PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
BOARD OF TRUSTEES MEETING

January 23, 2019

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 10:00 a.m. on Wednesday, January 23, 2019. 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. William T. Buivid\d Acting 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. 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.


   b. Acceptance of Elected Officials’ Retirement Plan of early retirement benefit of Fred Arnett.
c. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Mark A. Baron.


e. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Sharon R. Bechman.


g. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Larry A. Bravo.

h. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Robert L. Crabtree.

i. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Ben Crow.

j. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Virginia S. Duarte.

k. Acceptance of Elected Officials’ Retirement Plan of early retirement benefit of Mary Ellen Dunlap.

l. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Keith J. Frankel.

m. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Alfred F. Gamez.

n. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Anna Mary Glaab.

o. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Jacqueline Hatch.


q. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Henry G. Hellman III.
r. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Toni Hellon.

s. Acceptance of Elected Officials' Retirement Plan of survivor retirement benefit of Rosina Forster Hill.

t. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Artis E. Hinker.


v. Acceptance of Elected Officials' Retirement Plan of reactivation of suspended retirement benefit of Charles A. Irwin.

w. Acceptance of Elected Officials' Retirement Plan of termination of retirement benefit of Charles E. Jones.

x. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Kenneth Larson.


aa. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Steven C. McMurry.

bb. Acceptance of Elected Officials' Retirement Plan of termination of retirement benefit of Ronald B. Overson.


dd. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Robert Robson.


Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Rachel Torres-Carrillo.

Acceptance of Elected Officials' Retirement Plan of termination of retirement benefit of James D. Vandevier.

Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Henry Valasquez.

Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Charlene Weis.


Acceptance of Transfer Between State Retirement Systems of Robert Normile.

Acceptance of Transfer Between State Retirement Systems of Leslyn Wiese.

Acceptance of Transfer Between State Retirement Systems of Robert Lieder.

Approval of the Minutes of the December 19, 2018 Meeting of the PSPRS Board of Trustees.

Mr. William T. Buividas

4. 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. William T. Buividas

5. Appropriate Action regarding the Joinder Agreement with the Copper Canyon Fire & Medical District.

Mr. William T. Buividas

Report by Mr. Don Smith, Chairman of the Investment Committee, regarding agenda items 6 through 13, pertaining to the Investment Committee, and possible Board Action regarding same.

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 November 30, 2018; 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
7. Written report by Investment Department Staff regarding Portfolio Risk as of November 30, 2018.
   Mr. Owen Zhao
   Portfolio Analyst - Risk

   Mr. Mark Steed
   Chief Investment Officer
   Mr. Allan Martin
   NEPC, LLC

   Mr. Allan Martin

10. Response to public comments regarding actions of certain PSPRS Investment Partners.
    Mr. Dean Scheinert
    Trustee

    Mr. Mark Steed
    Mr. Allan Martin

12. Presentation and discussion by Investment Department Staff and Consultants regarding the annual Overview and Strategic Plan for the Private Credit portfolio.
    Mr. Mark Steed

    Mr. Mark Steed

Report by Mr. Mike Scheidt, Vice Chairman of the Operations, Governance Policy and Audit Committee, regarding agenda items 14 through 20, pertaining to the Operations, Governance Policy and Audit Committee, and possible Board Action regarding same.

14. 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. Communication Efforts

f. Law Firms' Billings for Legal Services

g. HR Report

15. Review, discussion and possible Action on Strategic Plan. 
   Mr. John Briney
   Enterprise Systems Architect

16. Update, discussion and possible Action on Strategic Consultant and organizational assessment. 
   Mr. Jared A. Smout
   Administrator

17. Review, discussion and possible Action on Internal Audit Plan. 
   Mr. Jared A. Smout

18. Review, discussion and possible Action on pending and passed legislative actions and potential legislative proposals. 
   Jared A. Smout

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

20. Update, discussion and possible Action regarding the Contract Subcommittee, including the Actuarial Services Selection Process. 
   Mr. William T. Buividas

21. Discussion and appropriate Action regarding Board of Trustee member requests to participate in training, educational and due diligence opportunities. 
   Mr. William T. Buividas
22. 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 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 13, 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. **Discussion and possible **Action** on future meeting dates. *(Next meeting currently scheduled for Tuesday, February 26, 2019)*

   a. 2019 Board of Trustees Meeting Calendar

   b. New Trustee Onboarding

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 Chrystal Angotti, Sr. Executive Assistant 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 MEETING

November 28, 2018

MINUTES

Members Present:  Mr. Brian P. Tobin, Chairman, Trustee
Mr. William T. Buividaz, Vice Chairman, Trustee
Mr. William C. Davis, Trustee
Mr. Harry A. Papp, Trustee
Mr. Bryan Raines, Trustee
Mr. Mike Scheidt, Trustee
Mr. Dean Scheinert, Trustee - Excused
Mr. Donald A. Smith, Jr. Trustee
Others Present:  Mr. Jared Smout, Administrator
Mr. Dave DeJonge, Deputy Administrator
Mr. Bret Parke, Assistant Administrator / General Counsel
Mr. Mark Steed, CIO
Mr. Timothy Jackson, Compliance Officer
Ms. Vaida Maleckaite, Director Investment Services
Mr. Owen Zhao, Portfolio Analyst
Ms. Liz Rozzell, CFO
Mr. John Briney, Enterprise Systems Architect
Mr. Christian Palmer, Communications Director
Ms. Ivy Voss, Attorney
Mr. Shan Chen, Lead Portfolio Manager
Mr. William Thatcher, Portfolio Manager
Mr. Jefferson Weston, Investment Analyst
Mr. James Ko, Portfolio Manager
Mr. Phil Coleman, Employer Relationship Manager
Ms. Chrystal Angotti, Senior Executive Assistant
Mr. Paul Hemmes, Information Technology
Mr. Allan Martin, NEPC – Teleconference
Ms. Dianne McAllister, Public Policy Partners
Mr. Doug Cole, HighGround
Mr. Stan Hoover, PSPRS Retiree

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

   The meeting was called to order by Chairman Tobin at 12:36 p.m. The Pledge of Allegiance was recited and the roll was called.

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. 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.

   Mr. Brian P. Tobin
4. Introductions of Bret Parke, Assistant Administrator / General Counsel.

   Bret Parke, Assistant Administrator / General Counsel and Liz Rozzell, CFO were introduced to the members of the Board of Trustees meeting.

Report by Mr. Don Smith, Chairman of the Investment Committee, regarding agenda items 5 through 13, which were discussed at the Investment Committee meeting held today, November 28, 2018, on or after 9:30 a.m., and possible Action on the Committee’s recommendations to the Board regarding same.

5. Written report by Compliance Officer regarding quarterly investment manager compliance as of September 30, 2018.

   A discussion was held regarding quarterly compliance report and scope of the Compliance Officer’s oversight.

6. Written report regarding the Trust’s Securities Lending program.

   A presentation was provided regarding the Trust’s Securities Lending program.

7. Presentation and written report by Investment Department Staff regarding Portfolio Risk as of August 31, 2018 and September 30, 2018.

   A presentation included information as to volatility, monthly value at risk forecast and risk by asset class.

8. 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 August 31, 2018 and September 30, 2018; and (ii) written report regarding the asset allocation and performance of the Firefighters and Peace Officers Cancer Insurance Program.

   No discussion was held.

9. Presentation and discussion by NEPC representative(s) on the Fourth Fiscal Quarter (Second Calendar Quarter) investment performance and the 2017-2018 Fiscal Year investment performance for the Arizona PSPRS Trust.

   Discussion was held regarding the Trust’s portfolio and returns achieved for the prior period.

---

**MOTION: 1-11/28/2018**

<table>
<thead>
<tr>
<th>At 12:39 P.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion: To approve the Consent Agenda as presented.</td>
</tr>
<tr>
<td>Moved by: Mr. Buividas</td>
</tr>
<tr>
<td>Seconded by: Mr. Raines</td>
</tr>
<tr>
<td>Discussion by: None.</td>
</tr>
<tr>
<td>Voted In Favor: Mr. Tobin, Mr. Buividas, Mr. Papp, Mr. Scheidt, Mr. Davis, Mr. Raines, Mr. Smith</td>
</tr>
<tr>
<td>Voted Against: None. Mr. Scheinert was excused/absent.</td>
</tr>
<tr>
<td>Motion: Passes Unanimously.</td>
</tr>
</tbody>
</table>

---

Mr. Mark Steed
Chief Investment Officer

Mr. Steed presented an overview of the plan for restructure and growth of the Trust’s portfolio.


Mr. Mark Steed
Mr. Allan Martin

Discussion was held regarding review and modifications to the Investment Policy.

12. Discussion regarding nature and presentation of management fees.

Mr. Mark Steed
Mr. Allan Martin

Discussion was held regarding the Trust’s reporting of management fees and methods of calculation.

13. 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 purposes of direct investment with Crestline Portfolio Financing Fund, in the Private Credit portfolio, subject to final Staff and legal due diligence.

2. Disclosure of a potential investment of up to $50 million for purposes of direct investment and $30 million for purpose of co-investment with TSG8, L.P in the Private Equity portfolio, subject to final staff and legal due diligence.

B. Finalized and Executed Transactions During Prior Period:

1. Iron Point Real Estate Partners IV Fund; Committed amount up to $40 million direct and $40 million for co-investment; Date Closed: August 31, 2018. This investment is allocated to PSPRS Asset class: Real Estate.

2. Taiga Special Opportunities DAC Fund; Committed amount of up to $60 million and $15 million for co-investments; Date Closed: September 14, 2108; this investment is allocated to the PSPRS Asset class: Private Credit.

3. Castle Creek Capital Partners VII, L.P. Fund; Committed amount up to $45 million; Date Closed: September 26, 2018. The Investment is allocated to PSPRS Asset class: Private Equity.

4. Alcion Real Estate Partners IV Fund; Committee amount up to $30 million direct and $10 million co-investment; Date Closed: October 22, 2018. This investment is allocated to PSPRS Asset class: Real Estate.

No discussion was held.

Presentation by Mr. Mike Scheidt, Vice Chairman of the Operations, Governance Policy and Audit Committee, regarding agenda items 14 through 18, which were discussed at the Operations, Governance Policy and Audit Committee meeting held today, November 28, 2018, on or after 10:30 a.m., and possible Action on the Committee’s recommendations to the Board regarding same.

14. Review and discussion of staff operation reports.

Mr. Dave DeJonge
Deputy Administrator

14. Written reports regarding topics 14 a. through 14 g. above were provided. No discussion was held.

15. Review and discussion regarding FY18 Internal Audit Plan and Internal Audit reports.  

Mr. Jared A. Smout  
Administrator

Written reports regarding the Internal Audit Reports was provided. No discussion was held.


Mr. Tim Jackson

A written report regarding the Governance Manual updates was provided.

**MOTION:4-11/28/2018**  
At 3:09 P.M.  
Motion: To accept the recommended changes to the Governance Manual adding the new section, number 9, regarding Investments Prohibitions.  
Moved by: Mr. Scheidt  
Seconded by: Mr. Buividas  
Discussion by: None.  
Voted In Favor: Mr. Tobin, Mr. Buividas, Mr. Papp, Mr. Scheidt, Mr. Davis, Mr. Raines, Mr. Smith  
Voted Against: None.  Mr. Scheinert was excused/absent.  
Motion: Passes Unanimously.

17. Review, discussion and possible Action regarding SB1609 rollback.  

Mr. Jared A. Smout

Discussion was held regarding SB1609. As discussions continued regarding the memo, it was found that there was more time needed to prepare, systems wide; to implement.

**MOTION:3-11/28/2018**  
At 2:12 P.M.  
Motion: To approve the extension of time from January 2019 to an additional three months with a date of April 1, 2019 and to send an updated public memo to the Board of Trustees.  
Moved by: Mr. Scheidt  
Seconded by: Mr. Buividas  
Discussion by: None.  
Voted In Favor: Mr. Tobin, Mr. Buividas, Mr. Papp, Mr. Scheidt, Mr. Davis, Mr. Raines, Mr. Smith  
Voted Against: None.  Mr. Scheinert was excused/absent.  
Motion: Passes Unanimously.

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

Mr. Jared A. Smout
A brief overview of the mid-term elections were given. This mid-term election turn-out was 65%, which is the second highest mid-point election in the history of the State of Arizona. Discussion regarding SB1609 and the Admin Bill was held.

MOTION:2-11/28/2018  At 1:57 P.M.
Motion: To approve the change to the Admin Bill to include members time in the DROP program to count towards the additional coverage.
Moved by: Mr. Scheidt
Seconded by: Mr. Raines
Discussion by: None.
Voted In Favor: Mr. Tobin, Mr. Buividas, Mr. Papp, Mr. Scheidt, Mr. Davis, Mr. Raines, Mr. Smith
Voted Against: None. Mr. Scheinert was excused/absent.
Motion: Passes Unanimously.

19. Presentation and discussion on preliminary results for the June 30, 2018 valuations and possible Action on actuarial assumptions and methods, including for CORP Tier 3 rates and layered amortization.

Mr. Mark Buis, FSA, EA, MAAA
Senior Consultant and Team Leader
Mr. James D. Anderson, FSA, EA, MAAA
Senior Consultant
Mr. Francois Pieterse, ASA, MAAA
Consultant

A presentation on preliminary results for the June 30, 2018 valuations, actuarial assumptions and methods, including for CORP Tier 3 rates and layered amortization was given. Individual valuations will be provided to PSPRS by mid-December.

20. Discussion and appropriate Action regarding Board of Trustee member requests to participate in training, education and due diligence opportunities.

Mr. Brian P. Tobin

MOTION:5-11/28/2018  At 3:59 P.M.
Motion: To approve Mr. Buividas to travel to New York in January to attend the Annual Advisory Board Meetings.
Moved by: Mr. Smith
Seconded by: Mr. Scheidt
Discussion by: None.
Voted In Favor: Mr. Tobin, Mr. Buividas, Mr. Papp, Mr. Scheidt, Mr. Davis, Mr. Raines, Mr. Smith
Voted Against: None. Mr. Scheinert was excused/absent.
Motion: Passes Unanimously.

21. 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 21.

22. 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. Update and discussion on personnel matters, as authorized A.R.S § 38-431.03 (A) (1). 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 13, 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), (7).

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

<table>
<thead>
<tr>
<th>MOTION: 11-6/27/2018</th>
<th>At 4:09 P.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion:</td>
<td>To enter Executive Session.</td>
</tr>
<tr>
<td>Moved by:</td>
<td>Mr. Buividas</td>
</tr>
<tr>
<td>Seconded by:</td>
<td>Mr. Scheidt</td>
</tr>
<tr>
<td>Discussion by:</td>
<td>None.</td>
</tr>
<tr>
<td>Voted In Favor:</td>
<td>Mr. Tobin, Mr. Buividas, Mr. Papp, Mr. Scheidt, Mr. Davis, Mr. Raines, Mr. Smith</td>
</tr>
<tr>
<td>Voted Against:</td>
<td>None. Mr. Scheinert was excused/absent.</td>
</tr>
<tr>
<td>Motion:</td>
<td>Passes Unanimously.</td>
</tr>
</tbody>
</table>

23 Possible Action on future meeting dates (Next meeting scheduled for December 19, 2018)

The meeting of the Board of Trustees scheduled for December 19, 2018 will be cancelled.

20. Adjournment.

The meeting was adjourned at 4:40 p.m.

______________________________
Brian P. Tobin, Trustee, Chairman

William T. Buividas, Trustee, Vice Chairman
______________________________
William C. Davis, Trustee

Vacant Position, Trustee
______________________________
Harry A. Papp, Trustee

Bryan Raines, Trustee
______________________________
Mike Scheidt, Trustee

Excused
______________________________
Dean M. Scheinert, Trustee

______________________________
Donald A. Smith, Jr., Trustee

______________________________
Mr. To bin, Mr. Buividas, Mr. Papp, Mr. Scheidt, Mr. Davis, Mr. Raines, Mr. Smith
ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

JOINDER AGREEMENT

THIS AGREEMENT entered into this 17th day of December, 2018, effective as of the 1st day of January, 2019, by and between the undersigned Employer and the Board of Trustees of the Arizona Public Safety Personnel Retirement System

WITNESSETH:

WHEREAS, the Employer is a public body deriving its powers from the legislature of the State of Arizona which employs certain employees in the field of public safety who are regularly assigned to hazardous duty, and

WHEREAS, the Employer, after considering its cost requirements to provide retirement and other benefits to its public safety employees through the Arizona Public Safety Personnel Retirement System, has determined to provide benefits for such employees through the Arizona Public Safety Personnel Retirement System and has adopted a resolution and followed such other procedures as are necessary to elect to join such System, and

WHEREAS, the Board of Trustees of the Arizona Public Safety Personnel Retirement System has considered the request of the undersigned Employer to join the System and has approved the participation in the System of such Employer;

NOW, THEREFORE, for and in consideration of the premises and the mutual covenants herein contained, the Employer and the Board of Trustees hereby agree as follows:

1. By execution of this Joinder Agreement the undersigned Employer unconditionally adopts, accepts and agrees to be bound by all the terms and conditions of the Arizona Public Safety Personnel Retirement System as provided by law with respect to the following designated class of employees: full-time (normally works 40 or more hours per week), paid fire fighters who are or were regularly assigned to hazardous duty in the State of Arizona.

2. The undersigned Employer agrees that for all employees joining the system on the joinder date that the employer will include as past service that period of continuous employment with the employer in a covered position.

3. The undersigned Employer further agrees that it will make contributions to the System for such employees which shall be sufficient to meet the normal cost of benefits for such employees, on a level cost method, and to meet the interest on its past service cost for such employees, as provided in Title 38, Chapter 5, Article 4, Arizona Revised Statutes.

4. The Board of Trustees, by execution of this Joinder Agreement, accepts the Employer for participation in the System

5. The undersigned Employer hereby agrees that all assets in any existing public employee defined benefit retirement program attributable to such employees shall be transferred to the Board of Trustees of the Arizona Public Safety Personnel Retirement System. Employer agrees to provide a statement of the accumulated employee contribution accounts in such prior program. Employer shall deliver possession of said assets within sixty (60) days after the effective date of this agreement.

IN WITNESS WHEREOF, the Employer has caused to be executed in its behalf by a duly authorized officer and the Board of Trustees has executed this Joinder Agreement this 17th day of December, 2018

Board of Trustees:

Chairman, The Board of Trustees
Public Safety Personnel Retirement System

EMPLOYER:
Copper Canyon Fire & Medical District

BY
Chairman
(Official Position or Title)
RESOLUTION NO. 2018 - 005

A RESOLUTION OF THE DISTRICT BOARD OF THE Copper Canyon Fire & Medical District Authorizing the Copper Canyon Fire & Medical District to Enter Into a Joinder Agreement with the Arizona Public Safety Personnel Retirement System on Behalf of the Full-Time (Normally Works 40 or More Hours Per Week), Paid Fire Fighters of the Copper Canyon Fire & Medical Fire District Who Are or Were Regularly Assigned to Hazardous Duty in the State of Arizona

WHEREAS, the Copper Canyon Fire & Medical Fire District is organized pursuant to Arizona Revised Statutes, Section 48-____, with three or more full-time paid fire fighters;

WHEREAS, the Copper Canyon Fire & Medical Fire District did on December 17, 2018, pass a resolution authorizing an actuarial study to be made to determine the estimated cost of participation in the Public Safety Personnel Retirement System, and

WHEREAS, the preliminary actuarial survey has been made and it has been deemed in the best interest of the Copper Canyon Fire & Medical Fire District to include all full-time (normally works 40 or more hours per week), paid fire fighters who are or were regularly assigned to hazardous duty in the State of Arizona in the Public Safety Personnel Retirement System as set forth in Arizona Revised Statutes, Title 38, Chapter 5, Article 4;

NOW THEREFORE BE IT RESOLVED by the District Board of the Copper Canyon Fire & Medical Fire District that the Board Chairperson be authorized to sign a Joinder Agreement with the Arizona Public Safety Personnel Retirement System Board of Trustees.

APPROVED AND PASSED by the District Board of the Copper Canyon Fire & Medical Fire District this 17th day of December, 2018.

Chairman

ATTEST:
### Arizona PSPRS Trust - Performance as of 11/30/2018 (Gross of Fees)

| Description | Asset Allocation | 7/1/2017 | Target (%) | Range (%) | Market Values ($) | Range (%) | Performance % | Performance % | Performance % | Performance % | Performance % | Performance % | Performance % |
|-------------|-----------------|----------|------------|-----------|------------------|----------|---------------|---------------|---------------|---------------|---------------|---------------|
| Arizona PSPRS Trust - Total Fund | $10,103,186,208 | 100.00% | 0.95% | -1.59% | 0.36% | 2.61% | 3.29% | 7.09% | 6.38% | 8.49% |
| Target Fund Benchmark* | 0.79% | -2.12% | 0.36% | 1.48% | 2.37% | 7.00% | 5.84% | 8.54% |
| Total Equity | $3,089,936,299 | 30.58% | 30% | 19-41% | 1.51% | -6.05% | -2.47% | -2.53% | -0.99% | 8.86% | 6.49% | 11.39% |
| Target Equity Benchmark* | 1.70% | -5.96% | 0.38% | 3.65% | 4.74% | 7.47% | 10.90% | 9.24% | 13.10% |
| U.S. Equity | $1,659,220,499 | 16.42% | 16% | 10-22% | 2.00% | -5.35% | 1.22% | 4.48% | 5.53% | 11.80% | 10.62% | 14.51% |
| Russell 3000 | 0.95% | -6.66% | -6.30% | -9.10% | -7.13% | 5.34% | 2.04% | 7.72% |
| Non-U.S. Equity | $1,430,715,800 | 14.16% | 14% | 9-19% | 0.95% | -6.66% | -6.30% | -9.10% | -7.13% | 5.34% | 2.04% | 7.72% |
| MSCI ACWI Ex-US Net | 1.51% | -6.05% | -2.47% | -2.53% | -0.99% | 8.86% | 6.49% | 11.39% |
| Private Equity | $1,381,531,778 | 13.67% | 12% | 7-17% | 2.89% | 2.41% | 6.72% | 16.71% | 16.72% | 14.01% | 16.66% | 13.96% |
| Russell 3000 + 100 bps | 2.27% | -3.33% | 3.65% | 5.48% | 6.33% | 12.80% | 11.62% | 15.11% |
| Fixed Income | $496,852,559 | 4.92% | 5% | 2-9% | -0.28% | -0.96% | -0.88% | -1.27% | -1.05% | 2.83% | 3.28% | 4.74% |
| Fixed Income Blended Benchmark* | 0.50% | -1.41% | -0.75% | -2.19% | -1.86% | 2.53% | 0.73% | 2.99% |
| Private Credit | $1,615,534,846 | 15.99% | 16% | 10-20% | 0.93% | 0.86% | 3.23% | 6.69% | 6.78% | 7.73% | 7.09% | 9.84% |
| 50% BofA ML US High Yield BB-B Constr./50% CSFB Fixed Income Arbitrage | -0.57% | -1.06% | 0.22% | 0.72% | 1.28% | 5.20% | 3.95% | 10.43% |
| Global Trading Strategies | $1,069,280,252 | 10.58% | 12% | 7-17% | -0.57% | 0.98% | -0.14% | 3.34% | 3.56% | 3.91% | 4.26% | N/A |
| 3-Month LIBOR + 300 bps | 0.45% | 1.32% | 2.20% | 4.79% | 5.16% | 4.34% | 3.91% | 3.68% |
| Real Assets | $872,713,890 | 8.64% | 9% | 6-14% | -0.17% | -1.34% | -0.84% | 3.29% | 3.39% | 7.63% | 4.35% | N/A |
| CPI + 200 bps | -0.02% | 0.75% | 1.43% | 3.80% | 4.21% | 4.03% | 3.56% | N/A |
| Real Estate | $812,479,658 | 8.04% | 10% | 6-14% | 1.19% | 0.75% | 1.28% | -1.29% | -0.79% | 1.46% | 2.15% | -0.80% |
| NCREIF NPI ** | 0.55% | 1.67% | 2.80% | 6.44% | 7.08% | 7.46% | 9.45% | 7.15% |
| Risk Parity | $397,602,701 | 3.94% | 4% | 2-6% | -0.13% | -3.55% | -4.04% | -5.14% | -3.73% | 3.22% | 2.70% | N/A |
| 60% Bloomberg BC Global Aggregate/30% MSCI AC World Net/10% Bloomberg Commodity TR | 0.57% | -2.77% | -2.08% | -3.01% | -2.05% | 4.14% | 1.54% | 4.73% |
| Short Term Investments¹ | $367,254,228 | 3.64% | 2% | 0-5% | 0.31% | 0.84% | 1.34% | 3.41% | 3.57% | 2.70% | 2.25% | 1.72% |
| BofA ML 3-Month T-Bill | 0.21% | 0.53% | 0.87% | 1.69% | 1.80% | 0.97% | 0.59% | 0.36% |

* 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.

¹. The returns for Short Term Investments account for both the interest on cash holdings and the revenue from securities lending.
**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% Fixed Income Blended Benchmark, 16% Private Credit (aka 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% Fixed Income Blended Benchmark, 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% Fixed Income Blended Benchmark, 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% Fixed Income Blended Benchmark, 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% Fixed Income Blended Benchmark, 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% Fixed Income Blended Benchmark, 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, 2011 - June 30, 2012: 20% Russell 3000, 15% MSCI World Ex-US Net, 8% 3-Month LIBOR + 300 bps, 20% Fixed Income Blended Benchmark, 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.

July 1, 2010 - June 30, 2011: 20% Russell 3000, 20% MSCI World Ex-US Net, 20% Fixed Income Blended Benchmark, 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, 2009 - March 31, 2009: 46% Wilshire 5000, 21% MSCI World Ex-US Net, 20% Fixed Income Blended Benchmark, 6% NCREIF NPI, 6% Wilshire 5000 +300 bps and 1% BofA ML 3-Month T-Bill.

**Target Total Equity Benchmarks/ Effective Dates:**

July 1, 2017 to Present: 53.33% Russell 3000 and 46.67% MSCI World Ex-US Net.

July 1, 2014 to March 31, 2014: 54.84% Russell 3000 and 45.16% MSCI World 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.

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

**Target Fixed Income Benchmarks/ Effective Dates:**


July 1, 2012 - June 30, 2018: 100% Bloomberg Barclays Global Aggregate.

April 1, 2009 - June 30, 2010: 100% Bloomberg Barclays U.S. Aggregate.

# Public Safety Cancer Insurance Policy (CIP) Program - Performance as of 11/30/2018 (Net of Fees)

<table>
<thead>
<tr>
<th>Description</th>
<th>Asset Allocation</th>
<th>Target (%)</th>
<th>Performance %</th>
<th>Month Ending</th>
<th>3 Month Ending</th>
<th>Fiscal YTD</th>
<th>Calendar YTD</th>
<th>1 Year</th>
<th>3 Years</th>
<th>5 Years</th>
<th>10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Market Values ($)</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIP - Total Fund</td>
<td>$25,295,494</td>
<td>100.00%</td>
<td></td>
<td>1.25%</td>
<td>-3.33%</td>
<td>-1.36%</td>
<td>-1.45%</td>
<td>-0.55%</td>
<td>6.12%</td>
<td>4.95%</td>
<td>8.38%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.96%</td>
<td>-3.44%</td>
<td>-1.77%</td>
<td>-2.45%</td>
<td>-1.36%</td>
<td>5.63%</td>
<td>3.56%</td>
<td>7.24%</td>
</tr>
<tr>
<td>Target Fund Benchmark*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. Equity</td>
<td>$6,263,643</td>
<td>24.76%</td>
<td>25%</td>
<td>2.01%</td>
<td>-5.30%</td>
<td>1.20%</td>
<td>4.57%</td>
<td>5.79%</td>
<td>11.98%</td>
<td>10.65%</td>
<td>14.73%</td>
</tr>
<tr>
<td>Russell 3000</td>
<td></td>
<td></td>
<td></td>
<td>2.00%</td>
<td>-5.35%</td>
<td>1.22%</td>
<td>4.48%</td>
<td>5.53%</td>
<td>11.80%</td>
<td>10.62%</td>
<td>14.51%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>$5,868,179</td>
<td>23.20%</td>
<td>25%</td>
<td>1.45%</td>
<td>-6.98%</td>
<td>-6.86%</td>
<td>-10.03%</td>
<td>-8.22%</td>
<td>5.46%</td>
<td>2.02%</td>
<td>7.91%</td>
</tr>
<tr>
<td>MSCI ACWI Ex-US Net</td>
<td></td>
<td></td>
<td></td>
<td>0.95%</td>
<td>-6.84%</td>
<td>-6.61%</td>
<td>-10.13%</td>
<td>-8.12%</td>
<td>5.43%</td>
<td>1.79%</td>
<td>7.66%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>$8,001,416</td>
<td>31.63%</td>
<td>30%</td>
<td>0.58%</td>
<td>-0.23%</td>
<td>0.19%</td>
<td>-0.23%</td>
<td>0.18%</td>
<td>2.01%</td>
<td>2.48%</td>
<td>3.71%</td>
</tr>
<tr>
<td>Fixed Income Blended Benchmark - CIP**</td>
<td></td>
<td></td>
<td></td>
<td>0.50%</td>
<td>-1.14%</td>
<td>-0.75%</td>
<td>-2.19%</td>
<td>-1.86%</td>
<td>2.53%</td>
<td>0.57%</td>
<td>2.92%</td>
</tr>
<tr>
<td>Inflation-Linked Securities</td>
<td>$2,560,633</td>
<td>10.12%</td>
<td>10%</td>
<td>0.48%</td>
<td>-2.01%</td>
<td>-1.90%</td>
<td>-2.05%</td>
<td>-1.13%</td>
<td>1.47%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Bloomberg Barclays U.S. TIPS Index</td>
<td></td>
<td></td>
<td></td>
<td>0.48%</td>
<td>-2.01%</td>
<td>-1.77%</td>
<td>-1.80%</td>
<td>-0.90%</td>
<td>1.66%</td>
<td>1.28%</td>
<td>4.09%</td>
</tr>
<tr>
<td>Commodities</td>
<td>$1,322,619</td>
<td>5.23%</td>
<td>5%</td>
<td>3.34%</td>
<td>-1.33%</td>
<td>0.35%</td>
<td>-0.79%</td>
<td>-2.83%</td>
<td>10.80%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>SPDR ® Gold Trust Index (GLD)</td>
<td></td>
<td></td>
<td></td>
<td>0.34%</td>
<td>1.79%</td>
<td>-2.62%</td>
<td>-6.56%</td>
<td>-8.59%</td>
<td>4.27%</td>
<td>-0.87%</td>
<td>3.70%</td>
</tr>
<tr>
<td>Short Term Investments¹</td>
<td>$1,279,005</td>
<td>5.06%</td>
<td>5%</td>
<td>0.25%</td>
<td>0.71%</td>
<td>1.14%</td>
<td>3.76%</td>
<td>4.10%</td>
<td>4.63%</td>
<td>4.62%</td>
<td>2.78%</td>
</tr>
<tr>
<td>BofA ML 3-Month T-Bill</td>
<td></td>
<td></td>
<td></td>
<td>0.21%</td>
<td>0.53%</td>
<td>0.87%</td>
<td>1.69%</td>
<td>1.80%</td>
<td>0.97%</td>
<td>0.59%</td>
<td>0.36%</td>
</tr>
</tbody>
</table>

¹ - The returns for Short Term Investments account for both the interest on cash holdings and the revenue from securities lending.

** Target Fund Benchmarks/ Effective Dates:
- July 1, 2014 to Present: 25% Russell 3000, 25% MSCI ACWI Ex-US Net, 30% Fixed Income Blended Benchmark - CIP, 10% Barclays U.S. TIPS, 5% GLD Index Return, 5% BofA ML 3-Month T-Bill.
- July 1, 2009 - June 30, 2014: 30% Russell 3000, 30% MSCI ACWI Ex-US Net, 35% Fixed Income Blended Benchmark - CIP, 5% BofA ML 3-Month T-Bill.
- July 1, 2002 - June 30, 2009: 60% Russell 3000, 35% Fixed Income Blended Benchmark - CIP, 5% BofA ML 3-Month T-Bill.

** Target Fixed Income Benchmarks/ Effective Dates:
PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

PSPRS      CORP      EORP      EODCRS

PSPRS Trust Risk Report

Serving Those Who Serve Others
Agenda - PSPRS Trust Portfolio Risk as of November 30, 2018

Current Realized and Forecasted Levels of PSPRS Trust Portfolio Risk

- Volatility and Value at Risk (VAR)
- Comparison with Historical Levels
- Risk Contributions of all Asset Classes to Total Portfolio Risk
- Exposure to Major Market Factors on both Asset-Class and Global Trust Levels
- Stress Test Results
- Upside and Downside Returns
- Conclusions
### Current Status

*For comparison, the monthly volatility of the S&P 500 over the past ten years has been 4.3% per month, or 15.0% 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.***

Sub-portfolios had minor changes in terms of historic and forecasted volatilities. The overall risk profile remained similar to that of last month.

*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)."

<table>
<thead>
<tr>
<th>PSPRS Trust</th>
<th>Portfolio Weight</th>
<th>Historic Volatility* (12m Std. Dev.)</th>
<th>Monthly Volatility (Forecast)</th>
<th>Monthly VAR Forecast (95% Confidence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Equity</td>
<td>16.4%</td>
<td>3.5%</td>
<td>3.4%</td>
<td>-5.4%</td>
</tr>
<tr>
<td>Int’l Equity</td>
<td>14.2%</td>
<td>3.5%</td>
<td>4.0%</td>
<td>-6.2%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>13.7%</td>
<td>1.8%</td>
<td>4.3%</td>
<td>-7.2%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>4.9%</td>
<td>0.8%</td>
<td>1.0%</td>
<td>-1.0%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>16.0%</td>
<td>0.5%</td>
<td>2.2%</td>
<td>-2.8%</td>
</tr>
<tr>
<td>GTS**</td>
<td>10.6%</td>
<td>1.1%</td>
<td>2.0%</td>
<td>-2.0%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>8.6%</td>
<td>1.2%</td>
<td>2.1%</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>8.0%</td>
<td>1.1%</td>
<td>3.2%</td>
<td>-6.5%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>3.9%</td>
<td>1.5%</td>
<td>2.8%</td>
<td>-3.7%</td>
</tr>
<tr>
<td>PSPRS Trust</td>
<td>96.4%</td>
<td>1.3%***</td>
<td>2.0%</td>
<td>-3.0%</td>
</tr>
</tbody>
</table>

*For comparison, the monthly volatility of the S&P 500 over the past ten years has been 4.3% per month, or 15.0% 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.
Volatility Comparison – 12 Month Trailing Volatility

PSPRS Trust global portfolio was 62% less volatile than the market.
Risk Decomposition by Asset Class (Measured as “VAR”)

Relative Shifting in Marginal VAR Contributions:
- US Equity: increased by 0.82%.
- International Equity: Decreased by 0.40%.
**Notable Drivers of Asset Class Risk**

<table>
<thead>
<tr>
<th>PSPRS Portfolio</th>
<th>Portfolio Weight</th>
<th>Primary Driver</th>
<th>Secondary Driver</th>
<th>Fraction Explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>US Equity</td>
<td>16.4%</td>
<td>Russell 2000 (small caps)</td>
<td>Change in VIX</td>
<td>88%</td>
</tr>
<tr>
<td>International Equity</td>
<td>14.2%</td>
<td>Russell 2000 (small caps)</td>
<td>Change in VIX</td>
<td>61%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>13.7%</td>
<td>Russell 2000 (small caps)</td>
<td>Change in VIX</td>
<td>77%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>4.9%</td>
<td>Oil</td>
<td>Change in US 1M T-Bill</td>
<td>30%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>16.0%</td>
<td>Russell 2000 (small caps)</td>
<td>Change in US 1M T-Bill</td>
<td>52%</td>
</tr>
<tr>
<td>GTS</td>
<td>10.6%</td>
<td>--</td>
<td>--</td>
<td>-</td>
</tr>
<tr>
<td>Real Assets</td>
<td>8.6%</td>
<td>Russell 2000 (small caps)</td>
<td>Oil</td>
<td>42%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>8.0%</td>
<td>Credit Spread (BAA-AAA)</td>
<td>Russell 2000 (small caps)</td>
<td>58%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>3.9%</td>
<td>--</td>
<td>--</td>
<td>-</td>
</tr>
</tbody>
</table>

*Values in yellow/red indicate an inverse relation.

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.

The primary and secondary risk factors remained the same.
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 97% of variance, or market risk):
  - Russell 2000 Total Return
  - Change in US 10Y T-Note
- We report the (all other things being equal) results of stress tests on these drivers in order to gauge our exposure to them.

<table>
<thead>
<tr>
<th>Market Factor Change</th>
<th>Portfolio Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russell 2000 Total Return-3 std</td>
<td>-5.6%</td>
</tr>
<tr>
<td>Russell 2000 Total Return-2 std</td>
<td>-3.6%</td>
</tr>
<tr>
<td>Russell 2000 Total Return-1 std</td>
<td>-1.6%</td>
</tr>
<tr>
<td>Russell 2000 Total Return+1 std</td>
<td>4.3%</td>
</tr>
<tr>
<td>Russell 2000 Total Return+2 std</td>
<td>6.3%</td>
</tr>
<tr>
<td>Russell 2000 Total Return+3 std</td>
<td>8.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Market Factor Change</th>
<th>Portfolio Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in US 10Y T-Note-3 std</td>
<td>2.4%</td>
</tr>
<tr>
<td>Change in US 10Y T-Note-2 std</td>
<td>2.4%</td>
</tr>
<tr>
<td>Change in US 10Y T-Note-1 std</td>
<td>2.4%</td>
</tr>
<tr>
<td>Change in US 10Y T-Note+1 std</td>
<td>2.3%</td>
</tr>
<tr>
<td>Change in US 10Y T-Note+2 std</td>
<td>2.3%</td>
</tr>
<tr>
<td>Change in US 10Y T-Note+3 std</td>
<td>2.3%</td>
</tr>
</tbody>
</table>
### Historical Worst-Case Scenarios

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

<table>
<thead>
<tr>
<th>Events</th>
<th>Today’s Portfolio</th>
<th>PSPRS Trust Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>WTC Attacks - Sept. 11</td>
<td>-4.6%</td>
<td>-11.7%</td>
</tr>
<tr>
<td>Stock Market Crash 2002</td>
<td>-2.0%</td>
<td>-21.1%</td>
</tr>
<tr>
<td>August Crisis 2007</td>
<td>1.4%</td>
<td>1.6%</td>
</tr>
<tr>
<td>January Crisis 2008</td>
<td>-2.0%</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Credit Crunch 2008 (Aug to Nov)</td>
<td>-12.2%</td>
<td>-23.1%</td>
</tr>
<tr>
<td>Crisis 2009 (Jan-Feb)</td>
<td>-4.3%</td>
<td>-12.9%</td>
</tr>
<tr>
<td>Flash Crash 2010</td>
<td>-2.3%</td>
<td>-3.7%</td>
</tr>
<tr>
<td>Brexit (2016)</td>
<td>0.5%</td>
<td>-0.3%</td>
</tr>
</tbody>
</table>
Upside and Downside Returns

Actual Portfolio Returns During Market Upside and Downside

<table>
<thead>
<tr>
<th>Period</th>
<th>Russell 3000</th>
<th>PSPRS Actual</th>
<th>Russell 3000</th>
<th>PSPRS Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/31/2011</td>
<td>11.4%</td>
<td>3.1%</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>9/30/2010</td>
<td>9.3%</td>
<td>4.4%</td>
<td>21%</td>
<td>11%</td>
</tr>
<tr>
<td>10/31/2015</td>
<td>7.8%</td>
<td>2.1%</td>
<td>1%</td>
<td>2%</td>
</tr>
<tr>
<td>3/31/2016</td>
<td>6.9%</td>
<td>3.4%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>7/31/2010</td>
<td>6.8%</td>
<td>4.1%</td>
<td>26%</td>
<td>11%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
<th>Russell 3000</th>
<th>PSPRS Actual</th>
<th>Russell 3000</th>
<th>PSPRS Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/31/2010</td>
<td>-8.1%</td>
<td>-3.7%</td>
<td>16%</td>
<td>11%</td>
</tr>
<tr>
<td>9/30/2011</td>
<td>-7.9%</td>
<td>-3.5%</td>
<td>24%</td>
<td>7%</td>
</tr>
<tr>
<td>10/31/2018</td>
<td>-7.5%</td>
<td>-2.8%</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>5/31/2012</td>
<td>-6.4%</td>
<td>-2.6%</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td>8/31/2015</td>
<td>-6.2%</td>
<td>-1.4%</td>
<td>3%</td>
<td>2%</td>
</tr>
</tbody>
</table>

- Upside participation: 44%
- Downside mitigation: 68% (32% participation)
Conclusions

• Despite the market volatility, the Trust portfolio continued to maintain a stable risk profile. Overall, the historic and forecasted volatilities remained at 1.3% and 2.0% separately. The monthly VAR forecast (95% confidence) increased by 10 bps to -3.0%. Equity markets such as S&P 500 was roughly 2.6 times more volatile than the Trust portfolio. In terms of risk contributions, US Equity increased by 82 bps while International Equity decreased by 40 bps. There was no changes regarding primary and secondary risk drivers for each portfolio as well as the participation rates during extreme market conditions.

• In addition to the PSPRS Trust being:
  ➢ Top decile on risk-terms since 2009.
  ➢ Top quartile in efficiency (Sharpe Ratio) terms since 2010.
Financial Market Overview
Market & Rate Update

January 23rd, 2019
Introduction

• The price of financial assets represents the present value of a future stream of cash flows discounted at a market rate
• Changes in pricing are driven not necessarily by what transpires in the market, but by what transpires relative to what was expected
• Identifying “market” expectations based on current prices can help investors gauge the likelihood of positive and negative surprises and the expected magnitude of price changes on a specific asset given those surprises
• Note: although such an exercise involves as much art as science it is still useful in understanding broad market regimes and expected returns
## 2019 Market & Rate Forecasts

### S&P 500 (2670 as of 1/18/2019)

<table>
<thead>
<tr>
<th>Firm</th>
<th>2019 Target</th>
<th>2019 EPS Estimate</th>
<th>Implied P/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAML</td>
<td>2900</td>
<td>170</td>
<td>17.1</td>
</tr>
<tr>
<td>Barclays</td>
<td>2750</td>
<td>171</td>
<td>16.1</td>
</tr>
<tr>
<td>BMO</td>
<td>3000</td>
<td>174</td>
<td>17.2</td>
</tr>
<tr>
<td>BTIG</td>
<td>3000</td>
<td>172</td>
<td>17.4</td>
</tr>
<tr>
<td>CG</td>
<td>2950</td>
<td>168</td>
<td>17.6</td>
</tr>
<tr>
<td>CFRA</td>
<td>2975</td>
<td>174.49</td>
<td>17</td>
</tr>
<tr>
<td>Citigroup</td>
<td>2850</td>
<td>172.5</td>
<td>16.5</td>
</tr>
<tr>
<td>Credit Suisse</td>
<td>2925</td>
<td>174</td>
<td>16.8</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>3250</td>
<td>175</td>
<td>18.6</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>3000</td>
<td>173</td>
<td>17.3</td>
</tr>
<tr>
<td>JPMorgan Chase</td>
<td>3000</td>
<td>173</td>
<td>17.3</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>2750</td>
<td>176</td>
<td>15.6</td>
</tr>
<tr>
<td>Oppenheimer</td>
<td>2960</td>
<td>175</td>
<td>16.9</td>
</tr>
<tr>
<td>RBC</td>
<td>2900</td>
<td>171</td>
<td>17</td>
</tr>
<tr>
<td>UBS</td>
<td>2950</td>
<td>174</td>
<td>17</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>2910</td>
<td>177</td>
<td>16.4</td>
</tr>
</tbody>
</table>

Source: S&P 500 CNBC Market Strategist Survey (updated 1/16/19)

### Fed Funds Rate

<table>
<thead>
<tr>
<th>In bps</th>
<th>Jan-19</th>
<th>Mar-19</th>
<th>May-19</th>
<th>Jun-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-225</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>225-250</td>
<td>99.5%</td>
<td>99.5%</td>
<td>95.5%</td>
<td>82.8%</td>
</tr>
<tr>
<td>250-275</td>
<td>0.5%</td>
<td>0.5%</td>
<td>4.5%</td>
<td>16.6%</td>
</tr>
<tr>
<td>275-300</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Source: Federal Reserve 1/18/2019

---

The PSPRS Trust
Financial Market Overview
Market & Rate Update

January 23rd, 2019
Introduction

• The price of financial assets represents the present value of a future stream of cash flows discounted at a market rate
• Changes in pricing are driven not necessarily by what transpires in the market, but by what transpires relative to what was expected
• Identifying “market” expectations based on current prices can help investors gauge the likelihood of positive and negative surprises and the expected magnitude of price changes on a specific asset given those surprises
• Note: although such an exercise involves as much art as science it is still useful in understanding broad market regimes and expected returns
# 2019 Market & Rate Forecasts

## S&P 500 (2670 as of 1/18/2019)

<table>
<thead>
<tr>
<th>Firm</th>
<th>2019 Target</th>
<th>2019 EPS Estimate</th>
<th>Implied P/E</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAML</td>
<td>2900</td>
<td>170</td>
<td>17.1</td>
</tr>
<tr>
<td>Barclays</td>
<td>2750</td>
<td>171</td>
<td>16.1</td>
</tr>
<tr>
<td>BMO</td>
<td>3000</td>
<td>174</td>
<td>17.2</td>
</tr>
<tr>
<td>BTIG</td>
<td>3000</td>
<td>172</td>
<td>17.4</td>
</tr>
<tr>
<td>CG</td>
<td>2950</td>
<td>168</td>
<td>17.6</td>
</tr>
<tr>
<td>CFRA</td>
<td>2975</td>
<td>174.49</td>
<td>17</td>
</tr>
<tr>
<td>Citigroup</td>
<td>2850</td>
<td>172.5</td>
<td>16.5</td>
</tr>
<tr>
<td>Credit Suisse</td>
<td>2925</td>
<td>174</td>
<td>16.8</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>3250</td>
<td>175</td>
<td>18.6</td>
</tr>
<tr>
<td>Goldman Sachs</td>
<td>3000</td>
<td>173</td>
<td>17.3</td>
</tr>
<tr>
<td>JPMorgan Chase</td>
<td>3000</td>
<td>173</td>
<td>17.3</td>
</tr>
<tr>
<td>Morgan Stanley</td>
<td>2750</td>
<td>176</td>
<td>15.6</td>
</tr>
<tr>
<td>Oppenheimer</td>
<td>2960</td>
<td>175</td>
<td>16.9</td>
</tr>
<tr>
<td>RBC</td>
<td>2900</td>
<td>171</td>
<td>17</td>
</tr>
<tr>
<td>UBS</td>
<td>2950</td>
<td>174</td>
<td>17</td>
</tr>
<tr>
<td>Wells Fargo</td>
<td>2910</td>
<td>177</td>
<td>16.4</td>
</tr>
</tbody>
</table>

Source: S&P 500 CNBC Market Strategist Survey (updated 1/16/19)

## Fed Funds Rate

<table>
<thead>
<tr>
<th>In bps</th>
<th>Jan-19</th>
<th>Mar-19</th>
<th>May-19</th>
<th>Jun-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>200-225</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>225-250</td>
<td>99.5%</td>
<td>99.5%</td>
<td>95.5%</td>
<td>82.8%</td>
</tr>
<tr>
<td>250-275</td>
<td>0.5%</td>
<td>0.5%</td>
<td>4.5%</td>
<td>16.6%</td>
</tr>
<tr>
<td>275-300</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

Source: Federal Reserve 1/18/2019
• In 2005 three private equity firms, KKR, Bain and Vornado Realty, collectively invested $1.3 billion in equity and took Toys “R” Us private.
• The company’s North American operations filed for Chapter 11 bankruptcy protection in September of 2017, stating the move would give the company flexibility to deal with over $5 billion in debt.
• In March of 2018 the company received approval from the court to liquidate all U.S. and British stores.
• By June of 2018 Toys R Us had closed all of its U.S. stores.
• Critics, including industry trade groups, employees, legislators and media, among others, blame the company’s private equity owners (KKR, Bain and Vornado) for burdening the company with too much debt.
• However, others blame the company’s secured creditors (Solus, Angelo Gordon, Highland Capital and Oaktree, among others), who rejected the owners’ restructuring plan and forced liquidation.
• In November of 2018 Bain and KKR established the TRU financial assistance fund, each contributing $10 million to help former employees (press release attached).
KKR and Bain Capital Establish $20 Million TRU Financial Assistance Fund

- Kenneth Feinberg and Camille Biros Appointed as Independent Administrators
- 100 Percent of contributions will be paid directly to eligible former Toys “R” Us Employees

NEW YORK AND BOSTON – November 20, 2018 — KKR & Co. Inc. (NYSE:KKR) and Bain Capital, L.P. today announced the establishment of the TRU Financial Assistance Fund (the “Fund”) to allocate and distribute funds to certain former Toys “R” Us employees in the U.S business who lost their jobs as a result of the severe disruption in the retail industry and the liquidation of the business. KKR and Bain Capital have each committed $10 million to the Fund, which has the flexibility to allow other interested parties to contribute.

The firms have appointed Kenneth Feinberg and Camille Biros, the nation’s leading experts in designing and administering unique programs such as the 9/11 Fund, BP Oil Spill Fund, GM Ignition Switch Compensation Fund, OneFund Boston, and the OneOrlando Fund. Most recently, they served as Fund Administrators for various Roman Catholic Dioceses resolving claims of sexual abuse by clergy. They will serve as Independent Administrators of the Fund, responsible for the independent management and distribution of all proceeds.

Feinberg stated: “This is a valuable and important step designed to provide a degree of financial relief to eligible former employees of Toys “R” Us. We are now disseminating a draft of the Protocol outlining the terms and conditions of eligibility so we can gauge employee reaction and comment.” Biros added, “We have designed a transparent, straightforward and simple process that should provide some financial relief to eligible former employees. Next, we want to hear from those former employees affected by the unexpected liquidation.”

The Draft Protocol is the result of a collaborative effort involving KKR, Bain Capital, the Independent Administrators, and former employees of Toys “R” Us.

Tracy Forbes, a former Toys “R” Us manager for 31 years at the company’s Chandler, Arizona store, commented: “KKR and Bain Capital’s creation of this fund will bring real support to the thousands of dedicated Toys “R” Us employees who lost their jobs. We hope other firms will follow their lead and contribute.”

The following information was used to develop the distribution methodology:

- Available Company data including:
  - historic earnings
  - hours worked
  - tenure using hire/termination dates
  - Toys “R” Us termination/employment policies, and
- Input from former Toys “R” Us employees
The following components were used to determine the proposed draft eligibility and payment amounts:

1) Tenure: Must have at least one year of tenure
2) Earnings: Must have no more than $110,000 in Annual Income
3) Minimum Earnings: Must have no less than $5,000 in Annual Income
4) Termination/Employment Guidelines in the Toys “R” Us Plan

Feinberg added, “In order to maximize the impact of available funds, key eligibility requirements and payment parameters had to be instituted.”

The parameters and the complete calculation methodology are described in the Draft Protocol, which has been posted on the Fund’s website at www.TRUFinancialAssistanceFund.com.

There will be a two-week period for all interested parties to comment on the terms and conditions of the Draft Protocol. After these comments are considered and evaluated by the Independent Administrators, the Final Protocol outlining final terms and conditions will be made public. The claims process is expected to launch on December 15. It is anticipated that distributions will begin shortly thereafter, and would be completed on or about April 30, 2019.

Feinberg and Biros emphasized that, with the exception of providing the initial contributions, and providing initial input concerning the program’s terms and conditions, neither KKR nor Bain Capital will have any role in the administration of the Fund or the distribution of the monies. All future announcements related to the Fund will be made by Feinberg and Biros.

KKR and Bain Capital stated: “After being a part of the community and supporting Toys “R” Us for twelve years, and advocating for a very different outcome than what occurred, we are establishing this Fund in response to an extraordinary set of circumstances for both of our firms. The confluence of the disruption in retail, the push by the company’s secured creditors to liquidate the company’s U.S. operations, and the fact that we have never experienced something like this in the history of either firm, led us to try and find a way to provide some financial relief for former employees. This is a unique set of circumstances that called for a unique solution, and we hope others will consider joining and contributing to the Fund.”

The TRU Financial Assistance Fund does not include any Limited Partner capital from either firm.

For more information about the terms and conditions of the Fund – including the submission of comments about the program during the comment period, how to contribute to the Fund, and other information - please visit www.TRUFinancialAssistanceFund.com.

About KKR

KKR is a leading global investment firm that manages multiple alternative asset classes, including private equity, energy, infrastructure, real estate and credit, with strategic partners that manage hedge funds. KKR aims to generate attractive investment returns for its fund investors by following a patient and disciplined investment approach, employing world-class
people, and driving growth and value creation with KKR portfolio companies. KKR invests its own capital alongside the capital it manages for fund investors and provides financing solutions and investment opportunities through its capital markets business. KKR has market-leading initiatives in place at many companies, such as wellness programs, equity ownership programs, and veterans hiring programs that are important value creation initiatives focused entirely on a company’s employees. References to KKR’s investments may include the activities of its sponsored funds. For more information about KKR & Co. Inc. (NYSE: KKR), or our citizenship, please visit KKR’s website at www.kkr.com/responsibility/citizenship.com.

About Bain Capital

Bain Capital (www.baincapital.com) is one of the world’s leading private, multi-asset alternative investment firms with approximately $105 billion of assets under management. We invest across asset classes including private equity, credit, public equity, venture capital and real estate, and we leverage our shared platform to capture opportunities in strategic areas of focus. Since our founding in 1984, our team of more than 1,000 people across 19 global offices has sought to create lasting impact for our investors, our people, the businesses we invest in and the communities where we live and work. The firm and our people bring this commitment to life by supporting a wide array of charitable and nonprofit organizations with our time, expertise and resources through Bain Capital Community Partnership.

Media Contacts:

KKR:
Kristi Huller, 212-750-8300
media@kkr.com

Bain Capital:
Alex Stanton, 212-780-0701
astanton@stantonprm.com
Response to Senator Warren

October 17, 2018

The Honorable Elizabeth Warren
United States Senate
Washington, D.C. 20510-2105

Dear Senator Warren:

I am writing in response to your letter dated October 16, 2018 regarding the Toys “R” Us bankruptcy.

As you know, KKR, Bain Capital and Vornado Realty Trust took control of Toys “R” Us through a leveraged buyout in 2005 that burdened the company with approximately $5 billion of debt. The company began to struggle almost immediately thereafter and ultimately filed for bankruptcy in 2017.

Investment funds managed by Oaktree had no involvement with Toys “R” Us until after it filed for bankruptcy. Funds managed by Oaktree purchased, in aggregate, less than 2% of the outstanding debt of Toys “R” Us beginning in late 2017. As a minor creditor, we played no meaningful role in the bankruptcy process.

Significantly, unlike other holders of the company’s B-4 debt, the funds managed by Oaktree did not provide debtor-in-possession (DIP) term loan financing to Toys “R” Us at the time of its bankruptcy filing. Some press reports (and your letter) erroneously suggest that the “catalyst to liquidation” was the B-4 lenders conditioning their waiver of covenants under the DIP term loan facility on liquidation of the company. In fact, the B-4 lenders had no right, and therefore the funds managed by Oaktree had no right, to waive violations under the DIP term loan facility. Only the DIP term loan lenders, most of whom happened to also be B-4 lenders, possessed that ability.

As the Oaktree-managed funds were never a lender under the DIP term loan facility, neither Oaktree, nor any of the funds we manage, played any role whatsoever in the negotiations that eventually led to the liquidation of Toys “R” Us.

We very much sympathize with the employees who lost their jobs as a result of the Toys “R” Us liquidation. Nevertheless, we do not believe it would be appropriate for our funds, which are owned by our public and private pension, union and other clients, to compensate for losses that our funds and our clients had nothing to do with creating.

Very truly yours,

Bruce Karsh
INVESTMENT POLICY STATEMENT

ARIZONA PSPRS TRUST

Board Approved: __/__/2018
Revised: __/__/____

ARIZONA PSPRS TRUST
3010 E. Camelback Road
Phoenix, Arizona 85016
INTRODUCTION

I. Purpose and Core Beliefs

The purpose of this Investment Policy Statement (IPS) is to set forth the objectives and overall investment philosophy for Trust assets and to establish the investment policies and the asset allocation that are utilized to effectively supervise, monitor and evaluate the investment of Trust assets by Investment Staff.

Accordingly, this IPS:

1. Establishes the objectives that govern the investment of the Trust assets;
2. Describes how assets will be allocated across financial markets;
3. Details the risk management parameters;
4. Provides rate-of-return objectives and criteria to monitor and evaluate the performance results achieved;
5. Establishes a framework for monitoring investment activity;
6. Promotes effective communication between the Board, Investment Staff, Advisors, Stakeholders and
7. Creates a formal review process for reviewing this IPS.

Core Investment Beliefs

Under development

II. Plan Description/Governing Law

The Public Safety Personnel Retirement System (the System) is a multi-employer governmental plan acting as an independent trust fund of the State of Arizona to provide retirement and disability benefits for Arizona’s public safety personnel and their beneficiaries and survivors. The System and two other governmental plans, the Elected Officials’ Retirement Plan (EORP) and the Corrections Officer Retirement Plan (CORP), which collectively, are called the Plans, are administered by a single, nine-member board of trustees (the Board). EORP provides retirement and disability benefits for Arizona’s jurists and elected officials and their beneficiaries and survivors. CORP provides retirement and disability benefits for Arizona’s corrections officers and their beneficiaries and survivors. By law, the Board administers the Plans through the System’s offices. The Plans have created a group trust called the Arizona PSPRS Trust (the Trust) to commingle their assets for purposes of investment. The Plans and Trust operate on a fiscal year basis ending every June 30. Each of the Plans is principally funded from three sources: employee contributions, employer contributions and investment returns. Investments shall be made solely in the investment interests of the members and beneficiaries of the Trust.
III. General Objectives and Policies

A healthy investment program requires accountability. Accountability entails clear goals that support objective analysis. To that end, policies must consider two important factors. First, that certain developments in financial markets are unknowable and/or uncontrollable. Second, that successful programs must strike the right balance between economic and actuarial perspectives, between asset-only and asset-liability perspectives and between absolute and relative rates of return perspectives.

Assets of the Trust shall be invested in accordance with the following hierarchy:

1. Provide a return on plan assets that is equal to or greater than the Actuarial Assumed Earnings Rate (AER);
2. Ensure Trust assets are available to meet current and future obligations when due;
3. Manage performance volatility for a given return target to mitigate contribution rate volatility;
4. Minimize total expenses through negotiation and operational efficiency.

Risk Management

The Trust recognizes that risk must be assumed to achieve the Trust’s long-term investment objectives. The Trust also understands that the nature of financial instruments and markets in which it invests involves some interim fluctuations in market value and rates of return. The Trust’s risk tolerance is defined by its desire to preserve capital in volatile investment environments while producing returns consistent with actuarial assumptions. The Trust will aim to diversify assets across asset classes and direct Investment Staff to maintain an appropriate level of risk to meet these objectives.

IV. Roles and Responsibilities

The roles and responsibilities outlined in this section are directed by, and subject to, the Board of Trustees Governance Manual.

Board of Trustees

The Board shall be responsible for the overall investment policies of the Trust. The Board shall approve the IPS and provide overall direction in the execution of the IPS. The Trustees may also review and recommend investment policy changes, deletions, or additions. The Trustees shall review, on an annual basis, the asset allocation, the annual rate of return and investment results in
relation to investment expectations, actuarial assumptions and market conditions to determine if changes are needed to the IPS.

In accordance with the enabling legislation, the Board has delegated to the Administrator the authority to prudently invest the assets of the Trust in accordance with this IPS and applicable law, and the Administrator, in turn, has delegated such authority to the Chief Investment Officer (CIO). Despite such delegation of authority, the Board has reserved authority to approve the hiring and firing of the Administrator, the CIO, custodian bank and professional consultants, as well as to make substantive changes to their operative contracts with the Trust. The Board has also delegated to its Investment Committee the authority to recommend changes to this IPS, as well as changes to the Trust’s investment strategies and asset allocations.

**Investment Committee**

Section 4.04 of the Board of Trustees Governance Manual defines the Investment Committee Charter. As described in the charter, the Investment Committee reviews the IPS and recommends appropriate changes to the Board of Trustees. Other responsibilities of the Investment Committee outlined in the charter are as follows:

1. Recommend broad investment strategies for the Trust, and, as appropriate, any changes to such strategies.
2. 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 a Committee recommendation to the Board.
3. Monitor the activities and performance of the Trust, including at a minimum:
   a. Compliance with the investment policies of the Trust.
   b. Compliance with the investment strategies of the Trust.
   c. Investment performance of the Trust.
   d. Performance of the investment consultants advising the Investment Committee and/or the Board of Trustees.

**Chief Investment Officer/Staff**

The primary role of the CIO is to prudently invest the assets of the Trust in accordance with the IPS and applicable law and for the overall management of the portfolio and the Investment Staff. Other responsibilities of the CIO are as follows:

1. To develop and modify policy objectives and guidelines, including the development of and recommendations on long-term asset allocation and the appropriate mix of styles and strategies.
2. To oversee security and fund selection, investment performance calculation and evaluation, and any other analysis associated with the proper execution of the IPS and management of the portfolio.
3. To enter into investment contracts, including those with third-party managers.
4. To provide oversight of consultants, service providers, and internal staff.

**Investment Consultants**

The primary role of Investment Consultants, pursuant to their contract with the Trust, is to provide objective, third-party advice. Consultants working for the trust shall serve as Fiduciaries to the Trust. Since the Board has chosen to delegate day-to-day investment decisions to the CIO, the Board may employ a Generalist Consultant to directly support the Board on Asset Allocation and Manager Selection Oversight. In addition to a Generalist Consultant, the Board may employ specialist consultants to support staff and Trustees with information and recommendations on specific investment mandates or asset classes.

The primary roles of the Generalist Consultant may include the following:

1. Assisting the Investment Staff in making well-informed and well-educated decisions regarding the investment of Trust assets.
2. Assisting in the development of investment policy guidelines that reflect the Trust’s tolerance for risk and rate-of-return objectives.
3. Assisting the Investment Staff in the development of portfolio structure that provides adequate diversification with respect to the number and types of investments.
4. Assisting in the identification of appropriate market benchmarks against which investments shall be evaluated.
5. Assisting in monitoring individual securities and commingled funds. This includes the ongoing monitoring of (i) total Trust and individual position-level performance on a quarterly basis and (ii) organizational developments at any external managers in which the assets may be invested.
6. Providing timely information, written and oral, on investment strategies, instruments, asset managers and other related issues, as requested by the Board, the Investment Committee, the CIO or Investment Staff.

**Custodian Bank**

The custodian bank is hired by, and is responsible to the Trust. The primary responsibilities of the custodian bank are to:

1. Provide adequate safekeeping services, cash-management services, administrative support, accounting services, risk management, and data processing capabilities.
2. Settle securities transactions on time.
3. Collect income, interest and dividends when due.
4. Prepare accurate and timely investment reports on monthly, quarterly and annual basis.
5. Calculate timely and accurate rates of return.
6. Ensure that the Trust is the registered owner of all assets.
7. Coordinate with Investment Consultants, accountants and auditors to ensure accuracy in reporting.

V. General Policies and Guidelines

Asset-Allocation Plan and Objectives

The Board, in collaboration with the CIO, Investment Staff and Consultants, establishes asset-allocation policies to reflect, and be consistent with, the investment objectives expressed in this IPS. These policies, developed after examining the historical relationships of risk and return among asset classes using traditional mean-variance analysis, are designed to provide the greatest probability of meeting or exceeding the Trust’s return objectives with an acceptable level of volatility.

Ultimately the Trust’s asset allocation is a function of market dynamics. Because investment management involves as much art as science, qualitative considerations play an extremely important role in portfolio decisions. The definition of an asset class is subjective, often requiring precise distinctions where none exist. Returns and correlations are difficult to forecast. Historical data provide a guide, but must be modified to recognize structural changes and compensate for anomalous periods. Quantitative measures like mean-variance analysis have difficulty incorporating factors such as market liquidity or the influence of significant, low-probability events. Despite such operational challenges, it is recognized that a strategic long-term asset allocation plan, implemented in a consistent and disciplined manner, will be the major determinant of the Trust’s investment performance. Asset allocation modeling identifies asset classes the plan will utilize, and target percentages that each asset class represents of the total fund. Due to fluctuations of market values, positioning within an approved range is acceptable and constitutes compliance with the policy. Exhibit I outlines the Fund’s current Board-approved asset allocation targets and ranges.

Rebalancing of Asset-Allocation Guidelines

One essential component of an asset allocation policy is the development and use of rebalancing ranges for the target allocation. The rebalancing ranges are shown in Exhibit I. The Investment Consultant shall prepare quarterly reports reviewing the actual asset-allocation percentages, demonstrating whether the lower or upper limits have been violated. Such reports shall be reviewed with the CIO, the Investment Staff and/or the Board on a regular basis.

If actual allocations fall within the defined ranges, no rebalancing will be required, but the CIO has the discretion to rebalance to manage portfolio risk relative to policy.

Public asset classes. In the event that actual allocations for a publicly traded asset class fall outside the predetermined ranges, Staff will prudently rebalance the allocation as market conditions allow.

Private asset classes. Given the difficulty in managing the allocation to less liquid private market asset classes, automatic rebalancing will not be required if the actual allocation falls outside
the predetermined range. Instead, Staff will develop a plan to bring the allocation as close as practicable to the policy target within a prudent timeframe.

**Performance Measurement and Review**

**Time Horizon**

The Board acknowledges that fluctuating rates of return characterize the securities markets, particularly during short-term time periods. Recognizing that short-term fluctuations may cause variations in the total portfolio's performance, the Board requires the CIO and Staff to develop long-term investment strategies consistent with the guidelines contained in this Investment Policy Statement. Performance measurement and review should occur over a full market-cycle (generally 7 to 10 years).

**Performance Objectives**

The Board has determined that it is in the best interest of the Trust that performance objectives be established for the total portfolio. It is clearly understood that these objectives are to be viewed, at a minimum, over the actuarial smoothed period, and generally over a full market-cycle and have been established after full consideration of all factors set forth in this Investment Policy Statement. The Board acknowledges that investment styles come in and go out of favor depending on economic and capital-market conditions. Accordingly, the Board has established style group comparisons as shorter-term performance objectives to be applied over a minimum of rolling three-year time periods.

An investor’s long-term asset allocation is by far the largest contributor to a portfolio’s return. Occasionally asset managers identify an opportunity to perform marginally better than the index by making modest allocations away from the index. The CIO has discretion to deviate from asset class indexes if, in his or her judgement, such deviations are likely to result in superior outcomes. The Board establishes investable benchmarks, where possible, for each asset class that represent an expected return target against which performance is measured.

Many illiquid asset classes do not have an equivalent investable benchmark. In these cases the Board assigns an uninvestable return target as the Primary Index Target. Uninvestable return targets are, by definition, always positive and may result in significant short-term deviations against actual asset class performance. Over the long-term performance should converge. A secondary index target, representing the most likely investable index for an illiquid asset class, is helpful in contextualizing performance. For example, the primary index target for Private Equity is the Russell 3000 Index plus 1%, which represents what the Trust hopes to achieve from the Private Equity program. The secondary index target is the Russell 3000 under the assumption most investors would invest in the Russell 3000 if they were not investing in Private Equity.
<table>
<thead>
<tr>
<th>Asset Category</th>
<th>Primary Index Target</th>
<th>Secondary (Investable) Index Target</th>
<th>Peer Group Universe/ Style Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Portfolio</td>
<td>Target Index¹</td>
<td></td>
<td>Public Pension Trusts</td>
</tr>
<tr>
<td>U.S. Equities</td>
<td>Russell 3000</td>
<td></td>
<td>Large Cap Core</td>
</tr>
<tr>
<td>International Equities</td>
<td>MSCI ACWI ex-US Net</td>
<td></td>
<td>Core International</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>60% Bloomberg BC Global Agg/ 30% MSCI AC World Net/ 10% Bloomberg Commodity TR</td>
<td></td>
<td>Balanced</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>20% Bloomberg Barclays Global Aggregate ex-US/ 80% Bloomberg Barclays US Agg</td>
<td></td>
<td>Core Fixed Income</td>
</tr>
<tr>
<td>Private Credit</td>
<td>50%BofA ML US HY BB-B / 50% CSFB FI Arbitrage</td>
<td></td>
<td>High Yield Bond Managers</td>
</tr>
<tr>
<td>Global Trading Strategies</td>
<td>3-Month LIBOR + 3%</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td>Private Equity</td>
<td>Russell 3000 + 1%</td>
<td>Russell 3000</td>
<td>Private Equity</td>
</tr>
<tr>
<td>Real Estate</td>
<td>NCREIF NPI</td>
<td>TBD</td>
<td>Real Estate Managers</td>
</tr>
<tr>
<td>Real Assets</td>
<td>CPI + 2%</td>
<td>TBD</td>
<td>Custom Real Assets</td>
</tr>
<tr>
<td>Cash</td>
<td>BofA 3-Mo T-bill</td>
<td></td>
<td>Cash Managers</td>
</tr>
</tbody>
</table>

**Investment Staff Guidelines**

Full discretion, within the parameters of the guidelines described herein, is granted to the CIO and the Investment Staff regarding the selection of securities, and the timing of transactions. Compliance with all guidelines must be monitored by the Investment Staff, other internal departments where applicable and/or external consultants, on a regular basis (monthly or more frequently when market conditions warrant) and based on then current market values. In the event that a portfolio moves out of compliance with these guidelines (as identified in the regular review of the portfolio), through market conditions or other changes outside the control of the Investment Manager, Investment Staff must bring the portfolio composition back into compliance as soon as feasible.

¹The Target Index will consist of (Insert Policy Index here)
Leverage Guidelines

The use of leverage is defined in the applicable PSPRS Trust documentation. For direct holdings, either through single securities or through separate accounts, the use of leverage is explicitly denoted on a gross and net basis and, if applicable, in the investment management agreement. For commingled investments, the use of leverage is described in the Limited Partnership Agreement or the Investment Management Agreement.

Derivatives Guidelines

The use of derivatives is defined in the applicable PSPRS Trust documentation. Derivatives are defined as securities whose return or market value is derived from another security or market index. Derivatives may be used for the express purpose of substitution, risk control or cash equitization. In commingled funds the use of derivatives is permitted so long as the Trust’s capital at risk is restricted to the amount invested in the commingled fund, with no recourse to the rest of the portfolio.

Commingled Funds

Mutual funds and other types of commingled investment vehicles provide, under some circumstances, lower costs and better diversification than can be obtained with a separately managed fund pursuing the same investment objectives. However, commingled investment funds cannot customize investment policies and guidelines to the specific needs of individual clients. The Trust is willing to accept the policies of such funds to achieve the lower costs and diversification benefits of commingled funds. Therefore, commingled investment vehicles are exempt from the policies and restrictions specified herein if the Investment Staff, with consultation with Investment Consultants, determines that the benefits of using a commingled vehicle rather than a separate account are material.

Responsible Investing

The System is a principle-led organization and explicitly acknowledges the relevance to the system’s members of social factors and the long-term health and stability of the market as a whole. Generating long term sustainable returns is dependent on well-functioning and well governed social and economic systems. Management’s commitment to actively exercising the ownership rights attached to its investments reflects the Trust's conviction that responsible asset owners should maintain oversight of the way in which the enterprises they invest in are managed and how their activities impact upon customers, clients, employees, stakeholders, and wider society.

PSPRS accepts that stakeholders will have differing views on how social, environmental and corporate governance considerations should be taken into account and believes that no “one size fits all” policy can possibly be implemented across such a diverse portfolio such as that of the Trust. The System’s approach to incorporating these factors is to establish the type and materiality of relevant issues on a case by case basis, whilst taking account of global norms, rather than to apply artificial exclusions through negative screening.

Although the System will not place social, environmental or corporate governance restrictions on internal staff, third-party managers or corporations, management stresses that adhering to the
highest standards of corporate governance and promoting responsibility by investee protects the financial interests of members. Moreover, the Trust expects investees to follow best practices in the jurisdictions in which they are based, operate and invest.

The Trust shall invest on the basis on financial risk and return having considered a full range of factors contributing to financial risk, including social factors, to the extent these indirectly or directly impact on financial risk and return.

**Exercising the Rights of Ownership**

**Public Securities**

The routes for exercising ownership influence vary across asset types and a range of activities are undertaken on the Fund's behalf by management, including direct representation on company boards, presence on investor & advisory committees and participation in partnerships and collaborations with other investors. In the case of listed equites the most direct form of ownership influence comes through shareholder voting and engagement. To ensure effective and consistent use of the voting rights attached to these assets the System works with an external provider of governance and proxy voting services. Voting is undertaken centrally rather than being delegated to individual managers and is in line with an agreed voting policy, which promotes risk mitigation and long-term shareholder value creation by supporting responsible global corporate governance practices.

**Private Partnerships**

Most alternative investments are structured as private partnerships whereby an external asset manager is the General Partner (“GP”) and investors like the Trust are Limited Partners (“LP”). GPs have complete discretion over investment decision-making and ownership activities for both legal and practical reasons. An LP typically invests in funds on the basis of a GP’s ability and judgement, and therefore delegates managerial functions to a GP. While a GP may obtain an LP’s input on various issues relating to a fund, an LP that provides input beyond being consultative in nature may undermine its limited liability status, depending on the jurisdiction and the particular facts involved.

While an LP cannot make, or materially influence, specific investment decisions, a distinction can be made between influencing a decision and influencing a decision-making process. As a result, in dispatching its fiduciary duties, the Trust, as an LP, monitors and, where necessary, engages a GP about the policies, systems and resources used to identify, assess and make investment decisions, including ethical risk management.

There are four main channels the Trust uses to communicate, or engage with, its GPs:

- **Limited partner advisory committee (LPAC):** The LPAC is generally comprised of the largest LPs in a fund, who represent their own interests. LPAC practice and mandate differs widely between funds, but often includes consents or waivers with respect to transactions involving conflicts of interest, valuation policies, investment period extensions, and other issues on which a
GP seeks LP input. If LPAC members are concerned about specific practices the LPAC may be an effective body for addressing those concerns.

- **Annual general meeting (AGM):** During the AGM, a GP generally reports on fund investment and performance during the previous year to all LPs. AGM practice differs across funds, but is generally for sharing information and not for seeking formal input on decisions.

- **Periodic GP reports:** The frequency and content of a GP’s reporting obligations is generally set in the fund’s governing documents. The Institutional Limited Partners Association (“ILPA”) is an industry group comprised of institutional investors that participate as LPs in private funds. The ILPA has developed standardized reporting templates, which an LP may consider when defining its expectations. An LP with specific reporting requirements will sometimes seek additional commitments from the GP in a side letter.

- **Meetings:** GPs and LPs may arrange telephone or in-person meetings. Unless otherwise stated in a fund’s governing documents, such meetings take place at a GP’s discretion.

The private partnership ownership and governance model is based on the close alignment of LP, GP and portfolio company management interests. This increases investors’ ability to influence how an LPs principles are addressed within portfolio companies.

LPs within a fund are likely to differ in their approach to responsible investing. LPs that engage with GPs on ethical investing may not necessarily have the support of other LPs that may have a different perception of whether or how such factors can impact risk-adjusted returns.

VI. **Investment Structure and Practices**

**Domestic and Non-U.S. Equity Investments:**

Domestic and non-U.S. investments include common and preferred stocks of companies domiciled both within the U.S. and outside the U.S. that trade on U.S. or foreign exchanges and over the counter. In addition to single securities, this asset class includes, but is not limited to, American Depository Receipts (ADRs), securities convertible into common stocks, derivative financial instruments that create equivalent exposures and commingled funds such as Exchange Traded Funds (“ETFs”) or Notes (“ETNs”) and Mutual Funds.

Active Managers are expected to provide total returns that meet the guidelines of this IPS and for a specific investment philosophy or style that the CIO and Investment Staff believe is appropriate for the Trust, as set out in the respective investment management agreement.

Unless otherwise stated in the respective investment management agreement, decisions as to individual security selection, security size and quality, number of industries and holdings, current income levels, turnover, and the other tools employed by active Investment Managers are left to such Investment Manager’s discretion, subject to the standards of fiduciary prudence.

**Domestic Fixed-Income Investments:**

Domestic fixed income investments may include, but are not limited to, U.S. Government and Federal Agency obligations, corporate bonds, debentures, commercial paper, certificates of deposit, Yankee bonds, mortgage-backed securities and other domestically issued fixed income
instruments deemed prudent by the Investment Staff. In addition to single securities, this asset class includes, but is not limited to, commingled funds such as Exchange Traded Funds (“ETFs”) or Notes (“ETNs”) and Mutual Funds

Unless otherwise stated in this IPS, decisions as to individual security selection, currency hedging, turnover, number of industries and holdings, and other tools employed by active Investment Managers are left to the Investment Manager’s discretion, subject to the standards of fiduciary prudence as set out in the applicable investment management agreement.

**Global and Emerging Fixed Income Investments:**

Global and Emerging fixed income investments may include debt securities of the U.S. government, non-U.S. government, and non-U.S. non-government entities, and other issued fixed income instruments deemed prudent by the Investment Managers. In addition to single securities, this asset class includes, but is not limited to, commingled funds such as Exchange Traded Funds (“ETFs”) or Notes (“ETNs”) and Mutual Funds

Unless otherwise stated in this IPS, decisions as to individual security selection, currency hedging, turnover, number of industries and holdings, and the other tools employed by active Investment Managers are left to the Investment Manager’s discretion, subject to the standards of fiduciary prudence as set out in the applicable investment management agreement.

**Global Asset Allocation (GAA) and Absolute Return Managers:**

The purpose of employing a GAA or Absolute Return Investment Manager is to provide an additional layer of diversification with the twin goals of increasing return and decreasing risk. To the extent necessary, the Investment Managers can use active or passive underlying portfolios. Due to the global nature of these mandates, Investment Managers are expected to be evaluating or investing in non-U.S. instruments, to include derivative investments allowing for market exposure or risk mitigation (e.g., index futures and currency forwards).

The investment objective of these allocations is to achieve attractive long-term, risk-adjusted returns in a variety of capital market conditions in accordance with this IPS. Investment Staff shall achieve this objective by purchasing investment funds that utilize a broad range of absolute return oriented investment strategies (e.g., convertible arbitrage, merger arbitrage, distressed securities, long/short equity, equity market neutral, etc.)

Investment Managers may employ a global tactical asset allocation strategy that can change the capital structure of the portfolio at any time as market conditions dictate within the strategy guidelines of the Investment Manager.

Investment Managers may employ either a passive or active/tactical approach regarding how the assets are invested. These strategies should be employed to improve the overall portfolio’s diversification and to provide attractive risk-adjusted returns. These strategies may include products that are focused on generating absolute or real returns, compared to other strategies in the portfolio which may be more benchmark sensitive.

Given that the investments will be made via commingled vehicles, the Trust recognizes that the portfolio cannot be customized or altered for any one investor. Accordingly, the Trust shall adopt the investment guidelines of the commingled vehicle as its own so long as it is keeping with the spirit and intent of the guidelines contained herein.
Private Investments:

The investment objective of private investments is to achieve high long-term returns by investing in private securities or private fund offerings.

Given that the investments will be made via commingled vehicles, the Trust recognizes that the portfolio cannot be customized or altered for any one investor. Accordingly, the Trust shall adopt the investment guidelines of the commingled vehicle as its own so long as it is keeping with the spirit and intent of the guidelines contained herein.

The Trust will analyze annual commitment levels and sub-strategy diversification.

VII. Evaluation Guidelines and Procedures

Investment Staff will consider changing a position when (1) it has materially underperformed its benchmarks and/or peers if applicable, (2) the characteristics of the portfolio no longer satisfy the desired or expected elements of the mandate, or (3) in the case of funds, confidence is lost in the management of a strategy. The following are a list of scenarios that could lead to a loss of confidence in an Investment Manager:

1. **Performance.** Continued performance shortfalls versus a peer group of managers with a similar style and market index. Absent a compelling justification, an Investment Manager that does not remain in the upper half of the universe and lags the pre-specified benchmark over a rolling three year for three consecutive quarters will be placed on watch status.

2. **Changes in strategy or style.** If the Investment Manager departs from the strategy and/or style it was originally hired to implement, such as a switch from a quantitative process to a fundamental one, or the strategy deviates from the universe and benchmark dramatically in a manner that would not have been expected given the tracking error expectations of the strategy.

3. **Change or material developments in organizational structure or personnel.** A significant change in culture through a merger, or acquisition or reorganization that is likely to distort incentives and promote turnover, or if there are significant departures from the investment team. Potential or new litigation, especially relating to personnel or regulatory deficiencies.

4. **Compliance.** Any gross negligence, willful misconduct, investment policy violation or breach of federal and state securities laws.

5. **Other.** Any other reason the Investment Staff or Investment Consultants may deem necessary for a heightened review of the Investment Manager.

Termination Procedures for Hedge Funds

Investment Staff and Investment Consultants will monitor the Investment Managers. External managers may be terminated by action of the CIO for conflicts of interests, unethical behavior or violation of investment management agreement, poor performance, style drift, operational deficiencies or turnover in personnel. Terminations and redemptions will be reviewed by the CIO, Investment Staff and, where appropriate, Investment Consultants.
Termination Procedures for Closed-End/Draw-down Commingled Funds

Unlike open-end funds and separate accounts which are more easily liquidated, closed-end commingled funds may be exited through the secondary market, but often marketability and liquidity is constrained to relatively few buyers. For these reasons, the watch list and terminating procedures used for traditional vehicles are not applicable for closed-end funds so the CIO and Investment Consultants will make appropriate recommendations for exiting such positions.

Proxy Voting Guidelines

Proxies are to be voted consistent with the economic interests of the Trust and the underlying Plans. The economic interest of the Trust is to maximize the total return earned for each investment undertaken consistent with the Investment Policy.

The Board may elect to retain a proxy voting consultant who may provide advice to Staff, recommend voting strategies, perform portfolio screening for specific proxy issues, enter votes for identified securities, provide manager oversight on voting practices, implement a proxy voting program for the Trust, or such other services as the Board or Staff may request. Such a consulting relationship must be approved by the Board and may be directed towards internally managed securities, externally managed securities or both.

In commingled account structures, the Trust shares common ownership of a pool of equity securities with other investors. Within this structure it is difficult for a manager to execute customized voting instructions for each client on the basis of each client’s pro-rata ownership. Because each External Manager will administer the proxy voting for the underlying equity issues based on a common set of practices across the whole of the commingled investment vehicle, this Policy shall not apply to the Trust’s investments in commingled accounts. Staff will review each External Manager’s proxy voting policies and procedures prior to funding capital to the External Manager as part of the due diligence process. Any unique characteristics will be reported to the Board and/or Investment Committee, as appropriate.

Securities Lending

The Trust may engage in securities lending with either the custody bank or tri-party in a separate account or commingled security lending structure. The CIO and Investment Staff will determine the lending program, including the collateral requirements, lending balance and securities to be loaned. Securities lending reports shall be provided quarterly by the lending agent to the Investment Staff. Such reports shall provide details of the investment instruments utilized and the appropriate breakdown of revenues.

Securities Litigation

The Trust will monitor and may participate in securities litigation when appropriate to protect Trust assets. Class action lawsuits are brought against companies, their directors, their officers and certain third parties for alleged violations of federal and state securities laws. The Trust may participate in such securities class action or pursue private action where indicated.
Communications

Investment staff shall provide the Investment Committee with periodic investment information. Generally, these are as follows:

Quarterly

1. Time-weighted rates of return for the quarter, year-to-date, and since inception.
2. Performance commentary that attributes both good and bad elements of quarterly performance to the sources of return.
3. Strategy statement that describes the portfolio strategies currently in place.

Monthly

1. Asset listings that contain descriptions of thematic exposures held in the portfolio.
2. Time-weighted rate of return for the month.

Event Driven

1. Organizational and/or economic developments that might impact the Trust’s investment philosophy, decision-making process, financial condition, ownership, or professional staff.

Board and Investment Committee Meetings

Investment Managers may be invited to make presentations to the Investment Staff or Investment Committee meetings at their cost. The agenda for such meetings usually will consist of the following:

1. Discussion of investment performance and risk - current quarter, year-to-date and since inception, in relation to a mutually agreed upon market index. Discussion of investment strategies that have helped and hurt performance.
2. Discussion of recent and material developments at Investment Manager’s organization - Ownership, organizational structure, financial condition, outstanding litigation, investment philosophy and investment decision-making process, professional staff, and client-servicing program.

Investment Consultant Reporting Requirements

Investment Consultants are required to provide the Investment Staff and/or the Board with periodic investment information for portfolio monitoring purposes. Generally, these are as follows:

Quarterly

1. A review of the current investment market environment.
2. The Trust’s actual asset allocation relative to its target asset allocation.
3. The Trust’s return relative to its policy portfolio return and other public pension funds.
4. The Trust’s risk adjusted returns relative to the policy portfolio and other public pension trusts.
5. Individual asset class performance relative to the benchmark.
6. Individual Investment Manager returns relative to their stated benchmark.
7. Any reportable events affecting any of the Trust’s Investment Managers.

Event Driven
Organizational developments that address any changes to the consultant’s organization or changes to the assigned consulting team.

VIII. Review Procedures

The Board, the CIO, the Investment Staff and the Investment Consultants customarily make a formal review of this IPS on an annual basis.

The Board of Trustees of the Arizona PSPRS Trust has formally adopted this IPS, effective as of [December __, 2018].

Dated this ____ day of December, 2018.

By: ________________________________
    Brian Tobin, Chairman

By: ________________________________
    Jared A. Smout, Administrator
Exhibit I

On the basis of the time horizon and risk tolerance determined for the Trust, the following asset-allocation guidelines have been established:

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Target Allocation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Appreciation</td>
<td>61%</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>US Public Equity</td>
<td>16%</td>
<td>10%</td>
<td>65%</td>
</tr>
<tr>
<td>International Public Equity</td>
<td>14%</td>
<td>10%</td>
<td>30%</td>
</tr>
<tr>
<td>Global Private Equity</td>
<td>12%</td>
<td>0%</td>
<td>30%</td>
</tr>
<tr>
<td>Private Real Estate</td>
<td>10%</td>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>Private Real Assets</td>
<td>9%</td>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>Contractual Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Core Bonds</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Credit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royalties</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leasing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversifying Strategies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Target Allocation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>21%</td>
<td>10%</td>
<td>33%</td>
</tr>
<tr>
<td>Core Bonds</td>
<td></td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>Private Credit</td>
<td></td>
<td>16%</td>
<td>20%</td>
</tr>
<tr>
<td>Royalties</td>
<td></td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>Leasing</td>
<td></td>
<td>0%</td>
<td>10%</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>Diversifying Strategies</td>
<td>15%</td>
<td>5%</td>
<td>33%</td>
</tr>
<tr>
<td>Cash</td>
<td>3%</td>
<td>2%</td>
<td>6%</td>
</tr>
</tbody>
</table>
PRIVATE CREDIT REVIEW

January 2019

Allan Martin, Partner
Don Stracke, Senior Consultant
Chris Hill, Senior Research Consultant, Private Credit
PRIVATE CREDIT OVERVIEW AND OUTLOOK
# PRIVATE CREDIT OUTLOOK

| Sub-beta                                                                 | 2019 Outlook | Rationale for adding to a portfolio                                                                 |
|-------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------
| US and European direct lending (senior secured lending) (regulatory capital relief) | Negative US Neutral Europe | • Serves as a source of current yield; illiquid fixed income replacement  
• Diversifies exposure to private corporates  
• Consider US and European diversified lending as a core exposure versus an opportunistic trade  
• US: unlevered yields in the 6%-7% range  
• Europe: unlevered yields in the 9%-10% range |
| Niche lending/special situations (sector specific or more targeted lending strategies) | Positive | • Increased yield including equity upside in some cases  
• Helps diversify private credit portfolios  
• Focused sector expertise  
• Higher on the risk/return spectrum  
• Some strategies have the ability to exploit opportunities with a shorter window |
| Mezzanine (subordinated lending)                                         | Negative | • Traditional players continue to see deal flow decrease due to outside competition (senior lending and unitranche funds)  
• Higher economics have priced out several managers  
• May become more attractive if and when there is a market correction |
| Distressed Debt/Non-Performing Loans                                     | Positive | • Given the cycle and 2-4 year investment periods for most funds, encourage clients to consider an allocation  
• Emphasis on managers who can perform in benign and turbulent environments  
• Favor managers with influence or control strategies |
<table>
<thead>
<tr>
<th>Asset Class</th>
<th>5-7 Year Return</th>
<th>Change 2019-2018</th>
<th>Volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>2.50%</td>
<td>+.50%</td>
<td>1.00%</td>
</tr>
<tr>
<td>US Inflation</td>
<td>2.25%</td>
<td>-0.25%</td>
<td>-</td>
</tr>
<tr>
<td>Large Cap Equities</td>
<td>6.00%</td>
<td>+0.75%</td>
<td>16.50%</td>
</tr>
<tr>
<td>International Equities (Unhedged)</td>
<td>6.75%</td>
<td>-0.75%</td>
<td>20.50%</td>
</tr>
<tr>
<td>Emerging International Equities</td>
<td>9.25%</td>
<td>+0.25%</td>
<td>28.00%</td>
</tr>
<tr>
<td>Private Equity*</td>
<td>10.01%</td>
<td>+2.01%</td>
<td>24.16%</td>
</tr>
<tr>
<td>Treasuries</td>
<td>2.50%</td>
<td>+0.25%</td>
<td>5.50%</td>
</tr>
<tr>
<td>Core Bonds*</td>
<td>3.04%</td>
<td>+0.29%</td>
<td>6.10%</td>
</tr>
<tr>
<td>High Yield Bonds</td>
<td>5.25%</td>
<td>+1.50%</td>
<td>12.50%</td>
</tr>
<tr>
<td>Private Credit*</td>
<td>7.60%</td>
<td>+1.10%</td>
<td>11.97%</td>
</tr>
<tr>
<td>Commodities</td>
<td>4.25%</td>
<td>-0.50%</td>
<td>19.00%</td>
</tr>
<tr>
<td>Non-Core Real Estate</td>
<td>7.00%</td>
<td>-</td>
<td>17.00%</td>
</tr>
<tr>
<td>Core Real Estate</td>
<td>6.00%</td>
<td>+0.25%</td>
<td>13.00%</td>
</tr>
<tr>
<td>US 60/40*</td>
<td>5.07%</td>
<td>+0.53%</td>
<td>10.45%</td>
</tr>
<tr>
<td>Global 60/40*</td>
<td>5.17%</td>
<td>+0.26%</td>
<td>11.14%</td>
</tr>
<tr>
<td>Hedge Funds*</td>
<td>5.74%</td>
<td>-0.09%</td>
<td>8.15%</td>
</tr>
</tbody>
</table>

*Calculated as a blend of other asset classes
*Private Credit calculated as 50% senior lending, 25% Mezzanine, 25% Distressed
RELATIVE ASSET CLASS ATTRACTIVENESS

2019 Asset Class Sharpe Ratio

- Private Credit
- PRA - Energy/Metals
- Bank Loans
- Private Equity
- Midstream Energy
- PRA - Infra/Land
- EMD (Local)
- Private RE Debt
- Core RE
- Non-Core RE
- EM Int'l Equities
- High-Yield Bonds
- REITs
- Large Cap Equities
- Int'l Equities (Unhdg)
- IG Corp Credit
- SMID Cap Equities
- EMD (External)
- Commodities
- TIPS
- Municipal Bonds
- High-Yield Munis
- MBS
- Treasuries

Change in Sharpe from 2018

- Private Credit
- High-Yield Bonds
- Private Equity
- PRA - Energy/Metals
- Bank Loans
- Midstream Energy
- Large Cap Equities
- EMD (Local)
- Private RE Debt
- IG Corp Credit
- SMID Cap Equities
- EMD (External)
- Municipal Bonds
- EM Int'l Equities
- PRA - Infra/Land
- Core RE
- REITs
- Non-Core RE
- MBS
- Commodities
- Treasuries
- Int'l Equities (Unhdg)
- TIPS
- High-Yield Munis

Source: NEPC
General Market Thoughts

• **Direct Lending: US and European markets are becoming saturated**
  - New funds, deregulation around banks and BDCs have made the US overly competitive and commoditized; the middle market remains the most attractive segment based on price premium, leverage characteristics and default and recovery statistics
  - European middle market remains less efficient relative to the US but competition is on the rise; spreads and upfront fees are still higher in Europe; rise in LIBOR benefits investors in USD-denominated vehicles

• **Niche Lending: Sector/industry-focused and specialized strategies can provide opportunities with less correlated risk/return profiles**

• **Distressed Debt/NPLs: Emerging opportunities across various areas**
  - A growing list of metrics point to a riskier future for performing credit broadly

• **Mezzanine: Opportunity remains muted**

• **Regulatory Capital Relief remains an opportunity within the lending space**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Outlook</th>
<th>Commentary</th>
</tr>
</thead>
</table>
| Senior Direct Lending | Negative US Neutral Europe | • US: Relative attractiveness in the lower-to middle market (companies less than $50m EBITDA); seek managers with historical discipline and transparency  
  • Europe: Tier 1 managers that can navigate multiple markets  
  • Focus on fees and more liquid vehicle structures |
| Niche Lending     | Positive      | • Find sector/industry specialists or areas which require additional expertise and often overlooked and passed over by traditional lenders |
| Distressed Debt/NPLs | Positive     | • Seek opportunistic strategies that offer flexibility across strategies and geographies |
| Mezzanine         | Negative      | • There are interesting opportunities on the non-sponsored side where managers can drive deal structures and terms |
On an absolute and relative basis, the European leveraged loan market is much smaller than the US.

In the US broadly syndicated loan market, investment banks are regaining the share they lost to direct lenders on bigger deals following the OCC’s looser stance on Leveraged Lending Guidance. Trend is not translating into the middle market.
Debt multiples for European LBOs still remain approx. 0.5x less levered than its US counterparts.

Upfront and commitment fees average 2-3x higher on European loans.

Default rates in Europe have decreased and become lower than the US in the past couple of years.
Niche lending strategies can exhibit several characteristics

- Target higher yields/higher IRRs with equity upside
- Sector expertise including restructuring, workout capabilities
- Underbanked or underserved inefficient industries
- Complex and special situations
- Heavier diligence and collateral valuation
- Non-traditional assets
- Diversification benefits within a broader portfolio

### NICHE LENDING

#### The Growth of Niche and More Focused Strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Description</th>
<th>Target Gross IRR (%)</th>
<th>Current Yield</th>
<th>Typical Investment Period (Years)</th>
<th>Typical Fund Term (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aircraft Leasing</td>
<td>Acquire aircraft or engines on lease to commercial airlines; potential to part-out end-of-life aircraft.</td>
<td>12-20%</td>
<td>8-12%</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Asset-backed lending</td>
<td>Loans against hard assets; equipment; merchandise</td>
<td>10-12%</td>
<td>8-10%</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Energy and Infrastructure Lending</td>
<td>Debt and structured equity financing for energy and infra projects</td>
<td>14-18%</td>
<td>8-12%</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Healthcare Lending</td>
<td>Flexible financing for commercial-stage healthcare companies</td>
<td>15-20%</td>
<td>10-15%</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Media Financing</td>
<td>Movie and TV portfolio financing</td>
<td>15-20%</td>
<td>8-12%</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>PE Portfolio Financing</td>
<td>Loans to PE funds for early or late fund life cash injections</td>
<td>12-15%</td>
<td>6-8%</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Pharma Lending</td>
<td>R&amp;D loans to large pharma for accounting optimization and the release of R&amp;D spend</td>
<td>20-25%</td>
<td>0-10%</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Regulatory Capital Relief Lending</td>
<td>Risk transfer trades focused on European bank balance sheet loans</td>
<td>10-15%</td>
<td>3-6%</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Royalty Investing</td>
<td>Purchases of royalty streams (i.e. pharmaceuticals)</td>
<td>15-25%</td>
<td>5-15%</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Software Lending</td>
<td>Software and tech enabled business lending</td>
<td>15-20%</td>
<td>10-12%</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Specialty Finance</td>
<td>Financing solutions to businesses serving unbanked or underbanked consumer SMEs</td>
<td>15-18%</td>
<td>10-12%</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Venture/Growth Lending</td>
<td>Less dilutive cash infusions to venture companies; offers LPs venture exposure through the loan and often equity warrants</td>
<td>20-25%</td>
<td>10-13%</td>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>
• All-in yields continue drop (albeit slightly)
• The bank/mezzanine structure is still cheapest given banks’ low cost of capital, but unitranche is closing the gap relative to other capital structures
• Despite the cheapest capital structure, mezzanine/subordinated debt continues to be an minimal part of overall debt structures
## PRIVATE CREDIT IMPLEMENTATION

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Viewpoints</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Senior Direct Lending</strong></td>
<td>• Avoid the larger end of the US middle market; focus on the lower end (companies &lt;$50m EBITDA)&lt;br&gt;• Target US lower middle market managers with proven credit discipline and conservative fund vehicles (ex. fund leverage creep)&lt;br&gt;• Seek European managers with established local presence that can originate and hold loans</td>
</tr>
<tr>
<td><strong>Niche Lending/Special Situations</strong></td>
<td>• Allocate to managers with proven sector/industry expertise through market cycles&lt;br&gt;• Strategies targeting non-traditional assets and underserved sectors/industries are attractive&lt;br&gt;• Complex/special situations with restructuring and workout capabilities can provide upside&lt;br&gt;• Invest opportunistically in the secondary market</td>
</tr>
<tr>
<td><strong>Distressed Debt/Non-Performing Loans</strong></td>
<td>• Consider strategies that can allocate capital opportunistically between geographies and asset classes&lt;br&gt;• Favor distressed-for-control/influence strategies that can succeed in benign and highly distressed markets</td>
</tr>
<tr>
<td><strong>Mezzanine</strong></td>
<td>• Focus on managers targeting smaller, unsponsored companies where they can drive terms and structure&lt;br&gt;• Managers that have</td>
</tr>
</tbody>
</table>
DISTRESSED DEBT AND OPPORTUNISTIC CREDIT/SPECIAL SITUATIONS

General Market Thoughts

- **Clouds are gathering**
  - A relatively benign environment for distress has existed for years outside of sector-specific pockets of distress in the US and some international opportunities like NPLs
  - A growing list of metrics and global political changes point to a riskier future for performing credit broadly
    - Rising rates in the US; QE ending in Europe; Increased amount of lower rated bonds; Increasing leverage levels on corp. balance sheets; Covenant-lite loan issuance; European sovereign issues; International regulatory reforms; Political volatility

- **Gimme’ shelter**
  - For 2019, clients should consider new distressed commitments given the maturity of the credit cycle and the 2-4 year investment periods for private market funds in the space

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Outlook</th>
<th>Commentary</th>
</tr>
</thead>
</table>
| Distressed Debt   | Positive| • Consider strategies that can allocate capital opportunistically between geographies and asset classes  
                  |         | • Favor distressed-for-control/influence strategies that can succeed in benign and highly distressed markets |
| Opportunistic Credit | Positive | • Find managers who can provide flexible capital solutions that can invest across various market conditions  
                            |         | • Opportunistic strategies can enhance returns in a low-rate environment compared to traditional fixed-income strategies |
PRIVATE CREDIT PACING RECOMMENDATION

• **NEPC recommends committing approximately $550 million to private credit strategies in 2019 to achieve and maintain the 16% allocation (assuming updated asset allocation review ratifies 16% target)**
  – Both 2019 and 2020 commitments are currently modeled at approximately $550 million each
  – Commitments are modeled excluding the liquid placeholders and open-end funds (see following charts)

• **AZ PSPRS should maintain an active commitment pace in each vintage year going forward, being mindful of the Plan’s liquidity needs**
  – Annual commitments need to be assessed carefully so as to not over-allocate to illiquid investments
  – AZ PSPRS currently has liquid placeholders in the private credit portfolio which can be used as a liquidity source as the increasing amount of private credit commitments call capital
AZ PSPRS PRIVATE CREDIT APPENDIX
Fundraising for direct lending funds reached an all-time high in 2017 driven primarily by a couple of mega funds in the US and Europe.

Direct lending funds continue to be the majority of funds raising in the market.

Dry powder in the US and Europe has reached an all-time high for each respective geography.

**Comments**

**Global Direct Lending Fundraising**

**Private Debt Fundraising**

**US and Europe Dry Powder**
Covenant-lite loans continue to dominate the market – Even deals with covenants tend to have looser definitions and are less tight than in the past.

US middle market total debt multiples for sponsored transactions continue to increase; reaching or exceeding pre-crisis levels.

First lien spreads per unit of leverage is lower in 2018 versus other years.
The rise in LIBOR and a benign default environment has masked some of the effects of increased competition.

Direct lending still provides a premium over the broadly syndicated market but overall spreads continue to gradually decline.

Banks are pushing leverage following less regulatory scrutiny but has not translated into the middle market yet.
Even as purchase price multiples increase, middle market companies are better equity capitalized relative to larger deals

Historical default rates have significantly been lower in smaller overall loan sizes; smaller loans sizes equate to loans to smaller companies

Similarly, recovery rates have been slightly higher at this end of the market, in smaller loans sizes, versus the broadly syndicated and bond markets
Comments

- Explosion in growth of corporate credit overall since 2000, in the US and internationally
- Private loans may be an additional opportunity going forward

Direct Lending Fundraising and Dry Powder (by year of final close)

China Credit Growth

Sources: Deutsche Bank Credit Book (top right); Preqin (bottom left); BIS, NEPC (bottom right)
DISTRESSED: INCREASE IN LOWER RATED CREDITS

Comments

- BBB ratings have become a larger proportion of the Investment Grade market
- The lower rated High Yield market has exploded in growth
- Covenant-lite loan issuance is at its highest level in years

Source: Deutsche Bank Credit Book, S&P LCD
DISTRESSED: INCREASING PRIVATE CORPORATE LEVERAGE

Comments

- Corporate leverage in private markets has increased across large and small markets with senior lenders willing to lend deeper into the capital stack.

Source: S&P Capital IQ LCD (top right and bottom left)
Thomson Reuters LPC (bottom right); *Avg EBITDA approximately $50M
DISTRESSED: LEVERAGED LOANS

Leveraged Loan Distressed Ratio

Dollar Amount of Leveraged Loans in Default

Source: S&P LCD. Distressed loans defined as those that are priced below 80.
DISTRESSED: EUROPEAN NPL VOLUME

European NPLs By Country
(€779 billion total – Only countries with €5 billion or greater included)

European NPL Ratios

NPL Ratio: NPL Loans + Advances / Total Gross Loans + Advances

Source: European Banking Authority
HY could face issues in the near future with increasing leverage and a significant maturity wall approaching.

Sector-specific distress has been the story over the last several years.

HY Sector Distress Ratios

6x and Higher Leveraged HY Bond Deals

Distress Ratio defined as proportion of par in DB HY indices with OAS > 1000 bps (bottom left)
Distressed debt fundraising has consistently been 4% - 8% of global private equity fundraising since the Global Financial Crisis.

Average fund sizes have increased in recent years as managers and investors appear to be anticipating the next turn in the cycle.

Source: Preqin
AZ PSPRS PRIVATE CREDIT PACING PLAN
## General Plan Assumptions

<table>
<thead>
<tr>
<th>Total Plan Assets</th>
<th>$10,238</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Private Credit Assets</td>
<td>$988</td>
</tr>
<tr>
<td>Private Credit Capital to be Funded</td>
<td>$1,063</td>
</tr>
<tr>
<td>Total Private Credit Exposure</td>
<td>$2,051</td>
</tr>
<tr>
<td>Total Private Credit Assets / Total Plan Assets</td>
<td>9.7%</td>
</tr>
<tr>
<td>Total Private Credit Exposure / Total Plan Assets</td>
<td>20.0%</td>
</tr>
<tr>
<td>Target Private Credit Allocation % (Current Target)</td>
<td>16.0%</td>
</tr>
</tbody>
</table>

### Plan Return Assumptions

<table>
<thead>
<tr>
<th></th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Rate (5-7 Year)</td>
<td>7.2%</td>
<td>7.2%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Expected Cash Outflow</td>
<td>-1.5%</td>
<td>-1.5%</td>
<td>-1.5%</td>
</tr>
<tr>
<td>Net Growth Rate %</td>
<td>5.7%</td>
<td>5.7%</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

### Total Projected Plan Assets

<table>
<thead>
<tr>
<th>Actual</th>
<th>Projected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Plan Net Growth Rate</td>
<td>7.2%</td>
</tr>
<tr>
<td>Total Plan Beginning NAV</td>
<td>$8,292</td>
</tr>
<tr>
<td>Yearly Net Growth</td>
<td>$597</td>
</tr>
<tr>
<td>Total Plan Ending NAV</td>
<td>$8,890</td>
</tr>
<tr>
<td>Target Private Credit Allocation</td>
<td>15.0%</td>
</tr>
<tr>
<td>Target Private Credit NAV</td>
<td>$1,333</td>
</tr>
</tbody>
</table>
Private Credit Commitments by Vintage Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Actual</th>
<th>More Certain</th>
<th>Less Certain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Commitments</td>
<td>$380</td>
<td>$325</td>
<td>$525</td>
</tr>
</tbody>
</table>

Commitments of $550 million each in 2019 and 2020 will help achieve the 16% target. As the total plan grows, expect commitments to private credit to rise after 2020.
### FUND PROJECTIONS

- **Red line** is the 16% target Private Credit allocation based on projected plan total NAV; **Blue line** is the 1.3x recommended over-commitment pace.
- Goal is to keep private credit NAV (green bar) plus uncalled capital commitments (blue bar), between red line and blue line.

#### Private Credit Plan Projections

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Credit NAV</td>
<td>$1,058</td>
<td>$1,176</td>
<td>$988</td>
<td>$1,636</td>
<td>$1,829</td>
<td>$2,008</td>
<td>$2,132</td>
<td>$2,207</td>
<td>$2,311</td>
<td>$2,414</td>
<td>$2,521</td>
<td>$2,644</td>
<td>$2,781</td>
</tr>
<tr>
<td>Uncalled Capital Commitments</td>
<td>$566</td>
<td>$895</td>
<td>$1,063</td>
<td>$606</td>
<td>$498</td>
<td>$448</td>
<td>$509</td>
<td>$543</td>
<td>$552</td>
<td>$570</td>
<td>$604</td>
<td>$641</td>
<td>$680</td>
</tr>
<tr>
<td>Private Credit NAV + Uncalled Capital Commitments</td>
<td>$1,624</td>
<td>$2,071</td>
<td>$2,051</td>
<td>$2,242</td>
<td>$2,327</td>
<td>$2,455</td>
<td>$2,640</td>
<td>$2,750</td>
<td>$2,864</td>
<td>$3,125</td>
<td>$3,286</td>
<td>$3,461</td>
<td></td>
</tr>
<tr>
<td>Target Private Credit NAV</td>
<td>$1,333</td>
<td>$1,538</td>
<td>$1,638</td>
<td>$1,731</td>
<td>$1,830</td>
<td>$1,938</td>
<td>$2,045</td>
<td>$2,161</td>
<td>$2,284</td>
<td>$2,415</td>
<td>$2,552</td>
<td>$2,698</td>
<td>$2,852</td>
</tr>
<tr>
<td>Over-Commitment Pace</td>
<td>1.3x</td>
<td>1.3x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
<td>1.30x</td>
</tr>
<tr>
<td>Target Private Credit Over Allocation</td>
<td>$1,734</td>
<td>$2,000</td>
<td>$2,129</td>
<td>$2,251</td>
<td>$2,379</td>
<td>$2,515</td>
<td>$2,658</td>
<td>$2,810</td>
<td>$2,970</td>
<td>$3,139</td>
<td>$3,318</td>
<td>$3,507</td>
<td>$3,707</td>
</tr>
<tr>
<td>Beginning Plan NAV</td>
<td>$8,292</td>
<td>$8,980</td>
<td>$9,614</td>
<td>$10,238</td>
<td>$10,821</td>
<td>$11,438</td>
<td>$12,090</td>
<td>$12,779</td>
<td>$13,508</td>
<td>$14,278</td>
<td>$15,092</td>
<td>$15,952</td>
<td>$16,861</td>
</tr>
<tr>
<td>Yearly Return</td>
<td>$597</td>
<td>$724</td>
<td>$624</td>
<td>$584</td>
<td>$617</td>
<td>$652</td>
<td>$689</td>
<td>$728</td>
<td>$770</td>
<td>$814</td>
<td>$860</td>
<td>$909</td>
<td>$961</td>
</tr>
<tr>
<td>Ending Plan NAV</td>
<td>$8,890</td>
<td>$9,614</td>
<td>$10,238</td>
<td>$10,821</td>
<td>$11,438</td>
<td>$12,090</td>
<td>$12,779</td>
<td>$13,508</td>
<td>$14,278</td>
<td>$15,092</td>
<td>$15,952</td>
<td>$16,861</td>
<td>$17,822</td>
</tr>
</tbody>
</table>

#### Percent of Total Plan Assets

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Credit NAV</td>
<td>11.9%</td>
<td>12.2%</td>
<td>9.7%</td>
<td>15.1%</td>
<td>16.0%</td>
<td>16.6%</td>
<td>16.7%</td>
<td>16.3%</td>
<td>16.2%</td>
<td>16.0%</td>
<td>15.8%</td>
<td>15.7%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Uncalled Capital Commitments</td>
<td>6.4%</td>
<td>9.3%</td>
<td>10.4%</td>
<td>5.6%</td>
<td>4.4%</td>
<td>3.7%</td>
<td>4.0%</td>
<td>4.0%</td>
<td>3.9%</td>
<td>3.8%</td>
<td>3.8%</td>
<td>3.8%</td>
<td>3.8%</td>
</tr>
<tr>
<td>NAV + Uncalled Capital Commitments</td>
<td>18.3%</td>
<td>21.5%</td>
<td>20.0%</td>
<td>20.7%</td>
<td>20.3%</td>
<td>20.3%</td>
<td>20.7%</td>
<td>20.4%</td>
<td>20.1%</td>
<td>19.8%</td>
<td>19.6%</td>
<td>19.5%</td>
<td>19.4%</td>
</tr>
<tr>
<td>Target Private Credit Allocation</td>
<td>15.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
<td>16.0%</td>
</tr>
</tbody>
</table>
NEPC’s private markets pacing analysis projects a potential level of future assets and cash flows for a single scenario based on a series of assumptions. This analysis is intended to help estimate future exposure levels. It is not a guarantee of future cash flows, appreciation or returns.

The timing and amounts of projected future cash flows and market values of investments could vary significantly from the amounts projected in this pacing analysis due to manager-specific and industry-wide macroeconomic factors.

Estimates of projected cash flows and market values for existing private markets commitments were made at the Fund level and do not incorporate any underlying portfolio company projections or analysis.

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.

Data used to prepare this report was obtained directly from the investment managers and other third parties. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

This report may contain confidential or proprietary information and is intended only for the designated recipient(s). If you are not a designated recipient, you may not copy or distribute this document.
It is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds and private equity:

1. Performance can be volatile and investors could lose all or a substantial portion of their investment
2. Leverage and other speculative practices may increase the risk of loss
3. Past performance may be revised due to the revaluation of investments
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
6. These funds are not subject to the same regulatory requirements as registered investment vehicles
7. Managers may not be required to provide periodic pricing or valuation information to investors
8. These funds may have complex tax structures and delays in distributing important tax information
9. These funds often charge high fees
10. Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager’s realm of expertise or contemplated investment strategy
Arizona PSPRS Trust

Private Credit – 2018

Staff and NEPC
Private Credit – Portfolio Fit

- The goal of Private Credit generally is to earn a rate of return that meets or exceeds the total return of High-Yield Bonds

- **Benchmark:** 50% BofA ML US High Yield BB-B 50% CSFB Fixed Income Arbitrage

- Account contains both illiquid, draw-down, style funds and liquid hedge funds
  - The Trust is required to use the time-weighted return (TWR) for aggregate performance even though the Internal Rate of Return (IRR) is optimal for most of the individual managers
Executive Summary – Private Credit

• Private Credit continues to contribute to the Trust’s return objectives by providing meaningful income and a total return that consistently exceeds the benchmark.

<table>
<thead>
<tr>
<th>Date</th>
<th>FYTD</th>
<th>1-Yr</th>
<th>3-Yr</th>
<th>5-Yr</th>
<th>7-Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/30/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private Credit</td>
<td>2.96</td>
<td>6.10</td>
<td>7.11</td>
<td>6.50</td>
<td>7.83</td>
</tr>
<tr>
<td>Private Credit ex-HY ETFs</td>
<td>3.78</td>
<td>8.55</td>
<td>9.23</td>
<td>8.73</td>
<td>9.92</td>
</tr>
<tr>
<td>Benchmark</td>
<td>0.22</td>
<td>1.28</td>
<td>5.20</td>
<td>3.95</td>
<td>5.76</td>
</tr>
</tbody>
</table>

*Net of fees.

• Portfolio successfully transitioned from post-crisis strategies focused on distressed situations towards income-oriented strategies without a drop in performance.

• Much of the current opportunity is driven by regulatory changes in the banking industry.

• Despite strong historic performance, record institutional commitments to private credit demand caution.

Private Credit: Rolling Annualized 7-Year Returns
What is Private Credit?

Private Credit is mostly about income. It represents investing in non-traditional fixed income by purchasing or originating illiquid loans or loan-like instruments.

<table>
<thead>
<tr>
<th>Common Sub-strategies</th>
<th>Approach</th>
<th>Return (Income or Capital Appreciation)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct Lending</strong>: Lending exclusively between a middle-market borrower and a non-bank lender</td>
<td>Lender holds loan and collects principal and interest payments</td>
<td>Income</td>
</tr>
<tr>
<td><strong>Distressed Debt</strong>: Purchasing discounted debt in a company experiencing financial or operational distress and/or that is under bankruptcy</td>
<td>Buyer seeks to gain by converting debt into equity through a restructuring or by holding the security until the company’s prospects improve.</td>
<td>Capital Appreciation</td>
</tr>
<tr>
<td><strong>Non-performing Loans</strong>: Purchasing pools of loans that are 90 days late or more at a discount</td>
<td>Buyer renegotiates loan terms with borrowers using a servicer. Re-performing loans are sold or securitized.</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Regulatory Capital Relief</strong>: Non-bank entity provides a financial guarantee to a bank that protects the bank from loan losses (effectively selling an insurance policy to the bank)</td>
<td>Bank pays monthly or quarterly payments to non-bank counterparty for the duration of the agreement. Credit losses are netted from returns.</td>
<td>Income</td>
</tr>
<tr>
<td><strong>Relative Value / Trading</strong>: Going long or short credit and credit derivatives</td>
<td>Generate capital appreciation from profitable trades</td>
<td>Both</td>
</tr>
<tr>
<td><strong>Special Situations</strong>: Niche opportunities involving unique dislocations. Highly negotiated with custom structures.</td>
<td>Lending on non-traditional collateral and/or on unique terms</td>
<td>Income</td>
</tr>
</tbody>
</table>
Private Credit

Private Credit offers three distinct advantages:

1. Consistency of actuarial income
   - Private credit transactions typically have a contractual cash payment that meets or exceeds the Trust’s assumed earnings rate
   - Since deals are not traded publicly their valuations are relatively steady (assuming the borrower performs) which stabilizes plan income by reducing the effects of actuarial smoothing

2. Provides illiquidity premium relative to public markets

3. Reduces interest rate risk as loans are floating rate and have relatively shorter-term maturities
Private Credit – Market Opportunity

Today’s opportunity is driven in part by “de-banking” and low yields on publicly traded securities

1. **Bank consolidation.** National banks acquire regional banks, reducing the supply of credit for smaller borrowers and creating a preference for larger fee-generating ones

   - Today banks hold around $100bln in illiquid assets, down from approximately $450bln in 2009
   - Banks provided 18% of all middle-market loans in 2006 but only 9% in 2017

3. **From principal investors to brokers.** Instead of committing capital and holding loans, banks more often serve as arrangers, extracting fees from syndicating loans and providing other services.

4. **Junk Bond Yields.** As of 3/31/18 Junk bonds had a fixed coupon of 6.35%, which is a lower all-in yield than private transactions. When a company defaults, bonds recover about 55% of principal while loans recover 70%.

Non-bank lenders like pensions, insurance companies and other specialty finance companies are active participants but also offer three advantages relative to banks:

- They can manage more complex structures than banks
- Are more flexible with loan terms than banks
- Make faster decisions than banks
PSPRS Trust Private Credit Portfolio

- Geographic exposure is approximately 95% U.S. and 5% Asia
- Illiquid funds (Direct lending, Distressed Debt and Special Situations) constitute 61% of the portfolio while 14% is allocated to liquid hedge funds and 25% to high-yield index funds
- Index funds reduce tracking error relative to the private credit benchmark (50% High Yield) and balance the Trust’s risk profile
- Capital deployments for new investments are typically funded by selling portions of the index funds
### Private Credit – 2018 Activity

In CY 2018 the Trust committed to 6 funds for a total of $375mm

<table>
<thead>
<tr>
<th>Fund</th>
<th>Strategy</th>
<th>Amt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crestline Portfolio Financing Fund</td>
<td>Special Situations</td>
<td>$75,000,000</td>
</tr>
<tr>
<td>OCP Asia Fund III</td>
<td>Special Situations</td>
<td>$50,000,000</td>
</tr>
<tr>
<td>SIH Debt Opportunities Fund II</td>
<td>Special Situations</td>
<td>$60,000,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$185,000,000</strong></td>
</tr>
<tr>
<td>Taiga Special Opportunities Fund</td>
<td>Special Situations</td>
<td>$60,000,000</td>
</tr>
<tr>
<td>TSSP Opportunities Partners IV</td>
<td>Special Situations</td>
<td>$70,000,000</td>
</tr>
<tr>
<td>Värde Asia Credit Fund</td>
<td>Special Situations</td>
<td>$60,000,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>$190,000,000</strong></td>
</tr>
</tbody>
</table>

### Cumulative

<table>
<thead>
<tr>
<th></th>
<th>11/30/2018</th>
<th>11/30/2017</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Funds</strong></td>
<td>44</td>
<td>36</td>
<td>8</td>
</tr>
<tr>
<td><strong>Commitments</strong></td>
<td>$2,956,457,730</td>
<td>$2,436,238,803</td>
<td>$520,218,927</td>
</tr>
<tr>
<td><strong>Capital Funding</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for Investment</td>
<td>$2,299,433,822</td>
<td>$1,975,034,820</td>
<td>$324,399,002</td>
</tr>
<tr>
<td>for Fees</td>
<td>$52,189,114</td>
<td>$42,142,628</td>
<td>$10,046,486</td>
</tr>
<tr>
<td><strong>Total Capital Funding</strong></td>
<td>$2,351,622,936</td>
<td>$2,017,177,448</td>
<td>$334,445,488</td>
</tr>
<tr>
<td><strong>Total Capital Distributions</strong></td>
<td>$1,894,364,167</td>
<td>$1,685,531,531</td>
<td>$208,832,636</td>
</tr>
<tr>
<td><strong>Remaining Valuation</strong></td>
<td>$965,052,625</td>
<td>$795,427,294</td>
<td>$169,625,331</td>
</tr>
<tr>
<td><strong>IRR</strong></td>
<td>10.19</td>
<td>10.33</td>
<td>-0.14</td>
</tr>
<tr>
<td><strong>Multiple</strong></td>
<td>1.23</td>
<td>1.23</td>
<td>-</td>
</tr>
<tr>
<td><strong>DPI</strong></td>
<td>0.81</td>
<td>0.84</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

*Inclusive of returned management fees
Private Credit – Performance by TWR (All funds)

- In aggregate, liquid managers outperformed the High-Yield ETFs but underperformed the Trust’s illiquid strategies

<table>
<thead>
<tr>
<th>Time-Weighted Returns</th>
<th>Description</th>
<th>1-Yr</th>
<th>3-Yr</th>
<th>5-Yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiquid Funds</td>
<td>Direct Lending, Distressed Debt, Special Situations</td>
<td>8.98</td>
<td>9.48</td>
<td>9.42</td>
</tr>
<tr>
<td>Manager 1</td>
<td>L/S Hedge Fund specializing in financial services</td>
<td>16.28</td>
<td>14.46</td>
<td>7.86</td>
</tr>
<tr>
<td>Manager 2</td>
<td>L/S Hedge Fund specializing in Asia region</td>
<td>4.52</td>
<td>4.15</td>
<td>5.36</td>
</tr>
<tr>
<td>Manager 3</td>
<td>Long-only High Yield Manager</td>
<td>-0.21</td>
<td>4.13</td>
<td>3.70</td>
</tr>
<tr>
<td>Managers 4</td>
<td>High Yield ETFs</td>
<td>0.43</td>
<td>4.85</td>
<td>2.32</td>
</tr>
</tbody>
</table>
Private Credit Market Outlook & Pacing

NEPC – Specialty Consultant
<table>
<thead>
<tr>
<th></th>
<th>Fund Name</th>
<th>Portfolio</th>
<th>Date Closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Varde Asia Credit Fund Master</td>
<td>Private Credit</td>
<td>28-Nov-18</td>
</tr>
<tr>
<td>2</td>
<td>Greenspring Global Partners IX</td>
<td>Private Equity</td>
<td>19-Dec-18</td>
</tr>
<tr>
<td>3</td>
<td>Ridgewood Water &amp; Strategic Infrastructure Fund</td>
<td>Real Assets</td>
<td>17-Dec-18</td>
</tr>
<tr>
<td>4</td>
<td>Tritium II, LP</td>
<td>Private Equity</td>
<td>14-Jan-19</td>
</tr>
<tr>
<td>5</td>
<td>GMO Benchmark-Free Allocation</td>
<td>Redemption</td>
<td>31-Dec-18</td>
</tr>
<tr>
<td>6</td>
<td>Systematica Blue Trend Fund, LP</td>
<td>Redemption</td>
<td>31-Dec-18</td>
</tr>
</tbody>
</table>
1. **RFP for Actuarial Services**
In coordination with the Board’s Contract Subcommittee, staff published an RFP for actuarial services on December 19, 2018. The RFP was posted on the PSPRS website and was also sent directly to the actuarial firms that work directly with public pension plans, including Buck (formerly Conduent), Cavanaugh Macdonald, Cheiron, Deloitte Consulting, Foster & Foster, GRS, Milliman, and Segal. Two additional firms, Nyhart and Willis Towers Watson, indicated they did not want to receive the RFP. Six firms sent us questions about the RFP, including five from the list above and Korn Ferry. Answers to the questions were packaged and posted on our website the morning of January 11, 2019, in accordance with the timeline noted in the RFP.

Proposals are due in our office by 4:00 PM on Friday, February 1, 2019. Staff will work with the Contract Subcommittee in whatever capacity would be helpful to the Subcommittee once the proposals have arrived.

2. **1609 Rollback**
Staff has been meeting on a regular basis to implement the rollback of S.B. 1609 provisions that are believed to be unconstitutional. Based on the Board’s discussion in November, staff put together a detailed project plan and has been working through that plan.

We have contacted every employer that has one or more of our 900 active New DROP members and we are gathering the pay period for which they will stop the member contributions. Many of the 111 employers have been able to stop the member contributions in December or in January, but 5 others are still making changes to their payroll systems and have not yet given us a “stop contributions” date. We are tweaking our own software so that once we know the interest rate, we will be able to quickly inform employers of the contribution refund amounts and issue credits for employers for those employers that wish to recoup the refund amounts by reducing future employer payment amounts. As employers stop contributions, we are adjusting the status of the New DROP members so that they are treated as Old DROP members going forward.

Roughly 450 New DROP members have already retired and received their DROP account funds and their contributions. We are making changes to our software that will allow us to recalculate the amount they should have received had we provided interest on their DROP money at the assumed earnings rate rather than at the smoothed average annual return over 7 years.

We have reviewed every service purchase we have transacted since July 1, 2017 and determined that 97 members made purchases that will need to be recalculated. We have identified the members affected and are gathering the information we will need in order to recalculate their purchases. GRS has developed the service purchase spreadsheet we use in the calculator, and we are testing the new spreadsheet. We are also tweaking our software so that our online and internal calculators pull from the new GRS spreadsheet accurately. We hope to have the changes made by the first of February.

We are also in the process of gathering information about members who requested service purchases but did not make a purchase. We will recalculate the service purchase estimates and send
the new estimates to affected members.

3. **Strategic Consultant**
   One of our goals in fiscal year 2019 was to bring in a strategic planning consultant to help us develop a 5-year strategic plan. We issued an RFP and received six proposals. We held personal interviews with three of the six vendors in October. By reading through the proposals and talking with the vendors, we realized that we have the skills needed to perform some of the initial tasks that were included in the proposals, but we still need outside help for other tasks. As a result, we are taking a two-pronged approach to strategic planning.

First, before we spend time looking at where we want to be in three to five years, any consultant we hire will want to start by documenting all of our existing products and services to provide a baseline of where we are today. Over the next few months we will work in teams to document what we do, why we do what we do, whether or not we have metrics for what we do, etc. We believe we can handle that task ourselves without having to pay an outside consultant to gather and document this baseline information.

Second, the Board has asked us to do a better job of providing tools to staff, members, employers and local boards. We are in the process of implementing a new agile software development methodology, and we recently lost an IT employee due to retirement. We believe this is an opportune time to use a strategic consultant to assess our IT division and identify opportunities for improvement. Our IT infrastructure, both in terms of human resources and our hardware/software, must be operating efficiently and effectively in order for us to be successful as an organization. Everything we do is dependent on our IT infrastructure, so we believe we need to put resources toward making sure the IT infrastructure is solid.

4. **Software Development**

   **Retirement Estimator**—This enhancement allows employers to prorate beginning and ending pay periods when calculating the final high 3 or 5 years of salary. The City of Phoenix has asked for this enhancement. It is now complete and in production.

   **City of Phoenix Health Insurance Premium Processing**—Phoenix has asked us to develop the ability to take additional insurance-related deductions from benefit recipient monthly pensions and change our system from a code-based system to a premium amount-based system, which meant rewriting most of our health insurance module. This project has taken three months, and is in the final testing stage. January insurance deductions for Phoenix retirees will be handled using the new software.

   **Demographic and Employee Lookup Module**—Our new system has always included the ability for employers to enter demographic information into our system electronically and lookup information about their members (including election information for new Tier 3 members). In response to requests by our larger employers, we enhanced those capabilities to allow an employer to process a demographic file or an employee lookup file to process more than one member at a time. The new capabilities were completed and are now in production.

   **Contribution Module Enhancements**—We recently rolled out several enhancements and bug fixes for the contribution module. We also fixed some data issues and made adjustments necessary for the 1609 Rollback project.
**Invoicing Module and Refund Module**—We are redesigning the Invoicing Module so that employers can see, print and save their contribution invoices immediately upon submission of their contribution files. We are also rewriting the Refund Module to not only transfer refund functionality from our old system (EPIC 1.0) to the new system (EPIC 2.0), but to enhance the refund system with functionality users have requested.

These two modules are being developed using a new software development methodology called Agile. In the past we have operated using either a waterfall development methodology or a rapid application development (RAD) methodology. Waterfall development is very linear, and is considered the traditional software development method. It consists of six steps: requirements, design, implementation, verification, implementation and maintenance. Each phase must be 100% complete before the next phase can start, which can make this method slow and subject to rework. Rapid application development, as the name implies, is faster because user design and construction occur together. RAD reduces the amount of pre-planning that is required before developers may begin developing the software.

In the 1990s a new methodology, called Agile software development, began to become popular. The term “Agile” was coined in 2001 when the Agile Manifesto was formulated. In agile software development, software is developed iteratively in 2 to 3 week sprints. Business users actively test software during each sprint, so bugs are caught early and requirements can be adjusted early in the process. This methodology requires close daily cooperation between business users and developers. We are in the process of moving to this new software development methodology. We believe it will reduce the amount of time it takes to develop software and will increase user satisfaction when new software is rolled into production. The Invoicing Module and Refund Modules will be developed using this new methodology.

5. **Statistics**

Now that we have received actuarial valuations and issued our Comprehensive Annual Financial Report (CAFR), we thought it might be helpful to the Board to see some statistics, so developed the charts on the following two pages.
Membership by Type--All Plans

Benefits by Type--All Plans
Percent Change in Employer Contribution Rates
FY19 to FY20

PSPRS Retirees--Retirement Age & Years of Service at Retirement
PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

Fiscal Year 2019 Budget with Fiscal Year to Date Expenses

As of 12-31-2018
Comments on the Budget

FY 2019

Fiscal year-to-date as of December 31, 2018, actual and projected expenses are expected to be under budget by $155,717 or 1.16%.
# All Departments Budget to Actual

## Public Safety Personnel Retirement System

### Fiscal Year Projections

**As of 12-31-2018**

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personnel Services</td>
<td>8,357,553</td>
<td>3,906,526</td>
<td>4,149,579</td>
<td>301,448</td>
<td>3.61%</td>
</tr>
<tr>
<td>Education &amp; Training</td>
<td>414,150</td>
<td>95,402</td>
<td>310,989</td>
<td>7,760</td>
<td>1.87%</td>
</tr>
<tr>
<td>Board of Trustees</td>
<td>573,000</td>
<td>341,354</td>
<td>325,222</td>
<td>(93,576)</td>
<td>(16.33%)</td>
</tr>
<tr>
<td>Professional Services</td>
<td>2,656,975</td>
<td>1,022,522</td>
<td>1,633,418</td>
<td>1,035</td>
<td>0.4%</td>
</tr>
<tr>
<td>Legal Counsel</td>
<td>100,000</td>
<td>102,067</td>
<td>77,500</td>
<td>(47,067)</td>
<td>(47.07%)</td>
</tr>
<tr>
<td>Communications</td>
<td>87,600</td>
<td>45,008</td>
<td>43,042</td>
<td>(450)</td>
<td>(0.51%)</td>
</tr>
<tr>
<td>Contractual Services</td>
<td>370,960</td>
<td>193,882</td>
<td>207,330</td>
<td>(30,252)</td>
<td>(8.16%)</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>61,000</td>
<td>39,430</td>
<td>30,737</td>
<td>(9,168)</td>
<td>(15.03%)</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>288,100</td>
<td>69,292</td>
<td>198,822</td>
<td>19,986</td>
<td>6.94%</td>
</tr>
<tr>
<td>Software</td>
<td>180,062</td>
<td>95,007</td>
<td>85,625</td>
<td>(570)</td>
<td>(0.32%)</td>
</tr>
<tr>
<td>Building</td>
<td>299,220</td>
<td>153,713</td>
<td>138,935</td>
<td>6,572</td>
<td>2.20%</td>
</tr>
<tr>
<td><strong>All Departments Budget Total</strong></td>
<td><strong>13,388,620</strong></td>
<td><strong>6,064,204</strong></td>
<td><strong>7,201,199</strong></td>
<td><strong>155,717</strong></td>
<td><strong>1.16%</strong></td>
</tr>
</tbody>
</table>

**Column Descriptions:**
- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
# Agency Budget to Actual

Public Safety Personnel Retirement System  
**Fiscal Year Projections**  
*As of 12-31-2018*

<table>
<thead>
<tr>
<th>AGENCY BUDGET</th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-Site Shredding</td>
<td>1,000</td>
<td>340</td>
<td>681</td>
<td>(21)</td>
<td>(2.09%)</td>
</tr>
<tr>
<td>Records Management</td>
<td>10,000</td>
<td>2,070</td>
<td>2,898</td>
<td>5,031</td>
<td>50.31%</td>
</tr>
<tr>
<td>Cyber Insurance</td>
<td>50,000</td>
<td>-</td>
<td>50,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>61,000</td>
<td>2,411</td>
<td>53,579</td>
<td>5,010</td>
<td>8.21%</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postage</td>
<td>15,000</td>
<td>16,218</td>
<td>1,218</td>
<td>(2,437)</td>
<td>(16.24%)</td>
</tr>
<tr>
<td>Printing - External</td>
<td>2,000</td>
<td>11,664</td>
<td>2,000</td>
<td>(11,664)</td>
<td>(583.20%)</td>
</tr>
<tr>
<td>Delivery Service</td>
<td>1,000</td>
<td>151</td>
<td>849</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Communications</strong></td>
<td>18,000</td>
<td>28,033</td>
<td>4,067</td>
<td>(14,101)</td>
<td>(78.34%)</td>
</tr>
<tr>
<td><strong>Operating Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Supplies - General</td>
<td>32,000</td>
<td>16,561</td>
<td>15,439</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Copier/Printer Supplies</td>
<td>17,000</td>
<td>6,785</td>
<td>10,215</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Envelopes</td>
<td>1,000</td>
<td>-</td>
<td>1,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Forms</td>
<td>500</td>
<td>981</td>
<td>-</td>
<td>(481)</td>
<td>(96.15%)</td>
</tr>
<tr>
<td>Other Office Expense</td>
<td>10,500</td>
<td>12,693</td>
<td>4,083</td>
<td>(6,276)</td>
<td>(59.77%)</td>
</tr>
<tr>
<td><strong>Total Operating Expenses</strong></td>
<td>61,000</td>
<td>37,020</td>
<td>30,737</td>
<td>(6,757)</td>
<td>(11.08%)</td>
</tr>
<tr>
<td><strong>Total Agency Budget</strong></td>
<td>140,000</td>
<td>67,464</td>
<td>88,383</td>
<td>(15,847)</td>
<td>(11.32%)</td>
</tr>
</tbody>
</table>

**Column Descriptions:**  
- 2019 Budget contains the budget approved by the Board of Trustees.  
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date  
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures;  
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.  
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
# Building Budget to Actual

Public Safety Personnel Retirement System

**Fiscal Year Projections**

*As of 12-31-2018*

## Building Budget

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Expenses</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condo Association Fees</td>
<td>35,500</td>
<td>13,315</td>
<td>18,641</td>
<td>3,544</td>
<td>9.98%</td>
</tr>
<tr>
<td>Elevator</td>
<td>4,800</td>
<td>583</td>
<td>1,749</td>
<td>2,467</td>
<td>51.40%</td>
</tr>
<tr>
<td>Security System</td>
<td>1,500</td>
<td>539</td>
<td>539</td>
<td>421</td>
<td>28.07%</td>
</tr>
<tr>
<td>Janitorial</td>
<td>22,000</td>
<td>11,065</td>
<td>11,065</td>
<td>(130)</td>
<td>(0.59%)</td>
</tr>
<tr>
<td>Utilities</td>
<td>55,000</td>
<td>27,735</td>
<td>27,265</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Window Cleaning</td>
<td>1,500</td>
<td>445</td>
<td>1,055</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Odorite of Arizona</td>
<td>1,000</td>
<td>1,645</td>
<td>-</td>
<td>(645)</td>
<td>(64.50%)</td>
</tr>
<tr>
<td>Pest Control</td>
<td>2,000</td>
<td>540</td>
<td>756</td>
<td>704</td>
<td>35.20%</td>
</tr>
<tr>
<td><strong>Total General Expenses</strong></td>
<td><strong>123,720</strong></td>
<td><strong>56,072</strong></td>
<td><strong>61,276</strong></td>
<td><strong>6,371</strong></td>
<td><strong>5.15%</strong></td>
</tr>
</tbody>
</table>

| **Other Occupancy Expenses** | | | | | |
| - Insurance            | 72,500      | 72,300        | -                 | 200          | 0.28%                 |
| - Building Management  | 20,000      | 2,000         | 18,000            | -            | 0.00%                 |
| **Total Other Occupancy Expenses** | **92,500** | **74,300** | **18,000** | **200** | **0.22%** |

| **Repair & Maintenance** | | | | | |
| - Repair & Mtn - Air Conditioning | 10,000 | 7,883 | 2,117 | - | 0.00% |
| - Repair & Maintenance - Other | 20,000 | 3,214 | 16,786 | - | 0.00% |
| **Total Repair & Maintenance** | **30,000** | **11,097** | **18,903** | - | **0.00%** |

| **Total Building Expenses** | **246,220** | **141,469** | **98,179** | **6,571** | **2.67%** |

| **Capital** | | | | | |
| - Furniture & Equipment | 10,000 | 1,250 | 8,750 | - | 0.00% |
| - Building Improvements | 2,000 | - | 2,000 | - | 0.00% |
| - Alarm & Video         | 1,000 | 17 | 983 | - | 0.00% |
| - Remodeling            | 29,500 | - | 29,500 | - | 0.00% |
| - Space Planner         | 10,500 | 10,977 | (477) | - | 0.00% |
| **Total Capital**       | **53,000** | **12,244** | **40,756** | - | **0.00%** |

| **Total Building Budget** | **299,220** | **153,713** | **138,935** | **6,571** | **2.20%** |

### Column Descriptions:

- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date.
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures.
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
# Board of Trustees Budget to Actual

Public Safety Personnel Retirement System

*Fiscal Year Projections*  
*As of 12-31-2018*

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Board of Trustees</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board of Trustee - Meetings</td>
<td>25,000</td>
<td>10,317</td>
<td>14,683</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Board of Trustee - Training</td>
<td>80,000</td>
<td>7,073</td>
<td>72,927</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Board of Trustee - Other</td>
<td>10,000</td>
<td>1,277</td>
<td>8,723</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Board Consultant</td>
<td>458,000</td>
<td>322,688</td>
<td>228,888</td>
<td>(93,576)</td>
<td>(20.43%)</td>
</tr>
<tr>
<td><strong>Total Board of Trustees</strong></td>
<td>573,000</td>
<td>341,354</td>
<td>325,222</td>
<td>(93,576)</td>
<td>(16.33%)</td>
</tr>
<tr>
<td><strong>Total Board of Trustees Budget</strong></td>
<td>573,000</td>
<td>341,354</td>
<td>325,222</td>
<td>(93,576)</td>
<td>(16.33%)</td>
</tr>
</tbody>
</table>

**Column Descriptions:**
- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date.
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures;
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
## Administration Budget to Actual
Public Safety Personnel Retirement System

**Fiscal Year Projections**

*As of 12-31-2018*

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries &amp; Wages</td>
<td>1,905,875</td>
<td>874,641</td>
<td>1,056,272</td>
<td>(25,039)</td>
<td>(1.31%)</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>118,537</td>
<td>-</td>
<td>118,537</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>121,465</td>
<td>37,268</td>
<td>43,506</td>
<td>40,691</td>
<td>33.50%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>214,480</td>
<td>89,009</td>
<td>100,957</td>
<td>24,513</td>
<td>11.43%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>21,458</td>
<td>9,955</td>
<td>11,746</td>
<td>(243)</td>
<td>(1.13%)</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>387,649</td>
<td>162,962</td>
<td>210,309</td>
<td>14,378</td>
<td>3.71%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>2,769,464</td>
<td>1,173,386</td>
<td>1,541,328</td>
<td>54,300</td>
<td>1.96%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local Board/Employer Training</td>
<td>28,000</td>
<td>775</td>
<td>27,225</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Travel Expense</td>
<td>15,000</td>
<td>6,876</td>
<td>8,124</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Conferences</td>
<td>43,735</td>
<td>15,702</td>
<td>28,033</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Dues &amp; Subscriptions</td>
<td>24,465</td>
<td>11,651</td>
<td>12,814</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tuition Reimburse</td>
<td>10,500</td>
<td>5,200</td>
<td>5,300</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense</td>
<td>18,000</td>
<td>3,809</td>
<td>14,191</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>139,700</td>
<td>44,013</td>
<td>95,687</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof Serv - Due Diligence</td>
<td>4,000</td>
<td>1,514</td>
<td>2,486</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Other</td>
<td>10,000</td>
<td>8,606</td>
<td>2,066</td>
<td>(672)</td>
<td>(6.72%)</td>
</tr>
<tr>
<td>Prof Serv - Actuarial Services</td>
<td>287,500</td>
<td>57,500</td>
<td>230,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Actuarial Other</td>
<td>30,000</td>
<td>-</td>
<td>30,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Strategic Consultant</td>
<td>50,000</td>
<td>-</td>
<td>50,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Legislative Liason</td>
<td>213,600</td>
<td>106,800</td>
<td>106,800</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Communication Services</td>
<td>91,980</td>
<td>26,728</td>
<td>65,253</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>687,080</td>
<td>201,147</td>
<td>486,604</td>
<td>(672)</td>
<td>(0.10%)</td>
</tr>
<tr>
<td><strong>Legal Counsel</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External Legal Counsel</td>
<td>100,000</td>
<td>102,067</td>
<td>45,000</td>
<td>(47,067)</td>
<td>(47.07%)</td>
</tr>
<tr>
<td>External Legal Contract Services</td>
<td>-</td>
<td>22,003</td>
<td>32,500</td>
<td>(54,503)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total Legal Counsel</strong></td>
<td>100,000</td>
<td>124,071</td>
<td>77,500</td>
<td>(101,571)</td>
<td>(101.57%)</td>
</tr>
<tr>
<td><strong>Contractual Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Contract Services</td>
<td>-</td>
<td>5,743</td>
<td>-</td>
<td>(5,743)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td>-</td>
<td>5,743</td>
<td>-</td>
<td>(5,743)</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Securities Monitoring</td>
<td>7,000</td>
<td>-</td>
<td>7,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software Other</td>
<td>-</td>
<td>71</td>
<td>(71)</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td>7,000</td>
<td>71</td>
<td>6,929</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Administration Dept. Budget</strong></td>
<td>3,703,244</td>
<td>1,548,881</td>
<td>2,208,048</td>
<td>(53,685)</td>
<td>(1.45%)</td>
</tr>
</tbody>
</table>

**Column Descriptions:**
- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date.
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures.
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
## Finance Department Budget to Actual

**Public Safety Personnel Retirement System**

*Fiscal Year Projections*

*As of 12-31-2018*

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FINANCE DEPARTMENT BUDGET</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Personnel Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries &amp; Wages</td>
<td>469,206</td>
<td>202,579</td>
<td>252,256</td>
<td>14,371</td>
<td>3.06%</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>28,152</td>
<td>7,796</td>
<td>11,291</td>
<td>9,065</td>
<td>32.20%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>81,601</td>
<td>36,623</td>
<td>33,822</td>
<td>11,155</td>
<td>13.67%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>4,975</td>
<td>2,309</td>
<td>2,926</td>
<td>(261)</td>
<td>(5.25%)</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>92,551</td>
<td>40,842</td>
<td>51,778</td>
<td>(69)</td>
<td>(0.07%)</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>676,485</td>
<td>290,150</td>
<td>352,073</td>
<td>34,261</td>
<td>5.06%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Expense</td>
<td>200</td>
<td>-</td>
<td>200</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Conferences</td>
<td>2,000</td>
<td>1,910</td>
<td>90</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Dues &amp; Subscriptions</td>
<td>2,900</td>
<td>440</td>
<td>2,460</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tuition Reimbursement</td>
<td>5,250</td>
<td>-</td>
<td>5,250</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense Other</td>
<td>200</td>
<td>-</td>
<td>200</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>10,550</td>
<td>2,350</td>
<td>8,200</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auditing Services</td>
<td>91,495</td>
<td>82,346</td>
<td>9,150</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Auditing Services GASB</td>
<td>50,000</td>
<td>37,500</td>
<td>12,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Annual Report (GFOA)</td>
<td>1,100</td>
<td>2,190</td>
<td>(1,090)</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Wells Fargo Services</td>
<td>500</td>
<td>-</td>
<td>500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>143,095</td>
<td>122,036</td>
<td>21,060</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1099 Distribution</td>
<td>22,000</td>
<td>-</td>
<td>22,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Communications</strong></td>
<td>22,000</td>
<td>-</td>
<td>22,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Contractual Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary Services</td>
<td>50,000</td>
<td>23,906</td>
<td>28,600</td>
<td>(2,506)</td>
<td>(5.01%)</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td>50,000</td>
<td>23,906</td>
<td>28,600</td>
<td>(2,506)</td>
<td>(5.01%)</td>
</tr>
<tr>
<td><strong>Total Finance Dept. Budget</strong></td>
<td>902,130</td>
<td>438,440</td>
<td>431,933</td>
<td>31,755</td>
<td>3.52%</td>
</tr>
</tbody>
</table>

**Column Descriptions:**

- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures;
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
## Information Governance Department Budget to Actual

### Public Safety Personnel Retirement System

#### Fiscal Year Projections

**As of 12-31-2018**

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries &amp; Wages</td>
<td>277,862</td>
<td>138,847</td>
<td>138,931</td>
<td>84</td>
<td>0.03%</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>16,672</td>
<td>3,936</td>
<td>4,296</td>
<td>8,440</td>
<td>50.62%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>44,281</td>
<td>20,660</td>
<td>20,673</td>
<td>2,948</td>
<td>6.66%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>2,945</td>
<td>1,579</td>
<td>1,612</td>
<td>(245)</td>
<td>(8.32%)</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>56,704</td>
<td>28,744</td>
<td>28,826</td>
<td>(866)</td>
<td>(1.53%)</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>398,464</td>
<td>193,765</td>
<td>194,338</td>
<td>10,361</td>
<td>2.60%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Expense</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Conferences</td>
<td>14,000</td>
<td>3,439</td>
<td>10,561</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Dues &amp; Subscriptions</td>
<td>1,250</td>
<td>495</td>
<td>755</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tuition Reimbursement</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Training Expense Other</td>
<td>3,050</td>
<td>-</td>
<td>3,050</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>18,300</td>
<td>3,934</td>
<td>14,366</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>1,312</td>
<td>1,429</td>
<td>(117)</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td>1,312</td>
<td>1,429</td>
<td>(117)</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Info. Governance Dept. Budget</strong></td>
<td>418,076</td>
<td>199,128</td>
<td>208,587</td>
<td>10,361</td>
<td>2.48%</td>
</tr>
</tbody>
</table>

### Column Descriptions:
- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures;
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
### INVESTMENT DEPARTMENT BUDGET

#### Personnel Services

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries &amp; Wages</td>
<td>906,048</td>
<td>399,960</td>
<td>447,064</td>
<td>59,023</td>
<td>6.51%</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>-</td>
<td>172,258</td>
<td>-</td>
<td>(172,258)</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>52,616</td>
<td>20,734</td>
<td>17,428</td>
<td>14,454</td>
<td>27.47%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>87,932</td>
<td>35,934</td>
<td>43,246</td>
<td>8,752</td>
<td>9.95%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>9,604</td>
<td>5,832</td>
<td>5,186</td>
<td>(1,414)</td>
<td>(14.72%)</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>185,052</td>
<td>73,551</td>
<td>89,508</td>
<td>21,993</td>
<td>11.88%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td><strong>1,241,252</strong></td>
<td><strong>708,270</strong></td>
<td><strong>602,431</strong></td>
<td><strong>(69,450)</strong></td>
<td><strong>(5.60%)</strong></td>
</tr>
</tbody>
</table>

#### Education & Training

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Expense</td>
<td>60,000</td>
<td>32,332</td>
<td>27,668</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Conferences</td>
<td>30,000</td>
<td>6,028</td>
<td>23,972</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Dues &amp; Subscriptions</td>
<td>5,000</td>
<td>8,512</td>
<td>(3,512)</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tuition Reimbursement</td>
<td>5,250</td>
<td>5,250</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Investment Research</td>
<td>45,000</td>
<td>-</td>
<td>45,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense Other</td>
<td>1,000</td>
<td>215</td>
<td>785</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td><strong>146,250</strong></td>
<td><strong>52,337</strong></td>
<td><strong>93,913</strong></td>
<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
</tbody>
</table>

#### Professional Services

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prof Serv - Other</td>
<td>-</td>
<td>3,740</td>
<td>-</td>
<td>(3,740)</td>
<td>N/A</td>
</tr>
<tr>
<td>Investment Tech Research</td>
<td>10,000</td>
<td>-</td>
<td>10,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>ORG</td>
<td>310,000</td>
<td>80,000</td>
<td>230,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Legacy Real Estate Valuations</td>
<td>150,000</td>
<td>13,360</td>
<td>136,640</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Stepstone Group</td>
<td>100,000</td>
<td>34,000</td>
<td>68,000</td>
<td>(2,000)</td>
<td>(2.00%)</td>
</tr>
<tr>
<td>Albourne America</td>
<td>640,000</td>
<td>240,000</td>
<td>400,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Mellon Bank Fees</td>
<td>400,000</td>
<td>297,664</td>
<td>102,336</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Withheld Tax Recovery</td>
<td>40,000</td>
<td>-</td>
<td>40,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td><strong>1,650,000</strong></td>
<td><strong>668,764</strong></td>
<td><strong>986,976</strong></td>
<td><strong>(5,740)</strong></td>
<td><strong>(0.35%)</strong></td>
</tr>
</tbody>
</table>

#### Software

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloomberg</td>
<td>33,000</td>
<td>18,668</td>
<td>18,668</td>
<td>(4,337)</td>
<td>(13.14%)</td>
</tr>
<tr>
<td>Investment Analytics</td>
<td>50,000</td>
<td>46,233</td>
<td>-</td>
<td>3,767</td>
<td>7.53%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td><strong>83,000</strong></td>
<td><strong>64,901</strong></td>
<td><strong>18,668</strong></td>
<td><strong>(570)</strong></td>
<td><strong>(0.69%)</strong></td>
</tr>
</tbody>
</table>

#### Total Investment Dept. Budget

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Investment Dept. Budget</strong></td>
<td><strong>3,120,502</strong></td>
<td><strong>1,494,272</strong></td>
<td><strong>1,701,989</strong></td>
<td><strong>(75,760)</strong></td>
<td><strong>(2.43%)</strong></td>
</tr>
</tbody>
</table>

#### Mellon Direct Expense

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Due Dilligence</td>
<td>-</td>
<td>228,917</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Legal Counsel</td>
<td>-</td>
<td>502,962</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Appraisals</td>
<td>-</td>
<td>54,691</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Mellon Direct Expense</strong></td>
<td><strong>786,570</strong></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Column Descriptions:

- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date.
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures.
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
## IT Network Services Department Budget to Actual

### Public Safety Personnel Retirement System

**Fiscal Year Projections**

**As of 12-31-2018**

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries &amp; Wages</td>
<td>394,730</td>
<td>196,900</td>
<td>152,563</td>
<td>45,267</td>
<td>11.47%</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>23,684</td>
<td>9,993</td>
<td>7,691</td>
<td>6,000</td>
<td>25.33%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>58,933</td>
<td>26,573</td>
<td>23,056</td>
<td>9,304</td>
<td>15.79%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>4,184</td>
<td>2,239</td>
<td>1,770</td>
<td>175</td>
<td>4.18%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>81,361</td>
<td>41,117</td>
<td>31,537</td>
<td>8,707</td>
<td>10.70%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>562,892</td>
<td>276,822</td>
<td>216,616</td>
<td>69,453</td>
<td>12.34%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Expense</td>
<td>4,500</td>
<td>-</td>
<td>4,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Conferences</td>
<td>-</td>
<td>(7,840)</td>
<td>-</td>
<td>7,840</td>
<td>N/A</td>
</tr>
<tr>
<td>Dues &amp; Subscriptions</td>
<td>-</td>
<td>80</td>
<td>-</td>
<td>(80)</td>
<td>N/A</td>
</tr>
<tr>
<td>Tuition Reimbursement</td>
<td>15,750</td>
<td>-</td>
<td>15,750</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense Other</td>
<td>18,000</td>
<td>-</td>
<td>18,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>38,250</td>
<td>(7,760)</td>
<td>38,250</td>
<td>7,760</td>
<td>20.29%</td>
</tr>
<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof Serv - Other</td>
<td>105,000</td>
<td>19,800</td>
<td>85,200</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>105,000</td>
<td>19,800</td>
<td>85,200</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications - Telephone</td>
<td>22,500</td>
<td>7,217</td>
<td>7,217</td>
<td>8,065</td>
<td>35.84%</td>
</tr>
<tr>
<td>Communications - Internet</td>
<td>25,100</td>
<td>9,757</td>
<td>9,757</td>
<td>5,585</td>
<td>22.25%</td>
</tr>
<tr>
<td><strong>Total Communications</strong></td>
<td>47,600</td>
<td>16,975</td>
<td>16,975</td>
<td>13,650</td>
<td>28.68%</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT Hardware</td>
<td>150,000</td>
<td>13,359</td>
<td>136,641</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>IT Security</td>
<td>18,000</td>
<td>15,164</td>
<td>2,836</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>IT Services</td>
<td>39,500</td>
<td>23,821</td>
<td>15,679</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Warranty Renewal</td>
<td>40,500</td>
<td>7,642</td>
<td>32,858</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Backup &amp; Disaster Recovery</td>
<td>38,600</td>
<td>9,307</td>
<td>9,307</td>
<td>19,986</td>
<td>51.78%</td>
</tr>
<tr>
<td><strong>Total Infrastructure</strong></td>
<td>286,600</td>
<td>69,292</td>
<td>197,322</td>
<td>19,986</td>
<td>6.97%</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software - Other</td>
<td>65,000</td>
<td>201</td>
<td>64,799</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>License &amp; Maintenance - Other</td>
<td>10,000</td>
<td>24,564</td>
<td>(14,564)</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td>75,000</td>
<td>24,765</td>
<td>50,235</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total IT Network Services Department Budget</strong></td>
<td><strong>1,115,342</strong></td>
<td><strong>399,894</strong></td>
<td><strong>604,599</strong></td>
<td><strong>110,849</strong></td>
<td><strong>9.94%</strong></td>
</tr>
</tbody>
</table>

**Column Descriptions:**
- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures;
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
## IT Systems Development Budget to Actual

### Public Safety Personnel Retirement System

**Fiscal Year Projections**

**As of 12-31-2018**

<table>
<thead>
<tr>
<th>IT SYSTEMS DEVELOPMENT DEPARTMENT BUDGET</th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries &amp; Wages</td>
<td>574,525</td>
<td>264,587</td>
<td>286,262</td>
<td>23,676</td>
<td>4.12%</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>34,472</td>
<td>6,433</td>
<td>9,215</td>
<td>18,824</td>
<td>54.61%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>92,975</td>
<td>35,869</td>
<td>38,067</td>
<td>19,038</td>
<td>20.48%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>6,089</td>
<td>3,014</td>
<td>3,321</td>
<td>(246)</td>
<td>(4.04%)</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>115,679</td>
<td>51,592</td>
<td>53,502</td>
<td>10,585</td>
<td>9.15%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>823,740</td>
<td>361,496</td>
<td>390,367</td>
<td>71,877</td>
<td>8.73%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Expense</td>
<td>1,000</td>
<td>-</td>
<td>1,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Conferences</td>
<td>12,000</td>
<td>-</td>
<td>12,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Dues &amp; Subscriptions</td>
<td>300</td>
<td>-</td>
<td>300</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tuition Reimbursement</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense Other</td>
<td>31,000</td>
<td>528</td>
<td>30,472</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>44,300</td>
<td>528</td>
<td>43,772</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Contractual Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract Services</td>
<td>232,960</td>
<td>117,757</td>
<td>115,204</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td>232,960</td>
<td>117,757</td>
<td>115,204</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Go-To-Webinar</td>
<td>1,100</td>
<td>-</td>
<td>1,100</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Go-To-Meeting</td>
<td>650</td>
<td>-</td>
<td>650</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Sybase Support</td>
<td>6,000</td>
<td>-</td>
<td>6,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software Other</td>
<td>4,000</td>
<td>3,841</td>
<td>159</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>License Backup Line</td>
<td>1,000</td>
<td>-</td>
<td>1,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>License Other</td>
<td>1,000</td>
<td>-</td>
<td>1,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td>13,750</td>
<td>3,841</td>
<td>9,909</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Furniture &amp; Equipment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repairs &amp; Maintenance</td>
<td>1,500</td>
<td>-</td>
<td>1,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Furniture &amp; Equipment</strong></td>
<td>1,500</td>
<td>-</td>
<td>1,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total IT Systems Development Budget</strong></td>
<td>1,116,250</td>
<td>483,621</td>
<td>560,752</td>
<td>71,877</td>
<td>6.44%</td>
</tr>
</tbody>
</table>

**Column Descriptions:**
- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date.
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures.
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
## Member Services Department Budget to Actual

Public Safety Personnel Retirement System

**Fiscal Year Projections**

**As of 12-31-2018**

### MEMBER SERVICES DIVISION BUDGET

<table>
<thead>
<tr>
<th></th>
<th>2019 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over)</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salaries &amp; Wages</td>
<td>1,293,907</td>
<td>639,378</td>
<td>602,220</td>
<td>52,309</td>
<td>4.04%</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>77,634</td>
<td>23,140</td>
<td>21,741</td>
<td>32,754</td>
<td>42.19%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>234,282</td>
<td>100,512</td>
<td>96,243</td>
<td>37,527</td>
<td>16.02%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>13,715</td>
<td>7,271</td>
<td>6,986</td>
<td>(541)</td>
<td>(3.94%)</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>265,717</td>
<td>131,887</td>
<td>125,236</td>
<td>8,594</td>
<td>3.23%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>1,885,256</td>
<td>902,188</td>
<td>852,425</td>
<td>130,643</td>
<td>6.93%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Expense</td>
<td>500</td>
<td>-</td>
<td>500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Conferences</td>
<td>3,600</td>
<td>-</td>
<td>3,600</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Dues &amp; Subscriptions</td>
<td>200</td>
<td>-</td>
<td>200</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Tuition Reimbursement</td>
<td>10,500</td>
<td>-</td>
<td>10,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense Other</td>
<td>2,000</td>
<td>-</td>
<td>2,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>16,800</td>
<td>-</td>
<td>16,800</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Death Index</td>
<td>10,800</td>
<td>10,775</td>
<td>-</td>
<td>25</td>
<td>0.23%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>10,800</td>
<td>10,775</td>
<td>-</td>
<td>25</td>
<td>0.23%</td>
</tr>
<tr>
<td><strong>Contractual Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scanning Services</td>
<td>41,000</td>
<td>11,427</td>
<td>29,574</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Temporary Services</td>
<td>47,000</td>
<td>13,047</td>
<td>33,953</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td>88,000</td>
<td>24,473</td>
<td>63,527</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Member Services Department Budget</strong></td>
<td>2,000,856</td>
<td>937,436</td>
<td>932,752</td>
<td>130,668</td>
<td>6.53%</td>
</tr>
</tbody>
</table>

**Column Descriptions:**

- 2019 Budget contains the budget approved by the Board of Trustees.
- 2019 Expenses contain actual expenses paid fiscal year-to-date as of report date
- Projected Expenses contain estimated remaining budgeted expenditures yet to be incurred and recurring non-budgeted expenditures;
- (Over) Under compares 2019 Expenses and Projected Expenses to the 2019 Budget.
- (Over) Under Budget % is the percentage of (Over) Under as compared to the 2019 Budget.
Employer/Local Board Outreach & Additional Projects:

- December 4, 2018 PSPRS provided an all-day seminar for employers and local boards. 93 employer groups and 254 participated in the training event. The training was a huge success! Results of the survey were positive.

- Quarterly update with the one on one phone training with Local Boards or Employer groups:
  - Provided 27 training sessions on the phone with local board secretaries
  - Provided 43 training sessions on the phone with employer groups

- Training schedule for the next few months:
  - January 17, 2019         Tubac, Arizona (Constable Conference)
  - January 24, 2019         Tolleson, Arizona (Local Board Training)
  - January 28, 2019         Nogales, Arizona (Local Board Training)
  - January 28, 2018         Nogales, Arizona (Employer Sponsored training)
  - February 6, 2019         San Luis, Arizona (Employer Sponsored training)
  - February 13, 2019        Golder Ranch, Arizona (Employer Sponsored)

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

- We are reviewing the minutes of the local boards and contacting those boards that appear to need additional help.

- Taylor Snowflake Fire and Medical requested a new actuarial report with an anticipated joinder dated of February 1, 2019.

- Copper Canyon Fire & Medical District requested a joinder dated of January 2, 2019. The joinder agreement will be on the full board agenda.
The major elements of December and January PSPRS communications include the early-December employer and local board seminar, which was well-attended, and stakeholder outreach regarding the rolling back of Tier 1B deferred compensation provisions.

The event agenda was determined by pre-event surveys and the need to provide updates about PSPRS operations and functions. After updates were giving to all those who attended, PSPRS organized “break-out sessions” to accommodate differing needs of human resources/payroll personnel and local board members and secretaries.

Follow-up event polling indicated the event was received well. Operationally-orientated presentations covering legislation, employer portal use and local board responsibilities polled most favorably. Almost all survey respondents found each presentation somewhat useful. PSPRS was fortunate to receive some constructive criticism, although some feedback was contradictory (ex. Respondents request either more detailed or more general/less detailed presentations) or directed at the venue.

Through December, PSPRS conducted outreach to employers, members, and retirees concerning the pending rollbacks of Tier 1b deferred retirement (DROP) changes as ordered by the board. These email communications were distributed in mid-December and generated very high open rates across all three stakeholder groups (64.5, 55.2, and 54.3 percent for employers, members and retirees, respectively. Similarly, updates and general information were posted online. PSPRS call center operations received calls about the rollbacks from members and retirees for roughly one week before call volume reduced dramatically.

Other notable PSPRS communications-related activity for December and January includes:

- **December 21 email** communication to employers regarding the availability of actuarial reports and annual employer valuations and contribution rates. Open rate of 43 percent.
- **December 28 email** advising Tier 3 PSPRS and CORP members to make their benefit elections online. Open rate of 55 percent of 179 recipients. This is part of an ongoing monthly campaign to encourage members to take an active role in planning for retirement.
- [PENDING] PSPRS quarterly newsletter. Items including Tier 1b DROP updates, trustee retirements and appointments, new Prop 124 and 125 video, 1099 tax form information, municipal finance opportunities available through Brevet Capital.
- Drafting of PSPRS investment risk and strategy educational script for pending video. This marks the first conceptual video for stakeholders, policymakers and the public about investment theory. This is a joint project between communications director and chief investment officer.
January 23, 2019
Board of Trustees
Monthly HR Report

PROJECTS

Learning/Development

- Safety training is scheduled to be conducted in January
- Proposed development classes for the remainder of the fiscal year are as follows:
  - Executive Presence
  - Diversity and Inclusion
  - Leadership vs Management
  - May and June classes TBD
- Lunch and Learn series
  - 1st series on Strength Finder to be completed in February.
  - 2nd series on Strength Finder to begin in March
  - 1st series on Predictive Index to begin in March

New Hire/Recruitment and Position Update

- Position Update
  - Member Services Representative (Call Center) – Blanca Johnson was offered and accepted the position. Her projected start date is Monday, February 11th.
  - Executive Assistant (CIO) – Cheryl Cohen was offered and accepted the position. Her projected start date is Monday, February 25th
  - Investment Intern – George Heiler was conditionally offered the position. Official start date to be determined after background check is completed.
- New Hire
  - Laura Long – Portfolio Analyst started on January 7th. Laura had previously worked at the Office of the Auditor General
  - Tami Mills – Retirement Advisor Technician started on November 26th. Tami had previously worked at the Department of Insurance

Professional Development

- Attended and completed Predictive Index facilitator certification training on December 4th and 5th
PSPRS FY19 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 mid FY18 and we expect it to continue at least 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.

Opportunity 3 – Conduct an agency-wide strategic assessment. PSPRS has issued a RPF in order to partner with a consultant to conduct a strategic assessment of all key program areas to help develop an integrated 3-5 year strategic/business plan. The consultant will also provide an assessment of the current and future needs in strategic and operational workforce planning and provide guidance for better information flow through meeting structure and purpose.

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 based on the FY19 PSPRS Strategic Assessment

Performance Measure – TBD

Objective 1.2 – conduct personnel succession planning Member Services based on the FY19 PSPRS Strategic Assessment

Performance Measure – TBD

Objective 1.3 – implement a cross-functional skills training program based on the FY19 PSPRS Strategic Assessment

Performance Measure – TBD

Objective 1.4 – implement a leader/employee development training program

Performance Measure - conduct six development classes for leaders and employees
PSPRS FY19 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 – process 100% of member retirements without error in the effective payroll period

Objective 2.2 – issue contribution refunds in an accurate and timely manner
   Performance Measure – issue 100% of contribution refunds without error within 20 days of refund request

Goal 3 – Provide risk-controlled investment management of the System’s assets (PSPRS CIO)

Objective 3.1 – meet or exceed the PSPRS assumed earnings rate
   Performance Measure – PSPRS Trust annualized return at or above the assumed earnings rate over the actuarial smoothed period

Objective 3.2 – attain a competitive risk-adjusted investment return ranking among peer pension systems
   Performance Measure – top quartile risk-adjusted PSPRS Trust investment return over the actuarial smoothed period

Objective 3.3 – meet or exceed the PSPRS Trust investment portfolio composite benchmark
   Performance Measure – annual composite PSPRS Trust investment return net of fees at or above the benchmark

Goal 4 – Evaluate and adjust our work processes to ensure relevance, efficiency and alignment (PSPRS Systems Architect)

Objective 4.1 – implement industry best practice software development capabilities
   Performance Measure – implement best practice requirements definition and management by the end of the FY
   Performance Measure – implement best practice product and process quality assurance by the end of the FY

Goal 5 - Evaluate and implement technology and data security aligned with our strategic plan (Deputy Administrator)

Objective 5.1 – implement a requirements management and issue tracking software application
   Performance Measure – fully implement the chosen software application by the end of the FY

Objective 5.2 – implement an automated testing and quality assurance software application
   Performance Measure – fully implement the chosen software application by the end of the FY

Objective 5.3 – conduct formal Information Security Program training for PSPRS staff
   Performance Measure – 100% of the PSPRS staff will have completed all required security training

Goal 6 – Improve communications, outreach and training to members, employers, local boards and external stakeholders (PSPRS Communications Director)

Objective 6.1 - ensure PSPRS websites are serving the diverse needs of our customers and that information contained therein is accurate, consistent and presented in a standardized format.
   Performance Measure – conduct a comprehensive review of PSPRS.COM and present content improvement recommendations to the Administrator by the end of the FY
PSPRS FY19 Strategic Plan

Strategic Goals and Objectives – cont’d.

Objective 6.2 – develop and implement phone etiquette and protocol training for PSPRS staff in tandem with PSPRS Human Resources Director and in consultation with department managers.

Performance Measure – create a training guide and host at least 2 training events during the FY

Objective 6.3 – continue to identify opportunities and methods to increase awareness among stakeholders, policymakers and the public about PSPRS investment strategies and progress

Performance measure – complete at least six public informational campaigns (videos, constituent emails, press releases, social media posting/sharing, etc.) during FY

Objective 6.4 – conduct 10 geographically disbursed employer/local board seminars in FY19 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

Goal 7 – Build strong Information Governance programs to protect the system and improve business outcomes (Information Governance Team)

Objective 7.1 – Compliance: Implement a compliance program to ensure compliance with laws, regulations, policies, and commitments in FY2019

Performance Measure – Complete an enterprise-wide risk assessment to identify strategic risks to assist in System resource allocation by the end of the FY

Performance Measure – Implement and administer an annual compliance plan including training, issue reporting (direct and anonymous), and investigation guidelines by the end of the FY

Objective 7.2 – Internal Audit: Develop and execute a comprehensive internal audit plan for FY19

Performance Measure – complete the PSPRS FY19 Internal Audit by 30 June 2019

Objective 7.3 – Records Management: coordinate the migration of official records from the PSPRS network shared-drive to SharePoint

Performance Measure – Develop plan of action to accomplish clean and migration processes starting with one pilot department by 10/31/2018

Objective 7.4 – Records Management: coordinate the removal of redundant, outdated and trivial records on the PSPRS network shared-drive.

Performance Measure – Work with IT and pilot department to accomplish total migration and clean-up of the PSPRS network shared-drive by 6/30/2019
We are on-track to meet our FY19 Strategic Plan goals and objectives except as noted below:

**General** - we will renumber Goal 3 to Goal 1 (as suggested by the BOT) in the FY20 plan

**Vision Statement** - we will further refine the Vision Statement (as suggested by the BOT) as we continue to identify and document all the products and services we provide through our planned internal and external strategic assessments

**HR Objectives** – personnel gap analysis, succession planning and cross-functional skills training are also dependent upon our planned internal and external strategic assessments

**Investment Objectives** – for strategic plan purposes we report on investment performance only at the end of the fiscal year

**Governance Objectives** – the pilot program for electronic records clean-up is in progress but most likely will not be completed by the end of FY19
INTERNAL AUDIT DATE
In accordance with the PSPRS FY2018 Internal Audit Plan, an audit of the
PSPRS Investment Funding Requests process and procedure (including capital
calls) was conducted on Thursday, June 14, 2018.

INTERNAL AUDIT PURPOSE AND SCOPE
The purpose of the PSPRS Investment Funding Requests audit was to verify
adherence to the policies and procedures that describe the processing of
capital calls and other investment-related funding activities.

DEPARTMENT
The PSPRS Investment Funding Requests process and procedure is performed
by the PSPRS Investment Operations department.

INTERNAL AUDITOR
The audit of the PSPRS Investment Funding Requests process and procedure
was conducted by Lisa Sweeting, PSPRS Internal Audit Officer.

INTERNAL AUDIT REPORT DISTRIBUTION

PSPRS BOARD OF TRUSTEES
- Brian P. Tobin, Chairman
- William T. Buvidas, Vice Chairman
- William C. Davis, Trustee
- Edward J. McNeill, Trustee
- Harry A. Papp, Trustee
- Bryan Raines, Trustee
- Mike Scheidt, Trustee
- Dean M. Scheinert, Trustee
- Donald A. Smith, Jr., Trustee

PSPRS SYSTEM ADMINISTRATORS
- Jared A. Smout, Administrator
- Dave DeJonge, Deputy Administrator
- Mark Steed, Interim Chief Investment Officer

PSPRS DEPARTMENT AND FUNCTIONAL MANAGERS
- PSPRS managers and staff receive internal audit reports as
  appropriate to each audit engagement.

INTERNAL AUDIT REPORT APPROVAL

<table>
<thead>
<tr>
<th>Number</th>
<th>Auditor</th>
<th>Submitted</th>
<th>Administrator</th>
<th>Approved</th>
</tr>
</thead>
</table>
1.0 INTERNAL AUDIT ENGAGEMENT METHODOLOGY

The overall objective of the Public Safety Personnel Retirement System (PSPRS or System) internal audit engagements is to provide the PSPRS Board of Trustees, Administrators and staff with objective and independent appraisals of internal quality controls and administrative processes, and the extent to which they are advancing PSPRS in the achievement of charters and strategic goals and initiatives as identified in the PSPRS Board of Trustees Governance Manual; PSPRS Strategic Plan; PSPRS Risk Assessment and PSPRS Internal Audit Plan.

As outlined in the PSPRS Internal Audit Guide (IAO-GUIDE-001), a defined set of quality improvement tools (PDCA and DMAIC cycles); control structures (statutes, systems, portals, policies, procedures and forms); and audit engagement methodologies (IIA International Professional Practices Framework, ISO Quality Management System Standard, best practices and lessons learned) are applied to carry out the purpose, scope and operational and compliance goals of each audit. The application of these rules, methods and frameworks ensures that audits are planned and performed to obtain sufficient and appropriate evidence that provides a reasonable basis for audit findings, opportunities, risks and recommendations.

The PSPRS audit engagement methodology also focuses on short duration, highly concentrated audits in lieu of long, drawn-out audits where the loss of focus and momentum becomes a real risk. The internal auditor normally conducts weekly audits of 60 to 90 minutes in duration, instead of infrequent month/quarter-long audits. This approach is much easier for the internal auditor to implement and monitor and appears to be less taxing and disruptive to business and team activities. In addition, conducting frequent, narrowly-scoped audits creates more exposure and exchanges between the internal auditor and staff members. The more comfortable that staff members are with the internal auditor and internal audit process (audit phases, leadership responses, corrective action plans, turnaround times, etc.) the less unwelcoming audits will feel.

Internal audits are not designed to identify all nonconformances or deficiencies in internal controls. For example, as the audit progresses, the internal auditor regularly questions whether continuing to sample evidence once targets are achieved/a pattern is established (per the audit purpose and scope) is in the best interest of PSPRS resources. To maximize audit coverage due to limited internal audit resources, the internal auditor utilizes a "Stop and Go" audit approach, which focuses on continuously assessing risks and adjusting the audit approach and sampling throughout the engagement. By continuously evaluating risk, the auditor may determine at any phase of the audit that no further work is needed to conclude the effectiveness of the controls. The auditor may determine that the chance of the audit deviating from the demonstrated norm is unlikely and end the audit before the full sample size is reached or all planned activities are concluded. This approach enables the auditor to focus on performing value added audits that respect PSPRS’ strategic, compliance and audit objectives and the auditor’s and auditee’s time.

2.0 INTERNAL AUDIT BACKGROUND AND CRITERIA

The PSPRS Internal Auditor performed a process audit of the individual steps and activities included in the PSPRS Investment Funding Requests procedure. Process audits are powerful in that they identify risks, procedural gaps and improvement opportunities, while also identifying best practices and areas of strength. Since most quality frameworks contain effective yet minimal controls, process audits allow for the review of all controls to ensure they are working to the benefit of PSPRS. Process audits go beyond the narrow control elements defined in compliance and standards audits, because processes are controlled by parameters (requirements and procedures) that can be dynamically adjusted to suit System needs and improve process outcomes.
The purpose of the PSPRS Investment Funding Requests audit was to verify adherence to the policies and procedures that describe the processing of capital calls and other investment-related funding activities. The following provides a high-level summarization of the investment funding request process:

2.1 Upon receiving notification from a fund manager regarding a capital call or other funding request, a member of the Investment Operations team creates a calendar entry citing the request due date/settlement date. The transaction date and amount is then verified by another staff member.

2.2 Following the initial processing of the funding request, the Investment Operations team seeks written approval for the drawdown from external legal counsel or the PSPRS Compliance Officer (as appropriate to the specific transaction). Upon approval, the paperwork required for the trade execution is finalized.

2.3 The transaction - to include the wire request and internal cash transfer instructions - is then entered on the Bank of New York Mellon (BNYM) Workbench-ICO system. For certain capital call requests (including those issued by foreign currency-denominated drawdown funds) a submission of a Letter of Intent (LOI) to BNYM is drafted (a manual execution) instead of using the Workbench-ICO system. The LOI includes specific and comprehensive instructions depending on the type of investment in question.

2.4 Once the Workbench transaction or LOI submission is complete, verified and authorized by a member of PSPRS’ executive team (the System Administrator, Chief Investment Officer or Finance Manager), all interested parties are then notified.

2.5 On the settlement date, Investment Operations confirms the settlement and reconciles the transaction by confirming the BNYM Workbench Settled Cash Statement; saving the final records to the appropriate folders; and closing the original calendar entry by noting the wire reference number (if applicable) and any other pertinent details.

The criteria reviewed to conduct the PSPRS Investment Funding Requests audit include:

- BNYM Workbench-ICO System (funding request transaction entry, authorization and reconciliation)
- Capital Call and Management Fee Funding Request Notifications – May 2018
- Capital Call Investment Schedule – May 2018
- PSPRS Funding Requests Procedure (INV-PROCEDURE-007) – September 2016
- PSPRS Capital Call Process Map (INV-PROCESS-001) – July 2017
- PSPRS Investment Calendars (transaction settlement dates, reminders and notes)
- PSPRS Transaction Request Cover Sheet – May 2018
- PSPRS/BNYM Unfunded Commitments Detail Report – May 2018
- PSPRS/BNYM Settled Cash Statement – May 2018
- PSPRS Investment Manager Records Retention Folders
- PSPRS Capital Call Analysis Chart (internal use only)

The application of the above audit criteria was left to the experience and judgment of the internal auditor. However, the PSPRS Internal Audit Guide and quality management system standards
specified in Section 1.0 continue to provide the rules, framework and guidance necessary to bring about an independent, disciplined and sound audit approach and outcome.

3.0 INTERNAL AUDIT RESULTS

The results of the PSPRS Investment Funding Requests process and procedure audit conducted as part of the FY2018 Internal Audit Plan are documented in this report in the form of improvement opportunities and internal auditor recommendations. The audit process required a one-on-one meeting between the PSPRS Internal Auditor and a member of the PSPRS Investment Operations department to review the funding request/capital call policies. The audit fieldwork included a thorough verification of the written/approved process map and procedure; review of supporting documentation; process demonstrations; representative statements; auditor observations and analysis; and a sampling of the funding request records for May 2018 (refer back to page 3).

The audit results support that the investment funding request process and procedure, as performed by the Investment Operations department, is under control. The audit did not reveal any process errors or deviations. However, in support of PSPRS’ continuous improvement efforts, one improvement opportunity was identified along with a recommendation on how to address the opportunity, as follows:

3.1 Improvement Opportunity – Policies, Processes and Procedures

Following the retirement of the PSPRS Compliance Officer in late 2016, Investment Operations implemented a temporary amendment (INV-PROCESS-001) to the official funding requests procedure (INV-PROCEDURE-007). The changes associated with the temporary amendment were necessary to briefly transfer the funding request review and approval responsibilities from the Compliance Officer to another staff member. In late 2017, PSPRS hired a new Compliance Officer. However, as of June 14, 2018, the interim funding request process remains in place.

Recommendation

3.1.a Investment Operations: Officially re-implement the funding request procedure (INV-PROCEDURE-007) and retire the interim process (INV-PROCESS-001); establish the interim process as the official procedure; or merge the interim process and official procedure together to create one comprehensive document.

The internal auditor will perform a validation audit of the corrective actions taken to address the opportunities within 30 to 90 days of the corrective action implementation date before closing the audit. Following the validation audit, the maintenance of effective controls remains the responsibility of PSPRS leadership and not that of the auditor.

4.0 LEADERSHIP RESPONSE

An official response to the internal audit improvement opportunity and recommendation is due in writing to the internal auditor by Friday, August 17, 2018. The response should describe the corrective action strategy, any preventive measures taken and the action plan implementation date or timeline. If leadership determines that corrective actions/preventive measures are not required, the basis for that determination should be included in the response.
July 19, 2018

Attn: Ms. Lisa Sweeting  
PSPRS Internal Audit Officer

Dear Ms. Sweeting:

In response to the Improvement Opportunity identified by your audit, and the Recommendation made with regard to same (per the excerpt below), I offer the following comment.

### 3.1 Improvement Opportunity – Policies, Processes and Procedures

Following the retirement of the PSPRS Compliance Officer in late 2016, Investment Operations implemented a temporary amendment (INV-PROCESS-001) to the official funding requests procedure (INV-PROCEDURE-007). The changes associated with the temporary amendment were necessary to briefly transfer the funding request review and approval responsibilities from the Compliance Officer to another staff member. In late 2017, PSPRS hired a new Compliance Officer. However, as of June 14, 2018, the interim funding request process remains in place.

**Recommendation**

3.1.a. **Investment Operations:** Officially re-implement the funding request procedure (INV-PROCEDURE-007) and retire the interim process (INVPROCESS-001); establish the interim process as the official procedure; or merge the interim process and official procedure together to create one comprehensive document.

**Response**

I agree with the recommendation. On July 6 2018, the final draft for the revised and updated INV-007 procedure has been submitted to the PSPRS Records Management Officer and posted on the K|IM portal (via SharePoint). The draft, which is currently awaiting Administrator’s approval, includes substantial revisions to sections 5.2, 5.3, and 5.4, to account for the IO process changes pertaining to the various funding requests and largely due to the newly re-established Compliance function. It also contains a few additional changes to section 5.7 (to include certain nuances in the BNYM online transaction processing system that we’ve found to be impacting our processes.
recently), and section 5.10 (primarily to reflect the changes in the list of the Trust’s authorized persons after Ryan Parham’s retirement). We’ve also added two new items under “References” (Exhibits 6.3 and 6.4) and made additional minor changes throughout the entire text for grammar/clarity.

Considering all the above, I believe that the INV-007 procedure, in its current revised draft version, is fully up to date and represents a comprehensive document on the management and handling of the Trust’s various investment-related funding requests - with the interim process (INVPROCESS-001) being fully incorporated into it, as per your recommendation.

Thank you,

Vaida Maleckaite
Director of Investment Services

Attachments – a) the Final Draft of the updated/revised INV-007 procedure and b) Document Control Change Log file pertaining to same.
INTERNAL AUDIT DATE
In accordance with the PSPRS FY2018 Internal Audit Plan, an audit of the PSPRS Human Resources Strategic Goals and Initiatives was conducted on Thursday, June 21, 2018.

INTERNAL AUDIT PURPOSE AND SCOPE
The purpose of the PSPRS Human Resources Goals and Initiatives audit was to confirm awareness of the human resources goals planned for FY2018 and assess PSPRS’ progress towards reaching those goals.

DEPARTMENT
The PSPRS Human Resources Strategic Goals and Initiatives are established annually by the PSPRS Administrator and PSPRS Human Resources Director.

INTERNAL AUDITOR
The audit of the PSPRS Human Resources Goals and Initiatives was conducted by Lisa Sweeting, PSPRS Internal Audit Officer.

INTERNAL AUDIT REPORT DISTRIBUTION

PSPRS BOARD OF TRUSTEES
- Brian P. Tobin, Chairman
- William T. Buividas, Vice Chairman
- William C. Davis, Trustee
- Edward J. McNeill, Trustee
- Harry A. Papp, Trustee
- Bryan Raines, Trustee
- Mike Scheidt, Trustee
- Dean M. Scheinert, Trustee
- Donald A. Smith, Jr., Trustee

PSPRS SYSTEM ADMINISTRATORS
- Jared A. Smout, Administrator
- Dave DeJonge, Deputy Administrator
- Mark Steed, Interim Chief Investment Officer

PSPRS DEPARTMENT AND FUNCTIONAL MANAGERS
- PSPRS managers and staff receive internal audit reports as appropriate to each audit engagement.

INTERNAL AUDIT REPORT APPROVAL

<table>
<thead>
<tr>
<th>Number</th>
<th>Auditor</th>
<th>Submitted</th>
<th>Administrator</th>
<th>Approved</th>
</tr>
</thead>
</table>
1.0 INTERNAL AUDIT ENGAGEMENT METHODOLOGY

The overall objective of the Public Safety Personnel Retirement System (PSPRS or System) internal audit engagements is to provide the PSPRS Board of Trustees, Administrators and staff with objective and independent appraisals of internal quality controls and administrative processes, and the extent to which they are advancing PSPRS in the achievement of charters and strategic goals and initiatives as identified in the PSPRS Board of Trustees Governance Manual; PSPRS Strategic Plan; PSPRS Risk Assessment and PSPRS Internal Audit Plan.

As outlined in the PSPRS Internal Audit Guide (IAO-GUIDE-001), a defined set of quality improvement tools (PDCA and DMAIC cycles); control structures (statutes, systems, portals, policies, procedures and forms); and audit engagement methodologies (IIA International Professional Practices Framework, ISO Quality Management System Standard, best practices and lessons learned) are applied to carry out the purpose, scope and operational and compliance goals of each audit. The application of these rules, methods and frameworks ensures that audits are planned and performed to obtain sufficient and appropriate evidence that provides a reasonable basis for audit findings, opportunities, risks and recommendations.

The PSPRS audit engagement methodology also focuses on short duration, highly concentrated audits in lieu of long, drawn-out audits where the loss of focus and momentum becomes a real risk. The internal auditor normally conducts weekly audits of 60 to 90 minutes in duration, instead of infrequent month/quarter-long audits. This approach is much easier for the internal auditor to implement and monitor and appears to be less taxing and disruptive to business and team activities. In addition, conducting frequent, narrowly-scoped audits creates more exposure and exchanges between the internal auditor and staff members. The more comfortable that staff members are with the internal auditor and internal audit process (audit phases, leadership responses, corrective action plans, turnaround times, etc.) the less unwelcoming audits will feel.

Internal audits are not designed to identify all nonconformances or deficiencies in internal controls. For example, as the audit progresses, the internal auditor regularly questions whether continuing to sample evidence once targets are achieved/a pattern is established (per the audit purpose and scope) is in the best interest of PSPRS resources. To maximize audit coverage due to limited internal audit resources, the internal auditor utilizes a "Stop and Go" audit approach, which focuses on continuously assessing risks and adjusting the audit approach and sampling throughout the engagement. By continuously evaluating risk, the auditor may determine at any phase of the audit that no further work is needed to conclude the effectiveness of the controls. The auditor may determine that the chance of the audit deviating from the demonstrated norm is unlikely and end the audit before the full sample size is reached or all planned activities are concluded. This approach enables the auditor to focus on performing value added audits that respect PSPRS’ strategic, compliance and audit objectives and the auditor’s and auditee’s time.

2.0 INTERNAL AUDIT BACKGROUND AND CRITERIA

The purpose of the PSPRS Human Resources (HR) Goals and Initiatives audit was to confirm awareness of the HR goals and initiatives planned for FY2018 and assess PSPRS’ plans and progress towards reaching those goals. Unlike traditional step-by-step audits, where policies, processes and procedures exist, audits of organizational goals and objectives require a different approach as documented methods for achieving the goals are not usually present. With respect to the audit of PSPRS’ HR initiatives, the PSPRS FY2018 Strategic Plan acted as the benchmark against which the progress towards achieving the HR objectives was compared.
PSPRS FY2018 Human Resources Strategic Goals and Initiatives

HR Goal: Recruit, engage, develop and retain qualified, motivated management and staff:

- Objective 1 – Conduct a personnel supply, needs and gap analysis.
  - **Performance Measure**: Include 75% of staff in the analysis.

- Objective 2 – Conduct personnel succession planning for PSPRS Member Services.
  - **Performance Measure**: Create succession plans for Member Services managers.

- Objective 3 – Implement a cross-functional skills training program.
  - **Performance Measure**: Provide 75% of staff with training in other areas.

- Objective 4 – Implement a training development program for leaders and staff.
  - **Performance Measure**: Conduct six development classes for leaders and staff.
  - Status as of June 21, 2018: 100% complete. See items 2.3 through 2.8 below.

The criteria used to conduct the Human Resources Goals and Initiatives audit include:

2.1 PSPRS FY2018 Strategic Plan – June 28, 2017
   - HR Risks and Opportunities
   - HR Objectives
   - HR Performance Measures

2.2 PSPRS Employee Engagement Agency Report – May 22, 2018

2.3 PSPRS Strengths Finders 2.0 Training Records – February 21, 2018

2.4 PSPRS Coaching and GROW Model Training Records – February 13, 21 and 23, 2018

2.5 PSPRS Art of Accountability Training Records – March 5, 2018

2.6 PSPRS Public Records Law Training Records – April 3 and 18, 2018

2.7 PSPRS Powerful Questions Training Records – April 24, 2018
   - Additional class is scheduled for July 13, 2018

2.8 PSPRS Active Listening Training Records – April 24, 2018
   - Additional class is scheduled for July 13, 2018

The application of the above audit criteria was left to the experience and judgment of the internal auditor. However, the PSPRS Internal Audit Guide and quality management system standards specified in Section 1.0 continue to provide the rules, framework and guidance necessary to bring about an independent, disciplined and sound audit approach and outcome.
3.0 INTERNAL AUDIT RESULTS

The PSPRS Human Resources Goals and Initiatives audit required a one-on-one meeting between the PSPRS Internal Auditor and PSPRS Human Resources Director to review the strategic risks, opportunities, objectives and measures, conceived by the PSPRS Administrator and HR Director in June 2017. The HR initiatives were established to augment PSPRS’ employee recruitment, employee engagement, employee development, and employee retention activities. The audit fieldwork included a thorough review of the PSPRS FY2018 Strategic Plan; PSPRS training agendas, training schedules and training class sign-in sheets; staff surveys; and HR email and calendar records.

The audit results confirm that PSPRS leadership is aware of and monitoring progress towards the achievement of the FY2018 HR goals and initiatives. However, in support of PSPRS’ ongoing improvement efforts, the internal auditor recommends continued emphasis in four specific HR areas as outlined below:

3.1 Improvement Opportunity 1 – Strategic Objectives

The PSPRS FY2018 Strategic Plan states that employee engagement is an area of risk that should be addressed in FY2018. However, the FY2018 HR objectives do not include a specific goal or initiative to address employee engagement.

Recommendation 1

3.1.a Human Resources Director: Ensure that the PSPRS FY2019 Strategic Plan includes an HR objective specific to employee engagement.

3.2 Improvement Opportunity 2 – Strategic Objectives

The PSPRS FY2018 Strategic Plan requires that PSPRS perform a personnel supply, needs and gap analysis to outline PSPRS’ current job vacancies; anticipate future job vacancies; and analyze PSPRS’ ability to meet said outcomes. As of June 21, 2018, approximately 30% of the gap analysis is complete, which includes plans to address staff retirements occurring within the next 3 years.

Recommendation 2

3.2.a Human Resources Director: Ensure that the PSPRS FY2019 Strategic Plan includes the continuation of this gap analysis as a rollover initiative.

3.3 Improvement Opportunity 3 – Strategic Objectives

The PSPRS FY2018 Strategic Plan requires that PSPRS conduct personnel succession planning for Member Services. As of June 21, 2018, this objective is 25% complete, equating to a completed succession plan for one Member Services manager.

Recommendation 3

3.3.a Human Resources Director: Ensure that the PSPRS FY2019 Strategic Plan includes this succession planning activity as a rollover initiative.

3.4 Improvement Opportunity 4 – Strategic Objectives and Training

The PSPRS FY2018 Strategic Plan requires the implementation of a cross-functional skills training program for Member Services. As of June 21, 2018, a cross-functional skills training program has yet to be established.
Recommendation 4

3.4.a Human Resources Director: Ensure that the PSPRS FY2019 Strategic Plan includes a cross-functional skills training program as a rollover initiative.

The internal auditor will perform a validation audit of the corrective actions taken to address the opportunities within 30 to 90 days of the corrective action implementation date before closing the audit. Following the validation audit, the maintenance of effective controls remains the responsibility of PSPRS leadership and not that of the auditor.

4.0 LEADERSHIP RESPONSE

An official response to the internal audit improvement opportunities and recommendations is due in writing to the internal auditor by Friday, August 17, 2018. The response should describe the corrective action strategy, any preventive measures taken and the action plan implementation date or timeline. If leadership determines that corrective actions/preventive measures are not required, the basis for that determination should be included in the response.
To: Lisa Sweeting  
   Internal Auditor  

From: Patricia Shaner  
   HR Director  

In response to your audit findings and recommendations for AR-2018-22, I offer the following comments.

Improvement Opportunity 1: Strategic Objectives

The PSPRS FY2018 Strategic Plan states that employee engagement is an area of risk that should be addressed in FY2018. However, the FY2018 HR objectives do not include a specific goal or initiative to address employee engagement.

Recommendation 1

Human Resources Director: Ensure that the PSPRS FY2019 Strategic Plan includes an HR objective specific to employee engagement.

Response: The PSPRS FY2019 Strategic Plan includes the above recommendation. However the performance measure has not been identified. This will be completed during the Strategic Consultant assessment and assistance in developing an integrated 3-5 year strategic business plan for PSPRS.

Improvement Opportunity 2: Strategic Objectives

The PSPRS FY2018 Strategic Plan requires that PSPRS perform a personnel supply, needs and gap analysis to outline PSPRS’ current job vacancies; anticipate future job vacancies; and analyze PSPRS’ ability to meet said outcomes. As of June 21, 2018, approximately 30% of the gap analysis is complete, which includes plans to address staff retirements occurring within the next 3 years.

Recommendation 2

Human Resources Director: Ensure that the PSPRS FY2019 Strategic Plan includes the continuation of this gap analysis as a rollover initiative.

Response: The PSPRS FY2019 Strategic Plan includes the above recommendation. However the performance measure has not been identified. This will be completed during the Strategic Consultant assessment and assistance in developing an integrated 3-5 year strategic business plan for PSPRS.
Improvement Opportunity 3: Strategic Objectives

The PSPRS FY2018 Strategic Plan requires that PSPRS conduct personnel succession planning for Member Services. As of June 21, 2018, this objective is 25% complete, equating to a completed succession plan for one Member Services manager.

Recommendation 2

Human Resources Director: Ensure that the PSPRS FY2019 Strategic Plan includes this succession planning activity as a rollover initiative.

Response: The PSPRS FY2019 Strategic Plan includes the above recommendation. However, the performance measure has not been identified. This will be completed during the Strategic Consultant assessment and assistance in developing an integrated 3-5 year strategic business plan for PSPRS.

Improvement Opportunity 4: Strategic Objectives

The PSPRS FY2018 Strategic Plan requires the implementation of a cross-functional skills training program for Member Services. As of June 21, 2018, a cross-functional skills training program has yet to be established.

Recommendation 4

Human Resources Director: Ensure that the PSPRS FY2019 Strategic Plan includes a cross-functional skills training program as a rollover initiative.

Response: The PSPRS FY2019 Strategic Plan includes the above recommendation. However, the performance measure has not been identified. This will be completed during the Strategic Consultant assessment and assistance in developing an integrated 3-5 year strategic business plan for PSPRS.
PSPRS RECORDS MANAGEMENT PLAN AUDIT

INTERNAL AUDIT DATE
In accordance with the PSPRS FY2018 Internal Audit Plan, an audit of the PSPRS Records Management Plan was conducted on Tuesday, June 26, 2018.

INTERNAL AUDIT PURPOSE AND SCOPE
The purpose of the PSPRS Records Management Plan audit was to verify adherence to the rules and guidelines for handling PSPRS records throughout the records management lifecycle.

DEPARTMENT
The PSPRS Records Management Plan is implemented and maintained by the PSPRS Records Officer.

INTERNAL AUDITOR
The audit of the PSPRS Records Management Plan was conducted by Lisa Sweeting, PSPRS Internal Audit Officer.

INTERNAL AUDIT REPORT DISTRIBUTION

PSPRS BOARD OF TRUSTEES
- Brian P. Tobin, Chairman
- William T. Buividas, Vice Chairman
- William C. Davis, Trustee
- Edward J. McNeill, Trustee
- Harry A. Papp, Trustee
- Bryan Raines, Trustee
- Mike Scheidt, Trustee
- Dean M. Scheinert, Trustee
- Donald A. Smith, Jr., Trustee

PSPRS SYSTEM ADMINISTRATORS
- Jared A. Smout, Administrator
- Dave DeJonge, Deputy Administrator
- Mark Steed, Interim Chief Investment Officer

PSPRS DEPARTMENT AND FUNCTIONAL MANAGERS
- PSPRS managers and staff receive internal audit reports as appropriate to each audit engagement.

INTERNAL AUDIT REPORT APPROVAL

<table>
<thead>
<tr>
<th>Number</th>
<th>Auditor</th>
<th>Submitted</th>
<th>Administrator</th>
<th>Approved</th>
</tr>
</thead>
</table>
1.0 INTERNAL AUDIT ENGAGEMENT METHODOLOGY

The overall objective of the Public Safety Personnel Retirement System (PSPRS or System) internal audit engagements is to provide the PSPRS Board of Trustees, Administrators and staff with objective and independent appraisals of internal quality controls and administrative processes, and the extent to which they are advancing PSPRS in the achievement of charters and strategic goals and initiatives as identified in the PSPRS Board of Trustees Governance Manual; PSPRS Strategic Plan; PSPRS Risk Assessment and PSPRS Internal Audit Plan.

As outlined in the PSPRS Internal Audit Guide (IAO-GUIDE-001), a defined set of quality improvement tools (PDCA and DMAIC cycles); control structures (statutes, systems, portals, policies, procedures and forms); and audit engagement methodologies (IIA International Professional Practices Framework, ISO Quality Management System Standard, best practices and lessons learned) are applied to carry out the purpose, scope and operational and compliance goals of each audit. The application of these rules, methods and frameworks ensures that audits are planned and performed to obtain sufficient and appropriate evidence that provides a reasonable basis for audit findings, opportunities, risks and recommendations.

The PSPRS audit engagement methodology also focuses on short duration, highly concentrated audits in lieu of long, drawn-out audits where the loss of focus and momentum becomes a real risk. The internal auditor normally conducts weekly audits of 60 to 90 minutes in duration, instead of infrequent month/quarter-long audits. This approach is much easier for the internal auditor to implement and monitor and appears to be less taxing and disruptive to business and team activities. In addition, conducting frequent, narrowly-scoped audits creates more exposure and exchanges between the internal auditor and staff members. The more comfortable that staff members are with the internal auditor and internal audit process (audit phases, leadership responses, corrective action plans, turnaround times, etc.) the less unwelcoming audits will feel.

Internal audits are not designed to identify all nonconformances or deficiencies in internal controls. For example, as the audit progresses, the internal auditor regularly questions whether continuing to sample evidence once targets are achieved or a pattern is established (per the audit purpose and scope) is in the best interest of PSPRS resources. To maximize audit coverage due to limited internal audit resources, the internal auditor utilizes a "Stop and Go" audit approach, which focuses on continuously assessing risks and adjusting the audit approach and sampling throughout the engagement. By continuously evaluating risk, the auditor may determine at any phase of the audit that no further work is needed to conclude the effectiveness of the controls. The auditor may determine that the chance of the audit deviating from the demonstrated norm is unlikely and end the audit before the full sample size is reached or all planned activities are concluded. This approach enables the auditor to focus on performing value added audits that respect PSPRS’ strategic, compliance and audit objectives and the auditor’s and auditee’s time.

2.0 INTERNAL AUDIT BACKGROUND AND CRITERIA

The PSPRS Internal Auditor performed a process audit of the individual steps and activities included in the PSPRS Records Management Plan. Process audits are powerful in that they identify risks, procedural gaps and improvement opportunities, while also identifying best practices and areas of strength. Since most quality frameworks contain effective yet minimal controls, process audits allow for the review of all controls to ensure they are working to the benefit of PSPRS. Process audits go beyond the narrow control elements defined in compliance and standards audits, because
processes are controlled by parameters (requirements and procedures) that can be dynamically adjusted to suit System needs and improve process outcomes.

The purpose of the PSPRS Records Management Plan process audit was to verify adherence to the rules and guidelines for handling PSPRS records throughout the records management lifecycle. The Arizona Revised Statutes (ARS) and Arizona Library, Archives and Public Records Office (LAPR) provide the PSPRS Records Officer with the requirements and best practices necessary for the development of PSPRS’ internal records management policies, plans, projects and objectives.

The ARS and LAPR records retention requirements and best practices pertain to general/cross-functional requirements, to include email, electronic records, essential records (for disaster recovery), media storage and handling, metadata, permanent and historical records, public records and social media. In addition, guidance exists pertaining to department-specific records, such as finance, human resources, information technology, internal audit and legal (to name a few).

In order to institute and maintain compliance with the ARS and LAPR directives, the PSPRS Records Officer developed the PSPRS Records Management Plan. The plan establishes PSPRS’ records management program framework; outlines the records creation, use, retention and disposition activities; and incorporates the policy statements that govern the following categories and areas of responsibility:

2.1 Records Management Authority
2.2 Records Definition (official records versus transitory records)
2.3 Public Records
2.4 Electronic Records
2.5 Records Management and Information Systems
2.6 Records Management Monitoring and Review (compliance activities)
2.7 Records Management Roles and Responsibilities (PSPRS staff, department managers, executive leadership, legal department, information technology, information governance group, and records officer)

The criteria reviewed to conduct the PSPRS Records Management Plan process audit include:

- Arizona Revised Statutes (pertaining to records management, as presented by LAPR)
- Arizona State Library, Archives and Public Records (LAPR) Retention Schedules
  - https://azlibrary.gov/arm/retention-schedules
- PSPRS Records Management Plan (RIM-POLICY-001) – February 2018
- PSPRS Public Records Guide (pending approval, not considered in audit evidence or findings)
- PSPRS Public Records Request Tracker (RIM-INDEX-003) – March 2018
- PSPRS Certificates of Records Destruction (for finance, information technology, investments and retired member services) – January 2018 and May 2018
- PSPRS Certificates of Records Destruction – LAPR Certificate Submission Emails – February 2018 and May 2018
- PSPRS Essential Records Listing – December 2014 (*A document update is to occur before the FY2019 internal audit. Updates are required every five years.*)
- PSPRS Personnel Structure Chart – May 2018
- International Organization for Standardization (ISO) Records Management Program Standard 15489 (*referenced only, not considered in audit evidence or findings*)
- International Organization for Standardization (ISO) Electronic Management System Standard 16175 (*referenced only, not considered in audit evidence or findings*)

The application of the above audit criteria was left to the experience and judgment of the internal auditor. However, the PSPRS Internal Audit Guide and quality management system standards specified in Section 1.0 continue to provide the rules, framework and guidance necessary to bring about an independent, disciplined and sound audit approach and outcome.

### 3.0 INTERNAL AUDIT RESULTS

The results of the PSPRS Records Management Plan process audit conducted as part of the FY2018 Internal Audit Plan are documented in this report in the form of improvement opportunities and internal auditor recommendations. The audit process required a one-on-one meeting between the PSPRS Internal Auditor and the PSPRS Records Officer to review the PSPRS Records Management Plan. The audit fieldwork included a thorough verification of the written/approved records management policies; review of supporting documentation; Records Officer statements; auditor observations and analysis; and a sampling of records management forms and email records for January, February and May 2018 (*refer back to page 3*).

The audit results support that the Records Officer is aware of the requirements and best practices as set forth by the Arizona Revised Statutes and Arizona Library, Archives and Public Records and is working with the PSPRS Administrators, Department Managers, Compliance Officer, Security Officer, Human Resources Director and Legal department to achieve full compliance with said directives. However, in support of PSPRS' continuous improvement efforts, **three improvement opportunities** along with recommendations on how to address the opportunities were identified. The opportunities pertain to leadership and staff acknowledgement and acceptance of the documented records management policies, as follows:

#### 3.1 Improvement Opportunity 1 – Policies

The PSPRS Records Management Plan (RIM-POLICY-001), Section 9.0 – Monitoring and Review states, “Typical audits and assessments may include monitoring business system compliance with ISO 16175 (electronic management systems) and ISO 15489 (records management programs).” However, the PSPRS Administrators have not formally approved these standards for implementation, independent of the records management plan approval.

**Recommendation 1**

3.1.a **PSPRS Records Officer:** Schedule a meeting with the PSPRS Administrator, Deputy Administrator and Compliance Officer to review and discuss the ISO 16175 and 15489 standards. If the standards are approved for incorporation into the PSPRS Records Management Plan, no action is required. If the standards are not approved or are approved
3.2 Improvement Opportunity 2 – Policies and Records

The PSPRS Records Management Plan (RIM-POLICY-001), Section 5.0 – Authority states, “This policy is approved by the Administrator, Deputy Administrator, System Attorney and Compliance Officer.” However, current email records do not explicitly demonstrate approval of the records management plan by these specific individuals.

Recommendation 2

3.2.a **PSPRS Records Officer:** Distribute the PSPRS Records Management Plan to the PSPRS Administrator, Deputy Administrator, Compliance Officer and Assistant Attorney General, requesting plan approval. Please retain the approval records as supporting evidence until superseded.

3.3 Improvement Opportunity 3 – Policies and Records

The PSPRS Records Management Plan (RIM-POLICY-001) includes a Policy Acknowledgement (as an attachment) to be signed by each PSPRS staff member. However, staff members have not formally recognized/signed the acknowledgement.

Recommendation 3

3.3.a **PSPRS Records Officer:** Meet with the PSPRS HR Director and PSPRS Compliance Officer to confirm that the records management plan is suitable (contains the proper elements) for staff acknowledgement. If so, develop a method of gaining and maintaining staff signatures. If not, remove the policy acknowledgement/attachment from the written plan.

The internal auditor will perform a validation audit of the corrective actions taken to address the opportunities within 30 to 90 days of the corrective action implementation dates before closing the audit. Following the validation audit, the maintenance of effective controls remains the responsibility of PSPRS leadership and not that of the auditor.

4.0 LEADERSHIP RESPONSE

An official response to the internal audit improvement opportunities and recommendations is due in writing to the internal auditor by **Monday, August 27, 2018.** The response should describe the corrective action strategy, any preventive measures taken and the action plan implementation dates or timeline. If leadership determines that corrective actions/preventive measures are not required, the basis for that determination should be included in the response.
August 22, 2018

Dear Ms. Sweeting,

In response to your audit report AR-2018-23, there were three improvement opportunities for the PSPRS Records Management Plan (RIM-POLICY-001). This communication serves as my formal response for your records.

**Improvement Opportunity 1 – Policies**

The PSPRS Records Management Plan (RIM-POLICY-001), Section 9.0 – Monitoring and Review states, "Typical audits and assessments may include monitoring business system compliance with ISO 16175 (electronic management systems) and ISO 15489 (records management programs)." However, the PSPRS Administrators have not formally approved these standards for implementation, independent of the records management plan approval.

**Recommendation 1**

3.1.a PSPRS Records Officer

Schedule a meeting with the PSPRS Administrator, Deputy Administrator and Compliance Officer to review and discuss the ISO 16175 and 15489 Standards. If the standards are approved for incorporation into the PSPRS Records Management Plan, no action is required. If the standards are not approved or are approved in part or with conditions, please update the Records Management Plan accordingly.

**Comment from Records Officer:**

_A meeting was scheduled on August 15, 2018, with the Administrator, Deputy Administrator and Compliance Officer._

_An overview was given to them of how ISO 15489 and ISO 16175 apply to records management programs and the management of electronic records in recordkeeping systems._

_Although, these standards include ideal functionalities and industry standards of a fully implemented records management program, they can also be used to measure our maturity in key areas of records management without penalizing our agency or the program just because_
we have not matured in some areas yet. I will make changes to the Records Management Plan to reflect the final agreed upon verbiage by August 31st that will most likely include using standards as tools for monitoring our systems and records program to align with them.

**Improvement Opportunity 2 – Policies and Records**

The PSPRS Records Management Plan (RIM-POLICY-001), Section 5.0 – Authority states, "This policy is approved by the Administrator, Deputy Administrator, System Attorney and Compliance Officer." However, current email records do not explicitly demonstrate approval of the records management plan by these specific individuals.

**Recommendation 2**

**3.2.a PSPRS Records Officer:**

Distribute the PSPRS Records Management Plan to the PSPRS Administrator, Deputy Administrator, Compliance Officer and Assistant Attorney General, requesting plan approval. Please retain the approval records as supporting evidence until superseded.

**Comment from Records Officer:**

*The RIM-POLICY-001 was originally submitted in February 2018 for approval to Administrator and Deputy Administrator after receiving comments from various members of managers and supervisors who reviewed draft and in favor of submission for final approval.*

*This policy will be resubmitted for approval once the ISO language is changed to reflect my comments in 3.1. Goal for obtaining approval and posting within KIM Portal (September 7th 2018).*

**Improvement Opportunity 3 – Policies and Records**

The PSPRS Records Management Plan (RIM-POLICY-001) includes a Policy Acknowledgement (as an attachment) to be signed by each PSPRS staff member. However, staff members have not formally recognized/signed the acknowledgement.

**Recommendation 3**

**3.3.a PSPRS Records Officer:**

Meet with the PSPRS HR Director and PSPRS Compliance Officer to confirm that the records management plan is suitable *(contains the proper elements)* for staff acknowledgement. If so, develop a method of gaining and maintaining staff signatures. If not, remove the policy acknowledgement/attachment from the written plan.

**Comment from Records Officer:**
A meeting was scheduled with Patricia Shaner on August 2, 2018 to discuss the suitability of employee acknowledgment forms for use with official PSPRS Policies and Procedures. Patricia is in agreement that these forms are desirable and should be put to use, however, we need to ensure employees ‘own’ the policies they sign even if we don’t use such a form.

A test e-signature form was created using the original verbiage for the acknowledgement form Patricia created for the PSPRS Dress Code Policy.

Using the Adobe signature tool, an e-signature line was added to the document and tested for ease of use by both Patricia Shaner and Timothy Jackson. With the goal of creating workflows from within SharePoint in the near future, a discussion was still needed to decide how and when to implement this type of e-signature form.

I met again with Patricia Shaner and Timothy Jackson on August 16, 2018 to discuss these forms once more and to collaborate on how we should best go about implementing them.

One question that has come up is if an e-signature is legally valid. The answer to this is yes. Per ARS § 18-106(B), unless otherwise provided by law, an electronic signature that complies with this section may be used to sign a writing on a document that is filed by a state agency, board or commission, and the electronic signature has the same force and effect as a written signature.

The exception to this rule applies to returns, statements and other documents filed pursuant to titles 42 (Taxation) and 43 (Taxation of Income) and those as described in title 39 (Public Records), chapter 1, article 2.

A decision was made to first meet with the Administrator and Deputy Administrator in two to three weeks from the date of the August 16th meeting in order to first obtain their approval for the use of such a document(s).

If approved, we will work to test and roll out this acknowledgment form beginning next 2019 calendar year (on System’s policies only). We would like to focus on using these forms starting day-forward on policies that are new or revised. They will not be used to collect signatures for existing policies in SharePoint that were put into effect before the implementation.

If no approval is granted to use this form (for any reason), we will abandon the use of this particular e-signature form and continue to collaborate with IT and management on ways to reduce the amount of physical handling of internal documents that require signatures. This may be accomplished with the creation of workflows to import such documents into SharePoint automatically after e-signing action has been completed on the document(s).

The benefits of using e-signatures:
- Reduced paper handling
- Tracking capabilities
• Lessens number of steps and people involved in scanning, maintaining and disposing of paper
• Can be incorporated into workflows for approval processes where multiple approvers may be required (purchase orders, new employee onboarding, policy and procedure approvals, employee reimbursements, etc.)
• Accountability
• Transparency

Action Item: Obtain approval for use of such forms then roll out next calendar year per comments made in 3.3a. The Employee Acknowledgement form will be removed from RIM-POLICY-001 before it is re-sumitted for approval as recommended in 3.2a.

If you have any questions about these responses, please don’t hesitate to meet with me so we can discuss further.

Sincerely.

Ruben D. Vargas
PSPRS Records Officer
## 2019 PSPRS BOARD OF TRUSTEES / COMMITTEE MEETINGS & CONFERENCE SCHEDULE

<table>
<thead>
<tr>
<th>January</th>
<th>February</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="calendar.jpg" alt="Calendar" /></td>
<td><img src="calendar.jpg" alt="Calendar" /></td>
<td><img src="calendar.jpg" alt="Calendar" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>April</th>
<th>May</th>
<th>June</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="calendar.jpg" alt="Calendar" /></td>
<td><img src="calendar.jpg" alt="Calendar" /></td>
<td><img src="calendar.jpg" alt="Calendar" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>July</th>
<th>August</th>
<th>September</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="calendar.jpg" alt="Calendar" /></td>
<td><img src="calendar.jpg" alt="Calendar" /></td>
<td><img src="calendar.jpg" alt="Calendar" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>October</th>
<th>November</th>
<th>December</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="calendar.jpg" alt="Calendar" /></td>
<td><img src="calendar.jpg" alt="Calendar" /></td>
<td><img src="calendar.jpg" alt="Calendar" /></td>
</tr>
</tbody>
</table>

### Key Dates

- **January**
  - 1: New Year’s Day
  - 9-11: OPAL Public Funds Summit
  - 21: Martin Luther King, Jr./Civil Rights Day
  - 23: Board of Trustees/Committee Meetings
  - 27-29: NCPERS Legislative Conference
  - 31-Feb 1: NEPC Public Funds Workshop

- **February**
  - 12: DC Committee Meeting
  - 18: Lincoln/Washington Presidents’ Day
  - 23-25: NASRA Winter Meeting
  - 26: Board of Trustees/Committee Meetings
  - 27 Mar 1: OPAL Investment Education Symposium

- **March**
  - 27: Board of Trustees/Committee Meetings
  - 24: Board of Trustees/Committee Meetings
  - 29-May 2: WHARTON / IFEBP Advanced Investment Management

- **April**
  - 7-8: NEPC Annual Investment Conference
  - 14: DC Committee Meeting
  - 18-19: NCPERS Trustee Educational Seminar (Teds)
  - 19-22: NCPERS Annual Conference & Exhibition
  - 27: Memorial Day

- **May**
  - 11: NAGDCA Annual Conference
  - 10-14: WHARTON Invest Strategy & Portfolio Management
  - 26: Board of Trustees/Committee Meetings

- **June**
  - 4: Independence Day
  - 22-24: WHARTON / IFEBP International & Emerging Market Investing
  - 22-24: OPAL Public Funds Summit East
  - 3-7: NASRA Annual Conference

- **July**
  - 2: Labor Day
  - 8-11: NAGDCA Annual Conference
  - 11-13: NCPERS Public Pension Funding Forum

- **August**
  - 2-4: WHARTON Invest Strategy & Portfolio Management
  - 27-29: WHARTON Invest Strat

- **September**
  - 2: Columbus Day
  - 14: WHARTON Invest Strategy & Portfolio Management
  - 21: NEPC Annual Investment Conference
  - 27: Annual Board of Trustees Meeting

- **October**
  - 8-11: NEPC Annual Investment Conference
  - 11: OPA

- **November**
  - 14: OPAL Public Funds Summit
  - 21-25: WHARTON Invest Strategy & Portfolio Management
  - 27-30: NEPC Public Safety Conference

- **December**
  - 18: Board of Trustees/Committee Meetings
  - 28: Thanksgiving Day
  - 25: Christmas Day