PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
BOARD OF TRUSTEES MEETING

January 31, 2018

AGENDA

The Meeting of the Board of Trustees of the Public Safety Personnel Retirement System (the "PSPRS" or "System") will be held in the main public conference room of the administrative offices of PSPRS, 3010 East Camelback Road, Suite 200, Phoenix, Arizona 85016, commencing at 12:30 p.m. on Wednesday, January 31, 2018. The meeting will continue until 5:00 p.m. or until the matters set forth in this agenda are otherwise addressed. Members of the Board of Trustees will attend either in person or by telephonic conference call. The Board of Trustees may vote to hold an executive session, which will not be open to the public, to discuss certain matters. The Board of Trustees reserves the right to consider agenda items out of their listed order.

This meeting is available to the public through "Go to Meeting" over the Internet or in person. Please see www.psprs.com for the computer link to the meeting. All persons wishing to attend are invited.

1. Call to Order; Pledge of Allegiance; Roll Call; Opening remarks.

   Mr. Brian P. Tobin
   Chairman

2. Call to the Public.

   This is the time for the public to comment. Members of the Board of Trustees may not discuss items that are not specifically identified on the agenda, except to address criticism from the public. Therefore, pursuant to A.R.S. § 38-431.01(H), the Board of Trustees' reaction to any public comment is limited to addressing criticism or recommending that the Board of Trustees or Staff respond or study such comment or schedule the subject matter for further consideration at a later date after appropriate notice.

3. Introduction of Chrystal Angotti, who has recently joined the PSPRS as Senior Executive Assistant.

   Mr. Jared A. Smout
   Administrator

4. Appropriate **Action** for approval of the items on the Consent Agenda (documentation concerning the matters on the consent agenda may be reviewed at the PSPRS office). Any matter on the Consent Agenda will be removed from the Consent Agenda and discussed as a regular agenda item upon the request of any member of the Board of Trustees.

a. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of James Blomo.

b. Acceptance of Elected Officials’ Retirement Plan of termination of normal retirement benefit of Acension C. Canchola.

c. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Nick Castaneda.

d. Acceptance of Elected Officials’ Retirement Plan of survivor benefit of Alice D. Corpstein.

e. Acceptance of Elected Officials’ Retirement Plan of termination of normal retirement benefit of Peter J. Corpstein.

f. Acceptance of Elected Officials’ Retirement Plan of early retirement benefit of David W. Crozier.

g. Acceptance of Elected Officials’ Retirement Plan of termination of survivor benefit of Vivian S. Evans.

h. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Alfred M. Fenzel.

i. Acceptance of Elected Officials' Retirement Plan of termination of normal retirement benefit of J. Richard Hannah.

j. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Myra Harris.

k. Acceptance of Elected Officials’ Retirement Plan of survivor benefit of Melody Jones.

l. Acceptance of Elected Officials’ Retirement Plan of termination of early retirement benefit of Michael D. Jones.

m. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Judith A. Joseph.

n. Acceptance of Elected Officials’ Retirement Plan of termination of survivor benefit of Lettie Pickrell.

o. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Steven S. Poe.

p. Acceptance of Elected Officials' Retirement Plan of termination of survivor benefit of Joan Strand.

q. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Michael Whalen.

r. Acceptance of Transfer Between State Retirement Systems of David Zehring.

s. Acceptance of Transfer Between State Retirement Systems of Thomas Johannesen.

t. Acceptance of Transfer Between State Retirement Systems of Cheryl Mendoza.

u. Acceptance of Transfer Between State Retirement Systems of Kenneth Allmon.

v. Acceptance of Transfer Between State Retirement Systems of Anthony Hernandez.

w. Acceptance of Transfer Between State Retirement Systems of Richard Martinez.

x. Acceptance of Transfer Between State Retirement Systems of Michael Ballard.

y. Acceptance of Transfer Between State Retirement Systems of Julia Galusky.

z. Acceptance of Transfer Between State Retirement Systems of Christopher Cetwinksi.

aa. Acceptance of Transfer Between State Retirement Systems of Todd Geisen.

bb. Acceptance of Transfer Between State Retirement Systems of James Herrick.

cc. Acceptance of Transfer Between State Retirement Systems of Jeff Plant.

dd. Acceptance of Transfer Between State Retirement Systems of Daniel J. Quirin.

ee. Approval of the Minutes of the November 29, 2017 Meeting and Special Work Study Session Meeting of the PSPRS Board of Trustees.

Mr. Brian P. Tobin

5. Appropriate **Action** regarding Sun City Fire Department's appeal for approval of their request to increase their amortization period.

Mr. Jared A. Smout

Report by Mr. William Davis, Chairman of the Investment Committee, regarding agenda items 6 through 11 which were discussed at the Investment Committee meeting held today, January 31, 2018, on or after 9:30 a.m., and possible Action on the Committee's recommendations to the Board regarding same.

6. Written report by Investment Department Staff regarding Portfolio Risk as of October 31, 2017 and November 30, 2017.

Mr. Owen Zhao
Portfolio Analyst - Risk

7. Written report by Investment Department Staff and discussion regarding (i) the Month-End and Fiscal Year-to-Date performance for the PSPRS Trust as of October 31, 2017 and November 30, 2017; and (ii) written report regarding the asset allocation and performance of the Firefighters and Peace Officers Cancer Insurance Program.

Ms. Vaida Maleckaite
Director of Investment Services

8. Presentation and discussion by NEPC representative(s) on multi-plan accounting / asset allocation strategy for the Arizona PSPRS Trust.

Mr. Allan Martin
NEPC, LLC.

9. Presentation and discussion by Investment Department Staff regarding the proposed calendar for asset reviews in calendar year 2018.

Mr. Ryan Parham
Assistant Administrator and Chief Investment Officer

10. Disclosure by Investment Department Staff of the following Manager Selection Matters:

A. New and Potential Investments Considered this Period:

1. Disclosure of a potential investment of up to $100 million for purposes of direct investment in a SMA with **Audax Senior Debt Fund,** in the Private Credit portfolio, subject to final Staff and legal due diligence.

2. Disclosure of a potential investment of up to $75 million for purposes of direct investment with **Stellus Capital Management in its Stellus Credit Fund II, L.P.,** in the Private Credit portfolio, subject to final Staff and legal due diligence.

3. Disclosure of a potential investment of up to $30 million direct and a reserve allocation of up to $10 million for purposes of co-investment with **LightBay Investment Partners A, L.P. ,** in the Private Equity portfolio, subject to final Staff and legal due diligence.

4. Disclosure of a potential investment of up to $75 million for purposes of direct investment in **Crestline Specialty Lending Fund II, L.P.,** in the Private Credit portfolio, subject to final Staff and legal due diligence.

B. Finalized and Executed Transactions During Prior Period:

1. **KKR Revolving Credit Partners II, L.P. Fund**; Committed amount up to $75 million; Date Closed: November 21, 2017. This investment is allocated to PSPRS Asset class: Private Credit.

11. Review, discussion and possible **Recommendations** on Governance Manual updates.

Jennifer Eichholz, Esq.
Chief In-House Investment Counsel
Ivy Voss, Esq.
Assistant Attorney General

Presentation by Mr. Bryan Raines, Chairman of the Operations, Governance Policy and Audit Committee, regarding agenda items 12 through 17, which were discussed at the Operations, Governance Policy and Audit Committee meeting held today, January 31, 2018, on or after 10:30 a.m., and possible Action on the Committee's recommendations to the Board regarding same.

12. Review and discussion of staff operation reports.

Mr. Dave DeJonge
Deputy Administrator

a. Operations Update Report

b. Year to Date Budget Report

c. Local Board & Employer Outreach Report

d. Local Board Rehearing Report

e. Law Firms' Billings for Legal Services

f. HR Report

g. Communication Efforts Report

h. Strategic Plan Report

13. Review, discussion and possible **Action** related to Internal Audit Plan.

Ms. Lisa Sweeting
Internal Auditor

14. Review and discussion of Auditor General's 24-Month Follow-Up Report.

Mr. Dave DeJonge

15. Review and discussion of Vendor Management Procedures.

Mr. Dave DeJonge

16. Review, discussion and possible **Recommendations** on COLA determinations.

Mr. Dave DeJonge

17. Review, discussion and possible **Action** on pending and passed legislative actions and potential legislative proposals.

Mr. Jared A. Smout

18. Election of Officers of the PSPRS Board of Trustees and appointment of committee chairs; and Chairman to select trustees and others, as appropriate, to serve as chairs, co-chairs and Committee members, subject to Board ratification.

Mr. Brian P. Tobin

19. Report and possible **Action** from the EORP Subcommittee Working Group.

Mr. Brian P. Tobin

20. Report by external auditor, Heinfeld, Meech & Co., P.C., regarding independent audit of PSPRS, EORP, CORP, and the Fire Fighter and Peace Officer Cancer Insurance Policy program for fiscal year 2016-2017.

Mr. Christopher Heinfeld
Senior Associate
Heinfeld, Meech & Co., P.C

21. Discussion and appropriate **Action** regarding Board of Trustee member requests to participate in training, educational and due diligence opportunities.

Mr. Brian P. Tobin

22. Discussion and consultation with legal counsel and Staff and possible **Action** regarding proposed legislation, real estate matters, investment matters, ongoing, contemplated or threatened legal action involving the Trust and Plans, including vendor disputes, public record requests, personnel matters and actual or potential litigation and claims based on contract, tort or statute, including matters involving, judges Thompson and Hall. The Board may vote to discuss these matters in Executive Session pursuant to A.R.S. §§ 38-431.03(A)(1), (2), (3), (4) and (7) as set forth in item 23.

23. **The Board of Trustees may vote to go into Executive Session (which will not be open to the public) to discuss matters pursuant to A.R.S. §§ 38-431.03(A) (1), (2), (3), (4) and (7), as applicable, including to receive legal advice from the Board's attorneys on any matter listed on the agenda, including:**

a. Discussion and consultation with legal counsel and Staff regarding matters arising from public record requests or subpoenas, and ongoing or threatened legal action or claims involving the Plans or Trust not otherwise referenced above in Item 22, including but not limited to those involving the status of lawsuits challenging provisions of SB1609, as authorized by A.R.S. §§ 38-431.03(A) (2), (3).

b. Update and discussion on personnel matters, as authorized by A.R.S § 38-431.03(A)(1).

24. Possible **Action** on future meeting dates. (*Next meeting currently scheduled for Wednesday, February 28, 2018.*)

25. Adjournment.

A copy of the agenda background material that is provided to the Board of Trustees (with the exception of materials relating to possible executive sessions and/or materials exempt by law from public inspection) is available for public inspection at the PSPRS offices located at 3010 East Camelback Road, Suite, 200, Phoenix, Arizona. The agenda is subject to revision up to 24 hours prior to the meeting.

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Michelle Pechan, Paralegal or Rose Crutcher, Paralegal, at (602) 255-5575. Requests should be made as early as possible to arrange the accommodation.

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
BOARD OF TRUSTEES
SPECIAL WORK STUDY SESSION MEETING

November 29, 2017

MINUTES

Present:	Mr. Brian Tobin, Chairman, Trustee
	Mr. William T. Buividas, Vice Chairman, Trustee
	Mr. William C. Davis, Trustee
	Mr. Edward J. McNeill, Trustee - Excused
	Mr. Harry A. Papp, Trustee
	Mr. Bryan Raines, Trustee
	Mr. Mike Scheidt, Trustee
	Mr. Dean M. Scheinert, Trustee
	Mr. Donald A. Smith, Jr., Trustee - Excused
Others Present:	Mr. Jared Smout, Administrator
	Mr. Dave DeJonge, Deputy Administrator
	Ms. Ivy Voss, Assistant Attorney General
	Ms. Rose Crutcher, Investment Paralegal
	Mr. Timothy Jackson, Compliance Officer
	Mr. Ruben Vargas, Records Officer
	Ms. Patricia Shaner, Human Resources Director
	Mr. Don Mineer, Local Board Training Coordinator
	Mr. William Thatcher, Portfolio Manager
	Mr. Allan Martin, NEPC
	Mr. Mark Buis, FSA, FCA, EA, MAAA, Senior Consultant Gabriel, Roeder, Smith & Company - Excused
	Mr. James D. Anderson, FSA, EA, MAAA, Senior Consultant Gabriel, Roeder, Smith & Company
	Mr. Francois Pieterse, ASA, MAAA, Consultant Gabriel, Roeder, Smith & Company

1. Call to Order; Pledge of Allegiance; Roll Call; Opening remarks.

Mr. Brian P. Tobin, Chairman

Chairman Tobin called the meeting to order at 9:00 a.m., took the roll and the Pledge of Allegiance was recited.

2. Call to the Public.

This is the time for the public to comment. Members of the Board of Trustees may not discuss items that are not specifically identified on the agenda, except to address criticism from the public. Therefore, pursuant to A.R.S. § 38-431.01(H), the Board of Trustees' reaction to any public comment is limited to addressing criticism or recommending that the Board of Trustees or Staff respond or study such comment or schedule the subject matter for further consideration at a later date after appropriate notice.

There was no response to the Call to the Public.

3. Discussion with representatives from Gabriel, Roeder, Smith & Company (GRS) regarding actuarial assumptions, methods, and other general matters.

Mr. Mark Buis, FSA, FCA, EA, MAAA
Senior Consultant
Mr. James D. Anderson, FSA, EA, MAAA
Senior Consultant
Mr. Francois Pieterse, A.S.A, M.A.A.A.
Consultant
Gabriel, Roeder, Smith & Company

This was an informal educational session regarding valuation highlights and issues for the Board of Trustees. The GRS staff discussed contribution changes for PSPRS Tiers 1, 2 and 3. The effect of the Fields and Hall cases regarding the pension benefit increase calculations were explained. Other topics of discussion included EORP which is now a closed plan, CORP will be closed plan as of July 1, 2018. Amortization methods, unfunded liability, actuarial assumption changes and funding of the EORP plan were discussed. Issues impacting valuations were discussed during a question and answer discussion between the board members and GRS. A suggestion was made that a letter be sent to the legislature regarding EORP funding in order to finance the plan.

4. Adjournment.

The meeting was adjourned at 10:14 a.m.

Brian P. Tobin, Chairman

William T. Buividas, Trustee,
Vice Chairman

William C. Davis, Trustee

EXCUSED
Edward J. McNeill, Trustee

Bryan Raines, Trustee

Mike Scheidt, Trustee

Dean M. Scheinert, Trustee

EXCUSED
Donald A. Smith, Jr., Trustee

Harry Papp, Trustee

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
BOARD OF TRUSTEES MEETING

November 29, 2017

MINUTES

Members Present:	Mr. Brian P. Tobin, Chairman, Trustee Mr. William T. Buividas, Vice Chairman, Trustee Mr. William C. Davis, Trustee Mr. Edward J. McNeill, Trustee – Excused Mr. Harry A. Papp, Trustee Mr. Bryan Raines, Trustee Mr. Mike Scheidt, Trustee Mr. Dean Scheinert, Trustee Mr. Donald A. Smith, Jr. Trustee
Others Present:	Mr. Jared Smout, Administrator Mr. Dave DeJonge, Deputy Administrator Mr. Ryan Parham, Assistant Administrator and CIO Ms. Ivy Voss, Assistant Attorney General Mr. Mark Steed, Deputy CIO and Chief of Staff Mr. Shan Chen, Lead Portfolio Manager Mr. Owen Zhao, Portfolio Analyst Mr. Jefferson Weston, Investment Analyst Ms. Vaida Maleckaite, Director of Investment Services Mr. William Thatcher, Lead Portfolio Manager Mr. Kevin Chen, Investment Accountant Ms. Jennifer Eichholz, In-House Investment Counsel Ms. Rose Crutcher, Investment Paralegal Ms. Lisa Sweeting, Internal Auditor Mr. Timothy Jackson, Compliance Officer Mr. Ruben Vargas, Records Officer Ms. Patricia Shaner, Human Resources Director Mr. Christian Palmer, Communications Director Mr. Allan Martin, NEPC Mr. Ed Schwartz, ORG Ms. Dianne McAllister, Public Policy Partners Mr. Doug Cole, HighGround Mr. Marc Lieberman, Kutak Rock

1. Call to Order; Pledge of Allegiance; Roll Call; Opening remarks.

Mr. Brian P. Tobin
Chairman

The meeting was called to order at 12:35 P.M. by Chairman Tobin which was followed by the Pledge of Allegiance and Roll Call.

2. Call to the Public.

This is the time for the public to comment. Members of the Board of Trustees may not discuss items that are not specifically identified on the agenda, except to address criticism from the public. Therefore, pursuant to A.R.S. § 38-431.01(H), the Board of Trustees' reaction to any public comment is limited to addressing criticism or recommending that the Board of Trustees or Staff respond or study such comment or schedule the subject matter for further consideration at a later date after appropriate notice.

There was no reply to the Call to the Public.

3. Appropriate **Action** for approval of the items on the Consent Agenda (documentation concerning the matters on the consent agenda may be reviewed at the PSPRS office). Any matter on the Consent Agenda will be removed from the Consent Agenda and discussed as a regular agenda item upon the request of any member of the Board of Trustees.

   a. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of William Brotherton.
   b. Acceptance of Elected Officials' Retirement Plan of termination of early retirement benefit of Russell H. Burdick, Jr.
   c. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Margaret H. Downie.
   d. Acceptance of Elected Officials' Retirement Plan of survivor benefit of Maureen Irr.
   e. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Robert H. Oberbillig.
   f. Acceptance of Elected Officials' Retirement Plan of termination of early retirement benefit of Kenneth W. Reeves, III.
   g. Acceptance of Elected Officials' Retirement Plan of survivor benefit of Linda Reeves.
   h. Acceptance of Elected Officials' Retirement Plan of termination of survivor benefit of Marrianne Rowley.
   i. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Julia Vigil.
   j. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of John S. Williams.
   k. Acceptance of Transfer Between State Retirement Systems of Daryll Willis.
   l. Acceptance of Transfer Between State Retirement Systems of Marvis Floyd.
   m. Acceptance of Transfer Between State Retirement Systems of Rafael Hernandez.
   n. Acceptance of Transfer Between State Retirement Systems of Jesus Moniel.
   o. Acceptance of Transfer Between State Retirement Systems of Roy Lippman.
   p. Acceptance of Transfer Between State Retirement Systems of Moses Paiaina.
   q. Acceptance of Transfer Between State Retirement Systems of Chet Berry.
   r. Acceptance of Transfer Between State Retirement Systems of James Penny.
   s. Acceptance of Transfer Between State Retirement Systems of Nancy Felix.
   t. Approval of the Minutes of the October 26, 2017 Meeting of the PSPRS Board of Trustees.

Mr. Brian P. Tobin

MOTION:1-11/29/17	At 12:37 P.M.
Motion:	To approve the Consent Agenda as presented.
Moved by:	Mr. Buividas
Seconded by:	Mr. Davis
Discussion:	None
In Favor:	Unanimous; Mr. McNeill - Excused
Motion:	Passes

4. Update and appropriate **Action**, if any, on the consolidation of the Golder Ranch and Mountain Vista Fire Districts and its effect on membership waivers granted to certain Mountain Vista Fire District fire fighters on September 22, 2016.

Mr. Brian P. Tobin

In August, the Board approved waivers to approximately eight members. This discussion is to inform such members' options regarding their decision and the eight members may enter the System as members of Tier 3, which offers the option of the defined contribution plan, which was not available in 2016. Golden Ranch Fire District desired to remain with PSPRS pension system when their district was consolidated with Mountain Vista Fire District. Mr. Randy Carr, Chief of the Golden Ranch Fire District was in attendance at the meeting. Chief Carr was directed by the Board to take action that identifies any preexisting conditions prior to entering the PSPRS system.

MOTION:2-11/29/17	At 12:49 P.M.
Motion:	To direct Golden Ranch Fire District and its local board to make eligibility determination with respect to these employees as it would any other employees of the district.
Moved by:	Mr. Papp
Seconded by:	Mr. Smith
Discussion:	None
In Favor:	Unanimous; Mr. McNeill - Excused
Motion:	Passes

5. Appropriate **Action** regarding the approval of Green Valley Fire District's request to increase amortization period.

Mr. Brian P. Tobin

MOTION:3-11/29/17	At 12:51 P.M.
Motion:	To approve Green Valley Fire District's request to increase their amortization period.
Moved by:	Mr. Raines
Seconded by:	Mr. Scheidt
Discussion:	None
In Favor:	Unanimous; Mr. McNeill - Excused
Motion:	Passes

Report by Mr. William Davis, Chairman of the Investment Committee, regarding agenda items 6 through 11, which were discussed at the Investment Committee meeting held today, Wednesday, November 29, 2017, on or after 11:00 a.m., and possible Action on the Committee's recommendations to the Board regarding same.

6. Presentation and quarterly report by Investment Department Staff regarding Portfolio Risk as of September 30, 2017.

Mr. Owen Zhao
Portfolio Analyst - Risk

The presentation regarding Portfolio Risk concluded that the risk profile has not materially changed.

7. Presentation and quarterly report by Investment Department Staff and discussion regarding (i) the Month-End and Fiscal Year-to-date performance for the PSPRS Trust as of September 30, 2017; and (ii) written report regarding the asset allocation and performance of the Firefighters and Peace Officers Cancer Insurance Program.

Ms. Vaida Maleckaite
Director of Investment Services

Agenda item 7 was presented in conjunction with Agenda item 8.

8. Presentation and discussion by NEPC representative(s) on the 1st Fiscal Quarter (3rd Calendar Quarter) investment performance and the 2016-2017 Fiscal Year investment performance for the Arizona PSPRS Trust.

Mr. Allan Martin
NEPC, LLC.

It was reported that the Trust increased in value 0.64% as of 9/30/17 and increased in value 2.6% for the three months ending September, 2017, net of fees. For the Year-to-Date, the Trust increased in value by 8.1%. For the one year period the increase in value was 10.3%, for the three years 6.4%, for five years 7.7%, for 7 years 7.2%, and for 10 years 3.9%. The assumed rate of return is 7.4%. The market value of the Trust is approximately $9.5 billion.

9. Presentation and discussion by Investment Department Staff and Consultants regarding the annual Overview and Strategic Plan for the Real Estate portfolio.

Mr. Mark Steed
Mr. Ed Schwartz, ORG
Marc Lieberman, Esq.
Kutak Rock

Discussion was held regarding the strategic plan for the Real Estate portfolio and pacing for the next 36 months. An overview of the market was presented by Mr. Steed including processes, performance, underperformance and expectations. Currently, 18% of the Real Estate portfolio consists of legacy real estate assets, which continue to have a drag on the portfolio return. The institutional Real Estate assets have outperformed in every time period. Plans are in place for the legacy Real Estate assets.

Other topics included core assets, value added and core plus strategies, U. S. regional composition and performance by regions. Currency conversion has had a negative impact on performance in converting local currency back to U. S. dollars. As of 12/31/09, PSPRS had 54 legacy asset holdings and, as of 10/31/17, there were 17 remaining legacy assets.

ORG presented a report regarding portfolio construction which included themes that drive real estate, such as demographics of the population, supply and demand and liquidity influence portfolio design. It was concluded to continue what we have been doing, to recognize where we are in the market and pacing of real estate cycles for opportunities.

10. Presentation and discussion regarding Section 5001 of the House Tax Reform Bill and Unrelated Business Taxable Income ("UBTI").

Jennifer Eichholz, Esq.
Chief In-House Investment Counsel
Marc Lieberman, Esq.
Kutak Rock

Since 1977, Congress has been studying the issue of a proposed tax on governmental pension funds utilizing the Unrelated Business Income Tax (UBIT) to tax income earned from activities not considered incidental to the core governmental function. We have taken steps to protect PSPRS in case the proposed tax bill extends UBIT to governmental pension plans.

11. Disclosure by Investment Department Staff of the following Manager Selection Matters:
   A. New and potential investments considered this period:
      1. Disclosure of a potential investment of up to $75 million for direct investment purposes with **KKR Revolving Credit Partners II, L.P.,** in the PSPRS Private Credit portfolio, subject to final Staff and legal due diligence.
      2. Disclosure of a potential investment of up to $100,000,000.00 for direct investment in a separately managed account with **Audax Senior Debt Fund;** in the PSPRS Private Credit Fund, subject to final Staff and legal due diligence.

   B. Finalized and Executed Transactions During Prior Period:
      1. **Charlesbank Equity Fund IX;** Committed amount up to $60 million for direct investment purposes and up to $30 million for purposes of co-investments; Date Closed: October 6, 2017. This investment is allocated to PSPRS Asset class: Private Equity.

No discussion was held.

Presentation by Mr. Bryan Raines, Chairman of the Operations, Governance Policy and Audit Committee, regarding agenda items 12 through 15, which were discussed at the Operations, Governance Policy and Audit Committee meeting held today, November 29, 2017, on or after 11:00 a.m., and possible Action on the Committee's recommendations to the Board regarding same.

12. Review and discussion of staff operation reports.

Mr. Dave DeJonge
Deputy Administrator

a. Operations Update Report
b. Year to Date Budget Report
c. Local Board & Employer Outreach Report
d. Local Board Rehearing Report
e. Law Firms' Billings for Legal Services
f. HR Report

This report was the normal monthly review report regarding the Operations, Governance Policy and Audit Committee review of operations.

13. Communications Update.

Mr. Christian Palmer
Communications Director

An outside communications company was hired.

14. Review, discussion and possible **Action** on Governance Manual updates.

Mr. Jared A. Smout, Administrator
Mr. Dave DeJonge
Ivy Voss, Esq., Assistant Arizona Attorney General

Staff recommended changes to several charters and policies. Most of the changes were grammatical or clarifications. Changes included clarification that all Trustee travel for PSPRS business shall be reported to the Compliance Officer; the requirement for staff members to notify the Board of Trustees every time they consult with the Investment Consultant was removed; and the requirement that certain positions have written contracts of employment has been changed to "may have" such contracts. Staff also recommends that the Advisory Committee Charter be revised to emphasize the Committee's liaison function stipulated in statute and to place less emphasis on formulating policy. The following were presented;

- Governance Manual Proviso
- Governance Manual Defined Terms
- Governance Manual Governance Principles
- Section 4.04 Investment Committee Charter
- Section 4.07 Charter of the Independent Investment Consultant
- Section 4.09 Charter of Fiduciary Counsel
- Section 4.11 Advisory Committee Charter
- Section 5.09 Travel Policy
- Section 5.11 Monitoring and Reporting Policy
- Section 5.12 Code of Conduct
- Section 5.13 Human Resources and Compensation Policy
- Section 5.14 Code of Ethics

MOTION:5-11/29/17	At 3:30 P.M.
Motion:	To recommend approval of all but the changes to Sections 4.04, 4.07 4.09, 5.09, 5.11, 5.12, 5.14 and to allow the Investment Committee to review the others at their next committee meeting to bring back to the Board for recommendation.
Moved by:	The Operations, Governance Policy and Audit Committee
Seconded by:	---
Discussion:	None
In Favor:	Unanimous; Mr. McNeill - Excused
Motion:	Passes

15. Review, discussion and possible **Action** on pending and passed legislative actions and potential legislative proposals.

Mr. Jared A. Smout

Ms. McCallister and Mr. Cole summarized information regarding their meetings with members of the legislature and progress of the PSPRS draft bills. A question and answer period was held.

MOTION:4-11/29/17	At 2:00 P.M.
Motion:	To accept the recommendation of the Operations, Governance Policy and Audit Committee regarding the proposed Administrative Bill.
Moved by:	The Operations, Governance Policy and Audit Committee
Seconded by:	---
Discussion:	None
In Favor:	Unanimous
Motion:	Passes

16. Discussion and possible **Action** regarding the presentation by Gabriel, Roeder, Smith & Company (GRS) representatives regarding the results of the FY 2017 actuarial valuations for the PSPRS, CORP and EORP.

Mr. Mark Buis, FSA, FCA, EA, MAAA
Senior Consultant
Mr. James D. Anderson, FSA, EA, MAAA
Senior Consultant
Mr. Francois Pieterse, A.S.A, M.A.A.A.
Consultant
Gabriel, Roeder, Smith & Company

Specific funding results were discussed, including the downward expectations for investment returns. Currently, many plans are at 7% or below. Highlights of the June 30, 2017 valuations were presented, including changes in assumptions and methods since last year, PSPRS changes in Tier 2 benefits, eligibility and multiplier and the changes due to the Hall decision. Other topics included changes in EORP and EORP benefits, the assumed PBI/COLA summary for 2017 and contribution rate changes since the last actuarial valuation. Discussion was held regarding an EORP Task Force concerning legislation which is to recommend new policy decisions to the Board.

17. Discussion and appropriate **Action** regarding Board of Trustee member requests to participate in training, educational and due diligence opportunities.

Mr. Brian P. Tobin

No requests were presented.

18. Discussion and consultation with legal counsel and Staff and possible **Action** regarding proposed legislation, investment matters, ongoing, contemplated or threatened legal action involving the Trust and Plans, including vendor disputes, public record requests, personnel matters and actual or potential litigation and claims based on contract, tort or statute, including matters involving, judges Thompson and Hall. The Board may vote to discuss these matters in Executive Session pursuant to A.R.S. §§ 38-431.03(A)(1), (2), (3), (4) and (7) as set forth in item 19.

MOTION:6-11/29/17	At 3:33 P.M.
Motion:	To recess Open Session and enter Executive Session regarding Agenda item 18.
Moved by:	Mr. Smith
Seconded by:	Mr. Davis
Discussion:	None
In Favor:	Unanimous; Mr. McNeill - Excused
Motion:	Passes

19. **The Board of Trustees may vote to go into Executive Session (which will not be open to the public) to discuss matters pursuant to A.R.S. §§ 38-431.03(A) (1), (2), (3), (4) and (7), as applicable, including to receive legal advice from the Board's attorneys on any matter listed on the agenda, including:**

    a. Discussion and consultation with legal counsel and Staff regarding matters arising from public record requests or subpoenas, and ongoing or threatened legal action or claims involving the Plans or Trust not otherwise referenced above in Item 18, including but not limited to those involving the status of lawsuits challenging provisions of SB1609, as authorized by A.R.S. §§ 38-431.03(A) (2), (3).

    b. Update and discussion on personnel matters, as authorized by A.R.S § 38-431.03(A)(1).

20. Possible **Action** on future meeting dates. (Next meeting currently scheduled for Wednesday, December 20, 2017.)

    The request was made to keep the date open for now.

21. Adjournment.

    The meeting was adjourned at 4:27 P.M.

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Brian P. Tobin, Trustee, Chairman

William T. Buividas, Trustee,
Vice Chairman

William C. Davis, Trustee

EXCUSED
Edward J. McNeill, Trustee

Harry A. Papp, Trustee

Bryan Raines, Trustee

Mike Scheidt, Trustee

Dean M. Scheinert, Trustee

Donald A. Smith, Jr., Trustee

RESOLUTION TO REQUEST INCREASED AMORTIZATION PERIOD
Resolution 17-0613A

WHEREAS the Sun City Fire District ("Employer") employs members ("Members") of the Public Safety Personnel Retirement System ("System");

WHEREAS the System's enabling legislation, A.R.S. §§ 38-841 *et seq.*, requires Employer to make contributions sufficient under actuarial valuations to meet both the normal cost for its Members hired before July 1, 2017 plus the actuarially determined amount required to amortize the unfunded accrued liability on a level percent of compensation basis for its Members (or participants as defined in § 38-865(7)(a)) over a closed period of not more than 20 years beginning July 1, 2017, as established by the System's board of trustees ("Board"), *except* in the event Employer makes a one-time election (an "Election") to request that the Board use a closed period of not more than 30 years, so long as certain conditions are satisfied;

WHEREAS to make a one-time Election to request that the Board apply a closed period of up to 30 years for the amortization of liability attributable to its Members, the Employer must (i) adopt a resolution ("Resolution") requesting the longer amortization period and (ii) specify the actuarial valuation date for which the new amortization period is to begin, which date shall commence, at Employer's election, on the System's fiscal year end (June 30) immediately before or immediately after the date of such Resolution;

WHEREAS it is understood by the Employer that the employer contribution rate reflecting the chosen amortization period will be effective July 1 in the year following the chosen actuarial valuation date.

WHEREAS as a further condition to make the one-time Election, the Employer must submit a written request for the longer amortization period, along with its adopted Resolution, to the Board's administrator ("Administrator");

WHEREAS Employer wishes to make an Election to increase its amortization period for its Members under the System to 30 years;

WHEREAS Employer has elected to specify that the actuarial valuation date for which its new amortization period shall begin shall be the System's fiscal year end (June 30) immediately after the date of this Resolution;

WHEREAS Employer believes that, increasing the amortization period for its Members under the System, is in the public interest and the interest of its Members,

NOW THEREFORE, BE IT RESOLVED, that:

1. The period for amortizing the liability attributable to the Employer's Members under the System shall be increased to 30 years;

2. The aforesaid increase in said amortization period shall begin as of the System's fiscal year end (June 30) immediately after the date of this Resolution, which increase will be reflected in the employer contribution rate to begin July 1 of the year following the chosen actuarial valuation date; and

3. Employer shall submit a written request for the above specified longer amortization period to the Board's Administrator.

As adopted by the majority vote of Employer at its open meeting held on June 13, 2017.

David C. Scott, Board Chairman

Walter A. Link, Clerk of the Board

Sun City Fire Department

December 19, 2017

Public Safety Personnel Retirement System
3010 E. Camelback Rd.
Suite 200
Phoenix, AZ 85016-4416

Dear Administrator Jared Smout,

Please accept this letter as our formal appeal against the decision to deny the Sun City Fire Districts resolution to request increased amortization for the 2017-2018 Fiscal Year.

In May of 2017 Public Safety Personnel Retirement System (PSPRS) sent out a Memo that discussed HB2485 and the ability for employers to increase their individual amortization period. At that time Sun City Fire District was finalizing their budget for Fiscal Year 2017-2018. With the continued financial pressures created by restricted revenue and increasing costs the District goes through an extensive budgeting and forecasting exercise. Through these processes the Board decided to vote on a resolution to request an increased amortization, and the lower rate, beginning in Fiscal Year 2017-2018. If approved the reduction in the rate paid by the District, from 55.94% to 46.54%, would equate to a significant savings in Fiscal Year 2017-2018. Sun City Fire District is currently at the 3.25 cap rate and the potential savings would create temporary relief. Sun City Fire District was notified at the beginning of October that the request to increase the amortization period from 20 to 30 years was denied for the Fiscal Year 2017-2018 due to using the word "after" instead of "before" in the resolution. The Sun City Fire District Board is prepared to adopt a revised resolution based upon the advice of PSPRS to rectify this issue.

The Sun City Fire District feels that they are part of the same team as PSPRS. The District has worked closely with PSPRS and have made every effort to understand the changes made within the system. The District has expended multiple resources getting prepared for the updated reporting requirements and paid out the money owed as part of the Parker Hall Settlement.

In addition, Sun City Fire District reached out to PSPRS on multiple occasions to gather a better understanding of the Memo and its requirements. No response was ever received, and therefore the District was left with moving forward with its own

18602 NORTH 99th AVENUE SUN CITY, ARIZONA 85373-1436 OFFICE: (623) 974-2321 FAX: (623) 972-1996
E-MAIL: sucifi@suncityfire.com

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interpretation of the sample resolution provided by PSPRS. That being said, Sun City Fire District also understands that the resolution was not received prior to June 30, 2017. This was due to an internal IT system malfunction, email related, and we appreciate that the error may have been caught if it had been received earlier.

We hope that you are able to accept our request to change our contribution rate for Fiscal Year 2017-2018 and appreciate you taking the time to review this appeal. If you have any questions please contact Chief Ron Deadman at 623.974.2321.

Sincerely,

David Scott
Board Chairman

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
CORRECTIONS OFFICER RETIREMENT PLAN
ELECTED OFFICIALS' RETIREMENT PLAN
3010 East Camelback Road, Suite 200
Phoenix, Arizona 85016-4416
Telephone: (602) 255-5575
Fax: (602) 255-5572
www.psprs.com

January 10, 2018

David Scott
Board Chairman
Sun City Fire Department
18602 N. 99th Avenue
Sun City, Arizona 85373-1436

RE: Formal Appeal

Dear Mr. Scott:

I am in receipt of your letter dated December 19, 2017 and I have reviewed your appeal to extend your amortization period. Please recognize it is statutorily a Board decision to grant the increase in the amortization period. As such, your request for appeal will be forwarded to the Public Safety Personnel Retirement System Board of Trustees for their consideration at their January 31, 2018 monthly meeting. After the meeting, I will contact you with the Trustees' decision.

As to the District's previous attempts to reach out for guidance and receiving no response, staff and I are unaware of any requests received from Sun City Fire amidst the multiple employers we have helped in this matter. Regardless, we recognize there could have been some miscommunication and appreciate the conciliatory approach to work together as is always our desire.

In the meantime, please proceed in having the Sun City Fire District Board adopt a revised resolution as described in your letter. I would be happy to review the language beforehand to ensure it meets statutory requirements and your desired implementation date. I can be reached directly at (602) 296-2527 or jared@psprs.com.

Please also feel free to contact me if you have any other questions or concerns.

Respectfully,

Jared A. Smout

Jared A. Smout
Administrator

Sun City Fire District

RESOLUTION TO CONFIRM REQUESTED INCREASED AMORTIZATION PERIOD
Resolution 18-0129A

WHEREAS the Sun City Fire District ("Employer") employs members ("Members") of the Public Safety Personnel Retirement System ("System");

WHEREAS the System's enabling legislation, A.R.S. §§ 38-841 *et seq*., requires the Employer to make contributions sufficient under actuarial valuations to meet both the normal cost for its Members hired before July 1, 2017 plus the actuarially determined amount required to amortize the unfunded accrued liability on a level percent of compensation basis for its Members (or participants as defined in § 38-865(7)(a)) over a closed period of not more than 20 years beginning July 1, 2017, as established by the System's board of trustees ("Board"), *except* in the event Employer makes a one-time election (an "Election") to request that the Board use a closed period of not more than 30 years, so long as certain conditions are satisfied;

WHEREAS the Board adopted Resolution 17-0613A on June 13, 2017 electing the 30 year amortization,

NOW THEREFORE, BE IT RESOLVED, that the intent of Resolution 17-0613A adopted on June 13, 2017 was for the amortization period to be increased with the June 30, 2016 valuation to be reflected in our July 1, 2017 employer contribution rate.

As adopted by the majority vote of Employer at its open meeting held on January 29, 2018.

David C. Scott, Board Chairman

Walter A. Link, Clerk of the Board

RECEIVED
JAN 29 REC'D

18602 NORTH 99TH AVENUE SUN CITY, ARIZONA 85373-1436 OFFICE: (623) 974-4977 FAX: (623) 972-1996

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

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PSPRS Trust Risk Report

Serving Those Who Serve Others

AGENDA - PSPRS Trust Portfolio Risk as of October 31, 2017

Current Status

Based on current holdings 10/31/17

PSPRS Trust 10/31/2017	**Portfolio Weight**	**Historic Volatility*** (12m Std. Dev.)	**Monthly Volatility** (Forecast)	**Monthly VAR Forecast** (95% Confidence)
Real Estate	9.0%	1.5%	3.4%	-6.6%
Private Equity	13.2%	1.1%	4.4%	-7.1%
US Equities	16.0%	1.3%	3.2%	-5.2%
Int'l Equities	14.1%	1.6%	4.1%	-5.7%
Risk Parity	4.3%	1.5%	2.1%	-2.7%
Real Assets	8.9%	1.2%	2.0%	-2.7%
GTS**	11.2%	0.7%	2.0%	-2.2%
Fixed Income	5.4%	0.6%	0.9%	-0.8%
Private Credit	13.7%	0.7%	2.3%	-2.8%
PSPRS Trust	95.8%	0.3%***	1.9%	-2.8%

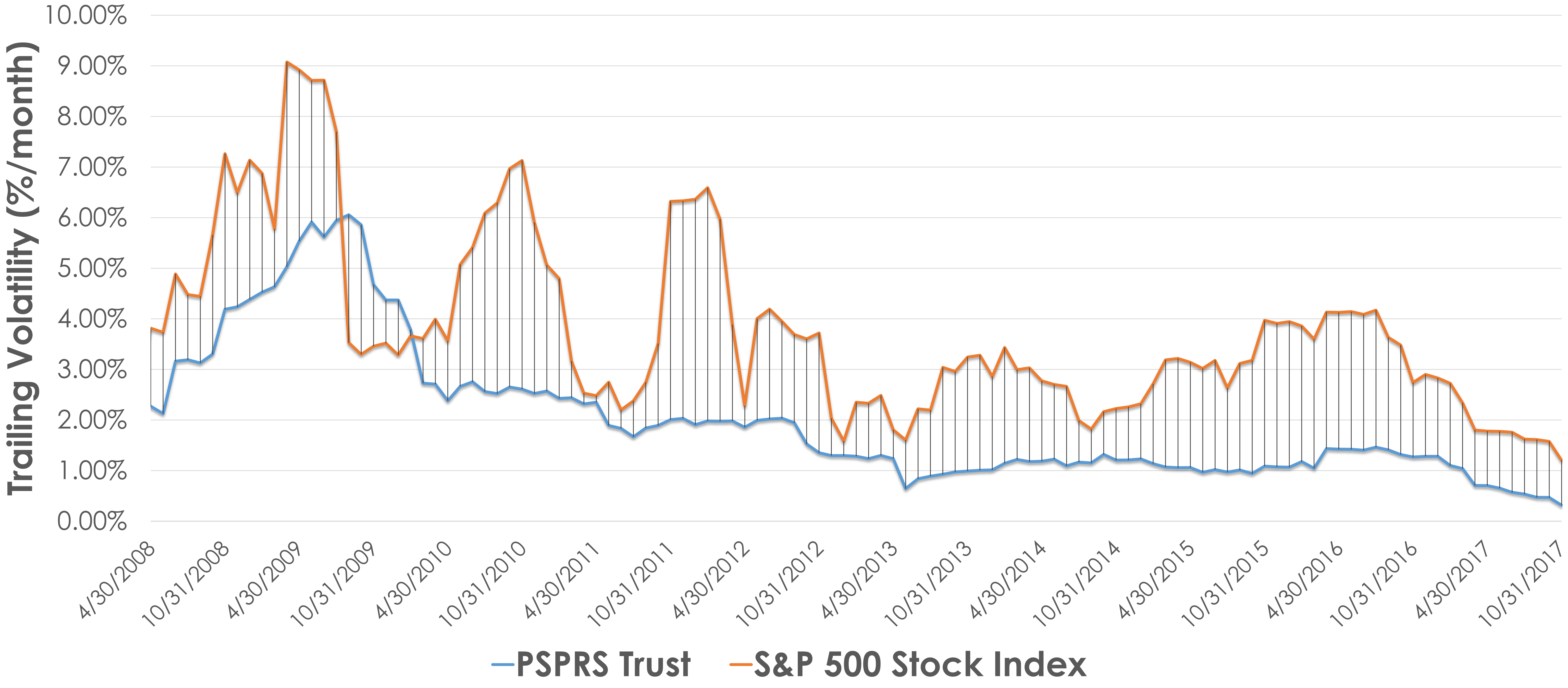
* For comparison, the monthly volatility of the S&P 500 over the past ten years has been 4.4% per month, or 15.2% per year.
* All risk values reported as monthly risk based on the past year of returns.
** GTS monthly performance (8/31/2016 – 7/31/2017) was derived from Absolute Return and GTAA.
***For comparison, a volatility of 1.0% per month, corresponds to 3.5% per year.

PSPRS Volatility and Value at Risk (VAR*):

- While Real Estate historic volatility increased by 90 bps, the Trust decreased by 20 bps;
- The Trust month VaR forecast moved up by 10 bps.

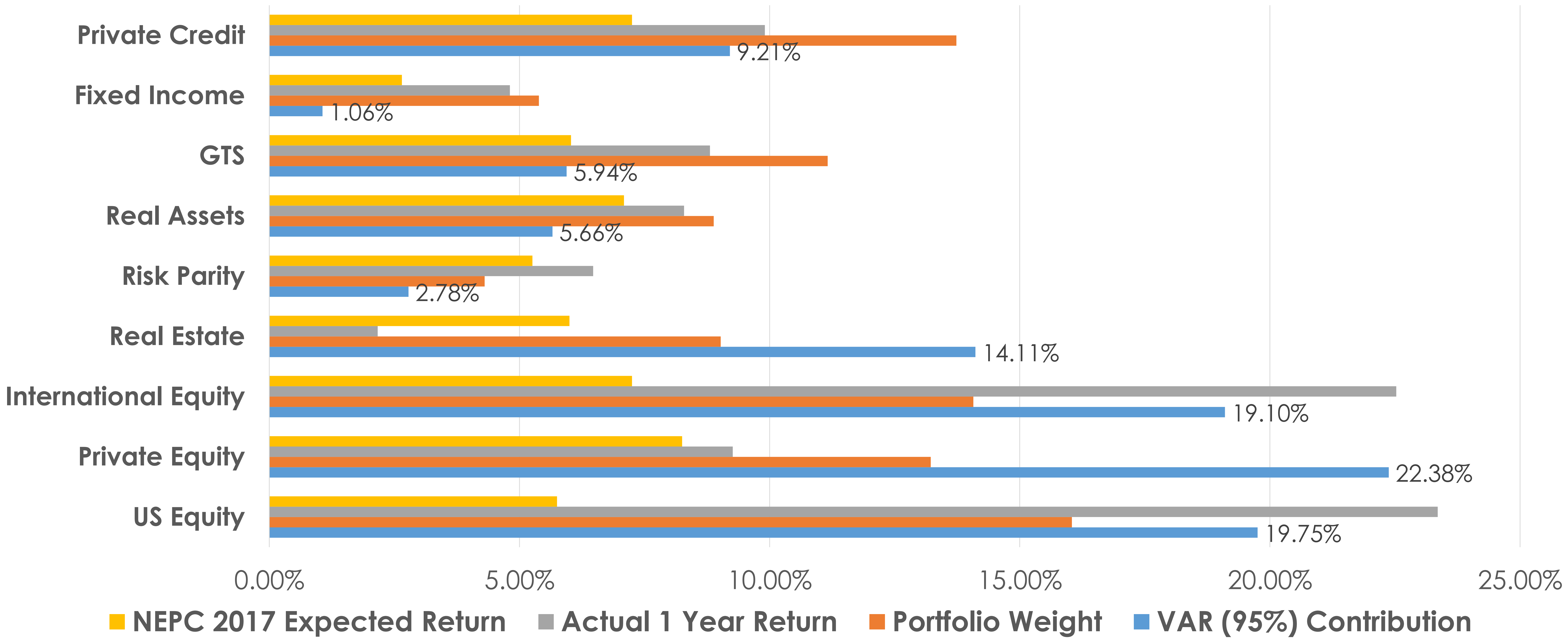
* Definition of 95% monthly VAR (used here): The maximum amount that could be lost over any one month period, with 95% confidence (in other words, with the exception of one month in 20, in which that maximum amount would be exceeded).

Volatility Comparison – 12 Month Trailing Volatility



PSPRS Trust global is 74% less volatile than the market.

Risk (measured as "VAR") Decomposition by Asset Class



Relative small shifting in marginal VAR contributions:

- Private Credit: increased by 2.05%;
- Real Estate: decreased by 0.95%;
- Equities: decreased by 1.10%.

Notable Drivers of Asset Class Risk

PSPRS Portfolio	Portfolio Weight	Primary Driver	Secondary Driver	Fraction Explained
US Equities	16.0%	Russell 2000 (small caps)	Change in VIX	87%
International Equities	14.1%	Russell 2000 (small caps)	Change in VIX	58%
Real Estate	9.0%	Credit Spread (BAA-AAA)	Russell 2000 (small caps)	58%
Private Equity	13.2%	Russell 2000 (small caps)	Change in VIX	67%
Fixed Income	5.4%	Change in US 10Y Note	Oil	35%
Private Credit	13.7%	Russell 2000 (small caps)	Treasury Spread (10Y-3M)	46%
GTS	11.2%	--	--	-
Real Assets	8.9%	Russell 2000 (small caps)	Oil	39%
Risk Parity	4.3%	--	--	-

* *Values in yellow/red indicate an inverse relation.

Change in US 10-year treasury note becomes the primary driver for Fixed Income.

* *We note the significant conclusion that our inability to model GTS and Risk Parity portfolios - using fundamental market or economic factors - is an indication of successful design and implementation of these investment portfolios.*

Notable Drivers of Portfolio Risk

- As with past months, risk modeling indicates that the PSPRS global portfolio is subject – in part – to two main drivers (explaining 70% of variance, or market risk):
  - MSCI World
  - Treasury Spread (10Y-3M)
- We report the (all other things being equal) results of stress tests on these drivers in order to gauge our exposure to them.

Market Factor Change	Portfolio Return
MSCI World-3 std	-5.6%
MSCI World-2 std	-3.6%
MSCI World-1 std	-1.7%
MSCI World+1 std	4.2%
MSCI World+2 std	6.1%
MSCI World+3 std	8.1%

Market Factor Change	Portfolio Return
Treasury Spread (10Y-3M)-3 std	3.9%
Treasury Spread (10Y-3M)-2 std	3.3%
Treasury Spread (10Y-3M)-1 std	2.8%
Treasury Spread (10Y-3M)+1 std	1.1%
Treasury Spread (10Y-3M)+2 std	0.6%
Treasury Spread (10Y-3M)+3 std	-0.0%

The Trust exposure to extreme equity events remains positively asymmetric.

Historical Worst-Case Scenarios

- Stress testing: The style analysis model of our current holdings can be subjected to stress scenarios.

Events	Today's Portfolio	PSPRS Trust Actual
Asian Crisis of 1997	3.2%	5.7%
Russian/LTCM Crisis 1998	-3.7%	-5.5%
WTC Attacks - Sept. 11	-1.8%	-11.7%
Stock Market Crash 2002	-2.9%	-21.1%
August Crisis 2007	3.1%	1.6%
January Crisis 2008	-1.0%	-2.7%
Credit Crunch 2008 (Aug to Nov)	-14.9%	-23.1%
Crisis 2009 (Jan-Feb)	-3.9%	-12.9%
Flash Crash 2010	-2.5%	-3.7%
Brexit (2016)	0.7%	-0.3%

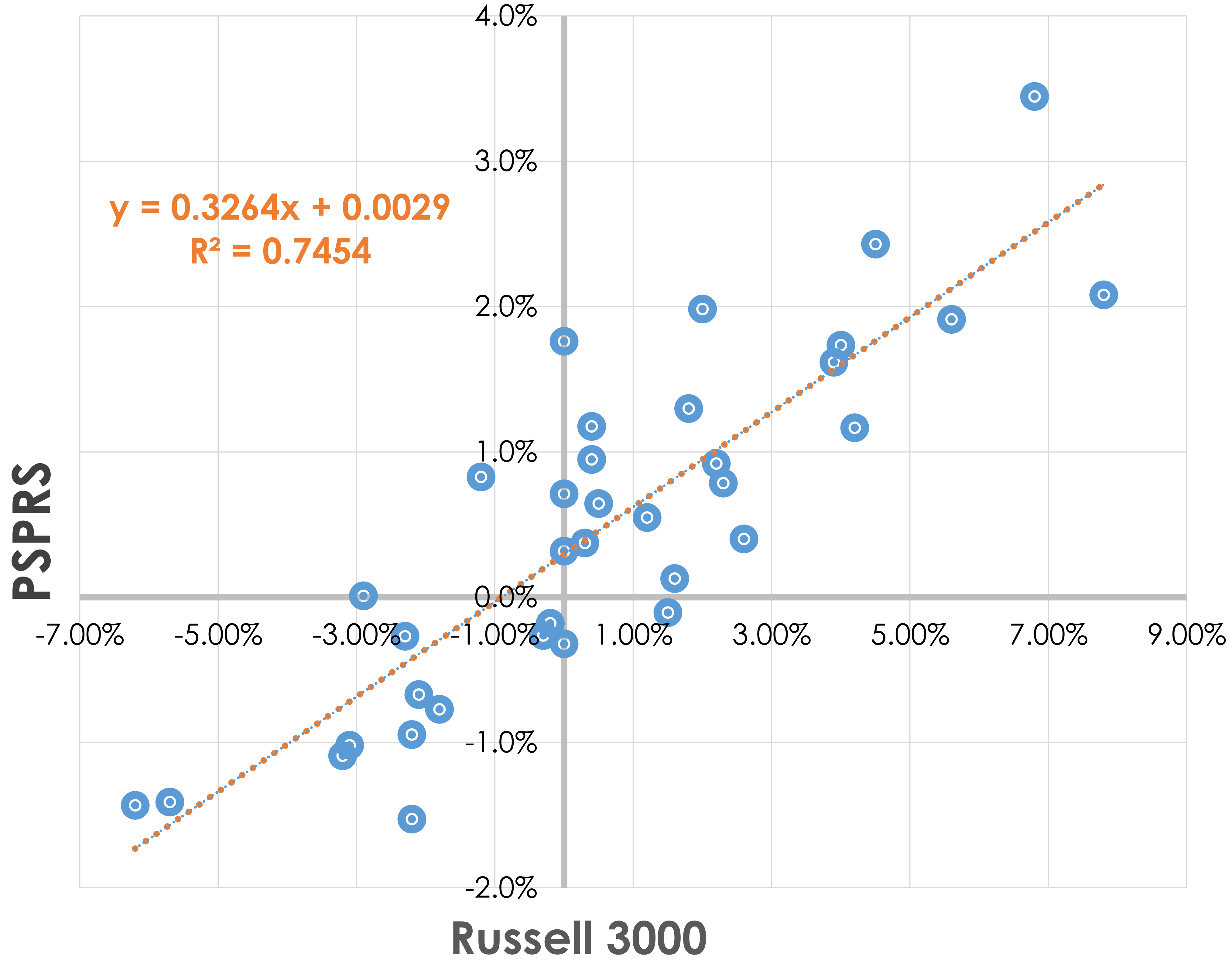
- Today’s portfolio performance in different stress scenarios is consistent compared to last month.

Upside and Downside Returns

- Actual portfolio returns during market upside and downside:

Upside			In 6-month	
Period	Russell 3000	PSPRS Actual	Russell 3000	PSPRS Actual
10/2015	7.8%	2.1%	-1.0%	1.7%
03/2016	6.8%	3.4%	6.0%	4.4%
02/2015	5.6%	1.9%	-6.1%	0.1%
02/2014	4.5%	2.4%	6.7%	5.4%
11/2016	4.2%	1.2%	9.0%	6.8%

Downside			In 6-month	
Period	Russell 3000	PSPRS Actual	Russell 3000	PSPRS Actual
08/2015	-6.2%	-1.4%	-3.7%	-1.1%
01/2016	-5.7%	-1.4%	12.9%	4.9%
01/2014	-3.2%	-1.1%	7.2%	6.1%
09/2015	-3.1%	-1.0%	6.2%	3.3%
01/2015	-3.1%	-0.0%	5.8%	3.4%



- Upside participation: 39%
- Downside mitigation: 77% (23% participation)

Conclusions

- While the Trust monthly volatility forecast remains the same, the historic volatility measured by the last 12-month standard deviation reached the historical low of 0.3%. This also indicates that the Trust performance was very stable over past 12 months. Compared to the public stock market, the Trust only captures about 25% of the volatility. However, our market upside participation is close to 40%.
- In terms of portfolio risk drivers, change in US 10-year treasury note becomes the primary driver for Fixed Income, followed by oil. The Trust exposure to extreme equity events remains positively asymmetric and stress testing results are consistent.
- In addition to the PSPRS Trust being:
  - ➢ Top decile on risk-terms since 2009.
  - ➢ Top quartile in efficiency (Sharpe Ratio) terms since 2010.

Contact Us

Arizona PSPRS Trust

Public Safety Personnel Retirement System
3010 E Camelback Rd, Suite 200, Phoenix, AZ 85016
United States

www.psprs.com

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602.255.5575

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

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PSPRS Trust Risk Report

Serving Those Who Serve Others

AGENDA - PSPRS Trust Portfolio Risk as of November 30, 2017

Current Status

Based on current holdings 11/30/17

PSPRS Trust 11/30/2017	**Portfolio Weight**	**Historic Volatility*** (12m Std. Dev.)	**Monthly Volatility** (Forecast)	**Monthly VAR Forecast** (95% Confidence)
US Equities	16.0%	1.1%	3.2%	-5.2%
Private Equity	13.6%	1.3%	4.4%	-7.1%
Int'l Equities	14.5%	1.1%	4.0%	-5.7%
Real Estate	9.5%	1.6%	3.4%	-6.6%
Risk Parity	4.4%	1.3%	2.1%	-2.7%
Real Assets	9.0%	1.1%	2.0%	-2.7%
GTS**	11.6%	0.8%	2.0%	-2.2%
Fixed Income	5.5%	0.5%	0.9%	-0.8%
Private Credit	12.5%	0.6%	2.3%	-2.8%
PSPRS Trust	96.6%	0.3%***	1.9%	-2.8%

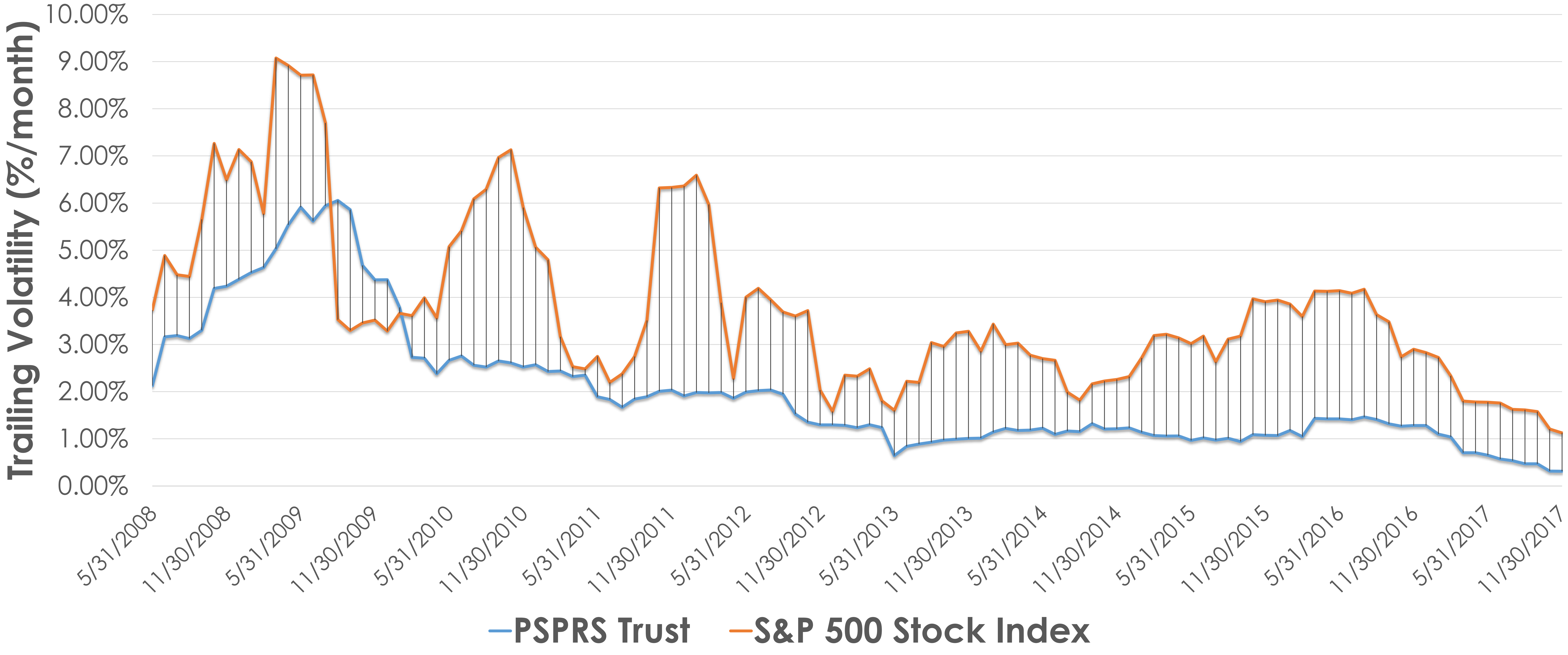
* For comparison, the monthly volatility of the S&P 500 over the past ten years has been 4.4% per month, or 15.2% per year.
* All risk values reported as monthly risk based on the past year of returns.
** GTS monthly performance (8/31/2016 – 7/31/2017) was derived from Absolute Return and GTAA.
***For comparison, a volatility of 1.0% per month, corresponds to 3.5% per year.

PSPRS Volatility and Value at Risk (VAR*):

- Asset class historic volatilities fluctuated slightly as the result of steady positive returns;
- Volatility and VaR forecasts remained stable.

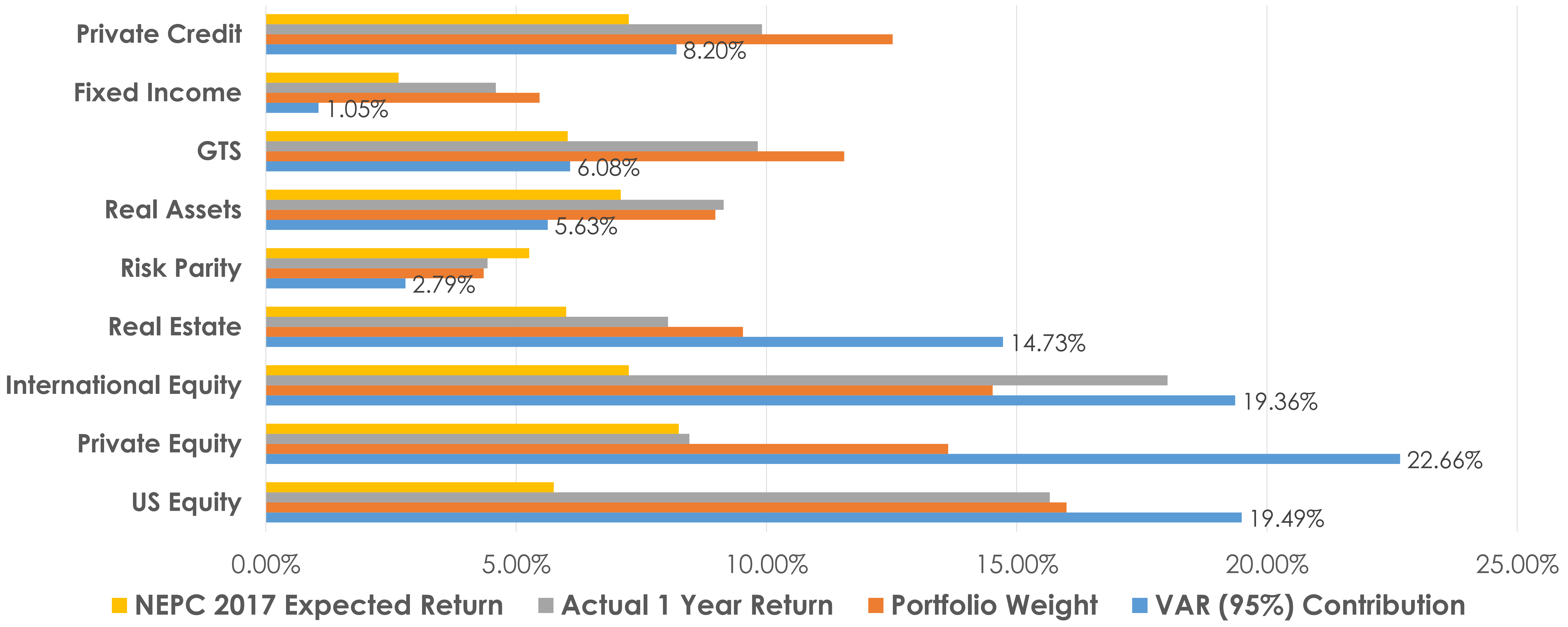
* Definition of 95% monthly VAR (used here): The maximum amount that could be lost over any one month period, with 95% confidence (in other words, with the exception of one month in 20, in which that maximum amount would be exceeded).

Volatility Comparison – 12 Month Trailing Volatility



PSPRS Trust global is 72% less volatile than the market.

Risk (measured as "VAR") Decomposition by Asset Class



Relative small shifting in marginal VAR contributions:

- Private Credit: decreased by 1.01%;
- Real Estate: increased by 0.62%;
- Private Equity: increased by 0.28%.

Notable Drivers of Asset Class Risk

PSPRS Portfolio	Portfolio Weight	Primary Driver	Secondary Driver	Fraction Explained
US Equities	16.0%	Russell 2000 (small caps)	Change in VIX	87%
Private Equity	13.6%	Russell 2000 (small caps)	Change in VIX	68%
International Equities	14.5%	Russell 2000 (small caps)	Change in VIX	59%
Real Estate	9.5%	Credit Spread (BAA-AAA)	Russell 2000 (small caps)	58%
Risk Parity	4.4%	--	--	-
Real Assets	9.0%	Russell 2000 (small caps)	Oil	39%
GTS	11.6%	--	--	-
Fixed Income	5.5%	Change in US 10Y Note	Oil	35%
Private Credit	12.5%	Russell 2000 (small caps)	Treasury Spread (10Y-3M)	46%

* *Values in yellow/red indicate an inverse relation.

The primary and secondary asset class risk drivers remain the same as last month.

** We note the significant conclusion that our inability to model GTS and Risk Parity portfolios - using fundamental market or economic factors - is an indication of successful design and implementation of these investment portfolios.*

Notable Drivers of Portfolio Risk

- As with past months, risk modeling indicates that the PSPRS global portfolio is subject – in part – to two main drivers (explaining 70% of variance, or market risk):
  - MSCI World
  - Treasury Spread (10Y-3M)
- We report the (all other things being equal) results of stress tests on these drivers in order to gauge our exposure to them.

Market Factor Change	Portfolio Return
MSCI World-3 std	-6.3%
MSCI World-2 std	-4.5%
MSCI World-1 std	-2.5%
MSCI World+1 std	3.4%
MSCI World+2 std	5.3%
MSCI World+3 std	7.3%

Market Factor Change	Portfolio Return
Treasury Spread (10Y-3M)-3 std	3.2%
Treasury Spread (10Y-3M)-2 std	2.7%
Treasury Spread (10Y-3M)-1 std	2.3%
Treasury Spread (10Y-3M)+1 std	0.9%
Treasury Spread (10Y-3M)+2 std	0.5%
Treasury Spread (10Y-3M)+3 std	0.0%

The Trust would gain more from a positive movement than would lose after a similarly sized negative movement.

Historical Worst-Case Scenarios

- Stress testing: The style analysis model of our current holdings can be subjected to stress scenarios.

Events	Today's Portfolio	PSPRS Trust Actual
Asian Crisis of 1997	3.2%	5.7%
Russian/LTCM Crisis 1998	-3.7%	-5.5%
WTC Attacks - Sept. 11	-2.3%	-11.7%
Stock Market Crash 2002	-3.4%	-21.1%
August Crisis 2007	2.6%	1.6%
January Crisis 2008	-1.5%	-2.7%
Credit Crunch 2008 (Aug to Nov)	-15.5%	-23.1%
Crisis 2009 (Jan-Feb)	-4.3%	-12.9%
Flash Crash 2010	-2.9%	-3.7%
Brexit (2016)	0.6%	-0.3%

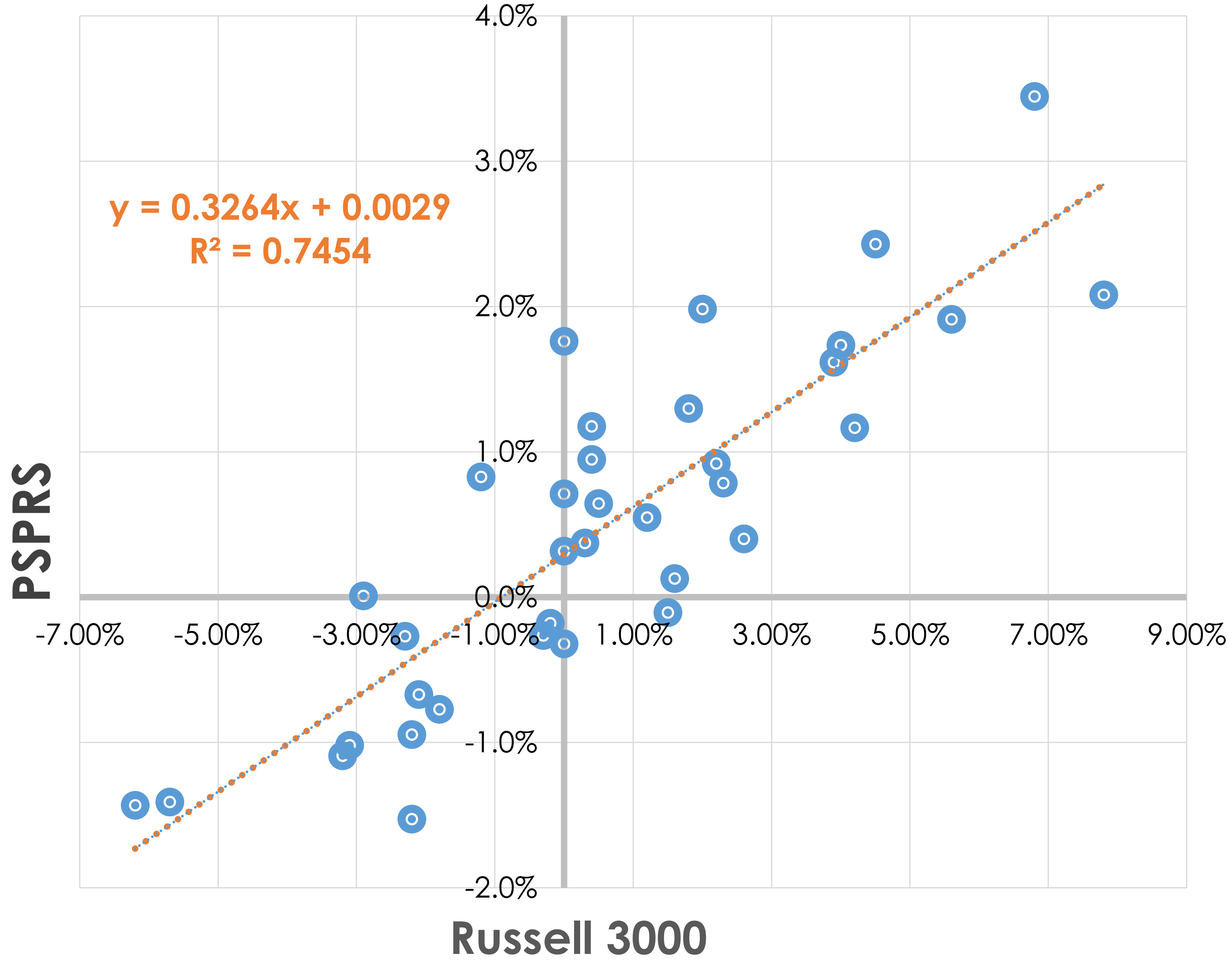
The downside risk in different stress scenarios has been reduced substantially compared to the actual.

Upside and Downside Returns

- Actual portfolio returns during market upside and downside:

Upside			In 6-month	
Period	**Russell 3000**	**PSPRS Actual**	**Russell 3000**	**PSPRS Actual**
10/2015	7.8%	2.1%	-1.0%	1.7%
03/2016	6.8%	3.4%	6.0%	4.4%
02/2015	5.6%	1.9%	-6.1%	0.1%
02/2014	4.5%	2.4%	6.7%	5.4%
11/2016	4.2%	1.2%	9.0%	6.8%

Downside			In 6-month	
Period	**Russell 3000**	**PSPRS Actual**	**Russell 3000**	**PSPRS Actual**
08/2015	-6.2%	-1.4%	-3.7%	-1.1%
01/2016	-5.7%	-1.4%	12.9%	4.9%
01/2014	-3.2%	-1.1%	7.2%	6.1%
09/2015	-3.1%	-1.0%	6.2%	3.3%
01/2015	-3.1%	-0.0%	5.8%	3.4%



- Upside participation: 39%
- Downside mitigation: 77% (23% participation)

Conclusions

- Overall, the Trust risk profile for November is similar to October. While the majority of risk measurements remained stable, asset class historic volatilities measured by last 12-month standard deviations experienced minor fluctuations. It is worth noting that standard deviation reflects the dispersion for a group as a whole. In other words, extreme returns will increase volatility level. In our case, steady positive asset class returns contributed to the movement.

- In addition to the PSPRS Trust being:

  - ➢ Top decile on risk-terms since 2009.

  - ➢ Top quartile in efficiency (Sharpe Ratio) terms since 2010.

Contact Us

Arizona PSPRS Trust

Public Safety Personnel Retirement System
3010 E Camelback Rd, Suite 200, Phoenix, AZ 85016
United States

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877.925.5575
602.255.5575

Arizona PSPRS Trust - Performance as of 10/31/2017 (Gross of Fees)

Description	Asset Allocation Market Values ($)	%	7/1/2017 Target (%)	Range (%)	Performance % Month Ending	3 Month Ending	Fiscal YTD	Calendar YTD	1 Year	3 Years	5 Years	10 Years
Arizona PSPRS Trust - Total Fund	**$9,567,273,859**	**100.00%**			**0.64%**	**2.53%**	**3.38%**	**9.26%**	**11.97%**	**7.02%**	**8.47%**	**4.17%**
*Target Fund Benchmark**					**1.12%**	**2.58%**	**4.12%**	**10.58%**	**12.73%**	**6.45%**	**7.79%**	**3.78%**
Total Equity	$2,881,282,037	30.12%	**30%**	19-41%	1.82%	4.43%	7.06%	18.65%	23.12%	7.97%	11.05%	4.82%
*Target Equity Benchmark**					*2.04%*	*4.61%*	*7.47%*	*19.65%*	*23.92%*	*8.33%*	*11.55%*	*4.86%*
U.S. Equity	$1,534,845,143	16.04%	**16%**	10-22%	1.99%	4.80%	6.52%	15.31%	23.36%	9.74%	13.94%	**N/A**
Russell 3000					*2.18%*	*4.88%*	*6.85%*	*16.40%*	*23.98%*	*10.53%*	*15.12%*	*7.61%*
Non-U.S. Equity	$1,346,436,894	14.07%	**14%**	9-19%	1.63%	4.02%	7.63%	22.48%	22.53%	5.78%	7.51%	**N/A**
MSCI ACWI Ex-US Net					*1.88%*	*4.32%*	*8.16%*	*23.41%*	*23.64%*	*5.71%*	*7.29%*	*0.92%*
Private Equity	$1,264,853,636	13.22%	**12%**	7-17%	1.10%	4.52%	3.29%	6.69%	9.26%	14.68%	16.97%	10.63%
Russell 3000 + 100 bps					*2.21%*	*5.07%*	*7.14%*	*17.21%*	*24.98%*	*11.54%*	*16.12%*	*9.14%*
Fixed Income	$515,495,497	5.39%	**5%**	2-9%	0.10%	1.06%	1.85%	4.48%	4.81%	3.77%	3.49%	4.32%
Bloomberg BC Global Aggregate					*-0.38%*	*-0.30%*	*1.38%*	*5.85%*	*1.18%*	*1.17%*	*0.43%*	*3.11%*
Private Credit	$1,314,005,395	13.73%	**16%**	10-20%	0.54%	2.33%	2.50%	6.06%	9.91%	6.42%	8.58%	**N/A**
50% BofA ML US High Yield BB-B Constr./ 50% CSFB Fixed Income Arbitrage					*0.64%*	*0.76%*	*1.72%*	*6.06%*	*7.41%*	*4.41%*	*4.97%*	*5.41%*
Global Trading Strategies	$1,067,861,251	11.16%	**12%**	7-17%	1.75%	3.40%	3.98%	6.64%	8.81%	4.71%	5.34%	**N/A**
3-Month LIBOR + 300 bps					*0.35%*	*1.06%*	*1.41%*	*3.50%*	*4.15%*	*3.69%*	*3.51%*	*3.82%*
Real Assets	$849,837,788	8.88%	**9%**	6-14%	0.15%	-1.35%	-0.93%	5.04%	8.29%	4.15%	3.91%	**N/A**
CPI + 200 bps					*0.35%*	*1.45%*	*1.74%*	*3.45%*	*4.05%*	*3.27%*	*3.28%*	***N/A***
Real Estate	$863,283,645	9.02%	**10%**	6-14%	-4.34%	-2.00%	-1.98%	2.08%	2.16%	3.66%	4.27%	0.78%
*NCREIF NPI ***					*0.56%*	*1.70%*	*2.27%*	*5.66%*	*6.88%*	*9.67%*	*10.29%*	*6.18%*
Risk Parity	$411,664,765	4.30%	**4%**	2-6%	1.62%	3.29%	4.50%	7.55%	6.47%	3.43%	2.95%	**N/A**
60% Bloomberg BC Global Aggregate/ 30% MSCI AC World Net/ 10% Bloomberg Commodity TR					*0.61%*	*1.39%*	*3.49%*	*9.16%*	*7.54%*	*2.19%*	*2.54%*	*2.58%*
Short Term Investments	$398,989,846	4.17%	**2%**	0-5%	0.16%	0.55%	0.67%	2.16%	2.55%	2.02%	2.32%	1.67%
BofA ML 3-Month T-Bill					*0.09%*	*0.27%*	*0.35%*	*0.66%*	*0.72%*	*0.35%*	*0.24%*	*0.45%*

* Please see Page 2 for additional notes regarding the benchmarks and effective dates.

** The NCREIF NPI index return is published on a quarterly basis approximately six weeks after the end of the quarter and will be updated as soon as it is available. The monthly returns shown above are based on geometric smoothing of the quarterly data.

Target Fund Benchmarks/ Effective Dates

July 1, 2017 to Present: 16% Russell 3000, 14% MSCI World Ex-US Net, 12% Russell 3000 + 100 bps, 5% BC Global Aggregate, 16% Private Credit (fka Credit Opportunities) Benchmark, 12% 3-Month LIBOR + 300 bps, 9% CPI + 200 bps, 10% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2016 to June 30, 2017: 16% Russell 3000, 14% MSCI World Ex-US Net, 11% Russell 3000 + 100 bps, 5% BC Global Aggregate, 15% Credit Opportunities Benchmark, 5% BofA ML 3-Month T-Bill + 200 bps, 10% 3-Month LIBOR + 300 bps, 8% CPI + 200 bps, 10% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2015 - June 30, 2016: 16% Russell 3000, 14% MSCI World Ex-US Net, 11% Russell 3000 + 100 bps, 7% BC Global Aggregate, 13% Credit Opportunities Benchmark, 5% BofA ML 3-Month T-Bill + 200 bps, 10% 3-Month LIBOR + 300 bps, 8% CPI + 200 bps, 10% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2014 - June 30, 2015: 16% Russell 3000, 14% MSCI World Ex-US Net, 11% Russell 3000 + 100 bps, 7% BC Global Aggregate, 13% Credit Opportunities Benchmark, 4% BofA ML 3-Month T-Bill + 200 bps, 10% 3-Month LIBOR + 300 bps, 8% CPI + 200 bps, 11% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2013 - June 30, 2014: 17% Russell 3000, 14% MSCI ACWI Ex-US Net, 10% Russell 3000 + 100 bps, 8% BC Global Aggregate, 12% Credit Opportunities Benchmark, 4% BofA ML 3-Month T-Bill + 200 bps, 10% 3-Month LIBOR + 300 bps, 8% CPI + 200 bps, 11% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2012 - June 30,2013: 18% Russell 3000, 14% MSCI World Ex-US Net, 9% Russell 3000 + 100 bps, 12% BC Global Aggregate, 12% Credit Opportunities Benchmark, 4% BofA ML 3-Month T-Bill + 200 bps, 8% 3-Month LIBOR + 300 bps, 7% CPI + 200 bps, 10% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2010 - June 30, 2012: 20% Russell 3000, 15% MSCI World Ex-US Net, 8% 3-Month LIBOR + 300 bps, 20% BC US Aggregate, 4% BofA ML 3-Month T-Bill + 200 bps, 9% BofA ML US High Yield BB-B Constrained, 8% Russell 3000 + 100 bps, 6% CPI + 200 bps, 8% NCREIF NPI and 2% BofA ML 3-Month T-Bill.

April 1, 2009 - June 30, 2010: 30% Russell 3000, 20% MSCI World Ex-US Net, 20% BC US Aggregate, 8% NCREIF NPI, 8% Russell 3000 + 100 bps, 8% BofA ML US High Yield BB-B Constrained, 5% CPI + 200 bps and 1% BofA ML 3-Month T-Bill.

July 1, 2007 - March 31, 2009: 46% Wilshire 5000, 21% MSCI World Ex-US Net, 20% BC Gov/Cred, 6% NCREIF NPI, 6% Wilshire 5000 +300 bps and 1% BofA ML 3-Month T-Bill.

July 1, 2006 - June 30, 2007: 50% S&P 500, 10% S&P 400, 5% S&P 600, 20% BC Gov/Cred, 10% Expected Annual Return for Real Estate of 8.00% and 5% BofA ML 3-Month T-Bill.

July 1, 2002 - June 30, 2006: 45% S&P 500, 45% BC Gov/Cred and 10% BofA 3-Month T-Bill.

Target Total Equity Benchmarks/ Effective Dates

July 1, 2014 to Present: 53.33% Russell 3000 and 46.67% MSCI World Ex-US Net.

July 1, 2013 to June 30, 2014: 54.84% Russell 3000 and 45.16% MSCI ACWI Ex-US Net.

July 1, 2012 - June 30, 2013: 56.25% Russell 3000 and 43.75% MSCI World Ex-US Net.

July 1, 2010 - June 30, 2012: 57.14% Russell 3000 and 42.86% MSCI World Ex-US Net.

April 1, 2009 - June 30, 2010: 60% Russell 3000 and 40% MSCI World Ex-US Net.

July 1, 2007 - March 31, 2009: 67.69% Wilshire 5000 and 32.31% MSCI World Ex-US Net.

July 1, 2006 - June 30, 2007: 76.92% S&P 500, 15.39% S&P 400 and 7.69% S&P 600.

July 1, 2002 - June 30, 2006: 100% S&P 500.

Arizona PSPRS Trust - Performance as of 11/30/2017 (Gross of Fees)

Description	Asset Allocation Market Values ($)	%	7/1/2017 Target (%)	7/1/2017 Range (%)	Performance % Month Ending	3 Month Ending	Fiscal YTD	Calendar YTD	1 Year	3 Years	5 Years	10 Years
Arizona PSPRS Trust - Total Fund	**$9,633,586,839**	**100.00%**			**1.28%**	**2.75%**	**4.70%**	**10.66%**	**12.09%**	**7.15%**	**8.50%**	**4.60%**
*Target Fund Benchmark**					*1.22%*	*3.40%*	*5.39%*	*11.93%*	*13.29%*	*6.59%*	*7.91%*	*4.20%*
Total Equity	$2,935,180,848	30.47%	**30%**	19-41%	1.87%	6.02%	9.06%	20.87%	23.62%	8.20%	11.19%	5.47%
*Target Equity Benchmark**					*2.00%*	*6.34%*	*9.61%*	*22.04%*	*24.77%*	*8.46%*	*11.71%*	*5.55%*
U.S. Equity	$1,580,429,421	16.41%	**16%**	10-22%	2.97%	7.72%	9.68%	18.74%	21.35%	10.07%	14.43%	**N/A**
Russell 3000					*3.04%*	*7.85%*	*10.10%*	*19.93%*	*22.27%*	*10.75%*	*15.63%*	*8.43%*
Non-U.S. Equity	$1,354,751,427	14.06%	**14%**	9-19%	0.62%	4.10%	8.29%	23.23%	26.14%	5.91%	7.25%	**N/A**
MSCI ACWI Ex-US Net					*0.81%*	*4.62%*	*9.04%*	*24.41%*	*27.59%*	*5.74%*	*7.06%*	*1.47%*
Private Equity	$1,286,425,800	13.35%	**12%**	7-17%	1.89%	3.34%	5.24%	8.71%	9.36%	15.13%	16.84%	10.84%
Russell 3000 + 100 bps					*3.10%*	*8.02%*	*10.46%*	*20.84%*	*23.27%*	*11.76%*	*16.64%*	*9.94%*
Fixed Income	$516,471,064	5.36%	**5%**	2-9%	0.20%	0.51%	2.05%	4.68%	5.88%	3.67%	3.45%	4.18%
Bloomberg BC Global Aggregate					*1.11%*	*-0.18%*	*2.50%*	*7.02%*	*6.53%*	*1.67%*	*0.66%*	*3.02%*
Private Credit	$1,376,550,044	14.29%	**16%**	10-20%	1.24%	2.03%	3.77%	7.38%	9.05%	6.62%	8.43%	**N/A**
50% BofA ML US High Yield BB-B Constr./ 50% CSFB Fixed Income Arbitrage					*0.11%*	*0.54%*	*1.83%*	*6.17%*	*7.54%*	*4.53%*	*4.86%*	*5.52%*
Global Trading Strategies	$1,059,743,300	11.00%	**12%**	7-17%	0.07%	1.98%	4.06%	6.72%	7.99%	4.20%	5.13%	**N/A**
3-Month LIBOR + 300 bps					*0.35%*	*1.06%*	*1.77%*	*3.86%*	*4.19%*	*3.72%*	*3.53%*	*3.79%*
Real Assets	$844,100,027	8.76%	**9%**	6-14%	2.00%	1.94%	1.05%	7.14%	7.37%	5.13%	4.59%	**N/A**
CPI + 200 bps					*0.33%*	*1.26%*	*2.07%*	*3.79%*	*4.23%*	*3.45%*	*3.37%*	***N/A***
Real Estate	$857,739,126	8.90%	**10%**	6-14%	0.68%	-2.81%	-1.31%	2.78%	3.23%	3.42%	4.15%	0.76%
*NCREIF NPI ***					*0.56%*	*1.70%*	*2.84%*	*6.26%*	*6.87%*	*9.51%*	*10.23%*	*6.12%*
Risk Parity	$413,907,192	4.30%	**4%**	2-6%	0.56%	1.23%	5.09%	8.15%	9.72%	3.24%	2.76%	**N/A**
60% Bloomberg BC Global Aggregate/ 30% MSCI AC World Net/ 10% Bloomberg Commodity TR					*1.20%*	*1.84%*	*4.73%*	*10.47%*	*11.08%*	*2.64%*	*2.71%*	*2.75%*
Short Term Investments	$343,469,438	3.57%	**2%**	0-5%	0.17%	0.50%	0.85%	2.33%	2.53%	2.03%	2.33%	1.65%
BofA ML 3-Month T-Bill					*0.08%*	*0.26%*	*0.44%*	*0.74%*	*0.79%*	*0.37%*	*0.25%*	*0.41%*

* Please see Page 2 for additional notes regarding the benchmarks and effective dates.

** The NCREIF NPI index return is published on a quarterly basis approximately six weeks after the end of the quarter and will be updated as soon as it is available. The monthly returns shown above are based on geometric smoothing of the quarterly data.

Target Fund Benchmarks/ Effective Dates

July 1, 2017 to Present: 16% Russell 3000, 14% MSCI World Ex-US Net, 12% Russell 3000 + 100 bps, 5% BC Global Aggregate, 16% Private Credit (fka Credit Opportunities) Benchmark, 12% 3-Month LIBOR + 300 bps, 9% CPI + 200 bps, 10% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2016 to June 30, 2017: 16% Russell 3000, 14% MSCI World Ex-US Net, 11% Russell 3000 + 100 bps, 5% BC Global Aggregate, 15% Credit Opportunities Benchmark, 5% BofA ML 3-Month T-Bill + 200 bps, 10% 3-Month LIBOR + 300 bps, 8% CPI + 200 bps, 10% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2015 - June 30, 2016: 16% Russell 3000, 14% MSCI World Ex-US Net, 11% Russell 3000 + 100 bps, 7% BC Global Aggregate, 13% Credit Opportunities Benchmark, 5% BofA ML 3-Month T-Bill + 200 bps, 10% 3-Month LIBOR + 300 bps, 8% CPI + 200 bps, 10% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2014 - June 30, 2015: 16% Russell 3000, 14% MSCI World Ex-US Net, 11% Russell 3000 + 100 bps, 7% BC Global Aggregate, 13% Credit Opportunities Benchmark, 4% BofA ML 3-Month T-Bill + 200 bps, 10% 3-Month LIBOR + 300 bps, 8% CPI + 200 bps, 11% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2013 - June 30, 2014: 17% Russell 3000, 14% MSCI ACWI Ex-US Net, 10% Russell 3000 + 100 bps, 8% BC Global Aggregate, 12% Credit Opportunities Benchmark, 4% BofA ML 3-Month T-Bill + 200 bps, 10% 3-Month LIBOR + 300 bps, 8% CPI + 200 bps, 11% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2012 - June 30,2013: 18% Russell 3000, 14% MSCI World Ex-US Net, 9% Russell 3000 + 100 bps, 12% BC Global Aggregate, 12% Credit Opportunities Benchmark, 4% BofA ML 3-Month T-Bill + 200 bps, 8% 3-Month LIBOR + 300 bps, 7% CPI + 200 bps, 10% NCREIF NPI, 4% Risk Parity Benchmark and 2% BofA ML 3-Month T-Bill.

July 1, 2010 - June 30, 2012: 20% Russell 3000, 15% MSCI World Ex-US Net, 8% 3-Month LIBOR + 300 bps, 20% BC US Aggregate, 4% BofA ML 3-Month T-Bill + 200 bps, 9% BofA ML US High Yield BB-B Constrained, 8% Russell 3000 + 100 bps, 6% CPI + 200 bps, 8% NCREIF NPI and 2% BofA ML 3-Month T-Bill.

April 1, 2009 - June 30, 2010: 30% Russell 3000, 20% MSCI World Ex-US Net, 20% BC US Aggregate, 8% NCREIF NPI, 8% Russell 3000 + 100 bps, 8% BofA ML US High Yield BB-B Constrained, 5% CPI + 200 bps and 1% BofA ML 3-Month T-Bill.

July 1, 2007 - March 31, 2009: 46% Wilshire 5000, 21% MSCI World Ex-US Net, 20% BC Gov/Cred, 6% NCREIF NPI, 6% Wilshire 5000 +300 bps and 1% BofA ML 3-Month T-Bill.

July 1, 2006 - June 30, 2007: 50% S&P 500, 10% S&P 400, 5% S&P 600, 20% BC Gov/Cred, 10% Expected Annual Return for Real Estate of 8.00% and 5% BofA ML 3-Month T-Bill.

July 1, 2002 - June 30, 2006: 45% S&P 500, 45% BC Gov/Cred and 10% BofA 3-Month T-Bill.

Target Total Equity Benchmarks/ Effective Dates

July 1, 2014 to Present: 53.33% Russell 3000 and 46.67% MSCI World Ex-US Net.

July 1, 2013 to June 30, 2014: 54.84% Russell 3000 and 45.16% MSCI ACWI Ex-US Net.

July 1, 2012 - June 30, 2013: 56.25% Russell 3000 and 43.75% MSCI World Ex-US Net.

July 1, 2010 - June 30, 2012: 57.14% Russell 3000 and 42.86% MSCI World Ex-US Net.

April 1, 2009 - June 30, 2010: 60% Russell 3000 and 40% MSCI World Ex-US Net.

July 1, 2007 - March 31, 2009: 67.69% Wilshire 5000 and 32.31% MSCI World Ex-US Net.

July 1, 2006 - June 30, 2007: 76.92% S&P 500, 15.39% S&P 400 and 7.69% S&P 600.

July 1, 2002 - June 30, 2006: 100% S&P 500.

Supplemental Cancer Insurance Plan (CIP) - Performance as of 10/31/2017 (Net of Fees)

	Asset Allocation		Target (%)	Performance %							
Description	**Market Values ($)**	**%**		**Month Ending**	**3 Month Ending**	**Fiscal YTD**	**Calendar YTD**	**1 Year**	**3 Years**	**5 Years**	**10 Years**
CIP - Total Fund	**$25,895,124**	**100.00%**		**1.36%**	**3.06%**	**4.71%**	**12.30%**	**13.68%**	**6.04%**	**7.75%**	**5.35%**
*Target Fund Benchmark**				***0.89%***	***2.28%***	***4.39%***	***12.22%***	***11.79%***	***4.86%***	***6.47%***	***4.07%***
U.S. Equity	$6,642,304	25.65%	**25%**	2.17%	4.82%	6.79%	16.42%	24.07%	10.55%	14.99%	6.96%
Russell 3000				*2.18%*	*4.88%*	*6.85%*	*16.40%*	*23.98%*	*10.53%*	*15.12%*	*7.61%*
Non-U.S. Equity	$6,673,492	25.77%	**25%**	1.86%	4.43%	7.90%	24.20%	24.42%	6.00%	7.55%	**N/A**
MSCI ACWI Ex-US Net				*1.88%*	*4.32%*	*8.16%*	*23.41%*	*23.64%*	*5.71%*	*7.29%*	*0.92%*
Fixed Income	$7,462,729	28.82%	**30%**	0.29%	0.74%	1.03%	2.49%	0.88%	2.71%	1.90%	3.99%
Bloomberg BC Global Aggregate				*-0.38%*	*-0.30%*	*1.38%*	*5.85%*	*1.18%*	*1.17%*	*0.43%*	*3.11%*
Inflation-Linked Securities	$2,348,149	9.07%	**10%**	0.24%	0.56%	1.03%	1.88%	-0.27%	1.27%	**N/A**	**N/A**
Bloomberg Barclays U.S. TIPS Index				*0.21%*	*0.63%*	*1.08%*	*1.94%*	*-0.11%*	*1.40%*	*-0.11%*	*3.81%*
Commodities	$1,477,628	5.71%	**5%**	3.43%	5.59%	7.86%	17.19%	19.69%	9.35%	**N/A**	**N/A**
SPDR ® Gold Trust Index (GLD)				*-0.75%*	*-0.07%*	*2.25%*	*10.09%*	*-1.04%*	*2.32%*	*-6.27%*	*4.38%*
Short Term Investments	$1,290,822	4.98%	**5%**	0.07%	0.21%	0.27%	0.55%	0.60%	0.29%	0.19%	0.55%
BofA ML 3-Month T-Bill				*0.09%*	*0.27%*	*0.35%*	*0.66%*	*0.72%*	*0.35%*	*0.24%*	*0.45%*

*** Target Fund Benchmarks/ Effective Dates**

July 1, 2014 to Present: 25% Russell 3000, 25% MSCI ACWI Ex-US Net, 30% BC Global Aggregate, 10% Barclays U.S. TIPS, 5% GLD Index, 5% BofA ML 3-Month T-Bill.
July 1, 2009 - June 30, 2014: 30% Russell 3000, 30% MSCI ACWI Ex-US Net, 35% BC Aggregate, 5% BofA ML 3-Month T-Bill.
July 1, 2005 - June 30, 2009: 60% Russell 3000, 35% BC Aggregate, 5% BofA ML 3-Month T-Bill.

Supplemental Cancer Insurance Plan (CIP) - Performance as of 11/30/2017 (Net of Fees)

Description	Asset Allocation Market Values ($)	%	Target (%)	Performance % Month Ending	3 Month Ending	Fiscal YTD	Calendar YTD	1 Year	3 Years	5 Years	10 Years
CIP - Total Fund	**$26,177,482**	**100.00%**		**1.09%**	**3.46%**	**5.85%**	**13.52%**	**15.03%**	**6.10%**	**7.80%**	**5.59%**
*Target Fund Benchmark**				***1.33%***	***2.82%***	***5.78%***	***13.71%***	***14.72%***	***5.09%***	***6.57%***	***4.43%***
U.S. Equity	$6,843,586	26.14%	**25%**	3.03%	7.83%	10.02%	19.95%	22.34%	10.75%	15.50%	7.77%
Russell 3000				*3.04%*	*7.85%*	*10.10%*	*19.93%*	*22.27%*	*10.75%*	*15.63%*	*8.43%*
Non-U.S. Equity	$6,710,434	25.63%	**25%**	0.55%	4.50%	8.50%	24.89%	27.71%	6.38%	7.29%	**N/A**
MSCI ACWI Ex-US Net				*0.81%*	*4.62%*	*9.04%*	*24.41%*	*27.59%*	*5.74%*	*7.06%*	*1.47%*
Fixed Income	$7,455,736	28.48%	**30%**	0.06%	-0.10%	1.09%	2.55%	2.94%	2.43%	1.84%	3.76%
Bloomberg BC Global Aggregate				*1.11%*	*-0.18%*	*2.50%*	*7.02%*	*6.53%*	*1.67%*	*0.66%*	*3.02%*
Inflation-Linked Securities	$2,345,673	8.96%	**10%**	0.09%	-0.38%	1.12%	1.97%	1.92%	1.24%	**N/A**	**N/A**
Bloomberg Barclays U.S. TIPS Index				*0.13%*	*-0.30%*	*1.21%*	*2.07%*	*1.97%*	*1.36%*	*-0.18%*	*3.42%*
Commodities	$1,505,447	5.75%	**5%**	1.88%	5.33%	9.89%	19.40%	22.11%	9.74%	**N/A**	**N/A**
SPDR ® Gold Trust Index (GLD)				*0.36%*	*-3.75%*	*2.61%*	*10.48%*	*8.37%*	*2.60%*	*-6.12%*	*4.59%*
Short Term Investments	$1,316,606	5.03%	**5%**	0.08%	0.22%	0.35%	0.62%	0.65%	0.31%	0.21%	0.51%
BofA ML 3-Month T-Bill				*0.08%*	*0.26%*	*0.44%*	*0.74%*	*0.79%*	*0.37%*	*0.25%*	*0.41%*

*** Target Fund Benchmarks/ Effective Dates**

July 1, 2014 to Present: 25% Russell 3000, 25% MSCI ACWI Ex-US Net, 30% BC Global Aggregate, 10% Barclays U.S. TIPS, 5% GLD Index, 5% BofA ML 3-Month T-Bill.
July 1, 2009 - June 30, 2014: 30% Russell 3000, 30% MSCI ACWI Ex-US Net, 35% BC Aggregate, 5% BofA ML 3-Month T-Bill.
July 1, 2005 - June 30, 2009: 60% Russell 3000, 35% BC Aggregate, 5% BofA ML 3-Month T-Bill.

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

NEPC 2018 INVESTMENT OUTLOOK

January 31, 2018

Allan Martin, Partner

Don Stracke, Consultant

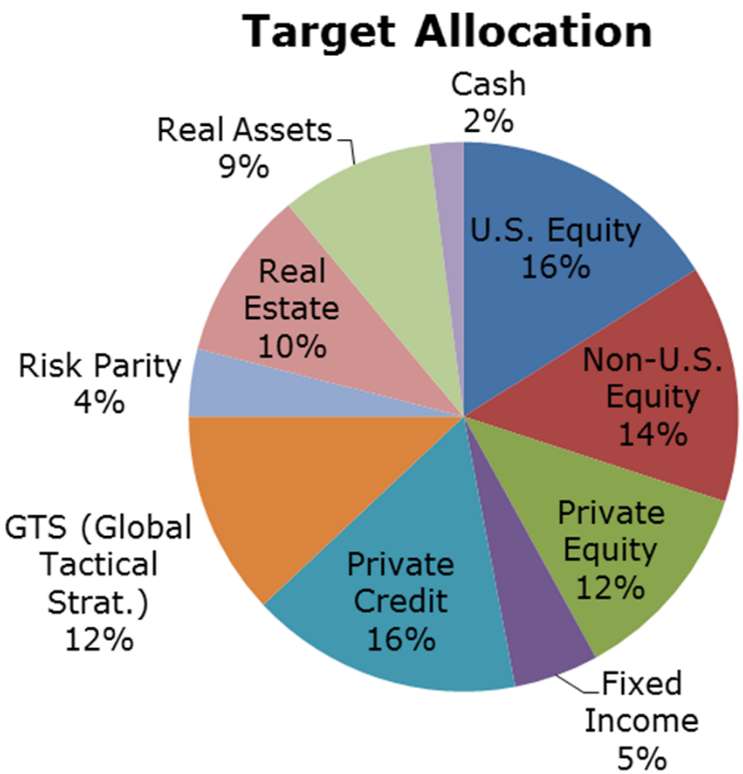
Tony Ferrara, Consultant

BOSTON | ATLANTA | CHARLOTTE | CHICAGO | DETROIT | LAS VEGAS | PORTLAND | SAN FRANCISCO

AZPSPRS PORTFOLIO

NEPC, LLC

AZ PSPRS' PORTFOLIO – 2018 ASSUMPTIONS



	5-7 Year		*30 Year*	
	2017	***2018***	***2017***	***2018***
Expected Return	7.2%	7.1%	8.1%	8.2%
Expected Volatility	12.1%	10.5%	12.1%	10.5%
Sharpe Ratio	0.45	0.48	0.42	0.52
Sortino Ratio	0.75	0.81	0.87	0.98

Probabilities Using 2018 Assumptions	
Probability of 1-Year Return Under 0%	25.0%
Probability of 6-Year Return Under 0%	5.0%
Probability of 1-Year Return Over 7.5%	48.3%
Probability of 6-Year Return Over 7.5%	45.9%
Probability of 30-Year Return Over 7.5%	64.1%

ALLOCATION BY PLAN

- **NEPC was asked whether asset allocation analysis should consider separate allocations for each plan within the Trust**
- **Key factors where material differences could lead to different allocations:**
  - Funded status
  - Time horizon

	PSPRS	CORP	EORP
Pension Assets ($millions)	7,063 (77%)	1,796 (20%)	311 (3%)
Funded Status	45.3%	49.5%	30.7%
Time Horizon	Ongoing	Ongoing	9 Years

- **The EORP is materially different than the other plans, especially due to the expected exhaustion of assets in 9 years**
- **However, there are significant hurdles to a separate EORP allocation:**
  - Relatively small size
  - Cost/benefit
  - Overhaul to unitized accounting

MULTI-PLAN ACCOUNTING

NEPC, LLC

MULTI-PLAN ACCOUNTING - DEFINED

- **Master Custodial Trusts often have many owners**

- **Trust level accounting enables owners of a 'Master Trust' (a.k.a. a pool of assets) to be accounted for in aggregate while accounting for the underlying owner's investment experience.**
  - The mechanism that enables this structure is called 'Unitization' or mulit-plan accounting

KEY TERMS:

- **Pooled Investment Account -** an aggregate account, or Master Trust, holding all of the investments.
  - All of the investment related activity occurs here including: earnings, income, realized gains/losses

- **Plan Accounts –** the owners of the investment pool holding their proportionate share via Master Trust Units.

- **Master Trust Units –** like a share of stock, represents ownership of the Master Trust

CONSIDERATIONS

BENEFITS

Economies of scale

- **Asset Allocation** - Each distinct owner of a Master Trust may have their own asset allocation.
- **Investment strategy** - Larger pools of capital have more efficient access to a broader range of investment strategies.
- **Operational efficiency** - Unitized structure results in back-office efficiencies as accounting becomes more streamlined; the number of accounts, trades, transactions are tracked once and allocated to their owner. Therefore, *less costly* to run multiple plans in this structure.
- **Reporting** – expected to have audited results in aggregate and therefore more timely

CAUTION

- **There are accounting choices to be made but custodial banks broadly can support most plan structures and accounting requirements.**
  - Choices include:
    - **How to allocate earnings**: Unit Distribution Method, Fluctuating Price Method, Cost Distribution/Fluctuating Price Method
    - **Amount of earnings to allocate**: Period End Calculation, Daily Weighted Average Calculation
- **Costs and benefits should be evaluated against alternatives.**
  - Cost reduction depends on the scope of the structure but are likely to be meaningful.

KEY MARKET THEMES

THEMES - INTRODUCTION

The outlook for developed market equities outside the US has improved

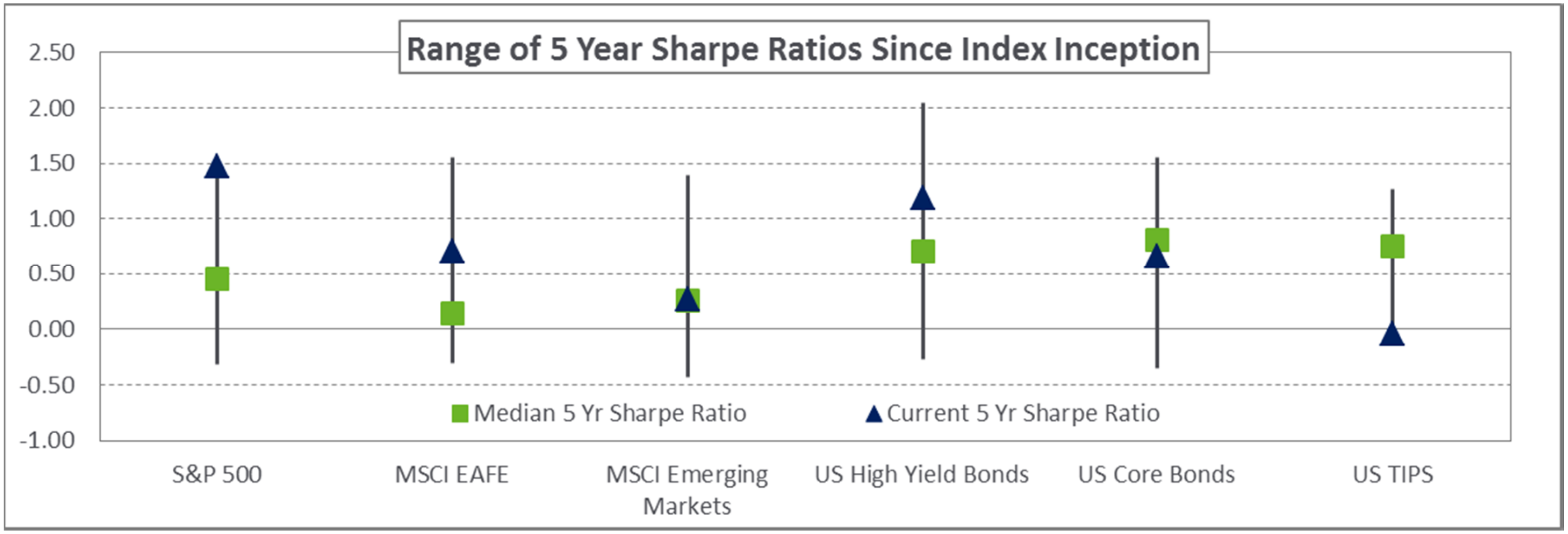
Growth conditions across the globe are on the upswing supported by easy financial conditions and an improved corporate earnings outlook

We encourage reducing exposure to assets that have outperformed expectations over a prolonged period such as US stocks and high yield

Tilt exposure to assets underperforming expectations in recent years, particularly emerging market equities, developed market equities, and US TIPS

Market stability must not elicit complacency, we encourage investors to increase exposure to strategies that mitigate market drawdowns

Look to rebalance "safe haven" fixed income exposure back to strategic targets



Index Inception: S&P 500 - 1926, MSCI EAFE – 1970, MSCI EM – 1988, US High Yield – 1983, US Core Bonds – 1976, US TIPS – 1997

Source: Ibbotson-Morningstar, eVestment, Sharpe Ratio range spans 5th to 95th percentile

KEY MARKET THEMES

Extended US Economic Cycle

Synchronized Economic Resurgence

Federal Reserve Gradualism

China Transitions

Globalization Backlash

KEY MARKET THEMES

Extended US Economic Cycle

Economic cycles do not die of old age

The US economy is in an extended expansionary cycle despite being eight years removed from the last recession

Financial health of US consumers and ongoing recovery of the housing market continue to drive economic growth

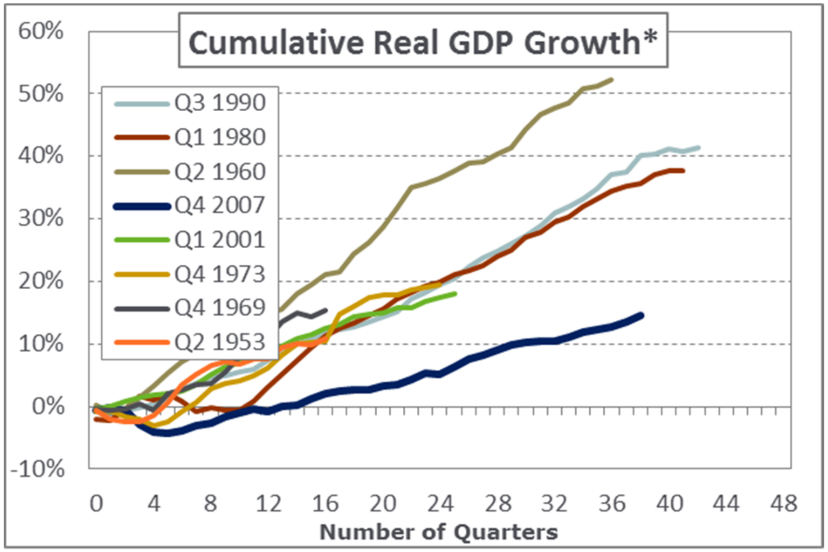
A prolonged US economic expansion can support a continued rally for US equities despite elevated valuation levels

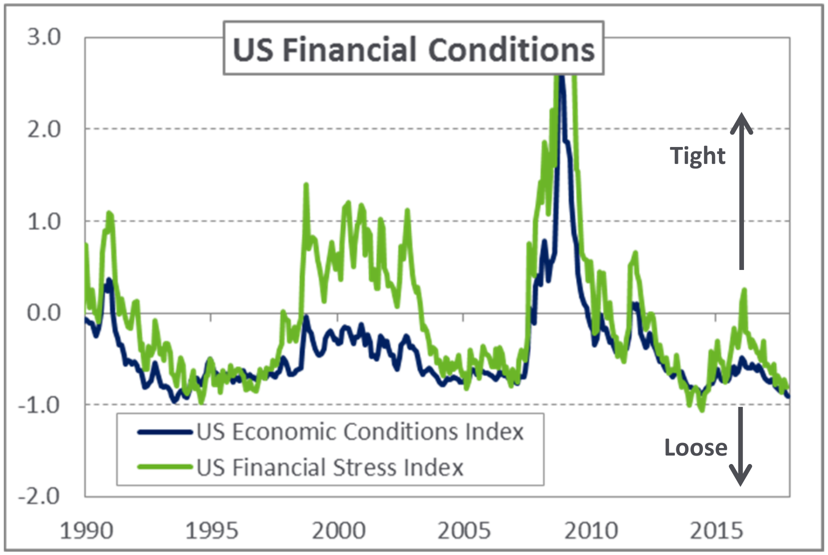
US financial conditions remain loose and support steady economic gains

Low inflation provides a foundation for positive economic conditions and reinforces the Fed's gradual monetary policy approach

Moderating US dollar strength is another form of easy financial conditions, benefiting global trade flows and credit creation

Reversal in these easy conditions may be fueled by actions outside the US, such as a misstep by global central banks and/or increased volatility in the Chinese yuan





*Source: (Top) Bloomberg,*Cumulative GDP growth from prior cycle peak*
Source: (Bottom) Federal Reserve Bank of Chicago and Kansas City

KEY MARKET THEMES

Extended US Economic Cycle

Excess capacity remains in the system and provides fuel for the expansion

Labor market gains have been robust but slack remains as many have not returned to the workforce

Muted wage gains and low inflation metrics are reflective of the excess capacity remaining in the US economy

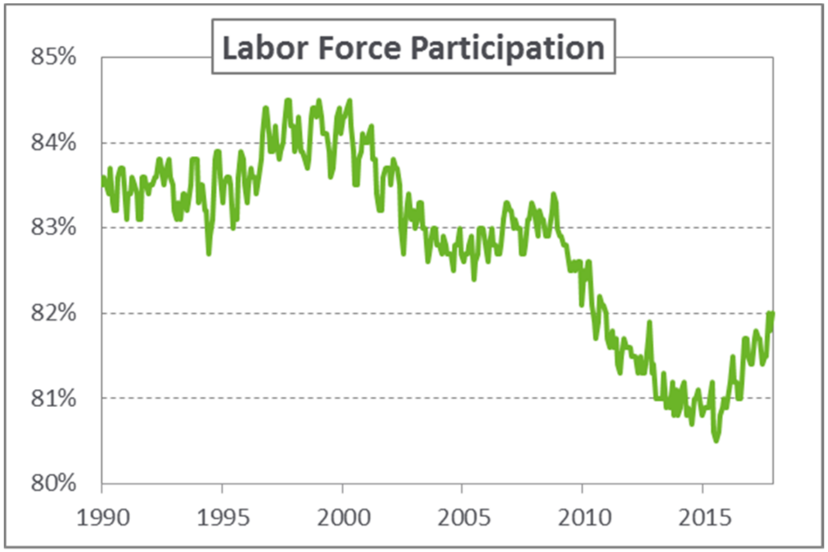
Tax cuts and fiscal stimulus can potentially remove spare economic capacity and be a catalyst for an uptick in inflation measures

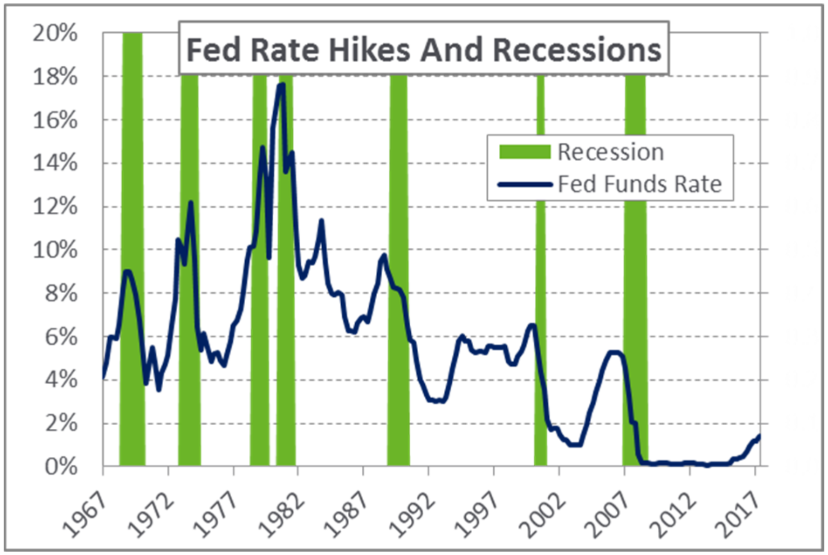
US recession concerns are muted

An acceleration in inflation leading to a tightening of financial conditions has historically been a catalyst to end economic expansions

However, improved US household balance sheets have room to expand and support further consumer spending gains

Improving global economic conditions reinforce an expansion of the US economy as global growth factors synchronize





Source: (Top) Federal Reserve Bank of St. Louis
Source: (Bottom) Federal Reserve, NEPC

KEY MARKET THEMES

Synchronized Economic Resurgence

Global economic conditions are improving in a synchronized fashion

Coordinated global growth factors reinforce economic gains across the globe and are distinct from the extension of the US economic cycle

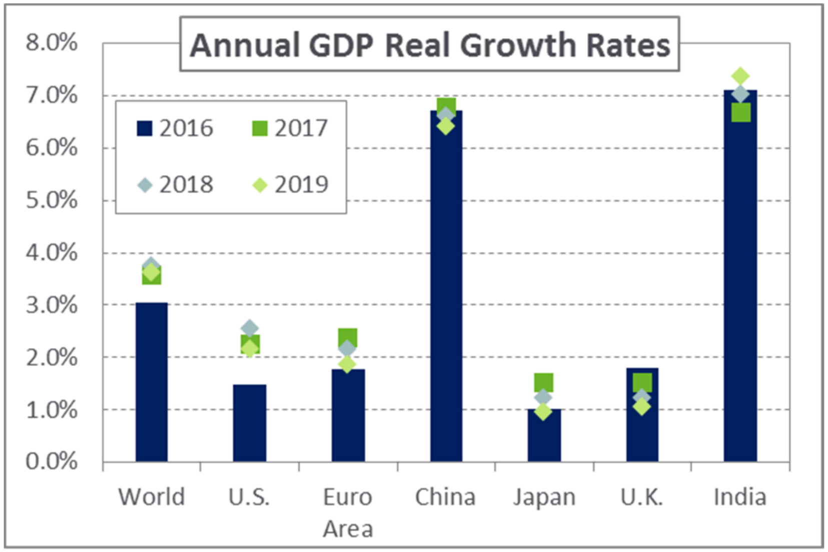
Non-US corporate revenues and equities are best positioned to benefit from a widespread boost in global economic conditions

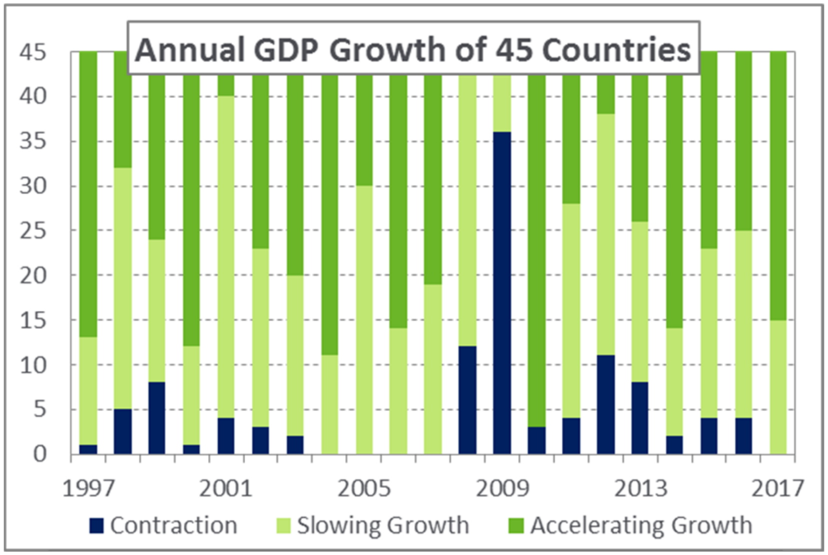
Positive growth rates harmonized across the globe are relatively rare

Conditions are the result of Europe, Japan, and large parts of the emerging world transitioning out of economic malaise

Persistence of the theme over several years would provide a substantial benefit to equity markets globally – specifically in Europe and Japan

Historically, periods of synchronized growth have been derailed by higher inflation levels and central banks tightening policy





Source: (Top) OECD
Source: (Bottom) OECD

KEY MARKET THEMES

Synchronized Economic Resurgence

Erosion of excess economic capacity is a catalyst to boost economic gains

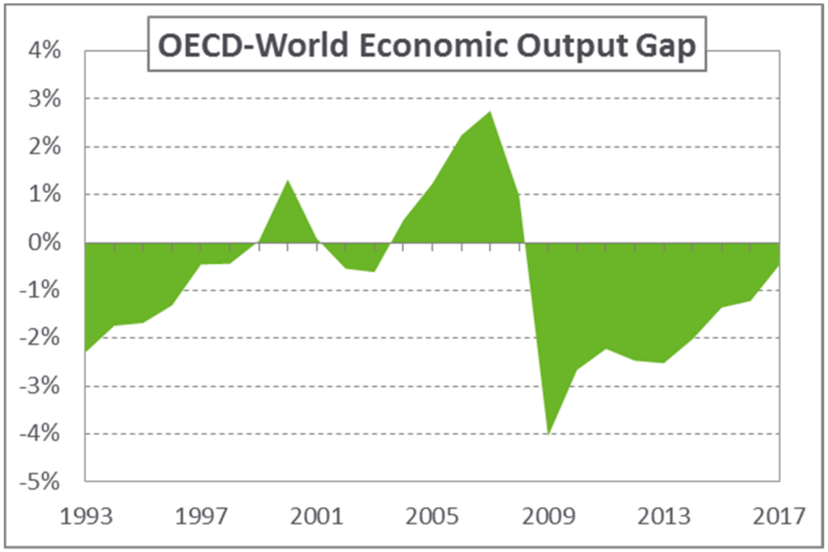
Despite recent labor market improvements, potential for labor reform in Europe and improved workforce participation in Japan offer multi-year benefits to economic growth

Material decline in emerging market inflation provides a cushion for real interest rates to fall and fuel an expansion of economic activity

Economic resurgence is delicate and can be disrupted by lingering global risk factors

US dollar strength, dislocation in China's credit expansion, and restrictive US trade policy pose the greatest threats

The foundation of synchronized economic resurgence is the continuation of positive trends associated with the other key market themes



Source: (Top) OECD
Source: (Bottom) IMF

KEY MARKET THEMES

Federal Reserve Gradualism

The Federal Reserve is expected to slowly increase interest rates

Expected path of Fed policy through 2020 matters more than timing of the next hike as the disconnect between market expectations and Fed signaling has grown

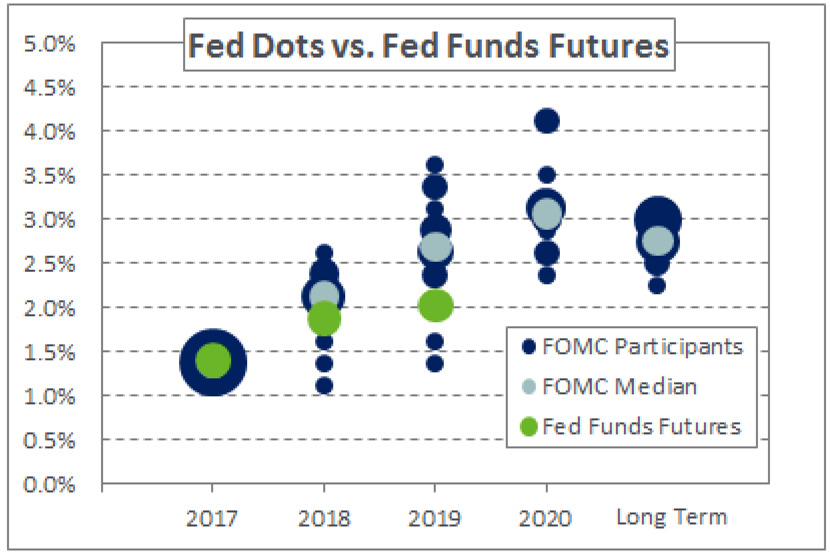
A relatively accommodative Fed is likely to continue, unless there is a dramatic acceleration in inflation

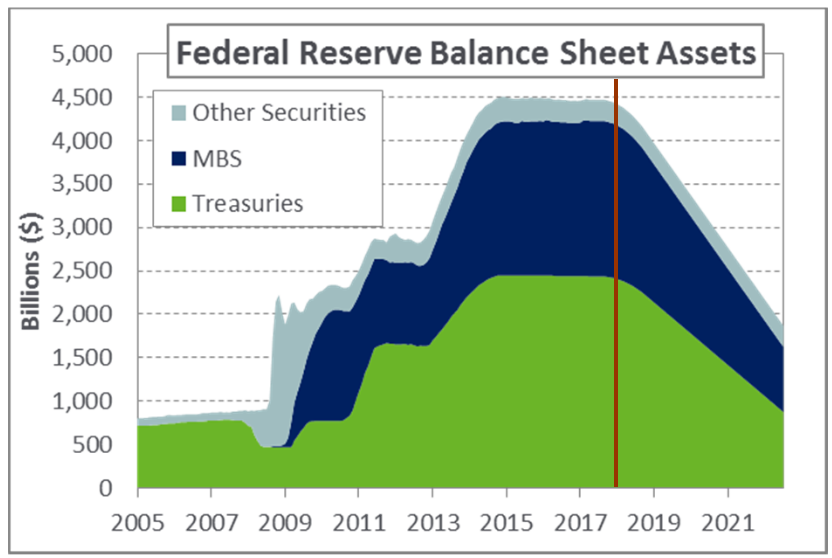
The Fed's balance sheet normalization is a low grade tightening of monetary policy but its impact is untested

Fed is expected to be careful and data dependent yet balance sheet disbursement into a strong economy will likely have tightening effects – in the same way balance sheet expansion had easing effects

The balance sheet will gradually shrink over time assuming conditions remain supportive

The gradual progression of balance sheet reduction combined with the accommodative policies of global central banks supports easy global financial conditions





Source: (Top) Bloomberg, NEPC
Source: (Bottom) Bloomberg, NEPC

KEY MARKET THEMES

Federal Reserve Gradualism

Gradualism is the policy of choice globally as the major central banks manage unprecedented initiatives

ECB's QE program is expanding but at a slower rate

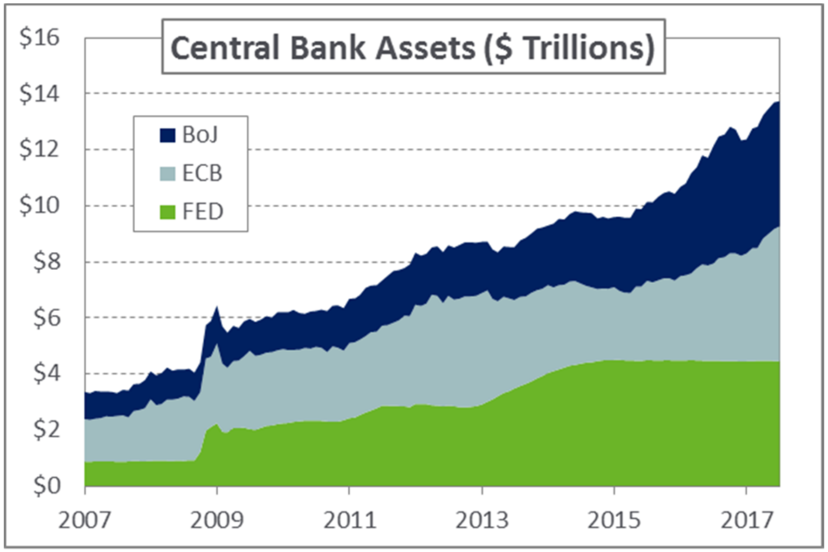
However, the reinvestment of balance sheet holdings is likely to continue for an extended period of time

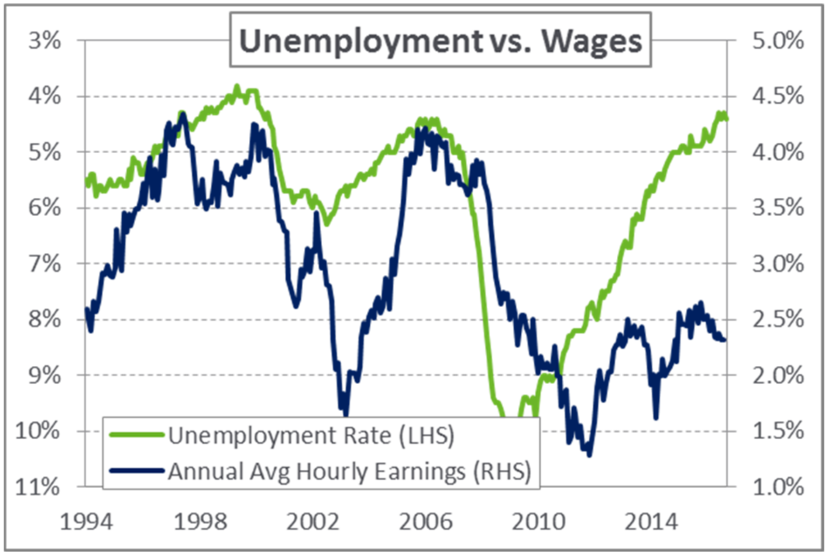
Bank of Japan's QE yield-curve control program has rapidly slowed bond purchases but solidified steepness in the yield curve

Inflation expected to shift marginally higher in the coming years

Improvements in wage growth and aggregate economic activity support modest upticks in inflation but still within the Fed's tolerance bands to gradually raise rates

Fed has stated a willingness to let the economy "run hot" and accept some inflation to repair the deflationary effects of the past decade





Source: (Top) Bloomberg, NEPC
Source: (Bottom): Bloomberg, FRED

KEY MARKET THEMES

China Transitions

China is the global growth engine but faces fundamental transitions

China's economic transition is pivoting from production and investment focused to a service and consumption based economy

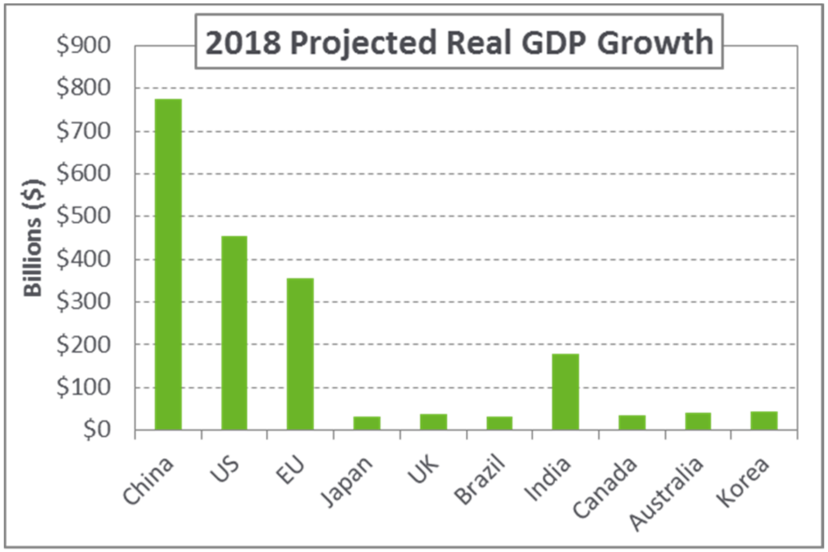
Fixed investment is required to sustain the production based economy and support employment as the rural population moves to urban centers

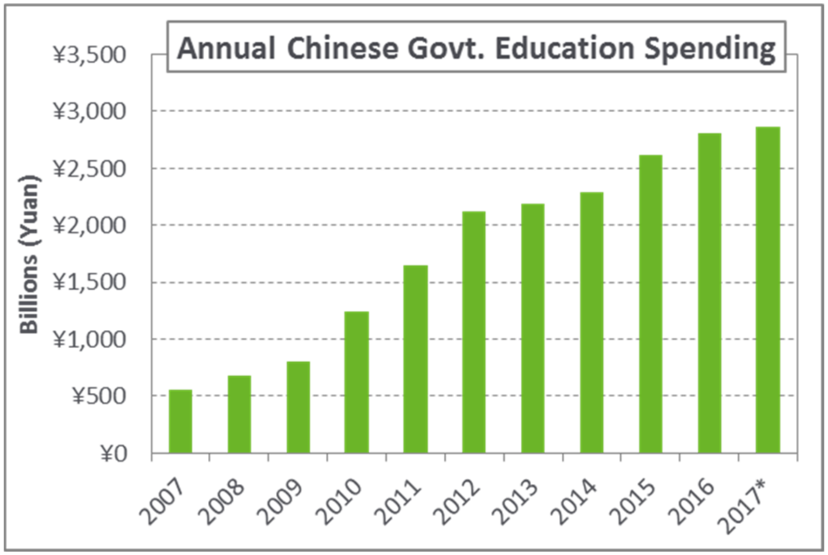
Any disruption to these transitions will have global repercussions due to China's role in the global economy

China must manage competing social goals in attempting to sustain growth

Engineering an orderly transition to a consumer-led economy requires supporting employment outside the major cities and improving quality of life metrics such as air quality in the urban centers

Future growth in a services based economy requires advancement in productivity, technology, and a more skilled labor force





Source: (Top) Bloomberg

*Source: (Bottom) Bloomberg, *Includes estimate for Nov/Dec 2017*

KEY MARKET THEMES

Globalization Backlash

Uneven economic growth and wage gains have fueled political discontent in the developed world

Election results in France have assuaged fears of political gridlock in the EU

Italian election in first half of 2018 is another potential flashpoint on globalization

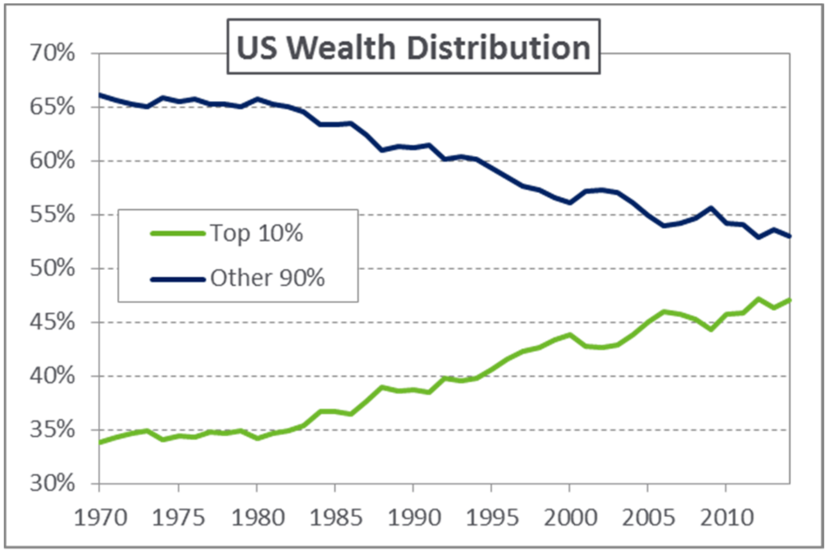
Anti-establishment political bias is likely a long term trend and potentially leads to higher levels of currency volatility over time

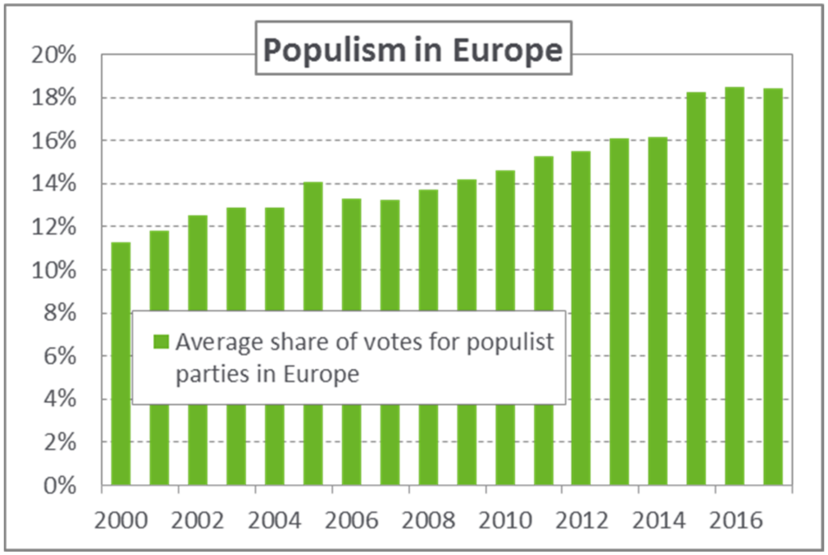
For many nations, a turn inward is associated with globalization fatigue

Often fuels greater expression of nationalism and increased geopolitical risks as multilateral relationships are reassessed

Populist movements destabilize the political order and shifts away from political orthodoxy heighten tail risks

However, equity markets often overreact to geopolitical concerns and sell-offs can be a buying opportunity for investors





Source: (Top) World Wealth & Income Database
Source: (Bottom) World Bank

KEY MARKET THEMES

Globalization Backlash

Major shifts in US trade policy did not materialize in 2017

However, a more aggressive protectionist policy would represent a material risk to global markets and the world economy

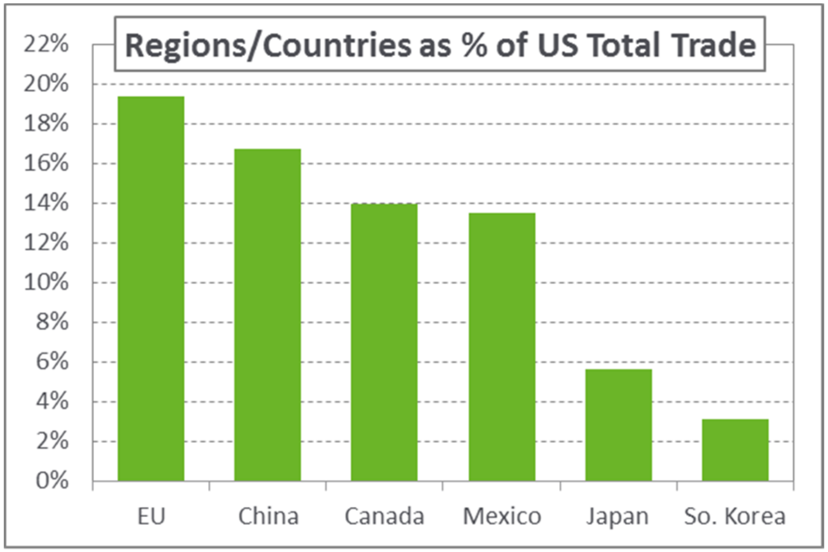
Markets have taken to interpreting the US administration's rhetoric with a grain of salt but ongoing NAFTA negotiations are a concern

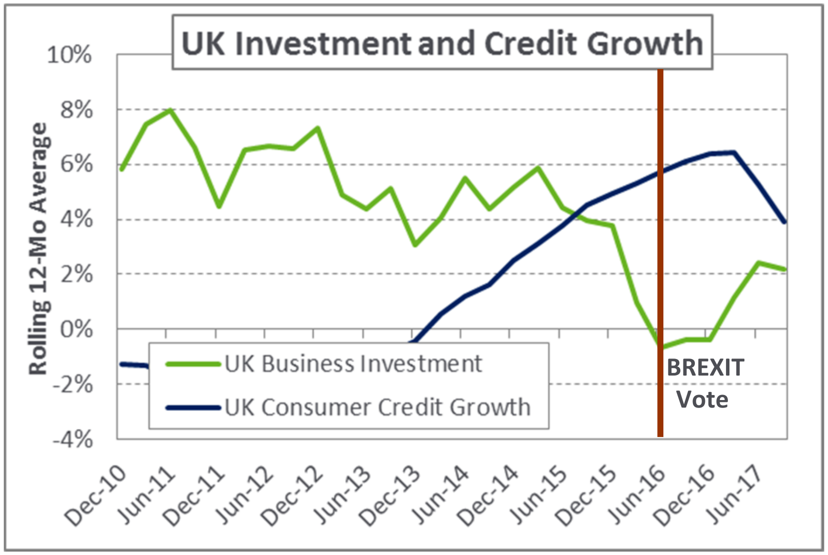
The UK serves as a live case study for the effects of globalization backlash

While it is early in the process, economic metrics across the country have turned lower in the 18 months since UK voted to leave the European Union

Expected disruption to financial regulations, customs controls, and business confidence in the UK are proving to be a cautionary tale for a turn away from globalization

However, the economic unease of voters remain and popularity of anti-establishment political parties poses a risk to the global economic order





Source: (Top) Federal Reserve Bank of St. Louis
Source: (Bottom) Bloomberg

INTRODUCTION
ASSET CLASS ASSUMPTIONS

NEPC, LLC

2018 ASSET CLASS ASSUMPTIONS

NEPC asset class assumptions offer both an intermediate (5-7 years) and long term (30 years) forecast horizon

- November 30th market data is used for inputs to the asset class models

The 5-7 year return expectations for US credit and equity asset classes are broadly lower due to continued increases in valuation levels

- Credit-based asset class expectations have declined considerably from prior year, with credit spreads moving below long-term medians across most sectors

The outlook for non-US equities remains attractive over 5-7 years supported by improvement in corporate earnings and economic growth

We anticipate US inflation will gradually move higher and average 2.5%

We continue to refine and enhance our process where appropriate

- The asset class assumption for Real Estate has been split into Core and Non-Core to offer a distinction between the volatility and return profile
- Core has a greater income orientation with broad exposure to commercial real estate beta and Non-Core is oriented to capital appreciation with increased use of leverage

INFLATION OVERVIEW

Inflation is an integral component of our asset allocation assumptions

Represents an essential building block for developing asset class returns

Inflation building blocks are model driven and informed by multiple sources for both the US and global asset classes

Includes forecasts from international organizations (e.g. IMF), local consumer and producer price indices, break-even inflation expectations, and global interest rate curves

US inflation is based upon the TIPS breakeven inflation curve adjusted for expectations of economic activity, employment, and capacity levels

Global inflation expectations are informed by consensus forecasts across countries along with implied inputs from global bond curves

The 30 year global inflation forecast assumes purchase power parity holds across the globe and country specific inflation levels converge to a terminal value

Region	5-7 Year Inflation Assumption	30-Year Inflation Assumption
United States	2.50%	2.75%
Global	3.00%	3.25%

2018 5-7 YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**2018**	**2017**	**2018-2017**
Cash	2.00%	1.75%	+0.25%
Treasuries	2.25%	2.00%	+0.25%
IG Corp Credit	3.50%	3.75%	-0.25%
MBS	2.50%	2.25%	+0.25%
Core Bonds*	2.75%	2.65%	+0.10%
TIPS	3.25%	3.00%	+0.25%
High-Yield Bonds	3.75%	4.75%	-1.00%
Bank Loans	4.50%	5.25%	-0.75%
Non-US Bonds (Unhedged)	0.50%	1.00%	-0.50%
Non-US Bonds (Hedged)	0.73%	1.09%	-0.36%
EMD External	4.25%	4.75%	-0.50%
EMD Local Currency	6.00%	6.75%	-0.75%
Large Cap Equities	5.25%	5.75%	-0.50%
Small/Mid Cap Equities	5.75%	6.00%	-0.25%
Int'l Equities (Unhedged)	7.50%	7.25%	+0.25%
Int'l Equities (Hedged)	7.82%	7.57%	+0.25%
Emerging Int'l Equities	9.00%	9.50%	-0.50%
Private Equity	8.00%	8.25%	-0.25%
Private Debt	6.50%	7.25%	-0.75%
Core Real Estate	5.75%	6.00%	-0.25%
Commodities	4.75%	4.75%	-
Global Trading Strategies**	5.83%	5.95%	-0.12%

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).
** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.

2018 30 YEAR RETURN FORECASTS

Geometric Expected Return			
Asset Class	**2018**	**2017**	**2018-2017**
Cash	2.75%	3.00%	-0.25%
Treasuries	3.25%	3.50%	-0.25%
IG Corp Credit	4.75%	5.00%	-0.25%
MBS	3.25%	3.50%	-0.25%
Core Bonds*	3.75%	4.00%	-0.25%
TIPS	3.75%	3.75%	-
High-Yield Bonds	5.50%	5.75%	-0.25%
Bank Loans	5.50%	6.00%	-0.50%
Non-US Bonds (Unhedged)	2.50%	2.75%	-0.25%
Non-US Bonds (Hedged)	2.77%	2.87%	-0.10%
EMD External	5.00%	5.75%	-0.75%
EMD Local Currency	6.50%	6.50%	-
Large Cap Equities	7.50%	7.50%	-
Small/Mid Cap Equities	7.75%	7.75%	-
Int'l Equities (Unhedged)	7.75%	7.75%	-
Int'l Equities (Hedged)	8.14%	8.14%	-
Emerging Int'l Equities	9.25%	9.50%	-0.25%
Private Equity	9.50%	9.50%	-
Private Debt	7.50%	8.00%	-0.50%
Core Real Estate	6.50%	6.50%	-
Commodities	5.50%	5.50%	-
Global Trading Startegies**	6.34%	6.47%	-0.13%

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

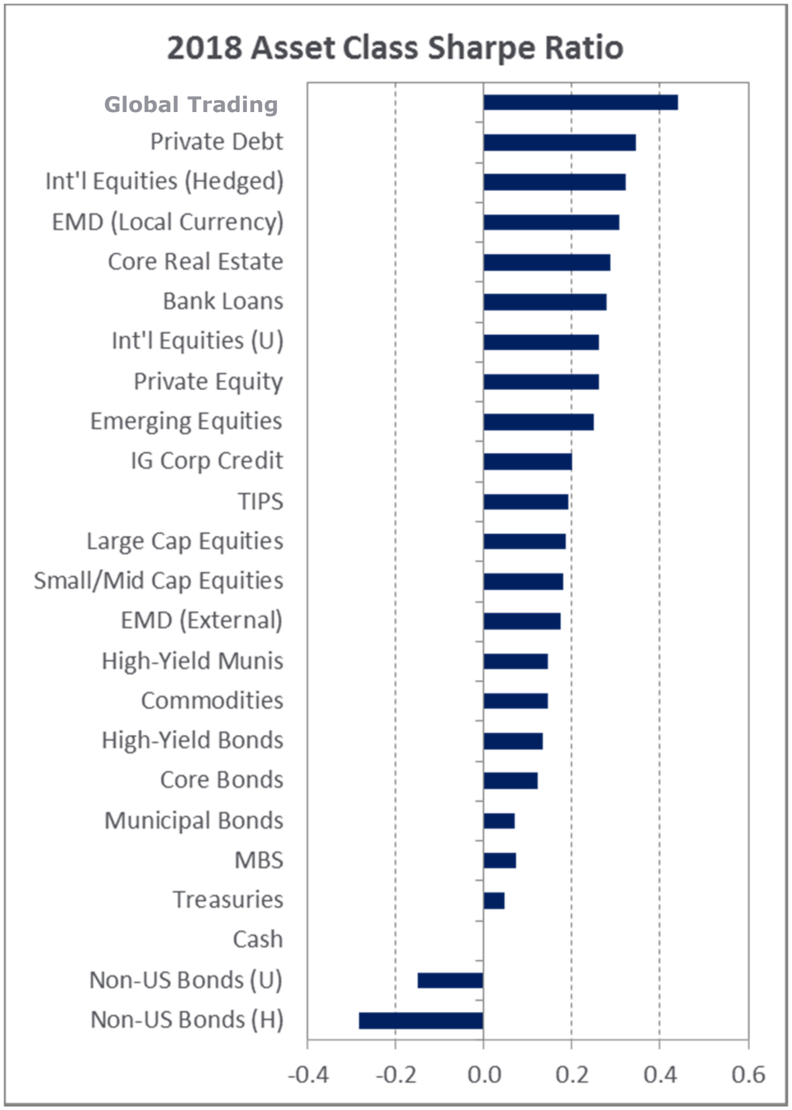
** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.

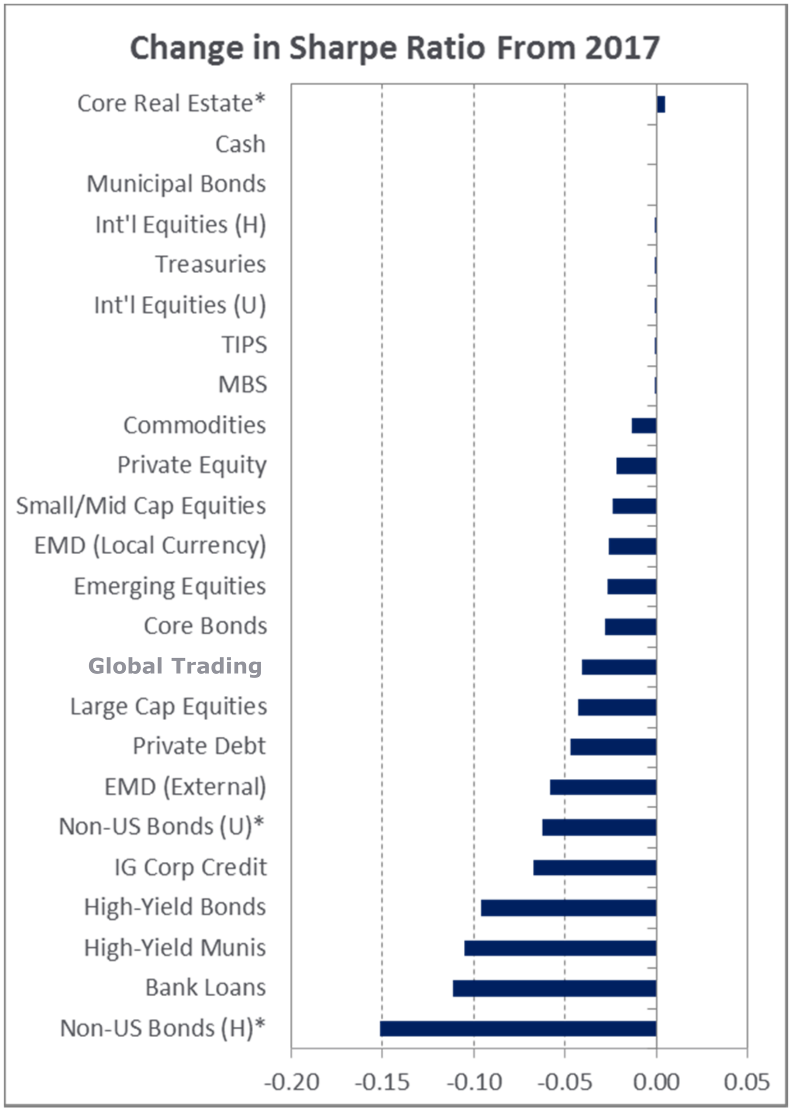
2018 VOLATILITY FORECASTS

Volatility		
Asset Class	**Capital Market Volatility**	**Accounting Volatility**
Cash	1.00%	1.00%
Treasuries	5.50%	5.50%
IG Corp Credit	7.50%	7.50%
MBS	7.00%	6.50%
Core Bonds*	5.99%	5.85%
TIPS	6.50%	6.00%
High-Yield Bonds	13.00%	9.00%
Bank Loans	9.00%	5.50%
Non-US Bonds (Unhedged)	10.00%	10.00%
Non-US Bonds (Hedged)	4.50%	3.50%
EMD External	13.00%	13.50%
EMD Local Currency	13.00%	13.00%
Large Cap Equities	17.50%	16.00%
Small/Mid Cap Equities	21.00%	20.50%
Int'l Equities (Unhedged)	21.00%	18.50%
Int'l Equities (Hedged)	18.00%	15.50%
Emerging Int'l Equities	28.00%	25.00%
Private Equity	23.00%	12.50%
Private Debt	13.00%	8.50%
Core Real Estate	13.00%	6.00%
Commodities	19.00%	17.00%
Global Trading Strategies**	9.07%	7.21%

* Core Bonds assumption based on market weighted blend of components of Aggregate Index (Treasuries, IG Corp Credit, and MBS).
** Hedge Funds is a calculated blend of 40% Equity, 40% Credit, 20% Macro-related strategies.

RELATIVE ASSET CLASS ATTRACTIVENESS





Source: NEPC

**Impacted by methodology changes for Core Real Estate (reduction in volatility) and Non-US Bonds (formerly was Global Bonds)*

2018 CORRELATIONS

Asset Class	Cash	US Lev	Tsy	IG	MBS	TIPS	HY	Non-US Bonds (U)	Non-US Bonds (H)	EMD (Ext)	EMD (Loc)	Large Cap	SMID	Int'l (U)	Int'l (H)	EME	PE	PD	PRA - Egy/Met	PRA: Infra/ Land	Core RE	Commodities
Cash	1.00	0.90	0.20	0.10	0.25	0.35	-0.05	0.10	0.15	0.05	0.05	-0.10	-0.15	-0.10	-0.10	-0.10	-0.20	0.00	-0.05	0.15	0.10	0.10
US Lev	0.90	1.00	0.20	0.10	0.25	0.35	-0.05	0.10	0.15	0.05	0.05	-0.10	-0.15	-0.10	-0.10	-0.10	-0.25	0.00	-0.05	0.15	0.10	0.10
Treasuries	0.20	0.20	1.00	0.65	0.85	0.65	0.10	0.45	0.70	0.20	0.10	-0.10	-0.15	-0.10	-0.10	-0.20	-0.15	-0.35	-0.20	-0.05	0.10	-0.10
IG	0.10	0.10	0.65	1.00	0.75	0.65	0.55	0.45	0.60	0.60	0.50	0.25	0.25	0.30	0.30	0.35	0.30	0.15	0.20	0.10	0.15	0.15
MBS	0.25	0.25	0.85	0.75	1.00	0.65	0.30	0.45	0.60	0.35	0.25	0.10	0.10	0.05	0.05	-0.10	0.10	-0.15	-0.05	-0.05	0.05	0.00
TIPS	0.35	0.35	0.65	0.65	0.65	1.00	0.20	0.40	0.65	0.30	0.25	-0.10	-0.10	-0.05	-0.05	-0.10	-0.10	-0.10	-0.05	0.05	0.10	0.30
HY	-0.05	-0.05	0.10	0.55	0.30	0.20	1.00	0.10	0.20	0.70	0.55	0.65	0.70	0.65	0.65	0.70	0.60	0.65	0.50	0.40	0.35	0.20
Non-US Bonds (U)	0.10	0.10	0.45	0.45	0.45	0.40	0.10	1.00	0.40	0.30	0.35	0.00	-0.05	0.35	0.05	0.25	-0.15	-0.10	-0.10	0.05	0.15	0.10
Non-US Bonds (H)	0.15	0.15	0.70	0.60	0.60	0.65	0.20	0.40	1.00	0.30	0.20	-0.10	-0.15	-0.10	-0.10	-0.20	-0.20	-0.10	-0.15	0.00	0.05	-0.10
EMD (Ext)	0.05	0.05	0.20	0.60	0.35	0.30	0.70	0.30	0.30	1.00	0.75	0.55	0.55	0.60	0.60	0.70	0.35	0.50	0.40	0.35	0.25	0.35
EMD (Local)	0.05	0.05	0.10	0.50	0.25	0.25	0.55	0.35	0.20	0.75	1.00	0.60	0.50	0.70	0.65	0.80	0.40	0.60	0.40	0.40	0.40	0.50
Large Cap	-0.10	-0.10	-0.10	0.25	0.10	-0.10	0.65	0.00	-0.10	0.55	0.60	1.00	0.90	0.70	0.75	0.65	0.70	0.60	0.65	0.50	0.40	0.30
SMID Cap	-0.15	-0.15	-0.15	0.25	0.10	-0.10	0.70	-0.05	-0.15	0.55	0.50	0.90	1.00	0.65	0.70	0.65	0.75	0.65	0.70	0.50	0.40	0.30
Int'l Eqty (U)	-0.10	-0.10	-0.10	0.30	0.05	-0.05	0.65	0.35	-0.10	0.60	0.70	0.70	0.65	1.00	0.85	0.70	0.60	0.75	0.55	0.45	0.35	0.40
Int'l Eqty (H)	-0.10	-0.10	-0.10	0.30	0.05	-0.05	0.65	0.05	-0.10	0.60	0.65	0.75	0.70	0.85	1.00	0.70	0.65	0.75	0.60	0.45	0.40	0.30
EM	-0.10	-0.10	-0.20	0.35	-0.10	-0.10	0.70	0.25	-0.20	0.70	0.80	0.65	0.65	0.70	0.70	1.00	0.45	0.80	0.50	0.40	0.30	0.55
PE	-0.20	-0.25	-0.15	0.30	0.10	-0.10	0.60	-0.15	-0.20	0.35	0.40	0.70	0.75	0.60	0.65	0.45	1.00	0.65	0.85	0.60	0.50	0.25
PD	0.00	0.00	-0.35	0.15	-0.15	-0.10	0.65	-0.10	-0.10	0.50	0.60	0.60	0.65	0.75	0.75	0.80	0.65	1.00	0.65	0.50	0.40	0.30
PRA - Egy/Met	-0.05	-0.05	-0.20	0.20	-0.05	-0.05	0.50	-0.10	-0.15	0.40	0.40	0.65	0.70	0.55	0.60	0.50	0.85	0.65	1.00	0.75	0.45	0.35
PRA – Infra/Land	0.15	0.15	-0.05	0.10	-0.05	0.05	0.40	0.05	0.00	0.35	0.40	0.50	0.50	0.45	0.45	0.40	0.60	0.50	0.75	1.00	0.70	0.40
Core RE	0.10	0.10	0.10	0.15	0.05	0.10	0.35	0.15	0.05	0.25	0.40	0.40	0.40	0.35	0.40	0.30	0.50	0.40	0.45	0.70	1.00	0.30
Commodities	0.10	0.10	-0.10	0.15	0.00	0.30	0.20	0.10	-0.10	0.35	0.50	0.30	0.30	0.40	0.30	0.55	0.25	0.30	0.35	0.40	0.30	1.00

APPENDIX

ASSUMPTION DEVELOPMENT

Capital market assumptions are published for over 40 asset classes

- Assumptions include 5-7 year and 30 year return forecasts, average annual volatility expectations, and correlations

The 5-7 year forecast is designed to capture the return outlook for the current investment cycle

- 30 year return assumptions reflect a long-term outlook and are informed by the historical relationships among asset classes

Assumptions are published annually on December 15th and use market data as of November 30th

- Assumptions are developed by the Asset Allocation Committee and approved by the Partners Research Committee (PRC)

Return assumptions are developed with proprietary valuation models and rely on a core building block methodology

Asset Allocation Committee	
September	Asset Allocation Committee Assumptions Kickoff Finalize List of New Asset Class Assumptions
October	Review Draft of Asset Class Return Assumptions Discuss Outlook with NEPC Research Beta Groups
November	Finalize Volatility and Correlation Assumptions Final Update of Asset Class Models (As of 11/30)
December	Review Model Output and Create Return Assumptions Present Draft to the PRC Publish Assumptions on December 15th

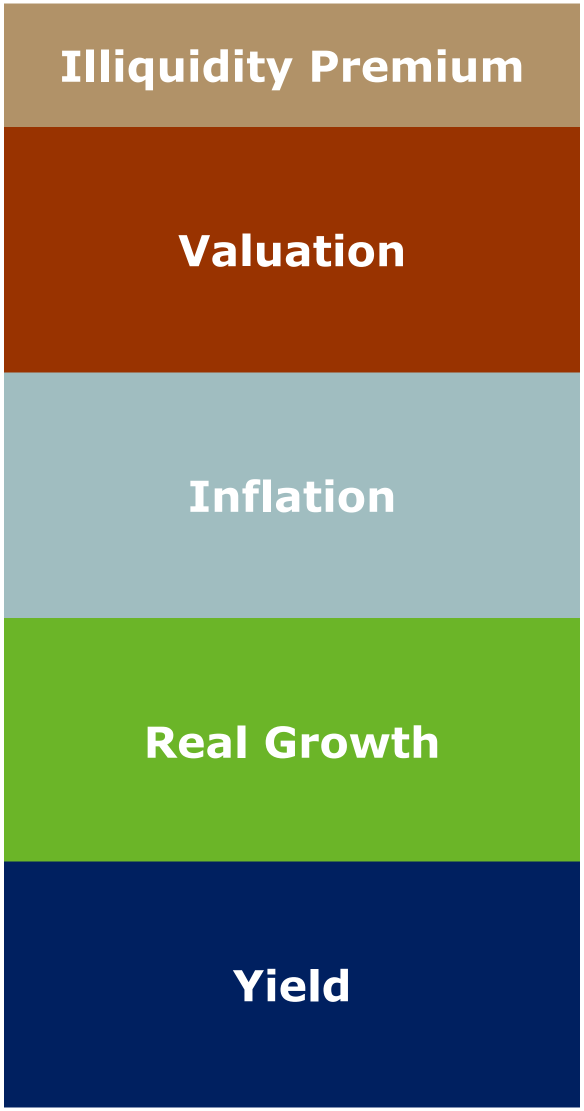
BUILDING BLOCKS METHODOLOGY

Forward-looking asset class models incorporate current and forecasted market and economic data to inform expected returns

Quantitative inputs combined with qualitative factors and investor sentiment (capital flows, etc.) drive the 5 to 7 year return outlook

Components are combined to capture core drivers of return across asset classes – forming the foundation of our building blocks framework

Building blocks will vary across equity, credit, and real assets

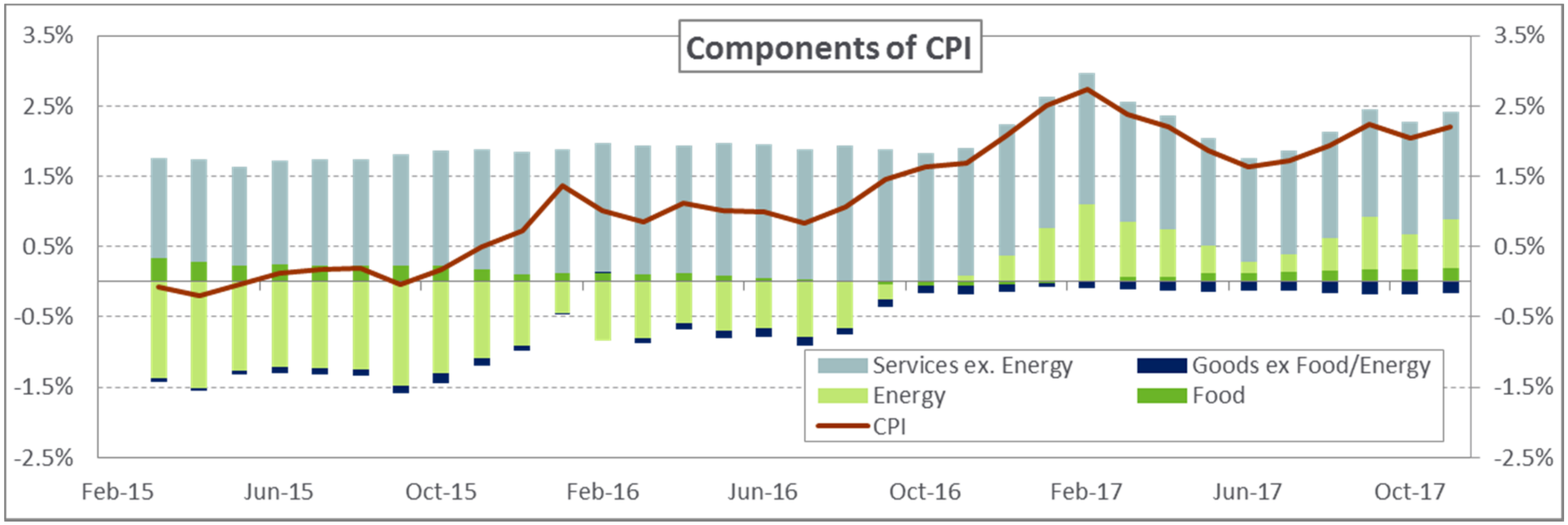


5-7 YEAR RETURN ASSUMPTIONS

	Asset Class	5-7 Year Return	Change 2018-2017	Volatility
	Cash	2.00%	**+.25%**	1.00%
	US Inflation	2.50%	-	-
Equity	Large Cap Equities	5.25%	**-.50%**	17.50%
	International Equities (Unhedged)	7.50%	**+.25%**	21.00%
	Emerging International Equities	9.00%	**-.50%**	28.00%
	Private Equity	8.00%	**-.25%**	23.00%
Rates/Credit	Treasuries	2.25%	**+.25%**	5.50%
	Core Bonds	2.75%	**+.10%**	5.99%
	Municipal Bonds 1-10 Year	2.50%	-	5.50%
	High Yield Bonds	3.75%	**-1.00%**	13.00%
	Private Debt	6.50%	**-.75%**	13.00%
Real Assets	Commodities	4.75%	-	19.00%
	REITs	6.50%	-	21.00%
	Core Real Estate	5.75%	**-.25%**	13.00%
Multi-Asset	US 60/40*	4.54%	**-.24%**	10.99%
	Global 60/40*	4.91%	**-.13%**	11.78%
	Global Trading Strategies*	5.83%	**-.10%**	9.07%

**Each calculated as a blend of other asset classes*

US INFLATION



Source: Bloomberg, NEPC

Low inflation continued throughout 2017 despite strong economic growth, tightening labor market, and early signs of wage gains

These metrics were thought to help inflation accelerate, yet the Fed's 2% inflation target has been a difficult target for the US economy to maintain

A seemingly transitory drop in certain CPI elements, such as healthcare costs and vehicles, have minimized price pressures in 2017 even as the impact from energy prices has turned positive

The Fed's preferred inflation measure, the personal consumption expenditures (PCE), remains below their 2% target

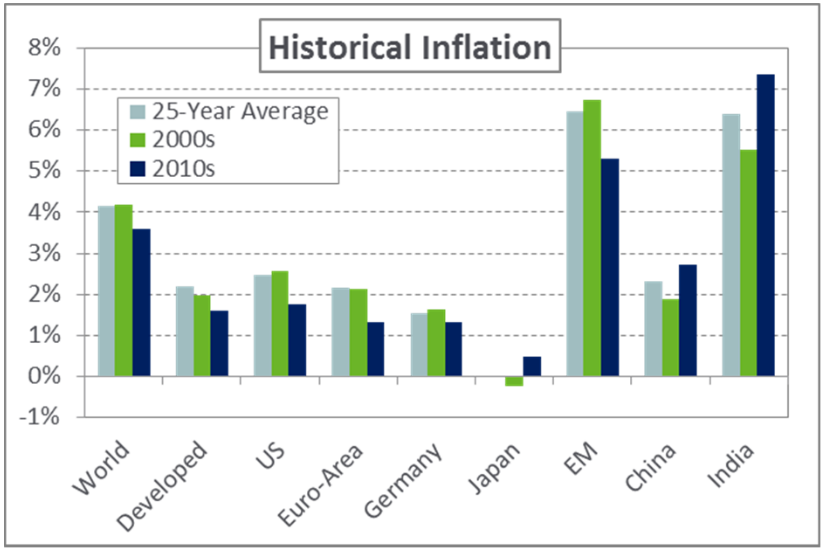
However, other more inclusive indicators such as the NY Fed Underlying Inflation Gauge, point to an increase in inflation in the coming years, but still below the long-term average

GLOBAL INFLATION

In most developed economies, core inflation has failed to reach or exceed central bank targets despite improved domestic demand and labor markets

Ultra accommodative monetary policy remains in place for Europe and Japan to fuel higher levels of inflation

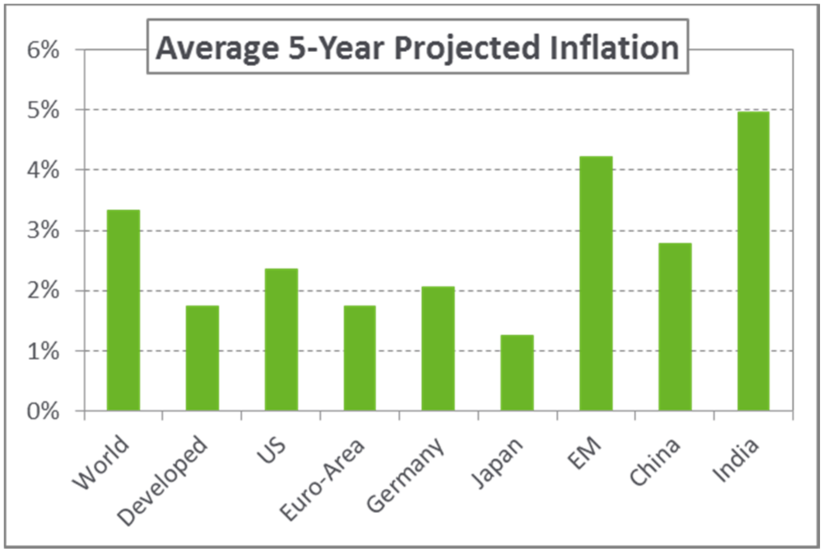
The UK is an exception to this trend as significant depreciation of the pound has led to higher consumer prices



Emerging market inflation has broadly declined over the last 24 months

This is in part due to the large fiscal correction and prudent monetary policy actions that followed the currency declines of prior years

Core inflation particularly in Russia and Brazil have declined significantly as the effect of high real interest rates weakens inflationary trends



Source: (Top) IMF, NEPC
Source: (Bottom) IMF, NEPC

US CASH EXPECTATIONS

Cash is the basic cornerstone of all asset class forecasts

The assumption flows through as a direct building block component or as a relative value adjustment (cash + risk premia)

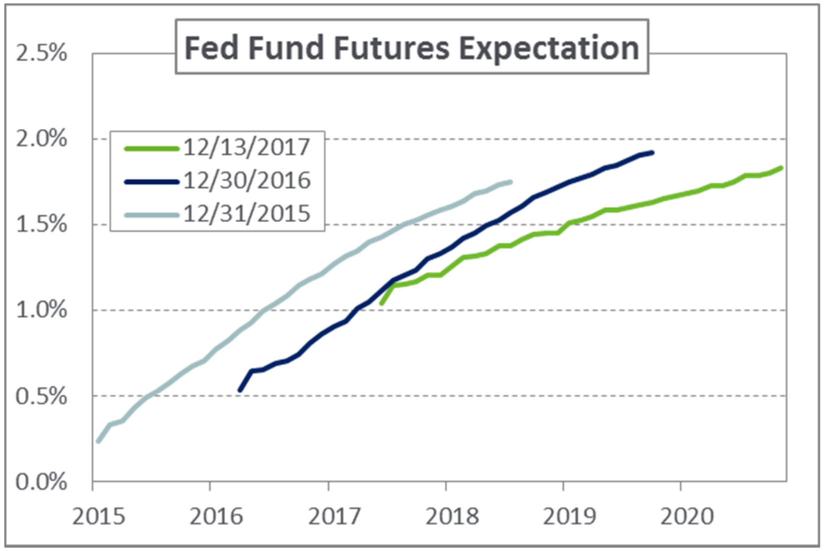
The longer-term cash assumption is a result of the inflation assumption in conjunction with our forecasted real interest rate path

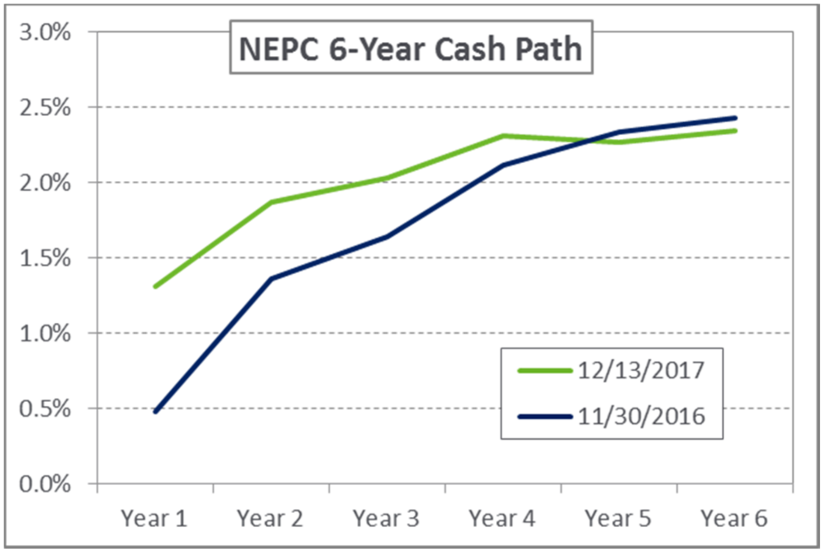
After three Fed rate hikes in 2017, expectations for increased short term interest rates project higher still

A progressively flatter yield curve has formed as longer-term rate expectations remain muted

Market prices reflect only two rate hikes in 2018, despite FOMC expectations of three

A key risk to our overall investment outlook is the ending of Fed gradualism and rate increases beyond market expectations





Source: (Top) Bloomberg
Source: (Bottom) Bloomberg, NEPC
Charts as of 12/13/2017

US INTEREST RATE EXPECTATIONS

Real yields are marginally higher relative to last year

Continued strength in economic data and expectation of future Fed rate hikes have improved the outlook for real yields

While higher, real rates remain below long-term averages, reinforcing the subdued outlook for fixed income

Long-term expectations for real yields remain positive but low in the US

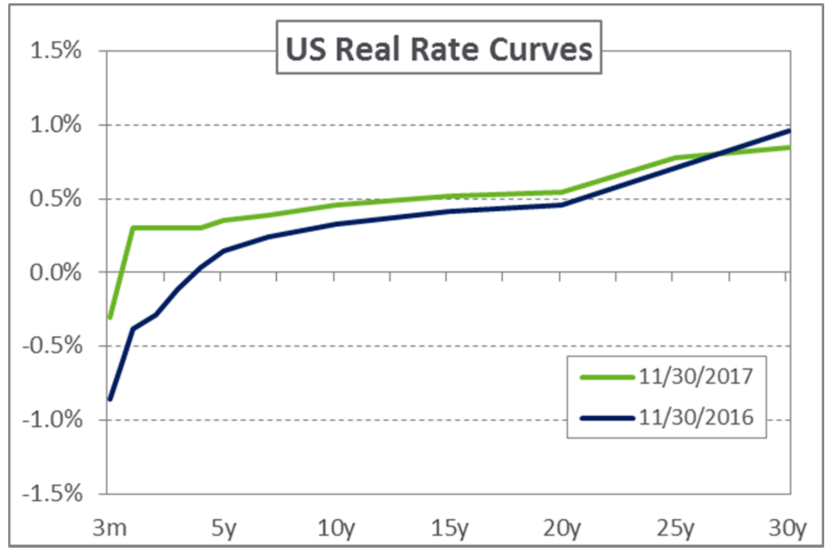
Low real rates depress the return outlook for risk assets over the long-term

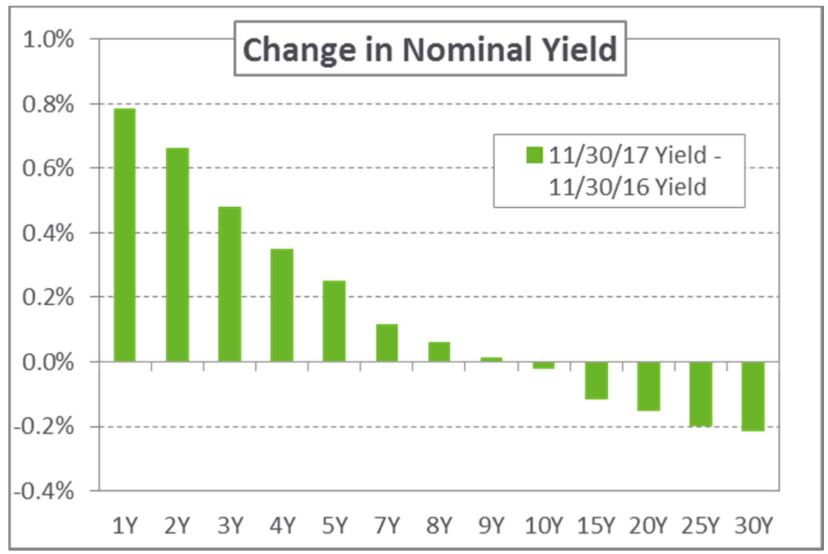
Interest rate increases have been slower than what the market has discounted

Additional uncertainty surrounding the path of rates is possible in 2018

Potential disruption with the confirmation of new Fed Chairman Jerome Powell

Tax cuts could push interest rates higher due to the larger federal deficits and debt issuance needs





Source: (Top) Bloomberg, NEPC
Source: (Bottom) Bloomberg

GLOBAL INTEREST RATE EXPECTATIONS

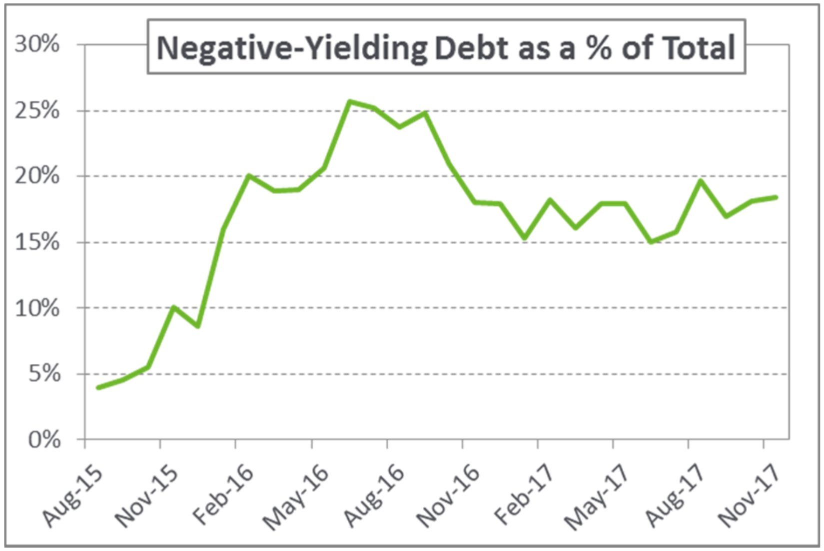
Government bond yields remain low and negative in much of the developed world

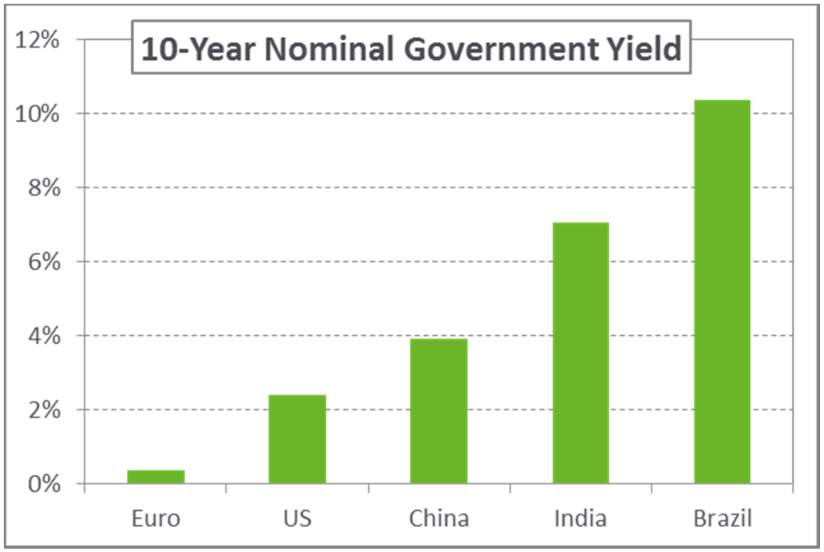
European sovereign yields have declined relative to Germany as political and economic risk declines

- Spain and other periphery nations have showed positive economic momentum
- France's election of Emmanuel Macron was seen as a stabilizing event for the country and the EU as a whole

Emerging market local interest rates are attractively priced as real yields remain elevated

- Emerging market yields continue to retain a healthy premia over developed world rates
- Additionally, positive real rates provide a larger cushion for EM central banks to cut interest rates and ease monetary conditions





Source: (Top) Bloomberg
Source: (Bottom) Bloomberg

EQUITY ASSUMPTIONS

EQUITY: ASSUMPTIONS

Equity Building Blocks	
Illiquidity Premium	The additional return expected for investments carrying liquidity risk
Valuation	An input representing P/E multiple contraction or expansion relative to long-term trend
Inflation	Represents market-specific inflation derived from index country revenue contribution and region-specific forecasted inflation
Real Earnings Growth	Reflects market-specific real growth for each equity asset class as a weighted-average derived from index country revenue contribution and forecasted GDP growth
Dividend Yield	Informed by current income distributed to shareholders with adjustments made to reflect market conditions and trends

Asset Class	5-7 Year Return	Change 2018-2017
US Large Cap	**5.25%**	**-.50%**
US Small/Mid-Cap	**5.75%**	**-.25%**
International (Unhedged)	**7.50%**	**+.25%**
International (Hedged)	**7.82%**	**+.25%**
International Small Cap	**7.75%**	**+.25%**
Emerging International	**9.00%**	**-.50%**
Emerging Intl. Small Cap	**9.25%**	**-.75%**
Private Equity	**8.00%**	**-.25%**
Hedge Funds – Long/Short	**6.25%**	**-**
Global Equity	***6.88%***	***-.33%***

EQUITY: REAL EARNINGS GROWTH

Global growth was stronger than expected during 2017

Synchronized global growth is likely to persist with continued favorable market growth conditions

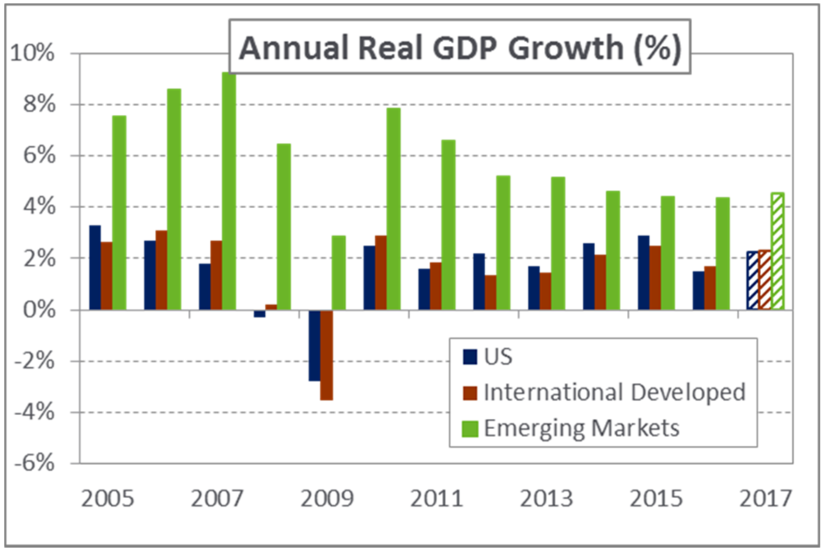
The broad outlook for developed economies has improved as a real earnings recovery has begun

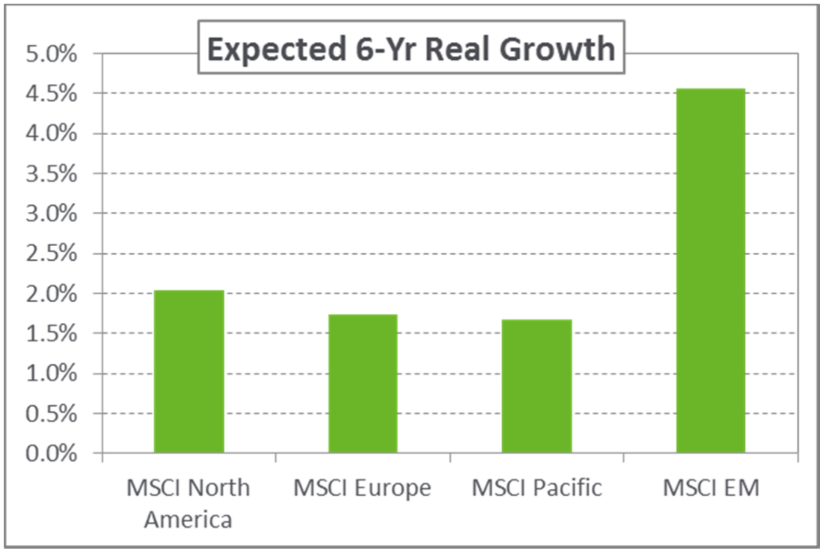
The UK remains a notable outlier as the country continues sorting through Brexit

Emerging economies are broadly expected to continue strong growth

Chinese real growth is expected to slow in future years as the country transitions to a more consumer based economy

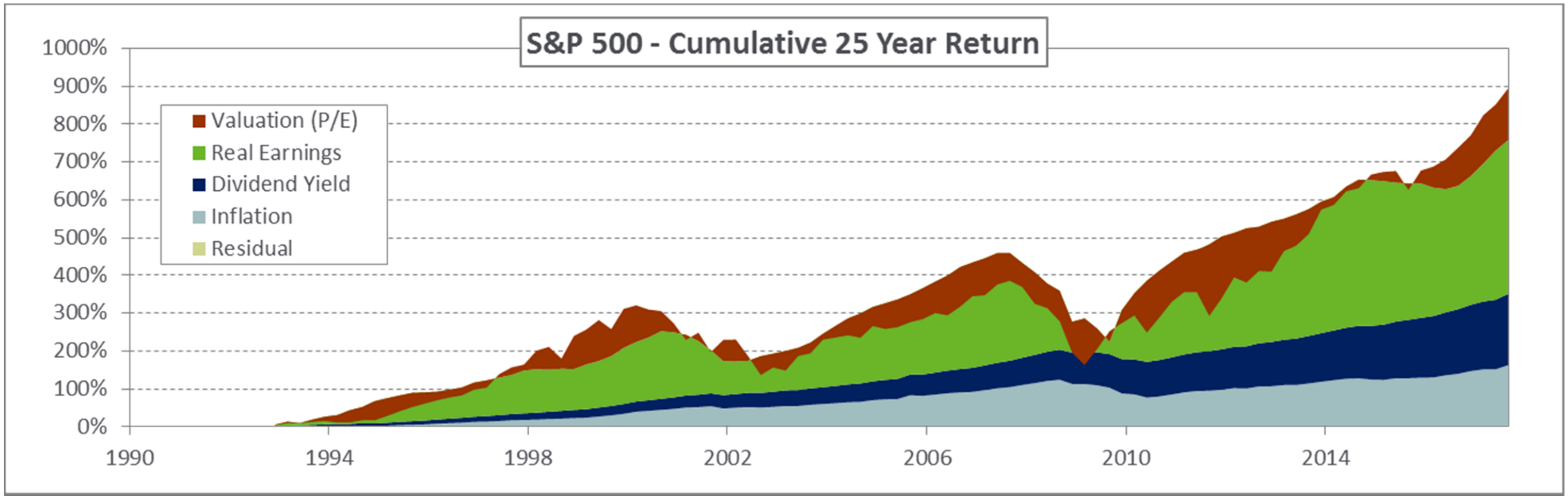
Reforms in India and southeast Asia are expected to boost investment, productivity, and per-capita growth





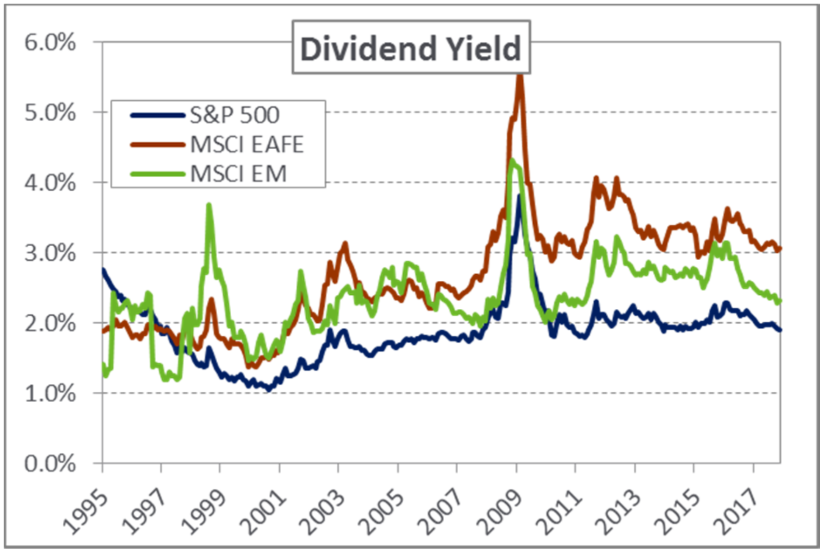
Source: (Top) Bloomberg, NEPC
Source: (Bottom) IMF, MSCI, Bloomberg

EQUITY: DIVIDEND YIELD



Real dividends per share have increased over time, but prices have increased at a faster rate, leading to falling yields

International and Emerging Markets continue to offer a more attractive dividend yield relative to the US



Source: (Top) S&P, NEPC, Bloomberg
Source: (Bottom) S&P, MSCI, Bloomberg

EQUITY: VALUATION

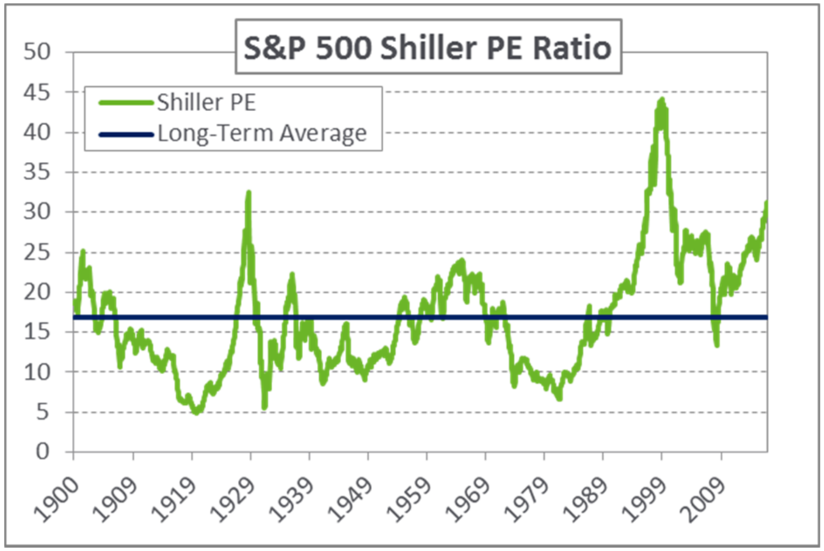
Global equities broadly pushed higher in 2017 supported by macroeconomic data, robust earnings, and easy financial conditions

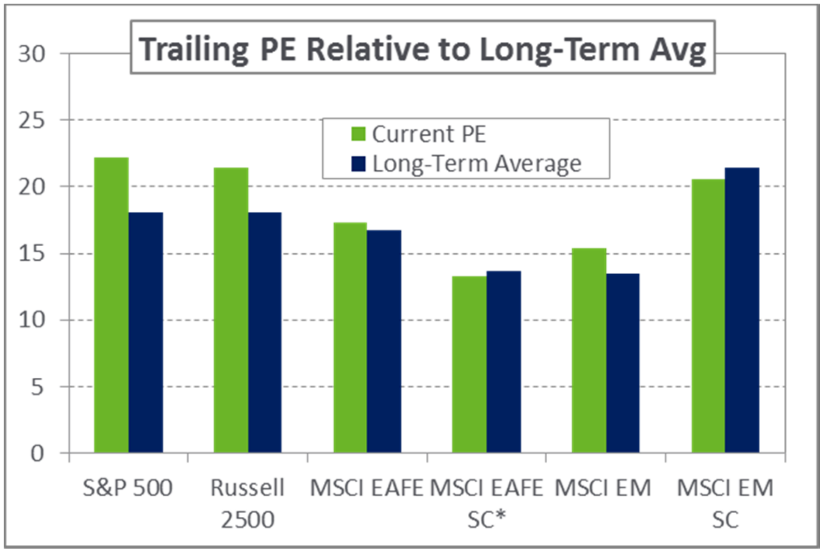
While earnings growth in the US came in stronger than expected, price gains continued to outpace – leading to further P/E multiple expansion

Recovering corporate earnings for international developed markets have allowed valuations to remain relatively attractive

A multi-year earnings recovery in Europe and Japan offers the potential for an elevated return in these markets

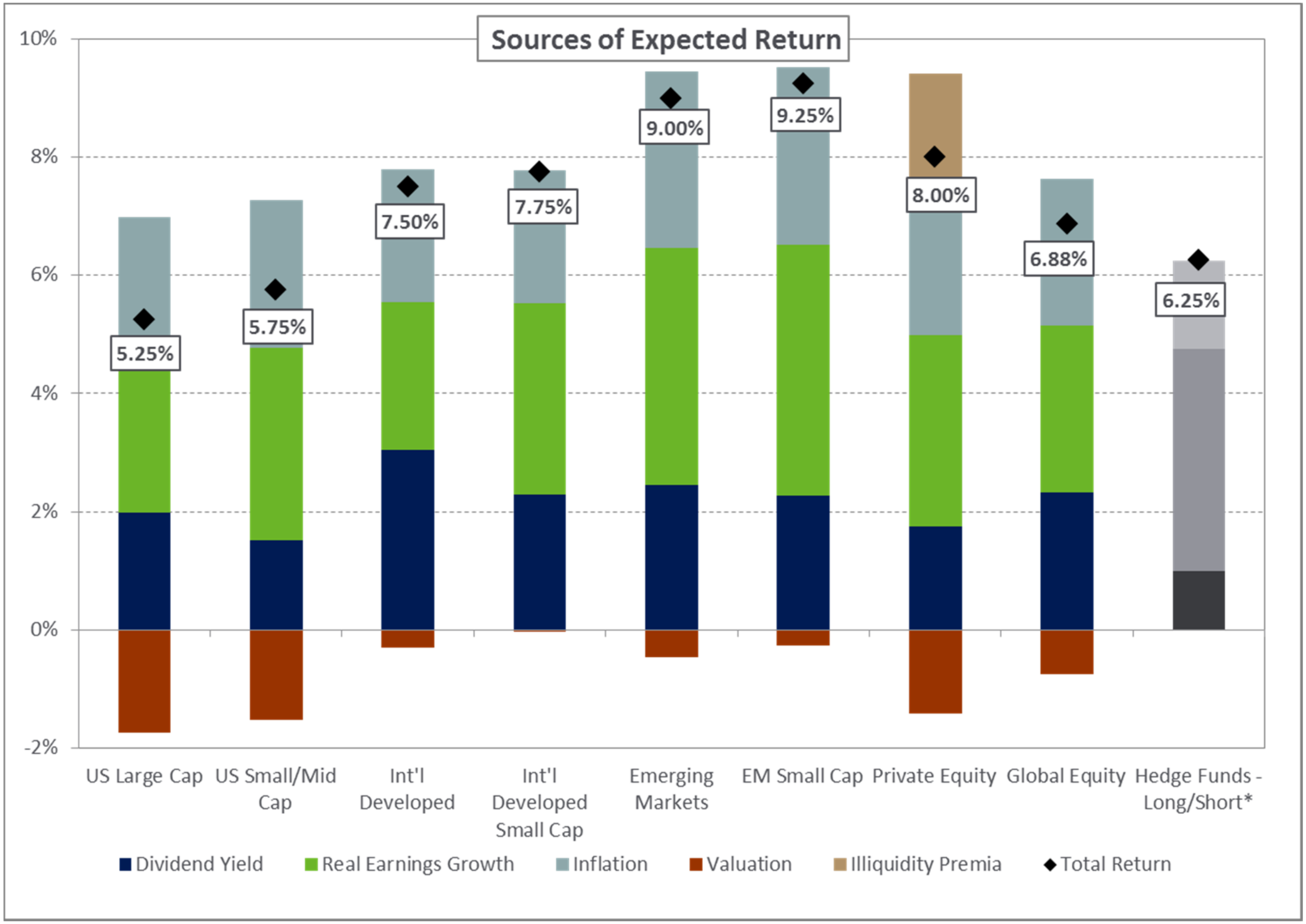
While emerging market equities posted the strongest gains for 2017, valuations remain close to long-term averages relative to domestic markets





Source: (Top) S&P, Shiller
Source: (Bottom) S&P, Russell, MSCI, Bloomberg
**Reflects index-adjusted positive P/E values*

EQUITY: BUILDING BLOCKS



Source: NEPC

**Hedge Funds are discussed in detail in the Multi-Asset section*

RATES & CREDIT ASSUMPTIONS

RATES & CREDIT: ASSUMPTIONS

Rate & Credit Building Blocks	
Illiquidity Premium	The additional return expected for investments carrying liquidity risk
Government Rates Price Change	The valuation change resulting from a change in the current yield curve to forecasted rates
Spread Price Change	The valuation change resulting from a change in credit spreads over the duration of the investment and highly sensitive to economic cycles
Credit Deterioration	The average loss for credit securities associated with an expected default cycle and recovery rates
Credit Spread	Additional yield premium provided by securities with credit risk
Government Rates	The yield attributed to sovereign bonds that do not have credit risk associated with their valuation

Asset Class	5-7 Year Return	Change 2018-2017
Treasuries	**2.25%**	**+.25%**
Investment-Grade Corporate Credit	**3.50%**	**-.25%**
Municipal Bonds	**2.50%**	**+.25%**
TIPS	**3.25%**	**+.25%**
High-Yield Bonds	**3.75%**	**-1.00%**
High-Yield Municipal Bonds	**3.75%**	**-.50%**
Bank Loans	**4.50%**	**-.75%**
Non-US Bonds (Unhedged)	**0.50%**	**-.50%**
EMD (External)	**4.25%**	**-.50%**
EMD (Local Currency)	**6.00%**	**-.75%**
Private Debt	**6.50%**	**-.75%**
Core Bonds	***2.75%***	***+.10%***

RATES & CREDIT: CREDIT SPREAD

Strong global growth and yield-seeking investor behavior has compressed credit spreads

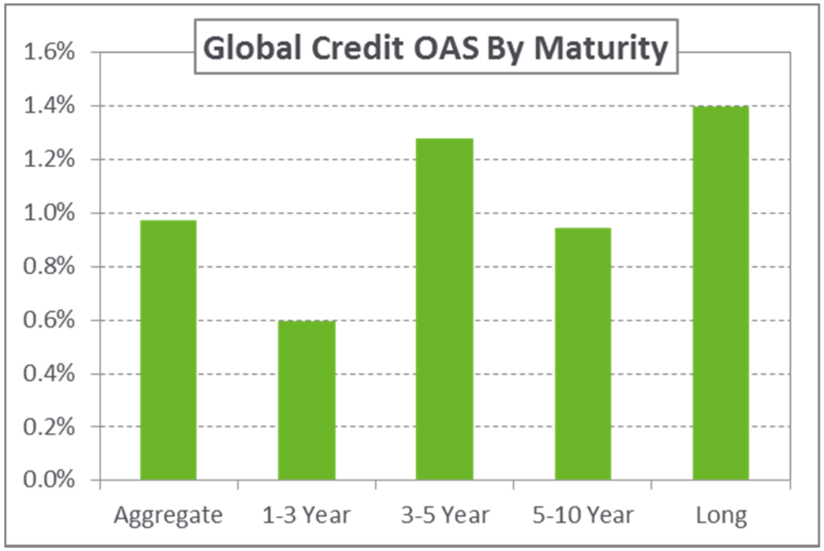
Economic growth usually translates to tighter credit spreads due to a lower probability of defaults

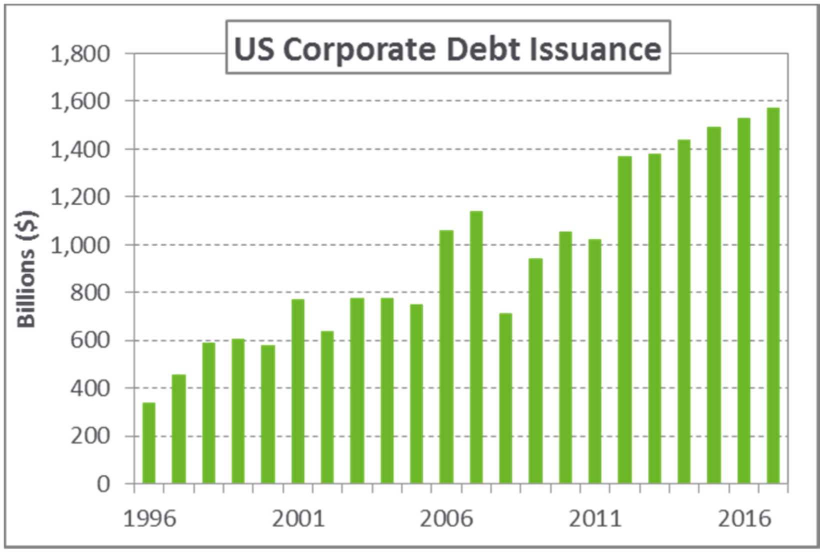
In Europe, the ECB's decision to include corporate bonds in its quantitative easing program has also contributed to smaller credit risk premiums globally

Low borrowing costs have encouraged record issuance in both investment grade and high yield bonds

Passive ownership of credit has increased significantly, even with a larger denominator

The outlook for US credit is subdued with limited return opportunities as credit spreads trade below long-term medians





Source: (Top) Barclays, Bloomberg
Source: (Bottom) SIFMA

RATES & CREDIT: RATES PRICE CHANGE

Rates price change include changes in the level of interest rates, changes to the shape of the curve, and roll down

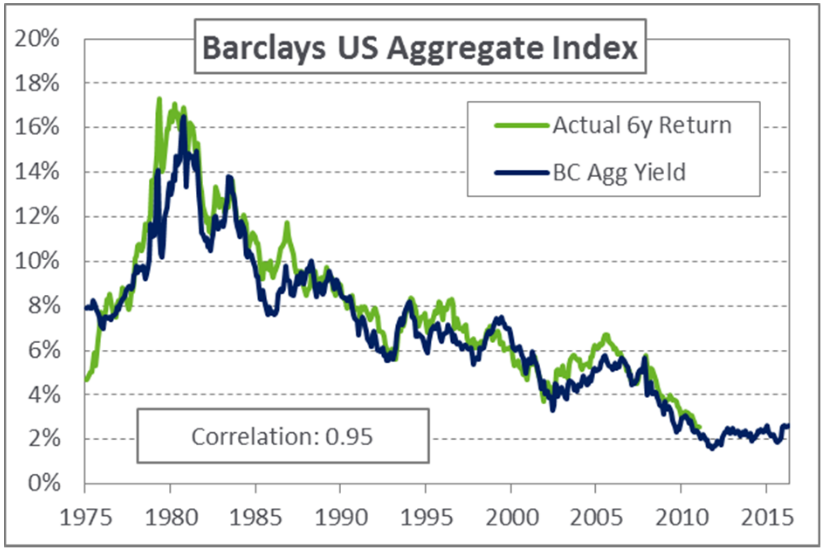
Roll down refers to expected price change due to aging of a bond along the curve

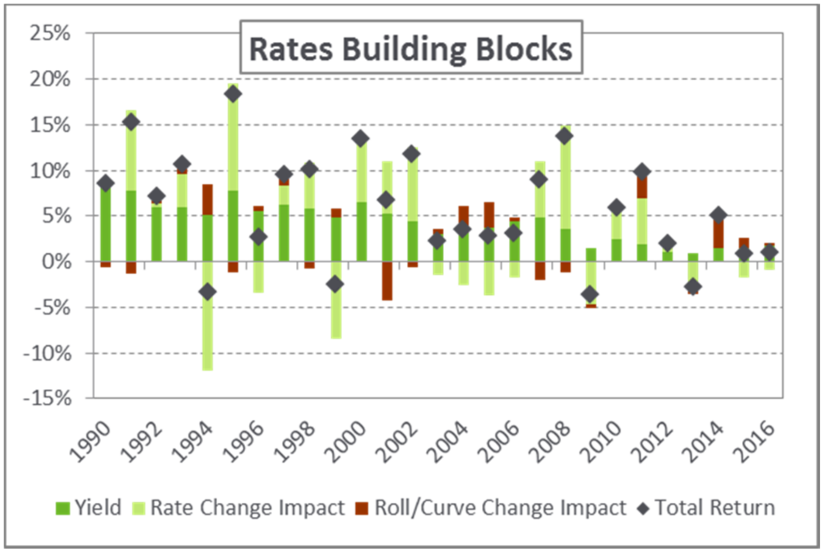
Rate change impact often dominates total return and is a likely detractor in the coming cycle, given expectations of modestly higher rates

Path of interest rates for each market is tied to both central bank actions and inflation expectations

Roll down offers some relief to rising rates when yield curves are steep

As yield curve flattens this can be a drag, pushing investors to shorter duration bonds





Source: (Top) Barclays, Bloomberg, NEPC
Source: (Bottom) Barclays, Bloomberg, NEPC

RATES & CREDIT: SPREAD PRICE CHANGE

Credit spreads continued to tighten throughout the year and remain below long-term averages

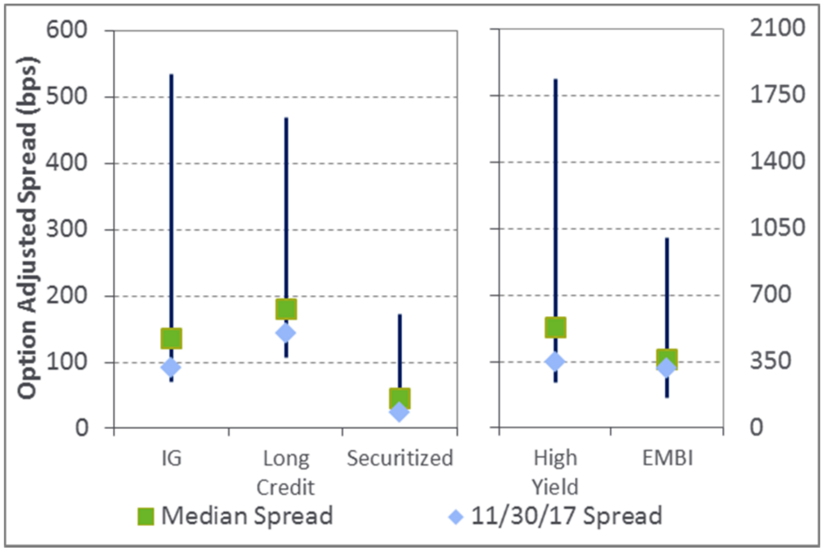
With positive economic indicators and strong technicals, spreads could grind lower

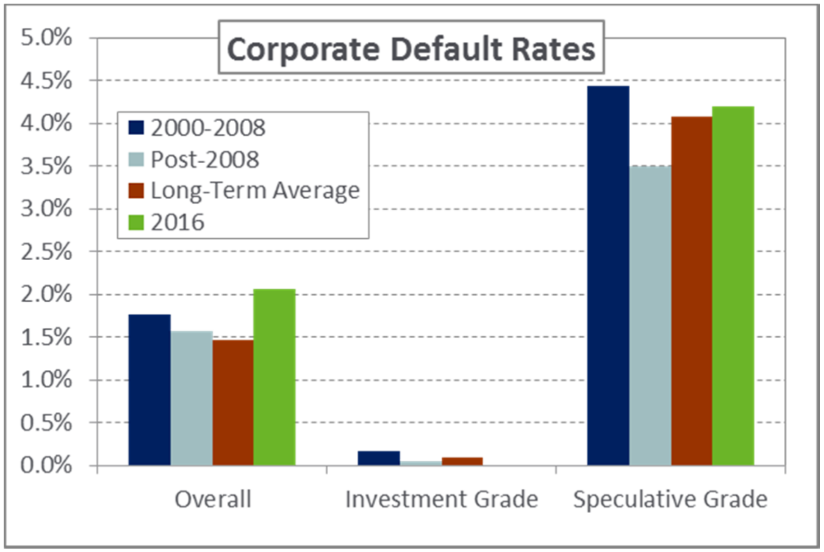
The number of defaults increased last year as a result of the depressed energy and natural resources sector

Over 50% of credit defaults occurred within the energy sector

Nearly all other sectors experienced default rates well below long-term averages

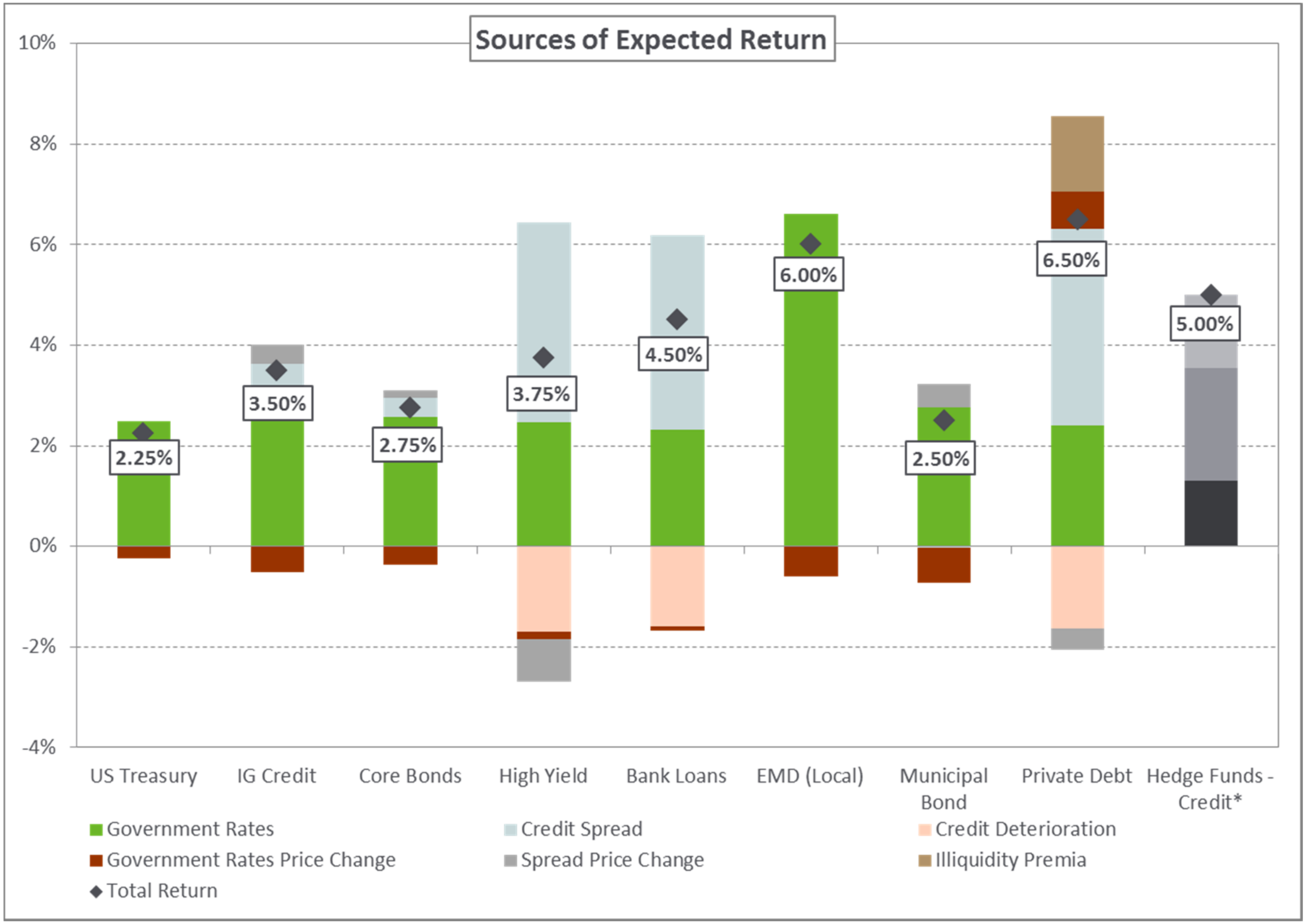
Credit spreads near historic lows suggest investors are receiving less compensation for taking on risk





Source: (Top) JPM, Bloomberg, NEPC. As of 01/31/2000
Source: (Bottom) S&P, NEPC

CREDIT: BUILDING BLOCKS



Source: NEPC

**Hedge Funds are discussed in detail in the Multi-Asset section*

REAL ASSETS ASSUMPTIONS

REAL ASSETS: ASSUMPTIONS

Real Assets Building Blocks	
Illiquidity Premium	The additional return expected for investments carrying liquidity risk
Valuation	The expected change in price of the underlying asset reverting to a long-term real average or terminal value assumption
Inflation	Incorporates the inflation paths as defined by TIPS breakeven expectations and NEPC expected inflation assumptions
Real Earnings Growth	Reflects market-specific real growth for each equity asset class as a weighted-average derived from index country revenue contribution and forecasted GDP growth
Real Income	Represents the inflation-adjusted income produced by the underlying tangible or physical asset

Asset Class	5-7 Year Return	Change 2018-2017
Commodities	**4.75%**	**-**
MLPs	**7.25%**	**+.25%**
REITs	**6.50%**	**-**
Core Real Estate	**5.75%**	**-.25%**
Non-Core Real Estate	**7.00%**	**N/A**
Private Real Assets: Energy/Metals	**8.00%**	**-.25%**
Private Real Assets: Infrastructure/Land	**6.00%**	**-**
Real Assets (Liquid)	***5.87%***	***-.05%***

REAL ASSETS: REAL INCOME

Equity-like investments: Real income represents the inflation-adjusted dividend yield

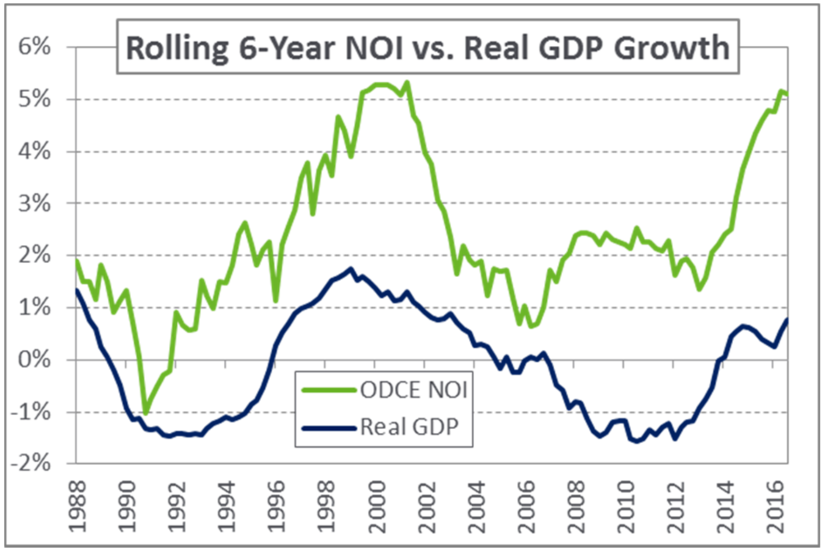
- Includes MLPs, natural resource equities, global infrastructure equities, and REITs
- Notably, MLP yields have increased relative to last year in combination with generally stronger balance sheets and a double-digit price decline

Real Estate: Real income growth is a function of Net Operating Income (NOI) growth

- Rolling 6-year NOI growth exhibits cyclically economic pattern and appears to be at or near its peak

Commodities: Real income is represented by collateral return

- A cash proxy is used to represent the collateral and as such, it represents the return on cash over the investment horizon



Real Asset Yields	11/30/16	11/30/17
MLPs	7.4%	8.1%
Core Real Estate	4.7%	4.6%
US REITs	4.6%	4.0%
Global REITs	4.2%	3.6%
Global Infrastructure Equities	4.1%	3.9%
Natural Resource Equities	3.0%	3.3%
US 10-Yr Breakeven Inflation	2.0%	1.9%
Commodity Index Roll Yield	-6.5%	-1.4%

Source: (Top) NCREIF, Bloomberg, NEPC
Source: (Bottom) NCREIF, Alerian, NAREIT, S&P, Bloomberg

REAL ASSETS: VALUATION

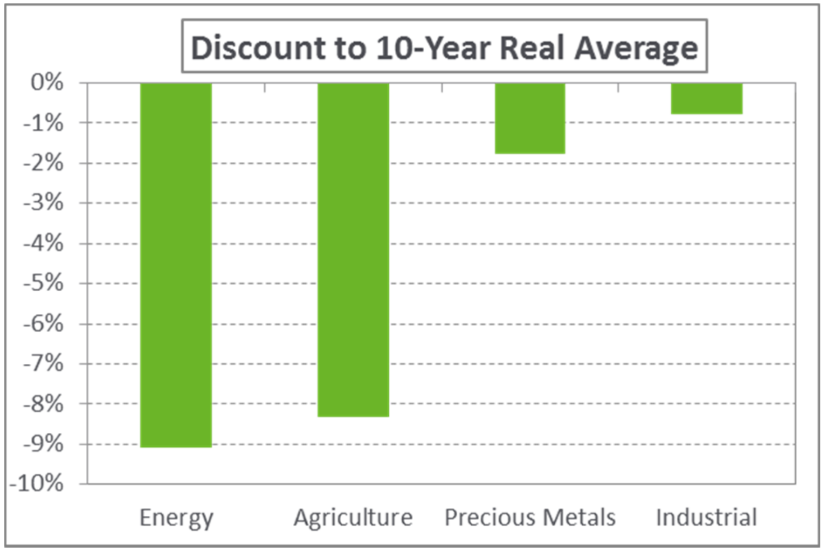
Change in commodity valuations can be attributed to both roll yield and change in spot price

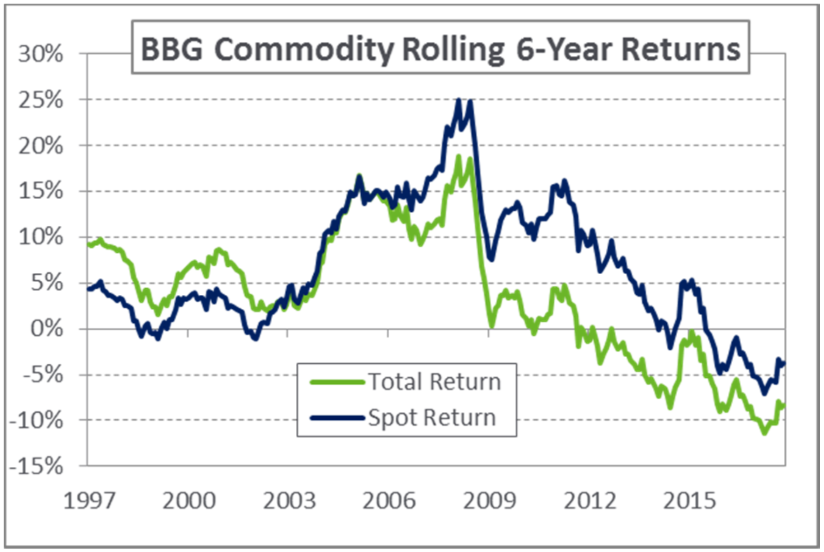
Commodity prices continue to trade below their long-term real averages, particularly in the energy and agriculture sectors

Roll yield continues to be a hurdle for investing in commodity futures

Post-2008, spot returns have had consistently higher returns than total return indices – demonstrating the impact of negative roll yield on overall investments

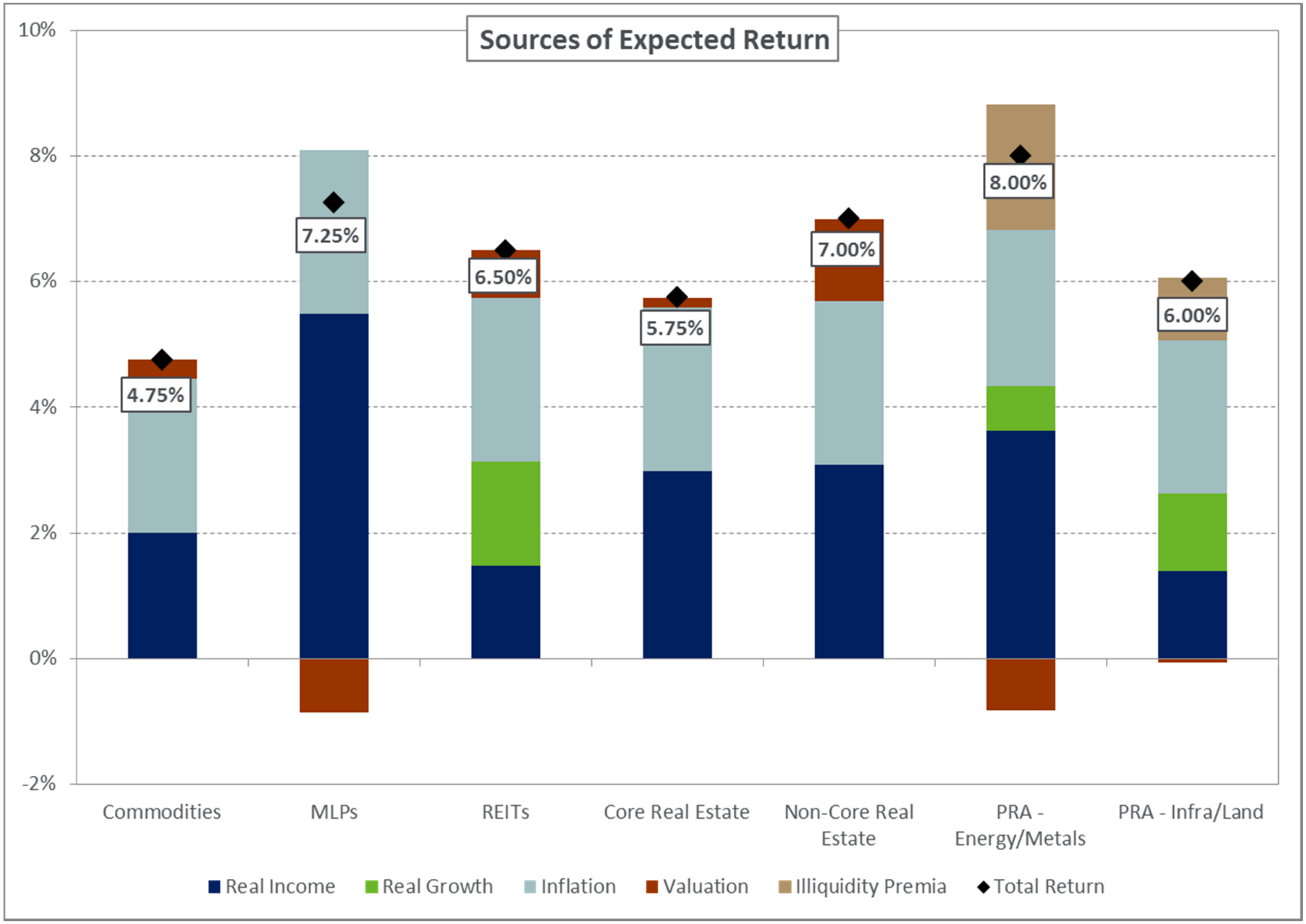
In the latter half of 2017, commodity prices rallied off mid-year lows, causing the negative roll yield to be much smaller relative to last year





Source: (Top) Bloomberg, NEPC
Source: (Bottom) Bloomberg, NEPC

REAL ASSETS: BUILDING BLOCKS



Source: NEPC

MULTI-ASSET & DERIVED COMPOSITES

NEPC, LLC

MULTI-ASSET & DERIVED COMPOSITES

Multi-asset assumptions are the result of the sum of equity, credit, and real asset building blocks

Global 60/40: 60% global equity and 40% global bonds

US 60/40: 60% US equity and 40% core bonds

Risk Parity 10% Vol: Average of 3 common risk parity exposures

GAA Strategies: Average of 3 common GAA exposures

Global Equity: Market weighted blend of MSCI ACWI IMI (US, Non-US Developed, Emerging)

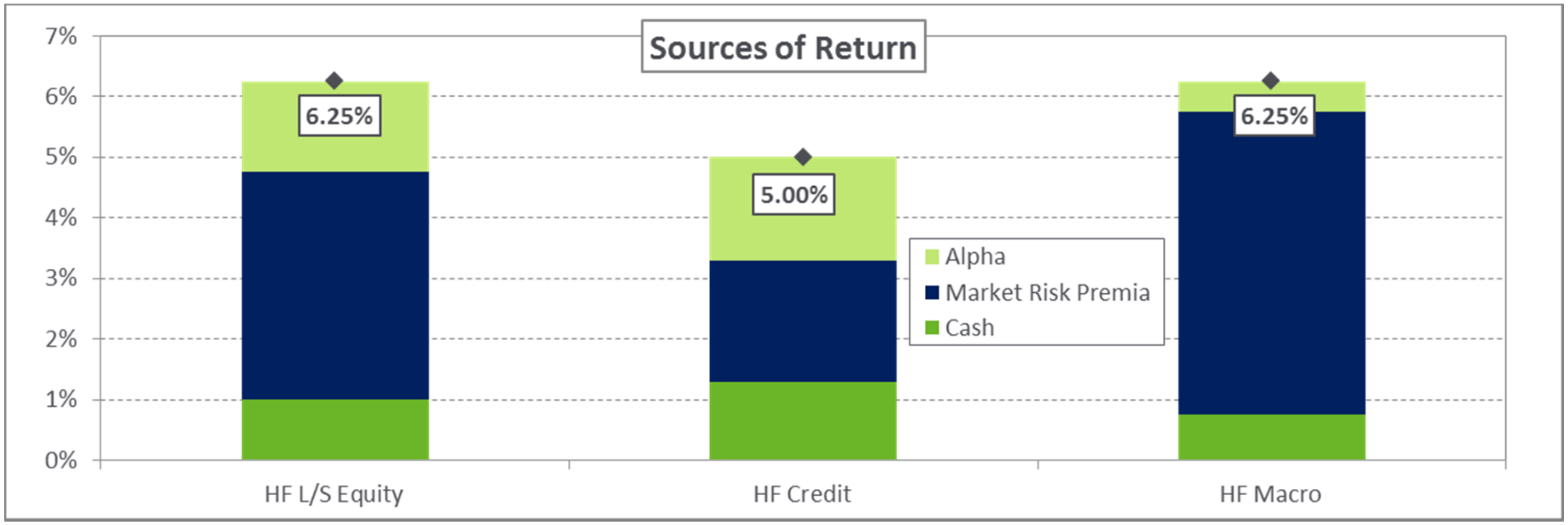
Core Bonds: Market weighted blend of Bloomberg Barclays US Aggregate Bond Index (Treasuries, IG Credit, MBS)

Real Assets (Liquid): Weighted blend of TIPS, global equities, REITs, and commodities

Hedge Funds: Weighted blend of 40% HF equity, 40% HF credit , and 20% HF macro

Asset Class	5-7 Year Return	Change 2018-2017
Global 60/40	**4.91%**	**-.13%**
US 60/40	**4.54%**	**-.24%**
Risk Parity 10% Vol	**5.11%**	**+.04%**
GAA Strategies	**5.44%**	**-.11%**
Hedge Funds – Macro Strategies	**6.25%**	**-**
Global Equity	**6.88%**	**-.33%**
Core Bonds	**2.75%**	**+.10%**
Real Assets (Liquid)	**5.87%**	**-.05%**
Hedge Funds	***5.83%***	***-.12%***

GLOBAL TRADING STRATEGIES ASSUMPTIONS



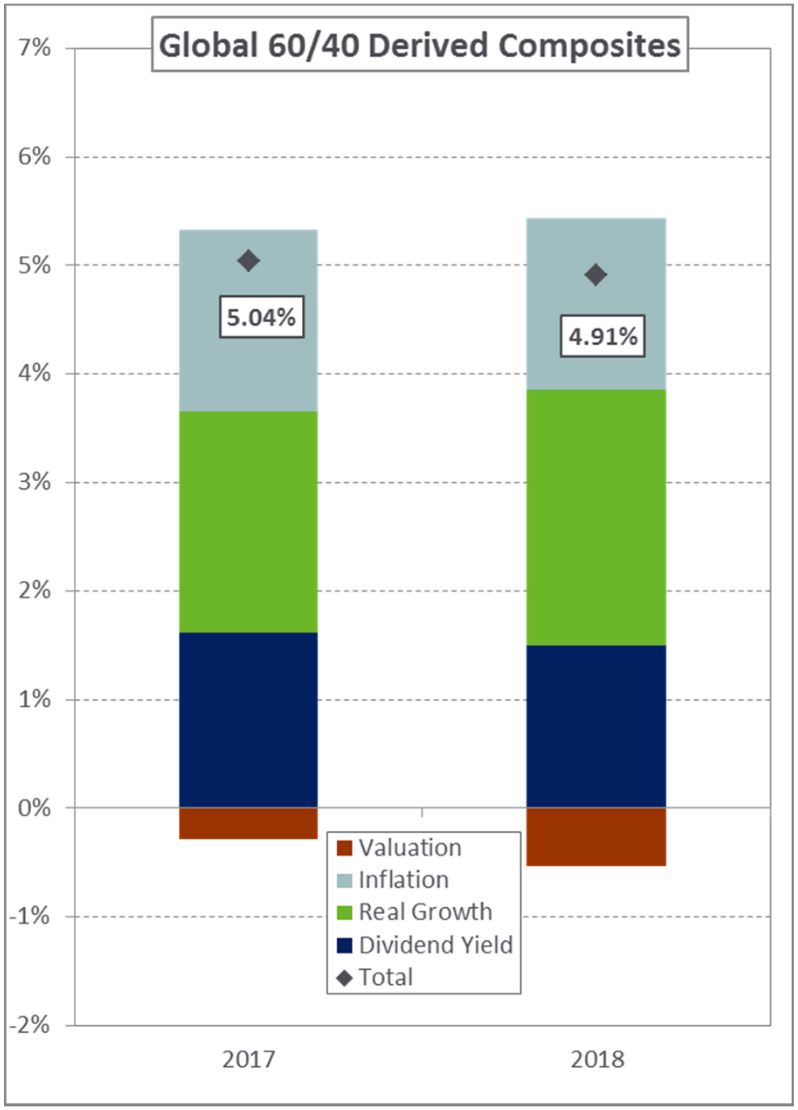
Source: NEPC

	Equity	Credit	Macro
Underlying Market Beta	Global Equity	High Yield, $ EMD, Bank Loans	Relative Value (Rates, Equity, Commodities)

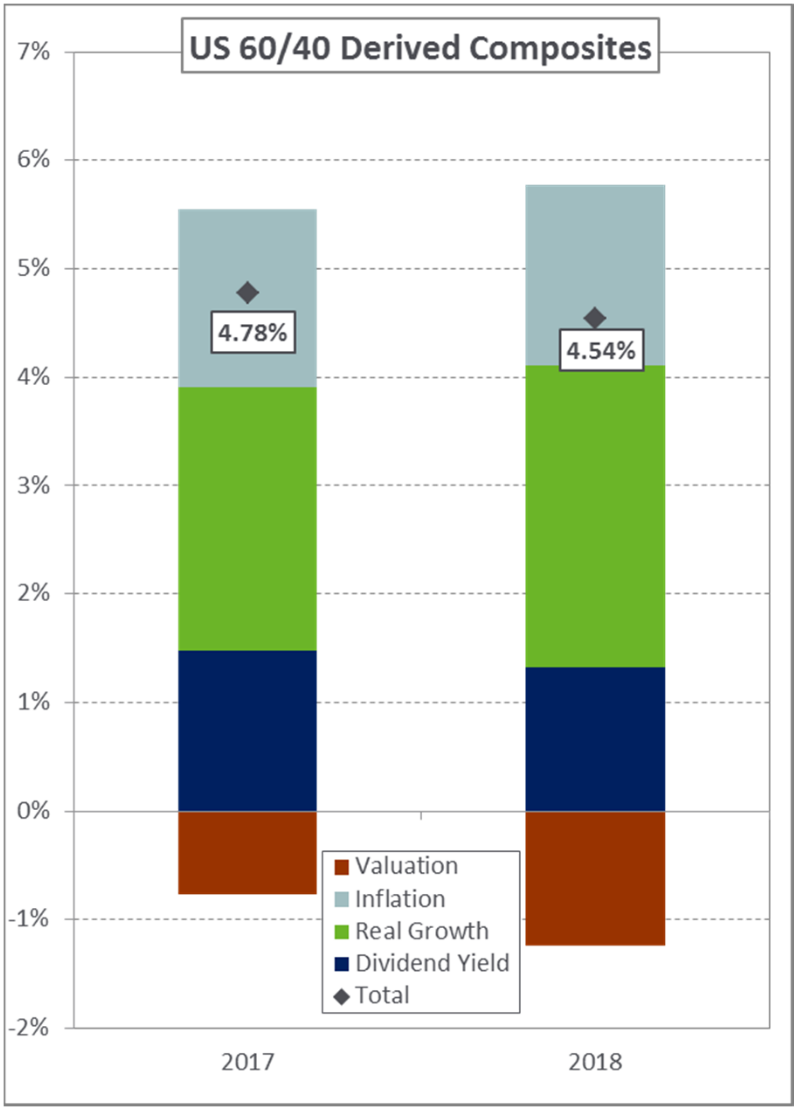
Hedge fund assumption constructed from building blocks of broad hedge fund categories

- Build up of 40% Equity, 40% Credit, and 20% Macro-related strategies
- Based on analysis of historical return, risk and correlation for underlying strategies and total universe
- Use NEPC-standard market betas as building blocks as well as an alpha component

GLOBAL VS. US 60/40 DERIVED COMPOSITES



Source: NEPC



Source: NEPC

INFORMATION DISCLAIMER

Past performance is no guarantee of future results.

The goal of this report is to provide a basis for substantiating asset allocation recommendations. The opinions presented herein represent the good faith views of NEPC as of the date of this report and are subject to change at any time.

Information on market indices was provided by sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.

This report is provided as a management aid for the client's internal use only. This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

Asset Review Schedule

Investment Staff Proposed Calendar

JANUARY

INTRODUCTION TO
ASSET ALLOCATION
MULTI-PLAN ACCOUNTING

FEBRUARY

Fixed Income

MARCH

Private Credit

APRIL

Private Equity

MAY

GTS
Cancer Fund

JUNE

Asset Allocation

JULY

To be determined

AUGUST

Equities
Risk Parity

SEPTEMBER

Annual Meeting
of Board of Trustees

OCTOBER

Real Estate

NOVEMBER

Real Assets

DECEMBER

To be determined

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
BOARD OF TRUSTEES GOVERNANCE MANUAL
TABLE OF CONTENTS

SECTION	ADOPTED	LAST AMENDED
5.13 Human Resources and Compensation Policy	Feb. 23/05	Jun. 27/12
5.14 Code of Ethics	Feb. 23/05	Jun. 27/12
5.15 Policy for Development and Implementation of Legislative Agenda and Use of Lobbying Services	Dec. 17/09	Oct. 26, 2017
5.16 Policy Regarding Review of PSPRS Local Board Action	Feb. 24/10	Oct. 26, 2017

Arizona Public Safety Personnel Retirement System

4.04 Investment Committee Charter

Introduction

1) The Board of Trustees has established an Investment Committee, which is a standing Committee of the Board of Trustees, and is intended to assist the Board of Trustees in overseeing the investment program of the Plans and the Trust.

2) The Investment Committee will be comprised of less than a quorum of the Board of Trustees.

3) This Charter sets out the responsibilities and related requirements of the Investment Committee.

Meetings

4) The Investment Committee will meet monthly, but may meet more or less frequently as required.

5) The Chair of the Investment Committee will approve each meeting agenda.

6) A quorum for committee meetings shall be a majority of Committee members.

7) The Investment Committee will abide by the Board of Trustees Operations Policy and the open meeting laws of the State of Arizona.

Committee Responsibilities

8) With the assistance, advice, and recommendations of staff and appropriate investment advisors, the Investment Committee will provide the following support to the Board of Trustees:

   a) Periodically review the Statement of Investment Policy and any other investment policies of the Board of Trustees, and recommend modifications to the Board of Trustees as necessary.

   b) Recommend broad investment strategies for the Trust, and, as appropriate, any changes to such strategies.

   c) Review the due diligence activities and recommendations of staff and investment advisors as to the selection or termination of the custodian, investment managers, investment partners, and investment consultants retained to advise the Investment Committee and/or the Board of Trustees, and in turn provide Committee recommendations to the Board regarding same. It is the Trustees' duty to monitor the System's investments generally, but not to become involved in the day-to-day due diligence and negotiation of investments of the System. ~~a Committee recommendation to the Board.~~

d) Monitor the activities and performance of the Trust, including at a minimum:

i) Compliance with the investment policies of the Trust.

ii) Compliance with the investment strategies of the Trust.

iii) Investment performance of the Trust, each asset class of the Trust, and each investment manager and investment partner of the Trust.

iv) Performance of the investment consultants advising the Investment Committee and/or the Board of Trustees.

9) The Investment Committee is expected to report to the Board of Trustees on approximately a monthly basis. Reporting by the Investment Committee shall include at a minimum:

a) Investment Committee meeting minutes.

b) Detailed quarterly investment performance reports.

c) Updates of Investment Committee business activities and recommendations.

10) The Board of Trustees may grant the Investment Committee authority to take any other actions the Board of Trustees deems appropriate.

CHARTER REVIEW

11) The Board of Trustees shall review this Charter at least every three years.

CHARTER HISTORY

12) This Charter was approved by the Board of Trustees on June 24, 2009. This Charter was amended by the Board of Trustees on June 27, 2012. This Charter was reviewed and updated by the Board of Trustees on November 29, 2017.

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

4.07 CHARTER OF THE INDEPENDENT INVESTMENT CONSULTANT

INTRODUCTION

1) The role of the Independent Investment Consultant (the "Consultant") is to assist the Board of Trustees in the oversight of the investment program. The Consultant is an independent professional or firm skilled in investment practices and familiar with retirement systems. The Board of Trustees recognizes that the Administrator [or the Chief Investment Officer (CIO), as appropriate] is responsible for providing advice on overall investment strategy and for administering the investment program. The Consultant serves the Board of Trustees by providing an independent and objective review of investment policy and the implementation of the investment program.

2) The purpose of this Charter is to set general parameters for the role and responsibilities of the Consultant. The specific responsibilities, tasks and deliverables of the Consultant shall be clearly documented in a contract or retainer agreement between the Board of Trustees and the Consultant.

GENERAL PROVISIONS

3) The Consultant shall be selected by the Board of Trustees, in accordance with the Vendor Selection Policy.

4) The Consultant shall have direct access to the Board of Trustees, and vice versa. In addition:

   a) Individual trustees are free to contact the Consultant to discuss the investment program;

   b) Trustees will exercise caution to assure that communications between the Consultant and individual ~~t~~Trustees do not violate the Open Meeting Laws; and

   c) Communication with individual ~~t~~Trustees does not relieve the Consultant of the duty to bring important issues to the attention of the Board of Trustees.

5) The Consultant ~~may~~ will consult with the Administrator or CIO, as appropriate, in order to carry out its mandate. Should professional differences arise between the Consultant and System staff concerning the direction and administration of the investment program, these issues will be discussed with the Board of Trustees, which is ultimately responsible for the investment program.

6) The Consultant serves the Board of Trustees. Should ~~System~~ staff members require consulting advice or research on issues that concern the administration of the investment program, they may use the services of other advisors, appointed in accordance with the Vendor Selection Policy. System staff members may also utilize the Consultant for such purposes~~, subject to notification to the Board of Trustees~~.

7) Generally, the Consultant shall assist the Board of Trustees by:

a) Providing independent investment performance measurement, analysis, and commentary;

b) Conducting or assisting in search and due diligence activities involving investment managers, investment partners, transition managers, and securities lending managers;

c) At the request of the Board of Trustees, reviewing investment philosophy, policy, strategies, and other elements of the investment program and providing analysis and commentary, and identifying risks and issues the Board of Trustees should be made aware of;

d) Providing, in conjunction with the Administrator, investment education to the Board of Trustees as deemed necessary by the Board of Trustees or the Consultant; and

e) At the request of individual ~~t~~Trustees, providing advice or answering questions relating to the investment program.

CHARTER REVIEW

8) The Board of Trustees shall review this Charter at least every three years.

CHARTER HISTORY

9) This Charter was approved by the Board of Trustees on February 23, 2005. The Charter was amended by the Board of Trustees on June 24, 2009 and on June 27, 2012. This Charter was reviewed and updated by the Board of Trustees on November 29, 2017.

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

4.09 CHARTER OF FIDUCIARY COUNSEL

1) The Board of Trustees and Plans shall be represented by one or more qualified internal or external lawyers or law firms selected by the Board of Trustees and approved by the Arizona Attorney General (each, a "Fiduciary Counsel"). The fees and expenses of Fiduciary Counsel shall be paid by the Plans from the Funds, pursuant to the terms of the applicable contract.

2) Fiduciary Counsel shall serve at the pleasure of the Board of Trustees.

3) Fiduciary Counsel shall represent the Board of Trustees and Plans in all proceedings and transactions in which legal services are required or appropriate, whether such legal services are requested by the Board or authorized staff. If there exists a conflict, and if that conflict is not waived, or cannot be waived, the Board shall be advised, and the Board and Plans shall be represented by alternate counsel.

4) The attorney-client relationship of the Fiduciary Counsel is exclusively to the Board of Trustees and to the Plans. No attorney-client relationship is created by this relationship, or by any consultations, between the Fiduciary Counsel and any individual member of the Board of Trustees or staff. If staff requires representation, a request must be made to the Board, and such requests will be considered on a case-by-case basis, in consultation with Fiduciary Counsel.

5) With the approval of the Board of Trustees, the Administrator or any Assistant or Deputy Administrator, Fiduciary Counsel shall be authorized to retain experts or third party professionals to assist Fiduciary Counsel in the performance of its duties ("Experts"). The Plans shall pay for all authorized services at the agreed fee.

6) Fiduciary Counsel shall meet all of the qualifications, and agree to abide by the requirements and obligations set forth in its contract for legal services. "Exhibit 1" is attached and incorporated into this Charter by this reference, to the extent not in conflict with this Charter, and describes typical duties, responsibilities and qualifications of Fiduciary Counsel.

7) This Charter shall be reviewed every three years, and updated as determined by the Board of Trustees.

8) This Charter was approved by the Board of Trustees on October 12, 2006. The Charter was amended by the Board of Trustees on June 27, 2012. This Charter was reviewed and updated by the Board of Trustees on November 29, 2017.

Exhibit 1

Charter of Fiduciary Counsel, PSPRS

DUTIES:

1) If the Board of Trustees elects to have an external law firm serve as Fiduciary Counsel, that firm shall designate one lawyer to serve as "Lead Counsel." That lawyer shall be the principal point of contact between Fiduciary Counsel and the Plans and shall be the lawyer ultimately responsible on behalf of Fiduciary Counsel for representing the Plans. Lead Counsel shall have substantial experience performing each of the Duties set forth in paragraph 2 below.

2) In addition to any other responsibilities assigned by the Board of Trustees, the Administrator or any Assistant or Deputy Administrator, Fiduciary Counsel may be responsible for performing the following services (the "Duties"):

a) Advising the Board of Trustees, Staff and Plans about their legal rights and obligations, including their duties under the Public Records and Open Meeting Laws;

b) Representing the Board of Trustees and Plans in all litigation;

c) Performing legal due diligence on all of the Plans' real estate and private equity investments, as well as any other investments designated by the Board of Trustees, Administrator or any Assistant or Deputy Administrator;

d) At the behest of the Board of Trustees, the Administrator or any Assistant or Deputy Administrator, negotiating and/or documenting the terms of contracts to which the Plans are a party;

e) Preparing legal opinions for the benefit of the Board of Trustees, Staff, and Plans;

f) Preparing third party legal opinions for the benefit of the Plans' creditors or vendors;

g) As requested, attending meetings of the Board of Trustees, Staff and any Committees established by the Board or Staff;

h) Preparing reports on the status of litigation involving the Plans;

i) Preparing reports of the status of the Plans' unregistered investments;

j) Preparing drafts of proposed legislation for the benefit of the Plans;

k) Lobbying and testifying before legislative ~~C~~committees in connection with laws affecting the Plans;

l) Providing legal guidance for the benefit of the Plans' members and local boards, as well as committees of the Board of Trustees;

m) Negotiating and preparing joinder agreements and accompanying resolutions for both tribal and non-tribal employers;

n) Preparing, updating and/or providing guidance regarding the Plans' personnel manual, governance and investment policies, code of ethics, Charters and other official rules and policies;

o) Responding to public records requests;

p) Preparing the documents necessary to qualify the Plans for tax-exempt status under the Internal Revenue Code and to maintain such status;

q) Addressing inquiries from private parties or governmental authorities regarding the Plans' terms, conditions, investments and activities;

r) Conducting internal investigations requested by the Board of Trustees, the Administrator or the Compliance/Internal Audit Officer and when appropriate, providing recommendations regarding same;

s) Preparing legal education materials for the Board of Trustees, Staff and local boards;

t) When requested and authorized by the Administrator, arbitrating or mediating disputes among the Plans, Staff, constituents and/or local boards;

u) When authorized by the Board of Trustees or the Administrator, appearing as amicus curaie in actions whose resolution may have significant impact on the Plans or Board of Trustees;

v) Conducting background investigations on new or existing employees of the Board of Trustees or third parties with whom the Plans may invest or do business;

w) Retaining the Plans' confidential files;

x) With the consent of the Board of Trustees or Administrator, settling claims or litigation involving the Plans or Board of Trustees;

y) Overseeing the activities of any law firm retained by the Board of Trustees to conduct securities class actions on behalf of the Plans;

z) Working with officials and counsel employed by other governmental plans to facilitate transfers, prepare legislation, and take any other action that the Board of Trustees or the Administrator deem beneficial to the Plans and their members;

aa) Answering questions regarding QDRO compliance and construction;

bb) Responding to subpoenas, levies and other legal process directed at the Plans, Staff or Board of Trustees;

cc) Handling or managing workouts of Plan development projects or other investments;

dd) With the approval of the Administrator or any Assistant or Deputy Administrator, execute those documents for the Plans for which Fiduciary Counsel holds a power of attorney for the Plans;

ee) Interpleading benefits demanded by competing beneficiaries; and

ff) Assuring the Plans' compliance with all applicable laws.

QUALIFICATIONS:

3) Lead Counsel shall be a member in good standing of the State Bar of Arizona. All lawyers assigned to perform the Duties shall be members in good standing of their respective state bar associations.

4) Lead Counsel shall have at least 10 years of experience performing each of the Duties, and any other lawyer performing the Duties pursuant to Lead Counsel's direction shall be sufficiently experienced to competently perform the Duties.

5) Lead Counsel shall have been a member in good standing of the National Association of Public Pension Attorneys, or similar professional organization, for at least 10 years.

6) One or more lawyers employed by Fiduciary Counsel and performing real estate documentation and due diligence for the Plans (and ideally, Lead Counsel) shall be certified as specialists in real estate law by the State Bar of Arizona or other applicable bar associations.

7) One or more lawyers employed by Fiduciary Counsel and representing the Plans in litigation (and ideally, Lead Counsel) shall have successfully represented one or more public pension plans in administrative (local board) proceedings, superior court trials, and appeals.

8) Fiduciary Counsel shall be generally knowledgeable about, and have experience involving the following legal disciplines: securities, contracts, real estate, finance, administrative procedure, appellate procedure, ERISA, tax and bankruptcy.

9) Fiduciary Counsel shall not regularly represent clients or have associations that create unwaivable Conflicts between the interests of Fiduciary Counsel and the Board of Trustees and Plans.

10) Fiduciary Counsel (and certainly, Lead Counsel) shall be sufficiently knowledgeable about public pension law, and have sufficient experience in performing the Duties, that there shall be a high likelihood that Fiduciary Counsel shall be approved by the Attorney General to represent the Board of Trustees and Plans. No Fiduciary Counsel shall represent the Board of Trustees and Plans unless first approved for such representation by the Arizona Attorney General.

11) Ideally, although not required, Lead Counsel shall have published books or articles relating to public pension law, real estate law, ethics, civil litigation and appeals.

12) Ideally, although not required, Lead Counsel shall have served as an officer on one or more Committees or sections of the State Bar of Arizona or other state bar association.

13) Ideally, although not required, Lead Counsel shall have lectured on public pension law, real estate law, ethics, civil litigation and/or appeals.

14) Ideally, although not required, Fiduciary Counsel shall have devoted substantial time to professional and non-professional activities which have improved Arizona or its various local communities.

15) Ideally, although not required, Fiduciary Counsel shall have offices or associations in several other American states to handle any of the Plans' legal work in foreign states.

16) All lawyers performing Duties on behalf of the Plans shall never have (i) been adjudicated bankrupt or (ii) been adjudged, by final decree of any court, to have committed legal malpractice, fraud, breach of fiduciary duty or any felony involving moral turpitude.

17) Fiduciary Counsel shall have errors and omission coverage of at least $10,000,000 per occurrence and $20,000,000 in the aggregate.

COMPLIANCE STANDARDS:

18) In performing the Duties, Fiduciary Counsel shall comply with the Rules of Professional Conduct set forth in Rule 42 of the Rules promulgated by the Arizona Supreme Court.

19) In connection with any litigation involving the Plans in the Arizona Superior Court, Fiduciary Counsel shall comply with the Arizona Rules of Civil Procedure, the Arizona Rules of Evidence, any applicable Arizona statutes and case law, and all local rules promulgated by the particular Superior Court hearing the matter.

20) In connection with any litigation involving the Plans in a federal district court, Fiduciary Counsel shall comply with the Federal Rules of Civil Procedure, the Federal Rules of Evidence, any applicable federal statutes and case law, and all local rules promulgated by the particular federal district court hearing the matter.

21) In connection with any litigation involving the Plans in any Arizona appellate court, Fiduciary Counsel shall comply with the Arizona Rules of Appellate Procedure, the Rules of the Arizona Supreme Court, and any applicable Arizona statutes and cases.

22) In connection with any litigation involving the Plans in state trial or appellate courts other than that resident in Arizona, Fiduciary Counsel shall comply with all rules of procedure and evidence promulgated by the courts of the states in question, as well as any applicable statutes and cases.

23) In connection with any litigation involving the federal courts of appeal or the U.S. Supreme Court, Fiduciary Counsel shall comply with the Federal Rules of Appellate Procedure, the local rules of the particular circuit court in question, and if appropriate, the Rules of the

U.S. Supreme Court and all federal statutes and cases governing matters pending in the federal appellate courts.

24) In connection with any administrative action involving the Plans, Fiduciary Counsel shall comply with any applicable substantive or procedural rules of the agency in question, as well as all appropriate statutes and governing cases.

25) Fiduciary Counsel shall comply with all applicable terms of the Board of Trustees' Governance Manual, the Plans' Investment Policy, and the Board of Trustees' Code of Ethics.

AUTHORIZATION, CONFIDENTIALITY & COOPERATION:

26) The Board of Trustees, the Administrator, any Assistant or Deputy Administrator, and any other person so authorized by the Administrator, shall be entitled to consult with and seek advice from Fiduciary Counsel about the Plans, as well as request legal opinions from Fiduciary Counsel on issues of concern to the Plans.

27) The Board of Trustees, the Administrator, any Assistant or Deputy Administrator, and any other person so authorized by the Administrator, shall be entitled to request Fiduciary Counsel to perform one or more of the Duties for the Plans.

28) All legal advice provided by Fiduciary Counsel to the Board of Trustees and Staff is confidential and whenever possible, shall be protected from disclosure by the Attorney/Client privilege. Fiduciary Counsel shall not disclose to third parties the substance of communications between Fiduciary Counsel and the Board or Staff unless such disclosure is authorized by the Board or the Administrator or required by court order or Ethical Rule 1.6 of the Rules of Professional Conduct promulgated by the Arizona Supreme Court.

29) Staff shall provide Fiduciary Counsel with all information requested by Fiduciary Counsel (and possessed by the Plans) which is necessary for Fiduciary Counsel to perform its Duties.

30) Fiduciary Counsel shall promptly respond to all requests for information posed by the Board of Trustees, Plans, Staff and subcommittees of the Board of Trustees. Fiduciary Counsel's work product shall be prepared and delivered in a timely manner.

DISCLOSURE:

31) If, in the course of the performance of its Duties, Fiduciary Counsel learns that any person is defrauding the Plans or is otherwise acting unlawfully with respect to the Plans, Fiduciary Counsel shall immediately report such fraud or unlawful action to the Administrator and the Chair of the Board of Trustees.

32) If, after a reasonable period, the Administrator and Chair of the Board of Trustees fail to take action to address any fraud or unlawful action reported to them by Fiduciary Counsel, Fiduciary Counsel shall then report such fraud or unlawful action to the remaining ~~t~~Trustees serving as Board of Trustees. If, within a reasonable period, the Board of Trustees nevertheless refrains from taking action to address the fraudulent or unlawful action, then Fiduciary Counsel shall be authorized to retain independent counsel to opine

whether Fiduciary Counsel shall disclose the fraud or unlawful activity to the Arizona Attorney General in accordance with Ethical Rule 1.13 of the Rules of Professional Conduct promulgated by the Arizona Supreme Court. The fees of the independent counsel retained shall be paid by the Plans. If the independent counsel retained to examine the fraud or unlawful action determines that Fiduciary Counsel must disclose the fraud or unlawful action to the Arizona Attorney General, then Fiduciary Counsel shall disclose the fraud or unlawful activity to the Arizona Attorney General in accordance with Ethical Rule 1.13.

EXPERTS:

33) With the approval of the Board of Trustees, the Administrator or any Assistant or Deputy Administrator, Fiduciary Counsel shall be authorized to retain experts or third party professionals to assist Fiduciary Counsel in the performance of its Duties ("Experts"). These Experts may include, among others, investment consultants (such as certified public accountants) to evaluate the financial terms of the Plans' real estate and other investments, professional investigators to study the backgrounds of persons with whom the Plans may do business, and persons with unique backgrounds and skills who may consult with Fiduciary Counsel about potential or ongoing litigation and/or testify in ongoing cases. Experts may also include lawyers not otherwise affiliated with Fiduciary Counsel whose expertise is necessary to enable Fiduciary Counsel to perform the Duties.

34) Except for Experts retained by Fiduciary Counsel solely to testify in court, or unless otherwise provided by law, all communications between Fiduciary Counsel and Experts retained by Fiduciary Counsel shall be considered protected from disclosure by the Attorney Client privilege, and Fiduciary Counsel shall take all appropriate action to protect such communications from disclosure.

35) The Plans shall pay the fees of all Experts retained by Fiduciary Counsel in connection with the performance of its Duties to the Plans.

36) To facilitate the performance of its Duties, Fiduciary Counsel shall be free to consult with the Plans' actuaries, auditors, the Compliance/Internal Audit Officer, and other third party consultants. Notwithstanding the foregoing, absent the consent of the Administrator or any Assistant or Deputy Administrator, Fiduciary Counsel is not authorized to request the Plans' consultants to undertake any work for which the Plans will be billed.

RESPONSIBILITY:

37) Fiduciary Counsel shall not be responsible for determining whether the Plans' investments, contracts or actions are financially justified or prudent.

38) While it shall be the responsibility of Fiduciary Counsel to advise Staff of any material legal risks known to Fiduciary Counsel and attendant to any investment about which Fiduciary Counsel has been consulted, it shall not be the responsibility of Fiduciary Counsel to determine whether the Plans should make such an investment despite such risks-- that determination ultimately rests with the Plans. At the request of Staff, Fiduciary Counsel may (i) approve a particular investment from a legal due diligence standpoint and (ii) opine whether it is worthwhile for the Plans to make a particular investment despite the legal risks identified by Fiduciary Counsel relating to such investment.

39) While it shall be the responsibility of Fiduciary Counsel to advise Staff of any material risks known to Fiduciary Counsel and attendant to any contract about which Fiduciary Counsel has been consulted, it shall not be the responsibility of Fiduciary Counsel to determine whether the Plans' contracts should be entered into despite such risks-- that determination ultimately rests with the Plans. At the request of Staff, Fiduciary Counsel may (i) approve a particular contract from a legal due diligence standpoint and (ii) opine whether it is worthwhile for the Plans to enter into a particular contract despite the legal risks identified by Fiduciary Counsel with respect to such contract.

40) While it shall be the responsibility of Fiduciary Counsel to advise Staff of any material legal risks and benefits known to Fiduciary Counsel and involving litigation in which the Plans are contemplating or engaged, it shall not be the responsibility of Fiduciary Counsel to make decisions affecting substantive rights in connection with such litigation, such as whether to sue, settle, appeal, demand awards of attorneys' fees or take any action involving substantive rights— ultimately, such decisions shall rest with Staff or the Board of Trustees after being advised of all material options by Fiduciary Counsel. In contrast, it shall be the responsibility of Fiduciary Counsel to determine how any decisions affecting substantive rights made by Staff or the Board in connection with litigation are to be procedurally effected or implemented. By way of example, after consulting with Fiduciary Counsel about the risks and/or rewards of bringing or defending an action, the decision whether to sue or defend shall rest with Staff or the Board of Trustees, whereas it shall be the responsibility of Fiduciary Counsel to decide how such suit or defense shall be filed and prosecuted.

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

5.09 TRAVEL POLICY

OBJECTIVES

1) The purpose of this policy is to:

   a) Establish reasonable parameters for ~~t~~Trustee and staff business and educational travel.

   b) Establish a process for the approval and reimbursement of reasonable travel and conference expenses.

   c) Define reasonable travel and conference expenses.

DEFINITIONS

2) In this policy "Conference" shall be defined to include conferences, seminars, or academic programs (e.g., Wharton).

GUIDELINES

Travel Authorization for Trustees

3) Trustees are encouraged to attend up to three (3) conferences per fiscal year at the expense of the System.

4) Reimbursement of expenses related to attendance at Conferences shall be reimbursed by the System if approved by the Board of Trustees or the Administrator.

5) Other travel by a ~~t~~Trustee on Board of Trustee~~s~~ business at the System's expense, including participation in meetings with current or prospective vendors, due diligence visits with current or prospective managers, etc., requires prior Board of Trustees approval. If prior approval was not possible, the Board of Trustees may ratify such travel for good cause, where such cause is explained. Notwithstanding that which is allowed under section "Business Materials, Entertainment & Travel" of 5.14 Code of Ethics, for all such travel to or with and accommodations provided by prospective vendors or managers, the Trustee shall pay all charges at time of incurrence, including charges to be borne by a third party, and subsequently submit a travel expense request to the System for reimbursement. If appropriate, the System may bill the third party after reimbursement to the Trustee.

~~5)~~6) All Trustee travel for conferences, seminars, and any other System business shall be reported to the Compliance Officer by the Trustee in the month incurred.

Travel Authorization for the Administrator

~~6)~~7) The Chair or Vice Chair are authorized to approve travel by the Administrator, provided:

   a) The purpose of such travel is for:

i) Administrative purposes, including due diligence evaluations, vendor meetings, meetings with other retirement systems;

ii) Attendance at industry or professional association meetings; or

iii) Participation at Conferences, where the content relates to the Administrator's job description; and

b) The staff travel and education budget for the year has not been exceeded.

~~7)~~8) Travel by the Administrator requires approval by the Board of Trustees when:

a) The staff travel and education budget for the year has been exceeded.

~~8)~~9) If prior approval was not possible, the Board of Trustees may ratify such travel for good cause, where such cause is explained.

Travel Authorization for System Staff

~~9)~~10) The Administrator is authorized to approve travel by staff, provided the following:

a) The purpose of such travel is for:

i) Administrative purposes, including due diligence evaluations, vendor meetings, meetings with other retirement systems;

ii) Attendance at industry or professional association meetings; or

iii) Participation at Conferences, where the content relates to the staff person's job description; and

b) The staff travel and education budget for the year has not been exceeded.

~~10)~~11) Travel by staff requires approval by the Board of Trustees when:

a) The staff travel and education budget has been exceeded for the year.

~~11)~~12) For travel covered by paragraph 10), if prior approval was not possible, the Board of Trustees may ratify such travel for good cause, where such cause is explained.

~~12)~~13) Staff may attend up to 3 Conferences per year at the expense of the System, subject to the approval procedures noted above. This limit does not apply to association or industry meetings where the majority of the meeting is devoted to the business of the association. This limit may be waived by action of the Board of Trustees.

Speaking Engagements

~~13)~~14) The Board of Trustees recognize that Trustees and staff members may be invited to speak at Conferences or other events because of their professional expertise. The System encourages the exchange of professional information, and approval for attendance should be given where participation would benefit the System. Reimbursement and employee leave for such purposes shall be subject to the approval procedures set out above.

Reimbursement Procedures

~~14)~~15) Trustees and staff shall only be reimbursed for reasonable travel expenses, as defined in the Travel Expense Reimbursement Procedures. Notwithstanding anything in this policy, the Board of Trustees may reject the reimbursement of any expense that is not consistent with the spirit of this policy or the procedures.

Concurrent Travel by Senior Staff

~~15)~~16) Concurrent out-of-town travel by more than two (2) senior staff members (defined here as the Administrator and the Assistant/Deputy Administrators) is not authorized unless there are extenuating circumstances. Occasions necessitating concurrent travel by more than two (2) of these individuals shall be communicated to the Chair in advance of the travel. On these occasions, the Administrator must provide for appropriate responsibility and authority within the System through other senior staff.

~~16)~~17) When air travel is involved, no more than two senior-staff members (2) shall travel on the same flight.

Travel Budget

~~17)~~18) Throughout the year the Administrator shall monitor travel costs against the annual travel budget for the Board of Trustees and for Staff, and shall inform the Board of Trustees when the budget has been exceeded.

POLICY REVIEW

~~18)~~19) The Board of Trustees shall review this policy at least once every three years to assure that it remains relevant and appropriate.

POLICY HISTORY

The Board of Trustees adopted this policy on February 23, 2005, and revised on June 24, 2009, March 30, 2011, and on June 27, 2012. It was reviewed by the Board of Trustees on April 26, 2017 but no changes were made. This policy was reviewed and updated by the Board of Trustees on November 29, 2017.

Arizona Public Safety Personnel Retirement System

5.11 Monitoring and Reporting Policy

Background and Purpose

1) In keeping with the duty of the Board of Trustees to oversee the activities and performance of the System, the Board of Trustees has established this Monitoring and Reporting Policy, which sets out the Board's expectations concerning the reports it is to receive on a regular basis.

Principles and Assumptions

2) While it is prudent for the Board of Trustees to delegate certain responsibilities, it should monitor the activities of those to whom it has delegated such responsibilities, in order to assure that the responsibilities are being fulfilled.

3) The Board of Trustees, and each ~~t~~Trustee, should receive all appropriate information that is relevant to their duties and responsibilities in a timely manner.

4) The system of reporting to the Board of Trustees is a dynamic one, and must be reviewed and modified periodically to meet the changing needs of the Board over time. A process should be in place to help direct and keep track of changes to this system.

Guidelines

5) The Board of Trustees will be provided the routine reports outlined in Appendix 1 with the frequency also set out in Appendix 1. The Board may be provided with other reports as required from time to time.

6) Requests by ~~t~~Trustees for additional routine reports shall require Board of Trustees approval and an amendment to Appendix 1 of this policy.

7) In addition to routine reporting, the Administrator shall promptly inform all ~~t~~Trustees of any emergencies that the Administrator believes may significantly affect the condition of the System and safety of its assets.

Policy Review

8) The Board of Trustees shall review this policy every three years to assure that it remains relevant and appropriate.

Policy History

9) The Board of Trustees adopted this policy on February 23, 2005, and revised on June 24, 2009, on June 27, 2012 and on May 31, 2017. This Policy was reviewed and updated by the Board of Trustees on November 29, 2017.

Appendix 1
Routine Reports

GOVERNANCE REPORTS

Report Name	Frequency	Presented By	Description and Purpose of Report
1. Administrator Evaluation	Annually	N/A	Summarizes the performance assessment of the Administrator.
2. Trustee Education Report	Annually	Administrator or third party	Summarizes the activities of the Board of Trustees with respect to education and orientation.

FUNDING REPORTS

Report Name	Frequency	Presented By	Description and Purpose of Report
3. Actuarial Valuation	Annually	Actuary	Valuation of the funded status of the Funds, taking into account assets and liabilities, and other economic and demographic assumptions. Also includes recommendations for contributions.
4. Actuarial Experience study	Every 5 years	Actuary	Reviews the appropriate long-term economic assumptions (e.g., investment return, wage and price inflation) and demographic assumptions (e.g. disability rates, mortality rates), etc. employed in preparing the actuarial valuation.
5. Actuarial Audit	Not more frequently than once every 5 years*	Actuarial Auditor	An independent review of the validity of the analyses and methodologies used in preparing actuarial valuations.

* Not required if the System has recently appointed, or is about to appoint, a new actuary at or about the time an actuarial audit is scheduled to be performed.

INVESTMENTS REPORTS

Report Name	Frequency	Presented By	Description and Purpose of Report
6. Investment Performance Reports	Monthly[1]	Chief Investment Officer (CIO)	Internal performance reports prepared by staff showing investment returns, for total fund, by asset class, and by manager, and asset allocations, as compared against benchmarks. Provides analysis based on return over various periods (3 months, 1 year, 5 year, etc.)
7. Joint Venture (JV) Real Estate Investment Reports	Quarterly[1]	Fiduciary Legal counsel	Provides a ~~monthly~~ quarterly account of the Funds' real estate investments, including the terms and expected returns of the investments.
8. Investment Performance Reports (Third party)	At least quarterly	Independent Investment Advisor	Performance reports prepared by independent investment advisor, showing investment returns, for total fund, by asset class, and by manager, and asset allocations, as compared against benchmarks. Also includes attribution analysis, to identify sources of returns.
9. Investment Manager Compliance	Quarterly	Compliance Officer	Confirms that investment managers (internal and external) are investing plan assets in accordance with their mandate, investment agreement, regulatory requirements and investment policy.
10. Overview of Investment Program	Annually	CIO	Snapshot of the overall structure of the investment program, including actual asset mix, number of managers, number of portfolios, etc.
11. Investment Costs	Annually	CIO	Evaluates the costs of the investment program. Periodically compare costs to an appropriate peer group.
12. Securities Lending	Annually	CIO	Summary of the System's security lending activities, including additional income earned, collateral received, and risk factors impacting collateral.
13. Asset / Liability Studies	At least every 3 years	CIO	A study of the relationship between the Funds' assets and liabilities, and recommendations regarding the appropriateness of the current asset mix policy.

[1] Except for the first month of each fiscal year

Report Name	Frequency	Presented By	Description and Purpose of Report
14. Alternative Investments Report	Annually	CIO	One page summary of each of the System's Alternative Investments.

ADMINISTRATION AND OPERATIONS REPORTS

Report Name	Frequency	Presented By	Description and Purpose of Report
15. Budget Variance Tracking	At least Quarterly	Administrator	Compares actual spending to the operating budget, including explanations for material variances.
16. Audited Financial Statements, including: • Opinion letters • Management letters	Annually	Financial Auditor	Confirms that the financial statements present fairly, in all materials respects, the financial status of the Funds, in accordance with generally accepted accounting principles. The Board of Trustees should also be presented with the auditor's opinion letter, and the auditor's Management Letter to staff.
17. Comprehensive Annual Financial Report	Annually	Administrator	Annual report on the operations and financial status of the Systems. The Report shall meet the content requirements set out in A.R.S. §38-848(J).
18. Member Services	Periodically	Administrator	Progress report on staff initiatives to improve service to members and to Local Boards) (e.g. significant changes in technology, staff procedures, training and education, etc.)
19. Reports on internal controls	Annually	Internal Audit Officer	Update of financial and operational internal controls, including any significant changes and improvements to such over the year.
20. External assessment of internal audit function	At least every 5 years	External Auditor	External assessment of the internal audit function, as required by internal audit standards.
21. Report on internal audit	Periodically	Internal Auditor	Summary of internal audit function's purpose, authority and responsibility, as required by internal audit standards.
22. Reports on HR management	Annually	HR Officer	Summary of initiatives in the human resources area, including compensation policies, training activities, staff turnover statistics, etc.

Report Name	Frequency	Presented By	Description and Purpose of Report
23. Legal Affairs	Updates each meeting	Legal Counsel	Monthly report on significant litigation, potential litigation, and on changes and potential changes to legislation that would significantly affect the System, the Plans or the Trust.
24. Litigation auditing report	Annually	Legal Counsel	Annual report prepared for the System's auditors on ongoing litigation involving the System, and on risks posed by new or proposed legislation.

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

5.12 CODE OF CONDUCT

BACKGROUND

1) As fiduciaries of a public trust, the ~~t~~Trustees of the Board of Trustees are required to discharge their duties with respect to the Plans and Trust solely in the interest of Plan members and their beneficiaries, and for the exclusive purposes of providing benefits to members and beneficiaries, and paying the expenses of administering the Plans.

2) Accordingly, ~~t~~Trustees are subject to the provisions of trust law, the governing statutes, and numerous other laws. Trustees are also required to conduct System business in an effective and professional manner.

3) This policy does not create any new or additional legal duties or obligations for ~~t~~Trustees, but is intended to communicate the Board of Trustees' expectations regarding their conduct as members of the Board of Trustees.

PURPOSE

4) The Board of Trustees has established this Code of Conduct:

   a) To remind ~~t~~Trustees of their responsibility to be familiar with and abide by various fiduciary and statutory duties, and Board policy and decisions.

   b) To establish standards of conduct consistent with their fiduciary and statutory duties, and Board of Trustees policy.

   c) To provide for a means of enforcing such standards of conduct.

GUIDELINES

General Duties

5) Trustees should:

   a) Conduct themselves with decorum, honesty, and professionalism in all aspects of their duties and in their relations with fellow ~~t~~Trustees, staff, vendors, members and other interested parties;

   b) Actively prepare for each meeting by thoroughly reading all meeting materials in advance; ~~and~~

   c) Attend and participate in meetings of the Board of Trustees and Committees on which they serve, unless unable to do so for reasons beyond their control~~.~~; and

   d) It is the Trustees' duty to monitor the System's operations and investments generally, but not to become involved in the day-to-day business of the System; and not to participate directly in daily operations or investment business; and,

~~c)~~e) Individual Trustees do not have any individual authority to direct, act, or bind the System. The Board of Trustees' authority is collective pursuant to a majority vote of the quorum of Trustees present at a duly noticed public meeting.

Compliance with Laws and Policies

6) A Trustee should:

a) Become familiar with and abide by the laws pertaining to the Plans and to the Board of Trustees, particularly:

(i) ARS Title 38, Chapter 5, Articles 3, 4, and 6;

(ii) ARS, Title 38, Chapter 3, Article 3.1 (Open Meeting Laws); and

(iii) Applicable state conflict of interest policies. (e.g. ARS Title 38, Chapter 3, Article 8).

b) Become familiar with and abide by all Board of Trustees policies, especially the Code of Ethics and the Board of Trustees Communications Policy.

c) Abide by all decisions of the Board of Trustees, even if he/she may not have supported or voted in favor of the decisions during Board deliberations (except where a ~~t~~Trustee believes that doing so would violate a fiduciary or statutory duty).

System Information

7) A Trustee should:

a) Direct questions or information requests to the Administrator or Assistant/Deputy Administrators, either at Board of Trustees or Committee meetings, or during regular business hours.

b) Only make reasonable requests for System information that is necessary for the purposes of fulfilling the duties of ~~t~~Trustee. Requests should not be made for System information intended for personal or business use.

c) Respect the confidentiality of all information pertaining to the Board of Trustees and the System to which the ~~t~~Trustee is privy by virtue of his/her position; confidential information should not be disclosed unless required by law.

Enforcement Provisions

8) The Board of Trustees Chair and Committee chairs, in presiding over meetings of the Board and Committees, will enforce and attempt to rectify any breaches of this Code that may occur during meetings of the Board or Committees.

9) Any ~~t~~Trustee may request that the Board of Trustees investigate potential violations of this Code, by filing a written petition with the Board Chair or Administrator, setting out the nature of the alleged violation, and supporting details and information. The Chair or Administrator shall place the matter on the agenda for a Board meeting, and shall give due notice to the ~~t~~Trustee who is the subject of the petition.

10) The Board of Trustees shall review and discuss a petition in open session, in compliance with Open Meeting Laws. In doing so, the Board shall hear from the ~~t~~Trustee in question and any other party recognized by the Board Chair. If the allegation is made against the Board Chair, then the Vice Chair shall act in his/ her place for purposes of considering and addressing the allegations.

11) Upon determination by the Board of Trustees that a violation has occurred, the Board shall have the authority to craft an appropriate remedy.

12) The use of any of the above enforcement remedies is a serious matter and shall not be used as a tool for harassment; any allegation must be supported by direct evidence, not hearsay.

13) The Board of Trustees' final determination will be recorded in the Board minutes and may be communicated to any parties and by any means determined by the Board.

POLICY REVIEW

14) The Board of Trustees shall review this policy at least every three years to assure that it remains relevant and appropriate.

POLICY HISTORY

15) The Board of Trustees adopted this policy on February 23, 2005, and reviewed and amended it on June 24, 2009, and on June 27, 2012. This Policy was reviewed and updated by the Board of Trustees on November 29, 2017.

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

5.14 CODE OF ETHICS

GENERAL PRINCIPLES

This Code of Ethics ("**Code**") sets forth the rules governing the ethical behavior expected of the Board of Trustees, officers and employees (the last term including full-time, part-time and contract personnel) of the Public Safety Personnel Retirement System and its associated plans, the Elected Officials' Retirement Plan and the Corrections Officer Retirement Plan (collectively, the "**Plans**"). In addition to strict compliance with legal requirements, all ~~t~~Trustees serving as Board of Trustees, as well as all officers and employees of the Plans, are expected to conduct themselves and the Plans' affairs in an honest, fair and forthright manner and to comply with the policies contained in this Code.

CONFLICTS

As fiduciaries of the Plans, the Board of Trustees, officers and employees of the Plans owe a duty of utmost loyalty and care to the Plans and their members. Thus, the Board of Trustees, officers and employees of the Plans must always assure that their personal interests do not conflict with, or even appear to conflict with, those of the Plans and their members. If a perceived or actual conflict exists, it must be declared, and the affected person must either cure the conflict or ~~rescue~~ recuse himself or herself from any involvement in the matter that is the subject of the conflict. Normally, a conflict can be cured by effectively separating the conflicted person from influencing the action taken. However, there are certain limited instances where a conflict cannot be cured, even by an enforced separation, such as the prohibition against self-dealing (Section III(6) below) precluding any Trustee, officer or employee of the Plans from using the monies of the Plans for their personal benefit; in that instance, no action can be taken by any of the Plans' agents or representatives to facilitate the conflicted person's receipt of the benefit, even if the conflicted person takes no part in the matter. Separation of the conflicted person will not cure the conflict arising from any prohibited acts or transactions set forth in this Code.

As used in this Code, the term "**Conflict of Interest**" means a substantial pecuniary or proprietary interest in any contract, sale, purchase, service, investment or asset by any Trustee, officer or employee of the Plans, which could reasonably be expected to diminish that person's independence of judgment in the performance of his/her responsibilities for the Plans. Any interest defined as a "remote interest" by A.R.S. § 38-502(10) is not a Conflict of Interest.

When determining whether one has a Conflict of Interest, the interest involved is not just that of the affected Trustee, officer or employee but instead, includes the interests of his/her relatives to the "third degree." A chart of one's relatives to the "third degree" is attached as Exhibit A. In addition to those persons referenced in Exhibit A, "step-relatives" are also included, such as step-parents, step-brothers/sisters and step-children. In this Code, the word "**Relative**" means all of these relations.

One cautionary note. This Code cannot anticipate and address all the possible circumstances in which representatives of the Plans could benefit themselves or related parties in connection with their official duties; therefore, the Code must be understood as a mere synopsis of general principles designed to provide broad ethical guidance for managing the many complicated situations and ethical conundrums that arise in administering a public retirement system. The fact that specific behavior is not prohibited in this Code does not necessarily mean that such behavior is ethical or appropriate. Safeguarding the Plans for the benefit of their members is paramount, and undisclosed Conflicts of Interest, which tend to undermine or influence any decision of any Trustee, officer or employee of the Plans, are unacceptable. In situations where the law or this Code does not appear to cover the conduct in question, any doubt should be resolved in a manner that abates or mitigates any Conflict of Interest and furthers the members' sense of faith in the integrity of the Plans and their administration.

GENERAL PROHIBITIONS

Given the duty of each Trustee, officer and employee of the Plans to act in the best interests of the Plans and their members, none may:

1) Accept or solicit any Gift, favor or service that might reasonably tend to influence the Trustee, officer or employee in the discharge of his/her official duties or which appears to be offered for the purpose of influencing his/her official actions or decisions. As used in this Code, "**Gift**" means any gratuity, special discount, favor, hospitality, service, economic opportunity or other benefit received without equivalent consideration and not provided to members of the public at large. A.R.S. §41-1231.

2) Accept, agree to accept, or solicit any Gift or benefit from another person for having exercised in favor of that person the Trustee's, officer's or employee's authority or performance of his/her duties.

3) Accept other employment or engage in a business or professional activity that the Trustee, officer or employee might reasonably expect would require or induce him/her to disclose Confidential Information acquired by reason of his/her position with the Plans. For purposes of this Code, "**Confidential Information**" is data and information not in the public domain, known only to Plan personnel and the Plans' attorneys, advisors and contractors, and which the Plans and/or their attorneys believe is proprietary and/or not required to be disclosed to third parties.

4) Except upon Satisfaction of the Conditions (as defined below), accept other employment or compensation that could reasonably be expected to impair the Trustee's, officer's or employee's independence of judgment in the performance of his/her duties for the Plans or substantially detract from his/her ability to fulfill his/her responsibilities to the Plans.

5) Except upon Satisfaction of the Conditions, make or continue personal investments that could reasonably be expected to create a substantial conflict between the Trustee's, officer's or employee's private interests and the interests of the Plans.

DISCLOSURE AND RECUSAL

As used in this Code, "**Satisfaction of the Conditions**" means (i) the affected Trustee, officer or employee of the Plans ("**Affected Person**") (a) has fully disclosed on the record or in a writing signed by the affected Trustee the applicable Conflict of Interest and recused himself/herself from participating in any discussions or decisions by the Board of Trustees, officers or employees of the Plans with respect to same and (b) verified on the record or in writing that to the best of his/her knowledge, said Affected Person is receiving no right or benefit different from those otherwise available to the general public or persons similarly situated to the Affected Person but not affiliated with the Plans (a "**Special Benefit**") as a result of the transaction giving rise to the subject Conflict of Interest and (ii) the Plans' fiduciary counsel has issued a written opinion addressed to both the Board of Trustees and the Affected Person concluding that, assuming compliance with subsection (i) above, the Affected Person's involvement in the transaction is lawful.

ADDITIONAL PROHIBITIONS

To further assure that the Plans' actions are above reproach, the Board of Trustees, officers and employees of the Plans must not enter into any transaction which would discredit the Plans or result in their disrepute; as a result, the Trustees, officers and employees of the Plans shall not enter into any of the following transactions or engage in any of the following activities:

1) No Trustee, officer or employee of the Plans may participate in any matter involving the Plans which involves a business, contract, property or investment held by such person (or his/her Relatives) if it is reasonably foreseeable that action by the Plans on such matter would confer a Special Benefit upon such Person or his/her Relatives by or through the business, contract, property or investment.

2) Except upon Satisfaction of the Conditions, no Trustee, officer or employee of the Plans (or their Relatives) may own stock or other ownership interests in any entity doing business with the Plans, except that this prohibition does not preclude ownership of less than 3% of the stock (or other ownership interest) of any publicly-held or traded security or ownership in any entity whose payments to the affected Trustee, officer or employee of the Plans (or their Relatives) represents no more than 5% of that person's annual income.

3) Except upon Satisfaction of the Conditions, no Trustee, officer or employee of the Plans may recommend that the Plans conduct business with him/her or his/her Relatives or any entity in which any of them own an interest in excess of 3% or which paid them sums representing more than 5% of their annual income.

4) No Trustee, officer or employee of the Plans may solicit, accept or agree to accept offers by reason of their position with the Plans to buy, sell, or trade any investment or asset on terms more favorable than available to the general public.

5) No Trustee, officer or employee of the Plans (or their Relatives) may borrow from investment managers, outside service providers, professional advisors, vendors, consultants, banks or other financial institutions with which the Plans do business unless such entities are normally engaged in such lending in the usual course of their business, and then only on customary terms offered to others under similar circumstances to finance proper and usual activities.

6) No Trustee, officer or employee of the Plans (and none of their Relatives) may borrow from or use the money of the Plans or serve as a surety, endorser, accommodation party or guarantor of the assets of the Plans, unless strictly authorized by law.

7) No Trustee, officer or employee of the Plans may represent the interests of any person (including himself/herself or any of his/her Relatives) in any action or proceeding before or involving the Plans except as a duly authorized representative or agent of the Plans and when such representation will benefit the Plans as a whole.

8) No Trustee, officer or employee of the Plans (including their Relatives) shall use any (i) Confidential Information; (ii) resources, equipment or assets or (iii) facilities of the Plans for personal gain.

9) Except upon Satisfaction of the Conditions, no Trustee, officer or employee of the Plans shall take any action personally or on behalf of the Plans, which will result in a reasonably foreseeable Conflict of Interest.

10) No decision made by any Trustee, officer or employee of the Plans shall be based upon race, religion, ethnic origin, sex, age, handicap or sexual orientation, except as authorized by law.

11) No Trustee, officer or employee of the Plans (or their Relatives) shall supply the Plans with any equipment, material, supplies or services, unless otherwise authorized by law.

12) No Trustee, officer or employee of the Plans shall divulge Confidential Information of the Plans unless disclosure of such Confidential Information is required by law.

DECISION MAKING ON THE MERITS

In accordance with the advice of the Arizona Attorney General:

a) All business transactions entered into on behalf of the Plans by any Trustee, officer or employee of the Plans shall be based upon (i) professional integrity and competence, (ii) financial merit and (iii) the benefit to the Plans. Whenever appropriate or prudent, Plan business transactions shall be made on a competitive basis and comply with all other requirements imposed by law.

b) All decisions made by any Trustee, officer or employee of the Plans on behalf of the Plans shall be the result of careful deliberation, free of bias or any Conflict of Interest and with the overall goal of promoting the best interests of the Plans and their members as a whole. All Trustees, officers and employees of the Plans are encouraged to seek advice from the Plans' attorneys about the legality of any particular transaction or decision, although any requests for such legal advice from the Plans' employees should be directed to the Administrator.

~~b)~~c) In the event a Trustee asks the System to consider an investment or other opportunity, such investment or opportunity shall be evaluated by the appropriate Consultant retained by the System for the related asset class. If, after such independent evaluation, such Consultant believes that the investment or opportunity has merit and is suitable for consideration by the System, the staff will conduct due diligence in the regular course of business on such investment or opportunity. Notwithstanding the provisions of Section 4.07(4)(a) hereof, the Trustee recommending, referring or introducing an investment or other opportunity to the System shall not vet that investment or opportunity with the Independent Investment Consultant directly, but shall instead refer such matters to the appropriate staff member. In order to avoid a conflict of interest, and promote consultant independence, the recommending Trustee shall have no further involvement with such prospective investment or opportunity. A Trustee who asks the System to consider an investment or opportunity must then be recused from any investment analysis and any subsequent vote by the Board of Trustees.

BUSINESS MATERIALS, ENTERTAINMENT & TRAVEL

While the Trustees, officers and employees of the Plans are prohibited from soliciting, agreeing to accept or accepting any Gifts intended to influence their official actions and decisions, this prohibition does not preclude any Trustee, officer or employee of the Plans from accepting the benefit of:

1) Any meals provided or paid for by any third party in connection with the conduct of official business of the Plans.

2) Any hotel or motel accommodations provided or paid for by any ~~third party~~ existing vendor or manager in connection with any official business of the Plans.

3) Any mode of transportation provided or paid for by any ~~third party~~ existing vendor or manager in connection with any official business of the Plans.

4) Any Gift (in addition to regular compensation and benefits) in an amount no greater than $200 given by the Plans to recognize special achievement or service to the Plans.

5) Any books, pamphlets, CDs, or other reading or audio/video materials which contain information directly related to the recipient's job duties and which are accepted on behalf of the Plans for use in performing his/her job duties.

6) Gifts from Relatives, which are based solely on a personal or familial relationship between the recipient and the Relative and have nothing whatsoever to do with the recipient's association with the Plans.

7) Seminar or conference fees, as well as accommodations and entertainment relating to same, when the seminar or conference relates to the recipient's official job duties and is sponsored by the Plans' consultants, advisors or agents or prospective consultants, advisors or agents or persons or entities whose interests may be affected by the Plans or in which the Plans may have an interest.

8) Items with a value less than $50, excluding cash or negotiable instruments, and other Gifts of nominal value. Examples of Gifts of nominal value are (i) modest items of food and refreshment on infrequent occasions; (ii) unsolicited advertising or promotional materials such as plaques, certificates, trophies, paperweights, calendars, note pads, pencils, pens; (iii) tickets to sporting events, the cinema, theater or other entertainment venue, so long as the total value of all such tickets given at any one time does not exceed $50; and (iv) other items of nominal intrinsic value.

DISCLOSURE OF GIFTS

Under no circumstances shall any Trustee, officer or employee of the Plans accept any Gift otherwise authorized above unless the source of the Gift is identified. All Gifts received by any officer or employee of the Plans, other than the Gifts referenced in paragraph 6 above, must be disclosed to the Plans' Administrator, who shall have authority to prohibit the receipt of such Gifts if, in the Administrator's judgment, such Gifts are overly elaborate, expensive, or otherwise inappropriate, such as ski trips, cruises or stays at expensive resorts. All Gifts received by the Administrator or any individual Trustee, other than the Gifts referenced in paragraph 6 above, must be disclosed to the Board of Trustees, which shall have the discretion to prohibit the receipt of such Gifts if, in the Board of Trustees' judgment, such Gifts are overly elaborate, expensive or otherwise inappropriate, such as ski trips, cruises or stays at expensive resorts. If a prohibited Gift is received by any Trustee, officer or employee of the Plans, he or she should immediately return the Gift to its source. If that is not possible, the Gift should be donated to charity or if appropriate, any public school.

NEPOTISM

No Trustee, officer or employee of the Plans shall hire, appoint, or vote to hire or appoint any Relative as an employee or agent of the Plans. Notwithstanding the foregoing, this does not prevent the continued employment by the Plans of a person who has already been lawfully working for the Plans for thirty (30) consecutive days prior to the date this Code is adopted. If a Relative of any Trustee, officer or employee of the Plans has been lawfully employed by the Plans for more than thirty (30) consecutive days before this Code is adopted, no Trustee, officer or employee of the Plans shall supervise, promote or evaluate his/her Relative or participate in any decision regarding the Relative's compensation and benefits.

LEGAL PROHIBITIONS

While the Code establishes high moral and ethical standards to which all Board of Trustees, officers and employees of the Plans must adhere, some of these standards are mandated by statute, the violation of which can constitute a felony. To assure that all Trustees, officers and employees of the Plans are aware of those statutes imposing standards of conduct on public officers and employees, a list of the most relevant of these statutes follows. The terms of the statutes listed have been simplified to make them more understandable and have been written with specific application to the Plans so they appear more relevant. Hypothetical situations illustrating each statute's application are included as well.

1. Improper Use of Position (A.R.S § 38-504(C))

Neither the Trustees, nor any officer or employee of the Plans, shall use or attempt to use his/her official position with the Plans to secure anything of value that would not otherwise lawfully and ordinarily accrue to such Trustees, officer or employee in the performance of his/her official duties.

Hypothetical Illustration A:

Trustee X recommends that the Plans enter into a contract with the ABC brokerage firm to trade the Plans' securities. This recommendation is made, in part, because ABC has either promised to secretly pay Trustee X a percentage of its commissions or alternatively, to reduce the annual fee Trustee X is paying ABC on X's personal brokerage account. The recommendation is a violation of the Code and is unlawful under Arizona law, including A.R.S. § 38-504(C).

Hypothetical Illustration B:

In exchange for judge X agreeing to dismiss criminal charges against the sister of Plan employee Y, Y accesses the Plans' computerized record system and falsifies X's Plan records to reflect that X has one more year of credited service than X has lawfully accrued. This action is a violation of the Code and is unlawful under Arizona law, including A.R.S. §§ 38-421, 38-423, and 38-849(B).

Hypothetical Illustration C:

X, the Fund Administrator, is caught speeding on I-10 on his way down to a Local Board meeting in Tucson. With the hope that his official position might persuade the officer who stopped him to forgo issuing X a citation, Administrator X makes it clear that he is in charge of the officer's pension. Fearing that upsetting X might jeopardize his pension, the officer refrains from citing X for speeding. X's actions violate the Code and Arizona law, including A.R.S. § 38-504(C).

2. Prohibition Against Additional Income (A.R.S. § 38-505)

Neither the Trustees, nor any officer or employee of the Plans, shall receive or agree to receive, directly or indirectly, any compensation other than as provided by law for any service rendered or to be rendered by him/her personally in connection with any case, proceeding, application, or other matter which is pending before the Plans.

Hypothetical Illustration A:

Plan officer X agrees to approve the Plan's purchase of interests in a real estate subdivision being developed by Company Y so long as Y agrees to sell X a home in the subdivision at a price materially less than available to the public. Such action violates the Code and Arizona law, including A.R.S. § 38-505. No violation would be apparent, however, if the particular property offered, and the terms of its purchase, were the same as those then available to the general public and there existed valid reasons for the Plans to purchase the subject interests.

3. Prohibition Against Charging Excessive Fees (A.R.S. § 38-413)

Neither the Trustees, nor any officer or employee of the Plans, shall demand or receive a higher fee for Plan services than prescribed by law.

Hypothetical Illustration A:

Judge X, who is insufferably overbearing, so annoys Plan employee Y that Y charges Judge X three times the fee usually charged for copies of X's retirement file. Such charges violate the Code and are unlawful under Arizona law, including A.R.S. § 38-413.

4. Prohibition Against Bribes (A.R.S. § 38-444)

Neither the Trustees, nor any officer or employee of the Plans, shall knowingly ask or receive any gratuity, emolument, or reward, other than those authorized by law, for doing any official act.

Hypothetical Illustration A:

Plan employee X agrees to expedite the Plan's consideration of Plan member Y's application for Plan disability benefits in exchange for Y's payment to X of $30. Such payment is a violation of the Code and Arizona law, including A.R.S. § 38-444.

Hypothetical Illustration B:

Same facts as in Illustration A except the sole consideration paid by Y for the exchange is Y's agreement to recommend X for employment by an agency in which Y is a high ranking official. Such an exchange is still a violation of the Code and Arizona law.

Hypothetical Illustration C:

In order to inspect a real estate project being considered for investment by the Plans, Plan Officer X travels to the project in the private jet of Company Y, which is developing the project and touting it as an investment. After inspecting the project, Company Y treats Officer X to an expensive dinner and then pays for him to spend the night in a fancy hotel adjacent to the project before returning him to Phoenix in the Company's jet. Such travel, meals and accommodations are not necessarily a violation of the Code so long as they are reasonable in the circumstances and would have been provided regardless of whether the Plans invested in the project.

5. Prohibition Against Nonfeasance (A.R.S. § 38-443)

Neither the Board of Trustees, nor any officer or employee of the Plans, shall knowingly omit to perform any duty the performance of which is required of them by law.

Hypothetical Illustration A:

X, the Plan's Administrator, is a close personal friend of Local Board Chairman Y, whose Local Board has just granted Plan member Z benefits far in excess of those authorized by the Plans' enabling legislation. Solely because he does not want to embarrass Chairman Y, Administrator X does not appeal or seek reconsideration of the Local Board's decision, even though the Plans will lose money as a result of such decision. X's actions are a violation of the Code and Arizona law, including A.R.S. § 38-443.

6. Bar Against Purchase, Sale And Discharge Of Office. (A.R.S. §§ 38-465, 38-466)

Neither the Trustees, nor any officer or employee of the Plans, shall knowingly give or offer any gratuity or reward to facilitate his/her or any other person's appointment to or employment with the Plans, nor shall they ever permit persons not employed (or otherwise officially hired) by the Plans to exercise or discharge their duties.

Hypothetical Illustration A:

Plan member Y sells his car to Plan Officer X for a price substantially less than the car is worth in exchange for X's agreement to hire Y as the Plans' computer technician. Such employment violates the Code and Arizona law, including A.R.S. §§ 38-465, 38-466.

Hypothetical Illustration B:

Plan employee X, who is employed by the Plans as a data input technician, is dating Y, who wishes to get some experience inputting data on computers like those used by the Plans. To curry favor with Y, X allows Y to input data into the Plans' computer systems, a task she performs flawlessly. Despite the fact that Y committed no flaws in inputting the data, her use of Plan equipment violates the Code and Arizona law, including A.R.S. §§ 38-465, 38-466.

7. Prohibition Against Employment Of Relatives (A.R.S. § 38-481)

Neither the Trustees, nor any officer or employee of the Plans, shall suggest, arrange, appoint or vote for the appointment by the Plans of any Relative.

Hypothetical Illustration A:

Wishing to instill the work ethic in his lazy teenage sons, Administrator X hires the boys at minimum wage to perform odd jobs in the Plans' offices, such as moving desks and boxes. Such conduct violates the Code and Arizona law, including A.R.S. § 38-481(A).

8. Theft, Destruction, Alteration Or Secretion Of Public Records. (A.R.S. §§ 38-421, 38-849(B)).

Neither the Trustees, nor any officer or employee of the Plans, shall steal or knowingly and without lawful authority destroy, mutilate, deface, alter, falsify, remove or secrete any of the Plans' records.

Hypothetical Illustration A:

Plan employee X, upset that Plan member Y was rude to X, deletes all reference to Y in the Plans' computer records. Such conduct violates the Code and Arizona law, including A.R.S. § 38-421.

9. Bar Against False Certificates. (A.R.S. § 38-423).

No Trustee, officer or employee of the Plans authorized by law to make or give any certificate or other writing shall set, make or deliver such certificate or writing if it contains statements he/she knows to be untrue. Further, no Trustee, officer or employee of the Plans shall knowingly make any false statements.

Hypothetical Illustration A:

Plan employee X, late for a lunch date, issues a certificate to the ASRS, which X strongly suspects inaccurately states the credited service earned by Plan member Y, who is seeking to transfer his credited service with the Plans to ASRS; X intends to send ASRS an amended certificate with the correct information when he has time to figure it out, but eventually forgets to do that, resulting in an inadequate amount of service being transferred to the ASRS on Y's account. Such conduct probably violates the Code and Arizona law, including A.R.S. § 38-423 and possibly, A.R.S. § 38-849(B).

Policy Review

The Board of Trustees shall review this policy at least every three years to assure that it remains relevant and appropriate.

Policy History

The Board of Trustees reviewed and updated this Policy on November 29, 2017.

January 31, 2018

Operations Committee
Monthly Operations Report

PROJECTS

1. **Software Development**

The new Employer Portal has been rolled out to all employers. Employers are now able to look up new members to determine basic information (tier, contribution rate, status, and plan election) about that member. They can send demographic information and status information (hire dates, termination dates, leave dates, etc.) electronically, and they can submit and validate contribution files that flow directly to our database without having to be rekeyed. As of January 23rd, 182 employers were submitting contributions using the new portal, and staff is working directly with the rest to help them submit files cleanly.

The enrollment process is now electronic. When an employer hires a new employee, they enter that information on the Employer Portal. Once they hit the "Submit" button, we send out an email to the new member and establish an account for them in the Members Only Portal. If the member is a new Tier 3 member, the email explains where they can receive education about the plan election they need to make, and how to make that election.

As of the writing of this report, we are getting ready to release the updated Local Board Portal, which contains everything that existed in the old portal, plus a more robust benefit estimator that not only provides the high-3 or high-5 salary, but also provides a benefit estimate and list of all contributions for that Board's members.

2. **Tier 3 Member Elections**

As of January 19th, 334 Tier 3 members have passed the 90-day mark to elect the plan in which they want to participate. 25 chose the defined contribution plan, 78 chose the defined benefit plan, and 231 were defaulted into the defined benefit plan. An additional 225 Tier 3 members have been hired and are still within the 90-day election period.

3. **Pension Benefit Increase (PBI)**

As a result of losing the *Hall* and *Parker* cases, PSPRS was required to grant PBIs to a group of retirees who had previously not qualified. After we paid those retroactive PBIs, our actuary recalculated the amount of excess investment earnings going back to 2012 using the old formula (since the new formula was found to be unconstitutional) and discovered additional excess investment earnings in each of the plans. Those excess earnings affect PBIs that were paid out in 2013 and 2014 for PSPRS and CORP and 2015 for EORP. Those additional PBIs were paid out in December 2017 (EORP and CORP) and January 2018 (PSPRS). In addition, CORP retirees received a PBI of 1.76% in December, retroactive to July 1, 2017 and EORP retirees received a PBI of 3.15% in December, retroactive to July 1, 2017. In accordance with Senate Bill 1428, a PBI will not be paid out to PSPRS members in 2017. The PBI was replaced with a COLA, and the first COLA will be paid in July, 2018.

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

Fiscal Year 2018 Budget with Fiscal Year to Date Expenses

As of 1-26-2018

Comments on the Budget

FY 2018

Including Litigation, we are under budget by $344,476 which is 2.76% of the budget. Vacancies savings continue to fund the contracted programmers working on the enhancement of EPIC 2.0 as well as external legal expenses that have exceeded estimates.

The legal fees reports will not agree to the budget report and the legal fees are presenting the expenses through December 2017 while the budget report will show legal expenses paid during January 2018.

Nearly seven months into the fiscal year, only significant outliers of expected expenses has been external legal and contracted programmers.

All Departments Budget to Actual

Public Safety Personnel Retirement System

Fiscal Year Projections

As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
ALL DEPARTMENTS BUDGET SUMMARY					
Personnel Services	8,007,331	3,840,932	3,570,803	595,596	7.44%
Education & Training	332,875	60,549	272,326	-	0.00%
Professional Services	2,670,095	1,326,456	1,453,228	(109,589)	(4.10%)
Board of Trustees	553,800	261,864	295,143	(3,207)	(0.58%)
Communications	72,450	38,848	24,087	9,515	13.13%
Contractual Services	110,660	230,198	26,456	(145,994)	(131.93%)
Operating Expenses	53,750	28,372	27,223	(1,845)	(3.43%)
Software	164,250	55,074	109,176	-	0.00%
Infrastructure	277,950	192,748	85,202	-	0.00%
Furniture & Equipment	1,500	-	1,500	-	0.00%
All Departments Budget Total	**12,244,661**	**6,035,041**	**5,865,144**	**344,476**	**2.81%**
Litigation	250,000	58,338	191,662	-	0.00%
Total With Litigation	**12,494,661**	**6,093,379**	**6,056,806**	**344,476**	**2.76%**
Excluded Investment Due Diligence		491,739			

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Administration Budget to Actual
Public Safety Personnel Retirement System
Fiscal Year Projections
As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
ADMINISTRATION DEPARTMENT BUDGET					
Personnel Services					
Salaries & Wages	1,949,021	973,053	805,547	170,421	8.74%
Incentives/In-grades/Payouts	139,787	(16,248)	156,035	-	0.00%
DC Plan - ER Matching	116,940	31,713	49,475	35,752	30.57%
Fringe Benefits	251,117	111,556	106,242	33,319	13.27%
Payroll Expenses - Other	379,116	180,890	160,395	37,831	9.98%
Payroll Expenses - ADOA Fees	20,660	10,350	8,741	1,569	7.59%
Total Personnel Services	**2,856,641**	**1,291,314**	**1,286,435**	**278,892**	**9.76%**
Education & Training					
Travel Expense	25,000	6,432	18,568	-	0.00%
Conferences	39,480	6,136	33,344	-	0.00%
Dues & Subscriptions	28,135	14,943	13,192	-	0.00%
Tuition Reimburse	20,500	-	20,500	-	0.00%
Training Expense	8,500	99	8,401	-	0.00%
Total Education & Training	**121,615**	**27,610**	**94,005**	**-**	**0.00%**
Professional Services					
Prof Serv - Actuarial Services	287,500	230,000	57,500	-	0.00%
Prof Serv - Due Diligence	7,000	2,136	4,864	-	0.00%
Prof Serv - Legislative Liason	213,600	124,600	89,000	-	0.00%
Prof Serv - Actuarial Other	50,000	-	50,000	-	0.00%
Prof Serv - Consolidation Study	70,000	49,375	20,625	-	0.00%
Legal Services - Legal Counsel	50,000	149,233	-	(99,233)	(198.47%)
Legal AG Office	162,300	81,150	81,150	-	0.00%
Legal Services - Other	50,000	46,581	3,419	-	0.00%
Prof Serv - Other	15,000	6,601	8,399	-	0.00%
Total Professional Services	**905,400**	**689,676**	**314,957**	**(99,233)**	**(10.96%)**
Contractual Services					
Temporary Services	5,000	4,288	712	-	0.00%
Total Contractual Services	**5,000**	**4,288**	**712**	**-**	**0.00%**
Administration Department Budget	**3,888,656**	**2,012,888**	**1,696,109**	**179,659**	**4.62%**
Litigation					
Legal Services - Litigation	250,000	58,338	191,662	-	0.00%
Total Litigation	**250,000**	**58,338**	**191,662**	**-**	**0.00%**
Total Administration Department Budget	**4,138,656**	**2,071,226**	**1,887,771**	**179,659**	**4.34%**

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Agency Budget to Actual

Public Safety Personnel Retirement System

Fiscal Year Projections

As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
AGENCY BUDGET					
Professional Services					
On-Site Shredding	500	422	78	-	0.00%
Records Management	10,000	4,834	5,166	-	0.00%
Professional Services - Other	500	163	337	-	0.00%
Total Professional Services	**11,000**	**5,419**	**5,581**	**-**	**0.00%**
Communications					
Printing - External	2,000	147	1,853	-	0.00%
Delivery Service	1,000	698	302	-	0.00%
Postage	12,000	12,485	-	(485)	(4.04%)
Total Communications	**15,000**	**13,330**	**2,155**	**(485)**	**(3.23%)**
Operating Expenses					
Copier/Printer Supplies	18,000	6,629	11,371	-	0.00%
Envelopes	500	291	209	-	0.00%
Forms	250	253	-	(3)	(1.20%)
Office Supplies - General	30,000	14,357	15,643	-	0.00%
Other Office Expense	5,000	6,842	-	(1,842)	(36.84%)
Total Operating Expenses	**53,750**	**28,372**	**27,223**	**(1,845)**	**(3.43%)**
Total Agency Budget	**79,750**	**47,121**	**34,959**	**(2,330)**	**(2.92%)**

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Board of Trustees Budget to Actual

Public Safety Personnel Retirement System

Fiscal Year Projections

As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
BOARD OF TRUSTEES BUDGET					
Board of Trustees					
Board of Trustee - Meetings	15,000	18,207	-	(3,207)	(21.38%)
Board of Trustee - Training	80,000	24,031	55,969	-	0.00%
Board of Trustee - Other	10,000	4,626	5,374	-	0.00%
Prof Serv - Board Consultant	448,800	215,000	233,800	-	0.00%
Total Board of Trustees	**553,800**	**261,864**	**295,143**	**(3,207)**	**(0.58%)**
Total Board of Trustees Budget	**553,800**	**261,864**	**295,143**	**(3,207)**	**(0.58%)**

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Finance Department Budget to Actual

Public Safety Personnel Retirement System

Fiscal Year Projections

As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
FINANCE DEPARTMENT BUDGET					
Personnel Services					
Salaries & Wages	351,118	207,155	148,550	(4,587)	(1.31%)
DC Plan - ER Matching	21,066	6,969	8,913	5,184	24.61%
Fringe Benefits	64,661	37,270	27,357	34	0.05%
Payroll Expenses - Other	71,488	40,850	30,245	393	0.55%
Payroll Expenses - ADOA Fees	3,722	2,242	1,575	(95)	(2.55%)
Total Personnel Services	**512,055**	**294,486**	**216,640**	**929**	**0.18%**
Education & Training					
Travel Expense	200	-	200	-	0.00%
Conferences	2,000	-	2,000	-	0.00%
Dues & Subscriptions	1,360	150	1,210	-	0.00%
Tuition Reimburse	5,250	-	5,250	-	0.00%
Total Education & Training	**8,810**	**150**	**8,660**	**-**	**0.00%**
Professional Services					
Prof Serv - Auditing	121,495	130,636	-	(9,141)	(7.52%)
Prof. Serv. - Annual Report (GFOA)	1,100	-	1,100	-	0.00%
Prof Serv - Wells Fargo	100	276	-	(176)	(176.00%)
Total Professional Services	**122,695**	**130,912**	**1,100**	**(9,317)**	**(7.59%)**
Communications					
Postage - Wells Fargo	17,500	3,890	3,610	10,000	57.14%
Total Communications	**17,500**	**3,890**	**3,610**	**10,000**	**57.14%**
Total Finance Department Budget	**661,060**	**429,438**	**230,010**	**1,612**	**0.24%**

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Investment Department Budget to Actual

Public Safety Personnel Retirement System

Fiscal Year Projections

As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
INVESTMENT DEPARTMENT BUDGET					
Personnel Services					
Salaries & Wages	1,121,000	452,309	552,221	116,470	10.39%
Contractual Obligations	-	-	-	-	0.00%
DC Plan - ER Matching	67,261	17,411	33,134	16,716	24.85%
Fringe Benefits	103,288	42,394	50,881	10,013	9.69%
Payroll Expenses - Other	209,787	79,554	103,344	26,889	12.82%
Payroll Expenses - ADOA Fees	11,883	4,794	5,854	1,235	10.39%
Total Personnel Services	**1,513,219**	**596,462**	**745,434**	**171,323**	**11.32%**
Education & Training					
Travel Expense	60,000	12,784	47,216	-	0.00%
Conferences	6,000	485	5,515	-	0.00%
Dues & Subscriptions	12,000	802	11,198	-	0.00%
Investment Research	45,000	-	45,000	-	0.00%
Tuition Reimburse	3,000	-	3,000	-	0.00%
Training Expense	2,000	467	1,533	-	0.00%
Total Education & Training	**128,000**	**14,538**	**113,462**	**-**	**0.00%**
Professional Services					
Prof Serv - Albourne America	640,000	288,000	352,000	-	0.00%
Prof Serv - Mellon Bank Fees	370,000	-	370,000	-	0.00%
Prof Serv - ORG Real Property	310,000	160,000	150,000	-	0.00%
Prof Serv - Stepstone Group	100,000	50,000	50,000	-	0.00%
Prof Serv - Valuations (Legacy RE)	200,000	-	200,000	-	0.00%
Prof Serv - Other	1,000	2,039	-	(1,039)	(103.90%)
Total Professional Services	**1,621,000**	**500,039**	**1,122,000**	**(1,039)**	**(0.06%)**
Software					
Securities Monitoring	6,500	-	6,500	-	0.00%
Bloomberg	33,000	24,630	8,370	-	0.00%
Investment Analytics	50,000	-	50,000	-	0.00%
ASPN - Diligence Vault	50,000	24,658	25,342	-	0.00%
Total Software	**139,500**	**49,288**	**90,212**	**-**	**0.00%**
Investment Department Excluding Due Diligence	**3,401,719**	**1,160,327**	**2,071,108**	**170,284**	**5.01%**
Direct Due Diligence					
Prof Serv Inv-Light Stone Solutions		159,844			
Legal Services- Kutak Rock LLP		331,895			
Prof Serv - Legal Other		-			
Total Direct Due Diligence		**491,739**			

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IT Network Services Department Budget to Actual

Public Safety Personnel Retirement System

Fiscal Year Projections

As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
IT NETWORK SERVICES DEPARTMENT BUDGET					
Personnel Services					
Salaries & Wages	389,730	203,597	164,886	21,247	5.45%
DC Plan - ER Matching	23,383	10,277	9,893	3,213	13.74%
Fringe Benefits	56,808	29,486	24,034	3,288	5.79%
Payroll Expenses - Other	79,349	42,117	33,571	3,661	4.61%
Payroll Expenses - ADOA Fees	4,131	2,158	1,748	225	5.45%
Total Personnel Services	**553,401**	**287,635**	**234,132**	**31,634**	**5.72%**
Education & Training					
Travel Expense	4,500	-	4,500	-	0.00%
Tuition Reimburse	10,500	1,229	9,271	-	0.00%
Training Expense	14,000	-	14,000	-	0.00%
Total Education & Training	**29,000**	**1,229**	**27,771**	**-**	**0.00%**
Professional Services					
Prof Serv - Other	10,000	410	9,590	-	0.00%
Total Professional Services	**10,000**	**410**	**9,590**	**-**	**0.00%**
Communications					
Communications - Telephone	12,530	10,419	2,111	-	0.00%
Communications - Internet	27,420	11,209	16,211	-	0.00%
Total Communications	**39,950**	**21,628**	**18,322**	**-**	**0.00%**
Infrastructure					
IT Hardware	160,000	133,997	26,003	-	0.00%
IT Security	11,850	3,775	8,075	-	0.00%
IT Services	27,800	14,645	13,155	-	0.00%
Warranty Renewal	37,500	19,738	17,762	-	0.00%
Backup & Disaster Recovery	40,800	20,593	20,207	-	0.00%
Total Infrastructure	**277,950**	**192,748**	**85,202**	**-**	**0.00%**
Software					
Software - Other	3,000	70	2,930	-	0.00%
License & Maintenance - Other	-	-	-	-	0.00%
Total Software	**3,000**	**70**	**2,930**	**-**	**0.00%**
Total IT Network Services Department Budget	**913,301**	**503,720**	**377,947**	**31,634**	**3.46%**

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-Projected Expenses consist of two components: (1) unpaid invoices that are included in the budget; (2) unpaid invoices for anticipated expenses that have arisen after the budget was approved.
-(Over) Under compares 2018 Expenses plus Projected Expenses to the 2018 Budget.
-(Over) Under Budget % is percentage of (Over) Under to 2018 Budget.

IT Systems Development Budget to Actual

Public Safety Personnel Retirement System

Fiscal Year Projections

As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
IT SYSTEMS DEVELOPMENT DEPARTMENT BUDGET					
Personnel Services					
Salaries & Wages	568,061	296,078	240,334	31,649	5.57%
DC Plan - ER Matching	34,084	7,457	14,420	12,207	35.81%
Fringe Benefits	92,183	38,852	39,001	14,330	15.55%
Payroll Expenses - Other	115,531	52,239	48,879	14,413	12.48%
Payroll Expenses - ADOA Fees	6,022	3,166	2,548	308	5.11%
Total Personnel Services	**815,881**	**397,792**	**345,182**	**72,907**	**8.94%**
Education & Training					
Conferences	10,000	-	10,000	-	0.00%
Dues & Subscriptions	150	150	-	-	0.00%
Training Expense	29,000	16,351	12,649	-	0.00%
Total Education & Training	**39,150**	**16,501**	**22,649**	**-**	**0.00%**
Contractual Services					
Contract Services	55,000	200,994	-	(145,994)	(265.44%)
Total Contractual Services	**55,000**	**200,994**	**-**	**(145,994)**	**(265.44%)**
Software					
Software - Go-To-Webinar	1,100	-	1,100	-	0.00%
Software - Go-To-Meeting	650	-	650	-	0.00%
Software - Sybase Support	6,000	5,716	284	-	0.00%
Software- Visual Studio	8,000	-	8,000	-	0.00%
Software - Other	4,000	-	4,000	-	0.00%
License & Mtn - Backup Line	1,000	-	1,000	-	0.00%
License & Maintenance - Other	1,000	-	1,000	-	0.00%
Total Software	**21,750**	**5,716**	**16,034**	**-**	**0.00%**
Furniture & Equipment					
F & E - Repairs & Maintenance	1,500	-	1,500	-	0.00%
Total Furniture & Equipment	**1,500**	**-**	**1,500**	**-**	**0.00%**
Total IT Systems Development Department Budget	**933,281**	**604,502**	**362,716**	**(73,087)**	**(7.83%)**

Column Descriptions:
-2018 Budget contains the budget approved by the Board of Trustees.
-2018 Expenses contains paid invoices to date.
-Projected Expenses consist of two components: (1) unpaid invoices that are included in the budget;
(2) unpaid invoices for anticipated expenses that have arisen after the budget was approved.
-(Over) Under compares 2018 Expenses plus Projected Expenses to the 2018 Budget.
-(Over) Under Budget % is percentage of (Over) Under to 2018 Budget.

Member Services Department Budget to Actual

Public Safety Personnel Retirement System

Fiscal Year Projections

As of 1-26-2018

	2018 Budget	FYTD Expenses	Projected Expenses	(Over) Under	(Over) Under Budget %
MEMBER SERVICES DIVISION BUDGET					
Personnel Services					
Salaries & Wages	1,228,345	685,083	519,684	23,578	1.92%
DC Plan - ER Matching	73,700	24,465	31,181	18,054	24.50%
Fringe Benefits	190,977	115,826	80,798	(5,647)	(2.96%)
Payroll Expenses - Other	250,091	140,538	105,808	3,745	1.50%
Payroll Expenses - ADOA Fees	13,021	7,331	5,509	181	1.39%
Total Personnel Services	**1,756,134**	**973,243**	**742,980**	**39,911**	**2.27%**
Education & Training					
Travel Expense	500	342	158	-	0.00%
Conferences	3,600	-	3,600	-	0.00%
Dues & Subscriptions	200	179	21	-	0.00%
Training Expense	2,000	-	2,000	-	0.00%
Total Education & Training	**6,300**	**521**	**5,779**	**-**	**0.00%**
Contractual Services					
Prof Serv - Other	9,660	9,660	-	-	0.00%
Temporary Services	41,000	15,256	25,744	-	0.00%
Total Contractual Services	**50,660**	**24,916**	**25,744**	**-**	**0.00%**
Total Member Services Department Budget	**1,813,094**	**998,680**	**774,503**	**39,911**	**2.20%**

Column Descriptions:
-2018 Budget contains the budget approved by the Board of Trustees.
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-(Over) Under compares 2018 Expenses plus Projected Expenses to the 2018 Budget.
-(Over) Under Budget % is percentage of (Over) Under to 2018 Budget.

January 31, 2018

Operations Committee
Employer/Local Board Outreach Recap

Employer/Local Board Outreach & Additional Projects:

- Training schedule for the next few months:
  March 8, 2018 Yuma, Arizona
  April 13, 2018 Benson, Arizona
  May 10, 2018 Globe, Arizona
  June 8, 2018 Payson, Arizona

- Working with certain local boards who have a disability application to ensure each employer group is processing the disability correctly.

- Reviewing the minutes of the local boards and contacting the boards who need additional help in establishing the local board.

- Reaching out to the Indian Tribes: Indian tribes may elect out of the risk pool by notifying the Administrator in writing before January 1, 2018. Only one board opted out of the risk pool.

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

FY2018 LEGAL INVOICES PAID IN DECEMBER 2017

TOTALS BY VENDOR

SUMMARY BY VENDOR and TYPE

		AMOUNT PAID (DEC 2017)	FYTD 2018 (Fees & Costs)	Deals in Process	Committed Capital	Legal fees as % of Investment
	KUTAK ROCK					
A-KUTAK ROCK	Administration	34,857.44	109,827.94			
L-KUTAK ROCK	Litigation	78.00	23,280.58			
I-KUTAK ROCK	Investment	52,682.65	227,937.52	1	158,000,000	0.0333%
	KUTAK TOTAL	87,618.09	361,046.04			
	STEPTOE & JOHNSON					
A-STEPTOE & JOHNSON	Administration					
L-STEPTOE & JOHNSON	Litigation		6,594.00			
	STEPTOE & JOHNSON TOTAL		6,594.00			
	FOLEY & LARDNER					
I-FOLEY & LARDNER	Investment	22,892.00	22,892.00			
	FOLEY & LARDNER TOTAL	22,892.00	22,892.00			
	AKIN GUMP					
I-AKIN GUMP	Investment					
	AKIN GUMP TOTAL					
	JACKSON WALKER					
I-JACKSON WALKER	Investment	31,066.91	31,066.91			
	JACKSON WALKER TOTAL	31,066.91	31,066.91			
	CHARLES W. WHETSTINE					
A-CHARLES W. WHETSTINE	Administration	15,936.00	26,577.00			
	CHARLES W. WHETSTINE TOTAL	15,936.00	26,577.00			

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

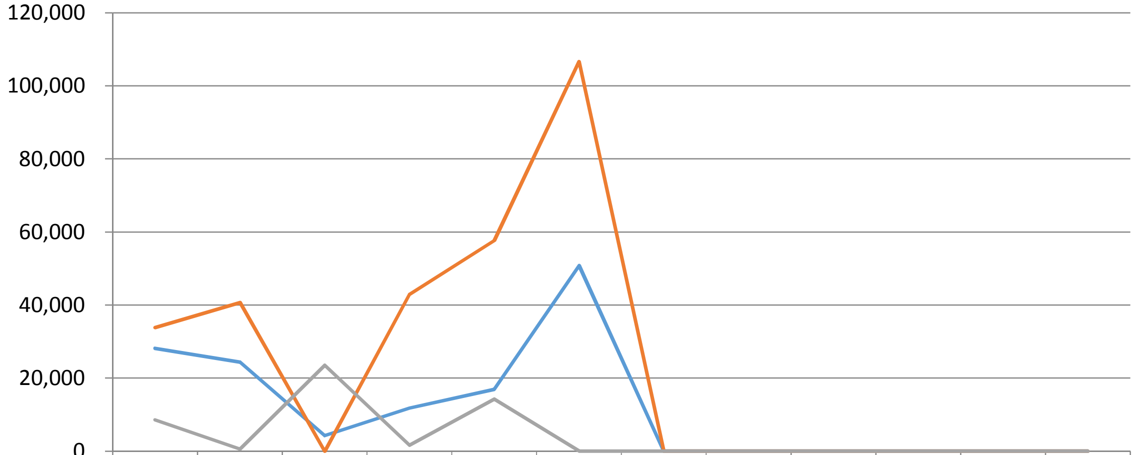
FY2018 LEGAL INVOICES PAID IN DECEMBER 2017

TOTALS BY VENDOR

SUMMARY BY VENDOR and TYPE

		AMOUNT PAID (DEC 2017)	FYTD 2018 (Fees & Costs)	Deals in Process	Committed Capital	Legal fees as % of Investment
	LEWIS ROCA ROTHGERBER					
A-LEWIS ROCA ROTHGERBER	Administration					
	LEWIS ROCA ROTHGERBER TOTAL					
	LITTLER MENDELSON					
A-LITTLER MENDELSON	Administration	11.71	11.71			
	LITTLER MENDELSON TOTAL	11.71	11.71			
	Coppersmith/Brockelman					
L-Coppersmith/Brockelman	Litigation					
	Coppersmith/Brockelman TOTAL					
	Special Counsel					
L-Special Counsel	Litigation					
	Special Counsel TOTAL					
	Yen Pilch & Landeen					
L-Yen Pilch & Landeen	Litigation		18,862.80			
	Yen Pilch & Landeen TOTAL		18,862.80			
	Fennemore Craig, PC.					
A-Fennemore Craig, PC.	Administration					
	Fennemore Craig TOTAL					
	Administration	$50,805.15	$136,416.65			
	Litigation	78.00	48,737.38			
	Investment	106,641.56	281,896.43	1	158,000,000	0.0675%
	GRAND TOTAL	157,524.71	467,050.46			

PSPRS Legal Expenses (FYTD 2018)



	Jul 2017	Aug 2017	Sep 2017	Oct 2017	Nov 2017	Dec 2017	Jan 2018	Feb 2018	Mar 2018	Apr 2018	May 2018	Jun 2018
Admin	28,182	24,385	4,239	11,824	16,981	50,805	0	0	0	0	0	0
Invest	33,907	40,713	0	42,962	57,673	106,642	0	0	0	0	0	0
Litigate	8,593	563	23,567	1,639	14,297	78	0	0	0	0	0	0

January 31, 2018

Board of Trustees
Monthly HR Report

PROJECTS

Learning/Development

- Lunch and Learn series – StrengthFinder 2.0
  - Series had the kick-off learning class on Thursday, December 14th and our second class was held on Tuesday, January 23rd. Series will be held every 4th Tuesday of the month through June 2018.
- Two mandatory development classes will be conducted in February (dates to be scheduled by no later than February 1st). The classes are:
  - Coaching 1-1
  - The Art of Accountability

- Proposed development classes for the remainder of the fiscal year are as follows:
  - Active Listening
  - Powerful Questions
  - Executive Presence
  - Diversity and Inclusion
  - Leadership vs Management

New Hire/Recruitment and Position Update

- New Hire
  - Chrystal Angotti - Senior Executive Assistant – 1st day was on Tuesday, January 16th.

- Position Update
  - The Employer Relationship Manager interviews will be conducted on February 5th and February 13th. We will be interviewing four applicants for the position.

January 2018

Operations Committee
Monthly Communications Report

Major communications efforts for December and November include continued growth of email communications infrastructure and preparation/delivery of PSPRS information in the form of presentations with Senate and House Appropriations committees.

During the last two months, PSPRS has added more than 1,380 email contacts* of members, employers and retirees. These emails have been collected directly from employers, whom PSPRS contacted repeatedly through email and other means. Media & Publications Specialist Vivian Padilla has led these efforts and worked diligently at this painstaking task.

Through these efforts, PSPRS has collected contact information for members who work for two counties (Yuma and Santa Cruz) and 12 cities, towns and fire districts. PSPRS also continues to collect email contact information for members, employers and retirees, through the "join our newsletter" website tool. In the past two months, more than 130 people signed up for PSPRS communications through the website.

The campaign schedule for PSPRS emails continued unabated; the agency sent out more than a dozen communication emails to members, employers and retirees. Most communications pertained to PSPRS website portal updates for employers, and, to a lesser extent, updates regarding Hall-Parker refunds and the distribution of retiree permanent benefit increases.

Email open rates continue to remain impressive. Average rates still hover between 40 and 50 percent.

Other PSPRS communications efforts include:

- Preparing PSPRS update presentations for Senate and House Appropriations Committees
- Targeting PSPRS members set to retire from DROP (deferred retirement) within the first six months for financial education
- Working with PSPRS-contracted firm Public Safety Financial/Galloway to create DROP retiree education curriculum and materials
- Hosting of first DROP member education event (roughly 25 members) on Jan. 24
    - DROP and relationship with Nationwide's 401(a) account
    - Advantages of keeping DROP money in Nationwide account
    - Tax implications of DROP
    - Available services for PSPRS retirees, including cancer insurance
    - Social Security issues
    - Basic financial/investment education on subjects including fees, interest and risk
- Completing a DROP video script draft
- Fielding media requests and hosting reporters from the *Arizona Republic*
- Upgraded and active social media presence on Facebook and Twitter

*More than 10,000 email contacts since beginning of FY2018

PSPRS FY18 Strategic Plan

Purpose

To provide uniform, consistent, and equitable statewide retirement programs for those who have been entrusted to our care

Vision

To be the best run agency in the State

Guiding Principles

A spirit of Gratitude guides all our actions, thereby *fostering* a culture of unparalleled *service* to others through which *growth* is nurtured, *progress* is developed, and *results* are achieved.

Trust is engendered by *transparency* of our decisions and *accountability* for our actions as measured against sound *expectations.*

We recognize that Respect for the *individual* strengthens the *whole* and is only earned by genuinely *understanding* and *fulfilling* the needs of others through *appropriate*, *timely* and *clear communication* and *education.*

Significant Risks and Opportunities

Risk 1 **–** The loss of institutional knowledge due to employee retirements. This risk drives the need to improve our Human Resources management processes and activities including human capital identification, development (including leadership and cross-functional training), employee engagement and succession planning.

Opportunity 1 - Improve work processes and electronic systems. Our ongoing work in this area began in August of the current fiscal year and we expect it to continue into FY20. In addition to implementing changes driven by regulatory and pension reform, we will improve our online member, local board and employer services and implement paperless work processing throughout the central PSPRS organization and the wider System where possible.

Opportunity 2 - Improve communication, outreach and training. The diverse and changing PSPRS landscape demands we improve our communication in all forms with our members, employers and local boards, and with external stakeholders.

Strategic Goals and Objectives

Goal 1 **–** Recruit, engage, develop and retain qualified, motivated management and staff (PSPRS HR Director)

Objective 1.1 – conduct a personnel supply, needs and gap analysis

Performance Measure – complete a supply, needs and gap analysis for 75% of PSPRS

Objective 1.2 – conduct personnel succession planning for PSPRS Member Services Section

Performance Measure – complete a personnel succession plan for PSPRS Member Services

Objective 1.3 – implement a cross-functional skills training program

Performance Measure – 75% of staff will be provided training in other areas of responsibility

Objective 1.4 – implement a leader/employee development training program

Performance Measure - conduct six development classes for leaders and employees

PSPRS FY18 Strategic Plan

Strategic Goals and Objectives – cont'd.

Goal 2 – Provide timely, effective customer service to members, employers and local boards (Member Services Director)

Objective 2.1 – process member retirement submissions in an accurate and timely manner

Performance Measure – percentage of member retirements processed without error in the effective payroll period

Objective 2.2 – issue contribution refunds in an accurate and timely manner

Performance Measure – percentage of contribution refunds issued without error within 20 days of refund request

Goal 3 – Provide risk-**controlled investment management of the System's a**ssets (PSPRS CIO)

Objective 3.1 - meet or exceed the PSPRS assumed earnings rate

Performance Measure – rolling 30-year PSPRS Trust investment return percentage

Performance Measure – annual PSPRS Trust investment return percentage

Objective 3.2 – attain a 75^{th} percentile (top quartile) risk-adjusted investment return ranking among peer pension systems

Performance Measure – 3-year risk-adjusted investment return percentile ranking

Performance Measure – 5-year risk-adjusted investment return percentile ranking

Performance Measure – 10-year risk-adjusted investment return percentile ranking

Objective 3.3 – meet or exceed the PSPRS Trust investment portfolio composite benchmark

Performance Measure – annual composite PSPRS Trust investment return net of fees compared to the annual composite benchmark

Goal 4 – Evaluate and adjust our work processes to ensure relevance, efficiency and alignment (PSPRS Systems Architect)

Objective 4.1 – improve local board web portal processes based on new system capabilities

Performance Measure – improve process efficiency for submission of meeting minutes and board member information maintenance by 40%

Objective 4.2 – improve refund of contributions processes based on new system capabilities

Performance Measure – improve process efficiency by 40% through online submission of refund applications

Objective 4.3 – develop new and/or modified processes to implement CORP statutory changes effective 1 July 2018

Performance Measure – all statutory changes implemented by 1 July 2018

Goal 5 - Evaluate and implement technology and data security aligned with our strategic plan (Deputy Administrator)

Objective 5.1 – redesign and implement the PSPRS Local Board website to enhance electronic coordination

Performance Measure – local board website functional and in use by 75% of local boards

Objective 5.2 – implement a formal Information Security Program for PSPRS staff

Performance Measure – 100% of the PSPRS staff has participated in the program as required

Strategic Goals and Objectives – cont'd.

Objective 5.3 – migrate the PSPRS software development environment to Microsoft C# programming language

Performance Measure – complete required staff C# training and deploy all necessary software applications

Objective 5.4 – enable members to apply for a refund of contributions electronically

Performance Measure – create an end-to-end electronic refund application module within Members Only Portal

Objective 5.5 – develop new and/or modified system capabilities to implement CORP statutory changes effective 1 July 2018

Performance Measure – new system capabilities in production on 1 July 2018

Goal 6 **–** Improve communications, outreach and training to members, employers, local boards and external stakeholders (PSPRS Communications Director)

Objective 6.1 – continue to improve communications through collection and use of new contact information for System members, employers, local boards and policymakers

Performance Measure – reduce email "bounce-back" rate by 25%

Performance Measure – reduce stale former employee email contacts by 50%

Performance Measure – increase valid email contacts by 10%

Objective 6.2 – launch in-house initiative to improve search engine optimization (SEO) results for PSPRS issues and services

Performance Measure – insert meta-descriptions into at least 75% of system updates (communications for members, local boards and employers) and press release webpages, and for 50% of remaining webpages

Objective 6.3 – conduct 10 geographically disbursed employer/local board seminars in FY18 with 75% of local boards/employers attending at least 1 of these events

Performance Measure – number of webinars conducted in geographically unique locations

Performance Measure – percentage of employers attending at least 1 seminar

Human Resources

Performance Measure	% complete or performance to benchmark	Status	Remarks
Complete a personnel supply/needs/gap analysis for 75% of PSPRS (Objective 1.1)	40% complete		
Complete a personnel succession plan for PSPRS Member Services Division (Objective 1.2)	45% complete		
Provide 75% of staff cross-training in at least one new functional area (Objective 1.3)	5% complete		This objective may not be accomplished by 30 June 2018 due to the EPIC software project
Conduct six skills development classes for leadership and staff (Objective 1.4)	25% complete		Six classes scheduled to be completed prior to 30 June 2018

Member Services

Performance Measure	% complete or performance to benchmark	Status	Remarks
Percentage of retirements processed error-free in the effective month (Objective 2.1)	90%		Benchmark: 99% Delays in posting contributions to member accounts may result in delayed benefit calculations
Percentage of refunds issued error-free within 20 days of receipt (Objective 2.2)	90%		Benchmark: 100% Delays in posting contributions to member accounts may result in delayed refund calculations

Technology and Process Improvement

Performance Measure	% complete or performance to benchmark	Status	Remarks
Design and implement an enhanced local board website to improve electronic interaction (Objectives 4.1, 5.1)	0% complete		Scheduled for Q3 and Q4 FY18
Design and implement processes and system capabilities to comply with CORP statutory changes. (Objectives 4.3, 5.5)	0% complete		Scheduled for Q3 and Q4 FY18
100% PSPRS employee participation in formal security training program (Objective 5.2)	100% complete		All PSPRS staff have attended initial training. Security education and awareness program is now live.
Migrate to the C# programming language (Objective 5.3)	100% complete		4 developers trained and coding in C#. C# development environment currently in use.

Technology and Process Improvement (cont'd.)

Performance Measure	% complete or performance to benchmark	Status	Remarks
Design and implement an online end-to-end contribution refund module. (Objectives 4.2, 5.4)	0% complete		Scheduled for Q3 and Q4 FY18

Communications and Outreach

Performance Measure	% complete or performance to benchmark	Status	Remarks
Reduce email bounce-back rate by 25% (Objective 6.1)	20% reduction achieved		Benchmark: 25%
Increase valid email contacts by 10% (Objective 6.1)	7.5% increase achieved		Benchmark: 10%
Include meta-descriptions in 75% of key System communications (Objective 6.2)	20% complete		
Conduct 10 geographically dispersed employer seminars (Objective 6.3)	6 seminars completed		Benchmark: 10 seminars Next seminar to be conducted February 2018

PSPRS Internal Audit Program

Internal Audit Guide

January 24
2018

Thank you for supporting our continuous improvement efforts.

Please direct questions and comments to Lisa Sweeting.

Revision History					
Revision	Revision Date	Author	Approved By	Approved Date	Change History
1.0	01-24-18	Lisa Sweeting	Board of Trustees	Pending	▪ New Document
			Jared A. Smout	01-24-18	

PSPRS Internal Audit Guide

Table of Contents

1.0 PSPRS Internal Audit Program Overview

The Public Safety Personnel Retirement System (PSPRS) Internal Audit Program is a planned, established, communicated and monitored system of audit activities. The mission of the internal audit program is to provide assurance to the PSPRS Board of Trustees and PSPRS Administrators with respect to the integrity of the internal audit program, quality management system, internal controls and decision-making practices.

The program provides a systematic and independent method of obtaining audit evidence and evaluating it objectively to determine the extent to which PSPRS organizational policies and objectives are fulfilled. The adoption of a systematic approach to auditing means that PSPRS must formally document and approve the audit system and incorporate professional standards and best practices to include an annual internal audit plan; audit policies and procedures; audit engagement methodologies; auditor and leadership roles and responsibilities; findings and corrective action requests; leadership response to corrective action requests; and audit performance metrics.

The program also requires that audit evidence be objective and prove process conformity to requirements. The evidence must be based on fact and may be obtained through investigation, observation, measurement and test or by any other acceptable means. Both the evaluation of the process or requirement and effectiveness of the corrective action implementation is required. Audit results should answer the following questions: Is PSPRS practicing the documented procedures? Are the practices achieving the desired results?

Internal audits must be performed in an impartial manner without any actual or perceived conflicts of interest, which requires that the PSPRS Internal Auditor be free from bias or other influences that could affect objectivity. For example, the internal auditor is not allowed to have responsibility for any program, process or requirement outside the realm of internal audit activities or have a vested interest in audit outcomes.

The primary objective of the internal audit program is to develop and promote an organizational culture that drives the PSPRS Purpose Statement and Governing Principles and builds quality awareness into daily business practices, service delivery and system administration.

2.0 PSPRS Internal Audit Program Governance

2.1 PSPRS Operations, Governance Policy and Audit Committee

The PSPRS internal audit program is established by the Board of Trustees and derives its authority and responsibility from the PSPRS Operations, Governance Policy and Audit Committee (OGPAC), which is a standing committee of the Board of Trustees and is intended to assist the Board of Trustees in overseeing PSPRS governance and operations.

The OGPAC has authority to conduct and authorize investigations into any matters within its scope of responsibility. In respect to the internal audit function, the OGPAC is empowered to:

a. Meet routinely with the internal auditor to carry out the OGPAC mandate per the PSPRS Board of Trustees Governance Manual.

b. Communicate with the Board of Trustees regarding principles, ethics and code of conduct policies, as they relate to internal audit control activities.

c. Provide input to the Administrator into the hiring, compensation, performance and, if necessary, termination of the internal auditor, per the Personnel Administration section of the PSPRS Board of Trustees Governance Manual.

d. Receive and approve the annual PSPRS Internal Audit Plan.

e. Assure that the internal auditor has access to all necessary documents, information and systems within the organization.

f. Receive and review internal audit policies, procedures and reports.

g. Assure the follow-up of audit findings.

h. Meet privately with the internal auditor to discuss sensitive matters, consistent with open meeting laws.

i. Review as appropriate the effectiveness of the internal audit function, including compliance with The Institute of Internal Auditors International Professional Practices Framework and The International Organization for Standardization Quality Management System Standard (as it relates to the internal audit function).

j. Assure and maintain, through the organizational structure of PSPRS and by other means necessary, the independence of the internal audit process.

The success of the internal audit program is largely dependent on the sponsorship of the PSPRS Board of Trustees, PSPRS Administrator and PSPRS Deputy Administrator. As with all organizational endeavors, executive management's participation is fundamental to the establishment of a well-executed, valued and effective internal audit program.

2.2 The Institute of Internal Auditors International Professional Practices Framework

The PSPRS internal audit program applies The Institute of Internal Auditors (IIA) International Professional Practices Framework (IPPF) and The International Organization for Standardization Quality Management System Standard (ISO 9001:2015) to the development, establishment and management of the internal audit policies, plans, processes, methodologies and reports.

The IIA is an internal audit and risk management guidance-setting body. Serving 185,000 members in nearly 190 countries, The IIA is the largest professional internal audit organization with global headquarters in Altamonte Springs, FL. The stated mission of the IIA is to provide "dynamic leadership" for the global profession of internal auditing. The IIA:

a. Advocates and promotes the value that internal auditors add to their organizations.

b. Provides comprehensive education and development opportunities, standards and other professional practice guidance and certification programs.

c. Researches, disseminates and promotes knowledge concerning internal auditing and its role in control, risk management and governance.

d. Educates practitioners on best practices in internal auditing.

e. Brings together internal auditors from all countries via conferences, webinars and blogs to share information and experiences.

The IPPF is the conceptual internal audit framework that organizes the authoritative guidance promulgated by the IIA. The IPPF includes mandatory guidance (core principles; definition of internal auditing; and code of ethics) and recommended guidance (implementation information).

2.3 The International Organization for Standardization Quality Standard – ISO 9001:2015

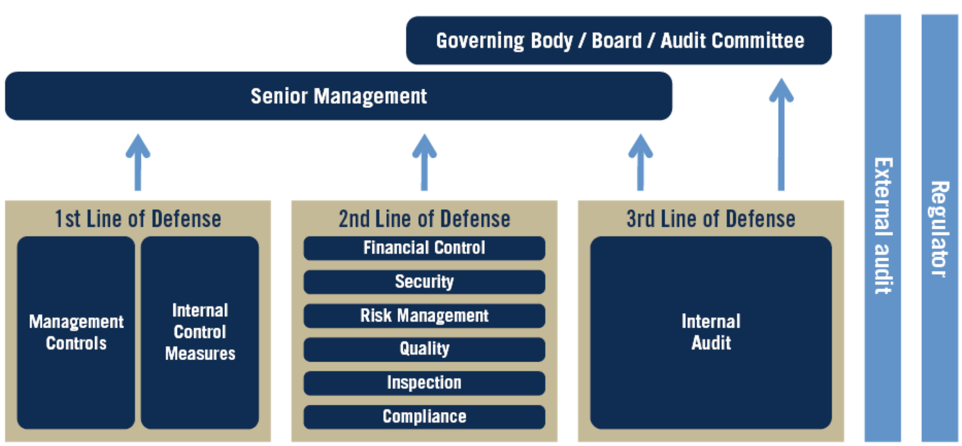
Established in 1947 and headquartered in Geneva, Switzerland, The International Organization for Standardization (ISO) is an independent, non-governmental organization with members representing 162 countries. ISO is the world's largest developer of international standards, having published over 20,000 standards and related documents, covering everything from internal audit and information technology to records management and customer service. The application of the ISO 9001:2015 Quality Management System Standard to the PSPRS operational environment aids in the creation of processes and deliverables that are controlled and assists PSPRS in increasing productivity and quality, while minimizing errors and waste (time and cost).

3.0 PSPRS Internal Auditor Accountability and Responsibility

The internal auditor provides independent appraisals of operational functions to assist the Board of Trustees and Administrators in the efficient discharge of PSPRS charters, strategic objectives and policies. The internal auditor provides independent *reassurance* that the internal controls are effective, while the Administrators, department/functional managers and process owners provide the day-to-day *assurance* that internal controls are operational. The internal auditor conducts compliance, financial and process audits in accordance with the PSPRS Internal Audit Plan for the current fiscal year; the policies and procedures contained herein under Section 9.0; and most importantly, the audit criteria – laws, regulations, contracts, industry standards, performance measures, defined organizational practices, standard operating procedures, benchmarks against which performance is compared – and any additional guidance as relevant to each audit engagement. The internal auditor reports administratively and operationally to the Administrator with an open line of communication to the Board of Trustees, which places the internal auditor outside of the management and staff level functions of auditable departments and processes.

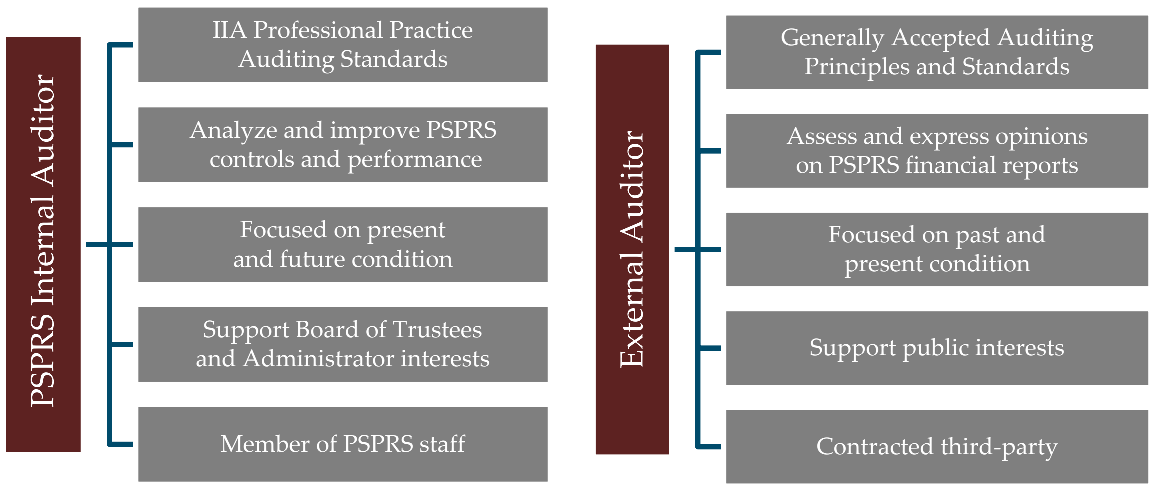
3.1 PSPRS Internal Auditor vs. External Auditors

The roles and responsibilities of the internal auditor and external/third-party auditors are complementary and similar in that both roles are based on professional discipline and operate to that discipline's standards. An external auditor's professional concerns are limited to the potential inaccuracies and misstatements that affect the assurance of fairness of PSPRS financial reports and compliance with government, program and contractual requirements. The internal auditor is concerned with the independent appraisal of organizational activities and the overall governance and management of risks and internal controls (nonfinancial information), as depicted below:



IIA Global Perspectives and Insights, Issue 8, 2017 – Three Lines of Defense Model

Internal audit and external audit do not compete nor conflict; rather, one complements the other. Both functions are crucial to good governance and at various points they come together to share information. However, there are distinct differences in the roles and certainly in the parameters of the work that internal and external auditors perform, as categorized below:



PSPRS Internal Auditor Focus vs. External Auditor Focus

3.2 PSPRS Internal Auditor Responsibilities:

- **a.** Establish policies and procedures for the internal audit program.
- **b.** Develop and execute a comprehensive internal audit plan for the annual evaluation of the operational controls across PSPRS.
- **c.** Conduct audits to plan.
- **d.** Compile, review and analyze audit evidence.
- **e.** Recommend improvements to internal management controls designed to safeguard resources and ensure compliance with statutes, industry regulations and standards.
- **f.** Prepare written audit findings and corrective action requests and recommendations.
- **g.** Advise on internal controls, acceptable practices and economy and efficiency issues.
- **h.** Explain audit findings and encourage the implementation of corrective measures.
- **i.** Validate the adequacy of corrective actions taken to correct errors and mitigate risks.
- **j.** Reassess actions considered inadequate until satisfactory resolution is reached.
- **k.** Conduct special audits as requested by the Board of Trustees and/or Administrators.
- **l.** Participate in professional audit organizations and network with internal auditors at other public retirement systems.
- **m.** Inform the OGPAC of emerging trends and practices in internal auditing.
- **n.** Ensure a peer review of the internal audit program every five years, by an auditor external to the System, as required by the IIA IPPF.

The internal auditor's primary responsibility is to establish, monitor and mature the internal audit program to deliver significant, risk-based findings and insightful recommendations to the Board of Trustees, Administrators and staff.

4.0 PSPRS Internal Auditor Authority

The internal auditor is authorized to allocate resources, set project frequencies, select audit subjects, determine the scope of work and apply the techniques necessary to accomplish audit objectives. The internal auditor is positioned within PSPRS in such manner as to provide him/her the necessary independence to carry out the duties assigned to the position. The internal auditor has full, free and unrestricted access to all PSPRS information systems, records, personnel, contractors, physical properties, rental locations and any other items relevant to the function, process or requirement under review. In addition, PSPRS vendor contracts shall contain language enabling the internal auditor to have access to all pertinent vendor records and information.

4.1 The PSPRS Internal Auditor is authorized to:

- **a.** Access all PSPRS records.
- **b.** Allocate resources, set frequencies, select subjects, determine scopes of work and apply the techniques required to accomplish audit objectives.
- **c.** Obtain the necessary assistance of departmental/functional personnel and specialized services from within and outside of PSPRS.

4.2 The PSPRS Internal Auditor is <u>not</u> authorized to:

- **a.** Perform any operational duties for PSPRS.
- **b.** Initiate or approve financial transactions external to internal audit.
- **c.** Direct the day-to-day activities of any PSPRS staff member except to the extent such staff members are assigned to audit engagements.

To maintain independence and objectivity, the internal auditor does not have direct responsibility or authority over the activities or operations that are subject to review, nor does the internal auditor develop or implement procedures, prepare records (external to internal audit) or engage in activities that would normally be subject to review. However, the internal auditor may be consulted when new PSPRS systems are designed to ensure that internal controls and risks are adequately and proactively addressed and managed.

The internal auditor does not typically use specialists or rely on the work of others. However, auditor "proficiency and independence" requires that the internal auditor have knowledge of the operations and appropriate expertise in the subject matter being audited. The internal auditor communicates with the Board of Trustees and Administrators regarding any request for the use of external consultants/subject matter experts. If a consultant is required, the internal auditor will document the nature and scope of the work to be performed. The specialist's ability to perform said work will be assessed and presented to the Board of Trustees and Administrators for consideration and approval. In such cases, the consultant's contract will contain provisions regarding the nature of the services provided and professional standards to be applied.

5.0 PSPRS Internal Auditor Ethics and Confidentiality

The internal auditor has an unbiased perspective and is allowed the operational and organizational independence required for the performance of audits in an ethical manner. The internal auditor abides by the Code of Ethics of the Institute of Internal Auditors (IIA). The purpose of the IIA Code of Ethics is to promote an ethical culture in the profession of internal auditing. A code of ethics is necessary and appropriate for the profession of internal auditing, since auditing is founded on trust, independence, principles, objective assurance, values and professionalism.

PSPRS Internal Auditor Principles and Characteristics

The IIA Code of Ethics extends beyond the simple definition of internal auditing to include two essential audit components: Principles and Rules of Conduct.

5.1 IIA Code of Ethics: Principles

Internal auditors are expected to apply and uphold the following principles:

a. **Integrity**

The integrity of internal auditors establishes trust and thus provides the basis for reliance on their judgment.

b. **Objectivity**

Internal auditors exhibit the highest level of professional objectivity in gathering, evaluating and communicating information about the activity or process being examined. Internal auditors make a balanced assessment of all the relevant circumstances and are not unduly influenced by their own interests or by others in forming judgments.

c. **Confidentiality**

Internal auditors respect the value and ownership of information they receive and do not disclose information without appropriate authority unless there is a legal or professional obligation to do so.

d. **Competency**

Internal auditors apply the knowledge, skills and experience needed in the performance of internal audit services.

5.2 IIA Code of Ethics: Rules of Conduct

a. Integrity

Internal auditors:

- Shall perform their work with honesty, diligence and responsibility.
- Shall observe the law and make disclosures expected by the law and the profession.
- Shall not knowingly be a party to any illegal activity or engage in acts that are discreditable to the profession of internal auditing or to the organization.
- Shall respect and contribute to the legitimate and ethical objectives of the organization.

b. Objectivity

Internal auditors:

- Shall not participate in any activity or relationship that may impair or be presumed to impair their unbiased assessment. This participation includes those activities or relationships that may conflict with the interests of the organization.
- Shall not accept anything that may impair or be presumed to impair their professional judgment.
- Shall disclose all material facts known to them that, if not disclosed, may distort the reporting of activities under review.

c. Confidentiality

Internal auditors:

- Shall be prudent in the use and protection of information acquired in the course of their duties.
- Shall not use information for personal gain or in any manner contrary to the law or detrimental to the legitimate and ethical objectives of the organization.

d. Competency

Internal auditors:

- Shall engage only in those services for which they have the necessary knowledge, skills and experience.
- Shall perform internal audits in accordance with the International Standards for the Professional Practice of Internal Auditing.
- Shall continually improve their proficiency and the effectiveness and quality of their services.

The IIA Code of Ethics describes the minimum requirements for internal auditor conduct and behavioral expectations, rather than specific audit activities.

6.0 PSPRS Internal Audit Methodology: Audit Types

The internal audit program is a system of planned audits of PSPRS operational policies, processes and requirements. Audit engagements are performed in accordance with the professional standards issued by the IIA and quality management system standards issued by ISO. PSPRS defines and approaches internal audits as follows:

6.1 Process Audits

Process audits consist of critical reviews of operating processes and procedures and internal controls designed to mitigate department-specific risks. This type of audit also examines the use of resources to determine if they are being used in the most effective and efficient manner to fulfill PSPRS goals, strategic objectives and department performance measures.

6.2 Compliance Audits

Compliance audits determine the degree to which areas within PSPRS adhere to mandated Federal, State and System policies. Other regulatory agencies may also be included in compliance audits (i.e. ADOA, HIPAA, etc.). This type of audit *requires* that corrective action requests necessitate improvements to the internal controls used to ensure compliance with regulations.

6.3 Financial Audits

Financial audits review accounting and financial transactions to determine if commitments, authorizations and the receipt and disbursement of funds are properly and accurately recorded and reported. This type of audit also determines if there are sufficient controls over cash and assets and adequate process controls over the acquisition and use of resources. Unlike external financial audits, internal financial audits do not express professional opinions on PSPRS' financial approach or the fairness of financial reports.

6.4 Investigative Audits

Investigative audits identify existing control weaknesses, assist in determining the amount of loss and recommend corrective measures to prevent additional losses. This type of audit and investigation can encompass misuse of PSPRS funds or assets, fraud or potential conflicts of interest. The internal auditor enlists the support of the PSPRS Compliance Officer and outside agencies to determine if misconduct occurred.

6.5 Technology Audits

Technology audits are usually comprised of control reviews of disaster recovery and business continuity plans, system backup procedures and the general security of PSPRS data. This type of audit ensures that thorough systems testing is performed at appropriate stages; system project and program documentation is complete and accurate; and evaluates the accuracy, effectiveness and efficiency of PSPRS electronic and information processing systems.

7.0 PSPRS Internal Audit Methodology: Audit Phases

The internal auditor is obligated by professional standards to act objectively, exercise due professional care and collect sufficient and relevant information to provide a sound basis for audit findings, observations and recommendations. To that end, the internal auditor executes the internal audit policies and procedures in a methodical and practiced manner, based on a process approach to auditing that incorporates Dr. Edwards Deming's well-known Plan-Do-Check-Act (PDCA) or Plan-Do-Study-Act (PDSA) Cycle (also known as the Deming Cycle and Shewhart Cycle).

PSPRS Internal Audit PDCA/PDSA Continual Improvement Cycle

The PDCA/PDSA Cycle is an iterative four-step method used across organizational types and structures for the control and continual improvement of processes. PSPRS selected this process-based approach to internal auditing, because it is well-suited for internal audit programs and continuous improvement projects, and it also forms the basis for ISO quality management system standards. The PDCA/PDSA Cycle is applied to the assessment of internal controls as follows:

7.1 **Audit Planning** (Plan Phase)

During the planning phase the internal auditor works to understand the plans, requirements and processes scheduled for review so that the established controls can be accurately evaluated.

Prior to any audit, the internal auditor discusses the audit engagement with the department/ functional manager. The discussions include the scope, purpose and estimated timeframe for the audit. Based on those discussions, any proposed changes to the approved internal audit plan will be promptly presented to the Administrators and Board of Trustees.

Sufficient time must be given to the planning phase to ensure an adequate understanding of the subject matter and internal controls as this information has a material effect on the scope of audit sampling and fieldwork testing to follow.

7.2 **Audit Sampling and Fieldwork** (Do Phase)

During the sampling/fieldwork phase, the internal auditor tests specific strategies, scenarios and steps to assess adherence to rules identified in the planning phase. Sufficient evidence is obtained during fieldwork to support the internal auditor's conclusions, findings and recommendations. Fieldwork includes the testing of any identified internal controls that are relevant to the audit's scope to determine if they are functioning properly.

In the process of collecting audit evidence, the internal auditor is required to perform audit testing to support all risk statements, findings and recommendations. During the performance of such testing, the internal auditor is not required to test the population in its entirety. Routinely, at the internal auditor's discretion, audit sampling is employed using less than 100% of a population. When sampling data, the Board of Trustees and Administrators must accept the risk that some or all errors will not be found and the conclusions drawn by the internal auditor (i.e. all transactions were proper and accurate) may be incorrect. Typical audit sampling methodologies selected by the internal auditor are as follows:

a. **Statistical or Probability Sampling** is used by the internal auditor to stipulate, with a given level of confidence, the condition of a large population by reviewing only a percentage of the total items.

b. **Attribute Sampling** is used when the auditor has identified the expected frequency or occurrence of an event.

c. **Variable Sampling** is used when the auditor samples for values in a population which vary from item to item.

d. **Judgment Sampling** is used when it is not essential to have a precise determination of the probable condition of the universe, or where it is not possible, practical or necessary to use statistical sampling.

The type of sampling used and the number of items selected is based on the internal auditor's experience, intuition, understanding of the relative risks and exposure to the process or requirement under audit. The audit sampling methodology will be determined predominantly by the scope (purpose and goal) of the audit activity.

7.3 **Audit Evidence** (Check and Study Phase)

During the evidence phase, the internal auditor evaluates the audit records (evidence). The evidence obtained provides the documented basis for the internal audit outcomes (risks, findings, and recommendations) as expressed in the internal audit report. The decision on how much evidence is enough and what type of evidence to seek requires the internal auditor to exercise judgment based on experience, education and intuition. A thorough knowledge of the concepts and context underlying the audit evidence assists the internal auditor in improving the quality and efficiency of the evidence collection and analyzation process. The audit work papers must contain certain attributes to provide a sound basis for audit findings, as follows:

a. **Sufficient** information that is factual and adequate so that a prudent, informed person would reach the same conclusions as the internal auditor.

b. R**eliable** information obtained through appropriate internal audit tools, techniques and sampling methodologies.

c. **Relevant** information that supports audit findings and corrective action requests and is consistent with the audit scope and objectives.

d. **Useful** information that assists PSPRS in meeting strategic goals and also provides a reference for the internal auditor when called upon to substantiate audit findings.

Evidence that supports the basic test of sufficiency, competence and relevance will be used to support the audit findings. The following outlines the different types of evidence obtained during the course of PSPRS internal audits:

a. **Physical Evidence** is obtained through observation and inquiry.

b. **Testimonial Evidence** is obtained from interviews and statements from auditees and other involved parties.

c. **Documentary Evidence** is obtained from statutes; Board of Trustees and management meeting minutes; financial and investment records and reports; vendor contracts; presentations, charts and spreadsheets; management letters; process maps and operational procedures; project timelines and action items; IT system designs and program data; and records contained within the PSPRS SharePoint Team Sites and Knowledge|Information Management Portal.

d. **Analytical Evidence** is obtained by the analysis of data collected by the internal auditor.

7.4 Audit Communication (Act Phase)

A foundation of continual dialogue between the internal auditor and all levels of leadership exists to ensure a meaningful exchange and contextual understanding of the findings and requests for improvement. This cooperation and steady discourse enhances the internal auditor's value to PSPRS and assists leadership in establishing rootcauses, priorities and remediation activities.

During the initial post-audit communication phase, the internal auditor reports the audit outcome to the Administrators and department/functional manager(s). This communication is followed by discussion, potential modifications to the audit findings, agreement by all parties and ultimately the approval of the internal audit report by the Administrators. The presentation of the final audit report by the internal auditor is agendized for the next *formal* Board of Trustees meeting.

The follow-up audit or validation audit occurs when the internal auditor returns to the department/functional manager after a predetermined period of time to assess the effectiveness of the corrective action implementation and risk mitigation plan.

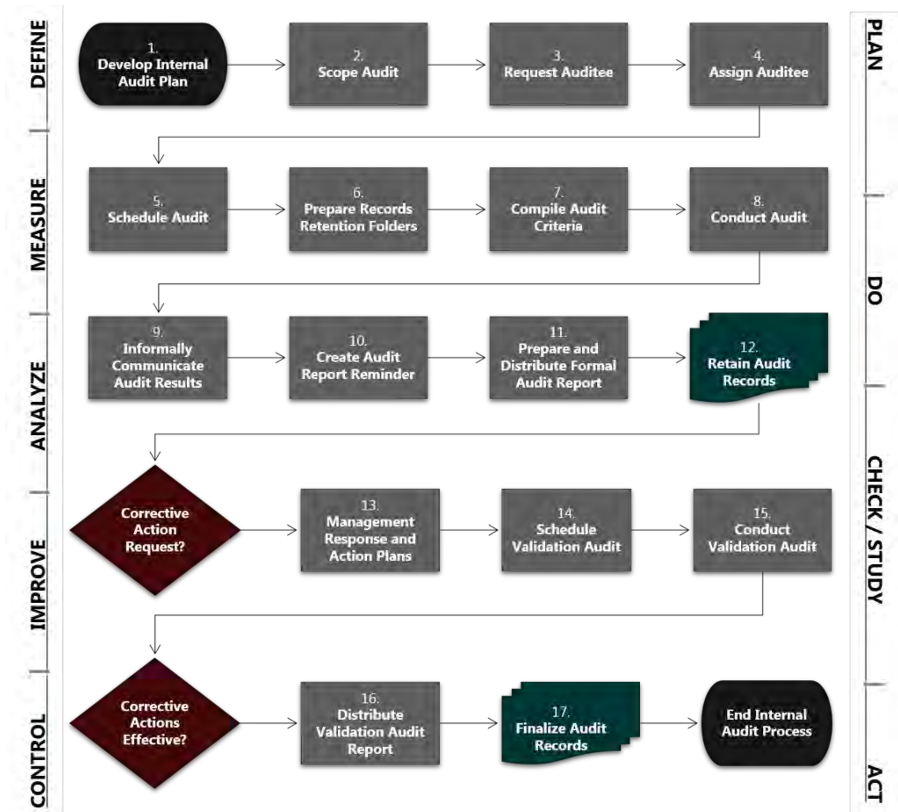
8.0 PSPRS Internal Audit Process

The PSPRS process-based approach to internal auditing incorporates the PDCA and Define-Measure-Analyze-Improve-Control (DMAIC) Cycles and risk-based thinking. Application of the PDCA and DMAIC Cycles ensures that processes are adequately reviewed, resourced and managed and that opportunities for improvement are specified *by the internal auditor* and acted upon by *leadership*. The illustration below depicts the application of the PDCA and DMAIC Cycles to the PSPRS internal audit universe and continuous improvement cycle:

PSPRS Internal Audit Universe and Continuous Improvement Cycle

Risk-based thinking enables the internal auditor to determine factors (observations and risks) that could cause PSPRS processes and quality system components to deviate from planned results, and institute preventive measures to minimize potential negative outcomes.

The PSPRS internal audit process is the same for most audit engagements and usually consists of five high-level steps that are broken down to twelve detailed steps – or seventeen detailed steps if corrective action is required – as diagramed below:



PSPRS Internal Audit Process Map

The application of this process enables the internal auditor to determine methods for minimizing risks and increasing efficiencies and provides for the *analysis and improvement* of operational controls, instead of simply corroborating compliance to requirements.

9.0 PSPRS Internal Audit Program Policies and Procedure

The internal audit program relies on a systematic, disciplined and risk-based approach to the auditing of internal controls. The core function of the program is the continual improvement of business operations and knowledge and information systems, while establishing a reasonable level of security and assurance to the Board of Trustees, Administrators and staff that efficient and effective policies are in place and producing desired outcomes.

The internal audit procedure specifies who does what, why it is being done and when it is to be done, while allowing for flexibility and the use of sound judgment and initiative in modifying the internal audit plan to meet the needs of PSPRS, as follows:

PSPRS Internal Audit Procedure

Step	Owner	Definition
1	**Internal Auditor**	**Plan:** Develop the internal audit plan. Determine which requirements and processes to audit. Sources may include but are not limited to previous internal and external audit results, risk assessments, internal policies, organizational priorities, leadership guidance, project plans, and external deliverable requirements. Add approved audits to the internal audit plan, by month. Populate the audit report number field in the internal audit plan as audits are completed, not in advance. **Policy Statement:** The internal auditor will develop the annual PSPRS Internal Audit Plan by May 31 of each year and present it to the Board of Trustees and Administrators for approval by June 30 of each year.
2	**Internal Auditor**	**Scope:** Identify the internal audit scope, objectives, length, resources and responsibilities of all parties involved in the audit process. Factors that may impact the audit should be raised at this time and may include system and resource availability due to downtime, vacations, holidays, etc.
3	**Internal Auditor**	**Request Auditee:** Email leadership to request the assignment of an auditee for the planned/upcoming audit.
4	**Internal Auditor**	**Assign Auditee:** Meet with leadership to discuss any changes to the approved internal audit plan (if requested). Populate the internal audit plan with the assigned auditee's name.
5	**Internal Auditor**	**Schedule Audit:** Use MS Outlook to request the audit engagement date in accordance with the internal audit plan. Email the meeting request to the auditee. *Copy the Administrators and department leadership as appropriate.*
6	**Internal Auditor**	**Prepare Records Retention Folders:** Create an audit records folder for the year in question to retain audit reports, corrective action requests and supporting documentation. Create folders within the year folder and label them by audit report number *(Construct numbers based on year and sequence, e.g. AR-2018-01)*.
7	**Internal Auditor**	**Compile Audit Criteria:** Perform audit pre-work by requesting all reasonable and attainable standards of performance and control against which the compliance, adequacy of systems and practices, and process efficiency and effectiveness can be evaluated *(statutes, contracts, standards, performance measures, organizational policies and practices, standard operating procedures and benchmarks against which performance is compared)*, and any additional regulations or guidance as relevant to each audit engagement.
8	**Internal Auditor**	**Conduct Audit:** Meet with auditee to conduct the audit engagement, sample records and gather evidence to assess the adequacy of internal controls. Populate the actual audit date field of the internal audit report. **Policy Statement:** The internal auditor will commence each planned and

			approved audit identified on the internal audit plan within seven calendar days of the target audit date indicated on the internal audit plan.
9	**Internal Auditor**		**Communicate Audit Results:** Inform leadership of the audit findings. There may be instances where the organization can begin working on rootcause analysis and corrective action plans, prior to audit report completion and distribution. Update the findings summary field on the internal audit plan.
10	**Internal Auditor**		**Create Audit Report Reminder:** Create an MS Outlook calendar reminder set a minimum of three business days in advance of audit report due date.
11	**Internal Auditor**		**Prepare and Distribute Internal Audit Report:** Prepare the internal audit report, citing any audit strengths, findings, risks and corrective action requests. Distribute the report to Administrators, department managers and Board of Trustees *(at the next formal Board meeting)*. **Policy Statement:** The internal auditor will complete and distribute the internal audit report within 30 calendar days of the audit conclusion.
12	**Retain Audit Records and Evidence**		
	12.1	**Internal Auditor**	**Update Internal Audit Plan:** Populate any remaining fields on the internal audit plan.
	12.2	**Internal Auditor**	**Update Internal Audit Systems:** Populate any remaining fields in the internal audit tools and databases.
	12.3	**Internal Auditor**	**Update Internal Audit Records:** Transfer the final internal audit reports, email records and work papers to the appropriate audit records folder. **Policy Statement:** The internal auditor will retain the audit work papers for five years and internal audit reports and management responses for seven years in accordance with state records retention policies.
Corrective Action Required – Complete Steps 13 to 18			
13	**Leadership**		**Leadership Response to Corrective Action Requests**: Leadership will notify the internal auditor of the corrective action plan for each audit finding. **Policy Statement:** The corrective action plan will include the rootcause of the finding and a corrective action implementation date. Leadership will notify the internal auditor of the corrective action plan in writing within 30 calendar days of receipt of the final internal audit report.
14	**Internal Auditor**		**Schedule Validation Audit:** Determine the number of days between the corrective action completion and the validation of effectiveness, based on the process run frequency *(if applicable)*. This subsequent audit is planned and discussed with the Administrators and department managers and the results published at the next *formal* Board of Trustees meeting. Add the scheduled validation audits to the internal audit plan.

15	**Internal Auditor**	**Conduct Validation Audit:** Reference the initial internal audit report and leadership responses/corrective action plans. Affirm that corrective actions were implemented as stated by leadership and are effective based on current evidence. **Policy Statement:** Validation audits will be performed within 90 days of corrective action implementation based on the process run frequency. Validation audits do not require Administrator or Board of Trustees pre-approval and may be formal or informal/remote based on the severity of the initial finding and/or access to data.
16	**Internal Auditor**	**Distribute Validation Audit Report:** Apply the same audit report distribution policy to validation audit reports.
17	**Internal Auditor**	**Finalize Audit Records and Evidence:** Perform final update to the internal audit plan for the corrective actions validated. Save the validation audit report and supporting documentation to the audit records folder. ***Repeat steps 13 to 18 when validation audits are unsuccessful.***
End Internal Audit Process		

10.0 PSPRS Internal Audit Program Key Performance Indicators

The internal audit Key Performance Indicators (KPIs) demonstrate how the maturity and strength of the internal audit program is measured. The results are monitored and analyzed monthly and reported to the Board of Trustees and Administrators quarterly via the PSPRS Internal Audit Performance Report, as follows:

- **a.** Number of internal audits performed
- **b.** Number of internal audits performed to plan
- **c.** Number of internal audit findings and recommendations
- **d.** Number of business days to issue internal audit reports and recommendations
- **e.** Number of on time and late internal audit reports
- **f.** Number of business days to respond with corrective action plans
- **g.** Number of business days to implement corrective action plans
- **h.** Number of validation audits performed
- **i.** Number of successful validation audits

The KPIs are executed and monitored as a closed loop cycle, which is an end-to-end process that extends from the audit engagement through corrective action and change management to continuous improvement. As the PSPRS internal audit program matures, the KPIs will also mature to include time and cost saving objectives and metrics.

11.0 PSPRS Internal Audit Program Supporting Information

The following documentation and quality frameworks, guidelines and standards contribute to the routine and systematic deployment of the PSPRS internal audit program:

- **a.** PSPRS Internal Audit Plan
- **b.** PSPRS Internal Audit Reports
- **c.** PSPRS Internal Audit Performance Report
- **d.** American Society for Quality (ASQ) principles, practices and tools
- **e.** IIA International Professional Practices Framework (IPPF)
- **f.** ISO Quality Management System Standards and Guidelines
  - ISO 9001:2015, Quality Management System Requirements
  - ISO 9004, Managing for the Sustained Success of an Organization — A Quality Management Approach
  - ISO 10002, Quality Management Customer Satisfaction Guidelines for Complaints Handling in Organizations
  - ISO 10004, Quality Management Customer Satisfaction Guidelines for Monitoring and Measuring
  - ISO 10006, Quality Management System Guidelines for Quality Management in Projects
  - ISO/TR 10013, Guidelines for Quality Management System Documentation
  - ISO 10015, Quality Management Guidelines for Training
  - ISO 19011, Guidelines for Auditing Management Systems

The internal auditor is accountable for conforming with professional standards related to internal auditor objectivity, proficiency and due professional care, and industry-specific standards relevant to the performance of the internal auditor's particular job duties. Consequently, it is reasonable and understood that the internal auditor must at times employ intuition and individual judgment in the application of standards and best practices.

12.0 PSPRS Internal Audit Program Review and Revision

The internal auditor will review the PSPRS Internal Audit Guide every year at minimum to assess the internal audit program's continued applicability to the PSPRS operational environment and strategic objectives. All revisions to the internal audit guide will be presented to the Board of Trustees and Administrators for review, input and approval.

January 31, 2018

Operations Committee
Auditor General Follow Up Report

BACKGROUND

State agency performance audits and sunset reviews are required by statute and conducted periodically by the Auditor General's office. In September, 2015, the Auditor General issued a Performance Audit and Sunset Review of PSPRS. The full report, including our response and a 6-month follow-up report by the Auditor General's office, is available on the Auditor General's website. The Auditor General's report is broken into two parts: the performance audit and the sunset review.

The Auditor General's performance audit had three main findings. Finding number 1 was that "Plans' assets have not kept pace with estimated pension obligations." The Auditor General did not provide any recommendations for this finding, however. Finding number 2 was that "Changes in calculating and awarding annual benefit increases would help system plans' sustainability." There were several recommendations associated with this finding. Finding number 3 was "Additional actions necessary to improve system plans' financial condition and long-term sustainability." There were several recommendations associated with this finding as well.

The Auditor General's sunset review was based on 12 different factors that were analyzed during the audit. After the review, three recommendations were made. Two of those recommendations were related to Factor #2 ("The extent to which the System has met its statutory objective and purpose and the efficiency with which it has operated") and one was related to Factor #6 ("The extent to which the System has been able to investigate and resolve complaints that are within its jurisdiction").

24-MONTH FOLLOW UP REPORT

On January 19, 2018, the Auditor General's Office published a 24-month follow up report. According to the report, 34 recommendations have either been implemented or are in the process of being implemented. 25 recommendations have not been implemented. 8 of those 25 recommendations are related to replacing the PBI in EORP with a COLA. At the time the report was written legislation had not yet been drafted that would replace the PBI with a COLA.

15 of the 25 recommendations that have not been implemented are all subparts of a high-level recommendation that PSPRS develop and implement a funding improvement strategy based on Rhode Island's funding improvement strategy. This recommendation was made prior to legislation that was passed in 2016 (SB 1428) and 2017 (SB 1442), which brought pension reform to PSPRS and CORP.

Until recently, Rhode Island had 150+ locally-administered pension plans. Each municipality had control over contribution rates and benefit provisions. When the funding ratio for one of those plans dropped to a certain level, it was considered "at-risk" and a Funding Improvement Plan had to be developed and filed with the State. That plan would include things like increasing contributions until they were paying the full ARC, changing amortization periods, decreasing or freezing COLAs, lowering the benefit multiplier, increasing the age at which a member could retire, or joining the State's Municipal Employees Retirement System.

In Arizona, PSPRS employers do not have those options available to them, and are required by statute to pay at least the actuarially determined contribution, so the Rhode Island model does not fit our structure very well. There is a concern, however, that PSPRS employers may not be adequately prepared financially to pay the actuarially determined contribution. As a result, House Bill 2097 has been drafted and dropped for the 2018 legislative session. The bill would require each PSPRS employer to adopt a pension funding policy that addresses how the employer will maintain adequate assets to fund benefits and maintain stability of the employer's contributions to PSPRS.

We believe most of the recommendations that are in the process of being implemented will be implemented by the time the Auditor General's Office conducts the 36-month review. We are also hopeful that the EORP PBI will have been addressed by then as well.

DEBRA K. DAVENPORT, CPA
AUDITOR GENERAL

STATE OF ARIZONA
OFFICE OF THE
AUDITOR GENERAL

MELANIE M. CHESNEY
DEPUTY AUDITOR GENERAL

January 19, 2018

The Honorable Anthony Kern, Chair
Joint Legislative Audit Committee

The Honorable Bob Worsley, Vice Chair
Joint Legislative Audit Committee

Dear Representative Kern and Senator Worsley:

Our Office has recently completed a 24-month followup of the *Public Safety Personnel Retirement System* (System) regarding the implementation status of the 60 audit recommendations (including sub-parts of the recommendations) presented in the performance audit report released in September 2015 (Auditor General Report No. 15-111). As the attached grid indicates:

- 13 have been implemented;
- 4 have been partially implemented;
- 16 are in the process of being implemented;
- 1 legislative recommendation is in the process of being implemented;
- 1 is not yet applicable; and
- 25 recommendations have not been implemented.

Our Office will conduct a 36-month followup with the System on the status of the recommendations that have not yet been fully implemented.

Sincerely,

Dale Chapman, Director
Performance Audit Division

DC:ka
Attachment

cc: Jared Smout, Administrator
Public Safety Personnel Retirement System

Public Safety Personnel Retirement System Board of Trustees

Public Safety Personnel Retirement System
Auditor General Report No. 15-111
24-Month Follow-Up Report

Recommendation	Status/Additional Explanation

Finding 2: Changes in calculating and awarding annual benefit increases would help system plans' sustainability.

Recommendation	Status/Additional Explanation
2.1 To ensure the plans' permanent benefit increase structures are sustainable, the System should take the lead and collaborate with stakeholders to identify changes that are needed and develop solutions. In developing solutions, the System will have to pursue legislative changes to implement them since each plan's benefit increase structure is specified in statute. The System will also need to determine if the solutions should apply to all members or members hired or retired on or after a specific date, and consider whether a constitutional change might be warranted (see Recommendations 2.2 and 2.3, page 35). In collaboration with stakeholders, the System should:	The System collaborated with stakeholders to provide input for Laws 2016, Ch. 2, which was signed by the Governor on February 16, 2016. For Public Safety Personnel Retirement System (PSPRS) plan members hired on or before June 30, 2017, this legislation repealed the statutes relating to permanent benefit increases and replaced them with a cost-of-living adjustment. These changes were contingent on approval of a constitutional amendment the Legislature referred to voters. Voters approved these changes during the May 17, 2016, special election. Laws 2016, Ch. 2, also established cost-of-living adjustments for PSPRS plan members who are hired on or after July 1, 2017, and this change was not contingent on approval of the constitutional amendment. In addition, in April 2017, the Governor signed Laws 2017, Ch. 163, which includes some legislative changes to the Corrections Officer Retirement Plan (CORP) that are similar to those made to the PSPRS plan, such as repealing the statutes related to permanent benefit increases and replacing them with a cost-of-living adjustment. Some changes made by Laws 2017, Ch. 163, are contingent on approval of a constitutional amendment the Legislature referred to voters at the next general election, which is scheduled for November 6, 2018. However, the changes made for PSPRS through Laws 2016, Ch. 2, and the changes made for CORP through Laws 2017, Ch. 163, do not apply to the System's other defined benefit plan—the Elected Officials' Retirement Plan (EORP). Changes to permanent benefit increases have yet to be proposed and/or made for the EORP.
a. Determine whether a higher funded status for each plan should be required before providing a benefit increase;	**Implemented for the PSPRS plan at 24 months** Through Laws 2016, Ch. 2, the Legislature enacted changes that require a higher funded status before providing a cost-of-living adjustment for PSPRS plan members hired on or after July 1, 2017, but there is no funded status requirement for PSPRS plan members hired before that date. Specifically, for members hired on or after July 1, 2017, the PSPRS plan must be at least 70 percent funded before a cost-of-living adjustment can be provided, and members cannot receive the maximum 2 percent cost-of-living adjustment unless the PSPRS plan has a funded status of 90 percent or higher.

Recommendation	Status/Additional Explanation
	Implemented for CORP at 24 months Through Laws 2017, Ch. 163, the Legislature enacted changes that require a higher funded status before providing a cost-of-living adjustment for CORP members who are probation and surveillance officers hired on or after July 1, 2018, but there is no funded status requirement for CORP members hired before that date. Specifically, for probation and surveillance officer members hired on or after July 1, 2018, CORP must be at least 70 percent funded before a cost-of-living adjustment can be provided, and members cannot receive the maximum 2 percent cost-of-living adjustment unless CORP has a funded status of 90 percent or higher. **Not Implemented for EORP** Changes made through Laws 2016, Ch.2, and Laws 2017, Ch.163, do not apply to EORP. According to the System, changes for EORP will be considered during the 2018 legislative session.
b. Determine whether a simple instead of a compound structure may be more sustainable for its plans;	**Partially implemented for the PSPRS plan at 24 months** According to the System, a simple instead of a compound structure would be more sustainable, but may not provide inflation protection for retirees. In addition, the System indicated that the stakeholders involved in pension reform preferred a compound structure. The changes enacted by the Legislature through Laws 2016, Ch. 2, established a compounding cost-of-living adjustment to the PSPRS plan member's base benefit. For members hired on or before June 30, 2017, voters approved a constitutional amendment during the May 17, 2016, special election that allowed for specific changes made by Laws 2016, Ch. 2, to be enacted, including the replacement of a permanent benefit increase with a compounding cost-of-living adjustment. **Implementation in process for CORP** According to the System, a simple instead of a compound structure would be more sustainable, but may not provide inflation protection for retirees. In addition, the System indicated that the stakeholders involved in pension reform preferred a compound structure. The Legislature made changes through Laws 2017, Ch. 163, that establish a compounding cost-of-living adjustment to the CORP plan member's base benefit. However, for members hired on or before June 30, 2018, these changes are contingent on a constitutional amendment the Legislature referred to voters at the next general election, which is scheduled for November 6, 2018.

Recommendation	Status/Additional Explanation
	Not implemented for EORP Changes made through Laws 2016, Ch.2, and Laws 2017, Ch.163, do not apply to EORP. According to the System, changes for EORP will be considered during the 2018 legislative session.
c. Consider whether it should link its permanent benefit increases to the Consumer Price Index, and if so, whether it should provide full inflation protection;	**Implemented for the PSPRS plan at 24 months** The changes enacted by the Legislature through Laws 2016, Ch. 2, repealed the statutes relating to permanent benefit increases and replaced them with a cost-of-living adjustment that is linked to the metropolitan Phoenix-Mesa Consumer Price Index, not to exceed 2 percent annually. If the Consumer Price Index reports an inflation rate of 2 percent or less, this change will provide full inflation protection. For members hired on or before June 30, 2017, voters approved a constitutional amendment during the May 17, 2016, special election that allowed for specific changes made by Laws 2016, Ch. 2, to be enacted, including the replacement of a permanent benefit increase with a compounding cost-of-living adjustment that is linked to the Consumer Price Index. **Implementation in process for CORP** The Legislature made changes through Laws 2017, Ch. 163, that repealed the statutes relating to permanent benefit increases and replaced them with a cost-of-living adjustment that is linked to the metropolitan Phoenix-Mesa Consumer Price Index, not to exceed 2 percent annually. If the Consumer Price Index reports an inflation rate of 2 percent or less, this change will provide full inflation protection. However, for members hired on or before June 30, 2018, these changes are contingent on voter approval of a constitutional amendment. **Not implemented for EORP** Changes made through Laws 2016, Ch.2, and Laws 2017, Ch.163, do not apply to EORP. According to the System, changes for EORP will be considered during the 2018 legislative session.
d. Consider changing its permanent benefit increase structure for the PSPRS plan and CORP to be based on the funded status of individual employers instead of each plan's overall aggregate funded status;	**Partially implemented for the PSPRS plan at 24 months** The System did not report or provide documentation indicating whether it considered changing the permanent benefit increase structure from an aggregate to an individual employer funded status. However, based on various legislative changes, cost-of-living adjustments will be based on an aggregate funded status and not an individual employer's funded status. Specifically, through Laws 2016, Ch. 2, the Legislature enacted changes that require a funded status for the PSPRS plan of at least 70 percent before providing a cost-of-living adjustment for PSPRS plan members hired on or after July 1, 2017. However, the funded status is an aggregate funded status because this law did not establish a requirement for the funded

Recommendation	Status/Additional Explanation
	status to be based on an individual employer's funded status. In addition, for PSPRS plan members hired on or after July 1, 2017, through Laws 2017, Ch. 235, the Legislature established an employer cost-sharing risk pool for employers with 250 or fewer active members. Under a cost-sharing plan, participating employers' and members' contributions are pooled and the plan assets are equally shared and used to pay the pension benefits of any participating employer's retirees. As a result, the funded status requirement for PSPRS plan members hired on or after July 1, 2017, for those employers with 250 or fewer employees will be based on the funded status for the cost-sharing risk pool. **Partially implemented for CORP at 24 months** The System did not report or provide documentation indicating whether it considered changing the permanent benefit increase structure from an aggregate to an individual employer funded status. However, the Legislature made changes through Laws 2017, Ch. 163, that require a funded status of at least 70 percent before providing a cost-of-living adjustment for CORP members that are probation and surveillance officers hired on or after July 1, 2018 (see explanation for Recommendation 2.1.a for more information). However, Laws 2017, Ch. 163, does not establish that the funded status be based on individual employers instead of CORP's aggregate funded status. In addition, there is no funded status requirement before providing a cost-of-living adjustment for members hired on or before June 30, 2018. **Not implemented for EORP** Changes made through Laws 2016, Ch.2, and Laws 2017, Ch.163, do not apply to EORP. According to the System, changes for EORP will be considered during the 2018 legislative session.
e. Consider whether increases for all three plans should be applied to a certain amount of a member's pension benefit, such as the first $18,000;	**Partially implemented for the PSPRS plan at 24 months** According to the System, applying increases to a certain amount of a member's pension benefit, such as the first $18,000, was considered for the PSPRS plan. However, this change was not pursued because it would not provide retirees with inflation protection. Through Laws 2016, Ch. 2, the Legislature enacted changes that require that a cost-of-living adjustment for a PSPRS plan member be based on a retired member's base benefit, and do not limit the increase to a certain amount of a member's pension benefit. However, the changes made through Laws 2016, Ch. 2, do represent a change in how benefit increases are calculated for PSPRS plan members (see explanation for Recommendation 2.1g for more information).

Recommendation	Status/Additional Explanation
	Implementation in process for CORP According to the System, applying increases to a certain amount of a member's pension benefit, such as the first $18,000, was considered for CORP. However, this change was not pursued because it would not provide retirees with inflation protection. Through Laws 2017, Ch. 163, the Legislature enacted changes that require that a cost-of-living adjustment for a CORP member be based on a retired member's base benefit, and do not limit the increase to a certain amount of a member's pension benefit. However, for members hired on or before June 30, 2018, these changes are contingent on a constitutional amendment the Legislature referred to voters at the next general election, which is scheduled for November 6, 2018. **Not implemented for EORP** Changes made through Laws 2016, Ch.2, and Laws 2017, Ch.163, do not apply to EORP. According to the System, changes for EORP will be considered during the 2018 legislative session.
f. Consider changing the EORP benefit increase formula to be based on asset value similar to the PSPRS plan and CORP, instead of retired members' estimated pension obligations;	**Not implemented** Changes made through Laws 2016, Ch.2, and Laws 2017, Ch.163, do not apply to EORP. According to the System, changes for EORP will be considered during the 2018 legislative session.
g. Consider modifying the PSPRS plan's permanent benefit increase structure to be based on an individual member's pension benefit; and	**Implemented at 24 months** Changes enacted by the Legislature through Laws 2016, Ch. 2, establish cost-of-living adjustments that will be based on the individual PSPRS plan member's pension benefit. Prior to this change, the benefit increase was determined using the average pension benefit of retirees, and each member received the same benefit increase amount regardless of the amount of their pension, which resulted in disproportionate benefit increases.
h. Identify other necessary changes, such as basing benefit increases on long-term investment performance instead of a 1-year result, or consider whether benefit increases should be eliminated.	**Implementation in process** Through Laws 2016, Ch.2, and Laws 2017, Ch. 163, the Legislature maintained benefit increases in the PSPRS plan and CORP by replacing them with cost-of-living adjustments. In addition, the cost-of-living adjustments are not tied to investment performance but rather to the metropolitan Phoenix-Mesa Consumer Price Index (see explanation for Recommendation 2.1c, for more information). However, for CORP members hired on or before June 30, 2018, these changes are contingent on a constitutional amendment the Legislature referred to voters at the next general election, which is scheduled for November 6, 2018. Finally, the changes made through Laws 2016, Ch. 2, and Laws 2017, Ch. 163, do not apply to EORP.

Recommendation	Status/Additional Explanation
2.2 Once solutions have been decided upon, the System and stakeholders should determine if the changes should apply only to members who are hired or retire after a specific date. If so, the System should pursue the necessary legislative changes to implement the solutions for all three plans' benefit increase structures. The outcome of the *Hall* lawsuit may impact the System's ability to make changes to the plans' benefit increase structures for active members.	**Implemented for the PSPRS plan at 24 months** See the explanation for Recommendation 2.1. **Implementation in process for CORP** See the explanation for Recommendation 2.1. **Not implemented for EORP** See the explanation for Recommendation 2.1.
2.3 The System should consider whether pursuing a ballot initiative to amend Arizona's Constitution would be warranted to make changes to the benefit increase structures for all three plans' members. Depending on how an amendment is worded, it could supersede previous legal decisions. If considering an amendment, the System and stakeholders should ensure that this amendment is specific to the System plans' permanent benefit increases to ensure members' base pension benefits are not impacted.	**Implemented for the PSPRS plan at 24 months** See the explanation for Recommendation 2.1. **Implementation in process for CORP** See the explanation for Recommendation 2.1. **Not implemented for EORP** See the explanation for Recommendation 2.1.
2.4 Throughout the process of developing solutions for the plans' benefit increase structures, the System should ensure it provides the necessary training or informational materials to ensure stakeholders and the public understand the purpose and impact of the proposed changes.	**Implementation in process for the PSPRS plan** The System is in the process of informing its members, local boards, and employers regarding changes made through Laws 2016, Ch. 2, to the PSPRS plan. For example, the System developed a communications plan that outlines certain events, such as webinars and training sessions, to provide local boards, employers, and members with updates regarding the progress of implementing changes to the PSPRS plan. In addition, the System publishes a quarterly newsletter on its website, and has developed and published in spring 2017 two animated videos to help educate local boards, employers, and members regarding changes made to the PSPRS plan through Laws 2016, Ch.2, and Laws 2017, Ch. 235 (see explanations for Recommendations 2.1, and 2.1d, for more information on the changes made through these laws). **Implementation in process for CORP** The System is in the process of informing CORP members, local boards, and employers regarding changes made through Laws 2017, Ch. 163. For example, the System included information on key provisions from the law in its third quarter newsletter for fiscal year 2017. **Not yet applicable for EORP** Changes made through Laws 2016, Ch.2, and Laws 2017, Ch.163, do not apply to EORP. According to the System, changes for EORP will be considered during the 2018 legislative session.

Recommendation	Status/Additional Explanation
2.5 The System should ensure that its actuarial assumptions appropriately include the estimated costs for its permanent benefit increases when conducting the System plans' annual valuations by:	
a. Conducting an audit of its actuary as soon as possible; and	**Implemented at 24 months**
b. Developing and implementing procedures for ensuring the actuarial audits' recommendations are reviewed and appropriately implemented.	**Implemented at 24 months**

Finding 3: Additional actions necessary to improve system plans' financial condition and long-term sustainability

Recommendation	Status/Additional Explanation
3.1 The System should develop and implement a funding improvement strategy. This funding improvement strategy will need to be at the participating-employer level for the PSPRS plan and CORP, but at the plan level for EORP. In developing this strategy, the System should review and incorporate key elements from Rhode Island's funding improvement strategy that may reasonably help increase plans' funded statuses.	**Not implemented** The System has decided not to pursue a formal funding improvement strategy at the employer level for the PSPRS plan or CORP, and at the plan level for EORP. The System believes that the changes made through legislation for the PSPRS plan and CORP (see explanation for Recommendation 2.1) serve as a funding improvement strategy. However, as indicated in the audit report, a funding improvement strategy establishes a standardized process for addressing the long-term sustainability of a retirement plan. Specifically, such a process would identify a specific point at which a funding improvement strategy was needed, require annual certification of the at-risk funded status of an employer/plan to prompt appropriate actions and steps, including specific actions that the System, member employers, or others could take to address an employer's or plan's at-risk funded status, and set specific time frames for completing the actions. In addition, although the System indicated that the Advisory Committee created through Laws 2016, Ch.2, may serve a key role in helping to develop policies and strategies such as those recommended by auditors, the Advisory Committee has not taken any action in this area.
3.2 The funding improvement strategy the System develops should consider:	
a. Establishing the funded status level at which its plans should be considered at-risk, and work with its actuary to determine what would be appropriate;	**Not implemented** See explanation for Recommendation 3.1.
b. Requiring annual certification of the at-risk funded status. This could be done as a part of the annual actuarial valuations performed by the System's actuary;	**Not implemented** See explanation for Recommendation 3.1.

Recommendation	Status/Additional Explanation
c. Specifying who must be notified when a plan is certified to be at-risk;	**Not implemented** See explanation for Recommendation 3.1.
d. Posting a notice of the at-risk status on its website;	**Not implemented** See explanation for Recommendation 3.1.
e. Establishing the specific actions that can be taken when a plan or plan employer is determined to be at-risk, including a requirement that the System review and approve the actions;	**Not implemented** See explanation for Recommendation 3.1.
f. Identifying who is responsible for the various actions, including the employer, an actuary, or system administrator;	**Not implemented** See explanation for Recommendation 3.1.
g. Establishing the amount of improvement in funded status that should be achieved; and	**Not implemented** See explanation for Recommendation 3.1.
h. Determining time frames for completing the various actions, including an overall time frame for improvement in a plan's funded status.	**Not implemented** See explanation for Recommendation 3.1.
3.3 Once the System has developed a funding improvement strategy, to provide greater leverage, the System should pursue legislation to incorporate the requirements related to the funding improvement strategy and its various components within its statutes.	**Not implemented** See explanation for Recommendation 3.1.
3.4 The System should work with the PSPRS plan and CORP employers and local boards, and other stakeholders, such as professional associations for firefighters or police, to explore the feasibility of offering multiple benefit options.	**Not implemented** Auditors were not able to determine whether the feasibility of offering multiple benefit options was effectively explored as a means to improve system plans' financial conditions and long-term sustainability. According to the System, the possibility of offering multiple benefit options was discussed during meetings with stakeholders as the pension reform bills for the PSPRS plan and CORP were being developed. In addition, the System sent an email on November 5, 2015, to stakeholders, such as the Arizona Law Enforcement Association and the Professional Fire Fighters of Arizona, informing them of the need to discuss the feasibility of offering multiple benefit options during a meeting scheduled for November 13, 2015. The System indicated that it was the consensus of the stakeholders that offering multiple benefit options was not something they wanted to pursue. However, the System did not provide documentation of its discussion with stakeholders. Finally, the System did not provide information about whether the feasibility of offering multiple benefit options was discussed with employers and local boards.

Recommendation	Status/Additional Explanation
3.5 If the System decides to offer a limited number of pension benefit options, it should take the following actions:	
a. Determine the specific pension options that should be available;	**Not implemented** See explanation for Recommendation 3.4.
b. Determine the specific times and conditions under which an employer can change its options;	**Not implemented** See explanation for Recommendation 3.4.
c. Seek the necessary changes to the PSPRS plan and CORP laws to allow for employers to select options; and	**Not implemented** See explanation for Recommendation 3.4.
d. Develop and implement training materials on the various pension benefit options and their costs so that PSPRS plan and CORP employers can make informed decisions about which benefit options would be the most appropriate.	**Not implemented** See explanation for Recommendation 3.4.
3.6 The System should develop and provide educational materials to PSPRS plan employers explaining how unusually large overtime pay increases the risk of generating unfunded liabilities. The System could work with the PSPRS plan's actuary to create and include in communications to plan employers, such as newsletters and retirement manuals, an explanation and examples of how compensation practices like unusually large overtime usage can generate unfunded liabilities for participating employers.	**Implementation in process** The System developed materials explaining how unusually large overtime pay increases the risk of generating unfunded liabilities and reported that it met with approximately 30 PSPRS plan local boards to present these materials. However, the System did not keep a record of meeting with these boards. Additionally, auditors contacted 7 local boards, none of which recalled seeing materials related to overtime pay.
3.7 The System should adopt practices similar to those in peer public pension plans to ensure that contributions are correct, including:	
a. Establishing formal, written policies and procedures for system staff to flag and document any abnormal contributions that may indicate abnormal wage increases or contribution errors. These procedures should detail which staff will be responsible for completing these tasks;	**Implemented at 6 months**
b. Establishing formal, written policies and procedures for system staff to investigate flagged contributions. These procedures should detail the necessary steps and documentation for any investigation as well as which staff will be responsible for conducting these investigations; and	**Implemented at 6 months**

Recommendation	Status/Additional Explanation
c. Developing and implementing written policies and procedures for conducting regular audits of participating employers for compliance in reporting wages and contributions.	**Not implemented** Although the System agreed with this recommendation and reported that it planned to contract for employer audits, during this 24-month followup, it reported that its Attorney General representative informally advised the Board that it does not have the authority to conduct audits of participating employers for compliance in reporting wages and contributions. The System indicated that it did not intend to seek a formal opinion from the Attorney General until changes made through Laws 2017, Ch. 235, are completed (see explanation for Recommendation 2.1d, for information on the changes made).
3.8 To ensure that the EORP has sufficient assets to cover its estimated pension obligations, the Legislature should consider revising A.R.S. §38-810 to allow the Board to annually establish contribution rates or consider increasing its annual appropriations over time.	**Implementation in process** During the 2018 legislative session, House Bill 2357 was introduced, which would require employer contributions to be sufficient to cover EORP's estimated pension obligations.
3.9 The System should continue its efforts to provide additional training to employers and local boards. In conducting such training, the System should ensure that employers and local board members understand the associated costs and effects of certain benefit decisions, such as long-term disability approvals and benefit calculations, as well as the significance of their individual funded status.	**Implementation in process** The System provided one training in February 2016 to CORP local board members that discussed the cost and effects of certain benefit decisions, such as long-term disability approvals and benefit calculations, as well as the significance of each employer's individual funded status. In addition, the System publishes a quarterly newsletter on its website, and has developed and published in spring 2017 two animated videos to help educate local boards, employers, and members regarding changes made to the PSPRS plan through Laws 2016, Ch.2, and Laws 2017, Ch. 235 (see explanations for Recommendations 2.1, and 2.1d, for more information on the changes made through these laws).

Sunset Factor #2: The extent to which the Department has met its statutory objective and purpose and the efficiency with which it has operated.

Recommendation	Status/Additional Explanation
1. The System should:	
a. Train IT staff on the roles and responsibilities of its updated disaster recovery plan;	**Implemented at 6 months**
b. Develop processes for reviewing, approving, and implementing its IT policies; and	**Implemented at 6 months**
c. Implement additional controls on its hosted website, such as encryption technologies, to prevent unauthorized access of confidential system information.	**Implemented at 6 months**
2. The Board and the System should enhance its internal audit function by:	

Recommendation	Status/Additional Explanation
a. Revising the System's internal audit charter to ensure internal and external assessments are conducted and scheduling an external assessment of the internal audit function;	**Implementation in process** The System indicated that it restructured its internal audit function and eliminated its internal audit function charter. However, it has updated its charter for the Operations, Governance Policy, and Audit Committee, which is responsible for overseeing the internal audit function. This charter and the appendices within its Board of Trustees Governance Manual contain requirements that internal and external assessments should be conducted of the internal audit function. The System reported that it will propose to the Board that an external assessment of its internal audit function be conducted in October 2018. Auditors will determine during the 36-month followup whether an external assessment for the internal audit function has been scheduled.
b. Requiring that the internal auditors disclose any conflicts of interest and their appropriate mitigation to the Operations, Governance Policy, and Audit Committee;	**Not implemented** Although the System has updated its charter for the Operations, Governance Policy, and Audit Committee, which is responsible for overseeing the internal audit function, this charter does not contain any requirements that internal auditors disclose any conflicts of interest and their appropriate mitigation to this committee.
c. Periodically reviewing its internal audit charter, including requiring internal auditors to regularly brief the Board on the purpose, authority, and responsibility of the internal audit function according to the charter. In addition, the Board should also amend the internal audit charter to require these activities; and	**Implementation in process** As indicated in Sunset Factor 2, Recommendation 2a, the Board eliminated the internal audit function's charter. However, the System updated its Board of Trustees Governance Manual to include a requirement for the internal auditor to periodically report to the Board a summary of the internal audit function's purpose, authority, and responsibility. Auditors will determine during the 36-month followup whether the internal auditor is periodically reporting to the Board.
d. Developing and implementing policies and procedures to guide internal audit function.	**Implementation in process** The System reported that it is beginning to draft policies and procedures for its internal audit function.

Sunset Factor #6: The extent to which the System has been able to investigate and resolve complaints that are within its jurisdiction.

Recommendation	Status/Additional Explanation
1. To enhance its processes for addressing members' issues, the System should:	
a. Develop and implement formal, written policies and procedures for handling member communications to ensure that system staff provide uniform treatment to members. These policies and procedures should define what member communications should be documented and tracked;	**Implementation in process** The System reported that it is developing a central database of record that will be used to document and track member issues in all three departments that handle member complaints. The System anticipates implementing a central database of record by February 2018. It also stated that it would develop written procedures for handling member communications once it implements this central database of record.

Recommendation	Status/Additional Explanation
b. Develop and implement a central record that details when members' issues are received, the nature of the issue, the system staff members who handled the issue and when, and how the issue was resolved; and	**Implementation in process** The System indicated that it is developing a central database of record and anticipates that this will be completed by February 2018. Once it has implemented this database, the System reported that it will begin developing a module within this database to track information on member communications.
c. Develop and implement procedures for requiring a regular analysis of the centralized record to identify and address systemic causes of trends in member issues.	**Implementation in process** As indicated in Sunset Factor 6, Recommendation 1b, the System will begin developing a module to track information on member communications once it has finished developing and implementing its central database of record. The System reported that, once the member communication module has been implemented, it would develop and implement procedures for requiring a regular analysis of this module to identify and address systematic causes of trends in member issues.

January 31, 2018

Operations Committee
Vendor Management Procedure

Background

When the Governance Manual's Vendor Selection Policy was updated in 2017, the Board asked staff to look into developing consistent procedures specifically related to two items: (1) how often contracts are rebid, and (2) how and how often vendor performance is evaluated. Those tasks were handled rather informally in the past, and little documentation was developed or reviewed. Staff looked at various ways to fulfill that request, and decided to develop a formal procedure that would ensure that vendor management is handled consistently and timely. As a result, staff developed a Vendor Management Procedure. Although staff procedures are not pre-approved by the Board, we wanted the Board to be aware of this new procedure.

Vendor Management Procedure Summary

The Vendor Management Procedure applies to contracted vendors—those vendors that we establish long-term relationships with. It does not apply, however, to investment managers because the methodology used to manage those contracts was previously determined by the Board and is already being followed by staff. It does apply to all other contracted vendors, including (but not limited to) vendors identified as "Named Vendors" in the Vendor Selection Policy, which includes the actuary, financial auditor, legal and fiduciary counsel, independent investment consultant, trustee/custodian, and government affairs representatives.

The new procedure adds some requirements to what we do today, including the following:

- We will assign a "business owner" to each contracted vendor. The business owner makes sure services are rendered in accordance with the contract and that appropriate service levels are being maintained by the vendor.
- At least once a year the business owner, often with feedback from others, will help evaluate vendor performance using a review form. Those reviews are to be completed by January 31st and turned in to the Compliance Officer.
- Contracts may be written with terms up to 5 years with possible extensions that extend the contract out another 5 years before it must be rebid. Contracts can no longer be extended indefinitely. 10 years was chosen as the amount of time a contract could be in place without being rebid because there are instances in which keeping the same vendor for 10-year periods is beneficial to PSPRS. For instance, using NEPC for this 10-year transition period has been important to prevent us from changing the portfolio's asset allocation every 5 years.
- The staff person or persons charged with tracking our contracts will notify the Administrator at least 6 months prior to any contract expiration, giving us time to determine whether or not we still need the services provided by the vendor, and time to re-bid the contract.
- The Compliance Officer will be responsible for making sure the procedures are followed timely and accurately.

We believe these changes will provide staff and the Board assurance that the money we spend on vendors is being spent wisely and that we are receiving quality service from those vendors.

Vendor Management Policy

January 19
2018

Please direct questions regarding this policy to Dave DeJonge.

Revision History

Revision Number	Creation Date	Revision Date	Author	Approver	Change History
1.0	1/19/18		Dave DeJonge	Jared Smout	▪ New Document

Vendor Management Procedure

1.0 Introduction

The purpose of this procedure is to provide instructions on how to manage the lifecycle of the vendors we contract with. This procedure will include sourcing, contracting, on-boarding, ongoing vendor management, and cancellation/transitioning. This procedure does not replace the Vendor Selection Policy found in the Board's Governance Manual, but rather provides information about how to implement the Policy.

2.0 Scope

This procedure applies to all contracted vendors not covered under another policy. For instance, Investment Managers are not included in this procedure; they are covered under investment policies approved by the Board of Trustees. The term "Named Vendor" refers to named vendors identified in paragraph 3 of the Governance Manual's Vendor Selection Policy.

3.0 Responsibilities

As defined in the Vendor Selection Policy, the Administrator has been assigned the task of overseeing the day-to-day activities of all vendors. The Administrator may delegate some or all of the procedures included in this document to others.

4.0 Procedures

The vendor lifecycle consists of four processes: Sourcing, Contracting, Ongoing Maintenance, and Transition/Cancellation. This document will include basic procedures for each process.

4.1 Process #1: Sourcing

The vendor sourcing process begins with a business need for a service. This may occur as a result of an expiration of an existing vendor relationship, or a brand new engagement. This process includes gathering requirements, identifying possible vendors, obtaining bids, evaluating those bids, and selecting a vendor.

4.1.1 Gathering Requirements

Before a contract is renewed or rebid, staff will determine whether or not the needs of the agency have changed, which might result in a change in services required. If the vendor is a Named Vendor whose appointment must be approved by the Board of Trustees, staff will consult with the Board of Trustees when finalizing requirements.

4.1.2 Identifying Possible Vendors

To the extent possible, staff familiar with the services provided will determine the appropriate vendor population, which may influence the bidding process used to select a vendor. As an example, staff may know of vendors already on State contract that could be used quickly at a price already negotiated by the State.

4.1.3 Obtaining Bids

In the case of Named Vendors, staff will work with the Board's Operations Committee (or a committee established by the Board Chair) to determine the best procurement method and will follow the requirements of the Vendor Selection Policy. The Administrator will be responsible for determining the best procurement method in all other instances. Bids should be competitive and obtained from two or more vendors. Procurement methods may include a Request for Proposal (RFP), Request for Information (RFI), State Contract vendors, competitive bid, or (in rare cases) sole source.

In emergency situations, the choice of procurement will depend upon the situation causing and/or resulting from the emergency and the actions needed to resolve it.

4.1.4 Evaluating Bids

Proposals/bids will be evaluated based on the selection criteria developed for that procurement, including obtaining background reviews of potential vendors, as necessary. Proposals from bidders that do not satisfy the mandatory criteria and/or minimum required qualifications will not be evaluated. Proposal evaluations must be conducted so evaluators can select the proposal providing the best value to PSPRS, not necessarily the lowest price.

4.1.5 Selecting a Vendor

Per the Vendor Selection Policy, Named Vendors will be appointed by the Board of Trustees. All other vendors will be appointed by the Administrator. The Administrator will inform the Board of Trustees of such appointments where they are material or significant.

4.2 Process #2: Contracting

Following the selection of a vendor, staff will work with the vendor to prepare contracts.

4.2.1 Contracts

Contracts will include the State of Arizona's Addendum of Mandatory Provisions and will be reviewed by legal counsel.

4.2.2 Contract Term

Contracts may be written with initial terms up to 5 years with possible extensions for up to an additional 5 years before they must be rebid. It is preferred that the contract be written to allow PSPRS to terminate the contract without cause upon 30 or 60 days' notice.

4.2.3 Private Data Protection

If the vendor will have access to data that is considered private or sensitive, the contract will include provisions that require the vendor to take reasonable and appropriate measures to protect that data. Private or sensitive data includes, but is not limited to, social security numbers, birth dates, and contact information.

4.3 Process #3: Ongoing Maintenance

Per the Vendor Selection Policy, "named vendors" will be subject to regular performance monitoring by staff, and periodic reviews throughout the term of their contracts. Criteria for review may include performance, staff satisfaction, competitiveness of fees, and/or quality of reporting. This section will outline the vendor management process in more detail.

4.3.1 Vendor Tracking

Paralegals will be responsible for tracking the various contracts we have with vendors, including the name of the vendor, services included in the contract, the cost, most recent renewal date, termination date, and any termination or renewal terms in the contract.

4.3.2 Vendor Relationship

The Administrator will assign a person to each vendor as the “business owner” responsible for maintaining a relationship with that vendor. The business owner will also be responsible for making sure services are rendered in accordance with the contract and the appropriate service level is being provided.

4.3.3 Vendor Performance Review

The business owner is responsible for ensuring that vendors are reviewed for compliance and due diligence on at least an annual basis. Performance Reviews will include the following criteria to determine vendor performance: vendor responsiveness; customer service, quality and delivery; user satisfaction; competitiveness of fees; and overall value. Performance reviews will be conducted by January 31st each year. Copies of the reviews will be provided to the Compliance Officer, the Deputy Administrator and the Administrator. The Compliance Officer and/or the Administrator will report results to the Board’s Operations Committee. Any material failures by named vendors to comply with the terms of their contract or applicable guidelines, along with any actions taken by staff, will be reported by the Administrator (or a designee) to the Board of Trustees in accordance with the Vendor Selection Policy.

4.4 Process #4: Transition/Cancellation

Activities for transition or cancellation will begin when either the vendor or PSPRS deems the relationship to no longer be necessary, the term of the agreement has expired, or service level agreements are not being met. Transition or cancellation activities may vary depending upon the type of vendor and/or contract.

4.4.1 Internal Notification

At least six months before a contract expires, and no later than January 31 of the year a contract is set to expire, the Paralegal or business owner will notify the Administrator that a contract will be expiring, giving the agency enough time to rebid the contract should PSPRS still need those services.

4.4.2 Named Vendors

If the vendor is a Named Vendor, the Administrator or designee will consult with the Board of Trustees to determine whether the services are still needed, the type of vendor being sought and supporting rationale, a projected timeline for completion of the search process, and a description of the search process deemed most appropriate and cost effective under the circumstances in accordance with the Vendor Selection Policy. The Board of Trustees will determine if they no longer have need of the services, wish to extend the contract with the existing vendor, or use one of the methods outlined in paragraph 4.1.3 of this document to gather information and/or begin the search process for a new vendor.

4.4.3 Other Non-Named Vendors

In accordance with the Vendor Selection Policy, the Administrator will be responsible for appointing vendors other than Named Vendors and for determining how best to proceed when a contract is to be cancelled, extended or re-bid.

5.0 Procedure Review

This procedure is effective on the day it is approved by the Administrator, and will be reviewed at least once every three years.

January 31, 2018

Operations Committee
PS COLA Calculations

BACKGROUND

Legislation passed in 2016 eliminated the Permanent Benefit Increase (PBI) in statute for public safety members, and replaced it with a Cost of Living Adjustment (COLA). A.R.S. §§38-856.05 and 38-856.06 describe how the COLA is to be calculated for PSPRS members:

> *A retired member or a survivor of a retired member shall receive annually a cost-of-living adjustment in the base benefit based on the average annual percentage change in the metropolitan Phoenix-Mesa consumer price index published by the United States department of labor, bureau of labor statistics, with the immediately preceding year as the base year for making the determination….*

Statute, however, does not specify which year to use (fiscal or calendar) or which CPI to use (CPI-U or CPI-W). Staff believes the Board has the ability to make those determinations through a Board policy decision.

QUESTION: WHICH YEAR SHOULD WE USE AS THE BASE YEAR?

Since 2001, the Phoenix-Mesa CPI has been updated by the Bureau of Labor Statistics every 6 months. Beginning later this year, the Phoenix-Mesa CPI will be updated every 2 months after each even month (February, April, June, etc.). The results are typically available about two weeks after the end of the month. For instance, the June, 2018 results will be available July 12, 2018. There are advantages and disadvantages of using the fiscal year vs. the calendar year as the basis for determining the COLA that will be granted to benefit recipients each July 1st.

The biggest advantage of using the fiscal year as the base year (in other words, measure CPI from June 30 to June 30) is that the COLA is granted closer to the period of time the price of goods is being measured. For instance, if the price of oil increases during the January to June timeframe, the COLA granted on July 1st will better reflect that increase.

The biggest advantage of using the calendar year is that staff would have enough time to calculate, communicate and process COLAs by July 1, as is required by statute. Any delays in the Department of Labor calculating and publishing the CPI would not have an effect on getting the COLAs processed timely. While we can't comment on the intent of the legislature, it is important to note that typically when the statute refers to a fiscal year, it specifically states "fiscal year." In the two sections of statute that refer to how the new COLA is calculated (§38-856.05 and §38-856.06), the statute does not specify "fiscal year" but rather states "year." That may be an indication that the legislature intended us to measure the CPI on a calendar year basis.

Recommendation: Staff recommends that we use the calendar year that precedes July 1 as the base year when calculating the amount of the COLA.

QUESTION: WHICH CPI SHOULD WE USE?

The Bureau of Labor Statistics publishes two measures of the Consumer Price Index—the CPI-U and the CPI-W. The CPI-U is the Consumer Price Index for all urban consumers. Approximately 89% of the population in the Phoenix metro area is included in this measurement. The CPI-W is the Consumer Price Index for a subset of the CPI-U population. It includes wage earners and clerical workers only, and represents approximately 29% of the population. Retirees who are not earning a "wage" are included in the CPI-U, but not in the CPI-W. Likewise, unemployed people are included in the CPI-U, but not in the CPI-W. In general, the CPI-W is more volatile because it uses a smaller sample population. According to the Bureau of Labor Statistics, in most cases across the country the CPI-W increases more than the CPI-U. In looking at the increases over the past 14 years in Phoenix, however, the CPI-U has outpaced the CPI-W in 9 of those years. Because the CPI-U population coverage is more comprehensive, it is typically the measurement used in most escalation agreements.

Recommendation: Staff recommends that we use the CPI-U as the measurement when calculating COLAs since retirees are included in that population and it is less volatile over time.

U.S. DEPARTMENT OF LABOR, BUREAU OF LABOR STATISTICS
Western Information Office, 90 7th St., Suite 14-100, San Francisco, CA 94103
Information Staff (415) 625-2270 / Fax (415) 625-2351

PHOENIX-MESA, AZ
Consumer Price Index, All Items, December 2001=100 for All Urban Consumers (CPI-U)

SEMI-ANNUAL AVERAGE				OVER-THE-YEAR PERCENT CHANGE			
YEAR	1st Half	2nd Half	ANNUAL AVERAGE	YEAR	1st Half	2nd Half	ANNUAL AVERAGE
2004	105.2	105.2	105.2	2004	2.0	1.6	1.8
2005	107.3	109.2	108.3	2005	2.0	3.8	2.9
2006	110.6	112.3	111.5	2006	3.1	2.8	3.0
2007	114.531	116.038	115.284	2007	3.6	3.3	3.4
2008	118.912	119.616	119.264	2008	3.8	3.1	3.5
2009	117.335	117.802	117.568	2009	-1.3	-1.5	-1.4
2010	118.176	118.278	118.227	2010	0.7	0.4	0.6
2011	120.762	122.203	121.483	2011	2.2	3.3	2.8
2012	124.128	124.267	124.197	2012	2.8	1.7	2.2
2013	125.642	125.922	125.782	2013	1.2	1.3	1.3
2014	127.490	128.157	127.823	2014	1.5	1.8	1.6
2015	127.288	128.749	128.019	2015	-0.2	0.5	0.2
2016	129.103	131.112	130.107	2016	1.4	1.8	1.6
2017	132.653	133.995	133.324	2017	2.7	2.2	2.5

Table of over-the-year percent increases. An entry for 1st Half 2014 indicates the percentage increase from 1st Half 2013 to 1st Half 2014 (in this example 1.5 percent)

PHOENIX-MESA, AZ
Consumer Price Index, All Items, December 2001=100 for Urban Wage Earners and Clerical Workers (CPI-W)

SEMI-ANNUAL AVERAGE				OVER-THE-YEAR PERCENT CHANGE			
YEAR	1st Half	2nd Half	ANNUAL AVERAGE	YEAR	1st Half	2nd Half	ANNUAL AVERAGE
2004	104.4	104.7	104.6	2004	1.2	1.3	1.3
2005	106.6	108.9	107.8	2005	2.1	4.0	3.1
2006	110.1	111.6	110.9	2006	3.3	2.5	2.9
2007	113.627	115.208	114.418	2007	3.2	3.2	3.2
2008	118.222	119.229	118.725	2008	4.0	3.5	3.8
2009	116.558	117.577	117.068	2009	-1.4	-1.4	-1.4
2010	117.968	118.155	118.062	2010	1.2	0.5	0.8
2011	120.928	122.368	121.648	2011	2.5	3.6	3.0
2012	123.889	123.894	123.892	2012	2.4	1.2	1.8
2013	125.183	125.153	125.168	2013	1.0	1.0	1.0
2014	126.599	127.056	126.828	2014	1.1	1.5	1.3
2015	125.613	126.982	126.298	2015	-0.8	-0.1	-0.4
2016	127.194	128.884	128.039	2016	1.3	1.5	1.4
2017	130.063	131.903	130.983	2017	2.3	2.3	2.3

Table of over-the-year percent increases. An entry for 1st Half 2014 indicates the percentage increase from 1st Half 2013 to 1st Half 2014 (in this example 1.1 percent)

PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
2018 PROPOSED LEGISLATION

(53rd Legislature, 2nd Regular Session)

Updated January 25, 2018

H2097 PENSION FUNDING POLICIES; EMPLOYERS

Beginning on or before July 1, 2019, each governing body of a Public Safety Personnel Retirement System employer is required to annually adopt a pension funding policy for the PSPRS that includes a list of specified funding objectives, including how to maintain adequate assets to fund benefits payable under the PSPRS and defining the governing body's funded ratio target under the PSPRS. The governing body is required to post the pension funding policy on its public website.

Affected Plans/Statutes: PSPRS
First sponsor: Rep. Livingston

Current Action: 1/18 from House Banking and Insurance with amendment #4013; 1/18 House Banking and Insurance amended, report awaited; 1/11 House Banking and Insurance held; 1/9 referred to House Banking and Insurance

H2357 EORP; EMPLOYER CONTRIBUTIONS

Beginning July 1, 2018, each Elected Officials' Retirement Plan employer is required to make contributions on a level percent of compensation basis for all member employees sufficient under an actuarial valuation to meet both the normal cost plus the actuarially determined amount required to amortize the unfunded accrued liability over a closed period of 20-30 years. In any fiscal year, an employer's contribution to EORP in combination with member contributions may not be less than the actuarially determined normal cost for that fiscal year. Emergency clause.

Affected Plans/Statutes: EORP
First sponsor: Rep. Livingston

Current Action: 1/18 from House Banking and Insurance do pass; 1/16 referred to House Banking and Insurance

H2431 PSPRS; NORMAL RETIREMENT; EMPLOYEE CONTRIBUTIONS

For the Public Safety Personnel Retirement System, the definition of "normal retirement date" for an employee who becomes a member on or after July 1, 2017, is modified to eliminate the requirement that the employee be at least 55 years of age to retire after 15 years of credited service. The separate calculations for employee contribution rates that applied to employees hired on or after July 1, 2017 are deleted.

Affected Plans/Statutes: PSPRS
First sponsor: Rep. Cardenas

Current Action: 1/24 referred to House Banking and Insurance

S1251 PSPRS; CORP; MODIFICATIONS

Various changes relating to the Public Safety Personnel Retirement System (PSPRS) and the Corrections Officer Retirement Plan (CORP). For the purpose of the PSPRS Defined Contribution Retirement Plan, a "participant" (defined) is permitted to make a rollover contribution from a "qualified plan" or an "IRA" (both defined) that must be deposited in a separate rollover account and made immediately available for the participant to either withdraw all or any portion of the lump sum deposit or directly transfer all or any portion of the lump sum deposit to an eligible retirement plan. If a participant in the PSPRS Defined Contribution Retirement Plan is subsequently covered by the federal old age and survivors insurance system, the participant and his/her employer cannot make any contributions on his/her behalf during the period s/he is covered by the federal old age and survivors insurance system. Retroactive to January 1, 2018, the deadline for an Indian tribe to opt out of the public safety employer risk pool is extended one year to December 31, 2018. If an employee hired on or after July 1, 2018 who is eligible to participate in CORP or PSPRS depending on the employee's election is killed in the line of duty or dies from injuries suffered in the line of duty during the first 90 days of employment, the employee is considered as having been enrolled in CORP and the surviving spouse of the deceased employee is eligible for survivor benefits.

Affected Plans/Statutes: PSPRS and CORP
First sponsor: Sen. D. Farnsworth

Current Action: Hearing: 1/31 at 9:00 AM, Senate Rm. 1; 1/22 referred to Senate Finance

S1262 RETIREMENT; ASSUMED RATE OF RETURN

Beginning with the actuarial valuation report issued for FY2018-19, for all of the defined benefit retirement plans the Public Safety Personnel Retirement System (PSPRS) Board manages, the Board is required to adopt an assumed rate of return that is not greater than 200 basis points above a 3-year rolling average of the 20-year treasury constant maturity rates as of June 30 of the fiscal year for which the actuarial valuation report is being prepared. If the assumed rate of return for FY2018-19 exceeds this threshold, the Board is required to reduce the assumed rate of return by at least 25 basis points annually until the assumed rate of return is at or below the threshold.

Affected Plans/Statutes: PSPRS
First sponsor: Sen. Petersen

Current Action: 1/22 referred to Senate Finance

S1292 EORP; COST-OF-LIVING ADJUSTMENT

For the Elected Officials' Retirement Plan, each retired member or survivor of a retired member is eligible to receive a compounding cost-of-living adjustment in the base benefit based on the average annual percentage change in the metropolitan Phoenix-Mesa consumer price index, with the immediately preceding year as the base year for making the determination, up to a maximum of two percent of the retired member's or survivor's base benefit annually. Repeals statutes governing EORP benefit increases. Conditionally enacted on the state Constitution being amended, as prescribed in an unspecified Senate concurrent resolution (blank in original), by the voters at the 2018 general election.

Affected Plans/Statutes: EORP
First sponsor: Sen. D. Farnsworth

Current Action: Hearing: 1/31 at 9:00 AM, Senate Rm. 1; 1/23 referred to Senate Finance

SCR1010	PUBLIC RETIREMENT SYSTEMS

The 2018 general election ballot is to carry the question of whether to amend the state Constitution to provide that the Constitutional provision prohibiting public retirement system benefits from being diminished or impaired does not prohibit certain adjustments to the Corrections Officer Retirement Plan as provided in S1442 as enacted by the 53rd Legislature, 1st Regular Session, and does not prohibit certain adjustments to the Elected Officials' Retirement Plan as provided in an unspecified Senate bill (blank in original). The Legislature requests the Secretary of State return SCR1023, 53rd Legislature, 1st Regular Session, to the Legislature and submit this resolution in lieu of SCR1023.

Affected Plans/Statutes: PSPRS, CORP and EORP
First sponsor: Sen. D. Farnsworth

Current Action: Hearing: 1/31 at 9:00 AM, House Rm. 1; 1/23 referred to Senate Finance

PSPRS Investment Committee, effective March 28, 2018
Donald A Smith, Jr. **Chairman**
William T. Buividas
Harry Papp
Dean M. Scheinert

PSPRS Operations, Governance Policy and Audit Committee
Edward J. McNeill, **Chairman**
Bryan Raines
Mike Scheidt

PSPRS Defined Contribution Committee
William T. Buividas, **Chairman, PSPRS Board Member**
Bryan Jeffries, Mesa FD, PFFA President
Ryan McKinnon, Scottsdale PD
Brian Moore, Phoenix FD
Jared A. Smout, PSPRS Administrator
Bill Thatcher, PSPRS Portfolio Manager
Daren Wunderle, Phoenix PD

800.521.0498 | P: 248.799.9000 | F: 248.799.9020 | www.grsconsulting.com

January 29, 2018

Mr. Jared A. Smout, Administrator
Arizona Public Safety Personnel Retirement System
3010 East Camelback Road, Suite 200
Phoenix, Arizona 85016-4416

Re: Arizona Elected Officials' Retirement Plan – Study for EORP Working Group

Dear Jared:

As requested, enclosed are benefit and contribution projections under various scenarios for the Arizona Elected Officials' Retirement Plan (EORP). This study was based upon data furnished by PSPRS, which is summarized on page 2. Actuarial methods and assumptions, except as noted, were the same as those used in the last regular annual actuarial valuation as of June 30, 2017.

Your comments and questions are welcome.

Sincerely,

James D. Anderson

James D. Anderson, FSA, EA, MAAA

JDA:sc
Enclosure

cc: Mark Buis, GRS
Francois Pieterse, GRS

One Towne Square | Suite 800 | Southfield, Michigan 48076-3723

Arizona Elected Officials' Retirement Plan
EORP Study
as of June 30, 2017

Requested By: Mr. Jared A. Smout, Administrator

Date: January 26, 2018

Submitted By: Mark Buis, FSA, EA, FCA, MAAA; James D. Anderson, FSA, EA, MAAA and Francois Pieterse, ASA, FCA, MAAA
Gabriel, Roeder, Smith & Company

This report contains projections related to the Arizona Elected Officials' Retirement Plan (EORP). The purpose of the report is to investigate various plan funding approaches. This report should not be relied on for any other purpose. The report has been prepared at the request of the Fund Administrator. Mark Buis, James D. Anderson, and Francois Pieterse are Members of the American Academy of Actuaries (MAAA) and meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein. The signing actuaries are independent of the plan sponsor.

The date of the valuation was June 30, 2017. This means that the results of the supplemental valuations are based upon the June 30, 2017 data and assumptions, unless otherwise stated. Supplemental valuations do **not** predict the result of future actuarial valuations. Rather, supplemental valuations give an indication of the probable long-term cost of the **plan** without comment on the complete end result of the future valuations.

This valuation was based upon information furnished by the Fund Administrator, for use in the June 30, 2017 valuation of the Plan. We checked for internal consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided by PSPRS. All actuarial assumptions, methods, and Plan provisions valued in this report, are as described in the June 30, 2017 valuation report except as explicitly described in this document.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. Due to the limited scope of the actuary's assignment, the actuary did not perform an analysis of the potential range of such future measurements.

Arizona Elected Officials' Retirement Plan
EORP Study
as of June 30, 2017

Actuarial assumptions and methods were consistent with those used in the regular actuarial valuation of the Retirement Plan on the valuation date, unless otherwise noted. Actuarial assumptions are adopted by the Retirement Board of Trustees. In particular:

- The assumed rate of interest was 7.40%.
- The assumed rate of wage inflation was 3.50%.

A brief summary of the EORP Defined Benefit Plan (DB) data, as of June 30, 2017, is presented below:

Summary of Covered Population Data
June 30, 2017

		Averages			
				Annual Pay or Retirement Allowance	
	No.	Age	Years of Service	2017	2016
Actives	600	57.1	10.7	$84,796	$83,236
Retirees & Beneficiaries	1,196	73.0		53,084	51,729
Inactive/Vested	162	55.7			
	1,958				

Combined total EORP payroll at June 30, 2017 equals $61,631,357:

- $50,877,556 for 600 EORP DB active members; and
- $10,753,801 for 170 EORP Defined Contribution (DC) members.

Present Plan

- EORP Defined Benefit Plan (DB) is closed to new hires effective January 1, 2014.
- Current Defined Benefit Plan Tier 1 members (hired before January 1, 2014) continue to participate in the Defined Benefit Plan and contribute 7% of pay.
- Current Defined Benefit Plan Tier 2 members (hired before January 1, 2014) continue to participate in the Defined Benefit Plan and contribute 13% of pay.
- EORP new hires (on or after January 1, 2014) enroll in a Defined Contribution (DC) Plan, contributing 8% of their pay and receive a 6% match on all contributions. No other benefits would be payable.
- New plan members may withdraw their accumulated contributions (including employer match) at any time per IRS rules.
- New DC accounts invested and managed by a third party administrator (no guaranteed rate of return, interest credited quarterly).
- Employers contribute a flat percentage rate over all employees (old and new) for 27 years which:
  - Pays the unfunded liability of DB plan over 27 years.
  - Pays the annual normal cost for DB plan participants each year until there are no longer any DB plan participants.
  - Flat rate is in addition to judicial filing fees ($8,646,790 received during 2016-2017) and an annual appropriation of $5 million.
  - Pays 6% match for new DC members which is not used for DB plan funding.

Background

At the time that EORP was closed to new members, statutory financing was established at a level equal to 23.5% of combined payroll (DB plus DC), plus judicial filing fees expected to be $10 million annually and a $5,000,000 annual appropriation. Each year subsequent to the EORP closure, an annual **stochastic** projection study has been performed to investigate the sufficiency of the statutory financing structure in light of emerging experience. The most recent study, delivered December 7, 2017 developed the following contributions to finance the plan with 75% probability:

Scenario	Flat Rate
A1	61.5% plus $15 million additional annual revenue
A2	23.5% plus $50.1 million additional annual revenue

Arizona Elected Officials' Retirement Plan
EORP Study
as of June 30, 2017

Focus of This Study

As requested, this study uses various contribution rate/benefit payment scenarios to investigate when the EORP fund might be depleted under the current 7.4% investment return assumption. Note that this study incorporates the most recent actual additional revenue amount of $13,646,790 (the sum of annual filing fees and the appropriation during 2016-2017). Also, while the EORP Defined Benefit (DB) plan is closed to new hires, the current funding mechanism is based on combined DB and Defined Contribution plan payroll – in this way the plan is financed similarly to an open DB Plan. Further, re-opening the plan would result in additional normal cost (as more active members accrue EORP benefits) and provide a more direct payroll base over which to calculate percentage of payroll costs. Lastly, a closed pension plan can constrict the asset allocation due to liquidity needs. Therefore, reopening the plan would provide greater flexibility with regard to asset allocation and the ability of the fund to earn 7.4% over the long term.

This study investigates the following contribution approaches:

- Pay-as-you-go financing (PAYGO) = contributions equal to benefit payments every year.
- Current Statutory = 23.5% of combined payroll + $13.6 million additional annual revenue.
- Stochastic = 61.5% of combined payroll + $13.6 million additional annual revenue or 23.5% of combined payroll + $50.1 million additional annual revenue.
- Intermediate = financing at a level between Current approach and Stochastic approach.
- Graduated = 23.5% to 48.5% over 5 years + $13.6 million additional annual revenue.
- Graduated = 23.5% to 73.5% over 10 years + $13.6 million additional annual revenue.

Additional scenarios were examined, but not included in this study. In particular, extending the amortization period does not help the solvency of the fund because the fund is projected to become depleted before the end of the current period of 27 years absent significant increases in contributions.

The financing approaches are applied to three benefit payment scenarios:

1) Current benefits (i.e., 3% Assumed Permanent Benefit Increases – "PBI").
2) Changing the EORP PBI to be like the newly established PSPRS COLA which is linked to CPI (i.e., 1.75% Assumed PBI).
3) A low investment volatility scenario in which the PBI is not triggered (i.e., 0% Assumed PBI).

The projected benefit payments for each scenario are shown in the Appendix. Please note that these are estimates based on an assumed PBI/COLA and that the actual pattern of PBI/COLA is not expected to be uniform under the current plan design. Rather, there will likely be years with large PBI/COLA increases and other years with zero or no PBI/COLA increase. Over the long term, however, the impact of the PBI/COLA is significant.

Focus of This Study (Concluded)

The body of this report contains summary charts with observations. The Appendix contains projections showing:

- benefit payment scenarios 1-3 – note that these become PAYGO scenarios at fund depletion
- selected Scenario 1 contribution rate scenarios

It is important to note that the projections were developed to show how cash flow emerges, meaning benefit payments and contributions. The contribution amounts are illustrative in that they are not adjusted as in the annual actuarial valuation for underfunding/overfunding. As such, due to the magic of compound interest, the cash flow projections exacerbate underfunding by showing increasingly negative asset balances, and also exacerbate overfunding by showing ever increasing asset balances. The following tables summarize the results based on the various contribution approaches and EORP benefits – with current PBI (Scenario 1), current PSPRS PBI (Scenario 2) and without PBI (Scenario 3).

Scenario 1: Current Valuation Assumptions and Benefits (i.e., 3% Assumed PBI)

Approach	Employer Contribution Rate	Additional Annual Revenue	End of Financing Period	Employer Contribution Dollars + Additional Annual Revenue	Fund Depletion Year
PAYGO	>100% initially	N/A	N/A	$64 million, increasing. to $100 million in 2034, then decreasing	None
Statutory	23.5%	$13.6 million	2044	$28 million*	2026
Stochastic	61.5%	$13.6 million	2044	$52 million*	None
Stochastic	23.5%	$50.1 million	2044	$65 million*	None
Intermediate	40%	$13.6 million	2044	$38 million*	2031
Intermediate	50%	$13.6 million	2044	$44 million*	2039
Intermediate	55%	$13.6 million	2044	$48 million*	2051
Intermediate	55%	$13.6 million	2047	$48 million*	None
Graduated	23.5%/48.5% over 5 years	$13.6 million	2044	$28 million^	2032
Graduated	23.5%/73.5% over 10 years	$13.6 million	2044	$28 million#	None

** Payroll portion of contribution increases 3.5% annually.*
^ Annual contribution increases of 5% for 5 years, 3.5% thereafter.
Contribution schedule:
2017 -- 23.5% of payroll + fees
2018 -- 28.5% of payroll + fees
2019 -- 33.5% of payroll + fees
2020 -- 38.5% of payroll + fees
2021 -- 43.5% of payroll + fees
 # Annual contribution increases of 5% for 10 years, 3.5% thereafter.

Scenario 1 Observations

- Annual contributions to the plan over the past few years have been at the $30 million level, while benefit payments run about $60 million per year. Pursuing an immediate PAYGO financing policy (i.e., contributions = benefit payments) results in contribution rates that are greater than 100% of combined payroll, and no fund depletion. If by PAYGO we mean that fund assets were used to pay benefits, with no other contributions, the fund would be depleted in 5 years, at which point estimated contributions would jump to $79 million.
- **Note that extending the financing period does not keep the fund from being depleted under current statutory financing – since the fund is depleted in 2026.** The 23.5% contribution rate is insufficient in the near term and increasing the financing period has no impact on plan solvency. However, extending the financing period to 30 years at a 55% contribution rate level is projected to not deplete the fund.
- An "Intermediate" contribution approach at the levels shown generally leads to fund depletion.
- A graduated contribution approach can lead to fund sufficiency, provided that the contributions ramp up quickly.

Scenario 2: Current Valuation Assumptions, Limited COLA Benefits (i.e., 1.75% Assumed PBI)

Approach	Employer Contribution Rate	Additional Annual Revenue	End of Financing Period	Employer Contribution Dollars + Additional Annual Revenue	Fund Depletion Year
PAYGO	>100% initially	N/A	N/A	$64 million, increasing. to $100 million in 2034, then decreasing	None
Statutory	23.5%	$13.6 million	2044	$28 million*	**2027**
Stochastic	61.5%	$13.6 million	2044	$52 million*	**None**
Stochastic	23.5%	$50.1 million	2044	$65 million*	**None**
Intermediate	40%	$13.6 million	2044	$38 million*	**2035**
Intermediate	50%	$13.6 million	2044	$44 million*	**None**
Intermediate	55%	$13.6 million	2044	$48 million*	**None**
Intermediate	55%	$13.6 million	2047	$48 million*	**None**
Graduated	23.5%/48.5% over 5 years	$13.6 million	2044	$28 million^	**2049**
Graduated	23.5%/73.5% over 10 years	$13.6 million	2044	$28 million#	None

** Payroll portion of contribution increases 3.5% annually.*
^ Annual contribution increases of 5% for 5 years, 3.5% thereafter.
2017 -- 23.5% of payroll + fees
2018 -- 28.5% of payroll + fees
2019 -- 33.5% of payroll + fees
2020 -- 38.5% of payroll + fees
2021 -- 43.5% of payroll + fees
 # Annual contribution increases of 5% for 10 years, 3.5% thereafter.

Scenario 2 Observations

- Annual contributions to the plan over the past few years have been at the $30 million level, while benefit payments run about $60 million per year. Pursuing an immediate PAYGO financing policy (i.e., contributions = benefit payments) results in contribution rates that are greater than 100% of combined payroll, and no fund depletion. If by PAYGO we mean that fund assets were used to pay benefits, with no other contributions, the fund would be depleted in 5 years, at which point estimated contributions would jump to $75 million.
- As Scenario 2 benefits are constrained relative to Scenario 1, the fund depletion year is generally projected to occur later.
- The COLA structure modelled (based on recent changes to PSPRS) has greater predictability than the current EORP PBI structure. Should EORP be reopened to new hires, consideration should be given to providing this more predictable COLA benefit to new hires.

Scenario 3: Current Valuation Assumptions, Limited COLA Benefits (i.e., 0% Assumed PBI) in Low Investment Volatility Environment

Approach	Employer Contribution Rate	Additional Annual Revenue	Amort. Period (years)	Employer Contribution Dollars + Additional Revenue	Fund Depletion Year		
					7.4%	6.0%	4.0%
PAYGO	>100% initially	N/A	N/A	$64 million, increasing to **$72** million in 2027, then decreasing	None	None	None
Statutory	23.5%	$13.6 million	27	$28 million*	**2029**	**2028**	**2027**
Stochastic	61.5%	$13.6 million	27	$52 million*	None	None	None
Stochastic	23.5%	$50.1 million	27	$65 million*	None	None	None
Intermediate	40%	$13.6 million	27	$38 million*	**None**	None	**2051**
Intermediate	50%	$13.6 million	27	$44 million*	**None**	None	None
Intermediate	55%	$13.6 million	27	$48 million*	**None**	None	None
Intermediate	55%	$13.6 million	30	$48 million*	None	None	None
Graduated	23.5%/48.5% over 5 years	$13.6 million	27	$28 million^	**None**	None	None
Graduated	23.5%/73.5% over 10 years	$13.6 million	27	$28 million#	None	None	None

** Payroll portion of contribution increases 3.5% annually.*
^ Annual contribution increases of 5% for 5 years, 3.5% thereafter.
2017 -- 23.5% of payroll + fees
2018 -- 28.5% of payroll + fees
2019 -- 33.5% of payroll + fees
2020 -- 38.5% of payroll + fees
2021 -- 43.5% of payroll + fees
 # Annual contribution increases of 5% for 10 years, 3.5% thereafter.

Scenario 3 Observations

- We are not investment experts, but anticipate that **a portfolio achieving a 7.4% return in today's markets would result in sufficient return volatility to trigger the PBI feature of this plan in some years**. As such, a reduced rate of return may be appropriate for investigating this scenario. Please see comment 1 on the following page for additional discussion regarding liquidity requirements.
- Given the size of the fund relative to benefit payments, projected fund depletion occurs sooner under low return expectations based on current statutory funding – even with no projected PBI payments.
- Annual contributions to the plan over the past few years have been at the $30 million level, while benefit payments run about $60 million per year. Pursuing an immediate PAYGO financing policy (i.e. contributions = benefit payments) results in contribution rates that are initially greater than 100% of combined payroll, and no fund depletion. If by PAYGO we mean that fund assets were used to pay benefits, with no other contributions, the fund would be depleted in 5 years, at which point estimated contributions would jump to $69 million.

Comments

Comment 1 - The funding of the closed DB plan is based on a 7.40% rate of return. When a plan closes, steadily increasing cash flow requirements will make earning the assumed rate of return more difficult. Looking at changes in the EORP DB population from June 30, 2014 to June 30, 2017, the ratio of retired to active has increased from 1.25:1 to 2:1 and annual benefit payments have increased from $53 million to $64 million. The fund stood a little under $300 million as of June 30, 2017. At some point liquidity concerns will be paramount as cash will be needed to provide benefit payments. This dramatically shortens the investment horizon and can lead to a greater fixed income or cash position which will lower the expected return of the fund and impact contribution requirements.

Comment 2 - The funding of the Closed DB plan also depends greatly on payroll increases (at a rate of 3.5% per year) for new hires in the DC plan. To the extent that pay increases are less than 3.5% or that the active population decreases, the Closed DB plan runs additional risks of running out of money. For example, under the "61.5% + $13.6 million" contribution scenario in which 3% PBI is expected – changing the payroll growth to 2.5% leads to fund depletion in 2051, and a further reduction in payroll growth to 1% leads to fund depletion in 2038. If the plan were reopened, the dependence on future payroll increases remains. However, the plan would be financed using level percentage of payroll financing on defined benefit payroll only, which is more straightforward than the current financing approach.

Comment 3 - The current plan structure will result in most of the unfunded liability being paid off in the last few years of the next 27 years. Similar programs have been used in Illinois and other places and have resulted in very low funded ratios and the potential to run out of system assets prior to all benefits being paid to plan participants.

Comment 4 - The current present value of retiree benefits exceeds the market value of assets which results in additional drain on the fund. This is because the restored PBI mechanism applies the excess return over 9% to the present value of retiree benefits (instead of the actual assets). For example, as of June 30, 2017 the Market Value of Assets in the EORP trust was approximately $298 million while the present value of retiree benefits is approximately $598 million. Suppose the fund were to earn a 30% rate of return. Then the excess over 9% is 21%. The 21% is then applied to the present value of retiree benefits resulting in a $126 million transfer to the excess reserve account. This $126 million represents 42% of the assets being diverted to the excess fund (leaving nothing of the 30% actual return to fund benefits). In the 2017, the return on assets for EORP was approximately 11.85%. However, the net return after transfer to the PBI was approximately 6.15%. Additionally, due to the funding mechanism of paying a larger share of the unfunded liability towards the end of the 27-year period, this situation could persist for the next 10 to 15 years. **Since the Plan is now closed to new hires, we recommend this policy be reviewed and perhaps modified to limit the transfer of reserves in excess of those actually earned on plan assets.**

Comments (Concluded)

Comment 5 - The funding of the Closed DB plan also depends on the ultimate number of new hires in the DC plan. The results are based on a static population, so that retiring members are replaced by new hires in the DC plan. If the population declines due to enrollment with ASRS or other reductions in workforce, the costs will be higher.

Comment 6 - If you have reason to believe that the information provided in this report is inaccurate, or is in any way incomplete, or if you need further information in order to make an informed decision on the subject matter of this report, please contact the authors of the report prior to making such decision. This report is intended to describe the financial effect of the current plan structure. No statement in this report is intended to be interpreted as a recommendation in favor of the structure, or in opposition to it. This report is intended to describe the financial effect of the current plan structure on the Retirement Plan. Except as otherwise noted, potential effects on other benefit plans were not considered. A full review of the current plan structure for compliance with Federal, State, or Local laws or regulations was out of the scope of this study and not performed. We recommend that the structure be reviewed by legal and fiduciary counsel.

APPENDIX

Pay-as-you-go (PAYGO) benefit illustration

Year	Current Benefit Payments (3% PBI)	Benefit Payments (1.75% PBI)	Benefit Payments (0% PBI)
2017	$ 64,399,503	$ 64,399,503	$ 64,399,503
2018	67,456,478	66,669,925	65,568,704
2019	70,453,361	68,845,753	66,627,127
2020	73,468,917	71,010,458	67,665,487
2021	76,499,273	73,162,808	68,686,541
2022	79,328,796	75,090,368	69,482,206
2023	82,155,386	76,996,835	70,263,528
2024	85,051,854	78,958,803	71,111,223
2025	87,759,469	80,720,231	71,771,955
2026	90,208,790	82,216,378	72,186,398
2027	92,365,562	83,419,474	72,334,357
2028	94,218,379	84,323,931	72,216,543
2029	95,780,485	84,950,477	71,862,276
2030	97,198,704	85,452,374	71,430,815
2031	98,491,113	85,852,876	70,949,475
2032	99,329,810	85,831,377	70,103,530
2033	99,665,400	85,348,446	68,862,844
2034	99,699,594	84,616,026	67,450,013
2035	99,368,886	83,578,568	65,815,679
2036	98,735,025	82,305,968	64,035,951
2037	97,847,414	80,855,185	62,172,840
2038	96,625,139	79,151,879	60,155,431
2039	95,033,189	77,167,410	57,958,506
2040	93,082,861	74,918,233	55,600,983
2041	90,816,663	72,450,706	53,129,583
2042	88,295,282	69,827,492	50,605,176
2043	85,561,195	67,091,267	48,067,505
2044	82,647,112	64,273,676	45,543,708
2045	79,493,834	61,312,625	42,965,629
2046	76,176,634	58,278,760	40,396,636
2047	72,707,336	55,178,207	37,834,807
2048	69,161,949	52,080,271	35,340,912
2049	65,546,373	48,982,903	32,903,428
2050	61,869,163	45,886,027	30,512,782
2051	58,187,519	42,837,785	28,207,375
2052	54,522,369	39,850,024	25,989,561
2053	50,894,466	36,934,728	23,862,829
2054	47,329,341	34,109,012	21,836,269
2055	43,844,398	31,382,247	19,911,803
2056	40,457,351	28,764,470	18,092,573
2057	37,182,585	26,262,862	16,379,490
2058	34,031,955	23,882,835	14,772,548
2059	31,016,128	21,629,135	13,271,685
2060	28,143,345	19,504,548	11,875,426
2061	25,420,531	17,510,944	10,581,837
2062	22,853,560	15,649,452	9,388,642
2063	20,446,735	13,920,164	8,293,080
2064	18,202,535	12,321,997	7,291,844
2065	16,121,834	10,852,858	6,381,197
2066	14,204,081	9,509,815	5,557,083
2067	12,447,419	8,289,198	4,815,221

Scenario 1: PAYGO (Assuming PBI)

Year	Assets Beginning of Year	Total Payroll	Employee Contributions	Flat Rate Contribution	Additional Contributions	Benefit Payments	Interest	Assets End of Year
2017	$ 298,118,144	$ 61,631,357	$ 3,947,204	$ -	$ -	$ 64,399,503	$ 19,824,008	$ 257,489,853
2018	257,489,853	63,788,454	3,635,180	-	-	67,456,478	16,692,861	210,361,416
2019	210,361,416	66,021,050	3,357,103	-	-	70,453,361	13,084,183	156,349,341
2020	156,349,341	68,331,787	3,087,728	-	-	73,468,917	8,965,747	94,933,899
2021	94,933,899	70,723,400	2,824,209	-	-	76,499,273	4,299,131	25,557,966
2022	25,557,966	73,198,719	2,576,365	-	-	79,328,796	(948,550)	(52,143,015)
2023	(52,143,015)	75,760,674	2,324,266	-	-	82,155,386	(6,812,335)	(138,786,470)
2024	(138,786,470)	78,412,297	2,073,566	-	-	85,051,854	(13,340,395)	(235,105,153)
2025	(235,105,153)	81,156,728	1,837,121	-	-	87,759,469	(20,576,908)	(341,604,409)
2026	(341,604,409)	83,997,213	1,627,728	-	-	90,208,790	(28,556,226)	(458,741,697)
2027	(458,741,697)	86,937,116	1,439,875	-	-	92,365,562	(37,311,136)	(586,978,520)
2028	(586,978,520)	89,979,915	1,271,924	-	-	94,218,379	(46,875,429)	(726,800,404)
2029	(726,800,404)	93,129,212	1,122,470	-	-	95,780,485	(57,285,576)	(878,743,996)
2030	(878,743,996)	96,388,734	972,935	-	-	97,198,704	(68,587,409)	(1,043,557,174)
2031	(1,043,557,174)	99,762,340	817,073	-	-	98,491,113	(80,837,170)	(1,222,068,384)
2032	(1,222,068,384)	103,254,022	682,257	-	-	99,329,810	(94,083,020)	(1,414,798,957)
2033	(1,414,798,957)	106,867,913	579,988	-	-	99,665,400	(108,361,283)	(1,622,245,652)
2034	(1,622,245,652)	110,608,290	492,029	-	-	99,699,594	(123,716,858)	(1,845,170,075)
2035	(1,845,170,075)	114,479,580	418,155	-	-	99,368,886	(140,203,763)	(2,084,324,569)
2036	(2,084,324,569)	118,486,365	347,727	-	-	98,735,025	(157,880,348)	(2,340,592,215)
2037	(2,340,592,215)	122,633,388	275,902	-	-	97,847,414	(176,813,970)	(2,614,977,697)
2038	(2,614,977,697)	126,925,556	214,303	-	-	96,625,139	(197,075,551)	(2,908,464,083)
2039	(2,908,464,083)	131,367,951	165,304	-	-	95,033,189	(218,736,454)	(3,222,068,422)
2040	(3,222,068,422)	135,965,829	130,988	-	-	93,082,861	(241,872,283)	(3,556,892,578)
2041	(3,556,892,578)	140,724,633	106,660	-	-	90,816,663	(266,566,321)	(3,914,168,902)
2042	(3,914,168,902)	145,649,995	85,239	-	-	88,295,282	(292,912,270)	(4,295,291,215)
2043	(4,295,291,215)	150,747,745	64,730	-	-	85,561,195	(321,014,919)	(4,701,802,599)
2044	(4,701,802,599)	156,023,916	46,974	-	-	82,647,112	(350,989,597)	(5,135,392,335)

Scenario 1: 23.5% of Payroll, Plus $13.6M (Assuming PBI)

Year	Assets Beginning of Year	Total Payroll	Employee Contributions	Flat Rate Contribution	Additional Contributions	Benefit Payments	Interest	Assets End of Year
2017	$ 298,118,144	$ 61,631,357	$ 3,947,204	$ 14,483,369	$ 13,646,790	$ 64,399,503	$ 20,864,823	$ 286,660,827
2018	286,660,827	63,788,454	3,635,180	14,990,287	13,646,790	67,456,478	19,911,085	271,387,691
2019	271,387,691	66,021,050	3,357,103	15,514,947	13,646,790	70,453,361	18,679,112	252,132,282
2020	252,132,282	68,331,787	3,087,728	16,057,970	13,646,790	73,468,917	17,152,761	228,608,614
2021	228,608,614	70,723,400	2,824,209	16,619,999	13,646,790	76,499,273	15,310,931	200,511,270
2022	200,511,270	73,198,719	2,576,365	17,201,699	13,646,790	79,328,796	13,139,388	167,746,716
2023	167,746,716	75,760,674	2,324,266	17,803,758	13,646,790	82,155,386	10,623,176	129,989,320
2024	129,989,320	78,412,297	2,073,566	18,426,890	13,646,790	85,051,854	7,735,739	86,820,451
2025	86,820,451	81,156,728	1,837,121	19,071,831	13,646,790	87,759,469	4,456,176	38,072,900
2026	38,072,900	83,997,213	1,627,728	19,739,345	13,646,790	90,208,790	775,182	(16,346,845)
2027	(16,346,845)	86,937,116	1,439,875	20,430,222	13,646,790	92,365,562	(3,313,067)	(76,508,587)
2028	(76,508,587)	89,979,915	1,271,924	21,145,280	13,646,790	94,218,379	(7,813,348)	(142,476,320)
2029	(142,476,320)	93,129,212	1,122,470	21,885,365	13,646,790	95,780,485	(12,730,904)	(214,333,084)
2030	(214,333,084)	96,388,734	972,935	22,651,353	13,646,790	97,198,704	(18,077,970)	(292,338,681)
2031	(292,338,681)	99,762,340	817,073	23,444,150	13,646,790	98,491,113	(23,874,637)	(376,796,418)
2032	(376,796,418)	103,254,022	682,257	24,264,695	13,646,790	99,329,810	(30,130,169)	(467,662,656)
2033	(467,662,656)	106,867,913	579,988	25,113,959	13,646,790	99,665,400	(36,839,049)	(564,826,367)
2034	(564,826,367)	110,608,290	492,029	25,992,948	13,646,790	99,699,594	(44,001,161)	(668,395,355)
2035	(668,395,355)	114,479,580	418,155	26,902,701	13,646,790	99,368,886	(51,622,102)	(778,418,697)
2036	(778,418,697)	118,486,365	347,727	27,844,296	13,646,790	98,735,025	(59,708,143)	(895,023,052)
2037	(895,023,052)	122,633,388	275,902	28,818,846	13,646,790	97,847,414	(68,270,623)	(1,018,399,552)
2038	(1,018,399,552)	126,925,556	214,303	29,827,506	13,646,790	96,625,139	(77,320,219)	(1,148,656,311)
2039	(1,148,656,311)	131,367,951	165,304	30,871,468	13,646,790	95,033,189	(86,863,503)	(1,285,869,440)
2040	(1,285,869,440)	135,965,829	130,988	31,951,970	13,646,790	93,082,861	(96,906,404)	(1,430,128,957)
2041	(1,430,128,957)	140,724,633	106,660	33,070,289	13,646,790	90,816,663	(107,457,281)	(1,581,579,162)
2042	(1,581,579,162)	145,649,995	85,239	34,227,749	13,646,790	88,295,282	(118,529,272)	(1,740,443,938)
2043	(1,740,443,938)	150,747,745	64,730	35,425,720	13,646,790	85,561,195	(130,140,538)	(1,907,008,431)
2044	(1,907,008,431)	156,023,916	46,974	-	13,646,790	82,647,112	(143,669,898)	(2,119,631,677)

Scenario 1: 61.5% of Payroll, Plus $13.6M (Assuming PBI)

Year	Assets Beginning of Year	Total Payroll	Employee Contributions	Flat Rate Contribution	Additional Contributions	Benefit Payments	Interest	Assets End of Year
2017	$ 298,118,144	$ 61,631,357	$ 3,947,204	$ 37,903,285	$ 13,646,790	$ 64,399,503	$ 21,731,360	$ 310,947,280
2018	310,947,280	63,788,454	3,635,180	39,229,900	13,646,790	67,456,478	22,605,148	322,607,820
2019	322,607,820	66,021,050	3,357,103	40,602,946	13,646,790	70,453,361	23,397,657	333,158,955
2020	333,158,955	68,331,787	3,087,728	42,024,049	13,646,790	73,468,917	24,109,480	342,558,085
2021	342,558,085	70,723,400	2,824,209	43,494,891	13,646,790	76,499,273	24,737,563	350,762,265
2022	350,762,265	73,198,719	2,576,365	45,017,212	13,646,790	79,328,796	25,287,136	357,960,971
2023	357,960,971	75,760,674	2,324,266	46,592,814	13,646,790	82,155,386	25,764,226	364,133,682
2024	364,133,682	78,412,297	2,073,566	48,223,563	13,646,790	85,051,854	26,164,899	369,190,645
2025	369,190,645	81,156,728	1,837,121	49,911,388	13,646,790	87,759,469	26,492,633	373,319,109
2026	373,319,109	83,997,213	1,627,728	51,658,286	13,646,790	90,208,790	26,764,403	376,807,525
2027	376,807,525	86,937,116	1,439,875	53,466,326	13,646,790	92,365,562	27,002,692	379,997,646
2028	379,997,646	89,979,915	1,271,924	55,337,648	13,646,790	94,218,379	27,233,231	383,268,860
2029	383,268,860	93,129,212	1,122,470	57,274,465	13,646,790	95,780,485	27,483,636	387,015,736
2030	387,015,736	96,388,734	972,935	59,279,072	13,646,790	97,198,704	27,777,068	391,492,896
2031	391,492,896	99,762,340	817,073	61,353,839	13,646,790	98,491,113	28,131,558	396,951,044
2032	396,951,044	103,254,022	682,257	63,501,223	13,646,790	99,329,810	28,578,894	404,030,398
2033	404,030,398	106,867,913	579,988	65,723,766	13,646,790	99,665,400	29,168,800	413,484,342
2034	413,484,342	110,608,290	492,029	68,024,098	13,646,790	99,699,594	29,948,984	425,896,650
2035	425,896,650	114,479,580	418,155	70,404,942	13,646,790	99,368,886	30,965,089	441,962,739
2036	441,962,739	118,486,365	347,727	72,869,114	13,646,790	98,735,025	32,266,001	462,357,347
2037	462,357,347	122,633,388	275,902	75,419,533	13,646,790	97,847,414	33,899,752	487,751,910
2038	487,751,910	126,925,556	214,303	78,059,217	13,646,790	96,625,139	35,919,563	518,966,644
2039	518,966,644	131,367,951	165,304	80,791,290	13,646,790	95,033,189	38,387,629	556,924,468
2040	556,924,468	135,965,829	130,988	83,618,985	13,646,790	93,082,861	41,372,025	602,610,395
2041	602,610,395	140,724,633	106,660	86,545,649	13,646,790	90,816,663	44,944,019	657,036,850
2042	657,036,850	145,649,995	85,239	89,574,747	13,646,790	88,295,282	49,176,152	721,224,497
2043	721,224,497	150,747,745	64,730	92,709,863	13,646,790	85,561,195	54,142,440	796,227,125
2044	796,227,125	156,023,916	46,974	-	13,646,790	82,647,112	56,369,533	783,643,310

Scenario 1: 23.5%/48.5% of Payroll, Graduated, Plus $13.6M (Assuming PBI)

Year	Assets Beginning of Year	Total Payroll	Employee Contributions	Flat Rate Contribution	Additional Contributions	Benefit Payments	Interest	Assets End of Year
2017	$ 298,118,144	$ 61,631,357	$ 3,947,204	$ 14,483,369	$ 13,646,790	$ 64,399,503	$ 20,864,823	$ 286,660,827
2018	286,660,827	63,788,454	3,635,180	18,179,710	13,646,790	67,456,478	20,029,094	274,695,123
2019	274,695,123	66,021,050	3,357,103	22,117,052	13,646,790	70,453,361	19,168,140	262,530,846
2020	262,530,846	68,331,787	3,087,728	26,307,738	13,646,790	73,468,917	18,301,496	250,405,681
2021	250,405,681	70,723,400	2,824,209	30,764,679	13,646,790	76,499,273	17,447,267	238,589,354
2022	238,589,354	73,198,719	2,576,365	35,501,379	13,646,790	79,328,796	16,634,254	227,619,346
2023	227,619,346	75,760,674	2,324,266	36,743,927	13,646,790	82,155,386	15,754,537	213,933,479
2024	213,933,479	78,412,297	2,073,566	38,029,964	13,646,790	85,051,854	14,672,921	197,304,866
2025	197,304,866	81,156,728	1,837,121	39,361,013	13,646,790	87,759,469	13,382,722	177,773,043
2026	177,773,043	83,997,213	1,627,728	40,738,648	13,646,790	90,208,790	11,889,967	155,467,387
2027	155,467,387	86,937,116	1,439,875	42,164,501	13,646,790	92,365,562	10,205,354	130,558,345
2028	130,558,345	89,979,915	1,271,924	43,640,259	13,646,790	94,218,379	8,341,919	103,240,858
2029	103,240,858	93,129,212	1,122,470	45,167,668	13,646,790	95,780,485	6,313,612	73,710,913
2030	73,710,913	96,388,734	972,935	46,748,536	13,646,790	97,198,704	4,128,881	42,009,351
2031	42,009,351	99,762,340	817,073	48,384,735	13,646,790	98,491,113	1,789,919	8,156,755
2032	8,156,755	103,254,022	682,257	50,078,201	13,646,790	99,329,810	(688,535)	(27,454,343)
2033	(27,454,343)	106,867,913	579,988	51,830,938	13,646,790	99,665,400	(3,275,106)	(64,337,133)
2034	(64,337,133)	110,608,290	492,029	53,645,020	13,646,790	99,699,594	(5,941,831)	(102,194,718)
2035	(102,194,718)	114,479,580	418,155	55,522,596	13,646,790	99,368,886	(8,664,319)	(140,640,382)
2036	(140,640,382)	118,486,365	347,727	57,465,887	13,646,790	98,735,025	(11,416,549)	(179,331,552)
2037	(179,331,552)	122,633,388	275,902	59,477,193	13,646,790	97,847,414	(14,175,093)	(217,954,174)
2038	(217,954,174)	126,925,556	214,303	61,558,895	13,646,790	96,625,139	(16,913,199)	(256,072,525)
2039	(256,072,525)	131,367,951	165,304	63,713,456	13,646,790	95,033,189	(19,597,149)	(293,177,313)
2040	(293,177,313)	135,965,829	130,988	65,943,427	13,646,790	93,082,861	(22,189,502)	(328,728,472)
2041	(328,728,472)	140,724,633	106,660	68,251,447	13,646,790	90,816,663	(24,651,942)	(362,192,180)
2042	(362,192,180)	145,649,995	85,239	70,640,248	13,646,790	88,295,282	(26,947,372)	(393,062,557)
2043	(393,062,557)	150,747,745	64,730	73,112,656	13,646,790	85,561,195	(29,039,899)	(420,839,475)
2044	(420,839,475)	156,023,916	46,974	-	13,646,790	82,647,112	(33,693,395)	(523,486,218)

Scenario 1: 23.5%/73.5% of Payroll, Graduated, Plus $13.6M (Assuming PBI)

Year	Assets Beginning of Year	Total Payroll	Employee Contributions	Flat Rate Contribution	Additional Contributions	Benefit Payments	Interest	Assets End of Year
2017	$ 298,118,144	$ 61,631,357	$ 3,947,204	$ 14,483,369	$ 13,646,790	$ 64,399,503	$ 20,864,823	$ 286,660,827
2018	286,660,827	63,788,454	3,635,180	18,179,710	13,646,790	67,456,478	20,029,094	274,695,123
2019	274,695,123	66,021,050	3,357,103	22,117,052	13,646,790	70,453,361	19,168,140	262,530,846
2020	262,530,846	68,331,787	3,087,728	26,307,738	13,646,790	73,468,917	18,301,496	250,405,681
2021	250,405,681	70,723,400	2,824,209	30,764,679	13,646,790	76,499,273	17,447,267	238,589,354
2022	238,589,354	73,198,719	2,576,365	35,501,379	13,646,790	79,328,796	16,634,254	227,619,346
2023	227,619,346	75,760,674	2,324,266	40,531,961	13,646,790	82,155,386	15,894,694	217,861,670
2024	217,861,670	78,412,297	2,073,566	45,871,194	13,646,790	85,051,854	15,253,732	209,655,098
2025	209,655,098	81,156,728	1,837,121	51,534,522	13,646,790	87,759,469	14,747,059	203,661,122
2026	203,661,122	83,997,213	1,627,728	57,538,091	13,646,790	90,208,790	14,427,264	200,692,205
2027	200,692,205	86,937,116	1,439,875	63,898,780	13,646,790	92,365,562	14,356,159	201,668,247
2028	201,668,247	89,979,915	1,271,924	66,135,237	13,646,790	94,218,379	14,436,366	202,940,186
2029	202,940,186	93,129,212	1,122,470	68,449,971	13,646,790	95,780,485	14,552,807	204,931,739
2030	204,931,739	96,388,734	972,935	70,845,720	13,646,790	97,198,704	14,730,818	207,929,298
2031	207,929,298	99,762,340	817,073	73,325,320	13,646,790	98,491,113	14,990,797	212,218,164
2032	212,218,164	103,254,022	682,257	75,891,706	13,646,790	99,329,810	15,367,109	218,476,216
2033	218,476,216	106,867,913	579,988	78,547,916	13,646,790	99,665,400	15,912,284	227,497,794
2034	227,497,794	110,608,290	492,029	81,297,093	13,646,790	99,699,594	16,677,081	239,911,192
2035	239,911,192	114,479,580	418,155	84,142,491	13,646,790	99,368,886	17,710,455	256,460,197
2036	256,460,197	118,486,365	347,727	87,087,478	13,646,790	98,735,025	19,064,892	277,872,060
2037	277,872,060	122,633,388	275,902	90,135,540	13,646,790	97,847,414	20,792,333	304,875,211
2038	304,875,211	126,925,556	214,303	93,290,284	13,646,790	96,625,139	22,950,236	338,351,685
2039	338,351,685	131,367,951	165,304	96,555,444	13,646,790	95,033,189	25,605,396	379,291,429
2040	379,291,429	135,965,829	130,988	99,934,884	13,646,790	93,082,861	28,830,868	428,752,099
2041	428,752,099	140,724,633	106,660	103,432,605	13,646,790	90,816,663	32,703,323	487,824,814
2042	487,824,814	145,649,995	85,239	107,052,747	13,646,790	88,295,282	37,301,148	557,615,456
2043	557,615,456	150,747,745	64,730	110,799,593	13,646,790	85,561,195	42,704,691	639,270,064
2044	639,270,064	156,023,916	46,974	-	13,646,790	82,647,112	44,754,711	615,071,427

Board of Trustees Presentation

Heinfeld, Meech & Co., P.C.

HeinfeldMeech

PSPRS Plan Financial Statements
2017 Audit

Employer Reports for Pension Reporting
2016 Examinations and Audits

Presented by:
Corey Arvizu, CPA
Christopher W. Heinfeld, CPA

HeinfeldMeech

PSPRS Plan Financial Statements

- Planning Procedures
- On-site (fieldwork) Procedures
  - 5 weeks on-site
  - 3-4 individuals each visit
  - Contributions, benefits, and cash and investments (along with related activity)
  - Administrative expenses, member data, internal audit, information technology, use of specialists, and use of service organizations
- Wrap-up (concluding) Procedures

PSPRS Plan Financial Statements

- **Contributions, Benefits, and Administrative Expenses** – understanding of procedures and internal controls; sample transaction to ensure proper recording; performed various analysis
- **Cash and Investments** – understanding of procedures and internal controls; sample transactions to ensure proper valuation and classification; agree balances to bank and investment statements
- **Member Data** – understanding of procedures and internal controls; agree to source documentation; comparison to data used by the actuary
- **Internal Audit** – understanding of procedures, and review reports
- **Information Technology** – understanding of procedures and internal controls, along with safeguards and security
- **Use of Specialist** – understanding of procedures performed, assumptions used, and qualifications of the specialists
- **Use of Service Organizations** – understanding of procedures performed and qualifications of the organizations; review service auditor reports

PSPRS Plan Financial Statements

- What's New?
  - "Big Data" Audit Analytics
  - Use of a Data Analyst Expert
  - Member Data
    - Changes to "fixed" census data from year-to-year (ex. birth date)
    - Changes to data outside expectations (ex. years of service – one year)
    - Duplicate entries
    - Members included under multiple tables

PSPRS Plan Financial Statements
Summary of Results

- Audit Procedures
  - No difficulties with System employees or getting information
  - No disagreements with management
  - No findings noted
- Financial Statements and Report
  - Some changes/edits
  - New note disclosure requirements for health insurance
  - Revised note disclosure for investment expenses
  - No disagreements with management

Employer Reports for Pension Reporting

- Planning Procedures
- On-site (fieldwork) Procedures
  - 10 entities selected
  - 2-3 individuals each visit
  - Census data
- Wrap-up (concluding) Procedures
  - PSPRS and CORP: tie-off, recalculation, and analysis
    - Contributions, net investment income, benefits, administrative expenses, net transfers, and net position
  - EORP and CORP-AOC: tie-off, recalculation, and allocation
    - Contributions, net pension liability, deferred outflows and inflows of resources, pension expense, and related proportionate share

Employer Reports for Pension Reporting
Summary of Results

- Examination/Audit Procedures
  - No difficulties with member entities or getting information
  - No difficulties with System employees or getting information
  - No disagreements with management
  - No findings noted
- Schedules and Reports
  - Some changes/edits
  - No disagreements with management

Final Notes

- We will be concluding test work and report review procedures related to the firefighter and peace officer cancer insurance plan in the next month
- We will begin performing the examination and audit procedures related to employer reporting for pension and health insurance in the next couple of months
- Questions and Comments
- Access to Auditors:

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