# TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
# BOARD OF TRUSTEES

## DRAFT AGENDA

**DATE: Friday, October 30th, 2015**
**TIME: 8:30 am**
**PLACE: Arizona Inn – (Safari Room) 2200 East Elm Street, Tucson, AZ**

**Please Note: Legal action may be taken on any item listed on this agenda**

**Arizona Inn - Telephone: (520) 325-1541, Fax: (520) 881-5830 Directions: heading eastbound on Speedway from the intersection of Speedway and Stone, turn left (north) at Campbell, and continue to Elm Street, taking a right turn (east) onto Elm Street. Located in a residential zone on the right, approximately 3/10th's of a mile from Campbell (parking area will be to your left, directly in front of the Arizona Inn, on the left side of Elm Street).**

**Note: Breakfast Buffet is available, starting at 7:45am**

**Morning Agenda (call to order by 8:30am)**

1) **Consent Agenda** (5 min)
   a. Approval of September 24, 2015 TSRS Board meeting minutes
   b. September 2015 TSRS Financials
   c. Approval of October 2015 Retirements

2) **Actuary Valuation Report for June 30, 2015 – Gabriel Roeder Smith & Assoc., - Leslie Thompson** (55 min all items)
   a. June 30, 2015 TSRS DRAFT valuation report and discussion
   b. Recommended Contribution Rates for 2017 Plan Year Beginning July 1, 2016, Ending June 30, 2017
   c. Acceptance of 6/30/15 Draft Valuation Report, Adoption of FY17 Contribution Rates
   d. Review of TSRS Funding Projections

**15 minute Morning Break (estimated at 9:30am)**

3) **PIMCO Fund Manager–Sasha Talcott, Matt Clark** (60 min)
   a. PIMCO Update
   b. Economic Outlook
   c. Review of StockPlus Portfolio
   d. Review of Diversified Income Portfolio

4) **Disability Process Discussion**
   a. TSRS Disability Statistics and Process (5 min)
   b. City's Medical Leave and Accommodation Policies – HR Representative (20 min)
   c. Discussion of Overall Disability Program (10 min)

5) **Education Session - Callan Associates - Paul Erlendson, Gordon Weightman** (40 min)
   a. Active Vs. Passive Management

**Morning Time: 3 hours, 15 minutes**

**Lunch Break (estimated time - 11:45am to 1:15pm)**

TUCSON SUPPLEMENTAL RETIREMENT SYSTEM

**BOARD OF TRUSTEES**
**Notice of Regular Meeting / Agenda**
**DATE: Friday, October 30th, 2015**

**Reconvene at 1:15pm**

6) **Investment Activity / Status Report**
   a. TSRS Portfolio Composition, Transactions and Performance for 9/30/15 (10 min)
   b. Executive Summary of TSRS Performance for 9/30/2014 **Callan Associates – Paul Erlendson, Gordon Weightman -** (10 min)[1]
   c. Transition Manager Overview (5 Min)

7) **Discussion of Fund Manager Presentations to the Board of Trustees Callan Associates** (25 min)
   a. Models Being Used in Other Plans
   b. Effectiveness of Current Practice
   c. What can we do Different?

8) **Administrative Discussions**
   a. Update on Pension Administrator recruitment and Potential Expenses Associated with the Recruitment (15 min)
   b. TSRS day-to-day operations (5 min)
   c. Discussion of hiring authority for TSRS System Administrator **– Cassie Langford (**30 min.**)**
   d. Discussion of Additional Proposed TSRS Code Changes **Cassie Langford** (10 min)

9) **Articles for Board Member Education / Discussion**
   a. Public and Private Mortality

10) **Call to Audience**

11) **Future Agenda Items**

12) **Adjournment**

**Afternoon Time: 1 hour, 50 minutes**

**Note 1 – This item was not available when this information was distributed; therefore, the information will be distributed during the meeting.**

*Pursuant to ARS 38-431.03(A)(3) and (4): the board may hold an executive session for the purposes of obtaining legal advice from an attorney or attorneys for the Board or to consider its position and instruct its attorney(s) in pending or contemplated litigation. The board may also hold an executive session pursuant to A.R.S. 38-431.03(A)(2) for purposes of discussion or consideration of records, information or testimony exempt by law from public inspection.

# TUCSON SUPPLEMENTAL RETIREMENT SYSTEM BOARD OF TRUSTEES

**Meeting minutes from Thursday, September 24, 2015**
**Finance Department Conference Room, 5th Floor**
**City Hall, 255 West Alameda**
**Tucson, AZ 85701**

| | |
|---|---|
| Members Present: | Robert Fleming, Chairman<br>Kevin Larson, City Manager Appointee<br>Rebecca Hill, Interim HR Director<br>Silvia Amparano, Director of Finance<br>Michael Coffey, Elected Representative<br>Jorge Hernández, Elected Representative<br>John O'Hare, Elected Retiree Representative |
| Staff Present: | Dave Deibel, Deputy City Attorney<br>Silvia Navarro, Treasury Administrator<br>Art Cuaron, Treasury Finance Manager<br>Michael Hermanson, Plan Administrator<br>Dennis Woodrich, Lead Pension Analyst<br>Dawn Davis, Administrative Assistant |
| Guests Present: | Jenefer Carlin, CTRA Representative<br>Gordon Weightman, Callan Associates (via telephone)<br>Catherine Langford, Yoder & Langford, P.C.<br>Leslie Thompson, Gabriel Roeder, Smith & Company (via telephone)<br>Frank Romero, City of Tucson Employee<br>Grace Romero, Spouse of Frank Romero |
| Absent/Excused: | None |

Chairman Fleming called the meeting to order at 8:30 AM.

A. **Consent Agenda**

1. Approval of August 27, 2015 TSRS Board Meeting Minutes
2. Retirement ratifications – September 2015
3. August 2015 TSRS expenses compared to budget

**The Consent Agenda was approved by a vote of 6-0 (Chairman Fleming did not vote).**

B. **Disability Retirement Application – Frank F. Romero**

**A motion to approve the disability retirement application of Frank Romero was made by Kevin Larson, 2nd by Rebecca Hill.**

**A motion to enter Executive Session was made by John O'Hare, 2nd by Kevin Larson, and passed by a vote of 6-0 (Chairman Fleming did not vote).**

**A motion to return to Regular Session was made by John O'Hare, 2nd by Rebecca Hill, and passed by a vote of 6-0 (Chairman Fleming did not vote).**

Chairman Fleming reminded the Board that the motion on the table was to approve the application for medical retirement.

**A motion to amend the motion to approve the application of Frank Romero to require a medical reevaluation after 2 years was made by John O'Hare. The motion failed for lack of a 2nd.**

**The disability retirement application of Frank Romero was approved by a vote of 4-2 (Michael Coffey and John O'Hare dissenting, Chairman Fleming did not vote).**

C. **Investment Activity Report**

1. Aberdeen EAFE Plus Manager – Gordon Weightman (Report from Callan Associates, 9/11/2015)

Gordon Weightman said the Board asked for a report on Aberdeen EEAFE Plus at the 8/27/15 meeting, with the transition set up to move assets and increase the Board's international equity exposure would it make sense to give Aberdeen more money given their recent performance history. They manage about $37M now, and through the transition their target allocation will increase to roughly $71M. Given that information Callan had their research specialist in international equity meet with Aberdeen and identified some factors contributing to the recent underperformance. The broad message is they know the performance is poor relative to the benchmark since the Board invested, however the underperformance is explainable based upon some of the bullet points in the memo distributed prior to the meeting. Aberdeen's style is out of favor, they are designed to protect on the down side and they focus on valuation and quality which have not been rewarded. They have had higher exposure to energy and materials relative to the benchmark and those sectors have underperformed. Aberdeen has adhered to their investment discipline by investing in high quality companies within those sectors, but the exposure to the sectors has contributed to the underperformance vs. the benchmark. They have a lower risk portfolio, with a lower standard deviation and a lower return. Risk adjusted returns are favorable for Aberdeen and they are being compensated for the amount of risk they are taking. The good news about the international equity composite as a whole is the Board's 2 managers, Aberdeen and Causeway who have different styles and philosophies, have performed very well in combination despite Aberdeen's performance. Over the last 3 years, through 6/30/15, the Board's composite is up 10.2% vs. the benchmark's 9.4%. Aberdeen has stuck to their process and is still the same firm hired by the Board a little over 3 years ago. Given the environment has been in a prolonged period where things like momentum are rewarded, Aberdeen is poised to turn their performance around. Historically their strategy has worked and has been very strong; this has just been a tough period for them.

Michael Coffey asked if Callan would have, knowing what they know now, recommended Aberdeen 3 years ago.

Mr. Weightman answered when they do international equity searches Callan still likes Aberdeen. Aberdeen would only make it through the screening process if Callan knew the client was not hung up on recent performance, because Aberdeen is currently a buying opportunity, but clients might be skeptical, so they might not make the list based on their recent performance. There has been a bull equity market up until recently, where there has been a correction for a very prolonged period of time. The market has been driven by price momentum, people being willing to pay more for earnings, which is a factor that Aberdeen does not focus on. They are more focused on value and quality of names. A cyclical pattern like this has not been seen for a long time, where stocks have been rewarded based on price momentum. When that changes Aberdeen is positioned to do well. A 3 year period is too short to evaluate any manager, a full market cycle has been 3 to 5 years historically, but it is even longer than that this time.

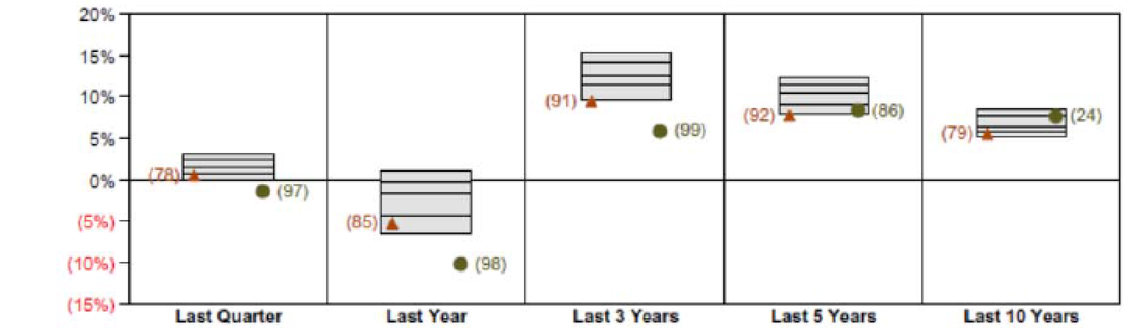
Jorge Hernández said based on Aberdeen's recent history a lot of their institutional clients have pulled a lot of money from Aberdeen's management. Was this an overreaction and would Callan agree with that time horizon action?

Mr. Weightman answered Aberdeen has lost money from clients who have shorter term time horizons, but the TSRS pension plan is being managed in perpetuity so by definition the Board has a longer time horizon. If the Board decided to fire Aberdeen, Callan would have to perform a search to find a new manager, and many times what happens is because performance is so tangible, often times clients hire managers at the peak of their cycle and then they underperform for the first 3 years. It was a little bit of an overreaction for those firms to fire Aberdeen. Not everyone thinks about managers in the same way and there are some consultants who will advise Board's based on manager rankings; other boards have strong watch list criteria. Groups that take a more informed approach and use judgment rather than a static set of criteria have held on to Aberdeen because they recognize the underperformance is explainable.

Kevin Larson said he agreed that they needed to look at a longer period of time, but most of the discussion held was relative to the benchmark when Aberdeen has been weak relative to their peers as well. He understood their risk profile was lower, and asked Mr. Weightman to address their weakness relative to peers.

**Exhibit 1**

**Performance vs CAI Non-U.S. Equity Style (Gross)**




| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| 10th Percentile | 3.05 | 1.03 | 15.31 | 12.41 | 8.51 |
| 25th Percentile | 2.39 | (0.36) | 14.17 | 11.39 | 7.64 |
| Median | 1.55 | (1.66) | 12.62 | 10.47 | 6.45 |
| 75th Percentile | 0.67 | (4.32) | 11.44 | 9.12 | 5.70 |
| 90th Percentile | (0.12) | (6.53) | 9.62 | 7.87 | 5.13 |
| **Aberdeen EAFE Plus** ● | (1.40) | (10.16) | 5.85 | 8.39 | 7.65 |
| MSCI ACWI x US (Net) ▲ | 0.53 | (5.26) | 9.44 | 7.76 | 5.54 |

Mr. Weightman said looking at the median manager in exhibit 1 of the memo, over most time periods there is an active management premium to be gained from international equity. Looking at Aberdeen over the last 3 years, which ties into their 5 year number now, they are at the bottom. There is not much of an explanation to be given for a performance like that. The proof statement to their strategy is, when looking at the last 10 years including 2008; they are in the 24th percentile. They are designed to protect with those quality factors, and they have done so in down markets. When stocks are running as they have in the last 3 to 5 years, given the environment where momentum has performed well, Aberdeen has been at the bottom.

John O'Hare asked how much more time would Callan recommend the Board give Aberdeen.

Mr. Weightman answered they needed to pay attention to the factors that are performing well within the non-US equity market. If valuation and quality factors start performing well and Aberdeen is still trailing he believes then there would be cause for concern.

2. TSRS Portfolio composition, transactions and performance review for 08/31/15

Art Cuaron reported as of 8/31/15 the total portfolio value was $712.5M, as of 9/24/15, it was $705.9M, continuing a downward trend that can be explained, partially, by the volatility in the market.

Calendar YTD returns – For the month of August, the Total Fund returned -3.97% vs. the Custom Plan Index at -3.94%; Total Fixed returned -0.71% vs. the Barclays Aggregate at -0.14%; Total Equities returned -6.07% vs. Equity Composite at -6.35%; Total Real Estate returned 0.70%; Total Infrastructure returned 0.74% vs. the CPI +4% at 0.19%. Through 8/31/15, the calendar YTD return for the Total Fund was -0.06% vs. -0.78% for the Custom Plan Index; Total Fixed returned 0.66% vs. the Barclays Aggregate at 0.45%; Total Equities returned -1.49% vs. Equity Composite at -2.54%; Total Real Estate returned 9.89% vs. NCREIF 7.34 (as of 6/30/15); Total Infrastructure returned -0.19% vs. the CPI +4% at 4.18% (as of 7/31/15).

Fiscal YTD returns – As of 8//31/15 the Total Fund returned -2.86% vs. the Custom Plan Index at -3.08%; Total Fixed returned -0.10% vs. the Barclays Aggregate at 0.56%; Total Equities returned -4.61% vs. the Equity Composite at -5.07%; Total Real Estate returned 1.31%; and Total Infrastructure returned 0.30% vs. the CPI +4% at 0.53%.

Trailing One Year Returns – As of 8/31/15 the Total Fund returned 0.28% vs. the Custom Plan Index at 0.08%; Total Fixed returned 0.22% vs. Barclays Aggregate at 1.56%; Total Equities returned -1.01% vs. the Equity Composite at -2.20%; Total Real Estate returned 13.45% vs. the NCREIF at 14.43% (as of 6/30/15); and Total Infrastructure returned -2.06% vs. the CPI +4% at 4.21%.

John O'Hare stated infrastructure seemed to be at least 6% under in the trailing one year returns and asked if there was a reason for that.

Mr. Cuaron answered he would look into it and provide the Board with an update. Net earnings through august were $12,733.

3. Callan's response to the number of public pension plans they have in their fund Sponsor database

This item was taken out of order and considered after item C1. Gordon Weightman said there were 350 public pension plans in Callan's fund Sponsor database.

John O'Hare asked if the TSRS Board members could get access to the database so they could go through it.

Mr. Weightman answered it was very difficult to provide the plan names and their asset allocations in Excel. They did have an exhibit in the measurement report that shows the range of allocations and the percentage of plans that are invested in various asset classes. Some of the data is from Callan clients, but they also buy some data from BNY Mellon. When BNY Mellon provides the data, they provide it with an identifier instead of the plan name. In those instances Callan gets the asset allocation information but they do not know the name of the plan.

Mr. O'Hare asked if they could filter out the public plans and remove the names.

Mr. Weightman said he would have to think about it and they could discuss it at a later date.

D. **Administrative Discussions**

1. TSRS Plan Document Revisions – Cassie Langford
   a. TSRS Plan Document Revisions – Strike out version
   b. TSRS Revised Funding Policy – Redline version
2. Discussion of adding administrative expenses on top of the contribution rate for TSRS – Leslie Thompson

Catherine Langford stated the first items, with regard to the Funding Policy Revisions, are more comprehensive than initially presented. Initially the goal was to revise the contribution language in the code to incorporate the additions to the actuarial calculations that they make under the Board's Funding Policy. It was determined at the 7/30/15 meeting that it should probably be made clearer and more comprehensive. They are shifting from the standard of the annual required contribution (ARC) to the actuarial determined contribution (ADC), which is a broader concept. Historically the ARC has been the normal cost plus the amount necessary to cover the unfunded accrued for the year. ADC, in the Code, would now refer to the Board's funding policy, cover the ARC, the rounding policy adjustments, and the administrative expenses of running the system. Currently the administrative expenses are not a specific line item in the actuarial calculation of the contribution; instead they are offset against investment returns. They want to shift the administrative expenses to a position where they are factored into the contribution calculation and appropriated every year. In terms of the Code revisions, they were replacing the ARC language with ADC language for Code purposes. All the other changes will occur through the Funding Policy. It is important to make sure that the Mayor and Council are comfortable with what is covered in the Funding Policy and that they understand how it works since it will be specifically referenced in the Code. On the Code level they want to make sure everything ties together to reach the appropriate amount to be appropriated by the City every year, which is why the definitions of the employer contribution and member contribution rates are being amended.

John O'Hare clarified there would not be any changes to the funded ratio or the City's contribution with the adoption of these changes.

Ms. Langford answered there was one change in how the administrative expenses would be treated.

Mr. O'Hare asked if there would be any changes to the City's contribution.

Michael Hermanson answered there would be an impact on the employer contributions because funding the administrative cost through contributions will increase contribution rates, but the funded ratio would be the same.

Silvia Amparano asked if the Board had already voted on adding the administrative costs to contributions.

Ms. Langford answered no, Leslie Thompson did the study on adding administrative expenses on top of the contribution rates for this discussion.

Mr. Hermanson explained it had been discussed at the retreat on 10/31/14. They discussed resetting the rates to include the round up issues, and specifically about the idea of adding the administrative costs but a decision had not been made yet.

Leslie Thompson directed the Board to look at the following spreadsheet:

## Tucson Supplemental Retirement System

30-Year Projection of Liabilities and Costs
7.25% Return on Investment for 2015 and Beyond
27.5% Contribution Rate with additional 0.65% for Administrative Expenses

| Valuation Year | Actuarial Accrued Liability | Actuarial Value of Assets | Funded Ratio | Unfunded Accrued Liability (UAL) | Normal Cost ($ amount) | Normal Cost (% of pay) | 20-Year Amortization of the UAL | UAL (% of pay) | Covered Payroll | Total Computed Contribution | New Member Contribution Rate | Combined Member Financed Portion | City Financed Portion | City Financed Portion in Dollars | Expected Benefit Payments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2014 | $1,012.39 | $656.00 | 64.8% | $356.40 | $14.02 | 11.71% | $25.99 | 20.52% | $126.64 | 33.43% | 5.25% | 5.28% | 28.15% | $36 | $67.46 |
| 2015 | $1,030.88 | $711.99 | 69.1% | $318.89 | $13.95 | 11.51% | $23.25 | 18.20% | $127.77 | 33.44% | 5.25% | 5.29% | 28.15% | $36 | $70.69 |
| 2016 | $1,047.27 | $751.81 | 71.8% | $295.46 | $13.94 | 11.35% | $21.54 | 16.64% | $129.50 | 33.44% | 5.25% | 5.29% | 28.15% | $36 | $73.61 |
| 2017 | $1,061.81 | $798.38 | 75.2% | $263.43 | $13.97 | 11.19% | $19.21 | 14.59% | $131.63 | 33.45% | 5.25% | 5.30% | 28.15% | $37 | $76.36 |
| 2018 | $1,074.59 | $837.17 | 77.9% | $237.42 | $14.02 | 11.04% | $17.31 | 12.93% | $133.90 | 33.45% | 5.25% | 5.30% | 28.15% | $38 | $79.06 |
| 2019 | $1,085.55 | $861.48 | 79.4% | $224.07 | $14.10 | 10.89% | $16.34 | 11.97% | $136.48 | 33.46% | 5.25% | 5.31% | 28.15% | $38 | $81.80 |
| 2020 | $1,094.55 | $885.58 | 80.9% | $208.97 | $14.22 | 10.75% | $15.24 | 10.94% | $139.21 | 33.46% | 5.25% | 5.31% | 28.15% | $39 | $84.25 |
| 2021 | $1,101.77 | $909.81 | 82.6% | $191.95 | $14.38 | 10.62% | $14.00 | 9.83% | $142.32 | 33.47% | 5.25% | 5.32% | 28.15% | $40 | $86.32 |
| 2022 | $1,107.53 | $934.72 | 84.4% | $172.81 | $14.56 | 10.50% | $12.60 | 8.65% | $145.73 | 33.47% | 5.25% | 5.32% | 28.15% | $41 | $88.21 |
| 2023 | $1,111.93 | $960.63 | 86.4% | $151.30 | $14.77 | 10.38% | $11.03 | 7.39% | $149.37 | 33.47% | 5.25% | 5.32% | 28.15% | $42 | $90.08 |
| 2024 | $1,114.93 | $987.72 | 88.6% | $127.21 | $15.00 | 10.27% | $9.28 | 6.05% | $153.26 | 33.47% | 5.25% | 5.32% | 28.15% | $43 | $91.75 |
| 2025 | $1,116.66 | $1,016.36 | 91.0% | $100.30 | $15.26 | 10.17% | $7.31 | 4.65% | $157.36 | 33.47% | 5.25% | 5.32% | 28.15% | $44 | $93.24 |
| 2026 | $1,117.23 | $1,046.92 | 93.7% | $70.30 | $15.54 | 10.08% | $5.13 | 3.17% | $161.65 | 33.47% | 5.25% | 5.32% | 28.15% | $46 | $94.48 |
| 2027 | $1,116.83 | $1,079.87 | 96.7% | $36.96 | $15.85 | 9.99% | $2.69 | 1.62% | $166.19 | 33.47% | 5.25% | 5.32% | 28.15% | $47 | $95.64 |
| 2028 | $1,115.52 | $1,115.54 | 100.0% | -$0.02 | $16.18 | 9.90% | ($0.00) | 0.00% | $170.96 | 10.55% | 5.25% | 5.31% | 5.24% | $9 | $96.57 |
| 2029 | $1,113.48 | $1,113.85 | 100.0% | -$0.37 | $16.54 | 9.83% | ($0.03) | -0.02% | $175.91 | 10.48% | 5.25% | 5.31% | 5.17% | $9 | $97.20 |
| 2030 | $1,110.99 | $1,111.76 | 100.1% | -$0.77 | $16.92 | 9.76% | ($0.06) | -0.03% | $181.05 | 10.41% | 5.25% | 5.30% | 5.11% | $9 | $97.55 |
| 2031 | $1,108.34 | $1,109.55 | 100.1% | -$1.21 | $17.33 | 9.70% | ($0.09) | -0.05% | $186.39 | 10.35% | 5.25% | 5.30% | 5.05% | $9 | $97.63 |
| 2032 | $1,105.83 | $1,107.52 | 100.2% | -$1.69 | $17.77 | 9.65% | ($0.12) | -0.06% | $192.02 | 10.30% | 5.25% | 5.29% | 5.01% | $10 | $97.57 |
| 2033 | $1,103.64 | $1,105.87 | 100.2% | -$2.23 | $18.22 | 9.60% | ($0.16) | -0.08% | $197.82 | 10.25% | 5.25% | 5.29% | 4.96% | $10 | $97.33 |
| 2034 | $1,101.99 | $1,104.82 | 100.3% | -$2.83 | $18.69 | 9.56% | ($0.21) | -0.10% | $203.82 | 10.21% | 5.25% | 5.28% | 4.93% | $10 | $96.95 |
| 2035 | $1,101.10 | $1,104.60 | 100.3% | -$3.51 | $19.19 | 9.52% | ($0.26) | -0.12% | $210.03 | 10.17% | 5.25% | 5.27% | 4.90% | $10 | $96.35 |
| 2036 | $1,101.27 | $1,105.52 | 100.4% | -$4.25 | $19.71 | 9.48% | ($0.31) | -0.14% | $216.44 | 10.13% | 5.25% | 5.27% | 4.86% | $11 | $95.64 |
| 2037 | $1,102.70 | $1,107.78 | 100.5% | -$5.07 | $20.26 | 9.45% | ($0.37) | -0.17% | $223.04 | 10.10% | 5.25% | 5.26% | 4.84% | $11 | $94.79 |
| 2038 | $1,105.67 | $1,111.66 | 100.5% | -$5.98 | $20.82 | 9.43% | ($0.44) | -0.19% | $229.84 | 10.08% | 5.25% | 5.26% | 4.82% | $11 | $93.93 |
| 2039 | $1,110.32 | $1,117.33 | 100.6% | -$7.01 | $21.40 | 9.41% | ($0.51) | -0.22% | $236.81 | 10.06% | 5.25% | 5.26% | 4.80% | $11 | $92.99 |
| 2040 | $1,116.87 | $1,125.02 | 100.7% | -$8.15 | $22.01 | 9.39% | ($0.59) | -0.24% | $244.00 | 10.04% | 5.25% | 5.26% | 4.78% | $12 | $92.01 |
| 2041 | $1,125.51 | $1,134.92 | 100.8% | -$9.41 | $22.62 | 9.37% | ($0.69) | -0.27% | $251.38 | 10.02% | 5.25% | 5.25% | 4.77% | $12 | $91.17 |
| 2042 | $1,136.29 | $1,147.09 | 101.0% | -$10.80 | $23.27 | 9.36% | ($0.79) | -0.30% | $258.96 | 10.01% | 5.25% | 5.25% | 4.76% | $12 | $90.48 |
| 2043 | $1,149.21 | $1,161.55 | 101.1% | -$12.34 | $23.93 | 9.35% | ($0.90) | -0.34% | $266.74 | 10.00% | 5.25% | 5.25% | 4.75% | $13 | $89.85 |
| | | | | | | | | | | | Total City Financed Portion for 30 years | | | $732 | |

The assumptions, except where stated otherwise are the same as those used in the June 30, 2014 report.
All dollar amounts in millions

The spreadsheet shows one option, adding administrative costs to the already rounded employer contribution rate of 27.5%. Adding 65 basis points to the City financed portion would bring the contribution rate up to 28.15%. It raises the contributions for the employer and provides for 100% funding a little earlier than previously anticipated. Under this option the unfunded liability reaches $0 in 2028 when under the baseline it does not reach $0 until 2029.

Mr. Hermanson said he wanted to go into how this option works with the Funding Policy and the rounding up of the employer contribution rate.

Ms. Thomson explained that the spread sheet assumes the rounding policy was applied before the administrative expenses; so the expenses are added on top of the employer contributions. This option illustrates the largest impact of the expenses. The other way to accomplish this would be to add the expenses to the employer contributions and then round. The raw actuarial employer contribution was 27.03%, adding 65 basis points would bring it up to 27.68%, which would round to 28%.

Mr. Hermanson said if it was filtered through the Funding Policy, which is another aspect of the discussion, it would be somewhere between 28.15% and the actuarially determined rates are from the valuations.

Ms. Thompson advised the other alternative would be to adding the expenses to normal cost because they are part of the annual cost of the plan. One of the interesting things about TSRS is that employees pay one half normal cost which means it would transfer into employee contribution; so employees would be paying half of the administrative expenses. However the legacy members are capped at 5% contribution rates so they would not be paying any of the administrative expenses. The raw contribution rate for tier II members of TSRS would be 6.62%, adding 32 basis points would bring it to 6.94%, which would be rounded up to 7%. With their current contribution rate of 6.75% the increase would be more than 25 basis points. Tier III members have a raw rate of 4.91%, 32 basis points would bring it up to 5.23%, which would be rounded to 5.25%. They would move from 5% to 5.25%. The employer would pay the other 32.5 basis points. Not all of the administrative expenses would be paid this way because legacy members would not pay, so that cost would have to be let go, or pushed onto the non-legacy employees or the employer.

Mr. O'Hare requested tables showing the division of the expenses for the different options.

Ms. Langford said the expenses were currently being netted against investment returns. If expenses were shifted to any of Ms. Thompson's models the Board could begin thinking about the impact they want to see. The option modeled with the 65 basis points on top of the rounded contribution would result in the contribution of both amounts, the rounding and the full expense load would be factored into the City's contribution.

Mr. Hermanson stated it was important for the Board to understand that if they followed through with the Funding Policy as presented at this meeting, it incorporates the addition of the administrative expenses to the overall calculation and would feed back into the rounding approach, and adding it to the employee contribution rates was not a part of the policy.

Ms. Langford said the option of adding it to each employees segment and the City was viable though complicated because of the legacy cap.

Chairman Fleming asked if it would have to be recalculated or would it always be 65 basis points.

Mr. Hermanson answered that was just what it was at this time.

Ms. Langford said they were trying to avoid fluctuation in the employee rates. The Board would have to decide how much they wanted to ask to collect. Under the Funding Policy they would go with the middle of the road approach as described by Ms. Thompson.

Ms. Amparano thought splitting the administrative costs between the employee and employer contribution rates was not a viable option. She felt this was not a necessary action to reach 100% funding only 1 year earlier, and suggested the Board continue to use the earnings to pay administrative costs.

Mr. Hermanson said the point they were trying to make was that any time there is a cost element it should be identified and funded explicitly.

Ms. Thompson said, from an actuarial perspective, in a year when the Board does not meet investment returns it also means they are not meeting their administration expenses and those cycle back and get spread over the amortization period. Then they are amortizing current debt which heightened the need to discuss the issue because they should not spread current service debt over 20 years.

Kevin Larson said he understood the concerns to the City but he liked the idea of the transparency of the expenses, and expressed support for the model where they add the 65 basis points and round it. It should not add it to the normal costs because it was not necessary. The Mayor and Council is in a position where they are willing to fund more than the ARC, and this should not be the complication to the issue that makes them lose interest in doing so, but the transparency it would bring to the expenses would be positive.

Ms. Langford stated it would also make the returns more accurate.

Mr. O' Hare clarified that the calculations given in the models were predicated on a 7.25% return.

Ms. Amparano asked what the administrative expense was based on.

Mr. Hermanson answered the actual for the previous year was $700K.

Ms. Langford explained the Funding Policy definition is meant to make it clear to Mayor and Council that there is an approved budgeted amount, but when Ms. Thompson does the calculations it would be based on the actual expenses incurred by the end of the year. The Funding Policy is a draft until the Code changes are approved. Adding actually between "expenses" and "incurred" to the wording in the Funding Policy would help to clarify the administrative expense was based on the actual cost from the previous year.

Chairman Fleming asked if it was appropriate for the Board to consider approving the Funding Policy as presented.

Ms. Langford answered if the Board was comfortable with the proposed Code revisions and wanted to give authorization to move forward with them, there should also be a motion to approve the Funding Policy because the draft goes with the Code revisions.

Chairman Fleming asked if it was appropriate to approve the Funding Policy before considering the Code changes.

Ms. Langford answered that was appropriate.

**A motion to approve the TSRS Funding Policy was made by Michael Coffey, 2nd by Kevin Larson, and passed by a vote of 6-0 (Chairman Fleming did not vote).**

Ms. Langford said item 5 in the Code revisions, dealing with an individual hired as a part time employee and later becomes full time, is a new provision. It was added because the Code currently says an employee's contribution rate is based on their date of hire, but in the cases of a long term part time employee the contribution rate will be determined based on when they become full time eligible.

Mr. Hermanson had requested that addition because there was ambiguity in the Plan Document with respect to how individuals are treated when they did not qualify to become a member until they attained full time status and if they were hired as a non-eligible part time employee 10 years ago their contribution rate would be locked in at 5% like a legacy member. They should land in the benefit tier applicable when they achieve full time status because that is when they actually become a TSRS member.

Mr. Coffey asked for clarification on item number 10 – Post Retirement Marital Changes.

Mr. Hermanson explained there have been issues where people are married when they retire and name their spouse as a surviving beneficiary, so that on the death of the member the spouse will receive the benefit. Then after retiring they get a divorce, or the spouse dies, and the member remarries, and wants to change the designation from the previous spouse. They did not understand why it was not possible when there was nothing prohibiting it in the Code, so this revision is remedying that.

Mr. Coffey asked if this was for administrative convenience.

Chairman Fleming answered no it was for actuarial purposes.

Mr. Hermanson explained it was an actuarial consideration for the plan; it keeps things smooth and steady for the cost of the plan. If retirees are able to change their survivors it changes the costs and they are not funded correctly.

Dave Deibel pointed out there could also be court orders applied to member's accounts.

Ms. Langford said the permanent and irrevocable language has always been in the Code, but retirees going through these circumstances argue that it means if they were married to the same person it is irrevocable, so this new language is just to make the Code provision as clear as possible.

**A motion to approve the proposed revisions to the Plan Document was made by Michael Coffey, 2nd by Silvia Amparano.**

Mr. Larson had some questions about item 3 – Disability Benefits. In Sec. 22-30(jj) it says "the Social Security Administration's determination shall be treated as conclusive evidence of Total and Permanent Disability." It should say "strong evidence" because it is important that the Social Security Administration's (SSA) decision is based on the time period when the person was a City employee. If the language is left as it is, a provision should be added to say provided the SSA's determination clearly determines it happened while the person was a City employee.

Ms. Langford said that was a good point that was not discussed in July. What they wanted to focus on was being able to accept the SSA determination as proof someone is disabled. In other provisions, with regard to the commencement of the benefit, there is language that says the person had to have stopped working for the City as a result of the disability. This language makes it clear that even if a SSA determination is obtained they still have to have stopped working at the City as a result of that disability.

Mr. Hermanson added the language also states they have to apply for disability retirement within 12 months of terminating City employment.

Chairman Fleming explained all the conclusive evidence language says is the Board will not re-litigate the question of whether they are disabled, leaving open the question of when they became disabled.

Mr. Larson said in Sec. 22-39(a) – Qualifications the language relates to a person who is no longer employed by the City, and asked if a section relating to applicants who are still employed by the City should be added because several applicants are still City employees, and the deleted language allowed for someone who was currently employed by the City.

Ms. Langford said this was a good point because if it is typical that someone is still a City employee when they apply, the word "terminates" should be removed.

Mr. Deibel asked how the sentence would be restructured.

Ms. Langford answered they should revert to the original language for that sentence.

Mr. Hermanson explained they were clarifying that someone cannot terminate and come back to the City to apply for disability retirement several years later because they have to apply within 12 months of termination. They are also leaving in the requirement of 10 years of City service.

Ms. Langford stated they were also requiring that the applicant establish that they left City employment or went on leave because of the disability.

**A motion to delete the proposed revision to Sec. 22-39(a) stating "If a member terminates from employment with the City prior to reaching Normal Retirement Age" and return to the original document wording from the revised Plan Document was made by Kevin Larson, 2nd by Rebecca Hill, and passed by a vote of 6-0 (Chairman Fleming did not vote).**

Mr. O'Hare expressed concern over the revision in Sec. 22-30(jj) designating the SSA determination as conclusive evidence of total and permanent disability because it turned the Board's authority over to the SSA.

Ms. Langford explained the independent determination was of the date the benefit would start. If a disability retirement applicant already had a SSA determination the Board's inclination was to take that as proof of disability. If the applicant had not yet applied or they are still in the process, the Board would go through the current procedure to make an independent determination of disability.

Mr. O'Hare stated he would like to see the Board take the SSA determination of disability as a factor but not be bound by it. He asked if the Board would still have the ability to require medical evaluations of disability retirees at a later date if they approved the wording of this revision.

Ms. Langford answered the annual verification of income would continue, and the discretionary follow up for an independent review would still be allowed. The revision only applies to the threshold determination of whether the applicant was disabled. There are some differences between the Board and SSA currently because the wording including “not less than 12 months” lacks the permanency of a total and permanent disability, which was the reason one of the revisions removed that wording.

**A motion to strike the word “conclusive” in reference to the SSA determination as evidence from the proposed amendment to Sec. 22-20(jj) of the Plan Document was made by John O’Hare. The motion failed for lack of a 2nd.**

Mr. Larson said he would substitute for the word conclusive because 99% of the time there will not be a question, but there are odd instances in that other 1% of the time.

**A motion to replace “conclusive” with “strong” was made by Kevin Larson, 2nd by John O’Hare.**

Mr. Coffey felt the sentence lost its meaning with the word conclusive removed. If the SSA determination was not taken as proof of disability it was just more information, so if conclusive is removed, the whole sentence should be removed.

Ms. Langford agreed with Mr. Coffey.

**The motion passed by a vote of 4-3 (Rebecca Hill, Michael Coffey, and Jorge Hernández dissenting).**

Mr. O’Hare asked if there was a provision in the Code stating the City was required to pay the ARC.

Ms. Langford answered no; they were required to pay the employer contribution, which is the City’s share of the ARC.

Mr. O’Hare asked if the Board wanted to change that so they have to pay the City’s share of the ADC.

Ms. Langford answered they already had with a revision to Sec. 22-35(b) which changes “Annual Required Contribution” to “Actuarially Determined Contribution”. There is another provision, which has not been modified, stating the City will appropriate the employer contribution piece.

**The motion to approve the proposed revisions, as amended, to the Plan Document passed by a vote of 6-0 (Chairman Fleming did not vote).**

3. October Board Retreat – Draft Agenda

Michael Hermanson stated the draft agenda incorporates all of the topics and issues previously suggested by the Board.

John O’Hare asked if he could contact Mr. Hermanson by email with any other suggestions.

Mr. Hermanson answered yes.

E. **Articles for Board Member Education / Discussion**

1. Understanding the Impact of Negative Cash Flow on a Public Pension Plan (Gabriel Roeder, Smith & Company, September 2015)
2. The Yardstick: A Tool to Evaluate Proposed Reforms of Arizona’s Public Safety Personnel Retirement System PSPRS – Final Report (League of Arizona Cities and Towns’ Pension Task Force, August 19, 2015)

F. **Call to Audience**

Jorge Hernández distributed an article about Aberdeen that he would like to share with the Board as the conversation continues.

G. **Future Agenda Items**

H. **Adjournment** 9:55 AM

Approved:

| | | | |
|---|---|---|---|
| Robert Fleming<br>Chairman of the Board | Date | Silvia Navarro<br>Treasury Administrator | Date |

| | |
|---|---|
| **Report ID** | : FIN-COT-BA-0001 |
| **Run Date** | : 10/23/2015 |
| **Run Time** | : 08:18 AM |

**City of Tucson**
**Budget vs Actual Expenses**
**Through: September, 2016**
**For Fiscal Year 2016**

## Parameter Page

**Parameters and Prompts**

| | |
|---|---|
| **Fiscal Year** | 2016 |
| **Accounting Period** | 3 |
| **Fund** | 072 |
| **Department** | 900 |
| **Unit** | * |
| **Object Code** | * |

**Report Description**

The Expenses vs. Actual Report shows expenditures and encumbrances for the selected accounting period and for the selected fiscal year compared against the current expense budget and the unobligated budget balance. The report is sectioned by Department, Fund and Unit and summarized by Object.

Report ID : FIN-COT-BA-0001
Run Date : 10/23/2015
Run Time : 08:18 AM



## City of Tucson
## Budget vs Actual Expenses
### Through: September, 2016
### For Fiscal Year 2016

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM

Fund 072 - TUCSON SUPP RETIREMENT SYSTEM

Unit 9001 - Normal Retiree Benefit

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 105 - PAYROLL PENSION | 0.00 | 5,067,776.95 | 5,067,776.95 | 0.00 | 15,133,165.76 | 15,133,165.76 | 63,300,000 | 48,166,834.24 | 76.09 % |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **5,067,776.95** | **5,067,776.95** | **0.00** | **15,133,165.76** | **15,133,165.76** | **63,300,000** | **48,166,834.24** | **76.09 %** |
| **Total for Unit 9001 - Normal Retiree Benefit** | **0.00** | **5,067,776.95** | **5,067,776.95** | **0.00** | **15,133,165.76** | **15,133,165.76** | **63,300,000** | **48,166,834.24** | **76.09 %** |

# City of Tucson
## Budget vs Actual Expenses
## Through: September, 2016
## For Fiscal Year 2016

**Department** 900 - TUCSON SUPPL RETIREMENT SYSTEM

**Fund** 072 - TUCSON SUPP RETIREMENT SYSTEM

**Unit** 9003 - Normal Retiree Beneficiary Benefit

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 105 - PAYROLL PENSION | 0.00 | 289,790.47 | 289,790.47 | 0.00 | 866,617.93 | 866,617.93 | 3,100,000 | 2,233,382.07 | 72.04 % |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **289,790.47** | **289,790.47** | **0.00** | **866,617.93** | **866,617.93** | **3,100,000** | **2,233,382.07** | **72.04 %** |
| **Total for Unit 9003 - Normal Retiree Beneficiary Benefi** | **0.00** | **289,790.47** | **289,790.47** | **0.00** | **866,617.93** | **866,617.93** | **3,100,000** | **2,233,382.07** | **72.04 %** |

Report ID : FIN-COT-BA-0001
Run Date : 10/23/2015
Run Time : 08:18 AM

# City of Tucson
## Budget vs Actual Expenses
## Through: September, 2016
## For Fiscal Year 2016

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM
Fund 072 - TUCSON SUPP RETIREMENT SYSTEM
Unit 9020 - Disability Retiree Benefit

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 105 - PAYROLL PENSION | 0.00 | 172,434.58 | 172,434.58 | 0.00 | 516,023.94 | 516,023.94 | 1,975,000 | 1,458,976.06 | 73.87 % |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **172,434.58** | **172,434.58** | **0.00** | **516,023.94** | **516,023.94** | **1,975,000** | **1,458,976.06** | **73.87 %** |
| **Total for Unit 9020 - Disability Retiree Benefit** | **0.00** | **172,434.58** | **172,434.58** | **0.00** | **516,023.94** | **516,023.94** | **1,975,000** | **1,458,976.06** | **73.87 %** |

Report ID : FIN-COT-BA-0001
Run Date : 10/23/2015
Run Time : 08:18 AM

**City of Tucson**
**Budget vs Actual Expenses**
**Through: September, 2016**
**For Fiscal Year 2016**

**Department** 900 - TUCSON SUPPL RETIREMENT SYSTEM
**Fund** 072 - TUCSON SUPP RETIREMENT SYSTEM
**Unit** 9021 - Pension Fund Administration

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 101 - SALARIES & WAGES FOR PERMANENT EMPLOYEES | 0.00 | 19,252.00 | 19,252.00 | 0.00 | 52,796.34 | 52,796.34 | 211,940 | 159,143.66 | 75.09 % |
| 108 - DOWNTOWN ALLOWANCE & DISCOUNTED TRANSIT PASSES | 0.00 | 92.32 | 92.32 | 0.00 | 267.08 | 267.08 | 1,160 | 892.92 | 76.98 % |
| 113 - SUPPLEMENTAL PENSION CONTRIBUTION | 0.00 | 4,873.44 | 4,873.44 | 0.00 | 14,098.13 | 14,098.13 | 58,280 | 44,181.87 | 75.81 % |
| 114 - FICA (SOCIAL SECURITY) | 0.00 | 1,328.92 | 1,328.92 | 0.00 | 3,844.39 | 3,844.39 | 15,410 | 11,565.61 | 75.05 % |
| 115 - WORKERS COMPENSATION INSURANCE | 0.00 | 240.98 | 240.98 | 0.00 | 608.49 | 608.49 | 5,930 | 5,321.51 | 89.74 % |
| 116 - GROUP PLAN INSURANCE | 0.00 | 2,588.98 | 2,588.98 | 0.00 | 7,843.10 | 7,843.10 | 30,920 | 23,076.90 | 74.63 % |
| 117 - STATE UNEMPLOYMENT | 0.00 | 17.34 | 17.34 | 0.00 | 50.16 | 50.16 | 300 | 249.84 | 83.28 % |
| 196 - INTERDEPARTMENTAL LABOR | 0.00 | 0.00 | 0.00 | 0.00 | 9,016.66 | 9,016.66 | 220,800 | 211,783.34 | 95.92 % |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **28,393.98** | **28,393.98** | **0.00** | **88,524.35** | **88,524.35** | **544,740** | **456,215.65** | **83.75 %** |
| 202 - TRAVEL | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4,000 | 4,000.00 | 100.00 % |
| 204 - TRAINING | 0.00 | 0.00 | 0.00 | 0.00 | 165.00 | 165.00 | 14,000 | 13,835.00 | 98.82 % |
| 205 - PARKING & SHUTTLE SERVICE | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 200 | 200.00 | 100.00 % |
| 212 - CONSULTANTS AND SURVEYS | 0.00 | 3,000.00 | 3,000.00 | 0.00 | 12,603.00 | 12,603.00 | 65,000 | 52,397.00 | 80.61 % |
| 213 - LEGAL | 0.00 | 7,353.00 | 7,353.00 | 0.00 | 7,353.00 | 7,353.00 | 50,000 | 42,647.00 | 85.29 % |
| 219 - MISCELLANEOUS PROFESSIONAL SERVICES | 39,000.00 | 0.00 | 39,000.00 | 39,000.00 | (331,727.20) | (292,727.20) | 4,059,500 | 4,352,227.20 | 107.21 % |
| 221 - INSUR-PUBLIC LIABILITY | 0.00 | 159.53 | 159.53 | 0.00 | 418.44 | 418.44 | 29,160 | 28,741.56 | 98.57 % |
| 228 - HAZARDOUS WASTE INSURANCE | 0.00 | 41.17 | 41.17 | 0.00 | 100.31 | 100.31 | 560 | 459.69 | 82.09 % |
| 232 - R&M MACHINERY & EQUIPMENT | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,200 | 1,200.00 | 100.00 % |

**City of Tucson**
**Budget vs Actual Expenses**
**Through: September, 2016**
**For Fiscal Year 2016**

**Department** 900 - TUCSON SUPPL RETIREMENT SYSTEM
**Fund** 072 - TUCSON SUPP RETIREMENT SYSTEM
**Unit** 9021 - Pension Fund Administration

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 245 - TELEPHONE | 0.00 | 0.00 | 0.00 | 0.00 | 420.00 | 420.00 | 1,200 | 780.00 | 65.00 % |
| 252 - RENTS EQUIPMENT | 0.00 | 84.67 | 84.67 | 0.00 | 249.97 | 249.97 | 0 | (249.97) | 0.00% |
| 260 - COMPUTER SOFTWARE MAINTENANCE AGREEMENTS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 41,000 | 41,000.00 | 100.00 % |
| 263 - PUBLIC RELATIONS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2,560 | 2,560.00 | 100.00 % |
| 284 - MEMBERSHIPS AND SUBSCRIPTIONS | 0.00 | 0.00 | 0.00 | 0.00 | 245.00 | 245.00 | 1,500 | 1,255.00 | 83.67 % |
| **Total for 200 - PROF CHARGES** | **39,000.00** | **10,638.37** | **49,638.37** | **39,000.00** | **(310,172.48)** | **(271,172.48)** | **4,269,880** | **4,541,052.48** | **106.35 %** |
| 311 - OFFICE SUPPLIES | 0.00 | 282.74 | 282.74 | 0.00 | 493.41 | 493.41 | 7,500 | 7,006.59 | 93.42 % |
| 312 - PRINTING,PHOTOGRAPHY,REPRODUCTION | 0.00 | 137.14 | 137.14 | 0.00 | 1,592.31 | 1,592.31 | 7,500 | 5,907.69 | 78.77 % |
| 314 - POSTAGE | 0.00 | 0.00 | 0.00 | 0.00 | 92.87 | 92.87 | 10,000 | 9,907.13 | 99.07 % |
| 341 - BOOK, PERIODICALS AND RECORDS | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 250 | 250.00 | 100.00 % |
| 345 - FURNISHINGS, EQUIPMENT AND TOOLS < $5,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,000 | 1,000.00 | 100.00 % |
| 346 - COMPUTER EQUIPMENT < $5,000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1,000 | 1,000.00 | 100.00 % |
| **Total for 300 - SUPPLIES** | **0.00** | **419.88** | **419.88** | **0.00** | **2,178.59** | **2,178.59** | **27,250** | **25,071.41** | **92.01 %** |
| **Total for Unit 9021 - Pension Fund Administration** | **39,000.00** | **39,452.23** | **78,452.23** | **39,000.00** | **(219,469.54)** | **(180,469.54)** | **4,841,870** | **5,022,339.54** | **103.73 %** |

# City of Tucson
## Budget vs Actual Expenses
## Through: September, 2016
## For Fiscal Year 2016

**Department** 900 - TUCSON SUPPL RETIREMENT SYSTEM
**Fund** 072 - TUCSON SUPP RETIREMENT SYSTEM
**Unit** 9022 - Disability Retiree Beneficiary Benefit

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 105 - PAYROLL PENSION | 0.00 | 30,418.52 | 30,418.52 | 0.00 | 92,560.92 | 92,560.92 | 350,000 | 257,439.08 | 73.55 % |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **30,418.52** | **30,418.52** | **0.00** | **92,560.92** | **92,560.92** | **350,000** | **257,439.08** | **73.55 %** |
| **Total for Unit 9022 - Disability Retiree Beneficiary Ben** | **0.00** | **30,418.52** | **30,418.52** | **0.00** | **92,560.92** | **92,560.92** | **350,000** | **257,439.08** | **73.55 %** |

Report ID : FIN-COT-BA-0001
Run Date : 10/23/2015
Run Time : 08:18 AM

**City of Tucson**
**Budget vs Actual Expenses**
**Through: September, 2016**
**For Fiscal Year 2016**

Department 900 - TUCSON SUPPL RETIREMENT SYSTEM
Fund 072 - TUCSON SUPP RETIREMENT SYSTEM
Unit 9023 - ACTIVE MEMBER REFUNDS-CONTRBS

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 186 - TSRS REFUNDS | 0.00 | 715,171.09 | 715,171.09 | 0.00 | 1,117,676.09 | 1,117,676.09 | 2,400,000 | 1,282,323.91 | 53.43 % |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **715,171.09** | **715,171.09** | **0.00** | **1,117,676.09** | **1,117,676.09** | **2,400,000** | **1,282,323.91** | **53.43 %** |
| **Total for Unit 9023 - ACTIVE MEMBER REFUNDS-CON** | **0.00** | **715,171.09** | **715,171.09** | **0.00** | **1,117,676.09** | **1,117,676.09** | **2,400,000** | **1,282,323.91** | **53.43 %** |

# City of Tucson
## Budget vs Actual Expenses
## Through: September, 2016
## For Fiscal Year 2016

**Department** 900 - TUCSON SUPPL RETIREMENT SYSTEM
**Fund** 072 - TUCSON SUPP RETIREMENT SYSTEM
**Unit** 9025 - INTEREST ON REFUNDS

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 186 - TSRS REFUNDS | 0.00 | 6,406.67 | 6,406.67 | 0.00 | 12,001.68 | 12,001.68 | 50,000 | 37,998.32 | 76.00 % |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **6,406.67** | **6,406.67** | **0.00** | **12,001.68** | **12,001.68** | **50,000** | **37,998.32** | **76.00 %** |
| **Total for Unit 9025 - INTEREST ON REFUNDS** | **0.00** | **6,406.67** | **6,406.67** | **0.00** | **12,001.68** | **12,001.68** | **50,000** | **37,998.32** | **76.00 %** |

| Report ID | : FIN-COT-BA-0001 |
|---|---|
| Run Date | : 10/23/2015 |
| Run Time | : 08:18 AM |



# City of Tucson
## Budget vs Actual Expenses
## Through: September, 2016
## For Fiscal Year 2016

| | |
|---|---|
| Department | 900 - TUCSON SUPPL RETIREMENT SYSTEM |
| Fund | 072 - TUCSON SUPP RETIREMENT SYSTEM |
| Unit | 9026 - DWE SYSTEM BENEFIT PAYMENT |

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 186 - TSRS REFUNDS | 0.00 | 0.00 | 0.00 | 0.00 | 61,918.40 | 61,918.40 | 200,000 | 138,081.60 | 69.04 % |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **0.00** | **0.00** | **0.00** | **61,918.40** | **61,918.40** | **200,000** | **138,081.60** | **69.04 %** |
| **Total for Unit 9026 - DWE SYSTEM BENEFIT PAYMEN** | **0.00** | **0.00** | **0.00** | **0.00** | **61,918.40** | **61,918.40** | **200,000** | **138,081.60** | **69.04 %** |

Report ID : FIN-COT-BA-0001
Run Date : 10/23/2015
Run Time : 08:18 AM



# City of Tucson
## Budget vs Actual Expenses
### Through: September, 2016
### For Fiscal Year 2016

**Department** 900 - TUCSON SUPPL RETIREMENT SYSTEM
**Fund** 072 - TUCSON SUPP RETIREMENT SYSTEM
**Unit** 9027 - CREDITABLE SERVICE TRANS(ASRS)

| Object | Current Period Encumbrance | Current Period Expenditure | Current Total Obligations | YTD Encumbrance | YTD Expenditure | YTD Total Obligations | Current Budgeted Amount | Unobligated Budget Balance | Percent |
|---|---|---|---|---|---|---|---|---|---|
| 186 - TSRS REFUNDS | 0.00 | 0.00 | 0.00 | 0.00 | (8,811.37) | (8,811.37) | 0 | 8,811.37 | 0.00% |
| **Total for 100 - PAYROLL CHGS** | **0.00** | **0.00** | **0.00** | **0.00** | **(8,811.37)** | **(8,811.37)** | **0** | **8,811.37** | **0.00%** |
| **Total for Unit 9027 - CREDITABLE SERVICE TRANS(A:** | **0.00** | **0.00** | **0.00** | **0.00** | **(8,811.37)** | **(8,811.37)** | **0** | **8,811.37** | **0.00%** |
| **Total for Fund 072 - TUCSON SUPP RETIREMENT SYS** | **39,000.00** | **6,321,450.51** | **6,360,450.51** | **39,000.00** | **17,571,683.81** | **17,610,683.81** | **76,216,870** | **58,606,186.19** | **76.89 %** |
| **Total for Department 900 - TUCSON SUPPL RETIREME** | **39,000.00** | **6,321,450.51** | **6,360,450.51** | **39,000.00** | **17,571,683.81** | **17,610,683.81** | **76,216,870** | **58,606,186.19** | **76.89 %** |
| **Grand Totals** | **39,000.00** | **6,321,450.51** | **6,360,450.51** | **39,000.00** | **17,571,683.81** | **17,610,683.81** | **76,216,870** | **58,606,186.19** | **76.89 %** |

## Service & Disability Retirements, End of Service Entrants for TSRS Board of Trustees Ratification

9/10/15 - 10/09/15 - October 2015

| Name of Applicant | Department | Type | Effective Date | Date of Birth | Age | Credited Service | Present Value | Member's Accumulated | AFC | Option | Pension |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Brown, Ronald A | Planning & Development Services | Normal | 9/22/2015 | 11/3/1944 | 70.89 | 7.71030 | 125,394.08 | 72,827.60 | 6,992.46 | Single Life | 3,352.08 |
| Duarte, Ernest A | Planning & Development Services | Normal | 9/19/2015 | 10/21/1962 | 52.91 | 30.0980 | 1,076,682.81 | 238,974.76 | 11,047.82 | J&S 75% | 7,124.09 |
| Patze, Elizabeth G | Police Department | Normal | 10/9/2015 | 9/25/1957 | 58.039 | 21.9921 | 474,546.05 | 127,800.60 | 6,847.40 | J&S 50% | 3,283.48 |
| Romero, Frank F | Parks & Recreation | Disability | 9/25/2015 | 3/23/1965 | 50.51 | 18.6468 | 158,156.98 | 36,445.24 | 2,566.78 | J&S 100% | 1,012.85 |
| | | | | | 0.00 | | | | | | |
| | | | | | 0.00 | | | | | | |
| | | | | | 0.00 | | | | | | |
| | | | | | 0.00 | | | | | | |
| | | | | | 0.00 | | | | | | |
| | | | | | 0.00 | | | | | | |
| | | | | | 0.00 | | | | | | |
| | | | | | 0.00 | | | | | | |
| | | | | | | | | | 27,454.46 | | 14,772.50 |
| | | | | Averages | 19.36 | 19.61 | 458,694.98 | 119,012.05 | 6,863.62 | | 3,693.13 |

### Comparison of Monthly Pension Payments - Beginning of FY 2015 to Current Monthly Pension Payments

| | Plan Year beginning 07/01/2014 (*from GRS annual valuation) | Monthly | Annual | (September 2015) Pension Payroll | | Annualized | Annual change since July 1, 2014 | % change |
|---|---|---|---|---|---|---|---|---|
| Service Pensions | 2,264 | 4,860,656 | 58,327,872 | 2,329 | 5,070,457 | 60,845,485 | 2,517,613 | 4.32% |
| Disability Pensions | 156 | 169,123 | 2,029,477 | 157 | 172,435 | 2,069,215 | 39,738 | 1.96% |
| Survivor Pensions | 344 | 326,541 | 3,918,488 | 329 | 320,209 | 3,842,508 | (75,980) | -1.94% |
| | 2,764 | 5,356,320 | 64,275,837 | 2,815 | 5,563,101 | 66,757,208 | 2,481,371 | 3.86% |
| | | | | 6 | $ 26,346 | | | |
| | | | | (net) change from previous month | | | | |

S:\treasdiv\tsrs\retirement\facts&figures\F&F 15-16.xls prior month 2,809 $ 5,536,754.31

Item 2a

Gabriel Roeder Smith & Company
Consultants & Actuaries

# TUCSON SUPPLEMENTAL RETIREMENT SYSTEM

## ACTUARIAL VALUATION REPORT

## AS OF JUNE 30, 2015

GRS Gabriel Roeder Smith & Company
Consultants & Actuaries

7900 East Union Avenue
Suite 650
Denver, CO 80237-2746

720.274.7270 phone
303.694.0633 fax
www.gabrielroeder.com

October 21, 2015

The Board of Trustees
Tucson Supplemental Retirement System
Tucson, Arizona

**Re: Actuarial Valuation of the Tucson Supplemental Retirement System as of June 30, 2015**

Dear Board Members:

We are pleased to present the Report on the actuarial valuation of the Tucson Supplemental Retirement System as of June 30, 2015.

This Report presents the results of the June 30, 2015 actuarial valuation of the Tucson Supplemental Retirement System. The Report describes the current actuarial condition of the Tucson Supplemental Retirement System, determines recommended annual employer and employee contribution rates, and analyzes changes in these required rates. This report should not be relied on for any purpose other than the purpose described in the primary communication. Information needed to comply with Statements No. 67 and 68 is provided in a separate accounting report.

We certify that the information included herein and contained in the June 30, 2015 Actuarial Valuation Report is accurate and fairly presents the actuarial position of the Tucson Supplemental Retirement System as of the valuation date.

***Contribution Rates***

There are no recommended changes to the contribution rates for FY 2017. Based on the TSRS funding policy, the recommended employer rate will remain at 27.5%, and the recommended employee rates by tier will remain at 5.00%, 6.75% and 5.25%. Full details of these calculations are in the report.

***Financing Objectives***

The employer contributions, when combined with the contributions made by members, are intended to cover the Actuarially Determined Contribution (ADC)), which is the sum of the Normal Cost plus a 20-year open level percent-of-pay amortization payment of the Unfunded Actuarial Accrued Liability (UAAL). If the contributions made are equal to the ADC, and if all actuarial assumptions are met, there will still be an unfunded accrued liability at the end of the 20-year period. This is due to “open” amortization – an amortization method that resets the payment period to 20 years with each valuation. However, the Board has adopted a funding policy which rounds up the employee and City contribution rates, and in addition, sets a 27.50% minimum on the City contribution rate until full funding is reached. Based on this funding policy, the System is projected to reach full funding in 2031.

### *Progress Toward Realization of Financing Objectives*

The UAAL/(surplus) and the funded ratio (ratio of the actuarial value of assets to the actuarial accrued liability) illustrate the progress toward the realization of certain financing objectivesBased on the actuarial valuation as of June 30, 2015, the Plan has an unfunded liability of $314.6 million and a funded ratio of 69.2%.

The increase in the funded ratio, from 64.8% to 69.2%, is primarily due to asset gains on the smoothed or actuarial value of assets as well as liability gains from salary increases less than expected. A funded ratio less than 100% indicates an actuarially determined contribution that will require a normal cost and an amortization payment. If the contributions equal the ADC, and if all assumptions are met, the funded ratio should improve over time.

The Total Actuarially Determined Contribution as a percentage of pay based on the actuarial valuation as of July 1, 2015 is 30.69% compared to the total contribution rate in the prior year of 32.23%. This total rate, net of the employee contributions, is used in setting City rates for the fiscal year beginning July 1, 2016 (FY 2017).

### *Benefit Provisions*

All of the benefit provisions reflected in this valuation are those which were in effect on June 30, 2015. There were no changes to the benefit provisions since the prior valuation. The benefit provisions are summarized in Section D of this Report.

### *Assumptions and Methods*

Since the prior valuation, the investment return assumption was changed to be net of only investment expenses, instead of investment and administrative expenses. The administrative expenses are now an explicit charge in the contribution rate calculation. There were no other changes in actuarial methods and assumptions since the prior report. The Board has sole authority to determine the actuarial assumptions used for the Plan. The assumptions that are based upon the actuary’s recommendations are internally consistent and are reasonably based on the actual past experience of the Plan.

The mortality tables include projection to 2020 to provide margin for future mortality improvement.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan’s funded status); and changes in plan provisions or applicable law. The actuarial calculations presented in this Report are intended to provide information for rational decision making.

### *Data*

The valuation was based upon information as of June 30, 2015, furnished by Tucson Supplemental Retirement System staff, concerning Plan benefits, financial transactions, plan provisions and active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not otherwise audit the data. We are not responsible for the accuracy or completeness of the information provided by Tucson Supplemental Retirement System staff.

### *Certification*

All of our work conforms with generally accepted actuarial principles and practices, and to the Actuarial Standards of Practice issued by the Actuarial Standards Board. In our opinion, our calculations also comply with the requirements of, where applicable, the Internal Revenue Code, and ERISA.

The signing actuaries are independent of the plan sponsor. Leslie Thompson and Dana Woolfrey are Enrolled Actuaries and are Members of the American Academy of Actuaries, and meet the Qualification Standards of the American Academy of Actuaries. Finally, both of the undersigned are experienced in performing valuations for large public retirement systems.

Respectfully submitted,

**Gabriel, Roeder, Smith & Company**

Leslie Thompson, FSA, FCA, EA, MAAA
Senior Consultant

Dana Woolfrey, FSA, FCA, EA, MAAA
Consultant

# *TABLE OF CONTENTS*

# SECTION A

# EXECUTIVE SUMMARY

**Actuarial Valuation**

Valuations are prepared annually, as of July 1 of each year, the first day of the fiscal year. The primary purposes of the valuation report are to measure the plan's liabilities, to determine the required contribution rates and to analyze changes in the Tucson Supplemental Retirement System's actuarial position.

In addition, the report provides summaries of the member data, financial data, plan provisions, and actuarial assumptions and methods.

## Experience During the Year

The plan experienced a liability gain of $9.7 million during fiscal year 2015, primarily due to salary increases less than expected. The plan experienced an asset gain of $30.3 million during fiscal year 2015. Although the market value of assets returned less than 7.25% during the year, there were deferred gains in the actuarial value of assets as of June 30, 2014 which were partially recognized in the June 30, 2015 valuation, creating the observed gain.

## Financial Position

The funded ratio increased from June 30, 2014 to June 30, 2015, primarily due to asset gains on the smoothed or actuarial value of assets as well as liability gains from salary increases less than expected to June 30, 2015. On a market value basis, the funded ratio slightly decreased from June 30, 2014 to June 30, 2015 due to market value investment returns less than 7.25% during the year.

**Funded Status Summary ($ in millions)**

| Valuation Date | June 30, 2015 | June 30, 2014 |
|---|---|---|
| Accrued Liability | $1,021.4 | $1,012.4 |
| Actuarial Value of Assets (smoothed) | 706.8 | 656.0 |
| Unfunded Accrued Liability | $314.6 | $356.4 |
| Funded Ratio | 69.20% | 64.80% |
| Market Value of Assets | $739.8 | $735.7 |
| Unfunded Accrued Liability | $281.6 | $276.7 |
| Funded Ratio | 72.43% | 72.67% |

**Financing Objectives and Funding Policy**

The financing objective of the Retirement System is to establish and receive contributions, expressed as percent of active member payroll, which will remain approximately, level from year to year and thereby minimize inter-generational cost transfers.

The Tucson Supplemental Retirement System is supported by member contributions, employer contributions, and investment return from retirement system assets. Currently, the member hired prior to July 1, 2006 contribute a flat rate, while members hired after June 30, 2006 are subject to variable rates that are 50% of their tiers' normal cost, subject to a floor of 5.0%. The rates are outlined in the table below. These rates are further subject to a 5.00% floor and a roundup policy rounding the next 0.25% percent - in this case, making the rates for fiscal year 2017, 5.00%, 6.75%, and 5.25%, respectively.

| | Actuarial (Non Rounded) Rates | |
|---|---|---|
| **Employee Group** | **FY 2016*** | **FY 2017*** |
| Employees hired prior to July 1, 2006 | 5.00% | 5.00% |
| Tier I Variable - employees hired after June 30, 2006, before July 1, 2011 | 6.62% | 6.60% |
| Tier II Variable - employees hired after June 30, 2011 | 4.91% | 4.89% |

**Before application of 5.0% floor or roundup policy*

Total contributions which satisfy the funding objective are determined by the annual actuarial valuation and are sufficient to:

(1) cover the normal cost (the actuarial present value of benefits allocated to the current year by the actuarial cost method described in Section C); and

(2) finance over a period of future years the annual payment of the unfunded actuarial accrued liability (the actuarial present value of benefits not covered by valuation assets and anticipated future normal costs); and

(3) as of the most recent valuation, cover administrative expenses of the System.

It is assumed that the investment return assumption of 7.25% is net of investment and administrative expenses. The additional explicit administrative expense charge to the contribution rate is applied to the recommended employer contribution.

The Total Actuarially Determined Contribution which is used to set rates for fiscal year 2017 decreased from 32.23% as of the prior valuation to 30.69% as of the current valuation. This was due to asset gains as well as liability gains from salaries increasing less than expected.

| **Contribution Requirement Summary<br>All Numbers Reported Middle of Year, Percent of Pay** | | |
|---|---|---|
| **Fiscal Year Beginning** | **July 1, 2016** | **July 1, 2015** |
| Total Actuarial Determined Contribution | 30.69% | 32.23% |
| Estimated Member Contribution | 5.17% | 5.20% |
| Net Annual Required Contribution | 25.52% | 27.03% |

| **Normal Cost by Tier** | |
|---|---|
| Aggregate Total Normal Cost | 11.57% |
| Tier I Normal Cost (Hired between July 1, 2006 and June 30, 2011) | 13.20% |
| Tier II Normal Cost (Hired after June 30, 2011) | 9.78% |

| **Member and City Rates by Tier for Fiscal Year Beginning July 1, 2016** | | | |
|---|---|---|---|
| Tier | Member Contribution* | City Contribution* | Total Contribution |
| Hired Prior to July 1, 2006 | 5.00% | 25.69% | 30.69% |
| Hired between July 1, 2006 and June 30, 2011 | 6.60% | 24.09% | 30.69% |
| Hired after June 30, 2011 | 4.89% | 25.80% | 30.69% |
| Blended Across Tiers | 5.17% | 25.52% | 30.69% |

*Prior to application of roundup policy and funding policy minimums. It is anticipated that the three member groups will contribute 5.00%, 6.75%, and 5.25%, respectively. It is anticipated that the City will contribute 27.50% of pay, in accordance with the funding policy minimum.

The recommended rates, with the application of the administrative expenses and the round up policy, are illustrated below:

FY 17 Recommended Rates
Based on TSRS Funding Policy

| **Employee Rates** | Actuarial Rate (50% of Normal Cost) | Round up to nearest .25% | FY 17 Board Recommended Rates | FY 16 Recommended Rates |
|---|---|---|---|---|
| Tier | | | | |
| Hired prior to 7/1/2006 | 5.00%* | n/a | 5.00% | 5.00% |
| Hired 7/1/2006 to 6/30/2011 | 6.60% | 6.75% | 6.75% | 6.75% |
| Hired after 6/30/2011 | 5.00%** | 5.25% | 5.25% | 5.25% |

**Rate set in ordinance at 5.00%*
*** Minimum 5% rate*

| **Employer Rates** | | Round up to nearest .50% | FY 17 Board Recommended Rates | FY 16 Recommended Rates |
|---|---|---|---|---|
| Tier | | | | |
| Hired prior to 7/1/2006 | 25.68% | n/a | | |
| Hired 7/1/2006 to 6/30/2011 | 24.08% | n/a | | |
| Hired after 6/30/2011 | 25.79% | n/a | | |
| Blended Rate | 25.51% | n/a | 27.5%* | 27.50% |

**Minimum 27.5% recommended rate*

## Exhibit A.1
## Tucson Supplemental Retirement System
## Executive Summary

| | June 30, 2015 | June 30, 2014 |
|---|---|---|
| 1. **Actuarially Determined Contribution** | | |
| a. Total | 30.69% | 32.23% |
| b. Blended Member % | 5.17% | 5.20% |
| c. Blended Net Employer % | 25.52% | 27.03% |
| 2. **Funded Status** | | |
| a. Actuarial Accrued Liability | $ 1,021,377,564 | $ 1,012,393,337 |
| b. Actuarial Value of Assets (AVA) | 706,773,630 | 655,997,802 |
| c. Unfunded Liability (AVA-basis) | 314,603,934 | 356,395,535 |
| d. Funded Ratio (AVA-basis) | 69.20% | 64.80% |
| e. Market Value of Assets (MVA) | $ 739,793,547 | $ 735,736,500 |
| f. Unfunded Liability (MVA-basis) | 281,584,017 | 276,656,837 |
| g. Funded Ratio (MVA-basis) | 72.43% | 72.67% |
| 3. **Summary of Census Data** | | |
| a. Actives | | |
| i. Counts | 2,665 | 2,714 |
| ii. Total Annual Covered Payroll | $ 123,414,560 | $ 126,639,423 |
| iii. Average Covered Payroll | 46,309 | 46,662 |
| iv. Average Age | 48.0 | 47.8 |
| v. Average Service | 12.1 | 12.0 |
| b. Members with Refunds Due Counts | 44 | 57 |
| c. Deferred Vested Member Counts | 284 | 266 |
| d. Retired Member Counts | 2,305 | 2,264 |
| e. Beneficiary Counts | 309 | 310 |
| f. Disabled Retiree Counts | 160 | 156 |
| g. Alternate Payees | 35 | 34 |
| h. Total Members Included in Valuation | 5,802 | 5,801 |

# SECTION B

# VALUATION RESULTS

## Exhibit B.1
## Tucson Supplemental Retirement System
## Actuarial Valuation Results
## Actuarial Accrued Liability

| | June 30, 2015 | June 30, 2014 |
|---|---|---|
| 1. **Active Members** | | |
| a. Retirement Benefits | $ 323,702,517 | $ 328,729,122 |
| b. Withdrawal Benefits | 8,890,652 | 9,489,185 |
| c. Disability Benefits | 1,929,369 | 2,056,444 |
| d. Death Benefits | 6,218,844 | 6,311,508 |
| e. Total | $ 340,741,382 | $ 346,586,259 |
| 2. **Members with Deferred Benefits** | $ 19,147,214 | $ 17,708,953 |
| 3. **Members Receiving Benefits** | $ 661,292,061 | $ 647,811,688 |
| 4. **Non-Vested Terminated Members Due Refund** | $ 196,907 | $ 286,437 |
| 5. **Total** | $ 1,021,377,564 | $ 1,012,393,337 |
| 6. **Actuarial Value of Assets** | $ 706,773,630 | $ 655,997,802 |
| 7. **Unfunded Actuarial Accrued Liability** | $ 314,603,934 | $ 356,395,535 |

## Exhibit B.2
## Tucson Supplemental Retirement System
## Actuarial Valuation Results
## Normal Cost

| | July 1, 2015 | July 1, 2014 |
|---|---|---|
| 1. **Normal Cost Rate** | | |
| a. Retirement Benefits | 8.98 % | 9.12 % |
| b. Withdrawal Benefits | 2.08 | 2.09 |
| c. Disability Benefits | 0.24 | 0.23 |
| d. Death Benefits | 0.27 | 0.27 |
| e. Total | 11.57 % | 11.71 % |

## Exhibit B.3
## Tucson Supplemental Retirement System
## Actuarial Valuation Results
## Present Value of Projected Benefits

| | June 30, 2015 | June 30, 2014 |
|---|---|---|
| 1. **Active Members** | | |
| a. Retirement Benefits | $ 391,871,542 | $ 400,763,929 |
| b. Withdrawal Benefits | 25,897,876 | 27,121,968 |
| c. Disability Benefits | 3,930,568 | 4,094,484 |
| d. Death Benefits | 8,329,892 | 8,479,227 |
| e. Total | $ 430,029,878 | $ 440,459,608 |
| 2. **Members with Deferred Benefits** | $ 19,147,214 | $ 17,708,953 |
| 3. **Members Receiving Benefits** | $ 661,292,061 | $ 647,811,688 |
| 4. **Non-Vested Terminated Members Due Refund** | $ 196,907 | $ 286,437 |
| 5. **Total** | $ 1,110,666,060 | $ 1,106,266,686 |

**Exhibit B.4**
**Tucson Supplemental Retirement System**
**Development of the Actuarially Determined Contribution**

| **Fiscal Year Beginning**[1] | **July 1, 2015** | **July 1, 2014** |
|---|---|---|
| 1. Total Normal Cost | 11.57% | 11.71% |
| 2. Total Contribution to the Unfunded Actuarial Accrued Liability[2] | 18.59% | 20.52% |
| 3. Administrative Expenses[3] | 0.53% | N/A |
| 4. Total Computed Contribution | 30.69% | 32.23% |
| 5. Member Financed Portion[4] | 5.17% | 5.20% |
| 6. City Financed Portion[5] | 25.52% | 27.03% |

[1]*One-year lag in contribution timing. Contribution rates developed for the fiscal year beginning July 1, 2015 are used to set the actual contribution rates for fiscal year beginning July 1,2016.*
[2] *Financed as a level percent of active member payroll over a period of 20 years from June 30, 2015.*
[3]*A recent change to the funding policy includes an additional charge for administrative expenses.*
[4] *This percentage reflects the fact that members hired prior to July 1, 2006 contributed 5.00% of pay per year and members hired between July 1, 2006 and June 30, 2011 (Tier I variable class) and for those hired after July 1, 2011 (Tier II variable class), employee contributions are 50% of the respective Normal Cost for each class with a floor of 5.0%. The employee contribution rates, before application of the floor or roundup policy, for fiscal year 2016 are 6.60% and 4.89%, respectively.*
[5]*Prior to round up policy and application of 27.5% minimum.*

**Exhibit B.5**
**Tucson Supplemental Retirement System**
**Plan Experience for Fiscal Year 2015**

| | | |
|---|---|---|
| | **Liabilities** | |
| 1. | Actuarial Accrued Liability at June 30, 2014 | $ 1,012,393,337 |
| 2. | Normal Cost during Fiscal Year 2015 | 14,829,476 |
| 3. | Benefit Payments during Fiscal Year 2015 | 67,612,351 |
| 4. | Interest on Items 1-3 to End of Year | 71,485,138 |
| 5. | Change in Actuarial Accrued Liability Due to Assumption Changes | - |
| 6. | Change in Actuarial Accrued Liability Due to Provision Changes | - |
| 7. | Expected Actuarial Accrued Liability at June 30, 2015 | 1,031,095,600 |
| 8. | Actual Actuarial Accrued Liability at June 30, 2015 | 1,021,377,564 |
| 9. | Liability Gain/(Loss) | 9,718,036 |
| | **Assets** | |
| 10. | Actuarial Value of Assets at June 30, 2014 | $ 655,997,802 |
| 11. | Benefit Payments during Fiscal Year 2015 | 67,612,351 |
| 12. | Contributions during Fiscal Year 2015 | 41,517,368 |
| 13. | Interest on Items 10-12 to End of Year | 46,613,898 |
| 14. | Expected Actuarial Value of Assets at June 30, 2015 | 676,516,717 |
| 15. | Actual Actuarial Value of Assets at June 30, 2015 | 706,773,630 |
| 16. | Asset Gain/(Loss) | 30,256,913 |
| | **Total** | |
| 17. | Total Gain/(Loss) | **$ 39,974,949** |

# SECTION C

# PLAN ASSETS

**Exhibit C.1**
**Tucson Supplemental Retirement System**
**Statement of Plan Net Assets**

| | June 30, 2015 | June 30, 2014 |
|---|---|---|
| **Assets** | | |
| Cash & Equivalents | $ 6,759,380 | $ 6,040,327 |
| Short-term investments | 28,834,913 | 23,950,983 |
| Real estate investments | 58,761,226 | 54,642,201 |
| Fixed income securities | 118,134,945 | 158,049,978 |
| Domestic equity | 372,249,062 | 362,939,416 |
| International equity | 97,369,073 | 102,838,872 |
| Other | 80,105,389 | 43,404,080 |
| Total assets | 762,213,988 | 751,865,857 |
| **Liabilities and net assets held in trust for benefits** | | |
| Accounts payable | 22,420,441 | 16,129,357 |
| Total payables | 22,420,441 | 16,129,357 |
| **Net assets held in trust for pension benefits** | $ 739,793,547 | $ 735,736,500 |

**Exhibit C.2**
**Tucson Supplemental Retirement System**
**Statement of Changes in Plan Net Assets**

| | Year Ended June 30, 2015 | Year Ended June 30, 2014 |
|---|---|---|
| **Additions to Net Assets Attributed to:** | | |
| Contributions | | |
| Employer contributions | $33,985,523 | $34,189,288 |
| Plan members contributions | 7,531,845 | 7,338,543 |
| Total | 41,517,368 | 41,527,831 |
| Net Investment Income | | |
| Net appreciation in fair value of investments | 22,467,139 | 111,063,362 |
| Interest and dividends | 12,309,498 | 12,688,268 |
| Other | 118,247 | 171,077 |
| | 34,894,884 | 123,922,707 |
| Total additions | 76,412,252 | 165,450,538 |
| **Deductions to Net Assets Attributed to:** | | |
| Benefit payments | 65,216,458 | 63,714,857 |
| Refunds | 2,395,893 | 2,287,156 |
| Investment expenses | 4,092,449 | 4,022,476 |
| Administrative expenses | 650,405 | 735,739 |
| Total deductions | 72,355,205 | 70,760,228 |
| Change in net assets | 4,057,047 | 94,690,310 |
| **Net assets held in trust for benefits:** | | |
| Beginning of year | 735,736,500 | 641,046,190 |
| End of year | $ 739,793,547 | $ 735,736,500 |

**Exhibit C.3**
**Tucson Supplemental Retirement System**
**Development of the Actuarial Value of Assets**

| | Item | | | | Year Ending June 30, 2015 |
|---|---|---|---|---|---|
| 1. | Market value of assets, at beginning of year | | | | 735,736,500 |
| 2. | Net new investments | | | | |
| | a. Contributions received for prior plan year | | | $ | 41,517,368 |
| | b. Benefits paid and administrative expenses | | | | (68,262,756) |
| | c. Net | | | $ | (26,745,388) |
| 3. | Market value of assets, at end of year | | | $ | 739,793,547 |
| 4. | Net MVA earnings [ (3) - (1) - (2c) ] | | | $ | 30,802,435 |
| 5. | Assumed investment return rate | | | | 7.25% |
| 6. | Expected return [ (5)*(1)+(5)*(2c)/2 ] | | | $ | 52,371,376 |
| 7. | Excess return [ (4) - (6) ] | | | $ | (21,568,941) |
| 8. | Deferred amounts for fiscal year ending June 30, | | | | |
| | Year | Gain/(Loss) | Percent Deferred | | Amount Deferred |
| | a. 2015 | (21,568,941) | 80% | | (17,255,153) |
| | b. 2014 | 71,196,036 | 60% | | 42,717,622 |
| | c. 2013 | 37,262,213 | 40% | | 14,904,885 |
| | d. 2012 | (36,737,183) | 20% | | (7,347,437) |
| | e. 2011 | 75,597,072 | 0% | | 0 |
| | f. Total | 125,749,197 | | | 33,019,917 |
| 9. | Actuarial value of assets (Item 3 - Item 8f) | | | $ | 706,773,630 |

**Exhibit C.4**
**Average Annual Rates of Investment Return**

| Fiscal Year Ended June 30, | Actuarial Value | Market Value |
|---|---|---|
| 2013 | 4.1 % | 14.3 % |
| 2014 | 13.8 | 19.1 |
| 2015 | 12.1 | 4.3 |

# SECTION D

# SUMMARY OF BENEFIT PROVISIONS

# SUMMARY OF BENEFIT PROVISONS

JUNE 30, 2015

## NORMAL RETIREMENT (NO REDUCTION FACTOR)

***Eligibility*** :

***Tier 1*** – Members hired before July 1, 2011. Age 62, or a combination of age and creditable service equal to 80 (for those hired on or after July 1, 2009, eligibility at age 62 requires a minimum of 5 years of accrued service).

***Tier 2*** – Members hired on or after July 1, 2011. Age 65 with 5 years of service or a combination of age and creditable service equal to 85 and the attainment of age 60.

***Amount*** - Creditable service times 2.25% of average final compensation for Tier 1 and 2.00% of average final compensation for Tier 2.

***Average Final Compensation*** - The average monthly creditable compensation for the period of 36 consecutive months during which the member's creditable compensation was the highest during the 120 months immediately preceding the date of retirement for Tier 1 and 60 consecutive months during which the member's creditable compensation was the highest during the 120 months immediately preceding the date of retirement for Tier 2. Effective July 1, 2000, accrued unused sick leave at the final salary may be substituted for an equal number of hours at the beginning of the 36 month period for Tier 1.

## DEFERRED RETIREMENT (VESTED TERMINATION)

***Eligibility*** - 5 or more years of accrued service. Deferred retirement benefits for terminated vested employee becomes automatic at age 62 (age 65 for Tier 2) or when a combination of age and creditable service equals 80 (85 with the attainment of age 60 for Tier 2), unless the member elects to withdraw the employee contribution account in lieu of a deferred retirement benefit. In addition to the eligibility listed above, the term-vested member may chose an Early Retirement (minimum age of 55 for Tier 1 and 60 for Tier 2 and minimum service of 20 yrs) subject to the same reduction – reduced by ½ of 1% per month for each month (6% per year) retirement precedes normal retirement eligibility.

***Amount*** - An amount computed as for normal retirement.

## DISABILITY RETIREMENT

***Eligibility*** - Eligibility requires 10 or more years of credited service and a disability that is total and permanent.

***Amount*** - An amount computed as for normal retirement. Disability Retirement Benefits are offset, if the combination of all employer-provided benefits exceeds 100% of the members adjusted income base, then members pension benefit from TSRS is reduced so income does not exceed the 100% maximum allowed.

### PRE-RETIREMENT SURVIVOR BENEFITS

***Eligibility*** - 5 or more years of accrued service and not eligible to retire.

***Amount*** - Lump sum payment equal to twice the member's contributions, with interest.

***Eligibility*** - After attaining eligibility for retirement, in the event the member dies prior to submitting an application for retirement benefits:

***Amount*** - If the member is married, a default provision allows the member's spouse to elect to receive either a lump sum payment of twice the member's contributions account, or receive a lifetime annuity benefit determined as if the member had elected a joint & last survivor benefit of 100% survivor annuity prior to death. If the member is not married and has named a single non-spousal beneficiary, the beneficiary may elect to receive either a lump sum payment of twice the member's contributions account, or receive a 15 year annuity benefit determined as if the member elected payment of a 15 year term certain annuity. If the member has named multiple designated beneficiaries, a lump sum refund of the member's account balance will be paid to the named beneficiaries.

### OTHER TERMINATION BENEFITS

***Eligibility*** - Termination of employment without eligibility for any other benefit.

***Amount*** - Accumulated contributions and interest in members account at time of termination.

### EMPLOYEE CONTRIBUTIONS

Interest is credited to member accumulated contributions accounts as simple interest two times per year at an annual interest rate of 6%. For those hired prior to July 1, 2006, employee contributions are 5.00% of salary. For those hired between July 1, 2006 and June 30, 2011 (Tier I variable class) and for those hired after July 1, 2011 (Tier II variable class), employee contributions are 50% of the respective Normal Cost for each class, with a floor of 5.0%. The employee contributions for the Tier I and Tier II variable classes for FY 16/17 are 6.60% and 4.89%, respectively, before application of the floor or roundup policy.

## CITY CONTRIBUTIONS

City Contributions are actuarially determined; which together with employee contributions and investment earnings will fund the obligations of the System in accordance with generally accepted actuarial principles. (please refer to the Funding Policy in Section I of this report).

## POST-RETIREMENT ADJUSTMENTS

The TSRS Board has established formal policies to determine whether the system shall fund an annual supplemental post-retirement benefit payment to retired members and beneficiaries.

# SECTION E

# SUMMARY OF PARTICIPANT DATA

## Exhibit E.1
## Tucson Supplemental Retirement System
## Summary of Census Data

| | July 1, 2015 | July 1, 2014 |
|---|---|---|
| 1. **Active Members** | | |
| a. Counts | 2,665 | 2,714 |
| b. Annual Covered Payroll | $ 123,414,560 | $ 126,639,423 |
| c. Average Annual Compensation | $ 46,309 | $ 46,662 |
| d. Average Age | 48.0 | 47.8 |
| e. Average Service | 12.1 | 12.0 |
| f. Accumulated Member Contributions with Interest | $ 129,747,618 | $ 128,963,064 |
| 2. **NonVested Members with Refunds Due** | | |
| a. Counts | 44 | 57 |
| b. Amount of Refunds Due | $ 196,907 | $ 286,437 |
| 3. **Deferred Vested Members** | | |
| a. Counts | 284 | 266 |
| b. Annual Deferred Benefits | $ 13,248,505 | $ 12,106,810 |
| c. Average Benefit | $ 46,650 | $ 45,514 |
| 4. **Retired Members** | | |
| a. Counts | 2,305 | 2,264 |
| b. Annual Benefits | $ 60,085,166 | $ 58,327,872 |
| c. Average Benefit | $ 26,067 | $ 25,763 |
| 5. **Beneficiaries** | | |
| a. Counts | 309 | 310 |
| b. Annual Benefits | $ 3,587,750 | $ 3,577,130 |
| c. Average Benefit | $ 11,611 | $ 11,539 |
| 6. **Disabled Retirees** | | |
| a. Counts | 160 | 156 |
| b. Annual Benefits | $ 2,091,109 | $ 2,029,477 |
| c. Average Benefit | $ 13,069 | $ 13,009 |
| 7. **Alternate Payees** | 35 | 34 |
| **8. Total Members Included in Valuation** | 5,802 | 5,801 |

## Exhibit E.2
## Summary of Changes in Participant Status
## During Fiscal Year 2015

| | Active Participants | Terminated Vested | Terminated Non-vested | Retirees | Disabled Retirees | Beneficiaries | Alternate Payees | Total |
|---|---|---|---|---|---|---|---|---|
| A. Number as of June 30, 2014 | 2,714 | 266 | 57 | 2,264 | 156 | 310 | 34 | 5,801 |
| 1. Age Retirements | (90) | (11) | | 101 | | | | - |
| 2. Disability Retirements | (5) | | | | 5 | | | - |
| 3. Deceased | (5) | | | (60) | (1) | (21) | | (87) |
| 5. Terminated - Deferred | (37) | 37 | | | | | | - |
| 6. Terminated - Due Refund | (22) | | 22 | | | | | - |
| 7. Cashouts | (102) | (6) | (44) | | | | | (152) |
| 8. Rehired as Active | 3 | (2) | (1) | | | | | - |
| 9. New Hires | 211 | | | | | 20 | 1 | 232 |
| 10. Expired Benefits | | | | | | | | - |
| 11. Data Adjustments | (2) | | 10 | | | | | 8 |
| B. Number as of June 30, 2015 | 2,665 | 284 | 44 | 2,305 | 160 | 309 | 35 | 5,802 |

**Exhibit E.3**
**Active Member Counts by Age and Service**
**as of July 1, 2015**

| Age | Service | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **0-4** | **5-9** | **10-14** | **15-19** | **20-24** | **25-29** | **Over 30** | **Total** |
| **Under 20** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **20-24** | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| **25-29** | 119 | 13 | 1 | 0 | 0 | 0 | 0 | 133 |
| **30-34** | 140 | 49 | 19 | 0 | 0 | 0 | 0 | 208 |
| **35-39** | 111 | 66 | 67 | 18 | 1 | 0 | 0 | 263 |
| **40-44** | 104 | 79 | 86 | 68 | 23 | 0 | 0 | 360 |
| **45-49** | 83 | 64 | 90 | 107 | 48 | 14 | 1 | 407 |
| **50-54** | 80 | 64 | 91 | 102 | 80 | 33 | 19 | 469 |
| **55-59** | 63 | 47 | 99 | 123 | 69 | 49 | 27 | 477 |
| **60-64** | 36 | 38 | 46 | 41 | 32 | 33 | 21 | 247 |
| **65-69** | 4 | 16 | 8 | 9 | 10 | 3 | 7 | 57 |
| **Over 70** | 2 | 2 | 1 | 3 | 3 | 0 | 1 | 12 |
| **Total** | 774 | 438 | 508 | 471 | 266 | 132 | 76 | 2,665 |

## Exhibit E.4
## Active Member Average Salary by Age and Service
## as of July 1, 2015

| Age | Service | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0-4 | 5-9 | 10-14 | 15-19 | 20-24 | 25-29 | Over 30 | Total |
| **Under 20** | * | * | * | * | * | * | * | * |
| **20-24** | $30,543 | * | * | * | * | * | * | $30,543 |
| **25-29** | 33,853 | 33,717 | * | * | * | * | * | 33,803 |
| **30-34** | 36,972 | 35,691 | 36,308 | * | * | * | * | 36,610 |
| **35-39** | 38,012 | 40,666 | 41,275 | 44,832 | * | * | * | 39,978 |
| **40-44** | 39,787 | 42,428 | 44,079 | 48,220 | 46,739 | * | * | 43,429 |
| **45-49** | 41,558 | 44,673 | 43,543 | 52,862 | 60,502 | 58,291 | * | 48,313 |
| **50-54** | 41,964 | 39,683 | 46,036 | 50,981 | 58,869 | 60,502 | 54,971 | 49,119 |
| **55-59** | 46,537 | 44,391 | 47,286 | 52,463 | 58,756 | 56,547 | 60,803 | 51,612 |
| **60-64** | 37,768 | 45,160 | 46,622 | 49,426 | 56,454 | 62,319 | 69,835 | 50,916 |
| **65-69** | * | 55,884 | 55,775 | 58,922 | 72,434 | * | 90,339 | 63,120 |
| **Over 70** | * | * | * | * | * | * | * | 57,038 |
| **Total** | $38,683 | 42,102 | 44,672 | 51,141 | 58,534 | 58,984 | 64,431 | $46,309 |

**Data excluded when cell contains less than five active members.*

# SECTION F

# HISTORICAL SCHEDULES

**Exhibit F.1**
**Tucson Supplemental Retirement System**
**Schedule of Funding Progress**
**$ in thousands**

| Actuarial Valuation Date | Actuarial Value of Assets | Actuarial Accrued Liability (AAL) | Unfunded AAL (UAAL) | Funded Ratio | Covered Payroll | UAAL as a Percentage of Covered Payroll |
|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4)=(3)-(2) | (5)=(2)/(3) | (6) | (7)=(4)/(6) |
| 6/30/1991 | $ 164,268 | $ 175,537 | $ 11,269 | 93.6% | $86,830 | 13.0% |
| 6/30/1992 | 179,570 | 187,812 | 8,242 | 95.6% | 86,205 | 9.6% |
| 6/30/1993 | 197,282 | 208,024 | 10,742 | 94.8% | 92,867 | 11.6% |
| 6/30/1994 | 213,541 | 230,026 | 16,485 | 92.8% | 94,180 | 17.5% |
| 6/30/1995 | 237,713 | 249,049 | 11,336 | 95.4% | 99,847 | 11.4% |
| 6/30/1996 | 266,740 | 269,186 | 2,446 | 99.1% | 105,230 | 2.3% |
| 6/30/1997 | 304,684 | 297,490 | (7,194) | 102.4% | 110,189 | -6.5% |
| 6/30/1998 | 353,057 | 348,966 | (4,090) | 101.2% | 113,729 | -3.6% |
| 6/30/1999 | 402,875 | 400,224 | (2,651) | 100.7% | 126,817 | -2.1% |
| 6/30/2000 | 453,954 | 437,750 | (16,204) | 103.7% | 134,088 | -12.1% |
| 6/30/2001 | 470,672 | 486,702 | 16,030 | 96.7% | 145,059 | 11.1% |
| 6/30/2001 | 470,672 | 495,359 | 24,687 | 95.0% | 145,059 | 17.0% |
| 6/30/2002 | 463,102 | 553,947 | 90,845 | 83.6% | 153,580 | 59.2% |
| 6/30/2003 | 458,857 | 601,173 | 142,316 | 76.3% | 143,164 | 99.4% |
| 6/30/2004 | 494,987 | 645,351 | 150,364 | 76.7% | 149,782 | 100.4% |
| 6/30/2005 | 538,789 | 693,871 | 155,082 | 77.6% | 162,149 | 95.6% |
| 6/30/2006 | 588,228 | 734,377 | 146,149 | 80.1% | 155,855 | 93.8% |
| 6/30/2006 | 588,228 | 735,793 | 147,565 | 79.9% | 155,855 | 94.7% |
| 6/30/2007 | 634,763 | 758,427 | 123,663 | 83.7% | 159,250 | 77.7% |
| 6/30/2007 | 634,763 | 763,539 | 128,776 | 83.1% | 159,250 | 80.9% |
| 6/30/2008 | 650,227 | 822,205 | 171,978 | 79.1% | 153,982 | 111.7% |
| 6/30/2009 | 665,298 | 859,485 | 194,187 | 77.4% | 149,925 | 129.5% |
| 6/30/2010 | 641,819 | 904,480 | 262,662 | 71.0% | 141,459 | 185.7% |
| 6/30/2011 | 624,665 | 928,609 | 303,944 | 67.3% | 121,631 | 249.9% |
| 6/30/2012 | 597,107 | 940,939 | 343,832 | 63.5% | 125,003 | 275.1% |
| 6/30/2013 | 600,330 | 948,562 | 348,232 | 63.3% | 125,858 | 276.7% |
| 6/30/2014 | 655,998 | 1,012,393 | 356,396 | 64.8% | 126,639 | 281.4% |
| 6/30/2015 | 706,774 | 1,021,378 | 314,604 | 69.2% | 123,415 | 254.9% |

**Exhibit F.2**
**Tucson Supplemental Retirement System**
**Schedule of Employer Contributions**

| Fiscal Year Ended June 30, | Annual Required Contribution | Actual City Contribution | Percentage Contributed |
|---|---|---|---|
| 1996 | 8.55 % | 8.18 % | 95.67 % |
| 1997 | 8.05 | 8.38 | 104.10 |
| 1998 | 8.05 | 8.38 | 104.10 |
| 1999 | 7.41 | 7.91 | 106.75 |
| 2000 | 6.07 | 7.35 | 121.09 |
| 2001 | 6.77 | 7.35 | 108.57 |
| 2002 | 6.30 | 7.35 | 116.67 |
| 2003 | 8.41 | 8.41 | 100.00 |
| 2004 | 11.17 | 11.17 | 100.00 |
| 2005 | 14.06 | 14.06 | 100.00 |
| 2006 | 14.83 | 14.83 | 100.00 |
| 2007 | 15.04 | 15.04 | 100.00 |
| 2008 | 15.21 | 15.21 | 100.00 |
| 2009 | 14.37 | 14.37 | 100.00 |
| 2010 | 16.84 | 16.84 | 100.00 |
| 2011 | 18.02 | 18.02 | 100.00 |
| 2012 | 23.38 | 23.38 | 100.00 |
| 2013 | 28.77 | 28.77 | 100.00 |
| 2014 | 27.09 | 27.09 | 100.00 |
| 2015 | 26.95 | 27.50 | 102.04 |
| 2016 | 27.03 | N/A | N/A |
| 2017 | 25.52 | N/A | N/A |

**Exhibit F.3**
**Tucson Supplemental Retirement System**
**Schedule of Retirees and Beneficiaries Added to and Removed from Rolls**

| | Added to Rolls | | Removed from Rolls | | Rolls End of Year | | | |
|---|---|---|---|---|---|---|---|---|
| Fiscal Year | Number | Annual Allowances | Number | Annual Allowances | Number | Annual Allowance | Average Annual Allowance | Percentage Increase in Allowance |
| 6/30/2005 | 68 | $3,498,948 | 42 | $485,633 | 1,791 | $ 31,990,842 | 17,796 | |
| 6/30/2006 | 101 | $2,335,032 | 53 | $656,383 | 1,878 | $ 35,092,308 | 18,686 | 4.61% |
| 6/30/2007 | 213 | $6,055,096 | 36 | $403,347 | 2,018 | $ 39,883,032 | 19,764 | 5.77% |
| 6/30/2008 | 313 | $10,001,857 | 24 | $395,246 | 2,307 | $ 49,489,643 | 21,452 | 8.54% |
| 6/30/2009 | 112 | $2,005,399 | 54 | $684,115 | 2,365 | $ 50,810,927 | 21,485 | 0.15% |
| 6/30/2010 | 141 | $3,089,275 | 56 | $784,935 | 2,450 | $ 53,115,267 | 21,680 | 0.91% |
| 6/30/2011 | 332 | $9,880,306 | 73 | $1,284,997 | 2,709 | $ 61,710,576 | 22,780 | 5.07% |
| 6/30/2012 | 64 | $1,084,848 | 69 | $1,057,560 | 2,704 | $ 61,737,864 | 22,832 | 0.23% |
| 6/30/2013 | 96 | $2,027,292 | 81 | $1,216,923 | 2,719 | $ 62,548,233 | 23,004 | 0.75% |
| 6/30/2014 | 114 | $2,635,101 | 69 | $907,497 | 2,764 | $ 64,275,837 | 23,255 | 1.09% |
| 6/30/2015 | 127 | $3,157,078 | 82 | $1,299,698 | 2,809 | $ 66,133,217 | 23,543 | 1.24% |

*Figures Prior to 6/30/2008 were obtained from the TSRS CAFR

**Exhibit F.4**
**Tucson Supplemental Retirement System**
**Comparative Schedule of Annual Pension Benefits Paid**

| Year Ending June 30 | Retired Members | Annual Pensions | % Increase | No. of Active Per Retired | Pensions as % of Active Payroll | Average Pensions | Actuarial Present Value of Pensions | Expected Removals No. | Expected Removals Pensions |
|---|---|---|---|---|---|---|---|---|---|
| 1989 [1] | 780 | $ 5,344,719 | 17.6 % | 4.2 [2] | 6.6 % | $ 6,852 | $ 46,556,352 | 26.6 | $ 133,860 |
| 1990 | 832 | 6,488,714 | 21.4 | 3.9 | 7.5 | 7,799 | 57,430,128 | 28.5 | 150,864 |
| 1991 [1] | 918 | 8,111,103 | 25.0 | 3.5 | 9.3 | 8,836 | 72,419,436 | 29.8 | 172,608 |
| 1992 | 965 | 9,010,345 | 11.1 | 3.3 | 10.5 | 9,337 | 80,342,604 | 32.3 | 208,068 |
| 1993 [1] | 989 | 9,704,929 | 7.7 | 3.3 | 10.5 | 9,813 | 85,832,484 | 34.3 | 235,068 |
| 1994 | 1,035 | 10,612,612 | 9.4 | 3.2 | 11.3 | 10,254 | 95,449,308 | 35.8 | 263,340 |
| 1995 [1] | 1,065 | 11,429,402 | 7.7 | 3.1 | 11.4 | 10,732 | 102,511,728 | 35.8 | 270,600 |
| 1996 | 1,105 | 12,236,298 | 7.1 | 3.1 | 11.6 | 11,074 | 109,572,672 | 37.7 | 302,952 |
| 1997 [1] | 1,156 | 13,391,185 | 9.4 | 3.0 | 12.2 | 11,594 | 119,508,312 | 39.4 | 325,440 |
| 1998 | 1,208 | 14,479,476 | 8.1 | 2.9 | 12.7 | 11,986 | 129,345,816 | 42.4 | 370,344 |
| 1999 [1] | 1,260 | 15,721,865 | 8.6 | 2.8 | 12.4 | 12,478 | 139,805,832 | 44.2 | 402,504 |
| 2000 [1] | 1,301 | 16,966,042 | 7.9 | 2.8 | 12.7 | 13,041 | 150,527,136 | 46.2 | 445,464 |
| 2001 [1] | 1,355 | 18,505,247 | 9.1 | 2.7 | 12.8 | 13,657 | 161,740,968 | 47.1 | 484,776 |
| 2002 [1] | 1,442 | 21,273,162 | 15.0 | 2.5 | 13.9 | 14,753 | 187,508,568 | 53.3 | 622,236 |
| 2003 [1] | 1,742 | 29,767,500 | 39.9 | 1.9 | 20.8 | 17,088 | 275,193,384 | 58.2 | 742,908 |
| 2004 [1] | 1,753 | 30,491,864 | 2.4 | 2.0 | 20.4 | 17,394 | 286,698,084 | 55.7 | 717,888 |
| 2005 [1] | 1,793 | 32,027,305 | 5.0 | 2.0 | 19.8 | 17,862 | 298,395,396 | 58.3 | 781,152 |
| 2006 [1] | 1,878 | 35,091,468 | 9.6 | 1.7 | 22.5 | 18,686 | 326,828,088 | 61.1 | 857,760 |
| 2007 [1] | 2,018 | 39,883,032 | 13.7 | 1.6 | 25.0 | 19,764 | 371,497,680 | 66.3 | 977,328 |
| 2008 | 2,307 | 49,489,643 | 24.1 | 1.4 | 32.1 | 21,452 | 473,240,976 | 74.4 | 1,134,019 |
| 2009 | 2,365 | 50,810,927 | 2.7 | 1.3 | 33.9 | 21,485 | 494,923,021 | 63.8 | 994,553 |
| 2010 | 2,450 | 53,115,267 | 4.5 | 1.2 | 37.5 | 21,680 | 525,200,232 | 58.9 | 948,815 |
| 2011 | 2,709 | 61,710,576 | 16.2 | 1.0 | 50.7 | 22,780 | 614,497,202 | 63.5 | 1,059,171 |
| 2012 | 2,704 | 61,737,864 | 0.0 | 1.0 | 49.4 | 22,832 | 607,450,331 | 66.1 | 1,125,302 |
| 2013 | 2,719 | 62,548,233 | 1.3 | 1.0 | 49.7 | 23,004 | 609,558,963 | 69.0 | 1,200,744 |
| 2014 | 2,764 | 64,275,837 | 2.8 | 1.0 | 50.8 | 23,255 | 647,811,688 | 70.4 | 1,219,112 |
| 2015 | 2,809 | 66,133,217 | 2.9 | 0.9 | 53.6 | 23,543 | 661,292,061 | 73.7 | 1,301,409 |

[1] *Includes ad-hoc cost-of-living increases.*
[2] *Reflects increase in the number of active members as a result of an amendment which eliminated the one year service requirement for participation in the Retirement System.*

**Exhibit F.5**
**Tucson Supplemental Retirement System**
**Solvency Test**

| | Aggregate Accrued Liabilities For | | | | | | |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | | Portion of Accrued Liabilities Covered by Reported Assets | | |
| Valuation Date | Active Member Contributions | Retirants and Beneficiaries | Active Member (Employer Financed Portion) | Valuation Assets | (1) | (2) | (3) |
| 6/30/1991 | $ 44,496,039 | $ 72,419,436 | $ 86,372,322 | $164,268,134 | 100.0 % | 100.0 % | 54.8 % |
| 6/30/1992 | 49,238,019 | 80,342,604 | 86,902,648 | 179,569,858 | 100.0 | 100.0 | 57.5 |
| 6/30/1993 | 55,146,786 | 85,832,484 | 98,492,344 | 197,281,861 | 100.0 | 100.0 | 57.2 |
| 6/30/1994 | 60,424,161 | 95,449,308 | 105,838,311 | 213,540,661 | 100.0 | 100.0 | 54.5 |
| 6/30/1995 | 66,316,408 | 102,511,728 | 113,211,848 | 237,712,863 | 100.0 | 100.0 | 60.8 |
| 6/30/1996 | 72,294,235 | 109,572,672 | 118,739,900 | 266,740,007 | 100.0 | 100.0 | 71.5 |
| 6/30/1997 | 78,991,358 | 119,508,312 | 128,878,531 | 304,684,444 | 100.0 | 100.0 | 82.4 |
| 6/30/1998 | 85,106,175 | 129,345,816 | 134,514,294 | 353,056,577 | 100.0 | 100.0 | 103.0 |
| 6/30/1999 | 92,367,491 | 139,805,832 | 168,050,794 | 402,875,158 | 100.0 | 100.0 | 101.6 |
| 6/30/2000 | 100,413,022 | 150,527,136 | 186,809,583 | 453,953,722 | 100.0 | 100.0 | 108.7 |
| 6/30/2001 | 108,696,394 | 161,740,968 | 224,921,223 | 470,671,667 | 100.0 | 100.0 | 89.0 |
| 6/30/2002 | 118,913,979 | 187,508,568 | 247,524,186 | 463,101,526 | 100.0 | 100.0 | 63.3 |
| 6/30/2003 | 110,195,709 | 275,193,384 | 215,784,329 | 458,856,831 | 100.0 | 100.0 | 34.0 |
| 6/30/2004 | 123,643,527 | 286,698,084 | 235,009,321 | 494,986,798 | 100.0 | 100.0 | 36.0 |
| 6/30/2005 | 135,346,297 | 298,395,396 | 260,129,138 | 538,788,828 | 100.0 | 100.0 | 40.4 |
| 6/30/2006 | 140,387,532 | 326,828,088 | 268,577,863 | 588,227,845 | 100.0 | 100.0 | 45.1 |
| 6/30/2007 | 136,028,896 | 371,497,680 | 256,012,354 | 634,763,193 | 100.0 | 100.0 | 49.7 |
| 6/30/2008 | 125,331,432 | 473,240,976 | 223,632,380 | 650,227,215 | 100.0 | 100.0 | 23.1 |
| 6/30/2009 | 133,633,947 | 494,923,021 | 230,928,190 | 665,298,494 | 100.0 | 100.0 | 15.9 |
| 6/30/2010 | 140,224,998 | 525,200,232 | 239,055,106 | 641,818,551 | 100.0 | 95.5 | 0.0 |
| 6/30/2011 | 119,049,097 | 614,497,202 | 195,062,492 | 624,664,880 | 100.0 | 82.3 | 0.0 |
| 6/30/2012 | 122,240,396 | 607,450,331 | 211,247,995 | 597,106,511 | 100.0 | 78.2 | 0.0 |
| 6/30/2013 | 138,342,388 | 609,558,963 | 200,661,102 | 600,330,066 | 100.0 | 75.8 | 0.0 |
| 6/30/2014 | 142,418,791 | 647,811,688 | 222,162,858 | 655,997,802 | 100.0 | 79.3 | 0.0 |
| 6/30/2015 | 143,648,835 | 661,292,061 | 216,436,668 | 706,773,630 | 100.0 | 85.2 | 0.0 |

# SECTION G

# ACTUARIAL ASSUMPTIONS AND METHODS

# SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

I. Valuation Date

The valuation date is July 1st of each plan year. This is the date as of which the actuarial present value of future benefits and the actuarial value of assets are determined.

II. Actuarial Cost Method

The actuarial valuation uses the Entry Age Normal actuarial cost method. Under this method, the employer contribution rate is the sum of (i) the employer normal cost rate, and (ii) a rate that will amortize the unfunded actuarial liability.

1. The valuation is prepared on the projected benefit basis. The present value of each participant's expected benefit payable at retirement or termination is determined, based on age, service, sex, compensation, and the interest rate assumed to be earned in the future (7.25%). The calculations take into account the probability of a participant's death or termination of employment prior to becoming eligible for a benefit, as well as the possibility of his terminating with a service benefit. Future salary increases are also anticipated. The present value of the expected benefits payable on account of the active participants is added to the present value of the expected future payments to retired participants and beneficiaries to obtain the present value of all expected benefits payable from the Plan on account of the present group of participants and beneficiaries.

2. The employer contributions required to support the benefits of the Plan are determined following a level funding approach, and consist of a normal cost contribution and an accrued liability contribution.

3. The normal contribution is determined using the Entry Age Normal method. Under this method, a calculation is made to determine the average uniform and constant percentage rate of employer contribution which, if applied to the compensation of each new participant during the entire period of his anticipated covered service, would be required in addition to the contributions of the participant to meet the cost of all benefits payable on their behalf. Effective July 1, 2013 the TSRS funding policy requires the computation of normal cost separately for those members in Tier 1 and Tier 2 (the variable rate tiers).

4. The unfunded accrued liability contributions are determined by subtracting the actuarial value of assets from the actuarial accrued liability and amortizing the result over 20 years from the valuation date as a level percentage of pay. It is assumed that payments are made throughout the year.

5. Administrative expenses for the recent year will be added to the employer normal cost in the current valuation and will be reflected in the recommended employer rate for the upcoming fiscal year.

III. Actuarial Value of Assets

The actuarial value of assets is based on recognizing gains and losses over a five-year period where gains and losses are determined by comparing the projected market value return (based on the prior year's market value of assets, cash flows during the year and expected investment returns on those amounts) to the actual market investment return.

IV. Actuarial Assumptions

A. Economic Assumptions

1. Investment return: 7.25% per annum, compounded annually, composed of an assumed 3.00% inflation rate and a 4.25% real rate of return. This rate represents the assumed return, net of all investment expenses.

2. Salary increase rate:

| Sample Attained Age | Percentage Increase in Salary with Less than Five Years of Service | | |
|---|---|---|---|
| | Merit | Inflation | Total |
| 0 | 3.50 % | 3.00 % | 6.50 % |
| 1 | 3.00 | 3.00 | 6.00 |
| 2 | 2.50 | 3.00 | 5.50 |
| 3 | 2.00 | 3.00 | 5.00 |
| 4 | 1.50 | 3.00 | 4.50 |

| Sample Attained Age | Percentage Increase in Salary with Five or More Years of Service | | |
|---|---|---|---|
| | Merit | Inflation | Total |
| 25 | 1.50 % | 3.00 % | 4.50 % |
| 30 | 1.50 | 3.00 | 4.50 |
| 35 | 1.50 | 3.00 | 4.50 |
| 40 | 1.00 | 3.00 | 4.00 |
| 45 | 0.50 | 3.00 | 3.50 |
| 50 | 0.25 | 3.00 | 3.25 |
| 55 | 0.25 | 3.00 | 3.25 |
| 60 | 0.25 | 3.00 | 3.25 |
| 65 | 0.00 | 3.00 | 3.00 |

3. Payroll growth rate: In the amortization of the unfunded actuarial accrued liability, payroll is assumed to increase 3.00% per year. This increase rate is primarily due to the effect of inflation on salaries, with no allowance for future membership growth.

B. Demographic Assumptions

1. Mortality rates (pre- and post-retirement) – RP-2000 Combined Mortality Table for males and females projected with Scale BB to 2020. Mortality rates were adjusted to include margin for future mortality improvement as described in the table name above.

2. Mortality rates (post-disablement) – RP-2000 Disabled Mortality Table for males and females.

| Sample Attained Ages | Probability of Death Pre- and Post-Retirement | |
|---|---|---|
| | Men | Women |
| 20 | 0.03 % | 0.02 % |
| 25 | 0.04 | 0.02 |
| 30 | 0.04 | 0.02 |
| 35 | 0.07 | 0.04 |
| 40 | 0.10 | 0.07 |
| 45 | 0.14 | 0.11 |
| 50 | 0.20 | 0.16 |
| 55 | 0.34 | 0.25 |
| 60 | 0.59 | 0.41 |
| 65 | 1.00 | 0.76 |
| 70 | 1.64 | 1.32 |
| 75 | 2.80 | 2.21 |
| 80 | 4.76 | 3.60 |
| 85 | 8.19 | 6.08 |
| 90 | 14.70 | 10.55 |

| Sample Attained Ages | Probability of Death Post-Disability | |
|---|---|---|
| | Men | Women |
| 20 | 2.26 % | 0.75 % |
| 25 | 2.26 | 0.75 |
| 30 | 2.26 | 0.75 |
| 35 | 2.26 | 0.75 |
| 40 | 2.26 | 0.75 |
| 45 | 2.26 | 0.75 |
| 50 | 2.90 | 1.15 |
| 55 | 3.54 | 1.65 |
| 60 | 4.20 | 2.18 |
| 65 | 5.02 | 2.80 |
| 70 | 6.26 | 3.76 |
| 75 | 8.21 | 5.22 |
| 80 | 10.94 | 7.23 |
| 85 | 14.16 | 10.02 |
| 90 | 18.34 | 14.00 |

3. Disability rates. Sample rates shown below:

| Sample Attained Ages | Probability of Disablement Next Year | |
|---|---|---|
| | Men | Women |
| 25 | 0.01 % | 0.01 % |
| 30 | 0.07 | 0.07 |
| 35 | 0.09 | 0.09 |
| 40 | 0.14 | 0.14 |
| 45 | 0.17 | 0.17 |
| 50 | 0.25 | 0.25 |
| 55 | 0.36 | 0.36 |
| 60 | 0.48 | 0.48 |

4. Termination rates (for causes other than death, disability or retirement): Termination rates are based on service and age. Termination rates are not applied after a member becomes eligible for a retirement benefit. Rates are shown:

| Sample Attained Age | Years of Credbile Service | Probability of Termination |
|---|---|---|
| Any | 0 | 18.00 % |
| | 1 | 13.00 |
| | 2 | 10.00 |
| | 3 | 8.00 |
| | 4 | 7.50 |
| 20 | 5 & over | 7.05 |
| 25 | | 7.05 |
| 30 | | 6.65 |
| 35 | | 4.65 |
| 40 | | 3.65 |
| 45 | | 2.95 |
| 50 | | 2.55 |
| 55 | | 2.45 |

5. Forfeiture rates: The percentages below represent the probability that a vested terminated member will take a refund of contributions rather than receive a deferred annuity benefit.

| **Sample Ages** | **% of Vested Terminating Members Choosing Refund at Termination** |
|---|---|
| Under 30 | 50 % |
| 30 | 45 |
| 35 | 40 |
| 40 | 35 |
| 45 | 30 |
| 50 | 25 |
| 55 | 20 |
| 60 and Over | 0 |

6. Retirement rates for Tier 1. For those ages 62+, the Rule of 80 retirement rates only applies if the Rule of 80 is attained by age 62.

| Attained | Tier 1 Members Percentage of Those Eligible Retiring During the Year | | |
|---|---|---|---|
| Age | Rule of 80 | Age Based | Early |
| 50-54 | 27.0 % | | |
| 55-59 | 27.0 | | 8.5 % |
| 60 | 27.0 | | |
| 61 | 27.0 | | |
| 62 | 27.0 | 33.0 % | |
| 63 | 27.0 | 16.0 | |
| 64 | 27.0 | 20.0 | |
| 65 | 27.0 | 24.0 | |
| 66-69 | 27.0 | 35.0 | |
| 70 & Over | 100.0 | 100.0 | |

Retirement rates for Tier 2. For those ages 65+, the Rule of 85 retirement rates only applies if the Rule of 85 is attained by age 65.

| Attained Age | Tier 2 Members Percentage of Those Eligible Retiring During the Year | | |
|---|---|---|---|
| | Rule of 80 | Age Based | Early |
| 60 | 27.0 % | | 8.5 % |
| 61 | 27.0 | | 8.5 |
| 62 | 27.0 | | 8.5 |
| 63 | 27.0 | | 8.5 |
| 64 | 27.0 | | 8.5 |
| 65 | 27.0 | 24.0 % | |
| 66-69 | 27.0 | 35.0 | |
| 70 & Over | 100.0 | 100.0 | |

Deferred vested members are assumed to retire at age first eligibility for unreduced benefits.

C. Other Assumptions

1. Percent married: 80% of employees are assumed to be married.
2. Age difference: Male members are assumed to be three years older than their spouses, and female members are assumed to be three years younger than their spouses.
3. Cost of living adjustment: None.
4. Optional forms: Members are assumed to elect the normal form of benefit.
5. Current and future deferred vested participants are assumed to retire at the earlier of age 62 and eligibility for rule of 80 for tier 1 and the earlier of age 65 and eligibility for the rules of 85 (but at least 60) for Tier 2.
6. Administrative expenses: Administrative expenses are added to the employer normal cost , before application of the round up policy.
7. Pay increase timing: End of year.
8. Decrement timing: Decrements of all types are assumed to occur mid-year.

9. Eligibility testing: Eligibility for benefits is determined based upon the age nearest birthday and service nearest whole year on the date the decrement is assumed to occur.

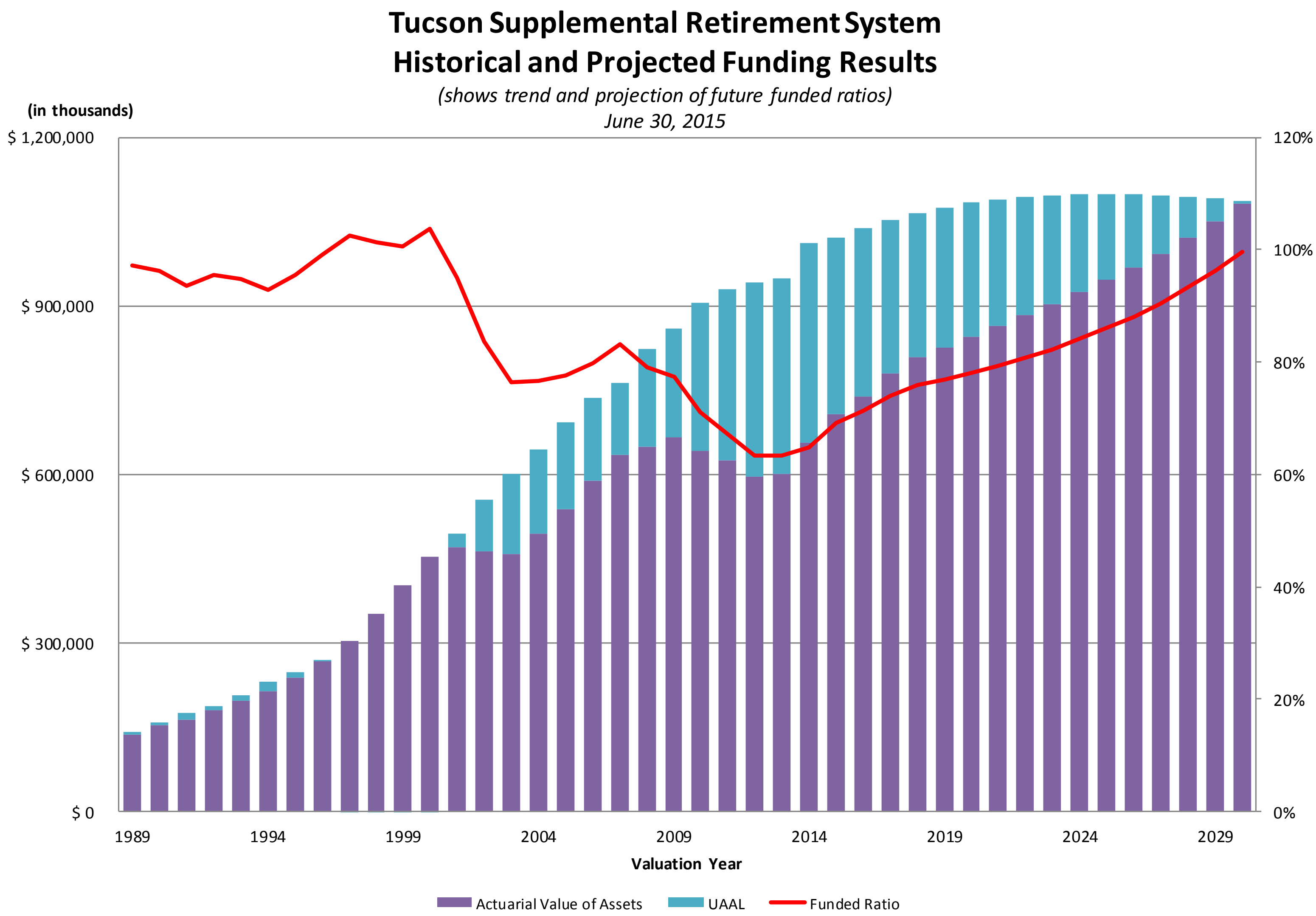
10. Decrement relativity: Decrement rates are used directly, without adjustment for multiple decrement table effects.

11. Incidence of Contributions: Contributions are assumed to be received continuously throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at the time contributions are made.

12. Benefit and Eligibility Service due to Accrued Sick and Vacation Leave at Retirement and Termination: Tier 1 Members are assumed to have an additional 0.019 years per year of benefit and eligibility service at early or normal retirement and termination due to accrued sick and vacation leave. This assumption was developed using sick and vacation leave and service amounts for active members included in the actuarial valuation as of June 30, 2013.

# SECTION H

# 30-YEAR DETERMINISTIC PROJECTIONS




*Funding policy reflects 27.50% of pay minimum City contribution until full funding is reached.*

# SECTION I

## Funding Policy of the TSRS Board

# SUMMARY OF FUNDING POLICY

**Basis for variable employee contribution rates**

Effective July 1, 2013 the contribution requirement for members hired after July 1, 2006 was changed from 40% of the Actuarial Required Contribution (or "ARC," as defined below) to a range of 50% to 100% of the normal cost of their given tier. In no event shall the variable contribution tier members contribute less than 5% of pay as set forth in TCC §22-34(a) and (b). Members hired prior to 7/1/2006 contribute 5% of pay.

**Amortization Policy**

The Board has adopted a 20 year open, level percent of pay amortization policy. A single unfunded amount is determined with each actuarial valuation, and that amount is then amortized over a 20 year period, assuming that the contribution amounts will remain level as a percent of the total payroll (so the dollar amount of the contribution is assumed to grow each year). The Board's amortization policy was most recently revised effective July 1, 2013.

**Administrative Expenses**

The annual administrative expenses incurred by the System, based on the administrative operating budget approved by the Board in advance of the fiscal year and determined as of the end of the fiscal year, shall be included in the calculation of the Actuarially Determined Contribution in accordance with sound actuarial principles. Administrative expenses paid by the System and included in the calculation of the ADC shall be reasonable and appropriate, and shall include staff salaries and related overhead expenses, actuarial, legal and other professional consulting fees, accounting charges, compliance expenses, and other fees and expenses necessary for the efficient administration of the System. Investment fees and expenses shall not be included in the calculation of the ADC.

**Contribution Rounding Policy**

I. Member Contribution Rates: Member Contributions for Legacy Members, Tier I Members and Tier II Members shall be determined by the TSRS actuary pursuant to TCC Section 22-34: members hired prior to July 1, 2006 (the "Legacy Members"), members hired between July 1, 2006 and June 30, 2011 ("Tier I Members") and members hired on or after July 1, 2011 ("Tier II Members"). The actuarially determined Member Contribution rate for each group shall be referred to as the "Calculated Rate" for the applicable group.

   The Board will then review the Calculated Rate for each member group and set the "Charged Rate" for the upcoming fiscal year. The Charged Rate will equal the Calculated Rate, rounded up to the nearest 0.25. The Charged Rate for a member group shall never be less than the Calculated Rate for that member group (for that same fiscal year). The Charged Rate for the legacy members is set at 5.00%.

II. City Contribution Rates: The City Contribution rate for a particular fiscal year equals the difference between the Actuarially Determined Contribution and the Member Contribution rate(s). TCC §22-30(t). Because there are three different Member Contribution rates, the TSRS actuary shall calculate a City Contribution rate for each member group and a blended City Contribution rate for the entire member population. In no event shall the blended City Contribution rate for the entire member population be less than the City Contribution rate for any member group. The City Contribution rates calculated by the TSRS actuary are referred to as the "Calculated Rates."

The Board will then review the Calculated Rates and set the "Charged Rate" for the City Contribution for the upcoming fiscal year. The Charged Rate will equal the blended Calculated City Contribution rate, rounded up to the nearest 0.50. The Charged Rate shall be rounded up to the nearest 0.50 instead of the nearest 0.25 because the Charged Rate is a blended rate. The Charged Rate shall never be less than the Calculated Rate for any member group for that same fiscal year.

III. Funded Status of TSRS: It is the goal of the Board to increase the funded status of TSRS. The Board anticipates that Calculated Rates for both Member Contributions and City Contributions may decrease from time to time, based on various actuarial factors. The Board will not recommend a decrease in the Charged Rate for Member and/or City Contributions until such point as TSRS is fully funded because the unfunded accrued liability has been extinguished, and the Calculated Rates for Member and City Contributions represent the payment of the normal cost of benefits only. Moreover, the Board shall recommend a decrease in the Charged Rates for Member Contributions only to the extent that the Charged Rates for Tier I Member Contributions and Tier II Member Contributions decrease simultaneously, in the same percentage of pay.

Item 2b

# CITY OF TUCSON

## Supplemental Retirement System
October 30, 2015

**ACTUARIAL VALUATION**
**As of June 30, 2015**

**Leslie Thompson, FSA, FCA, EA, MAAA**
**Senior Consultant**

GRS
**Gabriel Roeder Smith & Company**
Consultants & Actuaries
www.gabrielroeder.com

# Introduction

- Prepared as of June 30, 2015, financial data, benefit and contribution provisions, actuarial assumptions and methods
- There are three tiers
  - "Old Hire-Fixed Rate"— legacy group hired prior to June 30, 2006;
  - "Tier 1-Variable Rate" — hired between July 1, 2006 and June 30, 2011
  - "Tier 2 –Variable Rate" — hired on or after July 1, 2011
- Fourth year with Tier 2-Variable Rate members entering the plan
- Purposes:
  - Measure the actuarial liabilities
  - Determine adequacy of current contributions and review impact of the new funding policy
  - Provide other information for reporting
    - GASB
    - Comprehensive Annual Financial Report (CAFR)
  - Explain changes in the actuarial condition of plan



GRS

# Introduction

- A reminder of the new assumptions that were adopted from the 2013 experience study recommendations (effective last year)
  - Economic assumption changes
    - Inflation assumption (including wage inflation) has been decreased from 3.5% to 3.0%
    - Reduced the nominal investment return assumption from 7.75% to 7.25%
    - The merit component of the salary scale assumption reduced by 0.5%
  - Demographic assumption changes
    - Updated mortality table to the RP-2000 Combined Mortality Table with projection scale BB though 2020
    - Updated to the RP-2000 Disabled Mortality Table for disabled retirees
    - Updated retirement, termination, and disability rates to reflect experience
  - Cost Impact of Changes
    - The changes increased the unfunded liability as well as the total contribution
    - Increases are primarily due to the reduced inflation and investment return assumptions



GRS

# Introduction

- This year there is one assumption change
  - Administrative expenses are added to the employer normal cost.
  - Due to the actuarial condition of the plan (favorable actuarial gains) the expenses do not alter the recommended 27.5% employer contribution.

# Actuarial Valuation – Key Results

- Market return was 4.3% in FY2015; return on the Actuarial Value of Assets (AVA) was 12.1% (due to deferred asset gains from earlier years)
- The accrued liability remained at $1,012 million
  - Investment gain of $30.3 million
  - Demographic gain of $9.7 million
- Normal cost by variable rate Tier
  - "Tier 1 – Variable Rate" is 13.20%
  - "Tier 2 – Variable Rate" is 9.78%
  - Aggregate over the entire plan is 11.57%
- UAL amortization over 20 years is 18.59% of pay



GRS

# Actuarial Valuation – Key Results and History

| | 2015 | 2014 | 2013 |
|---|---|---|---|
| Total Normal Cost | 11.57% | 11.71% | 12.08% |
| Total Amortization Payment | 18.59% | 20.52% | 20.14% |
| Administrative Expenses | 0.53% | NA | NA |
| Total contribution | 30.69% | 32.23% | 32.22% |
| Member aggregate contributions | 5.17% | 5.20% | 5.27% |
| City financed portion | 25.52% | 27.03% | 26.95% |

# Member and City "Raw" Rates by Tier

- Based on the July 1, 2015 valuation effective for fiscal year beginning July 1, 2016-before application of the funding policy

| FY Beginning July 1, 2016 "Raw" Rates | Member Contribution | City Contribution | Total Contribution |
|---|---|---|---|
| **Old Hire – Fixed Rate** | 5.00% | 25.69% | 30.69% |
| **Tier 1 – Variable Rate** | 6.60% | 24.09% | 30.69% |
| **Tier 2 – Variable Rate** | 4.89% | 25.80% | 30.69% |
| **Blended Across Tiers** | 5.17% | 25.52% | 30.69% |



GRS

# Schedule of Funding Progress

| | 2015 | 2014 | 2013 | 2012 | 2011 | 2010 |
|---|---|---|---|---|---|---|
| Actuarial Value of Assets (in thousands) | $706,774 | $655,998 | $600,330 | $597,107 | $624,665 | $641,819 |
| Market Value of Assets (in thousands) | $739,794 | $735,737 | $641,046 | $580,383 | $599,712 | $514,122 |
| Funded Ratio (AVA) | 69.2% | 64.8% | 63.3% | 63.5% | 67.3% | 71.0% |
| Funded Ratio (MVA) | 72.4% | 72.67% | 67.6% | 61.7% | 64.6% | 56.8% |



GRS

# Historical Annual Returns-Actuarial and Market Value of Assets

- The market value of assets exceeds the actuarial value by $33 million; these deferred gains will enter the actuarial value of assets in future years

| Annual return during fiscal year- | Geometric Average return over 5 years | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|---|
| Actuarial Value of Assets | 6.2% | 12.1% | 13.76% | 4.1% | 0.1% | 1.8% |
| Market Value of Assets | 12.1% | 4.3% | 19.08% | 14.3% | 1.5% | 22.9% |



GRS

# Gain/Loss- the explanation of what happened between last year and this year

- Gain/loss is measured each year on the change in the accrued liabilities
- It is a measure of the *expected liabilities,* using the probabilities for decrement, against the actual liabilities
- The expected is developed from the actuarial assumptions
  - *The Board keeps the assumptions updated through a regular review of experience vs. assumptions (the experience study).*
  - *The last experience study was for the five year period ending June 30, 2013.*



GRS

# History of Gains and (Losses) on the Accrued Liability and the Assets

| | 2015 | 2014 | 2013 | 2012 | 2011 |
|---|---|---|---|---|---|
| **Investment Experience** | $30,256,913 | $37,505,177 | $(22,189,089) | $(47,621,333) | $(37,800,287) |
| **All Demographic** | $9,718,036 | $ (1,003,585) | $ 14,195,354 | $ 9,090,921 | $ (1,946,348) |
| **Total Experience Gain/(Loss)** | $39,974,949 | $36,501,592 | $(7,993,735) | $(38,530,412) | $(39,746,635) |



GRS

# Change in the Unfunded Accrued Liability (UAL)

- The 2014 UAL was $356 million
- The expected UAL for 2015 was $355 million
- The actual 2015 UAL is $315 million
  - Each year the UAL increases with normal cost and decreases with total contributions (all adjusted with interest)
  - Asset gains positively impact the UAL
- The “lower than expected” UAL occurred due to the variations in experience discussed on the previous slide

# “Growth/Control” of the Normal Cost

- The normal cost is also a component of the annual cost
- New tiers help to manage the growth, or “control” normal cost
- Decreasing normal cost in Tier 2 – Variable Rate group is shown below
  - Tier 1 – Variable Rate 13.20% normal cost
  - Tier 2 – Variable Rate 9.78% normal cost
  - Aggregate normal cost 11.57% (11.71% last year)
- Over the long term, as the population turns over and new hires enter Tier 2, the aggregate normal cost will continue to decrease

# Active Membership

- The number of active members decreased from 2,714 to 2,665
- Active membership by the three tiers is shown below

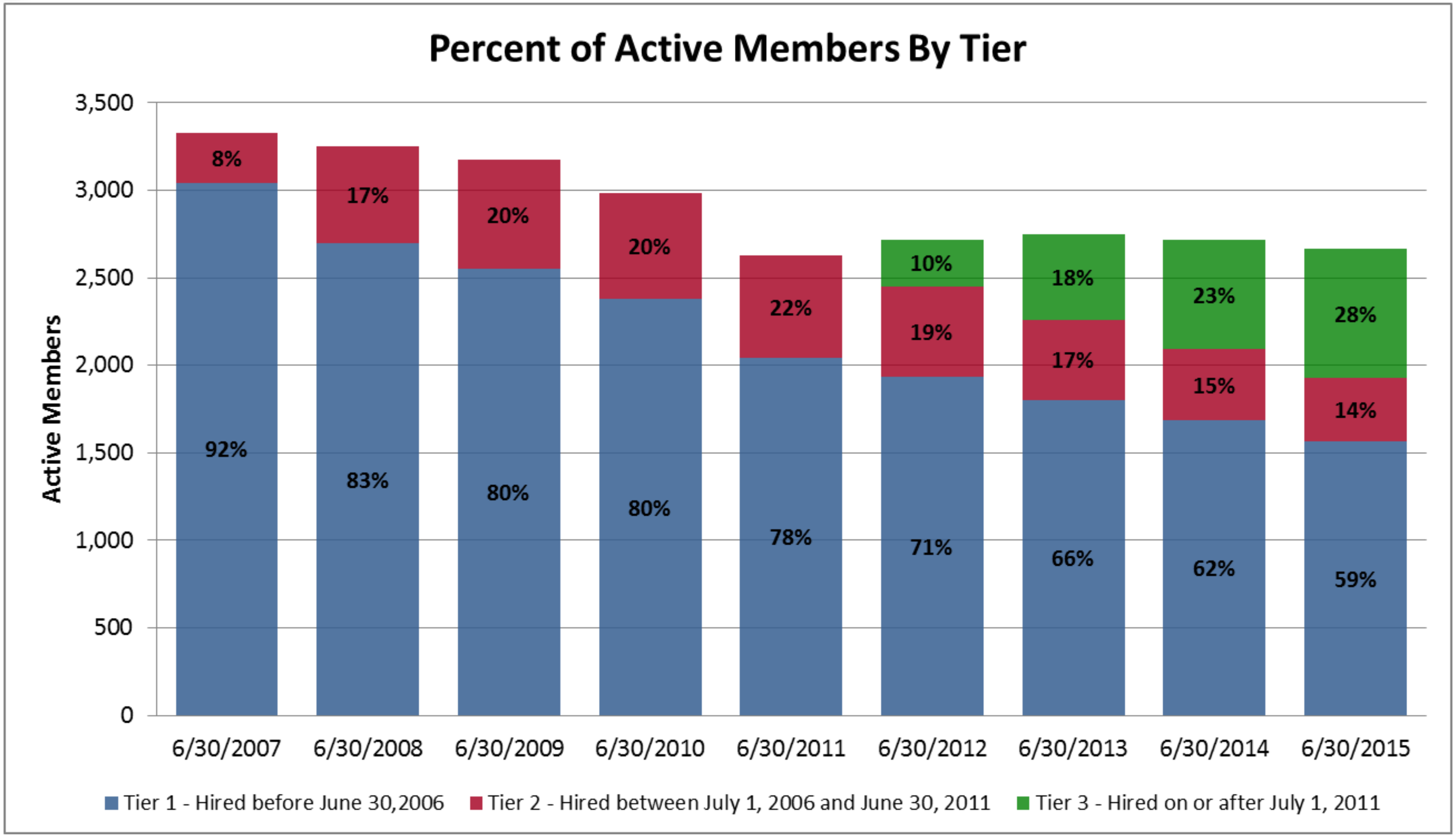
| Year | Old Hire – Fixed Rate | Tier 1 – Variable Rate | Tier 2 – Variable Rate | Total Actives |
|---|---|---|---|---|
| 2012 | 1,955 | 502 | 261 | 2,718 |
| 2013 | 1,802 | 456 | 492 | 2,750 |
| 2014 | 1,687 | 404 | 623 | 2,714 |
| 2015 | 1,566 | 360 | 739 | 2,665 |

- Payroll for active members decreased from $126.6 million to $123.4 million
- Payroll changes by tier shown below

| Old Hire – Fixed Rate | | | Tier 1 – Variable Rate | | | Tier 2 – Variable Rate | | |
|---|---|---|---|---|---|---|---|---|
| 2015 Payroll | 2014 Payroll | % Change | 2015 Payroll | 2014 Payroll | % Change | 2015 Payroll | 2014 Payroll | % Change |
| $79.9M | $85.9M | -7.0% | $14.9M | $16.8M | -11.3% | $28.6M | $23.7M | 20.7% |

- Total average pay for active members increased from $46,662 to $46,309
- Average age of active members is 48.0, compared to 47.8 last year
- Average years of service is 12.1, compared to 12.0 last year

# PERCENT OF ACTIVES BY TIER 2007-2015






GRS

# Pay-Status Membership

- The number of members in payment status increased by 45, from 2,764 to 2,809
  - With the prior valuation, the increase 45; from 2,719 to 2,764
  - Number includes service retirees and beneficiaries receiving benefits
- Average annual retiree benefit is $26,067 compared to $25,763 last year, with the average increase of 1.2%
- There is 10:9 ratio of pay status members to active members
- Pay-status liabilities comprise 65% of the total accrued liabilities; 10 years ago the pay-status liabilities were 43%; and 20 years ago were 41% (based on Entry Age Normal liabilities)
- The plan is maturing and mortality risk is becoming a larger part of the risk of the plan.



GRS

# Assets – Market Value

- Fair market value increased from $736 million to $740 million
- Contributions
  - Member contributions = $7.5 million ($7.3 million LY)
  - Member contributions depend on hire date
  - Employer contributions = $34.0 million ($34.2 million LY)
- Total contributions of $41.5 million, compared to $41.5 million in FY 2014

# Assets – Market Value

- Total distributions—benefit payments, refunds and expenses—totaled $72.4 million, compared to $70.8 million last year, a 2.3% increase
  - Investment expenses were $4.0 million, compared to $4.0 million in the prior year
  - Administrative expenses were $650,405 compared to $735,739 in the prior year
- Total revenues, including appreciation, interest and dividends, were $76.4 million, compared to $165.5 million last year
- There is a net appreciation of $22 million on the assets

# Assets – Actuarial Value

- Actuarial value increased from $656 million to $707 million.
- All actuarial calculations are based on actuarial value of assets, not market value.
- The method smoothes gains and losses over the last five years.
- There are “gain” bases in 2013 and 2014, and “loss” bases in 2012 and 2015.
- The gain bases outweigh the loss bases.
  - The total deferred gain is $33 million dollars

| Year | Gain/(Loss) | Percent Deferred | | Amount Deferred |
|---|---|---|---|---|
| 2015 | $(21,568,941) | 80% | | $ (17,255,153) |
| | | | | |
| 2014 | 71,196,036 | 60% | | 42,717,622 |
| | | | | |
| 2013 | 37,262,213 | 40% | | 14,904,885 |
| | | | | |
| 2012 | (36,737,183) | 20% | | (7,347,437) |
| | | | | |
| 2011 | 75,597,072 | 0% | | 0 |
| | | | | |
| Total | $125,749,197 | | | $ 33,019,917 |



GRS

# Summary of Rates

- Required Contribution
  - City financed (actuarial, unrounded) rate decreased from 27.03% to 25.52%; based on the funding policy we recommend maintaining the 27.5% rate.
  - Employee Rates:

| | Actuarial Rate | Proposed for FY 2017 | Rate in Effect for FY 2016 |
|---|---|---|---|
| **Hired Prior to 7/1/06** | 5.00% | 5.00% | 5.00% |
| **Hired 7/1/06 to 6/30/11** | 6.60% | 6.75% | 6.75% |
| **Hired After 6/30/11** | 4.89% | 5.25% | 5.25% |

- Funded ratio increased from 64.8% to 69.2%
- Based on current assumptions the total policy contribution rate of 27.5% plus the employee contributions would be sufficient to meet future benefit obligations as valued in the valuation
  - These rates are based on a 20 year amortization period

PIMCO

Your Global Investment Authority



Strategy review

# Tucson Supplemental Retirement System

30 October 2015


**For professional use only.**
**Client-specific update –**
**not for public distribution.**

A company of Allianz

# Disclosures

Past performance is not a guarantee or a reliable indicator of future results. Shares distributed by **PIMCO Investments LLC.**

PIMCO and YOUR GLOBAL INVESTMENT AUTHORITY are trademarks or registered trademarks of Allianz Asset Management of America L.P. and Pacific Investment Management Company LLC, respectively, in the United States and throughout the world.

The Morningstar Fixed-Income Fund Manager of the Year award (PIMCO Income, 2013) is based on the strength of the manager, performance, strategy and firm's stewardship. Morningstar Awards 2013©. Morningstar, Inc. All Rights Reserved. Awarded to Dan Ivascyn and Alfred Murata for U.S. Fixed Income Fund Manager of the Year.

# Biographical information

**R. Matthew Clark, CFA**

Mr. Clark is a senior vice president and account manager in the Newport Beach office with a focus on institutional client servicing. Prior to joining PIMCO in 2002, he served as an officer in the U.S. Army for eight years, achieving the rank of captain. He has 14 years of investment experience and holds an MBA from Harvard Business School. He received an undergraduate degree from Trinity University, San Antonio.

**Sasha Talcott, CFA**

Ms. Talcott is a vice president and account manager in the Newport Beach office, focusing on institutional client servicing. Prior to joining PIMCO in 2012, she was director of communications and outreach for Harvard Kennedy School's Belfer Center for Science and International Affairs, a research center that focuses on topics ranging from international security to energy policy. Previously, she was a business reporter for the Boston Globe, where she covered the banking and insurance sectors. She holds an MBA from MIT Sloan School of Management and received an undergraduate degree from Northwestern University.

# Agenda

1. PIMCO update
2. Economic outlook
3. Market review
4. StocksPLUS strategy
5. Diversified Income strategy
6. Appendix

# PIMCO update

# PIMCO: Focused on managing risks and delivering returns

## Firm snapshot

**Assets under management**
- $1.52 trillion[1]

**Global resources**
- 13 offices across five continents
- Nearly 2,400 total employees:
  - 250+ portfolio managers
  - 125+ credit and quantitative analysts

**Comprehensive investment solutions**
- Alternatives
- Asset allocation
- Equities
- Fixed income

**Diversified global business**
- Over 80% of AUM in non-core strategies
- One of largest alternatives platforms
- Over 45 funds with positive inflows YTD

## PIMCO's value proposition

**Time-tested investment philosophy**
- Diversified set of alpha engines
  - Top down
  - Bottom up
  - Structural tilts

**Long-term investment results**
- Nearly 90% of AUM outperformed benchmark over five-year period[2]

**Client-focused culture**
- Client education
- Solutions capabilities

**Thought leadership**
- Global market dynamics
- Economic analysis
- Central bank policy
- Industry trends

**Access to our latest views:** BLOG.PIMCO.COM

## "What's new?"

**Recent hires**
- Joachim Fels: MD, Global Economics
- Geraldine Sundstrom: MD, Asset Allocation
- Senior Advisors:
  Ben Bernanke, Michael Spence, Gene Sperling

**Cyclical forum conclusions**
- Muted global growth driven by EM weakness
- Headwinds: Global savings glut, China slowdown
- Tailwinds: Oil's effect on consumption, continued monetary stimulus

**New product launches**
- Capital Securities Strategy
- Opportunistic credit "follow-on" PE-style vehicle
- Expanded Research Affiliates relationship – RAE Fundamental strategies

As of 30 September 2015

1 Effective 31, March 2012, PIMCO began reporting the assets managed on behalf of its parent's affiliated companies as part of its assets under management. Reported figures are as of 30 June, 2015, the last date of publically disclosed AUM data

2 Based on 30 September 2015 data of PIMCO managed portfolios with at least a 5-years history. The gross-of-fees performance of each portfolio was compared to the portfolio's primary benchmark. If the gross-of-fees portfolio performance was greater than the benchmark performance for a given period, the assets in that portfolio were included in the outperforming data. Benchmark outperformance indicates the performance of a portfolio as compared to its benchmark. As such, it does not indicate that a portfolio's performance was positive during any given period. For example, if a portfolio declined 3% during a given period, and its benchmark declined 4%, the portfolio would have outperformed its benchmark, even though it lost value during the period. Certain absolute return oriented portfolios contained within the data may inflate the data either positively or negatively due to the low return/volatility characteristics of the primary benchmark. For example a portfolio measured against 3-month USD Libor would be more likely to out- or underperform its benchmark. No measure of past performance should be understood to ensure that future performance will be positive, whether on a relative or absolute basis.

# Recent PIMCO hires and added resources

**MANAGING DIRECTORS** | Portfolio management

**Joachim Fels**
Global Economic Advisor
Former Chief Economist,
Morgan Stanley

**Geraldine Sundstrom**
Asset allocation
Former portfolio manager and partner,
Brevan Howard

**Mohsen Fahmi**
Unconstrained and non-traditional
Former portfolio manager and COO,
Moore Capital Management

**ADVISORS** | Contribute to PIMCO forums, strategy sessions and select Investment Committee meetings

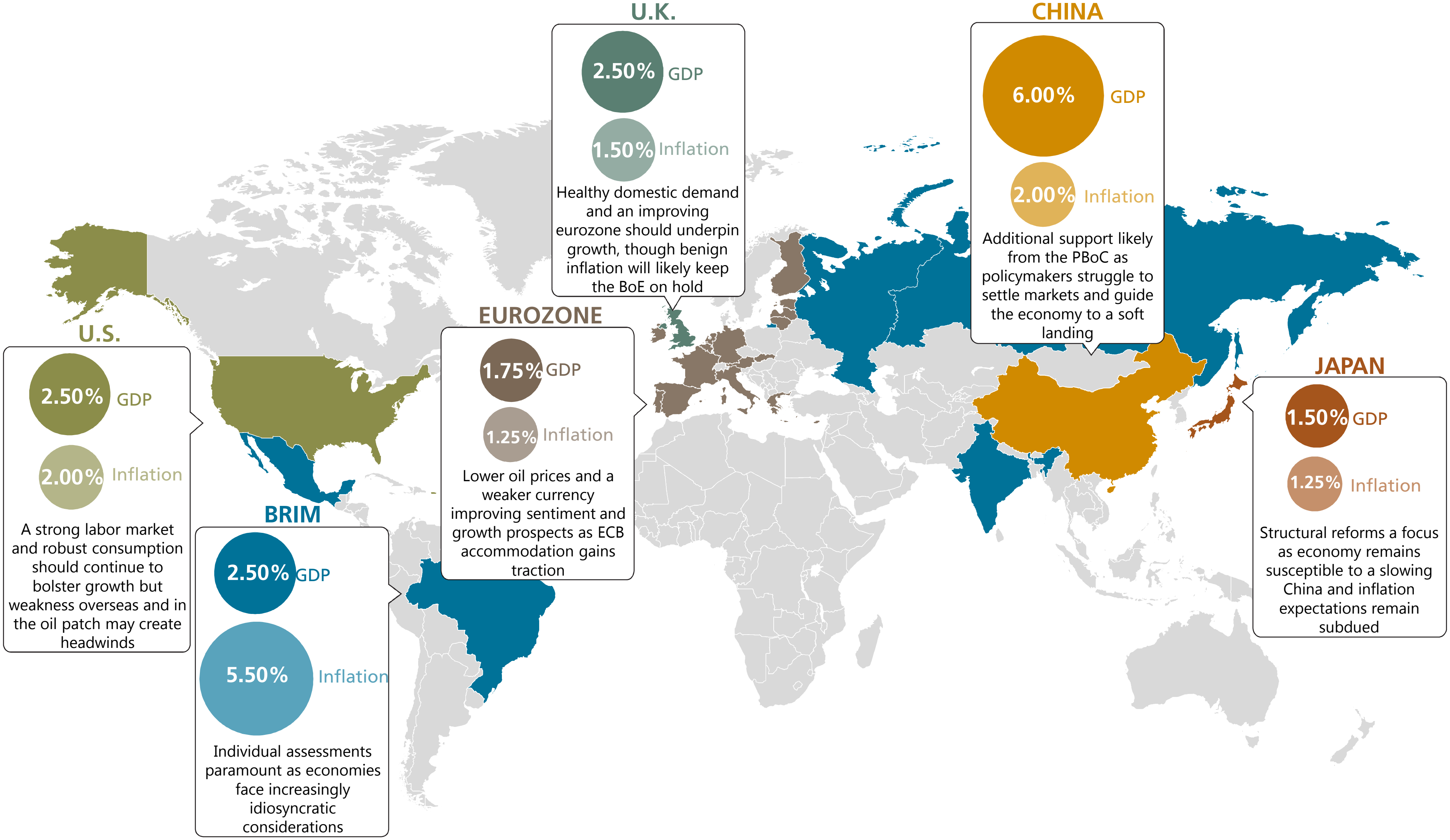
**Ben Bernanke**
Economist, Former Chairman
of the Federal Reserve
**Focus:** Global macroeconomic issues

**Michael Spence**
Awarded 2001 Nobel Memorial
Prize in Economic Sciences
**Focus:** Global policy issues

**Gene Sperling**
Former Director of the National
Economic Council
**Focus:** U.S. economic policy issues

# Economic outlook

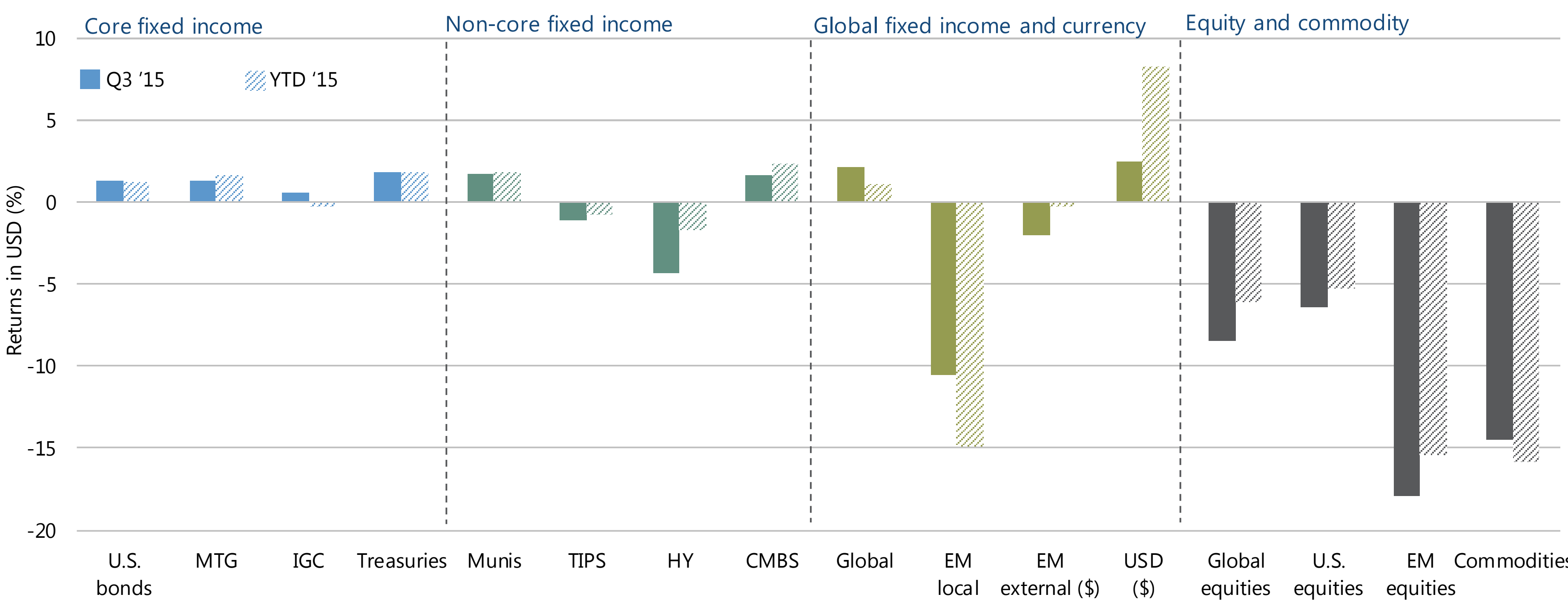
# PIMCO's cyclical outlook




PIMCO forecast as of 22 September 2015
BRIM is Brazil, Russia, India and Mexico
Real GDP and inflation projections reflect the midpoints of PIMCO's forecasts for the four quarters ending Q3 2016

# Market review

# Returns by asset class




- Treasury yields declined and curves flattened, sparked by a broader risk-off sentiment amid fears of slowing global growth
- Corporate credit underperformed Treasuries amid elevated volatility, though the pace of IG issuance slowed

- TIPS underperformed treasuries as inflation expectations fell sharply across the globe
- High Yield returns were lower on the quarter as positive carry was offset by considerable spread widening

- EM local bonds sold off precipitously as global growth concerns and turmoil in Brazil weighed on the sector
- The U.S. dollar trailed EUR and JPY modestly but strengthened considerably against most other DM and EM currencies

- U.S. equities had their worst quarter since 2011 on policymaker uncertainty and concerns about spillover from the EM slowdown
- Oil prices slumped given EM growth concerns and persistently high supply

As of 30 September 2015
SOURCE: Barclays, Bloomberg, Federal Reserve, JPMorgan, PIMCO
Barclays U.S. Aggregate; Barclays MBS Fixed Rate Mortgage; Barclays Investment Grade Credit; Barclays U.S. Treasury; Barclays Municipal Bond; Barclays U.S. TIPS; BofA Merrill Lynch U.S. High Yield BB-B Rated; Barclays CMBS ERISA-Eligible; JPMorgan EMBI Global; JPMorgan GBI Global ex-U.S. USD Hedged Index, JPMorgan GBI-EM Global Diversified (Unhedged); MSCI World; S&P 500; MSCI EM; Bloomberg Commodity
USD ($) measured relative to basket of seven currencies on a trade-weighted basis

# StocksPLUS strategy

# How does PIMCO manage enhanced equity strategies?

| | | | | |
|---|---|---|---|---|
| PIMCO Enhanced Equity | = | Equity Returns | + | Bond Alpha |

- Select desired equity market exposure (US Large, Small Cap, Int'l, EM, etc.)
  - Both market-cap and Research Affiliates Equity (RAE) exposures available
- Buy and hold equity futures and/or swaps to provide stock market exposure
  - Seeks to achieve exposure to equities at a money market cost
- Attempt to enhance returns with active bond management
  - Structurally based yield advantage
  - Potentially noteworthy diversification benefits

# Lipper recognizes PIMCO's Enhanced Equity Funds

## Lipper recognizes PIMCO as top large company Equity Manager of the Year, 2013, 2012, 2011, 2010

LIPPER
FUND AWARDS 2013
UNITED STATES*

**Best Equity Large Fund Group Award methodology***

PIMCO received The Lipper Fund Best Group over 3 Years Large Equity Award for four out of the five past years (2010, 2011, 2012, and 201)3. All U.S. fund groups with at least five equity funds are eligible for this group award. The lowest average decile rank of the three years' Consistent Return measure of the eligible funds determines the group award winner. Consistent Return reflect funds' historic returns, adjusted for volatility, relative to peers.

**Individual Fund "best in class" Awards**

| Category | Ticker | Fund Name |
|---|---|---|
| **2014** | | |
| Alternative Equity Market Neutral Funds (5 years) | PFATX | PIMCO Fundamental Advantage AR Strategy Fund |
| Dedicated Short-Bias Funds (5 years) | PSTIX | PIMCO StocksPLUS AR Short Strategy Fund |
| Large-Cap Core Funds (5 years) | PSPTX | PIMCO StocksPLUS Absolute Return Fund |
| **2013** | | |
| Dedicated Short-Bias Funds (3 years) | PSTIX | PIMCO StocksPLUS AR Short Strategy Fund |
| Alternative Equity Market Neutral Funds (3 years) | PFATX | PIMCO Fundamental Advantage AR Strategy Fund |
| Large-Cap Core Funds (3 years) | PSPTX | PIMCO StocksPLUS Absolute Return Fund |
| **2012** | | |
| Dedicated Short-Bias Funds (3 years) | PSTIX | PIMCO StocksPLUS AR Short Strategy Fund |
| Alternative Equity Market Neutral Funds (3 years) | PFATX | PIMCO Fundamental Advantage AR Strategy Fund |
| International Multi-Cap Core Funds (3 years) | PSKIX | PIMCO International StocksPLUS AR Strategy Fund (Unhedged) |
| Large-Cap Core Funds (3 years) | PSPTX | PIMCO StocksPLUS Absolute Return Fund |
| **2011** | | |
| Dedicated Short-Bias Funds (3 years) | PSTIX | PIMCO StocksPLUS AR Short Strategy Fund |
| Dedicated Short-Bias Funds (5 years) | PSTIX | PIMCO StocksPLUS AR Short Strategy Fund |
| **2010** | | |
| Dedicated Short-Bias Funds (3 years) | PSTIX | PIMCO StocksPLUS AR Short Strategy Fund |
| Dedicated Short-Bias Funds (5 years) | PSTIX | PIMCO StocksPLUS AR Short Strategy Fund |

As of 30 September 2015
SOURCE: PIMCO
* The Lipper Fund Best Group over 3 Years Large Equity award (2010, 2011, 2012, 2013) recognizes funds that have delivered consistently strong risk-adjusted performance, relative to peers

# PIMCO Enhanced Equity includes a range of core strategies designed to deliver market outperformance

*PIMCO Enhanced Equity*

- Range of portable alpha and smart beta-based strategies
- Seek to capture key benefits of both active and passive approaches
- Designed to deliver meaningful market outperformance, consistently
- Supported by persistent, structurally based potential alpha sources
- Earliest track record inception: 1986

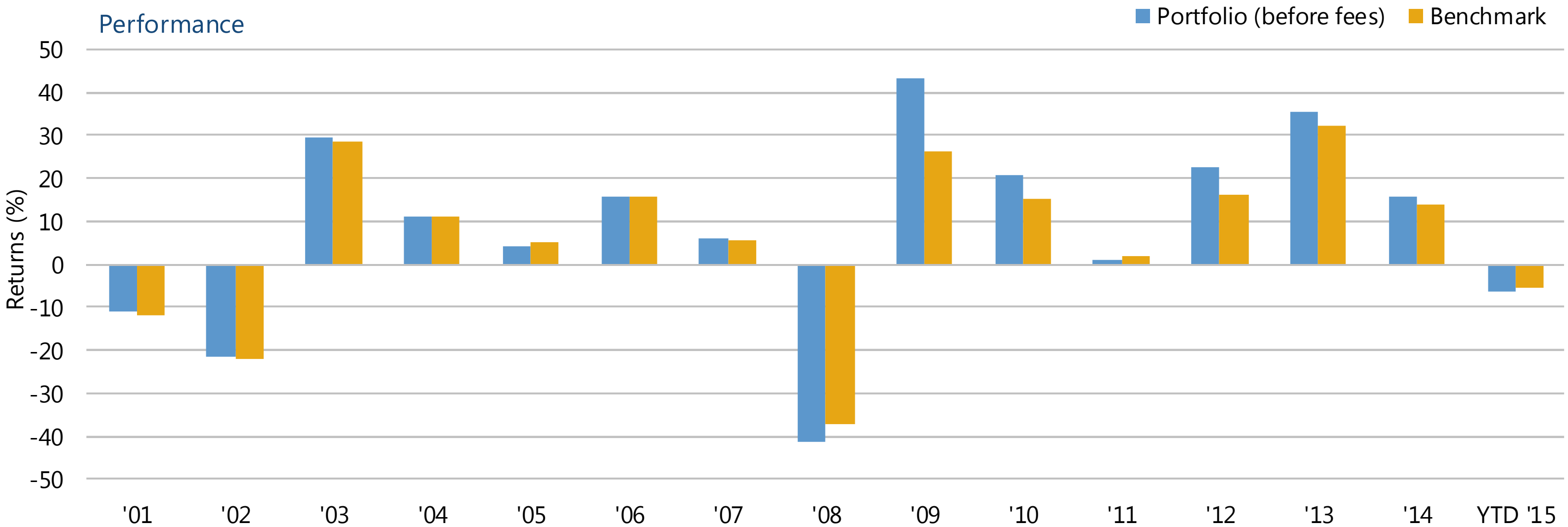
| | |
|---|---|
| *RAE Fundamental* | Smart beta-based equity strategies incorporating active enhancements. Approach breaks the link between stock price and portfolio weight. |
| *RAE Fundamental PLUS* | Equity exposure to RAE Fundamental with additional alpha source of an independent, absolute return bond strategy. |
| *StocksPLUS* | Portable alpha approach with exposure to market-cap weighted equity indices and excess return potential driven by an independent bond alpha strategy. |

As of 30 June 2015

# PIMCO StocksPLUS® performance review

Tucson Supplemental Retirement System (TSRS)

| Market value as of Sep '15 | $ 39,571,081 |
|---|---|




PIMCO StocksPLUS LP Fund B

| | Since inception 30 Sep '87 | 10 yrs. | Since inception 31 Mar '06 | 5 yrs. | 3 yrs. | 1 yr. | 6 mos. | 3 mos. | YTD 30 Sep '15 |
|---|---|---|---|---|---|---|---|---|---|
| Before fees (%) | 10.2 | 8.7 | 8.6 | 15.2 | 13.7 | -1.8 | -7.7 | -7.8 | -6.2 |
| After fees (%) | 9.9 | 8.1 | 7.9 | 14.5 | 13.0 | -2.0 | -7.8 | -7.8 | -6.4 |
| Benchmark (%) | 9.0 | 6.8 | 6.5 | 13.3 | 12.4 | -0.6 | -6.2 | -6.4 | -5.3 |

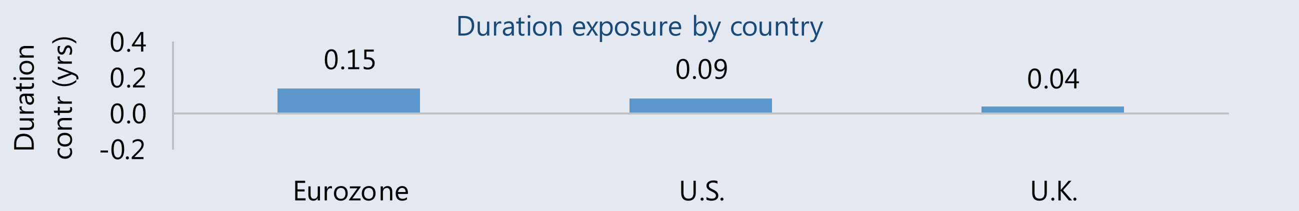
As of 30 September 2015
All periods longer than one year are annualized
Benchmark: S&P 500 Index

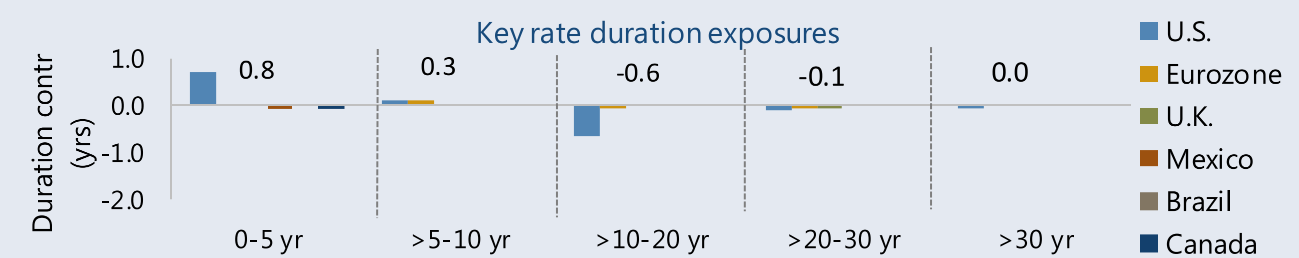
# Current positioning reflects the Fund’s broad opportunity set and diversified approach

**NET POSITION** | **KEY LONGS/SHORTS**

**DURATION/CURVE**

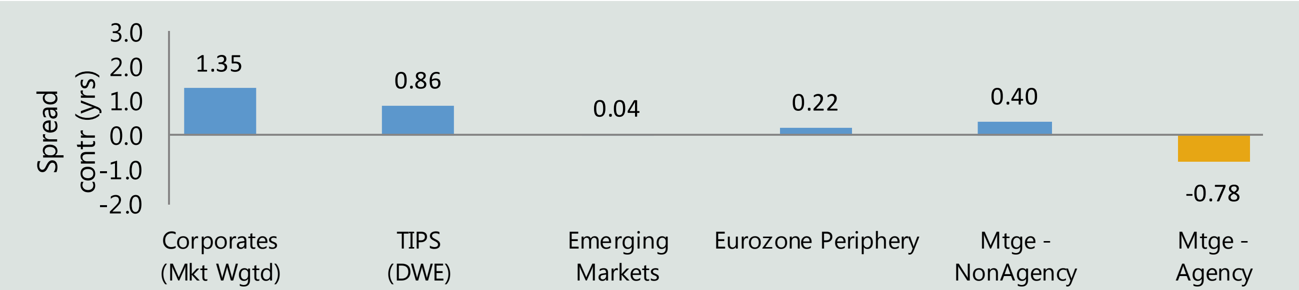
**0.3 yrs**
**Total portfolio duration**



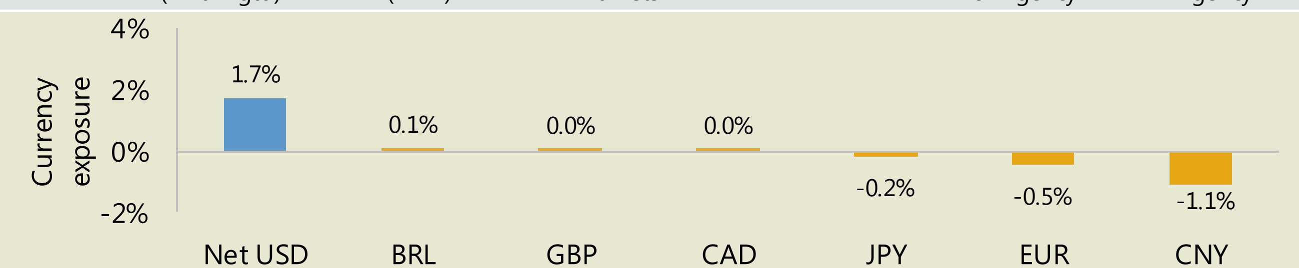

**SPREAD**

**2.0 yrs**
**Market Weighted Spread**




**FX**

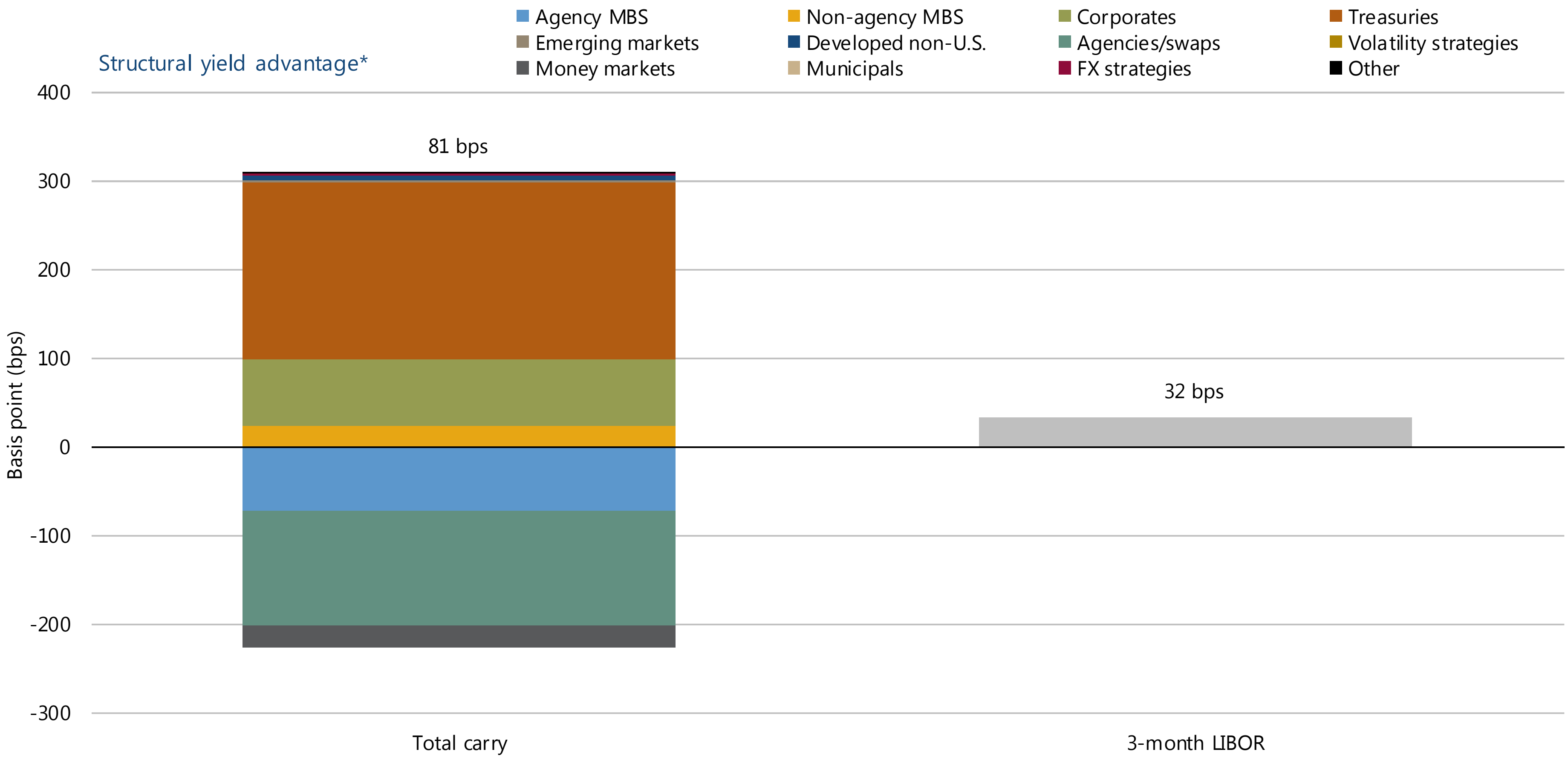
**2% gross exposure / -2% net exposure**




As of 30 September 2015

# Opportunities to capture high quality sources of structural yield persist

**PIMCO STOCKSPLUS®, L.P. FUND B**




As of 30 September 2015

* "Structural yield advantage" is a proprietary PIMCO measure of potential total return in excess of LIBOR associated with the amount of extra yield earned by a portfolio plus any additional return garnered (or given up) through yield curve roll down, option positions, and financing

# Strategic outlook for StocksPLUS:
## *Key opportunities derived from divergent global growth and policy trajectories*

| Theme | Risk factor | Implementation |
|---|---|---|
| Upcoming U.S. monetary policy tightening | Interest rates | ▪ Short U.S. duration risk in 1-5 year maturities |
| Divergent global monetary policies | Currency | ▪ Short Japanese and yen, euro vs. U.S. dollar |
| Sustained U.S. growth | Spread | ▪ Long non-agency MBS<br>▪ Long select IG and HY credits (a focus on U.S. and European banks) |
| Global inflation/reflation | Spread | ▪ Long U.S. TIPS versus short U.S. Treasuries |

As of 30 June 2015

# Diversified Income strategy

# Executive Summary: Q3'15

*PIMCO Diversified Income*

## What we thought

- We expected the Fed to signal a more rapid than consensus move towards policy normalization
- We believed that continued global monetary policy divergence would create opportunities across asset classes
- Credit sectors appeared attractive on a relative value basis given the third quarter selloff, but warranted a cautious approach given the potential for further market downswings

## What happened

- Economic fundamentals remained solid, particularly in the U.S.
- Concerns over the outlook for Chinese growth sent ripples throughout the global financial markets, Equities, EM assets, and commodities fell, and credit spreads widened across the board
- Concerns about global growth and financial market stability kept the Fed on hold at its September meeting

## Portfolio performance

The portfolio returned -1.95% in Q3 and -0.46% YTD (before fees). Its benchmark returned –1.28% and -0.33% in Q3 and YTD, respectively.

| Contributors | Detractors |
|---|---|
| ▪ Underweights to commodity related sectors such as energy, metals & mining) | ▪ Allocations to Brazilian quasi sovereign and corporate debt<br>▪ Overweight to credit spread duration<br>▪ Underweight to interest rate duration |

## Our positioning and outlook

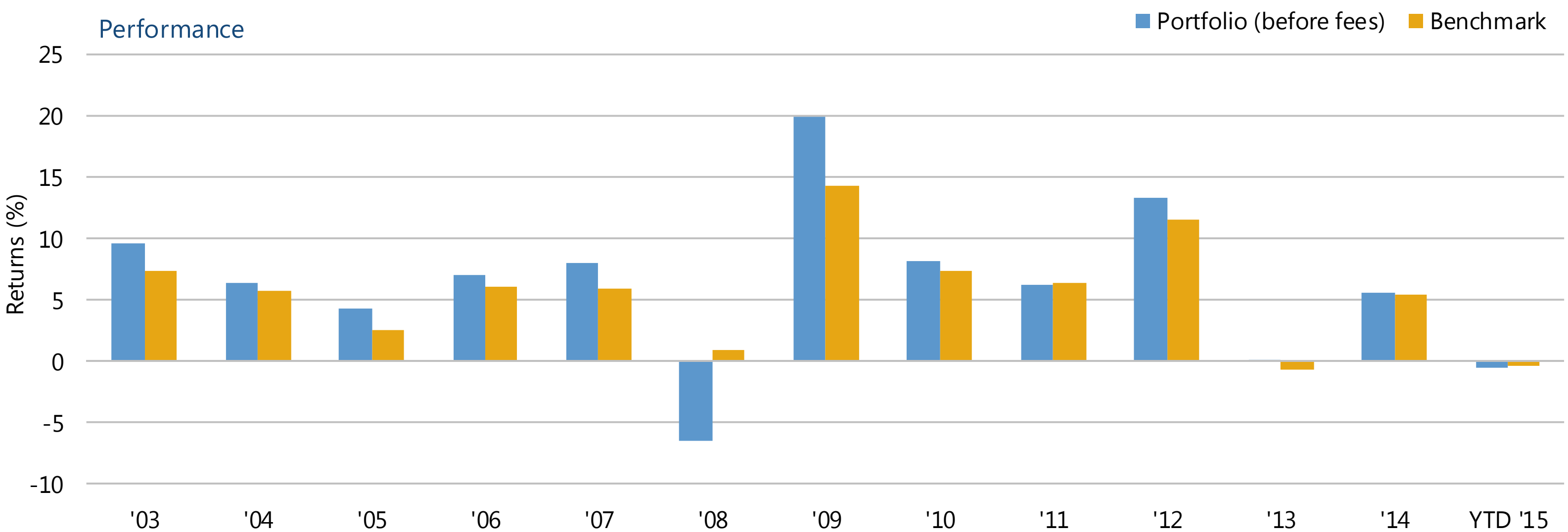
- IG: We continue to emphasize financials, while underweighting raw materials issuers which may be more susceptible to slowing demand from China
- HY: We continue to believe a low default rate environment is supportive for HY but are taking a selective approach amid elevated market volatility
- EM: Current levels suggest attractive relative value, but the potential negative impacts of transitioning US monetary policy (e.g. a strengthening USD) and a deteriorating EM growth outlook argue for a cautious approach to this sector
- Underweight duration: We believe the U.S. economy is on solid footing; the Fed is signaling that policy normalization is near

As of 30 September 2015

# Tucson Supplemental Retirement System performance review

Tucson Supplemental Retirement System

| Market value as of Sep '15 | $ | 99,533,255 |
|---|---|---|




Tucson Supplemental Retirement System

| | Since inception 30 Jun '02 | 10 yrs. | 5 yrs. | 3 yrs. | 1 yr. | 6 mos. | 3 mos. | YTD 30 Sep '15 |
|---|---|---|---|---|---|---|---|---|
| Before fees (%) | 6.3 | 6.0 | 4.8 | 2.5 | -0.2 | -3.3 | -2.0 | -0.5 |
| After fees (%) | 5.9 | 5.5 | 4.3 | 2.0 | -0.7 | -3.5 | -2.1 | -0.8 |
| Benchmark (%) | 5.8 | 5.7 | 4.5 | 2.0 | -0.1 | -2.3 | -1.3 | -0.3 |

As of 30 September 2015
All periods longer than one year are annualized
Benchmark: 70% Barclays Mortgage Backed Securities Index,15% Barclays Credit Index,15% Barclays High Yield. prior; Performance Holdiay from COB 12/31/2011 - COB 01/06/2012;Barclays Mortgage Index - 25%; Barclays Credit Index - 25%; Barclays High Yield - 25%; JP Morgan EMBI Global - 25% from COB 01/06/2012.

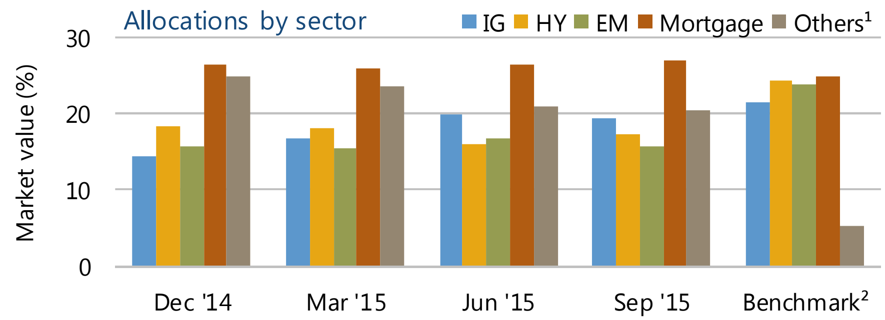
# Strategic outlook
## *Current top four investment themes in Diversified Income*

| | Position | Rationale |
|---|---|---|
| 1. Investment grade | Total market value: **20%,** with an emphasis on financials: (8%) | ▪ Financial institutions in the U.S. and Europe continue to de-lever and build capital amid regulatory scrutiny, creating a favorable dynamic for debt investors.<br>▪ We continue to find value in securities throughout the capital structure of de-leveraging, de-risking financial issuers with attractive long-term prospects. |
| 2. High yield | Total market value: **17%** | ▪ Commodity sector weakness and downgrade activity on a few large market issuers weighed on HY during the quarter.<br>▪ With the exception of the energy sector, we do not expect a broad based increase in HY market default rates.<br>▪ Maintain overweight, focus on security selection and diversification. Although yields have risen to attractive levels, we are taking a highly selective approach. |
| 3. Emerging markets | Total market value: **16%** | ▪ The Fed's liftoff delay did not provide relief to EM issuers, as concerns about fundamentals continue to dominate the market.<br>▪ We expect volatility to continue, and have adopted a highly flexible approach. We have reduced our exposure to Russia given the strong rally YTD, while incrementally reducing Brazil due to the recent uptick in volatility. |
| 4. Non-core credit | Total market value:<br>Securitized **27%** | ▪ Remain tactical with our non core exposure by seeking the most compelling risk adjusted returns. We continue to overweight non agency mortgages<br>▪ Securitized credit issues provide attractive yield as a complement to traditional high yield corporates. |

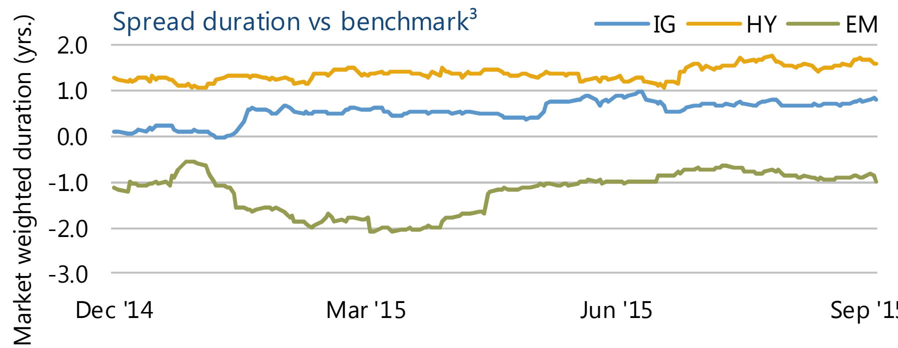
As of 30 September 2015
SOURCE: PIMCO

# Portfolio structure

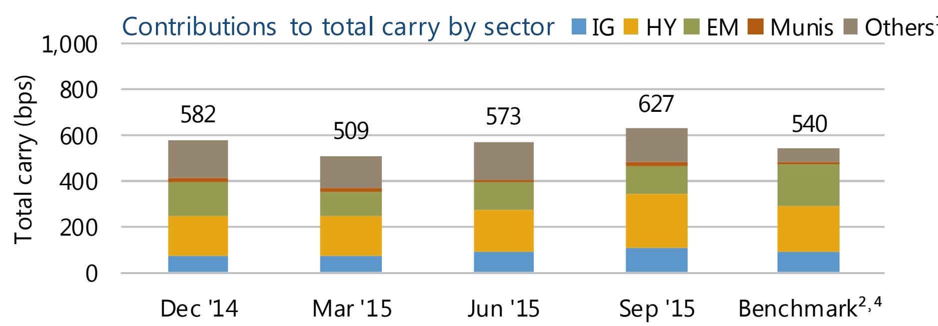
- On a market value basis, given the strong performance of high yield bonds (HY) in the first half of the year and recent rising volatility, the portfolio has taken profits and reduced HY exposure.




- Total spread duration[3] is currently overweight, with an overweight to high yield (HY) and underweight[4] to EM. The portfolio is also slightly underweight to IG




- The portfolio has maintained a carry advantage, boosted by tactical allocations to sectors such as non-agency mortgages and subordinated debt




As of 30 September 2015

SOURCE: PIMCO

1 Others: Treasuries, MBS, non-agency mortgages

2 Equally weighted blend of the following three indices: Barclays Global Aggregate Credit Ex EM Index (USD hedged), Merrill Lynch High Yield BB-B Rated Constrained Developed Market Only Index (USD hedged), JPMorgan EMBI Global.
We reclassify IG and HY corporate issues issued by EM countries into the EM bucket and government related issues in the Global Aggregate Credit Index into “Others.”

3 Spread duration represents a portfolio’s sensitivity to credit spreads movement. Underweight spread duration when spreads widen will lead the portfolio to outperform the benchmark.

# Appendix

# Structural yield advantage continued to contribute to performance

**PIMCO STOCKSPLUS®, L.P. FUND B**

| STRATEGY | ATTRIBUTION Q3 '15 | ATTRIBUTION YTD '15 |
|---|---|---|
| **Yield advantage relative to LIBOR** | + | ++ |
| **Non-U.S. dollar currency exposures** | - | ++ |
| **Interest rate strategies** | | |
| U.S. duration exposure | -- | -- |
| Exposure to non-U.S. interest rates | - | + |
| **Price impact of spread exposures and other strategies** | | |
| Allocations to fixed income securities that offered a yield premium to treasuries | | |
| Agency mortgage-backed securities | + | + |
| Non-agency MBS/ABS | - | + |
| Corporates | -- | - |
| Emerging markets | - | Neutral |

As of 30 September 2015

# PIMCO Diversified Income portfolio attribution and positioning

| KEY STRATEGIES | | STRATEGY IMPACT |
|---|---|---|
| **IG** | | |
| ▪ Underweights to energy /metals & mining were positive | YTD '15 | Positive |
| **HY** | | |
| ▪ An overweight to HY spread duration was positive, as income outpaced the losses from widening spreads<br>▪ An underweight to commodity-related sectors helped performance, as raw material-related issuers sold off amid negative China headlines | YTD '15 | Positive |
| **EMERGING MARKETS** | | |
| ▪ An overweight to Brazil was the primary detractor; Brazilian debt underperformed amid rating downgrades, deteriorating growth, and a challenging political backdrop | YTD '15 | Negative |
| **DURATION/CURVE** | | |
| ▪ An underweight to interest rate duration was negative for performance, as rates fell amid an uptick in flight-to-quality sentiment. | YTD '15 | Negative |
| **FX** | | |
| ▪ Long USD bias was positive for performance during the year, particularly with respect to the euro. We continue to maintain long exposure to USD as we expect central bank policy divergence to continue to support USD vs currencies such as EUR and JPY. | YTD '15 | Positive |

As of 30 September 2015. Benchmark: Equally weighted blend of the following three indices: Barclays Global Aggregate Credit Ex EM Index (USD hedged), Merrill Lynch High Yield BB-B Rated Constrained Developed Market Only Index (USD hedged), JPMorgan EMBI Global.

# DISABILITY RETIREMENTS
# 2015

Fifteen packets sent to employees since December 10, 2014.
Seven cases have been heard – six were approved, one disapproved.
Based upon five cases, the time from a completed packet to the board hearing ranges from 30 to 226 days (30, 36, 52, 73, 226). The average is approaching seven weeks. The lengthier case involved an additional evaluation and subsequent second examination by the city physician.

---

**Total number** receiving disability benefits as of September 30, 2015

- 157 - disability retirements - $172,435 monthly - average per retiree $1,098 monthly
- $2,069,220 annually
- 45 - disability retirement beneficiaries - $30,123 – average per beneficiary $699 monthly
- $361,476 annually

---

**Results** of the disability audit for calendar year 2014

- 156 total retirements
- 36 subject to annual audit and were sent affidavits
- 34 returned affidavit, 1 returned mail, 1 no response
- Telephonic attempt to contact retiree (returned mail *2) – no response
- Telephonic attempt to contact retiree who did not respond although EP signed for the letter– contacted phone number on file - 'not his number'

---

The current process begins after an employee has reached a point wherein the choices are diminished. After all leave time (vacation, sick, FML, and medical) is exhausted, the Medical Leaves Division directs the employee to the Retirement Office for an application. The process is explained to the employee, particularly that the onus is placed upon the employee to ensure they return their part of the application to our office, that the medical records release form(s) are delivered to their physician(s) with direction to forward them to the city's independent medical examiner, to ensure their primary care physician and any specialists complete their portion, and to ensure their department also completes their necessary portion of the application.

After the application is complete and medical records are sent to the city's physician, an appointment is made for the employee to be examined. Within two weeks of the appointment, the city physician sends our office a copy of the evaluation. A copy of the results is forwarded to the employee.

The Retirement Office then assembles a case summary, including an accommodations time line that is placed at the front of the application packet that is subsequently provided to the board in the monthly packet.

# * City of Tucson Medical Leaves Programs

Presented by

Medical Leaves & Workers Compensation Management

Human Resources

October 30, 2015

City of Tucson Medical Leaves Programs

## **Introduction**

City of Tucson has several Administrative Directives that address employee leaves. Specific leaves that address health issues of COT employees are:

- AD 2.01-7B – Sick Leave
- AD 2.01-7C – Family Medical Leave
- AD 2.01-7D – Medical Leave and Parental Leave
- AD 2.02-21 – Light Duty
- AD 2.05.2 – Reasonable Accommodation of Applicants and Employees with Disabilities (ADA)
- Worker's Compensation Program

City of Tucson Medical Leaves Programs

**Family Medical Leave Act (FMLA)**

- Provides up to 12 weeks of protected unpaid leave for eligible employees (based on employee's normal work week; generally 40 hours/week) in a 12-month period. City uses calendar year. Can be used continuously or intermittently.

**City Medical and Parental Leave**

- Continuous leave for up to 12 months, runs concurrently with all other leaves including FML.
- Initial approval for up to 6 months by Human Resources.
- Remainder of 12-month period is subject to approval by Human Resources in consultation with the employee's department director/designee – can be denied.

**Medical Leaves Case Management**

- Medical certification is required; re-certification may be required every 60 days
- Typical scenario is employee exhausts FML, then City Medical Leave

City of Tucson Medical Leaves Programs

**Medical Leaves Case Management (continued)**

- Medical Leaves Specialists closely monitors cases for return to work statuses based on physician certifications, Work Status Verification (releases) and City physician input.
- Most cases are basic, i.e., employee requests leave, takes leave and returns from leave based on the schedule indicated by the physician.
- Complicated health issues – uncontrolled chronic conditions, catastrophic injuries or terminal conditions often present situations where the employee cannot be reasonably or realistically expected to return to work within the 12-month period, if ever.
- During the leave period, the Medical Leave Specialist is in contact with the employee, providing communication and answering employee questions.
- Once an employee has reached 9 to 12 months continuous leave, notification is sent to the employee advising them of options available to them if their health condition is anticipated to keep them off greater than 12 months.

**Medical Leaves Case Management (continued)**

- Long-term health conditions that require leave greater than 6 months or extended light duty are evaluated for possible long-term disability through The Hartford or Metlife and referred accordingly. Employees can pursue both long-term disability and Medical Retirement.
- Employee may request Reasonable Accommodation under the Americans with Disabilities Act. Reasonable Accommodation may include permanent job re-assignment, extended light duty, or continued absence if there is a high expectation that the employee will be able to return to unrestricted job duties within a reasonable period of time.
- In cases where light duty is not available or Reasonable Accommodation is not possible, the employee who is unable to return to regular duty within the 12-month maximum leave period has the remaining options:
  - Pursue medical retirement (if eligible).
  - Resign their position.
  - Be terminated from employment with the City.
- Extended medical leave (beyond 12 months) will be approved if the employee is actively pursuing medical retirement (i.e., has a pending application with the Board that is under consideration).

City of Tucson Medical Leaves Programs

## Americans With Disabilities Act (ADA)

Intended to protect from discrimination those employees that may have a disability as defined under the law.  Essentially, the definition of a disability is to possess a physical or mental impairment that substantially limits a major life activity.  Employers are required to provide reasonable accommodations for **qualified individuals with disabilities**, provided that the accommodation does not impose an undue hardship to the employer.

- Disability that meets ADA is determined on a case-by-case basis.
- Temporary conditions generally do not meet the definition of disability under the ADA.
- Does not cover individuals actively abusing drugs or alcohol.

### Determining accommodation

- Employee requests accommodation by notifying chain of command or by contacting Medical Leaves directly, or after six months of light duty, or when the condition is determined to be permanent.
- Employee and Healthcare Provider completes the application.
- HR reviews to determine if the definition of disability is met.

City of Tucson Medical Leaves Programs

- HR reviews current essential functions and assesses physician statement.
- Has interactive discussion with employee.
- Follows up with appropriate department representatives for further assessment.
- Work with employee's home department first, then possibly organization-wide if reassignment is needed but not available in home department.
- Renders final determination and issues a written Record of Accommodation.
- Timeframes for ADA requests are different for each case.  One could be decided within one month or could be much longer – but not indefinitely just to get to one year.

City of Tucson Medical Leaves Programs

**Questions?**

Callan

October 30, 2015

# Tucson Supplemental Retirement System Board of Trustees

## Active & Passive Management Presentation

**Gordon Weightman, CFA**
Vice President

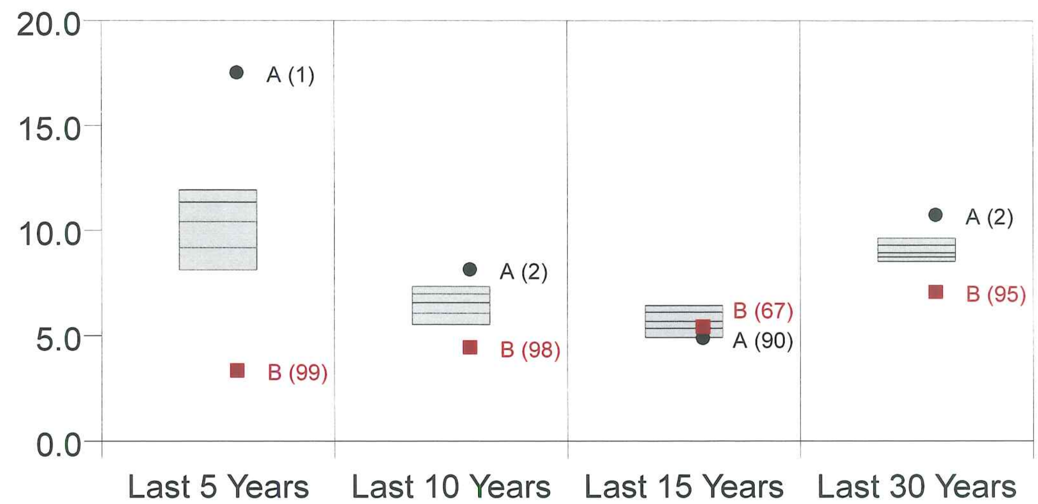
**Paul Erlendson**
Senior Vice President

# Discussion Framework

- Asset allocation is the primary driver of performance.
- Implementation – the use of active or passive strategies or "style" based strategies – influences results at the margin, but it can make a difference.
- Certain asset classes offer a higher probability of success for active managers than others.
- Most large institutional investors employ a blend of active and passive strategies.

# Asset Allocation – Driver of Performance & Risk

Returns for Periods Ended June 30, 2015
Group: CAI Public Fund Sponsor Database



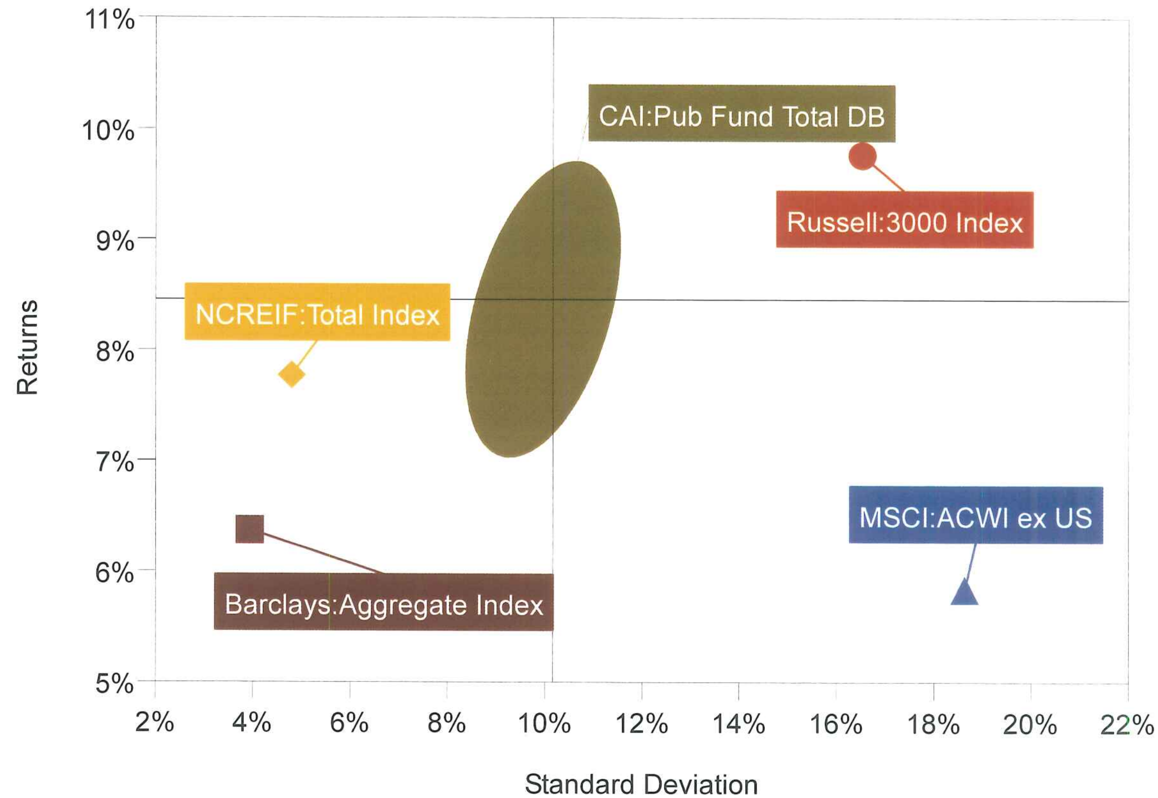

| | | Last 5 Years | Last 10 Years | Last 15 Years | Last 30 Years |
|---|---|---|---|---|---|
| 10th Percentile | | 11.93 | 7.35 | 6.43 | 9.63 |
| 25th Percentile | | 11.35 | 6.98 | 6.12 | 9.29 |
| Median | | 10.42 | 6.57 | 5.68 | 8.93 |
| 75th Percentile | | 9.17 | 6.07 | 5.35 | 8.73 |
| 90th Percentile | | 8.13 | 5.53 | 4.91 | 8.52 |
| Russell:3000 Index | ● A | 17.54 | 8.15 | 4.89 | 10.73 |
| Barclays:Aggregate Index | ■ B | 3.35 | 4.44 | 5.42 | 7.07 |

- The mix between stocks, bonds, and other asset classes determines over 85% of return variation over time.

# Asset Allocation – Driver of Performance & Risk

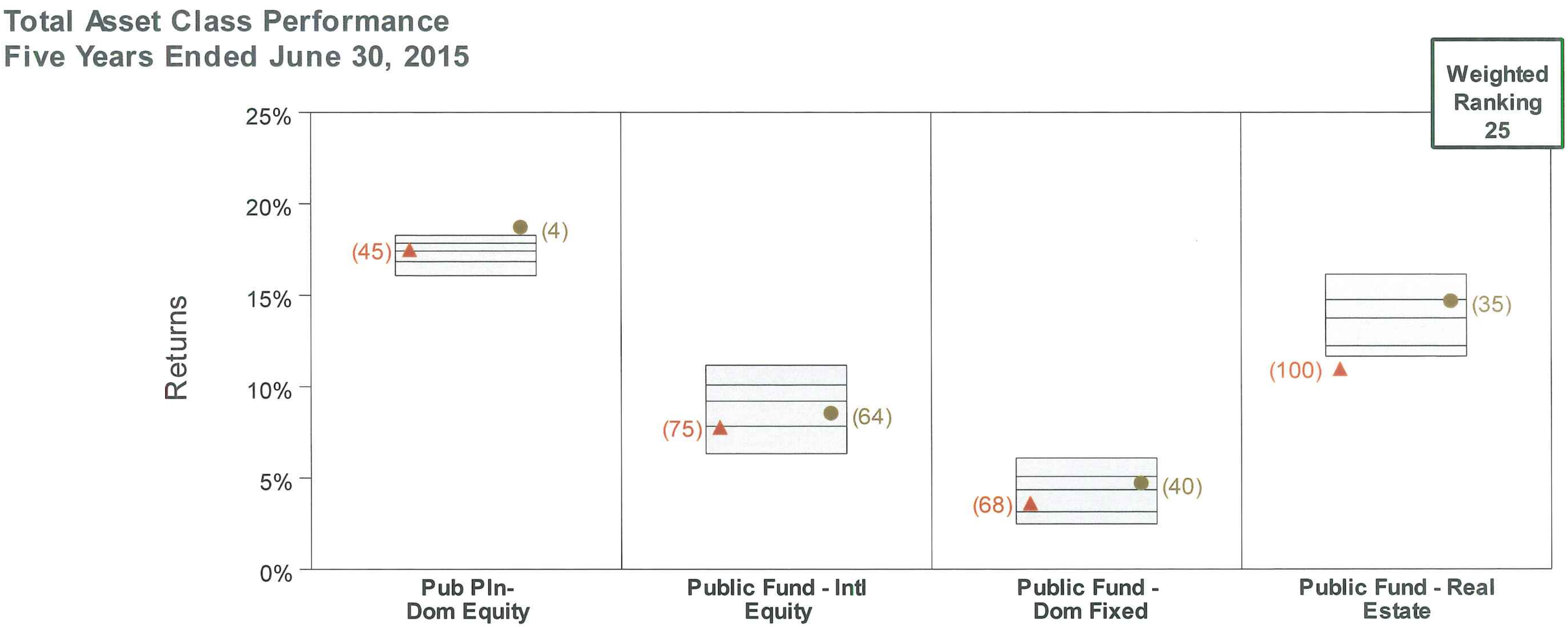
- Risk and return of public plan sponsors' portfolios has clustered in a similar range.
- Only plans with significantly different asset allocations will deviate over longer periods of time.
- The major capital market indices bracket the ranges for a diversified multi-asset class portfolio.

**Major Capital Market Index Returns & Standard Deviation for 25 Years Ended June 30, 2015**



# Tucson Supplemental Retirement System

## Five-Year Asset Class Performance

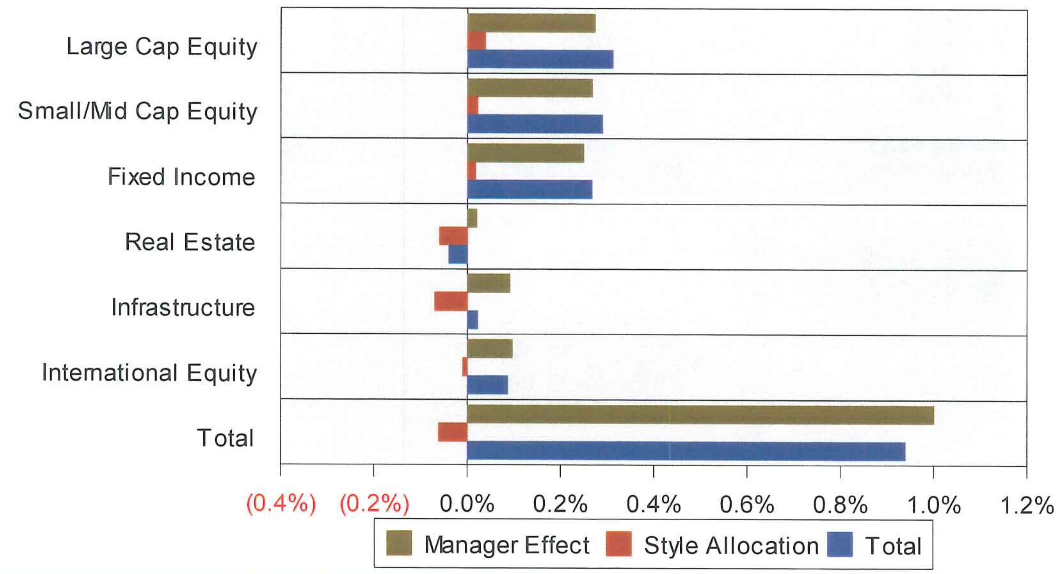



| | Pub Pln- Dom Equity | Public Fund - Intl Equity | Public Fund - Dom Fixed | Public Fund - Real Estate |
|---|---|---|---|---|
| 10th Percentile | 18.27 | 11.17 | 6.09 | 16.15 |
| 25th Percentile | 17.84 | 10.09 | 5.07 | 14.74 |
| Median | 17.41 | 9.20 | 4.35 | 13.74 |
| 75th Percentile | 16.84 | 7.81 | 3.16 | 12.21 |
| 90th Percentile | 16.06 | 6.33 | 2.49 | 11.64 |
| **Asset Class Composite** ● | 18.62 | 8.43 | 4.61 | 14.58 |
| Composite Benchmark ▲ | 17.49 | 7.76 | 3.62 | 10.94 |

# Tucson Supplemental Retirement System

## Five-Year Attribution Analysis

### Five Year Annualized Relative Attribution Effects




### Five Year Annualized Relative Attribution Effects

| Style Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Style Allocation | Total Relative Return |
|---|---|---|---|---|---|---|---|
| Large Cap Equity | 37% | 36% | 18.08% | 17.34% | 0.27% | 0.04% | 0.31% |
| Small/Mid Cap Equity | 11% | 10% | 20.46% | 17.85% | 0.27% | 0.02% | 0.29% |
| Fixed Income | 25% | 26% | 4.61% | 3.62% | 0.25% | 0.02% | 0.27% |
| Real Estate | 7% | 8% | 14.58% | 14.41% | 0.02% | (0.06%) | (0.04%) |
| Infrastructure | 6% | 5% | 7.46% | 5.80% | 0.09% | (0.07%) | 0.02% |
| International Equity | 14% | 15% | 8.43% | 7.76% | 0.10% | (0.01%) | 0.09% |
| **Total** | | | **12.64% =** | **11.70% +** | **1.00% +** | **(0.06%)** | **0.94%** |

# Pros and Cons of Active Management

- Pros
  - Creates the opportunity to generate higher returns than the broad markets
  - Can protect against market risk in down markets
  - Overcomes inefficiencies in areas where indices are un-investable or poorly constructed
  - Provides insight to investment staff and oversight committees on market behavior

- Cons
  - Has the potential to generate a lower return than the broad markets
  - May not keep pace during strong market rallies
  - Higher fees must be overcome
  - Requires additional staff and Board time for oversight, monitoring, contracting, etc.
  - Often requires longer term perspective to realize excess returns in the face of short-term under-performance

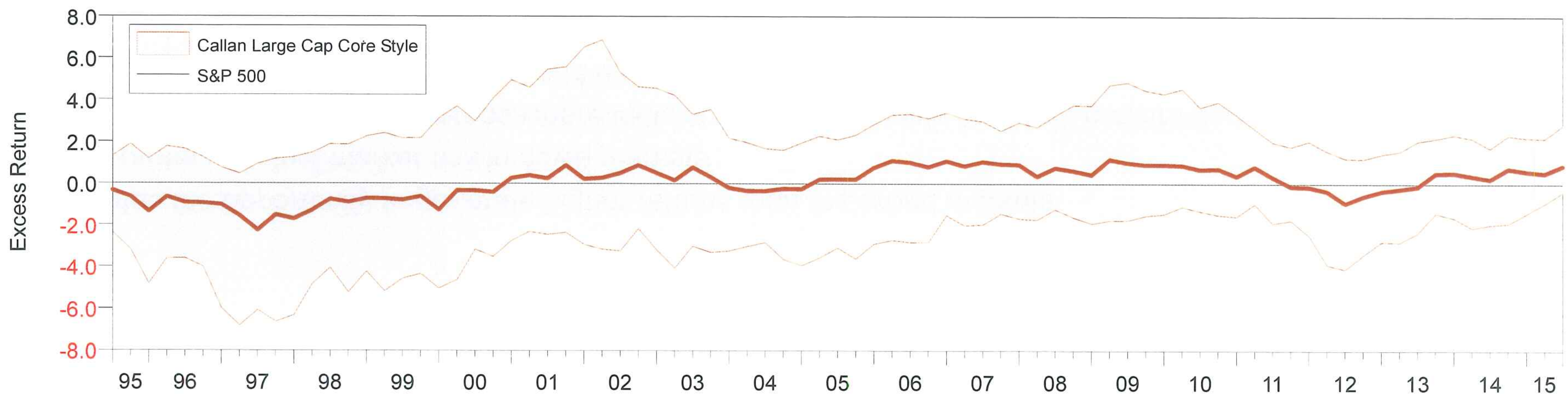
# Large Cap Core Equity Style versus S&P 500

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.25% | 0.30% | 0.35% | 0.40% | 0.45% | 0.50% | 0.55% | 0.60% | 0.65% | 0.70% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 49% | 46% | 44% | 39% | 38% | 38% | 31% | 31% | 29% | 29% |
| 45th Percentile | 59% | 59% | 59% | 56% | 56% | 54% | 51% | 48% | 43% | 40% |
| 40th Percentile | 63% | 63% | 63% | 63% | 61% | 61% | 61% | 58% | 58% | 55% |
| 35th Percentile | 78% | 75% | 71% | 69% | 68% | 65% | 64% | 64% | 63% | 63% |
| 30th Percentile | 84% | 83% | 83% | 79% | 79% | 78% | 78% | 76% | 73% | 70% |
| 25th Percentile | 91% | 89% | 88% | 85% | 84% | 84% | 81% | 81% | 81% | 78% |

**Average Annualized Excess Return – Median Manager: 0.06%**

## Rolling 12 Quarter Excess Return relative to S&P 500 for 20 Years Ended June 30, 2015



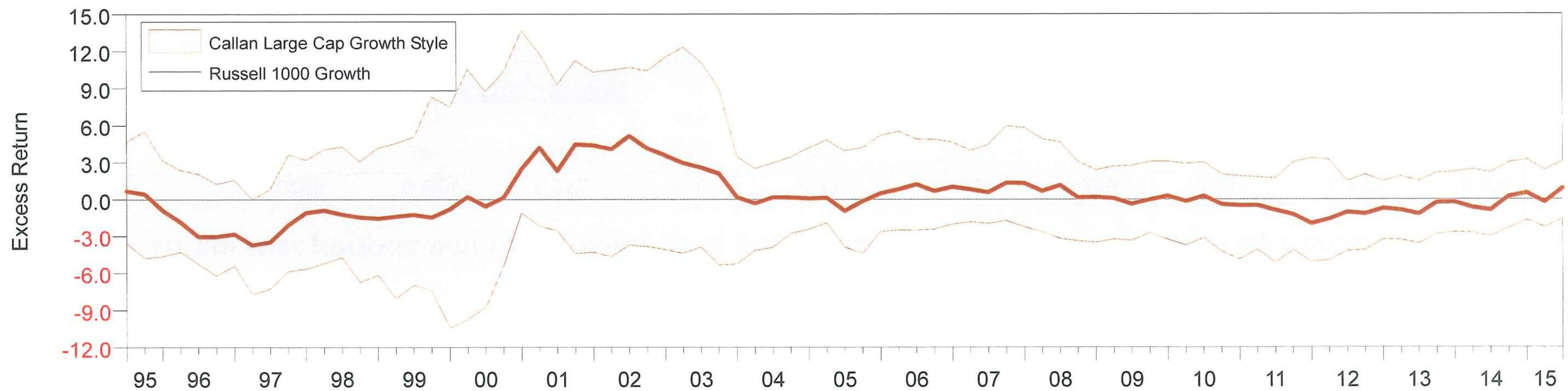
# Large Cap Growth Equity Style versus Russell 1000 Growth

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.25% | 0.30% | 0.35% | 0.40% | 0.45% | 0.50% | 0.55% | 0.60% | 0.65% | 0.70% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 34% | 33% | 33% | 33% | 31% | 29% | 29% | 28% | 28% | 25% |
| 45th Percentile | 50% | 48% | 45% | 43% | 40% | 38% | 36% | 35% | 35% | 34% |
| 40th Percentile | 60% | 59% | 59% | 58% | 58% | 54% | 53% | 49% | 46% | 43% |
| 35th Percentile | 70% | 70% | 68% | 68% | 65% | 63% | 61% | 58% | 58% | 58% |
| 30th Percentile | 80% | 80% | 80% | 78% | 75% | 74% | 71% | 68% | 68% | 68% |
| 25th Percentile | 89% | 88% | 88% | 84% | 84% | 81% | 80% | 80% | 80% | 80% |

**Average Annualized Excess Return – Median Manager: 0.08%**

## Rolling 12 Quarter Excess Return relative to Russell 1000 Growth for 20 Years ended June 30, 2015



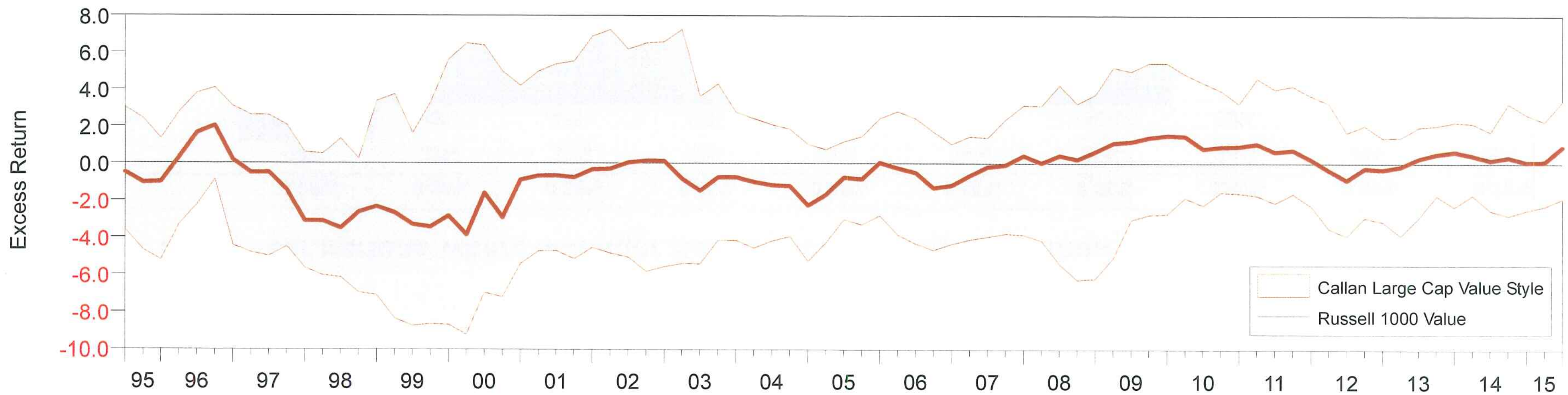
# Large Cap Value Equity Style versus Russell 1000 Value

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| **Hurdle** | **0.25%** | **0.30%** | **0.35%** | **0.40%** | **0.45%** | **0.50%** | **0.55%** | **0.60%** | **0.65%** | **0.70%** |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 29% | 28% | 25% | 25% | 21% | 21% | 20% | 20% | 16% | 16% |
| 45th Percentile | 44% | 43% | 43% | 41% | 38% | 35% | 34% | 33% | 29% | 26% |
| 40th Percentile | 54% | 53% | 51% | 46% | 45% | 45% | 44% | 44% | 44% | 40% |
| 35th Percentile | 65% | 63% | 61% | 60% | 58% | 55% | 54% | 53% | 51% | 50% |
| 30th Percentile | 73% | 70% | 69% | 69% | 66% | 66% | 66% | 63% | 60% | 60% |
| 25th Percentile | 80% | 78% | 76% | 76% | 76% | 75% | 71% | 71% | 71% | 70% |

**Average Annualized Excess Return – Median Manager: -0.51%**

## Rolling 12 Quarter Excess Return relative to Russell 1000 Value for 20 Years ended June 30, 2015



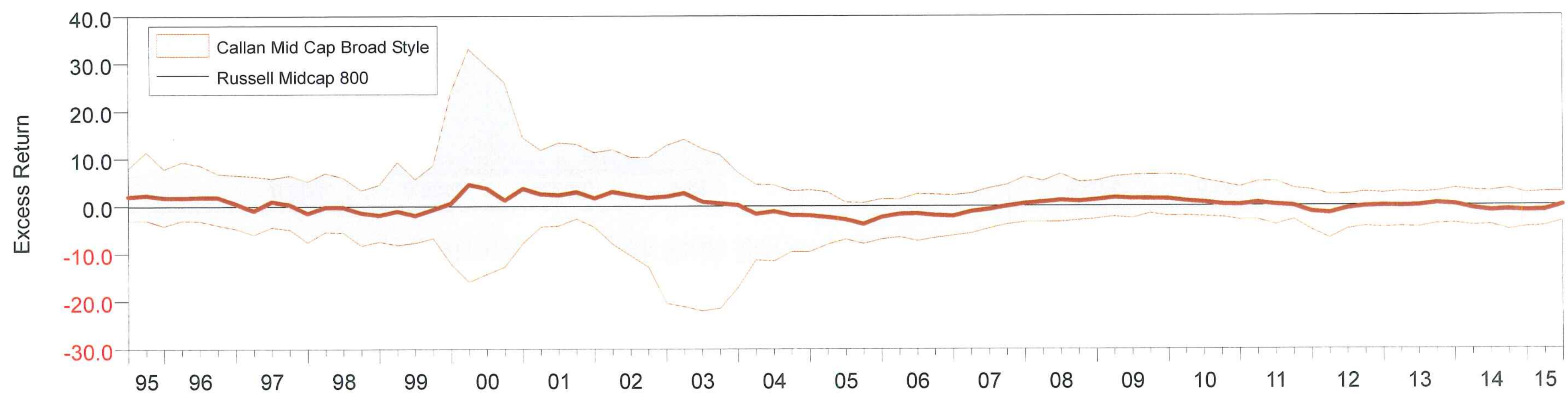
# Mid Cap Broad Equity Style versus Russell Midcap 800

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.35% | 0.40% | 0.45% | 0.50% | 0.55% | 0.60% | 0.65% | 0.70% | 0.75% | 0.80% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 45% | 44% | 43% | 40% | 38% | 38% | 38% | 36% | 35% | 35% |
| 45th Percentile | 54% | 54% | 53% | 51% | 51% | 51% | 50% | 48% | 46% | 46% |
| 40th Percentile | 68% | 66% | 64% | 63% | 63% | 61% | 61% | 60% | 59% | 58% |
| 35th Percentile | 74% | 74% | 73% | 71% | 70% | 68% | 66% | 65% | 65% | 65% |
| 30th Percentile | 85% | 85% | 85% | 83% | 81% | 79% | 79% | 78% | 75% | 74% |
| 25th Percentile | 90% | 89% | 88% | 88% | 88% | 86% | 86% | 86% | 86% | 86% |

**Average Annualized Excess Return – Median Manager: 0.15%**

## Rolling 12 Quarter Excess Return relative to Russell Midcap 800 for 20 Years ended June 30, 2015



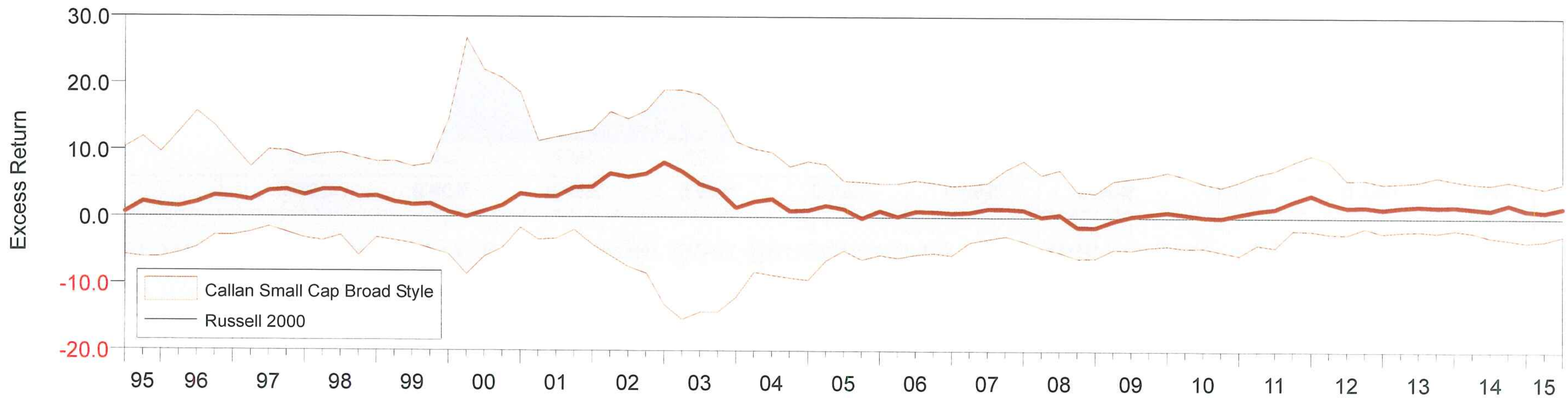
# Small Cap Broad Equity Style versus Russell 2000

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.50% | 0.55% | 0.60% | 0.65% | 0.70% | 0.75% | 0.80% | 0.85% | 0.90% | 0.95% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 85% | 84% | 83% | 83% | 80% | 80% | 79% | 75% | 75% | 73% |
| 45th Percentile | 95% | 93% | 93% | 91% | 90% | 89% | 89% | 89% | 89% | 88% |
| 40th Percentile | 98% | 98% | 98% | 98% | 98% | 98% | 96% | 93% | 93% | 93% |
| 35th Percentile | 98% | 98% | 98% | 98% | 98% | 98% | 98% | 98% | 98% | 98% |
| 30th Percentile | 99% | 98% | 98% | 98% | 98% | 98% | 98% | 98% | 98% | 98% |
| 25th Percentile | 100% | 100% | 100% | 100% | 100% | 99% | 99% | 99% | 99% | 99% |

**Average Annualized Excess Return – Median Manager: 2.03%**

## Rolling 12 Quarter Excess Return relative to Russell 2000 for 20 Years ended June 30, 2015



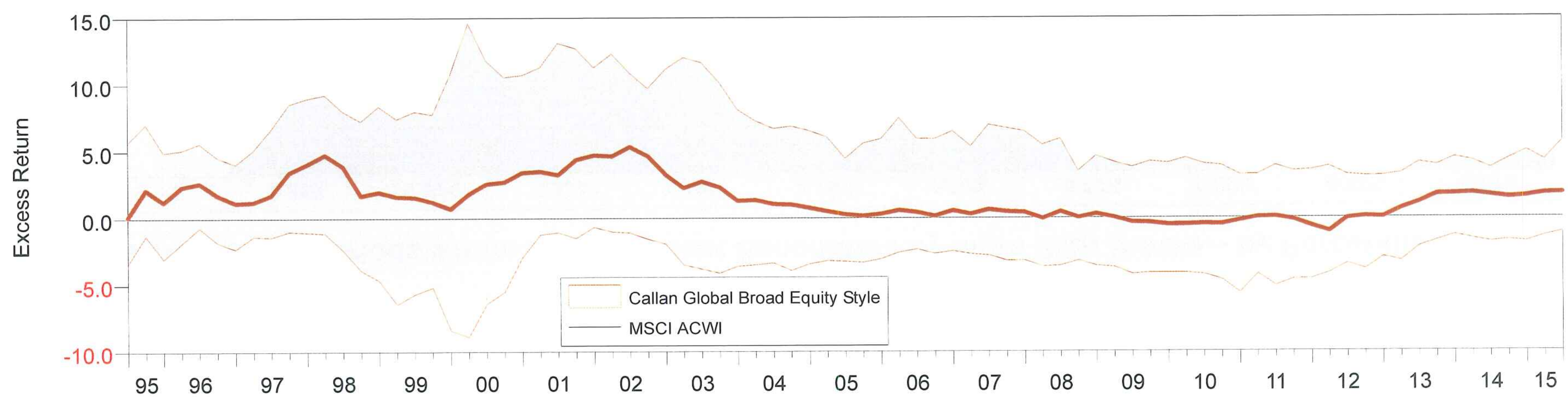
# Global Broad Equity Style versus MSCI ACWI

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.45% | 0.50% | 0.55% | 0.60% | 0.65% | 0.70% | 0.75% | 0.80% | 0.85% | 0.90% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 66% | 64% | 63% | 61% | 59% | 59% | 58% | 56% | 56% | 56% |
| 45th Percentile | 80% | 76% | 75% | 74% | 73% | 73% | 71% | 69% | 66% | 65% |
| 40th Percentile | 89% | 85% | 85% | 81% | 80% | 80% | 80% | 80% | 80% | 78% |
| 35th Percentile | 99% | 99% | 99% | 99% | 95% | 94% | 94% | 93% | 88% | 86% |
| 30th Percentile | 100% | 100% | 100% | 100% | 100% | 100% | 99% | 99% | 99% | 99% |
| 25th Percentile | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

**Average Annualized Excess Return – Median Manager: 1.39%**

## Rolling 12 Quarter Excess Return relative to MSCI ACWI for 20 Years ended June 30, 2015



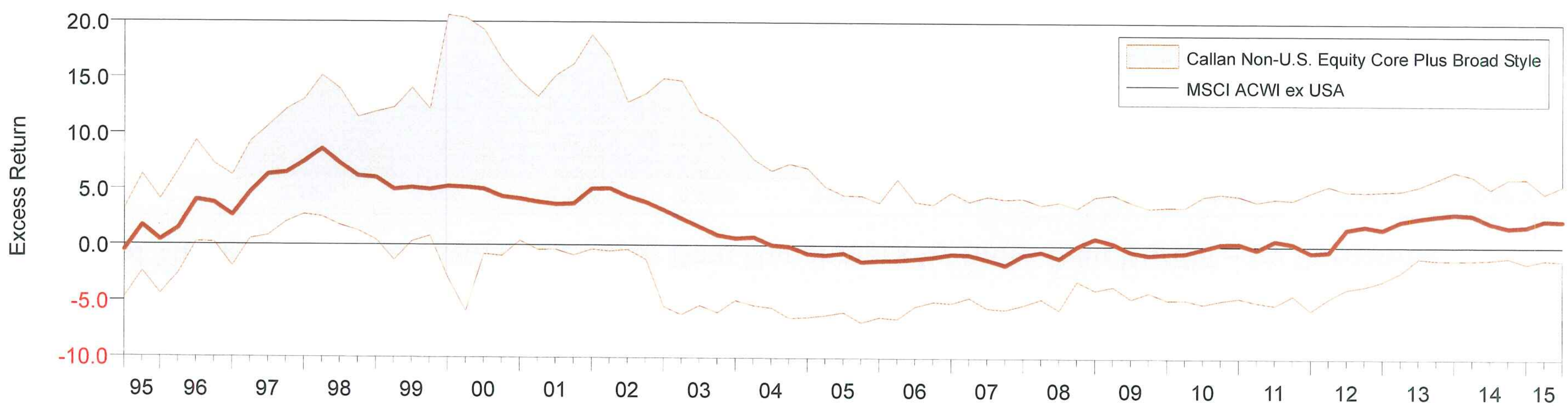
# Non-U.S. Equity Core Plus Broad Style vs MSCI ACWI ex USA

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.45% | 0.50% | 0.55% | 0.60% | 0.65% | 0.70% | 0.75% | 0.80% | 0.85% | 0.90% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 61% | 61% | 60% | 60% | 59% | 58% | 58% | 56% | 56% | 56% |
| 45th Percentile | 68% | 68% | 68% | 68% | 63% | 60% | 60% | 60% | 60% | 60% |
| 40th Percentile | 75% | 74% | 74% | 74% | 74% | 71% | 71% | 70% | 68% | 66% |
| 35th Percentile | 86% | 84% | 83% | 81% | 80% | 79% | 79% | 78% | 78% | 76% |
| 30th Percentile | 96% | 96% | 96% | 95% | 95% | 95% | 95% | 93% | 88% | 84% |
| 25th Percentile | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 99% | 99% | 99% |

**Average Annualized Excess Return – Median Manager: 1.96%**

## Rolling 12 Quarter Excess Return relative to MSCI ACWI ex USA for 20 Years ended June 30, 2015



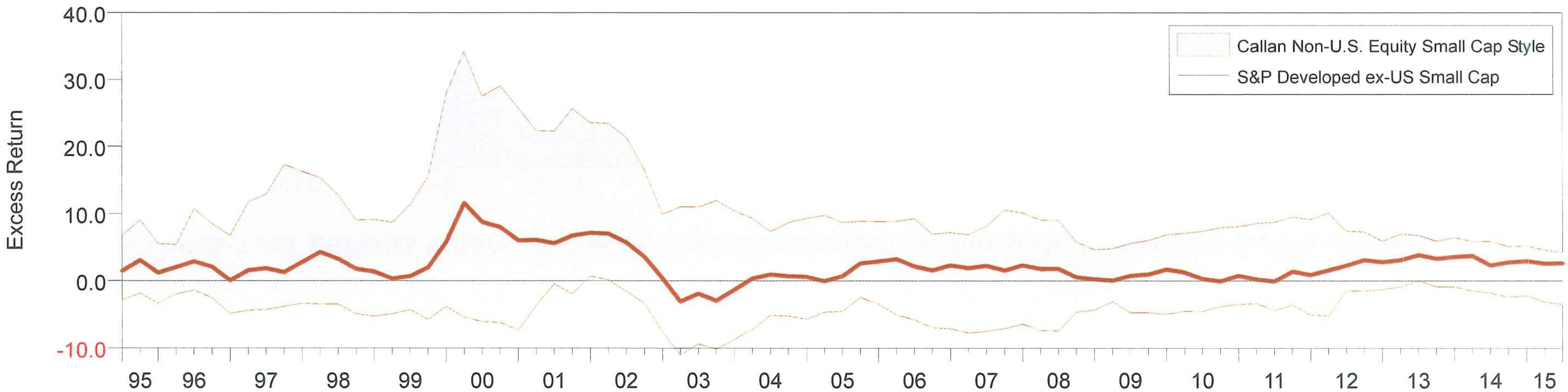
# Non-U.S. Small Cap Style vs S&P Developed ex-US Small Cap

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.75% | 0.80% | 0.85% | 0.90% | 0.95% | 1.00% | 1.05% | 1.10% | 1.15% | 1.20% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 73% | 73% | 71% | 71% | 69% | 69% | 69% | 69% | 69% | 68% |
| 45th Percentile | 86% | 86% | 85% | 83% | 80% | 79% | 79% | 78% | 76% | 74% |
| 40th Percentile | 94% | 94% | 94% | 93% | 93% | 90% | 90% | 88% | 88% | 88% |
| 35th Percentile | 99% | 98% | 98% | 98% | 98% | 98% | 98% | 98% | 96% | 96% |
| 30th Percentile | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 99% |
| 25th Percentile | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

**Average Annualized Excess Return – Median Manager: 2.26%**

## Rolling 12 Quarter Excess Return relative to S&P Developed ex-US Small Cap for 20 Years ended June 30, 2015



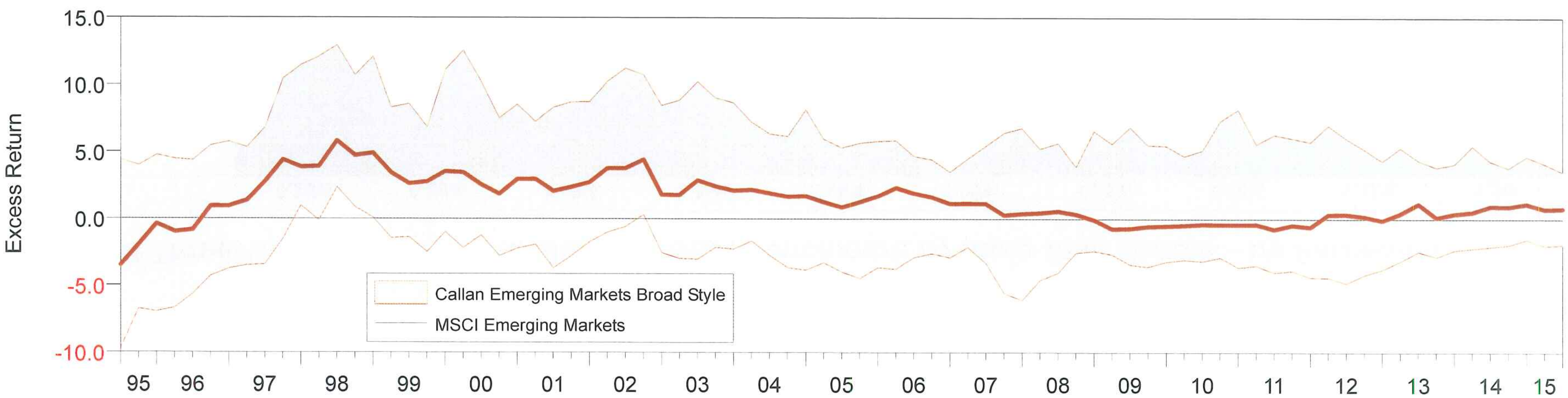
# Emerging Markets Broad Equity Style vs MSCI Emerging Markets

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.70% | 0.75% | 0.80% | 0.85% | 0.90% | 0.95% | 1.00% | 1.05% | 1.10% | 1.15% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 63% | 63% | 60% | 60% | 59% | 55% | 54% | 54% | 54% | 49% |
| 45th Percentile | 71% | 69% | 68% | 66% | 65% | 65% | 65% | 65% | 65% | 63% |
| 40th Percentile | 78% | 78% | 78% | 76% | 76% | 74% | 74% | 71% | 70% | 70% |
| 35th Percentile | 91% | 91% | 90% | 89% | 85% | 84% | 81% | 81% | 81% | 81% |
| 30th Percentile | 99% | 99% | 99% | 98% | 96% | 96% | 96% | 96% | 95% | 93% |
| 25th Percentile | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |

**Average Annualized Excess Return – Median Manager: 1.38%**

## Rolling 12 Quarter Excess Return relative to MSCI Emerging Markets for 20 Years ended June 30, 2015



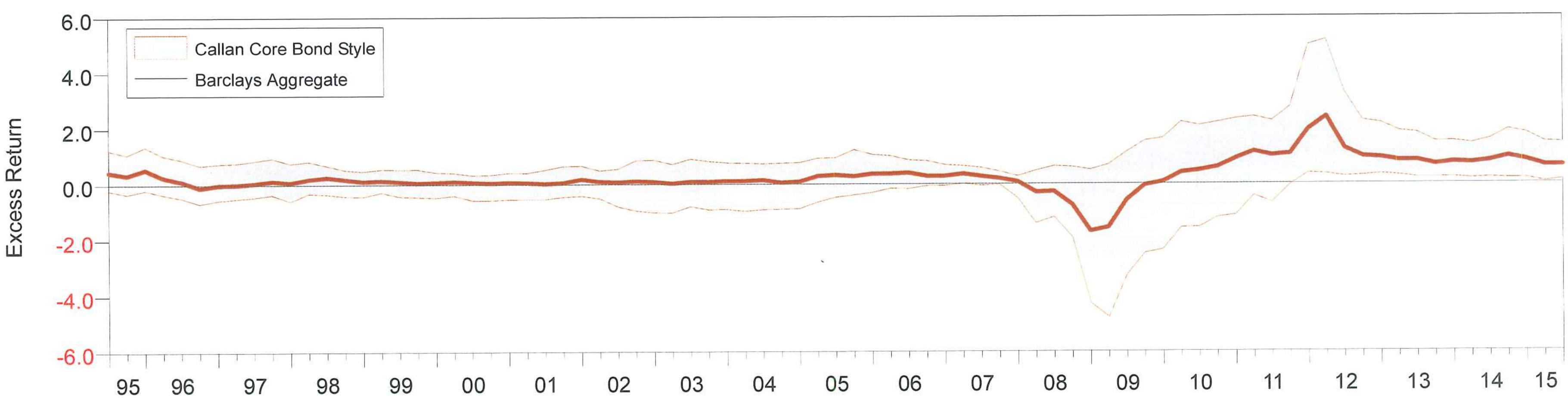
# Core Bond Style versus Barclays Aggregate

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.20% | 0.25% | 0.30% | 0.35% | 0.40% | 0.45% | 0.50% | 0.55% | 0.60% | 0.65% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 46% | 45% | 36% | 34% | 28% | 28% | 26% | 26% | 24% | 21% |
| 45th Percentile | 51% | 48% | 41% | 39% | 35% | 30% | 29% | 29% | 26% | 24% |
| 40th Percentile | 65% | 56% | 49% | 44% | 40% | 36% | 33% | 29% | 29% | 29% |
| 35th Percentile | 78% | 65% | 56% | 48% | 45% | 40% | 36% | 35% | 33% | 29% |
| 30th Percentile | 89% | 76% | 68% | 56% | 50% | 45% | 41% | 38% | 36% | 33% |
| 25th Percentile | 96% | 89% | 79% | 69% | 58% | 54% | 48% | 44% | 40% | 38% |

**Average Annualized Excess Return – Median Manager: 0.29%**

## Rolling 12 Quarter Excess Return relative to Barclays Aggregate for 20 Years ended June 30, 2015



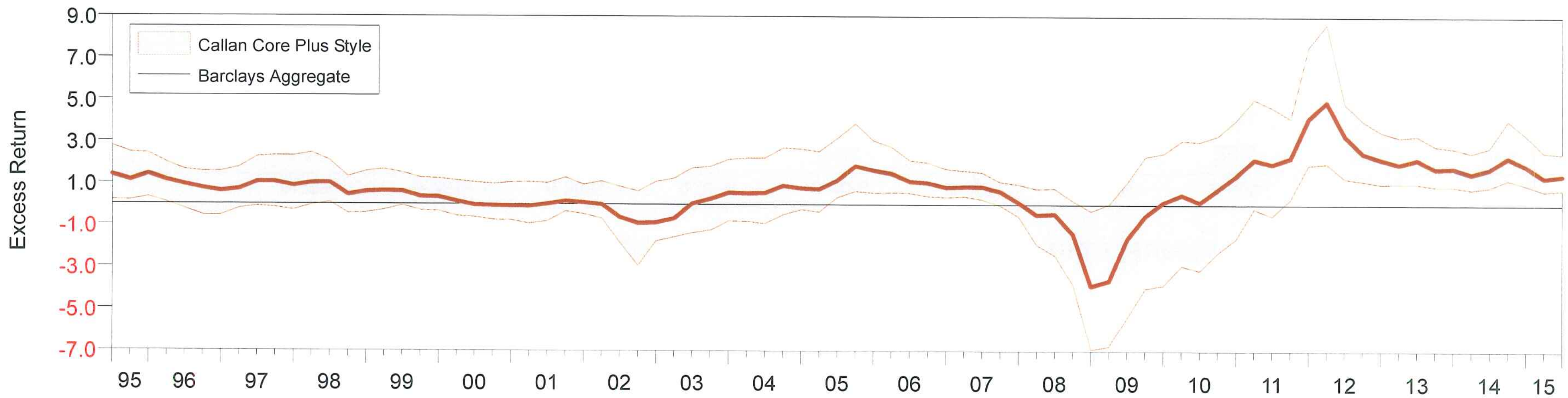
# Core Plus Bond Style versus Barclays Aggregate

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.20% | 0.25% | 0.30% | 0.35% | 0.40% | 0.45% | 0.50% | 0.55% | 0.60% | 0.65% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 70% | 70% | 69% | 66% | 66% | 65% | 64% | 61% | 59% | 54% |
| 45th Percentile | 73% | 71% | 69% | 69% | 69% | 68% | 65% | 65% | 63% | 63% |
| 40th Percentile | 76% | 74% | 74% | 73% | 73% | 71% | 70% | 68% | 68% | 68% |
| 35th Percentile | 80% | 79% | 76% | 75% | 74% | 74% | 74% | 73% | 71% | 68% |
| 30th Percentile | 84% | 83% | 83% | 81% | 80% | 79% | 76% | 75% | 75% | 73% |
| 25th Percentile | 90% | 88% | 88% | 88% | 84% | 81% | 81% | 80% | 78% | 76% |

**Average Annualized Excess Return – Median Manager: 0.73%**

## Rolling 12 Quarter Excess Return relative to Barclays Aggregate for 20 Years ended June 30, 2015



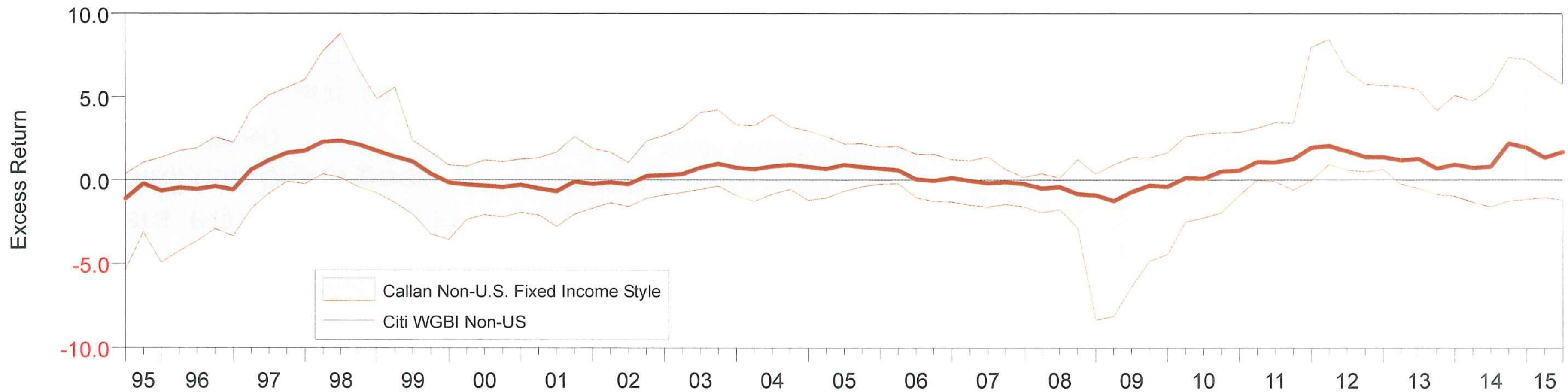
# Non-U.S. Fixed Style versus Citi WGBI Non-US

## Percent of Three-Year periods where Manager Beat Benchmark by more than Hurdle – by Percentile

| Hurdle | 0.20% | 0.25% | 0.30% | 0.35% | 0.40% | 0.45% | 0.50% | 0.55% | 0.60% | 0.65% |
|---|---|---|---|---|---|---|---|---|---|---|
| Median | 58% | 56% | 55% | 54% | 53% | 53% | 53% | 51% | 49% | 46% |
| 45th Percentile | 60% | 59% | 59% | 58% | 56% | 54% | 53% | 53% | 51% | 51% |
| 40th Percentile | 65% | 61% | 60% | 60% | 60% | 59% | 58% | 55% | 53% | 53% |
| 35th Percentile | 70% | 68% | 65% | 63% | 63% | 61% | 60% | 60% | 60% | 59% |
| 30th Percentile | 76% | 70% | 70% | 68% | 66% | 63% | 63% | 60% | 60% | 60% |
| 25th Percentile | 85% | 81% | 79% | 76% | 74% | 71% | 68% | 66% | 63% | 61% |

**Average Annualized Excess Return – Median Manager: 0.51%**

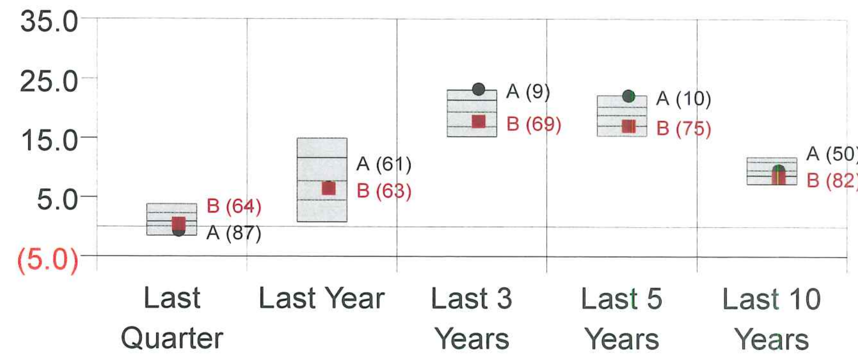
## Rolling 12 Quarter Excess Return relative to Citi WGBI Non-US
## for 20 Years ended June 30, 2015



# Small Cap Broad Median Manager Evaluation

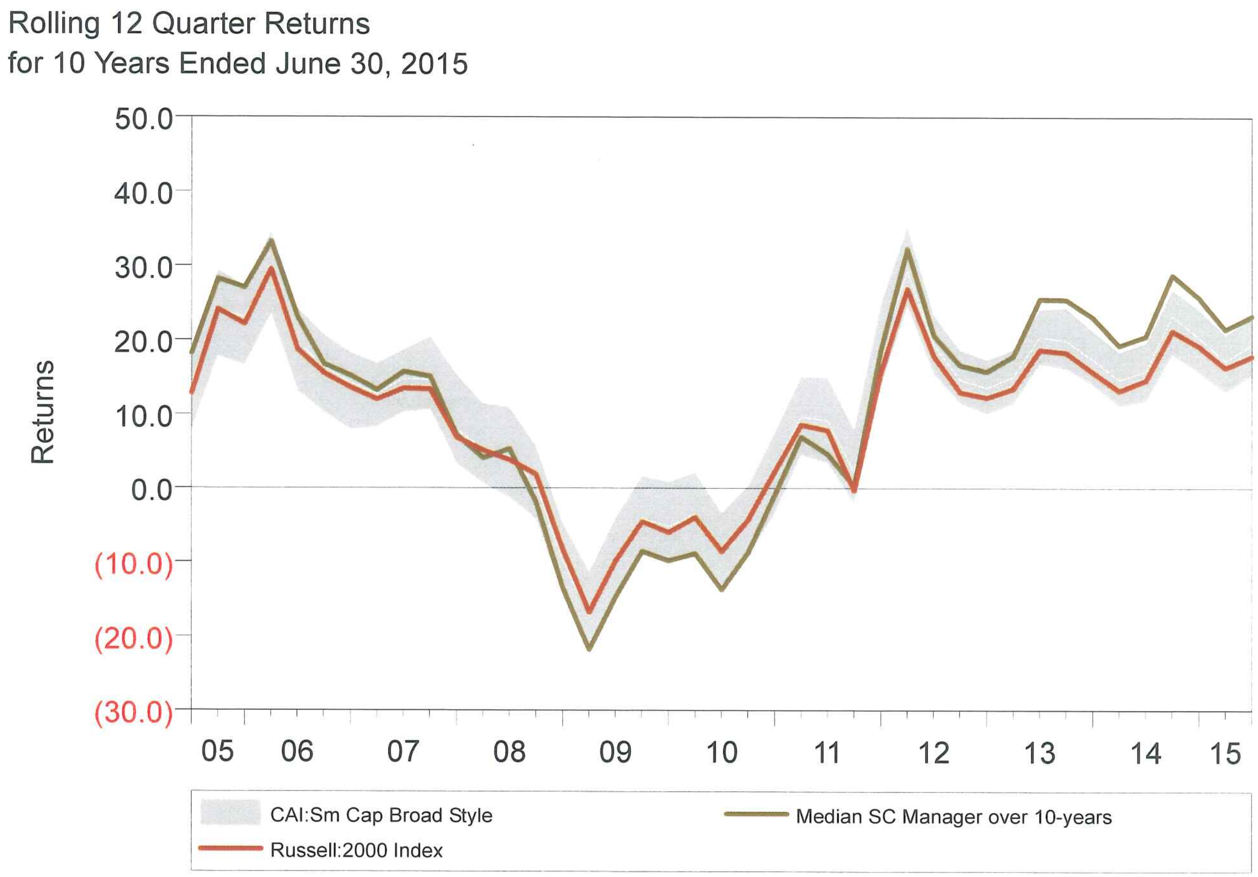
- The median manager over the last 10-years, ended 6/30/15, in Callan's small cap broad peer group was identified.
  - This is a point in time and it is expected that the median manager would be represented by a different product, if another time-period was selected.
- The performance pattern of the median manager illustrates the experience of an investor over multiple time periods.
- The median manager does not outperform the benchmark or the peer group over every time period.
- To capture median performance an investor must be patient over market cycles.

Returns
for Periods Ended June 30, 2015
Group: CAI Small Capitalization Style




| | Last Quarter | Last Year | Last 3 Years | Last 5 Years | Last 10 Years |
|---|---|---|---|---|---|
| 10th Percentile | 3.82 | 15.01 | 23.12 | 22.24 | 11.86 |
| 25th Percentile | 2.30 | 11.65 | 21.41 | 20.30 | 11.02 |
| Median | 0.86 | 7.77 | 19.41 | 18.89 | 9.56 |
| 75th Percentile | 0.05 | 4.51 | 16.90 | 17.06 | 8.69 |
| 90th Percentile | (1.53) | 0.75 | 15.23 | 15.35 | 7.24 |
| Member Count | 147 | 147 | 147 | 147 | 143 |
| Median SC Manager over 10-years ● A | (0.70) | 6.61 | 23.29 | 22.19 | 9.56 |
| Russell:2000 Index ■ B | 0.42 | 6.49 | 17.81 | 17.08 | 8.40 |

# Small Cap Broad Median Manager Evaluation



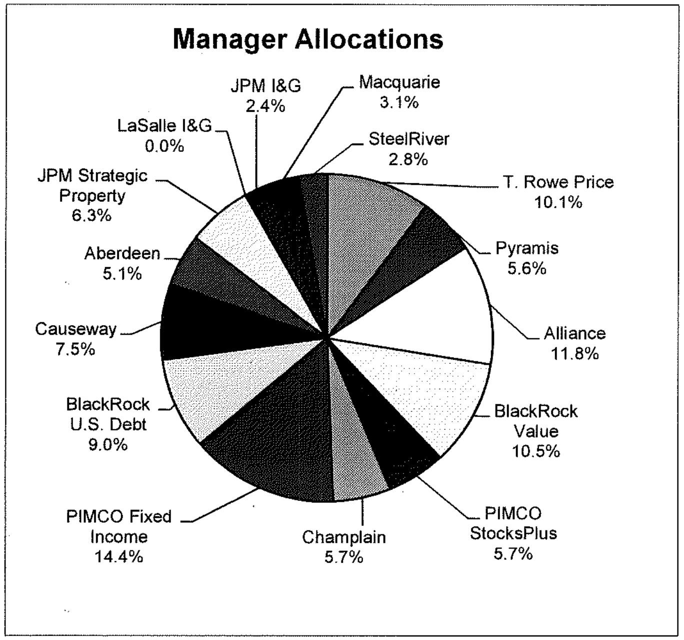

- The line chart illustrates how the median small cap manager (over 10-years as of 6/30/15) performed versus peers and the benchmark over rolling 3-year time periods.
- There are prolonged periods when the median manager underperformed peers and the benchmark.

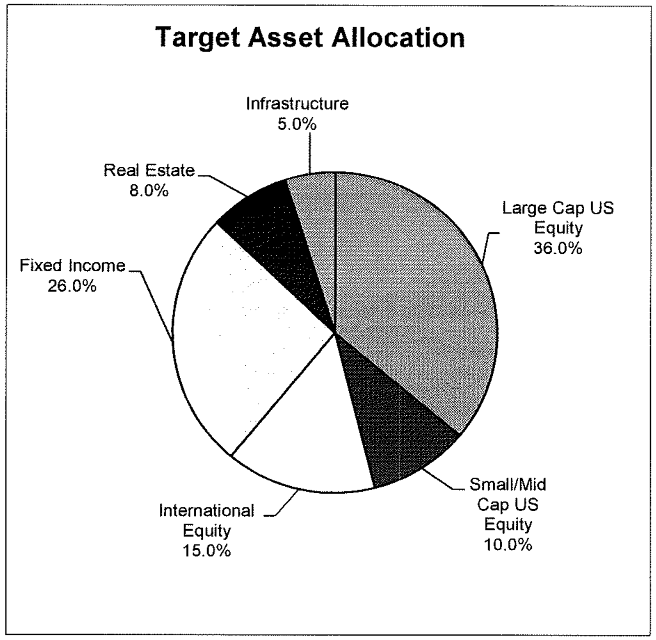
# Manager Allocations Compared with Policy Levels

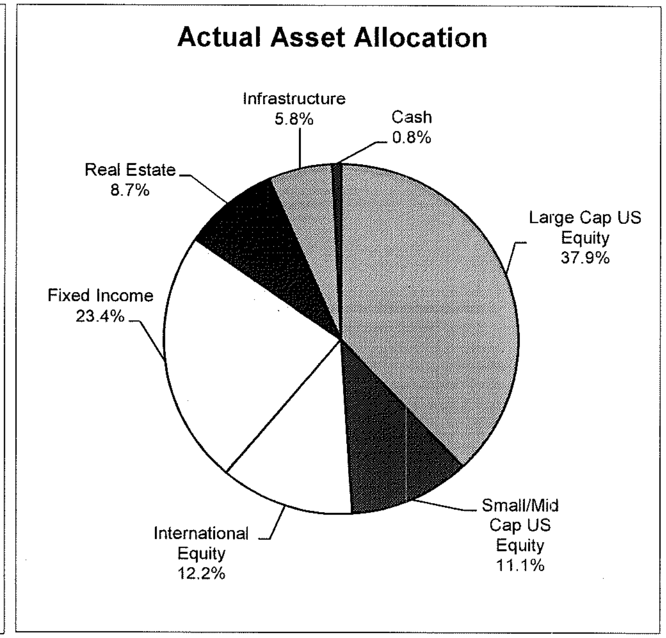
## Monthly Report as of: 09/30/15

| Managers and Asset Class | Actual (000s) | % | Target (000s) | % | Differences From Target | | Range Min | Range Max | Outside Range |
|---|---|---|---|---|---|---|---|---|---|
| T. Rowe Price | $ 69,843 | 10.1% | $ 68,965 | 10.0% | 0.1% | $ 878 | 8.0% | 12.0% | 0.0% |
| Alliance (S&P 500) | 81,282 | 11.8% | 75,862 | 11.0% | 0.8% | 5,420 | 8.0% | 14.0% | 0.0% |
| BlackRock Value | 72,068 | 10.4% | 68,965 | 10.0% | 0.4% | 3,102 | 8.0% | 12.0% | 0.0% |
| PIMCO StocksPlus | 39,571 | 5.7% | 34,483 | 5.0% | 0.7% | 5,089 | 3.0% | 7.0% | 0.0% |
| Large Cap U.S. Equity | 262,763 | **38.0%** | 248,275 | **36.0%** | 2.0% | 14,489 | **31.0%** | **41.0%** | 0.0% |
| Pyramis | 38,484 | 5.6% | 34,483 | 5.0% | 0.6% | 4,001 | 3.0% | 7.0% | 0.0% |
| Champlain | 39,005 | 5.7% | 34,483 | 5.0% | 0.7% | 4,522 | 3.0% | 7.0% | 0.0% |
| Small/Mid Cap U.S. Equity | 77,489 | **11.3%** | 68,965 | **10.0%** | 1.3% | 8,524 | **6.0%** | **14.0%** | 0.0% |
| Causeway Capital Mgmt | 51,557 | 7.5% | 51,724 | 7.5% | 0.0% | (167) | 5.5% | 9.5% | 0.0% |
| Aberdeen Asset Mgmt | 35,139 | 5.1% | 51,724 | 7.5% | -2.4% | (16,585) | 5.5% | 9.5% | -0.4% |
| International Equity | 86,696 | **12.6%** | 103,448 | **15.0%** | -2.4% | (16,752) | **13.0%** | **17.0%** | -0.4% |
| ***Total Stocks*** | ***426,948*** | ***61.9%*** | ***420,687*** | ***61.0%*** | ***0.9%*** | ***6,260*** | ***56.0%*** | ***66.0%*** | ***0.0%*** |
| PIMCO Fixed Income | 99,272 | 14.4% | 110,344 | 16.0% | -1.6% | (11,072) | 13.0% | 19.0% | 0.0% |
| BlackRock U.S. Debt | 62,229 | 9.0% | 68,965 | 10.0% | -1.0% | (6,737) | 8.0% | 12.0% | 0.0% |
| ***Total Bonds*** | ***161,501*** | ***23.4%*** | ***179,309*** | ***26.0%*** | ***-2.6%*** | ***(17,809)*** | ***21.0%*** | ***31.0%*** | ***0.0%*** |
| JPM Strategic Property | 43,603 | 6.3% | 34,483 | 5.0% | 1.3% | 9,121 | 3.0% | 7.0% | 0.0% |
| LaSalle Income & Growth IV | 62 | 0.0% | 10,345 | 1.5% | -1.5% | (10,283) | 0.0% | 3.0% | 0.0% |
| JPM Income & Growth | 16,427 | 2.4% | 10,345 | 1.5% | 0.9% | 6,082 | 0.0% | 3.0% | 0.0% |
| ***Total Real Estate*** | ***60,092*** | ***8.7%*** | ***55,172*** | ***8.0%*** | ***0.7%*** | ***4,920*** | ***6.0%*** | ***10.0%*** | ***0.0%*** |
| Macquarie | 21,245 | 3.1% | 17,241 | 2.5% | 0.6% | 4,003 | 1.5% | 3.5% | 0.0% |
| SteelRiver | 19,038 | 2.8% | 17,241 | 2.5% | 0.3% | 1,797 | 1.5% | 3.5% | 0.0% |
| ***Total Infrastructure*** | ***40,283*** | ***5.9%*** | ***34,483*** | ***5.0%*** | ***0.9%*** | ***5,800*** | ***3.0%*** | ***7.0%*** | ***0.0%*** |
| ***Liquidity Fund*** | ***829*** | ***0.1%*** | - | | | | | | |
| ***Total Fund*** | ***$ 689,652*** | ***100%*** | ***$ 689,652*** | ***100%*** | | | | | |

# Allocation Summaries
## As of: 09/30/15




### *Investment Manager Allocation:*

| | ***Investment Account*** | ***(000s)*** |
|---|---|---|
| 1 | T. Rowe Price | $ 69,843 |
| 2 | Pyramis | 38,484 |
| 3 | Alliance | 81,282 |
| 4 | BlackRock Value | 72,068 |
| 5 | PIMCO StocksPlus | 39,571 |
| 6 | Champlain | 39,005 |
| 7 | PIMCO Fixed Income | 99,272 |
| 8 | BlackRock U.S. Debt | 62,229 |
| 9 | Causeway | 51,557 |
| 10 | Aberdeen | 35,139 |
| 11 | JPM Strategic Property | 43,603 |
| 12 | LaSalle I&G | 62 |
| 13 | JPM I&G | 16,427 |
| 14 | Macquarie | 21,245 |
| 15 | SteelRiver | 19,038 |
| | Liquidity Account | 829 |
| | ***Total Assets*** | ***$ 689,652*** |

### *Target Asset Allocation:*

| ***Asset Class*** | ***(000s)*** |
|---|---|
| Large Cap US Equity | 248,275 |
| Small/Mid Cap US Equity | 68,965 |
| International Equity | 103,448 |
| Fixed Income | 179,309 |
| Real Estate | 55,172 |
| Infrastructure | 34,483 |
| ***Total Assets*** | ***$ 689,652*** |

### *Actual Asset Allocation:*

| ***Asset Class*** | ***(000s)*** |
|---|---|
| Large Cap US Equity | 261,473 |
| Small/Mid Cap US Equity | 76,282 |
| International Equity | 84,257 |
| Fixed Income | 161,501 |
| Real Estate | 60,092 |
| Infrastructure | 40,283 |
| Cash | 5,764 |
| ***Total Assets*** | ***$ 689,652*** |

# TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
# CALENDAR YEAR 2015 PERFORMANCE BY MANAGER
# NET OF FEES AND CUSTODIAL CHARGES

| | **Total Fund** | BlackRock U.S. Debt | PIMCO | **Total Fixed** | Alliance S&P 500 | BlackRock Value | PIMCO StocksPlus | T.RowePrice | Pyramis | Champlain | Aberdeen | Causeway Capital | **Total Equities** | JP Morgan Strat Prop | LaSalle I & G | JP Morgan I & G | **Total Real Estate** | SteelRiver | Macquarie Capital | **Total Infrastructure** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JAN | -1.02% | 2.10% | 1.67% | 1.83% | -3.00% | -3.97% | -2.78% | -0.58% | -2.39% | -2.76% | -0.48% | 0.53% | -2.02% | 0.47% | 0.00% | 3.00% | 1.14% | 0.00% | -6.70% | -3.58% |
| FEB | 3.76% | -0.92% | 0.76% | 0.12% | 5.73% | 4.86% | 5.92% | 6.73% | 6.88% | 5.94% | 4.26% | 4.42% | 5.60% | 1.85% | 0.00% | 0.00% | 1.32% | -0.20% | 2.16% | 1.02% |
| MAR | -0.57% | 0.44% | 0.33% | 0.37% | -1.58% | -1.37% | -1.46% | -0.55% | 1.43% | 0.83% | -2.74% | -1.12% | -0.93% | 1.35% | 2.61% | 0.00% | 1.00% | 0.00% | -4.25% | -2.22% |
| APR | 1.14% | -0.29% | 0.20% | 0.02% | 0.95% | 0.94% | 0.77% | 0.09% | -1.32% | 1.02% | 4.82% | 4.89% | 1.39% | 0.90% | 0.00% | 3.36% | 1.55% | 0.00% | 4.33% | 2.22% |
| MAY | 0.70% | -0.29% | 0.12% | -0.03% | 1.29% | 1.21% | 1.38% | 2.03% | 3.79% | 1.47% | -2.01% | -1.14% | 1.05% | 1.02% | 0.00% | 0.00% | 0.73% | 1.47% | -2.16% | -0.43% |
| JUN | -1.08% | -1.10% | -1.77% | -1.52% | -1.92% | -1.93% | -2.11% | -1.20% | 1.19% | 0.06% | -4.19% | -2.71% | -1.66% | 1.49% | 24.40% | 4.95% | 2.45% | 1.66% | 3.61% | 2.66% |
| JUL | 1.16% | 0.68% | 0.57% | 0.61% | 2.12% | 0.48% | 2.15% | 5.03% | 1.16% | -1.52% | -1.48% | 1.73% | 1.55% | 0.85% | 0.00% | 0.00% | 0.61% | 0.00% | -0.84% | -0.44% |
| AUG | -3.97% | -0.13% | -1.06% | -0.71% | -5.99% | -5.96% | -6.64% | -5.75% | -5.24% | -4.69% | -8.19% | -6.46% | -6.07% | 0.97% | 0.00% | 0.00% | 0.70% | 0.00% | 1.42% | 0.74% |
| **SEP** | **-3.20%** | **0.71%** | **-1.70%** | **-0.79%** | **-2.46%** | **-3.01%** | **-3.27%** | **-10.49%** | **-4.20%** | **-3.67%** | **-5.86%** | **-5.93%** | **-4.99%** | **1.30%** | **0.00%** | **0.00%** | **0.94%** | **-0.22%** | **1.41%** | **0.64%** |
| OCT | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| NOV | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| DEC | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| **CYTD** | **-3.26%** | **1.17%** | **-0.93%** | **-0.14%** | **-5.21%** | **-8.81%** | **-6.39%** | **-5.66%** | **0.71%** | **-3.67%** | **-15.44%** | **-6.26%** | **-6.40%** | **10.67%** | **27.65%** | **11.73%** | **10.92%** | **2.72%** | **-1.56%** | **0.45%** |

| **Benchmark Returns:** | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Latest Month** | -1.55% | 0.68% | -0.73% | 0.68% | -2.47% | -3.02% | -2.47% | -2.47% | -4.91% | -3.60% | -4.64% | -5.08% | -3.44% | 3.68% | 3.68% | 3.68% | 3.68% | 0.17% | 0.17% | 0.17% |
| **Clndr Yr to Date** | -2.32% | 1.14% | -0.33% | 1.14% | -5.27% | -8.97% | -5.27% | -1.53% | -7.73% | -5.85% | -8.63% | -5.27% | -5.89% | 11.29% | 11.29% | 11.29% | 11.29% | 4.36% | 4.36% | 4.36% |
| **Index** | Custom Plan Index | Barclays Aggregate | Fixed Inc Custom | Barclays Aggregate | S & P 500 | Russell 1000 Value | S & P 500 | Russell 1000 Growth | Russell 2000 | Russell Midcap | MSCI All Country Wld x-US N | MSCI EAFE Net Divd | Equity Composite | NCREIF-ODCE (1) (1) | NCREIF-ODCE (1) (1) | NCREIF-ODCE (1) (1) | NCREIF-ODCE (1) (1) | CPI + 4% (2) | CPI + 4% (2) | CPI + 4% (2) |

**(1) CYTD Index returns thru: 09/30/15** **(2) CYTD Index returns thru: 09/30/15**

**TUCSON SUPPLEMENTAL RETIREMENT SYSTEM**
**CALENDAR YEAR 2015 PERFORMANCE BY QUARTER**
**NET OF FEES AND CUSTODIAL CHARGES**

| ACCOUNT & BENCHMARK | 1st Quarter Ending 3/31/15 | 2nd Quarter Ending 6/30/15 | **3rd Quarter Ending 9/30/15** | 4th Quarter Ending 12/31/15 | TOTAL TO DATE |
|---|---|---|---|---|---|
| **TOTAL FUND** | 2.12% | 0.75% | **-5.96%** | 0.00% | -3.26% |
| **CUSTOM PLAN INDEX** | 2.22% | 0.14% | **-4.58%** | 0.00% | -2.32% |
| | | | | | |
| BLACKROCK U.S. DEBT INDEX | 1.61% | -1.67% | **1.26%** | 0.00% | 1.17% |
| BARCLAYS CAPITAL AGGREGATE | 1.61% | -1.68% | **1.24%** | 0.00% | 1.14% |
| PIMCO FIXED INCOME | 2.78% | -1.46% | **-2.19%** | 0.00% | -0.93% |
| FIXED INCOME CUSTOM INDEX | 1.97% | -0.98% | **-1.29%** | 0.00% | -0.33% |
| **TOTAL FIXED** | 2.33% | -1.53% | **-0.89%** | 0.00% | -0.14% |
| **BARCLAYS CAPITAL AGGREGATE** | 1.61% | -1.68% | **1.24%** | 0.00% | 1.14% |
| | | | | | |
| ALLIANCE S&P INDEX | 0.94% | 0.29% | **-6.36%** | 0.00% | -5.21% |
| S&P 500 | 0.96% | 0.28% | **-6.43%** | 0.00% | -5.27% |
| BLACKROCK VALUE | -0.68% | 0.19% | **-8.35%** | 0.00% | -8.81% |
| RUSSELL 1000 VALUE | -0.72% | 0.10% | **-8.40%** | 0.00% | -8.97% |
| PIMCO STOCKS PLUS | 1.47% | 0.01% | **-7.75%** | 0.00% | -6.39% |
| S&P 500 | 0.96% | 0.28% | **-6.43%** | 0.00% | -5.27% |
| T. ROWE PRICE | 5.53% | 0.90% | **-11.39%** | 0.00% | -5.66% |
| RUSSELL 1000 GROWTH | 3.84% | 0.12% | **-5.28%** | 0.00% | -1.53% |
| PYRAMIS (FIDELITY) | 5.82% | 3.64% | **-8.17%** | 0.00% | 0.71% |
| RUSSELL 2000 | 4.31% | 0.42% | **-11.92%** | 0.00% | -7.73% |
| CHAMPLAIN | 3.87% | 2.57% | **-9.58%** | 0.00% | -3.67% |
| RUSSELL MIDCAP | 3.96% | -1.54% | **-8.01%** | 0.00% | -5.85% |
| ABERDEEN | 0.92% | -1.59% | **-14.85%** | 0.00% | -15.44% |
| MSCI AC WORLD EX U.S. - Net Divd | 3.49% | 0.53% | **-12.17%** | 0.00% | -8.63% |
| CAUSEWAY | 3.80% | 0.88% | **-10.48%** | 0.00% | -6.26% |
| MSCI EAFE - Net Divd | 4.88% | 0.62% | **-10.24%** | 0.00% | -5.27% |
| **TOTAL EQUITIES** | 2.50% | 0.75% | **-9.37%** | 0.00% | -6.40% |
| **EQUITY COMPOSITE** | 2.47% | 0.19% | **-8.33%** | 0.00% | -5.89% |
| | | | | | |
| JP MORGAN STRAT PROP | 3.71% | 3.45% | **3.15%** | 0.00% | 10.67% |
| NCREIF PROP-ODCE (Est.) | 3.39% | 3.82% | **3.68%** | 0.00% | 11.29% |
| LASALLE I & G | 2.61% | 24.40% | **0.00%** | 0.00% | 27.65% |
| NCREIF PROP-ODCE (Est.) | 3.39% | 3.82% | **3.68%** | 0.00% | 11.29% |
| JP MORGAN I & G | 3.00% | 8.48% | **0.00%** | 0.00% | 11.73% |
| NCREIF PROP-ODCE (Est.) | 3.39% | 3.82% | **3.68%** | 0.00% | 11.29% |
| **TOTAL REAL ESTATE** | 3.50% | 4.80% | **2.27%** | 0.00% | 10.92% |
| **NCREIF PROP-ODCE (Est.)** | 3.39% | 3.82% | **3.68%** | 0.00% | 11.29% |
| | | | | | |
| STEELRIVER | -0.20% | 3.15% | **-0.22%** | 0.00% | 2.72% |
| CPI + 4% | 1.54% | 2.06% | **0.69%** | 0.00% | 4.36% |
| MACQUARIE CAPITAL | -8.74% | 5.76% | **1.99%** | 0.00% | -1.56% |
| CPI + 4% | 1.54% | 2.06% | **0.69%** | 0.00% | 4.36% |
| **TOTAL INFRASTRUCTURE** | -4.76% | 4.49% | **0.94%** | 0.00% | 0.45% |
| **CPI + 4%** | 1.54% | 2.06% | **0.69%** | 0.00% | 4.36% |

# TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
# FISCAL YEAR 2016 PERFORMANCE BY MANAGER
# NET OF FEES AND CUSTODIAL CHARGES

| | **Total Fund** | BlackRock U.S. Debt | PIMCO | **Total Fixed** | Alliance S&P 500 | BlackRock Value | PIMCO StocksPlus | T.RowePrice | Pyramis | Champlain | Aberdeen | Causeway Capital | **Total Equities** | JP Morgan Strat Prop | LaSalle I & G | JP Morgan I & G | **Total Real Estate** | SteelRiver | Macquarie Capital | **Total Infrastructure** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| JUL | 1.16% | 0.68% | 0.57% | 0.61% | 2.12% | 0.48% | 2.15% | 5.03% | 1.16% | -1.52% | -1.48% | 1.73% | 1.55% | 0.85% | 0.00% | 0.00% | 0.61% | 0.00% | -0.84% | -0.44% |
| AUG | -3.97% | -0.13% | -1.06% | -0.71% | -5.99% | -5.96% | -6.64% | -5.75% | -5.24% | -4.69% | -8.19% | -6.46% | -6.07% | 0.97% | 0.00% | 0.00% | 0.70% | 0.00% | 1.42% | 0.74% |
| **SEP** | **-3.20%** | **0.71%** | **-1.70%** | **-0.79%** | **-2.46%** | **-3.01%** | **-3.27%** | **-10.49%** | **-4.20%** | **-3.67%** | **-5.86%** | **-5.93%** | **-4.99%** | **1.30%** | **0.00%** | **0.00%** | **0.94%** | **-0.22%** | **1.41%** | **0.64%** |
| OCT | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| NOV | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| DEC | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| JAN | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| FEB | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| MAR | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| APR | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| MAY | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| JUN | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| **FYTD** | **-5.96%** | **1.26%** | **-2.19%** | **-0.89%** | **-6.36%** | **-8.35%** | **-7.75%** | **-11.39%** | **-8.17%** | **-9.58%** | **-14.85%** | **-10.48%** | **-9.37%** | **3.15%** | **0.00%** | **0.00%** | **2.27%** | **-0.22%** | **1.99%** | **0.94%** |
| **Benchmark Returns:** | | | | | | | | | | | | | | | | | | | | |
| **Latest Month** | -1.55% | 0.68% | -0.73% | 0.68% | -2.47% | -3.02% | -2.47% | -2.47% | -4.91% | -3.60% | -4.64% | -5.08% | -3.44% | 3.68% | 3.68% | 3.68% | 3.68% | 0.17% | 0.17% | 0.17% |
| **Fiscal Yr to Date** | -4.58% | 1.24% | -1.29% | 1.24% | -6.43% | -8.40% | -6.43% | -5.28% | -11.92% | -8.01% | -12.17% | -10.24% | -8.33% | 3.68% | 3.68% | 3.68% | 3.68% | 0.70% | 0.70% | 0.70% |
| **Index** | Custom Plan Index | Barclays Aggregate | Fixed Inc Custom | Barclays Aggregate | S & P 500 | Russell 1000 Value | S & P 500 | Russell 1000 Growth | Russell 2000 | Russell Midcap | MSCI All Country Wld x-US N | MSCI EAFE Net Divd | Equity Composite | NCREIF - ODCE (1) | NCREIF - ODCE (1) | NCREIF - ODCE (1) | NCREIF - ODCE (1) | CPI + 4% (2) | CPI + 4% (2) | CPI + 4% (2) |

**(1) FYTD Index returns thru: 09/30/15** **(2) FYTD Index returns thru: 09/30/15**

S:\TreasuryInvestments\PENSIONS\TSRS\FISCAL YEAR 2016\Investments\Reporting\Monthly Reports\TSRS Monthly Return Reports FY16\TSRS-PerformanceByFiscalYr_2016_ACTUAL,Tab:Mgr_Performance

# TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
# ONE YEAR TO DATE PERFORMANCE BY MANAGER
# NET OF FEES AND CUSTODIAL CHARGES

| | Total Fund | BlackRock U.S. Debt | PIMCO | Total Fixed | Alliance S&P 500 | BlackRock Value | PIMCO StocksPlus | T.RowePrice | Pyramis | Champlain | Aberdeen | Causeway Capital | Total Equities | JP Morgan Strat Prop | LaSalle I & G | JP Morgan I & G | Total Real Estate | SteelRiver | Macquarie Capital | Total Infrastructure |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OCT '14 | 1.46% | 0.93% | 1.22% | 1.11% | 2.42% | 2.25% | 2.15% | 3.56% | 5.12% | 3.30% | -1.75% | -2.26% | 1.87% | -0.06% | 0.00% | 2.70% | 0.68% | 0.00% | -0.78% | -0.42% |
| NOV '14 | 1.47% | 0.72% | 0.18% | 0.38% | 2.69% | 2.08% | 2.86% | 2.01% | 1.34% | 2.32% | -0.65% | 1.37% | 1.87% | 0.97% | -3.74% | 0.00% | 0.64% | 2.50% | 2.40% | 2.45% |
| DEC '14 | -0.68% | 0.15% | -1.34% | -0.78% | -0.24% | 0.59% | -0.43% | -1.01% | 2.55% | -0.99% | -3.97% | -3.28% | -0.79% | 1.57% | 0.00% | 0.00% | 1.12% | 0.00% | -2.94% | -1.58% |
| JAN '15 | -1.02% | 2.10% | 1.67% | 1.83% | -3.00% | -3.97% | -2.78% | -0.58% | -2.39% | -2.76% | -0.48% | 0.53% | -2.02% | 0.47% | 0.00% | 3.00% | 1.14% | 0.00% | -6.70% | -3.58% |
| FEB '15 | 3.76% | -0.92% | 0.76% | 0.12% | 5.73% | 4.86% | 5.92% | 6.73% | 6.88% | 5.94% | 4.26% | 4.42% | 5.60% | 1.85% | 0.00% | 0.00% | 1.32% | -0.20% | 2.16% | 1.02% |
| MAR '15 | -0.57% | 0.44% | 0.33% | 0.37% | -1.58% | -1.37% | -1.46% | -0.55% | 1.43% | 0.83% | -2.74% | -1.12% | -0.93% | 1.35% | 2.61% | 0.00% | 1.00% | 0.00% | -4.25% | -2.22% |
| APR '15 | 1.14% | -0.29% | 0.20% | 0.02% | 0.95% | 0.94% | 0.77% | 0.09% | -1.32% | 1.02% | 4.82% | 4.89% | 1.39% | 0.90% | 0.00% | 3.36% | 1.55% | 0.00% | 4.33% | 2.22% |
| MAY '15 | 0.70% | -0.29% | 0.12% | -0.03% | 1.29% | 1.21% | 1.38% | 2.03% | 3.79% | 1.47% | -2.01% | -1.14% | 1.05% | 1.02% | 0.00% | 0.00% | 0.73% | 1.47% | -2.16% | -0.43% |
| JUN '15 | -1.08% | -1.10% | -1.77% | -1.52% | -1.92% | -1.93% | -2.11% | -1.20% | 1.19% | 0.06% | -4.19% | -2.71% | -1.66% | 1.49% | 24.40% | 4.95% | 2.45% | 1.66% | 3.61% | 2.66% |
| JUL '15 | 1.16% | 0.68% | 0.57% | 0.61% | 2.12% | 0.48% | 2.15% | 5.03% | 1.16% | -1.52% | -1.48% | 1.73% | 1.55% | 0.85% | 0.00% | 0.00% | 0.61% | 0.00% | -0.84% | -0.44% |
| AUG '15 | -3.97% | -0.13% | -1.06% | -0.71% | -5.99% | -5.96% | -6.64% | -5.75% | -5.24% | -4.69% | -8.19% | -6.46% | -6.07% | -0.97% | 0.00% | 0.00% | 0.70% | 0.00% | 1.42% | 0.74% |
| SEP '15 | -3.20% | 7.10% | -1.70% | -0.79% | -2.46% | -3.01% | -3.27% | -10.49% | -4.20% | -3.67% | -5.86% | -5.93% | -4.99% | 1.30% | 0.00% | 0.00% | 0.94% | -0.22% | 1.41% | 0.64% |
| **1-YTD** | **-1.08%** | **9.53%** | **-0.89%** | **0.57%** | **-0.54%** | **-4.25%** | **-2.06%** | **-1.34%** | **10.02%** | **0.81%** | **-20.73%** | **-10.17%** | **-3.64%** | **11.25%** | **22.87%** | **14.75%** | **13.65%** | **5.29%** | **-2.92%** | **0.86%** |
| **Benchmark Returns:** | | | | | | | | | | | | | | | | | | | | |
| **Latest Month** | -1.55% | 0.68% | -0.73% | 0.68% | -2.47% | -3.02% | -2.47% | -4.91% | -3.60% | -4.64% | -5.08% | -3.44% | 3.68% | 3.68% | 3.68% | 3.68% | 0.17% | 0.17% | 0.17% | 0.17% |
| **One Yr to Date** | 0.18% | 2.95% | -0.12% | 2.95% | -0.60% | -4.44% | -0.60% | 3.19% | 1.24% | -0.26% | -12.17% | -8.65% | -2.86% | 14.92% | 14.92% | 14.92% | 14.92% | 3.97% | 3.97% | 3.97% |
| **Index** | Custom Plan Index | Barclays Aggregate | Fixed Inc Custom | Barclays Aggregate | S & P 500 | Russell 1000 Value | S & P 500 | Russell 1000 Growth | Russell 2000 | Russell Midcap | MSCI All Country Wld x-US N | MSCI EAFE Net Divd | Equity Composite | NCREIF - ODCE (1) | NCREIF - ODCE (1) | NCREIF - ODCE (1) | NCREIF - ODCE (1) | CPI + 4% (2) | CPI + 4% (2) | CPI + 4% (2) |

**(1) One Yr Index returns thru: 09/30/15** **(2) One Yr Index returns thru: 09/30/15**

**Tucson Supplemental Retirement System (TSRS)**
**BNY Mellon - Securities Lending & Custodial Fee Summary**
**FY16**

**July 1, 2015 - June 30, 2016**

| | *Gross Earnings* | *Rebate Paid* | *Bank Fees* | *Gross Client Earnings* | *Administration Fee* | *FY16 Net Client Earnings* | *FY15 Net Client Earnings* | *FY16 Custodian Fees* | *FY15 Custodian Fees* |
|---|---|---|---|---|---|---|---|---|---|
| July | $ 2,924 | $ (7,613) | $ 4,214 | $ 6,323 | $ - | **$ 6,323** | $ 6,816 | $ | $ |
| August | 2,712 | (7,968) | 4,271 | 6,410 | - | **6,410** | 5,775 | | |
| September | 2,016 | (10,251) | 4,905 | 7,362 | - | **7,362** | 6,239 | - | 73,879 |
| October | - | - | - | - | - | - | 6,970 | | |
| November | - | - | - | - | - | - | 6,002 | | |
| December | - | - | - | - | - | - | 6,655 | - | 71,675 |
| January | - | - | - | - | - | - | 7,214 | | |
| February | - | - | - | - | - | - | 8,612 | | |
| March | - | - | - | - | - | - | 11,248 | - | 75,962 |
| April | - | - | - | - | - | - | 11,082 | | |
| May | - | - | - | - | - | - | 13,175 | | |
| June | - | - | - | - | - | - | 8,769 | - | - |
| ***Totals*** | ***$ 7,653*** | ***$ (25,833)*** | ***$ 13,391*** | ***$ 20,095*** | ***$ -*** | ***$ 20,095*** | $ 98,557 | ***$ -*** | $ 221,516 |

*cross check:* *20,095*

**TSRS**

**Schedule of Cash Transfers Between Investment Accounts and/or Fund 072**

**FY 16**

| FROM (Transfers Out): | | | | TO (Transfers In): | | | NOTES: |
|---|---|---|---|---|---|---|---|
| **Transfer Date** | **Account #** | **Account Desc.** | **Amount** | **Account #** | **Account Desc.** | **Amount** | |
| 07/17/15 | TSRF1002002 | Pyramis Small Cap Account | **(2,000,000.00)** | **FUND 072 (1)** | **INVESTMENT POOL ACCOUNT** | **2,000,000.00** | *To meet cash liquidity needs & rebalance portfolio* |
| 07/13/15 | TSRF4001002 | JP Morgan Strategic Property Fund | (3.67) | TSRF2001002 | Liquidity Cash Account | 3.67 | *Automatic transfer of excess cash to liquidity account* |
| 07/16/15 | TSRF5002002 | SteelRiver IFNA | (216,262.81) | TSRF2001002 | Liquidity Cash Account | 216,262.81 | *Automatic transfer of excess cash to liquidity account* |
| 07/31/15 | TSRF5002002 | SteelRiver IFNA | (84,628.18) | TSRF2001002 | Liquidity Cash Account | 84,628.18 | *Automatic transfer of excess cash to liquidity account* |
| 08/13/15 | TSRF5001002 | Macquarie Capital Infrastructure Fund | (8,901.96) | TSRF2001002 | Liquidity Cash Account | 8,901.96 | *Automatic transfer of excess cash to liquidity account* |
| 09/30/15 | TSRF10012002 | T Rowe Price | **(5,000,000.00)** | **FUND 072 (1)** | **INVESTMENT POOL ACCOUNT** | **5,000,000.00** | *To meet cash liquidity needs & rebalance portfolio* |
| 09/30/15 | TSRF20010002 | SteelRiver IFNA | (41,792.49) | TSRF2001002 | Liquidity Cash Account | 41,792.49 | *Automatic transfer of excess cash to liquidity account* |
| **TOTALS** | | | **(7,351,589.11)** | | | **7,351,589.11** | - |

***(1) - INVESTMENT POOL ACCOUNT (Fund 072) Transfer-In Summary:***

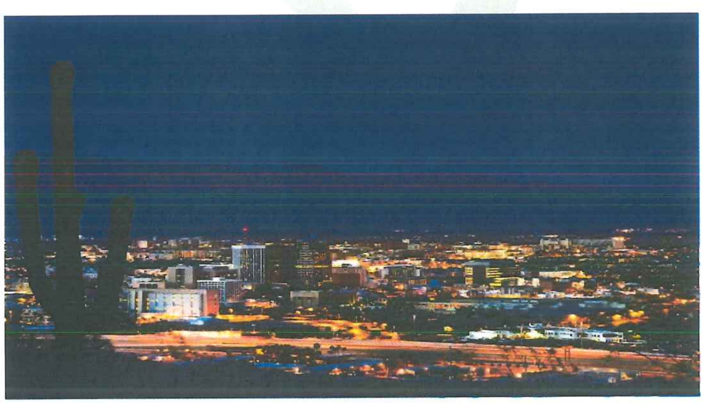
| FY16 -To Date | FY15 | FY14 | FY13 | FY12 | FY11 | FY10 | FY09 | FY08 | FY07 | FY06 | **TOTAL** |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **2,000,000** | 28,400,000 | 24,900,000 | 21,700,000 | 27,202,000 | 29,950,000 | 20,872,362 | 26,760,000 | 10,000,000 | 17,500,000 | 2,500,000 | **211,784,362** |
| *2,000,000.00* | *2,366,667* | *2,075,000* | *1,808,333* | *2,266,833* | *2,495,833* | *1,739,363* | *2,230,000* | *833,333* | *1,458,333* | *208,333* | |
| *5,000,000.00* | | | | | | | | | | | |

S:\TreasuryInvestments\PENSIONS\TSRS\FISCAL YEAR 2016\Investments\Reporting\Monthly Reports\TSRS Cash Trans Rebalance Sch FY16\TSRS-CashTransferSch_FY16,Tab:Detail


## THE COMMUNITY & CITY

Nicknamed the Old Pueblo, Tucson is Arizona's second largest and oldest city blending Indian, Spanish, Mexican and Anglo heritages. The Sonoran Desert surrounds the city with majestic mountain ranges and lush desert valleys. Nearly one million Tucsonans enjoy as many as 350 days of sunshine each year and average temperatures of 83 degrees. No matter what you love to do outdoors, with twenty-seven thousand acres of park land, there are many beautiful places to hike, climb, bike, ride and camp. The southern Arizona region is ranked as one of the five best areas in the United States for bird watching. Golfing is available year-round with over forty public and private golf courses. The mild winters are enjoyable, but if you are missing a little of that northern winter chill you can experience the snow covered slopes on Mt. Lemmon only an hour away.

The City operates under a Council-Manager form of government and provides the following services to the community: General Government, Police, Fire, Environmental Services, Transportation, Golf, Parks and Recreation and Water. The City's budget is developed annually under the direction of the City Manager, using Mayor and Council budget policies. The Fiscal Year 2016 combined total budget for all funds is $1.367 billion.



## CITY OF TUCSON RETIREMENT OFFICE

The City of Tucson's Retirement Office oversees the administration of the City's retirement benefits which include a defined benefit plan, 457 deferred compensation plan and 401a defined contribution program. The Tucson Supplemental Retirement System (TSRS) is a single-employer defined benefit plan serving approximately 5,800 members. The plan was established by the City of Tucson charter to provide civilian employees with a supplement to the retirement and disability benefits of the social security system. All TSRS assets all held in a trust including a 700+ investment portfolio. The trust is governed by a seven member board comprised of a chairman who is appointed by the Mayor and Council, the City's directors of human resources and finance, two elected employee representatives, an elected retiree representative and one member appointed by the City Manager. Benefit provisions are recommended by the Board of Trustees and must be approved by Mayor and Council.

TSRS reports to the City of Tucson Finance Department and is comprised of four employees: Pension Administrator, Lead Pension Analyst, Pension Analyst and Administrative Assistant. The Finance Department's overarching mission is to provide strong fiscal stewardship through the delivery of high quality financial services that support the operations of the City. Services provided include financial reporting, accounting systems administration, accounts payable, accounts receivable, payroll administration, cash collections and investments, revenue administration, business licensing, tax investigations, tax audit, debt management, pension administration, and risk management. The Finance Director works closely with the Board of Trustees and the Human Resources Director to ensure a high level of customer service to plan members, long-term sustainability of the defined benefit plan as well as employee outreach and education on retirement planning tools, including the 457 and 401a defined contribution options.

## ■ PENSION ADMINISTRATOR

The City of Tucson is currently seeking a highly motivated qualified individual to fill the Pension Administrator position. This position is responsible for the administration of all retirement benefits offered to civilian employees.

Examples of essential duties may include:

- Lead and coordinate all staff support to the Board of Trustees for the defined benefit plan (TSRS) and deferred compensation plan (457).
- Oversee the process for establishing annual TSRS contribution rates for both employer and employee.
- Manage the TSRS plan's funding policy for long-term sustainability.
- Participates in cash management and projection activities.
- Act as primary liaison to investment consultants, fund managers, actuary, auditors and legal counsel.
- Coordinate the assembly of the TSRS Comprehensive Annual Financial Report.
- Manage daily retirement office operations including payroll administration for approximately 2,700 retirees and support for approximately 2,700 active employees.
- Supervise retirement office staff and maximize employee productivity and morale through hiring, evaluating employee performance, training, managing work flows and setting priorities.
- Ensure that a high level of customer service is provided to plan members who interact with the office by phone, walk-in and by appointment.
- Assist plan members with retirement planning and counseling.
- Coordinate educational outreach through employee orientation and pre-retirement seminars.
- Ensure business continuity in day-to-day operations by documenting standard operating procedures.
- Ensure that operations conform to local, state, and federal governmental regulations and other applicable rules and requirements.
- Support the Finance Director's Office in presenting and communicating information to various stakeholders in the community including elected officials and local boards, responding to public information requests, policy development, problem solving, and strategic planning.

*What Makes a Place Great?*

Learn more about our beautiful community by watching the Tucson Regional Economic Opportunities video:

www.youtube.com/watch?v=zRkVIPdatPI

## ■ QUALIFICATIONS

The ideal candidate will possess a strong working knowledge of retirement benefit administration, pension accounting principles, investments and actuarial best practices. In addition, candidates for this position should demonstrate the ability to effectively manage both clerical and professional staff, be committed to developing positive working relationships, demonstrate strong communication skills (oral and written), and lead by example through a strong and supportive work ethic.

**Required:**

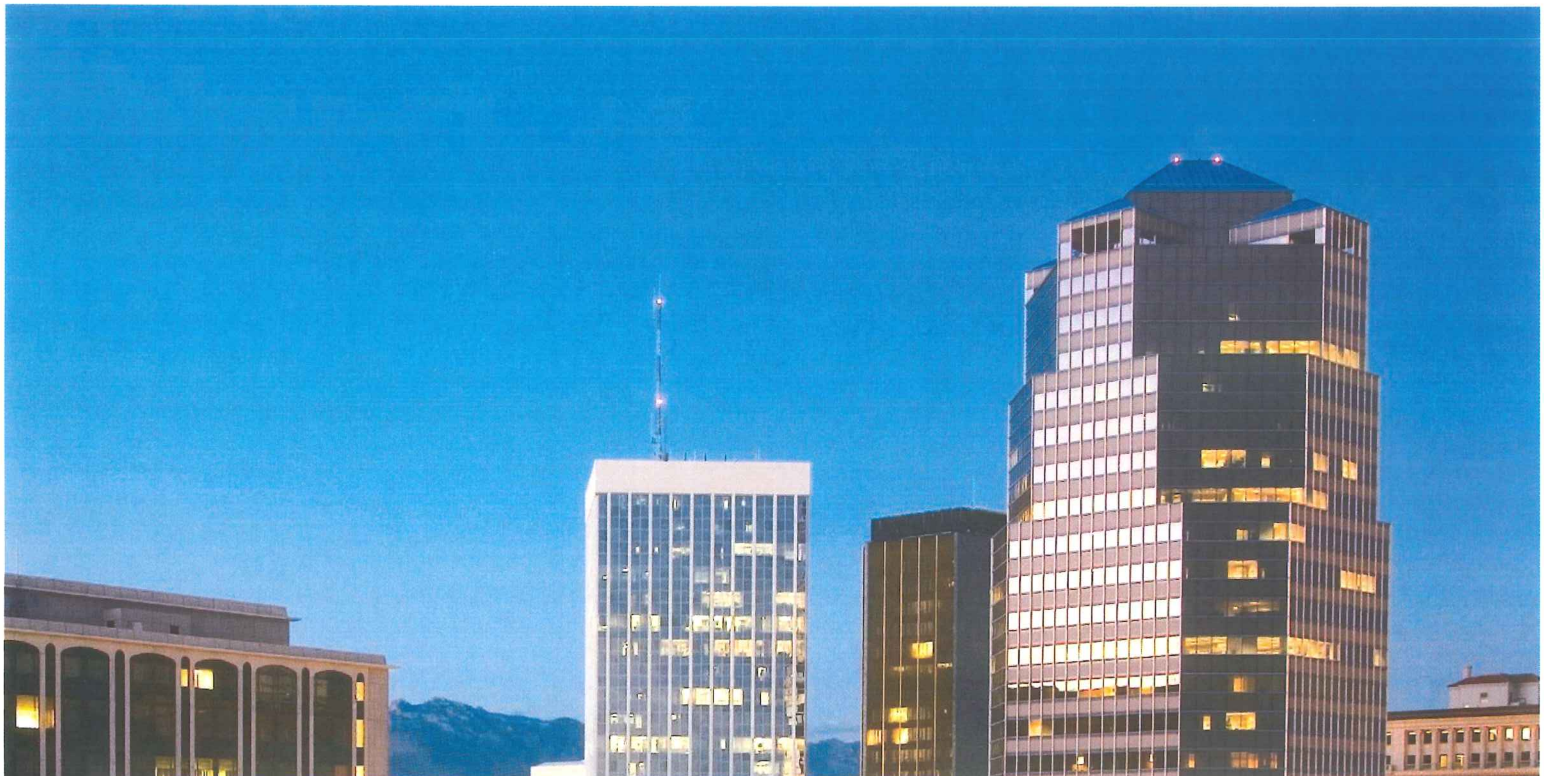
- Bachelor's degree in business, finance, accounting, actuarial science or related field
- Five years or more of full-time experience in pension administration, finance, accounting or related field
- *Four years or more of supervisory experience
  **Supervisory experience is defined as supervising at least one permanent full-time employee and does not include supervising part-time employees, non-perms, contractors, interns, etc.*
- Valid driver's license

**Highly Desirable:**

- Professional certification (CPA, CFP) or master's degree in related field
- Seven years or more of progressively responsible experience in the management of defined benefit and contribution plans
- Three years or more of progressively responsible experience in retirement benefit administration in a municipal setting

## ■ COMPENSATION & BENEFITS

The salary range is $65,041.60 - $110,385.60 and is dependent upon the qualifications and experience of the successful candidate. The City of Tucson offers employees an excellent fringe benefit package, including a defined pension plan, a voluntary deferred compensation 457 plan and 401(a) plan, health, dental and life insurance, sick and vacation accruals.



## APPLICATION AND SELECTION PROCESS

To be considered for this excellent career opportunity, <u>you must apply on-line at www.tucsonaz.gov/jobs.</u> In addition, a cover letter with current salary, cover letter and resume must be emailed by ____________ to:

Marisela Celaya, Lead HR Analyst
City of Tucson Human Resources
E-mail: **Marisela.Celaya@tucsonaz.gov**
***Subject Line Must Read: Pension Administrator***

*The City of Tucson is an equal opportunity employer that is both child and family friendly, as well as a drug and alcohol free workplace. Diverse candidates are strongly encouraged to apply.*

# Tucson Supplementary Retirement System
# Pension Administrator
# Recruitment Timeline - Draft

November 4, 2015 – Job Posting

December 9, 2015 – Job Closing

December 18, 2015 – Candidate List Established

Holidays

January 8, 2016 – Oral Boards Completed

January 15, 2016 – Certified List Established

January 22, 2016 – Hiring Interviews Completed

January 29, 2016 – Contingent Job Offer

February 5, 2016 – Background Check Completed

Two Week Notice (Minimum)

February 22, 2016 – Start Date for New Pension Administrator

# MEMORANDUM

DATE: October 22, 2015

TO: Silvia Amparano
Finance Director

FROM: Rebecca Hill, Interim Director
Human Resources Department

SUBJECT: NEW CLASSIFICATION – PENSION ADMINISTRATOR

Based upon information provided by the Finance Department, the Human Resources Department has conducted a preliminary review and supports, based upon the duties as presented, a new classification of Pension Administrator.

I have attached a draft classification specification for your review. Should it suit your purposes, please feel free to distribute to your necessary stakeholders for their review as well.

Given the importance of this position to the entire City, our Department remains committed to a collaborative process in order for you to recruit the best available person for the job.

Hi Mike,

The following responds to your recent inquiry regarding the extent to which municipal retirement plan administrators are appointed by the plan's board of trustees.

Although there is substantial pension literature regarding the appointment of plan trustees, I've been unable to find much regarding the appointment of plan administrators. Probably the closest I've found to a specific statement is the following from *Pensions in the Public Sector*, a 2001 Pension Research Council publication:
"Typically, day-to-day system administration is done by staff under the supervision of the system's executive director or plan administrator. Many systems hire an executive who reports directly to the board. Some smaller systems established by a single governmental employer are administered by employees in the employer's finance or human resources department."

To obtain more specific information, I examined nine municipal retirement systems (mostly in the southwestern portion of the U.S.) to determine how their plan administrators are determined. (I've also attached the organization charts for eight of the retirement systems.) Of the nine, six are hired or appointed by the Board of Trustees (Phoenix, San Diego, Denver, Richmond, Houston, and Austin) while three are determined as a result of their employment with the City (San Jose, Oklahoma City, and Roanoke). While the sample size is too small for the results to be conclusive, the following descriptions may give you a sense of the approaches used. Note that while I have tried to include references to legal sources (i.e., city charters and state statutes), I am not an attorney and so my statements should not be considered legal opinion. Nevertheless, I hope they are helpful.

**City of Phoenix, Arizona** – The general administration, management and operation of the City of Phoenix Employees' Retirement System (COPERS) are vested in a nine member Retirement Board. The Retirement Board appoints the Retirement Program Administrator, a civil service position, and contracts investment counsel and other services necessary to properly administer the system. (Source: COPERS CAFR, June 30, 2014, p. 26) Under the Phoenix City Charter, Chapter XXIV, Part II, City of Phoenix Employees' Retirement Plan:
5.2. The Retirement Board shall appoint an executive secretary who shall not be a Board member. His appointment shall be made in accordance with civil service rules and he shall have a civil service status of a full time classified employee. He shall perform such duties as are required of him in this Article and such other duties as the Board may from time to time prescribe.
**City of San Jose, California** – The City of San Jose's defined benefit pension plans are administered by the Director of Retirement Services, an employee of the City, under the direction of the City Manager and the Boards of Administration for the retirement systems. (Source: City of San Jose CAFR, June 30, 2014, p. 100)
**City of San Diego, California** – The San Diego City Employees' Retirement System is a legally separate, fiduciary component unit of the City. It is governed by a 13 member Board of Administration. The Pension Administrator does not report to or work under the direction of the elected officials or appointed managers of the City. (Source: City of San Diego CAFR, June 30, 2014, p. 66)
**City and County of Denver, Colorado** – The Denver Employees Retirement Plan (DERP) is a separate legal entity established by the City to provide benefits for City employees, except police officers and fire fighters. DERP is administered by the Retirement Board in accordance with the City's Revised Municipal Code. (Source: DERP CAFR, December 31, 2014, p. 97) As provided under Code Section 18-405(e)(1), the Retirement Board hires the Executive Director as the chief administrative officer of the plan.

**Oklahoma City, Oklahoma** – The Oklahoma City Employee Retirement System (OCERS) provides retirement benefits and disability allowances for substantially all full-time civilian employees of the City. The OCERS Board of Trustees is comprised of 13 members and serves as the OCERS governing body. The City Clerk serves as an ex-officio member (non-voting) and acts as the Clerk and Secretary to the Board. (City of Oklahoma City CAFR, June 30, 2014, p. 55)

**City of Richmond, Virginia** – The Richmond Retirement System is a component unit of the City of Richmond. It is governed by its Board of Trustees under Chapter 78 of the Code of the City of Richmond and other governing laws. (Source: Richmond Retirement System CAFR, June 30, 2014, p. 26) As provided under Code Section 78-48, the Board of Trustees appoints an Executive Director to be the administrative officer for the board. The Executive Director is employed in "unclassified service" and serves at the pleasure of the Board.

**City of Roanoke, Virginia** – The Roanoke Pension Plan is administered by a nine member Board of Trustees. The plan is established under Chapter 22.3, Pensions and Retirement, of the Code of the City of Roanoke. (Source: Roanoke Pension Plan CAFR, June 30, 2014, p.22) As provided under Code Section 22.3-14, the City's Director of Finance is the Secretary-Treasurer of the Board of Trustees.

**City of Houston, Texas** – The City of Huston has three defined benefit retirement plans that cover full-time City employees, each with a separate Board of Trustees. The pension plans were established under the authority of Texas statutes (Vernon's Texas Civil Statutes, Articles 6243.e2, 6243g, 6243g-4, respectively). Under the statutes, the Board of Trustees has the authority to appoint an administrator to carry out the business of the board. (Sources: City of Houston CAFR, June 30, 2014, p. 92; and referenced Statutes)

**City of Austin, Texas** – The City of Austin participates in three defined benefit retirement plans, with each plan administered by an independent Board of Trustees. (City of Austin CAFR, September 30, 2014, p. 86) The pension plans are established under Texas statutes (Vernon's Texas Civil Statutes, 6243n). Under statute 6243n, Section 4(p), the Board of Trustees has the authority to hire the pension administrator.

One of the conclusions that I take from this information is that the selection of plan administrator often depends on the legal provisions underlying the administration of the plan. Given this, I think it would be good to talk with an attorney about any proposed changes. Please let me know if you have any questions or would like to discuss this further.

Best wishes,

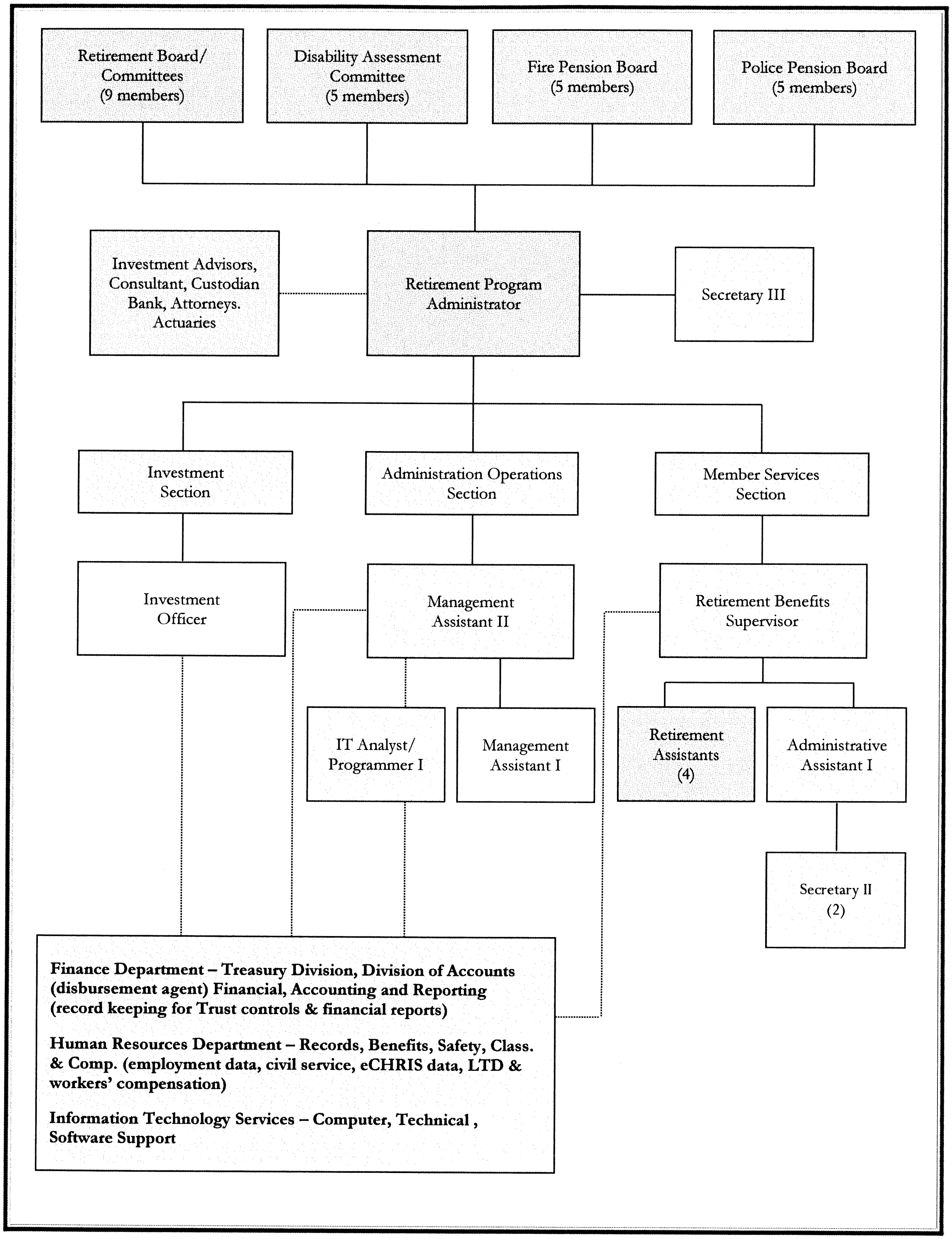
-Paul



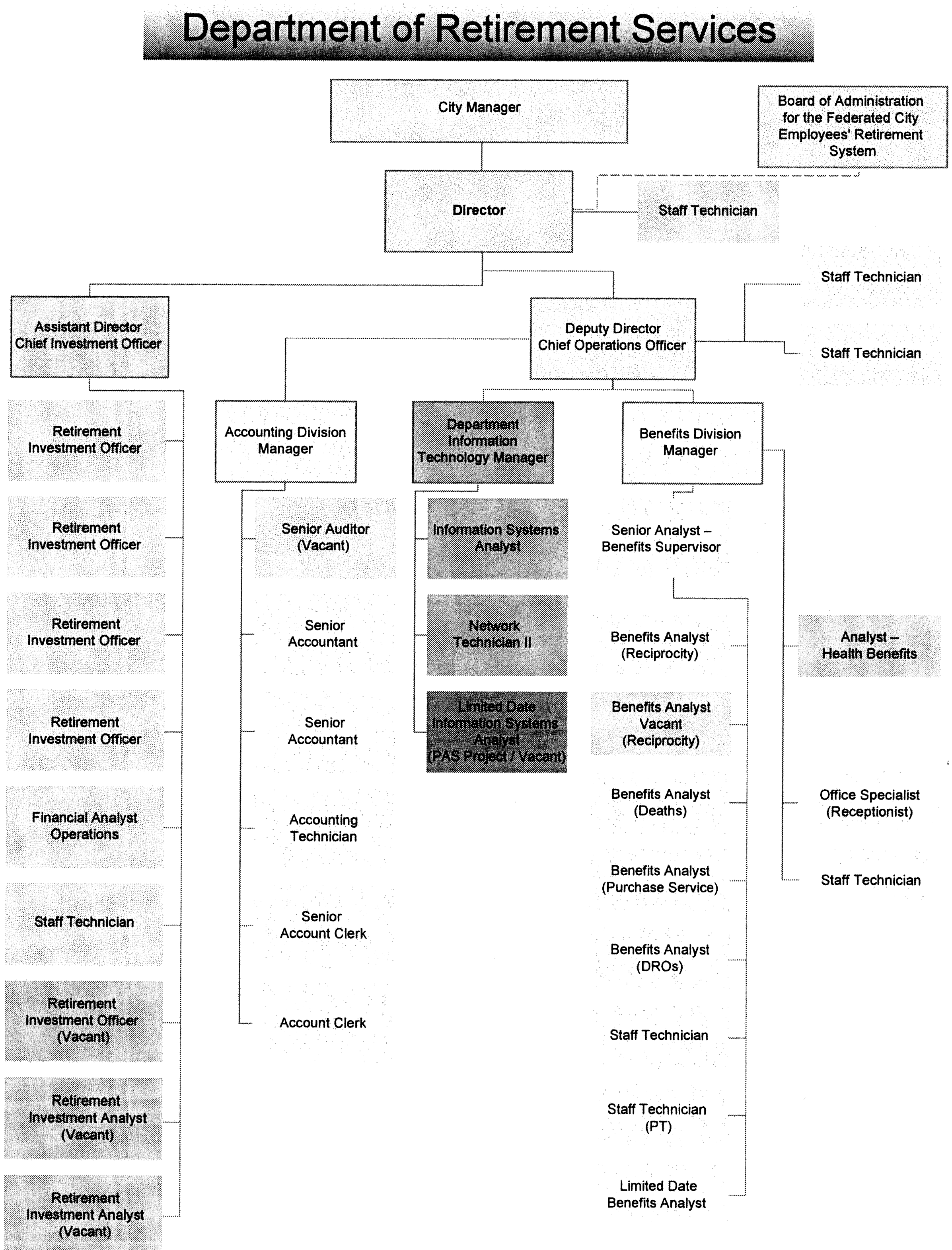
Paul Zorn
Gabriel, Roeder, Smith & Company
One Towne Square
Suite 800
Southfield, Michigan 48076-3723

Telephone: 248-799-9000 Fax: 248-799-9020
paul.zorn@gabrielroeder.com

## Phoenix Employees' Retirement Plan

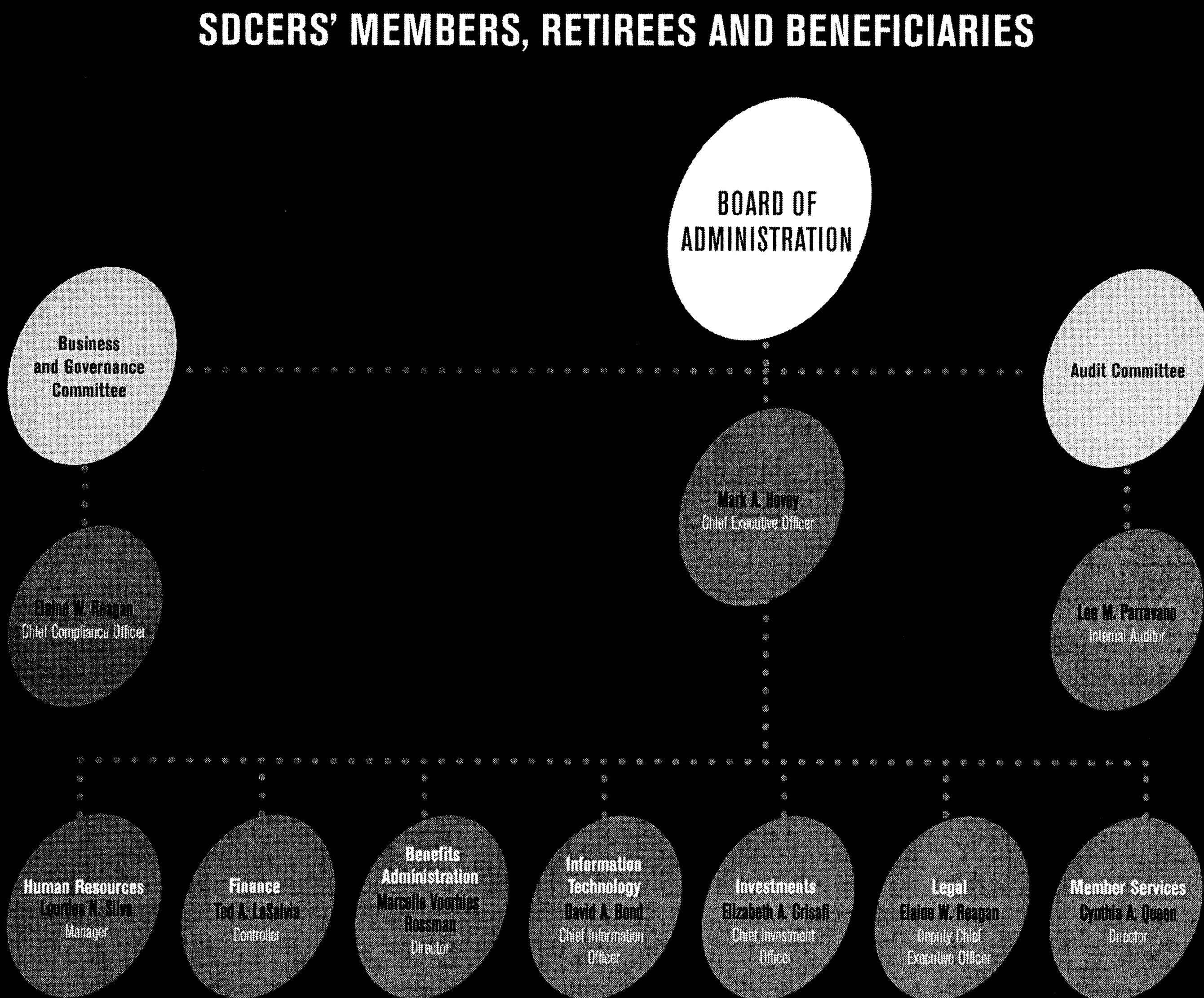


# 2014 Department of Retirement Services Organizational Chart

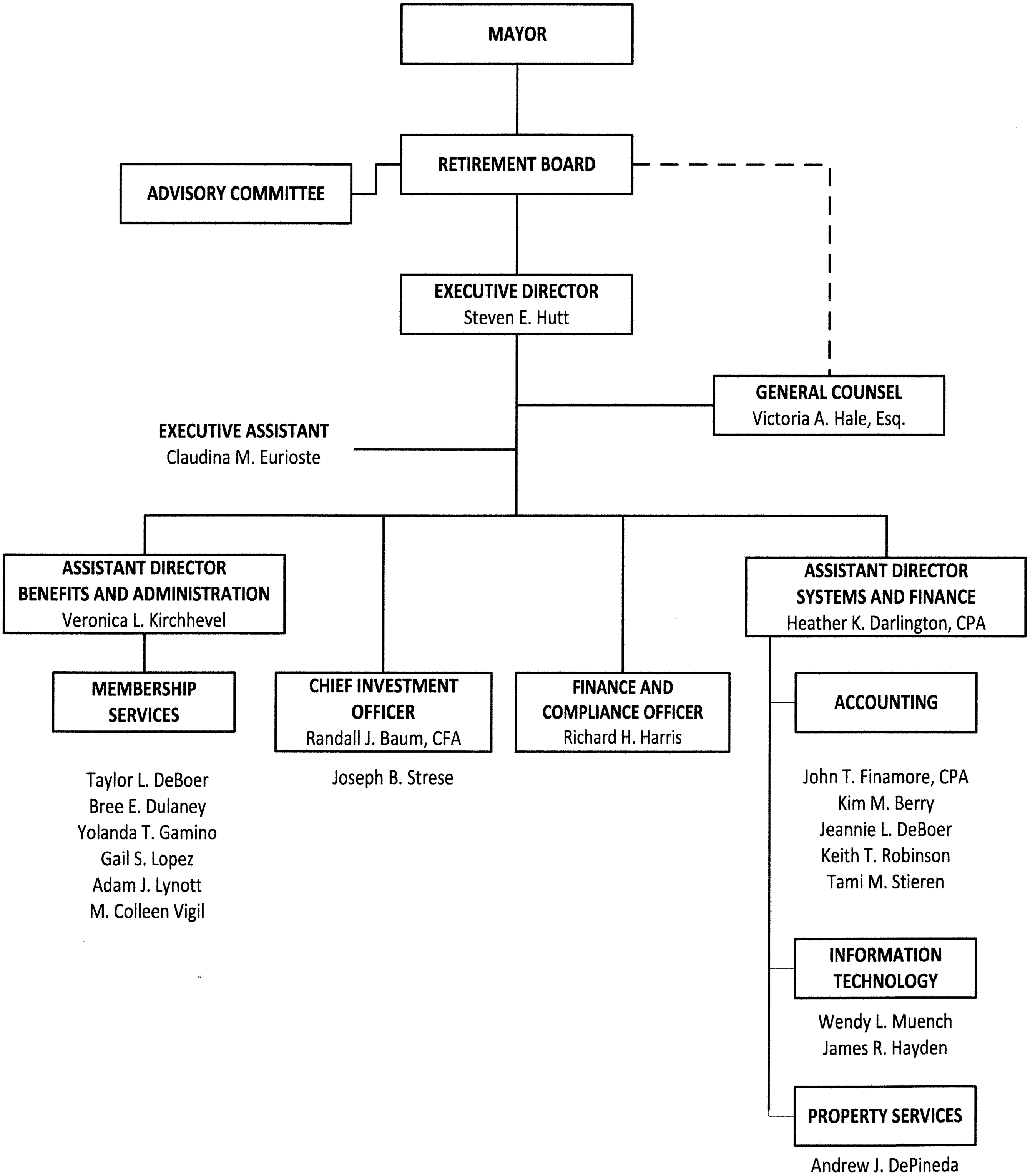


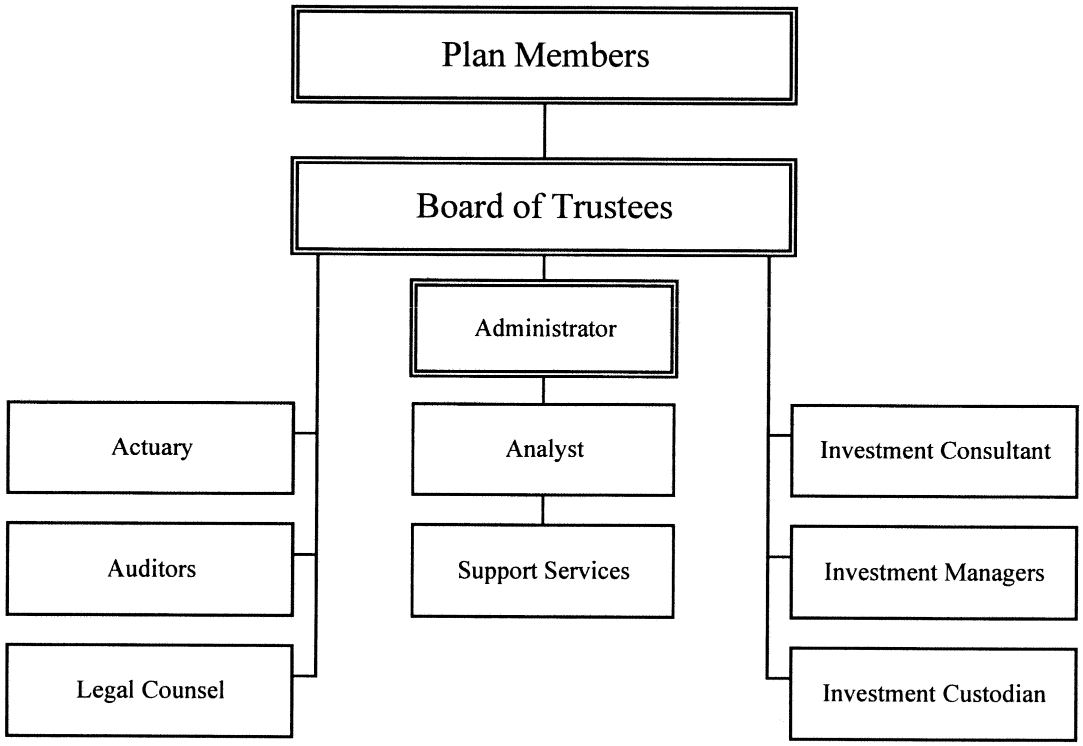

**DEPARTMENT OF RETIREMENT SERVICES**
1737 North First Street, Suite 600, San José, CA 95112
(408) 794-1000 | (800) 732-6477 | (408) 392-6732 FAX
*www.sjretirement.com*

## San Diego City Employees' Retirement System
## Organization Chart
## As of June 30, 2014

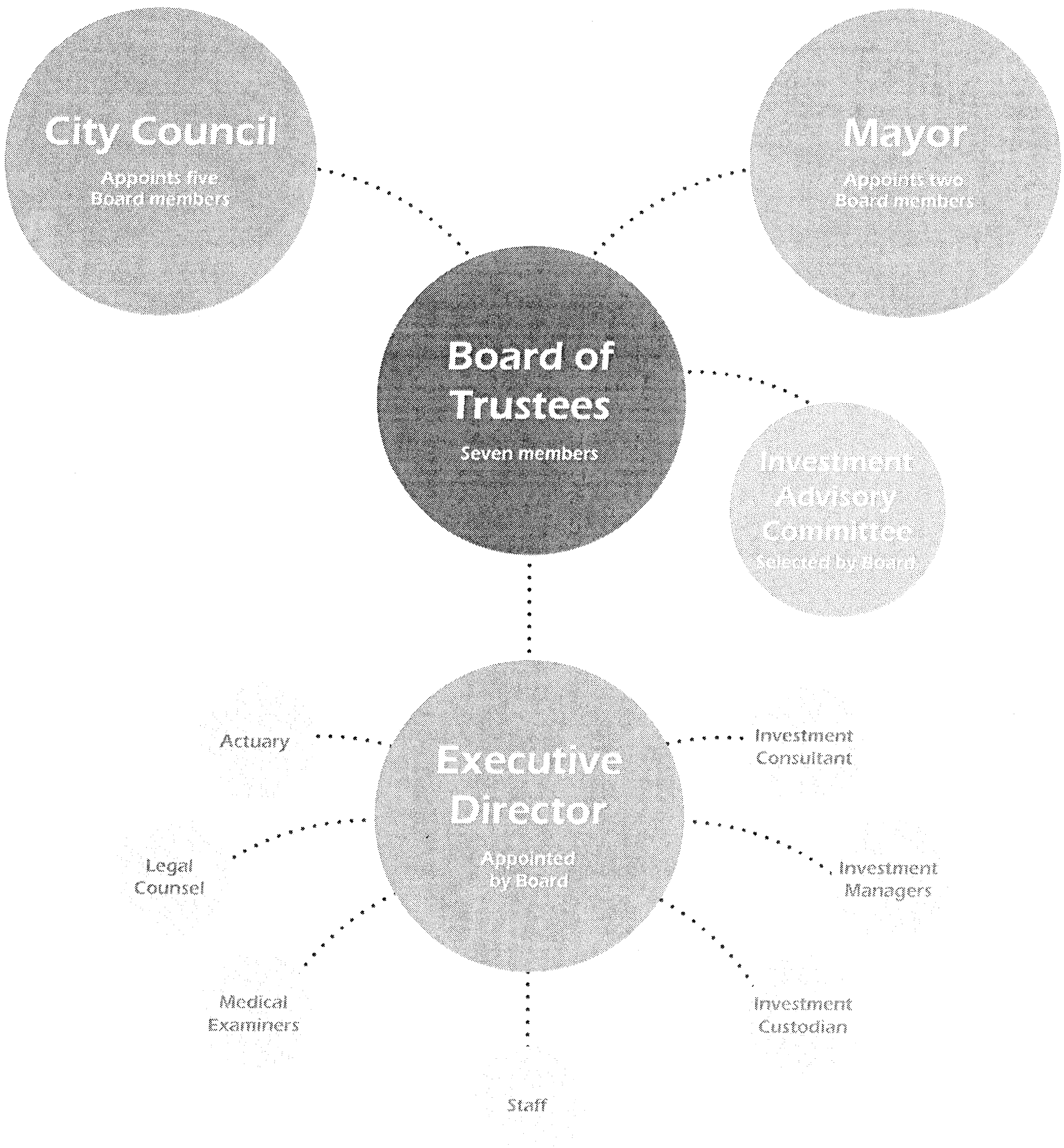


## Organizational Structure



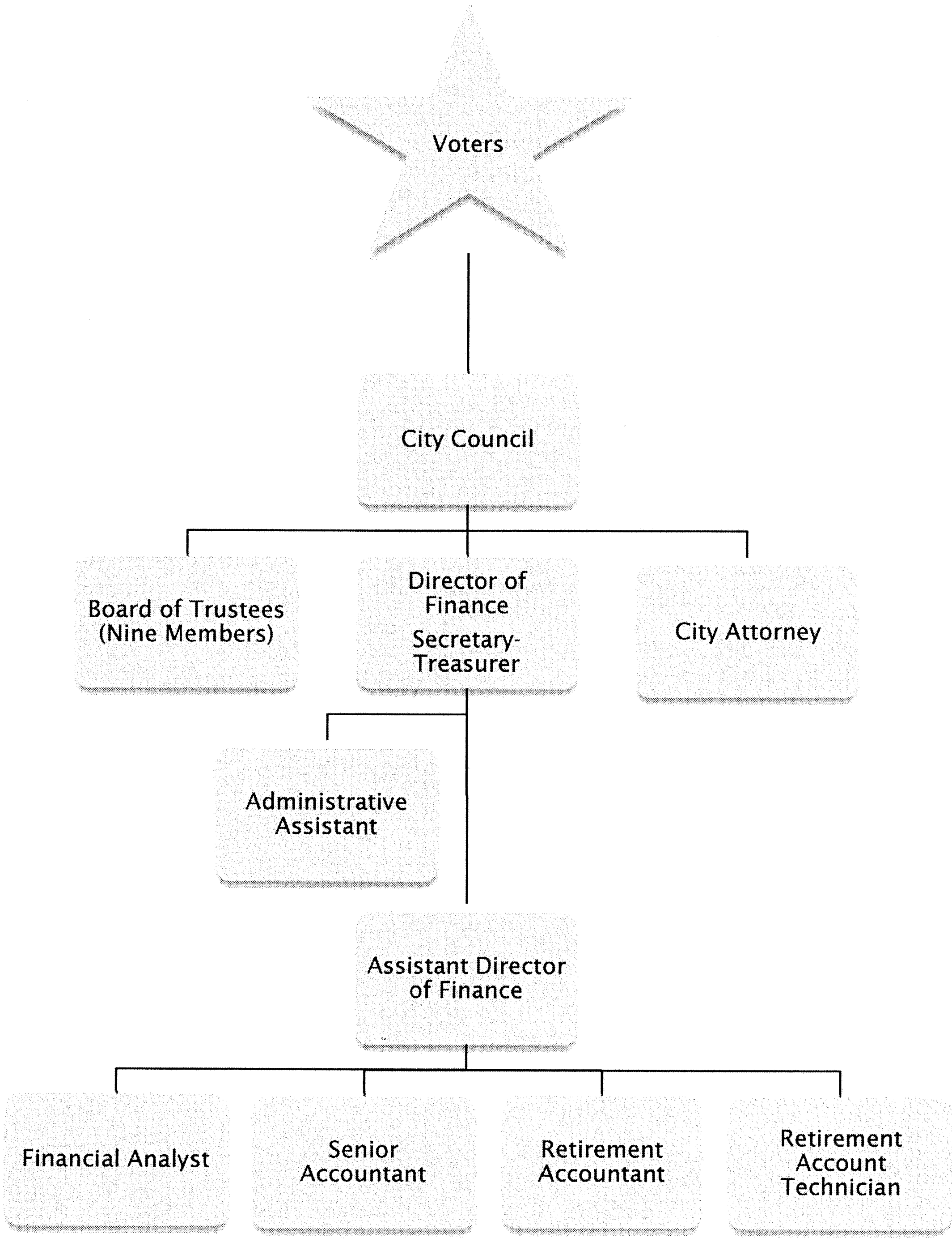

Plan Members
Board of Trustees
Administrator
Actuary
Analyst
Investment Consultant
Auditors
Support Services
Investment Managers
Legal Counsel
Investment Custodian

# Organizational Chart

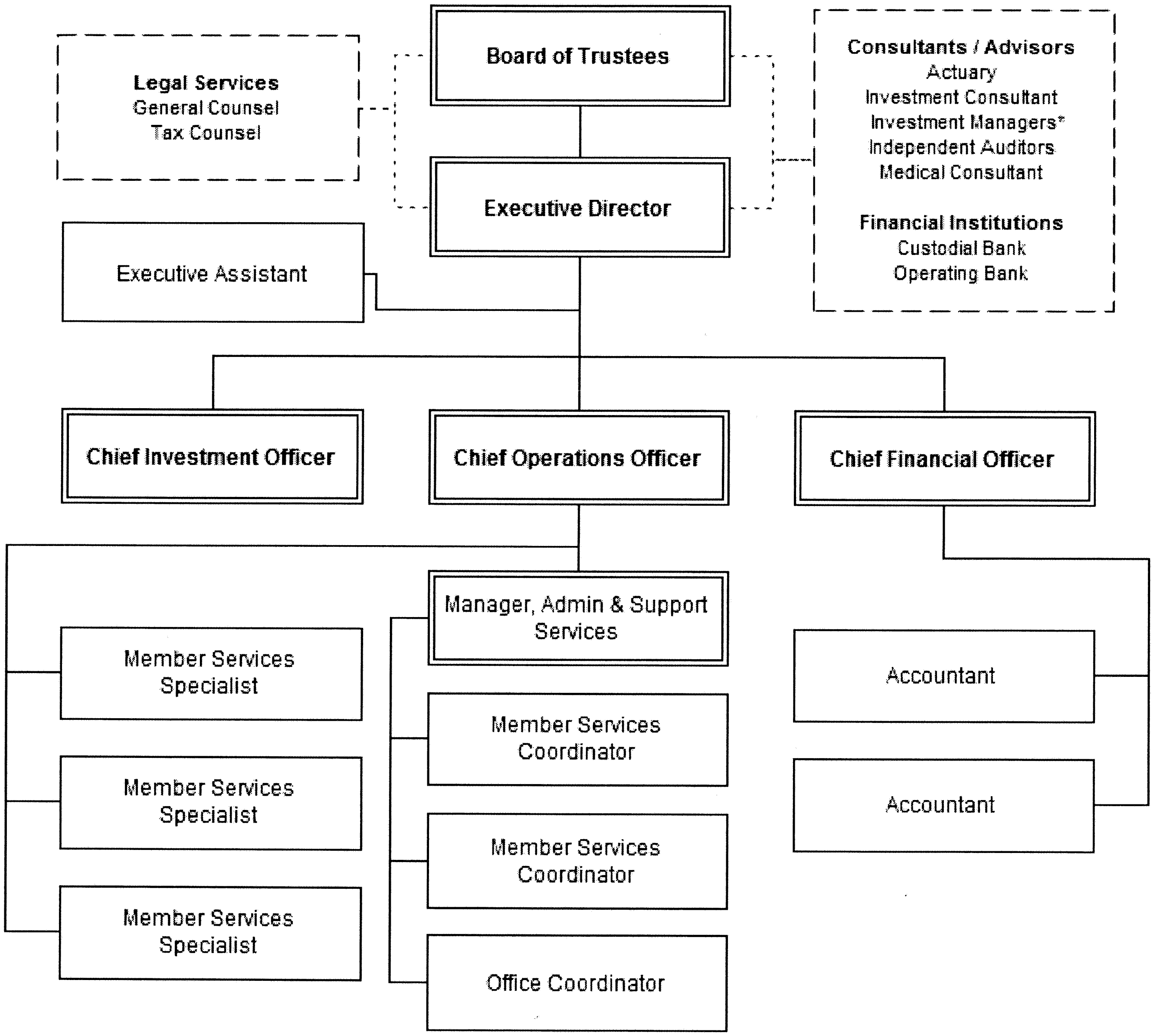



*The Schedule of Fees and Commissions is located on page 59 and 60 of this report.*

## ORGANIZATIONAL CHART



# ORGANIZATIONAL CHART




For more information on Investment professionals who provide services to COAERS, refer to the Asset Allocation on page 65 and the Investment Expenses table under Other Supplementary Information on page 55.

# Tucson Supplemental Retirement System
# Board of Trustees
# Funding Policy

## As Reviewed and Documented by TSRS Board on September 24, 2015

**Background**: The purpose of TSRS Funding Policy is to provide the framework in which the TSRS Board of Trustees recommends an annual contribution amount, and is designed to provide assurance that the Tucson Supplemental Retirement System ("TSRS") will remain viable and sustainable, and that the cost of the benefits provided by TSRS will be funded in an equitable manner. The TSRS funding policy is based on the following primary principles:

1. TSRS will obtain the actuarially determined contribution (ADC) annually and the TSRS Board will certify the ADC to the City annually.
2. The City is required to appropriate and pay over to TSRS the ADC under the Tucson City Code ("TCC").
3. The Board intends to encourage the City to extinguish the TSRS unfunded liability over a 12 – 15 year time period by recommending that the City contribution to TSRS remain fixed at a minimum of 27.5% of payroll,
4. The ADC will be calculated in a manner designed to fully fund (the unfunded liability is zero) the long-term costs for the benefits while balancing the goals of stable contribution rates and the allocation of members' costs over their working lifetime.
5. The TSRS board wishes to demonstrate accountability and transparency by communicating all of the information necessary for assessing the City's progress toward meeting its pension funding objectives.

Effective July 1, 2013 the contribution requirement for members hired after July 1, 2006 was changed from 40% of the Actuarial Required Contribution (or "ARC," as defined below) to a range of 50% to 100% of the normal cost of their given tier. In no event shall the variable contribution tier members contribute less than 5% of pay as set forth in TCC §22-34(a) and (b). Members hired prior to 7/1/2006 contribute 5% of pay.

**Purpose**: The Funding Policy will cover four core elements of a funding policy:

1. ***Annual Required Contribution or ARC***-The annual amount necessary to fund the sum of the employer normal cost, the employee segment normal cost amounts, and the annual amortization requirements for the System's unfunded accrued liability.
2. ***Administrative Expenses***-The reasonable and appropriate costs incurred in connection with the administration of the System on an annual basis.
3. ***Rounding Policy*-**The adjustment to the actuarially determined contribution rates, designed to minimize volatility in contribution rates from year to year.
4. ***Actuarially Determined Contribution***- *the contribution amount derived by subjecting the sum of the ARC and the administrative expenses to the Rounding Policy.*

# Tucson Supplemental Retirement System
# Board of Trustees
# Funding Policy

**Authority**: The Board has been granted the power and authority necessary to effectuate the administration, management and operation of TSRS. TCC §22-44(a). The actuarially determined contribution (ADC) to TSRS is set by the Board each fiscal year. TCC §22-30(mm). In connection with the determination of the ADC, the Board is required to certify to the City Manager the ADC, the Member Contribution rate(s) and the City Contribution. TCC §22-35(b).

## Policy:

1. **Annual Required Contribution**

The Annual Required Contribution or ARC is determined on a fiscal year basis by the System's actuary in accordance with generally accepted actuarial principles. The ARC is the sum of the employer normal cost, the employee segment normal cost and the annual amortization of the System's unfunded liability, calculated with the following actuarial assumptions and methods:

**a. Actuarial Cost Method**

The actuarial cost method is the individual entry age normal cost method, level percent of pay. This method conforms to the actuarial standards of practice and allocates normal costs over a period beginning no early than the date of employment and does not exceed the last assumed retirement age. This cost method fully funds the long-term costs of the promised benefits of the employees' period of active service.

**b. Asset Valuation Method**

To minimize the volatility effect of contribution rates affected by investment gains or losses during the year, the Board has adopted a smoothing process that involves spreading the difference between actual and expected market returns over a five year period to determine the actuarial value of assets.

**c. Amortization Policy**

The Board has adopted a 20 year open, level percent of pay amortization policy. A single unfunded amount is determined with each actuarial valuation, and that amount is then amortized over a 20 year period, assuming that the contribution amounts will remain level as a percent of the total payroll (so the dollar amount of the contribution is assumed to grow each year). The Board's amortization policy was most recently revised effective July 1, 2013.

2. **Administrative Expenses**

The annual administrative expenses actually incurred by the System, based on the administrative operating budget approved by the Board in advance of the fiscal year and determined as of the end of the fiscal year, shall be included in the calculation of the Actuarially Determined Contribution in accordance with sound actuarial principles. Administrative expenses paid by the System and included in the calculation of the ADC shall be reasonable and appropriate, and shall include staff salaries and related overhead expenses, actuarial, legal and other professional consulting fees, accounting charges, compliance expenses, and other fees and expenses necessary for the efficient administration of the System. Investment fees and expenses shall not be included in the calculation of the ADC. Administrative expenses shall be included in the calculation of the ADC prior to the application of the Contribution Rounding Policy set forth below.

3. **Contribution Rounding Policy**

Formatted: Font: Bold

**a. Purpose**

This Contribution Rounding Policy is intended to (1)minimize volatility in the Member Contribution rates and the related impact on the net take home pay of employees, (2) eliminate minor adjustments in contribution rates, and (3) recognize the inherent timing gap between actuarial valuation data and the effective date of new contribution rates.

**b. Rounding Policy**

The Board shall determine and certify Member and City Contribution rates in accordance with all applicable provisions of the TCC and, effective July 1, 2014, the terms of this Contribution Policy as set forth below:

I. Member Contribution Rates: Member Contributions for Legacy Members, Tier I Members and Tier II Members shall be determined by the TSRS actuary pursuant to TCC Section 22-34: members hired prior to July 1, 2006 (the "Legacy Members"), members hired between July 1, 2006 and June 30, 2011 ("Tier I Members") and members hired on or after July 1, 2011 ("Tier II Members"). The actuarially determined Member Contribution rate for each group shall be referred to as the "Calculated Rate" for the applicable group.

The Board will then review the Calculated Rate for each member group and set the "Charged Rate" for the upcoming fiscal year. The Charged Rate will equal the Calculated Rate, rounded up to the nearest 0.25. The Charged Rate for a member group shall never be less than the Calculated Rate for that member group (for that same fiscal year).

Examples:

Year 1: Actuarially Calculated
Tier I Member Contribution Rate: 6.67% of pay

| | | |
|---|---|---|
| | Charged Rate for Tier I Member Contribution: | 6.75% of pay |
| Year 2: | Actuarially Calculated Tier I Member Contribution Rate: | 6.48% of pay |
| | Charged Rate for Tier I Member Contribution: | 6.50% of pay |

II. City Contribution Rates: The City Contribution rate for a particular fiscal year equals the difference between the Actuarially Determined Contribution and the Member Contribution rate(s). TCC §22-30(t). Because there are three different Member Contribution rates, the TSRS actuary shall calculate a City Contribution rate for each member group and a blended City Contribution rate for the entire member population. In no event shall the blended City Contribution rate for the entire member population be less than the City Contribution rate for any member group. The City Contribution rates calculated by the TSRS actuary are referred to as the "Calculated Rates."

The Board will then review the Calculated Rates and set the "Charged Rate" for the City Contribution for the upcoming fiscal year. The Charged Rate will equal the blended Calculated City Contribution rate, rounded up to the nearest 0.50. The Charged Rate shall be rounded up to the nearest 0.50 instead of the nearest 0.25 because the Charged Rate is a blended rate. The Charged Rate shall never be less than the Calculated Rate for any member group for that same fiscal year.

Example:

Actuarial Calculated City Contribution Rates for three member groups:

| | | |
|---|---|---|
| | Legacy Members: | 27.22% of pay |
| | Tier I Members: | 25.55% of pay |
| | Tier II Members: | 27.08% of pay |
| Actuarially Calculated Blended City Contribution Rate | | 26.95% |
| Charged Rate for City Contribution: (Charged Rate is not set at 27.0% because that would be less than the Calculated Rate for two of the member groups) | | 27.50% of pay |

III. Funded Status of TSRS: It is the goal of the Board to increase the funded status of TSRS. The Board anticipates that Calculated Rates for both Member Contributions and City Contributions may decrease from time to time, based on various actuarial factors. The Board will not recommend a decrease in the Charged Rate for Member and/or City Contributions until such point as TSRS is fully funded because the unfunded accrued liability has been extinguished, and the Calculated Rates for Member and City Contributions represent the payment of the normal cost of benefits only. Moreover, the Board shall recommend a decrease in the Charged Rates for Member Contributions only to the extent that the Charged Rates for Tier I Member Contributions and Tier II Member Contributions decrease simultaneously, in the same percentage of pay.

Attachment: TSRS Actuarial Assumptions Addendum to TSRS Code Sec. 22-30(d)

# Tucson Supplemental Retirement System
# Board of Trustees
# Funding Policy

**Tucson Supplemental Retirement System ("TSRS")**

**Addendum to TSRS Code Sec. 22-30(d)**

**TSRS Actuarial Assumptions**

To determine the value of actuarially equivalent member benefits under TSRS, the following actuarial assumptions shall continue to be applied, effective as of July 1, 2016~~4~~:

| | |
|---|---|
| **Interest Rate:** | **7.25%** |
| **Mortality Table:** | **Mortality Table: RP-2000 Combined Mortality Table for males and females projected with Scale BB to 2020** |

The foregoing actuarial assumptions are adopted in accordance Tucson Code Chapter 22, Section 22-30(d) and are incorporated into this Addendum as required pursuant to Section 401(a)(25) of the Internal Revenue Code of 1986, as amended.

This Addendum hereby is executed by an authorized representative of the Tucson Supplemental Retirement System Board of Trustees, pursuant to action taken at a duly called meeting of the Board held on the 24~~18~~th day of September~~December~~, 2015~~4~~, at which a quorum was present.

By:___________________________
Name:_________________________
TSRS Board of Trustees

**PROPOSED REVISIONS TO TUCSON CITY CODE**

**TSRS PROVISIONS**

**NEW ITEM:**

**Successive Appointed Positions** (employee election opportunity)

*Sec. 22-33(b). Optional Membership.* Full-time appointed officers, full-time employees in the offices of the Mayor and City Council and full-time unclassified employees in the City Manager's office (collectively, "Appointed Positions") may elect membership in the System within ninety (90) days of their formal appointment to an Appointed Position. Accrued Service accrues from the beginning of the first payroll period commencing after an application for participation in the System has been accepted by the System Administrator. **An individual who is appointed to a second or successive Appointed Position shall be afforded an additional opportunity to apply for participation in the System as a result of the second or successive appointment only if the individual has a Termination Date prior to the commencement of the new Appointed Position.** Similarly, a Member who transfers directly from a mandatory membership position defined in Section 22-33(a) above to an Appointed Position without a Termination Date may elect to waive membership in the System within ninety (90) days of their formal appointment to the Appointed Position. In the case of an individual who waives membership while serving in an Appointed Position, Accrued Service and Member contributions shall cease on the effective date of the membership waiver, as determined by the System Administrator in a uniform and non-discriminatory manner. A waiver of membership pursuant to this Section shall not constitute a termination of membership for purposes of determining a Member's right to a refund of Accumulated Contributions or entitlement to Retirement Benefits.

**APPROVED BY TSRS BOARD ON SEPTEMBER 24, 2015:**

1. **Funding Policy** (statutory authority for Rounding Policy)

~~*Sec. 22-30(h). "Annual Required Contribution" or "ARC"* means the annual amount necessary to fund all employee segment normal cost amounts plus that amount necessary to satisfy the annual amortization requirements for the System's unfunded accrued liability, as determined by the System actuary in accordance with sound actuarial principles, and as set by the Board on a fiscal year basis. The Annual Required Contribution is expressed as a percentage of the City's active Member payroll costs for a fiscal year. Changes in accrued liabilities, and actuarial experience may increase or decrease the Annual Required Contribution.~~

***Sec. 22-30(mm). "Actuarially Determined Contribution" or "ADC"* means the total annual contribution determined by the Board in accordance with the Board's funding policy.**

*Sec. 22-30(t). "Employer Contribution"* means the difference between the ~~Annual Required Contribution~~ **Actuarially Determined Contribution** and the Member Contribution Rate, determined on a fiscal year basis.

*Sec. 22-30(x). "Member Contribution Rate"* means the portion of the ~~Annual Required Contribution~~ **Actuarially Determined Contribution** to be paid by the Members in any particular fiscal year, determined in accordance with section 22-34(a) or section 22-34(b), as applicable.

*Sec. 22-35(b). Certification of Rates and Charges.* The Board shall certify to the City manager, on a fiscal year basis, the ~~Annual Required Contribution~~ **Actuarially Determined Contribution**, the Member Contribution Rate and the Employer Contribution for the System.

*Sec. 22-37(f). Post Retirement Benefit Payments.* The Board shall determine, pursuant to its formal policy and in its discretion, whether the System shall fund an annual supplemental post retirement benefit payment to retired Members and Beneficiaries. The Board's formal policy shall include the methods and procedures to be followed by the Board in making its annual determination. The policy shall include the requirements that allocations to a post retirement benefits reserve shall not occur in years where any of the following conditions occur: the actuarial target funded ratio for that year is not achieved, there are no excess returns (based on the rolling average), or the allocation to a post retirement benefits reserve would directly cause an increase in the ~~Annual Required Contribution~~ **Actuarially Determined Contribution** for that year.

*Sec. 22-44(i). Retirement Incentives.* The Board may, pursuant to duly adopted Board policies, recommend retirement incentive programs and/or an extension of the scheduled termination date of incentive programs such as the end of service program; provided that the recommended action shall have no significant detrimental effect on the ~~Annual Required Contribution~~ **Actuarially Determined Contribution** or the funded status of the System and is consistent with the employment and retention goals and objectives of the City, as determined by the Board in consultation with the System's actuary and the City manager's office.

2. **Final Leave Cash Outs – Tier I Members** (clarification)

*Sec. 22-30(i). "Average Final Monthly Compensation" or "AFMC"* means the Member's average compensation for the applicable employment period, as defined below, within the one hundred twenty (120) months immediately preceding the member's termination date, during which the member's compensation was the highest. The "applicable employment period" for a tier I member shall be a period of thirty-six (36) consecutive calendar months of employment with the city and the "applicable employment period" for a tier II member shall be a period of sixty (60) consecutive calendar months of employment with the city. If the member has less than the number of consecutive calendar months of employment required for the applicable employment period calculation (thirty-six (36) months or sixty (60) months), the AFMC shall be the average of the compensation earned by the member during the period of employment with the city. For tier I members, accumulated unused vacation and sick leave hours ~~may~~ **shall** be included in the thirty-six (36) month period at the member's final pay rate, with an equal number of hours subtracted from the beginning of the thirty-six (36) month period, provided that the member contribution requirements of section 22-34(f) are satisfied **and that the inclusion of the accumulated unused vacation and sick leave hours does not result in a decrease in the AFMC**. Accumulated unused vacation and sick leave hours shall not be included in the calculation of average final monthly compensation for tier II members. The calculation of average final monthly compensation is subject to the special adjustment rules set forth in section 22-43(b) (part-time employment) and section 22-43(c) (unpaid authorized leave). For the period beginning on July 1, 2009, and ending on June 30, 2010, any active member who is subject to a reduction in pay in lieu of furlough shall continue to receive compensation credit for purposes of AFMC calculation during the reduction period at the rate of pay in effect for the member immediately preceding the pay reductions in lieu of furlough.

3. **Disability Benefits** (SSA determination as evidence; application timing changes)

*Sec. 22-30(jj). "Total and Permanent Disability"* means the inability to engage in any substantial gainful activity with the City by reason of any medically determinable physical or mental impairment that can be expected ~~to last for a continuous period of not less than twelve (12) months~~ **result in death or continue for a long and indefinite duration. If the Social Security Administration determines that a Member is totally and permanently disabled for purposes of Social Security Disability Insurance, the Social Security Administration's determination shall be treated as strong evidence of Total and Permanent Disability; provided, however, that the Board shall make an independent determination of the date on which any Disability Retirement Benefit shall commence in accordance with section 22-39(b)**.

*Sec. 22-39(a). Qualification.* If a Member is not yet eligible for normal retirement, the Member may apply for Disability Retirement Benefits ~~if the member has ten (10) or more years of accrued service and the member is determined, in accordance with applicable rules, to have a total and permanent disability.~~ **To be eligible to receive Disability Retirement Benefits, the Member must (1) apply for Disability Retirement Benefits within twelve (12) months of the date of termination from employment; (2) be credited with ten (10) or more years of Accrued Service, inclusive of accrued vacation and sick leave; (3) establish that he or she terminated from employment with the City as a result of a disabling mental or physical impairment; and (4) be determined, in accordance with applicable rules, to have a Total and Permanent Disability**.

*Sec. 22-39(b). Application Process*. An application for Disability Retirement Benefits may be filed by the Member in accordance with the policies and procedures of the System Administrator. **Unless waived by the Board in light of a Social Security Administration determination of Total and Permanent Disability, t**~~T~~he Board's physician shall examine the Member and certify in a written report to the Board whether the Member suffers from a Total and Permanently Disability. The report shall also state when the Member should be reexamined. If the Board determines that the Member should receive Disability Retirement Benefits, ~~the Board shall determine the date on which the disability retirement shall commence.~~**the Disability**

**Retirement Benefits shall commence as of the date determined by the Board in its discretion**. Disability Retirement Benefits shall not be paid for periods the Member elects to receive sick and vacation leave pay.

4. **Paid Military Leave – Member Contributions** (Compliance Change)

*Sec. 22-34(e). Qualified Military Service.* A Member who leaves employment for Qualified Military Service and is timely ~~reemployed~~ **reinstated** by the City and meets all other applicable requirements for benefits following Qualified Military Service including, without limitation, the requirements set forth in the city's Administrative Directive 2.01-7G regarding military leave, as amended, shall be permitted (but not required) to make up missed Member contributions to the system. Any ~~reemployed~~ **reinstated** Member who wishes to make up missed Member contributions shall contribute all or a portion of the Member contributions that would have been made by the Member but for the Qualified Military Service, calculated at the Compensation rate in effect for the Member immediately preceding the commencement of the Qualified Military Service and the Member contribution rate in effect during the Qualified Military Service, and without Interest or any other adjustment. The missed Member contributions shall be contributed to the System during a period that begins on the date of ~~reemployment~~ **reinstatement** and ends on the earliest of (1) the date that is five (5) years from the date of ~~reemployment~~ **reinstatement**, (2) the date that marks the end of a period which is three times the length of the Member's most recent period of Qualified Military Service, or (3) the Member's Termination Date. Any and all Member contributions made up pursuant to this section shall be treated as regular Member contributions made in accordance with Section 22-34(d). Following the contribution of missed Member contributions to the System, the System Administrator shall take all steps necessary to increase the Member's accrued benefit to include the portion of the Member's Qualified Military Service covered by the missed Member contributions. **Notwithstanding the foregoing, to the extent the Member is paid his full City salary during military leave in accordance with Section IV of the City's Administrative Directive 2.01-7G, as amended (Paid Military Leave Not to Exceed 30 Calendar Days in any Two (2) Consecutive Federal Fiscal Years), Member contributions shall be deducted from the Member's military leave pay on the same basis as Member contributions would be made by the Member under Section 22-34 if the Member was actively employed**.

*Sec. 22-36(b)(3) Military leave during active employment.* An active City employee who leaves employment to complete Qualified Military Service, makes a timely return to the City following an honorable discharge (as defined below), and who makes up missed Member contributions in accordance with section 22-43(e) may receive Accrued Service for periods of Qualified Military Service. Accrued Service credited to a Member who satisfies the conditions of this section and section 22-43(e) shall not exceed sixty (60) months of Accrued Service for Qualified Military Service, plus Accrued Service for reasonable periods of absence from employment which are necessitated by the Qualified Military Service, except as provided by applicable federal law. The Member's return to City service shall be deemed to be timely if the Member is ~~re-employed~~ **reinstated** or requests ~~re-employment~~ **reinstatement** in accordance with the following time frames: (A) The first full regularly scheduled work period on the first full calendar day following completion of the Qualified Military Service for periods of Qualified Military Service of less than thirty-one (31) days, (B) Not later than fourteen (14) days after completing Qualified Military Service for periods of Qualified Military Service of at least thirty (30) days and not more than one hundred eighty (180) days, or (C) Not later than ninety (90) days after completing Qualified Military Service for periods of Qualified Military Service of more than one hundred eighty (180) days. If the Member is hospitalized for, or convalescing from, an illness or injury incurred in, or aggravated during, the performance of Qualified Military Service, the Member's return to City service shall be deemed to be timely if the Member returns as of the earlier of the end of the period of recovery or the date which is two (2) years after the completion of Qualified Military Service. **Notwithstanding the foregoing, an active City employee who leaves employment for military leave in accordance with Section IV of the City's Administrative Directive 2.01-7G, as amended (Paid Military Leave Not to Exceed 30 Calendar Days in any Two (2) Consecutive Federal Fiscal Years) shall be credited with Accrued Service for the period of military leave during which Member contributions are made, regardless of the employee's subsequent return or failure to return to employment.**

5. **Employee Status Change – Member Contributions** (Determination of Rate)

***Sec. 22-34(h). Employment Status Changes.* Effective July 1, 2011 and notwithstanding any provision of the Code to the contrary, the mandatory Member Contribution Rate for an employee who first becomes a Member in the System after the employee's date of hire or rehire with the City will be determined pursuant to this Section. If an employee is hired or rehired by the City in an employment position that does not qualify for membership in the System and later becomes a Member, the applicable Member Contribution Rate shall be determined as of the date on which the employee first satisfies the requirements for membership under Section 22-33, as opposed to the employee's date of hire or rehire. The Member Contribution Rate for a reemployed Member shall be determined in accordance with Section 22-34(c).**

6. **Government and Military Service Purchases** (Expand purchase eligibility)

*Sec. 22-36(e). Additional Service -- Prior Government or Military Service.* Subject to the provisions of Section 22-36(g), a ~~contributing~~ Member **who has not requested a refund of the Member's accumulated contribution account or filed a retirement application** may elect to purchase Additional Service in the System for periods of Prior Government or Military Service. Additional Service will be used for benefit accrual purposes only, and will not be considered in the determination of whether a Member is Vested. Any Member wishing to purchase Additional Service shall furnish all documentation required by the System Administrator, in its discretion, to substantiate the prior service at the time of making an application to purchase the Additional Service. This provision shall govern the repurchase of prior City service credit forfeited upon receipt of a refund pursuant to Section 22-41, subject to the special redeposit rules of Section 22-36(h). It is the stated and declared purpose of this section to allow for the purchase of all prior government or military service for which a Member is not entitled to receive, presently or in the future, a benefit from another retirement System. To this end, the provisions of this Section shall be liberally construed.

7. **<u>Commencement of Pension to Deferred Vested Members</u>** (Compliance Change)

*Sec. 22-37(d). Payment of Benefits; Deferred Commencement.* Retirement Benefits are paid monthly in arrears. **Generally, a**~~A~~ Member may ~~elect to defer~~ **delay** the date payments begin as permitted by law provided, however, that no actuarial adjustment or retroactive adjustment shall be made to the Retirement Benefit as a result of the delayed commencement. **Notwithstanding the foregoing, if a Member delays commencement of Retirement Benefits beyond Normal Retirement Age, by affirmative election or failure to file a retirement application, an actuarial adjustment to the Retirement Benefit shall be made to reflect only the delayed commencement after the Normal Retirement Age.**

8. **<u>Non-Spouse Beneficiary on J&S Election</u>** (Compliance Change)

*Sec. 22-42(c). Joint and Survivor Annuity.* A Member eligible for retirement may elect to receive his Retirement Benefit payable in a joint and survivor annuity which provides payments to the Member for the remainder of the Member's life and then provides payments to the surviving Beneficiary for the remainder of the Beneficiary's life. In making this election, the monthly benefit to be paid to the surviving Beneficiary following the death of the Member may be one hundred percent (100%), seventy-five percent (75%) or fifty percent (50%) of the monthly benefit the Member had been receiving. All payments will cease upon the death of the Member or the beneficiary, whichever shall occur last. **The Member's designation of a Beneficiary to receive any survivor benefit payable under a joint and survivor annuity shall be subject to the requirements of section 22-43(f) and Code Section 401(a)(9), including the limitations on non-spouse beneficiaries, and any joint and survivor annuity election shall be adjusted as necessary for compliance with the Code.**

9. **<u>Rehire of Retirees</u>** (Codification of Practice)

*Sec. 22-37(g) Suspension of Pension Benefits upon Reemployment*. Retirement Benefits payable to a retired Member shall be suspended during the retired Member's period of reemployment with the City unless (1) at least twelve (12) months have elapsed between the Member's retirement from the City and the retired Member's reemployment date, and (2) the retired Member is engaged to work in a non-permanent employment classification. **The retired Member shall be permitted to work in consecutive or successive non-permanent employment classifications without triggering a suspension of Retirement Benefits provided that (A) the Member satisfied the twelve (12) month break rule set forth above; (B) the non-permanent employment classifications are separate and distinct employment positions; and (C) the retired Member's period of continuous reemployment does not exceed eighteen (18) months.** In no event shall any re-employed retired Member acquire Credited Service or credited compensation or contribute to the System.

10. **<u>Post Retirement Marital Changes</u>** (Divorce/Remarriage Have No Impact on Elections)

*Sec. 22-42(a). Explanation of Benefit Options.* A Member who is eligible to receive a Retirement Benefit may request from the System Administrator information regarding the Retirement Benefit payment options available. No pension is automatically payable hereunder, and all eligible Members must make appropriate retirement elections under the System. The Member and Spouse, if any, shall sign a statement acknowledging that the Retirement Benefit payment options have been satisfactorily explained and shall make a written election of one (1) of the Retirement Benefit payment options, all in accordance with the policies and procedures of the System Administrator. The benefit election can be revoked or changed by the Member by filing a written notice of revocation or change with the System Administrator, subject to any applicable Spousal acknowledgement requirements, any time prior to ratification of the Retirement Benefit by the Board. The benefit election is irrevocable upon Board ratification of the Member's application for retirement benefits**, regardless of any changes in the Member's marital status**.

*Sec. 22-43.1(b). System Administrator Review and Approval.* The System Administrator is responsible for the review and approval of any Domestic Relations Order impacting benefits or rights of a Member under this System and which is presented to the System Administrator in a timely fashion. The System Administrator shall determine whether the Domestic Relations Order can be administered and benefits paid in accordance with the applicable requirements of the Order, the System and the Code. Any Domestic Relations Order accepted by the System Administrator shall be referred to as a System Approved Domestic Relations Order. To the extent permitted by law, the System Administrator's decision regarding a Domestic Relations Order shall be final and binding. The City, the Board, and the System Administrator shall not be responsible for the payment of any System benefits in contravention of a Domestic Relations Order when the Domestic Relations Order is not timely presented to the System Administrator for review. **Additionally, upon ratification of a Member's retirement application by the Board, all benefit payment elections (including those filed by the Member, ordered pursuant to a System Approved Domestic Relations Order or filed by an alternate payee) shall become irrevocable and no change in benefit options shall be permitted, regardless of any changes in the marital status of the Member or the alternate payee.**

11. **Refund Guarantee Following Death of Member**. (Clarification)

*Sec. 22-40(f). Refund guarantee.* A Member who elects a single life annuity pursuant to section 22-42(b) or a joint and survivor annuity pursuant to section 22-42(c) shall be guaranteed a refund if the **named recipients on the selected annuity** ~~Member and their Beneficiary or survivor~~ die before the monthly retirement benefits paid equal or exceed two (2) times the value of the Member's Accumulated Contributions ~~with interest~~ **Account** at time of retirement. ~~The Member's estate (or heirs to the estate) will receive a lump sum amount equal to the refund guarantee amount, if any, reduced by the retirement benefits paid to date.~~ **The amount of the refund shall equal two (2) times the value of the Member's Accumulated Contributions Account at time of retirement, reduced by the retirement benefits paid to date (the "refund amount"). If the Member elected a single life annuity and the Member dies, or the Member elected a joint and survivor annuity and both the Member and the named survivor die, the member's Beneficiary (or the Member's estate, if the Beneficiary is not then living) will receive the refund amount.**

12. **<u>Board Authority</u>** (Specify Hearing/Appeal Authority)

*Sec. 22-45(i). Additional Powers and Duties*. In addition to all other powers and duties, the Board shall:

(1) Keep a record of all of its proceedings, and such record shall be open to inspection by Members and the public;

(2) Determine the Credited Service, the Compensation, the Average Final Monthly Compensation, and the age of all members; and when the same cannot be determined from the records, it may make the best available estimates thereof;

(3) Make annually a report to the Mayor and City Council covering the operations of the System for the preceding fiscal year, including its financial conditions as of fiscal closing;

(4) Review and provide written recommendations to the Mayor and City Council on all proposed ordinances and resolutions not originating from the Board that amend, modify or delete provisions of the System. The Board shall be given forty-five (45) days advance notice prior to any such Mayor and Council action regarding the System;

(5) Invest the funds of the System;

(6) Adopt necessary rules and regulations governing the administration of the System; ~~and~~

(7) **Hear and resolve employee, Member and Beneficiary claims relating to the System; and**

**(8)** Do all other things necessary for the proper administration of the provisions of the System.

13. **<u>TSRS Secretary</u>**. (Change to reflect current direct report for System Administrator)

*Sec. 22-46. Finance Director duties.* The Finance Director or his/her designee shall deposit the System's assets in the Trust Fund held by the custodial financial institution selected by the Board to maintain the assets in trust for the benefit of the Members. The Finance Director shall be responsible for maintaining a system of accounts for the assets in accordance with generally accepted accounting principles for pension funds. The Finance Director also shall be responsible for oversight of the payroll procedures connected to the System administration, such as the collection of contributions pursuant to section 22-35(d). **The Finance Director shall serve as secretary to the Board.**

*Sec. 22-47. Human Resources Director duties.* The Human Resources Director or his/her designee shall provide the Board with all relevant information available in the city's human resources department concerning the employment status of members. ~~The Human Resources Director shall serve as secretary to the Board.~~

14. **Corrected Section References**

*Sec. 22-33(e). Reentry into Membership.* Any former Member who is reemployed by the City in an eligible job classification shall become a Member of the System. The Member contributions required from a rehired Member shall be determined in accordance with section 22-34(c) and Credited Service accrued by the rehired Member shall be determined in accordance with Section 22-36(h). The accrued benefit earned by a rehired Member shall be determined based on the Member's status as a Tier I Member or a Tier II Member, as those terms are defined in section 22-30(~~gg~~**hh**) and 22-30(~~hh~~**ii**), respectively. The rules set forth herein regarding rehired Members shall apply to members who return to employment with the City following a layoff or any other event which constitutes a Termination Date under section 22-30(~~ff~~**gg**).

CENTER *for* RETIREMENT RESEARCH at BOSTON COLLEGE

STATE AND LOCAL PENSION PLANS NUMBER 44, JUNE 2015

# DOES MORTALITY DIFFER BETWEEN PUBLIC AND PRIVATE SECTOR WORKERS?

*By Alicia H. Munnell, Jean-Pierre Aubry, and Geoffrey T. Sanzenbacher**

## Introduction

Defined benefit plans pay pension benefits from retirement until death. Thus, the longer workers live, the higher the expense for the plan. On average, states and localities *assume* their workers will live slightly than longer private sector workers.[1] This *brief* asks a simple question: do state and local workers *actually* live longer on average than their private sector counterparts? If so, why?

The discussion proceeds as follows. The first section explains the nature and limitations of the available data – the *National Longitudinal Mortality Study*. The second section presents the percentage of public and private sector workers ages 55-64 who died within either an 11-year period or a separate 6-year period after being interviewed. The third section uses regression analysis to assess how various factors impact the likelihood of dying. The final section concludes that public sector workers – especially women – do live longer than their private sector counterparts and that most of the difference can be explained by the higher education levels of public sector workers.

## *The National Longitudinal Mortality Study*

The analysis uses the *National Longitudinal Mortality Study* (NLMS) to analyze public versus private sector mortality. This study is sponsored by the National Institute on Aging, the Center for Health Statistics, and the Census Bureau. The NLMS links demographic data from the *Current Population Survey* (CPS) to death certificates, providing a way to study how a person's characteristics may relate to his death.

More specifically, the data in this *brief* come from a publicly available version of the NLMS – the *NLMS Public Use Microdata Sample* (NLMS PUMS) – which

**Alicia H. Munnell is director of the Center for Retirement Research at Boston College (CRR) and the Peter F. Drucker Professor of Management Sciences at Boston College's Carroll School of Management. Jean-Pierre Aubry is assistant director of state and local research at the CRR. Geoffrey T. Sanzenbacher is a research economist at the CRR.*

LEARN MORE

Search for other publications on this topic at:
**crr.bc.edu**

is designed to protect respondents' confidentiality. Each observation in the NLMS PUMS has a subset of the demographic variables that are collected through the CPS when an individual enters the sample. If the individual dies, each observation contains a subset of information from the person's death certificate (including age of death). The death certificate data are collected at the end of the individual's "follow-up period" – either 11 years or 6 years after the CPS data were collected depending on the NLMS PUMS data year.

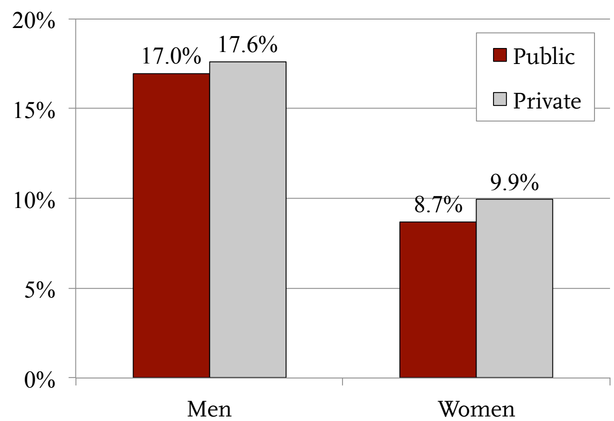
The NLMS PUMS differs from the full NLMS in two main ways that affect our analysis. First, the NLMS PUMS does not include the CPS survey year in which the individual was first observed. Instead, the NLMS PUMS creates three separate samples of CPS respondents that are representative of the U.S. population at particular times. The first two samples are from the early 1980s and are constructed to be representative of the U.S. population as of April 1, 1983. One of these samples has an 11-year follow-up period and the other just a 6-year follow-up. The third sample is from the early 1990s and is constructed to represent the U.S. population as of April 1, 1993. This 1993 sample has a 6-year follow-up period.

The second difference between the full NLMS and the NLMS PUMS is that the latter includes only a subset of CPS variables. Importantly, the NLMS PUMS does not differentiate between state and local workers and federal workers. The analysis below reflects both these restrictions – that is, the analysis is performed only for 1983 and 1993 and combines federal and state and local workers.[2]

## Do Public Sector Workers Have Lower Mortality?

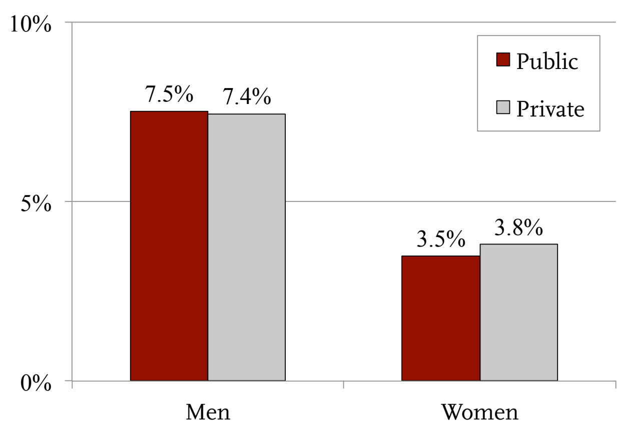
To compare the mortality of public and private sector workers, the NLMS PUMS samples described above were restricted to 55-64 year olds working at the time the CPS data were collected. It is necessary to restrict the sample to working individuals in order to determine whether the individual was a public or private sector employee. Once these samples are constructed, it is simple to tabulate mortality rates by gender and examine the percentage of individuals who died in the survey follow-up periods. Figure 1A shows the results for the 1983 sample with an 11-year follow-up period and Figure 1B shows the results combining the 1983 and 1993 samples with 6-year follow-up periods.

Figure 1A. 11-year Mortality Rates for 55-64 Year Old Workers, 1983 NLMS PUMS




*Source*: Authors' calculations from the NLMS PUMS, 1983 Sample (11-year follow-up).

Figure 1B. 6-year Mortality Rates for 55-64 Year Old Workers, 1983 and 1993 NLMS PUMS




*Sources*: Authors' calculations from the NLMS PUMS, 1983 Sample (6-year follow-up) and 1993 Sample.

Figure 1A supports the notion that public sector workers live longer. Public sector men ages 55-64 were 0.6 percentage points less likely to die within 11 years (i.e., by the time they were ages 66-75) than private sector men. For women, the gap was larger – 1.2 percentage points.[3] Figure 1B has smaller differences overall and is less conclusive, perhaps because the follow-up period is shorter and differences have less time to develop. In any case, public sector men are slightly *more* likely to die during the 6-year follow up than private sector men, a reversal from the earlier pattern. For women, the earlier pattern is preserved.[4]

## Why Do Public Sector Employees Have Lower Mortality?

The generally lower mortality rates shown in Figures 1A and 1B suggest an obvious question – why? It is tempting to develop a story around the nature of public sector work – perhaps it is somehow easier, less stressful, or more stable than private sector work or perhaps public sector workers have better health benefits and these factors lead to lower mortality.[5] The reality is somewhat more mundane: 1) public sector workers, on average, are more educated than private sector workers; and 2) more educated people have lower mortality. Table 1 illustrates the first fact by combining the three NLMS PUMS samples and tabulating rates of education by gender.

As Table 1 shows, public sector men are nearly twice as likely as private sector men to be college graduates and less likely to be high school dropouts. This pattern is even more pronounced for public sector women, who are four times more likely to be college graduates and much less likely to be high school dropouts than their private sector counterparts.[6]

Given these stark differences in educational attainment, it is important to determine how the mortality gap changes when controlling for educational differences between the two sectors. This exercise involves estimating six probit regressions – one set of three for men and one set of three for women – on the probability of dying for the 1983 11-year follow-up sample.[7] The 11-year sample was chosen for this analysis because of its lengthier follow-up time, which allows differences between the two sectors to develop. The first probit regression run for each gender included no controls, the second controlled for education only, and the third controlled for education and other factors (e.g., age, race/ethnicity, urban/rural residence, and occupation in police or fire).

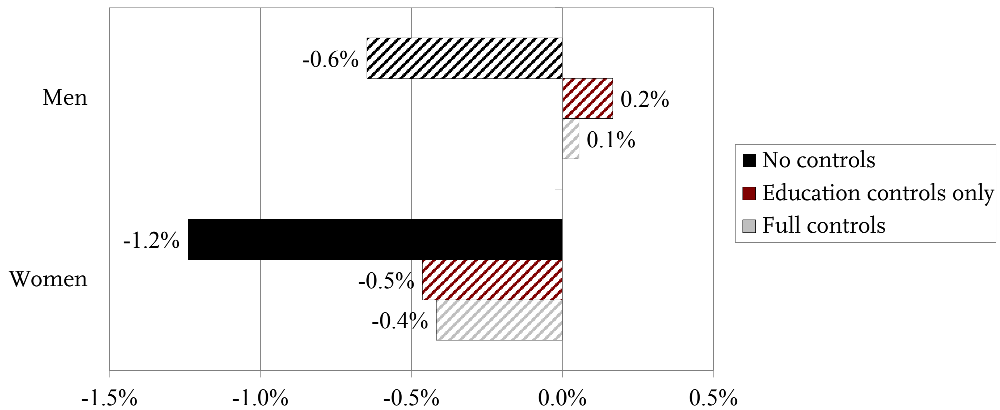
Figure 2 on the next page shows that, in the case of men, the 11-year mortality gap between public and private workers of 0.6 percentage point is not statistically significant, and introducing education controls turns the negative gap positive, albeit still not statistically significant. This positive difference is reduced when controls are introduced for those working in police and fire. In the case of women, 1.2 percent fewer public sector workers died over the 11-year period

Table 1. Public and Private Sector Workers Ages 55-64 by Educational Attainment, 1983 & 1993 NLMS PUMS

| Level of education | Men | | Women | |
|---|---|---|---|---|
| | Public sector | Private sector | Public sector | Private sector |
| Less than high school | 23.6% | 34.0% | 15.0% | 29.6% |
| High school only | 31.8 | 35.6 | 40.0 | 48.3 |
| Some college | 13.3 | 13.7 | 16.7 | 14.5 |
| 4-year college degree | 31.3 | 16.7 | 28.3 | 7.6 |
| Observations | 12,579 | 48,582 | 12,241 | 37,090 |

*Source*: Authors' calculations from the NLMS PUMS, 1983 Sample (11-year follow up), 1983 Sample (6-year follow-up), and 1993 Sample.

Figure 2. Percentage-Point Difference in 11-year Mortality between Public and Private Sector Workers, Ages 55-64




Note: Striped bars are not statistically significant.
*Source*: Authors' calculations from the NLMS PUMS, 1983 Sample (11-year follow-up).

than private sector workers, and the mortality gap was statistically significant. The second bar shows that controlling for differences in women's education dramatically reduces the 11-year mortality gap, and it is no longer statistically significant. Introducing further controls has a minimal effect on the difference for women. Figure 2 suggests that whether an individual is a public or private sector worker has little impact on their mortality; instead other individual characteristics drive the differences seen in Figures 1a and 1b.

## Conclusion

The public sector takes care to align its mortality assumptions to the mortality experience of its members. In practice, this alignment results in assumptions that public sector workers live slightly longer than private sector workers. The data in the NLMS PUMS seem to support this idea – especially for women. The explanation for this lower mortality turns out to be relatively simple: the public sector tends to employ more educated workers on average than the private sector, and these workers are less likely to die over a given period. After controlling for education, the rates of mortality between public and private sector workers are comparable.

## Endnotes

1 The average life expectancy at age 65 for men and women in the *Public Plans Database* (PPD) sample of 150 state and local pension plans is higher than that calculated under the IRS's most recently published tables for private plans. For more information on the mortality assumptions used by state and local plans, see Munnell, Aubry, and Cafarelli (2015).

2 About 80 percent of public sector workers are in state and local government.

3 For men, the difference is not statistically significant. For women, it is statistically significant at the 1-percent level.

4 Neither difference is statistically significant.

5 For information on the relative stability of public sector workers, see Munnell and Fraenkel (2013). For information on the quality of health benefits, see Munnell et al. (2011).

6 Although the share of high school dropouts may seem high and of college graduates low, it is worth remembering that the 1983 and 1993 samples of 55-64 year old workers were born from 1918-1928 and 1928-1938, respectively. These birth cohorts have low rates of educational attainment compared to more recent birth cohorts.

7 The full regression results are in the Appendix.

## References

Munnell, Alicia H., Jean-Pierre Aubry, and Mark Cafarelli. 2015. "How Will Longer Lifespans Affect State and Local Pension Funding?" *State and Local Pension Plans Issue in Brief* 43. Chestnut Hill, MA: Center for Retirement Research at Boston College. Jointly published by the Center for State and Local Government Excellence.

Munnell, Alicia H., Jean-Pierre Aubry, Joshua Hurwitz, and Laura Quinby. 2011. "Comparing Compensation: State-Local Versus Private Sector Workers." *State and Local Pension Plans Issue in Brief* 20. Chestnut Hill, MA: Center for Retirement Research at Boston College. Jointly published by the Center for State and Local Government Excellence.

Munnell, Alicia H. and Rebecca Cannon Fraenkel. 2013. "Public Sector Workers and Job Security." *State and Local Pension Plans Issue in Brief* 31. Chestnut Hill, MA: Center for Retirement Research at Boston College.

National Institutes of Health, National Center for Health Statistics, and U.S. Census Bureau. 1983, 1993. *National Longitudinal Mortality Study Public Use Microdata Samples*. Washington, DC.

*Public Plans Database*. 2001-2013. Center for Retirement Research at Boston College, Center for State and Local Government Excellence, and National Association of State Retirement Administrators.

# APPENDIX

## Appendix

Three probit regressions were run for each gender. The first probit regression included no controls, the second controlled for education only, and the third controlled for education and other factors (e.g., age, race/ethnicity, urban/rural residence, and occupation in police or fire). Table A1 includes summary statistics for the variables in these regressions.

### Table A1. Summary Statistics for Variables in 11-year Mortality Probit Regressions

| | Males | Females |
|---|---|---|
| Age | 58.7 | 58.7 |
| *Education* | | |
| Less than high school | 33.2% | 27.3% |
| High school only | 35.0 | 46.5 |
| Some college | 12.9 | 14.0 |
| 4-year college degree | 19.0 | 12.1 |
| *Race* | | |
| White, not Hispanic | 85.9 | 84.4 |
| Black, not Hispanic | 6.9 | 9.4 |
| Other race, not Hispanic | 2.0 | 2.2 |
| Hispanic | 5.2 | 4.1 |
| Rural | 27.1 | 25.6 |
| Fire/police worker | 2.7 | 0.3 |
| Observations | 27,452 | 21,740 |

*Source*: Authors' calculations from the NLMS PUMS, 1983 Sample (11-year follow-up).

The results from the probit regressions are in Table A2 (on the next page). The results are reported as marginal effects. The reported coefficient can be interpreted as the percentage-point-change in 11-year mortality given the person either has the indicated characteristic (e.g., the person is in the public sector) or given a one-year change in age.

Table A2. Marginal Effects of Select Variables on 11-year Mortality Probit Regressions, 55-64 Year Old Workers

| Variable | Men | | | Women | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) |
| Government worker | -0.0065 | 0.0017 | 0.0006 | -0.0124*** | -0.0046 | -0.0042 |
| | (0.0056) | (0.0058) | (0.0058) | (0.0045) | (0.0048) | (0.0048) |
| *Education* | | | | | | |
| *(Base=dropout)* | | | | | | |
| High school, no college | | -0.0231*** | -0.0233*** | | -0.0198*** | -0.0162*** |
| | | (0.0053) | (0.0054) | | (0.0046) | (0.0047) |
| Some college | | -0.0288*** | -0.0285*** | | -0.0274*** | -0.0253*** |
| | | (0.0069) | (0.0070) | | (0.0056) | (0.0057) |
| 4-year college degree | | -0.0630*** | -0.0621*** | | -0.0393*** | -0.0372*** |
| | | (0.0058) | (0.0059) | | (0.0057) | (0.0058) |
| Age | | | 0.0117*** | | | 0.0074*** |
| | | | (0.0008) | | | (0.0007) |
| *Race/Ethnicity* | | | | | | |
| *(Base=White, not Hispanic)* | | | | | | |
| Black, not Hispanic | | | 0.0299*** | | | 0.0270*** |
| | | | (0.0095) | | | (0.0076) |
| Other race, not Hispanic | | | -0.0334** | | | -0.0120 |
| | | | (0.0149) | | | (0.0128) |
| Hispanic | | | -0.0619*** | | | -0.0266*** |
| | | | (0.0087) | | | (0.0087) |
| Rural | | | -0.0074 | | | -0.0113** |
| | | | (0.0052) | | | (0.0045) |
| Fire/police worker | | | 0.0272* | | | |
| | | | (0.0147) | | | |
| Pseudo R-squared | 0.0001 | 0.0041 | 0.0144 | 0.0005 | 0.0039 | 0.0141 |
| Observations | 27,452 | 27,452 | 27,452 | 21,740 | 21,740 | 21,740 |

Note: Coefficients are significant at the 10-percent (*), 5-percent (**), or 1-percent (***) level.
*Source:* Authors' calculations from the NLMS PUMS, 1983 Sample (11-year follow-up).

## About the Center

The mission of the Center for Retirement Research at Boston College is to produce first-class research and educational tools and forge a strong link between the academic community and decision-makers in the public and private sectors around an issue of critical importance to the nation's future. To achieve this mission, the Center sponsors a wide variety of research projects, transmits new findings to a broad audience, trains new scholars, and broadens access to valuable data sources. Since its inception in 1998, the Center has established a reputation as an authoritative source of information on all major aspects of the retirement income debate.

## Affiliated Institutions

The Brookings Institution
Massachusetts Institute of Technology
Syracuse University
Urban Institute

## Contact Information

Center for Retirement Research
Boston College
Hovey House
140 Commonwealth Avenue
Chestnut Hill, MA 02467-3808
Phone: (617) 552-1762
Fax: (617) 552-0191
E-mail: crr@bc.edu
Website: http://crr.bc.edu



*The Center for Retirement Research thanks BlackRock, Charles Schwab & Co. Inc., Citigroup, Fidelity & Guaranty Life, Goldman Sachs, Mercer, National Association of Retirement Plan Participants, Prudential Financial, State Street, and TIAA-CREF Institute for support of this project.*



The research reported herein was supported by the Center's Partnership Program. The findings and conclusions expressed are solely those of the authors and do not represent the opinions or policy of the partners or the Center for Retirement Research at Boston College.