS uses private enterprises to help meet its mission (see Sunset Factor 12, pages 33 through 34, for more information on its use of private enterprises).

2. **The extent to which the ASRS has met its statutory objective and purpose and the efficiency with which it has operated.**

   The ASRS has generally met its statutory objective and purpose of providing and administering a pension plan for general employees, but auditors also identified areas where improvement is needed. As indicated in Finding 1 (see pages 11 through 18), the ASRS has established processes for and has taken actions to improve the ASRS plan's funded status, or the extent to which the ASRS plan's assets can meet its estimated pension obligations. These actions include drafting a funding policy that includes an objective to reach a 100 percent funded status, and increasing contribution rates. In addition, the ASRS has recommended and the Legislature has enacted statutory changes that will help improve the ASRS plan's long-term sustainability over time.

   Additionally, the ASRS has taken several steps to improve its operational efficiency, including the following:

   - Implemented an effective Incentive Compensation Plan (compensation plan) for its investment staff in 2013. The compensation plan provides an incentive to help the ASRS compete with the private financial market for investment professionals (see Introduction, pages 5 through 6, for more details). Auditors' review of the compensation

[1] In addition to its defined benefit retirement plan (ASRS plan), the ASRS also provides a system plan (System) that pre-dates the ASRS plan to certain members. In 1970, the Legislature authorized creation of the ASRS plan, which became effective on July 1, 1971. At that time, existing system members could opt to stay in the System or move to the ASRS plan. As of June 30, 2014, there were 1,353 system members including 9 active members, 30 inactive members, and 1,314 retired members. See Introduction, pages 3 through 4, for more information on the various other benefits the ASRS provides.

plan indicates it is consistent with federal guidance for financial institutions' design and implementation of incentive compensation arrangements.[1] As recommended by this guidance, the compensation plan aligns incentives with investment goals to prevent imprudent risk taking, includes internal controls over its design and implementation, and requires oversight by the ASRS' Board of Trustees (Board).

- Implemented objectives in its *Fiscal Years 2014-2018 Strategic Plan* for processing member issues in a timely manner. For example, the ASRS established an objective in its *Fiscal Years 2014-2018 Strategic Plan* that at least 80 percent of all phone calls to the ASRS Member Advisory Center must be answered within 20 seconds of entering the queue. According to ASRS information, the ASRS met this objective in 10 of the 12 months in fiscal year 2014. According to an ASRS report, the only 2 months where it did not meet this objective were July and August 2013, when the average wait times were, respectively, approximately 4 and 2½ minutes. According to the ASRS, lower-than-expected staffing levels and higher-than-projected call volumes caused these longer wait times. Additionally, the ASRS established an objective that 90 percent of member appeals at the assistant director and/or director level should be handled within 10 business days. According to an ASRS report, the ASRS achieved this objective in 10 of the 12 months in fiscal year 2014. The report also indicates that in the month in which the percentage was lowest, ASRS staff handled 85 percent of these appeals within 10 business days. ASRS staff attributed this lower percentage to a vacant appeals analyst position that the ASRS was in the process of filling.

- Improved its information technology (IT) practices. Office of the Auditor General IT auditors reviewed ASRS' IT processes in March 2014 and determined that the ASRS could improve its IT policies and procedures for change management, disaster recovery, access controls, logging and monitoring, and encryption.[2] IT auditors followed up on their initial recommendations in June 2015 and determined that the ASRS was working to improve all areas and had created procedures that appropriately addressed one of the areas, encryption. In addition, the ASRS provided a 5-year project plan, which included proposed activities for addressing the remaining areas. As part of its continuing efforts to enhance its IT practices, the ASRS should:

    - Develop a process for documenting the review and approval of IT system coding changes prior to implementing those changes;

    - Periodically update its disaster recovery plan to ensure that all information pertaining to devices, personnel, software, and processes are as up to date as possible;

    - Continue enhancing its data access process to ensure that access is limited to appropriate personnel;

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1 *Guidance on sound incentive compensation policies*, 75 Fed. Reg. 122 (June 25, 2010), pp. 36395–36414.

2 Change management policies and procedures standardize how staff make changes to IT systems. Disaster recovery plans are policies and procedures that guide an organization when it sustains a loss of IT capability or damage to its systems. Access controls involve the process of granting or denying specific requests to access information or enter specific physical facilities. Logging is recording IT system activities. Monitoring is the analysis, assessment, and review of information to identify potential violations of IT system security. Encryption is the process of changing plaintext into ciphertext for the purpose of security or privacy.

- Develop a process to review logs for key activities on its networks and systems; and

- Continue evaluating the recommendations it received from a 2014 limited security assessment and implement them as appropriate.

This audit also identified changes that the ASRS and its Board should make to further enhance the ASRS plan's long-term sustainability. Specifically, as indicated in Finding 1 (see pages 15 through 16), the ASRS should continue with its plans to formally adopt its funding policy and make it publicly available by posting the policy on its Web site. As indicated in Finding 2 (see pages 19 through 25), the ASRS and its Board should work with its actuary to develop a method for ensuring that the cost of expected future benefit increases do not impact the ASRS plan's sustainability. In addition, the ASRS and its Board should develop and implement policy and procedures for periodically reviewing its actuarial cost method to determine which generally accepted actuarial cost method is appropriate for determining contributions and helping it to meet its funding policy objectives. Finally, the ASRS should develop and implement additional policies and procedures for identifying and assessing the cost of inappropriate preretirement salary increases to the employer, and depending on the outcome of outstanding litigation, it may also need to adopt administrative rules.

3. The extent to which the ASRS serves the entire State rather than specific interests.

The ASRS serves the entire State by administering retirement, long-term disability, survivor and retiree health insurance benefits to employees of the State, counties, municipalities, universities, community colleges, and school districts. These benefits can help government employers recruit employees to serve the public.

Although members are spread throughout the State, the ASRS ensures that its services are accessible. The ASRS has offices in the Phoenix and Tucson metropolitan areas. In addition, members may receive services by phone, e-mail, and the Internet. Services available on the ASRS' Web site include *my*ASRS, an online tool members may use to update personal information, securely communicate with ASRS staff, check payments, estimate pension benefits, and apply for benefits. Finally, the ASRS conducts informational meetings for members nearing retirement at their Phoenix and Tucson offices, via webinar, and by request for in-person appointments. Members may also connect with the ASRS through social media, including Facebook, Twitter, and YouTube.

4. The extent to which the rules adopted by the ASRS are consistent with the legislative mandate.

General Counsel for the Office of the Auditor General has analyzed the ASRS' rule-making statutes and found that the ASRS' rules are consistent with its legislative mandate. However, the ASRS is currently party to outstanding litigation regarding whether it needs to adopt administrative rules on how to calculate the unfunded liability resulting from an employer termination incentive program and assess the cost of this unfunded liability to the employer as required by A.R.S. §38-749. Depending on the outcome of this litigation, the ASRS may also need to adopt rules in order to legally enforce A.R.S. §38-749 (see Finding 2, pages 19 through 25).

5. **The extent to which the ASRS has encouraged input from the public before adopting its rules and the extent to which it has informed the public as to its actions and their expected impact on the public.**

The ASRS has statutory authority to promulgate rules. It encourages input from and informs the public about rule makings and their expected impact on the public through the Arizona Administrative Register, public comment meetings, and its Web site.

From April to October 2014, auditors evaluated compliance with open meeting law requirements for seven public meetings held by the Board and its three committees—the Investment Committee, External Affairs Committee, and Operations and Audit Committee. The evaluation included review of public meeting information available on the ASRS' Web site and provided by staff, observation of the Board's and committees' meetings, and a review of board meeting minutes. Based on this evaluation, the Board and its committees complied with all provisions of the State's open meeting law, including statutory requirements that meetings are open to the public, public meeting notices and agendas for such meetings are posted 24 hours in advance of the meeting on the ASRS Web site and at the ASRS' offices, and the Board takes written minutes for its meetings and makes the written minutes or a recording of its meetings available to the public within 3 working days.

The ASRS also informs the public about its activities through its Web site, e-mailed newsletters, and social media outlets, such as Facebook, Twitter, and YouTube. For example, its Web site has information about legislation, annual reports, and changes in contribution rates.

The ASRS also complies with A.R.S. §41-1091.01, which requires agencies to post on their Web site the full text, or the Web site address and location of the full text, of each rule in use.

6. **The extent to which the ASRS has been able to investigate and resolve complaints that are within its jurisdiction.**

Although this factor is not applicable because the ASRS is not a regulatory agency, the ASRS has established processes for handling all ASRS plan member inquiries, including complaints. ASRS plan members can contact the Member Advisory Center, which acts as the ASRS' first point of contact, through e-mail, over the phone, or by making an appointment. In fiscal year 2014, according to ASRS information, it responded to more than 176,000 member inquiries. To track these member inquiries, the ASRS maintains a ticketing system. According to ASRS staff, each ticket contains information on a member's issue or question and a list of all staff who have handled it from its receipt to its resolution. ASRS staff also indicated that they are responsible for monitoring and resolving the tickets they receive in a timely manner. The ASRS has established several performance measures for the Member Advisory Center that are directly linked to the ASRS' strategic plan. For example, one objective requires that the ASRS' call center, which is part of the Member Advisory Center, ensure less than a 5 percent call abandonment rate. During fiscal year 2014, according to ASRS information, the call center met this objective in 10 of 12 months. In July and August 2013, the call abandonment rates were approximately 16 and 10 percent, respectively. According to the ASRS, lower-than-expected staffing levels and higher-than-projected call volumes caused these higher call abandonment rates.

If ASRS plan members are not satisfied with the information they initially receive, the ASRS also provides a process for escalating member inquiries or complaints. Specifically, members can appeal decisions to increasingly higher levels within the ASRS, which may culminate in a hearing before the Board, if necessary. Based on its strategic plan objectives, the ASRS has also established performance measures for the appeals process. Specifically, ASRS staff should respond to 90 percent or more of member appeals related to health and disability determinations at the Member Services Division and/or director level within 15 business days. According to ASRS information, staff met these performance measures in 10 of 12 months during fiscal year 2014. Data was not available to determine whether the ASRS met this performance measure for the remaining 2 months. For all other member appeals to the Member Services Division and/or the director, the ASRS has a similar objective that it should handle 90 percent of appeals within 10 business days. As indicated in Sunset Factor 2 (see page 28), according to an ASRS report, the ASRS achieved this objective in 10 of the 12 months in fiscal year 2014. This report also indicates that in the month in which this percentage was the lowest, ASRS staff handled 85 percent of these appeals within 10 business days. ASRS staff attributed this lower percentage to a vacant appeals analyst position that the ASRS was in the process of filling.

7. **The extent to which the Attorney General or any other applicable agency of state government has the authority to prosecute actions under the enabling legislation.**

The ASRS' enabling legislation does not provide authority for the Attorney General or any other applicable agency of state government to prosecute actions. However, the Attorney General is the ASRS' legal advisor and renders legal services as needed according to A.R.S. §41-192(A). The ASRS and the Attorney General's Office have entered into an interagency service agreement to provide a full-time, onsite Assistant Attorney General who may represent the ASRS and the Board, advise these parties, and assist the ASRS in strategic planning, developing policies and procedures, drafting rules, and drafting legislation the ASRS recommends for the Legislature's consideration. For example, A.R.S. §38-735(C) authorizes the ASRS to recover delinquent payments from employers through court actions, and the ASRS reported that the Attorney General files complaints with the relevant court and represents ASRS in these cases. However, the ASRS stated that these instances are rare because the statute also allows the ASRS to deduct delinquent contributions from other monies payable to the employer by any State of Arizona agency or department.

As allowed by A.R.S. §38-715(H), the Board also contracts with private attorneys for specialized legal assistance in investment law. The ASRS uses private legal counsel to a similar extent as its peer public pension plans (see Sunset Factor 12, page 33, for more information).

8. **The extent to which the ASRS has addressed deficiencies in its enabling statutes that prevent it from fulfilling its statutory mandate.**

According to ASRS management, there are no deficiencies in its enabling statutes that prevent it from fulfilling its statutory mandate. However, the Legislature has passed laws since 2010 that have affected the ASRS plan in several ways. Specifically, as outlined in other parts of this report, various laws have raised eligibility requirements, changed the pension benefit formula, and eliminated permanent benefit increases (see Finding 1, pages 17 through 18, for a discussion of these changes). In addition, some other changes have included:

- **Reduced service purchase eligibility**—Laws 2012, Ch. 362, reduced the amount of credited service that a member must have before initiating a service purchase of other public service, leave of absence, or military service from 10 to 5 years.

- **Self-insured health insurance program**—Laws 2013, Ch. 110, permitted the Board to establish a self-insured health insurance program if the Board determines, considering risks and costs, that self-insuring would be more cost-effective than a fully insured plan. As indicated in the Introduction (see page 3), the ASRS is contracting for the optional health insurance benefits it offers to members and their qualified dependents who are receiving benefits.

- **Expanding membership**—Laws 2014, Ch. 44, eliminated the requirement that individuals must be covered by a participating employer's Social Security 218 agreement to be eligible for ASRS plan membership. Section 218 of the Social Security Act allows the Commissioner of Social Security to, at the request of a state, extend Social Security coverage to employees of that state and its political subdivisions through a formal agreement.[1] Before this legislation passed, individuals had to be contributing to Social Security through a 218 agreement in order to be ASRS plan members.

9. The extent to which changes are necessary in the laws of the ASRS to adequately comply with the factors listed in the sunset law.

This audit did not identify any needed changes to the ASRS' statutes.

10. The extent to which the termination of the ASRS would significantly affect the public health, safety, or welfare.

Terminating the ASRS would significantly harm the public welfare. The ASRS had obligations to or provided retirement, long-term disability, survivor, and retiree health insurance benefits to more than 550,000 active, inactive, retired, and disabled members and other beneficiaries as of June 30, 2014 (see Table 3 in the Introduction, page 5, for the numbers and description of each member type). The Arizona State Constitution specifies that membership in a public retirement system is a contractual relationship and that benefits cannot be "diminished or impaired." Therefore, if the ASRS were terminated, another entity would need to assume the legal obligation for covering the nearly $43.2 billion in retirement, health insurance premium benefit, and long-term disability obligations that the ASRS had as of June 30, 2014.

Further, A.R.S. §38-712 states that the primary intent of the ASRS is to "provide an incentive in the recruitment and retention of employees of the highest possible quality." According to literature cited by the National Institute on Retirement Security, employers with defined benefit pensions may experience lower rates of employee turnover than those that do not

[1] 42 U.S.C. §418(a)(1).

offer pensions.[1] Therefore, discontinuing the ASRS may also undermine the ability of its 690 reported public employers within the State of Arizona—including school districts, charter schools, community college districts, and state universities, as well as local, county, and state governments—to attract and maintain a professional workforce. As a result, these employers could face difficulties in providing public services.

11. **The extent to which the level of the regulation exercised by the ASRS compares to other states and is appropriate and whether less or more stringent levels of regulation would be appropriate.**

    This factor does not apply because the ASRS is not a regulatory agency.

12. **The extent to which the ASRS has used private contractors in the performance of its duties as compared to other states and how more effective use of private contractors could be accomplished.**

    The ASRS uses private contractors to a similar extent as its peer public pension plans. Auditors reviewed each peer's most recent comprehensive annual financial report available at the time the audit work was conducted for information regarding use of contractors and asked staff at those four public pension plans if they used private contractors for any other functions critical to their plans' missions.[2] Similar to the ASRS, all four public pension plans use private contractors or vendors in the six following common areas, including investment management and actuarial services:

    - **Investment management**—The ASRS contracts with external investment management organizations to invest ASRS plan assets in accordance with the ASRS' investment strategies.
    - **Investment consultants**—The ASRS contracts with consultants to provide investment advice.
    - **Actuarial services**—Statute requires the ASRS to conduct an annual actuarial valuation of its assets and pension obligations. In addition, the ASRS uses an actuary to determine contribution rates and conduct experience studies, which compare the conditions that the ASRS plan is experiencing to assumptions the actuary makes to develop its valuations and determinations.
    - **Custodial banking services**—The ASRS contracts with a custodial bank to hold assets of the ASRS trust, value assets, and provide reports on ASRS plan assets.
    - **Legal services**—The ASRS contracts with private attorneys for specialized legal assistance in tax and investment law.

[1] National Institute on Retirement Security. (2010). *Public pension resource guide: Why do pensions matter?*

[2] Auditors identified four peers to the ASRS: the Mississippi Public Employees' Retirement System, Public Employees' Retirement System of Nevada, South Carolina Retirement Systems, and the Tennessee State Employees, Teachers and Higher Education Employees Pension Plan. See Appendix A, pages a-1 through a-2, for information on the factors auditors considered in selecting these peers.

- **Information technology services**—The ASRS contracts for IT services for systems that disburse benefit payments to members.

Similar to the ASRS, three of the four public pension plans also contract for external audit services and long-term disability plan administration, two of these public pension plans contract for proxy voting, and one contracted with a consultant to perform a governance review.[1] In addition to these services, the ASRS also contracts with a private entity to evaluate the effectiveness of the customer service it provides, which none of the other pension plans did.

The audit did not identify any other opportunities for the ASRS to use private contractors.

Recommendations:

1. As part of its continuing efforts to enhance its IT practices, the ASRS should:

    a. Develop a process for documenting the review and approval of IT system coding changes prior to implementing the changes;

    b. Periodically update its disaster recovery plan to ensure that all information pertaining to devices, personnel, software, and processes are as up to date as possible;

    c. Continue enhancing its data access process to ensure that access is limited to appropriate personnel;

    d. Develop a process to review logs for key activities on its networks and systems; and

    e. Continue evaluating the recommendations it received from a 2014 limited security assessment and implement them as appropriate (see Sunset Factor 2, pages 28 through 29).

[1] Investments sometimes require that shareholders make management decisions. The ASRS contracts with a proxy voting service to facilitate decision making. The ASRS also contracted with a consultant in 2012 to perform a governance review, i.e., to evaluate policies and procedures related to how the Board and the ASRS staff make decisions and to make recommendations on how the policies and procedures could be improved.

APPENDIX A Peer plan selection

This appendix provides information on the methods auditors used to select peer public retirement plans for the Arizona State Retirement System plan (ASRS plan). Auditors selected ASRS plan peers using data from the 2012 Public Fund Survey (PFS), which is an online compendium of data from 126 public pension plans in the United States.[1] Auditors selected peer plans based primarily on similarities in the following characteristics: the market value of assets, retired-to-active member ratio, and the investment return assumption. In addition, auditors reduced the pool of plans to those that are similar cost-sharing plans for general employees. Through this analysis, auditors identified four peer plans: the Public Employees' Retirement System of Mississippi (Mississippi); the Public Employees' Retirement System of Nevada–Regular Employees (Nevada); the South Carolina Retirement System (South Carolina); and the Tennessee State Employees, Teachers and Higher Education Employees Pension Plan (Tennessee).[2] In addition to some of the characteristics used in selecting the peer plans, Tables 5 and 6 contain additional comparative information, including the number of members, funded status, and contribution rates for employers and members.

**Table 5: ASRS plan's and other state peer plans' asset and demographic information
As of June 30, 2014[1]
(Unaudited)**

State plan	Funded status	Actuarial value of assets (In millions)	Retired members	Active members	Retired/active member ratio
ASRS plan	76.3%	$31,548	126,255	203,201	0.62:1
Mississippi	61.0	22,570	93,504	161,360	0.58:1
Nevada	70.8	31,466	43,136	88,709	0.49:1
South Carolina	62.5	25,753	127,696	184,690	0.69:1
Tennessee	93.3	31,851	90,414	132,900	0.68:1

1 All information is as of June 30, 2014, except for Tennessee's and South Carolina's, which is as of July 1, 2013.

Source: Auditor General staff analysis of the ASRS plan's and Mississippi plan's actuarial valuations as of June 30, 2014; the Nevada plan's comprehensive annual financial report for the fiscal year ended June 30, 2014; and the South Carolina plan's and Tennessee plan's actuarial valuations as of July 1, 2013.

1 Auditors reviewed the validity and reliability of the PFS' data by contacting the survey's administrator and verifying its data reliability process. In addition, auditors conducted a data accuracy and reliability test by reviewing data elements PFS reported and comparing them to ASRS plan financial reports for fiscal year 2012, such as the Fiscal Year 2012 Comprehensive Annual Financial Report. Auditors did not find any significant differences in the data elements tested and concluded that the data obtained from the PFS was sufficiently accurate and reliable for the purpose of selecting peer systems.

2 In fiscal year 2014, the Tennessee General Assembly split this plan so that teachers and state employees are in two separate plans.

Table 6: ASRS plan's and other state peer plans' actuarial information As of June 30, 2014[1] (Unaudited)

State plan	Actuarial cost method[2]	Investment return assumption	Employer contribution rate	Employee contribution rate
ASRS plan	Projected Unit Credit	8.00%	10.70%	11.30%
Mississippi	Entry Age	8.00	15.75	9.00
Nevada	Entry Age	8.00	25.75/13.25[3]	None/13.25[3]
South Carolina	Entry Age	7.50	10.60	7.50
Tennessee	Entry Age	7.50	15.03/8.88[4]	None/5.00[4]

1 All information is as of June 30, 2014, except for South Carolina's actuarial cost method and Tennessee's actuarial cost method and investment return assumption, which are as of July 1, 2013.

2 Each of these actuarial cost methods estimate an employee's salary and years of service at retirement and then spread the cost of the estimated pension obligation over the employee's career. The Projected Unit Credit cost method allocates lower costs early in an employee's career that gradually increase as an employee nears retirement. The Entry Age cost method allocates costs evenly, as a level percentage of pay, throughout an employee's projected career.

3 Nevada has two different employer and member contribution rates. For the Employer-Pay Contribution Plan, employers have a contribution rate of 25.75 percent and members do not contribute. For the Employer/Employee Contribution Plan, employers and members each contribute 13.25 percent.

4 Employer contribution rates for Tennessee vary depending on the employer group. Employers for state and higher education employees contribute 15.03 percent and employers for teachers contribute 8.88 percent. Members in the state and higher education groups do not contribute while employees in the teachers group contribute 5 percent.

Source: Auditor General staff analysis of the ASRS plan's and Mississippi plan's actuarial valuations as of June 30, 2014; the Mississippi, Nevada, South Carolina, and Tennessee plans' comprehensive annual financial reports for the fiscal year ended June 30, 2014; and the South Carolina plan's and Tennessee plan's actuarial valuations as of July 1, 2013.

APPENDIX B

Methodology

This appendix provides information on the methods auditors used to meet the audit objectives.

This audit was conducted in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The Auditor General discloses that she and her agency staff are members of the Arizona State Retirement System (ASRS). However, generally accepted government auditing standards do not preclude auditors from auditing pension plans they participate in if (1) the auditors have no control over the investment strategy, benefits, or other management issues associated with the pension plan and (2) the auditors belong to such a pension plan as a part of their employment with the audit organization, provided that the plan is normally offered to all employees in equivalent employment positions.

The Auditor General and staff express appreciation to the ASRS Board of Trustees (Board), Director, and staff for their cooperation and assistance throughout the audit.

Auditors used various methods to study the issues addressed in this report. Auditors interviewed board members, the executive director, and staff, attended several board meetings from April 2014 to October 2014, and reviewed and analyzed information in various documents including the *ASRS Board Governance Policy Handbook*, board policies, and a prior audit report. Auditors also reviewed state statutes and rules applicable to the ASRS and its Board.

Auditors also used the following specific methods to address the audit's objectives:

- To determine the funded status of the ASRS defined benefit plan (ASRS plan) from fiscal years 2005 through 2014 and assess the actions the ASRS and/or the Legislature have taken to improve the ASRS plan's long-term sustainability, auditors analyzed information from the ASRS' annual *Actuarial Valuation* reports as of June 30, 2005 through June 30, 2014. In addition, auditors compared changes the ASRS and Legislature had taken to improve the ASRS plan's sustainability to recommended practices or actions taken in other states as outlined in various reports, including those published by the American Academy of Actuaries, the Government Finance Officers Association, and the National Conference of State Legislatures.

- To identify and develop recommendations for the ASRS' permanent benefit increase structure, auditors reviewed ASRS statutes and other documents and compared them to recommended practices for permanent benefit increases as explained in various reports, including those published by the National Institute on Retirement Security. In addition, to determine how the ASRS defines, identifies, investigates, resolves, and tracks instances of pension spiking, auditors interviewed ASRS management and staff, reviewed statutes related to calculating member benefits and termination incentive programs, and reviewed agency documents. Auditors also obtained information through the four ASRS peers' comprehensive annual financial reports and conducted interviews with these plans' representatives and reviewed statutes and other documents (see Appendix A, pages a-1 through a-2, for information on these peer plans).

- To obtain information for the Introduction and Sunset Factors, auditors reviewed and compiled information from statutes, the *State of Arizona–The Master List of State Government Programs and State Agencies' Five Year Strategic Plans* (2015), and ASRS documents, such as its *2015 Retiree Group Health Insurance Initial Enrollment Guide*, and its *Comprehensive Annual Financial Reports* as of June 30, 2014. Auditors also reviewed peer retirement plan comprehensive annual financial reports for fiscal year 2013 and interviewed peer retirement plan officials to determine the extent of their use of private contractors. Finally, auditors reviewed ASRS documents related to how it handles member communications in its Member Advisory Center and manages its member appeals process, as well as interviewed staff involved in these processes.

- Auditors' work on internal controls focused on the steps the ASRS has taken to improve the ASRS plan's long-term sustainability and the proper management of its information technology systems. Auditors' conclusions on internal controls are reported in Findings 1 and 2, and Sunset Factor 2 of the report. In addition, the Office of the Auditor General contracted with Gallagher Fiduciary Advisors, LLC (Gallagher) to assess internal controls over investments, and conclusions on these controls are found in Gallagher's report—*Independent Operational Review of the Arizona State Retirement System's Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers*.

AGENCY RESPONSE

ARIZONA STATE RETIREMENT SYSTEM

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Paul Matson
Director

August 12, 2015

Ms. Debbie Davenport, Auditor General
Office of the Auditor General
2910 N. 44th St., Ste. 410
Phoenix, AZ 85018

Dear Ms. Davenport:

The Arizona State Retirement System (ASRS) appreciates the opportunity to respond to the Office of the Auditor General recommendations issued in the performance audit and sunset review report. The ASRS would like to commend the Office of the Auditor General staff on their professionalism and responsiveness during the course of this audit. They ensured the audit process proceeded smoothly with a minimum of disruption to daily operations. It was a pleasure to work with them.

Finding 1: ASRS plan is not fully funded, but steps have been taken to improve its long-term sustainability.

1.1 Recommendation: The ASRS should continue with its plans to formally adopt its funding policy and make it publicly available by posting the policy on its Web site.

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. This item is scheduled to be discussed at the August 2015 Board of Trustees meeting.

Finding 2: Additional actions can enhance ASRS plan's financial condition and long-term sustainability.

2.1 Recommendation: The ASRS and its Board should work with its actuary to develop a method for ensuring the cost of future benefit increases do not impact the ASRS plan's sustainability. In developing this method, the ASRS should ensure that it aligns with its funding policy's goals and objectives.

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The ASRS will incorporate this responsibility into its Funding Policy.

2.2 Recommendation: The ASRS and its Board should develop and implement a policy and procedure for periodically reviewing its actuarial cost method to determine which generally accepted actuarial cost method is appropriate for determining contributions and helping to meet its Funding Policy's objectives. In developing this procedure, the ASRS should ensure that its adopted policy and procedures:

a) Establish a time frame to review the appropriateness of the actuarial cost method periodically, such as every 5 years when it conducts its actuarial experience studies

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The ASRS will incorporate this responsibility into its Funding Policy.

b) Do not allow the Board and/or the actuary to change actuarial methods for the sole purpose of achieving a more favorable funding status, or fiscal result

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The ASRS will incorporate this responsibility into its Funding Policy.

2.3 Recommendation: The ASRS should enhance its procedures for identifying employer termination incentive programs and assessing the cost of any resulting unfunded liability to an employer. Further, depending on the final resolution of outstanding litigation, the ASRS may also need to adopt administrative rules in order to legally enforce A.R.S. §38-749. Specifically the ARS should:

a) Determine a methodology for calculating when a 30 percent or greater increase in a member's compensation not attributable to a promotion has occurred

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The ASRS is currently involved in litigation related to this topic and will determine how to address the Auditor General's findings at the conclusion of these legal proceedings.

b) Develop and implement written policy and procedures executing the methodology to determine when a 30 percent or greater non-promotion salary increase has occurred, and train staff on the policy and procedures

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The ASRS is currently involved in litigation related to this topic and will determine how to address the Auditor General's findings at the conclusion of these legal proceedings.

c) Assess the feasibility of implementing this procedure for all members who have retired since September 30, 2009. Accordingly, the ASRS should identify and investigate potential instances of employer termination programs, including those involving non-promotion salary increases of 30 percent or more. Further, when an instance is identified, the ASRS should assess the cost of any resulting unfunded liabilities to the employer

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The ASRS is currently involved in litigation related to this topic and will determine how to address the Auditor General's findings at the conclusion of these legal proceedings.

d) Include information in its retirement benefit processing procedures on how to identify and what ASRS staff should do when they identify salary increases that appear to be a result of an employer termination incentive program or an inappropriate pre-retirement salary increase, as well as which staff are responsible for conducting further investigations on such cases and for assessing the cost of the unfunded liability to the employer

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The ASRS is currently involved in litigation related to this topic and will determine how to address the Auditor General's findings at the conclusion of these legal proceedings.

e) Develop and implement a policy and procedures for regularly querying the ASRS contribution accounting system for increases in compensation that could indicate employer termination incentive programs. The adopted policy and procedures should also state which ASRS staff are responsible for conducting further investigations on potential cases identified through its queries, and which staff are responsible for assessing the cost of any unfunded liability to the employer

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented. The ASRS is currently involved in litigation related to this topic and will determine how to address the Auditor General's findings at the conclusion of these legal proceedings.

Sunset Factors Finding: The ASRS should enhance some of its information technology (IT) practices.

1. Recommendation: As part of its continuing efforts to enhance its IT practices, the ASRS should:

a) Develop a process for documenting the review and approval of IT system coding changes prior to implementing changes

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

b) Periodically update its disaster recovery plan to ensure that all information pertaining to devices, personnel, software, and processes are as up to date as possible

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

c) Continue enhancing its data access process to ensure that access is limited to appropriate personnel

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

d) Develop a process to review logs for key activities on its networks and systems

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

e) Continue evaluating the recommendations it received from a 2014 limited security assessment and implement them as appropriate

ASRS Response: The finding of the Auditor General is agreed to and the audit recommendation will be implemented.

Sincerely,

Paul Matson
Director

Performance Audit Division reports issued within the last 18 months

14-101	Arizona Department of Economic Security—Children Support Services—Transportation Services
14-102	Gila County Transportation Excise Tax
14-103	Arizona State Board of Dental Examiners
14-104	Arizona Office of Administrative Hearings
14-105	Arizona Board of Executive Clemency
14-106	State of Arizona Naturopathic Physicians Medical Board
14-107	Arizona Department of Child Safety—Children Support Services—Emergency and Residential Placements
14-108	Arizona Department of Administration—Arizona State Purchasing Cooperative Program
15-101	Arizona Department of Child Safety—Child Abuse or Neglect Reports, Substantiation Rate, and Office of Child Welfare Investigations
15-102	Arizona Department of Administration—State-wide Procurement
15-103	Arizona Medical Board—Licensing and Registration Processes
15-104	Arizona Department of Transportation—Motor Vehicle Division
15-105	Arizona Department of Revenue—Use of Information Technology
15-CR1	Independent Review—Arizona's Child Safety System and the Arizona Department of Child Safety
15-CR1SUPP	Supplemental Report to the Independent Review—Arizona's Child Safety System and the Arizona Department of Child Safety

Future Performance Audit Division reports

Arizona Sports and Tourism Authority

Arthur J. Gallagher & Co.

August 20, 2015

Independent Operational Review of the Arizona State Retirement System's (ASRS) Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers

Submitted To:
Debra Davenport, Auditor General
Office of the Auditor General
State of Arizona
2910 North 44th Street Suite 410
Phoenix, Arizona 85018

Submitted By:
Gallagher Fiduciary Advisors, LLC
a subsidiary of Arthur J. Gallagher & Co.
3600 American Blvd W, Suite 500
Bloomington, MN 55431

DEBRA K. DAVENPORT, CPA
AUDITOR GENERAL

STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

MELANIE M. CHESNEY
DEPUTY AUDITOR GENERAL

August 20, 2015

Members of the Arizona Legislature

The Honorable Doug Ducey, Governor

Mr. Paul Matson, Director
Arizona State Retirement System

Transmitted herewith is an *Independent Operational Review of the Arizona State Retirement System's Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers*. This review was conducted by Gallagher Fiduciary Advisors, LLC, a subsidiary of Arthur J. Gallagher & Co., under contract with the Office of the Auditor General and as part of the sunset review process prescribed in Arizona Revised Statutes §41-2951 et seq.

As outlined in its response, the Arizona State Retirement System agrees with all of the findings and plans to implement or implement in a different manner all of the recommendations.

Sincerely,

Debbie Davenport
Auditor General

Attachment

cc: Arizona State Retirement System Board of Trustees

2910 NORTH 44th STREET • SUITE 410 • PHOENIX, ARIZONA 85018 • (602) 553-0333 • FAX (602) 553-0051

Arthur J. Gallagher & Co.

August 20, 2015

Ms. Debra Davenport
Auditor General
Arizona Office of the Auditor General
2910 North 44th Street Suite 410
Phoenix, Arizona 85018

Dear Ms. Davenport:

Gallagher Fiduciary Advisors, LLC (Gallagher) is pleased to submit our final report for the Independent Operational Review of the Arizona State Retirement System's (ASRS) Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers. This report was prescribed as part of the sunset review process in the Arizona Revised Statues §41-2951 et seq.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Mark Melnychuk | Area Vice President
Joseph Karpinski | Area Executive Vice President
Barbra Byington | Area Senior Vice President
Mangala Murphy | Area Assistant Vice President
Craig Morton | Area Assistant Vice President
Julianne Wenzlick | Client Relationship Consultant

Attachments

Table of Contents

Introduction

Project Scope

Arthur J. Gallagher & Co. (Gallagher) has been retained by the Office of the Auditor General (Office) for the State of Arizona to conduct performance audit work as part of the Office's performance audit and sunset review of the Arizona State Retirement System (the ASRS). The focus of Gallagher's work includes a review of the ASRS' investment strategies, alternative asset investment procedures, and fees paid to external investment managers. Gallagher has evaluated the ASRS in order to assess the efficiency and effectiveness of the ASRS operations and how well it meets its statutory responsibilities.

This report is presented in three sections: an executive summary; detailed discussion and analysis (Tasks I-III); and background information and methodology.

Section I, the Executive Summary, offers a high-level overview of the major themes in the report. The Executive Summary should be used in the context of the full report and not read in isolation or distributed separately from the full report.

Section II, Discussion and Analysis, comprises the body of the report and addresses each task area. The discussion and analysis sets forth detailed observed conditions and recommendations as well as relevant background information (including best practices where applicable). Within Section II, Gallagher has addressed the following three task areas, making recommendations for improvement and comparing current procedures to best practices, as appropriate.

> Task 1: Determine the ASRS plan's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance and make recommendations for improving the plan's investment performance, as appropriate.
> Task 2: Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments, identify the reasons for and impact of any inadequate controls and make recommendations for improving controls, as appropriate.
> Task 3: Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate.

Section III, Background and Methodology, provides information about Gallagher, the methodology used in performing this evaluation, the overall format of the report, and a summary of recommendations.

Section I: Executive Summary

Overall Conclusion

Gallagher has reviewed the ASRS as described in the scope of the current project. Overall, we found that the current practices and procedures are reasonably consistent with industry standards and generally in line with many best practices. Throughout this report, Gallagher makes recommendations to enhance and improve the performance of the investment assets (or the "Fund") as well as the ASRS' practices and procedures regarding alternative investment due diligence and fee negotiations.

Report Highlights and Key Findings

The following paragraphs summarize the highlights and key findings of our report.

Task 1: Determine the Fund's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance, and make recommendations for improving the Fund's investment performance, as appropriate.

- Overall Observations:
  - Gallagher analyzed the ASRS' investment performance over the past 10 fiscal years as compared to its investment objectives and peer funds. Additionally, we reviewed the processes in place to monitor its investment strategies and objectives and compared it to industry standards.
  - Over the 10 fiscal years analyzed, the Fund has surpassed its Policy Index[1] (7.5% vs. 7.2%), but lagged its 8% assumed actuarial interest rate[2]. However, over the rolling 20-year period ending June 30, 2014, the Fund outperformed the assumed actuarial interest rate (8.9% vs. 8.0%), which is the stated goal. In the body of the report, we review individual asset class performance and note specific areas of underperformance and possible reasons for that underperformance.
  - The Fund also ranks in the top quartile versus a universe of other public pension plans (16th percentile). It should be noted that total fund peer universe comparisons are not "apples to apples" since the asset allocation policy can vary dramatically from one plan to the next as plans have different investment objectives.
  - The ASRS has a well-diversified asset allocation and investment structure and investment staff follow a comprehensive performance monitoring policy.

- The ASRS Policy Observations:
  - The ASRS' main investment objectives are its 8% actuarial assumed interest rate and its strategic asset allocation policy ("SAAP") benchmark or Policy Index.

[1] *Policy Index*: Public market indices are weighted to create a Policy Index that matches the ASRS' asset allocation policy and the weights remain fixed until that asset allocation policy is changed, e.g., a fund with an asset allocation of 60% domestic equities and 40% domestic bonds might adopt a policy index of 60% Russell 3000 Index and 40% Barclays Aggregate Bond Index. Policy benchmarks serve as an objective measure of total fund performance.

[2] *Actuarial assumed interest rate:* As defined in the ASRS' Investment Policy Statement ("IPS"), the actuarial assumed interest rate "is essentially an estimate of the long-term average of the combination of expected inflation rates and expected real rates of return. The actuarial rate is also the discount rate used to calculate the present value of liabilities." Although the actuary certifies an investment return assumption annually, this is a long-term assumption and the objective outlined in the IPS is to meet or exceed this rate over rolling 20-year periods.

- The ASRS has a well-diversified asset allocation policy and uses a variety of investment strategies. The ASRS uses a mix of public and private market assets and does not appear overly concentrated in any one asset class or strategy. Diversification helps to reduce the risk – or volatility - of the total portfolio. Overall, the ASRS' investment strategies and asset allocation policy appear to be reasonable and in line with industry standards and peers.
- Similar to peer funds and in keeping with industry standards, the number and complexity of investment strategies utilized by the ASRS has increased over the last ten years to include emerging markets, private markets (e.g., private equity, private debt/credit), global tactical asset allocation ("GTAA"), and opportunistic investments (both debt and equity).

o <u>Recommendation:</u>
- The assumed actuarial interest rate has not changed over the last ten fiscal years; Gallagher recommends that the ASRS discuss the 8.0% actuarial rate annually with the actuary to ensure that it is appropriate given current asset allocation and projected rates of return. ASRS should maintain a long-term perspective to avoid unwarranted changes to the actuarial rate.

o <u>The ASRS Performance Observations:</u>
- The Fund met or exceeded the 8% actuarial assumed rate in seven out of the past ten fiscal years.
- On a rolling 20-year basis, the Fund met or exceeded the actuarial assumed rate in nine out of the past ten fiscal years.
- The Fund met or exceeded its Interim Policy Index[3] in eight out of the past ten fiscal years.
- The Fund's performance relative to the Interim Policy Index is attributable to decisions of under/overweighting certain asset classes, as well as through manager alpha (e.g., manager outperformance versus its benchmark).

Years ending 6/30:	Fiscal Year (FY) Return	Interim Policy Index	Did FY Meet Policy Index? (Y/N)	Actuarial Rate	Did FY Meet Actuarial Rate? (Y/N)	Rolling 20 Year Return	Did rolling 20 Meet Actuarial Rate? (Y/N)
2014	18.6%	17.8%	Y	8.0%	Y	8.9%	Y
2013	13.1%	12.6%	Y	8.0%	Y	8.0%	Y
2012	1.3%	1.3%	Y	8.0%	N	8.2%	Y
2011	24.6%	24.4%	Y	8.0%	Y	8.9%	Y
2010	14.8%	13.1%	Y	8.0%	Y	8.1%	Y
2009	(18.7%)	(19.1%)	Y	8.0%	N	7.8%	N
2008	(7.5%)	(5.7%)	N	8.0%	N	9.7%	Y
2007	17.7%	18.6%	N	8.0%	Y	10.3%	Y
2006	10.0%	8.8%	Y	8.0%	Y	10.0%	Y
2005	8.5%	7.8%	Y	8.0%	Y	11.0%	Y

[3] The Interim Policy Index adjusts the weights in the SAAP to private equity and real estate pro rata as these asset classes are funded over time. This is an industry standard practice.

- On a cumulative ten year basis, the Fund exceeded its Interim Policy Index (7.5% versus 7.2%), but lagged the 8% assumed actuarial rate.
- The Fund exceeded its Interim Policy Index over one, three, five, seven, ten, and twenty year periods ended June 30, 2014.

	One Year	Three Years	Five Years	Seven Years	Ten Years	Twenty Years
ASRS	18.55%	10.76%	14.22%	5.59%	7.46%	8.9%
Policy Index	17.83%	10.36%	13.59%	5.38%	7.21%	8.1%
Actuarial Rate	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%

- Recommendation:
  - The ASRS should continue to monitor performance of the Fund, including the underlying strategies and adjust its asset allocation by restructuring asset classes as appropriate and reasonable.

- The ASRS Underperformance Observations:
  - The large negative returns achieved in 2008-2009 had a significant impact on cumulative returns over seven and ten years, but recent strong bull markets have helped to lift overall returns.
  - Contribution rates have increased from 10.40% in Fiscal Year 2005 to 22.60% in Fiscal Year 2014 (includes employee and employer); however, this is only partly attributable to investment performance or underperformance as many other factors go into actuarial calculations.
  - The ASRS has maintained the necessary liquidity to pay benefits.
  - The ASRS has restructured the asset classes where the most significant underperformance was realized.

Task 2: Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments; identify the reasons for and impact of any inadequate controls and make recommendations for improving controls, as appropriate.

- Overall Observations:
  - Gallagher reviewed the processes and procedures that the ASRS has in place to evaluate and select alternative investment managers, generally defined as investments other than equities, fixed income, or cash. The ASRS procedures, outlined in the Strategic Investment Policy (SIP006), represent a thorough process that is consistent with many of the industry best practices, such as thorough due diligence and documentation, as well as the involvement of specialized and experienced alternative investment professionals (internal and external). To complete our review, Gallagher sampled 52 of the 146 individual partnerships that were a part of the ASRS' portfolio as of June 30, 2014. Sampling included requests for due diligence materials, such as internal reports and meeting minutes, and documents pertaining to each partnership, which were then compared against SIP006.

- Recommendations:
  - Review and update (as needed) all procedures and SIP006 annually, as a preventative measure that will force the ASRS to consider the official procedure and make it less likely that changes made to office practices are not captured in the Strategic Investment Policy.

  - Gallagher recommends including sourcing and screening information, such as emails or database screens, with the final due diligence materials for each partnership.
    - Potential Impact: The ASRS team, along with its external consultants (Meketa, Credit Suisse, Ennis Knupp & Associates, NEPC, Franklin Park, Townsend Group, Robert Charles Lesser & Co.), appear to have reasonable sourcing and screening procedures in place based on the information reviewed in this analysis. This has been incorporated into practice, and will allow ASRS to better evaluate its procedures for sourcing and screening investments. A clear record of where an investment idea originated and why the team chose to pursue the idea for additional due diligence may help focus future efforts, allowing the ASRS to concentrate on the most advantageous sources and the most clear characteristics that tend to lead to successful investments.

  - Gallagher recommends requiring each investment advisor to incorporate the due diligence checklist (as defined in Appendix 1 of SIP006) into its final memorandum.
    - Potential Impact: This practice provides a written record to demonstrate to both the Private Markets Committee and other interested parties that the due diligence on each partnership was conducted in a manner consistent with the written procedures and the manager has met expectations.

  - Gallagher recommends periodically reviewing each service provider (investment advisors and legal representation) to help ensure that the firms continue to serve in the best interest of the plan. We recommend that such a review be conducted at least every three years.
    - Potential Impact: Regular reviews of outside service providers can give the ASRS confidence that it continues to receive the highest quality advice and guidance at a competitive cost.

Task 3: Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate.

- Overall Observations:
  - While there are opportunities for improvement outlined in the recommendations of this report, Gallagher does not consider the current processes or other controls employed by the ASRS to be inadequate.
  - In order to evaluate the impact of any inadequate processes and controls, Gallagher has compared the ASRS' current investment manager fees with a third-party database (eVestment Alliance) that includes a peer universe fee calculation based on investment style and size.
  - While the majority of investments in traditional asset classes have secured favorable fee arrangements, several are above the median level for the asset class given the size of the mandate. This is further identified in the report. The investments with above median fee arrangements, do not necessarily indicate a failure of procedure, as long as fees were negotiated to the best of the team's ability and the assessment was made that the manager's potential to add value relative to its

benchmark was likely to justify the above-median expense. All managers with above-median fees, and at least three years of performance history, were outperforming their benchmark net of fees as of June 30, 2014.

- Recommendations:
  - While SIP006 indicates that terms (including fees/fee structure) should be part of screening and due diligence considerations, it does not explicitly outline a procedure for fee negotiation. The ASRS has a well-considered approach to negotiating investment fees, as described in response to Gallagher's request for information, which should be documented in an appendix to SIP006 that explicitly outlines the objectives and preferences for fee negotiations.

  - The documented procedures should include a standard method for documentation of fee negotiation. The documentation should include, at a minimum, the proposed fees from the manager before negotiation, the ASRS proposed fee structure, the final agreement, and be signed by the person(s) responsible for the negotiation. The documentation of fee negotiations should include acknowledgement of where the manager fee ranks compared to an appropriate peer group. Above-median fees should be justified by the perceived team's ability of the manager to add value over the appropriate benchmark.

  - The ASRS' procedures are well aligned with best practices with the exception of having a dedicated fee negotiation team that must report on all proposed investments before a deal is executed. Gallagher recommends creating such a group and implementing a formal report on fee negotiations to be completed prior to the execution of each investment agreement. Once established, this group can also be tasked with documenting procedures that include the best practices outlined by the Government Finance Officers Association (GFOA). The group should draft a formal report on fee negotiations to be completed prior to the execution of each investment agreement.

Section II: Discussion and Analysis

Task 1: Performance

Task 1: Determine the Fund's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance, and make recommendations for improving the Fund's investment performance, as appropriate.

a. Identify the ASRS' investment strategies and objectives, and expected rates of return for fiscal years 2005 through 2014;

- **Overall Observations**
  - The ASRS' main investment objectives are its 8% actuarial assumed interest rate[4] and its strategic asset allocation policy ("SAAP") benchmark or Policy Index[5]. Public market indices are weighted to create a Policy Index that matches the ASRS' asset allocation policy and the weights remain fixed until that asset allocation policy is changed.
  - The ASRS has a well-diversified asset allocation policy and uses a variety of investment strategies. The ASRS uses a mix of public and private market assets and does not appear overly concentrated in any one asset class or strategy. Diversification helps to reduce the risk – or volatility - of the total portfolio.

- **Observations**

  Overall Fund Investment Objectives and Expected Rates of Return 2005-2014
  - The ASRS has a total fund level Investment Policy Statement ("IPS"). The first IPS was approved by the Board on February 18, 2011, and then later revised on November 16, 2011 and August 23, 2013.
  - Prior to 2011, the ASRS did not have an IPS in place.
  - The IPS defines the Performance Objectives for the Fund. The four Objectives shown below, for 2014, have been documented in the IPS since February 18, 2011 and are also spelled out in NEPC's (ASRS' general investment consultant) annual independent report for Fiscal Year ended June 20, 2014:

[4] *Actuarial assumed interest rate:* As defined in the ASRS' Investment Policy Statement ("IPS"), the actuarial assumed interest rate "is essentially an estimate of the long-term average of the combination of expected inflation rates and expected real rates of return. The actuarial rate is also the discount rate used to calculate the present value of liabilities." Although the actuary certifies an investment return assumption annually, this is a long-term assumption and the objective outlined in the IPS is to meet or exceed this rate over rolling 20-year periods.

[5] *Policy Index*: Public market indices are weighted to create a Policy Index that matches the ASRS' asset allocation policy and the weights remain fixed until that asset allocation policy is changed, e.g., a fund with an asset allocation of 60% domestic equities and 40% domestic bonds might adopt a policy index of 60% Russell 3000 Index and 40% Barclays Aggregate Bond Index. Policy benchmarks serve as an objective measure of total fund performance.

Objective	Description
Objective #1:	Achieve a twenty-year rolling annual total fund net rate of return equal to or greater than the actuarial assumed interest rate (Actuarial rate of 8%)
Objective #2:	Achieve one-year 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 (Policy Index)
	<u>SAAP: 7/1/2012 to Present</u> 23% Standard & Poor's (S&P) 500 5% S&P MidCap 400 5% S&P 600 14% Morgan Stanley Capital International (MSCI) Europe, Australasia, and Far East (EAFE) (Net) 3% MSCI EAFE Small Cap (Net) 6% MSCI Emerging Markets (Net) 7% Russell 2000 1 Quarter Lagged 13% Barclays Aggregate Index 5% Barclays U.S. High Yield Index 4% JP Morgan Government Bond Index –Emerging Markets (GBI-EM) Global Diversified 3% S&P/LSTA Levered Loan Index + 250 basis points (lagged one quarter) 8% National Council of Real Estate Fiduciaries (NCREIF) Open End Diversified Core (ODCE) 1 quarter Lagged (net) 4% Dow Jones (DJ) UBS Commodities Index
Objective #3:	Achieve one-year and three-year rolling annual total fund net rates of return for the ASRS strategic asset classes that are equal to or greater than their respective strategic asset class benchmarks (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. (liquidity)

- Between February 18, 2011 and August 23, 2013 there were two objectives in addition to the ones stated above:

Objective	Description
Objective #5:	Achieve a total fund rate of return equal to or greater than the amount projected in the most recent asset allocation study.
Objective #6:	Achieve portfolio-level net rates of return equal to or greater than their respective portfolio benchmarks.

- The SAAP has evolved over the years as changes have been made to the asset allocation policy:

Historic Strategic Asset Allocation Policy (SAAP)				
11/1/09-6/30/12	1/1/07 – 10/31/09	10/01/05 – 12/31/06	10/1/03 – 10/1/05	Index
28%	31%	53%	53%	S&P 500 Index
6%	7%			S&P MidCap 400
6%	7%			S&P 600

11/1/09-6/30/12	1/1/07 – 10/31/09	10/01/05 – 12/31/06	10/1/03 – 10/1/05	Index
	18%	15%		MSCI All Country World Index ex-US
13%			15%	MSCI EAFE (Gross through 12/31/13 then Net, blended not restated)
2%				MSCI EAFE Small Cap (Gross through 12/31/13 then Net, blended not restated)
3%				MSCI Emerging Markets (Gross through 12/31/13 then Net, blended not restated)
7%	5%			Russell 2000 1 quarter Lagged
24%	26%	26%	26%	Barclays Aggregate Index
2%				Barclays High Yield Index
6%	6%	6%	6%	NCREIF ODCE 1 quarter Lagged (net)
3%				Dow Jones UBS Commodities Index

- The table below illustrates the objectives that were in place over the past ten fiscal years.

Investment Policy Statement Objectives				
Fiscal Year 6/30	Objective #1: 20-year rolling 8% Actuarial Rate	Objective #2: Total Fund 1 & 3 years v. SAAP Benchmark	Objective #3: Asset classes 1 & 3 years v. benchmarks	Objective #4: Liquidity
2014	X	X	X	X
2013	X	New SAAP 7/1/2012	X	X

Fiscal Year 6/30	Objective #1: 8% Actuarial Rate	Objective #2: Total Fund v. SAAP Benchmark	Objective #3: Achieve return projected in asset allocation study (Eliminated 8/23/2013)	Objective #4: Asset classes v. benchmarks	Objective #5: Portfolio respective benchmarks (Eliminated 8/23/2013)	Objective #6: Liquidity
2012	X	X	X	X	X	X
2011	X	X	X	X	X	X
2010	X	New SAAP 11/1/2009	X	X	X	X
2009	X	X	X	X	X	X
2008	X	X	X	X	X	X

Fiscal Year 6/30	Objective #1: 8% Actuarial Rate	Objective #2: Total Fund v. SAAP Benchmark	Objective #3: Achieve return projected in asset allocation study (Eliminated 8/23/2013)	Objective #4: Asset classes v. benchmarks	Objective #5: Portfolio respective benchmarks (Eliminated 8/23/2013)	Objective #6: Liquidity
2007	X	New SAAP 1/1/2007	X	X	X	X
2006	X	X	X	X	X	X

Investment Policy Statement Objectives- Continued					
Fiscal Year 6/30	Objective #1: Safety as Principal Consideration	Objective #2: 8% Actuarial Rate	Objective #3: Minimum Funded Status of 100%	Objective #4: Support Excess Earnings PBI	Objective #5: Maintain Relatively Stable Contribution Rate
2005	X	X	X	X	X

Investment Strategies Utilized 2005-2014[6]

- The number and complexity of investment strategies utilized by the ASRS has increased over the last ten years.
- Summary of observations for the fiscal year 2014 Investment Strategies and history for each asset class are:

Investment Strategy	Topic	Observations
Domestic Equity	Benchmark	**Date** / **Benchmark** through 12/31/06: 100% S&P 500 01/01/07-12/31/10: 74% S&P 500, 13% S&P 400, 13% S&P 600 01/01/11-Present: 70% S&P 500, 15% S&P 400, and 15% S&P 600
Domestic Equity	Passive Management	▪ The majority of the domestic equity portfolio is passively managed o Approximately 83% of the large cap portfolio o Approximately 66% of the mid cap portfolio o Approximately 34% of the small cap portfolio

[6] The ASRS Investment Performance Report for the period ending June 30, 2014 dated August 18, 2014, prepared by NEPC.

<table>
<tr><th>Investment Strategy</th><th>Topic</th><th>Observations</th></tr>
<tr><td rowspan="2">International Equity</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 12/31/05</td><td>100% MSCI EAFE</td></tr><tr><td>01/01/06-12/31/10</td><td>100% MSCI ACWI ex-US</td></tr><tr><td>01/01/11-06/30/12</td><td>72% MSCI EAFE, 11% MSCI EAFE Small Cap and 17% MSCI Emerging Markets</td></tr><tr><td>07/01/12-Present</td><td>61% MSCI EAFE, 13% MSCI EAFE Small Cap and 26% MSCI Emerging Markets</td></tr></table></td></tr>
<tr><td>Passive Management</td><td>▪ Over half of the international developed markets portfolio is passively managed (54%)
o Almost 60% of the large cap portfolio is passively managed
o Approximately 37% of the small cap portfolio is passively managed
▪ Approximately 34% of the emerging markets equity portfolio is passively managed</td></tr>
<tr><td rowspan="2">Public Markets Fixed Income</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 12/31/10</td><td>100% BC US Aggregate Index</td></tr><tr><td>01/01/11-12/31/12</td><td>93% BC US Aggregate Index, 7% BC US HY Bond Index</td></tr><tr><td>01/01/13-Present</td><td>59% BC US Aggregate Index, 23% BC US HY Bond Index, 18% JP Morgan GBI-EM Global Diversified</td></tr></table></td></tr>
<tr><td>Passive Management</td><td>▪ The core portion of the public markets fixed income portfolio is managed primarily through enhanced passive strategies</td></tr>
<tr><td>Private Debt</td><td>Benchmark</td><td>▪ S&P/LSTA Levered Loan Index + 250 bps (funded in 2012)</td></tr>
<tr><td>Opportunistic Debt</td><td>Benchmark</td><td>▪ Net absolute return expectations range from 10-14% annually (inception date 1/2008). These investments are tactical in nature.</td></tr>
<tr><td>Inflation-Linked</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 7/31/10</td><td>100% BC US TIPS</td></tr><tr><td>08/01/10-08/31/10</td><td>50% BC US TIPS, 50% DJ UBS Commodities Index</td></tr><tr><td>09/01/10-05/31/11</td><td>30% BC US TIPS, 70% DJ UBS Commodities Index</td></tr><tr><td>06/01/11-Present</td><td>100% DJ UBS Commodities Index</td></tr></table></td></tr>
</table>

<table>
<tr><th>Investment Strategy</th><th>Topic</th><th>Observations</th></tr>
<tr><td></td><td>Notes</td><td>The ASRS started out with a dedicated TIPS (Treasury Inflation-Protected Securities) allocation for its inflation-linked portfolio, but over the years has moved to a commodities strategy.
The ASRS previously used two active managers in this space, funded September 2010, but is now invested with one manager.
Real estate, farmland and timber are considered extensions of the Inflation-linked program and addressed in the same annual asset class review.
The ASRS has also made a commitment to an infrastructure fund, but no capital has been called to date.</td></tr>
<tr><td rowspan="2">Real Estate</td><td>Benchmark</td><td>NCREIF– ODCE Index (Inception date 10/2005)</td></tr>
<tr><td>Notes</td><td>The current portfolio is below the target of 8%, but the ASRS has developed a pacing plan to meet that target over time.
The real estate portfolio is broken out into Core (Private and Public), Non-Core (Enhanced Return, High Return and Separately Managed), and the Arizona Owned Assets.</td></tr>
<tr><td rowspan="2">Farmland and Timber</td><td>Benchmark</td><td>CPI ex-Food and Energy + 350 bps (inception date 9/2013)</td></tr>
<tr><td>Notes</td><td>The ASRS has made one Farmland investment to date in 2013.
No investments in Timber have been made to date.</td></tr>
<tr><td rowspan="2">Global Tactical Asset Allocation ("GTAA")</td><td>Benchmark</td><td><table><tr><th>Date</th><th>Benchmark</th></tr><tr><td>through 09/30/11</td><td>56% S&P 500, 16% MSCI EAFE, 28% BC Aggregate</td></tr><tr><td>10/01/11-06/30/12</td><td>50% S&P 500, 19% MSCI EAFE, 28% BC Aggregate and 3% DJ UBS Commodities Index</td></tr><tr><td>07/01/12-Present</td><td>43% S&P 500, 25% MSCI EAFE, 28% BC Aggregate and 4% DJ UBS Commodities Index</td></tr></table></td></tr>
<tr><td>Notes</td><td>The ASRS has had a tactical asset allocation program in place since 1984 and moved to GTAA in 2003.
ASRS currently uses two GTAA managers and prefers this approach over hedge fund structures.</td></tr>
<tr><td rowspan="2">Private Equity</td><td>Benchmark</td><td>Russell 2000 Index</td></tr>
<tr><td>Notes</td><td>The ASRS began investing in Private Equity in 2007.
The current portfolio is below the target of 7%, but ASRS has developed a pacing plan to meet that target over time.
The portfolio is invested in buyouts, technology, distressed, energy, secondaries, mezzanine, and venture capital funds.</td></tr>
<tr><td>Opportunistic Equity</td><td>Benchmark</td><td>Net absolute return expectations range from 10-14% annually (funded in 2011)</td></tr>
</table>

Investment Strategy	Topic	Observations
	Notes	▪ Private market opportunistic equity investments with a target of 0-3%, each investment would have its own absolute return expectation. These investments are tactical in nature.

- **Recommendations-** Not Applicable

b. Compare the ASRS' investment strategies and objectives to best practices, including but not limited to industry standards;

- **Background Summary of Best Practices**

Investment Strategies and Objectives Best Practices/Industry Standards

Investment Policy Statement

- It is best practice/industry standard for a retirement system to establish and document appropriate investment strategies and objectives for the pension fund in the Investment Policy Statement ("IPS").
- An IPS is an industry standard foundational document for a pension fund's investment program.
  1. Purpose of an IPS: One purpose of an IPS is to articulate the consensus view of the Board of Trustees regarding the overall investment program and to document policies and procedures. The document can contain information including:
     a) The fund's investment objectives;
     b) The fund's risk tolerance, including liquidity needs;
     c) The asset allocation policy;
     d) Broad system and asset class level investment guidelines that define the allowable asset classes/investment strategies;
     e) Standards and measures of investment performance (i.e., the objectives for each asset class and the overall system).
  2. Definition of Performance Standards: Standards and measures of investment performance include performance benchmarks, which are objective standards used to assist in evaluating pension fund investment performance. A good benchmark should have the following characteristics:
     a) act as a representative opportunity set;
     b) be transparent;
     c) be objective;
     d) be exhaustive;
     e) be composed of investable securities or assets.

Benchmarks:

- Institutional investors typically use at least two types of performance benchmarks: "policy" benchmarks and "strategic" benchmarks.
  1. Policy Benchmarks: Policy benchmarks should represent the broad asset class and are used as a reference point against which the investor can compare its total asset class returns. Published market indices are weighted to create a Policy Index that matches the Fund's

long-term target asset allocation and the weights remain fixed over time. The Policy Index serves as an objective measure of total fund performance.

a) Example: A fund with an asset allocation of 60% domestic stocks and 40% domestic bonds may adopt a policy index of 60% Russell 3000 Index and 40% Barclays Aggregate Bond Index.

b) Policy benchmarks also help define the types of investment managers that should be used to achieve the investment objectives for the asset class and the nature of the manager's investment mandate.

2. Strategic Benchmarks: Strategic benchmarks are generally more narrowly defined and typically focus on a particular investment "style" within the asset class. They more clearly describe the expected range of investment opportunities for a given manager and more objectively measure the manager's value added, or the manager's return independent of its investment style.

- Providing appropriate benchmarks for investors is essential for them to make informed investment decisions and to evaluate performance. The risk of using an inappropriate benchmark is that the investor may not receive an accurate and appropriate measurement with which to compare its investment performance and/or volatility.

- **Overall Observations**
  - Overall, the ASRS' investment strategies and asset allocation policy appear to be reasonable and in line with industry standards and peers.
  - Similar to peer funds and in keeping with industry standards, the number and complexity of investment strategies utilized by the ASRS has increased over the last ten years to include emerging markets, private markets (e.g., private equity, private debt/credit), GTAA, and opportunistic investments (both debt and equity).

- **Observations**
  - Investment Policy Statement: As stated above, the ASRS has a total fund IPS in place since February 2011, in which the Performance Objectives are defined. It is unusual for a Fund of this caliber not to have an IPS in place; however, as noted, this situation has been rectified since 2011.
  - Actuarial Rate of Return: It is best practice/industry standard for one of the objectives outlined within the IPS to be the assumed actuarial rate. The ASRS has an assumed actuarial rate within their IPS.
    - The 2014 NCPERS Public Retirement Systems Study reports an average investment assumption of 7.7%, up 0.1% from 2013.
    - The ASRS' assumed actuarial rate is 8.00%. This assumption is slightly above the survey average.
    - The ASRS' actuarial assumed rate of return has remained unchanged over the ten years analyzed.
    - Milliman prepares an annual corporate Pension Funding Study of 100 companies[7]. The average expected rate of return for 2013 was 7.4%.
    - Many pension funds – both public and private – have lowered their actuarial assumed rate of return in recent years.
      - Per the Milliman study, the average expected rate of return has dropped from 9.4% in 2000 to 8.0% in 2010 to 7.8% for 2011 to 7.5% for 2012.

[7] Milliman 2014 Pension Funding Study; John W. Ehrhardt, Zorast Wadia, Alan Perry; April 2014.

- Many corporate plans have moved towards LDI (Liability Driven Investment) strategies and have lowered their equity allocations (and increased their fixed income allocations). With the change towards LDI strategies, Gallagher expects the assumed rates of return to continue to decrease.
- Additionally, a lower actuarial rate would have a negative impact on the funding ratio.

- Previous IPS Objective: As mentioned above, the ASRS eliminated two total Fund objectives from its IPS that were in place from February 18, 2011 to August 23, 2012. Gallagher would agree that these two objectives are less appropriate and are not typically found in other industry Investment Policy Statements.

Objective	Description
Objective #5:	Achieve a total fund rate of return equal to or greater than the amount projected in the most recent asset allocation study.
Objective #6:	Achieve portfolio-level net rates of return equal to or greater than their respective portfolio benchmarks.

- Policy Benchmark: In accordance with best practice/industry standards, the ASRS has a policy index (the SAAP) as a benchmark for the total fund. The SAAP appears to be in line with the current asset allocation policy.
- Strategic Benchmark: In accordance with best practice/industry standards, the ASRS has a strategic benchmark for each asset class.
  - Gallagher has reviewed the benchmarks for each asset class listed above in Section 1.a. and found them to be reasonable benchmarks and in line with industry standards.
  - For certain types of investments, e.g., private equity, timber/farmland, it is not possible to use an "investable" benchmark (e.g., the S&P 500 where one could buy all 500 stocks) as an objective and it is an industry standard to use a target rate of return instead (e.g., LIBOR + xx% or CPI + xx %)
- Asset Classes: As stated above, the number and complexity of investment strategies (i.e., asset classes) has increased over the period under review.
  - The ASRS has kept pace with peers by diversifying its asset allocation and expanding the number of investment strategies. We have found this to be the case for most institutional pension funds:
    - Investments beyond domestic equity, developed markets international equity and core fixed income have become commonplace or industry standard.
    - These include emerging markets equity, private markets investments (equity and debt), private real estate, increased inflation protection/real asset strategies, etc.
    - Greenwich Associates 2013 survey[8] (noted below) remarks, "Public funds are responding to funding shortfalls by significantly increasing allocations to alternative investments, with notable increases this year to private equity.

[8] Greenwich Associates; 2013 United States Institutional Investors; Institutional Asset Allocation. December 2013.

Investment Strategy	Observations
Domestic Equity	o For a plan the size of the ASRS, passively managing a large percentage of the portfolio is not uncommon since it is difficult to achieve manager alpha in this asset class, especially in large cap equity, and passive management is much less expensive. o Per Greenwich survey, U.S. public funds manage an average of 42% of U.S. equity passively.
International Equity	o For a plan the size of the ASRS, passively managing a large percentage of the portfolio is not uncommon, but it is less widely used than passive management of domestic equity, especially for emerging markets. o As noted below, the ASRS has had some difficulties in selecting active international equity managers, so managing a significant portion passively is a sound move. o Per Greenwich survey, U.S. public funds manage an average of 19% of international equity passively.
Fixed Income	o Passive (or enhanced passive) management of fixed income is generally less common than for equities, but can still be an efficient way to manage a large core portfolio. Since many fixed income managers have latitude to go outside the core Barclays Aggregate Index benchmark, active management can add more value. o We understand that the ASRS is currently underweighting core fixed income due to its current low yield characteristics. o The addition of high yield and global bond strategies was a reasonable move by ASRS and in line with industry trends. o The ASRS has Private Debt/Opportunistic Debt investments outside the public markets fixed income: • This has been a newer investment area as a dedicated strategy in line with industry trends as investors seek higher yielding fixed income investments.
Inflation-Linked	o While investment in these types of assets is not universal, it is widely accepted in the industry. o TIPS are widely used for inflation protection, although they are no longer part of ASRS' strategy.
Real Estate	o Private real estate investment is very common by large institutional investors. o The real estate portfolio is broken out into Core (Private and Public), Non-Core (Enhanced Return, High Return and Separately Managed). o This type of asset mix is common with a private real estate portfolio. o The ASRS also has a portfolio of Arizona Owned Assets. o It is not uncommon for very large pension funds to own some real estate directly.
Farmland and Timber	o Investments in Farmland/Timber are less common, but not unusual for very large institutional investors as they attempt to diversify their portfolio.
GTAA	o The ASRS does not have exposure to hedge funds, either directly or through fund-of-funds. Exposure to hedge funds is fairly common for large institutional investors, but the ASRS stated they prefer the GTAA approach over hedge fund structures.

Investment Strategy	Observations
Private Equity	o Investments in private equity have historically been considered "alternatives", but it is very standard for large institutional investors to invest in this asset class. o The ASRS has less emphasis in some common areas, such as venture capital, but the portfolio appears diversified by strategy and vintage year.
Opportunistic Equity	o This has been a newer investment area in line with industry trends as investors seek higher yielding private markets investments outside the traditional realm of "private equity."

- The ASRS has a well-diversified asset allocation and uses a variety of investment strategies. In the table below, we compare the ASRS' Target and Interim SAAP asset allocation to survey data: Greenwich Associates and NCPERS (National Conference on Public Employee Retirement Systems)[9].
  - US Equity Allocation
    - ASRS' US Equity allocation is in line with NCPERS and above the Greenwich average.
    - Per Greenwich survey, the average amount allocated to US Equity by public funds has decreased from 45% in 2004 to 25% in 2013.
  - International Equity Allocation
    - ASRS' International Equity allocation is close to the Greenwich average, but higher than the NCPERS survey.
    - Per Greenwich survey, in contrast to domestic equity, the amount allocated to International Equity by public funds has increased since 2004 from an average of 16% to 22%.
  - Private Equity
    - ASRS' Private Equity target allocation is slightly below Greenwich and NCPERS.
    - Per Greenwich survey, the amount allocated to private equity by public funds has increased from 4% in 2004 to 10% in 2013.
  - US Fixed Income
    - ASRS' US Fixed Income target allocation is slightly below NCPERS and below Greenwich; however, when the Emerging Markets Debt and Private Debt are added the target for total fixed income is 25%.
    - Per Greenwich survey, the average amount allocated to fixed income has decreased slightly from 28% in 2004 to 25% in 2013.
  - Real Estate Equity
    - ASRS' Real Estate Equity target allocation is the same as peers represented in the surveys.
  - Inflation Protected Strategies
    - The ASRS has a 4% target allocation to Inflation protected strategies, which is not represented separately in the Greenwich survey, but is larger than the 1% NCPERS survey target.
  - Hedge Funds/Fund of Funds
    - The ASRS does not have a target allocation to hedge funds or fund-of-funds, which make up 3% in the Greenwich survey.

[9] 2014 NCPERS Public Retirement Systems Study. November 2014.

- It is not possible to do a fully detailed comparison given the rather large allocation to "other" in the two surveys.

- Overall, the ASRS' investment strategies and overall asset allocation appear to be reasonable and in line with industry standards and peers.

Asset Class	ASRS Target Allocation	ASRS Interim SAAP	2013 Greenwich Public Funds Survey	2014 NCPERS Survey Target Allocation
US Equity	**33%**	**35%**	**25%**	**32%**
- large cap	23%	25%	-	-
- mid cap	5%	5%	-	-
- small cap	5%	5%	-	-
International Equity	**23%**	**23%**	**22%**	**19%**
- developed	14%	14%	-	-
- developed small cap	3%	3%	-	-
- emerging	6%	6%	-	-
Private Equity	**7%**	**6%**	**10%**	**9%****
US Fixed Income	**18%**	**19%**	**25%**	**19%**
- core bonds	13%	14%	-	-
- high yield bonds	5%	5%	-	2%
Emerging Markets Debt	**4%**	**4%**	**NA**	**3%**
Private debt	**3%**	**3%**	**NA**	**NA**
Real estate	**8%**	**6%**	**8%**	**8%**
Inflation Protection/ Commodities	**4%**	**4%**	**NA**	**1%**
Hedge Funds	**-**	**-**	**3%**	**NA**
Other	**-**	**-**	**7%***	**9%*****

*Other assets includes multi-asset, commodities, and money market.
**Includes private equity, hedge funds, and other alternatives.
***Includes 1% cash and variety of other responses.

- **Recommendations**

Task 1.b: Compare the ASRS' investment strategies and objectives to best practice, including but not limited to industry standards

Recommendation:

1. The ASRS should continue to maintain and update an investment policy statement (IPS) for the Fund.

2. The assumed actuarial interest rate has not changed over the last ten fiscal years; Gallagher recommends that the ASRS discuss the 8.0% actuarial rate annually with the actuary to ensure that it is appropriate given current asset allocation and projected rates of return. ASRS should maintain a long-term perspective to avoid unwarranted changes to the actuarial rate.

c. Determine the processes the ASRS uses to monitor how well its investment strategies and objectives are performing and guide it toward meeting its expected rates of return;

- Overall, the ASRS uses a comprehensive set of processes and reports to monitor the performance of the Fund and determine whether it is performing in accordance with its investment objectives.

- **Observations**

  - ASRS Strategic Investment Policy ("SIP006") - Investment Manager, Partner, and Co-Investment Selection and Oversight documents the selection and oversight process.
    1. SIP006 states, "Public and private investment managers and co-investments are monitored by various functions performed by the CIO, Investment Management Division (IMD) staff, ASRS custody bank, general consultant, staff extension consultants, and other service providers; and reported to the Asset Class Committees, Investment Committee (IC), and Board."
    2. IMD staff does not use a formal "watch-list." IMD staff indicated that in lieu of a watch-list, they prefer a more "dynamic approach" where managers are under "continuous review."
  - Quarterly Portfolio and Investment Manager Reviews: The ASRS reports that IMD staff conduct quarterly due diligence reviews with all investment managers.
    1. The objectives of the Reviews are "to review performance, attribution, and consistency of process and decision-making, and other matters related to firm personnel, Assets Under Management (AUM), and operations."
    2. Quarterly reviews are held either via conference call or in person.
    3. Attendees at reviews include IMD asset class staff and Senior Portfolio Managers, Analysts and Account Managers from the investment manager.
  - Open Communication: IMD staff have open communication with all investment managers that is not limited to quarterly reviews if necessary, e.g., concerns about performance or organizational changes at the firm.
    1. IMD staff can request input from Generalist or Specialty Consultants, as needed.
    2. Any noteworthy issues are reported to the CIO.
  - Internal Audit: The internal audit department reviews and reports any issues from the Monthly Compliance Report from State Street. The Monthly Compliance Report is a rules based report created by State Street based on individual portfolio guidelines.
  - The ASRS utilizes the following reports in its performance reporting/monitoring process:

Report Frequency	Report Information
Daily	▪ Preliminary unofficial daily performance available for total fund, asset classes and portfolios from custody bank. ▪ All portfolios are listed, but daily data is only available for assets that can be priced daily, e.g., this does not apply to asset classes such as private equity or real estate.

<table>
<tr><th>Report Frequency</th><th>Report Information</th></tr>
<tr><td>Weekly</td><td>Weekly "Market Info Report" prepared by IMD staff with performance calculated by State Street and benchmark/index performance from Bloomberg.
Report includes total fund and relevant index performance for fiscal and calendar YTD.
Presented to CIO and Director weekly and monthly to the Investment Committee (IC) at their meetings.</td></tr>
<tr><td>Monthly</td><td>Final unofficial public markets portfolio performance as calculated by State Street.
Report contains manager level performance versus benchmarks for public market asset classes.
This report goes to the CIO, Director, IC, and Board during regularly scheduled IC and Board meetings as part of the CIO's report.</td></tr>
<tr><td>Quarterly</td><td>ASRS' general consultant (NEPC) prepares two reports quarterly: The Investment Performance Report (IPR) and the Independent ASRS Investment Program Oversight Report ("Oversight Report").
The Oversight Report contains:
Quarterly investment performance report covering both public and private investment managers
Compares the ASRS' total fund and asset class performance to its policy objectives
Contains total plan attribution analysis, i.e., the contribution to return of the asset allocation effect, manager selection effect, interaction effect, and residual effect
Includes total fund peer universe comparisons for cumulative performance and risk statistics (1, 3, 5 and 10 years)
Compares asset allocation to policy for compliance purposes
Performance summary for public and private asset class composites - cumulative returns are presented
Additional risk statistics/peer comparisons are presented for public market asset classes
The IPR contains:
Total Fund Performance Summary
Internally Managed Portfolio Performance Summary (US Equity passive investments)
Asset class performance summary and analysis
Investment manager performance analysis, including risk statistics and peer universe rankings for public market asset classes</td></tr>
<tr><td>Annually</td><td>Annual asset class reviews for Equities, Fixed Income, Inflation Linked, Private Equity, and Real Estate presented to the IC.
IMD Staff prepares/presents along with General and Specialty Consultants.
Final performance data from General Consultant or back office private investment service provider.
Reports provide in-depth reviews of each asset class and underlying investment managers.
The annual staff reports are less detailed at the individual manager/investment level for the private market asset classes (Private Equity and Real Estate), but these asset classes are also reported on by specialty consultants.</td></tr>
</table>

- Private/alternative asset monitoring is covered separately in this report.

- **Recommendation:**

Task 1.c: Determine the processes the ASRS uses to monitor how well its investment strategies and objectives are performing and guide it toward meeting its expected rates of return
Recommendation: Gallagher recommends that the ASRS ask NEPC to include consecutive calendar year performance for the most recent ten years in the quarterly IPR.

d. Compare the processes the ASRS uses to monitor how well its investment strategies and objectives are working to best practices, including but not limited to industry standards;

- **Background Summary of Best Practices/Industry Standards**

  - Key components to monitoring: Thorough and comprehensive monitoring of investment strategies and objectives is considered essential. The key components to monitor are:
    1. Investment performance
    2. Investment risks
    3. Compliance with policy/guidelines
    4. Periodic, in-depth review of managers
  - Those charged with responsibility for oversight of sophisticated investment programs require clear, concise, consistent reports to monitor the performance and risk of the programs.
  - Investment Policy Statement:
    - An overall investment policy statement and guidelines are essential for monitoring, measuring and analyzing portfolio performance, risk, and structure relative to the objectives.
    - The fund IPS will typically discuss who has responsibility for monitoring investment manager performance and the minimum requirements for manager monitoring, e.g., whether the Board will meet with managers on a regular basis, how often performance will be reviewed, etc. The IPS may also outline the use of a "watch-list" to aid in manager monitoring.
  - Reporting:
    - Most major funds rely on a combination of staff and consultants to perform the monitoring function and to provide periodic reports to the Board.
    - Monitoring and reports should be executed on a regular periodic schedule (e.g., quarterly).
  - Report Content: Investment performance reports typically include data on individual managers, asset class composites, and the total fund in two main areas:
    - Investment performance:: Track holdings; account for cash flows and transactions; calculate periodic investment rates of return; compare returns to appropriate benchmarks; and rank in a peer universe.
    - Investment risks: Based on portfolio holdings, report portfolio characteristics such as price/earnings, price/book, dividend yield, earnings growth ratios (for equity) and maturity, duration, yield, convexity (for fixed income); observe how portfolio holdings are distributed among sectors and industries; calculate measures of volatility for the portfolio; compare characteristics, diversification, and volatility to that of an appropriate benchmark and peer group. Estimate the role of investment style in the manager's returns (if relevant to the investment structure of the fund). Apply sophisticated portfolio analytic systems to

estimate the risk of the portfolio on a forward looking basis (such as estimated tracking error).

- Questions to Answer: Thorough reports are designed to enable fiduciaries to answer a set of key investment questions such as:
  - How does the performance of the investment program and its individual components compare to its objectives (usually expressed as a benchmark and a relative time period)?
  - Is the investment program generating appropriate risk-adjusted returns, compared to stated objectives, typically that of a benchmark?
  - What are the nature and magnitude of the risks incurred by the investment program and its components?
  - How does the risk level compare to its benchmark(s)?

- **Observations**
  - Overall, the ASRS appears to follow a comprehensive monitoring process that is in accordance with industry standards.
  - The ASRS reviews investment performance in the reports outlined above under Section 1.c.

Report Frequency	Report Information
Daily	▪ The availability of daily preliminary performance is a tool not available to all funds and exceeds industry standards. ▪ Good for IMD staff to be able to see when necessary, but important for Board to not get too caught up in very short-term performance.
Weekly "Market Info Report"	▪ Useful for staff and Board to stay abreast of market conditions. ▪ Summary of historical fiscal and calendar year total fund numbers can help to put things in perspective.
Monthly	▪ Final unofficial public markets portfolio performance as calculated by State Street. ▪ Useful as "flash" report, which is a best practice.
Quarterly	▪ The ASRS' general consultant (NEPC) prepares two quarterly investment performance reports covering both public and private investment managers. o Overall, these reports are very thorough and address the major performance reporting needs and meet industry standards. o One area that is lacking is that the reports do not contain consecutive or calendar year performance. Gallagher believes it is important to look at individual year performance as well as cumulative returns (e.g., 1, 3, 5, 10 years), which is presented. See recommendation for 1.c. ▪ As stated above, IMD Staff conducts quarterly reviews with all managers, which is at the high end of industry standards. It is typically a minimum best practice to meet with investment managers annually, either in person or via conference call, depending on the nature of the strategy.
Annually	▪ Annual asset class reviews for Equities, Fixed Income, Inflation Linked, Private Equity, and Real Estate presented to the IC. o The thorough evaluation of the structure and performance of each asset class is a best practice.

- As noted above, the ASRS has made the decision not to use a "watch-list." There are differing opinions in the industry as to the usefulness of a watch-list and whether it adds any real value to the monitoring process. While Gallagher believes a watch-list can be a beneficial tool, the use of one is not necessary as long as a thorough monitoring process is followed.

o **Recommendations:** See 1.c above

e. Determine whether the ASRS met its overall expected rates of return during the past 10 fiscal years;

o **Overall Observations:** Over the ten fiscal years analyzed, the Fund has surpassed its Policy Index (7.5% vs. 7.2%), but lagged its 8% assumed actuarial investment rate.

- **Observations:**
  - It is industry standard to report investment performance on a gross of fees basis particularly when used for peer universe comparisons so that investment manager skill can be evaluated independent of the level of fees, which can vary from fund to fund.
  - Since the ASRS ultimately only receives net of fees performance, Gallagher used net of fee calculations to evaluate whether the Fund met its Actuarial Rate or Policy Index, as shown in the table below.
  - Gallagher calculated the ASRS total fund and composite net of fees returns using data supplied by the Fund in our performance measurement system - PARis. See also Appendix 1.e.1 and 1.e.2 for additional exhibits.

Years ending 6/30:	Fiscal Year (FY) Return	Interim Policy Index	Did FY Meet Policy Index? (Y/N)	Actuarial Rate	Did FY Meet Actuarial Rate? (Y/N)	Rolling 20 Year Return	Did rolling 20 Meet Actuarial Rate? (Y/N)
2014	18.6%	17.8%	Y	8.0%	Y	8.9%	Y
2013	13.1%	12.6%	Y	8.0%	Y	8.0%	Y
2012	1.3%	1.3%	Y	8.0%	N	8.2%	Y
2011	24.6%	24.4%	Y	8.0%	Y	8.9%	Y
2010	14.8%	13.1%	Y	8.0%	Y	8.1%	Y
2009	(18.7%)	(19.1%)	Y	8.0%	N	7.8%	N
2008	(7.5%)	(5.7%)	N	8.0%	N	9.7%	Y
2007	17.7%	18.6%	N	8.0%	Y	10.3%	Y
2006	10.0%	8.8%	Y	8.0%	Y	10.0%	Y
2005	8.5%	7.8%	Y	8.0%	Y	11.0%	Y

- The ASRS met or exceeded the 8% actuarial assumed rate in seven out of the past ten fiscal years.
- On a rolling 20-year basis, the Fund met or exceeded the actuarial assumed rate in nine out of the past ten fiscal years.
- The ASRS met or exceeded its Interim Policy Index in eight out of the past ten fiscal years. The Interim Policy Index adjusts the weights in the SAAP to private equity and real estate pro rata as these asset classes are funded over time. This is an industry standard practice.

Periods ending 6/30/14	Plan Return	Interim Policy Index	Met? (Y/N)	Actuarial Rate	Met? (Y/N)
Three Years	10.8%	10.4%	Y	8.0%	Y
Five Years	14.2%	13.6%	Y	8.0%	Y
Seven Years	5.6%	5.4%	Y	8.0%	N
10 Years	7.5%	7.2%	Y	8.0%	N
20 Years	8.9%	NA	NA	8.0%	Y
Since Inception (6/30/75)	10.1%	9.8%	Y	8.0%	Y

- On a cumulative ten year basis, the ASRS exceeded its Interim Policy Index (7.5% versus 7.2%), but lagged the 8% assumed actuarial rate. However, over the rolling 20-year period ending June 30, 2014, the Fund outperformed the assumed actuarial interest rate (8.9% vs. 8.0%), which is the stated goal.
- Over three (10.8%), five (14.2%) and 20 (8.9%) year time periods, the ASRS exceeded the 8% actuarial rate; however, the ASRS lagged the 8% actuarial rate slightly over 10 years (7.5%) and over seven years (5.6%).
- The ASRS also beat its Interim SAA Policy Index over one, three, five, seven, and ten year periods ended June 30, 2014.
- Gallagher compared each asset class composite to its policy benchmark:
  1. Most asset class composites, for which there is ten years of data, beat their benchmark for the ten years ended June 30, 2014. The only exceptions were:

Style/Asset Class	ASRS	Benchmark
International Developed Markets Equity	7.53%	8.72%
Total International Equity	6.68%	7.97%
Total Domestic and International Equity	7.88%	7.92%

  2. For asset classes with less than 10 years of history, we looked at since inception returns. A few asset classes underperformed their benchmarks. (Since inception returns provided by ASRS):

Style/Asset Class	Since Date	ASRS	Benchmark
High Yield Fixed Income	10/1/09	10.6%	11.6%
Farmland and Timber	9/1/13	(46.4)%	3.9%
Private Equity	1/1/08	4.6%	7.3%
Real Estate	10/1/05	3.7%	4.9%

  3. See Section 1.h. below for our comments on the underperformance of these asset classes and strategies.

- **Recommendations**: Not Applicable

f. Compare the ASRS' overall expected rates of return during the past 10 fiscal years to best practices, including but not limited to industry standards, and peer retirement systems;

- **Background Summary of Best Practices**
  - See 1.B above
- **Observations**
  - See 1.B above
- **Recommendations**: Not Applicable

g. Compare the ASRS' investment performance to peer retirement systems' performance;

- **Background**
  - Peer universe comparisons are one of many performance measurement tools used to monitor total fund investment performance.
  - While interesting and informative, total fund peer universe comparisons are not "apples to apples" since the asset allocation policy can vary dramatically from one plan to the next.
    1. Plans that have "riskier" asset allocations may perform better during strong bull markets, but underperform peers during market corrections.
    2. It is therefore important to consider peer universe comparisons as just one element in overall performance evaluation.
  - Peer universes are more relevant for specific manager universes of a certain style, e.g., core fixed income. These universes are typically *gross of fees*.

- **Overall Observations:** The Total Fund ranks in the top quartile versus a universe of other public pension plans (16th percentile) for the 10 year period analyzed.

- **Observations**
  - Gallagher compared the Fund fiscal year performance to the All Public Plans. The total fund universe in PARis was utilized (see Appendix 1.g.1 and 1.g.2).
    1. The Fund performance ranks in the top quartile for five of the ten years.
    2. The Fund ranks above median for eight of the ten years.
    3. The Fund ranked in the bottom quartile for two of the ten years.
       a) Total Fund performance for FY ended June 30, 2008 was -7.28%, which ranked 91st. This was also one of the two years where the Fund underperformed the Interim SAA Policy Index (-5.68%, rank of 78th percentile). Median fund performance was -4.22%.
       b) Total Fund performance for FY ended June 30, 2009 was -18.44%, which ranked 77th. This was better than the Interim SAA Policy Index (-19.11%, rank of 81st percentile). Median fund performance was -15.64%.
    4. The Fund ranked in the top quartile for cumulative periods ended June 30, 2014.
       a) The Fund ranked in the 16th percentile for the 10 years ended June 30, 2014.
       b) Total Fund ranked in the 4th percentile for the 5 years ended June 30, 2014.
       c) Total Fund ranked in the 10th percentile for the 3 years ended June 30, 2014.
  - Gallagher compared each asset class composite to the appropriate peer universe, for which peer data is available, in PARis (see Appendix 1.g.3-1.g.15). Gallagher discusses any underperformance in section 1.h. below. Note, we use *gross of fees* performance (industry

standard) for peer universe comparisons. For asset classes with less than ten years of performance history, we looked at since inception returns.

Investment Strategy	Sub Category	Quartile Ranking	Observations
Domestic Equity	Total Domestic Equity	22nd – Second Quartile	▪ Domestic Equity performed in the top quartile of the public plan universe (22nd percentile) for the 10 years ended June 30, 2014.
	Large Cap Equity	75th – Fourth Quartile	▪ Since the majority of this asset class is passively managed we would not expect outperformance. Over the 10 years, the S&P 500 Index ranked 81st and the ASRS ranked 75th. ▪ Five year ranking was 55th and 53rd percentile for ASRS and the S&P 500 respectively.
	Mid Cap Equity	Second Quartile	▪ Mid Cap Equity ranked in the second quartile (47th percentile) over the 10 year period analyzed.
	Small Cap Equity	Second Quartile	▪ Small Cap Equity ranked in the second quartile (above median) over the ten year period analyzed, with the exception of the six months ending 6/30/2014 (56th percentile).
International Equity	Total International Equity	Third or Fourth Quartile	▪ International Equity ranked in the third or fourth quartile (below median) over the ten year period analyzed, with the exception of the six months ending 6/30/2014 (46th percentile).
	International Developed	Near Median	▪ International Developed ranked near or below median for most of the 10 year period analyzed.
	Emerging Markets Equity	Second Quartile	▪ Emerging Markets Equity ranked in the second quartile (above median) since its inception.
Fixed Income	Core Fixed Income	78th - Fourth Quartile	▪ Core Fixed Income ranked in the fourth quartile (78th percentile) of the PARis public plan universe for the ten year period analyzed. ▪ Since this asset class is passively managed (or enhanced passive) we would not expect outperformance. Over the 10 years, the Barclays Aggregate ranked in the 92nd percentile.
	Emerging Debt	Fourth Quartile	▪ Emerging Debt ranked in the fourth quartile for the one year time period analyzed.
	High Yield	21st- First Quartile	▪ High-Yield ranked in the first quartile (21st) for the three years ended June 30, 2014 and second quartile (36th) for the one year time period.
Commodities		29th- Second Quartile	▪ Commodities ranked in the second quartile (29th) over the three year period analyzed.
Real Estate		Second Quartile	▪ Real Estate ranked in the second quartile over the one, three and five year periods analyzed.
GTAA		First Quartile	▪ GTAA ranked in the first quartile over all of the periods analyzed over the last 10 years.

- **Recommendations**: Not Applicable

h. Determine the causes for any underperformance, including any procedures or requirements that limit the ASRS' investment strategies;

- **Overall Observations**
  - As detailed below, the most significant underperformance realized by the Fund occurred as a result of the economic crisis of 2008-2009.
  - Gallagher did not find that the Fund's performance suffered as a result of any procedures or requirement.

- **Observations**
  - Assumed Actuarial Rate: The fiscal years in which the Fund underperformed its 8% target were 2008, 2009, and 2012. On a rolling 20-year basis, the Fund underperformed only in fiscal year 2009.
    1. The effects of the economic crisis caused the majority of pension plans to fail to achieve their actuarially assumed rate of return in 2008 and 2009.
       a) ASRS' peer universe and policy benchmark also suffered negative returns in these years (see Appendix 1.g.1).
       b) The large negative returns achieved in these years have had a significant impact on cumulative returns over seven and ten years.
    2. In fiscal year 2012, the Fund only slightly underperformed the SAAP (1.3% vs. 1.4%), but market conditions made it extremely difficult to achieve an 8% return for ASRS.
       a) Peer funds also posted very low returns over this time period as the median was 1.02% (see Appendix 1.g.1).
       b) Equities struggled during this time period, with low to negative returns for domestic equity benchmarks and negative international equity returns for both developed and emerging markets.
       c) Fixed income performed well (ASRS Fixed Income 8.1% vs Barclays Aggregate 7.5% for year ended 6/30/14)
       d) The real estate and private equity portfolios returned double digit during this year (12.31% and 15.43%, respectively) and helped to balance out the low to negative public equity returns.
  - Most asset classes for which there is ten years of data beat their benchmark for the ten year ended June 30, 2014. The only exceptions are explained below (See also Appendix 1.e.1 and 1.e.2):
    1. International Equity:

Style/Asset Class	10 Year Returns	
	ASRS	Benchmark
International Developed Markets Equity	7.53%	8.72%
Total International Equity	6.68%	7.97%
Total Domestic and International Equity	7.88%	7.92%

       a) International Developed Markets Equity lagged its benchmark in eight of the last ten years.

b) It is noteworthy that the two years it outperformed (2009 and 2012) were high negative years for this asset class.

c) As noted, approximately 50% of this asset class is passively managed as of June 30, 2014.
   - The large cap international passive portfolio has an inception date of July 2009.
   - The small cap international passive portfolio has an inception date of June 2010.
   - The passively managed portfolios have tracked their benchmarks very closely.

d) Only one of the managers currently in place (Large Cap International) has a ten year history with the Fund. This manager makes up approximately 11% of the developed markets portfolio.

Large Cap International Equity Manager	ASRS	Benchmark
Since Inception (October 1998)	10.00%	6.90%
Ten Years	7.10%	8.40%
Three Years	9.60%	8.50%
One Year	28.40%	23.70%

e) The second longest manager within the Fund is an International Small Cap manager.

International Small Cap Manager	ASRS	Benchmark
Since Inception (September 2005)	7.30%	7.00%
Five Years	13.90%	15.50%

f) Manager Changes: IMD staff reviewed the International Large Cap Equity sub asset class and restructured the managers in this asset class in late 2013 early 2014.
   - With the Fund restructuring, ASRS terminated three managers, which staff determined had poor relative performance and high tracking error versus the benchmark: two EAFE Growth managers and an EAFE Value Manager. All three of these managers detracted from the performance of the International Equity composite. For example, for the one and three years ended February 28, 2014 (the date of the Total Public Equity Asset Class Review) compared to MSCI EAFE:

EAFE Value Manager	ASRS	Benchmark
One Year	8.49%	19.74%
Three Years	19.74%	7.11%
EAFE Growth Manager	**ASRS**	**Benchmark**
One Year	14.55%	19.74%
Three Years	3.67%	7.11%
EAFE Growth Manager	**ASRS**	**Benchmark**
One Year	6.88%	19.74%
Three Years	NA	7.11%

   - Several new managers have been hired in 2013 and 2014 and it is too soon to judge their performance.

- Three new EAFE managers were hired June 2014.
- A new EAFE small cap manager was hired June 2013.

- As mentioned above, the following asset classes with less than ten years of history underperformed their benchmarks (See Appendix 1.e.1 and 1.e.2):

Investment Strategy	Reasons for Underperformance
High Yield Fixed Income	Inception Date: 10/01/09; ASRS: 10.6%; Benchmark: 11.6% ▪ High Yield Fixed Income underperformed its benchmark in three of the four last fiscal years. ▪ The ASRS has two active managers in the high yield space, which have both underperformed slightly over all cumulative time periods reported. ▪ The ASRS had a third high yield manager that was more conservative (i.e., higher quality) and its underperformance was the main drag on the overall portfolio since "riskier" segments of the market outperformed. Through 3/31/14, this manager returned 9.6% vs. 11.7% for the benchmark since inception of October 2009.
Farmland and Timber	Inception Date: 09/01/13; ASRS: (46.4)%; Benchmark: 3.9% ▪ Farmland and Timber returned 4.2% vs. 2.6% for its benchmark for the six months ended 6/30/14. ▪ NEPC reports an inception to date IRR of 1.3% in its June 30, 2014 IPR. ▪ It is too early in the lifecycle of this investment to judge its performance.

<table>
<tr><th>Investment Strategy</th><th>Reasons for Underperformance</th></tr>
<tr><td>Private Equity</td><td>
Inception Date | ASRS | Benchmark
1/01/08 | 4.6% | 7.3%

Private Equity underperformed its benchmark in four of the last seven years on a time-weighted return basis.
<u>Benchmark</u>: The index/benchmark proxy for private equity is the Russell 2000 Index, which consists of small cap stocks. While this is a reasonable proxy, it is not a direct comparison. There is not an investable private equity benchmark.
Private Equity investments are better evaluated on a dollar weighted return basis (i.e., IRR or Internal Rate of Return) given the nature of their cash flows and their long time horizon.
When evaluating Private Equity it is also important to understand the long time horizon of this asset class. It will take approximately 7-8 years to reach the proposed target allocation for private equity. There is a commitment period, drawdown period, and finally a realization period. Capital is first committed to a variety of limited partnerships over a number of vintage years. For each partnership, capital is drawn down through "capital calls" over a number of years to fund the initial commitment. An individual partnership's investment cycle typically begins with what is called a "J-curve," where the portfolio exhibits losses (negative performance) as fees are paid and capital is called with no investment gains realized. The investment period for a partnership is typically 3-4 years with a holding period of an additional 4-6+ years. As the investments mature and the portfolio experiences unrealized and realized gains performance starts to turn positive.
The Total Private Equity Portfolio has achieved an IRR of 12.9% vs. 16.3% for the Russell 2000 quarter lagged.
The Russell 2000 Index has had very strong performance over recent years – with a five year return through 6/30/14 of 24.31%.
The IRR achieved by the ASRS portfolio is in line with expectations for this asset class.
Private equity investments are best evaluated on a vintage year basis and over the long-term given the nature of the asset class and expectation for early year negative returns (i.e., the "j-curve" effect).

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<table>
<tr><th>Investment Strategy</th><th>Reasons for Underperformance</th></tr>
<tr><td>Real Estate</td><td>
<table><tr><td>Inception Date</td><td>ASRS</td><td>Benchmark</td></tr><tr><td>10/01/05</td><td>3.7%</td><td>4.9%</td></tr></table>

Real Estate underperformed the NCREIF ODCE in four of the last eight years.
The only years with significant underperformance were 2008 (-7.03% vs. 12.00% for the NCREIF ODCE) and 2009 (-37.19% vs. -23.98% for the NCREIF ODCE).
The ASRS portfolio significantly outperformed in 2010 (1.16% vs. -18.75% for the NCREIF ODCE).
ASRS' portfolio is broken out into Core (Private and Public), Non-Core (Enhanced Return, High Return, and Separately Managed), and the Arizona Owned Assets. Private real estate investments are long-term investments and can be difficult to exit.
The Core portion of the portfolio beat its benchmark (4.4% vs. 4.2%) and makes up approximately 18% of the total.
The Non-Core portfolio has been the drag on performance since inception, returning only 0.6%, but has achieved solid one, three and five year returns (13.6%, 12.9% and 9.5%, respectively, versus the ODCE returns of 12.7%, 12.0% and 6.3%).
These "riskier" assets are more volatile.
The plan is currently overweight opportunistic investments and this will be reduced over time to target weights.
The Arizona Owned Assets have returned 10.5% since October 2005.

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- **Recommendations**

Task 1.h: Determine the causes for any underperformance, including any procedures or requirements that limit the ASRS' investment strategies
Recommendation: The ASRS should continue to monitor performance of the Fund and the underlying strategies and adjust its asset allocation and restructure asset classes as appropriate and reasonable.

i. Determine the impacts of any underperformance;

- **Observations**
  - The large negative returns achieved in 2008-2009 have had a significant impact on cumulative returns over seven and ten years, but recent strong bull markets have helped to lift overall returns.
  - Contribution rates have increased from a total of 10.40% in Fiscal Year 2005 to 22.60% in Fiscal Year 2014 (includes employee and employer); however, this is only partly attributable to investment performance or underperformance as many other factors go into actuarial calculations.
  - The ASRS has maintained the necessary liquidity to pay benefits.
  - The ASRS has restructured the asset classes where the most significant underperformance was realized.

j. Make recommendations for improving the ASRS' investment performance, as appropriate.

- **Observations**
  - See recommendations in sections above

Task 2: Alternatives

Task 2: Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments, identify the reasons for and impact of any inadequate controls and make recommendations for improving controls, as appropriate.

a. **Identify the processes and other controls the ASRS uses for selecting, developing terms and conditions for, monitoring, and valuing investments, and terminating alternative investment manager contracts;**

- **Observations**

  The ASRS has a well-defined process for selecting and evaluating alternative investment managers, as detailed in the ASRS's Strategic Investment Policy (SIP006). The process includes seven areas of interest:

  1. Opportunity Set – Sourcing
  2. Opportunity Set – Screening
  3. Analysis and Due Diligence
  4. Asset Class Committee Meetings – Decision Making
  5. Post-Committee Meeting Documentation and Dissemination
  6. Governance Oversight
  7. Post-Investment Manager and Co-Investment Selection Monitoring

  - The process establishes a rigorous framework for evaluating alternative investments for the Fund. It is written in a way that allows the concepts to be applied across a broad range of strategies. This will help ensure that the same philosophy is applied across the entire portfolio, while maintaining the flexibility required to effectively evaluate strategies in different asset classes.
  - As a result of our sample auditing, no terminations of any alternative investments was noted. The policies, procedures and practices in place by the ASRS are adequate. The monitoring by the ASRS personnel and the independent consultant, NEPC, cover the issue of termination of an alternative investment. As a matter of record, private equity and alternative investment strategies are not terminated unless performance becomes an issue and the fact that the lack of liquidity in the marketplace is a factor.
  - The most recent version of the Strategic Investment Policy is dated November 16, 2012.

  The ASRS employs outside legal counsel to review relevant documents for each of the alternative investment partnerships that it considers for the Fund. Private equity and corporate private debt investments are reviewed by Foley and Lardner; real estate transactions and real estate private debt transactions are reviewed by Cox, Castle and Nicholson. As part of this audit, both law firms submitted a written description of the process they follow when reviewing these potential investments.

  The ASRS employs an ongoing process for monitoring alternative investment managers. Several periodic publications are a part of the monitoring procedures:

Frequency	Report Information
Monthly	▪ Prepared by the ASRS staff: reports including current estimates of market values, cash flows, unfunded commitments, performance, portfolio allocations, and a listing of current investments.
Quarterly	▪ Prepared by the ASRS Staff: Quarterly chart pack, which includes performance data (both internal rate of return and total multiple) for each investment as well as aggregate performance data by strategy. ▪ Prepared by the General Consultant (NEPC): Report including market values and current performance statistics by manager and by strategy.
Annually	▪ Prepared by the ASRS Staff: Annual Asset Class Reviews, which provide an overview of each respective investment program and strategy as well as data on performance and allocations by strategy.

The ASRS relies on the annual audit of each fund conducted by the General Partner (GP, manager) for the official value of its investments. Each GP accounts for their investments at fair value, as prescribed in accounting standards, and employs an independent auditor to provide an opinion on the methodology used for the annual financial statements and to verify that the statements are free of any material misstatement. The ASRS relies on the independent auditor's opinion, but it also reviews individual partnerships to determine if there are any discrepancies between the GP and the auditor's opinion. To date, the ASRS has reviewed 20 partnerships and not found any discrepancies. For interim periods, the ASRS uses regular reports by Grosvenor (formerly Credit Suisse) to show cash flows and current net asset values (NAVs).

- **Recommendations**

Task 2.a: Identify the processes and other controls the ASRS uses for selecting, developing terms and conditions for, monitoring, and valuing investments, and terminating alternative investment manager contracts
Recommendations: 1. Gallagher recommends that the ASRS conduct a thorough review and update of the Strategic Investment Policy at least annually (and more frequently if needed). The current version has been in place for more than two years. 2. In order to gain additional confidence in valuations, the ASRS should sample a greater number of partnerships. Sampling should include sufficient partnerships to represent at least 50% of the market value of the total alternative investment portfolio.

b. Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014;

- **Observations**

The ASRS has invested in 146 (as of 6/30/2014) individual alternative investment partnerships. As a part of this review, Gallagher reviewed a representative sample of partnerships from each of the underlying investment categories that make up the alternative investment allocation. Our review focused on applying the seven areas of focus from SIP006 to each of the selected partnerships.

- Our sample is intentionally diverse, including partnerships from different vintage years and commitments of various sizes. In the selection, we ensured that our sample represented at least 50% of the current market value in each alternative investment category. The full list of investments, including their respective category, that were included in the sampling review is included below:

- With each of the selected partnerships, we reviewed the available documentation for evidence that each investment adhered to the seven focus areas explained in the procedure. The current version, SIP006, was approved in November 2012. The current document was not in place during the period of due diligence for every partnership that was reviewed, since the review included partnerships dating back to 2004. Prior processes, most notably the ASRS' Private Equity Procedures Manual dated August 2, 2007, include many of the same concepts and focal points that are currently outlined in SIP006. Given the similarities in focus, we have evaluated every partnership using a consistent set of criteria. It should be noted, therefore, that the process has been refined over time and that recent partnerships were expected to have more detailed documentation than those that predate the current procedure.

- Gallagher has drawn the following conclusions from the individual partnership review:

    1. <u>Opportunity Set – Sourcing:</u> The ASRS uses several sources to source individual investment opportunities, including third party databases and the specialty consultants that advise the ASRS on each asset class. The ASRS maintains a robust forward calendar, including several managers that are expected to be in the market over the next five years.

        Unfortunately, most of the individual partnership materials that have been reviewed did not include specific information regarding the original source of the investment opportunity. It is possible in specific instances to identify the source from the materials presented, but this is the exception rather than the rule.

    2. <u>Opportunity Set – Screening:</u> The ASRS provided multiple screening tools that included several of the private equity partnerships. The tools demonstrate that the ASRS considers many different criteria in determining which funds warrant additional due diligence.

        Much like the Sourcing section, we found that most of the individual partnership materials that have been reviewed did not include specific information regarding the screening process. It is possible in specific instances to identify the source from the materials presented, but this is the exception rather than the rule.

    3. <u>Analysis and Due Diligence:</u> The review of the due diligence process conducted for each of the partnerships in the sample yielded the most comprehensive evidence of the ASRS' investment process. The ASRS relies on specialty consultants for each asset class. For the purposes of our review, Gallagher focused on the investment memos produced by those consultants for the Private Markets Committee's consideration. For each partnership, we looked for evidence that the consultant had considered each of the criteria listed in

Appendix 1 of the SIP006 document: Organization, Staff, Strategy, Terms, Performance, Risk (both Investment and Operational), Disclosures, and Miscellaneous.

In general, we found evidence that the ASRS and its specialty consultants conducted thorough due diligence on each of the partnerships that were ultimately approved for the Fund. Two trends warrant additional discussion:

- There is a clear trend of improving materials over time. Due diligence materials for partnerships that have been reviewed and approved in recent years, following the current process, are far more robust and in many cases follow the current process explicitly.
- Meketa, the specialty consultant for private equity partnerships, has incorporated the due diligence criteria outlined in Appendix 1 of SIP006 directly into their due diligence memos as early as 2010. The inclusion of this checklist gives the Private Markets Committee written assurance that the specialty consultant has considered all of the applicable criteria and found that the perspective investment meets the requirements for the ASRS consideration.

4. Asset Class Committee Meetings – Decision Making: Each investment in the ASRS must be approved by the appropriate Committee. In our review, we looked for the meeting minutes in which a motion was passed and approved for each of the selected investments. We also reviewed the ongoing documentation provided by Grosvenor, which lists the Commitment Date, for consistency with the meeting minutes.

5. Post-Committee Meeting Documentation and Dissemination: Upon formal approval, meeting minutes are disseminated to the relevant parties including the Investment Committee Trustees, the ASRS general investment consultant, and Internal Audit.

6. Governance Oversight: SIP006 requires an independent review, conducted annually by the general consultant, to ensure that the ASRS' investments are consistent with the Policy and the due diligence procedures that are outlined in Appendix 1. We reviewed annual reviews conducted by NEPC for the ASRS as of June 30th for calendar years 2009-2014. These reviews, like the due diligence materials, have grown more informative and comprehensive over time. In the most recent review, comments on portfolio-level investment strategy and Policy compliance, performance, risk, and Asset Class Committee meetings were included.

   The materials provided show evidence that NEPC is reviewing the processes employed and the decisions made by the Private Markets Committee. In the 2Q-2014 Independent Review, NEPC comments on five Asset Class Committee meetings. In this review, NEPC comments specifically on three investment recommendations that were approved by the Private Markets Committee. For each investment, NEPC certifies that the investment is consistent with the strategic asset allocation strategy, that the due diligence process was completed in accordance with SIP006 and that the investment was formally approved.

7. Post-Investment Manager and Co-Investment Selection Monitoring: The ASRS employs a series of reports and materials in its investment monitoring process. Grosvenor provides quarterly statements with details on the alternative investments. In addition, the ASRS staff produce monthly reports and a quarterly chart book, including information on each of the

investments. Lastly, the general consultant includes data on each investment in its full quarterly report. Overall, the monitoring process is extremely robust.

- **Recommendations**

Task 2.b: Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014
Recommendations: 1. Gallagher recommends including sourcing information and screening criteria in the final investment memo for each partnership. These are active parts of the investment process. It would also be beneficial to document where each opportunity came from and what characteristics drove the team to undertake additional due diligence. 2. Gallagher recommends that all specialty consultants adopt Meketa's practice of incorporating the due diligence checklist, as presented in Appendix 1 of SIP006, into their recommendations. The checklist provides a tangible record that the due diligence has been performed as prescribed by the consultant, which should give the Private Markets Committee additional confidence in considering the recommendations made by the consultant. Making the checklist a standard practice will also help to ensure consistency across the evaluation of each potential investment. 3. The ASRS should continue the independent reviews of Asset Class Committee meetings by NEPC. Record NEPC's reviews in a single document for ease of review and monitoring. NEPC's independent verification that the process has been followed for each investment serves as an important check and balance to ensure that every investment has been vetted properly.

c. **Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts;**

- **Observations**

The ASRS employs two outside law firms to conduct legal reviews of its prospective alternative investments. Foley & Lardner LLP (Foley) is employed to conduct a legal review of private equity and hedge fund strategies and Cox, Castle & Nicholson LLP (CCN) reviews documents pertaining to real estate investments.

As a part of this project, both Foley and CCN prepared memoranda explaining the key parts of their process and how they negotiate to improve terms for the ASRS. Appendix 2.c includes the key issues that each firm raised in their memorandum that are a part of the legal review.

Overall, the legal review process appears to be thorough and reasonable. By using long-standing partners, the ASRS has a reasonable basis for expecting that both firms can use their detailed knowledge of the ASRS to work towards improving subsequent contracts.

- **Recommendations**

Task 2.c: Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts
Recommendations: 1. The ASRS should continue to utilize both firms in the legal review of fund terms and documents, as appropriate.

Task 2.c: Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts
2. While both firms' have appeared to serve the ASRS well, a documented, periodic review of each service provider can help ensure that the firms continue to serve in the best interest of the Plan. We recommend that such a review be conducted at least every three years.

d. Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices, including but not limited to industry standards;

- **Background Summary of Best Practices**

In evaluating individual alternative investments, it is critical to employ consistent, rigorous standards to ensure the overall quality of the due diligence process. Gallagher believes that the process should include several key elements, including:

1. Initial contact and information showing where the investment idea originated;
2. Preliminary review and evaluation of the fund as a candidate for additional due diligence;
3. Comprehensive due diligence review, including (but not limited to):
   - Organizational Stability, focused on key personnel
   - Investment Strategy and Process
   - Investment Risk
   - Operational Risk
   - Performance Track Record
   - Investment Terms
   - Market Environment and Industry Overview
   - Legal Review and Negotiated Terms

2. Full Documentation of the investment review and approval process;
3. Ongoing monitoring, including both qualitative and quantitative evaluations.

In addition to our internal expertise, we also consulted an independent source to further refine our perspective on best practices and industry standards. We consulted fi360's 2013 publication, *Prudent Practices for Investment Stewards (U.S. Edition)*, for additional insight on the evaluation of the ASRS' processes and controls. See Appendix 2.d.1 for a listing of the best practices included in the publication. In this part of the evaluation, we focused specifically on the following practices (criteria designations are consistent with the identification presented in the publication):

Practice 3.3	**Decisions regarding investment strategies and types of investments are documented and made in accordance with fiduciary obligations of care.**
3.3.1	Decisions regarding investment strategies and types of investments are documented and made in accordance with fiduciary obligations of care.
3.3.2	Decisions regarding the selection of investments consider both qualitative and quantitative criteria.
3.3.3	The documented due diligence process used to select investments and third-party Investment Managers is consistently applied.

Practice 3.3	Decisions regarding investment strategies and types of investments are documented and made in accordance with fiduciary obligations of care.
3.3.7	Decisions regarding the use of separately managed and commingled accounts, such as mutual funds, unit trusts, exchange-traded products, and limited partnerships, are documented and made in accordance with obligations of care.
3.3.8	Decisions to use complex investments or strategies, such as alternative investments or strategies involving derivatives, are supported by documentation of specialized due diligence conducted by individuals who possess knowledge and skills needed to satisfy the heightened obligations of care.

Practice 4.1	Periodic reports compare investment performance to appropriate index, peer group, and investment policy statement objectives.

Practice 4.2	Periodic reviews are made of qualitative and/or organizational changes of Investment Advisors, Investment Managers, and other service providers
4.2.1	Periodic evaluations of the qualitative factors that may impact the results or reliability of Investment Advisors, Investment Managers, and other service providers are performed.
4.2.3	Deliberations and decisions regarding the retention or dismissal of Investment Advisors, Investment Managers, and other service providers are documented.
4.2.4	Qualitative factors that may impact service providers are considered in the contract review process.

- **Observations**
  - Overall, the ASRS employs the majority of the best practices identified above. The ASRS does an excellent job of documenting their process, executing the process as documented, and conducting periodic reviews to ensure adherence to the stated procedures.
    1. Among the best practices listed, the ASRS employs a clear, written process consistently across opportunities.
    2. The ASRS employs several outside advisors with the requisite expertise to ensure that the ASRS receives an appropriate level of guidance when considering alternative investments for its Fund. Specifically, the specialty investment consultants and legal representation the ASRS has are suitable partners for effectively evaluating and executing these investments.
  - The ASRS can improve its process by incorporating some of the early phases into the final due diligence materials. Specifically, information on the sourcing and screening of investments would be helpful as the Private Markets Committee reviews individual investment opportunities.

- Recommendations

Task 2.d: Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices, including but not limited to industry standards
Recommendations: 1. As listed in Section 2.b, Gallagher recommends the inclusion of sourcing and screening information in final due diligence materials on each fund. 2. A periodic review of all service providers (both investment advisors and legal representation) would help to ensure that the ASRS continues to receive high-quality guidance and advice at a reasonable cost. We recommend that these reviews be conducted at least every three years.

e. **Identify the reasons for and impacts of any inadequate processes or other controls; and**

- **Observations**

The ASRS employs reasonable procedures in evaluating investment opportunities for the Fund. Historically, the ASRS has documented and maintained records on each investment in a sufficient fashion. Finally, the monitoring of each investment is robust and allows for an appropriate level of oversight once an investment is added to the Fund.

Given these perspectives, Gallagher does not consider the current processes to be inadequate. The remainder of this section, therefore, will focus on the potential impact of specific recommendations that are outlined in this review.

- Recommendation: Add sourcing and screening information to its final due diligence materials for each fund.
- Potential Impact: The ASRS team, along with its external consultants (Meketa, Credit Suisse, Ennis Knupp & Associates, NEPC, Franklin Park, Townsend Group, Robert Charles Lesser & Co.), appear to have reasonable sourcing and screening procedures in place based on the information reviewed in this analysis. This has been incorporated into practice, and will allow the ASRS to better evaluate its procedures for sourcing and screening investments. A clear record of where an investment idea originated and why the team chose to pursue the idea for additional due diligence may help focus future efforts, allowing the ASRS to concentrate on the most advantageous sources and the most clear characteristics that tend to lead to successful investments.

- Recommendation: Require each investment advisor to incorporate the due diligence checklist (as defined in Appendix 1 of SIP006) into its final memorandum.
- Potential Impact: This practice provides a written record to demonstrate to both the Private Markets Committee and other interested parties that the due diligence on each partnership was conducted in a manner consistent with the written procedures and the manager has met expectations.

- Recommendation: Periodically review each service provider to help ensure that the firms continue to serve in the best interest of the ASRS. We recommend that such a review be conducted at least every three years.

- Potential Impact: Regular reviews of outside service providers can give the ASRS confidence that it continues to receive the highest quality advice and guidance at a competitive cost.

o **Recommendations**: Not Applicable

f. **Make recommendations for improving how the ASRS selects, develops terms and conditions, monitors, and terminates alternative investment manager contracts and values investments, as appropriate.**

See previous sections for specific recommendations.

Task 3: Fees

Task 3: Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate. Tasks will include the following:

a. **Identify the processes and other controls the ASRS uses for accepting and/or negotiating external investment manager fees;**

- **Observations**

  - The ASRS does not explicitly outline a procedure for fee negotiation in the Strategic Investment Policy (SIP006); which outlines the other aspects of investment manager selection and indicates that terms (including fees/fee structure) should be part of screening and due diligence considerations.
  - The key takeaways from the ASRS' response to this question are as follows:
    - The ASRS has identified fee negotiation as a secondary concern to identifying quality managers in alternative asset classes, citing the performance difference between top quartile and median managers to be 500 basis points annually and therefore highlighting the primary importance of investing with the best available managers.
    - The ASRS works with outside counsel to negotiate and structure legal documents, and includes a "most favorable nations" clause to ensure the best fees compared to investors of a similar size.
    - The ASRS has employed separately managed accounts (SMAs) for all but one investment in the private debt portfolio, and plans to continue to transition the real estate portfolio to such structures for investment purposes as well as the favorable fees and legal terms that they afford.
    - For real estate investments, the ASRS negotiates amongst the finalist managers and models the net present value of fees, discounting incentive based fees at a higher rate than guaranteed fees to favor managers that earn a greater portion of their fees from strong performance.
    - For private debt investments, the ASRS uses a similar strategy to real estate and makes concentrated investments to increase the size of mandates and therefore its leverage in fee negotiations.
    - The ASRS engages in co-investment opportunities selectively, knowing that the opportunity for reduced fees must be balanced against the inconsistent record of returns for such investments.

- **Recommendations**

Task 3.a: Identify the processes and other controls the ASRS uses for accepting and/or negotiating external investment manager fees
Recommendation: The ASRS has a well-considered approach to negotiating investment fees that should be equally well articulated in the documented procedures for selecting investment managers. Gallagher recommends adding an Appendix to SIP006 that explicitly outlines the objectives and preferences for fee negotiations.

b. **Determine whether the ASRS used the identified processes and controls for accepting and/or negotiating external investment manager fees for contracts the ASRS entered into during fiscal years 2005 through 2014;**

- **Observations**

  - While the results would suggest that the ASRS did indeed follow the outlined procedures when negotiating investment manager fees, it is hard to say with certainty which measures were or were not taken for each particular investment.
  - There is strong evidence for successful fee negotiation on alternative investments, although a similar lack of documentation. The ASRS' analysis shows that the fund has achieved fee reductions of over $340 million, compared to standard market fees, for deals with a commitment size of over $100 million executed since 2011.

- **Recommendations**

Task 3.b: Determine whether the ASRS used the identified processes and controls for accepting and/or negotiating external investment manager fees for contracts the ASRS entered into during fiscal years 2005 through 2014
Recommendation: The documented procedures mentioned in Section 3.a should include a standard method for documentation of fee negotiations. The documentation should include, at a minimum, the proposed fees from the manager before negotiation, the ASRS proposed fee structure, the final agreement, and be signed by the person(s) responsible for the negotiation.

c. **Compare the ASRS' processes and other controls over setting external investment manager fees to best practices, including but not limited to industry standards;**

- **Background Summary of Best Practices**

  - The Government Finance Officers Association identifies several best practices in its Investment Fee Policies for Retirement Systems Best Practice (released September 2014, see Appendix 3.c):
    - Negotiate the lowest possible fees given knowledge of what similar investors are paying and include a most favored nation clause in the agreement.
    - Give an individual or group responsibility for negotiating fees, and require that they report before any agreement is signed.

    - Consider the importance of investment management fees amongst the multiple factors examined when selecting investment managers.
    - Consider separately managed accounts, establish fee breakpoints as the investment grows, and discuss excluding uninvested cash.
    - Fees for alternative investments should favor performance based fees, and consideration should be given to group purchasing arrangements and cooperative fees.
- In addition, Gallagher would advise using indexed investments in areas where the market is largely efficient, and reserving active management for market segments were the median manager has demonstrated an ability to consistently add value over the relevant benchmark net of fees.

Observations

- The Fund has a considerable portion of assets invested in passive investments, particularly in efficient markets such as large-cap U.S. equities, and has secured favorable pricing on such investments as compared to the relevant peer group of passive investment managers.
- Of the five GFOA recommended best practices, the ASRS follows all, except designating an individual or group responsible for negotiating fees and reporting before any agreement is signed.

Recommendations

Task 3.c: Compare the ASRS' processes and other controls over setting external investment manager fees to best practices, including but not limited to industry standards
Recommendation: The ASRS procedures are well aligned with best practices with the exception of having a dedicated fee negotiation team that must report on all proposed investments before a deal is executed. Gallagher recommends implementing a formal report on fee negotiations to be completed prior to the execution of each investment agreement.

d. Identify the reasons for and impact of any inadequate processes or other controls;

Observations

- While there are opportunities for improvement outlined in the recommendations of this report, Gallagher does not consider the current processes or other controls employed by the ASRS to be inadequate.
- In order to evaluate the impact of any inadequate processes and controls, Gallagher has compared the current investment manager fees with a third-party database (eVestment Alliance) that includes a peer universe fee calculation based on investment style and size.
    - While the majority of investments in traditional asset classes have secured favorable fee arrangements, several are above the median level for the asset class given the size of the mandate.
    - These investments do not necessarily indicate a failure of procedure, as long as fees were negotiated to the best of the team's ability and the assessment was made that the manager's potential to add value relative to its benchmark was likely to justify the above-median expense.

- All but one of the managers with at least one year of performance have exceeded their respective benchmark net of fees since the investment was made. The one exception has only been in the portfolio for 18 months at the time of this analysis.

- **Recommendations**

Task 3.d: Identify the reasons for and impact of any inadequate processes or other controls
Recommendation: Gallagher recommends the documentation of fee negotiations should include acknowledgement of where the manager fee ranks compared to an appropriate peer group. Above-median fees should be justified by the perceived ability of the manager to add value over the appropriate benchmark.

e. **Make recommendations for improving how the ASRS accepts and/or negotiates external investment manager fees, as appropriate.**

Please see each individual section for specific recommendations.

Section III: Background and Methodology

Background Information

The Arizona State Retirement System (the ASRS) provides defined benefit (pension) and supplemental retirement plans, health insurance, long-term disability benefits, and survivor benefits to employees of the State, counties, municipalities, universities, community colleges, school districts, and other political entities. It also provides health insurance for retirees.
In this report, Gallagher will have the following references as it relates to the Operation Performance Audit and Sunset Review:

1. The agency, the Arizona State Retirement System, will be referred to as "the ASRS";
2. The retirement plan "ASRS plan";
3. The trustees "ASRS board" for the first instance, and "Board" for subsequent mentions;
4. The Trust or the Investment Portfolio we use "the Fund".

Arthur J. Gallagher & Co., an international insurance brokerage and risk management services firm, is headquartered in Itasca, Illinois, has operations in 30 countries and offers client service capabilities in approximately 140 countries around the world through a network of correspondent brokers and consultants. Gallagher Fiduciary Advisors, LLC (Gallagher) specializes in evaluating the organizational governance, day-to-day administration and investment programs of investment boards and pension systems using combined expertise in investment practices, pension fund administration, and fiduciary responsibility. In operation for over 20 years, Gallagher has performed similar evaluations for numerous other public and private pension funds, and is recognized as the leading firm in the industry performing this type of consulting services.

The specific details, scope, and depth of the review are defined by the December 1, 2014 agreement, between the Arizona Office of the Auditor General and Gallagher. Throughout the report, as part of our operational review, we identify and highlight our findings or observations and provide recommendations. We note that our comments are limited by the scope of work and we were not tasked with reviewing all areas of the investment program. Where appropriate, for each Task Area, we provide supplemental background information in addition to our findings and recommendations. The background sections may also include what we have deemed an industry "best practice" based on our experience performing similar reviews. A "best practice" is not necessarily the "norm" or most common practice, rather it is the most effective and efficient means (e.g., a process, procedure or structure) of doing something in a given situation to achieve an optimal outcome. Since effectiveness and efficiency are situational, what is a best practice for one operation may not be a best practice for all operations.

The analysis leading up to this report progressed through the following stages:

Document Collection

The first stage in our process was collection – with the ASRS' cooperation – of information regarding the ASRS' investment practices and performance. This included amassing data and documents, such as written investment policies and guidelines, investment performance reports, service provider contracts, and other materials. This phase was conducted primarily between November 2014 and February 2015.

Analysis & Interviews

The next stage of our process, which continued throughout the project, was analysis. Throughout the process, we coordinated and integrated our efforts and maintained communication with designated representatives. The main interviews with the ASRS were conducted during document procurement and in preparation for the preliminary draft.

Summary of Recommendations

Task 1.b: Compare the ASRS' investment strategies and objectives to best practice, including but not limited to industry standards

Recommendation:

1. The ASRS should continue to maintain and update an investment policy statement (IPS) for the Fund.

2. The assumed actuarial interest rate has not changed over the last ten fiscal years; Gallagher recommends that the ASRS discuss the 8.0% actuarial rate annually with the actuary to ensure that it is appropriate given current asset allocation and projected rates of return. ASRS should maintain a long-term perspective to avoid unwarranted changes to the actuarial rate.

Task 1.c: Determine the processes the ASRS uses to monitor how well its investment strategies and objectives are performing and guide it toward meeting its expected rates of return

Recommendation:

Gallagher recommends that the ASRS ask NEPC to include consecutive calendar year performance for the most recent ten years in the quarterly IPR.

Task 1.h: Determine the causes for any underperformance, including any procedures or requirements that limit the ASRS' investment strategies

Recommendation:

The ASRS should continue to monitor performance of the Fund and the underlying strategies, including adjusting its asset allocation and restructure asset classes as appropriate and reasonable.

Task 2.a: Identify the processes and other controls the ASRS uses for selecting, developing terms and conditions for, monitoring, and valuing investments, and terminating alternative investment manager contracts

Recommendations:

1. Gallagher recommends that the ASRS conduct a thorough review and update of the Strategic Investment Policy at least annually (and more frequently if needed). The current version has been in place for more than 2 years.

2. In order to gain additional confidence in valuations, the ASRS should sample a greater number of partnerships. Sampling should include sufficient partnerships to represent at least 50% of the market value of the total alternative investment portfolio.

Task 2.b: Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014

Recommendations:

1. Gallagher recommends including sourcing information and screening criteria in the final investment memo for each partnership. These are active parts of the investment process. It would also be beneficial to document where each opportunity came from and what characteristics drove the team to undertake additional due diligence.

Task 2.b: Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014

2. Gallagher recommends that all specialty consultants adopt Meketa's practice of incorporating the due diligence checklist, as presented in Appendix 1 of SIP006, into their recommendations. The checklist provides a tangible record that the due diligence has been performed as prescribed by the consultant, which should give the Private Markets Committee additional confidence in considering the recommendations made by the consultant. Making the checklist a standard practice will also help to ensure consistency across the evaluation of each potential investment.

3. The ASRS should continue the independent reviews of Asset Class Committee meetings by NEPC. Record NEPC's reviews in a single document for ease of review and monitoring. NEPC's independent verification that the process has been followed for each investment serves as an important check and balance to ensure that every investment has been vetted properly.

Task 2.c: Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts

Recommendations:

1. The ASRS should continue to utilize both firms in the legal review of fund terms and documents, as appropriate.

2. While both firms' have appeared to serve the ASRS well, a documented, periodic review of each service provider can help ensure that the firms continue to serve in the best interest of the Plan. We recommend that such a review be conducted at least every three years.

Task 2.d: Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices, including but not limited to industry standards

Recommendations:

1. As listed in Section 2.b, Gallagher recommends the inclusion of sourcing and screening information in final due diligence materials on each fund.

2. A periodic review of all service providers (both investment advisors and legal representation) would help to ensure that the ASRS continues to receive high-quality guidance and advice at a reasonable cost. We recommend that these reviews be conducted at least every three years.

Task 3.a: Identify the processes and other controls the ASRS uses for accepting and/or negotiating external investment manager fees

Recommendation:

The ASRS has a well-considered approach to negotiating investment fees that should be equally well articulated in the documented procedures for selecting investment managers. Gallagher recommends adding an Appendix to SIP006 that explicitly outlines the objectives and preferences for fee negotiations.

Task 3.b: Determine whether the ASRS used the identified processes and controls for accepting and/or negotiating external investment manager fees for contracts the ASRS entered into during fiscal years 2005 through 2014

Recommendation:

The documented procedures mentioned in Section 3.a should include a standard method for documentation of fee negotiations. The documentation should include, at a minimum, the proposed fees from the manager before negotiation, the ASRS proposed fee structure, the final agreement, and be signed by the person(s) responsible for the negotiation.

Task 3.c: Compare the ASRS' processes and other controls over setting external investment manager fees to best practices, including but not limited to industry standards

Recommendation:

The ASRS procedures are well aligned with best practices with the exception of having a dedicated fee negotiation team that must report on all proposed investments before a deal is executed. Gallagher recommends implementing a formal report on fee negotiations to be completed prior to the execution of each investment agreement.

Task 3.d: Identify the reasons for and impact of any inadequate processes or other controls

Recommendation:

Gallagher recommends the documentation of fee negotiations should include acknowledgement of where the manager fee ranks compared to an appropriate peer group. Above-median fees should be justified by the perceived ability of the manager to add value over the appropriate benchmark.

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Alternative investments sometimes lack liquidity, lack diversification, are not subject to the same regulatory requirements as other traditional investments, may involve complex tax structures and delays in distributing important tax information, and may involve substantial fees. Alternatives may involve leverage, short selling and/or derivatives. These products often execute trades on non-U.S. exchanges. Investing in foreign markets may entail risks that differ from those associated with investments in U.S. markets. These investments may not be appropriate for all investors.

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Unless otherwise noted, the data sources are: Standard & Poor's, Russell, MSCI Barra, Barclays, Dow Jones, Bloomberg, HFRI, and Investment Metrics.

Arthur J. Gallagher & Co.
BUSINESS WITHOUT BARRIERS

Independent Operational Review of the Arizona State Retirement System's (ASRS) Investment Strategies, Alternative Asset Investment Procedures, and Fees Paid to External Investment Managers

Appendices

Unless otherwise noted, the data sources are: Standard & Poor's, Russell, MSCI Barra, Barclays, Dow Jones, Bloomberg, HFRI, and Investment Metrics.

Appendix 1.e:

Determine whether the ASRS met its overall expected rates of return during the past 10 fiscal years

Exhibit 1:

Arizona State Retirement System
As of June 30, 2014

	Performance(%)									
	Jul-2013 To Jun-2014	Jul-2012 To Jun-2013	Jul-2011 To Jun-2012	Jul-2010 To Jun-2011	Jul-2009 To Jun-2010	Jul-2008 To Jun-2009	Jul-2007 To Jun-2008	Jul-2006 To Jun-2007	Jul-2005 To Jun-2006	Jul-2004 To Jun-2005
Total Fund	18.55	13.12	1.33	24.62	14.80	-18.65	-7.49	17.68	9.98	8.45
Interim SAA Policy	*17.83*	*12.60*	*1.30*	*24.35*	*13.13*	*-19.11*	*-5.68*	*18.59*	*8.80*	*7.79*
Total Fund without Global TAA	18.24	13.06	1.12	24.23	14.53	-18.81	-7.57	17.94	10.00	8.40
Interim SAA Policy	*17.83*	*12.60*	*1.30*	*24.35*	*13.13*	*-19.11*	*-5.68*	*18.59*	*8.80*	*7.79*
Total Public Markets Fixed Income	7.33	2.29	6.88	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ASRS Custom Public Mkts Fix. Inc.	*6.02*	*-0.24*	*7.50*	*4.06*	*9.50*	*6.05*	*7.13*	*6.12*	*-0.81*	*6.80*
Total Core Fixed Income	4.41	-0.56	7.87	3.82	11.22	5.98	6.66	6.09	-0.44	6.90
Barclays Aggregate Index	*4.37*	*-0.69*	*7.47*	*3.90*	*9.50*	*6.05*	*7.12*	*6.12*	*-0.80*	*6.81*
Total High Yield Fixed Income	11.11	8.78	7.54	14.71	N/A	N/A	N/A	N/A	N/A	N/A
Barclays U.S. High Yield	*11.73*	*9.49*	*7.27*	*15.63*	*26.77*	*-2.40*	*-2.26*	*11.55*	*4.81*	*10.86*
Total Emerging Market Debt	4.62	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
JPM GBI-EM Global Diversified	*3.91*	*1.32*	*-1.69*	*19.67*	*15.48*	*0.52*	*11.80*	*25.70*	*3.85*	*23.77*
Total Domestic and International Equity	23.28	18.83	-1.93	32.15	15.46	-26.21	-12.11	21.71	13.29	8.87
ASRS Custom Total Equity	*23.69*	*19.18*	*-2.15*	*32.48*	*14.65*	*-27.35*	*-10.59*	*23.94*	*12.48*	*8.02*
Total Dom and Int'l Eq ex-Equity Risk Factor	23.27	18.82	-1.93	32.15	15.46	-26.21	-12.11	21.71	13.29	8.87
ASRS Custom Total Equity	*23.69*	*19.18*	*-2.15*	*32.48*	*14.65*	*-27.35*	*-10.59*	*23.94*	*12.48*	*8.02*
Total Domestic Equity	24.65	22.21	2.84	33.83	17.83	-25.22	-12.55	19.68	10.00	8.14
ASRS Custom Domestic Equity	*24.89*	*21.98*	*3.68*	*32.75*	*17.00*	*-26.23*	*-12.56*	*21.56*	*8.63*	*6.33*
Total Large Cap Equity	24.18	20.13	4.74	31.41	14.76	-25.30	-13.31	19.96	9.09	6.90
S&P 500 Index	*24.61*	*20.60*	*5.45*	*30.69*	*14.43*	*-26.21*	*-13.12*	*20.59*	*8.63*	*6.32*
Total Mid Cap Equity	26.62	25.41	-3.25	38.15	23.72	-26.58	-7.41	19.04	12.35	14.71
S&P MidCap 400	*25.24*	*25.18*	*-2.33*	*39.38*	*24.93*	*-28.02*	*-7.34*	*18.51*	*12.98*	*14.03*
Total Small Cap Equity	24.85	28.00	0.17	38.14	23.89	-24.15	-14.07	17.71	13.41	10.23
ASRS Custom Sm Cap Eq Blended	*25.54*	*25.19*	*1.43*	*37.03*	*23.64*	*-25.31*	*-14.67*	*18.74*	*14.56*	*9.45*

Performance returns are net of fees

Exhibit 1 Continued:

Arizona State Retirement System
As of June 30, 2014

	Performance(%)									
	Jul-2013 To Jun-2014	Jul-2012 To Jun-2013	Jul-2011 To Jun-2012	Jul-2010 To Jun-2011	Jul-2009 To Jun-2010	Jul-2008 To Jun-2009	Jul-2007 To Jun-2008	Jul-2006 To Jun-2007	Jul-2005 To Jun-2006	Jul-2004 To Jun-2005
Total International Equity	21.32	13.98	-12.85	28.90	9.17	-28.46	-10.92	27.90	24.35	11.07
ASRS Custom Int'l Eq	*21.99*	*15.13*	*-13.86*	*30.81*	*10.88*	*-30.54*	*-6.20*	*30.15*	*26.80*	*14.13*
Total Int'l Developed Markets Equity	23.63	18.71	-12.95	31.20	9.53	-28.46	-10.92	27.90	24.35	11.07
ASRS Custom Int'l Dev Mkts Eq	*24.65*	*19.53*	*-13.55*	*31.61*	*10.88*	*-30.54*	*-6.20*	*30.15*	*26.80*	*14.13*
Total Int'l Emerging Markets Equity	15.88	4.33	-14.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MSCI Em Mkts	*14.49*	*3.23*	*-15.66*	*28.17*	*23.48*	*-27.82*	*4.89*	*45.45*	*35.90*	*34.89*
Total Private Equity	17.78	12.61	15.43	17.06	17.89	-33.89	-3.97	0.00	N/A	N/A
Russell 2000 1QTR Lagged	*24.90*	*16.30*	*-0.18*	*25.79*	*62.76*	*-37.50*	*-13.00*	*5.91*	*25.85*	*5.41*
Total Opportunistic Equity	37.88	41.12	-0.40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Inflation-Linked Assets	10.13	-5.03	-13.67	17.27	N/A	N/A	N/A	N/A	N/A	N/A
ASRS Custom Inf-Linked	*8.21*	*-8.01*	*-14.32*	*14.10*	*9.52*	*-1.11*	*15.09*	*3.99*	*-1.64*	*9.33*
Total Commodities	10.13	-5.01	-13.51	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bloomberg Commodity Index Total Return	*8.21*	*-8.01*	*-14.32*	*25.91*	*2.75*	*-47.08*	*41.56*	*2.94*	*18.09*	*8.56*
Total Real Estate	13.70	12.81	12.32	16.64	1.16	-37.19	-7.03	29.43	N/A	N/A
NCREIF ODCE 1QTR Lagged (net)	*12.74*	*9.68*	*13.59*	*19.01*	*-18.75*	*-23.98*	*12.00*	*15.35*	*N/A*	*N/A*
Total Farmland and Timber	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CPI Less Food & Energy 1QTR Lagged + 350bps	*5.20*	*5.45*	*5.83*	*4.74*	*4.68*	*5.34*	*5.97*	*6.09*	*5.67*	*5.93*
Total GTAA	21.23	12.69	2.38	28.58	17.90	-15.61	-5.81	15.79	9.54	8.86
ASRS Custom GTAA	*17.88*	*12.80*	*2.07*	*22.94*	*12.09*	*-18.41*	*-7.11*	*17.48*	*8.72*	*7.79*
Total Private Debt	14.95	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S&P LSTA/Leveraged Loan Index + 2.5%	*6.97*	*10.56*	*5.41*	*10.52*	*48.00*	*-15.31*	*-3.35*	*9.46*	*8.31*	*7.59*
Total Opportunistic Debt	9.61	12.37	2.89	18.59	39.04	-16.19	-2.22	0.00	N/A	N/A

Performance returns are net of fees

Exhibit 2:

Arizona State Retirement System
As of June 30, 2014

	Performance(%)					
	1 Quarter	1 Year	3 Years	5 Years	7 Years	10 Years
Total Fund	3.91	18.55	10.76	14.22	5.59	7.46
Interim SAA Policy	*3.50*	*17.83*	*10.36*	*13.59*	*5.38*	*7.21*
Total Fund without Global TAA	3.75	18.24	10.57	13.97	5.38	7.34
Interim SAA Policy	*3.50*	*17.83*	*10.36*	*13.59*	*5.38*	*7.21*
Total Public Markets Fixed Income	2.64	7.33	5.47	N/A	N/A	N/A
ASRS Custom Public Mkts Fix. Inc.	*2.48*	*6.02*	*4.37*	*5.31*	*5.68*	*5.16*
Total Core Fixed Income	2.02	4.41	3.85	5.27	5.57	5.14
Barclays Aggregate Index	*2.04*	*4.37*	*3.66*	*4.85*	*5.35*	*4.93*
Total High Yield Fixed Income	2.21	11.11	9.13	N/A	N/A	N/A
Barclays U.S. High Yield	*2.41*	*11.73*	*9.48*	*13.98*	*9.06*	*9.05*
Total Emerging Market Debt	4.29	4.62	N/A	N/A	N/A	N/A
JPM GBI-EM Global Diversified	*4.02*	*3.91*	*1.16*	*7.42*	*7.02*	*10.01*
Total Domestic and International Equity	4.57	23.28	12.84	17.00	5.15	7.88
ASRS Custom Total Equity	*4.58*	*23.69*	*12.99*	*16.98*	*5.17*	*7.92*
Total Dom and Int'l Eq ex-Equity Risk Factor	4.57	23.27	12.83	16.99	5.15	7.87
ASRS Custom Total Equity	*4.58*	*23.69*	*12.99*	*16.98*	*5.17*	*7.92*
Total Domestic Equity	4.73	24.65	16.14	19.83	7.10	8.69
ASRS Custom Domestic Equity	*4.64*	*24.89*	*16.46*	*19.66*	*6.78*	*8.31*
Total Large Cap Equity	5.14	24.18	16.04	18.70	6.22	7.88
S&P 500 Index	*5.23*	*24.61*	*16.58*	*18.83*	*6.16*	*7.78*
Total Mid Cap Equity	4.91	26.62	15.39	21.30	8.63	10.60
S&P MidCap 400	*4.33*	*25.24*	*15.26*	*21.67*	*8.57*	*10.50*
Total Small Cap Equity	2.58	24.85	16.98	22.33	8.64	10.14
ASRS Custom Sm Cap Eq Blended	*2.07*	*25.54*	*16.81*	*21.98*	*8.07*	*9.87*

Performance returns are net of fees

Exhibit 2 Continued:

Arizona State Retirement System
As of June 30, 2014

	Performance(%)					
	1 Quarter	1 Year	3 Years	5 Years	7 Years	10 Years
Total International Equity	4.34	21.32	6.42	11.14	1.12	6.68
ASRS Custom Int'l Eq	*4.48*	*21.99*	*6.55*	*11.90*	*1.93*	*7.97*
Total Int'l Developed Markets Equity	3.49	23.63	8.51	12.92	2.27	7.53
ASRS Custom Int'l Dev Mkts Eq	*3.73*	*24.65*	*8.80*	*13.45*	*2.94*	*8.72*
Total Int'l Emerging Markets Equity	6.90	15.88	1.15	N/A	N/A	N/A
MSCI Em Mkts	*6.60*	*14.49*	*-0.11*	*9.54*	*2.57*	*12.28*
Total Private Equity	2.75	17.78	15.25	16.14	4.28	N/A
Russell 2000 1QTR Lagged	*1.12*	*24.90*	*13.18*	*24.31*	*7.08*	*8.53*
Total Opportunistic Equity	4.80	37.88	24.68	N/A	N/A	N/A
Total Inflation-Linked Assets	1.90	10.13	-3.34	N/A	N/A	N/A
ASRS Custom Inf-Linked	*0.08*	*8.21*	*-5.17*	*1.28*	*2.80*	*3.10*
Total Commodities	1.90	10.13	-3.28	N/A	N/A	N/A
Bloomberg Commodity Index Total Return	*0.08*	*8.21*	*-5.17*	*1.99*	*-2.69*	*0.87*
Total Real Estate	2.41	13.70	12.94	11.19	-0.11	N/A
NCREIF ODCE 1QTR Lagged (net)	*2.29*	*12.74*	*11.99*	*6.31*	*2.10*	*N/A*
Total Farmland and Timber	0.32	N/A	N/A	N/A	N/A	N/A
CPI Less Food & Energy 1QTR Lagged + 350bps	*1.32*	*5.20*	*5.49*	*5.18*	*5.32*	*5.49*
Total GTAA	5.17	21.23	11.83	16.22	7.74	8.81
ASRS Custom GTAA	*3.85*	*17.88*	*10.72*	*13.34*	*5.11*	*6.92*
Total Private Debt	2.68	14.95	N/A	N/A	N/A	N/A
S&P LSTA/Leveraged Loan Index + 2.5%	*1.82*	*6.97*	*7.63*	*15.32*	*7.60*	*7.85*
Total Opportunistic Debt	3.18	9.61	8.22	15.88	7.99	N/A

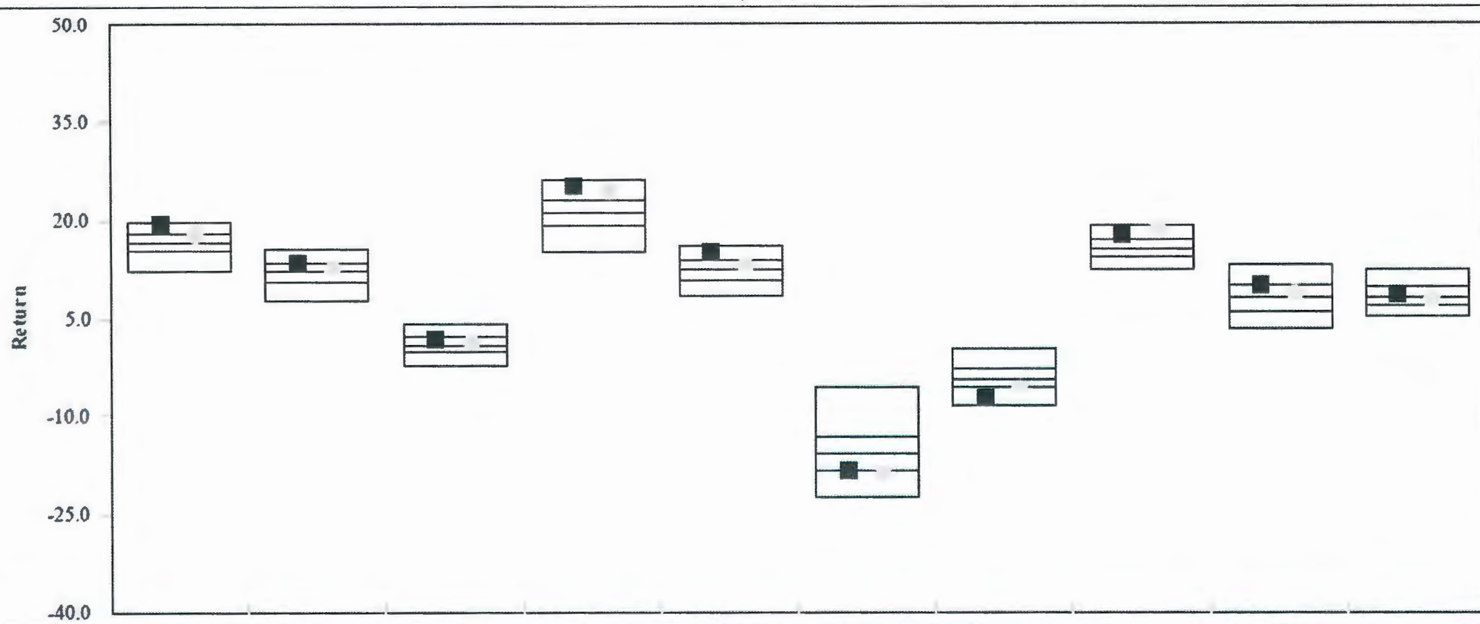
Performance returns are net of fees

Appendix 1.g:

Compare the ASRS' investment performance to peer retirement systems' performance

Exhibit 1:

Arizona State Retirement System
All Public Plans-Total Fund
As of June 30, 2004

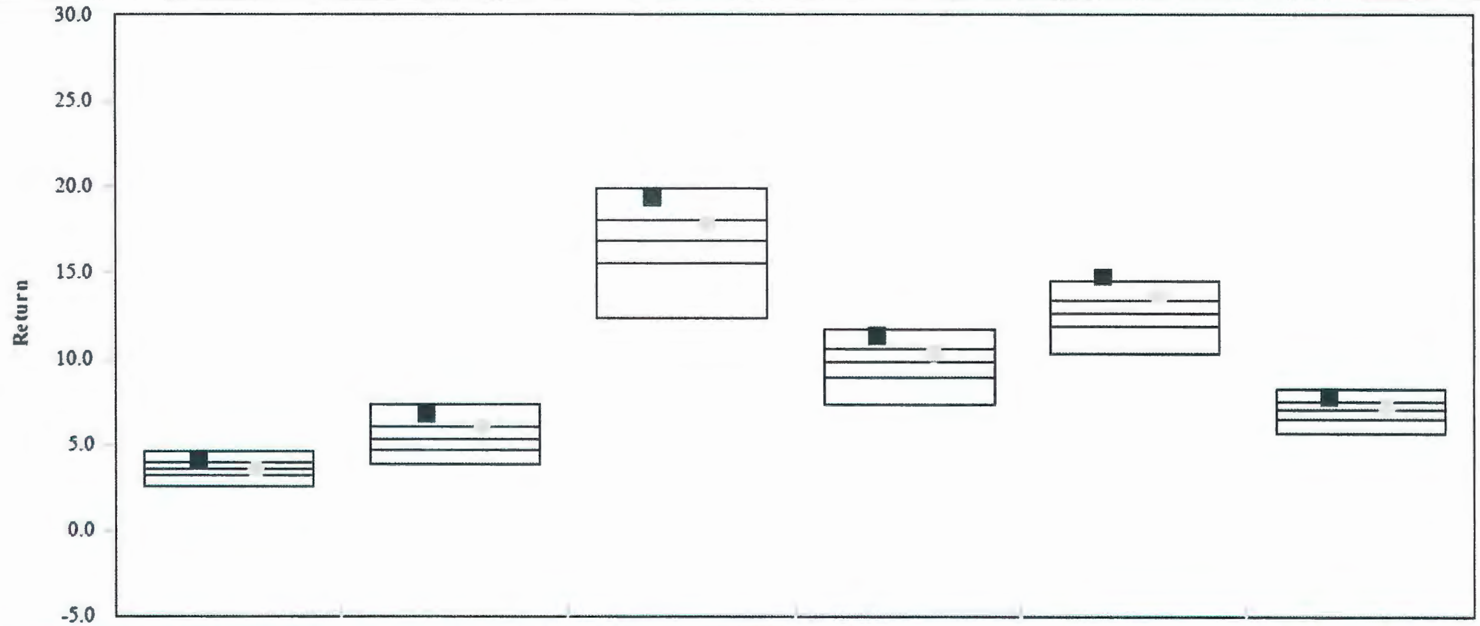


	Jul-2013 To Jun-2014	Jul-2012 To Jun-2013	Jul-2011 To Jun-2012	Jul-2010 To Jun-2011	Jul-2009 To Jun-2010	Jul-2008 To Jun-2009	Jul-2007 To Jun-2008	Jul-2006 To Jun-2007	Jul-2005 To Jun-2006	Jul-2004 To Jun-2005
■ Total Fund	19.31 (11)	13.76 (23)	1.81 (34)	25.14 (9)	15.15 (13)	-18.44 (77)	-7.28 (91)	17.90 (17)	10.14 (27)	8.60 (47)
Interim SAA Policy	17.83 (30)	12.60 (45)	1.30 (45)	24.35 (12)	13.13 (42)	-19.11 (81)	-5.68 (78)	18.59 (11)	8.80 (46)	7.79 (62)
5th Percentile	19.92	15.64	4.28	26.26	16.26	-5.57	0.55	19.43	13.39	12.54
1st Quartile	18.05	13.62	2.25	23.08	14.15	-13.07	-2.60	17.24	10.33	10.04
Median	16.85	12.34	1.02	21.23	12.68	-15.64	-4.22	15.74	8.48	8.33
3rd Quartile	15.59	10.81	-0.01	19.43	11.03	-18.22	-5.51	14.57	6.30	7.00
95th Percentile	12.44	7.92	-2.11	15.10	8.62	-22.41	-8.27	12.49	3.59	5.54
Population	513	511	522	526	512	453	410	308	287	276

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 2:

**Arizona State Retirement System
All Public Plans-Total Fund
As of June 30, 2014**

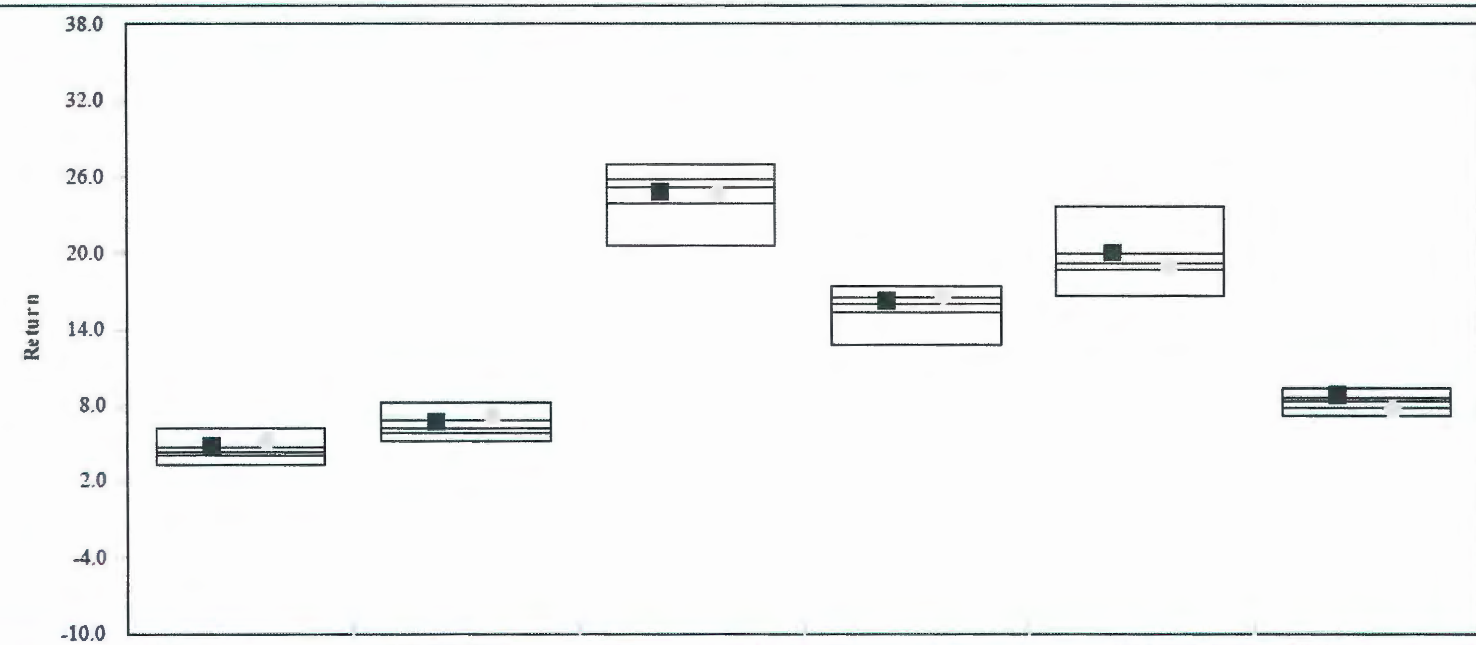


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Fund	4.08 (22)	6.79 (10)	19.31 (11)	11.38 (10)	14.77 (4)	7.82 (16)
Interim SAA Policy	3.50 (62)	5.98 (28)	17.83 (30)	10.36 (36)	13.59 (20)	7.21 (45)
5th Percentile	4.62	7.39	19.92	11.75	14.52	8.35
1st Quartile	3.99	6.05	18.05	10.71	13.44	7.60
Median	3.63	5.40	16.85	9.93	12.75	7.14
3rd Quartile	3.28	4.81	15.59	9.06	11.98	6.63
95th Percentile	2.63	3.85	12.44	7.43	10.32	5.76
Population	525	523	513	491	460	339

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 3:

Arizona State Retirement System
All Public Plans-US Equity Segment
As of June 30, 2014

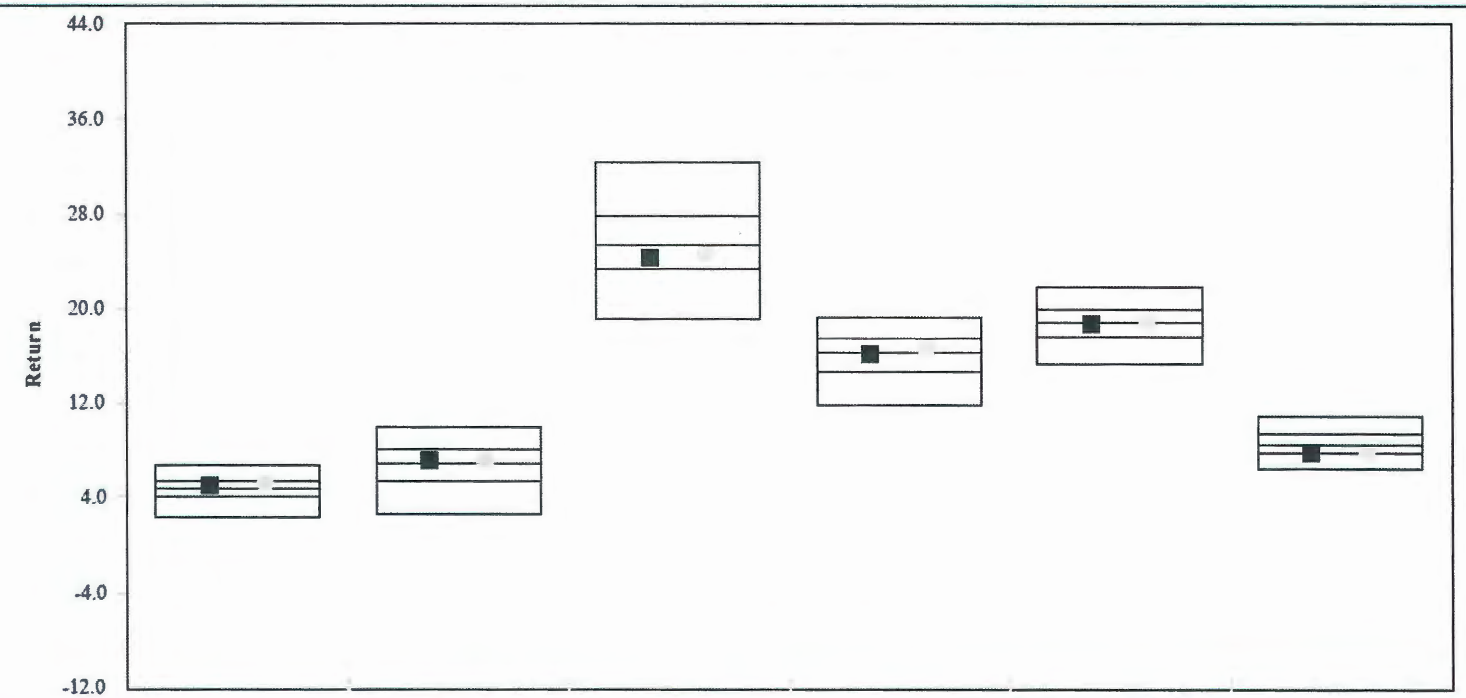


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Domestic Equity	4.76 (27)	6.68 (38)	24.81 (53)	16.30 (37)	19.98 (25)	8.82 (22)
S&P 500 Index	5.23 (11)	7.14 (12)	24.61 (59)	16.58 (24)	18.83 (69)	7.78 (76)
5th Percentile	6.38	8.25	26.92	17.47	23.69	9.34
1st Quartile	4.86	6.87	25.85	16.53	19.97	8.73
Median	4.41	6.37	25.11	16.11	19.32	8.37
3rd Quartile	4.13	5.85	23.96	15.35	18.77	7.80
95th Percentile	3.44	5.22	20.68	12.95	16.62	7.24
Population	87	85	82	75	61	36

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 4:

Arizona State Retirement System
IM U.S. Large Cap Equity (SA+CF)
As of June 30, 2014

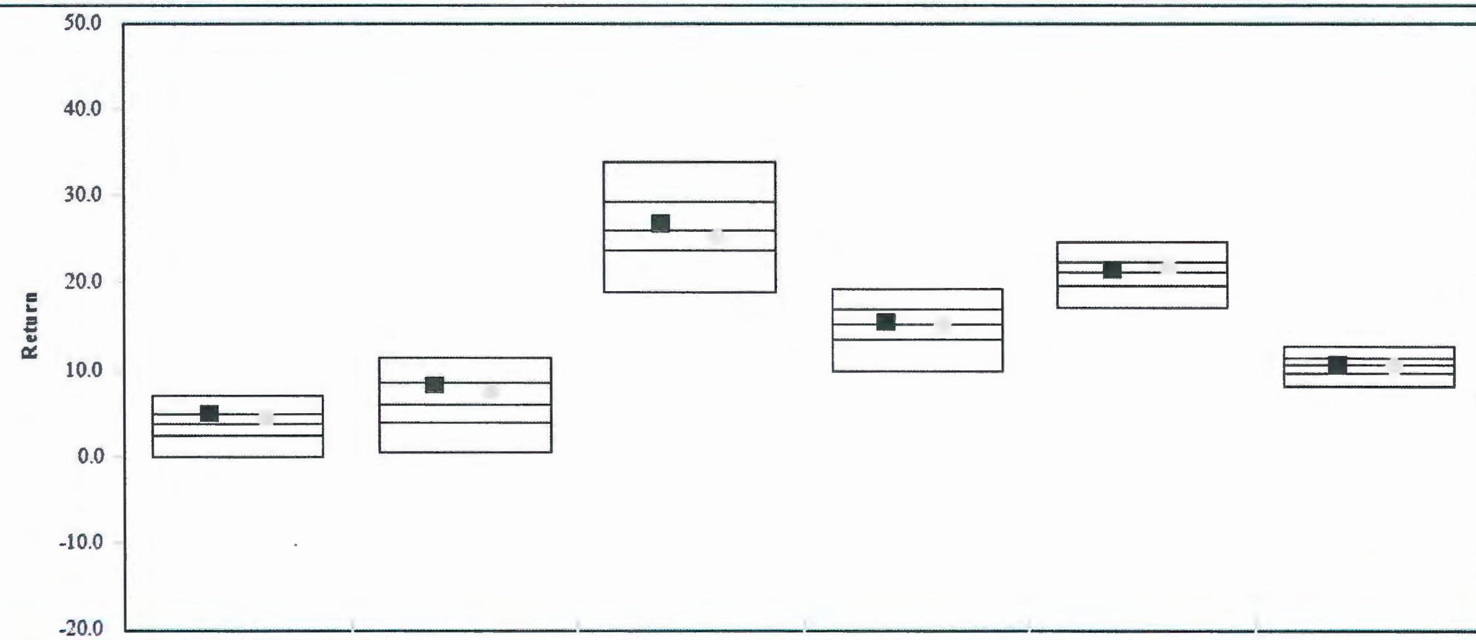


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Large Cap Equity	5.15 (38)	7.14 (45)	24.25 (67)	16.12 (59)	18.77 (55)	7.95 (75)
S&P 500 Index	5.23 (34)	7.14 (45)	24.61 (63)	16.58 (47)	18.83 (53)	7.78 (81)
5th Percentile	6.80	10.17	32.35	19.46	21.86	11.02
1st Quartile	5.48	8.13	27.76	17.65	19.94	9.49
Median	4.87	6.96	25.44	16.50	18.94	8.60
3rd Quartile	4.14	5.56	23.33	14.88	17.77	7.92
95th Percentile	2.41	2.79	19.18	11.97	15.45	6.54

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 5:

Arizona State Retirement System
IM U.S. Mid Cap Equity (SA+CF)
As of June 30, 2014

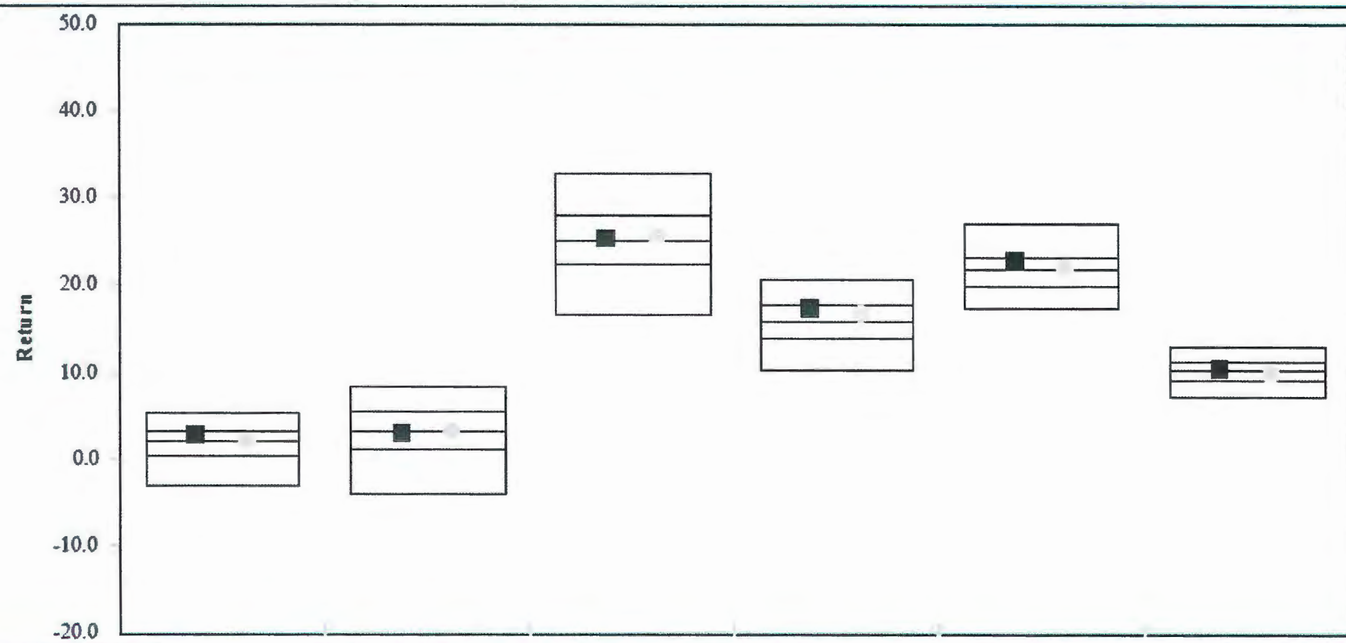


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Mid Cap Equity	4.96 (25)	8.18 (29)	26.84 (46)	15.60 (47)	21.50 (46)	10.78 (47)
S&P MidCap 400	4.33 (40)	7.50 (38)	25.24 (60)	15.26 (53)	21.67 (43)	10.50 (61)
5th Percentile	7.00	11.48	33.99	19.58	24.67	12.97
1st Quartile	4.94	8.67	29.52	17.02	22.55	11.60
Median	3.81	6.23	26.12	15.32	21.34	10.67
3rd Quartile	2.62	4.03	23.83	13.47	19.85	9.98
95th Percentile	0.12	0.52	18.99	10.17	17.15	8.36
Population	235	235	235	224	213	157

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 6:

Arizona State Retirement System
IM U.S. Small Cap Equity (SA+CF)
As of June 30, 2014

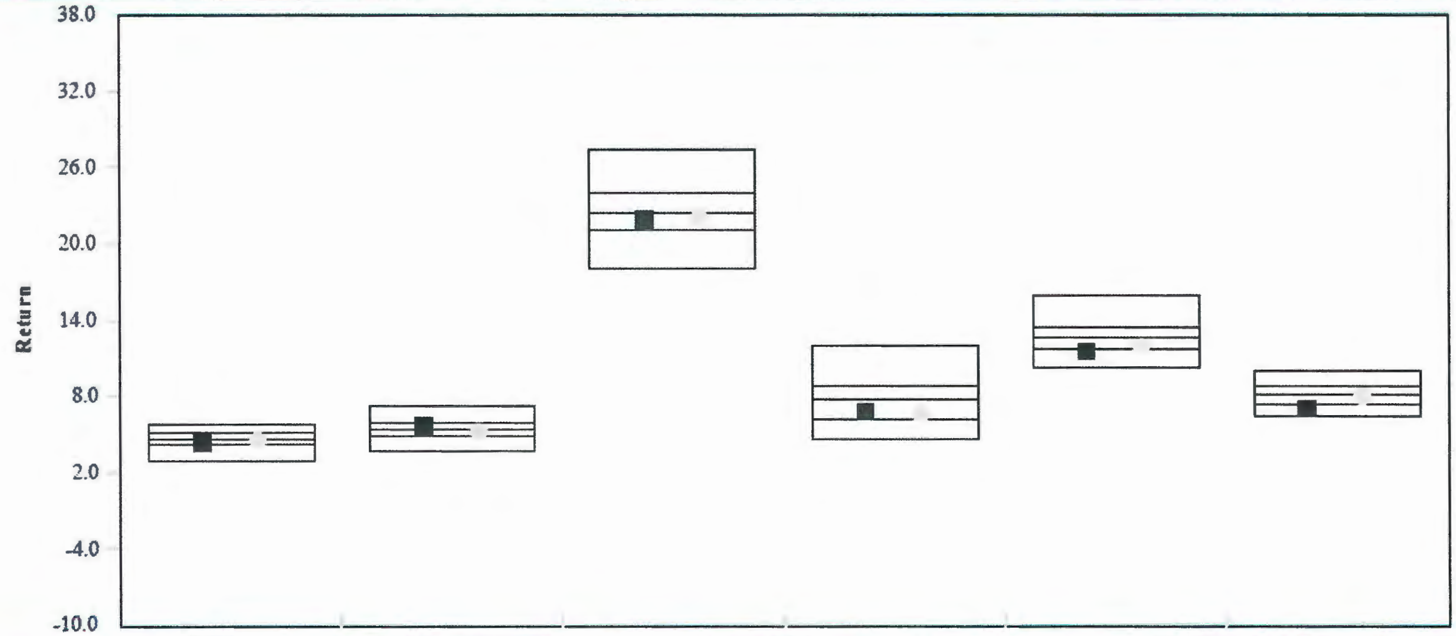


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Small Cap Equity	2.70 (39)	3.04 (56)	25.35 (49)	17.45 (29)	22.78 (35)	10.49 (45)
● ASRS Custom Sm Cap Eq Blended	2.07 (54)	3.22 (54)	25.54 (47)	16.81 (38)	21.98 (45)	9.87 (62)
5th Percentile	5.42	8.39	33.01	20.65	26.99	13.27
1st Quartile	3.44	5.58	28.05	17.80	23.43	11.43
Median	2.14	3.50	25.24	15.93	21.83	10.30
3rd Quartile	0.45	1.08	22.43	13.96	20.18	9.28
95th Percentile	-3.16	-3.90	16.84	10.38	17.49	7.33
Population	700	697	693	672	628	468

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 7:

Arizona State Retirement System
All Public Plans-Intl. Equity Segment
As of June 30, 2014

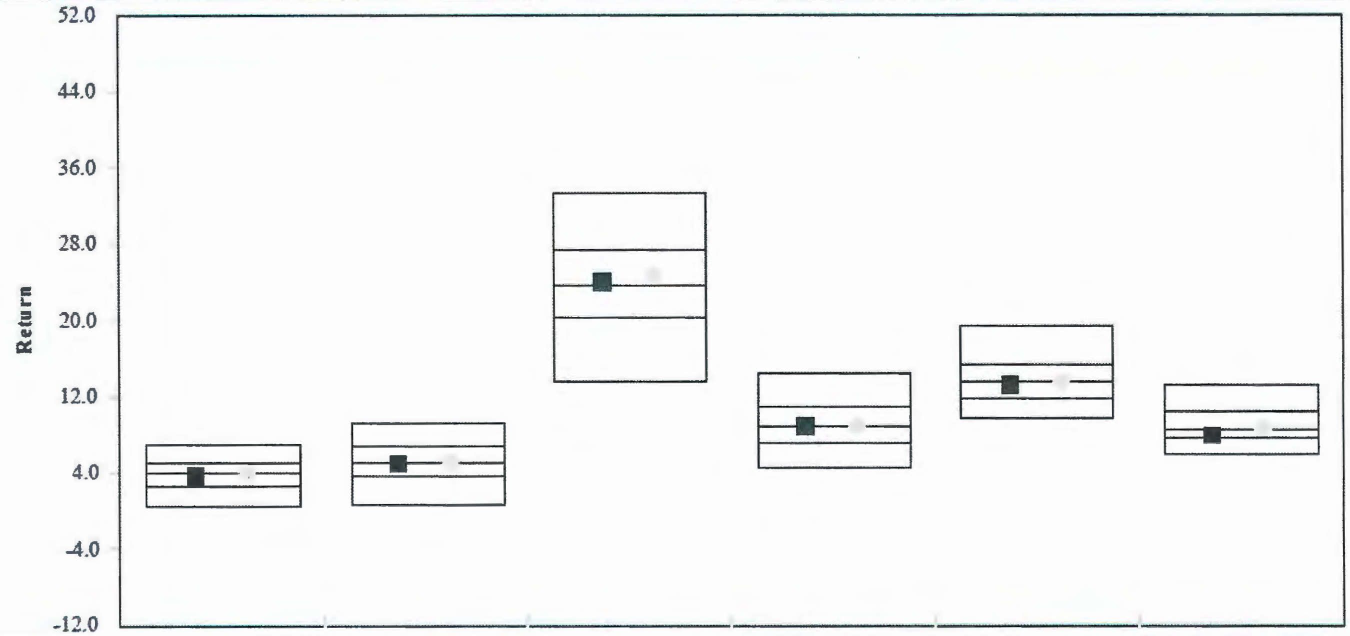


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total International Equity	4.43 (59)	5.58 (46)	21.75 (67)	6.79 (70)	11.52 (84)	7.04 (92)
ASRS Custom Int'l Eq	4.48 (56)	5.26 (61)	21.99 (61)	6.55 (71)	11.90 (75)	7.97 (59)
5th Percentile	5.91	7.29	27.38	11.98	15.94	10.11
1st Quartile	5.18	6.11	24.11	8.83	13.49	8.88
Median	4.63	5.48	22.33	7.91	12.76	8.21
3rd Quartile	4.19	4.91	21.11	6.23	11.83	7.37
95th Percentile	2.96	3.81	18.11	4.59	10.31	6.51
Population	83	82	80	70	56	34

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 8:

Arizona State Retirement System
IM International Equity Developed Markets (SA+CF)
As of June 30, 2014

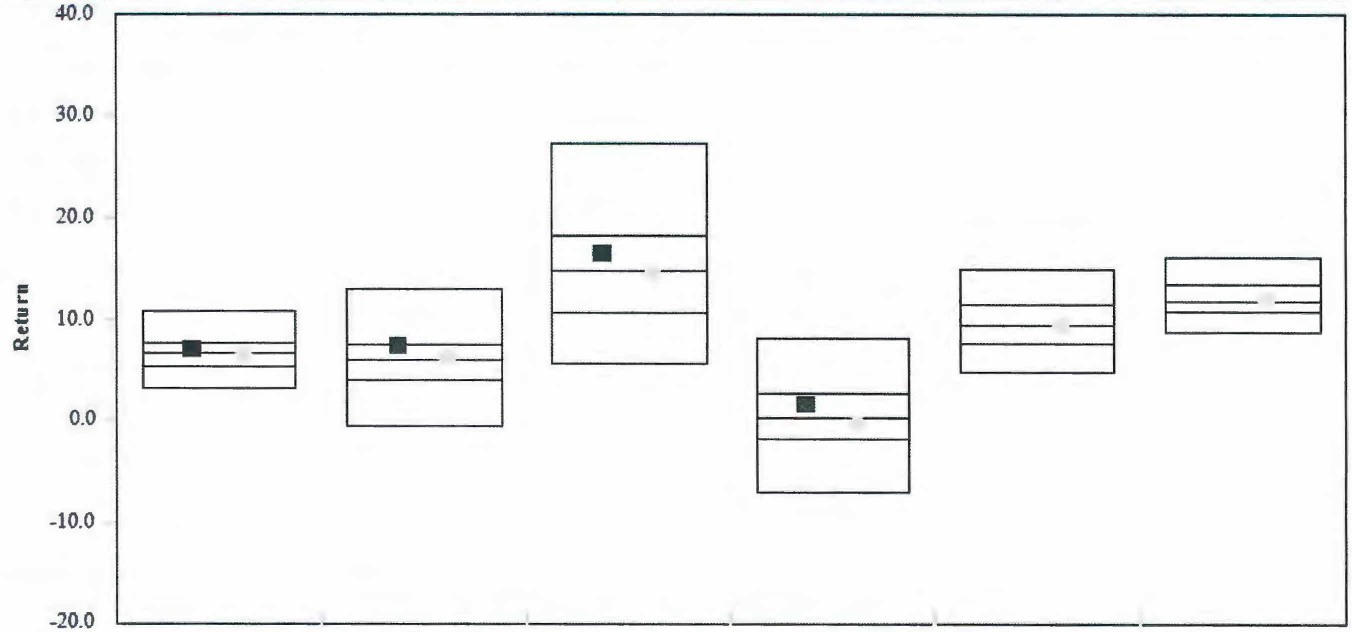


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Int'l Developed Markets Equity	3.57 (60)	5.00 (54)	23.98 (48)	8.82 (54)	13.27 (57)	7.87 (72)
● ASRS Custom Int'l Dev Mkts Eq	3.73 (57)	4.92 (55)	24.65 (42)	8.80 (55)	13.45 (52)	8.72 (51)
5th Percentile	6.96	9.45	33.36	14.67	19.36	13.31
1st Quartile	5.17	6.86	27.52	11.09	15.59	10.59
Median	4.09	5.17	23.70	9.00	13.61	8.73
3rd Quartile	2.77	3.57	20.46	7.20	11.98	7.67
95th Percentile	0.52	0.72	13.62	4.62	9.68	6.07
Population	639	639	635	597	563	378

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 9:

Arizona State Retirement System
IM Emerging Markets Equity (SA+CF+MF)
As of June 30, 2014

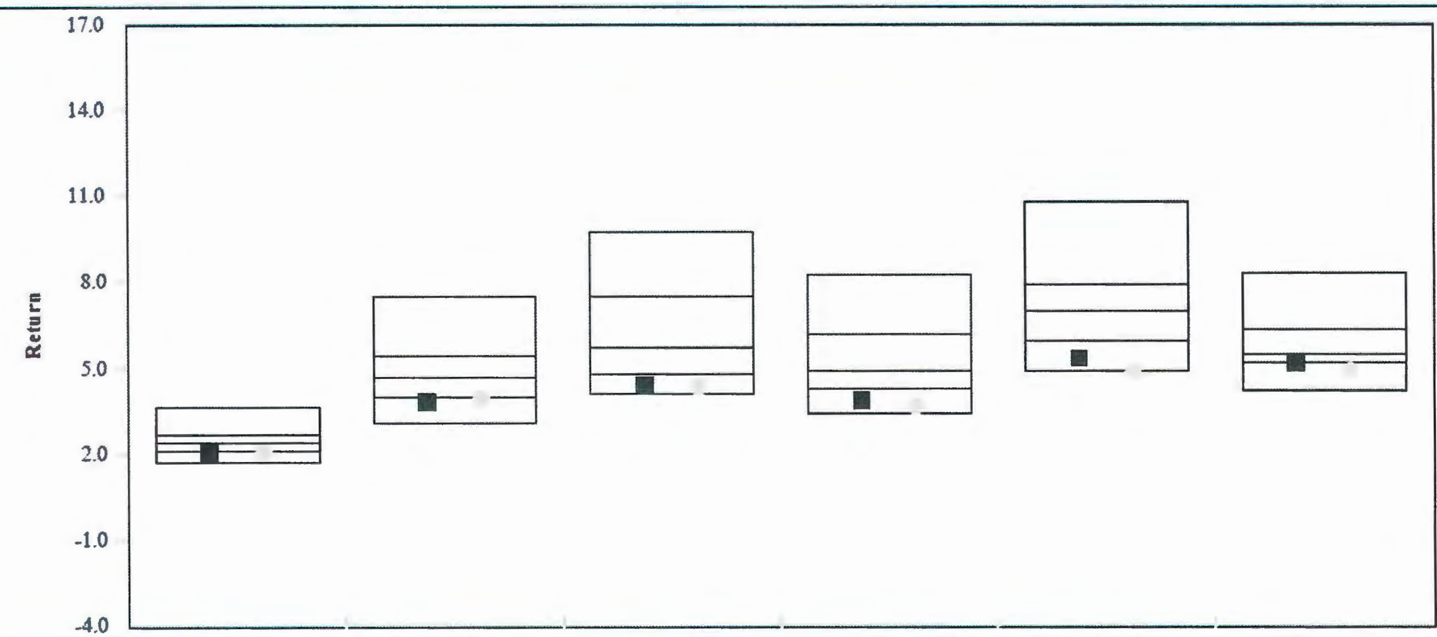


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Int'l Emerging Markets Equity	7.04 (43)	7.33 (29)	16.52 (36)	1.70 (35)	N/A	N/A
MSCI Emerging Markets (Net)	6.60 (55)	6.14 (47)	14.31 (54)	-0.39 (59)	9.24 (54)	11.94 (48)
5th Percentile	10.87	12.90	27.31	8.25	14.87	16.04
1st Quartile	7.75	7.59	18.22	2.86	11.54	13.41
Median	6.73	5.90	14.68	0.18	9.49	11.82
3rd Quartile	5.43	4.13	10.73	-1.85	7.73	10.85
95th Percentile	3.20	-0.52	5.73	-7.12	4.96	8.72
Population	1,241	1,191	1,087	823	581	290

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 10:

Arizona State Retirement System
All Public Plans-US Fixed Income Segment
As of June 30, 2014



	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Core Fixed Income	2.03 (79)	3.81 (87)	4.45 (90)	3.89 (85)	5.32 (92)	5.20 (78)
Barclays Aggregate Index	2.04 (77)	3.93 (82)	4.37 (91)	3.66 (91)	4.85 (98)	4.93 (92)
5th Percentile	3.70	7.51	9.79	8.27	10.85	8.32
1st Quartile	2.72	5.49	7.55	6.22	8.00	6.35
Median	2.43	4.72	5.79	4.99	7.02	5.54
3rd Quartile	2.10	4.06	4.83	4.30	6.03	5.21
95th Percentile	1.72	3.07	4.15	3.46	4.98	4.25
Population	83	82	79	72	56	35

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 11:

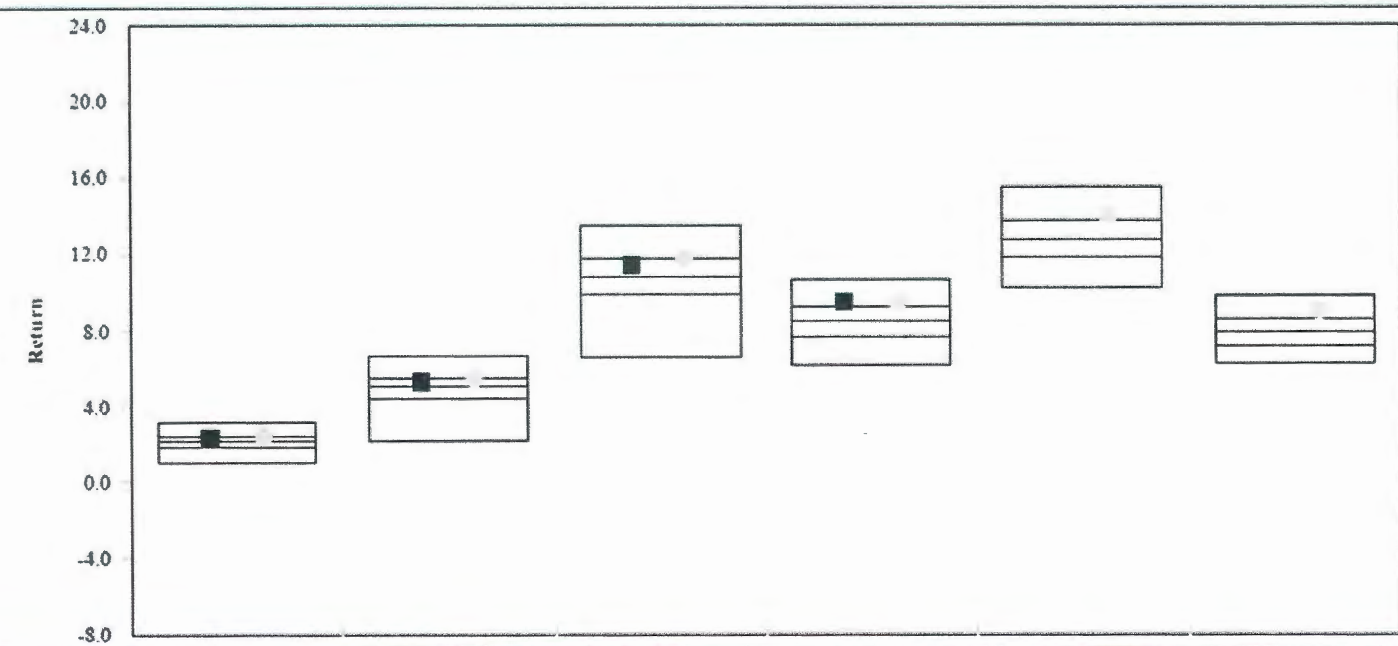
Arizona State Retirement System
IM Emerging Markets Debt (SA+CF+MF)
As of June 30, 2014

	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Emerging Market Debt	4.57 (63)	6.43 (71)	5.22 (88)	N/A	N/A	N/A
JPM GBI-EM Global Diversified	4.02 (81)	5.99 (79)	3.91 (95)	1.16 (93)	7.42 (92)	10.01 (54)
5th Percentile	6.03	10.24	13.11	9.06	14.11	12.59
1st Quartile	5.33	8.62	10.66	7.47	11.78	10.81
Median	4.76	7.72	9.13	6.30	10.54	10.08
3rd Quartile	4.18	6.22	6.87	3.53	9.21	9.16
95th Percentile	2.73	3.91	3.74	0.62	6.86	7.29
Population	375	367	329	217	152	83

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 12:

Arizona State Retirement System
IM U.S. High Yield Bonds (SA+CF+MF)
As of June 30, 2014

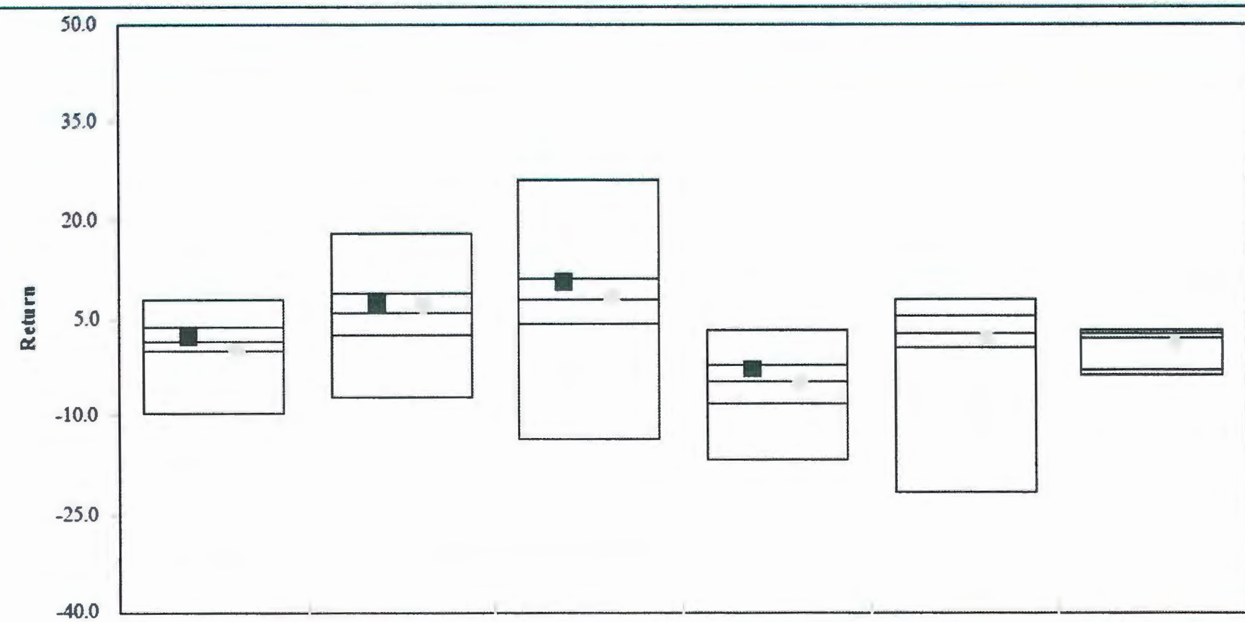


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total High Yield Fixed Income	2.30 (43)	5.33 (37)	11.45 (36)	9.50 (22)	N/A	N/A
Barclays US High Yield	2.41 (33)	5.46 (31)	11.73 (28)	9.48 (22)	13.98 (21)	9.05 (16)
5th Percentile	3.22	6.67	13.60	10.70	15.57	9.89
1st Quartile	2.51	5.60	11.85	9.34	13.81	8.68
Median	2.20	5.08	10.87	8.54	12.82	7.98
3rd Quartile	1.87	4.48	9.95	7.76	11.92	7.27
95th Percentile	0.99	2.21	6.60	6.24	10.29	6.33
Population	817	805	773	640	549	389

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 13:

Arizona State Retirement System
IM All Commodities (MF)
As of June 30, 2014

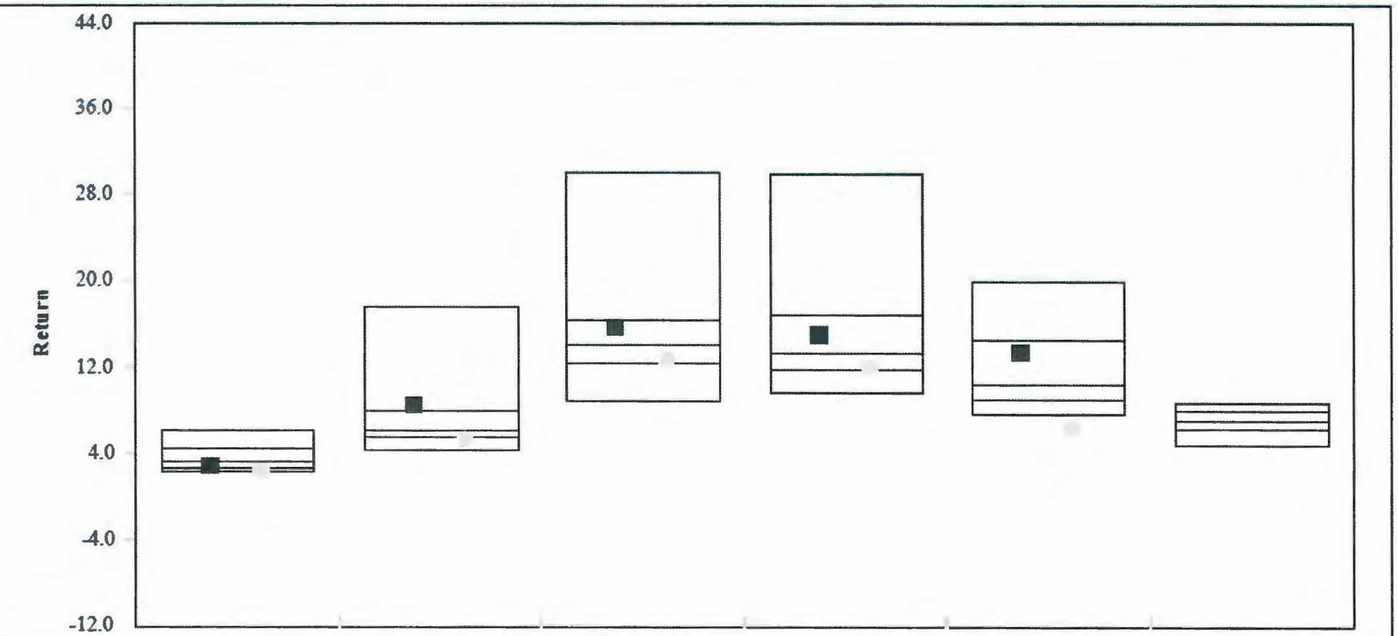


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Commodities	1.99 (43)	7.31 (38)	10.57 (30)	-2.79 (29)	N/A	N/A
Bloomberg Commodity Index Total Return	0.08 (75)	7.08 (40)	8.21 (47)	-5.17 (54)	1.99 (61)	0.87 (53)
5th Percentile	7.80	18.16	26.16	3.09	7.90	3.28
1st Quartile	3.74	8.96	11.32	-2.07	5.48	2.92
Median	1.53	6.15	7.84	-4.79	2.94	2.13
3rd Quartile	0.01	2.70	4.34	-8.03	0.47	-2.92
95th Percentile	-9.72	-7.09	-13.53	-16.71	-21.79	-3.56
Population	274	267	265	191	108	11

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 14:

Arizona State Retirement System
IM U.S. Private Real Estate (SA+CF)
As of June 30, 2014

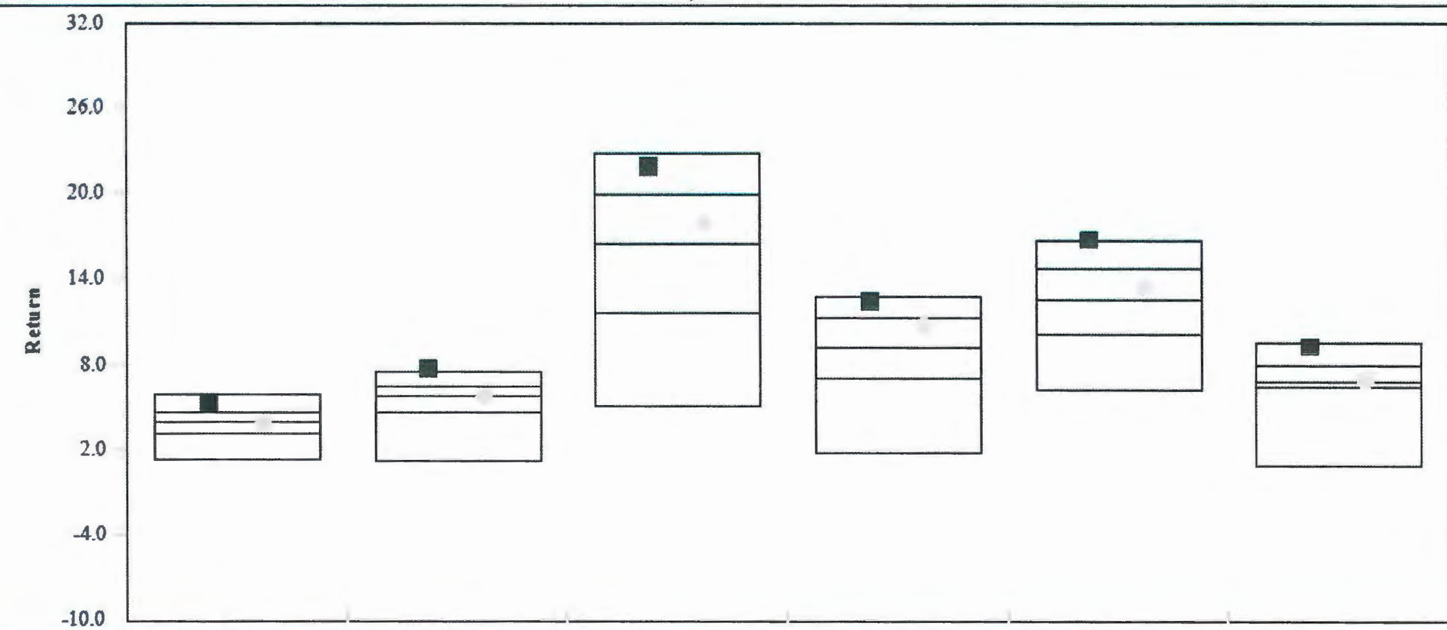


	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total Real Estate	2.78 (68)	8.48 (23)	15.74 (37)	14.97 (38)	13.38 (29)	N/A
NCREIF ODCE 1QTR Lagged (net)	2.29 (97)	5.29 (81)	12.74 (70)	11.99 (74)	6.31 (100)	N/A
5th Percentile	6.22	17.69	30.10	30.02	20.03	8.89
1st Quartile	4.52	8.04	16.46	17.04	14.75	8.03
Median	3.25	6.16	14.18	13.47	10.48	7.09
3rd Quartile	2.67	5.56	12.38	11.92	9.11	6.34
95th Percentile	2.31	4.23	8.98	9.58	7.73	4.76
Population	34	34	34	33	31	22

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Exhibit 15:

Arizona State Retirement System
IM Global Balanced/TAA (SA+CF+MF)
As of June 30, 2014



	1 Quarter	Year To Date	1 Year	3 Years	5 Years	10 Years
■ Total GTAA	5.32 (10)	7.72 (5)	21.87 (17)	12.42 (11)	16.79 (5)	9.27 (12)
ASRS Custom GTAA	3.85 (57)	5.70 (57)	17.88 (42)	10.72 (33)	13.34 (42)	6.92 (49)
5th Percentile	6.03	7.57	22.80	12.87	16.72	9.65
1st Quartile	4.60	6.42	20.06	11.38	14.76	8.12
Median	4.07	5.91	16.54	9.26	12.57	6.87
3rd Quartile	3.14	4.68	11.68	7.14	10.15	6.47
95th Percentile	1.30	1.28	5.14	1.88	6.23	0.92
Population	169	168	167	151	126	27

Parentheses contain percentile rankings. Calculation based on monthly periodicity
Performance returns are gross of fees. Peer Universe Source: Investment Metrics.

Appendix 2.c:

Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts

Exhibit 1:

Foley & Lardner LLP

Foley summarizes the key elements of their review process as follows:

- Review of Board meeting minutes to determine the scope of the Board's approval
- Investment Fund Document Review, which may include
  - Offering memoranda (PPM)
  - Limited partnership agreement
  - Subscription documents
  - SEC Form ADV
- Investment Fund Manager Review

In addition to the legal review, Foley will negotiate key terms specifically on behalf of ASRS. Key provisions of the negotiation include:

- Investment Fund Fees and Expenses
- Fiduciary Duty Standard of Investment Manager
- Most Favored Nation
- Clawbacks
- Indemnification
- Disclosure Requirements (consistent with Arizona statutes)
- Record Retention and Reports (consistent with Arizona statutes)
- Gift and Ethics (consistent with Arizona statutes)

Cox, Castle & Nicholson LLP

CCN identified the key criteria in their review of commingled fund offerings as follows:

- Side Letter typically includes:
  - Arizona Statutory Requirements
  - Most Favored Nation
  - Entire Agreement and Binding Effect
  - Financial Statements, Contents of Financial reports and Operational Audit; Management Fee and Partnership Expense Reporting; Cooperation with Consultants
  - Ethics Acknowledgement, Placement Agents and SEC Rule 206(4)-5 (Pay to Play Prohibitions)
  - Notice of Ownership Changes and Key Man Event
  - Representations of the Partnership and the General Partner
  - Investor Transfers
  - Alternative Investment Vehicles
  - Opinions
  - Other Opinions; Foreign Investments
  - Tax Withholding
  - Distributions in Kind
  - Tax Forms
  - Non-U.S. Tax
  - Eleventh Amendment Immunity
  - State of Arizona Look At Clause
  - Co-Investment Opportunities
  - Indemnification, Claims for Indemnification and Insurance
  - Liabilities after Termination
  - Advisory Board and Reporting Requirements
  - U.S. Foreign Corrupt Practices Act
  - AML Laws
  - AML Representations
  - Power of Attorney
  - Exemption from Participation
  - Distribution Notices
  - Fees and Incentive Allocation Transparency; Carried Interest Calculation
  - Indebtedness
  - Voting

Cox, Castle & Nicholson LLP- Continued

- Venue
- Notice of Certain Claims
- Subscription Facility
- Defaulting Investor
- Debt Due on Demand
- Partnership Expenses
- Change in Investments
- No Restoration
- Environmental Liability
- Transactions with Affiliates
- Publicity

- Subscription Agreement review typically includes:
  - Acceptance of Subscription
  - Delivery of Information
  - Execution of Documents
  - OFAC Representations
  - IRC Representations
  - ERISA Representations

CCN identified the key criteria in their review of separate accounts as follows:

- Formation
- Investor
- Manager
- Standard of Care
- No Substitute Performance
- Title Holding Subsidiaries
- Major Decisions
- Removal of the Manager
- Acquisition Process
- Financing and Guaranties
- Company Books
- Reports
- Audits

Appendix 2.d:

Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices

Exhibit 1: Best Practices

Sample Best Practices, from fi360's 2013 publication, *Prudent Practices for Investment Stewards (U.S. Edition)*

Appendix 3.c:

Compare the ASRS' processes and other controls over setting external investment manager fees to best practices

GFOA Best Practice

Investment Fee Policies for Retirement Systems

Background. Investment management fees can have a major effect on a retirement system's net investment returns. Historically, retirement systems have tried to minimize fees by: 1) using a competitive selection process that makes fee negotiation a key factor in the procurement decision; 2) using low-cost passive index investment strategies; and 3) exploring opportunities for achieving economies of scale. As retirement systems make increasing use of alternative investments such as hedge funds, private equity, and real estate, procedures to identify, quantify, and negotiate all forms of investment manager compensation are needed to minimize the effect these premium-priced investment strategies can have on the retirement system's total returns.

Recommendation. To minimize the impact of investment management fees on portfolio returns, the GFOA recommends that retirement systems, especially those that use alternative investment strategies, adopt an investment management fee policy that will allow the retirement system to negotiate the lowest competitive fee possible while looking out for the system's long-term earning potential.

To achieve this goal, an investment management fee policy should adhere to the following guidelines:

1. Staff and consultants should negotiate the lowest competitive fees using measures and techniques such as:
   - Determining what fees similar investors are paying and making these peer comparisons part of the negotiation process.
   - Including a "most favored nation" clause (ensuring that the type and size of fees are at the level that is being made available to other similar investors) in the agreement.
   - Leveraging the consultant's knowledge of the marketplace to minimize fees for contracted services, keeping in mind that fees are a key component of the competitive procurement process.

2. Give a specific individual or group of employees explicit responsibility for negotiating fees, and require that they report on the status of negotiations before the management agreement is executed. Consult with retirement system trustees to determine their interest in alternate fee structures (e.g., a fixed fee versus a performance fee that may have a higher or lower expected cost, based on performance).

3. Identify where the importance of competitive fees ranks among the multiple factors analyzed when selecting investment managers:
   - The primary factors to consider are demonstrated track records, proven investment talent, repeatable investment processes, competitive and strategic investment advantages, and other qualitative factors.[1]

- When screening investment managers, make sure fees are reasonable. Future returns are uncertain, while fees can be determined in advance. When one manager's fees are higher than another's, analyze the track record to determine whether the additional cost is necessary and appropriate.
- Because fees for active management can be dramatically higher than fees for passive management, examine the fees, the investment process, and historical performance of active managers to determine the likelihood that their performance will be better than the index return, after fees.[2]

4. When investing in traditional investments, ensure that the pension system is paying a reasonable, competitive fee by implementing the following strategies:
   - When using a separate account structure (whereby professional investors manage a portfolio solely for the system), establish fee break points as the manager's mandate grows. [3]
   - Explore the possibility of excluding uninvested cash from management fees, where possible. If exclusions aren't possible, consider a refunding arrangement.
   - When investing in commingled and mutual funds (investment vehicles that pool assets of multiple investors), ask the manager to identify and quantify all levels of fees.
     - Any fees that aren't directly related to the management of the portfolio should be considered for elimination.
     - Seek access to the lowest-cost share class and require that any fees related to services provided to retail investors be refunded to the retirement system.
     - Ask the investment manager to consider all the accounts it handles for your organization when determining fees.

5. When investing in alternatives, ensure that the retirement system is not paying excessive fees by implementing the following additional strategies:
   - Identify all fees. Paying a base fee is usually appropriate, but the fee policy should specify a preference for performance-based fees, where applicable. Focus on aligning the interests of the retirement system and the investment manager through the performance fee structure, potentially including fulcrum fees, hurdle rates, fee caps, and clawback provisions.[4]
   - The fee policy should state a preference for performance fees that compensate the manager for alpha rather than beta, and it should include a hard hurdle. [5] Alternative investment managers commonly use "carried interest," or participation fees, which are expressed as a percentage of net returns over a specified minimum return.
   - Rather than entering into direct partnerships with alternative investment managers, investigate the possibility of group purchasing arrangements such as an alternative investment fund of a P-share class.[6] These options allow retirement systems to realize pricing concessions based on their meaningful economies of scale and their long-term investment horizon.
   - Look for ways to "piggyback" on other institutional investors to maximize economies of scale and increase negotiating leverage.[7] One way of piggybacking is through a cooperative pool, in which an investment manager makes available a separate pool that provides lower pricing, based on the combined assets in the pool. Such "break points" are employed by mutual funds and commingled investment trusts and can be replicated through investment pools established for public pension funds.
   - Hire an attorney to oversee alternative investment contracts.

Notes.

1 A *repeatable investment processes* is one that is disciplined and consistent in strategy. *Competitive and strategic investment advantages* refer to an advantage that a firm has over its competitors, allowing it to generate greater sales or margins and/or retain more customers than its competition; this can include the firm's cost structure, product offerings, distribution network, and customer support. *Qualitative factors* refer to aspects of a firm's business such as its business model, competitive advantages, management, and corporate governance.

2 In *active management*, an investment manager attempts to earn more than the average market return. In *passive management*, the manager simply attempts to replicate the average market return before fees.

3 *Break point* refers to the investment amount that qualifies the investor for a reduced sales charge.

4 *Performance fees* are paid when an investment manager achieves an investment return that beats a specified benchmark. *Fulcrum fees* are fees that are centered on a target, or "fulcrum," performance level, which are increased or decreased, depending on performance. *Hurdle rates* are the *minimum rate of return* required for payment of performance fees. *Clawbacks* are payments the retirement system has made that the investment manager needs to return because of special circumstances that are included in the contract, such as failure to meet a minimum investment return.

5 *Alpha* refers to the portion of investment returns that is attributable to the manager's performance and skill, while *beta* is a measure of an investment's volatility, or systematic risk, when compared to the market as a whole. A *soft hurdle* calculates the manager's performance fee on all the fund's investment returns, if the hurdle rate is cleared. A *hard hurdle* is calculated only on returns above the hurdle rate. A hurdle is intended to ensure that a manager is rewarded only upon generating investment returns that are greater than what the investor would have earned elsewhere in the market.

6 A *P-share class* is a special pricing structure established by some investment fund companies; it gives retirement systems access to lower fees than those paid by retail investors.

7 Pension funds can also pursue collaborative procurement strategies and other methods of lawfully increasing the pension plan's bargaining and purchasing power. Each of the 50 states has enacted statutes permitting intergovernmental service and procurement arrangements.

Resources.

Orange County Employees Retirement System Fee Policy.

Girard Miller, "Managing Against Escalating Pension Investment Fees," *Government Finance Review*, February 2014.

ARIZONA STATE RETIREMENT SYSTEM

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Paul Matson
Director

August 12, 2015

Mark Melnychuk
Arthur J Gallagher & Co
3600 American Blvd West, Suite 500
Bloomington, MN 55431

Dear Mr. Melnychuk:

Below are the Arizona State Retirement System responses to the recommendations contained in the *Arizona State Retirement System (ASRS) Operational Review* report your firm prepared as a part of the Office of the Auditor General's performance audit and sunset review of the ASRS.

Task 1: Determine the Fund's investment performance during the past 10 fiscal years (2005 through 2014), identify the causes for and impact of any underperformance and make recommendations for improving the Fund's investment performance, as appropriate.

Task 1.b: Compare the ASRS' investment strategies and objectives to best practice, including but not limited to industry standards

1. Recommendation: The ASRS should continue to maintain and update an investment policy statement (IPS) for the Fund.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented. Per the ASRS Governance Handbook, the ASRS Investment Committee reviews the IPS annually; modifications to the IPS require full Board approval.

2. Recommendation: The assumed actuarial interest rate has not changed over the last ten fiscal years; Gallagher recommends that the ASRS discuss the 8.0% actuarial rate annually with the actuary to ensure that it is appropriate given current asset allocation and projected rates of return. ASRS should maintain a long-term perspective to avoid unwarranted changes to the actuarial rate.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

Task 1.c: Determine the processes the ASRS uses to monitor how well its investment strategies and objectives are performing and guide it toward meeting its expected rates of return

1. Recommendation: Gallagher recommends that the ASRS ask NEPC to include consecutive calendar year performance for the most recent ten years in the quarterly IPR.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented. The independent general investment consultant, NEPC, has commenced reporting annual calendar year performance in the ASRS quarterly Investment Performance Report. This information was included in the ASRS Q1-2015 Investment Performance Report.

Task 1.h: ***Determine the causes for any underperformance, including any procedures or requirements that limit the ASRS' investment strategies***

1. Recommendation: The ASRS should continue to monitor performance of the Fund and the underlying strategies and adjust its asset allocation and restructure asset classes as appropriate and reasonable.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

Task 2: Determine if the ASRS has adequate processes and other controls for selecting, monitoring, and terminating contracts with alternative investment managers and valuing these investments, identify the reasons for and impact of any inadequate controls and make recommendations for improving controls, as appropriate.

Task 2.a: ***Identify the processes and other controls the ASRS uses for selecting, developing terms and conditions for, monitoring, and valuing investments, and terminating alternative investment manager contracts***

1. Recommendation: Gallagher recommends that the ASRS conduct a thorough review and update of the Strategic Investment Policy at least annually (and more frequently if needed). The current version has been in place for more than 2 years.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

2. Recommendation: In order to gain additional confidence in valuations, the ASRS should sample a greater number of partnerships. Sampling should include sufficient partnerships to represent at least 50% of the market value of the total alternative investment portfolio.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

<u>Task 2.b</u>: *Determine whether the ASRS used the identified processes and controls for alternative investment contracts the ASRS entered into during fiscal years 2005 through 2014*

1. Recommendation: Gallagher recommends including sourcing information and screening criteria in the final investment memo for each partnership. These are active parts of the investment process, and it would be beneficial to document where each opportunity came from and what characteristics drove the team to undertake additional due diligence.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

2. Recommendation: Gallagher recommends that all specialty consultants adopt Meketa's practice of incorporating the due diligence checklist, as presented in Appendix 1 of SIP006, into their recommendations. The checklist provides a tangible record that the due diligence has been performed as prescribed by the consultant, which should give the Private Markets Committee additional confidence in considering the recommendations made by the consultant. Making the checklist a standard practice will also help to ensure consistency across the evaluation of each potential investment.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

3. Recommendation: The ASRS should continue the independent reviews of Asset Class Committee meetings by NEPC. Record NEPC's reviews in a single document for ease of review and monitoring. NEPC's independent verification that the process has been followed for each investment serves as an important check and balance to ensure that every investment has been vetted properly.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

<u>Task 2.c</u>: Determine if the ASRS collects and utilizes monitoring data to improve subsequent contracts

1. Recommendation: The ASRS should continue to utilize both firms in the legal review of fund terms and documents, as appropriate.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

2. Recommendation: While both firms' have appeared to serve the ASRS well, a documented, periodic review of each service provider can help ensure that the firms

continue to serve in the best interest of the Plan. We recommend that such a review be conducted at least every three years.

ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and a different method of dealing with the finding will be implemented. The ASRS review will be conducted to coincide with the procurement cycle.

<u>Task 2.d</u>: Compare the ASRS' processes and other controls for selecting, monitoring, and terminating alternative investment manager contracts and valuing investments to best practices, including but not limited to industry standards

1. Recommendation: As listed in Section 2.b, Gallagher recommends the inclusion of sourcing and screening information in final due diligence materials on each fund.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

2. Recommendation: A periodic review of all service providers (both investment advisors and legal representation) would help to ensure that the ASRS continues to receive high-quality guidance and advice at a reasonable cost. We recommend that these reviews be conducted at least every three years.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and a different method of dealing with the finding will be implemented. The ASRS review will be conducted to coincide with the procurement cycle.

<u>Task 3</u>: Determine if the ASRS has adequate processes and other controls over external investment manager fees, identify the reasons for and impact of any inadequate processes and controls, and make recommendations for improving processes and controls, as appropriate.

<u>Task 3.a</u>: Identify the processes and other controls the ASRS uses for accepting and/or negotiating external investment manager fees

1. Recommendation: The ASRS has a well-considered approach to negotiating investment fees that should be equally well articulated in the documented procedures for selecting investment managers. Gallagher recommends adding an Appendix to SIP006 that explicitly outline the objectives and preferences for fee negotiations.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

<u>Task 3.b</u>: Determine whether the ASRS used the identified processes and controls for accepting and/or negotiating external investment manager fees for contracts the ASRS entered into during fiscal years 2005 through 2014

1. Recommendation: The documented procedures mentioned in Section 3.a should include a standard method for documentation of fee negotiations. The documentation should include, at a minimum, the proposed fees from the manager before negotiation, the ASRS proposed fee structure, the final agreement, and be signed by the person(s) responsible for the negotiation.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

Task 3.c: Compare the ASRS' processes and other controls over setting external investment manager fees to best practices, including but not limited to industry standards

1. Recommendation: The ASRS procedures are well aligned with best practices with the exception of having a dedicated fee negotiation team that must report on all proposed investments before a deal is executed. Gallagher recommends implementing a formal report on fee negotiations to be completed prior to the execution of each investment agreement.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented.

Task 3.d: Identify the reasons for and impact of any inadequate processes or other controls

1. Recommendation: Gallagher recommends the documentation of fee negotiations should include acknowledgement of where the manager fee ranks compared to an appropriate peer group. Above-median fees should be justified by the perceived ability of the manager to add value over the appropriate benchmark.

   ASRS Response: The finding of Arthur J Gallagher & Co is agreed to and the audit recommendation will be implemented subject to availability of appropriate peer data.

Sincerely,

Paul Matson
Director

cc: Ms. Debbie Davenport, Auditor General

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A REPORT TO THE ARIZONA STATE RETIREMENT SYSTEM OPERATIONS AND AUDIT COMMITTEE

ARIZONA STATE RETIREMENT SYSTEM
EMPLOYER AUDITS

CENTRAL ARIZONA IRRIGATION AND DRAINAGE DISTRICT

<u>FINDINGS AND RECOMMENDATIONS</u>

July, 2015

FINDING 1:

The Central Arizona Irrigation and Drainage District did not properly account for the fiscal year 2012 contributions that were initially changed to a 53/47 split and then retroactively back to the historical 50/50 split.

A.R.S. § 38-736 required that, beginning "July 1, 2011, member contributions are a percentage of a member's compensation equal to fifty-three per cent of the total contributions." This change from the historical 50/50 sharing between members and their employers was then changed back before FY 2012 ended. Because the change was made retroactive, the employer was required to refund the employees' excess contributions and to report the refund to the ASRS so the members' accounts could properly reflect a 50/50 sharing for the entire year.

The employer properly refunded the excess amounts, but did not properly account for these adjustments. Of the thirty-six members whose accounts were adjusted, eight members had one pay period that was not included in the adjustment calculation, so their accounts are still out of balance. Also, the full adjustment was not made on their tax records. This resulted in their W-2s showing retirement contributions that were not reduced by the amounts returned. The District did offset these amounts to arrive at correct taxable income, so this was only a reporting error. While none of the individual misidentified amounts exceeded $1,000, in the aggregate the amount was $12,538.

The gross unreported adjustment as determined by this audit are as follows:

Total Unreported Eligible Adjustments $202

Recommendations:

The employer should report the additional adjustments to the ASRS for the eight members to bring their accounts into balance.

Employer Response:

On August 5, 2015, the finding was corrected. An adjustment was made on the ASRS website to correct the eight members' balances.

A REPORT TO THE
ARIZONA STATE RETIREMENT SYSTEM
OPERATIONS AND AUDIT COMMITTEE

ARIZONA STATE RETIREMENT SYSTEM
EMPLOYER AUDITS

CENTRAL ARIZONA IRRIGATION AND DRAINAGE DISTRICT

July, 2015

The audit of Central Arizona Irrigation and Drainage District was completed in July, 2015 for the period July 1, 2011 through June 30, 2014.

The audit objectives are to determine whether the Central Arizona Irrigation and Drainage District is in compliance with Arizona State Retirement System (ASRS) statutes governing the following:

- Eligible compensation and required contributions reported to the ASRS.
- Accurate and timely enrollment of all eligible employees.
- Reporting and remitting of the employees' and employer's share of contributions.
- Medical and dental insurance premium benefits payable to retired employees.
- Retirees returning to work.

SUMMARY OF FINDINGS:

Based on the results of the work performed to meet the above audit objectives, the following statement summarizes the finding presented to Central Arizona Irrigation and Drainage District:

> **The Central Arizona Irrigation and Drainage District did not properly account for the fiscal year 2012 contributions that were initially changed to a 53/47 split and then retroactively back to the historical 50/50 split.**

BACKGROUND

Central Arizona Irrigation and Drainage District joined the ASRS on January 1, 2009 by executing an Application and Social Security 218 Agreement. Central Arizona Irrigation and Drainage District currently has almost 40 employees contributing to the ASRS.

DESCRIPTION OF AUDIT WORK PERFORMED

The audit work performed during this engagement was conducted in conformance with the International Standards for the Professional Practice of Internal Auditing. The audit work completed consisted of an examination of the employer's payroll and personnel records for the time period July 1, 2011 through June 30, 2014. The auditor reviewed pertinent documentation and interviewed Central Arizona Irrigation and Drainage District personnel from the Human Resources and Payroll departments. The auditor performed substantive tests of the employees' employment and payroll records to provide sufficient assurance that the employer is accurately reporting and remitting ASRS retirement and Long Term Disability (LTD) contributions. The following audit tests were performed:

- Review of the Social Security 218 Agreement to determine eligible employees.
- Review of the employer payroll records and related ASRS reports.
- Review of employees' time sheets and payroll records to determine eligibility.
- Review of the noncontributing employees' personnel and payroll records to determine compliance with the 20 hour, 20 week eligibility criteria.
- Review of the retired employees' medical and dental insurance premium benefit.

- Determine compliance with A.R.S. § 38-766.01 by reviewing the hours and weeks worked and other criteria of retired employees who returned to work.
- Determine compliance with A.R.S. § 38-766.02 requirement to pay an ACR on all retirees who have returned to work in any capacity.
- Determined compliance with ARS 38-749 (D) (1) to conclude whether eligible compensation is increased for benefit calculation purposes.
- Other detailed testing as required to meet the audit objectives.

AUDITOR COMMENTS:

Central Arizona Irrigation and Drainage District personnel were a pleasure to work with. They were cooperative, informative and helpful in promptly providing time reports, payroll records, and other information necessary to effectively complete the ASRS audit. Audit findings and recommendations were discussed and issues resolved without delay

A REPORT TO THE ARIZONA STATE RETIREMENT SYSTEM OPERATIONS AND AUDIT COMMITTEE

ARIZONA STATE RETIREMENT SYSTEM
EMPLOYER AUDITS

TOWN OF MIAMI

JUNE, 2015

The audit of the Town of Miami was completed June 29, 2015, for the period July 1, 2011 through June 30, 2014.

The audit objectives are to determine whether the Town of Miami is in compliance with Arizona State Retirement System (ASRS) statutes governing the following:

- Eligible compensation and required contributions reported to the ASRS.
- Accurate and timely enrollment of all eligible employees.
- Reporting and remitting of the employees' and employer's share of contributions.
- Medical and dental insurance premium benefits payable to retired employees.
- Retirees' return to work.
- Termination incentive programs.

SUMMARY OF FINDINGS:

Based on the results of the work performed to meet the above audit objectives, the following statements summarize the findings presented to the Town of Miami:

The Town of Miami:

- **Did not remit ASRS contributions for fifteen employees who were engaged to work at least twenty hours per week for at least twenty weeks in one or more fiscal years.**
- **Withheld ASRS contributions from five employees but never remitted those contributions to the ASRS.**
- **Did not remit the alternate contribution due on all eligible wages for three of its return to work retirees.**

BACKGROUND

The Town of Miami joined the ASRS July 1, 1973, by executing an Application and Social Security 218 agreement. The Town of Miami currently has approximately 33 employees contributing to the ASRS.

DESCRIPTION OF AUDIT WORK PERFORMED

The audit work performed during this engagement was conducted in conformance with the *International Standards for the Professional Practice of Internal Auditing.* The audit work completed consisted of an examination of the employer's payroll and personnel records for the time period July 1, 2011 through June 30, 2014. The auditor reserves the right to expand the scope of the audit when circumstances dictate discrepancies with ASRS statues or federal laws. The auditor reviewed pertinent documentation and interviewed personnel from the Human Resources and Payroll departments. The auditor performed substantive tests of the employees' employment and payroll records to provide sufficient assurance that the employer is accurately reporting and remitting ASRS retirement and Long Term Disability (LTD) contributions. The following audit tests were performed:

- Review of the Social Security 218 agreement to determine eligible employees.
- Review of the employer payroll records and related ASRS reports.
- Review of employees' time sheets and payroll records to determine eligibility.
- Review of the noncontributing employees' personnel and payroll records to determine compliance with the 20 hour, 20 week eligibility criteria.
- Review of the retired employees' medical and dental insurance premium benefit.
- Determine compliance with A.R.S. § 38-766.01 by reviewing the hours and weeks worked and other criteria of retired employees who returned to work.
- Determine compliance with A.R.S. § 38-766.02 requirement to pay an ACR on all retirees who have returned to work in any capacity.
- Determined compliance with ARS 38-749 (D) (1) to conclude whether eligible compensation is increased for benefit calculation purposes.
- Review for unreported retirement incentive programs.
- Other detailed testing as required to meet the audit objectives.

AUDITOR COMMENTS:

The Town of Miami personnel were cooperative, informative and helpful in providing time reports, payroll records, and other information necessary to effectively complete the ASRS audit. Audit findings and recommendations were discussed and issues resolved in a timely manner.

A REPORT TO THE ARIZONA STATE RETIREMENT SYSTEM OPERATIONS AND AUDIT COMMITTEE

ARIZONA STATE RETIREMENT SYSTEM
EMPLOYER AUDITS

TOWN OF MIAMI

FINDINGS AND RECOMMENDATIONS

JUNE, 2015

FINDING 1:

The Town of Miami did not remit ASRS contributions for fifteen employees who were engaged to work at least twenty hours per week for at least twenty weeks in one or more fiscal years.

A.R.S. § 38-711, paragraph 23 defines an employee eligible to be a member in part as an employee who is "engaged to work at least twenty weeks in each fiscal year and at least twenty hours each week." This is the basis for what is called the 20/20 eligibility criteria. A.R.S. § 38-736 states that member "contributions are required as a condition of employment and shall be made by payroll deductions. Member contributions shall begin simultaneously with membership in ASRS."

The Town of Miami was unable to locate and provide payroll records for all pay periods for the three fiscal years reviewed.

Based on the payroll records provided, fifteen employees of the Town of Miami were identified as being engaged to work at least twenty hours per week for twenty or more weeks during the fiscal year without paying contributions when they first became eligible.

The ASRS Financial Services Department will generate invoices for the employee's portion of the contribution due after payment is made by the Town of Miami. The Town of Miami will be responsible to send these invoices to each employee.

The gross unreported earnings, employer and employee contributions and accrued interest due as determined by this audit are as follows:

Total Unreported Eligible Gross Earnings	**$81,635**
Member Contributions	**$8,912**
Employer Contributions	**$8,912**
Estimated Interest Due	**$3,874**
Total Estimated Due ASRS	**$21,698**

Recommendation(s):

1. Payroll records should be maintained for all pay periods and ASRS contributions should be withheld from employees' earnings when an employee is engaged to work at least twenty weeks in each fiscal year and at least twenty hours per week (20/20 eligibility criteria) or when his or her status changes and he or she is reasonably expected to do so.
2. The employer should have all eligible non-contributors complete online the ASRS enrollment and beneficiary forms, if applicable, so that contributions will be properly processed.

Employer Response:

The Town of Miami is now maintaining all payroll records. HR is giving all employees the correct form to fill out for ASRS contributions.

FINDING 2:

The Town of Miami withheld ASRS contributions from five employees but never remitted those contributions to the ASRS.

A.R.S. § 38-735, paragraph B states "each employer shall certify on each payroll the amount to be contributed and shall remit that amount to ASRS."

A.R.S. § 38-735, paragraph C states, "payments made by employers… become delinquent after the due date prescribed in the board's rules and thereafter shall be increased by interest from and after that date until payment is received by ASRS. ASRS shall charge interest on the delinquent payments at an annual rate equal to the interest rate assumption approved by the board from time to time for actuarial equivalency."

Payments are due fourteen days after the pay period ending date and the delinquent interest rate is 8%. The Town of Miami withheld ASRS contributions from five employees, but these contributions were never remitted to the ASRS.

The gross unreported earnings, employer and employee contributions due from employer, excluding accrued interest are as follows:

Total Unreported Eligible Gross Earnings	**$23,700**
Member Contributions due from Employer	**$2,705**
Employer Contributions	**$2,705**
Total Due ASRS from Employer, excluding interest	**$5,410**

Interest due will be calculated to the date of payment.

Recommendation:

The Town of Miami should contact its contributions accounting representative at the ASRS to make arrangements for the payment, including interests. ASRS contributions withheld should be timely submitted.

Employer Response:

The Town of Miami will make contact after the conference call on June 29, to make payment arrangements.

FINDING 3:

The Town of Miami did not remit the alternate contribution due on all eligible wages for three of its return to work retirees.

A.R.S. § 38-766.02 provides the guidelines for payment of the alternate contribution rate (ACR) for retirees who work after retirement. According to the statute, "an employer shall pay contributions at an alternate contribution rate on behalf of a retired member who returns to work in any capacity in a position ordinarily filled by an employee." The ACR is to be "applied to the compensation, gross salary or contract fee of a retired member who meets the requirements of this section."

The Town of Miami had three return to work retiree's where no alternate contribution was remitted on all eligible wages.

The estimated ACR due, excluding interest, as determined by this audit is as follows:

Total Gross Earnings	**$33,908**
Total Estimated Alternate Contribution Due	**$3,120**

Recommendation:

The Town of Miami should contact its contributions accounting representative at ASRS to make arrangements for payment, including interest, of the alternate contribution due.

Employer Response:

The Town of Miami will contact ASRS accounting representative to make payment arrangements.

A REPORT TO THE ARIZONA STATE RETIREMENT SYSTEM OPERATIONS AND AUDIT COMMITTEE

ARIZONA STATE RETIREMENT SYSTEM
INTERNAL AUDIT

QUALIFIED DOMESTIC RELATIONS ORDERS (QDRO) AUDIT

JUNE, 2015

The Internal Audit (IA) Division's audit objectives were:

1. The reliability and integrity of information.
2. Compliance with policies, plans, procedures, laws, and regulations
3. The economical and efficient use of resources.
4. The accomplishment of established objectives and goals for operations and programs.
5. That alternate payees are considered in disbursement; that the Qualified Domestic Relations Order (QDRO) is properly interpreted; and that the QDRO split is correct.

The scope of our audit encompassed the examination and evaluation of the internal control structure and the quality of performance in carrying out assigned responsibilities for the audited area. The tests were designed to obtain sufficient, competent, and relevant evidence to provide a reasonable basis for our conclusions.

The Arizona State Retirement System administration is responsible for establishing and maintaining the internal control structure. Because of the inherent limitations in any internal control structure, errors or irregularities may occur and not be detected.

Based on the results of work performed to meet the audit objectives, the following statements summarize the results of our testing and the internal recommendations presented to the Arizona State Retirement System administration with the Internal Recommendations Supplement.

The testing of a sample of QDROs for accurate interpretation of a split, or no split, and the associated calculation found no errors.

The SOPs covering all areas involving QDROs are incomplete and in need of updating.

BACKGROUND

The ASRS has the responsibility to act on QDROs received from various sources that may, or may not, directly impact the distribution of a member's benefit per court order. Usually, these are in the form of divorce settlements. These can dictate a split of a member's benefit in some way, or have no split and simply allow for a name change. Since these documents are court orders, accurate interpretation and action on the content wording is an important consideration for the ASRS.

In the past year, enhancements have been made to the procedures and automated environment for handling QDROs so that better guidance is provided to staff and more accurate interpretations and calculations of a QDRO's directives can be achieved.

DESCRIPTION OF AUDIT WORK PERFORMED

The audit work performed during this engagement was conducted in conformance with the *International Standards for the Professional Practice of Internal Auditing*. IA reviewed the internal control structure, interviewed personnel, obtained and reviewed documentation, and performed analytic reviews when appropriate. IA performed tests of the existing systems to provide sufficient evidence that controls were in place and being monitored, or were needed.

Some of the tests performed were:

- Review of the single Standard Operating Procedure (SOP) on the topic.
- Sample testing of QDROs for accurate interpretation of distribution to parties and calculations.
- Interviews with ASRS staff, management, rule writer and Assistant Attorney General.
- Research existing agency practices and procedural coverage for service purchase of forfeited service involving payments to alternative payees and other entities, including taxing authorities.

A REPORT TO THE ARIZONA STATE RETIREMENT SYSTEM OPERATIONS AND AUDIT COMMITTEE

ARIZONA STATE RETIREMENT SYSTEM
INTERNAL AUDIT

QUALIFIED DOMESTIC RELATIONS ORDERS (QDRO) AUDIT

INTERNAL RECOMMENDATION SUPPLEMENT

June, 2015

INTERNAL FINDINGS AND RECOMMENDATIONS:

1. The testing of a sample of QDROs for accurate interpretation of a split, or no split, and the associated calculation found no errors.

Our testing revealed the following:

- A new POL workflow queue with initial interpretation and subsequent review by another staff member.
- Many automated controls added and multi-layered ongoing reviews in the benefit payments areas of Forfeitures, NEWRETs, and Survivor Benefits.
- Subject matter experts (SMEs) were involved with enhancements to QDRO process changes and are handling the SOP development.

Best practices dictate well trained and experienced staff handle QDRO readings and interpretations due to the complexity and legal language involved, and so that accurate calculations are determined and applied to an impacted member's account.

Recent enhancements to the processing of QDROs should result in even less likelihood that an error will be made in benefit calculation allocations and disbursements.

RECOMMENDATION(S):

None.

2. The SOPs covering all areas involving Qualified Domestic Relations Orders (QDROs) are incomplete and in need of updating.

- The QDRO area has experienced significant enhancements in the past year, with ongoing projects to address unfinished portions of the planned upgrades, and subsequent changes requested by users as a result of learning the newer processes.
- There are three JIRAs outstanding related to QDROs, with one of these a multiple five-task JIRA. Therefore, it is likely that ongoing revisions of SOPs will need to be made as these tasks are handled and procedures developed for them.
- The MSD area has an SOP that has been approved as of March 2015, but it is being revised to include several decision trees currently being developed to ensure appropriate and accurate processing steps.
- The part of QDRO SOPs involved with Refunds (Forfeitures), Pensions, and Survivor Benefits are still being worked on, with expected completion by the end of calendar year 2015.

Best practices dictate that written SOPs exist for important functions of an organization to ensure controls remain in place and for the organization to be able to continue operationally in the event of staff changes and for disaster recovery.

Organizations that experience a rapid pace of change, such as exists for the ASRS, creates the need for almost constant SOP creation and revisions.

RECOMMENDATION(S):

Management should periodically monitor the progress of SOP development and revision for the various areas covered by QDROs to ensure their effective completion and implementation.

ADMINISTRATIVE RESPONSE:

Management concurs and will update these SOPs by December 31, 2015.

Arizona State Retirement System

Operations and Audit Committee

Meeting Schedule for the Calendar Year 2015

Please make note of the following scheduled meetings pertaining to the Operations and Audit Committee of the Arizona State Retirement System (ASRS). The meetings are held in the 14th floor conference room of the ASRS Phoenix Office, 3300 North Central Avenue, unless otherwise noted. Meetings are also teleconference to the ASRS Tucson Office, 7660 E. Broadway Blvd., Suite 108.

March 10, 2015, Tuesday, 10:30 a.m.
- IT Security, IT Development, Privacy Related Projects
- Internal/Employer Audits
- Quarterly Audit Report (4Q2014)
- Web Steering Committee Update
- UHC Senior Supplement Prescription Payment Letter

May 12, 2015, Tuesday, 10:30 a.m.
- GASB 67 & 68 Report
- Dental Program RFP
- Quarterly Audit Report (1Q2015)
- Internal/Employer Audits
- Audit Plan FY 16/17
- Health Care (Discussion #1)

June 9, 2015, Tuesday, 11:00 a.m.
- Health Care (Discussion #2)

July 14, 2015, Tuesday, 10:30 a.m.
- Internal/Employer Audits
- Quarterly Audit Report (2Q2015)
- Budget Update
- Compensation Strategies FY2015
- Staffing Update

September 8, 2015, Tuesday, 10:30 a.m.
- Internal/Employer Audits
- OAG Sunset Review Audit Results

November 10, 2015, Tuesday 10:30 a.m.
- Internal/Employer
- Audits Quarterly Audit Report (3Q2015)
- Health Care (Discussion #3)
- Web Steering Committee Update
- COOP Functionality Test and Tabletop Exercise Update
- Hiring Freeze Results
- FY15 TSD Development Accomplishments
- 2016 Meeting Calendar
- ACR (Substitute Teachers) - 'Leasing' Initiatives

Meeting dates and times are subject to change. A copy of the agenda for each meeting will be available at the ASRS offices listed above at least 24 hours in advance of each meeting. Persons with a disability may request a reasonable accommodation such as a sign language interpreter or alternate formats of this document by contacting Tracy Darmer, ADA Coordinator, at (602) 240-5378 in Phoenix, at (520) 239-3100, ext. 5378 in Tucson, or 1-800-621-3778, ext. 5378 outside metro Phoenix or Tucson. Requests should be made as early as possible to allow time to arrange the accommodations.

Revised: 9/1/15

OAC Action Items:

- Employer compliance with audit items and ASRS responsibility to our members (EE taxes)
- Mr. Smarik and Mr. McNeil wanted to know more about the Fraud Hotline and any associated professional standard requirement
- Dr. Jacob requested periodic progress reports on the audits beyond the quarterly audit hours report
- Dr. Jacob requested staff to provide a list of major functions the ASRS would like to upgrade and strategic initiatives it would like to pursue that are not in the current technology development plan to discuss at a future meeting
- ACR (Substitute Teachers)