The Meeting of the Board of Trustees of the Public Safety Personnel Retirement System (the “PSPRS” or “System”) will be held in the main public conference room of the administrative offices of PSPRS, 3010 East Camelback Road, Suite 200, Phoenix, Arizona 85016, commencing at 12:30 p.m. on Wednesday, March 1, 2017. The meeting will continue until 5:00 p.m. or until the matters set forth in this agenda are otherwise addressed. Members of the Board of Trustees will attend either in person or by telephonic conference call. The Board of Trustees may vote to hold an executive session, which will not be open to the public, to discuss certain matters. The Board of Trustees reserves the right to consider agenda items out of their listed order.

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

1. Call to Order; Pledge of Allegiance; Roll Call; Opening remarks.  
   
   Mr. Brian P. Tobin  
   Chairman

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

3. 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 normal retirement benefit of Mark Anderson.
   
   c. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Linda Arzoumanian.
   
   d. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Karla Brewster.
e. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Carmine Cornelio.

f. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Charles Donofrio III.

g. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Dolores J. Doolittle.

h. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Alex Finter.

i. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Wyn C. Gibbs.


k. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Frederick Heumann.


m. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of John S. Insalaco.

n. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Stephanie Karlin.

o. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Dennis Kavanaugh.


q. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Kenneth Malloque.

r. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Arthur Markham.

s. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Diane McCune-Davis.

t. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of James McDonald.


w. Acceptance of Elected Officials' Retirement Plan of termination of normal retirement benefit of James P. Stapley.

x. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Bob Stump.

y. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Bruce Wheeler.

z. Acceptance of Transfer Between State Retirement Systems of Brian Mackiewicz.

aa. Acceptance of Transfer Between State Retirement Systems of Salvador Lascano.

bb. Acceptance of Transfer Between State Retirement Systems of Sharon Hollingsworth.

cc. Acceptance of Transfer Between State Retirement Systems of Daniel Waltuch.

dd. Acceptance of Transfer Between State Retirement Systems of Robert Isaacson.

e. Acceptance of Transfer Between State Retirement Systems of Mark Savage.

ff. Acceptance of Transfer Between State Retirement Systems of Sara Colbert.


hh. Acceptance of Transfer Between State Retirement Systems of Darin George.

ii. Acceptance of Transfer Between State Retirement Systems of Allen Johnson.


kk. Acceptance of Transfer Between State Retirement Systems of Jeff Huskey.

ll. Acceptance of Transfer Between State Retirement Systems of Mark La Scala.

mm. Acceptance of Transfer Between State Retirement Systems of Tyon Downing.

nn. Acceptance of Transfer Between State Retirement Systems of Clifton Bryson.

oo. Acceptance of Transfer Between State Retirement Systems of Scott Miller.


qq. Acceptance of Transfer Between State Retirement Systems of Thomas Beck.

rr. Acceptance of Transfer Between State Retirement Systems of Michael Gaspar.
Acceptance of Transfer Between State Retirement Systems of Vicky Newsham.

Acceptance of Transfer Between State Retirement Systems of Gregory Miller.

Acceptance of Transfer Between State Retirement Systems of Desiree Sanchez.

Acceptance of Transfer Between State Retirement Systems of John Taylor.

Acceptance of Transfer Between State Retirement Systems of Scott Somers.

Approval of the Minutes of the following meetings: November 10, 2016 Meeting of the PSPRS Pending Board of Trustees; January 25, 2017, January 27, 2017 and February 9, 2017 Meetings of the PSPRS Board of Trustees.

Mr. Brian P. Tobin

4. Appropriate Action regarding the approval of two (2) La Paz County Applications for Membership Waiver of participation.

Mr. Brian P. Tobin

Report by Mr. William Davis, Chairman of the Investment Committee, regarding agenda items 5 through 9, which were discussed at the Investment Committee meeting held today, March 1, 2017 on or after 10:00 a.m., and possible Action on the Committee’s recommendations to the Board regarding same.

5. Presentation / Written report by Investment Department Staff regarding Portfolio Risk as of December 31, 2016.

Mr. Owen Zhao
Portfolio Analyst - Risk

6. 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 December 31, 2016; 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. Presentation and discussion by NEPC representative(s) on the 2nd FY Quarter (4th CY Quarter) investment performance and the 2016/2017 Fiscal Year-to-Date investment performance for the Arizona PSPRS Trust.

Mr. Allan Martin
NEPC, LLC.

8. Presentation and discussion by Investment Department Staff and Consultants regarding the annual Overview and Strategic Plan for the Private Equity portfolio.

Mr. Shan Chen, Lead Portfolio Manager
Mr. William Thatcher, Lead Portfolio Manager
Mr. Jay Rose, Stepstone
Mr. Weichou Su, Stepstone
Mr. David Hutchings, Albourne Consultants
9. 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 £50 million for direct investment and a reserve allocation of up to £30 million for purposes of co-investment with Clearbell Fund 3, in the Real Estate portfolio, subject to final Staff and legal due diligence.

2. Disclosure of a potential investment of up to $25,000,000 for direct investment purposes and a reserve allocation of up to $20,000,000 with BioInnovation Capital Partners, in the Private Equity portfolio, subject to final Staff and legal due diligence.

B. Disclosure of closed transactions for this period:

1. Mountain Capital Partners LP Fund; Committed amount up to $65 million direct and a reserve allocation of up to $30 million for purposes of co-investment; Date Closed: November 15, 2016; This investment is allocated to PSPRS Trust Asset Class: Real Assets.

2. Actis Energy 4 Fund; Committed amount of up to $60 million direct and a reserve allocation of up to $30 million for purposes of co-investment; Date Closed: December 22, 2016; This investment is allocated to PSPRS Trust Asset Class: Real Assets.

3. Catalyst European Property Fund II; Committed amount of up to €15 million direct investment; Date Closed: December 15, 2016; This investment is allocated to PSPRS Trust Asset Class: Real Estate.

4. Bluescape Energy Recapitalization & Restructuring Fund III; Committed amount of up to $50 million direct and a reserve allocation of up to $40 million for purposes of co-investment; Date Closed: December 5, 2016; This investment is allocated to the PSPRS Trust Asset Class: Real Assets.

5. Trident VII, LP Fund; Committed amount of up to $30 million direct and a reserve allocation of up to $30 million for purposes of co-investment; Date Closed: December 2, 2016; This investment is allocated to PSPRS Trust Asset Class: Private Equity.

C. Disclosure of completed transactions:

1. Brevan Howard Master Fund; This investment was allocated to PSPRS Asset Class: GTAA.

2. Eagle Small Cap Growth Strategy; This investment was allocated to PSPRS Asset Class: US Equity.

3. THB Micro Cap Strategy and THB Small Cap Strategy; These investments were allocated to PSPRS Asset Class: US Equity.
4. Gotham Institutional Select Fund; AZ Gotham Hedged Value Strategies (GHVS) 140-40; AZ Gotham Diversified Hedge Strategy (GDH) 115-65; AZ Gotham Diversified Hedge Strategy (GDH) 140-40; and AZ Gotham Hedged Value Strategies (GHVS) 115-65. These investments were allocated to PSPRS Asset Class: US Equity.

Jennifer Eichholz, Esq.
In-House Investment Counsel

Presentation by Mr. Edward J. McNeill, Vice Chairman of the Operations, Governance Policy and Audit Committee, regarding agenda items 10 through 19, which were discussed at the Operations, Governance Policy and Audit Committee meeting held today, March 1, 2017, on or after 10:30 a.m., and possible Action on the Committee’s recommendations to the Board regarding same.

10. Presentation of the Operations Update Report and possible Action. Mr. Dave DeJonge Deputy Administrator

11. Presentation of the Month-to-Date Budget Report for FY 2017 and possible Action. Mr. John Hendricks Manager Finance and Accounting

12. Presentation of the Local Board & Employer Outreach Report and possible Action. Mr. Don Mineer Local Board Training Coordinator

13. Presentation of the Strategic Plan Progress Report and possible Action. Mr. John Briney Enterprise Systems Architect

14. Presentation of the Requests for Local Board Rehearing Report for the current month and possible Action. Ms. Michelle Pechan Paralegal

15. Presentation on PSPRS communication efforts and possible Action. Mr. Christian Palmer Communications Director

16. Presentation of progress on implementation of Auditor General Recommendations as agreed to in their Performance Audit and Sunset Review and possible Action. Mr. Dave DeJonge

17. Review and discussion regarding law firms’ billings for legal services performed in January and February, 2017. Ivy Voss, Esq. Assistant Attorney General

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

19. Review, discussion and possible Action on Governance Manual updates. Mr. Dave DeJonge
20. Presentation, discussion and possible Action regarding the 5-year experience study and recommendations to changes in or adoptions of actuarial methods or assumptions with respect to the PSPRS Plans and Tiers made by Gabriel, Roeder, Smith & Company.

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

21. Review, discussion and possible Action on the PSPRS Actuarial Funding Policy.

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

22. Discussion and possible Action regarding nominations to be sent to Arizona Governor Doug Ducey for consideration as the ninth Newly Appointed Trustee.

Mr. Brian P. Tobin

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

Mr. Brian P. Tobin

24. 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, Hall and Fields. 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 25.

25. 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 council 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 24, 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, including the Administrator's Annual Performance Review, as authorized by A.R.S § 38-431.03(A)(1).
26. Schedule future meeting date(s). (Currently scheduled for Wednesday, March 29, 2017.)

27. Adjournment.

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

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Michelle Pechan, Paralegal, 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 10, 2016

MINUTES

Present:  
Mr. Brian Tobin, Trustee
Mr. William T. Buividas, Trustee
Mr. William C. Davis, Trustee
Mr. Edward J. McNeill, Trustee
Mr. Bryan Raines, Trustee
Mr. Mike Scheidt, Trustee
Mr. Dean M. Scheinert, Trustee
Mr. Donald A. Smith, Jr., Trustee

Others Present:  
Mr. Jared Smout, Administrator
Mr. Dave DeJonge, Deputy Administrator
Mr. Christian Palmer, Communications Director

1. Call to Order; Roll Call; Opening remarks

The meeting was called to order at 4:00 p.m.

2. Election of Chairman of the Board of the PSPRS Board of Trustees.

<table>
<thead>
<tr>
<th>MOTION 1-119/10/16</th>
<th>At 4:01 p.m.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion:</td>
<td>To nominate Mr. Tobin to serve as chairman of the PSPRS Board of Trustees.</td>
</tr>
<tr>
<td>Moved by:</td>
<td>Mr. Davis</td>
</tr>
<tr>
<td>Seconded by:</td>
<td>Mr. Buividas</td>
</tr>
<tr>
<td>Discussion:</td>
<td>None</td>
</tr>
<tr>
<td>In Favor:</td>
<td>Unanimous</td>
</tr>
<tr>
<td>Motion:</td>
<td>Passes: one vacant Board position</td>
</tr>
</tbody>
</table>

3. Action regarding the adoption of the PSPRS Advisory Committee Charter.

Administrator Smout explained that the PSPRS Advisory Committee was created by recent pension reform legislation as a new liaison between members of the System and the Board of Trustees. Going forward, the Advisory Committee Charter can be modified. The Charter sets out expectations, roles and responsibilities of the Advisory Committee. Suggestions have been made regarding possible future changes.

<table>
<thead>
<tr>
<th>MOTION 2-119/10/16</th>
<th>At 4:07 p.m.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion:</td>
<td>To approve the PSPRS Advisory Charter as drafted by the Administrator.</td>
</tr>
<tr>
<td>Moved by:</td>
<td>Mr. Buividas</td>
</tr>
<tr>
<td>Seconded by:</td>
<td>Mr. McNeill</td>
</tr>
<tr>
<td>Discussion:</td>
<td>None</td>
</tr>
<tr>
<td>In Favor:</td>
<td>Unanimous</td>
</tr>
<tr>
<td>Motion:</td>
<td>Passes: one vacant Board position</td>
</tr>
</tbody>
</table>
4. **Action** regarding the appointment of the PSPRS Advisory Committee members.

_Elected Chairman_

The Chairman of the Board has statutory authority to appoint the members of the Advisory Committee and the initial deadline of November 11, 2016 was imposed for nominations to be given. We do not have nominations for all of the ten seats, so we are hoping to receive more before tomorrow. However, since November 11, 2016, is Veterans Day, the deadline was extended by the Chairman to 5 p.m. on Monday, November 14, 2016.

5. **Action** regarding the appointment of the Trustee to Chair the PSPRS Defined Contribution Committee.

_Elected Chairman_

<table>
<thead>
<tr>
<th>MOTION 3-11/21/16</th>
<th>At 4:16 p.m.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Motion:</strong></td>
<td>To appoint Mr. Buividas, Trustee to serve as chairman of the Arizona PSPRS Defined Contribution Committee.</td>
</tr>
<tr>
<td><strong>Moved by:</strong></td>
<td>Mr. Tobin</td>
</tr>
<tr>
<td><strong>Seconded by:</strong></td>
<td>Mr. McNeill</td>
</tr>
<tr>
<td><strong>Discussion:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>In Favor:</strong></td>
<td>Unanimous</td>
</tr>
<tr>
<td><strong>Motion:</strong></td>
<td>Passes: one vacant Board position</td>
</tr>
</tbody>
</table>

6. Discussion and possible **Action** regarding the process to determine the nominations to be sent to Governor Ducey for the ninth Trustee.

_Elected Chairman_

The Advisory Committee will be appointed by Monday, November 14, 2016. The Advisory Committee will then select nominees to submit to the Board of Trustees the names of those individuals they recommend to serve as the ninth member of the Board of Trustees. The Board of Trustees will then decide upon three names to submit to Governor Ducey on or before December 1, 2016 so that the Governor can select the ninth member of the PSPRS Board of Trustees. Chairman Tobin stated that, due to the time constraints, he would review the resumes with the Board via teleconference, if necessary, and forego the in-person interview, since such interview will be included as part of the Governor’s decision-making process in choosing the ninth Trustee from the three finalists.

7. **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.

Mr. Jim Mann, Fraternal Order of Police, Executive Director, thanked the Administrator and Staff for assisting his organization in accomplishing what has been put in place by the legislature.

8. **Schedule future meeting date(s).**

The next meeting will be held on Tuesday, November 15, 2016 at 9 a.m.

The meeting was adjourned at 4:37 p.m.

________________________________________
Brian P. Tobin, Chairman

________________________________________  _______________________________________
William T. Buvidas, Trustee, William C. Davis, Trustee

________________________________________  _______________________________________
Edward J. McNeill, Trustee Bryan Raines, Trustee

________________________________________  _______________________________________
Mike Scheidt, Trustee Dean M. Scheinert, Trustee

________________________________________
Donald A. Smith, Jr., Trustee
PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
BOARD OF TRUSTEES MEETING

January 25, 2017

MINUTES

Present:
Mr. Brian Tobin, Chairman, Trustee
Mr. William T. Buividas, Vice Chairman, Trustee
Mr. William C. Davis, Trustee
Mr. Edward J. McNeill, Trustee
Mr. Bryan Raines, Trustee
Mr. Mike Scheidt, Trustee
Mr. Dean M. Scheinert, Trustee
Mr. Donald A. Smith, Jr., Trustee
Mr. Jared Smout, Administrator

Others Present:
Mr. Dave DeJonge, Deputy Administrator
Mr. Ryan Parham, Chief Investment Officer
Ms. Ivy N. Voss, Esq., Assistant Attorney General
Ms. Rose Crutcher, Investment Paralegal
Mr. Paul Hemmes, Information Technology
Mr. Christian Palmer, Communications Director
Ms. Diane McAlister, Public Policy Partners
Mr. Doug Cole, HighGround
Mr. Tom Iannuci, President, Cortex
Mr. Clive Morgan, Consultant, Cortex

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

   The meeting was called to order by Chairman Tobin at 12:38 p.m. and the Pledge of Allegiance was recited.

   Mr. Brian P. Tobin
   Chairman

2. Recognition, appreciation and presentation of plaques to outgoing PSPRS Board of Trustees.

   Chairman Tobin expressed his appreciation and presented plaques to outgoing trustees Mr. Gregory Ferguson, Ms. Randie Stein and Mr. Richard Petrenka for their service to the PSPRS. Not in attendance to receive their plaques were Mr. Lauren Kingry and Mr. Jeff McHenry. Administrator Smout thanked these past Board of Trustees members for their work with the PSPRS.

   Mr. Brian P. Tobin

3. Call to the Public.

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

   There was no response to the Call to the Public.
4. **Appropriate Action** for approval of the items on the Consent Agenda (documentation concerning the matters on the consent agenda may be reviewed at the PSPRS office). Any matter on the Consent Agenda will be removed from the Consent Agenda and discussed as a regular agenda item upon the request of any member of the Board of Trustees.

b. Acceptance of Elected Officials' Retirement Plan of termination of normal retirement benefit of Gus Arzberger.
c. Acceptance of Elected Officials' Retirement Plan of survivor benefit of Marsha Arzberger.
d. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Paul R. Babeu.
e. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Trudy Berry.
g. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Raymond Carroll.
h. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Donald D. Covey.
i. Acceptance of Elected Officials' Retirement Plan of termination of normal retirement benefit of John Henry Cummings.
j. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Arlo G. Davis.
k. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Carmen Dolny.
l. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of James Driscoll, Jr.
m. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Kathleen Farr.
o. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Lenora Fulton.
r. Acceptance of Elected Officials' Retirement Plan of survivor benefit of Terry Garcia.
s. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Clancy Jayne.
w. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Rosa C. Mazon.
x. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of Barbara McGuire.
y. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Mandy R. Metzger.
z. Acceptance of Elected Officials' Retirement Plan of termination of survivor benefit of Carol Murphy.
ee. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Helen Purcell.
ff. Acceptance of Elected Officials' Retirement Plan of normal retirement benefit of Derek Rapier.
i. Acceptance of Elected Officials' Retirement Plan of early retirement benefit of David W. Rozema.
ll. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Paul Simon.
mm. Acceptance of Elected Officials’ Retirement Plan of normal retirement benefit of Lenore L. Stuart.
nn. Acceptance of Elected Officials’ Retirement Plan of termination of survivor benefit of Erna Thurston.
qq. Acceptance of Transfer Between State Retirement Systems of William Corrales.
rr. Acceptance of Transfer Between State Retirement Systems of Michael Barnett.
s. Acceptance of Transfer Between State Retirement Systems of Kurtis Dana.
tt. Acceptance of Transfer Between State Retirement Systems of Jose Loera.
uu. Acceptance of Transfer Between State Retirement Systems of Patrick Herron.
vv. Acceptance of Transfer Between State Retirement Systems of Sarah Liming.
ww. Acceptance of Transfer Between State Retirement Systems of Richard Temby.
xx. Acceptance of Transfer Between State Retirement Systems of Tony Tenaglia.
yy. Acceptance of Transfer Between State Retirement Systems of Janina Austin.
zz. Acceptance of Transfer Between State Retirement Systems of James Martinez.
aaa. Acceptance of Transfer Between State Retirement Systems of Nathan Auvenshine.
b. Acceptance of Transfer Between State Retirement Systems of Christopher Tucker.
ccc. Acceptance of Transfer Between State Retirement Systems of Jason Sanders.
ddd. Acceptance of Transfer Between State Retirement Systems of Kori Peters.
eee. Acceptance of Transfer Between State Retirement Systems of Jeffrey Craner.
fff. Acceptance of Transfer Between State Retirement Systems of Michelle Dalton.
ggg. Acceptance of Transfer Between State Retirement Systems of Limmie Blaylock, Jr.
hhh. Acceptance of Transfer Between State Retirement Systems of Donald Gabriick, Jr.
iii. Acceptance of Transfer Between State Retirement Systems of Laurie Miller.
jjj. Acceptance of Transfer Between State Retirement Systems of Ronald Jackson.
kkk. Acceptance of Transfer Between State Retirement Systems of Chris McElroy.
lll. Acceptance of Transfer Between State Retirement Systems of Mark Timpf.
mmm. Acceptance of Transfer Between State Retirement Systems of Michael Gaspardo.
nnn. Acceptance of Transfer Between State Retirement Systems of Jerry Sinica.
ooo. Acceptance of Transfer Between State Retirement Systems of Nicholas Adams.
ppp. Acceptance of Transfer Between State Retirement Systems of Patrick Schutte.
qqq. Acceptance of Transfer Between State Retirement Systems of Stephen Coburn.
rrr. Acceptance of Transfer Between State Retirement Systems of David Conto.
sss. Acceptance of Transfer Between State Retirement Systems of Shelli Miller.
ttt. Acceptance of Transfer Between State Retirement Systems of Bradley Davis.
uuu. Acceptance of Transfer Between State Retirement Systems of Jared Lowe.
vvv. Acceptance of Transfer Between State Retirement Systems of Kaye Wagstaff.
www. Acceptance of Transfer Between State Retirement Systems of Steven Sicklebower.
xxx. Acceptance of Transfer Between State Retirement Systems of Paul Weishaar.
yyy. Acceptance of Transfer Between State Retirement Systems of Raymond Sylvester.
zzz. Acceptance of Transfer Between State Retirement Systems of Jeff Bird.
aaaa. Acceptance of Transfer Between State Retirement Systems of David Breen.
bobb. Acceptance of Transfer Between State Retirement Systems of Diane Tilton.
cccc. Approval of the Minutes of the following meetings: November 16, 2016 Meeting of the PSPRS Board of Trustees; November 22, 2016 Meeting of the PSPRS Board of Trustees; December 21, 2016 Training Meeting of the PSPRS Board of Trustees; and January 12, 2017 Special Work Session of the PSPRS Board of Trustees.

Mr. Brian P. Tobin

**MOTION:1-1-25/17**

At 12:55 p.m.

Motion: To approve the Consent Agenda as presented.

Moved by: Mr. Scheidt

Seconded by: Mr. Davis

Discussion: None

In Favor: Unanimous

Motion: Passes: One vacant Board position

It was stated that Mr. Gregory S. Ferguson’s retirement occurs today.


Mr. Jim Keeler
Program Director
Nationwide Retirement Solutions

At the end of December (the end of the fourth quarter 2016) the PSPRS Supplemental Plan included 12 employers with 575 participants and assets of $14,322,690. The EODCRS 401(a) Plan included 22 plans with 104 participants at year end with assets of $1,702,551.

Report by Mr. William Davis, Chairman of the Investment Committee, regarding agenda items 6 through 12, which were discussed at the Investment Committee meeting held today, January 25, on or after 10:30 a.m., and possible Action on the Committee’s recommendations to the Board regarding same.

6. Introduction to PSPRS Portfolio.

Mr. Ryan Parham
Assistant Administrator and Chief Investment Officer
Mr. Allan Martin
NEPC
Mr. Parham described the evolution of the portfolio which has evolved from a portfolio with 70% U.S. equities to a portfolio with lower risk and built-in risk protections. The most important item in the formation of the portfolio are asset allocation choices which are decided annually by the Board. Mr. Martin stated the most important investment decision is selection of asset classes. NEPC reviews 40 asset classes for the 5-7 year time frame and the 30 year time frame. Then the actuary develops the 30 year forecast to then determine if there is a need to change the assumed rate of return. If the assumed rate of return is not achieved, then contributions or benefits must change.

A review of the PSPRS portfolio was held including things that the PSPRS may do to improve investment return while considering risk. The portfolio was discussed using NEPC’s 2017 assumptions for 5-7 years and a 30 year cycle. This fiscal year, through the end of November, the return of the portfolio was 7.1% which is in the top quartile of the peer group.

7. Introduction to Investment Department Staff Quarterly Risk Report (Third Calendar Quarter 2016).

Mr. Owen Zhao
Portfolio Analyst - Risk

A good review of risk was held this morning during the meeting of the Investment Committee. A work/study session for the Board may be held in order to give a better understanding of what the Investment Team does. The portfolio is risk adverse, but we try to reach the assumed earnings rate of 7.5%. Staff reviews risk by presenting where we are in the risk environment with asset allocation.

8. Introduction to Investment Department Staff Monthly Performance Report.

Ms. Vaida Maleckaite
Director of Investment Services

This report was provided to the members of the Board in their packet of information.

9. Introduction to Quarterly report by NEPC representatives.

Mr. Allan Martin

A summary was presented regarding the topics included in the Quarterly report by NEPC. These are reports about the current economy, returns for all asset classes, special topics regarding asset classes, total funds market value, and how PSPRS did as compared to the peer group, and cash flow and compliance.

10. Presentation and discussion by Investment Department Staff and Consultants regarding the annual Overview and Strategic Plan for the Public Equities portfolio.

Mr. Mark Steed
Deputy Chief Investment Officer
Mr. Shan Chen
Lead Portfolio Manager
Mr. Allan Martin

A description of the role of equities in the portfolio was presented as was the structure of the accounts of the domestic and international portfolios. Performance data was also reported.

Performance as to returns and volatility of domestic equities, international equities, small cap equities and emerging markets were described. The use of benchmarks for each type of equity investment was discussed. No changes were recommended regarding the investment policy.
Disclosure by Investment Department Staff of the following manager selection matters:

A. New and potential investments considered by Manager Selection (MSM) this period:
   1. Disclosure of a potential investment of up to $65 million direct and a reserve allocation of up to $30 million for purposes of co-investment in the Mountain Capital Partners, LP Fund, in the Real Assets portfolio, subject to final Staff and legal due diligence.
   2. Disclosure of a potential investment of up to $60 million direct and a reserve allocation of up to $30 million for purposes of co-investment in the Actis Energy 4 Fund, in the Real Assets portfolio, subject to final Staff and legal due diligence.
   3. Disclosure of a potential investment of up to $15 million direct in the Catalyst European Property Fund II, in the Real Estate portfolio, subject to final Staff and legal due diligence.
   4. Disclosure of a potential investment of up to $50 million direct and a reserve allocation of up to $40 million for purposes of co-investment in the Bluescape Energy Recapitalization & Restructuring Fund III, in the Real Assets portfolio, subject to final Staff and legal due diligence.
   5. Disclosure of a potential investment of up to $30 million direct and a reserve allocation of up to $30 million for purposes of co-investment in the Trident VII, LP Fund, in the Private Equity portfolio, subject to final Staff and legal due diligence.

B. Disclosure of closed transactions for this period:
   1. Castle Creek Fund VI (increases for second and third closing); Committed amount up to $3.8 million and $4.3 million respectively; Date Closed: November 22, 2016 (second closing) and January 11, 2017 (third closing). This investment is allocated to PSPRS Asset class: Private Equity.

C. Disclosure of completed transactions for this period:
   1. 12th Street and Bell Property; Asset Class: Real Estate; This Real Estate Portfolio investment was originally approved by the Fund Manager in September, 2005.

The Manager Selection process was described to the board members. This is a prudent, exhaustive, and a many layered process of checks and balances.

Written report by Investment Department Staff and discussion regarding (i) the Month-End and Fiscal Year-to-Date performance for the PSPRS Trust as of October 31, 2016 and November 30, 2016; (ii) written report regarding the asset allocation and performance of the Firefighters and Peace Officers Cancer Insurance Program; and (iii) review and possible discussion regarding written report for 2016 Third Calendar Quarter presented to the Trustees in November, 2016.

The quarterly reports are presented orally and the monthly reports are given in writing. Next month there will be an oral quarterly report. For today the monthly report will be oral for the new Board of Trustees. Gross of fees the portfolio was up 1.17% for the month ending November 30, 2016. For the Fiscal Year-to-Date the Trust was up 5.07% as compared to the benchmark which was up .72%. For the Calendar Year-to-Date the portfolio was up 7.10% as compared to the benchmark which was up 6.43%.

The Supplemental Cancer Insurance Plan for the month ending November 30, 2016 was down 0.09% as compared to the benchmark which was down 1.26%. For the Fiscal Year-to-Date this fund was up 1.34% as compared to the benchmark which was down 0.13%. For the Calendar Year-to-Date the fund was up 5.81% as compared to the benchmark which was up 5.13%.
Presentation by Mr. Bryan Raines, Chairman of the Operations, Governance Policy and Audit Committee, regarding agenda items 13 through 20, which were discussed at the Operations, Governance Policy and Audit Committee meeting held today, January 25, 2017, on or after 11:00 a.m., and possible Action on the Committee's recommendations to the Board regarding same.

13. Presentation of the Month-to-Date Budget Report for FY 2017 and possible Action on same.

   Mr. John Hendricks  
   Manager of Finance and Accounting

The PSPRS is under budget for the Fiscal Year-to-Date; however there are new initiatives and activities required for the Information Technology Department resulting from new pension reform.

14. Presentation of the Local Board & Employer Outreach Report and possible Action.

   Mr. Don Mineer  
   Local Board Training Coordinator

New joinder agreements are in process.

15. Presentation of the Strategic Plan Process and possible Action.

   Mr. John Briney  
   Enterprise Systems Architect

An update of the Strategic Plan was presented to the Operations, Governance Policy and Audit Committee during their morning meeting.


   Ms. Lisa Sweeting  
   Continuous Improvement Administrator

An update regarding operational accomplishments was presented to the Operations, Governance Policy and Audit Committee during their morning meeting.

17. Presentation of the "Requests for Local Board Rehearing" Report for the current month.

   Ms. Michelle Pechan  
   Paralegal

Of the three requests for local board rehearing, two have been addressed so there is one outstanding request.

18. Presentation on PSPRS communication efforts.

   Mr. Christian Palmer  
   Communications Director

Outreach and communication efforts were described and discussed during the Operations, Governance Policy and Audit Committee meeting.

19. Review and discussion regarding law firms' billings for legal services performed in November and December, 2016.

   Mr. Jared A. Smout

The billings for law firms for legal services performed in November and December, 2016 were $233,126.56 and payment was unanimously approved by members of the Operations, Governance Policy and Audit Committee. The Board of Trustees had delegated this process to the committee. The bills are reviewed by legal counsel before they are placed on the agenda for the committee meeting.
20. **Review, discussion and possible Action on pending and passed actions and potential legislative proposals.**

Mr. Jared A. Smout

Several bills were reviewed including HB 2315, SB 1019, SB 1115, and SB 1190 which extends the supplemental program for another eight years. Our Administration Bill is in progress. This bill addresses the dire situation of EORP regarding a variable contribution rate versus the static rate that is now used. The focus now is on CORP at the legislature. Chairman Tobin stated the EORP issue is of high priority for the Board due to actuarial studies regarding sustainability. He directed the lobbyists to try to fix the situation regarding EORP since there are only about ten years left of solvency. We need to act as the fiduciary of that plan, to do something, but we cannot pass legislation. Options were discussed as to how to proceed.

Updated language regarding the Administration Bill was approved during the Operation, Governance Policy and Audit Committee meeting and it was recommended the Board approve it with one more change pending for an item.

<table>
<thead>
<tr>
<th>MOTION:2-1/25/17</th>
<th>At 2:34 p.m.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion:</td>
<td>To accept the recommendation of the Operations, Governance Policy and Audit Committee to approve past actions regarding the Administration Bill as presented in our packets pending the outcome of the conversation of the Administrator with the tax consultant regarding language.</td>
</tr>
<tr>
<td>Moved by:</td>
<td>The Operations, Governance Policy and Audit Committee</td>
</tr>
<tr>
<td>Seconded by:</td>
<td>Mr. Raines</td>
</tr>
<tr>
<td>Discussion:</td>
<td>None</td>
</tr>
<tr>
<td>In Favor:</td>
<td>Unanimous</td>
</tr>
<tr>
<td>Motion:</td>
<td>Passes: One vacant Board position</td>
</tr>
</tbody>
</table>

Chairman Tobin directed the Board’s attention to SB 1115 regarding changes to Tier 2 early retirement that would make it similar to Tier 3 starting July 1, 2017. There would be a slight savings according to an actuarial review. This allows those in Tier 2 to retire with at least 15 years of credited service at lower stepped multipliers until they reach the same 2.5% multiplier at 25 years.

<table>
<thead>
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<th>MOTION:3-1/25/17</th>
<th>At 2:44 p.m.</th>
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<tbody>
<tr>
<td>Motion:</td>
<td>Move to support bill SB 1115.</td>
</tr>
<tr>
<td>Moved by:</td>
<td>Mr. Buividas</td>
</tr>
<tr>
<td>Seconded by:</td>
<td>Mr. Davis</td>
</tr>
<tr>
<td>Discussion:</td>
<td>Discussion regarding being neutral or giving support to a bill was held. This bill has a cost saving. Mr. Buividas stated our weight at legislature is good.</td>
</tr>
<tr>
<td>In Favor:</td>
<td>Unanimous</td>
</tr>
<tr>
<td>Motion:</td>
<td>Passes: One vacant Board position</td>
</tr>
</tbody>
</table>
Chairman Tobin stated that our lobbyists have asked for direction regarding EORP funding status. The discussion centered around language to present removal of 23.5% contribution rate in order to allow the contribution rate to change every year based on actuarial reports. If the statutory rate continues, the employer rate will increase to 53.7% or increase annual contributions to over $40 million.

Discussion was held regarding sending some type of correspondence to the Legislature asking them to act in some way, to outline issues and concerns of the Board and to direct them to take some sort of action.

**MOTION: 4-1/25/17**

**Motion:**
At 3:14 p.m. To work with the Administrator to craft a letter to the leadership of the legislature to direct them to take reasonable and quick action to resolve the EORP Plan and urge them to do something as quickly as possible and to go on record.

**Moved by:**
Mr. Scheidt

**Seconded by:**
Mr. Davis

**Discussion:**
Mr. Smout stated we have the Auditor General’s report to back this up and to include this report in the letter, to reference this issue in the letter and the resolution.

**In Favor:**
Unanimous

**Motion:**
Passes: One vacant Board position


Mr. Corey Arvizu
Managing Partner

Mr. Christopher Heinfeld
Audit Manager

Heinfeld, Meech & Co., P.C

Two elements of the audit included review of the financial statements of the Plan and review of the benefits provided to employers and the reports the employers provided to their member entities. The auditing procedures were described as well as the wrap-up procedures. The external auditor had no difficulty with member entities or System employees with getting information. Also there were no disagreements with management and no findings were noted.

22. **Discussion, and possible Action on the risk-pooling and local board consolidation study as directed by SB1428.**

Mr. Jared A. Smout

There will be a meeting on Friday, January 27, 2017 specifically regarding this topic thus this agenda item was tabled until that date.


Mr. William T. Buividas
Vice Chairman

Mr. Buividas stated a contract with SageView Capital was executed and the committee is in the process of developing an RFP for a custodian/record keeper which will be out by mid-February.
24. Discussion and appropriate **Action** regarding Board of Trustee member requests to participate in training, educational and due diligence opportunities.

*Mr. Brian P. Tobin*

The board members discussed the NCEPRS Conference and those who want to attend to please notify the Administrator.

25. 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 26.

26. 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 25, 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, including the Administrator's Annual Performance Review, as authorized by A.R.S § 38-431.03(A)(1).

No request was made for an Executive Session.

27. **Schedule future meeting date(s).** *(Currently scheduled for Wednesday, March 1, 2017.)*

The next meeting will be March 1, 2017 which will act as the February meeting and the following meeting will be held on March 29.

28. **Adjournment.**

The meeting was adjourned at 3:43 p.m.
PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
BOARD OF TRUSTEES MEETING
January 27, 2017

MINUTES

Present:  
- Mr. Brian Tobin, Chairman, Trustee
- Mr. William T. Buvidas, Vice Chairman, Trustee
- Mr. William C. Davis, Trustee
- Mr. Edward J. McNeill, Trustee
- Mr. Bryan Raines, Trustee
- Mr. Mike Scheidt, Trustee
- Mr. Dean M. Scheinert, Trustee
- Mr. Donald A. Smith, Jr., Trustee
- Mr. Jared Smout, Administrator
- Mr. Dave DeJonge, Deputy Administrator
- Mr. Paul Hemmes, Information Technology
- Mr. Christian Palmer, Communications Director
- Mr. Tom Iannucci, President, Cortex
- Mr. Clive Morgan, Consultant, Cortex
- Mr. Pete Constant, Senior Fellow, Reason Foundation

Others Present:
- Mr. Jared Smout, Administrator
- Mr. Dave DeJonge, Deputy Administrator
- Mr. Paul Hemmes, Information Technology
- Mr. Christian Palmer, Communications Director
- Mr. Tom Iannucci, President, Cortex
- Mr. Clive Morgan, Consultant, Cortex
- Mr. Pete Constant, Senior Fellow, Reason Foundation

1. Call to Order; Roll Call; Opening remarks

   The meeting was called to order at 8:10 a.m. by Chairman Tobin. The Pledge of Allegiance was recited.

2. Call to the Public.

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

   There was no response to the Call to the Public.

3. Work session/discussion with representatives from the Reason Foundation on the risk-pooling and local board consolidation study.

   Mr. Brian P. Tobin  
   Administrator
   Mr. Jared A. Smout  
   Administrator
   Mr. Pete Constant  
   Senior Fellow, Pension Reform Project
   Reason Foundation
The Reason Foundation was a major contributor to SB 1428 and they are attending the meeting at the request of the Board in order to share their feedback regarding the Cortex study and to share some thought processes that went into the legislation. The Reason Foundation provides their technical expertise in assisting public officials across the U.S. in order to implement pension reform. They discussed their role regarding the rebalancing of the board in order to be more reflective of the members of the Plan and to have more opportunity to be included in the decision making processes of the System. The goals included how to address the governance and structure of the Plan including constraint of volatility, making good decisions at all levels in order that individual decisions and responsibilities of the local boards are cognizant regarding their impact on contribution rates. Discussion regarding plan design to reduce volatility and to ensure stability of contribution rates so that the Plan does not mount a large unfunded liability in the long term. Discussion was held regarding whether pooling is or is not in the best interest of PSPRS and you cannot undo a pooled plan. The representatives of the Reason Foundation stated the Cortex report achieves pooling with events outside of anyone’s control i.e., killed in the line of duty, injured in the line of duty. They felt discussion should be regarding where the line between controllable and non-controllable decisions should be.

4. Work session/discussion with representatives from Cortex regarding their risk-pooling and local board consolidation report and recommendations.

   Mr. Brian P. Tobin
   Mr. Jared A. Smout
   Mr. Tom Iannucci
   President, Cortex
   Mr. Clive Morgan,
   Consultant, Cortex

Topics of discussion included the prevalence of agent multiple plans, 100% pooled funds, charge backs, and calculations based on current actuarial rates. Cortex suggestion of 3C on p. 38 of their report with pooling of small employers with less than 100 employees may not be the best solution because they could still have additional costs that would affect overall costs of the Plan.

5. Discussion and possible Action on recommendations to the Legislature for possible risk-pooling and local board consolidation.

   Mr. Brian P. Tobin
   Mr. Jared A. Smout

Chairman Tobin stated action on the Board’s recommendation is required by legislature to be sent to them on or before 2/15/17 regarding risk pooling, if any and/or the local board consolidation decision if completed by that date. The decision regarding board consolidation was assigned during the Board of Trustees meeting on January 25, 2017 to the Advisory Committee for further study. Today’s discussion is about risk pooling. Discussion will also include Tier 3 contribution rates, which is an issue brought up in the Cortex report.

Discussion was held regarding the Cortex Report, p. 38, Table 6, Hybrid Option 3B.
Discussion regarding how to determine the employee and employer contribution rate occurred. The rate will be at the local level due to keeping the agency multiple and retiree pool. How to handle the employee rate? Input from several members of the public was given to the Board following a Call to the Public by Chairman Tobin. Following this input, a discussion was held between the members of the board as to how to determine the employer rate. This discussion was tabled and the Administrator was directed to seek information from all stakeholders since additional information is now available regarding contribution rates. No action was taken at this time. The chairman asked that employees and employers make presentations at the next meeting in order for others to address the Board.

6. 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:

7. Schedule future meeting date(s). (Currently scheduled for Wednesday, March 1, 2017.)

Most likely, another meeting may be scheduled prior to February 15, 2017.
8. Adjournment

The meeting was adjourned at 10:15 a.m.

________________________________________________________________________
Brian P. Tobin, Chairman

________________________________________________________________________
William T. Buividás, Trustee,  
Vice Chairman

William C. Davis, Trustee

________________________________________________________________________
Edward J. McNeill, Trustee

Bryan Raines, Trustee

________________________________________________________________________
Mike Scheidt, Trustee

Dean M. Scheinert, Trustee

________________________________________________________________________
Donald A. Smith, Jr., Trustee
1. Call to the Public.

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

There was no response to the Call to the Public.

2. Call to Order; Roll Call; Opening remarks

Mr. Brian P. Tobin
Chairman

The meeting was called to order at 1 p.m. by Chairman Tobin and the Pledge of Allegiance was recited.

3. Discussion with representatives from Cortex regarding their risk-pooling and local board consolidation report and recommendations.

Mr. Brian P. Tobin
Mr. Jared A. Smout
Mr. Tom Iannucci
Mr. Clive Morgan,
Cortex representatives are present for follow up questions regarding their final report about risk-pooling, local board consolidation and charge back practices and discussion regarding providing a letter of recommendations to the legislature.

At 4:01 p.m., Agenda item 3 was reopened in order to provide discussion between Cortex, Mr. McCarty, representing the League of Cities and Towns, and the Board of Trustees regarding clarifications of the Cortex report regarding the calculation of contributions to be split 50/50 between certain local employers and the aggregate rate for all employees across the System.

The League clarified the difference between their position and the recommendation approved earlier by the Board, which is that unusual costs are to be borne 100% by the employer. They prefer to have controllable costs in the System since such costs would have to be split 50/50, and to instead use the charge back method.

4. Discussion with stakeholders regarding risk-pooling and local board consolidation and possible Action. (15 minutes) Mr. Brian P. Tobin

Mr. Kevin Burke, from the Town of Paradise Valley, and Mr. Scott McCarty, from Queen Creek, both representing the League of Cities and Towns, presented a written report regarding the Risk Pooling in Option 3B of the Cortex Report. In addition, they presented three questions to the Board. Discussion was held between the speakers, Board of Trustees and Administrator Smout.

No action was taken.

5. Discussion and possible Action on recommendations to the Legislature for setting the Employee/Employer contribution rate for Tier 3 PSPRS members. Mr. Brian P. Tobin  
Mr. Jared A. Smout

Discussion was held regarding a recommendation that, if the Board is in agreement as to a uniform employee contribution rate for Tier 3 PSPRS members, that the rate be based on 50% of the total aggregate cost of Tier 3. Such total cost would be split 50/50 between employee and employer. The employees’ costs are uniform across the System and employers’ rate would be based on their individual cost, minus such uniform rate. Mr. Buividias stated that the volatility of smaller employers is great so that he favored this suggestion to help small employers. Discussion was held regarding the mathematics of this recommendation and calculations by the actuary.

| MOTION: 2 2/09/17 | At 2:19 p.m. |
| Motion: | To recommend to the Governor and to the legislators to make the employee rate 50% of the aggregate total rate. |
| Moved by: | Mr. Buividad |
| Seconded by: | Mr. Scheinert |
| Discussion: | Mr. Buividad stated the uniform employee rate is important for consistent lower volatility for smaller employers. |
| In Favor: | Unanimous |
| Motion: | Passes: One vacant Board position |
6. Review, discussion and possible Action on pending and passed actions and potential legislative proposals.

Mr. Jared A. Smout

The PSPRS lobbyists stated that the Administrative Bill has been dropped and three amendments are being contemplated. Bills HB 2315, SB 1115, HB 2508, SB 1330, SCR 1123 and SB 1442 were briefly presented. SB 1442 regarding CORP reform was discussed, stating that the Reason Foundation presented their proposal regarding CORP reform to stakeholders in a meeting on January 18. Chairman Tobin stated that this proposal was presented on short notice and the Board has taken the position in the past of remaining neutral. Mr. Buividas said the Board has a fiduciary responsibility to have a sustainable plan, therefore, it is incumbent that this Board take a fiduciary position.

7. Discussion and consultation with legal counsel and Staff and possible Action regarding proposed legislation, 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, Hall and Fields. 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 8.

The Assistant Attorney General Chuck Grube, Esq., and Mr. Ben Cooper, representing CORP, updated the Board of Trustees regarding on-going litigation.

The Board of Trustees entered Open Session at 4:00 p.m.

MOTION:2-2/09/17
Motion: To enter Executive Session to ask for legal advice.
Moved by: Mr. Davis
Seconded by: Mr. Buividas
Discussion: None
In Favor: Unanimous
Motion: Passes: One vacant Board position

The Board of Trustees entered Open Session at 4:00 p.m.

MOTION:3-2/09/17
Motion: That we solidify the discussion we had in Executive Session with our legal counsel to take action in the new Fields lawsuit vs. EORP System.
Moved by: Mr. Buividas
Seconded by: Mr. Davis
Discussion: None
In Favor: Unanimous
Motion: Passes: One vacant Board position
8. 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 7, 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).

9. Schedule future meeting date(s). (Currently scheduled for Wednesday, March 1, 2017.)

   The next meeting will be held on Wednesday, March 1, 2017.

10. Adjournment.

   The meeting was adjourned at 4:31 p.m.

________________________________________
Brian P. Tobin, Chairman

________________________________________
William T. Buvidas, Trustee, Vice Chairman

________________________________________
William C. Davis, Trustee

________________________________________
Edward J. McNeill, Trustee

________________________________________
Bryan Raines, Trustee

________________________________________
Mike Scheidt, Trustee

________________________________________
Dean M. Scheinert, Trustee

________________________________________
Donald A. Smith, Jr., Trustee
APPLICATION FOR MEMBERSHIP WAIVER

Corrections Officers Retirement Plan (CORP) has been amended by Laws 1987, Chapter 133 Section 1 to read:

A.R.S. Section 38-902.(A)-(E) Joinder Agreement

... The joinder agreement shall be in accordance with the provisions of this plan. ALL SUCH EMPLOYEES SHALL BE DESIGNATED FOR MEMBERSHIP IN THE JOINDER AGREEMENT UNLESS WRITTEN CONSENT TO THE CONTRARY IS OBTAINED FROM THE BOARD OF TRUSTEES.

Written consent for waiver of membership by the Board of Trustees shall be based on the following conditions:

1. The member completes this Application for Membership Waiver form and returns it to the Board of Trustees within 30 days of the effective date of participation in the Plan.

2. The member has credited service on account with a different retirement system or plan which is not eligible for transfer into the CORP.

3. The member can show a financial detriment by not being able to transfer the ineligible credited service into the CORP.

4. The member agrees to irrevocably waive all rights to participation, rights and benefits in the CORP.

TO: Board of Trustees, Corrections Officer Retirement Plan

NAME: STEF CRAWFORD

SOCIAL SECURITY NUMBER:

EMPLOYER: LA PALAZ COUNTY

DATE OF BIRTH:

POSITION OR TITLE: CFL

CORP MEMBERSHIP DATE:

I hereby make written application to the Board of Trustees for a Waiver of my membership rights and benefits under the Arizona Corrections Officer Retirement Plan pursuant to A.R.S. Section 38-902(A-E) This application is based on the following information:

PRIOR CREDITED SERVICE ON ACCOUNT WITH A DIFFERENT RETIREMENT SYSTEM OR PLAN WHICH IS NOT ELIGIBLE FOR TRANSFER INTO THE CORRECTIONS OFFICER RETIREMENT PLAN:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Employer</th>
<th>Position</th>
<th>Retirement System</th>
</tr>
</thead>
<tbody>
<tr>
<td>12/17/02</td>
<td>7/1/11</td>
<td>LA PALAZ COUNTY</td>
<td>CODE ENFORCEMENT</td>
<td>ASRS</td>
</tr>
</tbody>
</table>

(La Paz joined ASRS in 2006)

RECEIVED-PSPRS

JAN 20 2017
APPLICATION FOR MEMBERSHIP WAIVER (Continued)

THE FINANCIAL DETRIMENT THAT I WILL INCUR BY NOT BEING ABLE TO TRANSFER THE ABOVE-LISTED PRIOR INELIGIBLE CREDITED SERVICE INTO THE CORP IS AS FOLLOWS (attach a separate sheet, if necessary):

SEE ATTACHED.

I understand and acknowledge that if my Application for Membership Waiver is accepted and approved by the Board of Trustees, I WILL IRREVOCABLY FORFEIT ANY AND ALL MEMBERSHIP RIGHTS IN THE CORP AS WELL AS ANY AND ALL RIGHTS TO BENEFITS UNDER THE CORP; further, by signing below, I authorize and instruct the Board of Trustees to transfer my accumulated member account balance in the CORP, employer contributions equal to my member account balance and my service credits accumulated under the CORP to

DATED: 12/16/16

SIGNATURE OF MEMBER

WITNESS

EMPLOYER CERTIFICATION

I hereby acknowledge that the Membership and Position/Title information provided by the member on the reverse side corresponds with the information in our personnel file.

DATED: 12/19/16

Authorized Signature of Employer

BOARD OF TRUSTEES ACTION

Based on the information herein provided, the member named herein

☐ Qualifies for Waiver of Membership in the Corrections Officer Retirement Plan.

☐ Does not qualify for Waiver of Membership in the Corrections Officer Retirement Plan.

DATED: ___________________________ BOARD OF TRUSTEES:_________________________

by: ________________________________

RECEIVED-PSPRS

JAN 20 2017
I TERI L. CRAWFORD CURRENTLY HAVE APPROXIMATELY 8 YEARS UNTIL I AM ELIGIBLE FOR A FULL PENSION RETIREMENT THRU ASRS. IF I WAS MADE TO SWITCH TO CORPS I WOULD HAVE TO WORK AND ADDITIONAL 20 YEARS IN ORDER TO RECEIVE A FULL PENSION WITH CORPS. I HAVE APPROXIMATELY 13 YEARS OF SERVICE IN ASRS AND ONLY 5 OF THOSE YEARS ARE TRANSFERRABLE TO CORPS, MOST OF MY YEARS OF SERVICE AS A CODE ENFORCEMENT WHICH ARE IS NON-TRANSFERABLE. IF MADE TO CHANGE I WOULD NOT BE ABLE TO RECEIVE A FULL PENSION FROM EITHER RETIREMENT SYSTEM BY THE TIME I'M ELIGIBLE TO RETIRE. THIS WOULD BE A SIGNIFICANT LOSS OF MONIES.

THANK YOU

CPL. TERI CRAWFORD

RECEIVED-PSPRS
JAN 20 2017
APPLICATION FOR MEMBERSHIP WAIVER

Corrections Officers Retirement Plan (CORP) has been amended by Laws 1987, Chapter 133 Section 1 to read:

A.R.S. Section 38-902.(A)-(E) Joinder Agreement

... The joinder agreement shall be in accordance with the provisions of this plan. ALL SUCH EMPLOYEES SHALL BE DESIGNATED FOR MEMBERSHIP IN THE JOINDER AGREEMENT UNLESS WRITTEN CONSENT TO THE CONTRARY IS OBTAINED FROM THE BOARD OF TRUSTEES.

Written consent for waiver of membership by the Board of Trustees shall be based on the following conditions:

1. The member completes this Application for Membership Waiver form and returns it to the Board of Trustees within 30 days of the effective date of participation in the Plan.

2. The member has credited service on account with a different retirement system or plan which is not eligible for transfer into the CORP.

3. The member can show a financial detriment by not being able to transfer the ineligible credited service into the CORP.

4. The member agrees to irrevocably waive all rights to participation, rights and benefits in the CORP.

TO: Board of Trustees, Corrections Officer Retirement Plan

NAME: Cindy Venegas   SOCIAL SECURITY NUMBER

EMPLOYER: La Paz County Jail   DATE OF BIRTH:______

POSITION OR TITLE: Jail Cook   CORP MEMBERSHIP DATE: ______

I hereby make written application to the Board of Trustees for a Waiver of my membership rights and benefits under the Arizona Corrections Officer Retirement Plan pursuant to A.R.S. Section 38-902(A-E) This application is based on the following information:

PRIOR CREDITED SERVICE ON ACCOUNT WITH A DIFFERENT RETIREMENT SYSTEM OR PLAN WHICH IS NOT ELIGIBLE FOR TRANSFER INTO THE CORRECTIONS OFFICER RETIREMENT PLAN:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Employer</th>
<th>Position</th>
<th>Retirement System</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>1999</td>
<td>Parker Public Schools</td>
<td>cook</td>
<td>ASRS</td>
</tr>
<tr>
<td>1999</td>
<td>Present</td>
<td>La Paz County</td>
<td>Jail Cook</td>
<td>ASRS</td>
</tr>
<tr>
<td>(2006</td>
<td>Present</td>
<td>La Paz County</td>
<td>Jail Cook</td>
<td>ASRS</td>
</tr>
</tbody>
</table>

RECEIVED-PSPRS

JAN 20 2017
I do not want to join CORPS.
I wish to continue with ASRS, as I hope to retire with ASRS soon.

I understand and acknowledge that if my Application for Membership Waiver is accepted and approved by the Board of Trustees, I WILL IRREVOCABLY FORFEIT ANY AND ALL MEMBERSHIP RIGHTS IN THE CORP AS WELL AS ANY AND ALL RIGHTS TO BENEFITS UNDER THE CORP: further, by signing below, I authorize and instruct the Board of Trustees to transfer my accumulated member account balance in the CORP, employer contributions equal to my member account balance and my service credits accumulated under the CORP to

DATED: 12-10-2016
Cindy Turner
SIGNATURE OF MEMBER
Sandy Magennco
WITNESS

EMPLOYER CERTIFICATION

I hereby acknowledge that the Membership and Position/Title information provided by the member on the reverse side corresponds with the information in our personnel file.

DATED: 12-19-16
Mary Frank
Authorized Signature of Employer

BOARD OF TRUSTEES ACTION

Based on the information herein provided, the member named herein

☐ Qualifies for Waiver of Membership in the Corrections Officer Retirement Plan.

☐ Does not qualify for Waiver of Membership in the Corrections Officer Retirement Plan.

DATED: ___________________________  BOARD OF TRUSTEES:

by: ______________________________

RECEIVED-PSPRS
JAN 20 2017
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 December 31, 2016

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
- Conclusions
**CURRENT STATUS**

### PSPRS Trust 12/31/2016

<table>
<thead>
<tr>
<th>Category</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>Real Estate</td>
<td>9.8%</td>
<td>2.0%</td>
<td>3.0%</td>
<td>-6.6%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>14.3%</td>
<td>2.4%</td>
<td>4.6%</td>
<td>-7.3%</td>
</tr>
<tr>
<td>US Equities</td>
<td>15.7%</td>
<td>3.1%</td>
<td>3.6%</td>
<td>-6.0%</td>
</tr>
<tr>
<td>Int’l Equities</td>
<td>14.5%</td>
<td>3.4%</td>
<td>4.1%</td>
<td>-6.9%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>4.1%</td>
<td>1.0%</td>
<td>1.7%</td>
<td>-1.4%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>3.4%</td>
<td>1.6%</td>
<td>2.5%</td>
<td>-2.9%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>10.5%</td>
<td>1.0%</td>
<td>2.0%</td>
<td>-2.4%</td>
</tr>
<tr>
<td>GTAA</td>
<td>8.7%</td>
<td>1.5%</td>
<td>2.4%</td>
<td>-2.9%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>5.6%</td>
<td>0.7%</td>
<td>0.8%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>11.9%</td>
<td>0.8%</td>
<td>1.7%</td>
<td>-1.8%</td>
</tr>
<tr>
<td>PSPRS Trust</td>
<td>98.6%</td>
<td>1.3%**</td>
<td>2.0%</td>
<td>-2.8%</td>
</tr>
</tbody>
</table>

* For comparison, the monthly volatility of the S&P 500 over the past ten years has been 4.2% per month, or 14.5% per year.
* All risk values reported as monthly risk based on the past year of returns.
** For comparison, a volatility of 1.0% per month, corresponds to 3.5% per year.

**PSPRS Volatility and Value at Risk (VAR*)**:

- The forecasted monthly volatility and VAR (95% confidence) for the Trust global portfolio both decreased by 0.1%.

---

* Definition of 95% monthly VAR (used here): The maximum amount that could be lost over any one month period, with 95% confidence (in other words, with the exception of one month in 20, in which that maximum amount would be exceeded).
Volatility Comparison – 12 Month Trailing Volatility

PSPRS Trust global is approximately 55% less volatile than the market.
VAR portfolio contributions remain stable compared to last month:

- Relative shifting in marginal VAR contributions:
  - While contributions from US Equity decreased by 2.30%, International Equity increased by 1.31%

Equity risk is the highest contributor to VAR (65.70%)
## 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 Equities</td>
<td>15.7%</td>
<td>S&amp;P 500</td>
<td>Russell 2000 (small caps)</td>
<td>89%</td>
</tr>
<tr>
<td>International Equities</td>
<td>14.5%</td>
<td>MSCI World</td>
<td>Oil</td>
<td>90%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>9.8%</td>
<td>US 10y T-Note</td>
<td>Treasury Spread (10Y-3M)</td>
<td>50%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>14.3%</td>
<td>MSCI North America</td>
<td>S&amp;P 500</td>
<td>87%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>5.6%</td>
<td>Credit Spread (BAA-AAA)</td>
<td>Change in US 10Y T-Note</td>
<td>41%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>11.9%</td>
<td>Russell 2000 (small caps)</td>
<td>Inflation (CPI)</td>
<td>84%</td>
</tr>
<tr>
<td>GTAA</td>
<td>8.7%</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Real Assets</td>
<td>10.5%</td>
<td>Liquidity</td>
<td>VIX</td>
<td>41%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>4.1%</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>3.4%</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

* Values in yellow/red indicate an inverse relation.

Drivers remain the same as last month.

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

- As with past months, risk modeling indicates that the PSPRS global portfolio is subject – in part – to two main drivers (explaining 86% of variance, or market risk):
  - North American equity markets
  - Change in US 5Y 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>MSCI North America-5 std</td>
<td>-10.7%</td>
</tr>
<tr>
<td>MSCI North America-3 std</td>
<td>-6.5%</td>
</tr>
<tr>
<td>MSCI North America-2 std</td>
<td>-4.4%</td>
</tr>
<tr>
<td>MSCI North America-1 std</td>
<td>-2.3%</td>
</tr>
<tr>
<td>MSCI North America+1 std</td>
<td>3.9%</td>
</tr>
<tr>
<td>MSCI North America+2 std</td>
<td>6.0%</td>
</tr>
<tr>
<td>MSCI North America+3 std</td>
<td>8.1%</td>
</tr>
<tr>
<td>MSCI North America+5 std</td>
<td>12.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Market Factor Change</th>
<th>Portfolio Return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta US 5Y T-Note-5 std</td>
<td>2.2%</td>
</tr>
<tr>
<td>Delta US 5Y T-Note-3 std</td>
<td>2.0%</td>
</tr>
<tr>
<td>Delta US 5Y T-Note-2 std</td>
<td>2.0%</td>
</tr>
<tr>
<td>Delta US 5Y T-Note-1 std</td>
<td>1.9%</td>
</tr>
<tr>
<td>Delta US 5Y T-Note+1 std</td>
<td>1.7%</td>
</tr>
<tr>
<td>Delta US 5Y T-Note+2 std</td>
<td>1.7%</td>
</tr>
<tr>
<td>Delta US 5Y T-Note+3 std</td>
<td>1.6%</td>
</tr>
<tr>
<td>Delta US 5Y T-Note+5 std</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

- Our exposure to extreme equity events remains positively asymmetric.
- We expect to gain more from a positive movement than we would lose after a similarly sized negative movement.
Historical Worst-Case Scenarios

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

<table>
<thead>
<tr>
<th>Events</th>
<th>Today's Portfolio</th>
<th>PSPRS Trust Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Crisis of 1997</td>
<td>3.2%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Russian/LTCM Crisis 1998</td>
<td>-3.7%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>WTC Attacks - Sept. 11</td>
<td>-2.9%</td>
<td>-11.7%</td>
</tr>
<tr>
<td>Stock Market Crash 2002</td>
<td>-4.8%</td>
<td>-21.1%</td>
</tr>
<tr>
<td>August Crisis 2007</td>
<td>1.5%</td>
<td>1.6%</td>
</tr>
<tr>
<td>January Crisis 2008</td>
<td>-2.2%</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Credit Crunch 2008 (Aug to Nov)</td>
<td>-14.9%</td>
<td>-23.1%</td>
</tr>
<tr>
<td>Crisis 2009 (Jan-Feb)</td>
<td>-5.1%</td>
<td>-12.9%</td>
</tr>
<tr>
<td>Flash Crash 2010</td>
<td>-3.6%</td>
<td>-3.7%</td>
</tr>
<tr>
<td>Brexit (2016)</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

- Downside potential losses of today’s portfolio have decreased significantly.
CONCLUSIONS

- There are small shifts in portfolio weights, and the Trust global portfolio has the same historic volatility as last month. In addition, the forecasted monthly volatility and VAR (95% confidence) both reduced by 10 bps. Compared to the public stock market, the Trust total portfolio is 55% less volatile.

- In terms of risk decomposition, equity sub-portfolios (International, Private, and US) are the highest contributors to the overall VAR (65.70%), followed by Real Estate, GTAA and Real Assets. The drivers to explain the variance in each asset class remain the same.

- The stress testing results show that our current holdings are more risk-resistant than the Trust Actual. The downside losses in various stress scenarios have decreased significantly.

- In addition to the PSPRS Trust being:
  - Top decile on risk-terms since 2009.
  - Top quartile in efficiency (Sharpe Ratio) terms since 2010.
### Supplemental Cancer Insurance Plan (CIP) - Performance as of 12/31/2016 (Net of Fees)

<table>
<thead>
<tr>
<th>Description</th>
<th>Market Values ($)</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>CIP - Total Fund</td>
<td>$23,626,072</td>
<td>100.00%</td>
<td></td>
<td>1.32%</td>
<td>-0.66%</td>
<td>2.68%</td>
<td>7.21%</td>
<td>7.21%</td>
<td>3.69%</td>
<td>7.14%</td>
<td>5.20%</td>
</tr>
<tr>
<td>Target Fund Benchmark</td>
<td></td>
<td></td>
<td></td>
<td>0.89%</td>
<td>-2.30%</td>
<td>0.76%</td>
<td>6.06%</td>
<td>6.06%</td>
<td>1.74%</td>
<td>5.88%</td>
<td>3.71%</td>
</tr>
<tr>
<td>U.S. Equity</td>
<td>$6,480,407</td>
<td>27.43%</td>
<td>25%</td>
<td>1.99%</td>
<td>3.74%</td>
<td>8.78%</td>
<td>13.06%</td>
<td>13.06%</td>
<td>8.38%</td>
<td>14.46%</td>
<td>N/A</td>
</tr>
<tr>
<td>Russell 3000</td>
<td></td>
<td></td>
<td></td>
<td>1.95%</td>
<td>4.21%</td>
<td>8.79%</td>
<td>12.74%</td>
<td>12.74%</td>
<td>8.43%</td>
<td>14.67%</td>
<td>7.07%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>$5,700,832</td>
<td>24.13%</td>
<td>25%</td>
<td>2.26%</td>
<td>-2.47%</td>
<td>4.46%</td>
<td>4.66%</td>
<td>4.66%</td>
<td>-1.68%</td>
<td>5.12%</td>
<td>N/A</td>
</tr>
<tr>
<td>MSCI ACWI Ex-US Net</td>
<td></td>
<td></td>
<td></td>
<td>2.56%</td>
<td>-1.25%</td>
<td>5.57%</td>
<td>4.50%</td>
<td>4.50%</td>
<td>-1.78%</td>
<td>5.00%</td>
<td>0.96%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>$6,561,189</td>
<td>27.77%</td>
<td>30%</td>
<td>0.37%</td>
<td>-2.79%</td>
<td>-2.03%</td>
<td>3.48%</td>
<td>3.48%</td>
<td>3.50%</td>
<td>2.26%</td>
<td>N/A</td>
</tr>
<tr>
<td>Bloomberg BC Global Aggregate</td>
<td></td>
<td></td>
<td></td>
<td>-0.46%</td>
<td>-7.07%</td>
<td>-6.31%</td>
<td>2.09%</td>
<td>2.09%</td>
<td>-0.19%</td>
<td>0.21%</td>
<td>3.29%</td>
</tr>
<tr>
<td>Inflation-Linked Securities</td>
<td>$2,335,150</td>
<td>9.88%</td>
<td>10%</td>
<td>-0.04%</td>
<td>-2.99%</td>
<td>-1.63%</td>
<td>4.68%</td>
<td>4.68%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Bloomberg BC U.S. TIPS</td>
<td></td>
<td></td>
<td></td>
<td>-0.10%</td>
<td>-2.41%</td>
<td>-1.47%</td>
<td>4.68%</td>
<td>4.68%</td>
<td>2.26%</td>
<td>0.89%</td>
<td>4.36%</td>
</tr>
<tr>
<td>Commodities</td>
<td>$1,283,465</td>
<td>5.43%</td>
<td>5%</td>
<td>2.27%</td>
<td>0.73%</td>
<td>-0.16%</td>
<td>18.12%</td>
<td>18.12%</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>SPDR * Gold Trust (GLD)</td>
<td></td>
<td></td>
<td></td>
<td>-1.92%</td>
<td>-12.76%</td>
<td>-13.33%</td>
<td>8.03%</td>
<td>8.03%</td>
<td>-1.90%</td>
<td>-6.33%</td>
<td>565.91%</td>
</tr>
<tr>
<td>Short Term Investments</td>
<td>$1,265,029</td>
<td>5.35%</td>
<td>5%</td>
<td>0.03%</td>
<td>0.05%</td>
<td>0.12%</td>
<td>0.26%</td>
<td>0.26%</td>
<td>0.12%</td>
<td>0.10%</td>
<td>N/A</td>
</tr>
<tr>
<td>BofA ML 3-Month T-Bill</td>
<td></td>
<td></td>
<td></td>
<td>0.04%</td>
<td>0.09%</td>
<td>0.18%</td>
<td>0.33%</td>
<td>0.33%</td>
<td>0.14%</td>
<td>0.12%</td>
<td>0.80%</td>
</tr>
</tbody>
</table>

**Target Fund Benchmarks (Effective Dates):**

- **July 1, 2014 to Present:** 25% Russell 3000, 25% MSCI ACWI Ex-US Net, 30% BC Global Aggregate, 10% Barclays U.S. TIPS, 5% GLD Index, 5% BofA ML 3-Month T-Bill.
- **July 1, 2009 - June 30, 2014:** 30% Russell 3000, 30% MSCI ACWI Ex-US Net, 35% BC Aggregate, 5% BofA ML 3-Month T-Bill.
- **July 1, 2005 - June 30, 2009:** 60% Russell 3000, 35% BC Aggregate, 5% BofA ML 3-Month T-Bill.
**Supplemental Cancer Insurance Plan (CIP) - Historical Calendar Year Performance as of 12/31/2016 (Net of Fees)**

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>Performance %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CIP - Total Fund</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.21%</td>
</tr>
<tr>
<td><strong>Target Fund Benchmark</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.06%</td>
</tr>
</tbody>
</table>
### Arizona PSPRS Trust - Performance as of 12/31/2016 (Gross of Fees)

<table>
<thead>
<tr>
<th>Description</th>
<th>Asset Allocation</th>
<th>Market Values ($)</th>
<th>Target (%)</th>
<th>Range (%)</th>
<th>7/1/2016</th>
<th>Performance %</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arizona PSPRS Trust - Total Fund</strong></td>
<td><img src="image1.png" alt="Image" /></td>
<td>$8,889,789,497</td>
<td>100.00%</td>
<td></td>
<td></td>
<td><strong>Market Values ($)</strong></td>
<td><strong>1.30%</strong></td>
</tr>
<tr>
<td>**Target Fund Benchmark *</td>
<td><img src="image2.png" alt="Image" /></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Range (%)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Total Equity</strong></td>
<td><img src="image3.png" alt="Image" /></td>
<td>$2,682,952,042</td>
<td>30.18%</td>
<td>30%</td>
<td>21-39%</td>
<td></td>
<td><strong>1.30%</strong></td>
</tr>
<tr>
<td>**Target Equity Benchmark *</td>
<td><img src="image4.png" alt="Image" /></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>U.S. Equity</strong></td>
<td><img src="image5.png" alt="Image" /></td>
<td>$1,391,457,330</td>
<td>15.65%</td>
<td>16%</td>
<td>11-21%</td>
<td></td>
<td><strong>1.22%</strong></td>
</tr>
<tr>
<td><strong>Russell 3000</strong></td>
<td><img src="image6.png" alt="Image" /></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Non-U.S. Equity</strong></td>
<td><img src="image7.png" alt="Image" /></td>
<td>$1,291,494,712</td>
<td>14.53%</td>
<td>14%</td>
<td>10-18%</td>
<td></td>
<td><strong>2.23%</strong></td>
</tr>
<tr>
<td><strong>MSCI ACWI Ex-US Net</strong></td>
<td><img src="image8.png" alt="Image" /></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Private Equity</strong></td>
<td><img src="image9.png" alt="Image" /></td>
<td>$1,273,256,791</td>
<td>14.32%</td>
<td>11%</td>
<td>7-17%</td>
<td></td>
<td><strong>2.01%</strong></td>
</tr>
<tr>
<td><strong>Russell 3000 + 100 bps</strong></td>
<td><img src="image10.png" alt="Image" /></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fixed Income</strong></td>
<td><img src="image11.png" alt="Image" /></td>
<td>$500,939,713</td>
<td>5.64%</td>
<td>5%</td>
<td>3-11%</td>
<td></td>
<td><strong>1.14%</strong></td>
</tr>
<tr>
<td><strong>Bloomberg BC Global Aggregate</strong></td>
<td><img src="image12.png" alt="Image" /></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Private Credit</strong></td>
<td><img src="image13.png" alt="Image" /></td>
<td>$1,058,465,273</td>
<td>11.91%</td>
<td>15%</td>
<td>7-16%</td>
<td></td>
<td><strong>1.55%</strong></td>
</tr>
<tr>
<td><strong>50% BofA ML US High Yield BB-B Cnstr/ 50% CSFB Fixed Inc Arb</strong></td>
<td><img src="image14.png" alt="Image" /></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Absolute Return</strong></td>
<td><img src="image15.png" alt="Image" /></td>
<td>$361,612,463</td>
<td>4.07%</td>
<td>5%</td>
<td>0-9%</td>
<td></td>
<td><strong>0.53%</strong></td>
</tr>
<tr>
<td><strong>BofA ML 3-Month T-Bill + 200 bps</strong></td>
<td><img src="image16.png" alt="Image" /></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GTAA</strong></td>
<td><img src="image17.png" alt="Image" /></td>
<td>$777,448,606</td>
<td>8.75%</td>
<td>10%</td>
<td>6-14%</td>
<td></td>
<td><strong>1.49%</strong></td>
</tr>
<tr>
<td><strong>3-Month LIBOR + 300 bps</strong></td>
<td><img src="image18.png" alt="Image" /></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Real Assets</strong></td>
<td><img src="image19.png" alt="Image" /></td>
<td>$934,183,266</td>
<td>10.51%</td>
<td>8%</td>
<td>5-11%</td>
<td></td>
<td><strong>0.22%</strong></td>
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<tr>
<td><strong>CPI + 200 bps</strong></td>
<td><img src="image20.png" alt="Image" /></td>
<td></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>Real Estate</strong></td>
<td><img src="image21.png" alt="Image" /></td>
<td>$869,892,239</td>
<td>9.79%</td>
<td>10%</td>
<td>5-15%</td>
<td></td>
<td><strong>0.44%</strong></td>
</tr>
<tr>
<td>**NCREIF NPI **</td>
<td><img src="image22.png" alt="Image" /></td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Risk Parity</strong></td>
<td><img src="image23.png" alt="Image" /></td>
<td>$303,237,416</td>
<td>3.41%</td>
<td>4%</td>
<td>0-8%</td>
<td></td>
<td><strong>1.45%</strong></td>
</tr>
<tr>
<td><strong>60% Barclays BC Global Aggregate/ 30% MSCI AC World Net/ 10% Bloomberg Commodity Index TR</strong></td>
<td><img src="image24.png" alt="Image" /></td>
<td></td>
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</tr>
<tr>
<td><strong>Short Term Investments</strong></td>
<td><img src="image25.png" alt="Image" /></td>
<td>$127,801,689</td>
<td>1.44%</td>
<td>2%</td>
<td>0-6%</td>
<td></td>
<td><strong>0.19%</strong></td>
</tr>
<tr>
<td><strong>BofA ML 3-Month T-Bill</strong></td>
<td><img src="image26.png" alt="Image" /></td>
<td></td>
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</tbody>
</table>

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

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

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

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

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

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

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

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

April 1, 2009 - June 30, 2010: 30% Russell 3000, 20% MSCI World Ex-US Net, 20% BC US Aggregate, 8% NCREIF NPI, 8% Russell 3000 + 300 bps and 1% BofA ML 3-Month T-Bill

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

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

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

+ The Real Assets benchmark, or CPI + 200 bps, is scheduled to be reported shortly after 2/21/2013 and will be updated as soon as it is available.

Target Equity Benchmarks/Effective Dates

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

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

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

July 1, 2010 - June 30, 2011: 57.14% Russell 3000 and 42.86% MSCI World Ex-US Net

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

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

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

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

Page 2 of 3
## Arizona PSPRS Trust - Historical Calendar Year Performance as of 12/31/2016 (Gross of Fees)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Arizona PSPRS Trust - Total Fund</strong></td>
<td>8.49%</td>
<td>2.65%</td>
<td>6.37%</td>
<td>13.26%</td>
<td>9.38%</td>
<td>0.96%</td>
<td>10.35%</td>
<td>19.02%</td>
<td>-26.62%</td>
<td>9.32%</td>
</tr>
<tr>
<td><strong>Target Fund Benchmark</strong></td>
<td>7.73%</td>
<td>1.01%</td>
<td>5.36%</td>
<td>12.85%</td>
<td>11.11%</td>
<td>2.26%</td>
<td>9.55%</td>
<td>19.49%</td>
<td>-29.57%</td>
<td>7.62%</td>
</tr>
</tbody>
</table>
Arizona Public Safety Retirement Trust
Investment Summary
Quarter Ending December 31, 2016

Allan Martin, Partner
Tony Ferrara, CAIA, Consultant
Market Environment and Outlook
**Economic Environment**

- **Fourth quarter GDP growth rate (advance estimate) printed at a modest 1.9%**.
  - Retail sales ended November at +3.7% on a YoY basis. In the same period last year the YoY growth rate was 1.0%.
  - The inventory-to-sales ratio ended November flat at 1.4 and has remained relatively flat since early 2010.
  - Corporate profits (ended July) as a percent of GDP increased to 9.0% from 8.5% (in April) and remain elevated relative to historical levels.
  - The U.S. trade deficit widened ended November as the rate of change in imports increased to a 15 month high.

- **The unemployment rate decreased to 4.7% in Q4 from 4.9% in Q3; U-6, a broader measure of unemployment, decreased to 9.1% during the fourth quarter from 9.7%**.

- **The Case-Shiller Home Price Index (ended October) increased to 185.06 from 183.3 in July and is at levels higher than that of pre-financial crisis levels of 150.9**.

- **Rolling 12-month seasonally adjusted CPI saw an uptick to 2.09% at the end of December; Capacity Utilization was flat at 75.5% ended Q4**.

- **Fed Funds rate was increased +0.25% to a targeted range of 0.50% - to - 0.75%. The 10-year Treasury Yield (constant maturity) finished Q4 at 2.5% up 0.9% from Q3**.

- **The Fed balance sheet decreased slightly during Q4 2016, while the European Central Bank balance sheet continues to increase.**
  - ECB held its benchmark refinance rate at 0%, deposit rates -0.4% and asset purchases at €80 billion per month of corporate and public securities, announced slowing of bond purchase pace in 2017.

- **S&P valuations increased slightly in Q4 remaining above the 10-year and long-term averages.**
  - Cyclically adjusted Shiller PE ratio (27.84x) is above the long-term average of 16.71x and above the 10-year average of 24.46x.
## Market Environment – Q4 2016 Overview

**World Equity Benchmarks**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Qtr.</th>
<th>1 Yr.</th>
<th>3 Yr.</th>
<th>5 Yr.</th>
<th>10 Yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCI ACWI (Net) (USD) World</td>
<td>1.2%</td>
<td>7.9%</td>
<td>3.1%</td>
<td>9.4%</td>
<td>3.6%</td>
</tr>
<tr>
<td>MSCI ACWI (Local) World (Local Currency)</td>
<td>4.1%</td>
<td>8.8%</td>
<td>6.4%</td>
<td>11.9%</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

**Domestic Equity Benchmarks**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Qtr.</th>
<th>1 Yr.</th>
<th>3 Yr.</th>
<th>5 Yr.</th>
<th>10 Yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500 Large Core</td>
<td>3.8%</td>
<td>12.0%</td>
<td>8.9%</td>
<td>14.7%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Russell 1000 Large Core</td>
<td>3.8%</td>
<td>12.1%</td>
<td>8.6%</td>
<td>14.7%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Russell 1000 Growth Large Growth</td>
<td>1.0%</td>
<td>7.1%</td>
<td>8.6%</td>
<td>14.5%</td>
<td>8.3%</td>
</tr>
<tr>
<td>Russell 1000 Value Large Value</td>
<td>6.7%</td>
<td>17.3%</td>
<td>8.6%</td>
<td>14.8%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Russell 2000 Small Core</td>
<td>8.8%</td>
<td>21.3%</td>
<td>6.7%</td>
<td>14.5%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Russell 2000 Growth Small Growth</td>
<td>3.6%</td>
<td>11.3%</td>
<td>5.1%</td>
<td>13.7%</td>
<td>7.8%</td>
</tr>
<tr>
<td>Russell 2000 Value Small Value</td>
<td>14.1%</td>
<td>31.7%</td>
<td>8.3%</td>
<td>15.1%</td>
<td>6.3%</td>
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</tbody>
</table>

**International Equity Benchmarks**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Qtr.</th>
<th>1 Yr.</th>
<th>3 Yr.</th>
<th>5 Yr.</th>
<th>10 Yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCI ACWI Ex USA World ex-US</td>
<td>-1.3%</td>
<td>4.5%</td>
<td>-1.8%</td>
<td>5.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>MSCI EAFE (Net) (USD) Int’l Developed</td>
<td>-0.7%</td>
<td>1.0%</td>
<td>-1.6%</td>
<td>6.5%</td>
<td>0.7%</td>
</tr>
<tr>
<td>MSCI EAFE (Local) Int’l Developed (Local Currency)</td>
<td>7.1%</td>
<td>5.3%</td>
<td>5.5%</td>
<td>11.8%</td>
<td>2.2%</td>
</tr>
<tr>
<td>S&amp;P EPAC Small Cap Small Cap Int’l</td>
<td>-3.3%</td>
<td>1.7%</td>
<td>2.4%</td>
<td>10.7%</td>
<td>3.1%</td>
</tr>
<tr>
<td>MSCI EM Emerging Equity</td>
<td>-4.2%</td>
<td>11.2%</td>
<td>-2.6%</td>
<td>1.3%</td>
<td>1.8%</td>
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</tbody>
</table>

**Domestic Fixed Income Benchmarks**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Qtr.</th>
<th>1 Yr.</th>
<th>3 Yr.</th>
<th>5 Yr.</th>
<th>10 Yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barclays Aggregate Core Bonds</td>
<td>-3.0%</td>
<td>2.6%</td>
<td>3.0%</td>
<td>2.2%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Barclays US High Yield High Yield</td>
<td>1.8%</td>
<td>17.1%</td>
<td>4.7%</td>
<td>7.4%</td>
<td>7.5%</td>
</tr>
<tr>
<td>BoFA ML US HY BB/B High Yield</td>
<td>1.3%</td>
<td>14.7%</td>
<td>4.9%</td>
<td>7.1%</td>
<td>6.9%</td>
</tr>
<tr>
<td>CSFB Levered Loans Bank Loans</td>
<td>2.3%</td>
<td>9.9%</td>
<td>3.8%</td>
<td>5.3%</td>
<td>4.3%</td>
</tr>
<tr>
<td>BoFA ML US 3-Month T-Bill Cash</td>
<td>0.1%</td>
<td>0.3%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Barclays US TIPS 1-10 Yr Inflation</td>
<td>-1.5%</td>
<td>4.0%</td>
<td>1.5%</td>
<td>0.7%</td>
<td>3.8%</td>
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</tbody>
</table>

**Global Fixed Income Benchmarks**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Qtr.</th>
<th>1 Yr.</th>
<th>3 Yr.</th>
<th>5 Yr.</th>
<th>10 Yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citigroup WGBI World Gov. Bonds</td>
<td>-8.5%</td>
<td>1.6%</td>
<td>-0.8%</td>
<td>-1.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Barclays Global Aggregate Global Core Bonds</td>
<td>-7.1%</td>
<td>2.1%</td>
<td>-0.2%</td>
<td>0.2%</td>
<td>3.3%</td>
</tr>
<tr>
<td>BC Global Credit Global Bonds</td>
<td>-4.4%</td>
<td>3.7%</td>
<td>1.0%</td>
<td>2.6%</td>
<td>3.9%</td>
</tr>
<tr>
<td>JPMGBI-EM Glob. Diversified Em. Mkt. Bonds (Local Currency)</td>
<td>-6.1%</td>
<td>9.9%</td>
<td>-4.1%</td>
<td>-1.3%</td>
<td>3.8%</td>
</tr>
<tr>
<td>JPM EMBI+ Em. Mkt. Bonds</td>
<td>-5.3%</td>
<td>9.6%</td>
<td>5.8%</td>
<td>5.1%</td>
<td>6.6%</td>
</tr>
</tbody>
</table>

**Alternative Benchmarks**

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Qtr.</th>
<th>1 Yr.</th>
<th>3 Yr.</th>
<th>5 Yr.</th>
<th>10 Yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloomberg Commodity Index Commodities</td>
<td>2.7%</td>
<td>11.8%</td>
<td>-11.3%</td>
<td>-9.0%</td>
<td>-5.6%</td>
</tr>
<tr>
<td>Credit Suisse Hedge Fund Index Hedge Fund</td>
<td>1.1%</td>
<td>1.3%</td>
<td>1.6%</td>
<td>4.4%</td>
<td>3.8%</td>
</tr>
<tr>
<td>HFRI FoF Conservative Fund of Hedge Funds</td>
<td>2.0%</td>
<td>2.3%</td>
<td>1.9%</td>
<td>3.5%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Cambridge PE Lagged* Private Equity</td>
<td>3.7%</td>
<td>8.6%</td>
<td>10.7%</td>
<td>13.1%</td>
<td>10.8%</td>
</tr>
<tr>
<td>NCREIF ODCE Net Lagged* Real Estate</td>
<td>1.8%</td>
<td>9.1%</td>
<td>11.4%</td>
<td>11.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Wilshire REIT Index REIT</td>
<td>-2.3%</td>
<td>7.2%</td>
<td>13.8%</td>
<td>12.0%</td>
<td>4.8%</td>
</tr>
<tr>
<td>CPI + 2% Inflation/Real Assets</td>
<td>1.3%</td>
<td>4.1%</td>
<td>3.2%</td>
<td>3.4%</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

* As of 9/30/2016
Market Environment

Global Equity

• U.S. equities posted modest gains in the fourth quarter (+3.8%) according to the S&P 500. Volatility related to political change and economic uncertainty continued in the quarter.

• Small cap stocks outperformed large cap stocks during the quarter, with the Russell 2000 Index returning 8.8% and the Russell 1000 Index returning 3.8%.

• International equities underperformed U.S. markets during the quarter, returning -1.3%, as measured by the MSCI ACWI ex-U.S. Index. Emerging markets returned -4.2% as measured by the MSCI Emerging Markets Index in U.S. dollar terms.
  – Developed international markets returned -0.7% in USD terms, while in local currency terms returned +7.1% as measured by the MSCI EAFE Index.

Private Equity

• Total fundraising in 2016 was as follows:
  – Private equity fundraising totaled $395.4 billion.
  – Buyout and Special Situations fundraising totaled $219.7 billion.
    • While leverage multiples are nearly as high as pre-GFC levels, companies’ abilities to service their debt is stronger than in prior years.
  – Venture capital fundraising totaled $56.8 billion.
    • Fundraising continues to be strong, largest amounts since the dot-com era.
  – Fund of fund and multi-manager co-investment fundraising totaled $52.8 billion.
  – Growth equity fundraising totaled $23.9 billion.
**Market Environment**

**Fixed Income**

- The nominal yield curve steepened in Q4. Intermediate yields increased 79 –to- 85 basis points and long duration yields increased 74 basis points.

- The spread between two and 10-year rates increased to 125 basis points from 83 basis points in Q3. Treasury Inflation-Protected Securities, or TIPS, returned -1.5% during the quarter, as measured by the BBg Barclays US TIPS 1-10 Yr Index.

- The BBg Barclays Long Duration Credit Index lost -5.02% as the long end of the curve ended the quarter 74 basis points higher.

- Long Treasuries lost -11.67% and investment-grade US corporate debt lost -2.98%.

- The BBg Barclays 1-3 year Government/ Credit Index returned -0.39%. US high yield bonds gained +1.8% driven by Energy names and tighter spreads.

- Emerging markets debt sustained moderate losses.
  - US dollar-denominated debt, as measured by the JP Morgan EMBI Index, lost -5.3%; local currency debt lost -6.1%, according to the JP Morgan GBI-EM BD Index.
  - Inflows in 2016 have not made up for outflows since 2013 in local currency EMD.
Real Assets/Inflation-Linked Assets

• **Energy remains attractive.**
  – Private equity and debt opportunities are attractive.
  – Fire sale prices never materialized but focusing on assets outside of the hottest zip codes provides potential for strong returns as market normalizes.

• **Infrastructure – select opportunities to access growth markets.**
  – High quality assets are receiving premium bids from direct investors (Pension Funds and Sovereigns) with low costs of capital and long hold horizons; focus on mismanaged or niche opportunities.

• **Metals & Mining – have commodity prices bottomed?**
  – Peak capex occurred in 2012, lagging commodity price drops that began in 2011.
  – Diverse demand drivers for underlying commodity prices.

• **Timber – low return potential and limited opportunity for outperformance.**

• **Agriculture – near-term slowdown in price appreciation creates opportunity to invest in a strong (very) long term outlook supported by demographic trends.**
Commodities

- Commodities ended the quarter up +2.3% as measured by the Bloomberg Commodity Index. Weakness in Gold (lost -12.5%) in the fourth quarter outweighed by positive performance in the broader basket of commodities.

Real Estate

- NEPC continues to be neutral on core real estate in the US and remains positive on non-core real estate, that is, value-add and opportunistic strategies.

- Real estate fundamentals (rent growth, occupancy, net absorption) remain strong; however, valuations are high on an absolute and relative basis.
  - Rising interest rates have been baked into existing valuations but excess cap rate expansion (beyond general expectations) will reset valuations.

- Overall, the non-core real estate investment environment in the U.S. is normalizing; however, select areas remain attractive.

- REITs, at Q4, are trading below NAV but have been volatile and are still at historically high FFO multiples.

- Europe is viewed as the best place for a marginal dollar of non-core real estate investment.
  - Current US-dollar denominated investors with currency exposure will feel near-term impact of Brexit, but new investors may benefit from a strong US-dollar. Long-term Brexit implications, however, are unclear.
Key Market Themes

Extended US Economic Cycle

**Economic cycles don’t die of old age**

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

The health of US consumers continue to drive economic growth given relatively low debt levels.

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

**We anticipate inflation will shift marginally higher in the coming years**

Improvements in wage growth and the ongoing recovery in housing further support modest upticks in inflation.

The strength of the US dollar is likely to restrain inflationary pressures and offset the potential impact of fiscal stimulus in the US.
Key Market Themes

Extended US Economic Cycle

**US recession concerns are muted**

The US economy is likely to experience slow and steady growth as excess capacity is gradually absorbed by the economy.

The labor market recovery has been robust but excess capacity remains as many have yet to return to the workforce.

US dollar strength and corporate profitability trends are the primary sources of concern for potential weakness.

**Fiscal stimulus unlikely to push economic growth into a higher gear**

Tax cuts and infrastructure spending modestly improve the US growth profile.

The potential of higher US growth is likely muted by corresponding dollar strength.

US stimulus may benefit non-US developed economies as marginally higher US growth weakens their currencies and improves competitiveness.

---

Source: (Top) FRED
Source: (Bottom) Congressional Budget Office, Bloomberg

December 31, 2016
Key Market Themes

Federal Reserve Gradualism

**The Federal Reserve is expected to slowly increase interest rates**

Expected path of Fed policy through 2019 matters more than timing of the next hike

Fed has stated a willingness to let the economy “run hot” and accept some inflation to repair the deflationary effects of the past eight years

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

**Historically, rapid tightening of Fed policy precedes a US recession**

Tighter monetary policy slows inflation by decreasing economic activity

The Fed’s monetary policy statements are closely scrutinized and deviations from “lower for longer” can materially impact the market outlook

Source: (Top) Federal Reserve, Bloomberg

Source: (Bottom) Federal Reserve, NBER, Bloomberg
Key Market Themes

Federal Reserve Gradualism

**US dollar strength is interconnected with Federal Reserve policy**

The US dollar is sensitive to changes in Fed rate expectations and interest rate differentials relative to the rest of the world.

Fed must balance the path of future interest rate increases with the disruptive effects of a strong dollar on global markets.

Dollar strength weakens the outlook for US corporate earnings and rapid dollar appreciation likely strains US profit margins.

**2017 is likely to be a year for greater uncertainty regarding Fed policy**

Politics could intersect with Fed policy due to more vocal executive branch and conclusion of Janet Yellen’s term in February 2018.

The path of Fed rate hikes in 2017 and beyond is less clear due to the potential impact of fiscal stimulus.

Source: (Top) Federal Reserve, Bloomberg
Source: (Bottom) Federal Reserve
Key Market Themes

China Transitions

The PBOC is tasked with straddling a delicate path as the economy evolves

China maintains control of its currency and monetary policy but would have to make concessions to open its capital account and allow the free movement of capital.

Restrictions on capital markets are slowly being eased, with an eye towards limiting social disruption.

Concerns of a rapid currency devaluation have forced a more managed transition process that likely delays the opening of equity and bond markets to global investors.

Managed policy transitions come with significant risks which require balance

Fiscal policy: Consequences of unsustainable credit growth if too accommodative or a hard economic landing if too austere.

Monetary policy: Potential for asset price bubbles in real estate and capital markets if policy changes slowly or move rapidly and spur capital flight.
Key Market Themes

Globalization Backlash

Weak economic growth and uneven wage gains over the last decade have fueled political discontent in the West

The backlash against globalization does not materially alter the fundamentals of the global capital markets, but does increase economic and market uncertainty

Populist movements destabilize the established political order but are not inevitably bearish for equity markets

Political uncertainty intensifies currency volatility and in cases of depreciation may stimulate local equity markets (e.g. UK)

May bring increased fiscal spending and higher inflation, a welcome benefit for developed market economies

However, a shift away from political orthodoxy heightens low probability political tail-risks such as a US-China trade war or a dissolution of the euro

Source: (Top) Bureau of Economic Analysis, Eurostat, Bloomberg
Source: (Bottom) Bloomberg

December 31, 2016
Highlights of Fourth Quarter Happenings at NEPC

December 2016

NEPC Insights
- NEPC’s Election Perspective: The Race to the Bottom (October 2016)
- Interest Rate Risk and Asset/Liability Management for Cash Balance Plans (October 2016)
- 2016 3rd Quarter Market Thoughts (October 2016)
- Behind The Curtain: Operational Capabilities Are A Must for OCIOs (November 2016)
- NEPC’s 2016 Hedge Fund Operational Due Diligence Survey Results (November 2016)
- NEPC Market Chatter: To PE or not to PE... That is the Question (November 2016)
- Caution: Construction Ahead – Healthcare Organizations Use Private Equity Investments to Support Innovation (December 2016)

Webinar Replays
- Investor Insights – Perspectives on the 2016 US Election (November 2016)
- Defined Benefit Plan Trends Survey Results (December 2016)
- Digging Deeper on ESG (December 2016)

To download NEPC’s recent white papers and webinar replays, visit: www.NEPC.com/research

Client Awards
We’d like to congratulate the following clients for their recent award wins at Chief Investment Officer’s 7th Annual 2016 Industry Innovation Awards:
- Texas Tech University System’s CIO, Tim Barrett as 2016 recipient of the Endowment Award
- MoDot & Patrol Employees’ Retirement System’s CIO, Larry Krummen as the 2016 recipient of the Public Defined Benefit Plan Below $15 Billion Award
- State of Wisconsin Investment Board’s CIO, David Villa as the 2016 recipient of the Public Defined Benefit Plan Above $100 Billion Award

Upcoming Events
NEPC’s 22nd Annual Investment Conference will be held on May 9-10, 2017 at the InterContinental Hotel in Boston, MA. Details to come in the upcoming months!

NEPC Gives Back
- NEPC employees sorted and prepared 6,853 pounds of food during a volunteer day at the Greater Boston Food Bank, an organization that works to end hunger in the area by providing people in need with healthy food and resources.
- During the month of November, NEPC’s Movember team raised over $5,000 to support men’s health research.
- In support of Breast Cancer Awareness Month, NEPC employees wore their favorite pair of jeans with a purpose and participated in the American Cancer Society Denim Day by sporting denim and the color pink. Together, we raised over $2,500.
- As part of our Annual United Way campaign, over 50 NEPC employees assembled Literacy Kits for children during the holiday season. The kits were filled with developmental games, arts and crafts supplies, and reading materials.
Arizona Public Safety Retirement Trust

Total Fund Performance Summary (Net of Fees)

<table>
<thead>
<tr>
<th>Market Value</th>
<th>3 Mo</th>
<th>Rank</th>
<th>Fiscal YTD</th>
<th>1 Yr</th>
<th>Rank</th>
<th>3 Yrs</th>
<th>Rank</th>
<th>5 Yrs</th>
<th>Rank</th>
<th>10 Yrs</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona PSPRS Trust</td>
<td>$8,889,789,497</td>
<td>2.1%</td>
<td>2</td>
<td>6.2%</td>
<td>10</td>
<td>8.0%</td>
<td>38</td>
<td>5.3%</td>
<td>16</td>
<td>7.5%</td>
<td>66</td>
</tr>
<tr>
<td>Policy Index</td>
<td>1.1%</td>
<td>38</td>
<td>4.4%</td>
<td>67</td>
<td>7.7%</td>
<td>45</td>
<td>4.7%</td>
<td>34</td>
<td>7.5%</td>
<td>65</td>
<td>3.8%</td>
</tr>
<tr>
<td>PSPRS W/IT NCREIF</td>
<td>2.4%</td>
<td>1</td>
<td>6.4%</td>
<td>5</td>
<td>9.3%</td>
<td>8</td>
<td>6.5%</td>
<td>1</td>
<td>8.9%</td>
<td>21</td>
<td>5.4%</td>
</tr>
<tr>
<td>50% MSCI ACWI (Net)/40% CITI WGBI</td>
<td>-2.8%</td>
<td>99</td>
<td>0.4%</td>
<td>99</td>
<td>5.5%</td>
<td>95</td>
<td>1.7%</td>
<td>97</td>
<td>5.3%</td>
<td>95</td>
<td>3.7%</td>
</tr>
<tr>
<td>InvestorForce Public DB &gt; $1B Net Median</td>
<td>0.8%</td>
<td>4.6%</td>
<td>7.7%</td>
<td>4.1%</td>
<td>8.1%</td>
<td>4.8%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Performance returns are reported net of manager fees.

*Fiscal year ends June 30.

- The Fund's performance over the five-year period was 7.5%, ranking in the third quartile of a peer universe. However, the Fund's risk-adjusted returns ranks very highly over this period. The Fund's Sharpe and Sortino Ratios both rank in the 4th percentiles over this period.

- Over the past three years, the Fund returned 5.3% per annum, ranking in the first quartile of a peer universe. The Fund's Sharpe and Sortino Ratios highly during this period as well, ranking in the 4th and 2nd percentiles, respectively over this period.

- Over the last year, the Fund achieved it's primary objective of surpassing the 7.5% assumed rate, returning 8.0%. The Fund's assets totaled $8.89 billion, an increase of $597 million from a year ago. The Fund experienced a net investment gain of $662 million over that time.

*Policy Index: 16%(Russell 3000), 14%(MSCI ACWI Ex US), 10%(3-Month LIBOR+3%), 5%(BC Global Aggregate), 5%(91 Day T-Bills+2%), 15%(50%ML US HY BB-B Constrained/50% CS Fixed Income Arbitrage Index), 11%(Russell 3000+1%), 10%(NCREIF NPI), 8%(CPI+2%), 4%(60% BC Global Agg/30% MSCI All World/10% DJ-UBS Commodity), 2%(ML Treasury 91 Day).
Arizona Public Safety Retirement Trust

Total Fund Risk/Return

### 1 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona PSPRS Trust</td>
<td>8.0%</td>
<td>38</td>
<td>4.4%</td>
<td>10</td>
<td>1.7</td>
<td>7</td>
<td>4.2</td>
<td>4</td>
</tr>
<tr>
<td>Policy Index</td>
<td>7.7%</td>
<td>45</td>
<td>5.3%</td>
<td>20</td>
<td>1.4</td>
<td>24</td>
<td>1.9</td>
<td>22</td>
</tr>
<tr>
<td>PSPRS W/T NCREIF</td>
<td>9.3%</td>
<td>8</td>
<td>4.1%</td>
<td>8</td>
<td>2.2</td>
<td>3</td>
<td>4.3</td>
<td>76</td>
</tr>
<tr>
<td>InvestorForce Public DB &gt; $1B Net Median</td>
<td>7.7%</td>
<td>--</td>
<td>6.3%</td>
<td>--</td>
<td>1.2</td>
<td>--</td>
<td>1.5</td>
<td>--</td>
</tr>
</tbody>
</table>

### 3 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona PSPRS Trust</td>
<td>5.3%</td>
<td>16</td>
<td>4.1%</td>
<td>4</td>
<td>1.2</td>
<td>4</td>
<td>2.8</td>
<td>2</td>
</tr>
<tr>
<td>Policy Index</td>
<td>4.7%</td>
<td>34</td>
<td>5.2%</td>
<td>9</td>
<td>0.9</td>
<td>15</td>
<td>1.8</td>
<td>7</td>
</tr>
<tr>
<td>PSPRS W/T NCREIF</td>
<td>6.5%</td>
<td>1</td>
<td>3.9%</td>
<td>3</td>
<td>1.6</td>
<td>1</td>
<td>3.7</td>
<td>76</td>
</tr>
<tr>
<td>InvestorForce Public DB &gt; $1B Net Median</td>
<td>4.1%</td>
<td>--</td>
<td>6.2%</td>
<td>--</td>
<td>0.6</td>
<td>--</td>
<td>1.1</td>
<td>--</td>
</tr>
</tbody>
</table>

### 5 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona PSPRS Trust</td>
<td>7.5%</td>
<td>68</td>
<td>4.1%</td>
<td>4</td>
<td>1.8</td>
<td>4</td>
<td>3.3</td>
<td>4</td>
</tr>
<tr>
<td>Policy Index</td>
<td>7.5%</td>
<td>65</td>
<td>5.1%</td>
<td>6</td>
<td>1.5</td>
<td>16</td>
<td>2.5</td>
<td>7</td>
</tr>
<tr>
<td>PSPRS W/T NCREIF</td>
<td>8.9%</td>
<td>21</td>
<td>4.0%</td>
<td>3</td>
<td>2.2</td>
<td>2</td>
<td>3.8</td>
<td>76</td>
</tr>
<tr>
<td>InvestorForce Public DB &gt; $1B Net Median</td>
<td>8.1%</td>
<td>--</td>
<td>6.3%</td>
<td>--</td>
<td>1.2</td>
<td>--</td>
<td>1.8</td>
<td>--</td>
</tr>
</tbody>
</table>

### 10 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona PSPRS Trust</td>
<td>4.2%</td>
<td>76</td>
<td>8.9%</td>
<td>28</td>
<td>0.4</td>
<td>68</td>
<td>0.5</td>
<td>76</td>
</tr>
<tr>
<td>Policy Index</td>
<td>3.8%</td>
<td>86</td>
<td>10.1%</td>
<td>66</td>
<td>0.3</td>
<td>85</td>
<td>0.4</td>
<td>96</td>
</tr>
<tr>
<td>PSPRS W/T NCREIF</td>
<td>5.4%</td>
<td>15</td>
<td>8.9%</td>
<td>29</td>
<td>0.5</td>
<td>7</td>
<td>0.6</td>
<td>76</td>
</tr>
<tr>
<td>InvestorForce Public DB &gt; $1B Net Median</td>
<td>4.8%</td>
<td>--</td>
<td>9.7%</td>
<td>--</td>
<td>0.4</td>
<td>--</td>
<td>0.8</td>
<td>--</td>
</tr>
</tbody>
</table>
## Total Fund Asset Growth Summary

### 5 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th></th>
<th>Last Three Months</th>
<th>Fiscal Year-To-Date</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning Market Value</td>
<td>$8,720,087,760</td>
<td>$8,290,723,451</td>
<td>$8,292,399,153</td>
<td>$7,757,228,484</td>
<td>$6,496,602,043</td>
</tr>
<tr>
<td>Net Cash Flow</td>
<td>-$11,578,087</td>
<td>$80,476,472</td>
<td>-$64,991,159</td>
<td>-$148,058,259</td>
<td>-$506,316,410</td>
</tr>
<tr>
<td>Net Investment Change</td>
<td>$181,279,825</td>
<td>$518,589,573</td>
<td>$662,381,502</td>
<td>$1,280,619,273</td>
<td>$2,899,503,864</td>
</tr>
</tbody>
</table>

### Ending Market Value

<table>
<thead>
<tr>
<th></th>
<th>$8,889,789,497</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>December 31, 2016</strong></td>
<td>$8,889,789,497</td>
</tr>
</tbody>
</table>
### Asset Allocation vs. Target

<table>
<thead>
<tr>
<th>Policy</th>
<th>Current</th>
<th>Policy Difference*</th>
<th>Policy Range</th>
<th>Within Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>$1,391,457,330</td>
<td>15.7%</td>
<td>16.0%</td>
<td>-0.3%</td>
</tr>
<tr>
<td>Non-US Equity</td>
<td>$1,291,493,325</td>
<td>14.5%</td>
<td>14.0%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>$500,939,713</td>
<td>5.6%</td>
<td>5.0%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Global Asset Allocation</td>
<td>$777,448,606</td>
<td>8.7%</td>
<td>10.0%</td>
<td>-1.3%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>$303,237,416</td>
<td>3.4%</td>
<td>4.0%</td>
<td>-0.6%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>$1,058,465,273</td>
<td>11.9%</td>
<td>15.0%</td>
<td>-3.1%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>$1,273,256,791</td>
<td>14.3%</td>
<td>11.0%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>$361,612,463</td>
<td>4.1%</td>
<td>5.0%</td>
<td>-0.9%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>$869,892,239</td>
<td>9.8%</td>
<td>10.0%</td>
<td>-0.2%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>$934,183,266</td>
<td>10.5%</td>
<td>8.0%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Cash</td>
<td>$127,803,076</td>
<td>1.4%</td>
<td>2.0%</td>
<td>-0.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$8,889,789,497</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*Difference between Policy and Current Allocation

*Cash Allocation includes Sec Lend Impairment.

*Policy Index: 16%(Russell 3000), 14%(MSCI ACWI Ex US), 10%(3-Month LIBOR+3%), 5%(BC Global Aggregate), 5%(91 Day T-Bills+2%), 15%(50%ML US HY BB-B Constrained/50% CS Fixed Income Arbitrage Index), 11%(Russell 3000+1%), 10%(NCREIF NPI), 8%(CPI+2%), 4%(60% BC Global Agg/30% MSCI All World/10% DJ-UBS Commodity), 2%(ML Treasury 91 Day).
Arizona Public Safety Retirement Trust
Total Fund Asset Allocation History

Asset Allocation History

% Allocation (Actual)


Policy

U.S. Equity
Non-US Equity
Fixed Income
Global Asset Allocation
Private Credit
Risk Parity
Private Equity
Absolute Return
Real Estate
Real Assets
Cash
Arizona Public Safety Retirement Trust

Total Fund Risk/Return

*49 observations for this specific universe.

*48 observations for this specific universe.
Arizona Public Safety Retirement Trust

Total Fund Risk Statistics vs. Peer Universe

Arizona PSPRS Trust vs. InvestorForce Public DB > $1B Net (USD) (peer)
1 Year

- **Anlzd Return**
  - **Arizona PSPRS Trust**
    - Value: 8.0
    - Rank: 38
  - **Policy Index**
    - Value: 7.7
    - Rank: 45

- **Anlzd Alpha**
  - **Arizona PSPRS Trust**
    - Value: 2.1
    - Rank: 6
  - **Policy Index**
    - Value: 0.0
    - Rank: 45

- **Anlzd Standard Deviation**
  - **Arizona PSPRS Trust**
    - Value: 4.4
    - Rank: 10
  - **Policy Index**
    - Value: 5.3
    - Rank: 20

- **Sharpe Ratio**
  - **Arizona PSPRS Trust**
    - Value: 1.7
    - Rank: 7
  - **Policy Index**
    - Value: 1.4
    - Rank: 24

- **Sortino Ratio**
  - **Arizona PSPRS Trust**
    - Value: 4.2
    - Rank: 4
  - **Policy Index**
    - Value: 1.9
    - Rank: 22

Universe
- 5th %tile: 9.3
- 25th %tile: 8.4
- Median: 7.7
- 75th %tile: 7.1
- 95th %tile: 5.3

Universe
- 5th %tile: 2.1
- 25th %tile: 0.9
- Median: -0.2
- 75th %tile: -0.9
- 95th %tile: -2.6
Arizona Public Safety Retirement Trust
Total Fund Risk Statistics vs. Peer Universe

Arizona PSPRS Trust vs. InvestorForce Public DB > $1B Net (USD) (peer)
3 Years

### Anizd Return
- **Arizona PSPRS Trust**
  - Value: 5.3
  - Rank: 16
- **Policy Index**
  - Value: 4.7
  - Rank: 34

### Anizd Alpha
- **Arizona PSPRS Trust**
  - Value: 1.9
  - Rank: 4
- **Policy Index**
  - Value: 0.0
  - Rank: 41

### Anizd Standard Deviation
- **Arizona PSPRS Trust**
  - Value: 4.1
  - Rank: 4
- **Policy Index**
  - Value: 5.2
  - Rank: 9

### Sharpe Ratio
- **Arizona PSPRS Trust**
  - Value: 1.2
  - Rank: 4
- **Policy Index**
  - Value: 0.9
  - Rank: 15

### Sortino Ratio
- **Arizona PSPRS Trust**
  - Value: 2.8
  - Rank: 2
- **Policy Index**
  - Value: 1.8
  - Rank: 7

### Universe
- 5th %tile: 5.4
- 25th %tile: 4.9
- Median: 4.1
- 75th %tile: 3.6
- 95th %tile: 2.2
- Universe
- 5th %tile: 1.4
- 25th %tile: 0.3
- Median: -0.2
- 75th %tile: -0.7
- 95th %tile: -2.4
- Universe
- 5th %tile: 4.7
- 25th %tile: 5.7
- Median: 6.2
- 75th %tile: 6.9
- 95th %tile: 7.6
- Universe
- 5th %tile: 1.1
- 25th %tile: 0.8
- Median: 0.6
- 75th %tile: 0.5
- 95th %tile: 0.3
- Universe
- 5th %tile: 2.0
- 25th %tile: 1.3
- Median: 1.1
- 75th %tile: 0.9
- 95th %tile: 0.5
Arizona Public Safety Retirement Trust
Total Fund Risk/Return

*48 observations for this specific universe.

*45 observations for this specific universe.
Arizona Public Safety Retirement Trust

Total Fund Risk Statistics vs. Peer Universe

Arizona PSPRS Trust vs. InvestorForce Public DB > $1B Net (USD) (peer)

5 Years

<table>
<thead>
<tr>
<th>Anlzd Return</th>
<th>Anlzd Alpha</th>
<th>Anlzd Standard Deviation</th>
<th>Sharpe Ratio</th>
<th>Sortino Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona PSPRS Trust Value 7.5</td>
<td>Arizona PSPRS Trust Value 1.9</td>
<td>Arizona PSPRS Trust Value 4.1</td>
<td>Arizona PSPRS Trust Value 1.8</td>
<td>Arizona PSPRS Trust Value 3.3</td>
</tr>
<tr>
<td>Rank 68</td>
<td>Rank 6</td>
<td>Rank 4</td>
<td>Rank 4</td>
<td>Rank 4</td>
</tr>
<tr>
<td>Policy Index Value 7.5</td>
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<td>Rank 65</td>
<td>Rank 51</td>
<td>Rank 6</td>
<td>Rank 16</td>
<td>Rank 7</td>
</tr>
<tr>
<td>Universe 5th %tile 9.5</td>
<td>Universe 5th %tile 1.9</td>
<td>Universe 5th %tile 5.1</td>
<td>Universe 5th %tile 1.6</td>
<td>Universe 5th %tile 2.6</td>
</tr>
<tr>
<td>25th %tile 8.8</td>
<td>25th %tile 0.4</td>
<td>25th %tile 5.9</td>
<td>25th %tile 1.4</td>
<td>25th %tile 2.1</td>
</tr>
<tr>
<td>Median 8.1</td>
<td>Median 0.0</td>
<td>Median 6.3</td>
<td>Median 1.2</td>
<td>Median 1.8</td>
</tr>
<tr>
<td>75th %tile 7.1</td>
<td>75th %tile -0.5</td>
<td>75th %tile 7.0</td>
<td>75th %tile 1.1</td>
<td>75th %tile 1.6</td>
</tr>
<tr>
<td>95th %tile 5.0</td>
<td>95th %tile -1.9</td>
<td>95th %tile 7.7</td>
<td>95th %tile 0.9</td>
<td>95th %tile 1.2</td>
</tr>
</tbody>
</table>
Arizona Public Safety Retirement Trust

Total Fund Risk Statistics vs. Peer Universe

Arizona PSPRS Trust vs. InvestorForce Public DB > $1B Net (USD) (peer)

10 Years

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value (Arizona PSPRS Trust)</th>
<th>Rank</th>
<th>Value (Universe)</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anlzd Return</td>
<td>6.8</td>
<td>76</td>
<td>3.3</td>
<td>86</td>
</tr>
<tr>
<td>Anlzd Alpha</td>
<td>3.2</td>
<td>26</td>
<td>1.7</td>
<td>50</td>
</tr>
<tr>
<td>Anlzd Standard Deviation</td>
<td>6.9</td>
<td>68</td>
<td>7.9</td>
<td>85</td>
</tr>
<tr>
<td>Sharpe Ratio</td>
<td>0.8</td>
<td>76</td>
<td>0.5</td>
<td>96</td>
</tr>
<tr>
<td>Sortino Ratio</td>
<td>1.0</td>
<td>76</td>
<td>0.7</td>
<td>96</td>
</tr>
</tbody>
</table>

- Arizona PSPRS Trust Value: 4.2
- Rank: 76
- Policy Index Value: 3.8
- Rank: 86
- Universe 5th %tile: 5.7
- 25th %tile: 5.2
- Median: 4.8
- 75th %tile: 4.2
- 95th %tile: 3.3

- Universe 5th %tile: 1.7
- 25th %tile: 0.6
- Median: 0.0
- 75th %tile: -0.6
- 95th %tile: -1.3

- Universe Value: 8.9
- Rank: 68
- Policy Index Value: 0.0
- Rank: 50
- Universe 5th %tile: 7.9
- 25th %tile: 8.9
- Median: 9.7
- 75th %tile: 10.4
- 95th %tile: 11.3
Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total results shown may vary from the calculated return shown on the performance summary.

*Policy weight shown is end of period.
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*Policy weight shown is end of period.
**Total Fund Attribution Analysis**

### Attribution Summary

<table>
<thead>
<tr>
<th></th>
<th>Policy Weight</th>
<th>Wtd. Actual Return</th>
<th>Wtd. Index Return</th>
<th>Excess Return</th>
<th>Selection Effect</th>
<th>Allocation Effect</th>
<th>Interaction Effects</th>
<th>Total Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>17.0%</td>
<td>6.5%</td>
<td>8.4%</td>
<td>-1.9%</td>
<td>-0.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>-0.3%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>14.0%</td>
<td>-1.7%</td>
<td>-1.8%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Global Asset Allocation</td>
<td>10.0%</td>
<td>3.5%</td>
<td>3.4%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>8.0%</td>
<td>4.2%</td>
<td>-0.2%</td>
<td>4.4%</td>
<td>0.3%</td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>12.0%</td>
<td>6.6%</td>
<td>4.0%</td>
<td>2.5%</td>
<td>0.3%</td>
<td>-0.1%</td>
<td>-0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>8.0%</td>
<td>2.9%</td>
<td>3.2%</td>
<td>-0.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>4.0%</td>
<td>2.9%</td>
<td>2.1%</td>
<td>0.8%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>11.0%</td>
<td>3.3%</td>
<td>11.0%</td>
<td>-7.7%</td>
<td>-0.8%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>10.0%</td>
<td>16.7%</td>
<td>9.5%</td>
<td>7.2%</td>
<td>0.7%</td>
<td>0.4%</td>
<td>0.2%</td>
<td>1.2%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>4.0%</td>
<td>3.2%</td>
<td>1.8%</td>
<td>1.4%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Cash</td>
<td>2.0%</td>
<td>0.2%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>5.3%</strong></td>
<td><strong>4.7%</strong></td>
<td><strong>0.5%</strong></td>
<td><strong>0.3%</strong></td>
<td><strong>0.1%</strong></td>
<td><strong>0.2%</strong></td>
<td><strong>0.5%</strong></td>
</tr>
</tbody>
</table>

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*Policy weight shown is end of period.

### Attribution Summary

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<thead>
<tr>
<th></th>
<th>Policy Weight</th>
<th>Wtd. Actual Return</th>
<th>Wtd. Index Return</th>
<th>Excess Return</th>
<th>Selection Effect</th>
<th>Allocation Effect</th>
<th>Interaction Effects</th>
<th>Total Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>20.0%</td>
<td>12.9%</td>
<td>14.7%</td>
<td>-1.8%</td>
<td>-0.3%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>-0.2%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>15.0%</td>
<td>5.1%</td>
<td>5.0%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>-0.1%</td>
<td>0.0%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Global Asset Allocation</td>
<td>8.0%</td>
<td>3.1%</td>
<td>3.4%</td>
<td>-0.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>20.0%</td>
<td>3.1%</td>
<td>3.0%</td>
<td>0.2%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>9.0%</td>
<td>9.5%</td>
<td>6.1%</td>
<td>3.4%</td>
<td>0.4%</td>
<td>-0.2%</td>
<td>-0.1%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>6.0%</td>
<td>3.3%</td>
<td>3.4%</td>
<td>-0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>4.0%</td>
<td>7.6%</td>
<td>2.1%</td>
<td>5.5%</td>
<td>0.2%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>8.0%</td>
<td>2.5%</td>
<td>10.9%</td>
<td>-8.4%</td>
<td>-0.8%</td>
<td>0.1%</td>
<td>-0.1%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>8.0%</td>
<td>16.2%</td>
<td>15.7%</td>
<td>0.5%</td>
<td>0.1%</td>
<td>0.4%</td>
<td>0.1%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>--</td>
<td>3.2%</td>
<td>3.2%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Cash</td>
<td>2.0%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
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<tr>
<td>Total</td>
<td>100.0%</td>
<td>7.4%</td>
<td>7.5%</td>
<td>-0.1%</td>
<td>-0.2%</td>
<td>0.2%</td>
<td>-0.1%</td>
<td>-0.1%</td>
</tr>
</tbody>
</table>

*Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total results shown may vary from the calculated return shown on the performance summary.*

*Policy weight shown is end of period.*
### Total Fund Risk Statistics

#### 1 Year Ending December 31, 2016

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Ann Excess BM Return</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
<th>Info Ratio</th>
<th>Rank</th>
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</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>15.7%</td>
<td>12.3%</td>
<td>47</td>
<td>10.8%</td>
<td>25</td>
<td>-0.4%</td>
<td>47</td>
<td>0.9%</td>
<td>1</td>
<td>-0.5</td>
<td>58</td>
</tr>
<tr>
<td>Russell 3000</td>
<td>--</td>
<td>12.7%</td>
<td>45</td>
<td>11.3%</td>
<td>31</td>
<td>0.0%</td>
<td>45</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
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<tr>
<td>Non-U.S. Equity</td>
<td>14.5%</td>
<td>3.7%</td>
<td>19</td>
<td>11.6%</td>
<td>25</td>
<td>-0.8%</td>
<td>19</td>
<td>2.2%</td>
<td>1</td>
<td>-0.4</td>
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<tr>
<td>MSCI ACWI ex USA</td>
<td>--</td>
<td>4.5%</td>
<td>16</td>
<td>13.4%</td>
<td>62</td>
<td>0.0%</td>
<td>16</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Global Asset Allocation</td>
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<td>78</td>
<td>5.1%</td>
<td>29</td>
<td>-1.8%</td>
<td>78</td>
<td>5.0%</td>
<td>26</td>
<td>-0.4</td>
<td>80</td>
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<tr>
<td>3-Month LIBOR + 3%</td>
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<td>3.8%</td>
<td>45</td>
<td>0.1%</td>
<td>1</td>
<td>0.0%</td>
<td>45</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>5.6%</td>
<td>5.9%</td>
<td>32</td>
<td>2.5%</td>
<td>31</td>
<td>3.8%</td>
<td>32</td>
<td>6.2%</td>
<td>60</td>
<td>0.6</td>
<td>35</td>
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<tr>
<td>BBgBarc Global Aggregate TR</td>
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<td>2.1%</td>
<td>65</td>
<td>7.3%</td>
<td>90</td>
<td>0.0%</td>
<td>65</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

| Private Credit                    | 11.9%    | 7.0%      | 27   | 2.8%          | 1    | -2.4%                | 27   | 81%            | 4    | --         | --   |
| 50% BofAML US HY BB-B Constrained Ind/50% | --   | 9.4%      | 5    | 3.5%          | 16   | 0.0%                 | 56   | 4             | 60   | 0.0%       | --   |
| CSFB Fixed Income Arbitrage       | --       | 4.2%      | 80   | 0.5%          | 1    | 0.0%                 | 1    | 56            | 1    | 0.0%       | --   |
| Real Assets                       | 10.5%    | 12.3%     | 43   | 3.5%          | 16   | 8.1%                 | 4    | 56            | 1    | 0.1%       | --   |
| CPI + 2 %                         | --       | 2.3%      | 80   | 0.0%          | 1    | 0.0%                 | 1    | 56            | 1    | 0.0%       | --   |
| Absolute Return                   | 4.1%     | 5.4%      | --   | 3.4%          | --   | 3.1%                 | --   | 56            | 1    | 0.0%       | --   |
| 91TBill + 2%                      | --       | 2.3%      | --   | 0.0%          | --   | 0.0%                 | --   | 56            | 1    | 0.0%       | --   |
| Real Estate                       | 9.8%     | 1.2%      | 97   | 7.0%          | 91   | -6.8%                | 97   | 52            | 1    | 0.0%       | --   |
| NCREIF Property Index             | --       | 8.0%      | 54   | 3.3%          | 54   | 0.0%                 | 54   | 52            | 1    | 0.0%       | --   |
| Private Equity                    | 14.3%    | 15.9%     | 1    | 8.3%          | 97   | 2.1%                 | 97   | 52            | 1    | 0.0%       | --   |
| Russell 3000 + 1%                 | --       | 13.9%     | 4    | 11.3%         | 99   | 0.0%                 | 99   | 52            | 1    | 0.0%       | --   |
| Risk Parity                       | 3.4%     | 8.3%      | --   | 5.7%          | --   | 3.0%                 | --   | 52            | 1    | 0.0%       | --   |
| 60% BC Global Agg /30% MSCI AC World (Net) /10% | --   | 5.3%      | --   | 4.4%          | --   | 0.0%                 | --   | 52            | 1    | 0.0%       | --   |
| DJ UBS Commodity Index TR         | --       | 5.3%      | --   | 4.4%          | --   | 0.0%                 | --   | 52            | 1    | 0.0%       | --   |

*Asset classes shown sum to less than 100% due to the exclusion of cash.

### Arizona Public Safety Retirement Trust

#### Total Fund Risk Statistics

**3 Years Ending December 31, 2016**

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Ann Excess BM Return</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
<th>Info Ratio</th>
<th>Rank</th>
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<tr>
<td><strong>U.S. Equity</strong></td>
<td>15.7%</td>
<td>6.9%</td>
<td>49</td>
<td>10.5%</td>
<td>12</td>
<td>-1.5%</td>
<td>49</td>
<td>1.6%</td>
<td>2</td>
<td>-0.9</td>
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<tr>
<td>Russell 3000</td>
<td>--</td>
<td>8.4%</td>
<td>25</td>
<td>11.0%</td>
<td>23</td>
<td>0.0%</td>
<td>25</td>
<td>--</td>
<td>--</td>
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<tr>
<td><strong>Non-U.S. Equity</strong></td>
<td>14.5%</td>
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<td>11.0%</td>
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<td>65</td>
<td>2.0%</td>
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<td>0.1</td>
<td>63</td>
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<tr>
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<td>69</td>
<td>12.7%</td>
<td>83</td>
<td>0.0%</td>
<td>69</td>
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<td><strong>Global Asset Allocation</strong></td>
<td>8.7%</td>
<td>3.5%</td>
<td>9</td>
<td>5.6%</td>
<td>31</td>
<td>0.1%</td>
<td>9</td>
<td>5.6%</td>
<td>29</td>
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<tr>
<td>3-Month LIBOR + 3%</td>
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<td>3.4%</td>
<td>9</td>
<td>0.1%</td>
<td>1</td>
<td>0.0%</td>
<td>9</td>
<td>--</td>
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</tr>
<tr>
<td><strong>Fixed Income</strong></td>
<td>5.6%</td>
<td>4.3%</td>
<td>23</td>
<td>2.3%</td>
<td>39</td>
<td>4.5%</td>
<td>23</td>
<td>4.3%</td>
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<td>83</td>
<td>0.0%</td>
<td>99</td>
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</table>

*Asset classes shown sum to less than 100% due to the exclusion of cash and asset classes that do not have a 5 year history.*

### Arizona Public Safety Retirement Trust

#### Total Fund Risk Statistics

**5 Years Ending December 31, 2016**

<table>
<thead>
<tr>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Ann Excess BM</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
<th>Info Ratio</th>
<th>Rank</th>
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<td>15.7%</td>
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<tr>
<td>Russell 3000</td>
<td>--</td>
<td>14.7%</td>
<td>32</td>
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<td>0.0%</td>
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<td>Non-U.S. Equity</td>
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<td>MSCI ACWI ex USA</td>
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<td>5.3%</td>
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<td>3-Month LIBOR + 3%</td>
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<td>3.4%</td>
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<td>3.9%</td>
<td>39</td>
<td>2.8%</td>
<td>45</td>
<td>3.7%</td>
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<td>3.6%</td>
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<td>80</td>
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**5 Years Ending December 31, 2016**

<table>
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<tr>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Ann Excess BM</th>
<th>Rank</th>
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</thead>
<tbody>
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<tr>
<td>50% BofAML US HY BB-B Constrained Ind/50%</td>
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<td>6.5%</td>
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<td>0.0%</td>
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<td>91TBill + 2%</td>
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<td>2.1%</td>
</tr>
<tr>
<td>Russell 3000 + 1%</td>
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<td>15.7%</td>
<td>10</td>
<td>10.6%</td>
<td>96</td>
<td>0.0%</td>
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</tbody>
</table>

*Asset classes shown sum to less than 100% due to the exclusion of cash and asset classes that do not have a 5 year history.

### Arizona Public Safety Retirement Trust

#### Equity Performance Detail

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>Market Value ($)</th>
<th>% of Portfolio</th>
<th>3 Mo (%)</th>
<th>Rank</th>
<th>Fiscal YTD (%)</th>
<th>Rank</th>
<th>1 Yr (%)</th>
<th>Rank</th>
<th>3 Yrs (%)</th>
<th>Rank</th>
<th>5 Yrs (%)</th>
<th>Rank</th>
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<td>Over/Under</td>
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<td>-0.4</td>
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<tr>
<td>Over/Under</td>
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<td>17.3</td>
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<td>8.8</td>
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<td>12.7</td>
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</tbody>
</table>

*Redemption notice sent on 12/6/2016 for Gotham Institutional Select U.S, Gotham Diversified Hedge 140/40, Gotham Hedged Value 115/65, Gotham Diversified Hedge 115/65 and Gotham Hedged Value 140/40

*Not shown: U.S. Equity Funds has a Market Value of $10,612.
Current US Equity Structure

Global Equity Portfolio
30% Target – 30.2% Actual ($2,683 mm)

US Equity
16% Target – 15.7% Actual ($1,391 mm)
Benchmark Russell 3000
Passive : Active: Portable Alpha and L/S= 33%:33%:33%

International Equity
14% Target

US Passive
5.67% Target (35.5%)
$677 mm (49%)

SSgA Index Fund
$677 mm
R 3000

Acadian US Managed
$177 Million

Gotham 1000 Value
$70 mm

Gotham Inst. Select
*Redemption Notice sent 12/6/16

US Active Long Only
4.67% Target (29%)
$293 mm (21%)

Gotham 2000 Value
$16 mm

Ranger Small Cap Growth
$30 mm

Portable Alpha/Equity Long/Short
5.67% Target (35.5%)
$422 mm (30%)

SouthPoint
$88 mm

Gotham Hedge Funds
$74 mm
*Redemption notices sent 12/6/16

Crestline Alpha
$218 Million

SSgA Beta Overlay
$200 (notional)
$42 NAV

Portable Alpha
Current Non-U.S. Equity Structure

Global Equity Portfolio
30% Target – 30.2% Actual ($2,683 mm)

US Equity Exposure
16%

Non-US Equity Exposure 14% Target – 15.7% Actual ($1,291 mm)
Benchmark: MSCI ACWI ex-US (80% DM + 20% EM)
Geographic Target: 65% DM + 35% EM
Strategy Target: 40% Passive + 60%

Passive 5.6% Target
(80% DM + 20% EM)
11.3% Actual ($1,006 mm)

Active 8.4% Target
(55% DM + 45% EM)
3.2% Actual ($285 mm)

SSgA
$1,006 mm
Benchmark: MSCI ACWI ex-US

Gotham 400
$44 mm
MSCI ACWI ex-US

SEG Baxter
$108 mm
MSCI ACWI ex-US

Gotham Inst.
$42 mm
MSCI ACWI ex-US

BGI Frontier Markets
$10 mm
MSCI EM

ESG Cross Border
$61 mm
MSCI EM

ETFs (Staff)
$20 mm
MSCI ACWI ex-US
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<th>% of Portfolio</th>
<th>3 Mo (%)</th>
<th>Rank</th>
<th>Fiscal YTD (%)</th>
<th>Rank</th>
<th>1 Yr (%)</th>
<th>Rank</th>
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## Equity Performance Detail

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</table>

*Not shown: Small Cap Equity includes THB Micro Cap with a market value of $2 and Eagle Small Cap growth with a market value of $4

*THB Micro Cap was terminated on 6/1/2016. Eagle Small Cap was terminated on 6/30/2016.
## Equity Performance Detail

**Market Value ($)** | **% of Portfolio** | **3 Mo (%)** | **Rank** | **Fiscal YTD (%)** | **Rank** | **1 Yr (%)** | **Rank** | **3 Yrs (%)** | **Rank** | **5 Yrs (%)** | **Rank**
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
Non-U.S. Equity | 1,291,493,325 | 14.5 | -1.7 | 44 | 4.7 | 50 | 3.7 | 19 | -1.7 | 68 | 5.1 | 92
  
  **MSCI ACWI ex USA**
  Over/Under | -1.3 | 39 | 5.6 | 38 | 4.5 | 16 | -1.8 | 69 | 5.0 | 94
  
  eA All EAFE Equity Net Median
  Rank | -2.3 | 46 | 4.6 | 0.6 | -0.6 | 7.6
  
  **SSGA Int'l Equity**
  Over/Under | -1.2 | 24 | 5.7 | 27 | 5.0 | 22 | -1.4 | 54 | 6.3 | 60
  
  eA All ACWI ex-US Equity Net Median
  Rank | -3.7 | 27 | 1.0 | -1.1 | 6.5
  
  **Int'l Equity Funds**
  Over/Under | -1.2 | 24 | 3.7 | 44 | 0.9 | 51 | -3.2 | 84 | 2.4 | 99
  
  eA All ACWI ex-US Equity Net Median
  Rank | 1.0 | 2 | 0.0 | 74 | 7.2 | 96 | -4.8 | 90 | 3.6 | 29
  
  **Blackrock Frontier**
  Over/Under | 4.2 | 35 | 4.5 | 33 | 11.2 | 34 | -2.6 | 61 | 1.3 | 79
  
  eA Emg Mkts Equity Net Median
  Rank | 5.2 | 2.5 | 8.2 | -2.0 | 2.5
  
  **Gotham 400 International Value**
  Over/Under | -0.4 | 17 | 5.9 | 26 | 2.7 | 33 | -1.6 | 56 | 6.1 | 64
  
  eA All ACWI ex-US Equity Net Median
  Rank | -3.7 | 4.9 | 13.5 | 3.9
  
  **Gotham Institutional International Value**
  Over/Under | -5.7 | 78 | 1.0 | 68 | 5.6 | 17 | 0.9 | 19 | -- | --
  
  eA All ACWI ex-US Equity Net Median
  Rank | 0.4 | 17 | 5.9 | 26 | 2.7 | 33 | -1.6 | 56 | 6.1 | 64
  
  **ESG Cross Border Equity Fund**
  Over/Under | -5.3 | 49 | 2.9 | 2.5
  
  eA Emg Mkts Equity Net Median
  Rank | -3.7 | 2.7 | 1.0 | -1.1 | 6.5
  
  **SEG Baxter Street**
  Over/Under | -7.0 | 76 | -7.0 | 98 | -13.0 | 99 | -8.4 | 99 | -- | --
  
  eA Emg Mkts Equity Net Median
  Rank | 4.2 | 35 | 4.5 | 33 | 11.2 | 34 | -2.6 | 61 | 1.3 | 79
  
  **MSCI Emerging Markets**
  Over/Under | -2.8 | 35 | -11.5 | -24.2 | -5.8
  
  eA Emg Mkts Equity Net Median
  Rank | -5.2 | 2.5 | 8.2 | -2.0 | 2.5
  
  **SEPA Cross Border Equity Fund**
  Over/Under | -1.3 | 26 | 5.6 | 28 | 4.5 | 23 | -1.8 | 60 | 5.0 | 81
  
  eA All ACWI ex-US Equity Net Median
  Rank | -3.7 | 27 | 1.0 | -1.1 | 6.5

*Int'l Equity Transition account has a value of $2,750*
## GAA Performance Detail

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<th>% of Portfolio</th>
<th>3 Mo (%)</th>
<th>Rank</th>
<th>Fiscal YTD (%)</th>
<th>Rank</th>
<th>1 Yr (%)</th>
<th>Rank</th>
<th>3 Yrs (%)</th>
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Current Fixed Income Structure

Fixed Income Portfolio
7% Target – 5.6% Actual, $501 Million

US Fixed Income
4% Target
4.4% Actual ($394 M)

US Fixed Income
Internally Managed
0% Target
0.3% Actual $23 M

Active Bar. Cap Agg
3% Target
3.4% Actual $304 M

BlackRock Core
$143 Million

BlackRock FIGA
$79 Million

Field Street
$92 Million

High Yield
1% Target
0.8% Actual $66 M

High Yield Goldentree
$67 Million

Gracie Credit Opps
$127 K

Emerging Market Debt
3% Target
1.2% Actual ($107 M)

Iguazu Partners
$107 Million
## Arizona Public Safety Retirement Trust
### Fixed Income Performance Detail

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<tr>
<th></th>
<th>Market Value ($)</th>
<th>% of Portfolio</th>
<th>3 Mo (%)</th>
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<th>Fiscal YTD (%)</th>
<th>Rank</th>
<th>1 Yr (%)</th>
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**Note:** The table includes performance metrics such as market value, percentage of portfolio, 3-month, fiscal year-to-date (YTD), 1-year, 3-year, and 5-year rankings. The performance is compared against various benchmarks, including BBgBarc Global Aggregate and Over/Under comparisons. The table also includes figures for specific funds like Blackrock FIGA, Blackrock Core Active, Field Street FI Fund, and others.
## Arizona Public Safety Retirement Trust

### Fixed Income Performance Detail

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<th>Sector</th>
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<th>% of Portfolio</th>
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<th>Rank</th>
<th>Fiscal YTD (%)</th>
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- **Market Value ($)**: The total market value of the investment in this sector.
- **% of Portfolio**: The percentage of the total portfolio that this sector represents.
- **3 Mo (%)**: The 3-month return of the investment.
- **Rank**: The rank of the 3-month return within the sector.
- **Fiscal YTD (%)**: The year-to-date return of the investment.
- **Rank**: The rank of the year-to-date return within the sector.
- **1 Yr (%)**: The 1-year return of the investment.
- **Rank**: The rank of the 1-year return within the sector.
- **3 Yrs (%)**: The 3-year return of the investment.
- **Rank**: The rank of the 3-year return within the sector.
- **5 Yrs (%)**: The 5-year return of the investment.
- **Rank**: The rank of the 5-year return within the sector.

**December 31, 2016**
Current Private Credit Structure

Private Credit
15% Target, -11.9% Actual, $1,058 Million

Opportunistic
0-75% Target
- Davidson Kempner SP Op II: $47m Market Value
- TPG Opp. Partners II Commit: $100m $37m Market Value
- Czech Direct Lending II $45m Market Value
- Czech Direct Lending $8m Market Value
- Czech Direct Lending II $39m Market Value
- Melody Cap Partners: $50m Market Value
- Comvest Capital III: $26m Market Value
- Melody Telecom: $91m Market Value
- PAG Special Situations Commitment: $30m $13m Market Value

Relative Value
0-50% Target
- EJF Debt Opps Fund Commitment: $40m $57m Market Value
- West Face LT Opps Fund Commitment: $40m $24m Market Value
- ESG CME Fund: $37m Market Value
- DVDSON KMR SP OP III: $29m Market Value
- Credit Opps Public: $148m Market Value

Relative Value
0-50% Target
- EJF Debt Opps Fund Commitment: $40m $57m Market Value
- West Face LT Opps Fund Commitment: $40m $24m Market Value
- ESG CME Fund: $37m Market Value
- DVDSON KMR SP OP III: $29m Market Value
- Credit Opps Public: $148m Market Value

Distressed
0-75% Target
- Apollo European Fund Commit: $125m $4m Market Value
- PAG Asia Opp Fund Commitment: $40m $54m Market Value
- ESG CME Fund: $37m Market Value
- Credit Opps Public: $148m Market Value
- DVDSON KMR SP OP III: $29m Market Value

Distressed
0-75% Target
- Apollo European Fund Commit: $125m $4m Market Value
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Distressed
0-75% Target
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- DVDSON KMR SP OP III: $29m Market Value
### Arizona Public Safety Retirement Trust
### Private Credit Performance Detail

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<tr>
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<th>Market Value  ($ )</th>
<th>% of Portfolio</th>
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<th>Fiscal YTD (%), Rank</th>
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### Arizona Public Safety Retirement Trust
#### Private Credit Performance Detail

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## Private Credit Performance Detail

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*Note: The numbers represent performance metrics for different funds tracked by the Arizona Public Safety Retirement Trust as of December 31, 2016.*
## Private Credit Performance Detail

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### Arizona Public Safety Retirement Trust

#### Private Credit Performance Detail

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<th>Rank</th>
<th>Fiscal YTD (%)</th>
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<th>1 Yr (%)</th>
<th>Rank</th>
<th>3 Yrs (%)</th>
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*LSV Special Opps Fund V funded 8/1/2016.*
Arizona Public Safety Retirement Trust
Risk Parity Performance Detail

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<th>Market Value ($)</th>
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<th>Fiscal YTD (%)</th>
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<th>1 Yr (%)</th>
<th>Rank</th>
<th>3 Yrs (%)</th>
<th>Rank</th>
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<td>-1.7</td>
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<td>-5.8</td>
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December 31, 2016
### Arizona Public Safety Retirement Trust

#### Short Term Investments Performance Detail

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<th>Fiscal YTD (%)</th>
<th>Rank</th>
<th>1 Yr (%)</th>
<th>Rank</th>
<th>3 Yrs (%)</th>
<th>Rank</th>
<th>5 Yrs (%)</th>
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<td>91 Day T-Bills</td>
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<td>0.2</td>
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<td>Over/Under</td>
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Arizona Public Safety Retirement Trust

Total Fund Return Summary vs. Peer Universe

![Chart showing annualized return vs. peer universe over different periods from Fiscal 2016 to 5 Years.]

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<th>25th</th>
<th>Median</th>
<th>75th</th>
<th>95th</th>
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<td>2.7%</td>
<td>13.6%</td>
<td>10.7%</td>
<td>3.1%</td>
<td>7.8%</td>
</tr>
</tbody>
</table>

(Values in parentheses indicate rankings within the peer universe.)
Arizona Public Safety Retirement Trust

Real Estate Return Summary vs. Peer Universe

<table>
<thead>
<tr>
<th>Period</th>
<th>5th Percentile</th>
<th>25th Percentile</th>
<th>Median</th>
<th>75th Percentile</th>
<th>95th Percentile</th>
<th># of Portfolios</th>
<th>Real Estate</th>
<th>NCREIF Property Index</th>
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<tr>
<td>Quarter</td>
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<td>2.1</td>
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<tr>
<td>Fiscal YTD</td>
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<td>3.3</td>
<td>2.1</td>
<td>0.7</td>
<td>67</td>
<td>3.4</td>
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<tr>
<td>1 Year</td>
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<td>9.2</td>
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<td>7.2</td>
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<td>8.0</td>
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<tr>
<td>3 Years</td>
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<td>11.6</td>
<td>10.5</td>
<td>3.5</td>
<td>62</td>
<td>3.3</td>
<td>11.0</td>
</tr>
<tr>
<td>5 Years</td>
<td>13.5</td>
<td>12.2</td>
<td>11.6</td>
<td>10.1</td>
<td>2.7</td>
<td>51</td>
<td>2.5</td>
<td>10.9</td>
</tr>
</tbody>
</table>
Appendix: Market Environment
Near Term Broad Market Performance Summary as of 12/30/2016

*1 Yr Range: Represents range of cumulative high/low daily index returns for an investment made one year ago

Source: Bloomberg, Standard and Poors, Russell, MSCI, Barclays, Citigroup, JP Morgan

*1 Yr Range: Represents range of cumulative high/low daily index returns for an investment made one year ago
Inflation continues rising

Corporate profits experience an uptick

Unemployment has steadied

Manufacturing shows modest strength

Source: Bloomberg, Federal Reserve, Bureau of Labor Statistics

Source: Bloomberg, Bureau of Economic Analysis

Source: Bloomberg, Institute for Supply Management

Source: Bloomberg, Bureau of Labor Statistics
International Economic Indicators

Inflation has increased

Europe unemployment edges lower

Manufacturing steadies after showing modest improvement

Leading indicators mostly trending higher

Source: Bloomberg, Japan Ministry of Internal Affairs and Communications, Eurostat

Source: Bloomberg, Japan Ministry of Internal Affairs and Communications, Eurostat

Source: Bloomberg, OECD

Source: Bloomberg, OECD, Eurostat
EM inflation varies by country

Relatively healthy Debt/GDP ratios

Account balances remain steady

EM continues trending higher as a percent of global output
Volatility

Equity volatility remains low

![Graph showing equity volatility trend with VIX Index from 2012 to 2016.]

Source: Bloomberg, CBOE

Treasury volatility continues to be elevated

![Graph showing treasury volatility trend with MOVE Index from 2012 to 2016.]

Source: Bloomberg, Merrill Lynch

Currency volatility increased

![Graph showing currency volatility trend with CVIX Index from 2011 to 2016.]

Source: Bloomberg, Deutsche Bank

Commodity volatility has subsided

![Graph showing commodity volatility trend with Bloomberg Commodity 90D Vol from 2012 to 2016.]

Source: Bloomberg, Merrill Lynch
Yen depreciation has decreased the value of BoJ’s balance sheet.

Market expectations for interest rates have increased dramatically post rate hike.

Developed market interest rates are mostly lower than the previous year.

EM central bank policies vary by country-specific economic conditions.
Global Equity

EAFE’s current valuation is lower than the previous year

Rolling annual earnings growth trending upwards off lows

Profit margins slightly increased

EM has experienced lack-luster short-term performance

Source: Bloomberg, Standard and Poors, MSCI

*MSCI EAFE is ex UK Telecom

*Standard deviation calculations on 20 years of data except S&P 500 (30 years)
US Equity

**US equity valuations are higher than last year**

- PE Ratio
- S&P 500, Russell 2000, Russell 1000 Growth, Russell 1000 Value
- +1 Std Dev, -1 St Dev
- 12/31/2015, 12/30/2016

Source: Bloomberg, Standard and Poors, Russell
*Russell 2000 PE is index adjusted positive*
Standard deviation calculations based on 20 years of data

**GDP growth remains strong**

- US Real GDP Growth

Source: Bloomberg, Bureau of Economic Analysis

**Profit margins hold steady**

- S&P 500, Russell 2000

Source: Bloomberg, Standard and Poors, Russell

**US equity posts positive short-term returns**

- 3 Month Return, 1 Year Return
- S&P 500, Russell 2500, Russell 2000, Russell 1000, Russell 1000 Growth, Value

Source: Bloomberg, Standard and Poors, Russell
International Equity

UK PE ratios remain elevated

- PE Ratio: 0-70
- Europe, Japan, United Kingdom
- +1 Std Dev, -1 Std Dev

Source: Bloomberg, MSCI, FTSE *UK represented by FTSE 100 Index
*Standard deviation calculations based on 20 years of data, with Europe since 12/1998

International growth steadies

Source: Bloomberg

UK margins continue to decline

- Profit Margins: -4% to 14%
- MSCI EAFE, Euro, Japan, UK

Source: Bloomberg, MSCI

Short-term small cap returns have been lack-luster

Source: Bloomberg, MSCI

December 31, 2016
Emerging Markets Equity

Regional valuations similar year over year with the exception of Brazil

Russia and Brazil experience rebounds off earnings contractions

Profit margins in line with history

EM local indices have outperformed dollar-denominated
Global Equity by Sector

Energy and Financials lead MSCI ACWI short-term returns

Healthcare and Consumer Staples drag S&P 500 short-term returns

Energy and Materials continue their strong performance in EM

Financials sector weight has decreased significantly

Source: Bloomberg, MSCI

Source: Bloomberg, Standard and Poors

Source: Bloomberg, MSCI

Source: Bloomberg, MSCI
Currencies

Developed currencies have declined versus the dollar

![Graph showing developed currencies decline versus dollar]

Source: Bloomberg

A number of currencies have experienced sharp depreciation

![Graph showing various currencies' depreciation]

Source: Bloomberg, Federal Reserve

USD expectations vary across developed markets

![Graph showing USD expectations]

Source: Bloomberg

Dollar strength persists

![Graph showing dollar strength]

Source: Bloomberg, Federal Reserve
US Fixed Income

Spreads remain lower than the previous year

Fixed income yields have increased

Similar duration/yield profiles among core indices

Fixed income returns have broadly declined with recent yield increases

Source: Bloomberg, Barclays
*Standard deviation calculations based on 20 years of data

Source: Bloomberg, Barclays

Source: Bloomberg, Barclays

December 31, 2016
International Developed Fixed Income

**European periphery yields vary relative to Germany**

![Graph showing OAS or Equivalent (bps) for various countries](source)

- EurosAg Corp
- Pan-Euro HY
- 5 Year Italy
- 5 Year Portugal
- 5 Year Spain
- BC Asia IG
- BC Asia HY

**Global yields have increased post rate hike**

- Month End Yield
- 3 Month Previous Yield
- 1 Year Previous Yield

**Low yields persist in global bond universe**

- WGBI
- BC Pan-Euro HY
- BC Multiverse
- BC Global Infl-Linked
- BC EuroAgg

**Global bond returns hurt by rising yields**

- 3 Month Return
- 1 Year Return

Source: Barclays, Bloomberg

*European periphery spreads are over equivalent German Bund

Source: Bloomberg, Citigroup, Barclays

Source: Bloomberg, Citigroup, Barclays
Spreads continue to decline

EM local bond yields increased slightly

EM yields remain attractive versus global counterparts

EM debt posts negative short-term returns

Source: Bloomberg, JP Morgan

Source: Bloomberg

Source: Bloomberg, JP Morgan
Rate expectations have increased relative to three months prior.

Interest rate expectations continue increasing.

10-2 spreads spiked with recent increase in yield.

Sovereign bond yields remain in negative or neutral territory.

Source: Bloomberg
Long Rates and Liability

**Long duration yields have steadied**

Long credit yield increases

Yield and spread components continue to offer modest returns

Long duration fixed income posted large short-term losses

Source: Bloomberg, Citigroup, Barclays

Source: Bloomberg, US Treasury, Barclays, NEPC

Source: Bloomberg, Barclays

Source: Bloomberg, Barclays
Inflation and Real Rates

US 10-year real yields increased from three months prior

With the exception of Japan, global real yields have increased

US inflation expectations have increased but remain low

Global inflation expectations continue to increase

Source: Bloomberg

Source: Bloomberg

Source: Bloomberg

Source: Bloomberg

Source: Bloomberg
Inflation Sensitive Growth Assets

**REITs yields are higher than the previous year**

- Month-End Yield
- 1 Year Previous Yield

Source: Bloomberg, Alerian, Nareit, Standard and Poors

**Sustained recovery in commercial real estate occupancy rates**

Source: NCREIF

**US REIT valuations have steadied**

Source: Bloomberg, US Census Bureau

**REITs have underperformed in recent months**

Source: Bloomberg, Alerian, Nareit, Standard and Poors
Commodities

Negative roll yields remain a hurdle for investing directly in oil and natural gas

- Soybeans
- Oil
- Natural Gas
- Gold
- Corn
- Copper

Source: Bloomberg

Gold continues to decline post-election

$/Barrel

Crude Oil Spot (LHS)
Gold Spot (RHS)

Source: Bloomberg

World production has slightly declined with recent OPEC agreement

Source: Bloomberg, US Department of Energy

Commodities post strong short-term returns

Source: Bloomberg, Standard and Poors

December 31, 2016
Glossary of Investment Terminology—Risk Statistics

**Alpha** - Measures the relationship between the fund performance and the performance of another fund or benchmark index and equals the excess return while the other fund or benchmark index is zero.

**Alpha Jensen** - The average return on a portfolio over and above that predicted by the capital asset pricing model (CAPM), given the portfolio’s beta and the average market return. Also known as the abnormal return or the risk adjusted excess return.

**Annualized Excess Return over Benchmark** - Annualized fund return minus the annualized benchmark return for the calculated return.

**Annualized Return** - A statistical technique whereby returns covering periods greater than one year are converted to cover a 12 month time span.

**Beta** - Measures the volatility or systematic risk and is equal to the change in the fund’s performance in relation to the change in the assigned index’s performance.

**Information Ratio** - A measure of the risk adjusted return of a financial security, asset, or portfolio.

**Formula:**
\[
\frac{(\text{Annualized Return of Portfolio} - \text{Annualized Return of Benchmark})}{\text{Annualized Standard Deviation(Period Portfolio Return – Period Benchmark Return)}}
\]

**R-Squared** – Represents the percentage of a fund’s movements that can be explained by movements in an index. R-Squared values range from 0 to 100. An R-Squared of 100 denotes that all movements of a fund are completely explained by movements in the index.

**Sharpe Ratio** - A measure of the excess return or risk premium per unit of risk in an investment asset or trading strategy.

**Sortino Ratio** - A method to differentiate between good and bad volatility in the Sharpe Ratio. The differentiation of up and down volatility allows the calculation to provide a risk adjusted measure of a security or fund’s performance without upward price change penalties.

**Formula:**
\[
\text{Calculation Average (X-Y)/Downside Deviation (X-Y) * 2}
\]

Where X=Return Series Y = Return Series Y which is the risk free return (91 day T-bills)

**Standard Deviation** - The standard deviation is a statistical term that describes the distribution of results. It is a commonly used measure of volatility of returns of a portfolio, asset class, or security. The higher the standard deviation the more volatile the returns are.

**Formula:**
\[
\frac{(\text{Annualized Return of Portfolio} - \text{Annualized Return of Risk Free})}{\text{Annualized Standard Deviation (Portfolio Returns)}}
\]

**Tracking Error** - Tracking error, also known as residual risk, is a measure of the degree to which a portfolio tracks its benchmark. It is also a measure of consistency of excess returns. Tracking error is computed as the annualized standard deviation of the difference between a portfolio’s return and that of its benchmark.

**Formula:**
\[
\text{Tracking Error} = \text{Standard Deviation (X-Y) * } \sqrt{\# \text{ of periods per year}}
\]

For monthly returns, the periods per year = 12
For quarterly returns, the periods per year = 4

**Tureynor Ratio** - A risk-adjusted measure of return based on systematic risk. Similar to the Sharpe ratio with the difference being the Treynor ratio uses beta as the measurement of volatility.

**Formula:**
\[
\frac{(\text{Portfolio Average Return} - \text{Average Return of Risk-Free Rate})}{\text{Portfolio Beta}}
\]

**Up/Down Capture Ratio** - A measure of what percentage of a market’s returns is “captured” by a portfolio. For example, if the market declines 10% over some period, and the manager declines only 9%, then his or her capture ratio is 90%. In down markets, it is advantageous for a manager to have as low a capture ratio as possible. For up markets, the higher the capture ratio the better. Looking at capture ratios can provide insight into how a manager achieves excess returns. A value manager might typically have a lower capture ratio in both up and down markets, achieving excess returns by protecting on the downside, whereas a growth manager might fall more than the overall market in down markets, but achieve above-market returns in a rising market.

**UpsideCapture** = \[
\frac{\text{TotalReturn(FundReturns)}}{\text{TotalReturns(BMReturn)}} \text{ when Period Benchmark Return is } > = 0
\]

**DownsideCapture** = \[
\frac{\text{TotalReturn(FundReturns)}}{\text{TotalReturns(BMReturn)}} \text{ when Benchmark } < 0
\]

Data Source: InvestorForce
Glossary of Investment Terminology

# Of Portfolios/Observations - The total number of data points that make up a specified universe

Allocation Index - The allocation index measures the value added (or subtracted) to each portfolio by active management. It is calculated monthly: The portfolio asset allocation to each category from the prior month-end is multiplied by a specified market index.

Asset Allocation Effect - Measures an investment manager’s ability to effectively allocate their portfolio’s assets to various sectors. The allocation effect determines whether the overweighting or underweighting of sectors relative to a benchmark contributes positively or negatively to the overall portfolio return. Positive allocation occurs when the portfolio is over weighted in a sector that outperforms the benchmark and underweighted in a sector that underperforms the benchmark. Negative allocation occurs when the portfolio is over weighted in a sector that underperforms the benchmark and under weighted in a sector that outperforms the benchmark.

Agency Bonds (Agencies) - The full faith and credit of the United States government is normally not pledged to payment of principal and interest on the majority of government agencies issuing these bonds, with maturities of up to ten years. Their yields, therefore, are normally higher than government and their marketability is good, thereby qualifying them as a low risk-high liquidity type of investment. They are eligible as security for advances to the member banks by the Federal Reserve, which attests to their standing.

Asset Backed Securities (ABS) - Bonds which are similar to mortgage-backed securities but are collateralized by assets other than mortgages; commonly backed by credit card receivables, auto loans, or other types of consumer financing.

Attribution - Attribution is an analytical technique that allows us to evaluate the performance of the portfolio relative to the benchmark. A proper attribution tells us where value was added or subtracted as a result of the manager’s decisions.

Average Effective Maturity - For a single bond, it is a measure of maturity that takes into account the possibility that a bond might be called back to the issuer.

For a portfolio of bonds, average effective maturity is the weighted average of the maturities of the underlying bonds. The measure is computed by weighing each bond’s maturity by its market value with respect to the portfolio and the likelihood of any of the bonds being called. In a pool of mortgages, this would also account for the likelihood of prepayments on the mortgages.

Batting Average - A measurement representing an investment manager’s ability to meet or beat an index.

Formula: Divide the number of days (or months, quarters, etc.) in which the manager beats or matches the index by the total number of days (or months, quarters, etc.) in the period of question and multiply that factor by 100.

Brinson Fachler (BF) Attribution - The BF methodology is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio’s underlying performance. The main advantage of the BF methodology is that rather than using the overall return of the benchmark, it goes a level deeper than BHB and measures whether the benchmark sector, country, etc. outperformed/or underperformed the overall benchmark.

Brinson Hood Beebower (BHB) Attribution - The BHB methodology shows that excess return must be equal to the sum of all other factors (i.e., allocation effect, selection effect, interaction effect, etc.). The advantage to using the BHB methodology is that it is a highly accepted industry standard for calculating the allocation, selection, and interaction effects within a portfolio that collectively explains a portfolio’s underlying performance.

Corporate Bond (Corp) - A debt security issued by a corporation and sold to investors. The backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations. In some cases, the company’s physical assets may be used as collateral for bonds.

Correlation - A range of statistical relationships between two or more random variables or observed data values. A correlation is a single number that describes the degree of relationship between variables.

Data Source: 1InvestorForce, 2Interaction Effect Performance Attribution, 3NEPC, LLC, 4Investopedia, 5Hedgeco.net
Glossary of Investment Terminology

**Coupon** - The interest rate stated on a bond when it is issued. The coupon is typically paid semiannually. This is also referred to as the "coupon rate" or "coupon percent rate."

**Currency Effect** - Is the effect that changes in currency exchange rates over time affect excess performance.

**Derivative Instrument** - A financial obligation that derives its precise value from the value of one or more other instruments (or assets) at the same point of time. For example, the relationship between the value of an S&P 500 futures contract (the derivative instrument in this case) is determined by the value of the S&P 500 Index and the value of a U.S. Treasury bill that matures at the expiration of the futures contract.

**Downside Deviation** - Equals the standard deviation of negative return or the measure of downside risk focusing on the standard deviation of negative returns.

**Formula:**
Annualized Standard Deviation (Fund Return - Average Fund Return) where average fund return is greater than individual fund returns, monthly or quarterly.

**Duration** - Duration is a measure of interest rate risk. The greater the duration of a bond, or a portfolio of bonds, the greater its price volatility will be in response to a change in interest rates. A bond’s duration is inversely related to interest rates and directly related to time to maturity.

**Equity/Debt/Cash Ratio** - The percentage of an investment or portfolio that is in Equity, Debt, and/or Cash (i.e., A 7/89/4 ratio represents an investment that is made up of 7% Equity, 89% Debt, and 4% Cash).

**Foreign Bond** - A bond that is issued in a domestic market by a foreign entity, in the domestic market's currency. A foreign bond is most often issued by a foreign firm to raise capital in a domestic market that would be most interested in purchasing the firm's debt. For foreign firms doing a large amount of business in the domestic market, issuing foreign bonds is a common practice.

**Hard Hurdle** - Is a hurdle rate that once beaten allows a fund manager to charge a performance fee on only the funds above the specified hurdle rate.

**High-Water Mark** - The highest peak in value that an investment fund/account has reached. This term is often used in the context of fund manager compensation, which is performance based. Some performance-based fees only get paid when fund performance exceeds the high-water mark. The high-water mark ensures that the manager does not get paid large sums for poor performance.

**Hurdle Rate** - The minimum rate of return on an investment required, in order for a manager to collect incentive fees from the investor, which is usually tied to a benchmark.

**Interaction Effects** - The interaction effect measures the combined impact of an investment manager’s selection and allocation decisions within a sector. For example, if an investment manager had superior selection and over weighted that particular sector, the interaction effect is positive. If an investment manager had superior selection, but underweighted that sector, the interaction effect is negative. In this case, the investment manager did not take advantage of the superior selection by allocating more assets to that sector. Since many investment managers consider the interaction effect to be part of the selection or the allocation, it is often combined with the either effect.

**Median** - The value (rate of return, market sensitivity, etc.) that exceeds one-half of the values in the population and that is exceeded by one-half of the values. The median has a percentile rank of 50.

**Modified Duration** - The percentage change in the price of a fixed income security that results from a change in yield.

**Mortgage Backed Securities (MBS)** - Bonds which are a general obligation of the issuing institution but are also collateralized by a pool of mortgages.

**Municipal Bond (Muni)** - A debt security issued by a state, municipality or county to finance its capital expenditures.

**Net Investment Change** - Is the change in an investment after accounting for all Net Cash Flows.

**Performance Fee** - A payment made to a fund manager for generating positive returns. The performance fee is generally calculated as a percentage of investment profits, often both realized and unrealized.

*Data Source: InvestorForce, Interaction Effect Performance Attribution, NEPC, LLC, Investopedia, Hedgeco.net*
Glossary of Investment Terminology

**Policy Index** - A custom benchmark designed to indicate the returns that a passive investor would earn by consistently following the asset allocation targets set forth in this investment policy statement.

**Price to Book (P/B)** - A ratio used to compare a stock’s market value to its book value. It is calculated by dividing the current closing price of the stock by the latest quarter’s book value per share, also known as the "price-equity ratio".

**Price to Earnings (P/E)** - The weighted equity P/E is based on current price and trailing 12 months earnings per share (EPS).

**Price to Sales (P/S)** - A ratio for valuing a stock relative to its own past performance, other companies, or the market itself. Price to sales is calculated by dividing a stock’s current price by its revenue per share for the trailing 12 months.

**Return on Equity (ROE)** - The amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation’s profitability by revealing how much profit a company generates with the money shareholders have invested.

**Selection (or Manager) Effect** - Measures the investment manager’s ability to select securities within a given sector relative to a benchmark. The over or underperformance of the portfolio is weighted by the benchmark weight, therefore, selection is not affected by the manager’s allocation to the sector. The weight of the sector in the portfolio determines the size of the effect—the larger the sector, the larger the effect is, positive or negative.

**Soft Hurdle rate** – is a hurdle rate that once beaten allows a fund manager to charge a performance fee based on the entire annualized return.

**Tiered Fee** – A fee structure that is paid to fund managers based on the size of the investment (i.e. 1.00% fee on the first $10M invested, 0.90% on the next $10M, and 0.80% on the remaining balance).

**Total Effects** - The active management (total) effect is the sum of the selection, allocation, and interaction effects. It is also the difference between the total portfolio return and the total benchmark return. You can use the active management effect to determine the amount the investment manager has added to a portfolio’s return.

**Total Return** - The actual rate of return of an investment over a specified time period. Total return includes interest, capital gains, dividends, and distributions realized over a defined time period.

**Universe** - The list of all assets eligible for inclusion in a portfolio.

**Upside Deviation** – Standard Deviation of Positive Returns

**Weighted Avg. Market Cap.** - A stock market index weighted by the market capitalization of each stock in the index. In such a weighting scheme, larger companies account for a greater portion of the index. Most indexes are constructed in this manner, with the best example being the S&P 500.

**Yield (%)** - The current yield of a security is the current indicated annual dividend rate divided by current price.

**Yield to Maturity** - The discount rate that equates the present value of cash flows, both principal and interest, to market price.

*Data Source:* ¹InvestorForce, ²Interaction Effect Performance Attribution, ³NEPC, LLC, ⁴Investopedia, ⁵Hedgeco.net
Information Disclaimer and Reporting Methodology

Information Disclaimer

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

Reporting Methodology

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

Investment Summary
Quarter Ending December 31, 2016

Allan Martin, Partner
Tony Ferrara, CAIA, Consultant
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Performance Summary

<table>
<thead>
<tr>
<th></th>
<th>Market Value</th>
<th>3 Mo Rank</th>
<th>Fiscal YTD Rank</th>
<th>1 Yr Rank</th>
<th>3 Yrs Rank</th>
<th>5 Yrs Rank</th>
<th>10 Yrs Rank</th>
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<tbody>
<tr>
<td><strong>Total Composite</strong></td>
<td>$23,626,072</td>
<td>-0.7%</td>
<td>98</td>
<td>2.7%</td>
<td>79</td>
<td>7.2%</td>
<td>44</td>
</tr>
<tr>
<td><strong>Policy Index</strong></td>
<td></td>
<td>-0.2%</td>
<td>90</td>
<td>2.6%</td>
<td>83</td>
<td>6.3%</td>
<td>78</td>
</tr>
<tr>
<td><strong>Allocation Index</strong></td>
<td></td>
<td>-0.8%</td>
<td>98</td>
<td>2.2%</td>
<td>91</td>
<td>6.8%</td>
<td>60</td>
</tr>
<tr>
<td><strong>InvestorForce Public DB &lt; $50mm Net Median</strong></td>
<td>0.6%</td>
<td>3.6%</td>
<td>7.1%</td>
<td>4.1%</td>
<td>7.6%</td>
<td>5.1%</td>
<td></td>
</tr>
</tbody>
</table>

*Performance returns are reported net of fees.

*Fiscal year ends June 30.

![Chart showing quarterly outperformance, underperformance, and cumulative excess performance]

### 3 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th></th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio RF</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Composite</strong></td>
<td>3.69%</td>
<td>67</td>
<td>6.28%</td>
<td>29</td>
<td>0.57</td>
<td>63</td>
<td>0.98</td>
<td>56</td>
</tr>
<tr>
<td><strong>Policy Index</strong></td>
<td>1.77%</td>
<td>99</td>
<td>6.20%</td>
<td>27</td>
<td>0.27</td>
<td>99</td>
<td>0.48</td>
<td>98</td>
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<tr>
<td><strong>Allocation Index</strong></td>
<td>2.24%</td>
<td>99</td>
<td>6.41%</td>
<td>35</td>
<td>0.33</td>
<td>97</td>
<td>0.63</td>
<td>91</td>
</tr>
<tr>
<td><strong>InvestorForce Public DB &lt; $50mm Net Median</strong></td>
<td>4.10%</td>
<td>--</td>
<td>6.59%</td>
<td>--</td>
<td>0.63</td>
<td>--</td>
<td>1.11</td>
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</tr>
</tbody>
</table>

### 5 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th></th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio RF</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Composite</strong></td>
<td>7.14%</td>
<td>70</td>
<td>6.64%</td>
<td>55</td>
<td>1.06</td>
<td>69</td>
<td>1.66</td>
<td>69</td>
</tr>
<tr>
<td><strong>Policy Index</strong></td>
<td>5.90%</td>
<td>94</td>
<td>6.61%</td>
<td>54</td>
<td>0.88</td>
<td>97</td>
<td>1.38</td>
<td>95</td>
</tr>
<tr>
<td><strong>Allocation Index</strong></td>
<td>6.25%</td>
<td>89</td>
<td>6.83%</td>
<td>60</td>
<td>0.90</td>
<td>97</td>
<td>1.44</td>
<td>88</td>
</tr>
<tr>
<td><strong>InvestorForce Public DB &lt; $50mm Net Median</strong></td>
<td>7.56%</td>
<td>--</td>
<td>6.53%</td>
<td>--</td>
<td>1.18</td>
<td>--</td>
<td>1.82</td>
<td>--</td>
</tr>
</tbody>
</table>

*Policy Index: 25% Russell 3000, 25% MSCI ACWI ex US, 30% BC Aggregate, 10% US TIPs, 5% Bloomberg Commodity Index, 5% Cash
## Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

### Total Fund Risk/Return

#### 1 Year Ending December 31, 2016

<table>
<thead>
<tr>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Anlzd AJ</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio RF</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Composite</td>
<td>100.00%</td>
<td>7.21%</td>
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<td>6.12%</td>
<td>34</td>
<td>0.96%</td>
<td>5</td>
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<td>37</td>
<td>1.83</td>
<td>24</td>
<td>1.26%</td>
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<tr>
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<td>6.35%</td>
<td>78</td>
<td>6.10%</td>
<td>34</td>
<td>0.00%</td>
<td>31</td>
<td>0.99</td>
<td>68</td>
<td>1.58</td>
<td>30</td>
<td>0.00%</td>
</tr>
<tr>
<td>Allocation Index</td>
<td>--</td>
<td>6.82%</td>
<td>60</td>
<td>6.59%</td>
<td>55</td>
<td>0.04%</td>
<td>27</td>
<td>0.99</td>
<td>68</td>
<td>1.79</td>
<td>26</td>
<td>1.00%</td>
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<tr>
<td>InvestorForce Public DB &lt; $50mm Net Median</td>
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<td>7.10%</td>
<td>--</td>
<td>6.46%</td>
<td>--</td>
<td>-0.37%</td>
<td>--</td>
<td>1.04</td>
<td>--</td>
<td>1.35</td>
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<td>1.03%</td>
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#### 3 Years Ending December 31, 2016

<table>
<thead>
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<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Anlzd AJ</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio RF</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Composite</td>
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<td>3.69%</td>
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<td>6.28%</td>
<td>29</td>
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<td>1</td>
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<td>0.98</td>
<td>56</td>
<td>1.33%</td>
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<tr>
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<td>--</td>
<td>1.77%</td>
<td>99</td>
<td>6.20%</td>
<td>27</td>
<td>0.00%</td>
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<td>2.24%</td>
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<td>6.41%</td>
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<td>4</td>
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<td>0.63</td>
<td>91</td>
<td>0.63%</td>
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<td>InvestorForce Public DB &lt; $50mm Net Median</td>
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<td>4.10%</td>
<td>--</td>
<td>6.59%</td>
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<td>1.11</td>
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<td>1.04%</td>
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#### 5 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Anlzd AJ</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio RF</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Composite</td>
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<td>7.14%</td>
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<td>6.64%</td>
<td>55</td>
<td>1.31%</td>
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<td>1.06</td>
<td>69</td>
<td>1.66</td>
<td>69</td>
<td>1.21%</td>
</tr>
<tr>
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<td>--</td>
<td>5.90%</td>
<td>94</td>
<td>6.61%</td>
<td>54</td>
<td>0.00%</td>
<td>43</td>
<td>0.88</td>
<td>97</td>
<td>1.38</td>
<td>95</td>
<td>0.00%</td>
</tr>
<tr>
<td>Allocation Index</td>
<td>--</td>
<td>6.25%</td>
<td>89</td>
<td>6.83%</td>
<td>60</td>
<td>0.17%</td>
<td>35</td>
<td>0.90</td>
<td>97</td>
<td>1.44</td>
<td>88</td>
<td>0.56%</td>
</tr>
<tr>
<td>InvestorForce Public DB &lt; $50mm Net Median</td>
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<td>7.56%</td>
<td>--</td>
<td>6.53%</td>
<td>--</td>
<td>-0.10%</td>
<td>--</td>
<td>1.18</td>
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<td>1.82</td>
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<td>1.08%</td>
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#### 10 Years Ending December 31, 2016

<table>
<thead>
<tr>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Anlzd AJ</th>
<th>Rank</th>
<th>Sharpe Ratio</th>
<th>Rank</th>
<th>Sortino Ratio RF</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Composite</td>
<td>100.00%</td>
<td>5.20%</td>
<td>49</td>
<td>9.70%</td>
<td>64</td>
<td>1.55%</td>
<td>1</td>
<td>0.47</td>
<td>63</td>
<td>0.65</td>
<td>54</td>
<td>1.91%</td>
</tr>
<tr>
<td>Policy Index</td>
<td>--</td>
<td>3.72%</td>
<td>99</td>
<td>9.76%</td>
<td>66</td>
<td>0.00%</td>
<td>52</td>
<td>0.31</td>
<td>97</td>
<td>0.41</td>
<td>92</td>
<td>0.00%</td>
</tr>
<tr>
<td>Allocation Index</td>
<td>--</td>
<td>4.05%</td>
<td>95</td>
<td>10.21%</td>
<td>84</td>
<td>0.20%</td>
<td>45</td>
<td>0.33</td>
<td>95</td>
<td>0.43</td>
<td>91</td>
<td>0.97%</td>
</tr>
<tr>
<td>InvestorForce Public DB &lt; $50mm Net Median</td>
<td>--</td>
<td>5.14%</td>
<td>--</td>
<td>8.80%</td>
<td>--</td>
<td>0.06%</td>
<td>--</td>
<td>0.51</td>
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<td>0.66</td>
<td>--</td>
<td>1.42%</td>
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</tbody>
</table>
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Asset Growth Summary

<table>
<thead>
<tr>
<th></th>
<th>Last Three Months</th>
<th>Fiscal Year-To-Date</th>
<th>One Year</th>
<th>Three Years</th>
<th>Five Years</th>
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</thead>
<tbody>
<tr>
<td>Beginning Market Value</td>
<td>$23,782,830</td>
<td>$23,009,123</td>
<td>$22,424,101</td>
<td>$21,282,514</td>
<td>$16,654,004</td>
</tr>
<tr>
<td>Net Cash Flow</td>
<td>-$1,198,885</td>
<td>-$1,109,094</td>
<td>-$1,520,703</td>
<td>-$1,226,519</td>
<td>-$1,066,519</td>
</tr>
<tr>
<td>Net Investment Change</td>
<td>$1,042,127</td>
<td>$1,726,043</td>
<td>$2,722,674</td>
<td>$3,570,077</td>
<td>$8,038,586</td>
</tr>
<tr>
<td>Ending Market Value</td>
<td>$23,626,072</td>
<td>$23,626,072</td>
<td>$23,626,072</td>
<td>$23,626,072</td>
<td>$23,626,072</td>
</tr>
</tbody>
</table>

December 31, 2016
### Total Fund Asset Allocation vs. Policy Targets

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Policy Current</th>
<th>Policy Difference</th>
<th>Policy Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>$6,480,407</td>
<td>27.4%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Non-US Equity</td>
<td>$5,700,832</td>
<td>24.1%</td>
<td>25.0%</td>
</tr>
<tr>
<td>Core Bonds</td>
<td>$6,561,189</td>
<td>27.8%</td>
<td>30.0%</td>
</tr>
<tr>
<td>TIPS</td>
<td>$2,335,150</td>
<td>9.9%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Commodities</td>
<td>$1,283,465</td>
<td>5.4%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Cash</td>
<td>$1,265,029</td>
<td>5.4%</td>
<td>5.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$23,626,072</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*Difference between Policy and Current Allocation

*Policy Index: 25% Russell 3000, 25% MSCI ACWI ex US, 30% BC Aggregate, 10% US TIPS, 5% Bloomberg Commodity Index, 5% Cash
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Asset Allocation History

Asset Allocation History

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S. Equity</th>
<th>Non-US Equity</th>
<th>Core Bonds</th>
<th>TIPS</th>
<th>Commodities</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2013</td>
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<td>2016</td>
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<td></td>
</tr>
</tbody>
</table>

December 31, 2016
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Risk/Return

1 Year Ending December 31, 2016

3 Years Ending December 31, 2016

- Total Composite
- Policy Index
- Universe Median
- 68% Confidence Interval
- InvestorForce Public DB < $50mm Net

December 31, 2016
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Risk Statistics vs. Peer Universe

Total Composite vs. InvestorForce Public DB < $50mm Net
1 Year

<table>
<thead>
<tr>
<th>Anlzd Return</th>
<th>Anlzd Alpha</th>
<th>Anlzd Standard Deviation</th>
<th>Sharpe Ratio</th>
<th>Sortino Ratio RF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Composite</strong></td>
<td><strong>Total Composite</strong></td>
<td><strong>Total Composite</strong></td>
<td><strong>Total Composite</strong></td>
<td><strong>Total Composite</strong></td>
</tr>
<tr>
<td>Value</td>
<td>7.21</td>
<td>0.97</td>
<td>6.12</td>
<td>1.13</td>
</tr>
<tr>
<td>Rank</td>
<td>44</td>
<td>5</td>
<td>34</td>
<td>37</td>
</tr>
<tr>
<td>Policy Index Value</td>
<td>6.35</td>
<td>0.00</td>
<td>6.10</td>
<td>0.99</td>
</tr>
<tr>
<td>Rank</td>
<td>78</td>
<td>31</td>
<td>34</td>
<td>68</td>
</tr>
</tbody>
</table>

Universe
5th %tile | 8.78 | 0.94 | 4.62 | 1.35 | 3.00 |
25th %tile | 7.79 | 0.07 | 5.94 | 1.20 | 1.80 |
Median | 7.10 | -0.35 | 6.46 | 1.04 | 1.35 |
75th %tile | 4.40 | -0.94 | 7.19 | 0.95 | 1.17 |
95th %tile | 5.08 | -3.03 | 8.36 | 0.69 | 0.94 |

December 31, 2016
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Risk Statistics vs. Peer Universe

Total Composite vs. InvestorForce Public DB < $50mm Net
3 Years

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Composite Value</td>
<td>3.69</td>
<td>67</td>
</tr>
<tr>
<td>Total Composite Rank</td>
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<td></td>
</tr>
<tr>
<td>Policy Index Value</td>
<td>1.77</td>
<td>99</td>
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<tr>
<td>Policy Index Rank</td>
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<tr>
<td>Universe 5th %tile</td>
<td>5.47</td>
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</tr>
<tr>
<td>Universe 25th %tile</td>
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<tr>
<td>Universe Median</td>
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<td>Universe 75th %tile</td>
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<td>Universe 95th %tile</td>
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Anlzd Return

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<th>Rank</th>
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<tr>
<td>6.3</td>
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<td>6.0</td>
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</table>

Anlzd Alpha

<table>
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<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
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<td>3.1</td>
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<tr>
<td>2.6</td>
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</tr>
<tr>
<td>2.1</td>
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Anlzd Standard Deviation

<table>
<thead>
<tr>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
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</tr>
<tr>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>0.3</td>
<td></td>
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</table>

Sharpe Ratio

<table>
<thead>
<tr>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
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<tr>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>1.0</td>
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Sortino Ratio RF

<table>
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<tr>
<th>Value</th>
<th>Rank</th>
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</thead>
<tbody>
<tr>
<td>2.1</td>
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</tr>
<tr>
<td>1.9</td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td></td>
</tr>
</tbody>
</table>

December 31, 2016
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Risk Statistics vs. Peer Universe

Total Composite vs. InvestorForce Public DB < $50mm Net
5 Years

Anlzd Return

Anlzd Alpha

Anlzd Standard Deviation

Sharpe Ratio

Sortino Ratio RF

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Composite</td>
<td>7.14</td>
<td>70</td>
</tr>
<tr>
<td>Policy Index</td>
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<td>94</td>
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<tr>
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<td>Median</td>
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<tr>
<td>95th %tile</td>
<td>-1.92</td>
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</table>

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
<th>Rank</th>
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<tbody>
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<td>25th %tile</td>
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<td>Median</td>
<td>-0.86</td>
<td>43</td>
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<td>75th %tile</td>
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<tr>
<td>95th %tile</td>
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<table>
<thead>
<tr>
<th>Metric</th>
<th>Value</th>
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</tr>
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<td>25th %tile</td>
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<td>Median</td>
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</tr>
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<td>75th %tile</td>
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December 31, 2016
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Risk Statistics vs. Peer Universe

Total Composite vs. InvestorForce Public DB < $50mm Net
10 Years

Anlzd Return

Anlzd Alpha

Anlzd Standard Deviation

Sharpe Ratio

Sortino Ratio RF

<table>
<thead>
<tr>
<th>Total Composite</th>
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<th>Anlzd Alpha</th>
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<table>
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<th>Anlzd Standard Deviation</th>
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<table>
<thead>
<tr>
<th>Total Composite</th>
<th>Sharpe Ratio</th>
<th>Policy Index</th>
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<tbody>
<tr>
<td>Value</td>
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<td>0.31</td>
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<tr>
<td>Rank</td>
<td>63</td>
<td>97</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Total Composite</th>
<th>Sortino Ratio RF</th>
<th>Policy Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
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<td>0.65</td>
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<tr>
<td>Rank</td>
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<td>54</td>
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</table>

December 31, 2016
Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total results shown may vary from the calculated return shown on the performance summary.

### Attribution Summary

<table>
<thead>
<tr>
<th>Composite</th>
<th>Wtd. Actual Return</th>
<th>Wtd. Index Return</th>
<th>Excess Return</th>
<th>Selection Effect</th>
<th>Allocation Effect</th>
<th>Interaction Effects</th>
<th>Total Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity Composite</td>
<td>3.7%</td>
<td>4.2%</td>
<td>-0.5%</td>
<td>-0.1%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Int’l Equity Composite</td>
<td>-2.5%</td>
<td>-1.3%</td>
<td>-1.2%</td>
<td>-0.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>-0.3%</td>
</tr>
<tr>
<td>Fixed Income Composite</td>
<td>-2.8%</td>
<td>-3.0%</td>
<td>0.2%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Commodities Composite</td>
<td>0.7%</td>
<td>2.7%</td>
<td>-1.9%</td>
<td>-0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Inflation-Linked Composite</td>
<td>-3.0%</td>
<td>-2.4%</td>
<td>-0.6%</td>
<td>-0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Cash Composite</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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<td><strong>-0.2%</strong></td>
<td><strong>-0.4%</strong></td>
<td><strong>-0.5%</strong></td>
<td><strong>0.1%</strong></td>
<td><strong>0.0%</strong></td>
<td><strong>-0.4%</strong></td>
</tr>
</tbody>
</table>

*Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total results shown may vary from the calculated return shown on the performance summary.*
**Plan attribution calculations are returns based and the results shown reflect the composites shown. As a result, the total results shown may vary from the calculated return shown on the performance summary.**

### Attribution Summary

<table>
<thead>
<tr>
<th>Composite</th>
<th>Wtd. Actual Return</th>
<th>Wtd. Index Return</th>
<th>Excess Return</th>
<th>Selection Effect</th>
<th>Allocation Effect</th>
<th>Interaction Effects</th>
<th>Total Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity Composite</td>
<td>13.1%</td>
<td>12.7%</td>
<td>0.3%</td>
<td>0.1%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Int'l Equity Composite</td>
<td>4.7%</td>
<td>4.5%</td>
<td>0.2%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Fixed Income Composite</td>
<td>3.5%</td>
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<td>0.8%</td>
<td>0.3%</td>
<td>0.1%</td>
<td>0.0%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Commodities Composite</td>
<td>18.1%</td>
<td>11.8%</td>
<td>6.4%</td>
<td>0.3%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Inflation-Linked Composite</td>
<td>4.7%</td>
<td>4.7%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Cash Composite</td>
<td>0.3%</td>
<td>0.3%</td>
<td>-0.1%</td>
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<td>0.1%</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>6.3%</strong></td>
<td><strong>0.9%</strong></td>
<td><strong>0.6%</strong></td>
<td><strong>0.2%</strong></td>
<td><strong>0.0%</strong></td>
<td><strong>0.9%</strong></td>
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</tbody>
</table>

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*Allocation Effect*, *Selection Effect*, *Interaction Effects*,
### Total Fund Risk Statistics

#### 1 Year Ending December 31, 2016

<table>
<thead>
<tr>
<th>Fund Type</th>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Ann Excess BM Return</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
<th>Info Ratio</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity Composite</td>
<td>27.43%</td>
<td>13.06%</td>
<td>44</td>
<td>11.30%</td>
<td>32</td>
<td>0.33%</td>
<td>44</td>
<td>0.79%</td>
<td>1</td>
<td>0.42</td>
<td>36</td>
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<tr>
<td>Russell 3000</td>
<td>--</td>
<td>12.73%</td>
<td>45</td>
<td>11.25%</td>
<td>31</td>
<td>0.00%</td>
<td>45</td>
<td>0.00%</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Int'l Equity Composite</td>
<td>24.13%</td>
<td>4.66%</td>
<td>23</td>
<td>12.49%</td>
<td>41</td>
<td>0.16%</td>
<td>23</td>
<td>3.14%</td>
<td>14</td>
<td>0.05</td>
<td>22</td>
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<tr>
<td>MSCI ACWI ex USA</td>
<td>--</td>
<td>4.50%</td>
<td>23</td>
<td>13.37%</td>
<td>62</td>
<td>0.00%</td>
<td>23</td>
<td>0.00%</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Fixed Income Composite</td>
<td>27.77%</td>
<td>3.48%</td>
<td>34</td>
<td>3.66%</td>
<td>73</td>
<td>1.39%</td>
<td>34</td>
<td>4.40%</td>
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<tr>
<td>BBgBarc Global Aggregate TR</td>
<td>--</td>
<td>2.09%</td>
<td>91</td>
<td>7.35%</td>
<td>99</td>
<td>0.00%</td>
<td>91</td>
<td>0.00%</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Commodities Composite</td>
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<td>18.12%</td>
<td>--</td>
<td>10.25%</td>
<td>--</td>
<td>6.35%</td>
<td>--</td>
<td>13.04%</td>
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<td>11.77%</td>
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<td>12.45%</td>
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<td>49</td>
<td>4.34%</td>
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<td>0.90%</td>
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<tr>
<td>Cash Composite</td>
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<td>0.26%</td>
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<td>0.33%</td>
<td>--</td>
<td>0.05%</td>
<td>--</td>
<td>0.00%</td>
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<td>0.00%</td>
<td>--</td>
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### Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

#### Total Fund Risk Statistics

**3 Years Ending December 31, 2016**

<table>
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<tr>
<th>Asset Class</th>
<th>% of Tot</th>
<th>Anlzd Ret</th>
<th>Rank</th>
<th>Anlzd Std Dev</th>
<th>Rank</th>
<th>Ann Excess BM Return</th>
<th>Rank</th>
<th>Tracking Error</th>
<th>Rank</th>
<th>Info Ratio</th>
<th>Rank</th>
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<td>Russell 3000</td>
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<td>8.43%</td>
<td>25</td>
<td>11.04%</td>
<td>23</td>
<td>0.00%</td>
<td>25</td>
<td>0.00%</td>
<td>1</td>
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<td>--</td>
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<tr>
<td>Int'l Equity Composite</td>
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<td>12.33%</td>
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<td>59</td>
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<td>0.04</td>
<td>57</td>
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<tr>
<td>MSCI ACWI ex USA</td>
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<td>12.69%</td>
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<td>0.00%</td>
<td>60</td>
<td>0.00%</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Fixed Income Composite</td>
<td>27.77%</td>
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<td>25</td>
<td>3.12%</td>
<td>77</td>
<td>3.68%</td>
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<td>3.74%</td>
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<tr>
<td>BBgBarc Global Aggregate TR</td>
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<td>99</td>
<td>5.04%</td>
<td>99</td>
<td>0.00%</td>
<td>99</td>
<td>0.00%</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Cash Composite</td>
<td>5.35%</td>
<td>0.12%</td>
<td>--</td>
<td>0.03%</td>
<td>--</td>
<td>-0.02%</td>
<td>--</td>
<td>0.04%</td>
<td>--</td>
<td>-0.53</td>
<td>--</td>
</tr>
<tr>
<td>BofA Merrill Lynch 91-Day T-Bill</td>
<td>--</td>
<td>0.14%</td>
<td>--</td>
<td>0.05%</td>
<td>--</td>
<td>0.00%</td>
<td>--</td>
<td>0.00%</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

*Asset classes shown sum to less than 100%, due to the exclusion of Commodities and Inflation-Linked composites that do not have a 3 year history*
### Total Fund Risk Statistics

#### U.S. Equity Composite
- % of Tot: 27.43%
- Anlzd Ret: 14.46%
- Rank: 36
- Anlzd Std Dev: 10.69%
- Rank: 21
- Ann Excess BM Return: -0.20%
- Rank: 36
- Tracking Error: 0.44%
- Rank: 1
- Info Ratio: -0.46
- Rank: 70

#### Russell 3000
- % of Tot: --
- Anlzd Ret: 14.67%
- Rank: 32
- Anlzd Std Dev: 10.65%
- Rank: 20
- Ann Excess BM Return: 0.00%
- Rank: 32
- Tracking Error: 0.00%
- Rank: 1
- Info Ratio: --
- Rank: --

#### Int'l Equity Composite
- % of Tot: 24.13%
- Anlzd Ret: 5.12%
- Rank: 80
- Anlzd Std Dev: 13.26%
- Rank: 68
- Ann Excess BM Return: 0.11%
- Rank: 80
- Tracking Error: 2.41%
- Rank: 6
- Info Ratio: 0.05
- Rank: 78

#### MSCI ACWI ex USA
- % of Tot: --
- Anlzd Ret: 5.00%
- Rank: 81
- Anlzd Std Dev: 13.35%
- Rank: 73
- Ann Excess BM Return: 0.00%
- Rank: 81
- Tracking Error: 0.00%
- Rank: 1
- Info Ratio: --
- Rank: --

#### Fixed Income Composite
- % of Tot: 27.77%
- Anlzd Ret: 2.26%
- Rank: 78
- Anlzd Std Dev: 3.21%
- Rank: 82
- Ann Excess BM Return: 2.05%
- Rank: 78
- Tracking Error: 3.34%
- Rank: 57
- Info Ratio: 0.61
- Rank: 77

#### BBgBarc Global Aggregate TR
- % of Tot: --
- Anlzd Ret: 0.21%
- Rank: 99
- Anlzd Std Dev: 4.64%
- Rank: 99
- Ann Excess BM Return: 0.00%
- Rank: 99
- Tracking Error: 0.00%
- Rank: 1
- Info Ratio: --
- Rank: --

#### Cash Composite
- % of Tot: 5.35%
- Anlzd Ret: 0.10%
- Rank: --
- Anlzd Std Dev: 0.03%
- Rank: --
- Ann Excess BM Return: -0.02%
- Rank: --
- Tracking Error: 0.03%
- Rank: --
- Info Ratio: -0.71
- Rank: --

#### BofA Merrill Lynch 91-Day T-Bill
- % of Tot: --
- Anlzd Ret: 0.12%
- Rank: --
- Anlzd Std Dev: 0.04%
- Rank: --
- Ann Excess BM Return: 0.00%
- Rank: --
- Tracking Error: 0.00%
- Rank: --
- Info Ratio: --
- Rank: --

---

*Asset classes shown sum to less than 100%, due to the exclusion of Commodities and Inflation-Linked composites that do not have a 5 year history*
## Total Fund Performance Detail

<table>
<thead>
<tr>
<th></th>
<th>Market Value ($)</th>
<th>% of Portfolio</th>
<th>3 Mo (%)</th>
<th>Fiscal YTD (%)</th>
<th>1 Yr (%)</th>
<th>3 Yrs (%)</th>
<th>5 Yrs (%)</th>
<th>10 Yrs (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Composite</strong></td>
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<td>7.2</td>
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<tr>
<td>Policy Index</td>
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<td>6.3</td>
<td>78</td>
<td>1.8</td>
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<tr>
<td>Over/Under</td>
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<td></td>
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<td>0.1</td>
<td>0.9</td>
<td>1.9</td>
<td>1.9</td>
<td>1.2</td>
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<td>2.2</td>
<td>91</td>
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<td>eA TIPS / Infl Indexed Fixed Inc Net Median</td>
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<tr>
<td>Over/Under</td>
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*Performance returns are reported net of fees.

*Fiscal year ends June 30.
Arizona Fire Fighter and Peace Officer Cancer Insurance Plan

Total Fund Return Summary vs. Peer Universe

Total Composite vs. InvestorForce Public DB < $50mm Net

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<td>25th Percentile</td>
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<td>16.0</td>
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<td>7.3</td>
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<td>5.6</td>
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<td>82</td>
<td>67</td>
<td>49</td>
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<td>47</td>
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<td>Total Composite</td>
<td>2.7 (79)</td>
<td>1.8 (23)</td>
<td>1.3 (77)</td>
<td>16.3 (21)</td>
<td>9.4 (88)</td>
<td>-0.4 (81)</td>
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<td>15.4 (44)</td>
<td>10.0 (62)</td>
<td>-0.4 (81)</td>
<td>5.9 (84)</td>
</tr>
</tbody>
</table>
Information Disclaimer

• Past performance is no guarantee of future results.

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

• NEPC’s source for portfolio pricing, calculation of accruals, and transaction information is the plan’s custodian bank. Information on market indices and security characteristics is received from other sources external to NEPC. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within.

• Some index returns displayed in this report or used in calculation of a policy, allocation or custom benchmark may be preliminary and subject to change.

• This report is provided as a management aid for the client’s internal use only. Information contained in this report does not constitute a recommendation by NEPC.

• This report may contain confidential or proprietary information and may not be copied or redistributed to any party not legally entitled to receive it.

Reporting Methodology

• The client’s custodian bank is NEPC’s preferred data source unless otherwise directed. NEPC generally reconciles custodian data to manager data. If the custodian cannot provide accurate data, manager data may be used.

• Trailing time period returns are determined by geometrically linking the holding period returns, from the first full month after inception to the report date. Rates of return are annualized when the time period is longer than a year. Performance is presented gross and/or net of manager fees as indicated on each page.

• For managers funded in the middle of a month, the “since inception” return will start with the first full month, although actual inception dates and cash flows are taken into account in all Composite calculations.

• This report may contain forward-looking statements that are based on NEPC’s estimates, opinions and beliefs, but NEPC cannot guarantee that any plan will achieve its targeted return or meet other goals.
March 1, 2017

Operations Committee
Monthly Operations Report

PROJECTS

1. Website

PSPRS' website was developed more than 15 years ago and is in desperate need of a facelift. Although a lot of pertinent information is available, it is difficult to find because that information is not organized in any meaningful way. We have heard from members and employer groups alike that the website is difficult to use and out of date.

Over a year ago we began working with an outside vendor, Integrated Web Strategy (IWS), to redesign the site. Staff developed a site map based on content to be included on the new website and worked with IWS to design the look and feel of a new site. Over the past month we have been given access to the new site to populate each page with text and tables, and are just about done with that phase of the project. We are in the process of rolling out the site to staff and a select group of users for review and feedback. We will use the feedback we receive to put finishing touches on the new site. We hope to “go live” within the next couple of weeks.

As we discussed in January, PSPRS’ website is really hosted in two different places. IWS will be hosting the “static” part of our website that contains information but does not contain personal data. PSPRS will continue to host the part of our website that contains personal data...the Member Portal, Employer Portal and Local Board Portal. We have contracted with two web developers to work on those portals in preparation for Senate Bill 1428 implementation. They will also adjust the look and feel to match the look and feel of our IWS-hosted site so that moving back and forth is seamless for users of our website.

2. Phone System Upgrade

PSPRS has been using the same Cisco phone system for several years, and that phone system is no longer supported by Cisco. It will be considered “end of life” at the end of February. We budgeted for a new phone system in fiscal year 2017, and spent the past few months purchasing and configuring the new system, which will be rolled out to staff in March. The new phone system has additional functionality that does not exist on our existing antiquated system, including the following:

- Our existing phone system was not designed for call center use, so we have had to use a work around to make it function as a call center. The new system allows us to truly setup a call center queue that can be managed by the call center group.

- The new system has a better monitoring and reporting system. Our existing system is not able to provide detailed call reports. The new
system will allow us to track calls and create usage reports.

- The new system also has increased auto-attendant functionality, allowing us to build more sophisticated phone trees to help direct users to the department that can best answer their questions.

3. Building Changes
We presently own our building and could be held liable for any injuries that occur on our property. The building is classified as a capital asset on our financial statements. In 2016, the Board authorized staff to transfer the building into an LLC and have the building managed by a management company as an investment. We will have a deeper discussion at the March 29th meeting regarding the reasons for that change and progress on the transfer.

Dinan & Company, LLC has been a tenant in our building for the past 9 years. Dinan’s lease with us expires this year, and they are in the process of moving to a larger building. As of the writing of this memo they are expected to move out of our building the weekend of February 24-26, and will terminate their lease February 28th.

Once Dinan moves out of our building, we will be able to take over that space. We are in the process of determining final costs for making the space available to staff. Those costs include furniture for the offices, computer equipment and cabling needed to include that space in our network and phone system infrastructure, securing the space and tying that security into our existing security system, and other miscellaneous costs. We hope to have those costs defined by the March 29th Operations Committee meeting. Some of those costs were included in the fiscal year 2017 budget, so we will begin the process of preparing the space for staff in March.

HR Items
We are in the process of hiring a full-time HR Manager to replace Robert Ortega, who was promoted to Director of Member Services. We interviewed several people in December and held second interviews with two people on January 17th. We were impressed with one of the applicants and offered her a position, but she ended up turning us down to accept a position with the City of Goodyear, which is much closer to where she lives. We were not overly impressed with the other applicants, and are determining next steps.

We promoted our document scanning technician to the call center and attempted to use existing staff to keep up with our scanning needs. We quickly learned that existing staff does not have the time to keep up with the number of documents that need to be scanned, so we recently filled the scanning technician position.

We are reviewing our staffing needs for fiscal year 2018 in preparation for our budget request. We will share initial thoughts at the March 29th meeting.
### New Benefit Recipients by Fiscal Year

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>PSPRS</th>
<th>CORP</th>
<th>EORP</th>
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<td></td>
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<td>9,492</td>
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<td>1,375</td>
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<td>1,239</td>
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<td><strong>Total Membership--PSPRS</strong></td>
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<td><strong>33,041</strong></td>
<td><strong>32,172</strong></td>
<td><strong>31,519</strong></td>
<td><strong>31,104</strong></td>
<td><strong>30,750</strong></td>
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</table>

|                | EORP/EODCRS    |              |              |              |              |              |
| Active Members--Vested | 541            | 500          | 549          | 503          | 539          | 509          |
| Active Members--Non-Vested | 153            | 238          | 294          | 336          | 306          | 336          |
| Inactive       | 163            | 171          | 149          | 160          | 132          | 122          |
| Service Pensions | 897            | 893          | 837          | 842          | 785          | 785          |
| Disability Pensions | 18             | 17           | 16           | 15           | 14           | 16           |
| Survivor Benefits | 208            | 206          | 200          | 200          | 193          | 189          |
| **Total Membership--EORP** | **1,980**      | **2,025**    | **2,045**    | **2,056**    | **1,969**    | **1,957**    |

|                | EODCRS Members |              |              |              |              |              |
|                | 541            | 500          | 549          | 503          | 539          | 509          |
| **Total Membership--Elected Officials** | **2,076**       | **2,066**    | **2,045**    | **2,056**    | **1,969**    | **1,957**    |

|                | CORP           |              |              |              |              |              |
| Active Members--Vested | 4,988          | 4,979        | 4,872        | 4,646        | 4,586        | 4,483        |
| Active Members--Non-Vested | 8,858          | 9,205        | 9,723        | 9,934        | 10,405       | 10,082       |
| Inactive       | 2,792          | 2,318        | 1,687        | 1,463        | 1,101        | 1,300        |
| Service Pensions | 4,044          | 3,702        | 3,402        | 3,164        | 2,879        | 2,688        |
| Disability Pensions | 136            | 130          | 122          | 115          | 111          | 105          |
| Survivor Benefits | 605            | 578          | 566          | 531          | 486          | 463          |
| **Total Membership--CORP** | **21,423**     | **20,912**   | **20,372**   | **19,853**   | **19,568**   | **19,121**   |

|                | Total Membership--All | 57,429 | 56,019 | 54,589 | 53,428 | 52,641 | 51,828 |

-4-
PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

Fiscal Year 2017 Budget with Fiscal Year to Date Expenses

As of 2-22-2017
EXECUTIVE SUMMARY

FY 2017

As of 2-22-2017, this fiscal year is $518,491 under budget which translates to 4.37%.

The current cost of contracted services for the accelerated development of the computer systems totals $143,465. The project is on course to be completed by the end of April with a total cost of $384,564. The cost of the development is to be covered by savings in the other budgeted categories.

The projected expenses for the Compliance Division have been removed including Personnel Services. All savings have been realized. So far, the FY 2017 budget has been a positive experience.
# All Departments Budget to Actual

**Public Safety Personnel Retirement System**

*Fiscal Year Projections*

*As of 2-22-2017*

<table>
<thead>
<tr>
<th>ALL DEPARTMENTS BUDGET SUMMARY</th>
<th>2017 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>7,099,493</td>
<td>3,948,010</td>
<td>2,644,910</td>
<td>506,573</td>
<td>7.14%</td>
</tr>
<tr>
<td>Education &amp; Training</td>
<td>248,095</td>
<td>64,842</td>
<td>172,574</td>
<td>10,679</td>
<td>4.30%</td>
</tr>
<tr>
<td>Professional Services</td>
<td>3,148,745</td>
<td>1,559,263</td>
<td>1,439,961</td>
<td>149,521</td>
<td>4.75%</td>
</tr>
<tr>
<td>Board of Trustees</td>
<td>485,000</td>
<td>237,008</td>
<td>247,992</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Communications</td>
<td>67,550</td>
<td>42,404</td>
<td>27,733</td>
<td>(2,587)</td>
<td>(3.83%)</td>
</tr>
<tr>
<td>Contractual Services</td>
<td>14,500</td>
<td>157,086</td>
<td>2,039</td>
<td>(144,625)</td>
<td>(997.41%)</td>
</tr>
<tr>
<td>Building</td>
<td>233,468</td>
<td>104,038</td>
<td>129,430</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Operating Expenses</td>
<td>53,800</td>
<td>38,161</td>
<td>15,639</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software</td>
<td>239,315</td>
<td>84,503</td>
<td>155,882</td>
<td>(1,070)</td>
<td>(0.45%)</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>207,950</td>
<td>125,492</td>
<td>82,458</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Furniture &amp; Equipment</td>
<td>1,500</td>
<td>-</td>
<td>1,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Capital</td>
<td>64,500</td>
<td>479</td>
<td>64,021</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>All Departments Budget Total</td>
<td>11,863,916</td>
<td>6,361,286</td>
<td>4,984,139</td>
<td>518,491</td>
<td>4.37%</td>
</tr>
<tr>
<td>Litigation</td>
<td>250,000</td>
<td>198,802</td>
<td>51,198</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Total With Litigation</td>
<td>12,113,916</td>
<td>6,560,088</td>
<td>5,035,337</td>
<td>518,491</td>
<td>4.28%</td>
</tr>
</tbody>
</table>

**Excluded Investment Due Diligence**

- 2017 Budget contains the budget approved by the Board of Trustees.
- 2017 Expenses contains paid invoices to date.
- Projected Expenses consist of two components: (1) unpaid invoices that are included in the budget; (2) unpaid invoices for anticipated expenses that have arisen after the budget was approved.
- (Over) Under compares 2017 Expenses plus Projected Expenses to the 2017 Budget.
- (Over) Under Budget % is percentage of (Over) Under to 2017 Budget.
## Administration Budget to Actual

### Public Safety Personnel Retirement System

### Fiscal Year Projections

**As of 2-22-2017**

<table>
<thead>
<tr>
<th>Personnel Services</th>
<th>2017 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>1,374,713</td>
<td>773,237</td>
<td>541,163</td>
<td>60,313</td>
<td>4.39%</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>127,677</td>
<td>-</td>
<td>127,677</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>82,481</td>
<td>31,307</td>
<td>32,469</td>
<td>18,705</td>
<td>22.68%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>145,023</td>
<td>64,588</td>
<td>58,898</td>
<td>21,446</td>
<td>14.79%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>254,713</td>
<td>137,804</td>
<td>100,762</td>
<td>16,147</td>
<td>6.34%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>17,184</td>
<td>7,976</td>
<td>6,764</td>
<td>2,444</td>
<td>14.22%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td><strong>2,001,791</strong></td>
<td><strong>1,014,912</strong></td>
<td><strong>867,824</strong></td>
<td><strong>119,055</strong></td>
<td><strong>5.95%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Education &amp; Training</th>
<th>2017 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 - Other</td>
<td>15,000</td>
<td>9,443</td>
<td>5,557</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense</td>
<td>25,000</td>
<td>1,308</td>
<td>23,692</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Professional Dues and Subscriptions</td>
<td>20,000</td>
<td>19,192</td>
<td>808</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td><strong>60,000</strong></td>
<td><strong>29,943</strong></td>
<td><strong>30,057</strong></td>
<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Professional Services</th>
<th>2017 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 Services - Actuarial</td>
<td>250,000</td>
<td>214,000</td>
<td>36,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Due Diligence</td>
<td>5,000</td>
<td>1,680</td>
<td>3,320</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Legislative Liaison</td>
<td>213,600</td>
<td>134,600</td>
<td>79,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Actuarial - Other</td>
<td>100,000</td>
<td>59,500</td>
<td>40,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Actuarial - Exper Study</td>
<td>140,000</td>
<td>140,000</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Consolidation Study</td>
<td>50,000</td>
<td>115,821</td>
<td>-</td>
<td>(65,821)</td>
<td>(131.64%)</td>
</tr>
<tr>
<td>Legal Services - Legal Counsel</td>
<td>30,000</td>
<td>13,182</td>
<td>16,818</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Legal Services - AG</td>
<td>162,300</td>
<td>162,300</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Legal Services - Other</td>
<td>50,000</td>
<td>48,730</td>
<td>1,270</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Professional Services - Other</td>
<td>10,000</td>
<td>9,939</td>
<td>61</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Actuarial Audit</td>
<td>180,000</td>
<td>-</td>
<td>73,800</td>
<td>106,200</td>
<td>59.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td><strong>1,190,900</strong></td>
<td><strong>759,752</strong></td>
<td><strong>390,769</strong></td>
<td><strong>40,379</strong></td>
<td><strong>3.39%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contractual Services</th>
<th>2017 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary Services</td>
<td>6,000</td>
<td>3,961</td>
<td>2,039</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td><strong>6,000</strong></td>
<td><strong>3,961</strong></td>
<td><strong>2,039</strong></td>
<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Administration Department Budget</th>
<th>2017 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3,258,691</td>
<td>1,808,568</td>
<td>1,290,689</td>
<td>159,434</td>
<td>4.89%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Litigation</th>
<th>2017 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal Services - Litigation</td>
<td>250,000</td>
<td>198,802</td>
<td>51,198</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Litigation</strong></td>
<td><strong>250,000</strong></td>
<td><strong>198,802</strong></td>
<td><strong>51,198</strong></td>
<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
<tr>
<td><strong>Total Administration Department Budget</strong></td>
<td><strong>3,508,691</strong></td>
<td><strong>2,007,370</strong></td>
<td><strong>1,341,887</strong></td>
<td><strong>159,434</strong></td>
<td><strong>4.54%</strong></td>
</tr>
</tbody>
</table>

**Column Descriptions:**

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### Agency Budget to Actual

**Public Safety Personnel Retirement System**

*Fiscal Year Projections*

*As of 2-22-2017*

<table>
<thead>
<tr>
<th></th>
<th>2017 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>AGENCY BUDGET</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<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>850</td>
<td>329</td>
<td>521</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Records Management</td>
<td>7,000</td>
<td>7,586</td>
<td>-</td>
<td>(586)</td>
<td>(8.37%)</td>
</tr>
<tr>
<td>Professional Services - Other</td>
<td>1,000</td>
<td>468</td>
<td>532</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>8,850</td>
<td>8,383</td>
<td>1,053</td>
<td>(586)</td>
<td>(6.62%)</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing - External - Other</td>
<td>50</td>
<td>1,668</td>
<td>-</td>
<td>(1,618)</td>
<td>(3236.00%)</td>
</tr>
<tr>
<td>Delivery Service</td>
<td>3,000</td>
<td>486</td>
<td>2,514</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Postage</td>
<td>10,500</td>
<td>11,469</td>
<td>-</td>
<td>(969)</td>
<td>(9.23%)</td>
</tr>
<tr>
<td><strong>Total Communications</strong></td>
<td>13,550</td>
<td>13,623</td>
<td>2,514</td>
<td>(2,587)</td>
<td>(19.09%)</td>
</tr>
<tr>
<td><strong>Operating Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Copier/Printer Supplies</td>
<td>18,000</td>
<td>13,516</td>
<td>4,484</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Envelopes</td>
<td>500</td>
<td>229</td>
<td>271</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Forms</td>
<td>1,500</td>
<td>123</td>
<td>1,377</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Office Supplies - General</td>
<td>28,800</td>
<td>22,065</td>
<td>6,735</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Other Office Expenses</td>
<td>5,000</td>
<td>2,228</td>
<td>2,772</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Operating Expenses</strong></td>
<td>53,800</td>
<td>38,161</td>
<td>15,639</td>
<td>-</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

**Total Agency Budget**

76,200 60,167 19,206 (3,173) (4.16%)

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### BOARD OF TRUSTEES BUDGET

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD Expenses</th>
<th>Projected Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Trustee - Meetings</td>
<td>15,000</td>
<td>6,401</td>
<td>8,599</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Board of Trustee - Training</td>
<td>20,000</td>
<td>7,345</td>
<td>12,655</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Board of Trustee - Other</td>
<td>10,000</td>
<td>3,262</td>
<td>6,738</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Board Consultant</td>
<td>440,000</td>
<td>220,000</td>
<td>220,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Board of Trustees</strong></td>
<td><strong>485,000</strong></td>
<td><strong>237,008</strong></td>
<td><strong>247,992</strong></td>
<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
</tbody>
</table>

**Total Board of Trustees Budget**

|                      | 485,000     | 237,008       | 247,992            | -            | 0.00%                 |

**Column Descriptions:**
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**Building Budget to Actual**  
*Public Safety Personnel Retirement System*  
*Fiscal Year Projections*  
*As of 2-22-2017*

<table>
<thead>
<tr>
<th></th>
<th>2017 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 Budget</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td>55,000</td>
<td>35,700</td>
<td>19,300</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Janitorial</td>
<td>21,540</td>
<td>14,655</td>
<td>6,885</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Window Cleaning</td>
<td>1,560</td>
<td>960</td>
<td>600</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Elevator</td>
<td>4,800</td>
<td>1,557</td>
<td>3,243</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Security System</td>
<td>1,500</td>
<td>1,012</td>
<td>488</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Insurance</td>
<td>10,600</td>
<td>9,600</td>
<td>1,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Condo Association Fees</td>
<td>35,574</td>
<td>20,815</td>
<td>14,759</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total General Expenses</strong></td>
<td>130,574</td>
<td>84,299</td>
<td>46,275</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Other Occupancy Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odorite of Arizona</td>
<td>420</td>
<td>273</td>
<td>147</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Arizona Lock &amp; Safe</td>
<td>2,000</td>
<td>472</td>
<td>1,528</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Pest Control</td>
<td>1,440</td>
<td>1,161</td>
<td>279</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Other Occupancy Expenses</strong></td>
<td>3,860</td>
<td>1,906</td>
<td>1,954</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Repair &amp; Maintenance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repair &amp; Maintenance - Other</td>
<td>15,000</td>
<td>8,069</td>
<td>6,931</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Repair &amp; Mtn - Air Conditioning</td>
<td>80,000</td>
<td>7,550</td>
<td>72,450</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Repair &amp; Maintenance</strong></td>
<td>95,000</td>
<td>15,619</td>
<td>79,381</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Property &amp; Sales Taxes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property &amp; Sales Taxes - County</td>
<td>763</td>
<td>382</td>
<td>381</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Property &amp; Sales Taxes - City</td>
<td>3,271</td>
<td>1,832</td>
<td>1,439</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Property &amp; Sales Taxes</strong></td>
<td>4,034</td>
<td>2,214</td>
<td>1,820</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Building Expenses</strong></td>
<td>233,468</td>
<td>104,038</td>
<td>129,430</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building Improvements</td>
<td>25,000</td>
<td>-</td>
<td>25,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Alarm &amp; Video</td>
<td>5,000</td>
<td>17</td>
<td>4,983</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Furniture &amp; Equipment</td>
<td>15,000</td>
<td>260</td>
<td>14,740</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Bldg Improve - Wiring</td>
<td>15,000</td>
<td>-</td>
<td>15,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Repairs &amp; Mtn - Safety Equip</td>
<td>1,500</td>
<td>202</td>
<td>1,298</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Building Improve - Faucet Replace</td>
<td>3,000</td>
<td>-</td>
<td>3,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Capital</strong></td>
<td>64,500</td>
<td>479</td>
<td>64,021</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Building Budget</strong></td>
<td>297,968</td>
<td>104,517</td>
<td>193,451</td>
<td>-</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

**Column Descriptions:**  
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- Projected Expenses consist of two components: (1) unpaid invoices that are included in the budget; (2) unpaid invoices for anticipated expenses that have arisen after the budget was approved.  
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## Compliance Department Budget to Actual

### Public Safety Personnel Retirement System

**Fiscal Year Projections**

*As of 2-22-2017*

<table>
<thead>
<tr>
<th></th>
<th>2017 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>169,903</td>
<td>66,135</td>
<td>-</td>
<td>103,768</td>
<td>61.07%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>10,194</td>
<td>991</td>
<td>-</td>
<td>9,203</td>
<td>90.28%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>20,375</td>
<td>5,663</td>
<td>-</td>
<td>14,712</td>
<td>72.21%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>33,181</td>
<td>14,760</td>
<td>-</td>
<td>18,421</td>
<td>55.52%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>2,124</td>
<td>669</td>
<td>-</td>
<td>1,455</td>
<td>68.50%</td>
</tr>
<tr>
<td>Total Personnel Services</td>
<td><strong>235,777</strong></td>
<td><strong>88,218</strong></td>
<td>-</td>
<td><strong>147,559</strong></td>
<td><strong>62.58%</strong></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 - Other</td>
<td>5,000</td>
<td>9</td>
<td>-</td>
<td>4,991</td>
<td>99.82%</td>
</tr>
<tr>
<td>Training Expense - Conf</td>
<td>3,500</td>
<td>915</td>
<td>-</td>
<td>2,585</td>
<td>73.86%</td>
</tr>
<tr>
<td>Professional Dues</td>
<td>3,500</td>
<td>397</td>
<td>-</td>
<td>3,103</td>
<td>88.66%</td>
</tr>
<tr>
<td>Total Education &amp; Training</td>
<td><strong>12,000</strong></td>
<td><strong>1,321</strong></td>
<td>-</td>
<td><strong>10,679</strong></td>
<td><strong>88.99%</strong></td>
</tr>
<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof Services - IT Audit</td>
<td>20,000</td>
<td>-</td>
<td>-</td>
<td>20,000</td>
<td>100.00%</td>
</tr>
<tr>
<td>Prof Services - ER Audits</td>
<td>100,000</td>
<td>-</td>
<td>-</td>
<td>100,000</td>
<td>100.00%</td>
</tr>
<tr>
<td>Total Professional Services</td>
<td><strong>120,000</strong></td>
<td>-</td>
<td>-</td>
<td><strong>120,000</strong></td>
<td><strong>100.00%</strong></td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>1,575</td>
<td>1,246</td>
<td>-</td>
<td>329</td>
<td>20.89%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td><strong>1,575</strong></td>
<td><strong>1,246</strong></td>
<td>-</td>
<td><strong>329</strong></td>
<td><strong>20.89%</strong></td>
</tr>
<tr>
<td><strong>Total Compliance Department Budget</strong></td>
<td><strong>369,352</strong></td>
<td><strong>90,785</strong></td>
<td>-</td>
<td><strong>278,567</strong></td>
<td><strong>75.42%</strong></td>
</tr>
</tbody>
</table>

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## Finance Department Budget to Actual

### Public Safety Personnel Retirement System

#### Fiscal Year Projections

**As of 2-22-2017**

<table>
<thead>
<tr>
<th></th>
<th>2017 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>334,417</td>
<td>213,798</td>
<td>115,760</td>
<td>4,859</td>
<td>1.45%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>20,065</td>
<td>8,324</td>
<td>6,946</td>
<td>4,795</td>
<td>23.90%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>59,162</td>
<td>34,086</td>
<td>20,479</td>
<td>4,597</td>
<td>7.77%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>65,187</td>
<td>34,716</td>
<td>22,565</td>
<td>7,906</td>
<td>12.13%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>4,180</td>
<td>2,316</td>
<td>1,447</td>
<td>417</td>
<td>9.98%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>483,011</td>
<td>293,240</td>
<td>167,197</td>
<td>22,574</td>
<td>4.67%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training Exp - Conferences</td>
<td>500</td>
<td>-</td>
<td>500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Professional Dues/Subscriptions</td>
<td>2,000</td>
<td>1,174</td>
<td>826</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>2,500</td>
<td>1,174</td>
<td>1,326</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>Professional Services - Auditing</td>
<td>121,495</td>
<td>131,703</td>
<td>-</td>
<td>(10,208)</td>
<td>(8.40%)</td>
</tr>
<tr>
<td>Prof. Serv. - Annual Report (GFOA)</td>
<td>3,000</td>
<td>-</td>
<td>3,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv Finance-Banking</td>
<td>-</td>
<td>64</td>
<td>-</td>
<td>(64)</td>
<td>NA</td>
</tr>
<tr>
<td>Prof Serv - Great Plains</td>
<td>5,000</td>
<td>4,539</td>
<td>461</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>129,495</td>
<td>136,306</td>
<td>3,461</td>
<td>(10,272)</td>
<td>(7.93%)</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postage - Wells Fargo</td>
<td>16,500</td>
<td>3,877</td>
<td>12,623</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Communications</strong></td>
<td>16,500</td>
<td>3,877</td>
<td>12,623</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Finance Department Budget</strong></td>
<td>631,506</td>
<td>434,597</td>
<td>184,607</td>
<td>12,302</td>
<td>1.95%</td>
</tr>
</tbody>
</table>

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### Investment Department Budget to Actual

**Public Safety Personnel Retirement System**

*Fiscal Year Projections*

**As of 2-22-2017**

#### Investment Department Budget

<table>
<thead>
<tr>
<th></th>
<th>2017 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>1,112,580</td>
<td>629,750</td>
<td>428,874</td>
<td>53,956</td>
<td>4.85%</td>
</tr>
<tr>
<td>Contractual Obligations</td>
<td>119,000</td>
<td>50,000</td>
<td>69,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>73,895</td>
<td>29,379</td>
<td>28,204</td>
<td>16,312</td>
<td>22.07%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>91,658</td>
<td>49,508</td>
<td>37,358</td>
<td>4,792</td>
<td>5.23%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>211,971</td>
<td>103,029</td>
<td>81,199</td>
<td>27,023</td>
<td>12.75%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>15,396</td>
<td>7,447</td>
<td>5,876</td>
<td>2,073</td>
<td>13.46%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>1,624,500</td>
<td>869,113</td>
<td>651,231</td>
<td>104,156</td>
<td>6.41%</td>
</tr>
</tbody>
</table>

|                                |             |               |                    |              |                       |
| **Education & Training**       |             |               |                    |              |                       |
| Travel Expense - Other         | 65,000      | 10,009        | 54,991             | -            | 0.00%                 |
| Training Expense - Conferences | 5,000       | 380           | 4,620              | -            | 0.00%                 |
| Training Exp - Professional Dues/Subscriptions | 11,625 | 783 | 10,842 | - | 0.00% |
| Training Expense - Research    | 47,000      | 20,000        | 27,000             | -            | 0.00%                 |
| Training Expense - Tuition Reimb| 6,000        | -             | 6,000              | -            | 0.00%                 |
| Training Expense - Other       | 2,000       | -             | 2,000              | -            | 0.00%                 |
| **Total Education & Training** | 136,625     | 31,172        | 105,453            | -            | 0.00%                 |

|                                |             |               |                    |              |                       |
| **Professional Services**      |             |               |                    |              |                       |
| Prof Serv - Albourne America   | 640,000     | 288,000       | 352,000            | -            | 0.00%                 |
| Prof Serv - Mellon Bank Fees   | 355,000     | 135,254       | 219,746            | -            | 0.00%                 |
| Prof Serv - ORG Real Property  | 310,000     | 160,000       | 150,000            | -            | 0.00%                 |
| Prof Serv - Stepstone Group    | 100,000     | 66,666        | 33,334             | -            | 0.00%                 |
| Prof Serv - Valuations (Legacy RE) | 280,000 | - | 280,000 | - | 0.00% |
| Prof Serv - Other              | 4,500       | 119           | 4,381              | -            | 0.00%                 |
| **Total Professional Services**| 1,689,500   | 650,039       | 1,039,461          | -            | 0.00%                 |

|                                |             |               |                    |              |                       |
| **Software**                   |             |               |                    |              |                       |
| Private I                      | 50,000      | -             | 50,000             | -            | 0.00%                 |
| Bloomberg                      | 32,260      | 23,067        | 9,193              | -            | 0.00%                 |
| Investment Analytics           | 50,000      | 15,000        | 35,000             | -            | 0.00%                 |
| ASPN                           | 50,000      | -             | 50,000             | -            | 0.00%                 |
| **Total Software**             | 182,260     | 38,067        | 144,193            | -            | 0.00%                 |

|                                | 3,632,885   | 1,588,391     | 1,940,338          | 104,156      | 2.87%                 |

#### Direct Due Diligence

|                                |             |               |                    |              |                       |
| Prof Serv Inv - Employment Solutions | 141,692 |               |                      |              |                       |
| Legal Services                 | 453,625    |               |                      |              |                       |
| Legal Services - Other         | 31,453     |               |                      |              |                       |
| **Total Direct Due Diligence** | 626,770     |               |                      |              |                       |

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## IT Network Services Department Budget to Actual

**Public Safety Personnel Retirement System**  
*Fiscal Year Projections  
As of 2-22-2017*

<table>
<thead>
<tr>
<th></th>
<th>2017 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>289,730</td>
<td>189,439</td>
<td>100,291</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>17,384</td>
<td>7,835</td>
<td>6,018</td>
<td>3,531</td>
<td>20.31%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>35,413</td>
<td>23,155</td>
<td>12,258</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>56,583</td>
<td>36,987</td>
<td>19,586</td>
<td>10</td>
<td>0.02%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>3,621</td>
<td>2,008</td>
<td>1,253</td>
<td>360</td>
<td>9.94%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>402,731</td>
<td>259,424</td>
<td>139,406</td>
<td>3,901</td>
<td>0.97%</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 - Other</td>
<td>6,500</td>
<td>-</td>
<td>6,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Tuition Reimb</td>
<td>10,500</td>
<td>-</td>
<td>10,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Other</td>
<td>12,500</td>
<td>606</td>
<td>11,894</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>29,500</td>
<td>606</td>
<td>28,894</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>Professional Services - Other</td>
<td>10,000</td>
<td>4,783</td>
<td>5,217</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>10,000</td>
<td>4,783</td>
<td>5,217</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>12,180</td>
<td>6,349</td>
<td>5,831</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Communications - Internet</td>
<td>25,320</td>
<td>18,555</td>
<td>6,765</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Communications</strong></td>
<td>37,500</td>
<td>24,904</td>
<td>12,596</td>
<td>-</td>
<td>0.00%</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>94,000</td>
<td>59,022</td>
<td>34,978</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>IT Security</td>
<td>11,100</td>
<td>4,613</td>
<td>6,487</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>IT Services</td>
<td>25,450</td>
<td>17,705</td>
<td>7,745</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Warranty Renewal</td>
<td>38,500</td>
<td>17,741</td>
<td>20,759</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Backup &amp; Disaster Recovery</td>
<td>38,900</td>
<td>26,411</td>
<td>12,489</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Infrastructure</strong></td>
<td>207,950</td>
<td>125,492</td>
<td>82,458</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 - Other</td>
<td>3,000</td>
<td>515</td>
<td>2,485</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>License &amp; Maintenance - Other</td>
<td>1,500</td>
<td>604</td>
<td>896</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td>4,500</td>
<td>1,119</td>
<td>3,381</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total IT Network Services Department Budget</strong></td>
<td>692,181</td>
<td>416,328</td>
<td>271,952</td>
<td>3,901</td>
<td>0.56%</td>
</tr>
</tbody>
</table>

**Column Descriptions:**  
- 2017 Budget contains the budget approved by the Board of Trustees.  
- 2017 Expenses contains paid invoices to date.  
- Projected Expenses consist of two components: (1) unpaid invoices that are included in the budget; (2) unpaid invoices for anticipated expenses that have arisen after the budget was approved.  
- (Over) Under compares 2017 Expenses plus Projected Expenses to the 2017 Budget.  
- (Over) Under Budget % is percentage of (Over) Under to 2017 Budget.
## IT Systems Development Budget to Actual

**Public Safety Personnel Retirement System**  
**Fiscal Year Projections**  
**As of 2-22-2017**

<table>
<thead>
<tr>
<th>IT Systems Development Department Budget</th>
<th>2017 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>371,421</td>
<td>242,851</td>
<td>128,569</td>
<td>1</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>22,285</td>
<td>7,147</td>
<td>7,714</td>
<td>7,424</td>
<td>33.31%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>58,752</td>
<td>37,344</td>
<td>20,337</td>
<td>1,071</td>
<td>1.82%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>72,504</td>
<td>47,060</td>
<td>25,098</td>
<td>346</td>
<td>0.48%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>4,644</td>
<td>2,574</td>
<td>1,607</td>
<td>463</td>
<td>9.97%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>529,606</td>
<td>336,976</td>
<td>183,325</td>
<td>9,305</td>
<td>1.76%</td>
</tr>
<tr>
<td><strong>Contractual Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contractual Services</td>
<td></td>
<td>143,465</td>
<td></td>
<td>(143,465)</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td>-</td>
<td>143,465</td>
<td></td>
<td>(143,465)</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software - Go-To-Webinar</td>
<td>950</td>
<td>-</td>
<td>950</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software - Go-To-Meeting</td>
<td>550</td>
<td>-</td>
<td>550</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software - Sybase Support</td>
<td>6,000</td>
<td>5,956</td>
<td>44</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software - Visual Studio</td>
<td>40,030</td>
<td>34,266</td>
<td>5,764</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software - Other</td>
<td>2,000</td>
<td>2,904</td>
<td>-</td>
<td>(904)</td>
<td>(45.20%)</td>
</tr>
<tr>
<td>License &amp; Maintenance - Backup Line</td>
<td>1,000</td>
<td>-</td>
<td>1,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>License &amp; Maintenance - Other</td>
<td>450</td>
<td>945</td>
<td>-</td>
<td>(495)</td>
<td>(110.00%)</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td>50,980</td>
<td>44,071</td>
<td>8,308</td>
<td>(1,399)</td>
<td>(2.74%)</td>
</tr>
<tr>
<td><strong>Furniture &amp; Equipment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F &amp; E - 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>
</tbody>
</table>

**Total IT Systems Development Department Budget**  
582,086  
524,512  
193,133  
(135,559)  
(23.29%)

**Column Descriptions:**  
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- Projected Expenses consist of two components: (1) unpaid invoices that are included in the budget; (2) unpaid invoices for anticipated expenses that have arisen after the budget was approved.  
- (Over) Under compares 2017 Expenses plus Projected Expenses to the 2017 Budget.  
- (Over) Under Budget % is percentage of (Over) Under to 2017 Budget.
## Member Services Department Budget to Actual

**Public Safety Personnel Retirement System**  
**Fiscal Year Projections**  
**As of 2-22-2017**

<table>
<thead>
<tr>
<th></th>
<th>2017 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>1,263,612</td>
<td>783,089</td>
<td>440,606</td>
<td>39,917</td>
<td>3.16%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>75,816</td>
<td>29,459</td>
<td>26,436</td>
<td>19,921</td>
<td>26.28%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>220,075</td>
<td>121,535</td>
<td>77,329</td>
<td>21,211</td>
<td>9.64%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>246,779</td>
<td>143,660</td>
<td>86,049</td>
<td>17,070</td>
<td>6.92%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>15,795</td>
<td>8,384</td>
<td>5,507</td>
<td>1,904</td>
<td>12.05%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>1,822,077</td>
<td>1,086,127</td>
<td>635,927</td>
<td>100,023</td>
<td>5.49%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Expenses - Other</td>
<td>1,020</td>
<td>626</td>
<td>394</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Conferences</td>
<td>400</td>
<td>-</td>
<td>400</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Tuition Reimburse</td>
<td>6,050</td>
<td>-</td>
<td>6,050</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>7,470</td>
<td>626</td>
<td>6,844</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>Contractual Services</td>
<td>8,500</td>
<td>9,660</td>
<td>-</td>
<td>(1,160)</td>
<td>(13.65%)</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td>8,500</td>
<td>9,660</td>
<td>-</td>
<td>(1,160)</td>
<td>(13.65%)</td>
</tr>
<tr>
<td><strong>Total Member Services Department Budget</strong></td>
<td>1,838,047</td>
<td>1,096,413</td>
<td>642,771</td>
<td>98,863</td>
<td>5.38%</td>
</tr>
</tbody>
</table>

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- (Over) Under Budget % is percentage of (Over) Under to 2017 Budget.
### All Departments Budget to Actual

**Public Safety Personnel Retirement System**  
*Fiscal Year Projections*  
*As of 2-22-2017*

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel Services</strong></td>
<td>7,099,493</td>
<td>4,454,583</td>
<td>3,948,010</td>
<td>506,573</td>
<td>7.14%</td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td>248,095</td>
<td>64,842</td>
<td>64,842</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Professional Services</strong></td>
<td>3,148,745</td>
<td>1,559,263</td>
<td>1,559,263</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Board of Trustees</strong></td>
<td>485,000</td>
<td>237,008</td>
<td>237,008</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td>67,550</td>
<td>42,404</td>
<td>42,404</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Contractual Services</strong></td>
<td>14,500</td>
<td>157,086</td>
<td>157,086</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Building</strong></td>
<td>233,468</td>
<td>104,038</td>
<td>104,038</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Operating Expenses</strong></td>
<td>53,800</td>
<td>38,161</td>
<td>38,161</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td>239,315</td>
<td>84,503</td>
<td>84,503</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>207,950</td>
<td>125,492</td>
<td>125,492</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Furniture &amp; Equipment</strong></td>
<td>1,500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td>64,500</td>
<td>479</td>
<td>479</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>All Departments Budget Total</strong></td>
<td><strong>11,863,916</strong></td>
<td><strong>6,867,859</strong></td>
<td><strong>6,361,286</strong></td>
<td><strong>506,573</strong></td>
<td><strong>4.27%</strong></td>
</tr>
<tr>
<td><strong>Litigation</strong></td>
<td>250,000</td>
<td>198,802</td>
<td>198,802</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total With Litigation</strong></td>
<td><strong>12,113,916</strong></td>
<td><strong>7,066,661</strong></td>
<td><strong>6,560,088</strong></td>
<td><strong>506,573</strong></td>
<td><strong>4.18%</strong></td>
</tr>
<tr>
<td><strong>Excluded Investment Due Diligence</strong></td>
<td><strong>626,770</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Column Descriptions:**
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- FYTD Budget is the portion of the budget utilized to date.
- FYTD Expenses contains paid invoices to date.
- (Over) Under compares 2017 Expenses to the 2017 Budget.
- (Over) Under Budget % is percentage of (Over) Under to 2017 Budget.
## Administration Budget to Actual

### Public Safety Personnel Retirement System

#### Year to Date

#### As of 2-22-2017

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD 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>1,374,713</td>
<td>833,550</td>
<td>773,237</td>
<td>60,313</td>
<td>7.24%</td>
</tr>
<tr>
<td>Incentives/In-grades/Payouts</td>
<td>127,677</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>82,481</td>
<td>50,012</td>
<td>31,307</td>
<td>18,705</td>
<td>37.40%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>145,023</td>
<td>86,034</td>
<td>64,588</td>
<td>21,446</td>
<td>24.93%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>254,713</td>
<td>153,951</td>
<td>137,804</td>
<td>16,147</td>
<td>10.49%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>17,184</td>
<td>10,420</td>
<td>7,976</td>
<td>2,444</td>
<td>23.45%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td>2,001,791</td>
<td>1,133,967</td>
<td>1,014,912</td>
<td>119,055</td>
<td>10.50%</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 - Other</td>
<td>15,000</td>
<td>9,443</td>
<td>9,443</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense</td>
<td>25,000</td>
<td>1,308</td>
<td>1,308</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Professional Dues and Subscription</td>
<td>20,000</td>
<td>19,192</td>
<td>19,192</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td>60,000</td>
<td>29,943</td>
<td>29,943</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 Services - Actuarial</td>
<td>250,000</td>
<td>214,000</td>
<td>214,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Due Diligence</td>
<td>5,000</td>
<td>1,680</td>
<td>1,680</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Legislative Liason</td>
<td>213,600</td>
<td>134,600</td>
<td>134,600</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Actuarial - Other</td>
<td>100,000</td>
<td>59,500</td>
<td>59,500</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv - Actuarial - Exper Study</td>
<td>140,000</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
<td></td>
</tr>
<tr>
<td>Prof Serv - Consolidation Study</td>
<td>50,000</td>
<td>50,000</td>
<td>115,821</td>
<td>(65,821)</td>
<td>(131.64%)</td>
</tr>
<tr>
<td>Legal Services - Legal Counsel</td>
<td>30,000</td>
<td>13,182</td>
<td>13,182</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Legal Services - AG</td>
<td>162,300</td>
<td>162,300</td>
<td>162,300</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Legal Services - Other</td>
<td>50,000</td>
<td>48,730</td>
<td>48,730</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Professional Services - Other</td>
<td>10,000</td>
<td>9,939</td>
<td>9,939</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Actuarial Audit</td>
<td>180,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>1,190,900</td>
<td>693,931</td>
<td>759,752</td>
<td>(65,821)</td>
<td>(9.49%)</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>6,000</td>
<td>3,961</td>
<td>3,961</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td>6,000</td>
<td>3,961</td>
<td>3,961</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Administration Department Budget</strong></td>
<td>3,258,691</td>
<td>1,861,802</td>
<td>1,808,568</td>
<td>53,234</td>
<td>1.63%</td>
</tr>
<tr>
<td><strong>Litigation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal Services - Litigation</td>
<td>250,000</td>
<td>198,802</td>
<td>198,802</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Litigation</strong></td>
<td>250,000</td>
<td>198,802</td>
<td>198,802</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Administration Department Budget</strong></td>
<td>3,508,691</td>
<td>2,060,604</td>
<td>2,007,370</td>
<td>53,234</td>
<td>2.58%</td>
</tr>
</tbody>
</table>

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### AGENCY BUDGET

**Professional Services**

<table>
<thead>
<tr>
<th>Description</th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Site Shredding</td>
<td>850</td>
<td>329</td>
<td>329</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Records Management</td>
<td>7,000</td>
<td>7,000</td>
<td>7,586</td>
<td>(586)</td>
<td>(8.37%)</td>
</tr>
<tr>
<td>Professional Services - Other</td>
<td>1,000</td>
<td>468</td>
<td>468</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td><strong>8,850</strong></td>
<td><strong>7,797</strong></td>
<td><strong>8,383</strong></td>
<td><strong>(586)</strong></td>
<td><strong>(7.52%)</strong></td>
</tr>
</tbody>
</table>

**Communications**

<table>
<thead>
<tr>
<th>Description</th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printing - External - Other</td>
<td>50</td>
<td>50</td>
<td>1,668</td>
<td>(1,618)</td>
<td>(3236.00%)</td>
</tr>
<tr>
<td>Delivery Service</td>
<td>3,000</td>
<td>486</td>
<td>486</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Postage Meter</td>
<td>10,500</td>
<td>10,500</td>
<td>11,469</td>
<td>(969)</td>
<td>(9.23%)</td>
</tr>
<tr>
<td><strong>Total Communications</strong></td>
<td><strong>13,550</strong></td>
<td><strong>11,036</strong></td>
<td><strong>13,623</strong></td>
<td><strong>(2,587)</strong></td>
<td><strong>(23.44%)</strong></td>
</tr>
</tbody>
</table>

**Operating Expenses**

<table>
<thead>
<tr>
<th>Description</th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copier/Printer Supplies</td>
<td>18,000</td>
<td>13,516</td>
<td>13,516</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Envelopes</td>
<td>500</td>
<td>229</td>
<td>229</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Forms</td>
<td>1,500</td>
<td>123</td>
<td>123</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Office Supplies - General</td>
<td>28,800</td>
<td>22,065</td>
<td>22,065</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Other Office Expenses</td>
<td>5,000</td>
<td>2,228</td>
<td>2,228</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Operating Expenses</strong></td>
<td><strong>53,800</strong></td>
<td><strong>38,161</strong></td>
<td><strong>38,161</strong></td>
<td><strong>-</strong></td>
<td><strong>0.00%</strong></td>
</tr>
</tbody>
</table>

**Total Agency Budget**

<table>
<thead>
<tr>
<th>Description</th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>76,200</td>
<td>56,994</td>
<td>60,167</td>
<td>(3,173)</td>
<td>(5.57%)</td>
</tr>
</tbody>
</table>

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# Board of Trustees Budget to Actual

**Public Safety Personnel Retirement System**

**Year to Date**

**As of 2-22-2017**

<table>
<thead>
<tr>
<th>BOARD OF TRUSTEES BUDGET</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Board of Trustees</strong></td>
</tr>
<tr>
<td>Board of Trustee - Meetings</td>
</tr>
<tr>
<td>Board of Trustee - Training</td>
</tr>
<tr>
<td>Board of Trustee - Other</td>
</tr>
<tr>
<td>Prof Serv - Board Consultant</td>
</tr>
<tr>
<td><strong>Total Board of Trustees</strong></td>
</tr>
</tbody>
</table>

Total Board of Trustees Budget  

| 485,000 | 237,008 | 237,008 | - | 0.00% |

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## Building Budget to Actual

### Public Safety Personnel Retirement System

**Year to Date**

**As of 2-22-2017**

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUILDING BUDGET</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>General Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utilities</td>
<td>55,000</td>
<td>35,700</td>
<td>35,700</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Janitorial</td>
<td>21,540</td>
<td>14,655</td>
<td>14,655</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Window Cleaning</td>
<td>1,560</td>
<td>960</td>
<td>960</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Elevator</td>
<td>4,800</td>
<td>1,557</td>
<td>1,557</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Security System</td>
<td>1,500</td>
<td>1,012</td>
<td>1,012</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Insurance</td>
<td>10,600</td>
<td>9,600</td>
<td>9,600</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Condo Association Fees</td>
<td>35,574</td>
<td>20,815</td>
<td>20,815</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total General Expenses</strong></td>
<td>130,574</td>
<td>84,299</td>
<td>84,299</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Other Occupancy Expenses</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odorite of Arizona</td>
<td>420</td>
<td>273</td>
<td>273</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Arizona Lock &amp; Safe</td>
<td>2,000</td>
<td>472</td>
<td>472</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Pest Control</td>
<td>1,440</td>
<td>1,161</td>
<td>1,161</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Other Occupancy Expenses</strong></td>
<td>3,860</td>
<td>1,906</td>
<td>1,906</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Repair &amp; Maintenance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Repair &amp; Maintenance - Other</td>
<td>15,000</td>
<td>8,069</td>
<td>8,069</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Repair &amp; Mtn - Air Conditioning</td>
<td>80,000</td>
<td>7,550</td>
<td>7,550</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Repair &amp; Maintenance</strong></td>
<td>95,000</td>
<td>15,619</td>
<td>15,619</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Property &amp; Sales Taxes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property &amp; Sales Taxes - County</td>
<td>763</td>
<td>382</td>
<td>382</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Property &amp; Sales Taxes - City</td>
<td>3,271</td>
<td>1,832</td>
<td>1,832</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Property &amp; Sales Taxes</strong></td>
<td>4,034</td>
<td>2,214</td>
<td>2,214</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Building Expenses</strong></td>
<td>233,468</td>
<td>104,038</td>
<td>104,038</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Building Improvements</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Alarm &amp; Video</td>
<td>25,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Furniture &amp; Equipment</td>
<td>5,000</td>
<td>17</td>
<td>17</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Bldg Improve - Wiring</td>
<td>15,000</td>
<td>260</td>
<td>260</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Repairs &amp; Mtn - Safety Equip</td>
<td>15,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Building Improve - Faucet Replace</td>
<td>1,500</td>
<td>202</td>
<td>202</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Capital</strong></td>
<td>61,500</td>
<td>202</td>
<td>479</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Building Budget</strong></td>
<td>294,968</td>
<td>104,240</td>
<td>104,517</td>
<td>-</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

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## Compliance Department Budget to Actual
**Public Safety Personnel Retirement System**

### Year to Date
**As of 2-22-2017**

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD 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>169,903</td>
<td>169,903</td>
<td>66,135</td>
<td>103,768</td>
<td>61.07%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>10,194</td>
<td>10,194</td>
<td>991</td>
<td>9,203</td>
<td>90.28%</td>
</tr>
<tr>
<td>Fringe Benefits</td>
<td>20,375</td>
<td>20,375</td>
<td>5,663</td>
<td>14,712</td>
<td>72.21%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>33,181</td>
<td>33,181</td>
<td>14,760</td>
<td>18,421</td>
<td>55.52%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>2,124</td>
<td>2,124</td>
<td>669</td>
<td>1,455</td>
<td>68.50%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td><strong>235,777</strong></td>
<td><strong>235,777</strong></td>
<td><strong>88,218</strong></td>
<td><strong>147,559</strong></td>
<td><strong>62.58%</strong></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 - Other</td>
<td>5,000</td>
<td>9</td>
<td>9</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense - Conferences</td>
<td>3,500</td>
<td>915</td>
<td>915</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Professional Dues and Subscriptions</td>
<td>3,500</td>
<td>397</td>
<td>397</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td><strong>12,000</strong></td>
<td><strong>1,321</strong></td>
<td><strong>1,321</strong></td>
<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prof Services - IT Audit</td>
<td>20,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Services - ER Audits</td>
<td>100,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td><strong>120,000</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software</td>
<td>1,575</td>
<td>1,246</td>
<td>1,246</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td><strong>1,575</strong></td>
<td><strong>1,246</strong></td>
<td><strong>1,246</strong></td>
<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
<tr>
<td><strong>Total Compliance Department Budget</strong></td>
<td><strong>369,352</strong></td>
<td><strong>238,344</strong></td>
<td><strong>90,785</strong></td>
<td><strong>147,559</strong></td>
<td><strong>61.91%</strong></td>
</tr>
</tbody>
</table>

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## Finance Department Budget to Actual

**Public Safety Personnel Retirement System**

**Year to Date**

**As of 2-22-2017**

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD 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>334,417</td>
<td>218,657</td>
<td>213,798</td>
<td>4,859</td>
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</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>20,065</td>
<td>13,119</td>
<td>8,324</td>
<td>4,795</td>
<td>36.55%</td>
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<tr>
<td>Fringe Benefits</td>
<td>59,162</td>
<td>38,683</td>
<td>34,086</td>
<td>4,597</td>
<td>11.88%</td>
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<td>Payroll Expenses - Other</td>
<td>65,187</td>
<td>42,622</td>
<td>34,716</td>
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<td>Payroll Expenses - ADOA Fees</td>
<td>4,180</td>
<td>2,733</td>
<td>2,316</td>
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<tr>
<td><strong>Total Personnel Services</strong></td>
<td><strong>483,011</strong></td>
<td><strong>315,814</strong></td>
<td><strong>293,240</strong></td>
<td><strong>22,574</strong></td>
<td><strong>7.15%</strong></td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training Exp - Conferences</td>
<td>500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Professional Dues and Subscription</td>
<td>2,000</td>
<td>1,174</td>
<td>1,174</td>
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<td>0.00%</td>
</tr>
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<td><strong>Total Education &amp; Training</strong></td>
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<td>-</td>
<td><strong>0.00%</strong></td>
</tr>
<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Services - IT Audit</td>
<td>121,495</td>
<td>121,495</td>
<td>131,703</td>
<td>(10,208)</td>
<td>(8.40%)</td>
</tr>
<tr>
<td>Prof Serv Finance - Annual Report</td>
<td>3,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prof Serv Finance-Banking</td>
<td>-</td>
<td>-</td>
<td>64</td>
<td>(64)</td>
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<td>Prof Serv Finance - Accounting Software</td>
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<td>4,539</td>
<td>4,539</td>
<td>-</td>
<td>0.00%</td>
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<tr>
<td><strong>Total Professional Services</strong></td>
<td><strong>129,495</strong></td>
<td><strong>126,034</strong></td>
<td><strong>136,306</strong></td>
<td><strong>(10,272)</strong></td>
<td><strong>(8.15%)</strong></td>
</tr>
<tr>
<td><strong>Communications</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postage - Wells Fargo</td>
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<td>3,877</td>
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</tr>
<tr>
<td><strong>Total Communications</strong></td>
<td><strong>16,500</strong></td>
<td><strong>3,877</strong></td>
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</tr>
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<td><strong>Total Finance Department Budget</strong></td>
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<td><strong>446,899</strong></td>
<td><strong>434,597</strong></td>
<td><strong>12,302</strong></td>
<td><strong>2.75%</strong></td>
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</tbody>
</table>

**Column Descriptions:**
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## Investment Department Budget to Actual

**Public Safety Personnel Retirement System**

**Year to Date**

**As of 2-22-2017**

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD Expenses</th>
<th>(Over) Under</th>
<th>(Over) Under Budget %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INVESTMENT DEPARTMENT BUDGET</strong></td>
<td></td>
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<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>1,112,580</td>
<td>683,706</td>
<td>629,750</td>
<td>53,956</td>
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<td>Contractual Obligations</td>
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<td>50,000</td>
<td>-</td>
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<tr>
<td>DC Plan - ER Matching</td>
<td>73,895</td>
<td>45,691</td>
<td>29,379</td>
<td>16,312</td>
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<td>Fringe Benefits</td>
<td>91,658</td>
<td>54,300</td>
<td>49,508</td>
<td>4,792</td>
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<td>Payroll Expenses - Other</td>
<td>211,971</td>
<td>130,052</td>
<td>103,029</td>
<td>27,023</td>
<td>20.78%</td>
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<td>Payroll Expenses - ADOA Fees</td>
<td>15,396</td>
<td>9,520</td>
<td>7,447</td>
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<td>21.78%</td>
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<td><strong>Total Personnel Services</strong></td>
<td>1,624,500</td>
<td>973,269</td>
<td>869,113</td>
<td>104,156</td>
<td>10.70%</td>
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<td><strong>Education &amp; Training</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Travel Expense - Other</td>
<td>65,000</td>
<td>10,009</td>
<td>10,009</td>
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</tr>
<tr>
<td>Training Expense - Conferences</td>
<td>5,000</td>
<td>380</td>
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<tr>
<td>Training Exp - Professional Dues/Subscriptions</td>
<td>11,625</td>
<td>783</td>
<td>783</td>
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<td>0.00%</td>
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<td>Training Expense - Research</td>
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<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense - Tuition Reimb</td>
<td>6,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Expense - Other</td>
<td>2,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
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<tr>
<td><strong>Professional Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prot Serv - Albourne America</td>
<td>640,000</td>
<td>288,000</td>
<td>288,000</td>
<td>-</td>
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<tr>
<td>Prof Serv - Mellon Bank Fees</td>
<td>355,000</td>
<td>135,254</td>
<td>135,254</td>
<td>-</td>
<td>0.00%</td>
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<tr>
<td>Prot Serv - ORG Real Property</td>
<td>310,000</td>
<td>160,000</td>
<td>160,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prot Serv - Stepstone Group</td>
<td>100,000</td>
<td>66,666</td>
<td>66,666</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prot Serv - Valuations (Legacy RE)</td>
<td>280,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Prot Serv - Other</td>
<td>4,500</td>
<td>119</td>
<td>119</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
<td>1,689,500</td>
<td>650,039</td>
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<td>-</td>
<td>0.00%</td>
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<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private I</td>
<td>50,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Bloomberg</td>
<td>32,260</td>
<td>23,067</td>
<td>23,067</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Investment Analytics</td>
<td>50,000</td>
<td>15,000</td>
<td>15,000</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>ASPN</td>
<td>50,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td>182,260</td>
<td>38,067</td>
<td>38,067</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Investment Department Excluding Due Diligence</strong></td>
<td>3,632,885</td>
<td>1,692,547</td>
<td>1,588,391</td>
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<td><strong>Direct Due Diligence</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Prot Serv Inv - Employment Solutions</td>
<td>-</td>
<td>141,692</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Legal Services</td>
<td>-</td>
<td>453,625</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Legal Services - Other</td>
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<td>-</td>
<td>-</td>
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<tr>
<td><strong>Total Direct Due Diligence</strong></td>
<td>-</td>
<td>626,770</td>
<td>-</td>
<td>-</td>
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</tr>
</tbody>
</table>

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## IT Network Services Department Budget to Actual

### Public Safety Personnel Retirement System

**Fiscal Year Projections**

*As of 2-22-2017*

<table>
<thead>
<tr>
<th>IT NETWORK SERVICES DEPARTMENT BUDGET</th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD 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>289,730</td>
<td>189,439</td>
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<td>DC Plan - ER Matching</td>
<td>17,384</td>
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<td>Fringe Benefits</td>
<td>35,413</td>
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<tr>
<td>Payroll Expenses - Other</td>
<td>56,583</td>
<td>36,997</td>
<td>36,987</td>
<td>10</td>
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<td>Payroll Expenses - ADOA Fees</td>
<td>3,621</td>
<td>2,368</td>
<td>2,008</td>
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<td>259,424</td>
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<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Expense - Other</td>
<td>6,500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Tuition Reimb</td>
<td>10,500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Other</td>
<td>12,500</td>
<td>606</td>
<td>606</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
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<td>606</td>
<td>606</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>Professional Services - Other</td>
<td>10,000</td>
<td>4,783</td>
<td>4,783</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Professional Services</strong></td>
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<td>4,783</td>
<td>4,783</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>12,180</td>
<td>6,349</td>
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<td>Communications - Internet</td>
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<td><strong>Total Communications</strong></td>
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<tr>
<td><strong>Infrastructure</strong></td>
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</tr>
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<td>IT Hardware</td>
<td>94,000</td>
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<td>IT Security</td>
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<td>Warranty Renewal</td>
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<td>Backup &amp; Disaster Recovery</td>
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<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software - Other</td>
<td>3,000</td>
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<td>515</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>License &amp; Maintenance - Other</td>
<td>1,500</td>
<td>604</td>
<td>604</td>
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<td>0.00%</td>
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<td><strong>Total Software</strong></td>
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<td>1,119</td>
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<td><strong>Total IT Network Services Department Budget</strong></td>
<td>692,181</td>
<td>420,229</td>
<td>416,328</td>
<td>3,901</td>
<td>0.56%</td>
</tr>
</tbody>
</table>

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- (Over) Under Budget % is percentage of (Over) Under to 2017 Budget.
# IT Systems Development Budget to Actual

**Public Safety Personnel Retirement System**  
*Fiscal Year Projections*  
*As of 2-22-2017*

## IT SYSTEMS DEVELOPMENT DEPARTMENT BUDGET

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD Budget</th>
<th>FYTD 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>371,421</td>
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<tr>
<td>DC Plan - ER Matching</td>
<td>22,285</td>
<td>14,571</td>
<td>7,147</td>
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<td>Fringe Benefits</td>
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<tr>
<td>Payroll Expenses - ADOA Fees</td>
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<td><strong>Total Personnel Services</strong></td>
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<td>Contractual Services</td>
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<td>-</td>
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<td>NA</td>
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<tr>
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<td>-</td>
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<td>(143,465)</td>
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<tr>
<td><strong>Software</strong></td>
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</tr>
<tr>
<td>Software - Go-To-Webinar</td>
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<td>-</td>
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</tr>
<tr>
<td>Software - Go-To-Meeting</td>
<td>550</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software - Sybase Support</td>
<td>6,000</td>
<td>5,956</td>
<td>5,956</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software - Visual Studio</td>
<td>40,030</td>
<td>34,266</td>
<td>34,266</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Software - Other</td>
<td>2,000</td>
<td>2,000</td>
<td>2,904</td>
<td>(904)</td>
<td>(45.20%)</td>
</tr>
<tr>
<td>License &amp; Maintenance - Backup Line</td>
<td>1,000</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>License &amp; Maintenance - Other</td>
<td>450</td>
<td>450</td>
<td>945</td>
<td>(495)</td>
<td>(110.00%)</td>
</tr>
<tr>
<td><strong>Total Software</strong></td>
<td>50,980</td>
<td>42,672</td>
<td>44,071</td>
<td>(1,399)</td>
<td>(2.74%)</td>
</tr>
<tr>
<td><strong>Furniture &amp; Equipment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F &amp; E - Repairs &amp; Maintenance</td>
<td>1,500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Furniture &amp; Equipment</strong></td>
<td>1,500</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total IT Systems Development Department Budget</strong></td>
<td>582,086</td>
<td>388,953</td>
<td>524,512</td>
<td>(135,559)</td>
<td>(23.29%)</td>
</tr>
</tbody>
</table>

### Column Descriptions:
- 2017 Budget contains the budget approved by the Board of Trustees.
- FYTD Budget is the portion of the budget utilized to date.
- FYTD Expenses contains paid invoices to date.
- (Over) Under compares 2017 Expenses to the 2017 Budget.
- (Over) Under Budget % is percentage of (Over) Under to 2017 Budget.
### Member Services Department Budget to Actual

**Public Safety Personnel Retirement System**  
**Fiscal Year Projections**  
**As of 2-22-2017**

#### MEMBER SERVICES DIVISION BUDGET

<table>
<thead>
<tr>
<th></th>
<th>2017 Budget</th>
<th>FYTD 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>
</tr>
<tr>
<td>Salaries &amp; Wages</td>
<td>1,263,612</td>
<td>783,089</td>
<td>39,917</td>
<td>4.85%</td>
</tr>
<tr>
<td>DC Plan - ER Matching</td>
<td>75,816</td>
<td>29,459</td>
<td>19,921</td>
<td>40.34%</td>
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<tr>
<td>Fringe Benefits</td>
<td>220,075</td>
<td>121,535</td>
<td>21,211</td>
<td>14.86%</td>
</tr>
<tr>
<td>Payroll Expenses - Other</td>
<td>246,779</td>
<td>143,660</td>
<td>17,070</td>
<td>10.62%</td>
</tr>
<tr>
<td>Payroll Expenses - ADOA Fees</td>
<td>15,795</td>
<td>8,384</td>
<td>1,904</td>
<td>18.51%</td>
</tr>
<tr>
<td><strong>Total Personnel Services</strong></td>
<td><strong>1,822,077</strong></td>
<td><strong>1,086,127</strong></td>
<td><strong>100,023</strong></td>
<td><strong>5.49%</strong></td>
</tr>
<tr>
<td><strong>Education &amp; Training</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel Expenses - Other</td>
<td>1,020</td>
<td>626</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Conferences</td>
<td>400</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td>Training Exp - Tuition Reimburse</td>
<td>6,050</td>
<td>-</td>
<td>-</td>
<td>0.00%</td>
</tr>
<tr>
<td><strong>Total Education &amp; Training</strong></td>
<td><strong>7,470</strong></td>
<td><strong>626</strong></td>
<td><strong>-</strong></td>
<td><strong>0.00%</strong></td>
</tr>
<tr>
<td><strong>Contractual Services</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract Services</td>
<td>8,500</td>
<td>9,660</td>
<td>(1,160)</td>
<td>(13.65%)</td>
</tr>
<tr>
<td><strong>Total Contractual Services</strong></td>
<td><strong>8,500</strong></td>
<td><strong>9,660</strong></td>
<td><strong>(1,160)</strong></td>
<td><strong>(13.65%)</strong></td>
</tr>
</tbody>
</table>

**Total Member Services Department Budget**  
1,838,047       1,195,276       1,096,413       98,863       5.38%

**Column Descriptions:**
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March 1, 2017

Operations Committee
Employer/Local Board Outreach Recap

**Employer/Local Board Outreach & Additional Projects:**

- Presented information about the status of EORP and the benefits structure to the Constables at the ACA conference with over 50 in attendance in Tubac, AZ.

- Presented January 31 a webinar on the Tier 2/Hybrid program for SB 1428 (32 in attendance with 160 on the webinar)

- Contacted over 100 employers in Public Safety to gather information on who pays into Social Security, and had the opportunity to explain to them new DC plan on the phone to many of the employers.

- Continuing participation with SB1428 workgroup on implementation of new PSPRS Plan provisions.
  - Will provide regional training in Tucson, Flagstaff and Phoenix in March and April about the Tier 3 benefit structure and additional benefits for the Tier 2 membership.

- Colorado Indian Tribe police group has requested preliminary joinder information.

- Finalizing Joinders for the following employer groups: (still in process)
  - Navajo Nation interested in the joinder process for Police. (meet with this group several times) (Member group has information from the actuaries)
  - Yavapai-Apache Nation police (Member group has information from the actuaries) anticipation date for joinder May 2017.

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

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

The Arizona Public Safety Personnel Retirement System Board of Trustees Governance Manual requires the Administrator or designee to conduct a strategic planning process as follows:

Excerpt from the Arizona Public Safety Personnel Retirement System Board of Trustees Governance Manual (Policy 5.05 Strategic Planning and Budgeting Process, as amended)

The Annual Strategic Planning Process

3) During the third quarter of each fiscal year (i.e., January to March) the Administrator or designee will initiate an annual strategic planning process, which will include, at a minimum:


b) A review of the progress made in implementing the current year’s strategic plan.

c) An assessment as to whether the System is well positioned to achieve its mission and long-term objectives, including consideration of the following:

   i) Investment and asset management.

   ii) Funding progress.

   iii) Member services and administration.

   iv) Human resources.

   v) IT Program Development and Operations.

   vi) Governance and public relations.

   d) A review of current business initiatives, which may need to be carried forward into the next fiscal year.

   e) The identification of any new business initiatives to be undertaken to meet the mission and long-term objectives of the System.

4) The Administrator shall solicit input from the trustees regarding the priorities to be addressed in the strategic plan for the upcoming year.
PSPRS executive staff and managers have met bi-weekly since the last meeting of this committee and are in the process of conducting a SWOT (strengths, weaknesses, opportunities and threats) analysis to make an assessment as to whether the System is well positioned to achieve its mission and long-term objectives. The group has completed the strengths and weaknesses portions of the analysis, and is in the process of identifying opportunities and threats.
SUMMARY: Communication tasks and highlights over the past month include continued improvements to employer email contacts, analysis of PSPRS data to better understand employer funding problems, and the launching of initiatives, communications for the S1428/Prop 124 pension reform education campaign.

Actions include:

- Resuming and improving PSPRS outreach and advancing pension reform campaign
  - Record email open rates for Second Quarter Newsletter
    - 22,000 “opens” of 35,825 total recipients (62 percent)
    - Email includes feature items for pension reform campaign
    - Email includes unique content; ex. PBI, tribute to M. Anderson
  - Pension reform campaign email regarding necessary payroll changes
    - 196 “opens” of 382 total recipients (51 percent)
    - Topic: Required payroll coding changes for employers
  - Third party outreach
    - League of Arizona Cities & Towns Dep. Director Tom Belshe
      - PSPRS to assist League with information/presentations for municipalities
      - League assistance with employer contact information
        - 100 new contacts (and counting) for HR, finance, payroll employees and clerks
    - Central Arizona Fire & Medical (Yavapai County district)
      - Reviewed and supplied accurate PSPRS information for local presentations and other uses
  - New newsletter/update registration tools
    - Introduction of text registration for newsletter/updates (to 22828)

- Pension reform communications projects initiated
  - Contracted support with graphic video producer for at least 5 campaign videos
    - First script drafted and finalized; video currently under production
    - Topic: General PSPRS overview, history/need of reform, basics of 2016 reform
    - Estimated length of time: 3:40
  - Contracted support for pension reform campaign brochure
    - First brochure covers Tier 2 automatic enrollment in defined contribution (DC) plan; 3 percent contribution with employer match

- Data analysis on local governments distressed by public safety pension expenses
  - To understand and communicate disproportionate pension expense impact on smaller and/or rural communities
  - Limited earned media campaign to educate public in specific regions and use as needed to educate members, employers and stakeholders as needed
    - Town of Bisbee Fire Department
    - Town of Prescott
March 1, 2017

Operations Committee
Auditor General Report

BACKGROUND
State agency performance audits and sunset reviews are required by statute and conducted periodically by the Auditor General’s office. In September, 2015, the Auditor General issued a Performance Audit and Sunset Review of PSPRS. The full report, including our response and a 6-month follow-up report by the Auditor General’s office, is available on the Auditor General’s website at:


The Auditor General’s report is broken into two parts: the performance audit and the sunset review.

The Auditor General’s performance audit had three main findings. Finding number 1 was that “Plans’ assets have not kept pace with estimated pension obligations.” The Auditor General did not provide any recommendations for this finding, however. Finding number 2 was that “Changes in calculating and awarding annual benefit increases would help system plans’ sustainability.” There were several recommendations associated with this finding. Finding number 3 was “Additional actions necessary to improve system plans’ financial condition and long-term sustainability.” There were several recommendations associated with this finding as well.

The Auditor General’s sunset review was based on 12 different factors that were analyzed during the audit. After the review, three recommendations were made. Two of those recommendations were related to Factor #2 (“The extent to which the System has met its statutory objective and purpose and the efficiency with which it has operated”) and one was related to Factor #6 (“The extent to which the System has been able to investigate and resolve complaints that are within its jurisdiction”).

PSPRS concurred with the majority of the findings and recommendations, and began working on implementing changes. In May, 2016, the Auditor General’s office returned to review our progress and submitted a follow-up report. They recently contacted us again, and we are in the process of preparing for their 18-month follow-up, which will take place this spring.

The following Auditor General Findings and Recommendations report shows the original findings and recommendations, the status of our progress in May 2016, and progress made between May 2016 and March 2017. The final column shows items that remain outstanding.
### Finding 2: Changes in calculating and awarding annual benefit increases would help system plans' sustainability.

<table>
<thead>
<tr>
<th>AG Recommendations (September 2015)</th>
<th>AG Follow-up Report (May 2016)</th>
<th>Additional Progress- March 1, 2017</th>
<th>Yet To Do--Action Items</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2.1 To ensure the plans' permanent benefit increase structures are sustainable, the System should take the lead and collaborate with stakeholders to identify changes that are needed and develop solutions. In developing solutions, the System will have to pursue legislative changes to implement them since each plan's benefit increase structure is specified in statute. The System will also need to determine if the solutions should apply to all members or members hired or retired on or after a specific date, and consider whether a constitutional change might be warranted (see Recommendations 2.2 and 2.3, page 35). In collaboration with stakeholders, the System should:</strong></td>
<td><strong>The System collaborated with stakeholders to provide input for Laws 2016, Ch. 2, which was passed in the 2016 legislative session. For Public Safety Personnel Retirement System plan (PSPRS plan) members hired on or before June 30, 2017, this legislation repeals the statutes relating to permanent benefit increases and replaces them with a cost-of-living adjustment. However, these changes are contingent on approval of a constitutional amendment the Legislature referred to voters in a special election that will be held on May 17, 2016. Laws 2016, Ch. 2, also establishes cost-of-living adjustments for PSPRS plan members who are hired on or after July 1, 2017, and this change is not contingent on approval of the constitutional amendment. However, the changes made through Laws 2016, Ch. 2, do not apply to the System's two other defined benefit plans-the Corrections Officer Retirement Plan (CORP) and the Elected Officials' Retirement Plan (EORP). Changes to permanent benefit increases have yet to be made for CORP and EORP members.</strong></td>
<td><strong>The cost-of-living changes for PSPRS were approved by voters in the special election held on May 17, 2016 to amend the Arizona Constitution via prop 124. Legislators are working on a bill that would provide CORP members with the same COLA formula that now applies to PSPRS, although it would also require a change in the constitution to apply to existing members.</strong></td>
<td><strong>COLA changes made to PSPRS through proposition 124 have not yet been made to EORP or CORP. If the CORP legislation passes this year, EORP will be the only plan that still has a PBI for benefit recipients. In order to replace the PBI with a COLA similar to PSPRS, the constitution will need to be amended.</strong></td>
</tr>
</tbody>
</table>

| **a. Determine whether a higher funded status for each plan should be required before providing a benefit increase.** | **Implementation in process** Laws 2016, Ch. 2, requires a higher funded status before providing a cost-of-living adjustment for PSPRS plan members hired on or after July 1, 2017, but there is no funded status requirement for PSPRS plan members hired before that date. Specifically, for members hired on or after July 1, 2017, the PSPRS plan must be at least 70 percent funded before a cost-of-living adjustment can be provided, and members cannot receive the maximum 2 percent cost-of-living adjustment unless the PSPRS plan has a funded status of 90 percent or higher. These changes do not apply to CORP or EORP. | **The Hall case outcome reinforces that COLAs can't be changed for existing retirees without a voter-approved change in the constitution. A bill is being considered by the legislature that would base COLAs on the funded ratio of CORP, much like PSPRS Tier 3.** | **See answer to 2.1** |
### Public Safety Personnel Retirement System
#### Auditor General Findings and Recommendations

**Additional Progress--March 1, 2017**

<table>
<thead>
<tr>
<th>AG Recommendations (September 2015)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>b. Determine whether a simple instead of a compound structure may be more sustainable for its plans</td>
<td>Implementation in process The changes made through Laws 2016, Ch. 2, establish a compounding cost-of-living adjustment to the PSPRS plan member’s base benefit. For members hired on or before June 30, 2017, the changes are contingent on voter approval of a constitutional amendment. These changes do not apply to CORP or EORP.</td>
<td>The cost-of-living changes for PSPRS were approved by voters in the special election held on May 17, 2016 to amend the Arizona Constitution. A bill is being considered by the legislature that would provide a COLA to CORP retirees that would mirror the PSPRS Tier 3 COLA. Since pension reform for PSPRS and CORP is so new and further changes to the COLA would require a constitutional change, it is not likely the legislature would consider changing the COLA to a simple instead of a compound structure in the near future, further eroding cost of living increases for retirees.</td>
<td>It is unlikely the legislature will consider changing the structure from compound to simple.</td>
</tr>
<tr>
<td>c. Consider whether it should link its permanent benefit increases to the Consumer Price Index, and if so, whether it should provide full inflation protection.</td>
<td>Implementation in process Laws 2016, Ch. 2, repeals the statutes relating to permanent benefit increases and replaces them with a cost-of-living adjustment that is linked to the Consumer Price Index, not to exceed 2 percent annually. However, for members hired on or before June 30, 2017, these changes are contingent on voter approval of a constitutional amendment. These changes do not apply to CORP or EORP.</td>
<td>The cost-of-living changes for PSPRS were approved by voters in the special election held on May 17, 2016 to amend the Arizona Constitution via prop 124. Future COLAs are based on inflation capped at 2%. Legislators are working on a bill that would provide CORP members with the same COLA formula that now applies to PSPRS, although it would also require a change in the constitution to apply to existing members.</td>
<td>See answer to 2.1</td>
</tr>
</tbody>
</table>
Public Safety Personnel Retirement System  
Auditor General Findings and Recommendations  
Additional Progress--March 1, 2017

d. Consider changing its permanent benefit increase structure for the PSPRS plan and CORP to be based on the funded status of individual employers instead of each plan's overall aggregate funded status.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Implementation in process</td>
<td>According to the System, it has had discussions about this recommendation, but it has not yet determined whether the funded status requirement should be at the individual employer or the aggregate plan level. Specifically, although Laws 2016, Ch. 2, requires a funded status of at least 70 percent before providing a cost-of-living adjustment for PSPRS plan members hired on or after July 1, 2017, the System has not yet determined if this new tier of members will be part of a cost-sharing plan or part of an agent multiple-employer plan. The PSPRS plan for members hired on or before June 30, 2017, is an agent multiple-employer plan where pension assets are pooled for investment purposes, but each participating employer is responsible for its own pension obligations and has its own funded status. Under a cost-sharing plan, participating employers' and members' contributions are pooled and the plan assets are equally shared and used to pay the pension benefits of any participating employer's retirees. Under a cost-sharing plan, the funded status is for the entire plan. In addition, there is no funded status requirement for members hired on or before June 30, 2017, but changes for these members are contingent on voter approval of a constitutional amendment. Finally, the changes made through Laws 2016, Ch. 2, do not apply to CORP.</td>
<td>Cortex Applied research provided the Board with a study that looked at the structure of each plan. The Board voted to support the study's finding that PSPRS and CORP should remain agent multiple-employer plans, but each plan's benefit recipients should be pooled together. Future COLAs for PSPRS Tier 3 members are now based on the funded status of the plan. Those provisions are being sought for CORP as well, but would require a change in the constitution. Further changes to the COLA would be difficult to make without constitutional changes, which is unlikely.</td>
<td>Based on court cases, it would likely take a change in the constitution in order to change the COLA. Since changes were recently made in PSPRS and look like they will soon be made in CORP, changing the COLA so that it is based on the funded status of each individual employer instead of each plan's overall aggregate funded status is unlikely to occur.</td>
</tr>
</tbody>
</table>
### Public Safety Personnel Retirement System
### Auditor General Findings and Recommendations
### Additional Progress--March 1, 2017

<table>
<thead>
<tr>
<th>AG Recommendations (September 2015)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>e. Consider whether increases for all three plans should be applied to a certain amount of a member's pension benefit, such as the first $18,000.</td>
<td>Implementation in process According to the System, this recommendation was discussed and considered; however, Laws 2016, Ch. 2, requires that cost-of-living adjustments for the PSPRS plan be based on a retired member's base benefit, and does not limit the increase to a certain amount of a member's pension benefit. For members hired on or before June 30, 2017, changes are contingent on voter approval of a constitutional amendment. However, the changes made through Laws 2016, Ch. 2, represent a change in how benefit increases are calculated for PSPRS plan members (see explanation for Recommendation 2.1 g for more information). These changes do not apply to CORP or EORP.</td>
<td>The cost-of-living changes for PSPRS were approved by voters in the special election held on May 17, 2016 to amend the Arizona Constitution. Since changes were recently made in PSPRS and CORP is so new and further changes would require a change to the constitution, it is not likely the legislature would consider changing the COLA to a simple instead of a compound structure in the near future, further eroding cost of living increases for retirees.</td>
<td>Based on court cases, it would likely take a change in the constitution in order to change the COLA. Since changes were recently made in PSPRS and look like they will soon be made in CORP, changing the COLA so that it is based on a certain amount of a member's pension benefit is unlikely to occur.</td>
</tr>
<tr>
<td>f. Consider changing the EORP benefit increase formula to be based on asset value similar to the PSPRS plan and CORP, instead of retired members' estimated pension obligations.</td>
<td>Implementation in process According to the System, changes for EORP were discussed with legislative members and stakeholders, but the Legislature decided to focus on changes to the PSPRS plan.</td>
<td>Changes for EORP were again discussed with legislative members in 2017, but the Legislature so far has decided to focus on CORP in 2017.</td>
<td>Consider changing the EORP benefit increase formula to be based on asset value similar to the PSPRS plan and CORP, instead of retired members' estimated pension obligations, when calculating the amount transferred to the reserve account.</td>
</tr>
<tr>
<td>g. Consider modifying the PSPRS plan's permanent benefit increase structure to be based on an individual member's pension benefit.</td>
<td>Implementation in process Laws 2016, Ch. 2, establishes cost-of-living adjustments that will be based on individual PSPRS plan member's pension benefit. Prior to this change the benefit increase was determined using the average pension benefit of retirees, and each member received the same benefit increase amount regardless of the size of their pension, which resulted in disproportionate benefit increases. However, for members hired on or before July 30, 2017, these changes are contingent on voter approval of a constitutional amendment.</td>
<td>The cost-of-living changes for PSPRS were approved by voters in the special election held on May 17, 2016 to amend the Arizona Constitution. Future COLAs will be based on an individual member's pension benefit.</td>
<td>This is now implemented.</td>
</tr>
</tbody>
</table>

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Based on court cases, it would likely take a change in the constitution in order to change the COLA. Since changes were recently made in PSPRS and look like they will soon be made in CORP, changing the COLA so that it is based on a certain amount of a member's pension benefit is unlikely to occur.
**Public Safety Personnel Retirement System**  
**Auditor General Findings and Recommendations**  
**Additional Progress—March 1, 2017**

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</tr>
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</table>
| h. Identify other necessary changes, such as basing benefit increases on long-term investment performance instead of a 1-year result, or consider whether benefit increases should be eliminated. | Implementation in process  
According to the System, it was determined that benefit increases were important and should not be eliminated. Laws 2016, Ch. 2, maintained benefit increases in the PSPRS plan by replacing them with cost-of-living adjustments. In addition, the cost-of-living adjustments are not tied to investment performance, but rather to the Consumer Price Index (see Recommendation 2.1c, for more information). However, for members hired on or before June 30, 2017, these changes are contingent on voter approval of a constitutional amendment. These changes do not apply to CORP or EORP. | The cost-of-living changes for PSPRS were approved by voters in the special election held on May 17, 2016 to amend the Arizona Constitution via prop 124.  
Legislators are working on a bill that would provide CORP members with the same COLA formula that now applies to PSPRS, although it would also require a change in the constitution to apply to existing members. | See answer to 2.1 |

2.2 Once solutions have been decided upon, the System and stakeholders should determine if the changes should apply only to members who are hired or retire after a specific date. If so, the System should pursue the necessary legislative changes to implement the solutions for all three plans’ benefit increase structures. The outcome of the Hall lawsuit may impact the System’s ability to make changes to the plans’ benefit increase structures for active members.  
Implementation in process  
See explanation for Recommendation 2.1.  
The cost-of-living changes for PSPRS were approved by voters in the special election held on May 17, 2016 to amend the Arizona Constitution via prop 124.  
Legislators are working on a bill that would provide CORP members with the same COLA formula that now applies to PSPRS, although it would also require a change in the constitution to apply to existing members.  
See answer to 2.1
### Public Safety Personnel Retirement System
#### Auditor General Findings and Recommendations
#### Additional Progress--March 1, 2017

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</table>
| 2.3 The System should consider whether pursuing a ballot initiative to amend Arizona’s Constitution would be warranted to make changes to the benefit increase structures for all three plans’ members. Depending on how an amendment is worded, it could supersede previous legal decisions. If considering an amendment, the System and stakeholders should ensure that this amendment is specific to the System plans’ permanent benefit increases to ensure members’ base pension benefits are not impacted. | Implementation in process  
See explanation for Recommendation 2.1. | The cost-of-living changes for PSPRS were approved by voters in the special election held on May 17, 2016 to amend the Arizona Constitution via prop 124.  
Legislators are working on a bill that would provide CORP members with the same COLA formula that now applies to PSPRS, although it would also require a change in the constitution to apply to existing members. | See answer to 2.1 |
| 2.4 Throughout the process of developing solutions for the plans’ benefit increase structures, the System should ensure it provides the necessary training or informational materials to ensure stakeholders and the public understand the purpose and impact of the proposed changes. | Implementation in process  
The System has informed its members regarding the impact of some of the changes made through Laws 2016, Ch. 2, to the PSPRS plan. According to the System, it plans to develop an information and training program by June 30, 2017, to communicate changes made to the System’s plans. | This is being done through webinars, meetings, regional training events, videos, email and other documentation. | Done. This is now an ongoing effort we make with any new legislation. |
| 2.5 The System should ensure that its actuarial assumptions appropriately include the estimated costs for its permanent benefit increases when conducting the System plans’ annual valuations by: | Implementation in process  
The System has developed a document proposing additional contract expenses for its Board to consider for fiscal year 2017, which includes an actuary audit. The System will be requesting approval of these additional contract expenses from the Board during an upcoming board meeting. The System indicated that it plans to conduct this audit by June 30, 2017. | Cavanaugh Macdonald is in the process of auditing the work of our actuary. Their audit will be complete by the end of April, and a presentation will be made to the Board in April or May. | Complete the actuarial audit. |
| a. Conducting an audit of its actuary as soon as possible. | | | |
## Finding 3: Additional actions necessary to improve system plans' financial condition and long-term sustainability.

### 3.1 The System should develop and implement a funding improvement strategy. This funding improvement strategy will need to be at the participating-employer level for the PSPRS plan and CORP, but at the plan level for EORP. In developing this strategy, the System should review and incorporate key elements from Rhode Island’s funding improvement strategy that may reasonably help increase plans' funded statuses.

<table>
<thead>
<tr>
<th>AG Recommendations (September 2015)</th>
<th>AG Follow-up Report (May 2016)</th>
<th>Additional Progress- March 1, 2017</th>
<th>Yet To Do--Action Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Developing and implementing procedures for ensuring the actuarial audits’ recommendations are reviewed and appropriately implemented.</td>
<td>Not yet applicable The System plans to develop procedures after the next actuarial audit is conducted. See explanation for Recommendation 2.5a.</td>
<td>A procedure has been written. The actuarial audit results will be presented to the Board in April or May of 2017, in accordance with RFP requirements. The Board of Trustees Charter already requires the Board to monitor the validity and accuracy of the actuarial valuation results through a periodic actuarial audit (#24k).</td>
<td>Done.</td>
</tr>
</tbody>
</table>

Implementation in process According to the System, it has discussed the need for a funding improvement strategy with some stakeholders and plans to work more with employers in the coming year. In addition, the System believes that the advisory committee established by Laws 2016, Ch. 2 may also provide guidance to the System's Board on the funding improvement strategy. The System estimates that a funding improvement strategy would be completed by June 30, 2017.

This will be discussed by the Advisory Committee and the new Board of Trustees in 2017.

Determine if additional funding improvements need to be developed beyond pension reform that's already occurred for PSPRS and is being reviewed for CORP.

### 3.2 The funding improvement strategy the System develops should consider:

a. Establishing the funded status level at which its plans should be considered at-risk, and work with its actuary to determine what would be appropriate;

b. Requiring annual certification of the at-risk funded status. This could be done as a part of the annual actuarial valuations performed by the System's actuary;

<table>
<thead>
<tr>
<th>Finding 3: Additional actions necessary to improve system plans' financial condition and long-term sustainability.</th>
<th>Implementation in process</th>
<th>Additional Progress- March 1, 2017</th>
<th>Yet To Do--Action Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Establishing the funded status level at which its plans should be considered at-risk, and work with its actuary to determine what would be appropriate;</td>
<td>Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable explanation for recommendation 3.1.</td>
</tr>
<tr>
<td>b. Requiring annual certification of the at-risk funded status. This could be done as a part of the annual actuarial valuations performed by the System's actuary;</td>
<td>Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable explanation for recommendation 3.1.</td>
</tr>
</tbody>
</table>

Determine if PSPRS needs further pension reform. If so, take the steps outlined in 3.2 (a-h)
### Public Safety Personnel Retirement System
#### Auditor General Findings and Recommendations
##### Additional Progress--March 1, 2017

<table>
<thead>
<tr>
<th>AG Recommendations (September 2015)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>c. Specifying who must be notified when a plan is certified to be at-risk;</td>
<td>Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable See explanation for recommendation 3.1.</td>
<td></td>
</tr>
<tr>
<td>d. Posting a notice of the at-risk status on its website;</td>
<td>Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable See explanation for recommendation 3.1.</td>
<td></td>
</tr>
<tr>
<td>e. Establishing the specific actions that can be taken when a plan or plan employer is determined to be at-risk, including a requirement that the System review and approve the actions;</td>
<td>Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable See explanation for recommendation 3.1.</td>
<td></td>
</tr>
<tr>
<td>f. Identifying who is responsible for the various actions, including the employer, an actuary, or system administrator; and</td>
<td>Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable See explanation for recommendation 3.1.</td>
<td></td>
</tr>
<tr>
<td>g. Establishing the amount of improvement in funded status that should be achieved.</td>
<td>Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable See explanation for recommendation 3.1.</td>
<td></td>
</tr>
<tr>
<td>h. Determining time frames for completing the various actions, including an overall time frame for improvement in a plan's funded status.</td>
<td>Not yet applicable explanation for recommendation 3.1.</td>
<td>See Not yet applicable See explanation for recommendation 3.1.</td>
<td></td>
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</tbody>
</table>

3.3 Once the System has developed a funding improvement strategy, to provide greater leverage, the System should pursue legislation to incorporate the requirements related to the funding improvement strategy and its various components within its statutes.

| 3.3 Once the System has developed a funding improvement strategy, to provide greater leverage, the System should pursue legislation to incorporate the requirements related to the funding improvement strategy and its various components within its statutes. | Not yet applicable explanation for recommendation 3.1. | See Not yet applicable See explanation for recommendation 3.1. | |

Once a funding improvement strategy has been developed, pursue legislation to incorporate the requirements into Arizona statute.
### Public Safety Personnel Retirement System
#### Auditor General Findings and Recommendations
#### Additional Progress--March 1, 2017

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<tr>
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</thead>
<tbody>
<tr>
<td><strong>3.4</strong> The System should work with the PSPRS plan and CORP employers and local boards, and other stakeholders, such as professional associations for firefighters or police, to explore the feasibility of offering multiple benefit options.</td>
<td><strong>Implementation in process</strong> The System sent an e-mail on November 5, 2015, to stakeholders, such as the Arizona Law Enforcement Association and the Professional Fire Fighters of Arizona, informing them of the need to discuss the feasibility of offering multiple benefit options during a meeting scheduled for November 13, 2015. The System indicated that it was the consensus of the stakeholders that offering multiple benefit options was not something they wanted to pursue. However, the System did not provide documentation of its discussion with stakeholders. In addition, the System did not provide information about whether the feasibility of offering multiple benefit options was discussed with employers and local boards.</td>
<td>Pension reform has already occurred for PSPRS and will likely occur for CORP this legislative session. Assuming legislation is passed for CORP, new members will now have benefit options. Discussions have been held at various times with stakeholders and parties are in agreement that pension reform passed in 2016 and 2017 provide enough benefit options for members.</td>
<td><strong>Done.</strong></td>
</tr>
</tbody>
</table>

| **3.5** If the System decides to offer a limited number of pension benefit options, it should take the following actions: | **Not yet applicable** explanation for recommendation 3.4. This will be discussed by the Advisory Committee and the new Board of Trustees in 2017. | **Determine if PSPRS wants to offer a limited number of benefit options. If so, take the steps outlined in 3.5 (a-d).** |
|---|---|---|---|
| **a.** Determine the specific pension options that should be available; | **Not yet applicable** explanation for recommendation 3.4. See | **This will be discussed by the Advisory Committee and the new Board of Trustees in 2017.** |
| **b.** Determine the specific times and conditions under which an employer can change its options; | **Not yet applicable** explanation for recommendation 3.4. See | **This will be discussed by the Advisory Committee and the new Board of Trustees in 2017.** |
| **c.** Seek the necessary changes to the PSPRS plan and CORP laws to allow for employers to select options; and | **Not yet applicable** explanation for recommendation 3.4. See | **This will be discussed by the Advisory Committee and the new Board of Trustees in 2017.** |
| **d.** Develop and implement training materials on the various pension benefit options and their costs so that PSPRS plan and CORP employers can make informed decisions about which benefit options would be the most appropriate. | **Not yet applicable** explanation for recommendation 3.4. See | **This will be discussed by the Advisory Committee and the new Board of Trustees in 2017.** |
# Public Safety Personnel Retirement System
## Auditor General Findings and Recommendations
### Additional Progress--March 1, 2017

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<thead>
<tr>
<th>AG Recommendations (September 2015)</th>
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<th>Yet To Do--Action Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6 The System should develop and provide educational materials to PSPRS plan employers explaining how unusually large overtime pay increases the risk of generating unfunded liabilities. The System could work with the PSPRS plan's actuary to create and include in communications to plan employers, such as newsletters and retirement manuals, an explanation and examples of how compensation practices like unusually large overtime usage can generate unfunded liabilities for participating employers.</td>
<td>Implementation in process The System developed materials explaining how unusually large overtime pay increases the risk of generating unfunded liabilities and reported that it is in the process of scheduling meetings with PSPRS plan local boards to discuss these materials.</td>
<td>We visited with several local boards and called the local boards that had the worst funding ratios to explain how compensation practices and granting disability benefits can generate unfunded liabilities for participating employers. A webinar which included this information was also provided.</td>
<td>Provide additional training to employers and local boards, making sure they understand the associated costs and effects of certain benefit decisions.</td>
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</table>

<table>
<thead>
<tr>
<th>3.7 The System should adopt practices similar to those in peer public pension plans to ensure that contributions are correct, including:</th>
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</tr>
</thead>
<tbody>
<tr>
<td>a. Establishing formal, written policies and procedures for system staff to flag and document any abnormal contributions that may indicate abnormal wage increases or contribution errors. These procedures should detail which staff will be responsible for completing these tasks;</td>
<td>Implemented at 6 months</td>
<td>N/A</td>
<td>Done.</td>
</tr>
<tr>
<td>b. Establishing formal, written policies and procedures for system staff to investigate flagged contributions. These procedures should detail the necessary steps and documentation for any investigation as well as which staff will be responsible for conducting these investigations; and</td>
<td>Implemented at 6 months</td>
<td>N/A</td>
<td>Done.</td>
</tr>
<tr>
<td>AG Recommendations (September 2015)</td>
<td>AG Follow-up Report (May 2016)</td>
<td>Additional Progress--March 1, 2017</td>
<td>Yet To Do--Action Items</td>
</tr>
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</tr>
<tr>
<td>c. Developing and implementing written policies and procedures for conducting regular audits of participating employers for compliance in reporting wages and contributions.</td>
<td>Implementation in process According to the System, it is considering whether to use a private firm to conduct regular audits of participating employers or expand its staff to do so. Once it makes this decision, the System reported that it will develop policies and procedures for conducting such audits. The System estimates its policies and procedures will be completed by June 2017.</td>
<td>Oct 2016: The Attorney General's Office advised PSPRS that the System does not have statutorial authority to conduct employer audits. Census data testing is already occurring via employer auditors in order to comply with GASB 68. Risk of abuse is low since each employer pays its own unfunded liabilities. For these reasons, the Board decided not to conduct regular audits of participating employers at their September 2016 meeting. <strong>This will not be implemented.</strong></td>
<td>Done.</td>
</tr>
<tr>
<td>3.8 To ensure that the EORP has sufficient assets to cover its estimated pension obligations, the Legislature should consider revising A.R.S. §38-810 to allow the Board to annually establish contribution rates or consider increasing its annual appropriations over time.</td>
<td>Not implemented The Legislature did not introduce any bills in the 2016 legislative session that would revise A.R.S. §38-810 to allow the Board to annually establish EORP contribution rates or to increase its annual appropriation to the System over time.</td>
<td>The actuary indicated that the EORP will be out of money in 13 years. After PSPRS lost the Hall case, the actuary indicated that EORP may be out of money in roughly 10 years unless contributions are increased. The Board sent a letter to the legislature requesting additional funding and we continue to send the message that more funding is needed. This is really a recommendation for the legislature. PSPRS will continue to provide the legislature with information about the financial needs of the EORP, but PSPRS is not able to implement this recommendation.</td>
<td></td>
</tr>
<tr>
<td>3.9 The System should continue its efforts to provide additional training to employers and local boards. In conducting such training, the System should ensure that employers and local board members understand the associated costs and effects of certain benefit decisions, such as long-term disability approvals and benefit calculations, as well as the significance of their individual funded status.</td>
<td>Implementation in process The System provided one training in February 2016 to CORP local board members that discussed the cost and effects of certain benefit decisions, such as long-term disability approvals and benefit calculations, as well as the significance of each employer's individual funded status.</td>
<td>We visited with several local boards and called the local boards that had the worst funding ratios to explain how compensation practices and granting disability benefits can generate unfunded liabilities for participating employers. A webinar which included this information was also provided. Ongoing efforts.</td>
<td></td>
</tr>
</tbody>
</table>

**Sunset Factor #2: The extent to which the System has met its statutory objective and purpose and the efficiency with which it has operated.**

1. The System should:
# Public Safety Personnel Retirement System

## Auditor General Findings and Recommendations

### Additional Progress--March 1, 2017

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<tr>
<th>AG Recommendations (September 2015)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>a. Train IT staff on the roles and responsibilities of its updated disaster recovery plan;</td>
<td>Implemented at 6 months</td>
<td>N/A</td>
<td>Done.</td>
</tr>
<tr>
<td>b. Develop process for reviewing, approving, and implementing its IT policies; and</td>
<td>Implemented at 6 months</td>
<td>N/A</td>
<td>Done.</td>
</tr>
<tr>
<td>c. Implement additional controls on its hosted Website, such as encryption technologies, to prevent unauthorized access of confidential system information.</td>
<td>Implemented at 6 months</td>
<td>N/A</td>
<td>Done.</td>
</tr>
</tbody>
</table>

2. The Board and System should enhance its internal audit function by:

a. Revising the System's internal audit charter to ensure internal and external assessments are conducted and scheduling an external assessment of the internal audit function;  

   **Implementation in process**  
   
   The System reported that the Board began a governance manual review in March 2016. The review will include adding internal and external assessments to its internal audit charter. Arizona State Retirement System internal audit staff has agreed to conduct a review of the System’s internal assessment, and the System reported that it is working to identify an organization to provide an external assessment.  
   
   The internal audit charter is being revised this fiscal year. We will make sure the charter includes internal and external assessments. Since the position is being revised we will likely not schedule an external assessment of the function until 2018.  

   Revise the System's internal audit charter to ensure internal and external assessments are conducted and schedule an external assessment of the internal audit function;  

b. Requiring that the internal auditors disclose any conflicts of interest and their appropriate mitigation to the Operations, Governance Policy and Audit Committee;  

   **Implementation in process**  
   
   The System reported that it is developing a process for mitigating and disclosing conflicts of interest to the Board and that this process will be incorporated into its internal audit charter.  

   The process for mitigating and disclosing conflicts of interest to the Board will be incorporated into the revised internal audit charter.  

   Revise the internal audit charter.
### Public Safety Personnel Retirement System

**Auditor General Findings and Recommendations**

**Additional Progress—March 1, 2017**

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<thead>
<tr>
<th>AG Recommendations (September 2015)</th>
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<tbody>
<tr>
<td>c. Periodically reviewing its internal audit charter, including requiring internal auditors to regularly brief the Board on the purpose, authority, and responsibility of the internal audit function according to the charter. In addition, the Board should also amend the internal audit charter to require these activities; and</td>
<td><strong>Implementation in process</strong> System reported that the Board began a governance manual review in March 2016. The review will include incorporating requirements for the Board to periodically review its internal audit charter and for internal auditors to regularly brief the Board on the purpose, authority, and responsibility of the internal audit function.</td>
<td>The internal audit charter is being revised and will include this recommendation.</td>
<td>Revise the internal audit charter</td>
</tr>
<tr>
<td>d. Developing and implementing policies and procedures to guide internal audit function.</td>
<td><strong>Implementation in process</strong> The System reported that it is in the process of creating an audit manual and written procedures to guide the internal audit function.</td>
<td>Written policies and procedures are in process and will be part of the audit manual.</td>
<td>Develop and implement procedures to guide internal audit functions.</td>
</tr>
</tbody>
</table>

**Sunset Factor #6:** The extent to which the System has been able to investigate and resolve complaints that are within its jurisdiction.

1. To enhance its processes for addressing members’ issues, the System should:

   a. Develop and implement formal, written policies and procedures for handling member communications to ensure that system staff provide uniform treatment to members. These policies and procedures should define what member communications should be documented and tracked;  

   Implementation in process The System is developing a central record to log member issues and track how its staff handle them. System staff have created five categories to classify member complaints and these complaints will be documented and tracked through this central record. The System reported that it is currently testing this central record, and once this testing is complete, the System will develop procedures for handling member issues and conducting a regular analysis of the central record.  

   We are developing procedures for handling member communications.  

   Develop and implement formal, written policies and procedures for handling member communications.  

   b. Develop and implement a central record that details when members’ issues are received, the nature of the issue, the system staff members who handled the issue and when, and how the issue was resolved; and  

   Implementation in process See explanation for Recommendation for Sunset Factor 6, 1a.  

   The central member issue log has been developed, tested and put into production.  

   Done.
Public Safety Personnel Retirement System  
Auditor General Findings and Recommendations  
Additional Progress--March 1, 2017

<table>
<thead>
<tr>
<th>AG Recommendations (September 2015)</th>
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</thead>
<tbody>
<tr>
<td>c. Develop and implement procedures for requiring a regular analysis of the centralized record to identify and address systemic causes of trends in member issues.</td>
<td>Implementation in process explanation for Recommendation for Sunset Factor 6, 1a.</td>
<td>The purpose of the centralized record is to identify and address systemic causes of trends in member issues. This process will be institutionalized and adjusted as we gain experience with the new tool.</td>
<td>Done.</td>
</tr>
</tbody>
</table>
## PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

**FY2017 LEGAL INVOICES FOR SERVICES RENDERED IN JAN.2017 FOR FEB.2017 PAYMENT**

**TOTALS BY VENDOR**

### SUMMARY BY VENDOR and TYPE

<table>
<thead>
<tr>
<th>VENDOR</th>
<th>AMOUNT DUE (JAN 2017)</th>
<th>FYTD 2017 (Fees &amp; Costs)</th>
<th>Deals in Process</th>
<th>Committed Capital</th>
<th>Legal fees as % of Investment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KUTAK ROCK</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>A-KUTAK ROCK</td>
<td>Administration</td>
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<td>14,457.67</td>
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<tr>
<td>L-KUTAK ROCK</td>
<td>Litigation</td>
<td>525.00</td>
<td>61,657.22</td>
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<tr>
<td>I-KUTAK ROCK</td>
<td>Investment</td>
<td>69,788.40</td>
<td>453,625.36</td>
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<td>158,000,000</td>
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<tr>
<td><strong>KUTAK TOTAL</strong></td>
<td></td>
<td>70,688.40</td>
<td>529,740.25</td>
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<tr>
<td><strong>STEPTOE &amp; JOHNSON</strong></td>
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</tr>
<tr>
<td>A-STEPTOE &amp; JOHNSON</td>
<td>Administration</td>
<td>23,142.00</td>
<td>137,144.42</td>
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</tr>
<tr>
<td>L-STEPTOE &amp; JOHNSON</td>
<td>Litigation</td>
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<tr>
<td><strong>STEPTOE &amp; JOHNSON TOTAL</strong></td>
<td></td>
<td>23,142.00</td>
<td>137,144.42</td>
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<tr>
<td><strong>FOLEY &amp; LARDNER</strong></td>
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<tr>
<td>I-FOLEY &amp; LARDNER</td>
<td>Investment</td>
<td>1,471.00</td>
<td>4,698.50</td>
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<td><strong>FOLEY &amp; LARDNER TOTAL</strong></td>
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<tr>
<td><strong>FOSTER PEPPER</strong></td>
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<tr>
<td>I-FOSTER PEPPER</td>
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<td><strong>FOSTER PEPPER TOTAL</strong></td>
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<tr>
<td><strong>JACKSON WALKER</strong></td>
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<tr>
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<td><strong>JACKSON WALKER TOTAL</strong></td>
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<td>26,755.00</td>
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<tr>
<td><strong>CHARLES W. WHETSTINE</strong></td>
<td></td>
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</tr>
<tr>
<td>A-CHARLES W. WHETSTINE</td>
<td>Administration</td>
<td>16,165.50</td>
<td>40,723.75</td>
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<tr>
<td><strong>CHARLES W. WHETSTINE TOTAL</strong></td>
<td></td>
<td>16,165.50</td>
<td>40,723.75</td>
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</tbody>
</table>
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</thead>
<tbody>
<tr>
<td><strong>Lewis Roca Rothgerber</strong></td>
<td>Administration</td>
<td>$16,540.50</td>
<td>$61,911.42</td>
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<tr>
<td><strong>Lewis Roca Rothgerber Total</strong></td>
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<tr>
<td><strong>Coppersmith/Brockelman</strong></td>
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<tr>
<td><strong>Coppersmith/Brockelman Total</strong></td>
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<td><strong>Special Counsel</strong></td>
<td>Litigation</td>
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<td>485,078.86</td>
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<td><strong>Special Counsel Total</strong></td>
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<td><strong>Fennemore Craig Total</strong></td>
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**Grand Total**: $111,466.90 | $745,791.92 | 1 | 158,000,000 | 0.0451%

Internal deals in process: 5
PSPRS Legal Expenses (FYTD 2017)

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H2315  PSPRS; NORMAL RETIREMENT; AGE; REPEAL

Eliminates the normal retirement ages for members of the Public Safety Personnel Retirement System hired on or after January 1, 2012, leaving the number of years of service to determine normal retirement.

Affected Plans/Statutes: PSPRS
First sponsor: Rep. Cardenas

Current Action: 1/18 referred to House Banking and Insurance

H2369  REPEAL; STATE BOARDS & COMMITTEES

Repeals various state boards and committees. Repeals the Arizona State Parks Board, and transfers Board powers and duties to the Arizona State Parks Director. Repeals the Arizona Agricultural Protection Commission and the chapter of statute known as the Arizona Agricultural Protection Act. Repeals the Citizens Transportation Oversight Committee, the Conservation Advisory Committee, the Advisory Board of the Arizona State Library, Archives and Public Records, the Agricultural Best Management Practices Advisory Committee, and the Water Quality Assurance Revolving Fund Advisory Board.

Affected Plans/Statutes: PSPRS

Current Action: 2/20 referred to Senate Government; 2/16 House COW approved, passed House 34-24, ready for Senate; 2/14 from House rules okay, stricken from House consent calendar by Powers Hannely; 2/13 to House consent calendar; Hearing: 2/13 at 12:45 PM, House Rm. 4; 2/2 from House Government do pass; Hearing: 2/2 at 9:30 AM, House Rm. 1; 1/26 referred to House Government
Various changes to statutes governing the Elected Officials Retirement Plan (EORP), the Corrections Officer Retirement Plan (CORP), and the Public Safety Personnel Retirement System (PSPRS). All distributions required under any of the plans must be determined and made according to a specified section of the federal Internal Revenue Code and the regulations issued under that section by the U.S. Secretary of the Treasury. If more than the correct amount of employer or member contributions is paid into EORP, CORP or PSPRS by an employer through a mistake of fact, the appropriate Board is required to return those contributions upon a request made within one year after the date of overpayment. Establishes a new monthly disability benefit calculation for an EORP member who was elected, appointed or hired on or after July 1, 2017 and who meets the requirements for a disability pension. If a PSPRS member was initially employed on or after July 1, 2017, received a severance refund on termination of employment, and is subsequently reemployed by a PSPRS employer, the member returns to the PSPRS system as irrevocably elected. If a member of the PSPRS defined contribution plan dies before completing 10 years of service, the employer contributions are immediately fully vested. If a PSPRS defined contribution plan participant is killed in the line of duty or dies from injuries suffered in the line of duty, the PSPRS local board is required to follow the same procedures as under the PSPRS defined benefit plan to determine eligibility for and the continuation of a death benefit to a surviving spouse or any eligible child, and a calculation is established for the amount of the monthly death benefit.

Affected Plans/Statutes: PSPRS, CORP and EORP

Current Action: 2/23 from House Rules okay, House COW approved with amendment #4320, passed House 60-0, ready for Senate; 2/16 from House Government with amendment #4320; 2/16 House Government amended, report awaited; Hearing: 02/16 at 9:00 AM, House Rm. 1; 2/8 referred to House Government

The Arizona State Parks Board is renamed the Arizona State Parks and Trails Board and the State Parks and Revenue Fund is renamed the Arizona State Parks and Trails Revenue Fund.

Affected Plans/Statutes: PSPRS
First sponsor: Sen. Borrelli

Current Action: 1/10 referred to Senate Natural Resources, Energy & Water
**S1063** TECH CORRECTION; PAYMENT METHOD

Minor change in Title 42 (Taxation) related to payment methods. Apparent striker bus.

Affected Plans/Statutes: PSPRS and CORP  
First sponsor: Sen. Lesko

*Current Action:* 2/23 from Senate Rules okay; 2/22 from Senate Appropriations with amendment #4490; 2/15 further referred to Senate Appropriations 1/12 referred to Senate Rules only

**S1115** PSPRS; RETIREMENT BENEFIT CALCULATION

For the purpose of the Public Safety Personnel Retirement System, the definition of "normal retirement" is modified to allow employees who become a member of the system on or after January 1, 2012 and before July 1, 2017 to retire after completing 15 years of credited service if the employee is at least 52 1/2 years of age. If a member retires under this provision and has less than 25 years of service, the monthly pension amount is the member's average monthly benefit compensation multiplied by the number of whole and fractional years of credited service multiplied by the appropriate percentage based on the years of credited service as provided in statute. Also, the amount payable as a normal pension is no longer prohibited from exceeding 80 percent of the average monthly benefit compensation.

Affected Plans/Statutes: PSPRS  
First sponsor: Sen. Lesko  

*Current Action:* 2/27 to Senate consent calendar; Hearing: 2/27 at 1:00 PM, Senate Caucus Rm. 1; 1/25 from Senate Finance do pass; 1/18 referred to Senate Finance

**S1330** FIRE DISTRICTS; PENSION FUND; TRANSFER

If a fire district that has at least five full-time firefighters elects to provide coverage to its full-time firefighters under the Public Safety Personnel Retirement System (PSPRS), the amount of monies accumulated in the local Fire Fighters' Relief and Pension Fund in excess of the amount necessary to provide benefits for voluntary firefighters may be transferred to the PSPRS Fund for the purposes of paying any service costs of the district attributable to the full-time firefighters who are included in PSPRS.

Affected Plans/Statutes: PSPRS  
First sponsor: Sen. S. Allen

*Current Action:* 2/22 passed Senate 30-0, ready for House, Senate COW approved with the Senate Rules technical amendment; 2/21 from Senate Rules with a technical amendment; Hearing: 2/20 at 1:00 PM, Senate Caucus Rm. 1; 2/16 from Senate Finance do pass; 2/15 Senate Finance do pass, report awaited; Hearing: 2/15 at 8:00 AM, Senate Rm. 1; 1/26 referred to Senate Finance
Various changes to statutes governing the Corrections Officer Retirement Plan (CORP). CORP members who are employees hired on or after July 1, 2018 and who were not an active, inactive or retired CORP member on June 30, 2018 are required to participate in the Public Safety Personnel Retirement System (PSPRS) defined contribution plan. For these CORP members, the employee and employer contribution rates are five percent, "compensation" means "salary" as already defined in CORP statutes, and a reduced monthly disability pension calculation is established. The calculation for employer contributions for CORP members hired before July 1, 2018 is modified. Statutes establishing and regulating CORP benefit increases are repealed, and a new cost-of-living adjustment calculation for CORP benefits is established for members hired on or before June 30, 2018. Conditionally enacted on the state Constitution being amended as prescribed in an unspecified Senate concurrent resolution (blank in original), by vote of the people at the 2018 general election.

Affected Plans/Statutes: PSPRS and CORP

Current Action:  2/23 retained on Senate COW calendar; 2/21 from Senate Rules okay; Hearing: 2/20 at 1:00 PM, Senate Caucus Rm. 1; 2/16 from Senate Finance with amendment #4257; 2/15 Senate Finance amended, report awaited; Hearing: 2/15 at 8:00 AM, Senate Rm. 1; 1/31 referred to Senate Finance

The 2018 general election ballot is to carry the question of whether to amend the state Constitution to provide that the Constitutional provision prohibiting public retirement system benefits from being diminished or impaired does not prohibit certain adjustments to the Corrections Officer Retirement Plan as provided in an unspecified Senate Bill (blank in original).

Affected Plans/Statutes: CORP
First sponsor: Sen. Lesko

Current Action:  2/23 retained on Senate COW calendar; 2/21 from Senate Rules okay; Hearing: 2/20 at 1:00 PM, Senate Caucus Rm. 1; 2/16 from Senate Finance with amendment #4259; 2/15 Senate Finance amended, report awaited; Hearing: 02/15 at 8:00 AM, Senate Rm. 1; 1/31 referred to Senate Finance
March 1, 2017

Operations Committee
Governance Manual Updates

BACKGROUND
The Board of Trustee’s governance manual consists of 11 charters and 15 policies/procedures. Each charter and policy contains a review period, which states how often that charter or policy should be formally reviewed by the board. All of the policies and all but two of the charters need to be reviewed in 2017. Staff developed a draft review schedule and shared that schedule with the Operations Committee during their January meeting. During the March 1, 2017, meeting staff will present two charters and three policies for review by the Operations Committee, including the following:

- 4.02 Charter for the Chair of the Board of Trustees
- 4.03 Charter of the Vice Chair of the Board of Trustees
- 5.01 Policy Development Process
- 5.02 Board of Trustees Communications Policy
- 5.03 Board of Trustees Operations Policy

Staff has reviewed these five sections and does not have any recommendations for changes to the first four. Staff does, however, have recommendations for changes to section 5.03, as follows:

- In paragraph 2 the “Governing Statute” has been expanded to include Title 38, Chapter 5, Articles 3.1, 3.2 (the Elected Officials Defined Contribution Retirement System and associated Disability Program) and Articles 4.1 and 4.2 (the Public Safety Personnel Defined Contribution Retirement Plan and associated Disability Program).
- The Board of Trustees is now a 9-member board. As a result, a quorum for Board of Trustee meetings has increased from four to five members, and the maximum number of Trustees who can participate as members of a committee has increased from three to four.
- In paragraph 20 the statute reference has changed from §38-848(F) to §38-848(H) and the quote in paragraph 21 has changed slightly to match §38-848(H).
- In paragraph 26 the order of business for regular Board of Trustees meetings was adjusted, moving the Call to the Public from the bottom of the agenda to near the top of the agenda in accordance with past practice. That change was made in practice in December 2013.

The Operations Committee is charged with recommending changes to board charters or policies to the full Board of Trustees if changes are warranted. The full Board of Trustees must approve those changes in order for them to be implemented.
INTRODUCTION

1) The role of the Chair is to provide leadership for the Board of Trustees, to assist in the coordination of the affairs of the Board, and to preside at Board meetings.

DUTIES AND RESPONSIBILITIES

2) The Chair will exercise the powers and perform the duties and functions as specified herein:

   a) As the need arises, establish Committees of the Board of Trustees, subject to Board ratification.

   b) Select persons to serve as chairs, co-chairs and members on Committees, subject to Board ratification.

   c) Approve the agenda for each Board of Trustees meeting.

   d) Preside at all Board of Trustees meetings, assuring that such meetings are conducted efficiently and in accordance with Board policies, and open meeting laws. The Chair shall refer to Robert’s Rules of Order Newly Revised to resolve any disagreements that cannot otherwise be resolved.

   e) Act as the spokesperson for the Board of Trustees and the System, or designate a spokesperson as appropriate.

   f) Be available to support Committee chairs in the exercise of their duties.

   g) Coordinate the annual performance review of the Administrator.

CHARTER REVIEW

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

CHARTER HISTORY

4) This Charter was approved by the Board of Trustees on February 23, 2005. The Charter was amended by the Board of Trustees on June 24, 2009 and on June 27, 2012.
ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

4.03 CHARTER OF THE VICE-CHAIR OF THE BOARD OF TRUSTEES

INTRODUCTION

1) The role of the Vice Chair is to assure continuity in the leadership of the Board of Trustees by exercising the powers of the Chair when the Chair is either absent, unwilling, or unable to perform his/ her duties or complete his/her term.

DUTIES AND RESPONSIBILITIES

2) The Vice-Chair will exercise the powers and will perform the duties and functions as specified herein:
   a) Temporarily assume the duties of the Chair when the Chair is absent.
   b) Assume the position of Chair for the balance of the term of the Chair, in the event the Chair becomes ineligible, unable, or unwilling to complete his or her term.

CHARTER REVIEW

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

CHARTER HISTORY

4) This Charter was approved by the Board of Trustees on February 23, 2005. The Charter was amended by the Board of Trustees on June 24, 2009 and on June 27, 2012.
ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

5.01 POLICY DEVELOPMENT PROCESS

BACKGROUND

1) The Board of Trustees best serves the System when it focuses on oversight and policy, as opposed to operational details and activities.

2) The Board of Trustees may adopt policies for the governance of its own proceedings and for the administration of the System. Such policies may address various aspects of the System’s business including governance, investments, funding, and benefit administration.

POLICY OBJECTIVES

3) The objectives of the Board of Trustees Policy Development Process are to:
   a) Set out the process by which the Board shall develop and approve policies; and
   b) Assure that the Board of Trustees’ approach to policy development is sound, thorough, and yields policies that effectively support the goals and priorities of the System.

DEFINITIONS

4) Board of Trustees’ policies serve as guidelines for the Board, the Administrator and System staff to follow in regard to a matter, opportunity or risk that may significantly affect the ability of the System or the Board to carry out the mission of the System.

GUIDELINES

Roles and Responsibilities

5) The role of the Administrator in the policy-development process is to:
   a) Assist the Board of Trustees in identifying necessary Board policies;
   b) Provide the Board with sound, thorough analysis of policy issues; and
   c) Provide recommendations for consideration by the Board.

6) The Administrator, with the support of advisors as required, will be responsible for performing all necessary research and analysis to support the Board of Trustees’ policy development process.

7) The role of the Board of Trustees in the policy development process is to adopt policies after concluding that the policy recommendations and the underlying analysis thereof
effectively support the mission and goals of the System. The Board may direct a Committee to assist it in the development of Board policies.

Policy Development

8) Individual trustees, Committees, the Administrator, assistant administrators, or advisers may recommend that the Board of Trustees consider developing and/or adopting the new policy. To expedite matters, staff may directly submit policies to the Board for consideration and approval.

9) In determining whether a particular issue warrants a Board of Trustees policy, the Board shall consider whether the issue satisfies the following criteria:

   a) The issue may have a significant impact on the System in terms of its ability to meet its mission;
   
   b) The issue is expected to recur or continue indefinitely; or
   
   c) The issue is not an operational issue that would otherwise fall within the discretion of the Administrator.

10) If it is determined by the Board of Trustees that an issue warrants a Board policy, the Board shall direct the Administrator, a Committee, or a consultant to develop and recommend a policy for review and adoption by the Board. The general parameters to be met by the policy shall be recorded in the minutes of the Board meeting at which the determination is made.

11) Board of Trustees’ policies shall generally contain at a minimum the following sections:

   a) Policy objectives/purpose;
   
   b) Policy Guidelines (actual provisions of the policy);
   
   c) Policy Review (the frequency for reviewing the policy); and
   
   d) Policy History (the date the policy was adopted and/or amended).

12) Board of Trustees’ policies must be approved by formal Board resolution in order to take effect.

Policy Compliance

13) As a general rule, the Board of Trustees will comply with all of its policies. Should the Board take an action contrary to one of its policies, it will state in the meeting minutes the reasons for doing so. At such time, the Board will also consider whether a review of the policy should be undertaken.
Policy Maintenance and Review

14) All of the Board of Trustees’ policies will be maintained in soft and hard copy volumes, and will be accessible to trustees, staff and the public. All trustees shall be furnished a copy of the policies, which shall be updated from time-to-time as necessary.

15) All policies shall be formally reviewed at a time specified within each policy, but no less frequently than every three years.

16) If a trustee, Committee, or the Administrator believes that a particular policy requires review in advance of the time specified, then such a review may be recommended to the Board.

Policy Review

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

Policy History

18) This policy was adopted by the Board of Trustees on February 23, 2005, and revised on June 24, 2009 and on June 27, 2012.
ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM  
5.02 BOARD OF TRUSTEES COMMUNICATIONS POLICY

PURPOSE

1) The purpose of this policy is to establish guidelines to:
   a) Facilitate effective communication by the Board of Trustees with System staff, Local Boards, Plan members, vendors, and system stakeholders.
   b) Minimize the risk of unauthorized or inaccurate communications by trustees and staff.

GENERAL

2) The Board of Trustees shall carry out its activities in the spirit of open governance and in accordance with the Open Meeting Law. Notwithstanding this, the Board may conduct certain business in executive (closed) session as provided for by statute.

3) Communications by trustees, when acting in their capacity as trustees, should be consistent with their fiduciary duty to represent the interests of all System participants.

4) Trustees shall communicate in a respectful and constructive manner with other trustees, staff members, Plan members, and other stakeholders.

5) Trustees shall protect all confidential information pertaining to the Board of Trustees and the System to which they are privy by virtue of their position, and shall not disclose any confidential information unless compelled by force of law.

Communication among Trustees

6) In order to comply with the Open Meeting Laws, trustees and System staff shall not communicate in a manner that would violate the Open Meeting Laws. This includes, at a minimum, the following:
   a) Trustees shall avoid discussing or deliberating Board of Trustees business with more than two other trustees outside of duly noticed Board of Trustees meetings.
   b) Trustees serving on Committees shall avoid discussing or deliberating Committee business with more than one of the other Committee trustees outside of duly noticed Committee meetings.
   c) The above restrictions also apply to communication by electronic means.
Communications with System Staff

7) Trustees shall direct questions or information requests to the Administrator or Assistant Administrators, either at Board of Trustee or Committee meetings, or during regular business hours.

8) Trustees shall only make reasonable requests for information that are necessary for the purposes of fulfilling their duties as trustees, and shall not request or use System information for their own personal or business use.

9) Where the Administrator believes that an information request would require a significant expenditure of staff time (more than a few hours) or the use of external resources, the Administrator may place the request on the agenda for the next Board of Trustees meeting, for discussion and consideration by the Board.

10) Requests by trustees for a new routine report to the Board of Trustees shall require the approval of the Board, and modification to Appendix 1 of the Board of Trustees' Monitoring and Reporting Policy.

11) As appropriate, the Administrator shall assure that information that has been requested by individual trustees is made available to all trustees.

12) In the spirit of open communication, individual trustees shall share any information that may be pertinent to the Administrator with the Administrator in a timely manner. The Administrator shall similarly share with the Board of Trustees any information pertinent to the Board in a timely manner.

Communications with Vendors

13) Trustees may communicate with vendors of the System for the purposes of obtaining information, guidance, or counsel to assist them in carrying out their duties, but shall not direct vendors to undertake any work assignments without first obtaining authorization from the Board of Trustees, a Committee of the Board, or the Administrator.

14) In communicating with vendors, trustees shall avoid disclosing confidential information, unilaterally making any commitments on the part of the Board of Trustees, or showing special treatment or favouritism.

15) Trustee contact with investment managers should generally be made at Board of Trustee or Committee meetings, or through System staff.

16) Trustees shall refer investment opportunities or service proposals that they receive from vendors directly to the Chief Investment Officer or the Chair of the Investment Committee.

17) Trustees shall obey quiet period restrictions imposed by the Board of Trustees on specified vendors, in accordance with the Vendor Selection Policy.
Communications with the Media

18) The Chair, or his or her designee, shall act as the spokesperson for the Board of Trustees and the System.

19) In carrying out their duties, spokespersons shall:
   
a) Communicate in a manner consistent with the established policies and decisions of the Board of Trustees.
   b) Not make comments reflecting personal views.
   c) Promptly inform the Administrator and trustees of any sensitive or high profile issues discussed with the media.
   d) If time permits, discuss sensitive, high profile issues with the Board of Trustees prior to engaging in external communications.

20) Written media communications concerning the System shall be the responsibility of the Administrator and shall clearly and accurately reflect the policies and decisions of the Board of Trustees and the provisions of the Plans. The Administrator shall submit to the Chair for approval all media communications of a sensitive or high profile nature. Such media communications shall be shared with the Board of Trustees prior to their release.

21) In their external communications, trustees should:
   
a) Speak on behalf of the Board of Trustees only when explicitly authorized to do so by the Board of Trustees.
   b) Clearly and respectfully indicate when they are communicating a personal position that differs from the policies or decisions of the Board of Trustees.
   c) Refrain from referring to policies and decisions of the Board of Trustees in a disparaging manner with the media or other external parties.

22) The Board of Trustees acknowledges an individual trustee’s right to express publicly disagreement with a policy or decision of the Board of Trustees. The Board expects, however, that trustees shall do so in an open and professional manner and further expects that a trustee shall nevertheless abide by such policy or decision to the extent that doing so is consistent with the trustee’s fiduciary duty.

23) When approached by the media for information concerning the affairs of the System, a trustee shall refer the matter to the appropriate spokesperson, and in any event shall not make unauthorized commitments on the part of the Board of Trustees or the System.

24) To assure the technical accuracy of materials prepared by trustees for publication or general distribution, that are related to the affairs of the System, and to assure that the System is not inadvertently placed at risk, trustees agree to provide such material to the Administrator, or his or her designee, for technical review only, prior to distribution or publication.
Communications with Plan members

25) The Board of Trustees recognizes the importance of open communication between the System and Plan members, as well as the ongoing delivery of information regarding the System's Plans and benefits. To assure effective communication with Plan members, it shall be the policy of the Board of Trustees requires that:

   a) Plan members have reasonable access to System staff via telephone and the Internet.
   b) The Administrator will make available through secure online methods an annual member statement to any member who wants it.
   c) The Administrator will assure that the Annual Report for each Plan is available on the System's website, and that a copy is made available to any member who requests a printed one.
   d) The Administrator will provide active members, through their local boards, and retired members with electronic or written communications regarding significant changes in legislation, benefits, buy-back provisions, COLA rates, access to services or other matters as appropriate. When prudent and practical, members shall be asked to acknowledge receipt.
   e) The Administrator will make other relevant information available on its website. (See section 29 of this policy.)

26) Trustees will be sensitive to the risk of communicating inaccurate information to Plan members, and the potential liability and harm to a member that may result from such miscommunications. Trustees will encourage Plan members to refer their queries to the Administrator or appropriate staff person.

Communications with Local Boards and Employers

27) The Board of Trustees recognizes the importance of open communication between the System and its Local Boards and employers, as well as the ongoing delivery of information and education. To assure effective communication with Local Boards, the policy of the Board requires that:

   a) The Administrator maintain a database of the names and contact information of all Local Boards and employers, and update the database as necessary.
   b) Local Boards and employers have access to System staff via telephone and the Internet.
   c) The Administrator make available online the Annual Financial Reports of the System's Plans.
   d) The Administrator, in consultation with the Board of Trustees, will develop and implement an education program for Local Board members, which shall include:
      i) Annual retirement seminars.
ii) Interactive training via meetings and the website.

iii) Sample procedures and forms for use by Local Boards.

e) The interactive training will generally cover the following information:

i) A description of the PSPRS and CORP Plans.

ii) A description of the roles of the Board of Trustees, the System, and Local Boards.

iii) A description of the duties and responsibilities of Local Board members.

iv) Contact information for the System, and designated staff contacts.

v) The use of sample procedures and forms provided by the System for the benefit of and use by, Local Boards.

**Communication with Employee Associations**

28) The Board of Trustees recognizes the importance of open and consistent communication between the Board of Trustees, the System, and employee organizations. To assure effective communication with employee organizations, the policy of the Board requires that:

a) The Administrator maintain a current listing of the names and contact information of all recognized employee organizations.

b) The Administrator or his or her designee respond promptly to inquiries made by employee associations.

c) The System shall make other relevant information available via its website. (See section 29 of this policy.)

**System Website**

29) The following minimum information must be available via the System’s website for the benefit of the members, Local Boards, employers, employee organizations and other stakeholders:

i) The current composition of the Board of Trustees.

ii) Contact information for the System.

iii) The identification of key vendors for the Board of Trustees and the System.


v) The investment policy for the Trust.

vi) Access to account information for active members, where available.
vii) Standard applications/forms for retirement, disability, etc.

viii) Information regarding significant changes in legislation, benefits, COLA rates, or access to services.

ix) Board of Trustees and Committee meeting notices, agendas and approved minutes.¹

tax) The Charters and Code of Ethics of the Board of Trustees.

30) The Administrator shall have the authority to take the website temporarily off-line for security concerns or maintenance.

POLICY REVIEW

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

POLICY HISTORY

32) The Board of Trustees adopted this policy on February 23, 2005, and revised on June 24, 2009, and on June 27, 2012.

¹ Please note the notice guidelines set out in sections 13 to 15 of the Board of Trustees Operations Policy.
ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM

5.03 BOARD OF TRUSTEES OPERATIONS POLICY

PURPOSE

1) This Board of Trustees Operations Policy is intended to describe the manner in which the Board will appoint officers, establish Committees, and conduct meetings, so as to assure efficient operation of the Board.

2) This policy is intended to be consistent with Title 38, Chapter 5, Articles 3, 3.1, 3.2, 4, 4.1, 4.2 and 6 (the “Governing Statute”) , and with Title 38, Chapter 3, Article 3.1 (the “Open Meeting Laws”). Where there is a conflict between the provisions of this policy and Arizona statutes, the statutes will prevail.

POLICY GUIDELINES

A) Board of Trustees and Officers

3) The Board of Trustees is comprised of seven-nine trustees, as appointed pursuant to section 38-848(A) of the Arizona Revised Statutes.

4) On an annual basis, the Board of Trustees shall nominate and elect from among its trustees a Chair and a Vice Chair, each to hold office for a term of one year.

5) In the event that an officer of the Board of Trustees becomes ineligible, unwilling or unable to complete his or her term, the following action shall be taken:

   (i) If said officer is the Chair, then the Vice-Chair shall assume the Chair’s position for the balance of the Chair’s term, and a new Vice-Chair shall be elected at the next regularly scheduled meeting.

   (ii) If said officer is the Vice-Chair, then the Board of Trustees shall elect a new Vice-Chair at the next regularly scheduled meeting, to serve for the balance of the Vice-Chair’s term.

B) Board of Trustees Committees

6) The Chair may approve the establishment of standing or ad hoc Committees, subject to Board of Trustees ratification. The Chair is encouraged to consult with the Administrator in this regard.

7) Each Committee shall be comprised of less than a quorum of the Board of Trustees.

8) The Chair shall appoint the chair and members of each Committee subject to ratification by the Board of Trustees at its next meeting.

9) The Administrator, at the direction of the Chair, shall prepare for Board of Trustees approval a Charter for each standing Committee. Each charter shall provide a description of the Committee’s mandate, the composition of the Committee, and the quorum and...
voting powers of its members. Ad hoc Committees do not require Charters, provided their mandates are specified in the Board of Trustees’ minutes.

C) Board of Trustees and Committee Meetings

Board of Trustees Meetings – Time and Location

10) Regular Meetings of the Board of Trustees shall be scheduled monthly, except for the first month of each fiscal year. The Administrator shall recommend to the Board of Trustees an annual schedule of meetings prior to the commencement of the new fiscal year.

11) The Board of Trustees Chair or Administrator may recommend to the Board of Trustees for approval any revisions to the date, time or venue of regular Board of Trustees meetings, together with the rationale for the revision. Such revisions must not violate the notice requirements under the Open Meeting Laws.

Committee Meetings – Time and Location

12) Committees will meet at the discretion of the Committee chair, in consultation with the Administrator. Timely notice of such is to be provided to the public in accordance with the Open Meeting Laws.

Agendas and Meeting Materials

13) A meeting notice and a written agenda shall be prepared for all regular Board of Trustees meetings and Committee meetings, and shall normally be distributed to all trustees or Committee members, as the case may be, at least 5 days in advance of meetings. The agenda shall be prepared by the Administrator, and approved by the Chair or Committee chair, as the case may be.

14) Meeting notices and agendas shall be posted on the front door of the System’s administrative offices and, on the System’s website at least 24 hours prior to each Board of Trustees and Committee meeting. Any change to such meeting notices or agendas must be made no later than 24 hours before a meeting.

15) The notice requirements set out in sections 13) and 14) represent the general practice of the System, but are not binding, and do not change the minimum notice requirements as set out in the Open Meeting Laws.

Quorum and Voting

16) A quorum for meetings of the Board of Trustees shall be four-five (45) trustees.

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

18) If there is a lack of a quorum present for a Board of Trustees meeting or Committee meeting, no formal business can be conducted, although discussions may take place.

19) If the Board of Trustees Chair is absent from a meeting, the Vice Chair shall preside at that meeting. If the Vice Chair is also absent, the longest serving trustee present shall preside over the meeting.
20) The Board of Trustees may not conduct business outside of a properly noticed Board of Trustees or Committee meeting, except in accordance with the provisions of A.R.S. §38-848(FH) which states:

21) “Conference call meetings of the Board that are held for investment purposes only are not subject to chapter 3, article 3.1 of this title, except that the Board of Trustees shall maintain minutes of these conference call meetings and make them available for public inspection within twenty-four hours after the meeting. The Board shall review the minutes of each conference call meeting and shall ratify all legal actions taken during each conference call meeting at the next scheduled meeting of the Board.”

Attendance at Board of Trustees and Committee Meetings

22) Trustees agree to make every reasonable effort to attend all meetings of the Board of Trustees and all meetings of Committees on which they serve. There shall be no provision for voting by proxy at a Board or Committee meeting.

23) At any noticed Committee meeting of the Board of Trustees, no more than three-fourths trustees may participate as members of the Committee and no trustees other than those serving on said Committee may take part in the Committee’s deliberations, as per the Open Meeting Laws.

24) Members of the public are entitled to attend Board of Trustees and Committee meetings and hearings, subject to the Open Meeting Laws and the rules relating to executive sessions.

Rules of Order

25) Meetings of the Board of Trustees and all of its Committees shall be governed by this policy, the Governing Statute, and the Open Meeting Laws. Robert's "Rules of Order, Revised" shall serve as a reference tool for resolving issues and discrepancies that cannot be resolved using the instruments listed herein.

26) The order of business for regular Board of Trustees meetings shall normally be:

a) Call to Order

b) Call to the Public

b)c) Consent Agenda and ratification of prior month’s meeting minutes

c)d) Investment and Operations, Governance Policy & Audit Committee reports

d)e) Other Business

  (i) Investment and Legislative matters not covered in the Committee reports

  (ii) Administrator’s Report

  (iii) Assistant or Deputy Administrator(s) Report(s)

e) Call to the Public
f) Adjournment

27) The Chair has the discretion to change the order of business of a Board of Trustees meeting at any time.

Public Comment

28) The agenda shall allow for a “call to the public” to allow members of the public to address the Board of Trustees or Committee members at each meeting, in accordance with the Open Meeting Laws.

29) To assure the efficient conduct of Board of Trustees and Committee business, the Chair and Committee chairs shall have the discretion to limit all speakers to the same time restriction.

30) Subject to the Chair’s discretion, members of the public may request to make statements at Board of Trustees meetings concerning any agenda item, prior to deliberation of the matter. Such requests should be made in writing to the Chair prior to the commencement of the meeting.

Executive Sessions

31) The Board of Trustees and its Committees may conduct business in executive session, which will be closed to the public, in accordance with the conditions prescribed in the Open Meeting Laws. The Board of Trustees will generally hold executive sessions to discuss any matters permitted under A.R.S. §38-431.03.

Meeting Minutes

32) The Administrator will cause the minutes of all Board of Trustees and Committee meetings to be prepared and published on the System’s website, in accordance with A.R.S. §38-431.01, recording therein:

   a) The date, time and place of each meeting.

   b) In the case of Board of Trustees meetings, the names of trustees recorded as either present or absent.

   c) In the case of Committee meetings, the names of Committee members recorded as either present or absent, and the names of any trustees who are not serving on the Committee but are present as observers.

   d) The time at which a trustee joined the meeting after its commencement or left the meeting prior to its conclusion.

   e) The names of staff, vendor representatives or other persons in attendance who made statements or presented materials to the public body.

   f) A general description of the matters considered.

   g) All official acts of the Board of Trustees/Committee, including the wording of any resolution or motion considered by the Board of Trustees/Committee, and the identity of the trustee who offered the resolution or motion.
h) The disposition of each resolution or motion, including the votes made by members except where the action is unanimous; and when requested, a member’s dissent or approval with his/her reasons.

i) All action items assigned to Committees, trustees / Committee members, staff or vendors by the Board of Trustees/Committee.

33) The Administrator shall cause Board of Trustees minutes to be written and presented for approval at the next regular Board meeting. Once approved, the minutes will be signed by all attending trustees, and shall form part of the permanent record of the Board.

34) The Administrator shall cause minutes of Committee meetings to be written and presented for approval at the next Committee meeting. Once approved, the minutes will be signed by the appropriate Committee chair, and shall form part of the permanent record of the Board of Trustees.

35) Subject to section 32 above, Board of Trustees or Committee meeting minutes or a recording of such meetings shall be open to public inspection three working days after the meeting. (A.R.S. §38-431.01)

POLICY REVIEW

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

POLICY HISTORY

37) This policy was adopted by the Board of Trustees on February 23, 2005, revised on June 24, 2009, revised on March 30, 2011, and on June 27, 2012.
Arizona PSPRS, CORP and EORP

2011 – 2016 Experience Study
March 1, 2017
Agenda

- Background
- Demographic Assumptions
- Economic Assumptions
- Summary Results
- Conclusions
The three retirement plans (PSPRS, CORP and EORP) are defined benefit plans.

- Benefits are defined in the statute.
- Benefits are paid at some future point in time when certain age and service requirements are met.

Actuary calculates the value of these benefits as of the valuation date.

Actuary must make assumptions about future events (investment return, wage inflation, withdrawal, disability, retirement, mortality, etc.)
Background

Primary Risk Areas

Demographic
- Retirement
- Withdrawal
- Mortality
- Disability

Economic
- Price Inflation
- Wage Inflation
- Investment Return

Merit and Longevity
The assumptions must be reasonable individually and in the aggregate.

The assumptions should be reviewed periodically in light of recent plan experience and economic environment.

Understated liabilities/costs can lead to:

- Inability to pay benefits when due, or
- Sharp increases in required contributions in the future.
Overstated liabilities/costs can lead to:
- Benefit levels kept below the level that could be supported by the computed rate, or
- Larger burden on the current generation of participants, employers and taxpayers

A single set of assumptions is not suitable indefinitely

Things change, along with our understanding of things
Background

- Data was tabulated from the last five annual gain/loss analyses.
- Generally move rates about half way to observed rates over the most recent experience period.
- Philosophy: Don’t overreact to results from any single experience period. It is better to make a series of small changes in the right direction, rather than a single large change that could turn out, with hindsight, to be very wrong.
PSPRS Assumption Groups
Assumption Groups

- Current assumption groups are broken out as follows:
  - Police Large
  - Police Small
  - Fire Large
  - Fire Small

- No apparent rationale for how ‘large’ and ‘small’ were developed

- GRS studied various alternatives and determined that the demographics of employers were more closely aligned with the geographic area rather than the size of an employer
## Assumption Groups

<table>
<thead>
<tr>
<th></th>
<th>Actives</th>
<th>Retirees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Average Pay</td>
</tr>
<tr>
<td>Maricopa County</td>
<td>10,162</td>
<td>86,540</td>
</tr>
<tr>
<td>Pima County</td>
<td>3,002</td>
<td>69,130</td>
</tr>
<tr>
<td>Other Counties</td>
<td>5,542</td>
<td>65,187</td>
</tr>
</tbody>
</table>
Assumption Groups

- Recommended assumption groups are broken out as follows:
  - Maricopa County Police
  - Maricopa County Fire
  - Pima County Police
  - Pima County Fire
  - Other Police
  - Other Fire
Example – Withdrawal Assumption
Example – Withdrawal Assumption

<table>
<thead>
<tr>
<th>Year</th>
<th>Maricopa Fire</th>
<th>Pima Fire</th>
<th>Other Fire</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.02</td>
<td>0.12</td>
<td>0.04</td>
</tr>
<tr>
<td>1</td>
<td>0.04</td>
<td>0.1</td>
<td>0.06</td>
</tr>
<tr>
<td>2</td>
<td>0.06</td>
<td>0.14</td>
<td>0.08</td>
</tr>
<tr>
<td>3</td>
<td>0.08</td>
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<td>0.1</td>
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<tr>
<td>4</td>
<td>0.1</td>
<td>0.1</td>
<td>0.12</td>
</tr>
<tr>
<td>5</td>
<td>0.12</td>
<td>0.1</td>
<td>0.14</td>
</tr>
<tr>
<td>6</td>
<td>0.14</td>
<td>0.1</td>
<td>0.12</td>
</tr>
<tr>
<td>7</td>
<td>0.12</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>8</td>
<td>0.1</td>
<td>0.1</td>
<td>0.08</td>
</tr>
<tr>
<td>9</td>
<td>0.12</td>
<td>0.1</td>
<td>0.06</td>
</tr>
<tr>
<td>10</td>
<td>0.14</td>
<td>0.1</td>
<td>0.04</td>
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<td>11</td>
<td>0.12</td>
<td>0.1</td>
<td>0.02</td>
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<tr>
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<td>0.1</td>
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<td>0.1</td>
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<tr>
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<td>0.1</td>
<td>0.12</td>
</tr>
<tr>
<td>20</td>
<td>0.1</td>
<td>0.1</td>
<td>0.14</td>
</tr>
</tbody>
</table>
Demographic Assumptions
Mortality Discussion
Future Mortality Improvement

- Factors resulting in future mortality improvements
  - Persistent trend of last 100 years
  - Medical advances
  - Greater emphasis on disease management
  - Lifestyle changes
  - Higher education

- Factors resulting in leveling off of future mortality improvement
  - Diminishing returns on medical research
  - High cost or access to medical care
  - Possible emergence of new diseases
  - Obesity
  - Ultimate limits to human lifespan
Why is it necessary to recognize future improvements in mortality?

- Ensure adequate funding
- Avoid liability losses
- Need to comply with ASOPs
- Failure to do so would shift costs to future generations
Mortality Experience

- Prior to last experience study, Actuarial Standards of Practice issued new guidance with regard to the mortality assumption
- Actuary must state provisions made for future mortality improvements
- Unlike other assumptions where we gradually adjust rates towards the actual experience, most demographers expect future mortality rates to continue to decrease (longer lives)
- Last experience study, we recommended a change to the most recent mortality table published by the SOA (RP2000) with a projection to 2015 with scale AA
Society of Actuaries (SOA) just released (October 2014) new RP-2014 mortality tables and MP-2014 projection scale.

Two methods to account for future improvements:
- Static projection of improvement to some future year (one dimensional)
- Fully generational table based on both age and year of birth (two dimensional)

SOA (and actuarial community in general) strongly recommend ‘fully generational’ method.

So what does ‘fully generational’ look like?
Mortality Experience

- Old tables looked like this:
Mortality Experience

New Tables look like this:

Historical MI rates developed from SSA mortality data
Mortality Experience

- **Problem**
  - RP-2014 not based on public sector data
  - RP-2014 does not appear to be a good fit for PSPRS data

- **Solution**
  - Adjust RP-2014 table to match current experience for CORP, EORP and PSPRS
  - Apply 75% of MP-2016 improvement scale moving forward (apply 100% for EORP)
### Mortality Experience - Example

<table>
<thead>
<tr>
<th>Year of Retirement</th>
<th>Age</th>
<th>Life Expectancy Male</th>
<th>Life Expectancy Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>65</td>
<td>20.6</td>
<td>21.9</td>
</tr>
<tr>
<td>2026</td>
<td>65</td>
<td>21.2</td>
<td>22.5</td>
</tr>
<tr>
<td>2036</td>
<td>65</td>
<td>21.8</td>
<td>23.1</td>
</tr>
<tr>
<td>2046</td>
<td>65</td>
<td>22.4</td>
<td>23.7</td>
</tr>
</tbody>
</table>
Mortality Improvement - Males

Historical Life Expectancy of a 65-year old male

- Males with Projection
- Males without Projection

Projected
Mortality Improvement - Females

Historical Life Expectancy of a 65-year old female

- Females with Projection
- Females without Projection

Projected
### Summary of Demographic Experience - PSPRS

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Recommendation</th>
<th>Financial Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal Rates</td>
<td>Higher Rates</td>
<td>Decrease</td>
</tr>
<tr>
<td>Disability Rates</td>
<td>Lower Rates</td>
<td>Decrease</td>
</tr>
<tr>
<td>Retirement Rates</td>
<td>Lower Rates</td>
<td>Decrease</td>
</tr>
<tr>
<td>Merit Increases</td>
<td>Lower Rates</td>
<td>Decrease</td>
</tr>
<tr>
<td>Mortality Rates</td>
<td>Lower Rates</td>
<td>Increase</td>
</tr>
</tbody>
</table>
Economic Assumptions
Current Economic Assumptions

Price Inflation  2.75%
Wage Inflation    4.00%
Net Investment Return  7.5% in 2016 valuation
                     7.4% in 2017 valuation
Comments on Economic Assumption Selection

- We are not investment experts, we look at the following items:
  - Historical Trends
  - Forward expectations of Investment Consultants
  - Comparison to other Systems
- Typically a Board decision with input from Investment Experts and Actuary
- Actuary must comply with Actuarial Standards of Practice
Guidance regarding the selection of economic assumptions is governed by Actuarial Standard of Practice (ASOP) No. 27.

ASOP No. 27 requires that the selected economic assumptions be consistent with one another.

That is, the selection of the investment return assumption should be consistent with the selection of the wage inflation and price inflation assumptions.
New Standard eliminates reasonable range (25\textsuperscript{th} to 75\textsuperscript{th} percentile)

Actuary must select reasonable assumptions (best estimate)

- Appropriate for purposes of measurement
- Reflects actuary’s professional judgment
- Takes into account historical and current data
- Reflects actuary’s estimate of future experience
- Has no significant bias except when provision for adverse deviation
Price Inflation

- Long term averages approach 4%, while shorter term averages range between 2% and 3%
- Investment consulting firm’s expectations vary between 2% and 3%
- 2016 annual report of the Social Security Trustees uses 2.60% as the intermediate assumption
- Recommend adopting long term price inflation of 2.5% (does not directly impact liabilities)
### Wage Inflation

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Increase in</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prices (CPI-U)</td>
<td>Wages (NAE)</td>
</tr>
<tr>
<td>1961-1970</td>
<td>2.9%</td>
<td>4.4%</td>
</tr>
<tr>
<td>1971-1980</td>
<td>8.1%</td>
<td>7.3%</td>
</tr>
<tr>
<td>1981-1990</td>
<td>4.5%</td>
<td>5.3%</td>
</tr>
<tr>
<td>1991-2000</td>
<td>2.7%</td>
<td>4.3%</td>
</tr>
<tr>
<td>2001-2010</td>
<td>2.3%</td>
<td>2.6%</td>
</tr>
<tr>
<td>2011-2016</td>
<td>2.3%</td>
<td>2.4%</td>
</tr>
<tr>
<td>5-Year Avg</td>
<td>1.5%</td>
<td>2.8%</td>
</tr>
<tr>
<td>10-Year Avg</td>
<td>1.9%</td>
<td>2.6%</td>
</tr>
<tr>
<td>20-Year Avg</td>
<td>2.2%</td>
<td>3.4%</td>
</tr>
<tr>
<td>30-Year Avg</td>
<td>2.6%</td>
<td>3.5%</td>
</tr>
<tr>
<td>50-Year Avg</td>
<td>4.1%</td>
<td>4.8%</td>
</tr>
</tbody>
</table>
Wage Inflation

- Long term averages approach 5% while shorter term averages approach 3%.
- Results in a reasonable range of 3.0% to 4.0%.
- Average Salaries for PSPRS have increased approximately 1.3% since 2008. Statistic may be distorted by growth in population and other factors.
- Recommend lowering wage inflation assumption from 4.0% to 3.5%.
- Note that wage growth assumption also impacts amortization factors. Lower wage growth assumption results in higher contribution rates.
GRS does not provide investment advice

- Looked at capital market assumptions from eight different investment consulting firms
- Based on history but incorporates forward looking assumptions
- Shorter term horizon than actuaries
- May be a little biased by current conditions
## Investment Return – Asset Allocation

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Approximate Asset Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>16%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>14%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>13%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>11%</td>
</tr>
<tr>
<td>GTAA</td>
<td>10%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>10%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>8%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>7%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>5%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>4%</td>
</tr>
<tr>
<td>Short Term Inv.</td>
<td>2%</td>
</tr>
</tbody>
</table>

100%
## Investment Return

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>6.67%</td>
<td>2.20%</td>
<td>4.47%</td>
<td>2.50%</td>
<td>6.97%</td>
<td>0.10%</td>
<td>6.87%</td>
<td>10.83%</td>
</tr>
<tr>
<td>2</td>
<td>7.09%</td>
<td>2.50%</td>
<td>4.59%</td>
<td>2.50%</td>
<td>7.09%</td>
<td>0.10%</td>
<td>6.99%</td>
<td>12.67%</td>
</tr>
<tr>
<td>3</td>
<td>6.51%</td>
<td>1.56%</td>
<td>4.94%</td>
<td>2.50%</td>
<td>7.44%</td>
<td>0.10%</td>
<td>7.34%</td>
<td>12.53%</td>
</tr>
<tr>
<td>4</td>
<td>7.25%</td>
<td>2.26%</td>
<td>4.99%</td>
<td>2.50%</td>
<td>7.49%</td>
<td>0.10%</td>
<td>7.39%</td>
<td>10.97%</td>
</tr>
<tr>
<td>5</td>
<td>7.43%</td>
<td>2.00%</td>
<td>5.43%</td>
<td>2.50%</td>
<td>7.93%</td>
<td>0.10%</td>
<td>7.83%</td>
<td>11.44%</td>
</tr>
<tr>
<td>6</td>
<td>7.76%</td>
<td>2.29%</td>
<td>5.51%</td>
<td>2.50%</td>
<td>8.01%</td>
<td>0.10%</td>
<td>7.91%</td>
<td>12.93%</td>
</tr>
<tr>
<td>7</td>
<td>8.52%</td>
<td>2.29%</td>
<td>6.27%</td>
<td>2.50%</td>
<td>8.77%</td>
<td>0.10%</td>
<td>8.67%</td>
<td>15.83%</td>
</tr>
<tr>
<td>8</td>
<td>8.74%</td>
<td>2.20%</td>
<td>6.54%</td>
<td>2.50%</td>
<td>9.04%</td>
<td>0.10%</td>
<td>8.94%</td>
<td>12.18%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>7.49%</strong></td>
<td><strong>2.15%</strong></td>
<td><strong>5.34%</strong></td>
<td><strong>2.50%</strong></td>
<td><strong>7.84%</strong></td>
<td><strong>0.10%</strong></td>
<td><strong>7.74%</strong></td>
<td><strong>12.42%</strong></td>
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</table>
## Investment Return

<table>
<thead>
<tr>
<th>Investment Consultant</th>
<th>Distribution of 20-Year Average Geometric Net Nominal Return</th>
<th>Probability of exceeding 7.50%</th>
<th>Probability of exceeding 7.40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>1</td>
<td>5.72%</td>
<td>6.33%</td>
<td>6.94%</td>
</tr>
<tr>
<td>2</td>
<td>5.54%</td>
<td>6.24%</td>
<td>6.96%</td>
</tr>
<tr>
<td>3</td>
<td>5.92%</td>
<td>6.62%</td>
<td>7.32%</td>
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<td>4</td>
<td>6.21%</td>
<td>6.83%</td>
<td>7.45%</td>
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<tr>
<td>5</td>
<td>6.58%</td>
<td>7.22%</td>
<td>7.87%</td>
</tr>
<tr>
<td>6</td>
<td>6.42%</td>
<td>7.14%</td>
<td>7.87%</td>
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<td>7</td>
<td>6.65%</td>
<td>7.53%</td>
<td>8.42%</td>
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<td>8</td>
<td>7.58%</td>
<td>8.26%</td>
<td>8.95%</td>
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<tr>
<td><strong>Average</strong></td>
<td><strong>6.33%</strong></td>
<td><strong>7.02%</strong></td>
<td><strong>7.72%</strong></td>
</tr>
</tbody>
</table>
Consultants not in agreement

Significant range of results

Old ASOP standards produce reasonable range of 5.52% (25th percentile) to 8.55% (75th percentile)

New ASOP standards require actuary to use best estimate:
- 7.02% (geometric median)
- 7.74% (arithmetic mean)
Hot Topics: National Trends -- Evolving Investment Return Assumptions

Distribution of Public Pension Investment Return Assumptions

- >8.5
- 8.5
- >8.0 < 8.5
- 8.0
- >7.5 < 8.0
- >7.0 - 7.5
- 7.0
- >7.0 - 7.5
- <7.0

Fiscal Year: 2001-2014

Public Fund Survey, NASRA Feb-16

GRS
7.4% assumption is still a reasonable assumption, but changes in asset allocation or future expectations may result in pressure to lower rate in the future.

Investment return adopted today will:

- Affect DROP interest credits beginning July 1, 2017
- Affect investment return assumption used in June 30, 2018 (contribution rates for FY 2019-20)

Each system will be different given their asset allocation and risk tolerance.
Recommendation is for continuation of the scheduled reduction in assumed investment return
- July 1, 2017 valuation – 7.4% (already scheduled)
- July 1, 2018 valuation – 7.3%

Consider a lower investment return assumption for EORP due to closed nature of plan
- May need to change asset allocation to more liquid investments
  - Example - 7.3% for first 15 years and 5% thereafter

Continue to monitor in light of performance and asset allocation changes
Summary Results
# PSPRS - Summary Results – Tier 1 and 2

<table>
<thead>
<tr>
<th>Tier 1 &amp; 2</th>
<th>Present Demographic</th>
<th>Revised Demographic Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.50%/4.00%</td>
<td>7.50%/4.00%</td>
</tr>
<tr>
<td><strong>Employer Contribution Rate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pension</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>16.16%</td>
<td>16.01%</td>
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<tr>
<td>Amortization</td>
<td>35.68%</td>
<td>37.60%</td>
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<td>Total</td>
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<tr>
<td><strong>Health</strong></td>
<td></td>
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<tr>
<td>Employer Normal Cost</td>
<td>0.34%</td>
<td>0.30%</td>
</tr>
<tr>
<td>Amortization</td>
<td>-0.09%</td>
<td>-0.14%</td>
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<td>Total</td>
<td>0.25%</td>
<td>0.16%</td>
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<tr>
<td><strong>Funded Status</strong></td>
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<tr>
<td><strong>Pension</strong></td>
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<td></td>
</tr>
<tr>
<td>Accrued Liabilities</td>
<td>$14,248,709,595</td>
<td>$14,649,880,632</td>
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<tr>
<td>Funding Value of Assets</td>
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<td>6,553,902,958</td>
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<td>Funded Ratio</td>
<td>46.0%</td>
<td>44.7%</td>
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<td>Accrued Liabilities</td>
<td>$304,029,058</td>
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<td>Funded Ratio</td>
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## PSPRS - Summary Results – Tier 3

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<th>Tier 3</th>
<th>Present Demographic 7.50%/4.00%</th>
<th>Revised Demographic Assumptions 7.50%/4.00%</th>
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<th>7.40%/3.50%</th>
<th>7.30%/3.50%</th>
<th>5.00%/3.50%</th>
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</thead>
<tbody>
<tr>
<td><strong>Employer Contribution Rate</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pension</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>7.14%</td>
<td>7.13%</td>
<td>7.13%</td>
<td>7.20%</td>
<td>7.98%</td>
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<td>Employee Normal Cost</td>
<td>7.14%</td>
<td>7.13%</td>
<td>7.13%</td>
<td>7.20%</td>
<td>7.98%</td>
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<td>Total</td>
<td>14.28%</td>
<td>14.26%</td>
<td>14.26%</td>
<td>14.40%</td>
<td>15.96%</td>
<td>26.86%</td>
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<td><strong>Health</strong></td>
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<td></td>
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<tr>
<td>Employer Normal Cost</td>
<td>0.17%</td>
<td>0.15%</td>
<td>0.15%</td>
<td>0.16%</td>
<td>0.17%</td>
<td>0.26%</td>
</tr>
<tr>
<td>Employee Normal Cost</td>
<td>0.17%</td>
<td>0.15%</td>
<td>0.15%</td>
<td>0.16%</td>
<td>0.17%</td>
<td>0.26%</td>
</tr>
<tr>
<td>Total</td>
<td>0.34%</td>
<td>0.30%</td>
<td>0.30%</td>
<td>0.32%</td>
<td>0.34%</td>
<td>0.52%</td>
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</table>
## CORP - Summary Results

<table>
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<th>Present Demographic</th>
<th>Revised Demographic Assumptions</th>
</tr>
</thead>
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<tr>
<td></td>
<td>7.50%/4.00%</td>
<td>7.50%/3.50%</td>
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<tr>
<td><strong>Employer Contribution Rate</strong></td>
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<td></td>
</tr>
<tr>
<td><strong>Pension</strong></td>
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<td></td>
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<tr>
<td>Employer Normal Cost</td>
<td>7.11%</td>
<td>6.68%</td>
</tr>
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<td>Amortization</td>
<td>13.65%</td>
<td>14.38%</td>
</tr>
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<td><strong>Total</strong></td>
<td>20.76%</td>
<td>21.06%</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Employer Normal Cost</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>0.32%</td>
<td>0.24%</td>
</tr>
<tr>
<td>Amortization</td>
<td>-0.10%</td>
<td>-0.24%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>0.22%</td>
<td>0.00%</td>
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<td><strong>Funded Status</strong></td>
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</tr>
<tr>
<td><strong>Pension</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accrued Liabilities</td>
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<td>Funding Value of Assets</td>
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<td>Funded Ratio</td>
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<td><strong>Health</strong></td>
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</tr>
<tr>
<td>Accrued Liabilities</td>
<td>$107,001,025</td>
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<td>Funding Value of Assets</td>
<td>116,150,082</td>
<td>116,150,082</td>
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<td>Funded Ratio</td>
<td>108.6%</td>
<td>122.7%</td>
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</table>
# EORP - Summary Results

<table>
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<tr>
<th>Tier 1 &amp; 2</th>
<th>Present Demographic</th>
<th>Revised Demographic Assumptions</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>7.50%/4.00%</td>
<td>7.50%/3.50% 7.40%/3.50% 7.30%/3.50%</td>
</tr>
<tr>
<td>Employer Contribution Rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>18.99%</td>
<td>19.02%</td>
</tr>
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<td>Amortization</td>
<td>87.56%</td>
<td>93.90%</td>
</tr>
<tr>
<td>Total</td>
<td>106.55%</td>
<td>112.92%</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>0.58%</td>
<td>0.52%</td>
</tr>
<tr>
<td>Amortization</td>
<td>-1.82%</td>
<td>-1.82%</td>
</tr>
<tr>
<td>Total</td>
<td>-1.24%</td>
<td>-1.30%</td>
</tr>
<tr>
<td>Funded Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accrued Liabilities</td>
<td>$837,478,365</td>
<td>$873,475,283</td>
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<td>Funding Value of Assets</td>
<td>314,524,640</td>
<td>314,524,640</td>
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<td>Funded Ratio</td>
<td>37.6%</td>
<td>36.0%</td>
</tr>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Accrued Liabilities</td>
<td>$12,853,655</td>
<td>$12,850,610</td>
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<td>Funding Value of Assets</td>
<td>23,508,583</td>
<td>23,508,583</td>
</tr>
<tr>
<td>Funded Ratio</td>
<td>182.9%</td>
<td>182.9%</td>
</tr>
</tbody>
</table>
Conclusions
Conclusions

- GRS recommends adopting the demographic assumptions with the June 30, 2017 valuations.

- GRS recommends adopting new economic assumptions with the following schedule:
  - June 30, 2017 valuations
    - Investment return to 7.4% (already scheduled)
  - June 30, 2018 valuations
    - Investment return lowered to 7.3%
    - Consider lower investment return assumption for EORP

- Confirm whether change to PSPRS Tier 3 rates should be effective for FY2017-18 or FY2018-19.
Appendix – Funding Policy
Funding Methodology Components

- **Amortization Method**
- Actuarial Cost Method
- Asset Valuation Method
- Funding Target
- Gains and Losses

- Risk Sharing
- Implementation
- Overfunding
- Benefit Changes
- Assumption Changes
Funding Policy: Amortization Method

- **Level $ vs. Level % of pay**
  - Level $ front loads funding
  - Level % can produce “negative amortization”

- **Closed vs. Open period**
  - Open period never actually pays off UAL
  - Open period will result in lower discount rate for GASB calculations

- “Clopen” – closed period (decreasing) for awhile and then open (constant), refinance each year
Alternate Amortization Methods to Finance
$25,000,000 over 30 years
Amortization Example – UAL comparison

23 Year vs 30 Year Amortization of UAL

UAL (in $millions)

Years

UAL (using 23 amortization)
UAL (using 30 amortization)
## Comparison of Methods

<table>
<thead>
<tr>
<th>Approach</th>
<th>Employer Contribution</th>
<th>Funded Status</th>
<th>Employer Consistency</th>
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</thead>
<tbody>
<tr>
<td>30 year amortization</td>
<td>Provides ‘longer term’ contribution relief</td>
<td>Unfunded liability is not reduced for next 13 years</td>
<td>Some employers may see contribution decrease</td>
</tr>
<tr>
<td>30 year amortization on new liability</td>
<td>Provides modest contribution relief</td>
<td>New unfunded liability is not reduced for first 13 years</td>
<td>Consistent treatment among employers</td>
</tr>
<tr>
<td>Phase-in contribution increase over 3 years</td>
<td>Provides ‘shorter term’ contribution relief</td>
<td>UAAL is paid down on original schedule</td>
<td>Consistent treatment among employers</td>
</tr>
</tbody>
</table>
Circular 230 Notice: Pursuant to regulations issued by the IRS, to the extent this presentation concerns tax matters, it is not intended or written to be used, and cannot be used, for the purpose of (i) avoiding tax-related penalties under the Internal Revenue Code or (ii) marketing or recommending to another party any tax-related matter addressed within. Each taxpayer should seek advice based on the individual’s circumstances from an independent tax advisor.

This presentation shall not be construed to provide tax advice, legal advice or investment advice.
ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM
ANALYSIS OF ACTUARIAL ASSUMPTIONS
JULY 1, 2011 THROUGH JUNE 30, 2016
February 24, 2017

Board of Trustees
Arizona Public Safety Personnel Retirement System
Phoenix, Arizona

Ladies and Gentlemen:

The results of the 5-year investigation of experience of the Arizona Public Safety Personnel Retirement System (PSPRS) are presented in this report. The investigation was made for the purpose of updating the actuarial assumptions used in valuing the actuarial liabilities, assets and actuarially determined employer contribution rates of PSPRS.

The investigation covered the 5-year period from July 1, 2011 to June 30, 2016 and was carried out using generally accepted actuarial principles and techniques.

The investigation was based upon the statistical data furnished for annual actuarial valuations, and upon supplemental information furnished by PSPRS staff, concerning members who died, withdrew, became disabled or retired during the last 5 years and on published economic historical data.

We believe that the new actuarial assumptions that are the result of this investigation represent a reasonable estimate of future experience of PSPRS based upon the data reviewed in the study and general trends among Public Employee Retirement Systems.

Mark Buis, James D. Anderson and Francois Pieterse are Members of the American Academy of Actuaries (MAAA) and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

The consultants below are experienced in performing valuations for large public retirement systems. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

Mark Buis       James D. Anderson   Francois Pieterse
FSA, EA, FCA, MAAA     FSA, EA, MAAA    ASA, FCA, MAAA

MB/JDA/FP:mrb
<table>
<thead>
<tr>
<th>Item</th>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Summary of Findings</td>
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<tr>
<td>Non-Economic Assumptions</td>
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<tr>
<td>Economic Assumptions</td>
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<td>11</td>
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<tr>
<td>Historical Patterns of Investment Return</td>
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<td>18</td>
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<tr>
<td>Effect on Contribution Rates</td>
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<td>19</td>
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<tr>
<td>Explanatory Standard Deviation Example</td>
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<td>Detailed Results</td>
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<tr>
<td>Withdrawal Experience</td>
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<tr>
<td>Disability Experience</td>
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<tr>
<td>Pay Increases (Merit &amp; Longevity)</td>
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<tr>
<td>Normal Retirement</td>
<td>D</td>
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<tr>
<td>Mortality Experience</td>
<td>E</td>
<td>1</td>
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<tr>
<td>Employer Groups and Complete Lists of Proposed</td>
<td>F</td>
<td>1</td>
</tr>
<tr>
<td>Decrement Assumptions</td>
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</tr>
</tbody>
</table>
EXECUTIVE SUMMARY

The Fund Manager has established a policy of reviewing the actuarial assumptions every five years. The last review was prepared for the period from July 1, 2006 to June 30, 2011. In this report, we review the current actuarial assumptions and compare them to the actual experience of the Retirement Fund for the years 2011-2016.

The table below lists each of the primary assumptions and methods that we analyzed, including our recommendations for each item, and the impact of any recommended changes.

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Recommendation</th>
<th>Financial Impact</th>
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<tbody>
<tr>
<td>Withdrawal rates</td>
<td>Higher Rates</td>
<td>Decrease</td>
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<tr>
<td>Disability rates</td>
<td>Lower Rates</td>
<td>Decrease</td>
</tr>
<tr>
<td>Pay increases due to seniority</td>
<td>Lower Rates</td>
<td>Decrease</td>
</tr>
<tr>
<td>Retirement rates</td>
<td>Lower Rates</td>
<td>Decrease</td>
</tr>
<tr>
<td>Pre and post-retirement mortality rates</td>
<td>Lower Rates</td>
<td>Increase</td>
</tr>
<tr>
<td>Interest rate</td>
<td>Decrease</td>
<td>Increase</td>
</tr>
<tr>
<td>Wage inflation</td>
<td>Decrease</td>
<td>Decrease</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Various</strong></td>
<td><strong>Increase</strong></td>
</tr>
</tbody>
</table>

The overall impact on the contribution rate is summarized on page 19 of this study.
INTRODUCTION

SELECTION OF ASSUMPTIONS USED IN ACTUARIAL VALUATIONS

Actuarial assumptions may be classified as demographic and economic.

Demographic Assumptions

- Rates of withdrawal among active members.
- Rates of disability among active members.
- Patterns of merit & longevity pay increases to active members.
- Rates of retirement among active members.
- Rates of mortality among active members, retirees and beneficiaries.

Economic Assumptions

- Long-term rates of investment return to be generated by the assets of the Fund.
- Long-term rates of growth of total payroll also called wage inflation.
- Price Inflation.

Assumptions should be carefully chosen and continually monitored. Use of outdated assumptions can lead to:

- Understated costs resulting in either an inability to pay benefits when due, or sharp increases in required contributions at some point in the future; and
- Overstated costs resulting in either benefit levels that are kept below the level that could be supported by the computed rate, or an unnecessarily large burden on the current generation of members, employers and taxpayers.

A single set of assumptions will not be suitable indefinitely. Things change, and our understanding of things (whether or not they are changing) also changes.

A common practice among public employee retirement systems is that the actuary recommends a set of demographic assumptions and suggests a range of reasonable alternate economic assumptions. Following discussion involving the actuary, the plan governing body, and other professionals, the plan governing body makes a final choice of economic assumptions from the various alternatives.
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS

In general, the present assumptions varied by category, and proposed changes are recommended in all assumption categories. In most cases, when adjustments are indicated, the proposed assumptions give partial recognition to present assumptions. Complete recognition is rarely given to actual experience over a limited period. In general, the rates were moved about half way to the observed experience, except for the case of mortality which is discussed in further detail later in this report.

Note that we have considered the use of a ‘liability weighted rate’ for certain decrements. This represents the crude rate of decrement on a liability weighted basis as opposed to strictly a number count basis. Results on a liability weighted basis were not significantly different from those on a number count basis.

Withdrawal Rates: A “withdrawal” or a quit is a separation from service without entitlement to an immediate monthly benefit. In general, the number of withdrawals from employment was more than expected over the experience period. The recommended rates of withdrawal varied by group. This change had downward pressure on the average contribution rate. Detailed information on withdrawals begins on page A-1.

Disability Rates: Overall, the number of disabilities were lower than expected over the experience period. The recommended rates of disability varied by group. This change had downward pressure on the average contribution rate. Detailed information on disabilities begins on page B-1.

Pay Increase Rates (Merit and Seniority portion): The total amount of expected pay increases is typically divided into two categories: base wage inflation portion and merit and seniority portion. In general, the rates of pay increases due to Merit and Seniority were slightly lower than expected over the experience period and we recommend lowering pay increase rates. This change had downward pressure on the contribution rates. Recommendations regarding general wage inflation are discussed on page 14. Detailed information on merit and seniority begins on page C-1.

Retirement Experience: Overall, there were fewer retirements than expected over the experience period and we recommend lowering the rates of retirement. This change had downward pressure on
the contribution rates. Detailed information on retirements begins on page D-1.

*Mortality Among Retirees:* Mortality rates among retired public employees have been declining for years. Additionally, and perhaps consequently, the Actuarial Standards of Practice with regard to the mortality assumption has recently been revised. ASOP No. 35 Disclosure Section 4.1.1 now states:

“...The disclosure of the mortality assumption should contain sufficient detail to permit another qualified actuary to understand the provision made for future mortality improvement. If the actuary assumes zero mortality improvement after the measurement date, the actuary should state that no provision was made for future mortality improvement.”

While the current mortality table did provide some margin for future improvement, the current tables used a static (1 dimensional) projection for future improvement in life expectancy. The Society of Actuaries recently released a new set of mortality tables (RP-2014) and recommended the use of a ‘fully generational’ (2 dimensional) projection scale (MP-2016). Although the actual number of deaths was slightly less than the expected number of deaths, the sample size is very small and not sufficient to determine if there is margin for future improvements in mortality. Therefore, we are recommending a change in the mortality table to the RP-2014 Healthy Annuitant mortality table for males and females adjusted backward to 2006 with MP-2014. In addition, we are recommending the use of 75% of the MP-2016 fully generational projection scale to produce appropriate margin for future experience. This change produced upward pressure on contribution rates.

The graphs on the following two pages illustrate how the life expectancy for a 65-year old has changed over time. The key difference is that Actuarial Standards of Practice now require the use of margin for future improvements in mortality. In the graphs, this is the difference between the dashed line and the solid line in the shaded region of the graphs.
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS (CONTINUED)

Historical Life Expectancy of a 65-Year-Old Male

- Males with Projection
- Males without Projection

Margin for Future Improvement

Projected
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS
(CONTINUED)

Historical Life Expectancy of a 65-Year-Old Female

- Projected margin for future improvement
- Females with projection vs. females without projection
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS
(CONTINUED)

Data for active and disabled retirees was insufficient to use as a basis for judgment. Therefore, we used active and disabled mortality tables from the RP-2014 mortality table (applying the same adjustments for healthy lives) and project future rates with the MP-2016 fully generational projection scale.

Assumptions for members hired after January 1, 2012: Members hired after January 1, 2012 have different retirement eligibilities and benefits and will likely have different experience with regard to withdrawal, disability, retirement and other assumptions. Currently, there is insufficient participant data, to perform an experience review for members hired after January 1, 2012. Proposed rates for members hired after January 1, 2012 are shown in Section F.

Assumption Groups: In the past, demographic assumptions have been developed and broken out based on the following four groups:

- Police Large
- Police Small
- Fire Large
- Fire Small

As part of this study, we analyzed these groupings to determine their appropriateness. The prior actuary established these groupings during an experience study performed some 10 years ago with no apparent definition of the terms ‘Large’ or ‘Small’. In fact, there were some Employers in the ‘Large’ category which had fewer members than an Employer in the ‘Small’ category and vice-versa. We analyzed various alternatives, and determined that the demographics of employers were more closely aligned with the geographic area rather than the size of an employer. The following chart shows the average salary and average benefit by Geographic Region.

<table>
<thead>
<tr>
<th></th>
<th>Actives</th>
<th>Retirees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Average Pay</td>
</tr>
<tr>
<td>Maricopa County</td>
<td>10,162</td>
<td>86,540</td>
</tr>
<tr>
<td>Pima County</td>
<td>3,002</td>
<td>69,130</td>
</tr>
<tr>
<td>Other Counties</td>
<td>5,542</td>
<td>65,187</td>
</tr>
</tbody>
</table>
Therefore, we are recommending that the groupings be changed to the following:

- Maricopa County Police
- Maricopa County Fire
- Pima County Police
- Pima County Fire
- Other County Police
- Other County Fire

While no grouping will be a perfect fit for every employer, we believe these groupings are more closely aligned with the economics of their employers and provide a better match for future experience. We will continue to monitor the groupings determine the emergence of any future patterns. However, it is important to note that developing too many assumption groups can lead to a reduction in credibility, while serving to complicate and add cost to the valuation process.

The following charts show the withdrawal experience for Police and Fire broken out by Geographic Region:
**Miscellaneous Assumptions:** Our valuations also make assumptions about the percentage of members that are married; the percentage of members that will receive a Health Care subsidy when they retire; and the percentage of members who elect to DROP instead of retire.

The current and proposed assumptions are shown below:

<table>
<thead>
<tr>
<th>Percent Married</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males Females</td>
<td>85%</td>
<td>85%</td>
</tr>
<tr>
<td>Males Females</td>
<td>85%</td>
<td>60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of Members with Health Subsidy</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>75%</td>
<td>70%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Percent of Members who elect to DROP</th>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>50%</td>
<td>60%</td>
<td></td>
</tr>
<tr>
<td>Decrement</td>
<td>Actual</td>
<td>Assumed</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Present</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>3,037</td>
<td>2,288.7</td>
</tr>
<tr>
<td>Disability</td>
<td>282</td>
<td>324.9</td>
</tr>
<tr>
<td>Retirement</td>
<td>2,305</td>
<td>2,760.0</td>
</tr>
<tr>
<td>Post-Retirement Death</td>
<td>779</td>
<td>788.2</td>
</tr>
<tr>
<td>Pre-Retirement Death</td>
<td>28</td>
<td>23.9</td>
</tr>
</tbody>
</table>

This page compares actual total decrement experience during the 5-year experience period with experience that was assumed by the present assumption package and with experience that would have been assumed if the proposed assumptions had been in force throughout the experience period.
SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS

Economic assumptions include long-term rates of investment return (net of administrative and investment expenses), wage inflation (the across-the-board portion of salary increases), and pay increases due to merit and seniority. Unlike demographic activities, economic activities do not lend themselves to analysis solely on the basis of internal historical patterns because both salary increases and investment return are affected more by external forces; namely inflation (both wage and price), general productivity changes and the local economic environment which defy accurate long-term prediction. Estimates of economic activities are generally selected on the basis of the expectations in an inflation-free environment and then both long-term rates of investment return and wage inflation are increased by some provision for long-term inflation.

If inflation and/or productivity increases are lower than expected, it will probably result in both actual rates of salary increases and investment return below the assumed rates. Salaries increasing at rates less than expected produce lower liabilities. However, actual investment return below the assumed rate of investment return (whether due to manager performance, change in the mix of assets, or general market conditions) results in lower than expected asset amounts.

Sources considered in the analysis of the economic assumptions included:

- Actual system experience over the last 5 years (i.e., merit and seniority pay increases)
- Future expectations of investment consultants
- 2016 Social Security Trustees Report
- Historical observations of inflation statistics (both price and wage) and investment returns

Current economic assumptions for the System are as follows:

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment Return</td>
<td>7.50%</td>
</tr>
<tr>
<td>Wage Inflation</td>
<td>4.00%</td>
</tr>
<tr>
<td>Price Inflation</td>
<td>3.00%</td>
</tr>
<tr>
<td>Spread Between Investment Return and Wage Inflation</td>
<td>3.50%</td>
</tr>
<tr>
<td>Spread Between Investment Return and Price Inflation</td>
<td>4.50%</td>
</tr>
</tbody>
</table>

The remainder of this section addresses the economic assumptions other than pay increases due to merit and seniority. Pay increases due to merit and seniority are addressed on page 3.
Guidance regarding the selection of economic assumptions for measuring pension obligations is provided by Actuarial Standards of Practice (ASOP) No. 27. The standard requires that the selected economic assumptions be consistent with each other. That is, the selection of the investment return assumption should be consistent with the selection of the wage inflation and price inflation assumptions.

The most recent version of ASOP No. 27 (applicable to valuation dates on or after September 30, 2014) defines a reasonable economic assumption as an assumption that has the following characteristics:

(a) It is appropriate for the purpose of the measurement;
(b) It reflects the actuary’s professional judgment;
(c) It takes into account historical and current economic data that is relevant as of the valuation date;
(d) It reflects the actuary’s estimate of future experience, the actuary’s observation of the estimates inherent in market data, or a combination thereof; and
(e) It has no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included and disclosed under Section 3.5.1, or when alternative assumptions are used for the assessment of risk.
Summary of Findings – Economic Assumptions (Continued)

Price Inflation. Price inflation underlies both the wage inflation and investment return assumptions. Since price inflation underlies the wage inflation assumption and the investment return assumption, we recommend that a specific price inflation assumption be adopted in conjunction with this Experience Study. The chart below shows historical averages of both price and wage inflation. Over the past 50 years, price inflation has averaged 4.1%. This result is heavily affected by the high inflationary period of the 1970’s and early 1980’s. During the past decade, price inflation averaged 1.9%. The 2016 Social Security Trustees report uses 2.6% as the long-range intermediate price inflation assumption. In addition, most investment consulting firms are predicting a price inflation assumption between 2.0% and 2.5%, though this is typically based on a shorter time horizon. Based upon the reviewed data, we suggest that the Board adopt a price inflation assumption of 2.5%. (Remember that the selected wage inflation and investment return assumptions should be consistent with the final selected price inflation assumption.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Increase in Prices (CPI-U)</th>
<th>Annual Increase in Wages (NAE)</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961-1970</td>
<td>2.9%</td>
<td>4.4%</td>
<td>1.5%</td>
</tr>
<tr>
<td>1971-1980</td>
<td>8.1%</td>
<td>7.3%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>1981-1990</td>
<td>4.5%</td>
<td>5.3%</td>
<td>0.8%</td>
</tr>
<tr>
<td>1991-2000</td>
<td>2.7%</td>
<td>4.3%</td>
<td>1.7%</td>
</tr>
<tr>
<td>2001-2010</td>
<td>2.3%</td>
<td>2.6%</td>
<td>0.3%</td>
</tr>
<tr>
<td>2011-2016</td>
<td>2.3%</td>
<td>2.4%</td>
<td>0.1%</td>
</tr>
<tr>
<td>5-Year Avg</td>
<td>1.5%</td>
<td>2.8%</td>
<td>1.3%</td>
</tr>
<tr>
<td>10-Year Avg</td>
<td>1.9%</td>
<td>2.6%</td>
<td>0.7%</td>
</tr>
<tr>
<td>20-Year Avg</td>
<td>2.2%</td>
<td>3.4%</td>
<td>1.2%</td>
</tr>
<tr>
<td>30-Year Avg</td>
<td>2.6%</td>
<td>3.5%</td>
<td>0.9%</td>
</tr>
<tr>
<td>50-Year Avg</td>
<td>4.1%</td>
<td>4.8%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>
**SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS (CONTINUED)**

*Wage Inflation.* Wage inflation consists of two components, 1) a portion due to pure price inflation (i.e., increases due to changes in the CPI), and 2) increases in average salary levels in excess of pure price inflation (i.e., increases due to changes in productivity levels, supply and demand in the labor market and other macroeconomic factors). The long-term rate of increase in National Average Earnings over the last 50 years is somewhat higher than the current PSPRS assumption, although shorter term averages are below it. It is expected that, in the long run, salary increases in all parts of the country will be close to the national averages. However, few economists are forecasting a repeat of the high inflation rates experienced in the 1970s. In addition, average salaries in PSPRS have risen at approximately 1.3% a year since 2008 - a slower pace than the assumed 4.00% a year, although, the active member group has decreased in size, which distorts this statistic. **Given our recommendation for a 2.50% price inflation assumption, we believe a reasonable range for this assumption is from 3.0% to 4.0% a year. We recommend a change in the wage inflation assumption to 3.5%**.

We have illustrated the approximate impact on contribution requirements if the wage inflation assumption were changed from 4.0% to 3.50% on page 19.
**SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS (CONTINUED)**

**Investment Return.** The investment return assumption is the actuarial assumption that has the largest impact on actuarial valuation results. As more of the actuarial accrued liabilities are related to non-active members, the nominal (as opposed to real) investment return assumption becomes a more prominent factor.

Presented below is the approximate current asset allocation:

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Approximate Asset Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>16%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>14%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>13%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>11%</td>
</tr>
<tr>
<td>GTAA</td>
<td>10%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>10%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>8%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>7%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>5%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>4%</td>
</tr>
<tr>
<td>Short Term Inv.</td>
<td>2%</td>
</tr>
</tbody>
</table>

Based upon the approximate asset allocation, future expectations of various investment consultants were analyzed. The next few exhibits show the results of this analysis. Final expected nominal investment return results are based upon a 2.5% price inflation assumption. We used the actuarial assumption for price inflation rather than the consultant assumption, in order to be consistent with the calculation of liabilities. Investment results presented are net of expenses and are based upon an administrative expense assumption of 10 basis points.
### Investment Return Expectations of Various Investment Consultants

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.67%</td>
<td>2.20%</td>
<td>4.47%</td>
<td>2.50%</td>
<td>6.97%</td>
<td>0.10%</td>
<td>6.87%</td>
<td>10.83%</td>
</tr>
<tr>
<td>2</td>
<td>7.09%</td>
<td>2.50%</td>
<td>4.59%</td>
<td>2.50%</td>
<td>7.09%</td>
<td>0.10%</td>
<td>6.99%</td>
<td>12.67%</td>
</tr>
<tr>
<td>3</td>
<td>6.51%</td>
<td>1.56%</td>
<td>4.94%</td>
<td>2.50%</td>
<td>7.44%</td>
<td>0.10%</td>
<td>7.34%</td>
<td>12.53%</td>
</tr>
<tr>
<td>4</td>
<td>7.25%</td>
<td>2.26%</td>
<td>4.99%</td>
<td>2.50%</td>
<td>7.49%</td>
<td>0.10%</td>
<td>7.39%</td>
<td>10.97%</td>
</tr>
<tr>
<td>5</td>
<td>7.43%</td>
<td>2.00%</td>
<td>5.43%</td>
<td>2.50%</td>
<td>7.93%</td>
<td>0.10%</td>
<td>7.83%</td>
<td>11.44%</td>
</tr>
<tr>
<td>6</td>
<td>7.76%</td>
<td>2.25%</td>
<td>5.51%</td>
<td>2.50%</td>
<td>8.01%</td>
<td>0.10%</td>
<td>7.91%</td>
<td>12.93%</td>
</tr>
<tr>
<td>7</td>
<td>8.52%</td>
<td>2.25%</td>
<td>6.27%</td>
<td>2.50%</td>
<td>8.77%</td>
<td>0.10%</td>
<td>8.67%</td>
<td>15.83%</td>
</tr>
<tr>
<td>8</td>
<td>8.74%</td>
<td>2.20%</td>
<td>6.54%</td>
<td>2.50%</td>
<td>9.04%</td>
<td>0.10%</td>
<td>8.94%</td>
<td>12.18%</td>
</tr>
<tr>
<td>Average</td>
<td>7.49%</td>
<td>2.15%</td>
<td>5.34%</td>
<td>2.50%</td>
<td>7.84%</td>
<td>0.10%</td>
<td>7.74%</td>
<td>12.42%</td>
</tr>
</tbody>
</table>

### Distribution of 20-Year Average Geometric Net Nominal Return

<table>
<thead>
<tr>
<th>Investment Consultant</th>
<th>Distribution of 20-Year Average Geometric Net Nominal Return 40th</th>
<th>50th</th>
<th>60th</th>
<th>Probability of exceeding 7.50%</th>
<th>Probability of exceeding 7.40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(5)</td>
</tr>
<tr>
<td>1</td>
<td>5.72%</td>
<td>6.33%</td>
<td>6.94%</td>
<td>31.36%</td>
<td>32.83%</td>
</tr>
<tr>
<td>2</td>
<td>5.54%</td>
<td>6.24%</td>
<td>6.96%</td>
<td>32.81%</td>
<td>34.09%</td>
</tr>
<tr>
<td>3</td>
<td>5.92%</td>
<td>6.62%</td>
<td>7.32%</td>
<td>37.57%</td>
<td>38.94%</td>
</tr>
<tr>
<td>4</td>
<td>6.21%</td>
<td>6.83%</td>
<td>7.45%</td>
<td>39.18%</td>
<td>40.76%</td>
</tr>
<tr>
<td>5</td>
<td>6.58%</td>
<td>7.22%</td>
<td>7.87%</td>
<td>45.68%</td>
<td>47.24%</td>
</tr>
<tr>
<td>6</td>
<td>6.42%</td>
<td>7.14%</td>
<td>7.87%</td>
<td>45.02%</td>
<td>46.40%</td>
</tr>
<tr>
<td>7</td>
<td>6.65%</td>
<td>7.53%</td>
<td>8.42%</td>
<td>50.38%</td>
<td>51.52%</td>
</tr>
<tr>
<td>8</td>
<td>7.58%</td>
<td>8.26%</td>
<td>8.95%</td>
<td>61.18%</td>
<td>62.60%</td>
</tr>
<tr>
<td>Average</td>
<td>6.33%</td>
<td>7.02%</td>
<td>7.72%</td>
<td>42.90%</td>
<td>44.30%</td>
</tr>
</tbody>
</table>
SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS
(CONCLUDED)

The current version of ASOP No. 27 (applicable to valuation dates after September 30, 2014) defines suggests that either the expected geometric return (i.e., 50th percentile) or the expected arithmetic return are suitable for use as a reasonable investment return assumption. Based on the average of each of the investment consultants’ expectations, this would result in a range of 7.02% to 7.74%. The Board has already adopted an assumption of 7.4% to be used in the June 30, 2017 actuarial valuation. However, since the probability of achieving of 7.4% return is still below 50%, we believe a modest change of 10 basis points to 7.3% would be reasonable and should be considered for use in the June 30, 2018 actuarial valuation. This assumption will be reviewed annually.

We have illustrated the approximate impact on contribution requirements if the investment return assumption were changed from 7.5% to 7.4% and 7.3% on page 19.

The results on page 19 are presented as an aid in understanding the average combined effects of the changes in assumptions that have been proposed in this experience study. The results are approximate and indicate only the general direction and approximate average magnitude of the effects of the assumption changes. Contribution rates for fiscal year beginning July 1, 2017 have already been scheduled based upon the June 30, 2016 valuation and are not affected by the experience study. The experience study would begin to effect rates for the fiscal year beginning July 1, 2018.
### Historical Patterns of Investment Return, Pay Increases & Inflation

#### Calendar Year Period

<table>
<thead>
<tr>
<th>Calendar Year Period</th>
<th>Gross Market Returns</th>
<th>Price Inflation</th>
<th>National Average Earnings</th>
<th>Sample Balanced Fund</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961-1970</td>
<td>4.3%</td>
<td>2.5%</td>
<td>1.3%</td>
<td>8.2%</td>
</tr>
<tr>
<td>1971-1980</td>
<td>6.8%</td>
<td>4.2%</td>
<td>3.9%</td>
<td>8.4%</td>
</tr>
<tr>
<td>1981-1990</td>
<td>8.5%</td>
<td>14.0%</td>
<td>13.7%</td>
<td>13.9%</td>
</tr>
<tr>
<td>1991-2000</td>
<td>4.7%</td>
<td>9.0%</td>
<td>10.3%</td>
<td>17.5%</td>
</tr>
<tr>
<td>2001-2010</td>
<td>2.2%</td>
<td>7.6%</td>
<td>6.6%</td>
<td>1.4%</td>
</tr>
<tr>
<td>2011</td>
<td>0.0%</td>
<td>18.0%</td>
<td>28.2%</td>
<td>2.1%</td>
</tr>
<tr>
<td>2012</td>
<td>0.1%</td>
<td>10.7%</td>
<td>3.3%</td>
<td>16.0%</td>
</tr>
<tr>
<td>2013</td>
<td>0.0%</td>
<td>(7.1)%</td>
<td>(11.4)%</td>
<td>32.4%</td>
</tr>
<tr>
<td>2014</td>
<td>0.0%</td>
<td>17.3%</td>
<td>23.9%</td>
<td>13.7%</td>
</tr>
<tr>
<td>2015</td>
<td>0.5%</td>
<td>(4.8)%</td>
<td>(1.3)%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

#### Last 5 Years

<table>
<thead>
<tr>
<th>Calendar Year Period</th>
<th>Gross Market Returns</th>
<th>Price Inflation</th>
<th>National Average Earnings</th>
<th>Sample Balanced Fund</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.1%</td>
<td>6.3%</td>
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#### Last 10 Years

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<th>Gross Market Returns</th>
<th>Price Inflation</th>
<th>National Average Earnings</th>
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#### Last 55 Years

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<th>Price Inflation</th>
<th>National Average Earnings</th>
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<td>10.0%</td>
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<td>3.8%</td>
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#### Sample Balanced Fund

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<th>Sample Balanced Fund</th>
<th>Proportion</th>
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<td>Equities</td>
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<tr>
<td>Bonds - Government</td>
<td>17%</td>
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<tr>
<td>- Corporate</td>
<td>17%</td>
</tr>
<tr>
<td>Cash Equivalents</td>
<td>2%</td>
</tr>
<tr>
<td>Fund Expenses(e)</td>
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#### Historical Spread

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<td>55 years</td>
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<td>45 years</td>
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<td>35 years</td>
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### SUMMARY OF FINDINGS
### AVERAGE EFFECT ON CONTRIBUTION RATES
### (RESULTS BASED UPON JUNE 30, 2016 DATA)

#### AVERAGE EFFECT ON CONTRIBUTION RATES

**Present Demographic**

**Tier 1 & 2**

<table>
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<th>Pension</th>
<th>Present Demographic</th>
<th>Revised Demographic Assumptions</th>
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<td>Employer Normal Cost</td>
<td>7.50%/4.00%</td>
<td>7.50%/3.50%</td>
</tr>
<tr>
<td>Amortization</td>
<td>7.50%/4.00%</td>
<td>7.50%/3.50%</td>
</tr>
<tr>
<td>Total</td>
<td>7.50%/4.00%</td>
<td>7.50%/3.50%</td>
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</table>

<table>
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<th>Health</th>
<th>Present Demographic</th>
<th>Revised Demographic Assumptions</th>
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<tbody>
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<td>Employer Normal Cost</td>
<td>0.34%</td>
<td>0.30%</td>
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<td>Amortization</td>
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<td>-0.14%</td>
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<td>0.16%</td>
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#### Funded Status

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<th>Revised Demographic Assumptions</th>
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<tr>
<td>Accrued Liabilities</td>
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<td>$14,649,880,632</td>
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<td>Funding Value of Assets</td>
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<td>6,553,902,958</td>
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<tr>
<td>Funded Ratio</td>
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<td>44.7%</td>
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<table>
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<th>Health</th>
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<td>Funded Ratio</td>
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<td>110.8%</td>
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</table>
### SUMMARY OF FINDINGS

**AVERAGE EFFECT ON CONTRIBUTION RATES**

(RESULTS BASED UPON JUNE 30, 2016 DATA) (CONCLUDED)

<table>
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<th>Tier 3</th>
<th>Present Demographic 7.50%/4.00%</th>
<th>Revised Demographic Assumptions</th>
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<td>7.50%/4.00%</td>
<td>7.50%/3.50%</td>
</tr>
<tr>
<td><strong>Employer Contribution Rate</strong></td>
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<tr>
<td><strong>Pension</strong></td>
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<tr>
<td>Employee Normal Cost</td>
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<td>7.13%</td>
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<tr>
<td>Total</td>
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<td>14.26%</td>
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<tr>
<td><strong>Health</strong></td>
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<td>Employer Normal Cost</td>
<td>0.17%</td>
<td>0.15%</td>
</tr>
<tr>
<td>Employee Normal Cost</td>
<td>0.17%</td>
<td>0.15%</td>
</tr>
<tr>
<td>Total</td>
<td>0.34%</td>
<td>0.30%</td>
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</table>
Standard Deviation graphs of the type shown above appear frequently in this report. The navy blue line represents the present assumptions used in the valuation. After experience is reviewed for a given decrement, an actual value is computed (based on actual experience) along with its standard deviation value. The green vertical bars on the graph above represent the standard deviation value. If the standard deviation value is large, this means that the group being tested is from a small population. A small group should have less influence on deriving the new proposed value than a large group. In comparison, if the standard deviation has a small value, this means the group being tested is from a large population and should have a greater impact on the decision of the proposed value.
WITHDRAWAL EXPERIENCE
There were 869 withdrawals and 32,725 years of exposure included in the withdrawal investigation.

<table>
<thead>
<tr>
<th>Service Index</th>
<th>Withdrawals</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Withdrawals</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td>Present</td>
<td>Proposed</td>
<td></td>
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<td>N/A</td>
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<td>0.0050</td>
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<td>0.0% N/A</td>
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<td>N/A</td>
<td>N/A</td>
<td>0.0050</td>
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<td>0.0% N/A</td>
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</tbody>
</table>

Totals        | 869         | 32,725   | 0.0266       | 0.0266       | 0.0266               | 870.6 870.3               |
|              |             |          |              |              | 99.8% 99.8%         |                           |
MARICOPA COUNTY POLICE WITHDRAWAL EXPERIENCE

![Graph showing actual experience and proposed assumptions for police withdrawal experience over age. The graph indicates a decrease in experience with increasing age, with actual experience represented by green bars and proposed assumptions by a red line.]
There were 351 withdrawals and 7,751 years of exposure included in the withdrawal investigation.

The proposed rates recommend higher rates of withdrawal.

<table>
<thead>
<tr>
<th>Service Index</th>
<th>Withdrawals</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Withdrawals</th>
<th>Ratio of Actuals/Expecteds</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td>Proposed</td>
<td>Present</td>
<td>Proposed</td>
</tr>
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There were 1,010 withdrawals and 11,472 years of exposure included in the withdrawal investigation. The proposed rates recommend higher rates of withdrawal.

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MARICOPA COUNTY FIRE WITHDRAWAL EXPERIENCE

There were 210 withdrawals and 15,574 years of exposure included in the withdrawal investigation. The proposed rates recommend lower rates of withdrawal.

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There were 155 withdrawals and 5,385 years of exposure included in the withdrawal investigation. The proposed rates recommend higher rates of withdrawal.

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OTHER FIRE WITHDRAWAL EXPERIENCE

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OTHER FIRE WITHDRAWAL EXPERIENCE

![Graph showing actual experience and proposed assumptions for other fire withdrawal experience over age]
DISABILITY EXPERIENCE
MARICOPA COUNTY POLICE DISABILITY RETIREMENT EXPERIENCE

There were 127 disability benefit claims and 32,725 years of exposure included for the 5-year period. The proposed rates recommend lower rates of disability.

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* Sample values are selected from midpoint of age group.
MARICOPA COUNTY POLICE DISABILITY RETIREMENT EXPERIENCE

Actual Experience

Proposed Assumptions
PIMA COUNTY POLICE DISABILITY RETIREMENT EXPERIENCE

There were 27 disability benefit claims and 7,751 years of exposure included for the 5-year period. The proposed rates recommend lower rates of disability.

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*Sample values are selected from midpoint of age group.
OTHER POLICE DISABILITY RETIREMENT EXPERIENCE

There were 54 disability benefit claims and 11,472 years of exposure included for the 5-year period. The proposed rates recommend lower rates of disability.

<table>
<thead>
<tr>
<th>Age</th>
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<th>Actual Rates</th>
<th>Sample Rates*</th>
<th>Expected Disabilities</th>
<th>Ratio of Actuals/Expecteds</th>
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</thead>
<tbody>
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<td>Present</td>
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* Sample values are selected from midpoint of age group.
OTHER POLICE DISABILITY RETIREMENT EXPERIENCE

Age

- Actual Experience
- Proposed Assumptions
MARICOPA COUNTY FIRE DISABILITY RETIREMENT EXPERIENCE

There were 30 disability benefit claims and 15,574 years of exposure included for the 5-year period. The proposed rates recommend lower rates of disability.

<table>
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<th>Age</th>
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<th>Actual Rates</th>
<th>Sample Rates*</th>
<th>Expected Disabilities</th>
<th>Ratio of Actuals/Expecteds</th>
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</thead>
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<td>Proposed</td>
<td>Present</td>
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<tr>
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<td>0.0025</td>
<td>0.0022</td>
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* Sample values are selected from midpoint of age group.
MARICOPA COUNTY FIRE DISABILITY RETIREMENT EXPERIENCE

Actual Experience

Proposed Assumptions
PIMA COUNTY FIRE DISABILITY RETIREMENT EXPERIENCE

There were 15 disability benefit claims and 5,385 years of exposure included for the 5-year period. The proposed rates recommend slightly higher rates of disability.

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<thead>
<tr>
<th>Age</th>
<th>Disabilities</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates*</th>
<th>Expected Disabilities</th>
<th>Ratio of Actuals/Expecteds</th>
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<td>-</td>
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<td>0.1</td>
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<td>0.0026</td>
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* Sample values are selected from midpoint of age group.
PIMA COUNTY FIRE DISABILITY RETIREMENT EXPERIENCE

Age

- Actual Experience
- Proposed Assumptions
## OTHER FIRE DISABILITY RETIREMENT EXPERIENCE

There were 29 disability benefit claims and 8,268 years of exposure included for the 5-year period. The proposed rates recommend slightly higher rates of disability.

<table>
<thead>
<tr>
<th>Age</th>
<th>Disabilities</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates*</th>
<th>Expected Disabilities</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 20</td>
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<td>N/A</td>
<td>0.0003</td>
<td>-</td>
</tr>
<tr>
<td>20-24</td>
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<td>N/A</td>
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*Sample values are selected from midpoint of age group.*
OTHER FIRE DISABILITY RETIREMENT EXPERIENCE

Age

- Actual Experience
- Present Assumptions
- Proposed Assumptions
PAY INCREASES
MERIT AND LONGEVITY PORTION
### Maricopa County Police Members
#### Merit & Longevity Pay Increase

<table>
<thead>
<tr>
<th>Age Group Beginning of Year</th>
<th>Merit/Seniority % Increase</th>
<th>Sample Values*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Present</td>
</tr>
<tr>
<td>Under 25</td>
<td>6.24 %</td>
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<tr>
<td>25-29</td>
<td>3.41 %</td>
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</tr>
<tr>
<td>30-34</td>
<td>1.91 %</td>
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</tr>
<tr>
<td>35-39</td>
<td>0.87 %</td>
<td>N/A</td>
</tr>
<tr>
<td>40-44</td>
<td>0.04 %</td>
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</tr>
<tr>
<td>45-49</td>
<td>(0.29)%</td>
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</tr>
<tr>
<td>50-54</td>
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<td>55-59</td>
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<tr>
<td>60-64</td>
<td>(0.33)%</td>
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<tr>
<td>65 &amp; Over</td>
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*Sample values are selected from midpoint of age group.*
## Pima County Police Members
### Merit & Longevity Pay Increase

<table>
<thead>
<tr>
<th>Age Group Beginning of Year</th>
<th>Merit/Seniority % Increase</th>
<th>Sample Values*</th>
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<tbody>
<tr>
<td></td>
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<tr>
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<td>25-29</td>
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<tr>
<td>30-34</td>
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</tr>
<tr>
<td>35-39</td>
<td>0.74 %</td>
<td>N/A</td>
</tr>
<tr>
<td>40-44</td>
<td>0.13 %</td>
<td>N/A</td>
</tr>
<tr>
<td>45-49</td>
<td>(0.03)%</td>
<td>N/A</td>
</tr>
<tr>
<td>50-54</td>
<td>(0.56)%</td>
<td>N/A</td>
</tr>
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<td>55-59</td>
<td>(0.61)%</td>
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</tr>
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<td>60-64</td>
<td>(0.70)%</td>
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</tr>
<tr>
<td>65 &amp; Over</td>
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<td>N/A</td>
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*Sample values are selected from midpoint of age group.*
### OTHER POLICE MEMBERS

#### MERIT & LONGEVITY PAY INCREASE

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<th>Age Group</th>
<th>Merit/Seniority % Increase</th>
<th>Sample Values*</th>
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<td></td>
<td>Actual</td>
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</tr>
<tr>
<td>Under 25</td>
<td>5.49 %</td>
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</tr>
<tr>
<td>25-29</td>
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<td>30-34</td>
<td>1.27 %</td>
<td>N/A</td>
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<tr>
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<td>0.25 %</td>
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<tr>
<td>40-44</td>
<td>(0.18)%</td>
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<td>45-49</td>
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<td>(0.25)%</td>
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<td>65 &amp; Over</td>
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*Sample values are selected from midpoint of age group.*
### Maricopa County Fire Members
**Merit & Longevity Pay Increase**

<table>
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<th>Age Group</th>
<th>Merit/Seniority % Increase</th>
<th>Sample Values*</th>
</tr>
</thead>
<tbody>
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<td>25-29</td>
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<td>30-34</td>
<td>2.88 %</td>
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<td>35-39</td>
<td>1.48 %</td>
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</table>

*Sample values are selected from midpoint of age group.*
## Pima County Fire Members
### Merit & Longevity Pay Increase

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Merit/Seniority % Increase</th>
<th>Sample Values*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Present</td>
</tr>
<tr>
<td>Under 25</td>
<td>5.48 %</td>
<td>N/A</td>
</tr>
<tr>
<td>25-29</td>
<td>2.10 %</td>
<td>N/A</td>
</tr>
<tr>
<td>30-34</td>
<td>1.91 %</td>
<td>N/A</td>
</tr>
<tr>
<td>35-39</td>
<td>0.96 %</td>
<td>N/A</td>
</tr>
<tr>
<td>40-44</td>
<td>0.23 %</td>
<td>N/A</td>
</tr>
<tr>
<td>45-49</td>
<td>0.03 %</td>
<td>N/A</td>
</tr>
<tr>
<td>50-54</td>
<td>(1.26)%</td>
<td>N/A</td>
</tr>
<tr>
<td>55-59</td>
<td>(1.58)%</td>
<td>N/A</td>
</tr>
<tr>
<td>60-64</td>
<td>(3.18)%</td>
<td>N/A</td>
</tr>
<tr>
<td>65 &amp; Over</td>
<td>(2.48)%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

* Sample values are selected from midpoint of age group.
### Other Fire Members

**Merit & Longevity Pay Increase**

<table>
<thead>
<tr>
<th>Age Group Beginning of Year</th>
<th>Merit/Seniority % Increase</th>
<th>Sample Values*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Present</td>
</tr>
<tr>
<td>Under 25</td>
<td>3.68 %</td>
<td>N/A</td>
</tr>
<tr>
<td>25-29</td>
<td>2.69 %</td>
<td>N/A</td>
</tr>
<tr>
<td>30-34</td>
<td>1.64 %</td>
<td>N/A</td>
</tr>
<tr>
<td>35-39</td>
<td>1.27 %</td>
<td>N/A</td>
</tr>
<tr>
<td>40-44</td>
<td>0.68 %</td>
<td>N/A</td>
</tr>
<tr>
<td>45-49</td>
<td>(0.01)%</td>
<td>N/A</td>
</tr>
<tr>
<td>50-54</td>
<td>0.01 %</td>
<td>N/A</td>
</tr>
<tr>
<td>55-59</td>
<td>(0.56)%</td>
<td>N/A</td>
</tr>
<tr>
<td>60-64</td>
<td>(1.12)%</td>
<td>N/A</td>
</tr>
<tr>
<td>65 &amp; Over</td>
<td>(5.37)%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*Sample values are selected from midpoint of age group.*
NORMAL RETIREMENT EXPERIENCE
MARICOPA COUNTY POLICE
AGE BASED NORMAL RETIREMENT EXPERIENCE
(FOR MEMBERS NOT ATTAINING 20 YEARS OF SERVICE BEFORE AGE 62)

There were 17 age and service retirements and 47 life years of exposure in the age based retirement investigation. The proposed rates recommend lower rates of retirement.

<table>
<thead>
<tr>
<th>Age</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 62</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
</tr>
<tr>
<td>62</td>
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<td>15</td>
<td>0.2000</td>
<td>0.7500</td>
<td>0.6000</td>
<td>11.3</td>
</tr>
<tr>
<td>63</td>
<td>6</td>
<td>9</td>
<td>0.6667</td>
<td>0.6000</td>
<td>0.5000</td>
<td>5.4</td>
</tr>
<tr>
<td>64</td>
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<td>8</td>
<td>0.1250</td>
<td>0.6000</td>
<td>0.5000</td>
<td>4.8</td>
</tr>
<tr>
<td>65</td>
<td>2</td>
<td>4</td>
<td>0.5000</td>
<td>0.6000</td>
<td>0.5000</td>
<td>2.4</td>
</tr>
<tr>
<td>66</td>
<td>1</td>
<td>3</td>
<td>0.3333</td>
<td>0.6000</td>
<td>0.5000</td>
<td>1.8</td>
</tr>
<tr>
<td>67</td>
<td>2</td>
<td>2</td>
<td>1.0000</td>
<td>0.6000</td>
<td>0.5000</td>
<td>1.2</td>
</tr>
<tr>
<td>68</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>0.6000</td>
<td>0.5000</td>
<td>-</td>
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<td>0.6000</td>
<td>0.5000</td>
<td>0.6</td>
</tr>
<tr>
<td>Sub Totals</td>
<td>15</td>
<td>42</td>
<td>0.3571</td>
<td>0.6536</td>
<td>0.5357</td>
<td>27.5</td>
</tr>
<tr>
<td>70 &amp; Over</td>
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<td>5</td>
<td>0.4000</td>
<td>0.6357</td>
<td>0.6357</td>
<td>5.0</td>
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<tr>
<td>Total (62 &amp; Over)</td>
<td>17</td>
<td>47</td>
<td>0.3617</td>
<td>0.6317</td>
<td>0.5357</td>
<td>32.5</td>
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</table>
There were 1,132 service retirements and 5,261 life years of exposure in the service based retirement investigation. The proposed rates recommend slightly lower rates of retirement.

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<th>Service Years*</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 20</td>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
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<td>311</td>
<td>1,199</td>
<td>0.2594</td>
<td>N/A</td>
<td>0.2700</td>
<td>330.1</td>
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<tr>
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<td>132</td>
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<td>0.1628</td>
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<td>0.1800</td>
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</tr>
<tr>
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<td>60</td>
<td>587</td>
<td>0.1022</td>
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<tr>
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<td>41</td>
<td>523</td>
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<td>0.0950</td>
<td>54.3</td>
</tr>
<tr>
<td>24</td>
<td>26</td>
<td>527</td>
<td>0.0493</td>
<td>N/A</td>
<td>0.0750</td>
<td>52.7</td>
</tr>
<tr>
<td>25</td>
<td>201</td>
<td>562</td>
<td>0.3577</td>
<td>N/A</td>
<td>0.3750</td>
<td>221.5</td>
</tr>
<tr>
<td>26</td>
<td>128</td>
<td>388</td>
<td>0.3299</td>
<td>N/A</td>
<td>0.3600</td>
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<tr>
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<td>53</td>
<td>236</td>
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<td>46</td>
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<td>26</td>
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<td>0.2653</td>
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<td>22</td>
<td>67</td>
<td>0.3284</td>
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<td>0.3400</td>
<td>24.8</td>
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<td>13</td>
<td>48</td>
<td>0.2708</td>
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<td>19.8</td>
</tr>
<tr>
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<td>20</td>
<td>33</td>
<td>0.6061</td>
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<td>0.6500</td>
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</tr>
<tr>
<td>33</td>
<td>9</td>
<td>14</td>
<td>0.6429</td>
<td>N/A</td>
<td>0.6500</td>
<td>10.5</td>
</tr>
<tr>
<td>Sub Totals</td>
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<td>5,248</td>
<td>0.2149</td>
<td>0.2512</td>
<td>0.2292</td>
<td>1,318.1</td>
</tr>
<tr>
<td>34 &amp; Over</td>
<td>4</td>
<td>13</td>
<td>0.3077</td>
<td></td>
<td></td>
<td>13.0</td>
</tr>
<tr>
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<td>5,261</td>
<td>0.2152</td>
<td></td>
<td></td>
<td>1,331.1</td>
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</tbody>
</table>

* Measured as Integer Service Nearest Whole Year at time of decrement.
MARICOPA COUNTY POLICE
RATES OF AGE BASED NORMAL RETIREMENT

![Graph showing rates of age based normal retirement for Maricopa County Police.](image)

MARICOPA COUNTY POLICE
RATES OF SERVICE BASED NORMAL RETIREMENT

![Graph showing rates of service based normal retirement for Maricopa County Police.](image)
There were 10 age and service retirements and 31 life years of exposure in the age based retirement investigation. The proposed rates recommend lower rates of retirement.

<table>
<thead>
<tr>
<th>Age</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 62</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>62</td>
<td>1</td>
<td>7</td>
<td>0.1429</td>
<td>0.7500</td>
<td>0.6000</td>
<td>5.3</td>
</tr>
<tr>
<td>63</td>
<td>3</td>
<td>7</td>
<td>0.4286</td>
<td>0.6000</td>
<td>0.5000</td>
<td>4.2</td>
</tr>
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<td>64</td>
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<td>0.2500</td>
<td>0.6000</td>
<td>0.5000</td>
<td>2.4</td>
</tr>
<tr>
<td>65</td>
<td>-</td>
<td>3</td>
<td>0.0000</td>
<td>0.6000</td>
<td>0.5000</td>
<td>1.8</td>
</tr>
<tr>
<td>66</td>
<td>2</td>
<td>2</td>
<td>1.0000</td>
<td>0.6000</td>
<td>0.5000</td>
<td>1.2</td>
</tr>
<tr>
<td>67</td>
<td>-</td>
<td>1</td>
<td>0.0000</td>
<td>0.6000</td>
<td>0.5000</td>
<td>0.6</td>
</tr>
<tr>
<td>68</td>
<td>1</td>
<td>2</td>
<td>0.5000</td>
<td>0.6000</td>
<td>0.5000</td>
<td>1.2</td>
</tr>
<tr>
<td>69</td>
<td>-</td>
<td>2</td>
<td>0.0000</td>
<td>0.6000</td>
<td>0.5000</td>
<td>1.2</td>
</tr>
<tr>
<td>Sub Totals</td>
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<td>28</td>
<td>0.2857</td>
<td>0.6375</td>
<td>0.5250</td>
<td>17.9</td>
</tr>
<tr>
<td>70 &amp; Over</td>
<td>2</td>
<td>3</td>
<td>0.6667</td>
<td>3.0</td>
<td>3.0</td>
<td>66.7%</td>
</tr>
<tr>
<td>Total (62 &amp; Over)</td>
<td>10</td>
<td>31</td>
<td>0.3226</td>
<td></td>
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<td>20.9</td>
</tr>
</tbody>
</table>
There were 162 service retirements and 928 life years of exposure in the service based retirement investigation. The proposed rates recommend slightly lower rates of retirement.

<table>
<thead>
<tr>
<th>Service Years*</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td></td>
</tr>
<tr>
<td>Under 20</td>
<td>7</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
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<td>50</td>
<td>246</td>
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</tr>
<tr>
<td>21</td>
<td>28</td>
<td>162</td>
<td>0.1728</td>
<td>N/A</td>
<td>0.1900</td>
<td>32.5 30.8 86.2% 91.0%</td>
</tr>
<tr>
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<td>10</td>
<td>89</td>
<td>0.1124</td>
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<td>0.1400</td>
<td>15.8 12.5 63.2% 80.3%</td>
</tr>
<tr>
<td>23</td>
<td>7</td>
<td>80</td>
<td>0.0875</td>
<td>N/A</td>
<td>0.0950</td>
<td>8.7 7.6 80.6% 92.1%</td>
</tr>
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<td>1</td>
<td>71</td>
<td>0.0141</td>
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<td>0.0650</td>
<td>7.1 4.6 14.1% 21.7%</td>
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<td>22</td>
<td>87</td>
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<td>0.3200</td>
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<tr>
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<td>14</td>
<td>60</td>
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<td>N/A</td>
<td>0.3200</td>
<td>23.3 19.2 60.1% 72.9%</td>
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<td>N/A</td>
<td>0.2200</td>
<td>14.2 9.2 35.3% 54.1%</td>
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<tr>
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<td>4</td>
<td>36</td>
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<td>N/A</td>
<td>0.2200</td>
<td>11.3 7.9 35.4% 50.5%</td>
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<td>4</td>
<td>29</td>
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<td>N/A</td>
<td>0.2200</td>
<td>9.1 6.4 44.0% 62.7%</td>
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<td>5</td>
<td>14</td>
<td>0.3571</td>
<td>N/A</td>
<td>0.3500</td>
<td>4.9 4.9 101.6% 102.0%</td>
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<td>6</td>
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<td>N/A</td>
<td>0.3500</td>
<td>2.2 2.1 92.6% 95.2%</td>
</tr>
<tr>
<td>32</td>
<td>3</td>
<td>5</td>
<td>0.6000</td>
<td>N/A</td>
<td>0.6500</td>
<td>3.8 3.3 80.0% 92.3%</td>
</tr>
<tr>
<td>33</td>
<td>-</td>
<td>1</td>
<td>0.0000</td>
<td>N/A</td>
<td>0.6500</td>
<td>0.8 0.7 0.0% 0.0%</td>
</tr>
<tr>
<td>Sub Totals</td>
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<td>928</td>
<td>0.1746</td>
<td>0.2526</td>
<td>0.2112</td>
<td>234.4 196.0 69.1% 82.7%</td>
</tr>
<tr>
<td>34 &amp; Over</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
</tr>
<tr>
<td>Totals</td>
<td>162</td>
<td>928</td>
<td>0.1746</td>
<td></td>
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<td>234.4 196.0</td>
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</tbody>
</table>

* Measured as Integer Service Nearest Whole Year at time of decrement.
PIMA COUNTY POLICE
RATES OF AGE BASED NORMAL RETIREMENT

PIMA COUNTY POLICE
RATES OF SERVICE BASED NORMAL RETIREMENT
OTHER POLICE

AGE BASED NORMAL RETIREMENT EXPERIENCE
(FOR MEMBERS NOT ATTAINING 20 YEARS OF SERVICE BEFORE AGE 62)

There were 20 age and service retirements and 38 life years of exposure in the age based retirement investigation. The proposed rates recommend lower rates of retirement.

<table>
<thead>
<tr>
<th>Age</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 62</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
</tr>
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<td>4</td>
<td>0.5000</td>
<td>0.6000</td>
<td>0.5000</td>
<td>2.4</td>
</tr>
<tr>
<td>65</td>
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<td>3</td>
<td>0.3333</td>
<td>0.6000</td>
<td>0.5000</td>
<td>1.8</td>
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<tr>
<td>66</td>
<td>3</td>
<td>3</td>
<td>1.0000</td>
<td>0.6000</td>
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<td>1.8</td>
</tr>
<tr>
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<td>1</td>
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**OTHER POLICE**

**SERVICE BASED NORMAL RETIREMENT EXPERIENCE**

*(FOR MEMBERS ATTAINING 20 YEARS OF SERVICE BEFORE AGE 62)*

There were 258 service retirements and 900 life years of exposure in the service based retirement investigation. The proposed rates recommend slightly higher rates of retirement.

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<td>0.2836</td>
<td>0.2847</td>
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<td>0.2836</td>
<td>0.2847</td>
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*Measured as Integer Service Nearest Whole Year at time of decrement.*
There were 6 age and service retirements and 14 life years of exposure in the age based retirement investigation. The proposed rates recommend lower rates of retirement.

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<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
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Expected Ratio of Sample Rates

Actuals/Expecteds
There were 423 service retirements and 2,754 life years of exposure in the service based retirement investigation. The proposed rates recommend slightly lower rates of retirement.

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* Measured as Integer Service Nearest Whole Year at time of decrement.
There were 3 age and service retirements and 10 life years of exposure in the age based retirement investigation. The proposed rates recommend lower rates of retirement.

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PIMA COUNTY FIRE
SERVICE BASED NORMAL RETIREMENT EXPERIENCE
(FOR MEMBERS ATTAINING 20 YEARS OF SERVICE BEFORE AGE 62)

There were 92 service retirements and 558 life years of exposure in the service based retirement investigation. The proposed rates recommend slightly lower rates of retirement.

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<th>Sample Rates</th>
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*Measured as Integer Service Nearest Whole Year at time of decrement.
PIMA COUNTY FIRE
RATES OF AGE BASED NORMAL RETIREMENT

PIMA COUNTY FIRE
RATES OF SERVICE BASED NORMAL RETIREMENT
OTHER FIRE
AGE BASED NORMAL RETIREMENT EXPERIENCE
(FOR MEMBERS NOT ATTAINING 20 YEARS OF SERVICE BEFORE AGE 62)

There were 15 age and service retirements and 38 life years of exposure in the age based retirement investigation. The proposed rates recommend lower rates of retirement.

<table>
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<th>Sample Rates</th>
<th>Expected</th>
<th>Ratio of Actuals/Expecteds</th>
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<td></td>
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<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
</tr>
<tr>
<td>Under 62</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>62</td>
<td>6</td>
<td>10</td>
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</tr>
<tr>
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<td>-</td>
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<td>0.5000</td>
<td>0.6</td>
</tr>
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<td>68</td>
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<td>0.6000</td>
<td>0.5000</td>
<td>0.6</td>
</tr>
<tr>
<td>69</td>
<td>-</td>
<td>-</td>
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<td>0.6000</td>
<td>0.5000</td>
<td>-</td>
</tr>
<tr>
<td>Sub Totals</td>
<td>15</td>
<td>38</td>
<td>0.3947</td>
<td>0.6395</td>
<td>0.5263</td>
<td>24.3</td>
</tr>
<tr>
<td>70 &amp; Over</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
</tr>
<tr>
<td>Total (62 &amp; Over)</td>
<td>15</td>
<td>38</td>
<td>0.3947</td>
<td>24.3</td>
<td>20.0</td>
<td>61.7%</td>
</tr>
</tbody>
</table>
OTHER FIRE

SERVICE BASED NORMAL RETIREMENT EXPERIENCE

(FOR MEMBERS ATTAINING 20 YEARS OF SERVICE BEFORE AGE 62)

There were 167 service retirements and 796 life years of exposure in the service based retirement investigation. The proposed rates recommend slightly higher rates of retirement.

<table>
<thead>
<tr>
<th>Service Years*</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Under 20</td>
<td></td>
<td>Present</td>
<td>Proposed</td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>21</td>
<td>53</td>
<td>194</td>
<td>0.2732</td>
<td>0.2500</td>
<td>0.2300</td>
<td>36.9</td>
</tr>
<tr>
<td>22</td>
<td>22</td>
<td>128</td>
<td>0.1719</td>
<td>0.1700</td>
<td>0.1800</td>
<td>23.8</td>
</tr>
<tr>
<td>23</td>
<td>12</td>
<td>94</td>
<td>0.1277</td>
<td>0.1700</td>
<td>0.1100</td>
<td>8.9</td>
</tr>
<tr>
<td>24</td>
<td>4</td>
<td>70</td>
<td>0.0571</td>
<td>0.1000</td>
<td>0.0800</td>
<td>6.6</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>72</td>
<td>0.0139</td>
<td>0.1000</td>
<td>0.0500</td>
<td>5.6</td>
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<tr>
<td>26</td>
<td>24</td>
<td>68</td>
<td>0.3529</td>
<td>0.4000</td>
<td>0.3000</td>
<td>17.3</td>
</tr>
<tr>
<td>27</td>
<td>14</td>
<td>45</td>
<td>0.3111</td>
<td>0.4000</td>
<td>0.3000</td>
<td>11.8</td>
</tr>
<tr>
<td>28</td>
<td>9</td>
<td>36</td>
<td>0.2500</td>
<td>0.3500</td>
<td>0.3000</td>
<td>9.0</td>
</tr>
<tr>
<td>29</td>
<td>7</td>
<td>30</td>
<td>0.2333</td>
<td>0.3200</td>
<td>0.2500</td>
<td>8.3</td>
</tr>
<tr>
<td>30</td>
<td>2</td>
<td>21</td>
<td>0.0476</td>
<td>0.3200</td>
<td>0.1600</td>
<td>5.7</td>
</tr>
<tr>
<td>31</td>
<td>5</td>
<td>17</td>
<td>0.2941</td>
<td>0.3800</td>
<td>0.3200</td>
<td>6.0</td>
</tr>
<tr>
<td>32</td>
<td>4</td>
<td>11</td>
<td>0.3636</td>
<td>0.4200</td>
<td>0.3500</td>
<td>3.9</td>
</tr>
<tr>
<td>33</td>
<td>1</td>
<td>8</td>
<td>0.8750</td>
<td>0.7500</td>
<td>0.6000</td>
<td>2.8</td>
</tr>
</tbody>
</table>
| * Measured as Integer Service Nearest Whole Year at time of decrement. 

Sub Totals | 166 | 794 | 0.2091 | 0.1846 | 0.1975 | 146.6 | 156.9 | 113.3% | 105.8% |
| Totals     | 167 | 796 | 0.2098 |        |        | 148.6 | 158.9 | 50.0%  | 50.0%  |

PSPRS 2011-2016 Experience Study D-17
**OTHER FIRE**

**RATES OF AGE BASED NORMAL RETIREMENT**

![Age-based retirement rates graph]

**OTHER FIRE**

**RATES OF SERVICE BASED NORMAL RETIREMENT**

![Service-based retirement rates graph]
MORTALITY EXPERIENCE
There were more deaths than expected among active males. Recommend slightly lower rates of mortality to recognize a margin for future improvements in mortality.

<table>
<thead>
<tr>
<th>Age</th>
<th>Deaths</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates*</th>
<th>Expected Deaths</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
<td>Proposed</td>
</tr>
<tr>
<td>Under 20</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>0.0001</td>
<td>0.0002</td>
<td>-</td>
</tr>
<tr>
<td>20-24</td>
<td>1</td>
<td>234</td>
<td>0.0043</td>
<td>0.0002</td>
<td>0.0004</td>
<td>0.0</td>
</tr>
<tr>
<td>25-29</td>
<td>1</td>
<td>2,675</td>
<td>0.0004</td>
<td>0.0002</td>
<td>0.0004</td>
<td>0.6</td>
</tr>
<tr>
<td>30-34</td>
<td>6</td>
<td>5,767</td>
<td>0.0010</td>
<td>0.0003</td>
<td>0.0004</td>
<td>1.8</td>
</tr>
<tr>
<td>35-39</td>
<td>6</td>
<td>7,092</td>
<td>0.0008</td>
<td>0.0005</td>
<td>0.0004</td>
<td>3.5</td>
</tr>
<tr>
<td>40-44</td>
<td>7</td>
<td>8,247</td>
<td>0.0008</td>
<td>0.0006</td>
<td>0.0006</td>
<td>5.2</td>
</tr>
<tr>
<td>45-49</td>
<td>1</td>
<td>6,054</td>
<td>0.0002</td>
<td>0.0008</td>
<td>0.0010</td>
<td>5.0</td>
</tr>
<tr>
<td>50-54</td>
<td>4</td>
<td>2,734</td>
<td>0.0015</td>
<td>0.0012</td>
<td>0.0017</td>
<td>3.2</td>
</tr>
<tr>
<td>55-59</td>
<td>1</td>
<td>863</td>
<td>0.0000</td>
<td>0.0022</td>
<td>0.0028</td>
<td>1.7</td>
</tr>
<tr>
<td>60-64</td>
<td>-</td>
<td>190</td>
<td>0.0000</td>
<td>0.0042</td>
<td>0.0047</td>
<td>0.7</td>
</tr>
<tr>
<td>65 &amp; Over</td>
<td>-</td>
<td>38</td>
<td>0.0000</td>
<td>0.0079</td>
<td>0.0083</td>
<td>0.3</td>
</tr>
<tr>
<td>Totals</td>
<td>26</td>
<td>33,894</td>
<td>0.0008</td>
<td>0.0007</td>
<td>0.0007</td>
<td>22.1</td>
</tr>
</tbody>
</table>

* Sample values are selected from midpoint of age group.
PRE-RETIREMENT MORTALITY - FEMALES

There were slightly more deaths than expected among active females. Recommend slightly lower rates of mortality to recognize a margin for future improvements in mortality.

<table>
<thead>
<tr>
<th>Age</th>
<th>Deaths</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates*</th>
<th>Expected Deaths</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 20</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>0.0001</td>
<td>0.0001</td>
<td>-</td>
</tr>
<tr>
<td>20-24</td>
<td>-</td>
<td>40</td>
<td>0.0000</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0</td>
</tr>
<tr>
<td>25-29</td>
<td>-</td>
<td>327</td>
<td>0.0000</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0</td>
</tr>
<tr>
<td>30-34</td>
<td>1</td>
<td>736</td>
<td>0.0014</td>
<td>0.0002</td>
<td>0.0001</td>
<td>0.1</td>
</tr>
<tr>
<td>35-39</td>
<td>-</td>
<td>873</td>
<td>0.0000</td>
<td>0.0003</td>
<td>0.0002</td>
<td>0.2</td>
</tr>
<tr>
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<td>1</td>
<td>1,053</td>
<td>0.0009</td>
<td>0.0004</td>
<td>0.0002</td>
<td>0.4</td>
</tr>
<tr>
<td>45-49</td>
<td>-</td>
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<td>0.0000</td>
<td>0.0006</td>
<td>0.0004</td>
<td>0.4</td>
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<tr>
<td>50-54</td>
<td>-</td>
<td>331</td>
<td>0.0000</td>
<td>0.0010</td>
<td>0.0007</td>
<td>0.3</td>
</tr>
<tr>
<td>55-59</td>
<td>-</td>
<td>76</td>
<td>0.0000</td>
<td>0.0019</td>
<td>0.0010</td>
<td>0.1</td>
</tr>
<tr>
<td>60-64</td>
<td>-</td>
<td>12</td>
<td>0.0000</td>
<td>0.0037</td>
<td>0.0015</td>
<td>0.0</td>
</tr>
<tr>
<td>65 &amp; Over</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>0.0068</td>
<td>0.0023</td>
<td>-</td>
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<tr>
<td>Totals</td>
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<td>4,121</td>
<td>0.0005</td>
<td>0.0004</td>
<td>0.0003</td>
<td>1.7</td>
</tr>
</tbody>
</table>

* Sample values are selected from midpoint of age group.
POST-RETIREFMENT MORTALITY - MALES

Observed death rates were slightly lower than expected. The current rates are based on static projection for future improvements in mortality. The proposed rates represent the recommended base table only. Margin for future improvements in mortality will be built into the ‘fully generational’ projection which cannot be displayed in a table with this format.

<table>
<thead>
<tr>
<th>Age</th>
<th>Deaths</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Benefit Weighted</th>
<th>Sample Rates*</th>
<th>Expected Deaths</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present/Proposed</td>
</tr>
<tr>
<td>Under 44</td>
<td>-</td>
<td>316</td>
<td>N/A</td>
<td>N/A</td>
<td>0.001097</td>
<td>0.002197</td>
<td>0.4/0.8</td>
</tr>
<tr>
<td>45-49</td>
<td>8</td>
<td>2,586</td>
<td>0.003094</td>
<td>0.002740</td>
<td>0.001451</td>
<td>0.003304</td>
<td>3.9/9.0</td>
</tr>
<tr>
<td>50-54</td>
<td>12</td>
<td>6,283</td>
<td>0.001910</td>
<td>0.002047</td>
<td>0.002069</td>
<td>0.004814</td>
<td>13.4/30.7</td>
</tr>
<tr>
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<td>8,666</td>
<td>0.003577</td>
<td>0.003630</td>
<td>0.003810</td>
<td>0.006537</td>
<td>33.6/57.0</td>
</tr>
<tr>
<td>60-64</td>
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<td>8,984</td>
<td>0.005232</td>
<td>0.004841</td>
<td>0.007330</td>
<td>0.008923</td>
<td>67.4/80.9</td>
</tr>
<tr>
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<td>99</td>
<td>7,357</td>
<td>0.013457</td>
<td>0.012831</td>
<td>0.013871</td>
<td>0.013123</td>
<td>99.4/95.8</td>
</tr>
<tr>
<td>70-74</td>
<td>87</td>
<td>4,141</td>
<td>0.021009</td>
<td>0.019459</td>
<td>0.022834</td>
<td>0.020571</td>
<td>93.9/84.4</td>
</tr>
<tr>
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<td>0.040474</td>
<td>0.033509</td>
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<tr>
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<td>0.074896</td>
<td>0.074918</td>
<td>0.056845</td>
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<td>0.124308</td>
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<td>0.099211</td>
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</tr>
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<td>114</td>
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<td>0.217413</td>
<td>0.170786</td>
<td>22.9/18.0</td>
</tr>
<tr>
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<td>0.272727</td>
<td>0.271896</td>
<td>0.305530</td>
<td>0.259075</td>
<td>6.7/5.6</td>
</tr>
<tr>
<td>100-104</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>0.390269</td>
<td>0.358615</td>
<td>-/-</td>
</tr>
<tr>
<td>105 &amp; Over</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>0.420000</td>
<td>0.451341</td>
<td>-/-</td>
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<tr>
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<td>0.009483</td>
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<td>0.013682</td>
<td>597.6/584.3</td>
</tr>
</tbody>
</table>

* Sample values are selected from midpoint of age group.
Rates of Post-Retirement Mortality - Males

![Graph showing rates of post-retirement mortality for males across different age groups and comparing actual experience with present and proposed assumptions.]
POST-RETIREMENT MORTALITY - FEMALES

Observed death rates among female retirees (including original retirees and spouses of original retirees) were somewhat lower than expected. The current rates are based on static projection for future improvements in mortality. The proposed rates represent the recommended base table only. Margin for future improvements in mortality will be built into the ‘fully generational’ projection which cannot be displayed in a table with this format.

<table>
<thead>
<tr>
<th>Age</th>
<th>Deaths</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Benefit Weighted</th>
<th>Sample Rates*</th>
<th>Expected Deaths</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
<td>Proposed</td>
<td>Present/Expecteds</td>
</tr>
<tr>
<td>Under 44</td>
<td>4</td>
<td>379</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000713</td>
<td>0.001967</td>
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<td>0.001773</td>
<td>0.001195</td>
<td>0.001061</td>
<td>0.002658</td>
<td>0.6</td>
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<td>50-54</td>
<td>3</td>
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<td>0.002611</td>
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<td>0.001715</td>
<td>0.003388</td>
<td>2.0</td>
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<td>0.003387</td>
<td>0.004571</td>
<td>4.1</td>
</tr>
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<td>1,067</td>
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<td>0.006484</td>
<td>0.006884</td>
<td>7.0</td>
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<tr>
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<td>16</td>
<td>1,105</td>
<td>0.014480</td>
<td>0.015143</td>
<td>0.011846</td>
<td>0.010886</td>
<td>13.2</td>
</tr>
<tr>
<td>70-74</td>
<td>18</td>
<td>985</td>
<td>0.018274</td>
<td>0.016786</td>
<td>0.019825</td>
<td>0.017573</td>
<td>19.5</td>
</tr>
<tr>
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<td>820</td>
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<td>0.023165</td>
<td>0.032229</td>
<td>0.028718</td>
<td>26.4</td>
</tr>
<tr>
<td>80-84</td>
<td>47</td>
<td>696</td>
<td>0.067529</td>
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* Sample values are selected from midpoint of age group.
POST-RETIREMENT MORTALITY - FEMALES

The graph shows the post-retirement mortality rates for females across different age groups. The x-axis represents the age groups, and the y-axis represents the mortality rates. The graph compares actual experience, present assumptions, and proposed assumptions.

Key:
- **Actual Experience**
- **Present Assumptions**
- **Proposed Assumptions**

Age categories range from Under 44 to 90-94.
EMPLOYER GROUPS AND COMPLETE LISTS OF PROPOSED DECREMENT ASSUMPTIONS
## Employer Groups

### Maricopa County Police
- 005 CHANDLER POLICE DEPT.
- 013 GLENDALE POLICE DEPT.
- 016 MARICOPA COUNTY SHERIFF'S OFFICE
- 018 MESA POLICE DEPT.
- 022 PHOENIX POLICE DEPT.
- 025 SCOTTSDALE POLICE DEPT.
- 028 TEMPE POLICE DEPT.
- 041 ASU CAMPUS POLICE
- 074 PEORIA POLICE DEPT.
- 076 PARADISE VALLEY POLICE DEPT.
- 090 TOLLESON POLICE DEPT.
- 093 AA POLICE DEPT.
- 126 MARICOPA COUNTY ATTORNEY INVEST.
- 187 SALT RIVER PIMA-MARICOPA POLICE
- 222 MARICOPA COUNTY PARK RANGERS
- 229 CAVE CREEK MARSHALS

### Maricopa County Fire
- 004 CHANDLER FIRE DEPT.
- 012 GLENDALE FIRE DEPT.
- 017 MESA FIRE DEPT.
- 021 PHOENIX FIRE DEPT.
- 027 TEMPE FIRE DEPT.
- 059 AVONDALE FIRE DEPT.
- 073 PEORIA FIRE DEPT.
- 108 TOLLESON FIRE DEPT.
- 120 SURPRISE FIRE DEPT.
- 127 EL MIRAGE FIRE DEPT.
- 136 GOODYEAR FIRE DEPT.
- 143 DAISY MOUNTAIN FIRE DISTRICT
- 149 GILBERT FIRE DEPT.
- 155 SUN LAKES FIRE DISTRICT
- 167 GUADALUPE FIRE DEPT.
- 170 SUN CITY WEST FIRE DISTRICT
- 177 SUN CITY FIRE DISTRICT
- 181 SALT RIVER PIMA-MARICOPA FIRE
- 190 BUCKEYE FIRE DEPT.
- 197 FORT MCDOWELL TRIBAL FIRE DEPT.
- 209 TONOPAH VALLEY FIRE DISTRICT
- 212 BUCKEYE VALLEY FIRE DISTRICT
- 222 RIO VERDE FIRE DISTRICT
- 223 SCOTTSDALE FIRE DEPT.
- 238 HARQUAHALA FIRE DISTRICT
- 241 WITTMANN FIRE DISTRICT
- 246 DESERT HILLS FIRE DEPT.
- 247 QUEEN CREEK FIRE DEPT.

### Pima County Fire
- 029 TUCSON FIRE
- 049 DREXEL HEIGHTS FIRE DISTRICT
- 058 SOUTH TUCSON FIRE DEPT.
- 124 TUCSON AIRPORT AUTHORITY FIRE DEPT.
- 133 GOLDEN RANCH FIRE DISTRICT
- 145 PICTURE ROCKS FIRE DISTRICT
- 147 NORTHWEST FIRE DISTRICT
- 162 AVRA VALLEY FIRE DISTRICT
- 188 THREE POINTS FIRE DISTRICT
- 194 GREEN VALLEY FIRE DISTRICT
- 195 SUMMIT FIRE DISTRICT
- 208 RINCON VALLEY FIRE DISTRICT
- 214 PASCUA YAQUI TRIBE FIRE DEPT.
- 226 CORONA DE TUCSON FIRE DISTRICT
- 233 MOUNT LEMMON FIRE DISTRICT
- 235 TOHONO O'ODHAM NATION FIRE DEPT.

### Other Police
- 003 CASA GRANDE POLICE DEPT.
- 007 DEPT. OF PUBLIC SAFETY
- 009 DOUGLAS POLICE DEPT.
- 011 FLAGSTAFF POLICE DEPT.
- 024 PRESCOTT POLICE DEPT.
- 033 YUMA POLICE DEPT.
- 034 YUMA COUNTY SHERIFF'S DEPT.
- 035 GAME AND FISH DEPT.
- 036 SIERRA VISTA POLICE DEPT.
- 037 BENSON POLICE DEPT.
- 038 BISBEE POLICE DEPT.
- 040 KINGMAN POLICE DEPT.
- 043 MOHAVE COUNTY SHERIFF'S DEPT.
- 046 COCHISE COUNTY SHERIFF'S DEPT.
- 047 SAFFORD POLICE DEPT.
- 050 WINSLOW POLICE DEPT.
- 052 PAYSON POLICE DEPT.
- 055 FREDONIA MARSHALS
- 056 NAU CAMPUS POLICE
- 060 PARKER POLICE DEPT.
- 061 COCONINO COUNTY SHERIFF'S DEPT.
- 065 SNOWFLAKE POLICE DEPT.
- 066 COTTONWOOD POLICE DEPT.
- 067 LAKE HAVASU CITY POLICE DEPT.
- 070 APACHE JUNCTION POLICE DEPT.
- 071 NAANO COUNTY SHERIFF'S DEPT.
- 077 WILLCOX POLICE DEPT.
- 078 SHOW LOW POLICE DEPT.
- 079 ELOY POLICE DEPT.

### Pima County Police
- 030 TUCSON POLICE
- 039 PIMA COUNTY SHERIFF'S DEPT.
- 045 U OF A CAMPUS POLICE
- 069 SOUTH TUCSON POLICE DEPT.
- 107 MARANA POLICE DEPT.
- 122 ORO VALLEY POLICE DEPT.
- 125 TUCSON AIRPORT AUTHORITY POLICE DEPT
- 146 PIMA COUNTY COMM. COLLEGE POLICE
- 154 PIMA COUNTY ATTORNEY INVEST.
- 174 SAHUARITA POLICE DEPT.
- 215 PASCUA YAQUI TRIBE POLICE DEPT.
- 236 TOHONO O'ODHAM NATION POLICE DEPT.
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# Proposed Retirement Rates

Members hired before January 1, 2012

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# Proposed Normal Retirement Rates

Members hired after January 1, 2012

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February 24, 2017

Mr. Jared Smout  
Administrator  
Arizona Public Safety Personnel Retirement System  
3010 East Camelback Road, Suite 200  
Phoenix, Arizona 85016-4416

Re: PSPRS 2011-2016 Experience Study

Dear Jared:

Enclosed are 5 copies of the 2011 – 2016 Experience Study.

Sincerely,

James D. Anderson, FSA, EA, MAAA

JDA:mrb  
Enclosures
ARIZONA CORRECTIONS OFFICER RETIREMENT PLAN
ANALYSIS OF ACTUARIAL ASSUMPTIONS
JULY 1, 2011 THROUGH JUNE 30, 2016
February 24, 2017

Board of Trustees
Arizona Corrections Officer Retirement Plan
Phoenix, Arizona

Ladies and Gentlemen:

The results of the 5-year investigation of experience of the Arizona Corrections Officer Retirement Plan (CORP) are presented in this report. The investigation was made for the purpose of updating the actuarial assumptions used in valuing the actuarial liabilities, assets and actuarially determined employer contribution rates of CORP.

The investigation covered the 5-year period from July 1, 2011 to June 30, 2016 and was carried out using generally accepted actuarial principles and techniques.

The investigation was based upon the statistical data furnished for annual actuarial valuations, and upon supplemental information furnished by PSPRS staff, concerning members who died, withdrew, became disabled or retired during the last 5 years and on published economic historical data.

We believe that the new actuarial assumptions that are the result of this investigation represent a reasonable estimate of future experience of CORP based upon the data reviewed in the study and general trends among Public Employee Retirement Systems.

Mark Buis, James D. Anderson and Francois Pieterse are Members of the American Academy of Actuaries (MAAA) and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

The consultants below are experienced in performing valuations for large public retirement systems. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

Mark Buis
FSA, EA, FCA, MAAA

James D. Anderson
FSA, EA, MAAA

Francois Pieterse
ASA, FCA, MAAA

MB/JDA/FP: mrb
# Table of Contents

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EXECUTIVE SUMMARY

The Fund Manager has established a policy of reviewing the actuarial assumptions every five years. The last review was prepared for the period from July 1, 2006 to June 30, 2011. In this report, we review the current actuarial assumptions and compare them to the actual experience of the Retirement Fund for the years 2011-2016.

The table below lists each of the primary assumptions and methods that we analyzed, including our recommendations for each item, and the impact of any recommended changes.

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</tbody>
</table>

The overall impact on the contribution rate is summarized on page 17 of this study.
INTRODUCTION

SELECTION OF ASSUMPTIONS USED IN ACTUARIAL VALUATIONS

Actuarial assumptions may be classified as demographic and economic.

Demographic Assumptions

- Rates of withdrawal among active members.
- Rates of disability among active members.
- Patterns of merit & longevity pay increases to active members.
- Rates of retirement among active members.
- Rates of mortality among active members, retirees and beneficiaries.

Economic Assumptions

- Long-term rates of investment return to be generated by the assets of the Fund.
- Long-term rates of growth of total payroll also called wage inflation.
- Price Inflation.

Assumptions should be carefully chosen and continually monitored. Use of outdated assumptions can lead to:

- Understated costs resulting in either an inability to pay benefits when due, or sharp increases in required contributions at some point in the future; and
- Overstated costs resulting in either benefit levels that are kept below the level that could be supported by the computed rate, or an unnecessarily large burden on the current generation of members, employers and taxpayers.

A single set of assumptions will not be suitable indefinitely. Things change, and our understanding of things (whether or not they are changing) also changes.

A common practice among public employee retirement systems is that the actuary recommends a set of demographic assumptions and suggests a range of reasonable alternate economic assumptions. Following discussion involving the actuary, the plan governing body, and other professionals, the plan governing body makes a final choice of economic assumptions from the various alternatives.
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS

In general, the present assumptions varied by category, and proposed changes are recommended in all assumption categories other than disability rates. In most cases, when adjustments are indicated, the proposed assumptions give partial recognition to present assumptions. Complete recognition is rarely given to actual experience over a limited period. In general, the rates were moved about half way to the observed experience, except for the case of mortality which is discussed in further detail later in this report.

Note that we have considered the use of a ‘liability weighted rate’ for certain decrements. This represents the crude rate of decrement on a liability weighted basis as opposed to strictly a number count basis. Results on a liability weighted basis were not significantly different from those on a number count basis.

Withdrawal Rates: A “withdrawal” or a quit is a separation from service without entitlement to an immediate monthly benefit. In general, the number of withdrawals from employment was more than expected over the experience period. We recommend increasing rates of withdrawal for this group. This change had downward pressure on the contribution rates. Detailed information on withdrawals begins on Page A-1.

Disability Rates: Overall, there were 34 reported disabilities over the experience period, which was in line with our expectation and we recommend no change in the rates of disability. Detailed information on disabilities begins on page B-1.

Pay Increase Rates (Merit and Seniority portion): The total amount of expected pay increases is typically divided into two categories: base wage inflation portion and merit and seniority portion. In general, the rates of pay increases due to Merit and Seniority were slightly lower than expected over the experience period and we recommend lowering pay increase rates. This change had downward pressure on the contribution rates. Recommendations regarding general wage inflation are discussed on page 12. Detailed information on merit and seniority begins on page C-1.

Retirement Experience: Overall, there were fewer retirements than expected over the experience period and we recommend lowering the rates of retirement. This change had downward pressure on the contribution rates. Detailed information on retirements begins on page D-1.
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS
(CONTINUED)

Mortality Among Retirees: Mortality rates among retired public employees have been declining for years. Additionally, and perhaps consequently, the Actuarial Standards of Practice with regard to the mortality assumption has recently been revised. ASOP No. 35 Disclosure Section 4.1.1 now states: “…The disclosure of the mortality assumption should contain sufficient detail to permit another qualified actuary to understand the provision made for future mortality improvement. If the actuary assumes zero mortality improvement after the measurement date, the actuary should state that no provision was made for future mortality improvement.”

While the current mortality table did provide some margin for future improvement, the current tables used a static (1 dimensional) projection for future improvement in life expectancy. The Society of Actuaries recently released a new set of mortality tables (RP-2014) and recommended the use of a ‘fully generational’ (2 dimensional) projection scale (MP-2016). Although the actual number of deaths was slightly less than the expected number of deaths, the sample size is very small and not sufficient to determine if there is margin for future improvements in mortality. Therefore, we are recommending a change in the mortality table to the RP-2014 Healthy Annuitant mortality table for males and females adjusted backward to 2006 with MP-2014. In addition, we are recommending the use of the MP-2016 fully generational projection scale to produce appropriate margin for future experience. This change produced upward pressure on contribution rates.

The graphs on the following two pages illustrate how the life expectancy for a 65-year-old has changed over time. The key difference is that Actuarial Standards of Practice now require the use of margin for future improvements in mortality. In the graphs, this is the difference between the dashed line and the solid line in the shaded region of the graphs.
**Summary of Findings – Non–Economic Assumptions (continued)**

**Graph: Historical Life Expectancy of a 65-Year-Old Male**

- **Projected Life Expectancy**
- **Males with Projection**
- **Males without Projection**

**Margin for Future Improvement**
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS
(CONTINUED)

Historical Life Expectancy of a 65-Year-Old Female

- Females with Projection
- Females without Projection

Margin for Future Improvement
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS
(CONTINUED)

Data for active and disabled retirees was insufficient to use as a basis for judgment. Therefore, we used active and disabled mortality tables from the RP-2014 mortality table (applying the same adjustments for healthy lives) and project future rates with the MP-2016 fully generational projection scale.

Assumptions for members hired after January 1, 2012: Members hired after January 1, 2012 have different retirement eligibilities and benefits and will likely have different experience with regard to withdrawal, disability, retirement and other assumptions. Currently, there is insufficient participant data to perform an experience review for members hired after January 1, 2012. Proposed rates for members hired after January 1, 2012 are shown in Section F.

Miscellaneous Assumptions: Our valuations also make assumptions about the percentage of members that are married and the percentage of members that will receive a Health Care subsidy when they retire.

The current and proposed assumptions are shown below:

<table>
<thead>
<tr>
<th></th>
<th>Percent Married</th>
<th></th>
<th>Percent of Members with Health Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current</td>
<td>Proposed</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>80%</td>
<td>75%</td>
<td></td>
</tr>
<tr>
<td>Females</td>
<td>80%</td>
<td>50%</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current</td>
<td>70%</td>
<td>60%</td>
<td></td>
</tr>
</tbody>
</table>

Males Females Males Females
80% 80% 75% 50%
### ACTIVE MEMBER DECREMENTS
#### COMPARISON OF ACTUAL, PRESENT AND PROPOSED EXPERIENCE

<table>
<thead>
<tr>
<th>Decrement</th>
<th>Actual</th>
<th>Assumed Present</th>
<th>Assumed Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal</td>
<td>7,836</td>
<td>7,346.9</td>
<td>7,556.9</td>
</tr>
<tr>
<td>Disability</td>
<td>34</td>
<td>31.4</td>
<td>31.4</td>
</tr>
<tr>
<td>Retirement</td>
<td>1,572</td>
<td>2,286.3</td>
<td>1,938.9</td>
</tr>
<tr>
<td>Post-retirement Death</td>
<td>322</td>
<td>348.5</td>
<td>316.2</td>
</tr>
<tr>
<td>Pre-retirement Death</td>
<td>82</td>
<td>103.1</td>
<td>83.6</td>
</tr>
</tbody>
</table>

This page compares actual total decrement experience during the 5-year experience period with experience that was assumed by the present assumption package and with experience that would have been assumed if the proposed assumptions had been in force throughout the experience period.
SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS

Economic assumptions include long-term rates of investment return (net of administrative and investment expenses), wage inflation (the across-the-board portion of salary increases), and pay increases due to merit and seniority. Unlike demographic activities, economic activities do not lend themselves to analysis solely on the basis of internal historical patterns because both salary increases and investment return are affected more by external forces; namely inflation (both wage and price), general productivity changes and the local economic environment which defy accurate long-term prediction. Estimates of economic activities are generally selected on the basis of the expectations in an inflation-free environment and then both long-term rates of investment return and wage inflation are increased by some provision for long-term inflation.

If inflation and/or productivity increases are lower than expected, it will probably result in both actual rates of salary increases and investment return below the assumed rates. Salaries increasing at rates less than expected produce lower liabilities. However, actual investment return below the assumed rate of investment return (whether due to manager performance, change in the mix of assets, or general market conditions) results in lower than expected asset amounts.

Sources considered in the analysis of the economic assumptions included:

- Actual system experience over the last 5 years (i.e., merit and seniority pay increases)
- Future expectations of investment consultants
- 2016 Social Security Trustees Report
- Historical observations of inflation statistics (both price and wage) and investment returns

Current economic assumptions for the System are as follows:

<table>
<thead>
<tr>
<th>Assumption</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment Return</td>
<td>7.50%</td>
</tr>
<tr>
<td>Wage Inflation</td>
<td>4.00%</td>
</tr>
<tr>
<td>Price Inflation</td>
<td>3.00%</td>
</tr>
<tr>
<td>Spread Between Investment Return and Wage Inflation</td>
<td>3.50%</td>
</tr>
<tr>
<td>Spread Between Investment Return and Price Inflation</td>
<td>4.50%</td>
</tr>
</tbody>
</table>

The remainder of this section addresses the economic assumptions other than pay increases due to merit and seniority. Pay increases due to merit and seniority are addressed on page 3.
Guidance regarding the selection of economic assumptions for measuring pension obligations is provided by Actuarial Standards of Practice (ASOP) No. 27. The standard requires that the selected economic assumptions be consistent with each other. That is, the selection of the investment return assumption should be consistent with the selection of the wage inflation and price inflation assumptions.

The most recent version of ASOP No. 27 (applicable to valuation dates on or after September 30, 2014) defines a reasonable economic assumption as an assumption that has the following characteristics:

(a) It is appropriate for the purpose of the measurement;
(b) It reflects the actuary’s professional judgment;
(c) It takes into account historical and current economic data that is relevant as of the valuation date;
(d) It reflects the actuary’s estimate of future experience, the actuary’s observation of the estimates inherent in market data, or a combination thereof; and
(e) It has no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included and disclosed under Section 3.5.1, or when alternative assumptions are used for the assessment of risk.
Price Inflation. Price inflation underlies both the wage inflation and investment return assumptions. Since price inflation underlies the wage inflation assumption and the investment return assumption, we recommend that a specific price inflation assumption be adopted in conjunction with this Experience Study. The chart below shows historical averages of both price and wage inflation. Over the past 50 years, price inflation has averaged 4.1%. This result is heavily affected by the high inflationary period of the 1970’s and early 1980’s. During the past decade, price inflation averaged 1.9%. The 2016 Social Security Trustees report uses 2.6% as the long-range intermediate price inflation assumption. In addition, most investment consulting firms are predicting a price inflation assumption between 2.0% and 2.5%, though this is typically based on a shorter time horizon. Based upon the reviewed data, we suggest that the Board adopt a price inflation assumption of 2.5%. (Remember that the selected wage inflation and investment return assumptions should be consistent with the final selected price inflation assumption.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Increase in Prices (CPI-U)</th>
<th>Wages (NAE)</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961-1970</td>
<td>2.9%</td>
<td>4.4%</td>
<td>1.5%</td>
</tr>
<tr>
<td>1971-1980</td>
<td>8.1%</td>
<td>7.3%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>1981-1990</td>
<td>4.5%</td>
<td>5.3%</td>
<td>0.8%</td>
</tr>
<tr>
<td>1991-2000</td>
<td>2.7%</td>
<td>4.3%</td>
<td>1.7%</td>
</tr>
<tr>
<td>2001-2010</td>
<td>2.3%</td>
<td>2.6%</td>
<td>0.3%</td>
</tr>
<tr>
<td>2011-2016</td>
<td>2.3%</td>
<td>2.4%</td>
<td>0.1%</td>
</tr>
<tr>
<td>5-Year Avg</td>
<td>1.5%</td>
<td>2.8%</td>
<td>1.3%</td>
</tr>
<tr>
<td>10-Year Avg</td>
<td>1.9%</td>
<td>2.6%</td>
<td>0.7%</td>
</tr>
<tr>
<td>20-Year Avg</td>
<td>2.2%</td>
<td>3.4%</td>
<td>1.2%</td>
</tr>
<tr>
<td>30-Year Avg</td>
<td>2.6%</td>
<td>3.5%</td>
<td>0.9%</td>
</tr>
<tr>
<td>50-Year Avg</td>
<td>4.1%</td>
<td>4.8%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>
Wage Inflation. Wage inflation consists of two components, 1) a portion due to pure price inflation (i.e., increases due to changes in the CPI), and 2) increases in average salary levels in excess of pure price inflation (i.e., increases due to changes in productivity levels, supply and demand in the labor market and other macroeconomic factors). The long-term rate of increase in National Average Earnings over the last 50 years is somewhat higher than the current CORP assumption, although shorter term averages are below it. It is expected that, in the long run, salary increases in all parts of the country will be close to the national averages. However, few economists are forecasting a repeat of the high inflation rates experienced in the 1970s. In addition, average salaries in CORP have risen at approximately 0.0% a year since 2008 - a slower pace than the assumed 4.00% a year, although, the active member group has decreased in size, which distorts this statistic. **Given our recommendation for a 2.50% price inflation assumption, we believe a reasonable range for this assumption is from 3.0% to 4.0% a year. We recommend a change in the wage inflation assumption to 3.5%.**

We have illustrated the approximate impact on contribution requirements if the wage inflation assumption were changed from 4.0% to 3.50% on page 17.
**SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS**  
*(CONTINUED)*

**Investment Return.** The investment return assumption is the actuarial assumption that has the largest impact on actuarial valuation results. As more of the actuarial accrued liabilities are related to non-active members, the nominal (as opposed to real) investment return assumption becomes a more prominent factor.

Presented below is the approximate current asset allocation:

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Approximate Asset Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>16%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>14%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>13%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>11%</td>
</tr>
<tr>
<td>GTAA</td>
<td>10%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>10%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>8%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>7%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>5%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>4%</td>
</tr>
<tr>
<td>Short Term Inv.</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Based upon the approximate asset allocation, future expectations of various investment consultants were analyzed. The next few exhibits show the results of this analysis. Final expected nominal investment return results are based upon a 2.5% price inflation assumption. We used the actuarial assumption for price inflation rather than the consultant assumption, in order to be consistent with the calculation of liabilities. Investment results presented are net of expenses and are based upon an administrative expense assumption of 10 basis points.
## SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS
(CONTINUED)

### Investment Return Expectations of Various Investment Consultants

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.67%</td>
<td>2.20%</td>
<td>4.47%</td>
<td>2.50%</td>
<td>6.97%</td>
<td>0.10%</td>
<td>6.87%</td>
<td>10.83%</td>
</tr>
<tr>
<td>2</td>
<td>7.09%</td>
<td>2.50%</td>
<td>4.59%</td>
<td>2.50%</td>
<td>7.09%</td>
<td>0.10%</td>
<td>6.99%</td>
<td>12.67%</td>
</tr>
<tr>
<td>3</td>
<td>6.51%</td>
<td>1.56%</td>
<td>4.94%</td>
<td>2.50%</td>
<td>7.44%</td>
<td>0.10%</td>
<td>7.34%</td>
<td>12.53%</td>
</tr>
<tr>
<td>4</td>
<td>7.25%</td>
<td>2.26%</td>
<td>4.99%</td>
<td>2.50%</td>
<td>7.49%</td>
<td>0.10%</td>
<td>7.39%</td>
<td>10.97%</td>
</tr>
<tr>
<td>5</td>
<td>7.43%</td>
<td>2.00%</td>
<td>5.43%</td>
<td>2.50%</td>
<td>7.93%</td>
<td>0.10%</td>
<td>7.83%</td>
<td>11.44%</td>
</tr>
<tr>
<td>6</td>
<td>7.76%</td>
<td>2.25%</td>
<td>5.51%</td>
<td>2.50%</td>
<td>8.01%</td>
<td>0.10%</td>
<td>7.91%</td>
<td>12.93%</td>
</tr>
<tr>
<td>7</td>
<td>8.52%</td>
<td>2.25%</td>
<td>6.27%</td>
<td>2.50%</td>
<td>8.77%</td>
<td>0.10%</td>
<td>8.67%</td>
<td>15.83%</td>
</tr>
<tr>
<td>8</td>
<td>8.74%</td>
<td>2.20%</td>
<td>6.54%</td>
<td>2.50%</td>
<td>9.04%</td>
<td>0.10%</td>
<td>8.94%</td>
<td>12.18%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>7.49%</strong></td>
<td><strong>2.15%</strong></td>
<td><strong>5.34%</strong></td>
<td><strong>2.50%</strong></td>
<td><strong>7.84%</strong></td>
<td><strong>0.10%</strong></td>
<td><strong>7.74%</strong></td>
<td><strong>12.42%</strong></td>
</tr>
</tbody>
</table>

### Distribution of 20-Year Average Geometric Net Nominal Return

<table>
<thead>
<tr>
<th>Investment Consultant</th>
<th>Distribution of 20-Year Average Geometric Net Nominal Return</th>
<th>Probability of exceeding 7.50%</th>
<th>Probability of exceeding 7.40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)               (3)               (4)               (5)               (5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5.72%             6.33%             6.94%             31.36%            32.83%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5.54%             6.24%             6.96%             32.81%            34.09%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5.92%             6.62%             7.32%             37.57%            38.94%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>6.21%             6.83%             7.45%             39.18%            40.76%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>6.58%             7.22%             7.87%             45.68%            47.24%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6.42%             7.14%             7.87%             45.02%            46.40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>6.65%             7.53%             8.42%             50.38%            51.52%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>7.58%             8.26%             8.95%             61.18%            62.60%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>6.33%</strong>         <strong>7.02%</strong>         <strong>7.72%</strong>         <strong>42.90%</strong>         <strong>44.30%</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The current version of ASOP No. 27 (applicable to valuation dates after September 30, 2014) suggests that either the expected geometric return (i.e., 50th percentile) or the expected arithmetic return are suitable for use as a reasonable investment return assumption. Based on the average of each of the investment consultants’ expectations, this would result in a range of 7.02% to 7.74%. The Board has already adopted an assumption of 7.4% to be used in the June 30, 2017 actuarial valuation. However, since the probability of achieving of 7.4% return is still below 50%, we believe a modest change of 10 basis points to 7.3% would be reasonable and should be considered for use in the June 30, 2018 actuarial valuation. This assumption will be reviewed annually.

We have illustrated the approximate impact on contribution requirements if the investment return assumption were changed from 7.5% to 7.4% and 7.3% on page 17.

The results on page 17 are presented as an aid in understanding the average combined effects of the changes in assumptions that have been proposed in this experience study. The results are approximate and indicate only the general direction and approximate average magnitude of the effects of the assumption changes. Contribution rates for fiscal year beginning July 1, 2017 have already been scheduled based upon the June 30, 2016 valuation and are not affected by the experience study. The experience study would begin to effect rates for the fiscal year beginning July 1, 2018.
# Historical Patterns of Investment Return, Pay Increases & Inflation

## Calendar Year Period

<table>
<thead>
<tr>
<th>Calendar Year Period</th>
<th>Gross Market Returns</th>
<th>Price Inflation</th>
<th>National Average Earnings</th>
<th>Sample Balanced Fund</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bonds (Long)</td>
<td>Cash Equivalents (T Bills)</td>
<td>Stocks (S&amp;P 500)</td>
<td>Total Return (I)</td>
</tr>
<tr>
<td></td>
<td>U.S. Treasury (S&amp;P AA)</td>
<td>Corp. (T Bills) (S&amp;P 500)</td>
<td>(CPI)</td>
<td></td>
</tr>
<tr>
<td>1961-1970</td>
<td>4.3%</td>
<td>2.5%</td>
<td>1.3%</td>
<td>8.2%</td>
</tr>
<tr>
<td>1971-1980</td>
<td>6.8%</td>
<td>4.2%</td>
<td>3.9%</td>
<td>8.4%</td>
</tr>
<tr>
<td>1981-1990</td>
<td>8.5%</td>
<td>14.0%</td>
<td>13.7%</td>
<td>13.9%</td>
</tr>
<tr>
<td>1991-2000</td>
<td>4.7%</td>
<td>9.0%</td>
<td>10.3%</td>
<td>17.5%</td>
</tr>
<tr>
<td>2001-2010</td>
<td>2.2%</td>
<td>7.6%</td>
<td>6.6%</td>
<td>1.4%</td>
</tr>
<tr>
<td>2011</td>
<td>0.0%</td>
<td>18.0%</td>
<td>28.2%</td>
<td>2.1%</td>
</tr>
<tr>
<td>2012</td>
<td>0.1%</td>
<td>10.7%</td>
<td>3.3%</td>
<td>16.0%</td>
</tr>
<tr>
<td>2013</td>
<td>0.0%</td>
<td>(7.1)%</td>
<td>(11.4)%</td>
<td>32.4%</td>
</tr>
<tr>
<td>2014</td>
<td>0.0%</td>
<td>17.3%</td>
<td>23.9%</td>
<td>13.7%</td>
</tr>
<tr>
<td>2015</td>
<td>0.5%</td>
<td>(4.8)%</td>
<td>(1.3)%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Last 5 Years</td>
<td>0.1%</td>
<td>6.3%</td>
<td>7.5%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Last 10 Years</td>
<td>1.2%</td>
<td>6.1%</td>
<td>6.5%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Last 55 Years</td>
<td>4.8%</td>
<td>7.3%</td>
<td>7.1%</td>
<td>10.0%</td>
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</tbody>
</table>

## Sample Balanced Fund

<table>
<thead>
<tr>
<th>Sample Balanced Fund</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Equities</td>
<td>64%</td>
</tr>
<tr>
<td>Bonds - Government</td>
<td>17%</td>
</tr>
<tr>
<td>- Corporate</td>
<td>17%</td>
</tr>
<tr>
<td>Cash Equivalents</td>
<td>2%</td>
</tr>
<tr>
<td>Fund expenses(e)</td>
<td>0.50%</td>
</tr>
</tbody>
</table>

## Historical Spread

<table>
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<tr>
<th>Historical Spread</th>
<th>Observation Period</th>
<th>Spread</th>
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<tbody>
<tr>
<td>Observed spread</td>
<td>55 years</td>
<td>4.3%</td>
</tr>
<tr>
<td></td>
<td>45 years</td>
<td>4.9%</td>
</tr>
<tr>
<td></td>
<td>35 years</td>
<td>6.5%</td>
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</table>
### Summary of Findings

**Average Effect on Contribution Rates**

*(Results Based upon June 30, 2016 Data)*

#### Tier 1 & 2

<table>
<thead>
<tr>
<th></th>
<th>Present Demographic</th>
<th>Revised Demographic Assumptions</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>7.50%/4.00%</td>
<td>7.50%/3.50%</td>
</tr>
<tr>
<td><strong>Employer Contribution Rate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pension</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>7.11%</td>
<td>6.68%</td>
</tr>
<tr>
<td>Amortization</td>
<td>13.65%</td>
<td>14.38%</td>
</tr>
<tr>
<td>Total</td>
<td>20.76%</td>
<td>21.06%</td>
</tr>
<tr>
<td><strong>Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>0.32%</td>
<td>0.24%</td>
</tr>
<tr>
<td>Amortization</td>
<td>-0.10%</td>
<td>-0.24%</td>
</tr>
<tr>
<td>Total</td>
<td>0.22%</td>
<td>0.00%</td>
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<tr>
<td><strong>Funded Status</strong></td>
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<tr>
<td><strong>Pension</strong></td>
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<tr>
<td>Accrued Liabilities</td>
<td>$2,930,678,257</td>
<td>$2,994,588,317</td>
</tr>
<tr>
<td>Funding Value of Assets</td>
<td>1,678,275,008</td>
<td>1,678,275,008</td>
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<tr>
<td>Funded Ratio</td>
<td>57.3%</td>
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<tr>
<td><strong>Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accrued Liabilities</td>
<td>$107,001,025</td>
<td>$94,684,076</td>
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<tr>
<td>Funding Value of Assets</td>
<td>116,150,082</td>
<td>116,150,082</td>
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<tr>
<td>Funded Ratio</td>
<td>108.6%</td>
<td>122.7%</td>
</tr>
</tbody>
</table>
Standard Deviation graphs of the type shown above appear frequently in this report. The navy blue line represents the present assumptions used in the valuation. After experience is reviewed for a given decrement, an actual value is computed (based on actual experience) along with its standard deviation value. The green vertical bars on the graph above represent the standard deviation value. If the standard deviation value is large, this means that the group being tested is from a small population. A small group should have less influence on deriving the new proposed value than a large group. In comparison, if the standard deviation has a small value, this means the group being tested is from a large population and should have a greater impact on the decision of the proposed value.
WITHDRAWAL EXPERIENCE
There were 7,836 withdrawals and 66,405 years of exposure included in the withdrawal investigation. The proposed rates recommend higher rates of withdrawal.

<table>
<thead>
<tr>
<th>Service Index</th>
<th>Withdrawals</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Withdrawals</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>1</td>
<td>926</td>
<td>4,314</td>
<td>0.2146</td>
<td>0.2500</td>
<td>0.2300</td>
<td>1,078.5</td>
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<tr>
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<td>1,599</td>
<td>7,943</td>
<td>0.2013</td>
<td>0.2000</td>
<td>0.2000</td>
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<td>5,949</td>
<td>0.1696</td>
<td>0.1600</td>
<td>0.1650</td>
<td>951.8</td>
</tr>
<tr>
<td>4</td>
<td>750</td>
<td>5,033</td>
<td>0.1490</td>
<td>0.1400</td>
<td>0.1450</td>
<td>704.6</td>
</tr>
<tr>
<td>5</td>
<td>640</td>
<td>4,663</td>
<td>0.1373</td>
<td>0.1200</td>
<td>0.1300</td>
<td>559.6</td>
</tr>
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<td>529</td>
<td>4,331</td>
<td>0.1221</td>
<td>0.0900</td>
<td>0.1050</td>
<td>389.8</td>
</tr>
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<td>0.0950</td>
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<td>0.0900</td>
<td>0.0900</td>
<td>363.7</td>
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<td>3,913</td>
<td>0.0787</td>
<td>0.0800</td>
<td>0.0800</td>
<td>313.0</td>
</tr>
<tr>
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<td>303</td>
<td>3,343</td>
<td>0.0906</td>
<td>0.0800</td>
<td>0.0800</td>
<td>267.4</td>
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<td>258</td>
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<td>0.0914</td>
<td>0.0800</td>
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<td>225.8</td>
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<tr>
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<td>165</td>
<td>2,488</td>
<td>0.0663</td>
<td>0.0500</td>
<td>0.0600</td>
<td>124.4</td>
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<tr>
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<td>139</td>
<td>2,332</td>
<td>0.0596</td>
<td>0.0400</td>
<td>0.0500</td>
<td>93.3</td>
</tr>
<tr>
<td>14</td>
<td>118</td>
<td>2,188</td>
<td>0.0539</td>
<td>0.0400</td>
<td>0.0450</td>
<td>87.5</td>
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<td>64</td>
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<td>0.0321</td>
<td>0.0300</td>
<td>0.0300</td>
<td>59.8</td>
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<td>30</td>
<td>1,516</td>
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<td>0.0200</td>
<td>0.0200</td>
<td>30.3</td>
</tr>
<tr>
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<td>27</td>
<td>1,293</td>
<td>0.0209</td>
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<td>0.0200</td>
<td>25.9</td>
</tr>
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<td>10</td>
<td>634</td>
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<td>12.7</td>
</tr>
<tr>
<td>21</td>
<td>9</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
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<tr>
<td>22</td>
<td>1</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>23</td>
<td>2</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>24</td>
<td>3</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>25</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>26</td>
<td>2</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>27</td>
<td>3</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>28</td>
<td>1</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>29</td>
<td>1</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>30 and over</td>
<td>4</td>
<td>-</td>
<td>N/A</td>
<td>0.0000</td>
<td>0.0200</td>
<td>0.0</td>
</tr>
<tr>
<td>Totals</td>
<td>7,836</td>
<td>66,405</td>
<td>0.1180</td>
<td>0.1106</td>
<td>0.1138</td>
<td>7,346.9</td>
</tr>
</tbody>
</table>
CORP WITHDRAWAL EXPERIENCE

![Graph of CORP Withdrawal Experience]

- Actual Experience
- Present Assumptions
- Proposed Assumptions
DISABILITY EXPERIENCE
There were 34 disability benefit claims and 66,457 years of exposure included for the 5-year period. The proposed rates recommend no change in the rates of disability.

<table>
<thead>
<tr>
<th>Age</th>
<th>Disabilities</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates*</th>
<th>Expected Disabilities</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 20</td>
<td>-</td>
<td>19</td>
<td>0.0000</td>
<td>0.0003</td>
<td>0.0003</td>
<td>0.0</td>
</tr>
<tr>
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<td>-</td>
<td>4,287</td>
<td>0.0000</td>
<td>0.0003</td>
<td>0.0003</td>
<td>1.3</td>
</tr>
<tr>
<td>25-29</td>
<td>-</td>
<td>11,387</td>
<td>0.0000</td>
<td>0.0003</td>
<td>0.0003</td>
<td>3.4</td>
</tr>
<tr>
<td>30-34</td>
<td>2</td>
<td>10,996</td>
<td>0.0002</td>
<td>0.0003</td>
<td>0.0003</td>
<td>3.3</td>
</tr>
<tr>
<td>35-39</td>
<td>3</td>
<td>10,295</td>
<td>0.0003</td>
<td>0.0004</td>
<td>0.0004</td>
<td>3.9</td>
</tr>
<tr>
<td>40-44</td>
<td>4</td>
<td>10,285</td>
<td>0.0004</td>
<td>0.0005</td>
<td>0.0005</td>
<td>5.4</td>
</tr>
<tr>
<td>45-49</td>
<td>10</td>
<td>7,290</td>
<td>0.0014</td>
<td>0.0006</td>
<td>0.0006</td>
<td>4.4</td>
</tr>
<tr>
<td>50-54</td>
<td>4</td>
<td>5,388</td>
<td>0.0007</td>
<td>0.0008</td>
<td>0.0008</td>
<td>4.0</td>
</tr>
<tr>
<td>55-59</td>
<td>7</td>
<td>4,214</td>
<td>0.0017</td>
<td>0.0008</td>
<td>0.0008</td>
<td>3.2</td>
</tr>
<tr>
<td>60-64</td>
<td>1</td>
<td>1,897</td>
<td>0.0005</td>
<td>0.0011</td>
<td>0.0011</td>
<td>2.1</td>
</tr>
<tr>
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<td>2</td>
<td>340</td>
<td>0.0059</td>
<td>0.0011</td>
<td>0.0011</td>
<td>0.4</td>
</tr>
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<td>53</td>
<td>0.0189</td>
<td>0.0011</td>
<td>0.0011</td>
<td>0.1</td>
</tr>
<tr>
<td>75 and over</td>
<td>-</td>
<td>6</td>
<td>0.0000</td>
<td>0.0011</td>
<td>0.0011</td>
<td>0.0</td>
</tr>
<tr>
<td>Totals</td>
<td>34</td>
<td>66,457</td>
<td>0.0005</td>
<td>0.0005</td>
<td>0.0005</td>
<td>31.4</td>
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</tbody>
</table>

*Sample values are selected from midpoint of age group.*
PAY INCREASES
MERIT AND LONGEVITY PORTION
## CORP MEMBERS
### MERIT & LONGEVITY PAY INCREASE

<table>
<thead>
<tr>
<th>Age Group Beginning of Year</th>
<th>Merit/Seniority % Increase</th>
<th>Sample Values*</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Actual</td>
<td>Present</td>
</tr>
<tr>
<td>Under 25</td>
<td>2.66%</td>
<td>3.25%</td>
</tr>
<tr>
<td>25-29</td>
<td>1.72%</td>
<td>2.75%</td>
</tr>
<tr>
<td>30-34</td>
<td>1.39%</td>
<td>1.75%</td>
</tr>
<tr>
<td>35-39</td>
<td>0.85%</td>
<td>0.95%</td>
</tr>
<tr>
<td>40-44</td>
<td>0.65%</td>
<td>0.60%</td>
</tr>
<tr>
<td>45-49</td>
<td>0.40%</td>
<td>0.50%</td>
</tr>
<tr>
<td>50-54</td>
<td>0.27%</td>
<td>0.25%</td>
</tr>
<tr>
<td>55-59</td>
<td>0.06%</td>
<td>0.10%</td>
</tr>
<tr>
<td>60-64</td>
<td>0.08%</td>
<td>0.00%</td>
</tr>
<tr>
<td>65 &amp; Over</td>
<td>(0.69)%</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

*Sample values are selected from midpoint of age group.*
NORMAL RETIREMENT EXPERIENCE
There were 454 age and service retirements and 1,510 life years of exposure in the age based retirement investigation. The proposed rates recommend lower rates of retirement.

<table>
<thead>
<tr>
<th>Age</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Under 62</td>
<td>Under 62</td>
<td>Under 62</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
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<td>5</td>
<td>335</td>
<td>0.3194</td>
<td>0.6000</td>
<td>0.4500</td>
<td>201.0 150.8 53.2% 71.0%</td>
</tr>
<tr>
<td>63</td>
<td>64</td>
<td>237</td>
<td>0.2700</td>
<td>0.6000</td>
<td>0.4500</td>
<td>142.2 106.7 45.0% 60.0%</td>
</tr>
<tr>
<td>64</td>
<td>47</td>
<td>206</td>
<td>0.2282</td>
<td>0.6000</td>
<td>0.4500</td>
<td>123.6 92.7 38.0% 50.7%</td>
</tr>
<tr>
<td>65</td>
<td>45</td>
<td>189</td>
<td>0.2250</td>
<td>0.6000</td>
<td>0.4500</td>
<td>103.4 85.1 39.7% 52.9%</td>
</tr>
<tr>
<td>66</td>
<td>64</td>
<td>206</td>
<td>0.2250</td>
<td>0.6000</td>
<td>0.4500</td>
<td>95.4 71.6 37.1% 57.9%</td>
</tr>
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<td>67</td>
<td>45</td>
<td>117</td>
<td>0.3684</td>
<td>0.6000</td>
<td>0.4500</td>
<td>70.2 52.7 64.1% 85.5%</td>
</tr>
<tr>
<td>68</td>
<td>22</td>
<td>71</td>
<td>0.3099</td>
<td>0.6000</td>
<td>0.4500</td>
<td>42.6 32.0 51.6% 68.9%</td>
</tr>
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<td>15</td>
<td>59</td>
<td>0.2542</td>
<td>0.6000</td>
<td>0.4500</td>
<td>35.4 32.6 52.4% 65.5%</td>
</tr>
<tr>
<td>70</td>
<td>12</td>
<td>47</td>
<td>0.2553</td>
<td>0.6000</td>
<td>0.4500</td>
<td>28.2 21.2 42.6% 56.7%</td>
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<td>12</td>
<td>34</td>
<td>0.3529</td>
<td>0.6000</td>
<td>0.4500</td>
<td>20.4 15.3 58.8% 78.4%</td>
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<td>4</td>
<td>19</td>
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<td>0.6000</td>
<td>0.4500</td>
<td>11.4 8.6 35.1% 46.8%</td>
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<td>73</td>
<td>4</td>
<td>14</td>
<td>0.2857</td>
<td>0.6000</td>
<td>0.4500</td>
<td>8.4 6.3 47.6% 63.5%</td>
</tr>
<tr>
<td>74</td>
<td>4</td>
<td>10</td>
<td>0.4000</td>
<td>0.6000</td>
<td>0.4500</td>
<td>6.0 4.5 66.7% 88.9%</td>
</tr>
<tr>
<td>Sub Totals</td>
<td>450</td>
<td>1,497</td>
<td>0.3006</td>
<td>0.6000</td>
<td>0.4500</td>
<td>898.2 673.7 50.1% 66.8%</td>
</tr>
<tr>
<td>75 &amp; Over</td>
<td>4</td>
<td>13</td>
<td>0.3077</td>
<td>0.6000</td>
<td>0.4500</td>
<td>13.0 13.0 30.8% 30.8%</td>
</tr>
<tr>
<td>Total (62 &amp; Over)</td>
<td>454</td>
<td>1,510</td>
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<td>0.6000</td>
<td>0.4500</td>
<td>911.2 686.7 49.8% 66.1%</td>
</tr>
</tbody>
</table>
CORP

SERVICE BASED NORMAL RETIREMENT EXPERIENCE
(for members attaining 20 years of service before age 62)

There were 1,069 service retirements and 4,801 life years of exposure in the service based retirement investigation. The proposed rates recommend slightly lower rates of retirement.

<table>
<thead>
<tr>
<th>Service Years*</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 20</td>
<td>16</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>344</td>
<td>1,073</td>
<td>0.3206</td>
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<td>0.3000</td>
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</tr>
<tr>
<td>21</td>
<td>201</td>
<td>723</td>
<td>0.2780</td>
<td>0.2800</td>
<td>0.2800</td>
<td>202.4</td>
</tr>
<tr>
<td>22</td>
<td>82</td>
<td>536</td>
<td>0.1530</td>
<td>0.2200</td>
<td>0.1900</td>
<td>117.9</td>
</tr>
<tr>
<td>23</td>
<td>68</td>
<td>479</td>
<td>0.1420</td>
<td>0.2000</td>
<td>0.1700</td>
<td>95.8</td>
</tr>
<tr>
<td>24</td>
<td>38</td>
<td>417</td>
<td>0.0911</td>
<td>0.1700</td>
<td>0.1300</td>
<td>70.9</td>
</tr>
<tr>
<td>25</td>
<td>72</td>
<td>398</td>
<td>0.1809</td>
<td>0.3300</td>
<td>0.2600</td>
<td>131.3</td>
</tr>
<tr>
<td>26</td>
<td>69</td>
<td>324</td>
<td>0.2130</td>
<td>0.3300</td>
<td>0.2600</td>
<td>106.9</td>
</tr>
<tr>
<td>27</td>
<td>37</td>
<td>238</td>
<td>0.1555</td>
<td>0.2500</td>
<td>0.1900</td>
<td>59.5</td>
</tr>
<tr>
<td>28</td>
<td>39</td>
<td>190</td>
<td>0.2053</td>
<td>0.1700</td>
<td>0.1900</td>
<td>32.3</td>
</tr>
<tr>
<td>29</td>
<td>28</td>
<td>136</td>
<td>0.2059</td>
<td>0.1700</td>
<td>0.1900</td>
<td>23.1</td>
</tr>
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<td>30</td>
<td>23</td>
<td>96</td>
<td>0.2396</td>
<td>0.3000</td>
<td>0.2700</td>
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<td>31</td>
<td>14</td>
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<td>14</td>
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<td>0.5000</td>
<td>0.4000</td>
<td>21.5</td>
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<tr>
<td>33</td>
<td>8</td>
<td>27</td>
<td>0.2963</td>
<td>0.5000</td>
<td>0.4000</td>
<td>13.5</td>
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<tr>
<td>34</td>
<td>5</td>
<td>21</td>
<td>0.2381</td>
<td>0.7500</td>
<td>0.5000</td>
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<td>17</td>
<td>0.2353</td>
<td>0.7500</td>
<td>0.5000</td>
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<td>9</td>
<td>0.4444</td>
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<td>4,787</td>
<td>0.2227</td>
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<td>0.6000</td>
<td>1,257.7</td>
</tr>
<tr>
<td>37 &amp; Over</td>
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<td>14</td>
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<td>0.7500</td>
<td>0.5000</td>
<td>14.0</td>
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<tr>
<td>Totals</td>
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<td>4,801</td>
<td>0.2227</td>
<td>0.7500</td>
<td>0.6000</td>
<td>1,271.7</td>
</tr>
</tbody>
</table>

* Measured as Integer Service Nearest Whole Year at time of decrement.
**CORP**

**“RULE OF 80” RETIREMENT EXPERIENCE**

*(FOR MEMBERS ATTAINING 80 POINTS AFTER AGE 60)*

There were 49 service retirements and 147 life years of exposure in the service based retirement investigation. The proposed rates recommend lower rates of retirement.

<table>
<thead>
<tr>
<th>Age</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 60</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td>2</td>
<td>0.5000</td>
<td>0.6000</td>
<td>0.4500</td>
<td>1.2</td>
</tr>
<tr>
<td>61</td>
<td>8</td>
<td>34</td>
<td>0.2353</td>
<td>0.6000</td>
<td>0.4500</td>
<td>20.4</td>
</tr>
<tr>
<td>62</td>
<td>16</td>
<td>26</td>
<td>0.6154</td>
<td>0.6000</td>
<td>0.4500</td>
<td>15.6</td>
</tr>
<tr>
<td>63</td>
<td>1</td>
<td>11</td>
<td>0.0909</td>
<td>0.6000</td>
<td>0.4500</td>
<td>6.6</td>
</tr>
<tr>
<td>64</td>
<td>2</td>
<td>10</td>
<td>0.2000</td>
<td>0.6000</td>
<td>0.4500</td>
<td>6.0</td>
</tr>
<tr>
<td>65</td>
<td>4</td>
<td>6</td>
<td>0.6667</td>
<td>0.6000</td>
<td>0.4500</td>
<td>3.6</td>
</tr>
<tr>
<td>66</td>
<td>-</td>
<td>2</td>
<td>0.0000</td>
<td>0.6000</td>
<td>0.4500</td>
<td>1.2</td>
</tr>
<tr>
<td>67</td>
<td>3</td>
<td>3</td>
<td>1.0000</td>
<td>0.6000</td>
<td>0.4500</td>
<td>1.8</td>
</tr>
<tr>
<td>68</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>0.6000</td>
<td>0.4500</td>
<td>-</td>
</tr>
<tr>
<td>69</td>
<td>-</td>
<td>-</td>
<td>N/A</td>
<td>0.6000</td>
<td>0.4500</td>
<td>-</td>
</tr>
<tr>
<td>70</td>
<td>-</td>
<td>1</td>
<td>0.0000</td>
<td>0.6000</td>
<td>0.4500</td>
<td>0.6</td>
</tr>
<tr>
<td>71</td>
<td>2</td>
<td>2</td>
<td>1.0000</td>
<td>0.6000</td>
<td>0.4500</td>
<td>1.2</td>
</tr>
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<td>0.6000</td>
<td>0.4500</td>
<td>2.4</td>
</tr>
<tr>
<td>73</td>
<td>2</td>
<td>3</td>
<td>0.6667</td>
<td>0.6000</td>
<td>0.4500</td>
<td>1.8</td>
</tr>
<tr>
<td>74</td>
<td>-</td>
<td>5</td>
<td>0.0000</td>
<td>0.6000</td>
<td>0.4500</td>
<td>3.0</td>
</tr>
<tr>
<td>Sub Totals</td>
<td>41</td>
<td>109</td>
<td>0.3761</td>
<td>0.6000</td>
<td>0.4500</td>
<td>65.4</td>
</tr>
<tr>
<td>75 &amp; Over</td>
<td>8</td>
<td>38</td>
<td>0.2105</td>
<td>0.6000</td>
<td>0.4500</td>
<td>38.0</td>
</tr>
<tr>
<td>Total</td>
<td>49</td>
<td>147</td>
<td>0.3333</td>
<td>0.6000</td>
<td>0.4500</td>
<td>103.4</td>
</tr>
</tbody>
</table>
CORP

RATES OF AGE BASED NORMAL RETIREMENT

CORP

RATES OF SERVICE BASED NORMAL RETIREMENT
CORP
RATES OF “RULE OF 80” RETIREMENT

[Graph showing rates of "Rule of 80" retirement]

- Actual Experience
- Present Assumptions
- Proposed Assumptions
MORTALITY EXPERIENCE
**POST-RETIREMENT MORTALITY - MALES**

Observed death rates were slightly lower than expected. The current rates are based on static projection for future improvements in mortality. The proposed rates represent the recommended base table only. Margin for future improvements in mortality will be built into the ‘fully generational’ projection which cannot be displayed in a table with this format.

<table>
<thead>
<tr>
<th>Age</th>
<th>Deaths</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Benefit Weighted</th>
<th>Sample Rates*</th>
<th>Expected Deaths</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present/Proposed</td>
</tr>
<tr>
<td>Under 44</td>
<td>-</td>
<td>220</td>
<td>N/A</td>
<td>N/A</td>
<td>0.001276</td>
<td>0.002638</td>
<td>0.3/0.6</td>
</tr>
<tr>
<td>45-49</td>
<td>1</td>
<td>875</td>
<td>0.001143</td>
<td>0.002440</td>
<td>0.001821</td>
<td>0.003939</td>
<td>1.6/3.5</td>
</tr>
<tr>
<td>50-54</td>
<td>4</td>
<td>1,485</td>
<td>0.002694</td>
<td>0.002933</td>
<td>0.002800</td>
<td>0.005343</td>
<td>4.2/7.9</td>
</tr>
<tr>
<td>55-59</td>
<td>8</td>
<td>1,610</td>
<td>0.004969</td>
<td>0.005025</td>
<td>0.004928</td>
<td>0.006746</td>
<td>8.0/11.0</td>
</tr>
<tr>
<td>60-64</td>
<td>22</td>
<td>2,050</td>
<td>0.010732</td>
<td>0.009645</td>
<td>0.009195</td>
<td>0.009646</td>
<td>19.8/20.4</td>
</tr>
<tr>
<td>65-69</td>
<td>38</td>
<td>2,452</td>
<td>0.015498</td>
<td>0.014029</td>
<td>0.016879</td>
<td>0.015221</td>
<td>41.3/37.5</td>
</tr>
<tr>
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<td>45</td>
<td>1,765</td>
<td>0.025496</td>
<td>0.024541</td>
<td>0.028645</td>
<td>0.024638</td>
<td>50.4/43.2</td>
</tr>
<tr>
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<td>58</td>
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<td>0.053065</td>
<td>0.056732</td>
<td>0.049251</td>
<td>0.040457</td>
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<tr>
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<td>35</td>
<td>530</td>
<td>0.066038</td>
<td>0.053865</td>
<td>0.084510</td>
<td>0.067902</td>
<td>43.5/35.0</td>
</tr>
<tr>
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<td>15</td>
<td>159</td>
<td>0.094340</td>
<td>0.083724</td>
<td>0.142845</td>
<td>0.116487</td>
<td>21.9/17.7</td>
</tr>
<tr>
<td>90-94</td>
<td>5</td>
<td>29</td>
<td>0.172414</td>
<td>0.132161</td>
<td>0.227435</td>
<td>0.195154</td>
<td>6.2/5.3</td>
</tr>
<tr>
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<td>1</td>
<td>1.000000</td>
<td>1.000000</td>
<td>0.314845</td>
<td>0.284940</td>
<td>0.3/0.2</td>
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<tr>
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<td>-</td>
<td>-</td>
<td>N/A</td>
<td>N/A</td>
<td>0.390269</td>
<td>0.384058</td>
<td>-/-</td>
</tr>
<tr>
<td>105 &amp; Over</td>
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<td>N/A</td>
<td>N/A</td>
<td>0.420000</td>
<td>0.470810</td>
<td>-/-</td>
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<td>0.014947</td>
<td>0.020417</td>
<td>0.018416</td>
<td>250.5/225.9</td>
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</tbody>
</table>

* Sample values are selected from midpoint of age group.
RATES OF POST-RETIREMENT MORTALITY - MALES

Actual Experience  Present Assumptions  Proposed Assumptions
**POST-RETIREMENT MORTALITY - FEMALES**

Observed death rates among female retirees (including original retirees and spouses of original retirees) were somewhat lower than expected. The current rates are based on static projection for future improvements in mortality. The proposed rates represent the recommended base table only. Margin for future improvements in mortality will be built into the ‘fully generational’ projection which cannot be displayed in a table with this format.

<table>
<thead>
<tr>
<th>Age</th>
<th>Deaths</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Benefit Weighted</th>
<th>Sample Rates*</th>
<th>Expected Deaths</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
</tr>
<tr>
<td>Under 44</td>
<td>-</td>
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<td>0.000000</td>
<td>0.000895</td>
<td>0.002091</td>
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<td>0.002119</td>
<td>0.003124</td>
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<td>804</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.003652</td>
<td>0.004435</td>
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<td>60-64</td>
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<td>939</td>
<td>0.005325</td>
<td>0.006589</td>
<td>0.006990</td>
<td>0.007283</td>
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<td>0.019976</td>
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<td>0.018861</td>
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<td>0.157939</td>
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<td>0.226002</td>
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<td>N/A</td>
<td>0.267223</td>
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<td>105 &amp; Over</td>
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<td>-</td>
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<td>N/A</td>
<td>0.338861</td>
<td>0.435390</td>
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<td>0.011492</td>
<td>0.016297</td>
<td>0.015000</td>
<td>98.0</td>
</tr>
</tbody>
</table>

* Sample values are selected from midpoint of age group.
POST-RETIREMENT MORTALITY - FEMALES

Age

-0.05 0.00 0.05 0.10 0.15 0.20 0.25

Actual Experience  Present Assumptions  Proposed Assumptions

CORP 2011-2016 Experience Study  E-4
COMPLETE LISTS OF PROPOSED DECREMENT ASSUMPTIONS
## Proposed Retirement Rates

Members hired before January 1, 2012

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## Proposed Disabled Mortality Rates

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February 24, 2017

Mr. Jared Smout  
Administrator  
Arizona Public Safety Personnel Retirement System  
3010 East Camelback Road, Suite 200  
Phoenix, Arizona 85016-4416

Re: CORP 2011-2016 Experience Study

Dear Jared:

Enclosed are 5 copies of the 2011 – 2016 Experience Study.

Sincerely,

James D. Anderson, FSA, EA, MAAA

JDA:mrb
Enclosures
ARIZONA ELECTED OFFICIALS' RETIREMENT PLAN
ANALYSIS OF ACTUARIAL ASSUMPTIONS
JULY 1, 2011 THROUGH JUNE 30, 2016
February 24, 2017

Board of Trustees
Arizona Elected Officials’ Retirement Plan
Phoenix, Arizona

Ladies and Gentlemen:

The results of the 5-year investigation of experience of the Arizona Elected Officials’ Retirement Plan (EORP) are presented in this report. The investigation was made for the purpose of updating the actuarial assumptions used in valuing the actuarial liabilities, assets and actuarially determined employer contribution rates of EORP.

The investigation covered the 5-year period from July 1, 2011 to June 30, 2016 and was carried out using generally accepted actuarial principles and techniques.

The investigation was based upon the statistical data furnished for annual actuarial valuations, and upon supplemental information furnished by PSPRS staff, concerning members who died, withdrew, became disabled or retired during the last 5 years and on published economic historical data.

We believe that the new actuarial assumptions that are the result of this investigation represent a reasonable estimate of future experience of EORP based upon the data reviewed in the study and general trends among Public Employee Retirement Systems.

Mark Buis, James D. Anderson and Francois Pieterse are Members of the American Academy of Actuaries (MAAA) and meet the qualification standards of the American Academy of Actuaries to render the actuarial opinions contained herein. The signing actuaries are independent of the plan sponsor.

The consultants below are experienced in performing valuations for large public retirement systems. All calculations have been made in conformity with generally accepted actuarial principles and practices, and with the Actuarial Standards of Practice issued by the Actuarial Standards Board and with applicable statutes.

Respectfully submitted,

GABRIEL, ROEDER, SMITH & COMPANY

Mark Buis       James D. Anderson       Francois Pieterse
FSA, EA, FCA, MAAA    FSA, EA, MAAA    ASA, FCA, MAAA

MB/JDA/FP:mrb
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<td>Introduction</td>
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<td>Effect on Contribution Rates</td>
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<td>Explanatory Standard Deviation Example</td>
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EXECUTIVE SUMMARY

The Fund Manager has established a policy of reviewing the actuarial assumptions every five years. The last review was prepared for the period from July 1, 2006 to June 30, 2011. In this report, we review the current actuarial assumptions and compare them to the actual experience of the Retirement Fund for the years 2011-2016.

The table below lists each of the primary assumptions and methods that we analyzed, including our recommendations for each item, and the impact of any recommended changes.

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<td><strong>Various</strong></td>
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The overall impact on the contribution rate is summarized on page 18 of this study.
INTRODUCTION

SELECTION OF ASSUMPTIONS USED IN ACTUARIAL VALUATIONS

Actuarial assumptions may be classified as demographic and economic.

Demographic Assumptions

- Rates of withdrawal among active members.
- Rates of disability among active members.
- Patterns of merit & longevity pay increases to active members.
- Rates of retirement among active members.
- Rates of mortality among active members, retirees and beneficiaries.

Economic Assumptions

- Long-term rates of investment return to be generated by the assets of the Fund.
- Long-term rates of growth of total payroll also called wage inflation.
- Price Inflation.

Assumptions should be carefully chosen and continually monitored. Use of outdated assumptions can lead to:

- Understated costs resulting in either an inability to pay benefits when due, or sharp increases in required contributions at some point in the future; and
- Overstated costs resulting in either benefit levels that are kept below the level that could be supported by the computed rate, or an unnecessarily large burden on the current generation of members, employers and taxpayers.

A single set of assumptions will not be suitable indefinitely. Things change, and our understanding of things (whether or not they are changing) also changes.

A common practice among public employee retirement systems is that the actuary recommends a set of demographic assumptions and suggests a range of reasonable alternate economic assumptions. Following discussion involving the actuary, the plan governing body, and other professionals, the plan governing body makes a final choice of economic assumptions from the various alternatives.
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS

In general, the present assumptions varied by category, and proposed changes are recommended in all assumption categories, except pay increases due to seniority. In most cases, when adjustments are indicated, the proposed assumptions give partial recognition to present assumptions. Complete recognition is rarely given to actual experience over a limited period. In general, the rates were moved about half way to the observed experience, except for the case of mortality which is discussed in further detail later in this report.

Note that we have considered the use of a ‘liability weighted rate’ for certain decrements. This represents the crude rate of decrement on a liability weighted basis as opposed to strictly a number count basis. Results on a liability weighted basis were not significantly different from those on a number count basis.

**Withdrawal Rates:** A “withdrawal” or a quit is a separation from service without entitlement to an immediate monthly benefit. In general, the number of withdrawals from employment was very close to expected over the experience period. Slightly lower rates were recommended to the current rates for service up to 10 years of service and slightly higher rates were recommend after 10 years of service up to and including 20 years of service. This change had downward pressure on the contribution rates. Detailed information on withdrawals begins on Page A-1.

**Disability Rates:** Overall, there were more reported disabilities over the experience period than expected and we recommend increasing the rates of disability. This change had upward pressure on the contribution rates. Detailed information on disabilities begins on page B-1. Note that this experience is based on experience of Defined Benefit members during the exposure period. Given the paucity of data available for Defined Contribution members hired after the plan was closed, these rates will be applied to estimate disability costs for those members.

**Pay Increase Rates** (Merit and Seniority portion): The total amount of expected pay increases is typically divided into two categories: base wage inflation portion and merit and seniority portion. In general, the rates of pay increases due to Merit and Seniority were very close to expected over the experience period and no change is recommended. Recommendations regarding general wage inflation are discussed on page 12. Detailed information on merit and seniority begins on page C-1.
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS
(CONTINUED)

Retirement Experience: Overall, there were fewer retirements than expected over the experience period and we recommend lowering the rates of retirement. This change had downward pressure on the contribution rates. Detailed information on retirements begins on page D-1.

Mortality Among Retirees: Mortality rates among retired public employees have been declining for years. Additionally, and perhaps consequently, the Actuarial Standards of Practice with regard to the mortality assumption has recently been revised. ASOP No. 35 Disclosure Section 4.1.1 now states: “...The disclosure of the mortality assumption should contain sufficient detail to permit another qualified actuary to understand the provision made for future mortality improvement. If the actuary assumes zero mortality improvement after the measurement date, the actuary should state that no provision was made for future mortality improvement.”

While the current mortality table did provide some margin for future improvement, the current tables used a static (1 dimensional) projection for future improvement in life expectancy. The Society of Actuaries recently released a new set of mortality tables (RP-2014) and recommended the use of a ‘fully generational’ (2 dimensional) projection scale (MP-2016). Although the actual number of deaths was slightly less than the expected number of deaths for males and slightly greater for females, the sample size is very small and not sufficient to determine if there is margin for future improvements in mortality. Therefore, we are recommending a change in the mortality table to the RP-2014 Healthy Annuitant mortality table for males and females. In addition, we are recommending the use of the MP-2016 fully generational projection scale to produce appropriate margin for future experience. This change produced upward pressure on contribution rates.

The graphs on the following two pages illustrate how the life expectancy for a 65-year old has changed over time. The key difference is that Actuarial Standards of Practice now require the use of margin for future improvements in mortality. In the graphs, this is the difference between the dashed line and the solid line in the shaded region of the graphs.
SUMMARY OF FINDINGS – NON–ECONOMIC ASSUMPTIONS
(CONTINUED)

Historical Life Expectancy of a 65-Year-Old Male

Margin for Future Improvement

Projected

- Males with Projection
- Males without Projection
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS
(CONTINUED)

Historical Life Expectancy of a 65-Year-Old Female

- Females with Projection
- Females without Projection

Margin for Future Improvement

Projected
SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS
(CONTINUED)

Data for active and disabled retirees was insufficient to use as a basis for judgment. Therefore, we used active and disabled mortality tables from the RP-2014 mortality table (applying the same adjustments for healthy lives) and project future rates with the MP-2016 fully generational projection scale.

Assumptions for members hired after January 1, 2012: Members hired after January 1, 2012 have different retirement eligibilities and benefits and will likely have different experience with regard to withdrawal, disability, retirement and other assumptions. Currently, there is insufficient data (since these members all have less than 5 years of service, the closed nature of the plan, and relative infrequency with which members are elected) to perform an experience review for members hired after January 1, 2012. Proposed rates for members hired after January 1, 2012 are shown in Section G.

Miscellaneous Assumptions: Our valuations also make assumptions about the percentage of members that are married and the percentage of members that will receive a Health Care subsidy when they retire.

The current and proposed assumptions are shown below:

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<th>Percent Married</th>
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<th>Proposed</th>
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<tr>
<td>Males</td>
<td>85%</td>
<td>80%</td>
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<tr>
<td>Females</td>
<td>85%</td>
<td>70%</td>
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<table>
<thead>
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<th>Percent of Members with Health Subsidy</th>
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<tbody>
<tr>
<td>70%</td>
<td>70%</td>
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**SUMMARY OF FINDINGS – NON – ECONOMIC ASSUMPTIONS (CONCLUDED)**

*Contribution Requirements:* Under current statutes, the plan is funded by employer contributions equal to 23.5% of aggregate payroll* plus certain appropriations and court fees. The result of this funding approach has been a substantial deterioration in funded status, the prospect of the plan running out of funds in the relatively near future, and a dramatic decrease in the Single Discount Rate required for GASB accounting calculations. To address this situation, we recommend computations on an actuarially calculated basis, including contributions for Normal Cost and the use of a closed 20-year amortization period (level dollar) for financing unfunded accrued liabilities. This method will put the plan on firmer financial footing -- systematically paying down the unfunded liability, improving funded status and will help avoid having to use a lower discount rate under GASB accounting rules.

*Aggregate payroll on behalf of active members in the Arizona Elected Official’s Retirement Plan (EORP) and active members in the Elected Officials’ Defined Contribution Retirement System (EODCRS), and active members in the Arizona State Retirement System (ASRS) who opt-out of EODCRS because they had money on account with ASRS.*
**SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS**

Economic assumptions include **long-term rates of investment return** (net of administrative and investment expenses), **wage inflation** (the across-the-board portion of salary increases), and pay increases due to **merit and seniority**. Unlike demographic activities, economic activities do not lend themselves to analysis solely on the basis of internal historical patterns because both salary increases and investment return are affected more by external forces; namely inflation (both wage and price), general productivity changes and the local economic environment which defy accurate long-term prediction. Estimates of economic activities are generally selected on the basis of the expectations in an inflation-free environment and then both long-term rates of investment return and wage inflation are increased by some provision for long-term inflation.

If inflation and/or productivity increases are lower than expected, it will probably result in both actual rates of salary increases and investment return below the assumed rates. Salaries increasing at rates less than expected produce lower liabilities. However, actual investment return below the assumed rate of investment return (whether due to manager performance, change in the mix of assets, or general market conditions) results in lower than expected asset amounts.

Sources considered in the analysis of the economic assumptions included:

- Actual system experience over the last 5 years (i.e., merit and seniority pay increases)
- Future expectations of investment consultants
- 2016 Social Security Trustees Report
- Historical observations of inflation statistics (both price and wage) and investment returns

Current economic assumptions for the System are as follows:

<table>
<thead>
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<th>Assumption</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment Return</td>
<td>7.50%</td>
</tr>
<tr>
<td>Wage Inflation</td>
<td>4.00%</td>
</tr>
<tr>
<td>Price Inflation</td>
<td>3.00%</td>
</tr>
<tr>
<td>Spread Between Investment Return and Wage Inflation</td>
<td>3.50%</td>
</tr>
<tr>
<td>Spread Between Investment Return and Price Inflation</td>
<td>4.50%</td>
</tr>
</tbody>
</table>

The remainder of this section addresses the economic assumptions other than pay increases due to merit and seniority. Pay increases due to merit and seniority are addressed on page 3.
Guidance regarding the selection of economic assumptions for measuring pension obligations is provided by Actuarial Standards of Practice (ASOP) No. 27. The standard requires that the selected economic assumptions be consistent with each other. That is, the selection of the investment return assumption should be consistent with the selection of the wage inflation and price inflation assumptions.

The most recent version of ASOP No. 27 (applicable to valuation dates on or after September 30, 2014) defines a reasonable economic assumption as an assumption that has the following characteristics:

(a) It is appropriate for the purpose of the measurement;
(b) It reflects the actuary’s professional judgment;
(c) It takes into account historical and current economic data that is relevant as of the valuation date;
(d) It reflects the actuary’s estimate of future experience, the actuary’s observation of the estimates inherent in market data, or a combination thereof; and
(e) It has no significant bias (i.e., it is not significantly optimistic or pessimistic), except when provisions for adverse deviation or plan provisions that are difficult to measure are included and disclosed under Section 3.5.1, or when alternative assumptions are used for the assessment of risk.
SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS
(CONTINUED)

Price Inflation. Price inflation underlies both the wage inflation and investment return assumptions. Since price inflation underlies the wage inflation assumption and the investment return assumption, we recommend that a specific price inflation assumption be adopted in conjunction with this Experience Study. The chart below shows historical averages of both price and wage inflation. Over the past 50 years, price inflation has averaged 4.1%. This result is heavily affected by the high inflationary period of the 1970’s and early 1980’s. During the past decade, price inflation averaged 1.9%. The 2016 Social Security Trustees report uses 2.6% as the long-range intermediate price inflation assumption. In addition, most investment consulting firms are predicting a price inflation assumption between 2.0% and 2.5%, though this is typically based on a shorter time horizon. Based upon the reviewed data, we suggest that the Board adopt a price inflation assumption of 2.5%. (Remember that the selected wage inflation and investment return assumptions should be consistent with the final selected price inflation assumption.)

<table>
<thead>
<tr>
<th>Year</th>
<th>Annual Increase in Prices (CPI-U)</th>
<th>Annual Increase in Wages (NAE)</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961-1970</td>
<td>2.9%</td>
<td>4.4%</td>
<td>1.5%</td>
</tr>
<tr>
<td>1971-1980</td>
<td>8.1%</td>
<td>7.3%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>1981-1990</td>
<td>4.5%</td>
<td>5.3%</td>
<td>0.8%</td>
</tr>
<tr>
<td>1991-2000</td>
<td>2.7%</td>
<td>4.3%</td>
<td>1.7%</td>
</tr>
<tr>
<td>2001-2010</td>
<td>2.3%</td>
<td>2.6%</td>
<td>0.3%</td>
</tr>
<tr>
<td>2011-2016</td>
<td>2.3%</td>
<td>2.4%</td>
<td>0.1%</td>
</tr>
<tr>
<td>5-Year Avg</td>
<td>1.5%</td>
<td>2.8%</td>
<td>1.3%</td>
</tr>
<tr>
<td>10-Year Avg</td>
<td>1.9%</td>
<td>2.6%</td>
<td>0.7%</td>
</tr>
<tr>
<td>20-Year Avg</td>
<td>2.2%</td>
<td>3.4%</td>
<td>1.2%</td>
</tr>
<tr>
<td>30-Year Avg</td>
<td>2.6%</td>
<td>3.5%</td>
<td>0.9%</td>
</tr>
<tr>
<td>50-Year Avg</td>
<td>4.1%</td>
<td>4.8%</td>
<td>0.7%</td>
</tr>
</tbody>
</table>
**Wage Inflation.** Wage inflation consists of two components, 1) a portion due to pure price inflation (i.e., increases due to changes in the CPI), and 2) increases in average salary levels in excess of pure price inflation (i.e., increases due to changes in productivity levels, supply and demand in the labor market and other macroeconomic factors). The long-term rate of increase in National Average Earnings over the last 50 years is somewhat higher than the current EORP assumption, although shorter term averages are below it. It is expected that, in the long run, salary increases in all parts of the country will be close to the national averages. However, few economists are forecasting a repeat of the high inflation rates experienced in the 1970s. In addition, average salaries in EORP have risen at approximately 1.3% a year since 2008 - a slower pace than the assumed 4.00% a year, although, the active member group has decreased in size, which distorts this statistic. **Given our recommendation for a 2.50% price inflation assumption, we believe a reasonable range for this assumption is from 3.0% to 4.0% a year. We recommend a change in the wage inflation assumption to 3.5%.**

We have illustrated the approximate impact on contribution requirements if the wage inflation assumption were changed from 4.0% to 3.50% on page 18.
Investment Return. The investment return assumption is the actuarial assumption that has the largest impact on actuarial valuation results. As more of the actuarial accrued liabilities are related to non-active members, the nominal (as opposed to real) investment return assumption becomes a more prominent factor.

Presented below is the approximate current asset allocation:

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Approximate Asset Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Equity</td>
<td>16%</td>
</tr>
<tr>
<td>Non-U.S. Equity</td>
<td>14%</td>
</tr>
<tr>
<td>Private Credit</td>
<td>13%</td>
</tr>
<tr>
<td>Private Equity</td>
<td>11%</td>
</tr>
<tr>
<td>GTAA</td>
<td>10%</td>
</tr>
<tr>
<td>Real Estate</td>
<td>10%</td>
</tr>
<tr>
<td>Real Assets</td>
<td>8%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>7%</td>
</tr>
<tr>
<td>Absolute Return</td>
<td>5%</td>
</tr>
<tr>
<td>Risk Parity</td>
<td>4%</td>
</tr>
<tr>
<td>Short Term Inv.</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

Based upon the approximate asset allocation, future expectations of various investment consultants were analyzed. The next few exhibits show the results of this analysis. Final expected nominal investment return results are based upon a 2.5% price inflation assumption. We used the actuarial assumption for price inflation rather than the consultant assumption, in order to be consistent with the calculation of liabilities. Investment results presented are net of expenses and are based upon an administrative expense assumption of 10 basis points.
### SUMMARY OF FINDINGS – ECONOMIC ASSUMPTIONS (CONTINUED)

#### Investment Return Expectations of Various Investment Consultants

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.67%</td>
<td>2.20%</td>
<td>4.47%</td>
<td>2.50%</td>
<td>6.97%</td>
<td>0.10%</td>
<td>6.87%</td>
<td>10.83%</td>
</tr>
<tr>
<td>2</td>
<td>7.09%</td>
<td>2.50%</td>
<td>4.59%</td>
<td>2.50%</td>
<td>7.09%</td>
<td>0.10%</td>
<td>6.99%</td>
<td>12.67%</td>
</tr>
<tr>
<td>3</td>
<td>6.51%</td>
<td>1.56%</td>
<td>4.94%</td>
<td>2.50%</td>
<td>7.44%</td>
<td>0.10%</td>
<td>7.34%</td>
<td>12.53%</td>
</tr>
<tr>
<td>4</td>
<td>7.25%</td>
<td>2.26%</td>
<td>4.99%</td>
<td>2.50%</td>
<td>7.49%</td>
<td>0.10%</td>
<td>7.39%</td>
<td>10.97%</td>
</tr>
<tr>
<td>5</td>
<td>7.43%</td>
<td>2.00%</td>
<td>5.43%</td>
<td>2.50%</td>
<td>7.93%</td>
<td>0.10%</td>
<td>7.83%</td>
<td>11.44%</td>
</tr>
<tr>
<td>6</td>
<td>7.76%</td>
<td>2.25%</td>
<td>5.51%</td>
<td>2.50%</td>
<td>8.01%</td>
<td>0.10%</td>
<td>7.91%</td>
<td>12.93%</td>
</tr>
<tr>
<td>7</td>
<td>8.52%</td>
<td>2.25%</td>
<td>6.27%</td>
<td>2.50%</td>
<td>8.77%</td>
<td>0.10%</td>
<td>8.67%</td>
<td>15.83%</td>
</tr>
<tr>
<td>8</td>
<td>8.74%</td>
<td>2.20%</td>
<td>6.54%</td>
<td>2.50%</td>
<td>9.04%</td>
<td>0.10%</td>
<td>8.94%</td>
<td>12.18%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>7.49%</strong></td>
<td><strong>2.15%</strong></td>
<td><strong>5.34%</strong></td>
<td><strong>2.50%</strong></td>
<td><strong>7.84%</strong></td>
<td><strong>0.10%</strong></td>
<td><strong>7.74%</strong></td>
<td><strong>12.42%</strong></td>
</tr>
</tbody>
</table>

#### Distribution of 20-Year Average Geometric Net Nominal Return

<table>
<thead>
<tr>
<th>Investment Consultant</th>
<th>Distribution of 20-Year Average Geometric Net Nominal Return 40th</th>
<th>50th</th>
<th>60th</th>
<th>Probability of exceeding 7.50%</th>
<th>Probability of exceeding 7.40%</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(5)</td>
</tr>
<tr>
<td>1</td>
<td>5.72%</td>
<td>6.33%</td>
<td>6.94%</td>
<td>31.36%</td>
<td>32.83%</td>
</tr>
<tr>
<td>2</td>
<td>5.54%</td>
<td>6.24%</td>
<td>6.96%</td>
<td>32.81%</td>
<td>34.09%</td>
</tr>
<tr>
<td>3</td>
<td>5.92%</td>
<td>6.62%</td>
<td>7.32%</td>
<td>37.57%</td>
<td>38.94%</td>
</tr>
<tr>
<td>4</td>
<td>6.21%</td>
<td>6.83%</td>
<td>7.45%</td>
<td>39.18%</td>
<td>40.76%</td>
</tr>
<tr>
<td>5</td>
<td>6.58%</td>
<td>7.22%</td>
<td>7.87%</td>
<td>45.68%</td>
<td>47.24%</td>
</tr>
<tr>
<td>6</td>
<td>6.42%</td>
<td>7.14%</td>
<td>7.87%</td>
<td>45.02%</td>
<td>46.40%</td>
</tr>
<tr>
<td>7</td>
<td>6.65%</td>
<td>7.53%</td>
<td>8.42%</td>
<td>50.38%</td>
<td>51.52%</td>
</tr>
<tr>
<td>8</td>
<td>7.58%</td>
<td>8.26%</td>
<td>8.95%</td>
<td>61.18%</td>
<td>62.60%</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>6.33%</strong></td>
<td><strong>7.02%</strong></td>
<td><strong>7.72%</strong></td>
<td><strong>42.90%</strong></td>
<td><strong>44.30%</strong></td>
</tr>
</tbody>
</table>
The current version of ASOP No. 27 (applicable to valuation dates after September 30, 2014) suggests that either the expected geometric return (i.e., 50th percentile) or the expected arithmetic return are suitable for use as a reasonable investment return assumption. Based on the average of each of the investment consultants’ expectations, this would result in a range of 7.02% to 7.74%. The Board has already adopted an assumption of 7.4% to be used in the June 30, 2017 actuarial valuation. However, since the probability of achieving a 7.4% return is still below 50%, we believe a modest change of 10 basis points to 7.3% would be reasonable and should be considered for use in the June 30, 2018 actuarial valuation. This assumption will be reviewed annually.

Currently, the Retirement Plan is closed to new members. As a result, the employee population in the Plan has been steadily declining over the past several years while the retiree population has been growing. As such, the Plan is moving toward a mature state with a substantial need for cash and other “liquid” investments in order to pay pension benefits each month. When a pension plan reaches a mature state, some pension boards restructure their investment portfolio to provide the increased asset liquidity needed to make pension payments each month while reducing the investment risk associated with cashing out securities. This can lead to an increased allocation to fixed income instruments and a decreased allocation to equities, resulting in a lower expected investment return. In light of this, consideration should be given to lowering the ultimate investment return assumption for EORP to a much lower rate (perhaps 5% or 6%). We recommend seeking advice from your investment manager as to the length of time that the reduction in liquidity will result in a change in their asset allocation strategy.

We have illustrated the approximate impact on contribution requirements if the investment return assumption were changed from 7.5% to 7.4% and 7.3% on page 18.
The results on page 18 are presented as an aid in understanding the average combined effects of the changes in assumptions that have been proposed in this experience study. The results are approximate and indicate only the general direction and approximate average magnitude of the effects of the assumption changes. *Contribution rates for fiscal year beginning July 1, 2017 have already been scheduled based upon the June 30, 2016 valuation and are not affected by the experience study.* The experience study would begin to effect rates for the fiscal year beginning July 1, 2018.
### Historical Patterns of Investment Return, Pay Increases & Inflation

#### Gross Market Returns

<table>
<thead>
<tr>
<th>Calendar Year Period</th>
<th>U.S. Treasury (S&amp;P AA)</th>
<th>Corp. Equiv. (T Bills)</th>
<th>Stocks (S&amp;P 500)</th>
<th>Price Inflation (CPI)</th>
<th>National Average Earnings</th>
<th>Sample Balanced Fund Total Return (I)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961-1970</td>
<td>4.3%</td>
<td>2.5%</td>
<td>1.3%</td>
<td>8.2%</td>
<td>2.9%</td>
<td>4.4%</td>
</tr>
<tr>
<td>1971-1980</td>
<td>6.8%</td>
<td>4.2%</td>
<td>3.9%</td>
<td>8.4%</td>
<td>8.1%</td>
<td>7.3%</td>
</tr>
<tr>
<td>1981-1990</td>
<td>8.5%</td>
<td>14.0%</td>
<td>13.7%</td>
<td>13.9%</td>
<td>4.5%</td>
<td>5.3%</td>
</tr>
<tr>
<td>1991-2000</td>
<td>4.7%</td>
<td>9.0%</td>
<td>10.3%</td>
<td>17.5%</td>
<td>2.7%</td>
<td>4.3%</td>
</tr>
<tr>
<td>2001-2010</td>
<td>2.2%</td>
<td>7.6%</td>
<td>6.6%</td>
<td>1.4%</td>
<td>2.3%</td>
<td>2.6%</td>
</tr>
<tr>
<td>2011</td>
<td>0.0%</td>
<td>18.0%</td>
<td>28.2%</td>
<td>2.1%</td>
<td>3.0%</td>
<td>3.1%</td>
</tr>
<tr>
<td>2012</td>
<td>0.1%</td>
<td>10.7%</td>
<td>3.3%</td>
<td>16.0%</td>
<td>1.7%</td>
<td>3.1%</td>
</tr>
<tr>
<td>2013</td>
<td>0.0%</td>
<td>(7.1)%</td>
<td>(11.4)%</td>
<td>32.4%</td>
<td>1.5%</td>
<td>1.3%</td>
</tr>
<tr>
<td>2014</td>
<td>0.0%</td>
<td>17.3%</td>
<td>23.9%</td>
<td>13.7%</td>
<td>0.8%</td>
<td>3.6%</td>
</tr>
<tr>
<td>2015</td>
<td>0.5%</td>
<td>(4.8)%</td>
<td>(1.3)%</td>
<td>1.4%</td>
<td>0.7%</td>
<td>2.9%</td>
</tr>
<tr>
<td>Last 5 Years</td>
<td>0.1%</td>
<td>6.3%</td>
<td>7.5%</td>
<td>12.6%</td>
<td>1.5%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Last 10 Years</td>
<td>1.2%</td>
<td>6.1%</td>
<td>6.5%</td>
<td>7.3%</td>
<td>1.9%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Last 55 Years</td>
<td>4.8%</td>
<td>7.3%</td>
<td>7.1%</td>
<td>10.0%</td>
<td>3.8%</td>
<td>4.6%</td>
</tr>
</tbody>
</table>

#### Sample Balanced Fund

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equities</td>
<td>64%</td>
</tr>
<tr>
<td>Bonds - Government</td>
<td>17%</td>
</tr>
<tr>
<td>- Corporate</td>
<td>17%</td>
</tr>
<tr>
<td>Cash Equivalents</td>
<td>2%</td>
</tr>
<tr>
<td>Fund expenses(e)</td>
<td>0.50%</td>
</tr>
</tbody>
</table>

#### Sample Balanced Fund Historical Spread

<table>
<thead>
<tr>
<th>Observation Period</th>
<th>Spread</th>
</tr>
</thead>
<tbody>
<tr>
<td>55 years</td>
<td>4.3%</td>
</tr>
<tr>
<td>45 years</td>
<td>4.9%</td>
</tr>
<tr>
<td>35 years</td>
<td>6.5%</td>
</tr>
</tbody>
</table>

---

EORP 2011-2016 Experience Study

-17-
## SUMMARY OF FINDINGS
**EFFECT ON CONTRIBUTION RATES**
**(RESULTS BASED UPON JUNE 30, 2016 DATA)**

<table>
<thead>
<tr>
<th>Tier 1 &amp; 2</th>
<th>Present Demographic</th>
<th>Revised Demographic Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.50%/4.00%</td>
<td>7.50%/4.00%</td>
</tr>
<tr>
<td><strong>Employer Contribution Rate</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>18.99%</td>
<td>19.02%</td>
</tr>
<tr>
<td>Amortization</td>
<td>87.56%</td>
<td>93.90%</td>
</tr>
<tr>
<td>Total</td>
<td>106.55%</td>
<td>112.92%</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Normal Cost</td>
<td>0.58%</td>
<td>0.52%</td>
</tr>
<tr>
<td>Amortization</td>
<td>-1.82%</td>
<td>-1.82%</td>
</tr>
<tr>
<td>Total</td>
<td>-1.24%</td>
<td>-1.30%</td>
</tr>
<tr>
<td><strong>Funded Status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accrued Liabilities</td>
<td>$837,478,365</td>
<td>$873,475,283</td>
</tr>
<tr>
<td>Funding Value of Assets</td>
<td>314,524,640</td>
<td>314,524,640</td>
</tr>
<tr>
<td>Funded Ratio</td>
<td>37.6%</td>
<td>36.0%</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accrued Liabilities</td>
<td>$12,853,655</td>
<td>$12,850,610</td>
</tr>
<tr>
<td>Funding Value of Assets</td>
<td>23,508,583</td>
<td>23,508,583</td>
</tr>
<tr>
<td>Funded Ratio</td>
<td>182.9%</td>
<td>182.9%</td>
</tr>
</tbody>
</table>
Standard Deviation graphs of the type shown above appear frequently in this report. The navy blue line represents the present assumptions used in the valuation. After experience is reviewed for a given decrement, an actual value is computed (based on actual experience) along with its standard deviation value. The green vertical bars on the graph above represent the standard deviation value. If the standard deviation value is large, this means that the group being tested is from a small population. A small group should have less influence on deriving the new proposed value than a large group. In comparison, if the standard deviation has a small value, this means the group being tested is from a large population and should have a greater impact on the decision of the proposed value.
WITHDRAWAL EXPERIENCE
EORP Withdrawal Experience

There were 146 withdrawals and 3,130 years of exposure included in the withdrawal investigation. The proposed rates recommend a decrease in the rates of withdrawal.

<table>
<thead>
<tr>
<th>Service Index</th>
<th>Withdrawals</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Withdrawals</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Present</td>
<td>Proposed</td>
<td>Present</td>
<td>Proposed</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>145</td>
<td>0.0207</td>
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EORP WITHDRAWAL EXPERIENCE

Age

- Actual Experience
- Present Assumptions
- Proposed Assumptions
DISABILITY EXPERIENCE
There were 5 disability benefit claims and 2,675 years of exposure included for the 5-year period. Shown below are the proposed rates of increased disability expectation.

<table>
<thead>
<tr>
<th>Age</th>
<th>Disabilities</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates*</th>
<th>Expected Disabilities</th>
<th>Ratio of Actuals/Expecteds</th>
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<td>Proposed</td>
<td>Present</td>
<td>Proposed</td>
</tr>
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<td>0.0000</td>
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</tr>
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<td>-</td>
</tr>
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<td>20</td>
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<td>0.0000</td>
<td>0.0</td>
</tr>
<tr>
<td>30-34</td>
<td>-</td>
<td>62</td>
<td>0.0000</td>
<td>0.0001</td>
<td>0.0000</td>
<td>0.0</td>
</tr>
<tr>
<td>35-39</td>
<td>-</td>
<td>137</td>
<td>0.0000</td>
<td>0.0001</td>
<td>0.0000</td>
<td>0.0</td>
</tr>
<tr>
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<td>-</td>
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<td>0.0000</td>
<td>0.0002</td>
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<td>0.0</td>
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<td>-</td>
<td>361</td>
<td>0.0000</td>
<td>0.0002</td>
<td>0.0005</td>
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<td>-</td>
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<td>0.0000</td>
<td>0.0003</td>
<td>0.0015</td>
<td>0.1</td>
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<td>0.0042</td>
<td>0.0003</td>
<td>0.0018</td>
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<td>0.0022</td>
<td>0.0004</td>
<td>0.0012</td>
<td>0.2</td>
</tr>
<tr>
<td>65-69</td>
<td>1</td>
<td>62</td>
<td>0.0161</td>
<td>0.0004</td>
<td>0.0000</td>
<td>0.0</td>
</tr>
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<td>70-74</td>
<td>-</td>
<td>23</td>
<td>0.0000</td>
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<td>0.0000</td>
<td>0.0004</td>
<td>0.0000</td>
<td>0.0</td>
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<tr>
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<td>2,675</td>
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<td>0.0003</td>
<td>0.0011</td>
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* Sample values are selected from midpoint of age group.
PAY INCREASES
MERIT AND LONGEVITY PORTION
### EORP MEMBERS
#### MERIT & LONGEVITY PAY INCREASE

<table>
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<th>Age Group Beginning of Year</th>
<th>Merit/Seniority % Increase</th>
<th>Sample Values*</th>
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<td></td>
<td>Actual</td>
<td>Present</td>
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<td>Under 25</td>
<td>N/A</td>
<td>0.25 %</td>
</tr>
<tr>
<td>25-29</td>
<td>0.35 %</td>
<td>0.25 %</td>
</tr>
<tr>
<td>30-34</td>
<td>(0.44)%</td>
<td>0.25 %</td>
</tr>
<tr>
<td>35-39</td>
<td>0.98 %</td>
<td>0.25 %</td>
</tr>
<tr>
<td>40-44</td>
<td>0.76 %</td>
<td>0.25 %</td>
</tr>
<tr>
<td>45-49</td>
<td>0.40 %</td>
<td>0.25 %</td>
</tr>
<tr>
<td>50-54</td>
<td>(0.47)%</td>
<td>0.25 %</td>
</tr>
<tr>
<td>55-59</td>
<td>(0.37)%</td>
<td>0.25 %</td>
</tr>
<tr>
<td>60-64</td>
<td>(0.06)%</td>
<td>0.25 %</td>
</tr>
<tr>
<td>65 &amp; Over</td>
<td>0.04 %</td>
<td>0.25 %</td>
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*Sample values are selected from midpoint of age group.*
NORMAL RETIREMENT EXPERIENCE
EORP

AGE BASED NORMAL RETIREMENT EXPERIENCE
(FOR MEMBERS NOT ATTAINING 20 YEARS OF SERVICE BEFORE AGE 62)

There were 124 age and service retirements and 831 life years of exposure in the age based retirement investigation. The proposed rates recommend slightly lower rates of retirement.

<table>
<thead>
<tr>
<th>Age</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
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<td></td>
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<td>- - N/A N/A</td>
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<td>5</td>
<td>75</td>
<td>0.0667</td>
<td>0.2000 0.1500</td>
<td>15.0 11.3</td>
<td>33.3% 44.4%</td>
</tr>
<tr>
<td>63</td>
<td>12</td>
<td>82</td>
<td>0.1463</td>
<td>0.2000 0.1500</td>
<td>16.4 12.3</td>
<td>73.2% 97.6%</td>
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<td>64</td>
<td>10</td>
<td>71</td>
<td>0.1408</td>
<td>0.2000 0.1500</td>
<td>14.2 10.7</td>
<td>70.4% 93.9%</td>
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<td>65</td>
<td>21</td>
<td>109</td>
<td>0.1927</td>
<td>0.2000 0.1500</td>
<td>21.8 16.4</td>
<td>96.3% 128.4%</td>
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<tr>
<td>66</td>
<td>14</td>
<td>86</td>
<td>0.1628</td>
<td>0.2000 0.1500</td>
<td>17.2 12.9</td>
<td>81.4% 108.5%</td>
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<td>13</td>
<td>67</td>
<td>0.1940</td>
<td>0.2000 0.1500</td>
<td>13.4 10.1</td>
<td>97.0% 129.4%</td>
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<tr>
<td>68</td>
<td>6</td>
<td>59</td>
<td>0.1017</td>
<td>0.2000 0.1500</td>
<td>11.8 8.9</td>
<td>50.8% 67.8%</td>
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<tr>
<td>69</td>
<td>10</td>
<td>53</td>
<td>0.1887</td>
<td>0.2000 0.1500</td>
<td>10.6 8.0</td>
<td>94.3% 125.8%</td>
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<tr>
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<td>12</td>
<td>49</td>
<td>0.2449</td>
<td>0.2000 0.1500</td>
<td>9.8 7.4</td>
<td>122.4% 163.3%</td>
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<td>3</td>
<td>37</td>
<td>0.0811</td>
<td>0.2000 0.1500</td>
<td>7.4 5.6</td>
<td>40.5% 54.1%</td>
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<td>2</td>
<td>30</td>
<td>0.0667</td>
<td>0.2000 0.1500</td>
<td>6.0 4.5</td>
<td>33.3% 44.4%</td>
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<td>26</td>
<td>0.1154</td>
<td>0.2000 0.1500</td>
<td>5.2 3.9</td>
<td>57.7% 76.9%</td>
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<tr>
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<td>3</td>
<td>19</td>
<td>0.1579</td>
<td>0.2000 0.1500</td>
<td>3.8 2.9</td>
<td>78.9% 105.3%</td>
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<td>152.6 114.5</td>
<td>76.0% 101.4%</td>
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</tr>
<tr>
<td>75 &amp; Over</td>
<td>8</td>
<td>68</td>
<td>0.1176</td>
<td>68.0 68.0</td>
<td>11.8% 11.8%</td>
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<tr>
<td>Total</td>
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<td>831</td>
<td>0.1492</td>
<td>220.6 182.5</td>
<td>56.2% 68.0%</td>
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</table>
EORP

SERVICE BASED NORMAL RETIREMENT EXPERIENCE
( FOR MEMBERS ATTAINING 20 YEARS OF SERVICE BEFORE AGE 62)

There were 27 service retirements and 149 life years of exposure in the service based retirement investigation. The proposed rates recommend slightly lower rates of retirement.

<table>
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<th>Service Years*</th>
<th>Retirements</th>
<th>Exposure</th>
<th>Actual Rates</th>
<th>Sample Rates</th>
<th>Expected Retirements</th>
<th>Ratio of Actuals/Expecteds</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td>Proposed</td>
<td>Present</td>
<td>Proposed</td>
</tr>
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<td>-</td>
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<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td>1.2</td>
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<td>-</td>
<td>6</td>
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<td>0.2000</td>
<td>0.1500</td>
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<tr>
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<td>-</td>
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<td>0.2000</td>
<td>0.1500</td>
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<td>0.2000</td>
<td>0.1500</td>
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<td>0.1500</td>
<td>1.4</td>
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<td>0.0000</td>
<td>0.2000</td>
<td>0.1500</td>
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<td>0.0000</td>
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* Measured as Integer Service Nearest Whole Year at time of decrement.
EORP
RATES OF AGE BASED NORMAL RETIREMENT

EORP
RATES OF SERVICE BASED NORMAL RETIREMENT
EARLY RETIREMENT EXPERIENCE
EORP

**SERVICE BASED EARLY RETIREMENT EXPERIENCE**

There were 45 age and service retirements and 1,903 life years of exposure in the service based early retirement investigation. The proposed rates recommend slightly lower rates of retirement.

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<th>Sample Rates</th>
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*Measured as Integer Service Nearest Whole Year at time of decrement.*
EORP

RATES OF SERVICE BASED EARLY RETIREMENT

[Graph showing rates of service based early retirement across different age groups, comparing actual experience to present and proposed assumptions.]
MORTALITY EXPERIENCE
Observed death rates were slightly lower than expected. The current rates are based on static projection for future improvements in mortality. The proposed rates represent the recommended base table only. Margin for future improvements in mortality will be built into the ‘fully generational’ projection which cannot be displayed in a table with this format.

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* Sample values are selected from midpoint of age group.
RATES OF POST-RETIREMENT MORTALITY - MALES

![Graph showing rates of post-retirement mortality for males across different age groups. The graph compares actual experience, present assumptions, and proposed assumptions.](image-url)
**POST-RETIREMENT MORTALITY - FEMALES**

Observed death rates among female retirees (including original retirees and spouses of original retirees) were somewhat higher than expected. The current rates are based on static projection for future improvements in mortality. The proposed rates represent the recommended base table only. Margin for future improvements in mortality will be built into the ‘fully generational’ projection which cannot be displayed in a table with this format.

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<th>Exposure</th>
<th>Actual Rates</th>
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<th>Expected Deaths</th>
<th>Ratio of Actuals/Expecteds</th>
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* Sample values are selected from midpoint of age group.*
POST-RETIREMENT MORTALITY - FEMALES

[Graph showing post-retirement mortality rates for females across different age groups. The x-axis represents age groups (Under 44, 45-49, 50-54, etc.) and the y-axis represents the mortality rates. The graph compares actual experience with present and proposed assumptions.]
COMPLETE LISTS OF PROPOSED DECREMENT ASSUMPTIONS
## Proposed Normal Retirement Rates

Members hired before January 1, 2012

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**PROPOSED NORMAL RETIREMENT RATES**

Members hired after January 1, 2012

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February 24, 2017

Mr. Jared Smout  
Administrator  
Arizona Public Safety Personnel Retirement System  
3010 East Camelback Road, Suite 200  
Phoenix, Arizona 85016-4416

Re: EORP 2011-2016 Experience Study

Dear Jared:

Enclosed are 5 copies of the 2011 – 2016 Experience Study.

Sincerely,

[Signature]

James D. Anderson, FSA, EA, FCA, MAAA

JDA:mrb
Enclosures
Arizona Public Safety Personnel Retirement System
Actuarial Funding Policy

Introduction

The purpose of this Actuarial Funding Policy is to record the funding objectives and policy set by the Board for the Arizona Public Safety Personnel Retirement System (PSPRS). The Board establishes this Funding Policy to help ensure the systematic funding of future benefit payments for members of the Retirement System.

In 2012, the Governmental Accounting Standards Board (GASB) approved two new financial reporting standards. GASB Statement No. 67, “Financial Reporting for Pension Plans” replaces the requirements of Statement No. 25. GASB Statement No. 68, “Accounting and Financial Reporting for Pensions” replaces the requirements of Statements No. 27 and No. 50. Prior to the changes, the Annual Required Contribution (ARC) rate was used as a basis for funding decisions. The new GASB statements separate accounting cost (expense) from funding cost (contributions), necessitating the creation of this funding policy.

This funding policy shall be reviewed by the Board annually for several years following initial adoption until the next experience study. Subsequently, it shall be reviewed every five years in conjunction with the experience study.

Funding Objectives

1. Maintain adequate assets so that current plan assets plus future contributions and investment earnings are sufficient to fund all benefits expected to be paid to members and their beneficiaries.

2. Maintain stability of employer contribution rates, consistent with other funding objectives.

3. Maintain public policy goals of accountability and transparency. Each policy element is clear in intent and effect, and each should allow an assessment of whether, how and when the funding requirements of the plan will be met.

4. Promote intergenerational equity. Each generation of members and employers should incur the cost of benefits for the employees who provide services to them, rather than deferring those costs to future members and employers.

5. Provide a reasonable margin for adverse experience to help offset risks.

6. Continue progress of systematic reduction of the Unfunded Actuarial Accrued Liabilities (UAAL).
Elements of Actuarial Funding Policy

1. Actuarial Cost Method
   a. The Individual Entry Age Normal level percent of pay actuarial cost method of valuation shall be used in determining Actuarial Accrued Liability (AAL) and Normal Cost. Differences in the past between assumed experience and actual experience ("actuarial gains and losses") shall become part of the AAL. The Normal Cost shall be determined on an individual basis for each active member.

2. Asset Smoothing Method
   a. The investment gains or losses of each valuation period, resulting from the difference between actual investment return and assumed investment return, shall be recognized annually in level amounts over 7 years in calculating the Funding Value of Assets
   b. The Funding Value of Assets so determined shall be subject to a 20% corridor relative to Market Value of Assets.

3. Amortization Method
   a. The Funding Value of Assets are subtracted from the computed AAL. Any unfunded amount is amortized as a level percent of payroll over a closed period. If the Funding Value of Assets exceeds the AAL, the excess is amortized over an open period of 20 years and applied as a credit to reduce the Normal Cost otherwise payable.

4. Funding Target
   a. The targeted funded ratio shall be 100%.
   b. The maximum amortization period shall be 30 years.
   c. If the funded ratio is between 100% and 120%, a minimum contribution equal to the Normal Cost will be made.
Elements of Actuarial Funding Policy

5. Risk Management

a. Assumption Changes
   - The actuarial assumptions used shall be those last adopted by the PSPRS Board based on the most recent experience study and upon the advice and recommendation of the actuary. In accordance with best practices, the actuary shall conduct an experience study every five years. The results of the study shall be the basis for the actuarial assumption changes recommended to the PSPRS Board.
   - The actuarial assumptions can be updated during the five-year period if significant plan design changes or other significant events occur, as advised by the actuary.

b. Amortization Method
   - The amortization method, Level Percent Closed, will ensure full payment of the UAAL over a finite, systematically decreasing period not to exceed 30 years. The amortization period will be reviewed once the period reaches 15 years.

c. Risk Measures
   - The following risk measures will be annually determined to provide quantifiable measurements of risk and their movement over time.
     (i) Classic measures currently determined
         - Funded ratio (assets / liability)
     (ii) UAAL / Total Payroll
         - Measures the risk associated with contribution decreases relative impact on the ability to fund the UAAL. An increase in this measure indicates an increase in contribution risk.
     (iii) Total Liability / Total Payroll
         - Measures the risk associated with the ability to respond to liability experience through adjustments in contributions. An increase in this measure indicates an increase in experience risk.

Glossary

1. Actuarial Accrued Liability (AAL): The difference between (i) the actuarial present value of future plan benefits, and (ii) the actuarial present value of future normal cost. Sometimes referred to as “accrued liability” or “past service liability”.

2. Actuarial Assumptions: Estimates of future plan experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.
3. **Actuarial Cost Method**: A mathematical budgeting procedure for allocating the dollar amount of the “actuarial present value of future plan benefits” between the actuarial present value of future normal cost and the actuarial accrued liability. Sometimes referred to as the “actuarial funding method”.

4. **Actuarial Gain (Loss)**: A measure of the difference between actual experience and that expected based upon a set of actuarial assumptions during the period between two actuarial valuation dates, in accordance with the actuarial cost method being used. For example, if during a given year the assets earn more than the investment return assumption, the amount of earnings above the assumption will cause an unexpected reduction in UAAL, or “actuarial gain” as of the next valuation. These include contribution gains and losses that result from actual contributions made being greater or less than the level determined under the policy.

5. **Actuary**: A person who is trained in the applications of probability and compound interest to problems in business and finance that involve payment of money in the future, contingent upon the occurrence of future events. Most actuaries in the United States are Members of the American Academy of Actuaries (MAAA). The Society of Actuaries (SOA) is an international research, education, and membership organization for actuaries in the life and health insurance, employee benefits, and pension fields. The SOA administers a series of examinations leading initially to Associateship and the designation ASA and ultimately to Fellowship with the designation FSA.

6. **Amortization**: Paying off an interest-bearing liability by means of periodic payments of interest and principal, as opposed to paying it off with a lump sum payment.

7. **Entry Age Normal Actuarial Cost Method**: A funding method that calculates the Normal Cost as a level percentage of pay over the working lifetime of the plan’s members.

8. **Experience Study**: An actuarial investigation of demographic and economic experiences of the system during the period studied. The investigation is made for the purpose of updating the actuarial assumptions used in valuing the actuarial liabilities.

9. **Funding Value of Assets**: The value of current plan assets recognized for valuation purposes. Generally based on a phased-in recognition of all or a portion of market related investment return. Sometimes referred to as Actuarial Value of Assets.

10. **Market Value of Assets**: The fair value of plan assets as reported in the plan’s audited financial statements.

11. **Normal Cost (NC)**: The annual cost assigned, under the actuarial funding method, to current and subsequent plan years. Sometimes referred to as “current service cost”. Any payment toward the unfunded actuarial accrued liability is not part of the normal cost.

12. **Unfunded Actuarial Accrued Liability (UAAL)**: The positive difference, if any, between the actuarial accrued liability and valuation assets. Sometimes referred to as “unfunded accrued liability”.

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**Page 4 of 4**
February 27, 2017

Board of Trustees
Public Safety Personnel Retirement System
3010 E. Camelback Road, Suite 200
Phoenix, Arizona 85016

RE: Ninth Member of the PSPRS Board of Trustees

Dear Members of the Board of Trustees:

In the meeting of the Public Safety Personnel Retirement System Advisory Committee held today, the Advisory Committee voted upon and selected for your consideration, the following candidates for the ninth seat on the PSPRS Board of Trustees:

- Thomas Marreel
- Harry Papp
- Charles Sklader
- James Stricklin
- Christopher Tiller

We believe these candidates meet the requirements as prescribed in statute.

Sincerely,

[Signature]

Ken Strobeck
Chairman, PSPRS Advisory Committee
THOMAS E. MARREEL

Tom Marreel is founder and CEO of Marreel Slater Insurance, a health care consulting and benefit brokerage company in Phoenix, Arizona.

Prior to Marreel Slater Insurance, Tom worked for Schaller Anderson, Inc., a health management and consulting company based in Phoenix, Arizona. Tom became senior vice president of Schaller Anderson in 2000, assuming development and oversight of the commercial self-funded business sector. The commercial operation performs all aspects of managed health care for employer self-funded plans, including medical management, finance and underwriting, claims and member services, provider networks, reinsurance, pharmacy, behavioral health, and client management. He also developed performance-based management for their commercial clients. Tom was also a member of the Schaller Anderson Board of Directors from 2000 to 2003. In 2003, Tom became responsible for business development activities for all product lines nationally. Tom left Schaller Anderson in 2008 after the acquisition by Aetna Insurance Company to start his own company.

From 1994 to 2000, Tom was a principal at Mercer, a prominent human capital consulting firm and part of the Marsh and McLennan family of companies. Tom held the positions of office head, office health care practice leader, and national government sector business leader. He was a member of Mercer’s national health care practice group and was responsible for all government health care consulting activities throughout the United States. He also led many of Mercer’s employee development programs, including its employee orientation program, Mercer 101.

During his tenure and leadership at Mercer, the Phoenix office grew from 8 employees to more than 100 employees, and revenue grew from $3 million to $20 million annually. Tom and the Phoenix office consulted to many large fortune-500 employer groups, and more than 50 state government agencies. Services to these clients included strategy, actuarial, financial performance, clinical, benefit design, pharmacy, behavioral health, information systems, and human resources.

Prior to 1994, Tom was a senior health care consultant for The Segal Company in Phoenix, Arizona. He spent more than eight years consulting to key large public and private sector employer groups. He was instrumental in the growth of The Segal Company in Phoenix and in securing its position as a market leader for health care consulting services.
Tom began his career more than 30 years ago as a sales and service representative for John Hancock Mutual Insurance Company. He was responsible for servicing and selling John Hancock insurance services to large employer groups in the Los Angeles area. Tom was recognized in 1984 and 1985 as a President Group Production Leader.

Tom is actively involved in numerous charities. He just completed a 12-year term on of the Board of Directors for Dignity Health Foundation East Valley, which supports philanthropic fundraising for Chandler Regional Medical Center and Mercy Gilbert Medical Center. He chaired several fundraising events, including the golf tournament. He also co-chaired the Gala in 2006 and 2008. In 2005, Tom was recognized with the Spirit of Philanthropy award from the Association of Fundraising Professionals. Also, in 2010 and 2011 Tom was named Dignity Health East Valley Board of Directors Member of the Year, in recognition of his outstanding contribution of time and talent. Currently, Tom serves on the community board for Dignity Health East Valley, and serves as the board liaison representing the Dignity Health East Valley as a member on the Dignity Health St. Joseph Board.

Tom has also appeared as a speaker to numerous health care seminars and meetings over the past thirty years. Tom also is a co-founder of the Antigua National High School Golf Invitational, where over 200 high school boys and girls come together once a year in Arizona to compete. Over the past few years, Tom has been actively involved with a number of Arizona-based healthcare organizations – providing capital investments, board leadership, strategic planning, and business development consulting services. In addition, he is also an investor in a number of restaurants in the metro Phoenix area, including The Living Room (4 locations), CHOP, Rock Lobster, and Humble Pie.

Tom holds a Bachelor of Science degree in Marketing from Arizona State University.
Harry Papp Biography

Harry Papp has been associated with L. Roy Papp & Associates (an investment firm) since 1981 and is currently a managing partner and portfolio manager. “Harry A Papp, CFA” L. Roy Papp & Associates, LLP Accessed 01/31/17

- This firm manages the Papp Small & Mid-Cap Growth Fund

**HARRY A. PAPP, CFA  Managing Partner & Portfolio Manager**

Harry has been associated with L. Roy Papp & Associates since 1981 and has over three decades of experience in portfolio management and financial analysis. Prior to joining the firm he was with the Treasurer's Office of G.D. Searle & Co. (where he was responsible for overseas financing and acquisitions and managed the domestic real estate holdings of the company).

He holds a Master of Business Administration degree in Finance and Accounting from the University of Chicago, a Master of Science degree in Geochemistry from the University of Chicago, and an A.B. degree from Brown University. He is a past Chairman and current member of the Board of Directors of Blue Cross and Blue Shield of Arizona. In February 2012, Harry was appointed to the Arizona State Board of Investment which is responsible in part to oversee over $11 billion of investments for the State of Arizona. He is a longtime Trustee of The Phoenix Zoo. He is a Trustee and a Director of the Arizona State University Foundation and chairs the Investment Committee. He is a Board Member and Treasurer of the Institute of Human Origins at ASU. He is on the Board of Community Health Charities of Arizona, and previously served on the national board for 15 years. He serves on the Planned Giving Committee for the Desert Botanical Garden, the Phoenix Art Museum, and Ballet Arizona. He is President of the Arizona Five Arts Circle. He is a CFA charterholder.

- **Harry Papp is President and Treasurer for “5 Arts Circle” Arizona’s premier philanthropic organization supporting the arts community.** 5 Arts Circle Board of Directors, Accessed 01/31/17
  “Founded in 1999, 5 Arts Circle is a 501(c)(3) social group that supports five premier visual and performing arts organizations vital to the cultural and economic life of our community. The membership organization is an advocate for the arts in metro-Phoenix and has raised nearly $4 million to date for the Arizona Opera, Ballet Arizona, Phoenix Art Museum, Scottsdale Cultural Council and The Phoenix Symphony. In the 2014-2015 season, 5 Arts Circle will celebrate its 15th anniversary.” 5 Arts Circle “What is 5 Arts Circle?” and Board of Directors, Accessed 01/31/17

- **Harry Papp currently sits on the Board of Directors for BlueCross BlueShield of Arizona (BCBS-AZ).** According to his biography from L. Roy Papp & Associates, he is also past chairman of the board for BCBS-AZ. “Board of Directors” BCBS-AZ Accessed 01/31/17

- **He is also on the Planned Fiving Committed for the Desert Botanical Garden.** Desert Botanical Garden Accessed 01/31/17

- **He is also on the planned giving committee Phoenix Art Museum and a part of the Museum’s “21st Century Society” for naming it a beneficiary of $5,000 or more.** “21st Century Society” Phoenix Art Museum Accessed 01/31/17
WORK HISTORY

1989 - 1991 - Aetna Life & Casualty – Registered Representative. Territory was five counties in eastern New York State.

1991 – 2001 – Aetna Financial Services – Vice President, Sales, business retention, Recruiting / Training & Service to participants and plan sponsors. Tax codes included 457, 401(a), 403(b), governmental 401(k) and 457(f).

2001 – 2016 – SST Consulting – Vice President, Consulting. Tax codes include 457, 401(a), 403(b and governmental 401(k).

2016 - Present – Galloway – Vice President Consulting. Tax codes include 457, 401(a), 403(b and governmental 401(k).

QUALIFICATIONS

I have almost 30 years of financial services experience working with plan sponsors in defined contribution plan markets and 15 years as a consultant to plan sponsors in the governmental market.

I have excelled in several capacities during my career in the financial services industry – from recruiting, training and managing financial advisors, to defined contribution retirement plan acquisition and retention activities at the Vice President level for a major record-keeper company. I have held the following FINRA licenses: Series 6, 7, 24, 26, 64, and 65. The culture that I developed was to always do what is in the best interest of the participant.

My consulting experience began in 2001, where my expertise in 457(b), 401(a), 403(b), government 401(k), and 457(f) plans. I provided consulting services to mostly governmental employers in a five state area. I worked with Plan Sponsors in the defined contribution market space providing expertise in RFP design and processes, record-keeper selection, investment analysis and oversight, innovated retirement plan solutions best practices to follow to meet their fiduciary responsibilities. My emphasis has always been on education for both the decision makers and participants.

With my RIA status I was the lead investment consultant for my employer and was also the expert on interest crediting options, i.e. General Accounts, Separate Accounts and Stable Value funds with single and multiple investment managers.

I have co-authored two articles, “Evaluation of Asset Allocation Funds” and “Rethinking Public Sector Asset Allocation Models.” Both were published by the International Foundation for Retirement Education, a 501(c)(3) organization whose mission is to raise the retirement readiness of the American worker.
James L. Stricklin  
Managing Director  
Wedbush Securities Inc.

Mr. Stricklin has over 30 years of experience in municipal finance and has been responsible for public finance innovations, program development and implementation in areas including general obligation and revenue bonds, COPs and unique pledged revenue bond work. He has structured and managed a wide variety of new money tax-exempt and taxable transactions including traditional pledged revenue obligations, excise tax secured revenue bonds and water and wastewater utility revenue bonds. He has extensive experience in all aspects of public finance and serves as the Firm’s senior representative for many Arizona municipal and special district clients, including state agencies and universities. He has also participated in the structuring and design of numerous advance and current debt refundings, restructurings and defeasances.

Prior to joining Wedbush, Mr. Stricklin was a Managing Director and founding principal of Peacock, Hislop, Staley & Given, Inc. Preceding Peacock Hislop, he also worked for a regional investment banking firm in Dallas and at Ernst & Whinney (now EY). He passed the CPA exam and completed the certification experience requirements in 1984. He has a Bachelor of Science degree with majors in finance, accounting and real estate from the University of Arizona. Mr. Stricklin is a supporter, or a member of various professional organizations including the League of Cities and Town, the Arizona City Managers Association, the GFOAz. Mr. Stricklin holds Series 7, 53 and 63 licenses and has passed the Municipal Advisor Representative Qualification Examination - Series 50.
Christopher S. Tiller
Realtor - Russ Lyon Sotheby's International Realty Scottsdale, Arizona Real Estate
Current Russ Lyon Sotheby's International Realty
Previous Geneva Real Estate & Investments LLC, Rotaract
Education Aspen University

Summary: Quality professional service, consistent communication and experience are not separators, they are prerequisites. The distinguishing factors that set our brand apart would be our exclusive marketing agreements, our undisputed market share and our personal relationships. My position as a real estate agent is to market and expose your home to the highest number of qualified buyers as possible. Higher exposure equals higher demand. Higher demand equals the highest return on your home. Buyers also have the advantage of leveraging our exclusive off market inventory and cost savings through established relationships within all aspects of the transaction. Mortgage, title, inspection etc. all discount for our clients. I also leverage my decade long experience of contract negotiation and financial expertise to make your purchase not just a great investment but also a great home.

Work Experience

Realtor (Russ Lyon Sotheby's International Realty)
March 2010 – Present (7 years)
Residential real estate representation focusing in Chandler, Gilbert and Scottsdale.

Realtor (Geneva Real Estate & Investments LLC)
May 2008 – May 2011 (3 years 1 month)
I purchased homes from distressed homeowners in the Phoenix area to add to my clients growing needs.
While purchasing and selling these homes to my clients the benefits were two fold. Helping underwater homeowners off load critical debt and help increase the net worth of my investor clients for the future.

Education

Aspen University
MBA, Finance
2010 – 2012

Finance

Ottawa University
Bachelor’s, Management
2007 – 2009

Business Management

Occidental College
Bachelor's degree, Economics
2001 – 2003
A heavy focus on economics and financial markets.