

**TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
BOARD OF TRUSTEES
Notice of Regular Meeting / Agenda**

DATE: Thursday, September 24th, 2015
TIME: 8:30 a.m.
PLACE: Finance Department Conference Room, 5th floor
City Hall, 255 West Alameda
Tucson, Arizona 85701

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

B. Disability Retirement Application – Frank F. Romero*

C. Investment Activity Report

1. Aberdeen EAFE Plus Manager – Gordon Weightman (Report from Callan Associates, 9/11/2015)
2. TSRS Portfolio composition, transactions and performance review for 08/31/15
3. Callan's response to the number of public pension plans they have in their fund Sponsor database

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
3. October Board Retreat – Draft Agenda

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

G. Future Agenda Items

H. Adjournment

Please Note: Legal Action may be taken on any agenda item

* 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, August 27, 2015

Members Present: Michael Coffey, Acting Chairman
Curry Hale, HR Director
Silvia Amparano, Director of Finance
Jorge Hernández, Elected Representative
John O'Hare, Elected Retiree Representative

Staff Present: Dave Deibel, Deputy City Attorney
Karen Tenace, Deputy Director of Finance
Silvia Navarro, Treasury Administrator
Art Cuaron, Treasury Finance Manager
Michael Hermanson, Plan Administrator
Dawn Davis, Administrative Assistant

Guests Present: Jenefer Carlin, CTRA Representative
Rebecca Hill, Human Resources Department
Dennis Woodrich, Lead Pension Analyst
Gordon Weightman, Callan Associates
Judy O'Connell, Champlain Investment Partners
Scott Brayman, Champlain Investment Partners
Gina Callen, City of Tucson Employee
Michael Callen, Spouse of Gina Callen

Absent/Excused: Robert Fleming, Chairman
Kevin Larson, City Manager Appointee

Acting Chairman Michael Coffey called the meeting to order at 8:30 AM.

A. Consent Agenda

1. Approval of July 30, 2015 TSRS Board Meeting Minutes
2. Retirement ratifications – August 2015
3. July 2015 TSRS expenses compared to budget

A motion to approve the Consent Agenda was made by Silvia Amparano, 2nd by Curry Hale, and passed by a vote of 4 – 0 (Chairman Fleming and Kevin Larson absent, Acting Chairman Coffey did not vote).

B. Investment Activity Report

1. Introduction to Art Cuaron

Silvia Navarro introduced Art Cuaron and advised he would be assuming Allan Bentkowski's responsibilities. He has worked with the City of Tucson for 3 years, prior to that he was a finance specialist for the Town of Oro Valley. He brings government finance, accounting, and budget experience to the position.

The Board formally welcomed Art Cuaron.

2. Champlain Investment Partners – Annual Manager Review – Judy O’Connell, Scott Brayman

Gordon Weightman provided a brief update on Champlain Investment Partners. They manage about \$43M (as of 6/30/15) in mid-cap equity. Their performance since inception has been good, for 4.75 years there has been a bull equity market, and over that time the index has risen by 16.2% and Champlain returns were 17.4%, ranking in the 29th percentile vs. peers.

John O’Hare clarified that the Board was asking their active managers to outperform the benchmark by 2 points.

Mr. Weightman answered that was something they could ask; what their out-performance objective was. At a baseline level, it is to outperform the benchmark after fees. Champlain has recently added an emerging markets team through an acquisition, and they entered into a minority revenue share with another firm.

Judy O’Connell explained Champlain had expanded ownership from 8 partners to 12. In June, they purchased New Showman Advisors, an emerging markets team located in Irvine, CA; New Showman Advisors have sub advised for around \$85M in emerging market assets for more than 5 years. The reason Champlain looked at this capability was primarily that it was a diversifying asset class to small and mid-cap US. It also provides an element of growth at the firm which is important for attracting and retaining resources and talent over time.

Mr. O’Hare asked if Champlain would keep their Orange County office open, and if so would any of the staff move to Irvine.

Ms. O’Connell answered that there were no plans to move staff to Irvine. The plan was to build out the team which will be located in Irvine.

Mr. Weightman asked if anyone from the mid-cap portfolio would be spending any time or resources on the emerging market side or would it be completely separate.

Ms. O’Connell answered it would be completely separate. The only resource commitment would be on the quantitative side, and they are adding resources there as well. Champlain is currently looking for a financial services analyst and a technology analyst.

Scott Brayman said they might make use of some of Champlain’s frameworks and tools for slicing and dicing industries and sectors. This does not mean that Champlain is enthusiastic about emerging markets today; they think it is a very inefficient opportunity in the long term which means there will be opportunities for stock pickers. This was Champlain trying to anticipate the future.

Ms. O’Connell said they had also entered into a 10 year minority revenue share, which is a low teen percentage of their revenue, to create liquidity for the founding partners for estate and tax planning reasons. This revenue share does not have any management control over the firm. Champlain will continue to add assets in the mid-cap strategy, and remain closed in the small cap strategy.

Mr. O’Hare asked how many new clients they have brought in and how many have they lost.

Ms. O’Connell answered they had lost 1 client in mid cap when the State of Michigan removed all of their mid-cap allocations, and the State of Arizona reduced their small cap exposure. The firm added Edward Jones in the mid-cap space, Edward Jones is using Champlain in one of their fund of funds model as well as in their corporate pension plan, and they are looking for \$1B in mid-cap capacity. The California Ironworkers pension trust fund added \$45M in mid-cap and AstraZeneca just invested in mid-cap with Champlain.

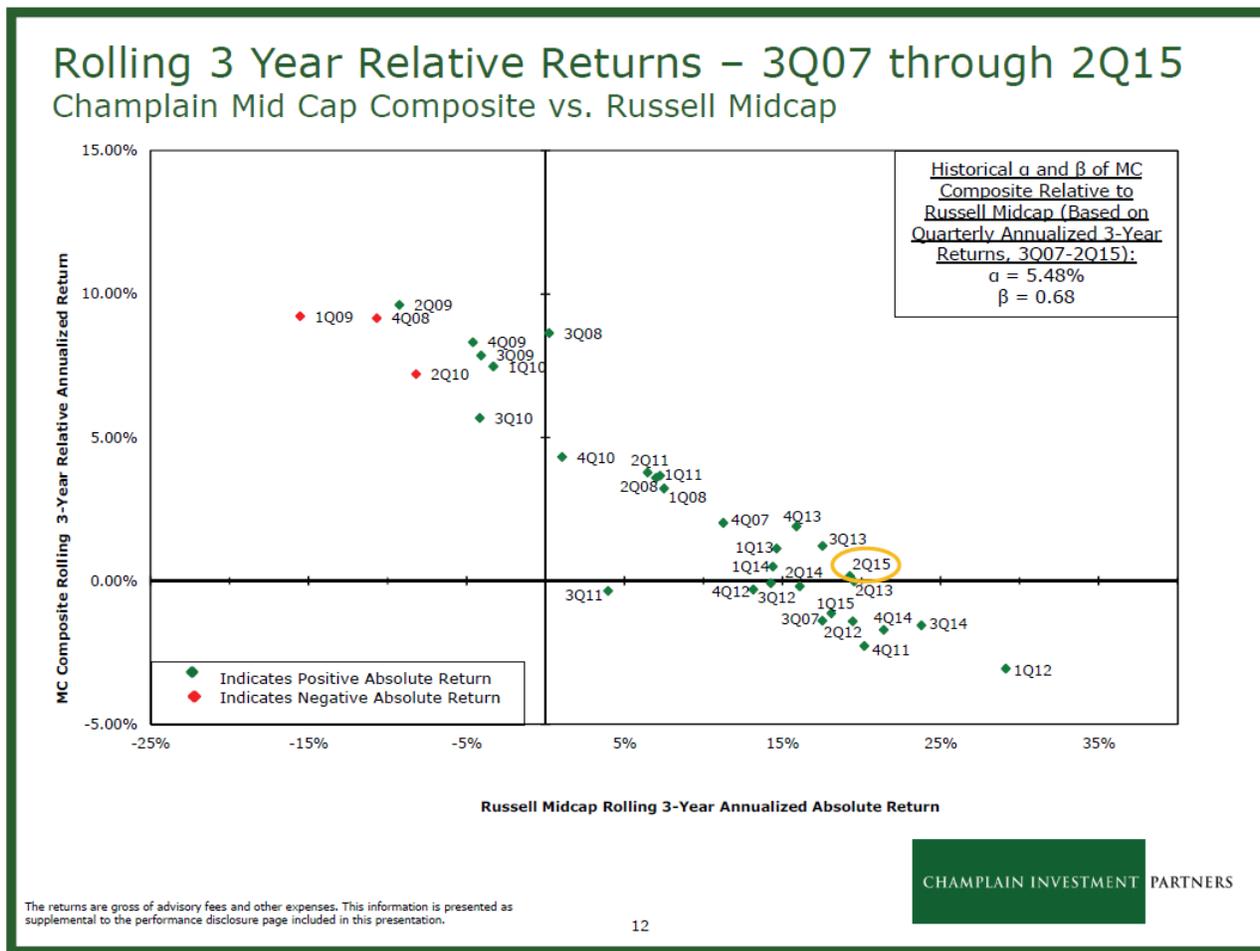
Mr. O’Hare asked if this meant there was growth in the assets under management.

Ms. O’Connell answered they manage \$6.6B, compared to the last time they met with the TSRS Board; it was around \$6.1B, but some of that increase is from market appreciation.

Mr. Weightman asked if the \$6.6B was in mid-cap.

Ms. O'Connell answered that amount is total firm assets, mid-cap assets are around \$2.6B and they intend to close it at \$4.5B. They believe they have a clear path to closing the mid-cap strategy. For them to keep pace in the current environment; they would expect, to the extent markets and interest rates normalize, to outperform. They have not been in a full market cycle since the TSRS Board hired them, it has all been up, which is good for absolute returns but it is difficult for them to distinguish themselves on a relative basis during that period. As of 6/30/15, after fees, they have not outperformed the Russell mid-cap, they returned 18.64% vs. 19.28% for the benchmark.

Mr. Brayman encouraged the Board to turn to page 12 (shown below) of the presentation materials provided prior to the meeting.



This chart represents Champlain's value proposition, and shows why they are gaining market share with their mid-cap strategy. The benchmark's absolute returns on a rolling 3 year basis are on the horizontal axis, and Champlain's excess or deficit returns are on the vertical axis. The way to read this chart is that in very strong absolute return markets Champlain has historically lagged. Over the last 3 years they were in line with the benchmark, before fees.

Mr. O'Hare stated the Board hires active managers to outperform the benchmark by 2 points over a 3 year period.

Mr. Brayman answered their relevance to the market place was whether they could add value and provide a good return on their fees. Looking back over the last 3 years it might look like Champlain has not earned their fees. Looking back since inception a customer could ask where is the value-add for the fees. There are 2 thoughts on this; first Champlain is taking a lot less risk than the market, so the Board is getting market like returns with a strategy having less downside risk and volatility. Second, this has been an extremely unusual and unprecedented environment. They have never seen global central banks flood the markets with the liquidity and stimulus that they have in recent years. He would argue there is a degree of artificiality and a degree of contrived returns in the market as central banks have created a lot of activity that is probably unsustainable. A lot of valuations in some highly leveraged stock have moved up substantially. Highly leveraged companies have had a chance to refinance at very low interest rates and create a lot of earnings growth; they will not have that opportunity going forward.

Mr. Weightman asked for an example of an industry or stock doing this that Champlain would steer away from. He thought of some of the airlines or biotech names that have run up and may not fit into the criteria Champlain is looking for.

Mr. Brayman said biotech's have a less direct situation; they don't necessarily have highly leveraged balance sheets to refinance. There have been some aggressive companies in the pharmaceutical industry that have been using access to cheap credit market for acquisitions; those acquisitions have created big take outs in biotech resulting in others entering the biotech space to chase the strong returns. Airlines are more of a beneficiary of low oil prices, but certainly the ability to access cheap credit has helped them to refinance their balance sheets. Ford's management was in a position to run the table in the auto industry, but then the Government stepped in and eliminated their advantage, keeping all of Ford's competitors in business. The real estate industry has also benefitted tremendously from the zero interest rate policy and the ability to refinance their balance sheets at lower rates. Champlain believes when rates start to go up, the real estate investment trust industry will be challenged and there could be a lot of stranded capital in that industry. Champlain has avoided areas of the market that have been aided, abetted, or subsidized by the Fed's zero interest rate policy, they don't own companies that depend on cheap financing for customers to buy their products, so there is no exposure to housing and auto related industries.

Acting Chairman Coffey asked if they expected federal interest rates to rise this year.

Mr. Brayman answered everyone is expecting it to happen in September this year, but in recent weeks that has shifted to December 2015 or March 2016. Champlain does not spend a lot of time thinking about this because the vast majority of their time is spent trying to buy good companies that are reasonably priced or undervalued substantially.

Acting Chairman Coffey asked them to expand on the notion of Champlain protecting investors from downside risk and to go into their investment philosophy.

Mr. Brayman explained it was Champlain's belief there is a lot of risk in business from policy mistakes around trade, taxes, business cycles, certain industries get overbuilt and have trouble as they try to unwind the excesses, and currency wars. There is a lot of risk out there and it is an environment where central banks have substantially mitigated the risks. Now they are running out of room for further interest rate cuts because they are already at 0% around the world. Now there is talk that the US central bank may start to normalize interest rates which is creating stress and strain in the system as managers are starting to ask what kind of companies they own and what kinds of companies will do well in a more normalized market. The kinds of high quality companies Champlain likes to own tend to have more control of their destiny than the credit sensitive industries. He reiterated that the chart on page 12 of the presentation materials shows that historically Champlain's process has resulted in substantial value-add when they get into weak market environments on the order of between 5% and 10% value-add in difficult markets. When averaged out, Champlain expects to have 2% to 3% value-add over a full market cycle. Champlain has not been involved with TSRS over a full market cycle yet. Champlain is encouraged that they have been able to keep up as well as they have by taking a lot less risk; they are confident that they will see either normal or difficult environments return in the next 3 to 5 years.

Mr. Weightman said when viewing the last 3 years after fees as of 6/30/15, Champlain is up 18.6% vs. the benchmark at 19.3% per annum.

Mr. O'Hare stated he understood the expectation of the Board was that the target is 2 points over the benchmark for an active manager. He asked what would be the point of hiring an active manager that consistently underperforms the benchmark.

Mr. Brayman explained, through a full market cycle the Board would see at least 2 points over the benchmark but they had not seen a full market cycle.

Ms. O'Connell stated the last 3 and 6 years had not been a full market cycle. Champlain is not going to outperform in all environments. If there is a full market cycle where there is some volatility in the market they should outperform, as they have done historically.

Mr. O'Hare asked whether Champlain could expect to outperform if the next 6 years were in a down market, by 4% so that over 12 years they will have met the target of 2% over the benchmark.

Ms. O'Connell answered theoretically the answer was yes, but it does not necessarily need to be a down market for them to outperform the index. This has been an artificial free money type of market, and not normal for the last 6 years. It has been a positive 6 years because they were up 19% annually. If the current market environment continues for another 6 years Champlain will not outperform.

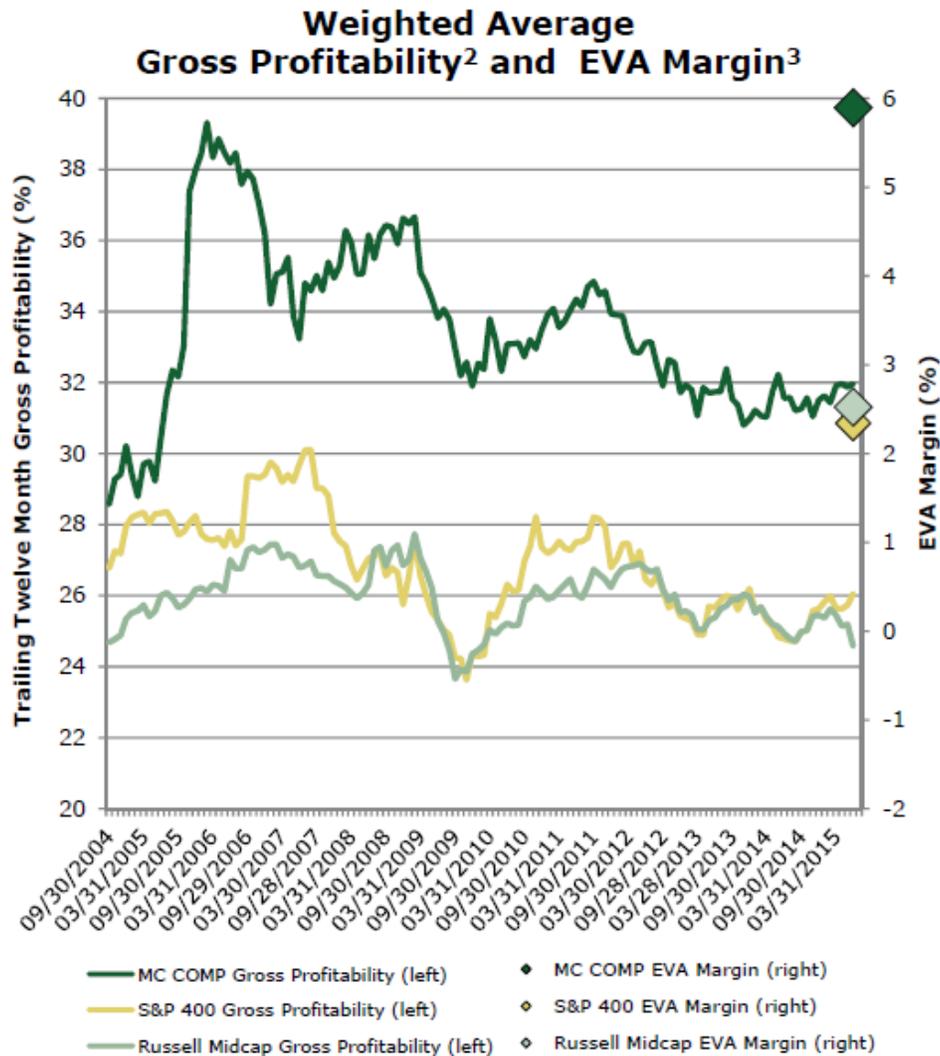
Mr. Weightman explained if Champlain had beat the benchmark, after fees, by 2% over the last 3 years, given that the benchmark is up almost 20%, that would worry him because it would mean they were doing something they had told the Board they were not intending to do within their investment philosophy. The numbers speak precisely to what the message to the Board has been since Champlain was hired. When you have a roaring bull equity market they will trail, that is the expectation. They were hired so that when there is a down market or a market that is up 2%, 3%, or 4% in a year they will outperform. Looking at upside and downside capture ratios, the upside is less than 100% and their downside is less than 100%.

Mr. O'Hare stated there was a lot of risk to the fund in waiting another 6 years to see if they can average out for a 12 year period.

Mr. Weightman answered that spoke to time horizon. The plan is open and being managed in perpetuity as a going concern. Every year the actuarial numbers are viewed to see the funded status of the plan.

Mr. Brayman stated that Champlain would much rather lag in a very strong, absolute return environment where the Board was well ahead of their assumptions in terms of plan expectations. It is in the difficult environments where the markets are not delivering on the Board's plan expectations that Champlain wants to add a lot of value. A good way to consider their fees is that they are an insurance policy for the tough cycles and unexpected events. Looking at history through markets, things happen and they go through tough periods, and it is difficult to expect the strong, absolute returns to continue for another 3 to 5 years. According to the prognosticators, the valuation suggests a return to a more normalized, if not negative, return environment in the near future. The Board cannot compound at 16% in perpetuity, the market is due for some reversion to the mean.

Mr. Brayman directed the Board to turn to page 18 (shown on following page) of the presentation materials.



This graph reflects two credible proxies for high quality, one is gross profitability which is represented by the solid lines, second is the EVA Margin, which is basically the profit minus the cost of capital. In business there is an implied cost of capital for equity and a known cost of capital for debt. What does the company do with that capital, how much of a spread do they earn over that capital? That is a reflection of the business model and of management prowess or acumen; it shows how good they are at investing shareholder capital and capital they borrowed from banks or debt markets. The Board's portfolio has a 600 basis point spread over the cost of capital; the benchmarks are less than 3%. Once the artificiality of free money is removed from the equation, if money is compounded at a 6% spread vs. a 3% spread, given time the difference will be profound. Champlain has done well as they have because they own higher quality companies, but it has been masked by all the artificiality. Given time and better profitability on the gross profitability level, the EVA margin will compound beautifully.

There is a lot of obfuscation with P/E ratios in the industry. Various constituents and benchmark services present the data on their benchmarks, excluding the companies that do not earn money from the calculated P/E ratio. Champlain adds those companies that are not earning back into the ratio to get the weighted harmonic average. If there are 3 companies, one earning \$5 in profits, another earning \$5 in profits, and the 3rd losing \$5 in profits, the total profits would be \$5. Take the market cap of all 3 companies and divide it by the \$5 profit. In other words, the losses are deducted from the profits.

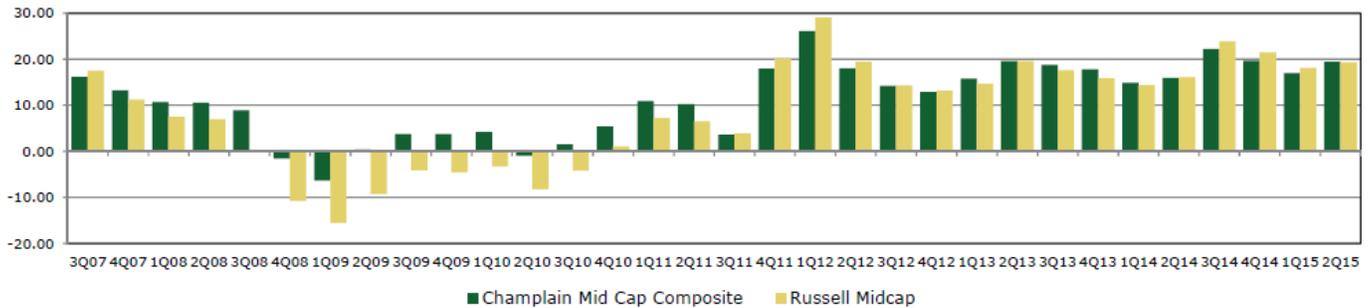
Mr. O'Hare expressed confusion over this explanation.

Ms. O’Connell directed the Board to view the bar chart on page 26 (shown below) of the presentation materials.

Annualized Rolling Returns – as of 06.30.15

Champlain Mid Cap Composite

Rolling 3 Year Quarterly Periods



The chart shows that during periods of normal returns Champlain has outperformed over 3 years. In markets with strong absolute returns Champlain has kept pace but not outperformed.

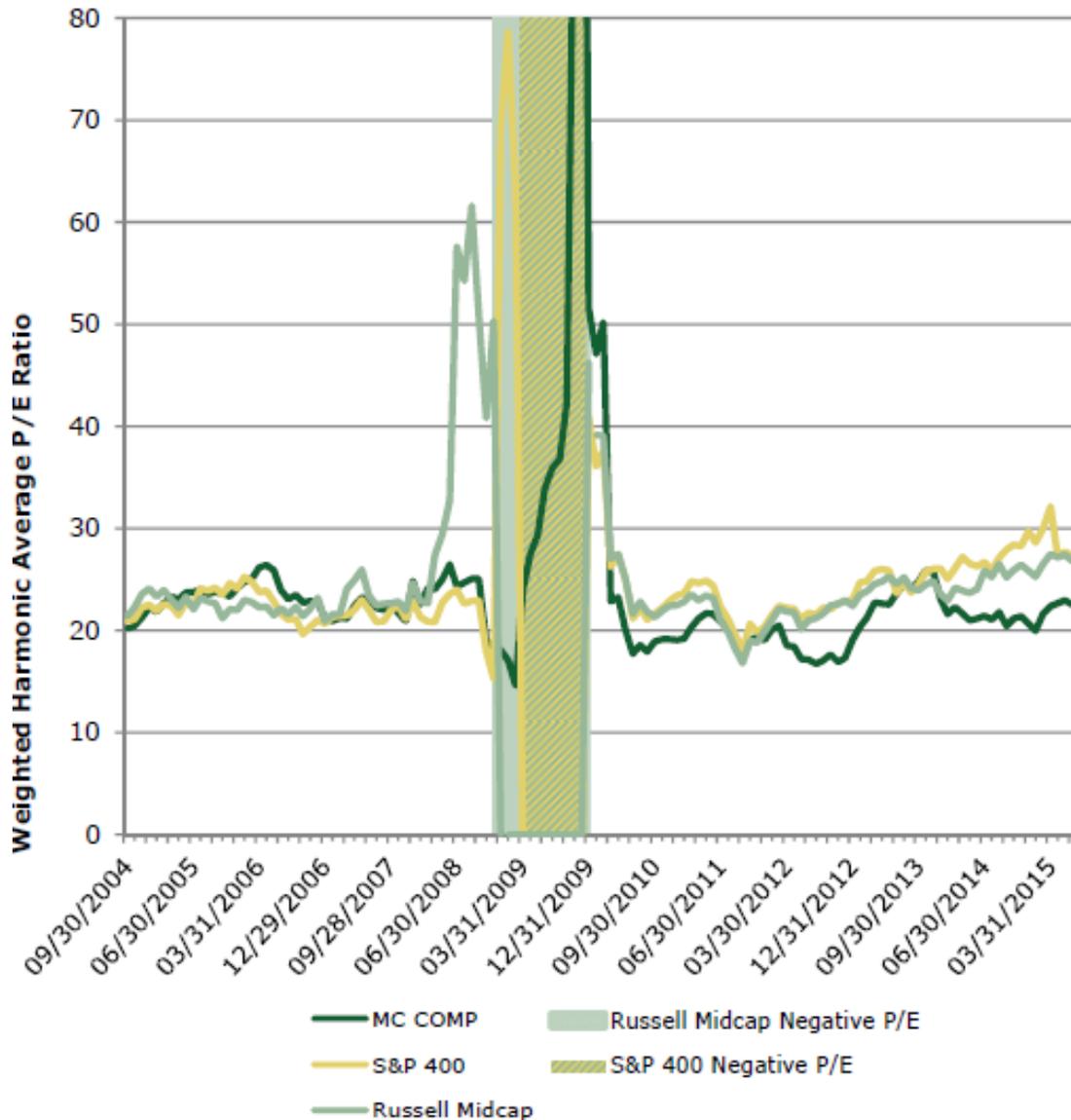
Mr. O’Hare stated these were gross figures rather than net of fees.

Ms. O’Connell answered the fees were 85 basis points, and even if they were to adjust for it they would still outperform for that period. The table on page 37 (shown below) lists the annual returns net of fees.

Annual Returns %			
	Gross	Net	Russell Midcap
YTD 2015	6.94	6.55	2.35
2014	9.19	8.43	13.22
2013	38.92	37.88	34.76
2012	13.05	12.23	17.28
2011	4.04	3.31	-1.55
2010	22.18	21.37	25.48
2009	28.91	28.04	40.48
2008	-25.71	-26.13	-41.46
2007	16.55	15.54	5.69
2006	10.30	9.21	15.58
2005	13.04	11.90	12.70

Mr. Brayman explained that the CFA Institute and Morning Star believe that the weighted harmonic average P/E ratio is a credible method to reflect valuation and the chart on page 18 (shown below) shows that Champlain's valuation is several points less than the benchmark.

Weighted Harmonic Average P/E¹



This is an environment in which, since the 2009 lows, a lot of investors have been chasing risk and beta. Because of the actions of the central banks, there has been a lot of aggressive and bad behavior has been highly rewarded. This means the high quality companies, like those owned by Champlain, are not trading for as much as the other companies, and therein lies the opportunity: the Board is getting a much better set of companies in this portfolio at a lower valuation. There is a lot of valuation risk in the lower quality segment of the portfolio, but there is upside in the higher quality portfolio. Mr. Brayman believes the differential between the discount in the names and the over valuation in the lower quality names will manifest itself over the next 3 to 5 years creating a substantial advantage, which when averaged with the recent lack of advantage will leave the Board feeling very comfortable. The market does tend to be up more than it is down, but the point with Champlain is that they add substantial value in down markets and meaningful value in normal markets; it is the

extremely strong markets, recent returns are at the extreme end of market returns, in which Champlain struggles.

Acting Chairman Coffey stated essentially, Champlain has delivered what they promised.

Mr. Brayman answered they delivered as they expected. It is hard to make promises in this business but they are confident they own high quality, and high quality is undervalued.

Mr. Weightman said if the Board thinks of a full market cycle, the market bottom was 03/09/09 for the S&P 500. If they go back a time period that covers 2008 maybe a full market cycle is around 10 years. Looking at Champlain's numbers after fees over 10 years, they returned 11.2% after fees when the Russell Midcap returned 9.4%. That is close to 2% per annum outperformance after fees. That 10 year number includes a disproportionate amount of bad and a great bull equity markets.

Mr. O'Hare confirmed they were approximately 65 basis points under.

Ms. O'Connell answered yes.

Acting Chairman Coffey asked Mr. Weightman to go over the questions presented to Champlain prior to the meeting.

Mr. Weightman said they had already addressed many of them. He asked if there were any questions the Board felt had not been addressed.

Silvia Amparano asked when Champlain would sell a security.

Mr. Brayman answered they like to sell stocks when they have a lot of confidence that they are overvalued. They also sell when new information comes to light showing they made a mistake in purchasing the stock. Sometimes they change their mind about stocks and have a gain in them. For every stock, there are at least 3 or 4 reasons why they should not buy it. Champlain makes a judgment call that the business model and the prowess of management will overcome these risks, and sometimes they are wrong and will sell as a result.

Ms. O'Connell went over the mid-cap strategy sale discipline. They sell stocks above their estimate of fair value, mistakes, and hold a maximum of 5% of portfolio in companies over \$20B. They trim when position size at market is greater than 5%, and when sector weights exceed investment policy guidelines. They reevaluate holdings when 25% below cost. The benefits of this strategy is they are able to harvest gains, control losses, maintain mid cap exposure, and manage company specific risk.

Mr. O'Hare said he would like to thank Champlain for sending portfolio managers instead of sales staff.

3. Economic Update – Callan Associates

Gordon Weightman distributed a 2nd Quarter Market Update providing some background on what has been happening in the markets. It also looks at asset class returns where the Board has exposure within the portfolio. For the US Economy, overall the indicators are positive. Despite what has been seen in the markets in July/August, with the big correction, the economic indicators are strong. The first estimate of the 2nd quarter GDP was revised up from a negative number to a positive one at 0.6%; the 2nd estimate came out on 8/27/15 at 3.7%. A lot of that was from corporate spending, replenishing their inventories, and consumer spending. Inflation is up 1.8% if food and energy are stripped out. This is very close to the Fed's target of 2%. Unemployment is down, but so is the number of people in the workforce as a result of retirees and discouraged workers leaving the workforce. Even though indicators say that wage growth is picking up, it has been very modest. While unemployment is down, the Fed is not pleased with the total employment picture in the US. Oil is down 44% through 6/30/15 and the per barrel price is now below \$40, mostly due to increased supply.

Mr. Weightman briefly went over the information on page 2 of the distributed material (chart on next page).

Asset Class Performance

Periods Ending June 30, 2015

**Periodic Table of Investment Returns
for Periods Ended June 30, 2015**

Last Quarter	Last 2 Quarters	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
MSCI:Emer Markets 0.8%	MSCI:EAFE US\$ 5.5%	S&P:500 7.4%	S&P:600 Small Cap 18.8%	S&P:600 Small Cap 18.4%	S&P:600 Small Cap 9.3%
MSCI:EAFE US\$ 0.6%	S&P:600 Small Cap 4.2%	S&P:600 Small Cap 6.7%	S&P:500 17.3%	S&P:500 17.3%	MSCI:Emer Markets 8.5%
S&P:500 0.3%	MSCI:Emer Markets 3.1%	Barclays:Aggregate Index 1.9%	MSCI:EAFE US\$ 12.0%	MSCI:EAFE US\$ 9.5%	S&P:500 7.9%
S&P:600 Small Cap 0.2%	S&P:500 1.2%	3 Month T-Bill 0.0%	MSCI:Emer Markets 4.1%	MSCI:Emer Markets 4.0%	MSCI:EAFE US\$ 5.1%
3 Month T-Bill 0.0%	3 Month T-Bill 0.0%	MSCI:EAFE US\$ (4.2%)	Barclays:Aggregate Index 1.8%	Barclays:Aggregate Index 3.3%	Barclays:Aggregate Index 4.4%
Barclays:Aggregate Index (1.7%)	Barclays:Aggregate Index (0.1%)	MSCI:Emer Markets (4.8%)	3 Month T-Bill 0.1%	3 Month T-Bill 0.1%	3 Month T-Bill 1.4%

The striking information here is that Barclays Aggregate Index had a return of -1.7% when interest rates went up. The 10 year treasury went up 43 basis points in the quarter which hurt the TSRS bond portfolios, including PIMCO, so returns were negative for fixed income in the quarter. Over the last year, Barclays Aggregate is at 1.9%, positive but in a low yielding environment. From a big picture perspective there is a lot of macro news behind these numbers. Greece is basically borrowing money to pay off existing debt and there is no clear view of how they will get out of this situation without defaulting. The real risk is not in the situation, they are only responsible for 2% of the Eurozone GDP; the real risk is that if Greece exits does that open the door for other countries to leave the Euro as well. The other big news was slower growth in China. China is a huge importer of goods, they import 25% of the world's gold, 33% of the world's oil, 25% of the world's cotton, and more than 50% of the concrete produced worldwide. They devalued their currency to grow by making their exported goods cheaper. The effect of China's one child per family policy in place for a very long time and now there are not enough young people in the economy to replace those leaving the labor force; explains why they are expecting lower growth. China's local markets fell around 30% on the back of a 150% increase over an 18 month period. The TSRS portfolio does not have any exposure to the Chinese local market, the exposure they do have is through ADRs traded in the US and on the Hong Kong exchange, which were down modestly in the last quarter.

Quarter to date the S&P 500 is down 5.6%. Year to date small cap stocks are down 9.6% from 6/30/15 through 8/26/15. ACWI Ex-US is down 10%; Bonds are up 0.6%.

4. June 30, 2015 TSRS Performance Summary - Callan Associates - Paul Erlendson, Gordon Weightman

Gordon Weightman said for fiscal year 2015, after fees, the TSRS portfolio was up 4.2%, below the 7.25% target, but it comes on the back of 19.1% and 14.2% in 2014 and 2013 respectively. PIMCO received a "Wells

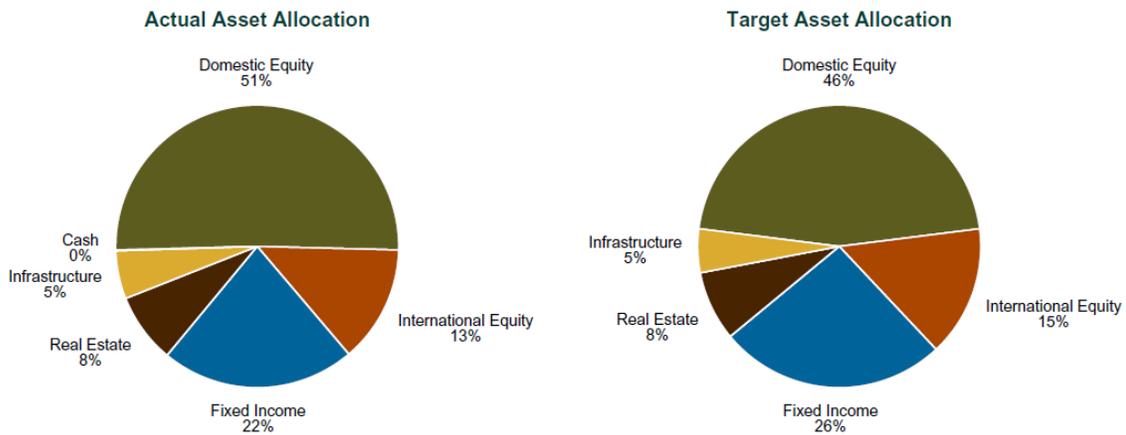
Notice” from the SEC regarding the valuation of securities in the actively managed ETF vehicle of the PIMCO Total Return strategy. This does not mean that they are guilty, only that the SEC is doing an evaluation and analysis. The potential concern is that PIMCO was buying difficult-to-value non-agency MBS in small sizes (“odd lots”) at cheap prices and then valuing these securities at higher prices for the purposes of calculating a NAV for the ETF and calculating performance. In August 2015, Aberdeen Asset Management PLC announced the acquisition of Arden Asset Management LLC, a hedge fund manager. The acquisitions of Arden and FLAG are part of a larger effort to grow and broaden Aberdeen’s global alternatives platform to better serve their clients.

Michael Hermanson commented, the activity in the private equity space has for been minimal, but the activity has picked up recently.

Mr. Weightman explained there have been a lot of institutions looking to invest in private equity; for TSRS to do this, the Board would need to be comfortable with the amount of liquidity needed in the fund to be able to do so. The main reason is clients are looking at expected returns from asset allocation modeling over the next 10 years and it does not seem like they will get 7.25% returns, so they think investing in private equity is a way to close that gap.

**Actual vs Target Asset Allocation
As of June 30, 2015**

The top left chart shows the Fund’s asset allocation as of June 30, 2015. The top right chart shows the Fund’s target asset allocation as outlined in the investment policy statement. The bottom chart ranks the fund’s asset allocation and the target allocation versus the Public Fund Sponsor Database.



Asset Class	\$000s Actual	Weight Actual	Target	Percent Difference	\$000s Difference
Domestic Equity	374,186	50.9%	46.0%	4.9%	35,871
International Equity	98,860	13.4%	15.0%	(1.6%)	(11,460)
Fixed Income	162,948	22.2%	26.0%	(3.8%)	(28,274)
Real Estate	58,760	8.0%	8.0%	0.0%	(77)
Infrastructure	40,220	5.5%	5.0%	0.5%	3,447
Cash	493	0.1%	0.0%	0.1%	493
Total	735,468	100.0%	100.0%		

Looking at the actual asset allocation vs. the target asset allocation for the Total Fund, all managers are within rebalancing ranges though domestic equity is high, fixed income is low, and international is about 2% low. Earlier this year the Board completed an asset allocation and liability study and decided to add money to non-US equity, hire an international small cap manager, and subsequently decided to hire transition managers to facilitate the whole process, which will occur soon. There is a new target asset allocation that has US equity at 34%, non-US equity at 25%, fixed income at 27%, real estate at 9%, and infrastructure at 5%.

For the quarter ended 6/30/15 the market value of the portfolio declined by \$5.7M, the investment return was positive, up 0.62% (net of fees), and there were outflows of \$10.1M. PIMCO Stock Plus (0.00%) trailed the S&P 500 in the quarter (0.28%); they invest in future S&P 500 futures contracts, take the collateral from that and invest in short duration fixed income securities, interest rates went up which brought them down a little bit, but they have added value over the last 3 years. T. Rowe Price has been a very strong manager for the Board as the large cap growth manager. They hold 72 stocks, and last fiscal year and they were up 11.93%, after fees, vs. the index at 10.56%. For Champlain, the expectation as a full market cycle is seen they will outperform. Pyramis small cap is up 14.24% vs. the index at 6.49%. International equity is the weak spot within the Board's portfolio, over the last year the composite is down at -6.46% vs. the benchmark down at -5.26%, for an underperformance after fees of 1.2%. All of that is attributable to Aberdeen. Callan has looked deeply into Aberdeen's portfolio because of how poorly they have been performing. Earnings growth in the non-US equity market is a major driver of returns and Aberdeen is largely absent that factor. They look at things like price to book, price to earnings, and stocks that have been selected based on those metrics have tended to underperform. With the Board's new investment policy, more money will be added to Aberdeen. If the Board thinks that Aberdeen is still a good manager this is a rebalancing opportunity. But, it is also easy to lose confidence in the capabilities of Aberdeen. He recommended sticking with Aberdeen because nothing has changed from a philosophy or implementation perspective. Historically their process has worked and they are just in a period where it is not working. If they change their philosophy and implementation it could cause alarm because they could capitulate at the wrong time. PIMCO manages 2/3 of the Board's bond portfolio in a separate account structure with a specified benchmark, with a target of 25% mortgages, 25% credit, 25% high yield, and 25% emerging market debt. Their short duration helped them in the quarter, but what hurt them was that they had some exposure on the short end of the yield curve and exposure on the long end. The long end exposure hurt them as interest rates rose. They also have a long dollar bias, they hedge currency within this portfolio as they see fit, and hedged against the Euro which rose in the quarter. The Board now has to look back 5 years to see outperformance from PIMCO (5.10% vs. 4.99% index). Over the long term, PIMCO has been a very good manager for TSRS, so Mr. Weightman did not believe anything needed to be adjusted. The JP Morgan Strategic Property Fund has trailed after fees over the last year vs. the index, however they are more conservative than the peer group. They are leveraging at 26.5% of return and saw a return of 12.28%; more leverage will substantially improve the return. The role of real estate within the Board's portfolio is to act as a diversifier against equity and bond portfolios. The Incoming Growth Fund is more aggressive than the Strategic Property Fund, which has 40% leverage. They returned 14.7% over the last year and 15.9% over the last 3 years. Those are very strong returns for real estate after fees.

Acting Chairman Coffey asked about the mechanism to discuss and potentially remove Aberdeen from the Board's portfolio.

Mr. Weightman answered the mechanism was the Investment Policy Statement, recently reviewed and adopted by the Board. There are evaluation criteria for managers, qualitative and quantitative, but it is really left to the judgment and conviction of the Board. One thing the Board would have to be confident in, if they decided to make a switch with Aberdeen, is that they could select a manager that could then outperform. He has seen many times that if performance is used as an indicator to make that decision often times the manager is hired at the top of their cycle and the first 3 years performance is often negative.

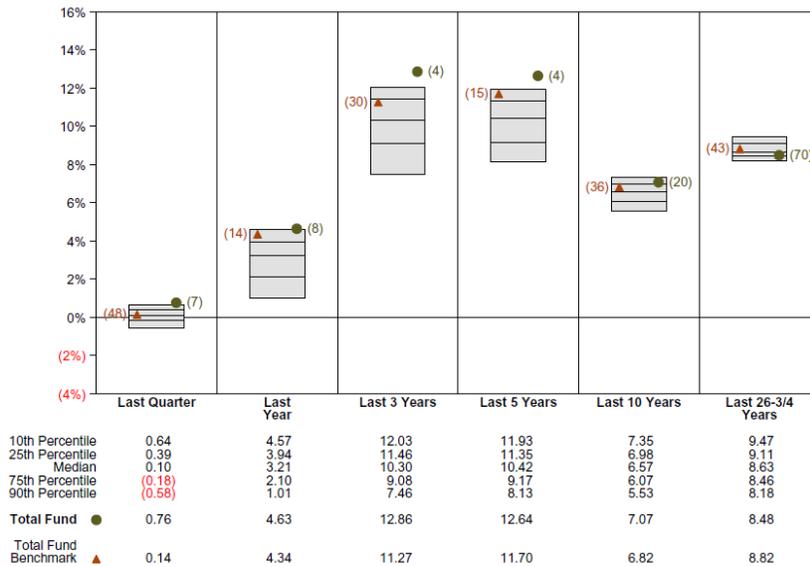
Michael Hermanson asked if Callan could provide a report on Aberdeen next quarter so that the Board could have more information on this manager.

Mr. Weightman answered this could be achieved in several ways. Aberdeen representatives could come in to present to the Board again, Callan international equity specialists could come and present to the Board regarding Aberdeen, or they could write up a detailed report and send it to the Board.

The Board asked for a detailed report from Callan.

Mr. Weightman moved on, directing the Board to look at the peer group ranking chart on page 40 of the presentation materials.

Performance vs Public Fund Sponsor Database (Gross)



Despite the struggles of Aberdeen and PIMCO, the Board’s peer group rankings have been great over the last 5 and 10 years. The floating bar charts capture the 10th to 90th percentiles of distribution of returns for public funds. In the last year, the Board did not achieve the 7.25% target returns, but they were in the 8th percentile of all public fund sponsors at 4.6%. The median for the range of returns was 3.2%.

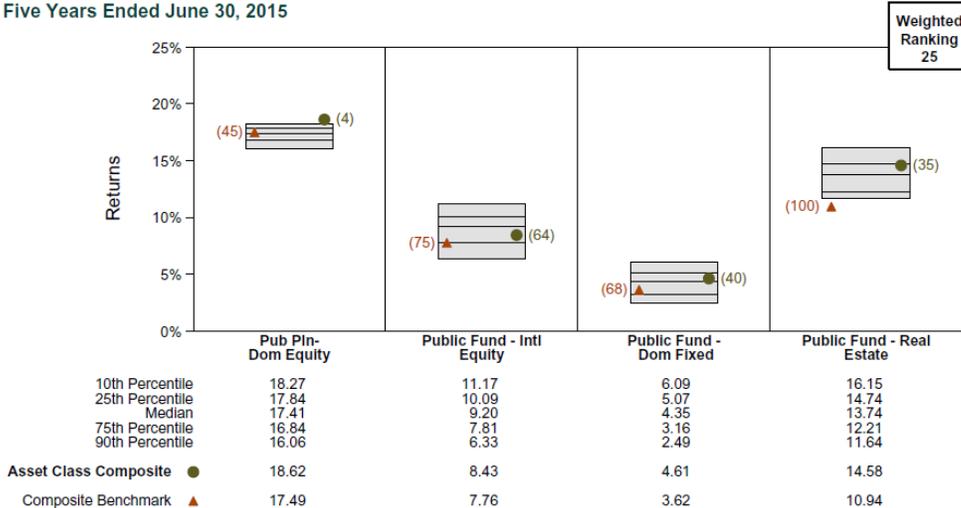
Mr. O’Hare asked how many public funds were in the population.

Mr. Weightman answered it was well over 100.

Mr. O’Hare asked if Public Funds were able to obtain the same managerial talent as the other funds competing with them.

Mr. Weightman explained the Board’s domestic equity portfolio has attained 18.6% over 5 years, which is 4th percentile and the median is 17.4%. The benchmark has been in the 45th percentile while the Boards portfolio has been in the 4th, so the Board in aggregate has managers that outperform. Public funds have access to the best investment managers in the world and small cap is a place where there has been outperformance while large cap has not been, though that is not true for the Board’s portfolio. He summarized the floating bar chart showing the Boards 5 year asset class performance.

Total Asset Class Performance
Five Years Ended June 30, 2015



Acting Chairman Coffey asked if the Public Fund Sponsor Database was a creation of Callan's.

Mr. Weightman answered yes; all the peer groups are maintained and controlled by Callan. They freeze them quarterly to eliminate any survivorship biases, and they buy data to supplement the data provided by Callan clients and make it a more robust peer group. Even though a lot of time was spent on the managers who have not been performing there was a lot of good news in the quarterly report. It is very rare to find a manager who outperforms in all markets.

5. TSRS Portfolio composition, transactions and performance review for 07/31/15

Silvia Navarro reported as of 7/31/15 the total portfolio value was \$742M, as of 8/26/15, it was \$717M.

Calendar YTD returns – thru the end of July, the Total Fund returned 4.07% vs. the Custom Plan Index at 2.96%; Total Fixed returned 1.38% vs. the Barclays Aggregate at 0.60%; Total Equities returned 4.88% vs. Equity Composite at 4.06%; Total Real Estate returned 9.13% (no index avail. yet); Total Infrastructure returned -0.92% vs. the CPI +4% at 3.98%.

Fiscal YTD returns – As of 7/31/15 the Total Fund returned 1.16% vs. the Custom Plan Index at 0.89%; Total Fixed returned 0.61% vs. the Barclays Aggregate at 0.70%; Total Equities returned 1.55% vs. the Equity Composite at 1.37%; Total Real Estate returned 0.61% (no index avail. yet); and Total Infrastructure returned -0.44% vs. the CPI +4% at 0.33%.

Trailing One Year Returns – As of 7/31/15 the Total Fund returned 6.90% vs. the Custom Plan Index at 6.77%; Total Fixed returned 2.07% vs. Barclays Aggregate at 2.82%; Total Equities returned 8.81% vs. the Equity Composite at 7.83%; Total Real Estate returned 13.22% vs. the NCREIF at 14.43% (as of 6/30/15); and Total Infrastructure returned -2.64% vs. the CPI +4% at 4.18%.

\$2M was transferred into the pension fund to pay for retiree benefits for the month of July.

C. Disability Retirement Application – Gina Callen*

A motion to enter executive session was made by Curry Hale, 2nd by Silvia Amparano, and passed by a vote of 4 – 0 (Chairman Fleming and Kevin Larson absent, Acting Chairman Coffey did not vote).

A motion to return to regular session was made by Curry Hale, 2nd by Jorge Hernández, and passed by a vote of 4 – 0 (Chairman Fleming and Kevin Larson absent, Acting Chairman Coffey did not vote).

A motion to approve the disability retirement application of Gina Callen was made by Curry Hale, 2nd by John O'Hare, and passed by a vote of 4 – 0 (Chairman Fleming and Kevin Larson absent, Acting Chairman Coffey did not vote).

D. Administrative Discussions

1. Discussion of treatment for non-trust related expenses

Michael Hermanson explained this was an informational item. On occasions, the retirement office is asked to support activities that are unrelated to the trust, for example administering the 457 defined benefit plan, but the plan is reimbursed for the expenditures related to those tasks. Currently, the PSPRS 401a program has requested the retirement office to provide support on implementing a new program for member of the Arizona PSPRS, and there are hard costs incurred for services provided by outside council in this endeavor. These services will be billed to PSPRS not TSRS.

Silvia Amparano clarified that the PSPRS Board voted to add a 401a deferred compensation option. Since the retirement office is responsible for making sure the City is in compliance with the IRS and other entities, Mr.

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

8/10/15 - 9/09/15 - September 2015

Name of Applicant	Department	Type	Effective Date	Date of Birth	Age	Credited Service	Present Value	Member's Accumulated	AFC	Option	Pension
Barnett, Wayne A	Parks & Recreation	Normal	8/29/2015	11/13/1965	49.79	30.2299	529,389.81	154,522.32	5,250.27	J&S 50%	3,352.08
Beusoleil, Stella M.	Police	Normal	8/28/2015	7/19/1944	71.11	21.7526	180,526.73	65,891.78	3,330.49	Single life	1,630.05
Caldo, John	Parks & Recreation	Normal	8/18/2015	11/20/1952	62.744	8.3096	49,081.67	24,212.93	2,107.40	Single life	394.01
Callen, Gina M	Fire Department	Disability	8/28/2015	11/3/1964	50.82	15.4587	202,756.42	53,852.20	3,875.13	J&S 100%	1,287.93
Darkes, Dawn	City Public Defender	Normal	9/9/2015	2/23/1958	57.54	22.6666	444,152.33	150,366.28	6,218.12	Single life	3,171.23
Gregory, Karen	Finance	Normal	9/10/2015	10/30/1960	54.86	30.5472	348,863.61	118,860.40	3,501.43	Single life	2,406.58
Guzman, Victor M	Housing & Comm. Dev.	Normal	8/15/2015	2/3/1964	51.53	29.8234	445,579.68	149,240.18	4,566.10	Single life	3,063.97
Ingram, Thomas F	Housing & Comm. Dev.	Normal	9/1/2015	6/21/1951	64.19	18.5128	277,617.94	84,622.01	5,453.40	J&S 50%	2,041.65
Lewis, Lori P.	City Attorney	Normal	9/5/2015	5/1/1958	57.34	27.6891	688,377.67	238,301.47	7,793.75	Single life	4,855.54
Romo, David E	Water	Normal	8/1/2015	10/5/1953	61.82	38.4027	535,391.54	215,009.18	4,884.56	Single life	4,220.56
Stark, Denise A	Housing & Comm. Dev.	Deferred	8/19/2015	8/19/1953	62.00	7.9159	59,863.78	17,561.16	2,539.33	Single life	452.28
Verdugo, Julio C	Transportation	Normal	9/2/2015	3/14/1957	58.47	21.5718	265,854.28	80,385.02	4,050.92	Single life	1,966.18
									53,570.90		28,842.06
Averages					58.52	22.74	335,621.29	112,735.41	4,464.24		2,403.51

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

	Plan Year beginning 07/01/2014 (**from GRS annual valuation)			(August 2015) Pension Payroll		Annualized	Annual change since July 1, 2014	% change
	Monthly	Annual						
Service Pensions	2,264	4,860,656	58,327,872	2,323	5,043,517	60,522,205	2,194,333	3.76%
Disability Pensions	156	169,123	2,029,477	156	171,632	2,059,589	30,112	1.48%
Survivor Pensions	344	326,541	3,918,488	330	321,605	3,859,257	(59,231)	-1.51%
	2,764	5,356,320	64,275,837	2,809	5,536,754	66,441,052	2,165,215	3.37%
				7	\$ 14,673			
				(net) change from previous month				

Report ID : FIN-COT-BA-0001

Run Date : 09/18/2015

Run Time : 01:33 PM

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

Item A3

Parameter Page

Parameters and Prompts

Fiscal Year	2016
Accounting Period	2
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.

City of Tucson
Budget vs Actual Expenses
Through: August, 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	5,038,294.07	5,038,294.07	0.00	10,065,388.81	10,065,388.81	63,300,000	53,234,611.19	84.10 %
Total for 100 - PAYROLL CHGS	0.00	5,038,294.07	5,038,294.07	0.00	10,065,388.81	10,065,388.81	63,300,000	53,234,611.19	84.10 %
Total for Unit 9001 - Normal Retiree Benefit	0.00	5,038,294.07	5,038,294.07	0.00	10,065,388.81	10,065,388.81	63,300,000	53,234,611.19	84.10 %

City of Tucson
Budget vs Actual Expenses
Through: August, 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	287,958.16	287,958.16	0.00	576,827.46	576,827.46	3,100,000	2,523,172.54	81.39 %
Total for 100 - PAYROLL CHGS	0.00	287,958.16	287,958.16	0.00	576,827.46	576,827.46	3,100,000	2,523,172.54	81.39 %
Total for Unit 9003 - Normal Retiree Beneficiary Benefi	0.00	287,958.16	287,958.16	0.00	576,827.46	576,827.46	3,100,000	2,523,172.54	81.39 %

Run Date : 09/18/2015

Run Time : 01:33 PM

City of Tucson
Budget vs Actual Expenses
Through: August, 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	171,632.45	171,632.45	0.00	343,589.36	343,589.36	1,975,000	1,631,410.64	82.60 %
Total for 100 - PAYROLL CHGS	0.00	171,632.45	171,632.45	0.00	343,589.36	343,589.36	1,975,000	1,631,410.64	82.60 %
Total for Unit 9020 - Disability Retiree Benefit	0.00	171,632.45	171,632.45	0.00	343,589.36	343,589.36	1,975,000	1,631,410.64	82.60 %

Run Date : 09/18/2015

Run Time : 01:33 PM

City of Tucson
Budget vs Actual Expenses
Through: August, 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	17,721.60	17,721.60	0.00	33,544.34	33,544.34	211,940	178,395.66	84.17 %
108 - DOWNTOWN ALLOWANCE & DISCOUNTED TRANSIT PASSES	0.00	92.32	92.32	0.00	174.76	174.76	1,160	985.24	84.93 %
113 - SUPPLEMENTAL PENSION CONTRIBUTION	0.00	4,873.44	4,873.44	0.00	9,224.69	9,224.69	58,280	49,055.31	84.17 %
114 - FICA (SOCIAL SECURITY)	0.00	1,328.92	1,328.92	0.00	2,515.47	2,515.47	15,410	12,894.53	83.68 %
115 - WORKERS COMPENSATION INSURANCE	0.00	233.03	233.03	0.00	367.51	367.51	5,930	5,562.49	93.80 %
116 - GROUP PLAN INSURANCE	0.00	2,588.98	2,588.98	0.00	5,254.12	5,254.12	30,920	25,665.88	83.01 %
117 - STATE UNEMPLOYMENT	0.00	17.34	17.34	0.00	32.82	32.82	300	267.18	89.06 %
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	26,855.63	26,855.63	0.00	60,130.37	60,130.37	544,740	484,609.63	88.96 %
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	6,865.00	6,865.00	0.00	9,603.00	9,603.00	65,000	55,397.00	85.23 %
213 - LEGAL	0.00	0.00	0.00	0.00	0.00	0.00	50,000	50,000.00	100.00 %
219 - MISCELLANEOUS PROFESSIONAL SERVICES	0.00	(331,727.20)	(331,727.20)	0.00	(331,727.20)	(331,727.20)	4,059,500	4,391,227.20	108.17 %
221 - INSUR-PUBLIC LIABILITY	0.00	154.24	154.24	0.00	258.91	258.91	29,160	28,901.09	99.11 %
228 - HAZARDOUS WASTE INSURANCE	0.00	42.84	42.84	0.00	59.14	59.14	560	500.86	89.44 %
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: August, 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	75.46	75.46	0.00	165.30	165.30	0	(165.30)	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	0.00	(324,589.66)	(324,589.66)	0.00	(320,810.85)	(320,810.85)	4,269,880	4,590,690.85	107.51 %
311 - OFFICE SUPPLIES	0.00	79.48	79.48	0.00	210.67	210.67	7,500	7,289.33	97.19 %
312 - PRINTING,PHOTOGRAPHY,REPRODUCTION	0.00	58.48	58.48	0.00	1,455.17	1,455.17	7,500	6,044.83	80.60 %
314 - POSTAGE	0.00	92.87	92.87	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	230.83	230.83	0.00	1,758.71	1,758.71	27,250	25,491.29	93.55 %
Total for Unit 9021 - Pension Fund Administration	0.00	(297,503.20)	(297,503.20)	0.00	(258,921.77)	(258,921.77)	4,841,870	5,100,791.77	105.35 %

Run Date : 09/18/2015

Run Time : 01:33 PM

City of Tucson
Budget vs Actual Expenses
Through: August, 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	31,071.20	31,071.20	0.00	62,142.40	62,142.40	350,000	287,857.60	82.25 %
Total for 100 - PAYROLL CHGS	0.00	31,071.20	31,071.20	0.00	62,142.40	62,142.40	350,000	287,857.60	82.25 %
Total for Unit 9022 - Disability Retiree Beneficiary Ben	0.00	31,071.20	31,071.20	0.00	62,142.40	62,142.40	350,000	287,857.60	82.25 %

City of Tucson
Budget vs Actual Expenses
Through: August, 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	185,764.06	185,764.06	0.00	402,505.00	402,505.00	2,400,000	1,997,495.00	83.23 %
Total for 100 - PAYROLL CHGS	0.00	185,764.06	185,764.06	0.00	402,505.00	402,505.00	2,400,000	1,997,495.00	83.23 %
Total for Unit 9023 - ACTIVE MEMBER REFUNDS-CON	0.00	185,764.06	185,764.06	0.00	402,505.00	402,505.00	2,400,000	1,997,495.00	83.23 %

Run Date : 09/18/2015

Run Time : 01:33 PM

City of Tucson
Budget vs Actual Expenses
Through: August, 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	1,169.94	1,169.94	0.00	5,595.01	5,595.01	50,000	44,404.99	88.81 %
Total for 100 - PAYROLL CHGS	0.00	1,169.94	1,169.94	0.00	5,595.01	5,595.01	50,000	44,404.99	88.81 %
Total for Unit 9025 - INTEREST ON REFUNDS	0.00	1,169.94	1,169.94	0.00	5,595.01	5,595.01	50,000	44,404.99	88.81 %

City of Tucson
Budget vs Actual Expenses
Through: August, 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 %

Run Date : 09/18/2015

Run Time : 01:33 PM

City of Tucson
Budget vs Actual Expenses
Through: August, 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	(8,811.37)	(8,811.37)	0.00	(8,811.37)	(8,811.37)	0	8,811.37	0.00%
Total for 100 - PAYROLL CHGS	0.00	(8,811.37)	(8,811.37)	0.00	(8,811.37)	(8,811.37)	0	8,811.37	0.00%
Total for Unit 9027 - CREDITABLE SERVICE TRANS(A:	0.00	(8,811.37)	(8,811.37)	0.00	(8,811.37)	(8,811.37)	0	8,811.37	0.00%
Total for Fund 072 - TUCSON SUPP RETIREMENT SYS	0.00	5,409,575.31	5,409,575.31	0.00	11,250,233.30	11,250,233.30	76,216,870	64,966,636.70	85.24 %
Total for Department 900 - TUCSON SUPPL RETIREME	0.00	5,409,575.31	5,409,575.31	0.00	11,250,233.30	11,250,233.30	76,216,870	64,966,636.70	85.24 %
Grand Totals	0.00	5,409,575.31	5,409,575.31	0.00	11,250,233.30	11,250,233.30	76,216,870	64,966,636.70	85.24 %

Memorandum

To: Tucson Supplemental Retirement System
From: Gordon Weightman, CFA & Paul Erendson
Date: September 11, 2015
Subject: Aberdeen EAFE Plus

TSRS's account with Aberdeen EAFE Plus invests in non-U.S. stocks the manager believes are of high quality and reasonably priced. The first full quarter for TSRS's investment with Aberdeen was the third quarter of 2012. Over that period Aberdeen has returned 5.85% per annum while the MSCI ACWI ex-U.S.¹ benchmark returned 9.44% as of 6/30/15.

This has been a noticeably difficult period of performance for Aberdeen although it is not inconsistent with their philosophy to protect in down markets at the expense of lower upside in rising equity markets. This is evident in Aberdeen's low volatility of returns versus peers (see Exhibit 2) and portfolio positioning in sectors and companies that have historically exhibited more defensive characteristic such as consumer staples, industrials, and telecommunication.

Callan's International Equity specialists recently met with Aberdeen to discuss their relative underperformance. During the meeting several headwinds to performance were identified including:

- International Equity Markets have been led by price momentum and 3-month analyst revisions for over two years, which is an extended period when compared to history. Aberdeen is under exposed to these factors.
- Valuation and quality factors such as P/B (value) and ROE (quality) have been negative contributors across all global markets except the U.S. Aberdeen's exposure to these factors remains high.
- Aberdeen's investment approach leads them to favor stocks they believe are trading at reasonable prices that are often below intrinsic value. Multiple expansion (e.g. an increase in P/E) has led to an environment where stocks believed to be overvalued continue to outperform those believed to be undervalued. Historically, this has been a cyclical pattern where value goes in and out of favor relative to the broad market.
- Exposure to Energy and Materials are high in absolute terms and relative to the benchmark. These have been major sources of recent underperformance as they are influenced by

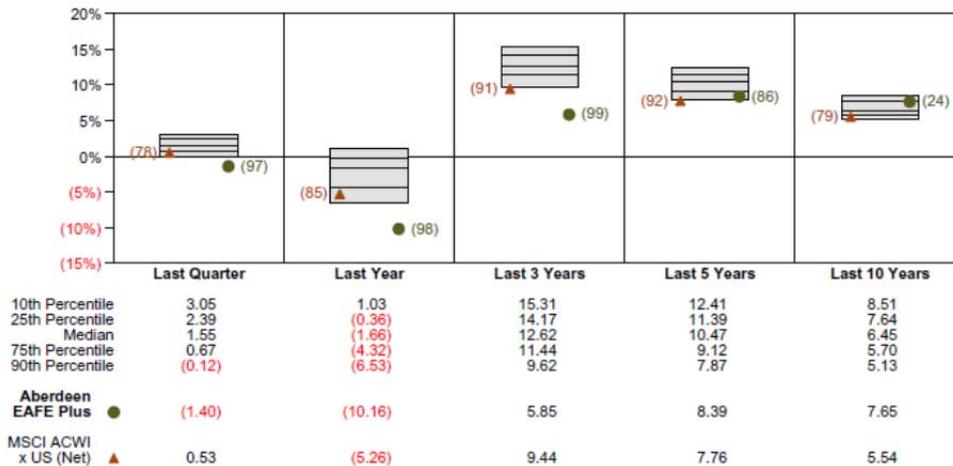
¹ MSCI ACWI ex-U.S. stands for Morgan Stanley Capital International All-Country World Index excluding the U.S. It essentially covers all publicly traded equities everywhere except the U.S.

movement in commodity prices. Investment in these sectors is largely in companies with high quality proven reserves, low cost production, and strong management.

- Aberdeen EAFE Plus is a concentrated portfolio designed to look different from the benchmark. This naturally leads to periods of relative performance variation versus the benchmark.

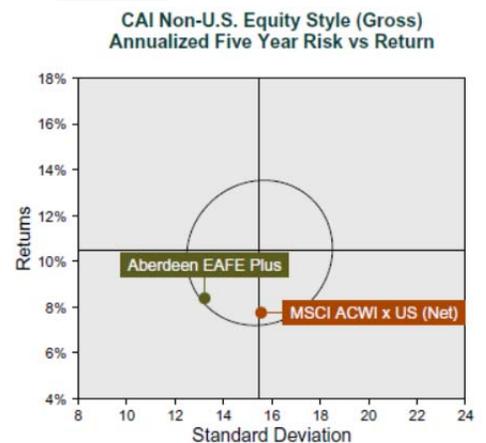
Aberdeen's performance versus the benchmark and peers as of 6/30/15 is illustrated in **Exhibit 1**. The last three-year column reflects TSRS's actual experience with Aberdeen before deduction of investment management fees. Despite the recent performance struggles, Aberdeen's five- & ten-year returns are still above benchmark.

Exhibit 1
Performance vs CAI Non-U.S. Equity Style (Gross)



Over five-years ended 6/30/15, Aberdeen has outperformed the benchmark while taking on less risk. **Exhibit 2** is a return and risk chart that shows the volatility of return for Aberdeen, peers (the ellipse captures 80% of the peer group's results) and the benchmark. Aberdeen's lower risk portfolio is a result of their bottom-up stock selection process to find what they believe are quality stocks trading at reasonable valuations.

Exhibit 2



Callan

Conclusion

Aberdeen's relative underperformance is explainable and understandable. It appears they are selecting stocks based on a consistent investment philosophy that has been practiced over time even while their strategy has been out of favor. There have been no major changes to the investment philosophy, research process or personnel at the firm. Callan believes that a period of three years is too short a time-frame to make a conclusion about a manager's performance. Many of the headwinds bulleted above appear to be temporary.

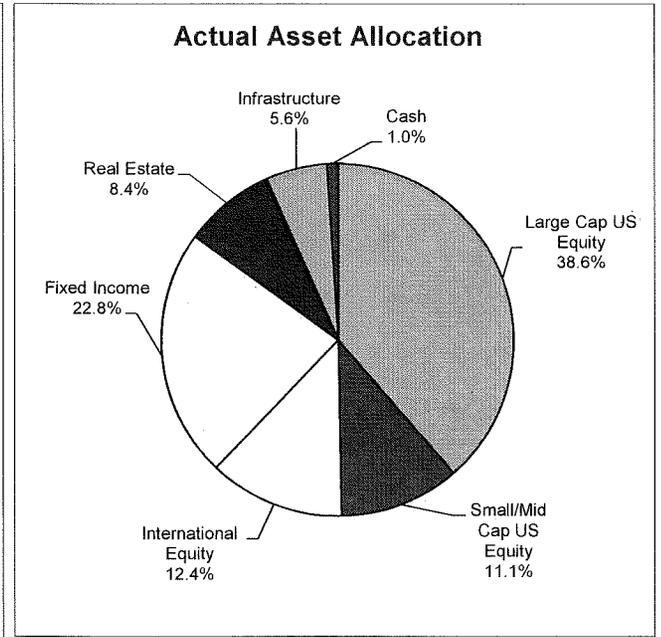
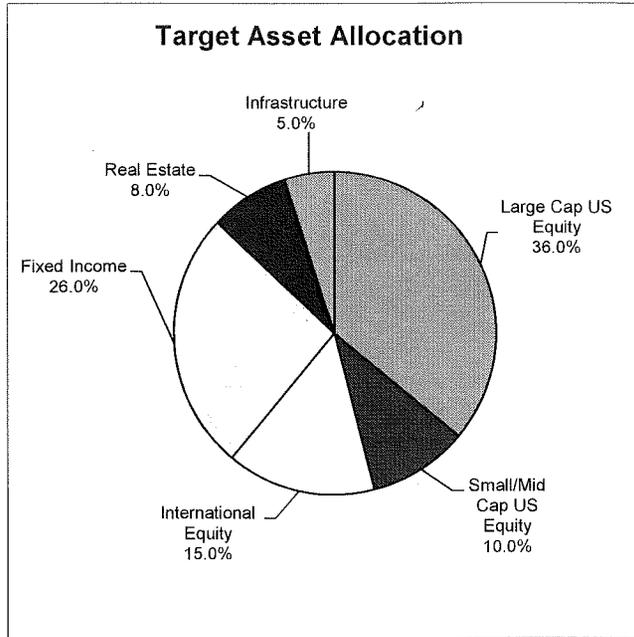
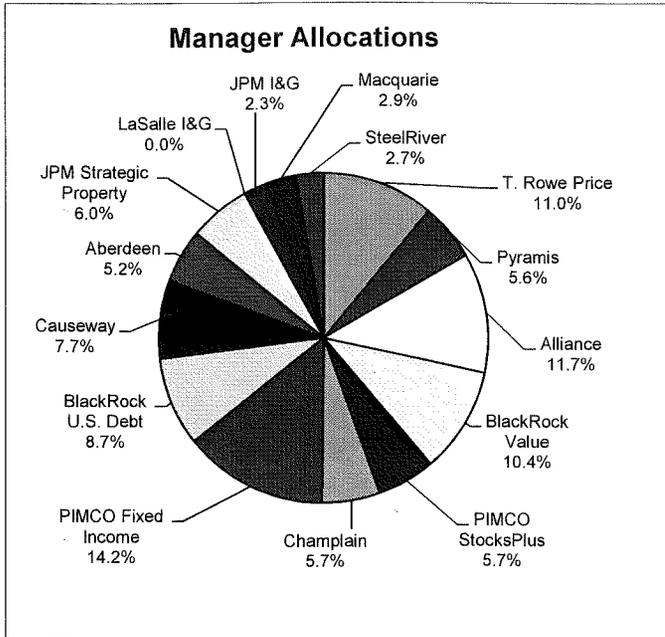
Manager Allocations Compared with Policy Levels

Monthly Report as of: 08/31/15

<i>Managers and Asset Class</i>	<i>Actual</i>		<i>Target</i>		<i>Differences</i>		<i>Range</i>		<i>Outside Range</i>
	<i>(000s)</i>	<i>%</i>	<i>(000s)</i>	<i>%</i>	<i>From Target</i>		<i>Min</i>	<i>Max</i>	
T. Rowe Price	\$ 78,025	11.0%	\$ 71,248	10.0%	1.0%	\$ 6,777	8.0%	12.0%	0.0%
Alliance (S&P 500)	83,330	11.7%	78,373	11.0%	0.7%	4,957	8.0%	14.0%	0.0%
BlackRock Value	74,301	10.4%	71,248	10.0%	0.4%	3,053	8.0%	12.0%	0.0%
PIMCO StocksPlus	40,909	5.7%	35,624	5.0%	0.7%	5,285	3.0%	7.0%	0.0%
Large Cap U.S. Equity	276,565	38.8%	256,493	36.0%	2.8%	20,072	31.0%	41.0%	0.0%
Pyramis	40,170	5.6%	35,624	5.0%	0.6%	4,546	3.0%	7.0%	0.0%
Champlain	40,489	5.7%	35,624	5.0%	0.7%	4,865	3.0%	7.0%	0.0%
Small/Mid Cap U.S. Equity	80,659	11.3%	71,248	10.0%	1.3%	9,411	6.0%	14.0%	0.0%
Causeway Capital Mgmt	54,804	7.7%	53,436	7.5%	0.2%	1,368	5.5%	9.5%	0.0%
Aberdeen Asset Mgmt	37,326	5.2%	53,436	7.5%	-2.3%	(16,110)	5.5%	9.5%	-0.3%
International Equity	92,129	12.9%	106,872	15.0%	-2.1%	(14,743)	13.0%	17.0%	-0.1%
Total Stocks	449,354	63.0%	434,613	61.0%	2.0%	14,740	56.0%	66.0%	0.0%
PIMCO Fixed Income	100,993	14.2%	113,997	16.0%	-1.8%	(13,004)	13.0%	19.0%	0.0%
BlackRock U.S. Debt	61,787	8.7%	71,248	10.0%	-1.3%	(9,461)	8.0%	12.0%	0.0%
Total Bonds	162,780	22.9%	185,245	26.0%	-3.1%	(22,465)	21.0%	31.0%	0.0%
JPM Strategic Property	43,044	6.0%	35,624	5.0%	1.0%	7,420	3.0%	7.0%	0.0%
LaSalle Income & Growth IV	62	0.0%	10,687	1.5%	-1.5%	(10,625)	0.0%	3.0%	0.0%
JPM Income & Growth	16,427	2.3%	10,687	1.5%	0.8%	5,739	0.0%	3.0%	0.0%
Total Real Estate	59,532	8.3%	56,998	8.0%	0.3%	2,534	6.0%	10.0%	0.0%
Macquarie	20,948	2.9%	17,812	2.5%	0.4%	3,136	1.5%	3.5%	0.0%
SteelRiver	19,080	2.7%	17,812	2.5%	0.2%	1,268	1.5%	3.5%	0.0%
Total Infrastructure	40,028	5.6%	35,624	5.0%	0.6%	4,404	3.0%	7.0%	0.0%
Liquidity Fund	787	0.1%	-	-	-	-	-	-	-
Total Fund	\$ 712,481	100%	\$ 712,481	100%					

Allocation Summaries

As of: 08/31/15



Investment Manager Allocation:

<u>Investment Account</u>	<u>(000s)</u>
1 T. Rowe Price	\$ 78,025
2 Pyramis	40,170
3 Alliance	83,330
4 BlackRock Value	74,301
5 PIMCO StocksPlus	40,909
6 Champlain	40,489
7 PIMCO Fixed Income	100,993
8 BlackRock U.S. Debt	61,787
9 Causeway	54,804
10 Aberdeen	37,326
11 JPM Strategic Property	43,044
12 LaSalle I&G	62
13 JPM I&G	16,427
14 Macquarie	20,948
15 SteelRiver	19,080
Liquidity Account	787
Total Assets	\$ 712,481

Target Asset Allocation:

<u>Asset Class</u>	<u>(000s)</u>
Large Cap US Equity	256,493
Small/Mid Cap US Equity	71,248
International Equity	106,872
Fixed Income	185,245
Real Estate	56,998
Infrastructure	35,624
Total Assets	\$ 712,481

Actual Asset Allocation:

<u>Asset Class</u>	<u>(000s)</u>
Large Cap US Equity	274,905
Small/Mid Cap US Equity	79,327
International Equity	88,626
Fixed Income	162,780
Real Estate	59,532
Infrastructure	40,028
Cash	7,283
Total Assets	\$ 712,481

**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	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%
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	-0.06%	0.45%	0.78%	0.66%	-2.82%	-5.98%	-3.22%	5.40%	5.13%	0.00%	-10.17%	-0.35%	-1.49%	9.25%	27.65%	11.73%	9.89%	2.95%	-2.93%	-0.19%

Benchmark Returns:																				
Latest Month	-3.94%	-0.14%	-0.84%	-0.14%	-6.03%	-5.96%	-6.03%	-6.07%	-6.28%	-5.28%	-7.64%	-7.36%	-6.35%	-	-	-	-	0.19%	0.19%	0.19%
Cldr Yr to Date	-0.78%	0.45%	0.40%	0.45%	-2.87%	-6.14%	-2.87%	0.97%	-2.97%	-2.34%	-4.18%	-0.20%	-2.54%	7.34%	7.34%	7.34%	7.34%	4.18%	4.18%	4.18%
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: 06/30/15

(2) CYTD Index returns thru: 07/31/15

**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	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%
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	-2.86%	0.55%	-0.50%	-0.10%	-4.00%	-5.51%	-4.63%	-1.01%	-4.14%	-6.14%	-9.55%	-4.84%	-4.61%	1.83%	0.00%	0.00%	1.31%	0.00%	0.57%	0.30%

Benchmark Returns:																				
Latest Month	-3.94%	-0.14%	-0.84%	-0.14%	-6.03%	-5.96%	-6.03%	-6.07%	-6.28%	-5.28%	-7.64%	-7.36%	-6.35%	-	-	-	-	0.19%	0.19%	0.19%
Fiscal Yr to Date	-3.08%	0.56%	-0.56%	0.56%	-4.06%	-5.55%	-4.06%	-2.89%	-7.37%	-4.58%	-7.90%	-5.43%	-5.07%	0.00%	0.00%	0.00%	0.00%	0.53%	0.53%	0.53%
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)	CPI + 4% (2)	CPI + 4% (2)	CPI + 4% (2)			

(1) FYTD Index returns thru: 06/30/15

(2) FYTD Index returns thru: 08/31/15

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

	Total Fund	BlackRock U.S. Debt	PIMCO 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
SEP '14	-1.87%	-0.62%	-1.43%	-1.13%	-1.39%	-2.02%	-1.27%	-1.60%	-4.80%	-2.79%	-4.88%	-2.38%	-2.40%	1.06%	0.00%	0.00%	0.76%	0.00%	-4.10%	-2.27%
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%
1-YTD	0.28%	1.64%	-0.62%	0.22%	0.55%	-3.28%	-0.04%	8.46%	9.33%	1.73%	-19.91%	-6.78%	-1.01%	10.98%	22.87%	14.75%	13.45%	5.52%	-8.20%	-2.06%

Benchmark Returns:																				
Latest Month	-3.94%	-0.14%	-0.84%	-0.14%	-6.03%	-5.96%	-6.03%	-6.07%	-6.28%	-5.28%	-7.64%	-7.36%	-6.35%	-	-	-	-	0.19%	0.19%	0.19%
One Yr to Date	0.08%	1.56%	-0.91%	1.56%	0.50%	-3.49%	0.50%	4.27%	0.03%	0.01%	-12.36%	-7.46%	-2.20%	14.43%	14.43%	14.43%	14.43%	4.21%	4.21%	4.21%
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)	CPI + 4% (2)	CPI + 4% (2)	CPI + 4% (2)			

(1) One Yr Index returns thru: 06/30/15

(2) One Yr Index returns thru: 08/31/15

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

July 1, 2015 - June 30, 2016

	<i>Gross Earnings</i>	<i>Rebate Paid</i>	<i>Bank Fees</i>	<i>Gross Client Earnings</i>	<i>Administration Fee</i>	<i>FY16 Net Client Earnings</i>	<i>FY15 Net Client Earnings</i>	<i>FY16 Custodian Fees</i>	<i>FY15 Custodian Fees</i>
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	-	-	-	-	-	-	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	\$ 5,637	\$ (15,581)	\$ 8,485	\$ 12,733	\$ -	\$ 12,733	\$ 98,557	\$ -	\$ 221,516

cross check: 12,733

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

FY 16

<i>FROM (Transfers Out):</i>				<i>TO (Transfers In):</i>			<i>NOTES:</i>
<u>Transfer Date</u>	<u>Account #</u>	<u>Account Desc.</u>	<u>Amount</u>	<u>Account #</u>	<u>Account Desc.</u>	<u>Amount</u>	
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
TOTALS			(2,309,796.62)			2,309,796.62	-

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

<u>FY16 -To Date</u>	<u>FY15</u>	<u>FY14</u>	<u>FY13</u>	<u>FY12</u>	<u>FY11</u>	<u>FY10</u>	<u>FY09</u>	<u>FY08</u>	<u>FY07</u>	<u>FY06</u>	<u>TOTAL</u>
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	

Michael Hermanson - Callan's Public Fund Sponsor Database

From: Gordon Weightman <weightman@callan.com>
To: "John O'Hare (johare25@cox.net)" <johare25@cox.net>
Date: 8/28/2015 6:46 AM
Subject: Callan's Public Fund Sponsor Database
Cc: "Michael Hermanson (Michael.Hermanson@tucsonaz.gov)" <Michael.Hermanson@...>

Good morning John,

During our meeting yesterday you asked how many public pension plans are in Callan's Public Fund Sponsor Database Group. I'm reporting back that there are 350 members making the group very robust.

Best,
Gordie

Gordon M. Weightman, CFA

Vice President
Fund Sponsor Consulting

Please note our new address:

Callan Associates Inc.
1900 16th Street
Suite 1175
Denver, CO 80202

P: [303.861.1900](tel:303.861.1900)

Information contained herein is the confidential and proprietary information of Callan and should not be used other than by the intended recipient for its intended purpose or disseminated to any other person without Callan's permission.

PROPOSED REVISIONS TO TUCSON CITY CODE

TSRS PROVISIONS

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 conclusive 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 **terminates from employment with the City prior to reaching Normal Retirement Age** 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~~**The 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 afforded 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. **Commencement of Pension to Deferred Vested Members** (Compliance Change)

Sec. 22-37(d). Payment of Benefits; Deferred Commencement. Retirement Benefits are paid monthly in arrears. **Generally, 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. **Non-Spouse Beneficiary on J&S Election** (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. **Rehire of Retirees** (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. **Post Retirement Marital Changes** (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. **Board Authority** (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. **TSRS Secretary**. (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(~~gghh~~) and 22-30(~~hhii~~), 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(~~ffgg~~).

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

**As Reviewed and Documented by TSRS Board on
December 30, 2014**

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 an-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").ADC will serve as the basis for the recommended contribution rate to the City, subject to additional policy considerations and funding concerns explained below.
- 1.3. As of December 2014, 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, subject to changing market conditions.
- 2.—
- 3.4. The ADC will be calculated in a manner designed to fully fund (and not over 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.
4. The TSRS Board certifies an annual contribution which shall not be less than the ADC to the City annually and which the City is required to appropriate and pay over to TSRS under the Tucson City Code ("TCC).
5. The TSRS Board annually shall recommend to the City an additional contribution amount designed to address the unfunded accrued liabilities in TSRS. As of December 2014, 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, subject to changing market conditions.
6. 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 threefourfour core elements of a funding policy:

**Tucson Supplemental Retirement System
Board of Trustees
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.
1. ~~Actuarial Cost Method~~ this is the technique used to allocate the total present value of future benefits over an employee's working career (normal cost/service cost).
2. ~~Asset Valuation and Smoothing Method~~ the method employed to determine the actuarial value of assets, including the period used to smooth the gains/losses on the assets.
- 3.2. ~~Amortization Policy~~ The length of time and the structured used to eliminate the unfunded accrued liability (or surplus).
- 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 once the actuary has determined the ADC, the rates for each of the three separate employee member groups and the rate for the City, the Rounding Policy (described in greater detail below) will be applied.
4. Actuarially Determined Contribution- the contribution amount derived by subjecting the ADC is the sum of the ARC and the administrative expenses, and then subjected to the Rounding Policy.

Formatted: Font: Not Bold, Not Italic, No underline

Formatted: No underline

Formatted: Font: Bold, Italic, Underline

Formatted: Font: Not Bold, No underline

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, based on the actuarial calculations of by the independent actuary engaged by TSRS. TCC §22-30(mmh). 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:

Formatted: Indent: Left: 0.5", No bullets or numbering

Formatted: Normal, No bullets or numbering

1.a. Actuarial Cost Method

Formatted: Font: Not Bold

Formatted: Indent: Left: 0.5", No bullets or numbering

Formatted

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.

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

2.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.

Formatted

Formatted: Justified, Indent: Left: 0.5"

3.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.

Formatted

Formatted: Indent: Left: 0.5"

2. 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.

Formatted: Font: Bold

Formatted: List Paragraph, Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 0.25" + Indent at: 0.5"

Formatted: Font: Bold

Formatted: List Paragraph

Formatted: Line spacing: Multiple 1.15 li

4.3. Contribution Rounding Policy

~~A. **Background:** Contributions to the Tucson Supplemental Retirement System are made by participating employees (Member Contributions) and the City of Tucson (City Contributions). Member Contributions are made pursuant to Tucson City Code ("TCC") Section 22-34, which sets forth the specific contribution rates for three separate member groups: 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").~~

Formatted: Indent: Left: 0.5", First line: 0", Space After: 0 pt

Formatted: No underline

~~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.

Formatted: List Paragraph, Numbered + Level: 2 + Numbering Style: a, b, c, ... + Start at: 1 + Alignment: Left + Aligned at: 0.75" + Indent at: 1"

Formatted: No underline

Formatted: List Paragraph, Indent: Left: 1", First line: 0"

Formatted: Indent: Left: 0.5", First line: 0", Space After: 0 pt

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

b. ~~C.~~ 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~~annual required 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."

Formatted: No underline

Formatted: List Paragraph, Numbered + Level: 2 + Numbering Style: a, b, c, ... + Start at: 1 + Alignment: Left + Aligned at: 0.75" + Indent at: 1"

Formatted: Font: 11 pt

Formatted: List Paragraph, Indent: Left: 1", First line: 0"

Formatted: Indent: Left: 0.5", First line: 0", Space After: 0 pt

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

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: 27.50% of pay
(Charged Rate is not set at 27.0% because that
would be less than the Calculated Rate
for two of the member groups)

- III. ~~17~~ 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 be applied, effective as of July 1, 2014:

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 18th day of December, 2014, at which a quorum was present.

By: _____
Name: _____
TSRS Board of Trustees

Tucson Supplemental Retirement System

30-Year Projection of Liabilities and Costs
7.25% Return on Investment for 2015 and Beyond
27.5% Contribution Rate

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 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	32.78%	5.25%	5.28%	27.50%	\$35	\$67.46
2015	\$1,030.88	\$711.13	69.0%	\$319.74	\$13.95	11.51%	\$23.31	18.25%	\$127.77	32.79%	5.25%	5.29%	27.50%	\$35	\$70.69
2016	\$1,047.27	\$750.03	71.6%	\$297.23	\$13.94	11.35%	\$21.67	16.74%	\$129.50	32.79%	5.25%	5.29%	27.50%	\$36	\$73.61
2017	\$1,061.81	\$795.60	74.9%	\$266.21	\$13.97	11.19%	\$19.41	14.75%	\$131.63	32.80%	5.25%	5.30%	27.50%	\$36	\$76.36
2018	\$1,074.59	\$833.31	77.5%	\$241.28	\$14.02	11.04%	\$17.59	13.14%	\$133.90	32.80%	5.25%	5.30%	27.50%	\$37	\$79.06
2019	\$1,085.55	\$856.43	78.9%	\$229.12	\$14.10	10.89%	\$16.71	12.24%	\$136.48	32.81%	5.25%	5.31%	27.50%	\$38	\$81.80
2020	\$1,094.55	\$879.24	80.3%	\$215.30	\$14.22	10.75%	\$15.70	11.28%	\$139.21	32.81%	5.25%	5.31%	27.50%	\$38	\$84.25
2021	\$1,101.77	\$902.09	81.9%	\$199.68	\$14.38	10.62%	\$14.56	10.23%	\$142.32	32.82%	5.25%	5.32%	27.50%	\$39	\$86.32
2022	\$1,107.53	\$925.47	83.6%	\$182.05	\$14.56	10.50%	\$13.27	9.11%	\$145.73	32.82%	5.25%	5.32%	27.50%	\$40	\$88.21
2023	\$1,111.93	\$949.73	85.4%	\$162.20	\$14.77	10.38%	\$11.83	7.92%	\$149.37	32.82%	5.25%	5.32%	27.50%	\$41	\$90.08
2024	\$1,114.93	\$975.02	87.5%	\$139.91	\$15.00	10.27%	\$10.20	6.66%	\$153.26	32.82%	5.25%	5.32%	27.50%	\$42	\$91.75
2025	\$1,116.66	\$1,001.71	89.7%	\$114.95	\$15.26	10.17%	\$8.38	5.33%	\$157.36	32.82%	5.25%	5.32%	27.50%	\$43	\$93.24
2026	\$1,117.23	\$1,030.15	92.2%	\$87.07	\$15.54	10.08%	\$6.35	3.93%	\$161.65	32.82%	5.25%	5.32%	27.50%	\$44	\$94.48
2027	\$1,116.83	\$1,060.80	95.0%	\$56.04	\$15.85	9.99%	\$4.09	2.46%	\$166.19	32.82%	5.25%	5.32%	27.50%	\$46	\$95.64
2028	\$1,115.52	\$1,093.96	98.1%	\$21.55	\$16.18	9.90%	\$1.57	0.92%	\$170.96	32.81%	5.25%	5.31%	27.50%	\$47	\$96.57
2029	\$1,113.48	\$1,130.15	101.5%	-\$16.67	\$16.54	9.83%	(\$1.22)	-0.69%	\$175.91	9.83%	5.25%	5.31%	4.52%	\$8	\$97.20
2030	\$1,110.99	\$1,127.28	101.5%	-\$16.29	\$16.92	9.76%	(\$1.19)	-0.66%	\$181.05	9.76%	5.25%	5.30%	4.46%	\$8	\$97.55
2031	\$1,108.34	\$1,124.19	101.4%	-\$15.85	\$17.33	9.70%	(\$1.16)	-0.62%	\$186.39	9.70%	5.25%	5.30%	4.40%	\$8	\$97.63
2032	\$1,105.83	\$1,121.19	101.4%	-\$15.36	\$17.77	9.65%	(\$1.12)	-0.58%	\$192.02	9.65%	5.25%	5.29%	4.36%	\$8	\$97.57
2033	\$1,103.64	\$1,118.45	101.3%	-\$14.81	\$18.22	9.60%	(\$1.08)	-0.55%	\$197.82	9.60%	5.25%	5.29%	4.31%	\$9	\$97.33
2034	\$1,101.99	\$1,116.19	101.3%	-\$14.19	\$18.69	9.56%	(\$1.03)	-0.51%	\$203.82	9.56%	5.25%	5.28%	4.28%	\$9	\$96.95
2035	\$1,101.10	\$1,114.60	101.2%	-\$13.50	\$19.19	9.52%	(\$0.98)	-0.47%	\$210.03	9.52%	5.25%	5.27%	4.25%	\$9	\$96.35
2036	\$1,101.27	\$1,113.99	101.2%	-\$12.73	\$19.71	9.48%	(\$0.93)	-0.43%	\$216.44	9.48%	5.25%	5.27%	4.21%	\$9	\$95.64
2037	\$1,102.70	\$1,114.57	101.1%	-\$11.87	\$20.26	9.45%	(\$0.87)	-0.39%	\$223.04	9.45%	5.25%	5.26%	4.19%	\$9	\$94.79
2038	\$1,105.67	\$1,116.59	101.0%	-\$10.92	\$20.82	9.43%	(\$0.80)	-0.35%	\$229.84	9.43%	5.25%	5.26%	4.17%	\$10	\$93.93
2039	\$1,110.32	\$1,120.19	100.9%	-\$9.87	\$21.40	9.41%	(\$0.72)	-0.30%	\$236.81	9.41%	5.25%	5.26%	4.15%	\$10	\$92.99
2040	\$1,116.87	\$1,125.58	100.8%	-\$8.71	\$22.01	9.39%	(\$0.64)	-0.26%	\$244.00	9.39%	5.25%	5.26%	4.13%	\$10	\$92.01
2041	\$1,125.51	\$1,132.94	100.7%	-\$7.43	\$22.62	9.37%	(\$0.54)	-0.22%	\$251.38	9.37%	5.25%	5.25%	4.12%	\$10	\$91.17
2042	\$1,136.29	\$1,142.30	100.5%	-\$6.01	\$23.27	9.36%	(\$0.44)	-0.17%	\$258.96	9.36%	5.25%	5.25%	4.11%	\$11	\$90.48
2043	\$1,149.21	\$1,153.67	100.4%	-\$4.46	\$23.93	9.35%	(\$0.33)	-0.12%	\$266.74	9.35%	5.25%	5.25%	4.10%	\$11	\$89.85

Total City Financed Portion for 30 years \$736

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

All dollar amounts in millions

5% contribution rate for members hired prior to 7/1/2006

6.75% contribution rate for members hired after 6/30/2006 and before 7/1/2011

5.25% contribution rate for members hired after to 6/30/2011

27.5% city financed portion

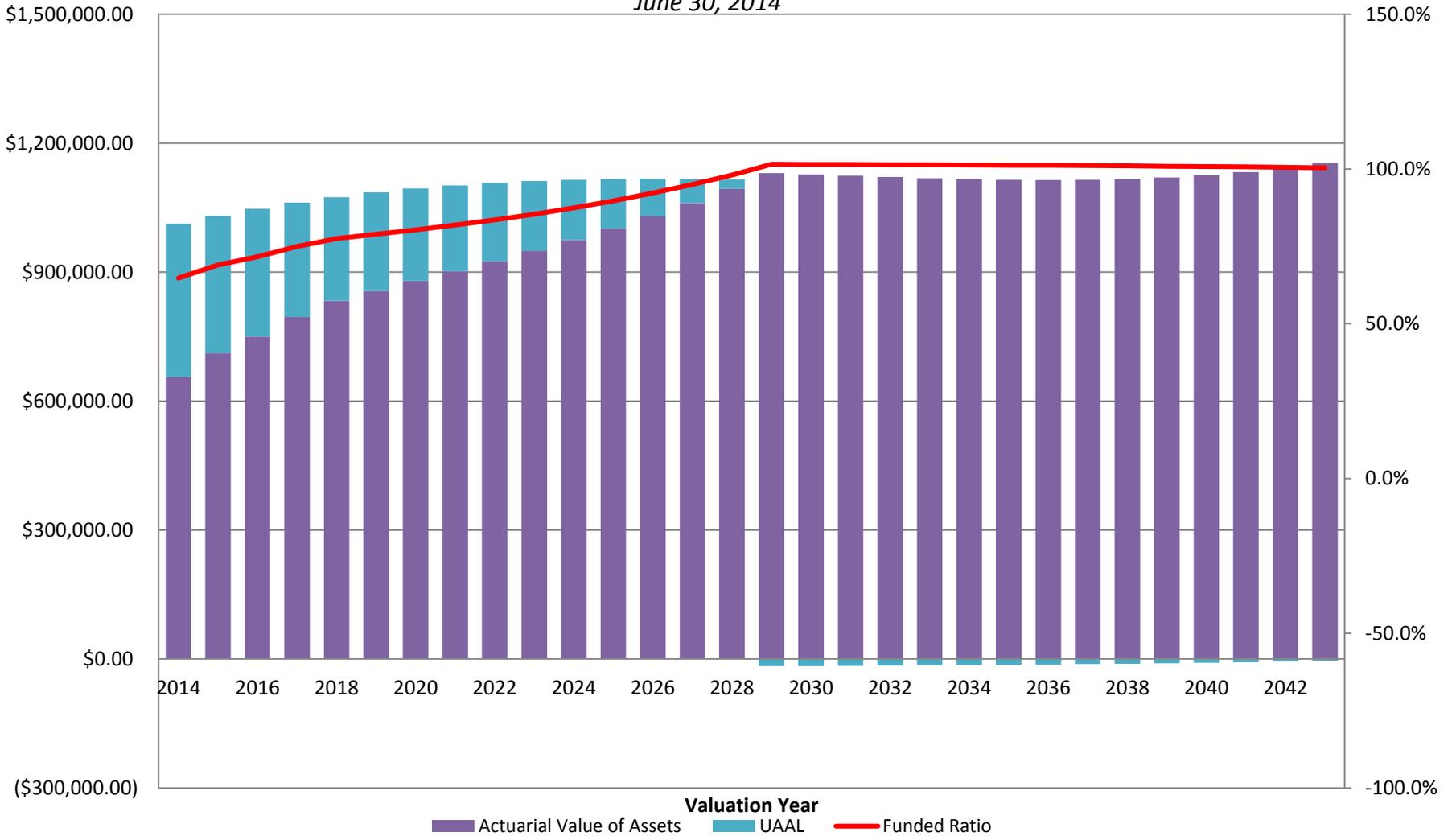
Tucson Supplemental Retirement System Projected Funding Results

27.5% Contribution Rate

(shows trend and projection of future funded ratios)

June 30, 2014

(in thousands)



Valuation Year

Actuarial Value of Assets
 UAAL
 Funded Ratio

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.

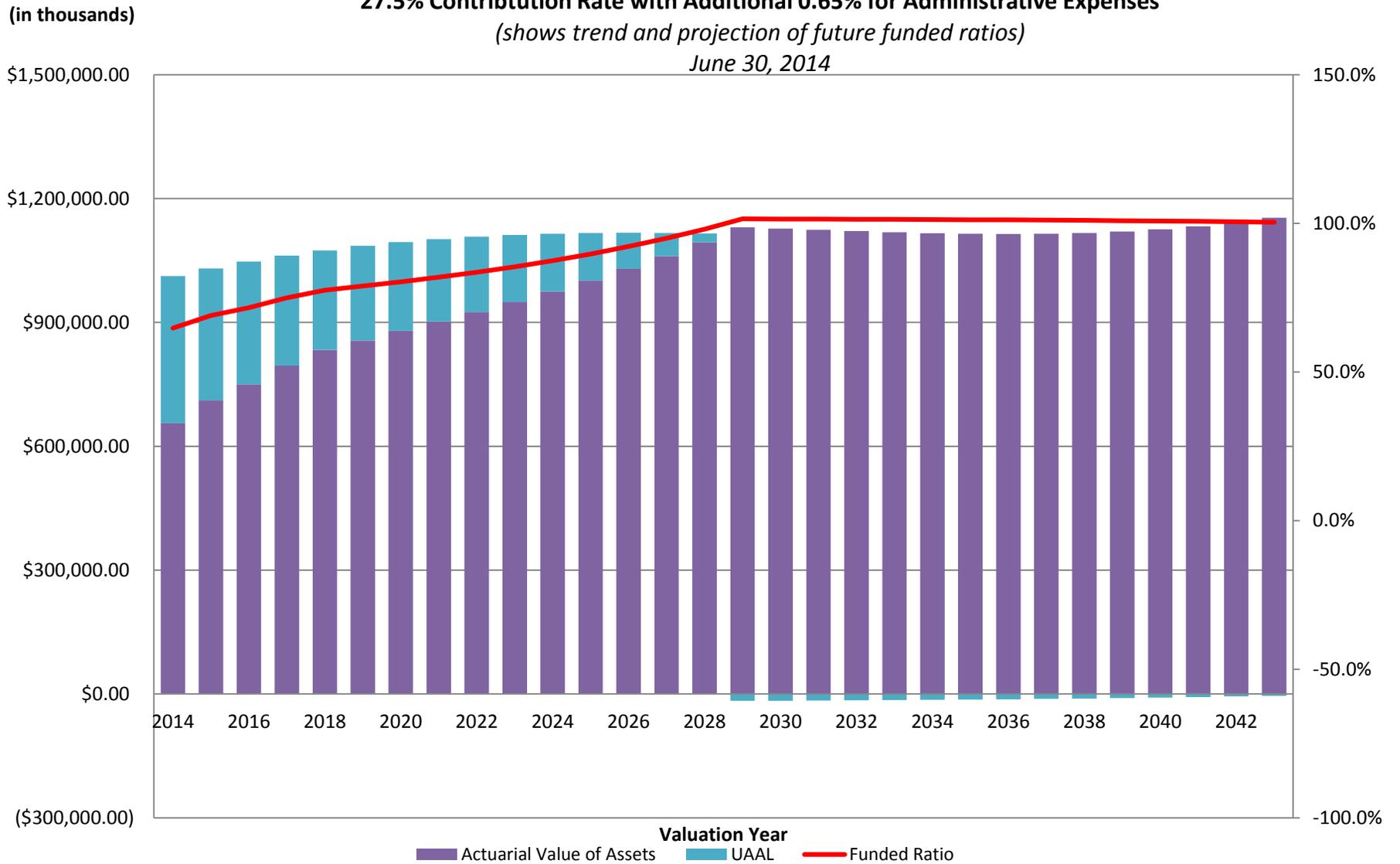
All dollar amounts in millions

Tucson Supplemental Retirement System Projected Funding Results

27.5% Contribution Rate with Additional 0.65% for Administrative Expenses

(shows trend and projection of future funded ratios)

June 30, 2014



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 3/10ths 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

2) Actuary Valuation Report for June 30, 2014 – Gabriel Roeder Smith & Assoc., - Leslie Thompson

(55 min for all items except c)

- a. June 30, 2014 TSRS DRAFT valuation report and discussion
- b. Recommended contribution rates for the 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 –Sasha Talcott, Matt Clark (60 min)

- a. Annual Fund Manager Review of Stocks Plus Fund
- b. Annual Fund Manager Review of Custom Fixed Income Fund
- c. Current Economic Overview and Forecast

4) Disability Process Discussion

- a. TSRS Disability Statistics, other Statistics (5 min)
- b. Standing Considerations for Disability Applicants (10 min)
- c. City's Medical Leave and Accommodation Policies – HR Representative (20 min)
- d. Overall Success of the TSRS Program (10 min)

5) Discussion of Fund Manager Presentations to the Board of Trustees (25 min)

- a. What are the various models being used in other plans – Callan Associates
- b. Effectiveness of using pre-determined questions to replace standard manager presentation
- c. Is the TSRS Board getting sufficient information needed to manage the portfolio?

Morning Time: 3 hours, 10 minutes

Lunch Break (estimated time - 11:40am to 1:15pm)

**TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
BOARD OF TRUSTEES
Notice of Regular Meeting / Agenda
DATE: Friday, October 30st, 2015**

Reconvene at 1:15pm

6) Disability Retirement Applications*(20min)

- a. (not known yet)

7) Investment Activity / Status Report

- a. TSRS portfolio composition, transactions and individual investments, securities lending summary and performance by manager for the quarter ending 9/30/14 (10 min)
- b. **Callan Associates – Paul Erlendson, Gordon Weightman** - Executive Summary of TSRS Performance for 9/30/2014 ¹ (20 min)

8) Callan Associates - Paul Erlendson, Gordon Weightman

- a. Transition Manager Overview (10 min)
- b. Analysis comparing historical Investment Policy Performance vs. the TSRS Portfolio (15 min.)

9) Administrative Discussions – Cassie Langford (25 min.)

- a. Board Authority Discussion
- b. Appointed Positions Discussion

10) Articles for Board Member Education / Discussion (5 min)

- a. To be determined
- b. To be determined

11) Call to Audience

12) Future Agenda Items

13) Adjournment

Afternoon Time: 1 hour, 50 minutes

*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.

GRS PERSPECTIVES

September 2015

www.gabrielroeder.com

Understanding the Impact of Negative Cash Flow on a Public Pension Plan

Lance Weiss, EA, FCA, MAAA

Public-sector pension plans are designed to provide public employees with a pension upon their retirement. But where does the money come from to make the pension payments? Very simply stated, the goal is for employees and their employers to make periodic contributions to a pension fund, which together with investment returns on the invested contributions, will be sufficient to pay all promised benefits upon the members' retirement. This concept is illustrated by the following basic public pension plan financing equation:

$$B + E = I + C$$

where:

- B = Benefits Paid
- E = Administrative Expenses
- I = Investment Return on Plan Assets
- C = Contributions

In this equation, the benefits paid are determined by negotiated and/or legislated plan provisions. Administrative expenses are generally determined by system policies. Investment return is determined by investment policies (including liquidity issues). Contributions are generally shared by employees and their employer, with the amount of employee and employer contributions generally set by statute, plan document, or other contract.

Annual employee and employer contributions represent a systematic means of pre-funding the system's costs. The benefit of pre-funding is that investment return on the pre-funded plan assets reduces the employer's long-term contributions.

Retirement plans that have been in operation for a number of years generally have contributions coming in and benefits being paid out each year. The net (non-investment) cash flow is the difference between the contributions and benefits and expenses. These cash flows will vary for each plan since all plans have different demographics and maturities.

Using the same basic public pension plan financing equation, net (non-investment) cash flow is determined by:

$$\text{Net Cash Flow} = C - B - E$$

where:

- C = Contributions
- B = Benefits Paid
- E = Administrative Expenses

Consequently, if $C - B - E$ is negative, the plan has a negative cash flow and if $C - B - E$ is positive, the plan has a positive cash flow. Younger plans tend to have positive cash flows, whereas more mature plans may have negative cash flows. There is nothing necessarily wrong with a plan having negative cash flows. In fact, it is expected that all plans will have negative cash flows over time, which is considered the normal cycle of a pension plan.

Further, when assessing the impact of cash flow on a pension plan, it is important to remember why a pension plan has assets - **to pay benefits**. Although a plan has negative cash flow, it does not necessarily imply it is in trouble. In fact, some would say that the primary purpose of pre-funding is so the investment return can pay a significant portion of the benefit payments.

Understanding the Impact of Negative Cash Flow on a Public Pension Plan

For example, a mature plan with a one-to-one ratio of actives to retirees that is well funded may have negative cash flow, but be actuarially sound. On the other hand, a poorly funded plan that has negative cash flow may be indicative of a plan that is in need of significant (and potentially unaffordable) increases in annual employer contributions.

One potential warning sign for mature plans is if the amount of negative cash flow as a percentage of the plan assets starts to get excessive. For example, if the funded ratio of a plan is significantly below 100%, then negative cash flows now represent a much larger percentage of the assets. This can be an indicator that the plan may need to have a more aggressive funding policy.

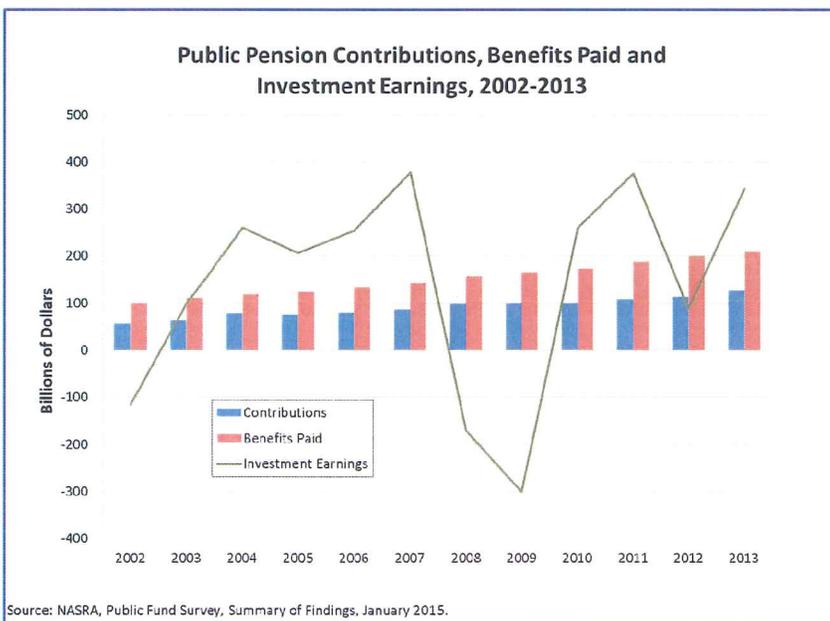
A plan in a negative cash flow situation that does not have enough liquidity to make all the required benefit payments may be forced to change its investment portfolio to one comprised of a larger percentage of short-term (cash generating) investments. Such a change in investment policy may result in the plan's actuary recommending a reduction in the investment return assumption. The direct result will be a significant increase in the annual contribution requirement of the plan

which, in turn, will reduce the amount of the negative cash flow.

As more and more baby boomers retire, the negative cash flow problem could potentially worsen. For example, according to an analysis by the Center for State & Local Government Excellence of the Current Population Survey, 50% of the U.S. public-sector workforce is age 45 or older.¹ This suggests that a large portion of the public-sector workforce will be eligible for retirement within 10 years.

In fact, it is typical for mature plans to experience negative cash flow. The chart below, reproduced from the 2015 Public Fund Survey, plots the combined revenues and expenditures of 100 large public retirement systems. The green line reflects investment gains and losses, which vacillate as investment markets fluctuate. The blue bars indicate total contributions from employees and employers and the red bars show benefit payments.

As this chart indicates, benefit payments exceeded contributions each year during the period from 2002 through 2013 for the plans included in the survey. The good news is that investment earnings were available in most years to offset the negative cash flows.



In summary, negative (non-investment) cash flow is not, by itself, an indication of financial or actuarial distress for a public pension plan.

However, a larger (i.e., more negative) cash flow may require the system's assets to be managed more conservatively, with a larger allocation to more liquid assets in order to meet current benefit payroll requirements. This is likely to result in the plan's actuary recommending a reduction in the investment return assumption and a significant increase in the annual contribution requirement of the plan.

¹ Joshua Franzel, Retirement Security: The Evolving Social Contract, Center for State & Local Government Excellence (SLGE), June 9, 2015. Presentation at the SLGE Retirement Security Summit.

About the Author



Lance Weiss, EA, FCA, MAAA is a Senior Consultant with more than 30 years of actuarial and retirement consulting experience.

During his career, Lance has worked with large public-sector entities and private corporations, coordinating retirement benefits with other elements of total compensation programs.

Lance serves as a lead consultant to clients in Illinois, Maryland, and West Virginia. His expertise covers the design, funding, accounting, administration, and communication of defined benefit pension plans, post-retirement medical benefits, and § 529 pre-paid tuition programs.

Lance can be reached at lance.weiss@gabrielroeder.com.

About Gabriel, Roeder, Smith & Company

Gabriel, Roeder, Smith & Company (GRS) is a national actuarial and benefits consulting firm. We help our clients develop fiscally sustainable benefit programs that preserve financial security for millions of Americans. Our reputation for providing independent advice and quality consulting services has remained unmatched for over 75 years.

Public-sector consulting is GRS' primary focus. Our consultants also have experience serving church, hospital, and corporate benefit plans. GRS has more than 120 associates that serve more than 1,000 clients. Having served clients in nearly every state, we have experience with virtually every benefit structure used by retirement systems and plan sponsors today.

Corporate Office: One Towne Square, Suite 800
Southfield, Michigan 48076-3723
800-521-0498
www.gabrielroeder.com

Chicago ♦ Dallas ♦ Denver ♦ Detroit ♦ Fort Lauderdale ♦ Grand Rapids ♦ Minneapolis

GRS Perspectives focuses on benefit plans sponsored by the public sector. Articles attributed to individuals do not necessarily reflect the views of GRS as an organization. This communication should not be construed to provide tax, legal, or investment advice.



HOW MUCH LONGER DO PEOPLE NEED TO WORK?

Alicia H. Munnell, Anthony Webb, and Anqi Chen

CRR WP 2015-19
August 2015

Center for Retirement Research at Boston College
Hovey House
140 Commonwealth Avenue
Chestnut Hill, MA 02467
Tel: 617-552-1762 Fax: 617-552-0191
<http://crr.bc.edu>

All of the authors are with the Center for Retirement Research at Boston College (CRR). Alicia H. Munnell is the Peter F. Drucker Professor of Management Sciences at Boston College's Carroll School of Management and director of the CRR. Anthony Webb is a senior research economist at the CRR. Anqi Chen is a research associate at the CRR. The research reported herein was pursuant to a grant from the Alfred P. Sloan Foundation. The findings and conclusions expressed are solely those of the authors and do not represent the views of the Alfred P. Sloan Foundation or Boston College.

© 2015, Alicia H. Munnell, Anthony Webb, and Anqi Chen. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission, provided that full credit, including © notice, is given to the source.

About the Center for Retirement Research

The Center for Retirement Research at Boston College, part of a consortium that includes parallel centers at the University of Michigan and the National Bureau of Economic Research, was established in 1998 through a grant from the Social Security Administration. The Center's mission is to produce first-class research 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.

Center for Retirement Research at Boston College
Hovey House
140 Commonwealth Ave
Chestnut Hill, MA 02467
Tel: 617-552-1762 Fax: 617-552-0191
<http://crr.bc.edu>

Affiliated Institutions:
The Brookings Institution
Massachusetts Institute of Technology
Syracuse University
Urban Institute

Abstract

Working longer is a powerful lever to enhance retirement security. Individuals should be able to extend the number of years they work because, *on average*, they are healthier, live longer, and face less physically demanding jobs. But averages are misleading when discrepancies in health, job prospects, and life expectancy have widened between individuals with low and high socioeconomic status (SES). To understand the magnitude of the problem, this paper, using data from the *Health and Retirement Study* (HRS), specifies how much longer households in each SES quartile would need to work to maintain their pre-retirement standard of living and compares those optimal retirement ages with their planned retirement ages to calculate a retirement gap. It then uses regression analysis to explore whether the gaps reflect poor circumstances or poor planning – that is, the extent to which the retirement gap results from health, employment, and marital shocks that occur before the HRS interview but too late for the household to adjust saving (between ages 50 and 58), as opposed to a gap resulting from inadequate foresight. The analysis shows that households in lower-SES quartiles have larger retirement gaps, and this pattern remains true even after controlling for late-career shocks. In short, the most vulnerable have the largest retirement gaps, and these gaps arise from poor planning rather than late-career shocks.

Introduction

Working longer is a powerful lever to enhance retirement security. Individuals, *on average*, are healthier, live longer, and face less physically demanding jobs, so they should be able to extend the number of years worked. But averages are misleading when discrepancies have widened between individuals with low and high socioeconomic status (SES) in areas such as health, job prospects, and life expectancy. This paper explores the need to work longer for various SES groups by quantifying the degree to which households *plan* to retire before they have saved enough and whether those of lower SES are more likely to do so.

This analysis relies on education as the SES metric. Of course, many characteristics contribute to SES, including income and wealth, race and ethnicity, parents' income and education, health, poverty status, neighborhood attributes, and occupation. Education, however, has particular advantages. First, nearly every survey includes the respondent's educational attainment, unlike characteristics of one's parents or neighborhood. Second, unlike occupation, education is a valid measure for individuals out of the labor force, including retirees. Third, with few exceptions, educational attainment is determined early in life and affects, but is unaffected by, the focus of our research: late-career labor market activity and retirement savings. More contemporaneous factors like income, wealth, health, and poverty status are more likely to have an endogenous relationship with SES.

The focus of this paper is the *planned* retirement age, because the fact that someone retires prematurely is not necessarily evidence of poor decision making. Some households who plan to work well into their sixties will retire prematurely due to a misfortune such as a health shock or involuntary job loss. In contrast to actual retirement ages, which can be buffeted by these unforeseen events, planned retirement ages reveal individual preferences and their consumption and saving behavior without the influence of unexpected health or employment shocks. Households should *plan* to retire at ages that will permit them to maintain their pre-retirement standard of living. Previous research has identified a close relationship between planned and actual retirement ages (Loughran et al. 2001), which suggests that many households that retire prematurely are not mainly influenced by shocks and, therefore, are more likely to be making a suboptimal decision.

Using data from the *Health and Retirement Study* (HRS), this paper first identifies those older working Americans who plan to retire prior to the age at which they would be able to

maintain their pre-retirement standard of living. This information is then used to calculate the retirement gap, the number of years each household would have to delay retirement in order to meet its replacement rate target. The retirement gap is then tallied for each SES quartile.

The second part of the project uses regression analysis to determine the extent to which the retirement gap results from health, employment, and marital shocks that occur before the interview but too late for the household to adjust its saving (between ages 50 and 58), as opposed to a gap resulting from inadequate foresight. The dependent variable is the retirement gap, and the explanatory variables include the SES quartile, demographic characteristics, and a number of late-career shock variables that unexpectedly limit the capacity to work or reduce the resources available to finance post-retirement consumption.

The analysis shows that households in lower-SES quartiles are less prepared for retirement than higher-SES groups; lower-SES groups will meet their targets at later ages and will, on average, have larger retirement gaps. Furthermore, households with lower SES are more likely to experience shocks and are particularly adversely affected by wealth shocks (a decline in total financial and housing wealth of 20 percent or more). They are also more likely to experience employment shocks, but surprisingly, employment shocks reduce the retirement gap. The explanation may be that unemployment reduces the target replacement rate or that those forced to find a new job in their fifties recognize that they will have to work longer to make ends meet in retirement and adjust their plans. Health and marital shocks do not have a statistically significant effect on retirement gaps at any SES level. In short, the most vulnerable have the largest retirement gaps, and these gaps arise more from poor planning than late-career shocks.

Literature Review

This study builds on four strands of prior research. The first strand is the life-cycle model. This model postulates that households should smooth the marginal utility of consumption over their lifetimes. Although households may optimally plan for lower consumption at ages to which they are less likely to survive, under reasonable assumptions regarding preference parameters, utility maximization requires that households maintain their pre-retirement consumption into retirement. The literature documents that more than 50 percent of today's working-age households face a retirement savings gap, meaning they will be unable to maintain their customary standard of living, if they retire at traditional ages (Mitchell and Moore

1998; Munnell, Orlova, and Webb 2013). Furthermore, almost half of American households outlive their financial assets (Poterba, Venti, and Wise 2012).¹ Importantly, those with lower SES are even less likely than the average to be prepared for retirement (Butrica, Iams, and Smith 2007). The issue is not that households will fall into poverty but that their savings and labor supply outcomes are suboptimal.

The second strand in the literature documents that, while retirement expectations are generally predictive of the age of retirement (Loughran et al. 2001), a significant minority retires prematurely as a result of health or employment shocks (Bernheim 1989; Dwyer and Hu 1999). This research indicates that households either plan their retirement or are, at the very least, able to forecast the age beyond which they will be unable to work. However, their suboptimal outcomes appear to be, at least in part, the result of suboptimal choices. Households are choosing to save too little and planning to retire too soon.

The third strand documents SES disparities both in financial preparedness for retirement and in average retirement ages. Butrica, Iams, and Smith (2007) found that lower-SES households are increasingly likely to be in poverty and less likely than the average to be prepared for retirement. Those in lower-SES groups are also less likely to be in good health (Smith, 2005), and those with lower educational attainment retire earlier than their counterparts with higher education levels (Burtless 2013). It may be optimal for low-SES households to retire early if their disutility of work increases more rapidly with age than that of their high-SES counterparts or if they face more constrained labor market opportunities. But the combination of weak financial preparedness for retirement and early retirement ages for low-SES groups indicates that they are more likely to face substantial declines in consumption at retirement and are therefore making more suboptimal labor supply and saving choices.

The fourth strand documents strong relationships between financial literacy, the ability to plan, and wealth accumulation (for a review, see Rooij, Lusardi, and Alessie 2012). The

¹ Some economists question the seriousness of the retirement savings gap (e.g., Scholz and Seshadri 2008; Scholz, Seshadri, and Khitatrakun 2006). But their findings are sensitive to their assumptions regarding household preferences. They assume that households optimally choose quite rapid declines in consumption during retirement and reduce consumption once children leave home. Neither assumption appears to closely match actual household preferences and behavior. Financial planning tools assume a goal of level consumption throughout retirement, and Coe and Webb (2010) find no evidence that consumption declines when children leave home. Other studies find little evidence of a significant decline in consumption as households transition into retirement (Hurst 2008; Hurd and Rohwedder 2013), but the larger unanswered question is whether pre-retirement consumption is sustained *throughout* retirement.

retirement planning decision is particularly difficult because the household must jointly determine both consumption and labor supply but faces uncertainty in both the financial and labor markets. This project will extend this strand of research by uncovering the relationship between retirement intentions and retirement preparedness, as well as how it varies by SES. To our knowledge, no previous study has compared *planned* retirement ages with the ages at which households are projected to be financially prepared for retirement.

Data and Methodology

The data for the analysis come from waves 5 to 10 of the HRS linked to U.S. Social Security Administration earnings records. The HRS is a panel survey of household heads over the age of 50 and their spouses, irrespective of age, that has been administered every two years since 1992. The survey collects in-depth information on income, work histories, assets, pensions, health insurance, disability, physical health and functioning, cognitive function, and health care expenditures.

To calculate the extent to which households plan to retire prematurely, the first step is to identify the ages at which households plan to retire. The second step is to calculate a target retirement income for each household. This target equals average household earnings for the 10 calendar years ending immediately prior to the HRS interview at which the household head turned age 58, multiplied by the 2008 Georgia State RETIRE Project target for the household type. The third step is to calculate the retirement incomes that households would achieve if they retired at each age from their current age onwards. The fourth and final step is to compare the age at which each household will achieve its target income with the age at which it plans or expects to retire and to tabulate our proxy for SES, their quartile of educational attainment.

The following subsections discuss the sample size and sample selection, the HRS questions on planned or expected retirement ages, the validity of the replacement rate targets, the methodologies used to project retirement income and the procedure for reassigning educational status.

Sample Size and Selection

The original sample consists of 3,876 households in which the household head turned 58 between waves 5 and 10 (2000 to 2010) of the HRS.² For couples, the male is identified as the head. In the case of same-sex couples, the higher-earning spouse is the head or, if earnings are equivalent, the older respondent is the head. From the original sample, we exclude 751 households whose head was not working for pay at the age 58 wave and 76 households with missing or inconsistent data. These two exclusions reduce the final sample to 3,049 households. Participants were asked about their retirement plans at 58, an age at which households will have begun to consider the question of when to retire but few have already retired. The focus is on the head of the household; the spouse's planned retirement age is not considered. For the cohorts under consideration, the spouse generally makes only a modest contribution to household earnings, and including data on the spouse would significantly complicate the analysis.

Planned and Expected Retirement Ages

In each wave, participants who are working or looking for work are asked about their retirement plans. They are allowed to give multiple responses, including that they plan to “stop work altogether.” Those who include “stop work altogether” as one of their plans are asked to indicate the age or year at which they plan to stop working. We refer to these households as *planners*. Those who do not say that they plan to “stop work altogether,” but indicate that they have “not given much thought” to the subject or have “no current plans,” are asked the age or year at which they think they will stop working.³ We refer to these households as *thinkers*. Participants who, when asked about their retirement plans, respond that they plan to “never stop work” are not asked when they plan or think they will stop working. However, some of the planners and thinkers also respond “never” when they are asked when they anticipate stopping work. Of the sample, 22 percent specify an age at which they plan to stop working, 19 percent specify an age at which they think they will stop working, 4 percent state that they plan to never

² Households are selected if they have turned 58 but have not yet turned 60 in the next interview wave, so the sample includes some 59 year olds.

³ Participants who state that they plan to reduce work hours (22 percent of the sample), change the kind of work they do (3 percent of the sample), or become self-employed (1 percent of the sample) are asked the age or year at which they plan to make these changes. We do not make use of these responses. These changes may result in reductions in income that would necessitate the household delaying retirement in order to meet its replacement rate target, but we have no means of estimating the likely reduction in income.

stop working, while the remaining 55 percent either don't know or give other responses that resulted in them not being asked when they anticipated stopping work.⁴

Although some participants die without ever stopping work, most households stop work at some point, whether by choice or as a result of declining health or an inability to find work. Our presumption is that the “never-stop-work” households would, if pressed, acknowledge that they would eventually stop work if they survived long enough and might be able to estimate an age at which this outcome might occur. Similarly, those who do not know when they will stop work or were not asked the question might also be able to provide an age, if pressed. We therefore impute anticipated ages for individuals who, for whatever reason, did not provide an estimated retirement age, using those who did provide ages as the donor pool. In making these estimates, we use birth cohort, education level, race, pension type, marital earnings status, and health status as covariates.

A potential concern is that the unobserved anticipated retirement ages of individuals who do not provide responses may differ from the reported anticipated retirement ages of either the planners or the thinkers. We address this concern in part by comparing the actual retirement ages of the planners and thinkers with those of individuals who stated that they would never stop work or who did not answer the question. If the planners and thinkers have similar retirement ages to the never- and non-respondents, and if we assume that the differences between their planned and actual retirement ages are similar, then using information from those who answered will yield unbiased estimates for those who did not. The data are censored in the sense that retirements are observable up to 2010.

As shown in Table 1, those who say they plan to never stop working have the highest actual retirement age, on average, and the highest proportion still working. Interestingly, the average retirement age and the proportion still working for those who plan to never stop working are comparable to the thinkers. Those who provided no answer are comparable to the average of both the planners and thinkers. Reflecting this pattern, we use thinkers as the donor pool for those who state that they will never stop working, and we use all respondents as the donor pool for non-respondents. Again, in both cases, the assumption is that the difference between planned and actual retirement ages is similar across groups

⁴ This situation might occur if their only responses were that they planned to work until their health failed, reduce hours, change their kind of work, or work for themselves.

Replacement Rate Targets

According to the life-cycle model of saving behavior, households should accumulate wealth during their working years and draw down that wealth during retirement. Specifically, households select a saving and drawdown plan that maximizes expected discounted lifetime utility, subject to the household's budget constraint. Utility will depend on both consumption and leisure. Mathematically, the household chooses a consumption plan that maximizes:

$$E_t \sum_{t=0}^T \beta^t U(C_t, L_t)$$

where β is a rate of time preference, C is consumption, and L is leisure. The budget constraint is:

$$c_t + a_{t+1} = (1+r_t)a_t + y_t$$

where a_t and y_t are assets and income at time t .

Assuming that consumption and leisure are separable in the utility function,⁵ and ignoring mortality risk, the optimal consumption path is one that satisfies the following first-order condition:

$$u(c_t) = \beta E_t [(1+r_{t+1})u(c_{t+1})]$$

where r is the rate of interest. The household will choose a consumption path such that the marginal utility of this period's consumption equals the expected marginal utility of next period's consumption, discounted by a rate of time preference, and multiplied by 1 plus the rate of interest. The intuition is that the household cannot increase total utility by shifting consumption from one period to another. If the rate of interest equals the rate of time preference, then the household, in the absence of uncertainty, would choose level consumption. In reality, households face uncertain labor income and investment returns. If the second derivative of the utility function is positive, so that bad outcomes decrease marginal utility more than good outcomes increase marginal utility, households will engage in precautionary saving. On average,

⁵ Separability implies that the marginal utility of consumption does not depend on the amount of leisure.

consumption will increase with age, though some households – those that experience bad capital and labor market outcomes – will have lower consumption at older ages.⁶

The model developed by the Georgia State RETIRE project can be thought of as a special case of the life-cycle model that assumes no risk. The project therefore likely understates optimal replacement rate targets. In theory, this problem could be addressed by constructing an intertemporal optimization model that incorporates risk, but models of this type are computationally challenging, and the HRS data lack detailed information on many sources of risk. Thus, the Georgia State targets are a reasonable option.

Table 2 reports the Georgia State targets. They are less than 100 percent of pre-retirement income, because households, once retired, no longer pay Social Security and Medicare payroll taxes or contribute to 401(k) plans, and federal income taxes are lower because – at most – only a portion of their Social Security benefits are taxable. The calculations also assume that households have paid off their mortgage by the time they stop working. The Georgia State Project uses information from the *Consumer Expenditure Survey* released by the U.S. Department of Labor’s Bureau of Labor Statistics to estimate age- and work-related expenses. Targets are higher for lower earners, reflecting lower taxes and higher Social Security replacement rates.⁷

Projecting Retirement Income

Retirement income is projected separately for Social Security, defined benefit and defined contribution plans, and financial assets, with an adjustment for existing mortgages.

Social Security. Projected Social Security benefits are calculated using the HRS and Social Security earnings records, which are available to qualified researchers on a restricted basis. When such records were not available, earnings histories were imputed using current earnings, earnings at the first HRS interview, and final earnings from the previous job. Nominal wages are projected to grow at 4 percent annually. The entire wage history is then indexed by the Average Wage Index (U.S. Social Security Administration 2013), and the highest 35 years of

⁶ Households who retire prematurely may still be behaving optimally if they choose low consumption levels prior to and after retirement. However, a correlation test found no relationship between retirement gap and the ratio of consumption to income. As such, households that retire prematurely are not ones behaving optimally based on their strong tastes for leisure.

⁷ For an array of pre-retirement earnings levels, they calculate federal, state, and local income taxes and Social Security taxes before and after retirement.

indexed wages are used to calculate Average Indexed Monthly Earnings (AIME). The benefit formula is then applied to the AIME to derive the individual's Primary Insurance Amount (PIA). Cost-of-living adjustments as well as early or delayed retirement credits are applied to the PIA. Final household benefit levels are calculated depending on marital status and work tenures.

Pension Income. The starting point for the projection of income from defined benefit pension plans is to project pension wealth from these plans at ages 60 through 70 using the 1998 and 2004 HRS imputations for employer-sponsored pension wealth from current jobs. The two datasets differ slightly. The 2004 dataset includes values for retirement ages 60, 62, 65 and 70. For the 1998 dataset, pension values are available only for ages 60, 62, and 65. The 2004 dataset discounts defined benefit pension wealth to the survey year, while the 1998 dataset projects defined benefit wealth to the retirement age. The 1998 values are extrapolated to age 70 based on the average increase in retirement wealth from 65 to 70 in the 2004 data. For both datasets, values for ages 61, 63, 64, and 66 through 69 are interpolated based on the reported numbers. Defined benefit pension wealth is then converted into pension income using the interest and inflation-rate assumptions embedded in the pension wealth calculations.⁸ Pensions from the 2004 dataset are assigned to households reaching age 58 in waves 7 through 10 (2004, 2006, 2008, 2010) and pensions from the 1998 dataset are assigned to those attaining age 58 in waves 5 and 6 (2000 and 2002).

For defined contribution pensions, the starting point is the account balance. Balances then grow as participants contribute an assumed 6 percent of salary, receive a 50-percent employer match, and earn a 4.6-percent real return until retirement. For simplicity, people who started their jobs after 1998 (waves 5 and 6) or 2004 (waves 7, 8, 9, and 10) are assumed to receive no additional pension benefits on their new jobs. The conversion of defined contribution wealth to income is discussed in the next section on financial assets.

Financial Assets. Household financial wealth invested in stocks, bonds, and short-term deposits is assumed to earn real returns of 6.5 percent, 3.0 percent, and 1.0 percent, respectively, from the date of the interview until retirement. These rates approximate the long-run average rates of return for each asset class. Importantly, these assumptions are used throughout for projecting asset returns rather than incorporating any actual fluctuations. The objective is to

⁸ The interest rate assumption is irrelevant, provided that the same assumption is used to both calculate pension wealth from respondents' estimates of their pension income and then recover pension income from pension wealth.

assess whether households are on track to meet their replacement rate targets, not whether they actually succeeded in meeting them.

At retirement, households are assumed to use all of their financial assets, including 401(k) and IRA balances, to purchase a nominal joint- or single-life annuity. Currently, annuity rates are extremely low, reflecting depressed interest rates. The objective of this exercise is to calculate financial preparedness for retirement, given the beliefs of respondents at the time of their HRS interviews. Therefore, we assume some improvement in annuity rates, reflecting a return of interest rates to historic norms, partially offset by projected mortality improvements based on Social Security Administration cohort mortality tables.⁹ If a household takes a reverse mortgage, we assume that it uses the proceeds to purchase a nominal annuity.

Mortgage Adjustments. One caveat about the Georgia State study is that it does not model mortgage payments and mortgage debt outstanding after retirement, but rather, as noted, assumes the mortgage is paid off before retirement. Our projections assume that any mortgage debt outstanding at retirement will be discharged using financial assets. If financial assets are insufficient to discharge the entire mortgage debt, mortgage payments are reduced in proportion to the reduction in debt, and the replacement rate targets are adjusted accordingly.

The *Consumption and Activities Mail Survey* (CAMS) is the only data source for mortgage payments in the HRS, but, even then, the remaining term on a mortgage is not asked and only the mortgage balance outstanding is known. We derive the remaining mortgage term using data on mortgage balances and annual payments and assume a nominal interest rate of 6 percent, approximating to the average interest rate on a 30-year fixed mortgage during the survey period.¹⁰

The next step is to estimate mortgage payments and terms for people not included in the CAMS. An attempt was made to impute mortgage payments based on data for the CAMS subsample. Initial tabulations showed that the ratio of mortgage payments to debt was tightly

⁹ Specifically, we calculate current annuity money's worths (the expected present value of the income stream divided by the premium paid), given current interest and mortality rates and then calculate annuity prices assuming the same money's worths, projected mortality improvements, and 2004 interest rates, deeming 2004 rates to approximate to a long-run equilibrium.

¹⁰ The remaining term was bottom-coded to one year if the reported annual payment exceeded the debt. If the ratio of payments to outstanding balance was less than or equal to the interest or if the term was greater than 30 years, we top-coded the term to 30 years.

clustered around the median of 0.12, implying a median remaining mortgage term of about 12 years. An econometric model, in which the ratio of mortgage payments to mortgage balance outstanding was the dependent variable and explanatory variables included house value, age, and socioeconomic characteristics, produced statistically insignificant coefficients. Therefore, we assumed that all non-CAMS households had a remaining term of 12 years.

Measuring Socioeconomic Status

Educational attainment is used as a proxy for SES, because it is highly correlated with other markers of SES and is, with few exceptions, determined early in life and is unaffected by later labor market or retirement saving decisions. In contrast, contemporaneous markers of SES such as income and wealth are more likely to be influenced by such decisions.

Initially, educational attainment naturally falls into four categories: less than high school, high school, some college, and college. However, the percentage of individuals with less than a high school education has become much smaller over time (see Table 3) and represents a more disadvantaged SES group than in the past, making it necessary to create quartiles of people ranked by their educational attainment.

Making the proportions equal in each quartile requires moving some households from the top SES group (college) into the second-highest group (some college), then from the second-highest group to the third SES group (high school), and finally into the lowest SES group (less than high school). In contrast to Bound, Rodriguez, and Waidmann (2014), who reassigned people at random, the probability of being selected and moved is proportional to the probability that someone with that individual's characteristics would not have graduated from college, so that marginal college graduates are more likely to be reassigned.

The methodology for this reassignment is as follows. The first step is to estimate the following ordered probit model:

$$y^* = x\beta + e$$

where $y = 0$ if y^* (the exact but unobserved dependent variable) is $\leq \alpha_1$, the dividing line between less than high school and high school education; $y = 1$ if $\alpha_1 < y^* \leq \alpha_2$, the dividing line between high school and some college; $y = 2$ if $\alpha_2 < y^* \leq \alpha_3$, the dividing line between some

college and college graduation; $y = 3$ if $\alpha_3 < y^*$; and \mathbf{x} is a vector of correlates of educational attainment. These correlates include gender, race, census division, industry and occupation dummies, and income percentile.

The procedure allows for the possibility that a college graduate may be reassigned all the way to the less than high school category. As shown in Table 4, all of the households who had less than a high school degree remained in the lowest SES quartile. However, 21 percent of households with a college degree were moved into the second highest SES quartile, 4 percent were moved into the third SES quartile and 2 percent were moved all the way down to the lowest SES quartile.¹¹ A concern may be that our approach for reassigning individuals to educational quartiles may understate the relationship between SES and plans for retirement. If we omit factors predictive of the probability of failing to graduate from high school, we may not identify the most likely candidates for reassignment to that category. We address this concern in the regression analysis by conducting a sensitivity test in which, instead of reassigning individuals to create equally sized quartiles, we divide individuals among the four reported education categories. As will be shown below, the results are quite similar using the quartile data and using the educational attainment originally reported.

Results

The following discussion presents the results for retirement preparedness and the size of the retirement gap by SES and the regression analysis that determines the extent to which this retirement gap results from shocks as opposed to inadequate foresight.

Retirement Preparedness

A household is deemed prepared for retirement if their projected retirement income at a given age is equal to or greater than their target retirement income at that age. Tables 5a and 5b show the percentage of households who are unprepared for retirement at each age from 60 through 70 in both a base case and a case in which the proceeds of a reverse mortgage based on their home values are added to their total wealth.

¹¹ A perfectly even reallocation between SES quartiles was not possible because each household had different weights. The procedure reassigned households by the unit and not weighted unit.

At age 62, three-quarters of households do not meet their targets, and even when the proceeds from a reverse mortgage are included, 70 percent would be unprepared if they retired at 62. Even at age 65, over half of households cannot meet their targets even with a reverse mortgage. This finding is consistent with the results of the 2013 National Retirement Risk Index (Munnell, Hou, and Webb 2014). One-fifth of households would fall short even if they were to delay retirement until age 70 and take a reverse mortgage. Conditioning on age, those in lower-SES quartiles are more likely to be unprepared.

Retirement Gap

The above statistics would not be a cause for concern if households planned to work until advanced ages and acted on those intentions. But the ages at which households plan to retire are often earlier than the ages at which they will be financially prepared for retirement. Table 6 reports the median age at which households in each SES group will be financially prepared for retirement and reports the median retirement gap by SES – that is, the median difference between the age at which each household will be financially prepared and the age at which it plans to stop work. On average, households in the top SES quartile plan to retire on time, even if they do not take a reverse mortgage, whereas households in the bottom quartile plan to retire two years too soon, or one year too soon if they take a reverse mortgage. These averages, however, may hide considerable heterogeneity, if some households plan to retire much too soon and others plan to work beyond the ages at which they would be able to hit their replacement rate targets. Table 7 reports the percentage of households who plan to retire prematurely and the average retirement gap of those who plan to retire prematurely. Low-SES households are more likely to plan to retire prematurely, but conditional on planning to retire prematurely, the average retirement gap is similar across SES quartiles – four to five years.

A potential concern is that reporting errors may inflate our estimates of the percentage planning to stop work prematurely. If everyone planned to retire on time, but everyone also reported wealth with a mean zero error term, then one-half of households would appear to plan to retire prematurely. We conduct a sensitivity analysis by assuming that all households appearing to plan premature retirement understate their housing and financial wealth by 20 percent. This adjustment has almost no effect on the percentage planning to stop work prematurely or on the

average retirement gap. And reporting error cannot explain the relationship between SES and retirement gap.

Another potential concern is that the imputation of expected retirement ages to those who failed to respond is affecting the results. Redoing the exercise and eliminating households with imputations produces a very similar picture (see Tables 8 and 9).

Inadequate Foresight or Shocks

From the above discussion, it is evident that households in lower-SES quartiles are more likely to retire “too soon” and are less likely to delay retirement. Planning to retire prematurely may reflect short-sightedness. But it might also result from late-career economic shocks, to which low-SES households may be particularly vulnerable. The question becomes to what extent is the larger retirement gap among low-SES households reflective of greater vulnerability to shocks and a reduced capacity to smooth consumption over their lifetimes versus inadequate planning or knowledge about how long to work.

We define a household as having experienced a particular type of shock if it occurred in any wave of the observed window at or prior to the wave in which they attained age 58. We define employment and spousal employment shocks as any periods of unemployment; self and spousal health shocks as substantial declines in self-reported health status;¹² marital shocks as any change from a couple household to a non-couple household; and wealth shocks as any wave-to-wave decline of 20 percent or more in total financial and housing wealth, including secondary residences. The incidence of shocks is tabulated in Table 10.¹³ Households in the lowest SES quartile have a statistically significant higher incidence of all of the above shocks than those in the top quartile.

To investigate the relationships between shocks, SES, and the retirement gap, we estimate the following OLS regression:

$$R_{h,t} = \beta_0 + \beta_1 SES_t + \beta_2 D_t + \beta_3 S_t + \beta_7 C_{it} + \varepsilon_{it}$$

¹² Self-reported health status in the HRS is measured on a five-point scale. We treat declines of two or more points as substantial.

¹³ The high incidence of wealth shocks across all SES quartiles is because total financial wealth includes housing assets, which were exposed to the housing market collapse.

The dependent variable, $R_{h,t}$, the retirement gap, takes a zero if the household plans to retire at the age at which it will meet its target, a negative value if the household plans to work beyond that age, and a positive value if the household plans to delay retirement. Explanatory variables include SES_t , the household's SES quartile, D_t , a vector of demographic and economic characteristics, S_t , a vector of shocks, and C_t , controls for different birth cohorts.

Two regressions are estimated, one excluding potential income from reverse mortgages and one including it (see Table 12).¹⁴ A positive coefficient indicates that the explanatory variable is associated with an increase in the retirement gap. The demographic and economic variables have the expected coefficients. Being black, having poor health, and being a one-earner couple all increase the gap between the age of planned retirement and the age of financial readiness. Households that participate in both defined benefit and defined contribution pension plans have a retirement gap that is 0.86 years less than those that are not covered in any pension plan. Unsurprisingly, the retirement gap of households whose financial planning horizon is 10 years or more is 0.85 years less than other households.

The focus of the equation is to determine whether late-career shocks increase the retirement gap. Indeed, wealth shocks are associated with a statistically significant increase in the retirement gap of 0.51 years. Interestingly, households that experience employment shocks (becoming unemployed) have a retirement gap that is 1.9 years less than those that have never become unemployed. Two explanations are possible. One is that periods of unemployment decrease the denominator in the replacement rate calculation, which likely contributes to the unanticipated sign on the coefficient. The other is that those forced to find a new job in their fifties recognize that they will have to work longer to make ends meet in retirement, so they adjust their plans.

The bottom line, however, is that, even after controlling for both shocks and household characteristics, households in the top two SES quartiles have significantly smaller retirement gaps than those in the bottom quartile, 0.7 and 1.0 years, respectively, in the first specification.

¹⁴ Two additional regressions are also estimated that control for the potential impact of spousal employment and health shocks, since the coefficient on these variables was insignificant and their inclusion had no effect on the rest of the equation, they are not reported.

Conclusion

Working longer is a powerful way to improve retirement security for Americans who are retiring prematurely – that is, before they acquire enough income to maintain their pre-retirement standard of living. This paper documents the disparities across SES quartiles both in the ages at which households will meet their retirement income targets and in their planned retirement ages. It also shows that the larger retirement gaps for low-SES households are due to poor planning – planning to retire before they are financially prepared – rather than late-career shocks. The analysis involves imputations of planned retirement ages for those who say “never” or do not respond, and it involves grouping households by educational quartile rather than educational attainment, but sensitivity analyses show that these procedures are not driving the results.

These results have important policy implications, because they suggest that the big problem is premature retirement among low-SES households. This same group has seen little improvement in health and life expectancy and faces poor job prospects. It may well be that their retirement shortfalls cannot be bridged by working longer and that other solutions will be needed.

References

- Bernheim, B.D. 1989. "The Timing of Retirement: A Comparison of Expectations and Realizations." In *The Economics of Aging*, edited by David A. Wise, 335-355. Chicago: University of Chicago Press.
- Burtless, Gary. 2013. "The Impact of Population Aging and Delayed Retirement on Workforce Productivity." Working Paper 2013-11. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Butrica, A. Barbara, Howard M. Iams, and Karen E. Smith. 2007. "Understanding Baby Boomer Retirement Prospects." In *Redefining Retirement: How Will Boomers Fare?*, edited by Brigitte Madrian, Olivia S. Mitchell, and Beth J. Soldo, 70-94. New York, NY: Oxford University Press.
- Coe, Norma B. and Anthony Webb. 2010. "Children and Household Utility: Evidence from Kids Flying the Coop." Working Paper 2010-16. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Dwyer, D.S., and J. Hu. 1999. "The Relationship Between Retirement Expectations and Realizations: The Role of Health Shocks," in *Forecasting Retirement Needs and Retirement Wealth*, edited by Olivia Mitchell, P. Brett Hammond, and Anna M. Rappaport. Philadelphia, PA: University of Pennsylvania Press.
- Hall, Arden and Terry R. Johnson. 1980. "The Determinants of Planned Retirement Age". *Industrial and Labor Relations Review* 33(2): 241-254.
- Hurd, Michael D. and Susann Rohwedder. 2013. "Heterogeneity in Spending Change at Retirement." *Journal of the Economics of Ageing* 1(2): 60-71.
- Hurst, Erik. 2008. "The Retirement of a Consumption Puzzle." Working Paper 13789. Cambridge, MA: National Bureau of Economic Research.
- Loughran, David, Constantijn Panis, Michael Hurd, and Monika Reti. 2001. "Retirement Planning." Manuscript. Santa Monica, CA: RAND Corporation.
- Mitchell, Olivia S. and James Moore. 1998. "Can Americans Afford to Retire? New Evidence on Retirement Saving Adequacy." *Journal of Risk and Insurance* 65: 371-400.
- Munnell, Alicia H., Wenliang Hou, and Anthony Webb. 2014. "NRRI Update Shows Half Still Falling Short." *Issue in Brief* 14-20. Chestnut Hill, MA: Center for Retirement Research at Boston College.
- Munnell, Alicia H., Natalia Orlova, and Anthony Webb. 2012. "How Important Is Asset Allocation to Financial Security in Retirement?" Working Paper 2012-13. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Munnell, Alicia H., Matthew S. Rutledge, and Anthony Webb. 2014. "Are Retirees Falling Short? Reconciling the Conflicting Evidence." Working Paper 2014-16. Chestnut Hill, MA: Center for Retirement Research at Boston College.

Poterba, James M., Steven F. Venti, and David A. Wise. 2012. "Were They Prepared for Retirement? Financial Status at Advanced Ages in the HRS and AHEAD Cohorts." Working Paper 17824. Cambridge, MA: National Bureau of Economic Research.

Scholz, John Karl and Ananth Seshadri. 2008. "Are All Americans Saving 'Optimally' for Retirement?" Presented at the 10th Annual Joint Conference of the Retirement Research Consortium in Washington, DC, August 7-8.

Scholz, J. K., A. Seshadri, and S. Khitatrakun. 2006. "Are Americans Saving 'Optimally' for Retirement?" *Journal of Political Economy* 114(4): 607-643.

Smith, James P. 2005. "Unravelling the SES Health Connection," published in *Aging, Health, and Public Policy: Demographic and Economic Perspectives*, a supplement to *Population and Development Review* 30: 108-132. New York: Population Council.

University of Michigan. *Health and Retirement Study, 2000-2010*. Ann Arbor, MI.

Van Rooij, Maarten, Annamaria Lusardi, and Rob Alessie. 2012. "Financial Literacy, Retirement Planning and Household Wealth." *The Economic Journal* 122(560): 449-478.

Table 1. *Average Retirement Age and Percentage Retired by Retirement Plan Response*

	Average retirement age	% retired
Answered	63.1	74.3%
Planners	62.7	81.2
Thinkers	63.6	67.6
Never	63.8	66.2
Non-response	63.3	71.8

Source: Authors' calculations from the University of Michigan, *Health and Retirement Study* (HRS), 2000-2010.

Table 2. *Target Replacement Rates by Income Level and Household Type*

	\$20,000	\$30,000	\$40,000	\$50,000	\$60,000	\$70,000	\$80,000	\$90,000
One-earner married couple; age 65 worker, age 62 spouse	94%	90%	85%	81%	78%	77%	77%	78%
One-earner married couple; age 65 worker and spouse	94	90	85	81	78	77	76	76
Two-earner married couple; age 65 higher earner, age 62 spouse	94	90	85	81	80	78	78	78
Single worker; age 65	88	84	83	80	79	81	82	81

Source: Palmer (2008).

Table 3. *Weighted Percentage of Households by Educational Attainment*

Educational attainment	% of household heads
Less than high school	10%
High school or GED	31
Some college	27
College	33

Source: Authors' calculations from the 2000-2010 HRS.

Table 4. *Percentage of Households Reassigned in Each SES Quartile, by Educational Attainment*

SES quartile	Lowest	Second	Third	Highest	Total
Less than high school	100%	0%	0%	0%	100%
High school / GED	40	60	0	0	100
Some college	14	21	64	0	100
College	2	4	21	74	100
Total	27	25	24	24	100

Source: Authors' calculations from the 2000-2010 HRS.

Tables 5a and 5b. *Percentage of Households Aged 60 to 70 Unprepared for Retirement, by SES Quartile With and Without Reverse Mortgage*

5a. *Without Reverse Mortgage*

Age	Lowest	Second	Third	Highest	Total
60	95%	93%	89%	86%	91%
61	95	93	89	85	91
62	83	76	71	68	75
63	80	72	65	63	70
64	75	66	62	60	66
65	69	61	55	54	60
66	64	54	49	49	54
67	56	49	44	43	48
68	47	43	38	37	41
69	39	32	32	31	34
70	31	27	25	26	27

5b. *With Reverse Mortgage*

Age	Lowest	Second	Third	Highest	Total
60	95 %	93 %	89 %	86 %	91 %
61	95	93	89	85	91
62	78	71	67	64	70
63	75	66	60	57	65
64	68	61	55	51	59
65	61	53	49	46	52
66	54	46	42	41	46
67	46	40	37	36	40
68	38	32	31	32	33
69	31	25	24	26	27
70	22	21	19	21	21

Source: Authors' calculations from the 2000-2010 HRS.

Table 6. *Median Age Households Meet Target and Median Retirement Gap, by SES*

SES	Median age meets target		Retirement gap (years)	
	Base case	Including reverse mortgage	Base case	Including reverse mortgage
Lowest	67	67	2	1
Second	66	66	1	0
Third	66	65	1	0
Highest	65	64	0	-1

Source: Authors' calculations from the 2000-2010 HRS.

Table 7. *Median Retirement Gap of Households That Retire Prematurely, by SES*

SES	Percentage		Retirement gap (years)	
	Base case	Including reverse mortgage	Base case	Including reverse mortgage
Lowest	64%	57%	5	5
Second	57	51	5	5
Third	55	48	5	4
Highest	51	44	5	5

Source: Authors' calculations from the 2000-2010 HRS.

Table 8. *Median Age Households Meet Target and Median Retirement Gap, by SES for Non-Imputed Responses*

SES	Median age meets target		Retirement gap (years)	
	Base case	Including reverse mortgage	Base case	Including reverse mortgage
Lowest	67	67	2	1
Second	66	66	2	1
Third	66	65	0	0
Highest	65	64	0	0

Source: Authors' calculations from the 2000-2010 HRS.

Table 9. Median Retirement Gap of Households That Retire Prematurely, by SES for Non-Imputed Responses

SES	Percentage		Retirement gap (years)	
	Base case	Including reverse mortgage	Base case	Including reverse mortgage
Lowest	68%	61%	4	4
Second	59	53	6	6
Third	52	47	5	5
Highest	50	44	5	4

Source: Authors' calculations from the 2000-2010 HRS.

Table 10. Percentage of Households That Experience Various Shocks, By SES

SES	Employment shock		Health shock		Marital shock	Wealth shock
	Respondent	Spouse	Respondent	Spouse		
Lowest	6.7%	4.2%	15.0%	8.2%	7.8%	58.2%
Second	5.4	4.2	11.5	4.3	5.7	48.4
Third	5.4	2.5	11.2	5.3	5.2	49.4
Highest	4.9	3.2	6.3	4.6	4.6	45.5
Total	5.6	3.5	10.8	5.4	5.7	49.9

Notes: The difference between the lowest and highest SES quartile for employment, health, spousal health, marital, and wealth shocks are statistically significant at the 15-percent, 1-percent, 5-percent, 5-percent and 1-percent levels respectively. Spousal employment shocks were not statistically significant.

Source: Authors' calculations from the 2000-2010 HRS.

Table 11. *Regression Results for Retirement Gap by SES (Standard Errors in Parentheses)*

Retirement gap	(1)	(2)
<i>SES</i>		
Second	-0.08 (0.34)	-0.15 (0.35)
Third	-0.71*** (0.33)	-0.66*** (0.33)
Highest	-1.02*** (0.36)	-1.05*** (0.37)
<i>Demographics/health</i>		
Male	-0.09 (0.40)	0.07 (0.40)
Black	1.04*** (0.37)	0.99*** (0.37)
Hispanic	0.40 (0.43)	-0.03 (0.46)
Other	0.35 (0.69)	0.37 (0.73)
Number of kids	0.12** (0.07)	0.11* (0.07)
10+ year planning horizon	-0.85*** (0.28)	-0.69*** (0.28)
Poor health	1.01*** (0.32)	1.13*** (0.33)
<i>Pension type</i>		
DB only	-0.30 (0.35)	0.07 (0.35)
DC only	0.09 (0.29)	0.11 (0.29)
DB and DC	-0.86*** (0.42)	-0.47 (0.42)
<i>Marital/earning status</i>		
Married one-earner	1.09*** (0.38)	1.36*** (0.39)
Married two-earner	-0.56 (0.50)	-0.33 (0.51)

-Continued-

Table 11. *Regression Results for Retirement Gap by SES (Standard Errors in Parentheses)*
(cont'd)

Retirement gap	(1)	(2)
<i>Shocks</i>		
Employment shock	-1.90 *** (0.72)	-1.76 *** (0.71)
Health shock	0.01 (0.45)	0.09 (0.45)
Marital shock	0.27 (0.60)	0.03 (0.62)
Financial shock	0.51 *** (0.25)	0.78 *** (0.25)
Wave	0.16 *** (0.08)	0.05 (0.08)
Constant	-1.16 ** (0.66)	-1.42 *** (0.66)
R-squared	0.05	0.05

(1) Retirement gap, excluding spousal health and employment shocks.

(2) Retirement gap including reverse mortgages, excluding spousal health and employment shocks.

Notes: *** significant at the 5-percent level, ** significant at the 10-percent level, *significant at the 15-percent level. Spousal health and employment shocks were also estimated but did not have a statistically significant effect.

Source: Authors' calculations from the 2000-2010 HRS.

Table 12. *Retirement Gap Relative to Lowest SES Group, by SES Definition and Group*

Education quartile	Base	Reverse mortgage	Reported attainment	Base	Reverse mortgage
Second	-0.08 (0.34)	-0.15 (0.35)	High school	-0.07 (0.42)	-0.13 (0.42)
Third	-0.71*** (0.33)	-0.66 *** (0.33)	Some college	-0.67 * (0.43)	-0.66 ** (0.42)
Highest	-1.02*** (0.36)	-1.05 *** (0.37)	College	-1.26 *** (0.44)	-1.35 *** (0.44)

Notes: *** significant at the 5-percent level, ** significant at the 10-percent level, *significant at the 15-percent level. The education definition is based on reported educational attainment while the quartile definition reassigns households into SES quartiles.

Source: Authors' calculations from the 2000-2010 HRS.

RECENT WORKING PAPERS FROM THE
CENTER FOR RETIREMENT RESEARCH AT BOSTON COLLEGE

The Challenge of Pension Reform in Georgia: Non-Contributory Pensions and Elderly Poverty

Tamila Nutsubidze and Khatuna Nutsubidze, July 2015

The Transition from Defined Benefit to Defined Contribution Pensions: Does It Influence Elderly Poverty?

Natalia S. Orlova, Matthew S. Rutledge, and April Yanyuan Wu, July 2015

Will the Average Retirement Age Continue to Increase?

Matthew S. Rutledge, Christopher M. Gillis, and Anthony Webb, July 2015

The Role of Occupations in Differentiating Health Trajectories in Later Life

Michal Engelman and Heide Jackson, University of Wisconsin-Madison, July 2015

The Relationship Between Automatic Enrollment and DC Plan Contributions: Evidence from a National Survey of Older Workers

Barbara A. Butrica and Nadia S. Karamcheva, July 2015

Evidence of Increasing Differential Mortality: A Comparison of the HRS and SIPP

Barry P. Bosworth and Kan Zhang, July 2015

Slowed or Sidelined? The Effect of “Normal” Cognitive Decline on Job Performance Among the Elderly

Anek Belbase, Mashfiqur R. Khan, Alicia H. Munnell, and Anthony Webb, June 2015

Does Social Security Continue to Favor Couples?

Nadia S. Karamcheva, April Yanyuan Wu, and Alicia H. Munnell, June 2015

Sources of Increasing Differential Mortality Among the Aged by Socioeconomic Status

Barry P. Bosworth, Gary Burtless, and Kan Zhang, June 2015

Do Retired Americans Annuitize Too Little? Trends in the Share of Annuitized Income

Barry P. Bosworth, Gary Burtless, and Mattan Alalouf, June 2015

Impact of the Financial Crisis on Long-Term Growth

Barry P. Bosworth, June 2015

Post-War Trends in Labor Income in the Social Security Earnings Records

Gary Burtless and Kan Zhang, June 2015

*All working papers are available on the Center for Retirement Research website
(<http://crr.bc.edu>) and can be requested by e-mail (crr@bc.edu) or phone (617-552-1762).*

The Yardstick: A Tool to Evaluate Proposed Reforms of Arizona's Public Safety Personnel Retirement System (PSPRS)

Final Report

August 19, 2015

Prepared by the League of Arizona Cities and Towns'
Pension Task Force

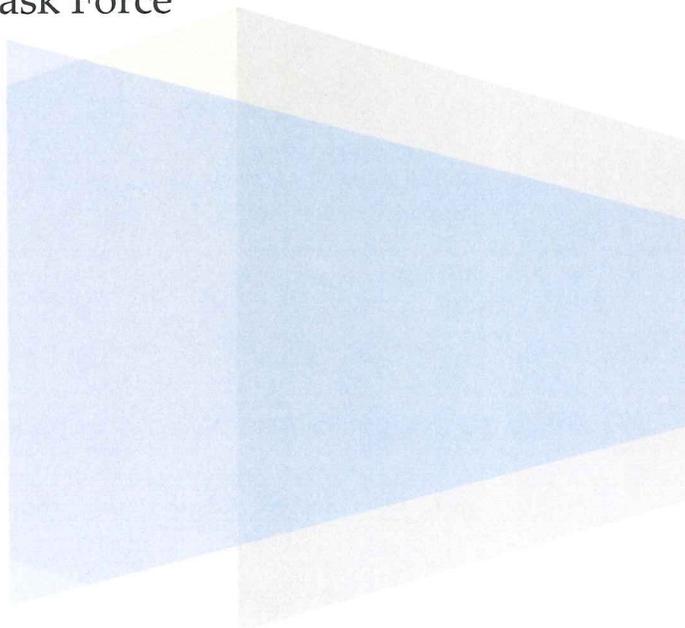


Table of Contents

LETTER FROM THE CHAIRMAN 4

EXECUTIVE SUMMARY 6

HOW DID WE GET HERE? 7

REFORM PRINCIPLES..... 10

- **Adequate & Affordable 10**
- **Financial Solvency 11**
- **Transparency & Accountability 11**

THE YARDSTICK..... 14

YARDSTICK EFFECTS..... 21

CONCLUSIONS 23

REFERENCES 24

APPENDICES 30

PENSION TASK FORCE MEMBERS

CHAIRMAN

Scott McCarty, Finance Director, Town of Queen Creek

VICE- CHAIRMAN

Mike Townsend, Assistant County Manager, Coconino County

TASK FORCE MEMBERS

Scott Barber, HR Director, Town of Florence

Greg Caton, Town Manager, Town of Oro Valley

Karen Daines, Assistant City Manager, City of Sedona

Barbara Fleming, HR Director, City of Sierra Vista

Barbara Goodrich, Management Services Director, City of Flagstaff

Michael Kennington, Chief Financial Officer, City of Mesa

Alan Maguire, President and Principal Economist, The Maguire Company

James Menlove, Finance Director, Navajo County

Rick Naimark, Deputy City Manager, City of Phoenix (Retired)

Robert Nilles, Finance Director, City of El Mirage

Kathy Reyes, Benefits Administrator, City of Avondale

Marc Skocypec, Assistant Town Manager, Town of Gilbert

Marge Zylla, Government Relations, City of Tempe

REPORT PREPARATION AND EDITING

Performed By Task Force Members and By

Justine Bruno, Management Support Analyst, Town of Gilbert

August 19, 2015

Mayor Mark Mitchell
President, Executive Committee
League of Arizona Cities and Towns

RE: Public Safety Pension Reform Recommendations from the Pension Reform Task Force

President Mitchell and Members of the Executive Committee,

The Task Force believes reforming PSPRS is one of the most important financial issues facing the taxpayers in the State of Arizona, as the current system is not sustainable. To provide perspective on the magnitude of this issue, the system's total unfunded liability at June 30, 2014 was \$6.2 billion; 72% of this amount (\$4.5 billion) relates to Arizona's cities and towns for their police departments (\$3.0 billion) and fire departments (\$1.5 billion). Arizona cities and towns have 120 plans within PSPRS (74 for police and 46 for fire), which include about 22,000 employee and retiree members.

Arizona's cities and towns are the system's largest participant and our involvement in reform is critical. The Task Force began its work in June, 2014 and has provided updates to the Executive Committee on three occasions over this period of time, sharing our observations and thoughts. Over the course of our work, we have completed a tremendous amount of education, communication and outreach having met with all stakeholders including:

- Staff from the Governor's Office;
- Staff from the Treasurer's Office;
- State Legislators and staff;
- The State Legislative Pension Group led by Senator Lesko and Representative Olson;
- Labor associations;
- PSPRS Board and staff;
- PSPRS' Actuaries;
- Arizona State Retirement System (ASRS) staff;
- Elected officials of cities, towns, counties, and fire districts;
- The Arizona Tax Research Association (ATRA);
- The Reason Foundation;
- Public Pension Associations and National Subject Matter Experts;
- The County Supervisor Association;
- The Arizona City and County Management Association (ACMA); and
- The Government Finance Officers Association of Arizona (GFOAz).

This extensive process has been invaluable by providing education to the Task Force and to the others that were involved. For example, the Yardstick recommends creating the “third leg” of the retirement stool for those members not in the Social Security system by creating a replacement-like program. This recommendation resulted directly from the feedback provided by the labor associations.

Additionally, we developed ‘Employer Recommended Practices’, which are ideas for employers to implement immediately, to improve the financial condition of their pension plans. These ideas have been very well received and have, in fact, already improved the final condition of those who have taken action. Specifically, the Task Force has relentlessly described a plan’s unfunded liability as “debt” and challenged employers to develop ways to eliminate and reduce it.

I also mention these specific ideas because it shows the depth and level of understanding the Task Force has developed about the system. Prior reform efforts have not resulted in these ideas, and when combined with the Yardstick, we expect will result in the necessary reform. The Task Force strongly believes the Yardstick can play an important role in the reform discussions and decisions, but it is not intended as a reform proposal. Rather, the Yardstick identifies the key elements that need to be addressed through reform. As designed, it is a tool that we can use to assist in the evaluation of pension reform proposals and by communicating your position on important reform issues.

On behalf of all members of the Task Force, I want to thank the Executive Committee for the opportunity to participate in this process – it has been our privilege. We feel we have provided a professional assessment and thorough analysis that serves both the taxpayers and pension participants.

Respectfully submitted,

Scott McCarty
Chair
Finance Director
Town of Queen Creek

Executive Summary

Currently, the Arizona Public Safety Personnel Retirement System (PSPRS) is comprised of 256 employer (individual) plans with roughly 32,000 active members and retirees. Of the 256 plans, the financial condition and employer contribution (ER) rate varies amongst each; however, the employee contribution (EE) rate is set uniformly by State law and presently fixed at 11.65%. The growing unfunded liability and anticipated demand on the system has generated multiple reform efforts over the years. As of June 30, 2014, the total underfunded liability was \$6.2 billion, with the funded status varying greatly across the 256 plans; 216 plans are less than 100% funded.

The current system is unsustainable and reform is necessary. The declining financial condition of PSPRS has accelerated the call for action and spurred the creation of the Task Force by the League of Arizona Cities and Towns' Executive Committee, to assess the current system and identify the next steps to provide the necessary relief.

The PSPRS Task Force was formed in June, 2014, through the leadership of the Executive Committee of the League of Arizona Cities and Towns in partnership with the Arizona City and County Managers Association (ACMA) and the Government Finance Officers Association of Arizona (GFOAz). Fifteen members comprise the Task Force, with all members currently or formerly holding executive positions in Arizona government.

The Task Force was formulated to undertake a comprehensive review of PSPRS, but rather than develop a specific reform proposal, the Task Force created the Yardstick. The Yardstick identifies the goals, characteristics, and elements of a viable and sustainable, well-designed public safety pension system. As the name suggests, it is an evaluation tool for the current system and for potential reform proposals for Arizona's public safety pension system. This report explains the approach of the Task Force, discusses the elements of the Yardstick, and how creating an approach consistent with the Yardstick will create a more sustainable and affordable system, while still attracting the highest quality employees.

The conclusions of this report are as follows:

1. The current system is unsustainable and comprehensive reform is necessary.
2. Achieving successful reform is a shared responsibility of system members, elected officials, employers, and taxpayers.
3. The Yardstick reflects characteristics of a well-designed public safety pension plan.
4. The Yardstick is a tool to evaluate reform (not a specific proposal) and to aid in communicating the reform elements important to employers.

How Did We Get Here?

PSPRS is a multi-agent employer, defined benefit pension plan. Meaning, once vested, an employee/beneficiary is guaranteed a monthly benefit based on years of service and salary. The plan is funded by a combination of contributions from employees, employers (taxpayers), and investment gains. Within the system, there are 256 individual plans, with each maintaining their own provisions and requirements. For example, the City of Phoenix has two plans within the system, one for fire and a second plan for police.

There are two components that determine the pension amount: normal cost and unfunded liability. The ratio of a plan's assets to liabilities reflects its funded status and measures the value of current assets to pay for the future pension benefits employees have earned. A funded ratio of 100% means the plan has a net present value equal to the present value all of its obligations. Again, because there are 256 individual plans, each plan has its own unique funded status and unique employer contribution requirements. As of the June 30, 2014, 216 of the 256 plans were less than 100% funded, with the total unfunded liability equaling \$6.2 billion.

Over the past few years, funded status has been declining for most plans. This growing unfunded liability results in increased annual pension costs for employers (because the employee contribution is capped); meaning a larger share of an employer's budget is spent on pension costs, with fewer resources available for public safety and other essential services. This impact is best measured by calculating the percent of pension costs expressed as a percent of an entity's operating budget. This measurement also allows for comparability across employers, to assess their relative position. There are some cities in which the pension contributions for both police and fire represent about 20% to 25% of operating revenues, with no immediate relief in sight.

A combination of many issues have caused this declining financial condition, including investment losses, benefit increases, the permanent benefit increase calculation, governance, and inadequate reform in 2011. If we do not evaluate past reform efforts, we are likely to repeat the same mistakes, making it critical to develop an understanding of these issues and the appropriate approach to reform. The issues discussed in the following paragraphs summarize some of the challenges PSPRS has faced.

Investment Losses

One of the most obvious impacts has been the stock market downturn in 2000 and the Great Recession in 2007-2009. These severe economic conditions have caused investment return to be lower than actuary assumptions. Since employee contribution rates are capped, increased

employer contributions have been needed to cover the shortfall. Historically, the PSPRS Board has been reluctant to reduce the interest rate assumptions to more accurately reflect this.

Benefit Increases

The creation of the Deferred Retirement Option Plan (DROP) was a cost to the system when it was first implemented. This program was intended to allow employers to retain highly-experienced personnel who intended to retire after their minimum years of service. Under DROP, the retirement benefits are allocated to a separate account and bear interest at a specified rate, which is problematic for employers when those returns are not produced by the market.

Permanent Benefit Increase (PBI)

The current system provides for an annual Permanent Benefit Increases (PBI), which functions like a dividend. One half of annual investment earnings in excess of 9% are separated out, placed into a separate fund, and paid to retirees as a PBI by dividing this amount by the number of retirees. As a result, each retiree receives the same dollar amount increase.

This method is problematic because years of high investment returns are not available to offset years of low returns. Dollars that could have been used to increase a plan’s assets (and reduce its unfunded liability) are paid out to retirees, leaving the system without a safety net to cover years with low returns. The PBI is paid out regardless of the financial condition and funded status of a plan and it is done system wide. As an example, retirees in the Town of Bisbee fire plan receive these increases even though the plan is 8.0% funded.

It is also important to point that prior to FY 2015-16, the cost of the PBI was not included in the employer contribution rate. Excluding the PBI from the calculation effectively underestimated the normal cost of the pension plan, causing it to manifest itself in the unfunded liability. This issue was identified by PSPRS actuaries several years ago, but the PSRPS Board did not take action to address it.

Governance

The PSPRS Board of Trustees functions as the plan administrator responsible for fiduciary responsibilities, such as investment management, setting actuarial assumptions, and benefits administration. Additionally, unique to this system, is the fact that each plan has a local board. The local board makes decisions regarding eligibility, such as accepting members into the plan and determining disability retirements.

In practical terms, it means each local entity is responsible for managing a public safety pension plan, or plans. For example, the City of Phoenix has to manage two pension plans: police and fire. Self-management has proven to be an issue. Other than the largest member employers in the system, most entities do not have the resources and professional staff to manage a pension

system. As such, they rely on the PSPRS Board and administration to provide oversight and management of their plans.

Unfortunately, self-management and the PSPRS Board have not resulted in the type of active management needed to prevent unfunded liabilities. For example, only a handful of employers have completed a detailed study of how their actual performance has compared to the actuarial assumptions. To this point, the Task Force created “Employer Recommended Practices”, to assist employers with evaluating and improving the financial condition of their plan. These are included in this report as Appendix A and we encourage all employers to implement these practices.

Finally, given the fact that the employee contribution is capped at 11.65% of salary, any differences between actuary assumptions and actual performance manifests in unfunded liability, which is the sole responsibility of the employer.

2011 Failed Reform Efforts

Recent legal challenges have also had adverse financial impacts on the system. The rulings from the Fields Case and the Hall Case (still-pending) have left employers grappling with the impending fiscal impacts. The Fields Case restored the PBI for retirees and is estimated to have a financial impact in the vicinity of \$375 million. Assuming the Hall Case is ruled upon similarly, it will restore the PBI formula for current employees and return the employee contribution rate to the previously established fixed amount of 7.65% (from the current amount of 11.65%), resulting in retroactive reimbursements to employees, creating increased unfunded liabilities to many employers. Court decisions from across the country have produced similar results; pension promises to current employees and retirees are difficult to change and, if enacted, are sure to be litigated.

Reform Principles

It is important to note that the Task Force undertook a concerted effort to catalog all of the various interests present in pension reform. Collectively, the group sought to identify interests held by each group and develop alternatives that would generate reform, without undermining or violating other strong interests. This was done through a process that included educational presentations to the Task Force and subsequent discussions with subject matter experts from across the county. These presentations are identified in Appendix A and reference articles are identified as References at the end of this report. At the highest level, the Task Force set out to answer the following key questions:

- What should the Employee, Retiree, Employer, and Taxpayer get out of the pension system?
- How is this best accomplished?

These questions are answered using guiding principles and elements, called the Yardstick. The remainder of the report discusses these guiding principles and then identifies and explains each element of the Yardstick.

The guiding principles represent the common interests of employees/retirees and taxpayers/employers. The guiding principles are:

- Adequate and Affordable
- Financial Solvency
- Transparency and Accountability

Guiding Principle: Adequate and Affordable

Pension plans should provide adequate benefits yet be affordable to both the employee and employer. Some elements of a plan that impact its adequacy and affordability levels include: minimum age of retirement; minimum years of service; actuarial assumptions; social security participation by members; available health insurance benefits; and other key elements.

Income Adequacy

In a defined benefit plan, retirement benefits are determined by two factors (years of service and average income) and use a formula to determine the full applicable retirement benefit for recipients. The Task Force acknowledges that public safety positions are more physically/mentally demanding than most other governmental positions and that each retirement plan should be designed with this difference in mind. To this point, the Task Force spent a tremendous amount of time discussing the pros and cons of a Defined Contribution

plan and a hybrid plan. We believe a defined benefit plan best answers the Task Force's key questions, meets the guiding principles and is ultimately the most cost-effective approach to managing plan adequacy.

System Affordability

The overall intent of the new reform efforts is to have a plan that provides a sustainable cost structure for the employee and the employer. Both the normal cost and unfunded liability must be aggressively managed to provide transparent and understandable contribution amounts. Targeting a funded status of 100% is the best way to ensure each generation pays their fair share. From the employer perspective, affordability is best measured by determining the percent of pension costs as a percent of an entity's operating budget. Also, this provides comparability across employers, while comparing contribution rates does not. Lastly, if benefits are increased, they must be funded by contribution increases as there is no other funding source if all actuary assumptions are believed to be correct.

Guiding Principle: Financial Solvency

The primary financial objective of any pension system is to ensure it will be able to make its promised future benefit payments. Both the funded status and its trend (whether increasing or decreasing) are important metrics that measure solvency. Ideally, action should be taken to prevent wide swings in a plan's funded status. For example, if a plan's funded status is decreasing and not addressed, future taxpayers will be forced to pay more.

In this regard, understanding trends leads to identifying management and policy issues. A routine, critical evaluation of actuary assumptions is of the highest importance. As an example, if a plan has a higher than expected number of disability retirements, the evaluation may suggest enhancements to the employer's worker compensation program as appropriate.

Financial performance is also greatly impacted by investment strategies, which can be very complicated and difficult to understand, especially in changing economic markets.

Guiding Principal: Transparency and Accountability

The governance structure is especially critical to the success of a pension plan. A healthy and well-run system will be evident through its structure and design. The structure must be simple enough for users to understand, without being confused by terminology, complex formulas, lengthy descriptions, or excessive options.

To be transparent and ensure accountability, a healthy system will rely on simplicity to meet the core needs (benefits) of its members. By focusing on core needs, a plan will enhance its ability to be healthy, accountable, and transparent.

A transparent plan will clearly identify systems, structures, and responsibilities. Experts should be utilized to provide advice, guidance, direction, and functionality for the system. Expert advice should be accepted unless there is a logical and defensible reason not to. In either case, the advice and any contrary determinations should be publicized in order to provide opportunities for public comment.

Customer Service

A sign of a healthy and well-run system is the level of service that it provides to its users. Users include, but are not limited to: employees and employers enrolled in the system; government and financial institutions; the media; and citizens. Good service includes timely and consistent responses to inquiries, knowledgeable and easily understandable communication that is easily accessible, and a commitment of resources to ensure that the information is delivered timely to those who need it. A system that achieves these objectives will often have a simplistic workflow, process, and forms; it will utilize an approach that is less complicated in structure, making it easier to convey how the system works to others.

A dedicated resource to address the questions and needs of those who utilize the system, such as a liaison, can often create a buffer between the more technical operations of the system and the end users. A liaison can often coordinate multiple requests and make sure that the system provides transparent and accountable service.

Outreach and Education

Providing the necessary and adequate levels of education to keep members informed and involved is vital for transparency between plan administrators and plan members. Users must receive regular training in both a structured group setting and in a one-on-one setting (as long as the training is consistent from one user to the next). Computerized training, on-line tutorials, and other easily accessible electronic visuals can provide alternate ways of providing consistent data and information that is often relegated to legal documents and manuals.

A system that achieves these objectives will often provide regular trainings, user meetings, tutorials, and a breakdown of complex legal and legislative language into a more simplified and user-friendly product. The most transparent and accountable forms of education start with a source document (the enabling legislation) and build from that. Appropriate documentation requires that any source be cited, which ensures transparency with what is “cast in stone” and what is based on operational needs and efficiency. This allows the users to understand what is open for interpretation and what is not.

Documents that are not proprietary should be readily available and accessible to everyone. Users should be able to view all aspects of how the system operates, not just their particular area. From start to finish, a solid understanding of system operations helps reduce questions and confusion, which is why access to documents and training materials should not be restricted, unless necessary.

Information and Data

Another sign of a healthy and well-run system is the level of data that it provides to its users. Users must receive regular data and communication that is clear, concise, useful, relevant, accurate, verified, timely, and compliant. To ensure transparency, all official reports, minutes, legislation, directives, guidance, interpretations, disbursements, budgets, revenues, audits, findings, and decision-making documents should be readily available, searchable, and accessible. To be useful, data must be presented in a timely manner.

A system that achieves these objectives will ensure that the data has been reviewed and certified, preferably by an independent third party or responsible administrative personnel. Every attempt should be made to ensure that a common user can understand and interpret the data. If the data is too complex, it should be accompanied by documents or documentation that explains the complexities. A system that is accountable should follow the same reporting requirements as the entity responsible for its existence or operation. This would include all financial operations from annual budgeting, to auditing, to daily functions such as purchasing, payroll, accounts payable/receivable, and so forth. The responsible entity should receive reports detailing all relevant financial activity, with all data and decisions being made public to the maximum extent permitted by law.

A transparent and accountable system will detail and breakdown data into base elements that aid informed decision making; however combining too much data actually restricts decision making. If data is combined, its source information should be available to aid in decision making and data interpretation. When operating as a government agency, or quasi government agency, laws and statutes that govern the responsible entity/government should be adhered to, including those related to bidding, advertising, publishing, and public notice.

Consistency

A sign of a healthy and well-run system is easily identifiable by the consistency of the information and communication provided. Users should come to expect consistent treatment in all matters; if precedence is established it should become the rule. Individual employers and employees should be able to apply past determinations to current decisions. This can best be achieved when there is one deciding entity/board for actions.

The Yardstick

After completing the educational process, which included testimony from subject matter experts, and identifying the guiding principles, the Task Force was poised to develop its reform recommendations. To this point, the Yardstick identifies the goals, characteristics, and elements of a viable and sustainable public safety pension system, for the State of Arizona; it is not a proposal. Rather, as the name suggests, it is an evaluation tool for the current system and reform proposals. The balance of this report explains and discusses the elements of the Yardstick, and how creating an approach consistent with the Yardstick will create a sustainable system, which will serve to attract the highest quality employees while maintaining affordability for taxpayers. The Yardstick is shown on the following pages:

The Yardstick

1. DEFINED BENEFIT PLAN

- The pension benefit is predetermined by a formula based on employee compensation, age, and tenure of service

2. FREE FROM LEGAL CHALLENGE

- All current employees and all current retirees remain in the existing tiers

3. NEW STATEWIDE TIER

- For employees hired after July 1, 2016

4. PLAN ELEMENTS OF THE NEW STATEWIDE TIER

- **Pooled Assets and Liabilities.** Shares risk across the broadest base
- **Fully Funded.** Assets at least equal liabilities (at least 100%) over an economic cycle
- **Equal Cost Sharing.** There will be only one equal employer / employee contribution rate in the new tier
- **Funding New Benefits or Benefit Increases.** Funded as a tier component and only if the tier is determined to be fully funded before and after the change
 - **Pension Increases.** To maintain purchasing power
- **In-Lieu of Social Security Program.** Mandatory participation in an employer-matched Defined Contribution plan for those members not in Social Security to replicate a Social Security like benefit

5. GOVERNANCE STRUCTURE

- **System Design.** Structure that requires sustainable outcomes
- **Funding Policy.** Identifies financial objectives to ensure equity and sustainability
- **Investment Policy.** Identifies beliefs and objectives regarding asset allocation
- **Board of Trustees.** Independent, qualified professionals with fiduciary responsibility of ensuring compliance with Plan Elements
- **Administration.** Consolidated and one independent disability committee of qualified experts

The Yardstick's elements are further defined and discussed in the following section.

1. DEFINED BENEFIT PLAN

- The pension benefit is predetermined by a formula based on employee compensation, age, and tenure of service

As discussed in the 'Guiding Principles' section of the this report, the Task Force believes a defined benefit plan is the most cost effective way to provide pension benefits to public safety employees. Fewer years on the job and longer years in retirement are characteristics unique to public safety employees, so the predictability of retirement income is paramount; however, a structure should exist that prevents an employee from inflating (spiking) their pension.

2. FREE FROM LEGAL CHALLENGE

- All current employees and all current retirees remain in the existing tiers

The Task Force believes that changing benefits for existing employees and retirees will be legally challenged both at the State and federal level and ultimately reversed. Court cases from across the country and Arizona have reversed attempts to change benefits to existing members and retirees. Most recently in Arizona, in the Fields Case, the Arizona Supreme Court reversed changes to the retiree PBI, which forced PSPRS to revert back to the way it was originally administered.

This also raises concerns about the length of time legal challenge and corresponding litigation can take. Essentially, the system is in a holding pattern while litigation is pending, as is the situation with the Hall case. It is highly probable that this case, which was filed in response to the 2011 reform, will not be decided until 2016, or later. For these reasons, any proposed reform should avoid legal challenges to the maximum extent possible.

3. NEW STATEWIDE TIER

- For employees hired after July 1, 2016

It is legal to create a tier for new employees on a prospective basis. Doing so means the current tiers will close naturally, avoiding potential legal challenges; however, putting new hires in a different tier does not terminate them. Under this application, the 256 existing plans would be closed to new enrollment as of June 30, 2016, but the plan would not dissolve completely until the last member (or beneficiary) of the plan passes away.

Opponents of this recommendation typically react by saying it will greatly increase costs. Costs that are incurred in this case are ones in which the plan is underfunded, meaning it was priced incorrectly. Closing the plan to new employees will not impact any of the current obligations or liabilities of the plan. Using basic pension funding principles, assets should equal liabilities based on current membership at any time. If a plan is underfunded, the solution is not adding more members to the plan, it is contributing more for the members currently in the plan.

4. PLAN ELEMENTS OF THE NEW STATEWIDE TIER

- **Pooled Assets and Liabilities.** Shares risk across the broadest base

The primary purpose of pooling is to achieve economies of scale that are gained when risk and volatility are spread across the broadest base. It is recommended that new members entering into PSPRS be pooled into one tier. The 256 plans would not be replicated in the new tier and pooling would help disperse the risk and volatility in the new tier. Also, each jurisdiction would still be responsible for their unfunded liabilities of the current plan. A new plan would address the exchange of resources when an employee transfers from one tier to another, under the current system. Every time this occurs in the current system, there is a winner and loser because each employer plan has a different funded status and contribution rate.

Additionally, the current system puts individual plans at extreme financial risk. For example, if an instance occurs that is an extreme anomaly as compared to the actuary assumptions (such as a high amount of disability retirements to regular retirements), employer costs will immediately spike.

Finally, public safety services are provided throughout the state of Arizona and without regard to jurisdictional boundaries. If public safety functions as one large system protecting the public, it seems appropriate that the pension system serves as one large system as well.

- **Fully Funded.** Assets equal liabilities (at least 100%) or greater over an economic cycle

Taxpayer and member equity is achieved only when funding equals 100%. If a plan is less than 100% funded, it means taxpayers and members have not paid their fair share up to that point and future taxpayers and members will be forced to make up the difference. Measuring funding over an economic cycle is also recommend, to account for natural changes in asset values that do not necessitate contribution increases. For example, in a down market with decreased asset values, a funded level of about 80% is acceptable. Similarly, in a strong

financial market, a funded level of about 125% is understandable. In both cases, the difference from 100% is attributable to market conditions, not the underlying financial structure of the plan.

- **Equal Cost Sharing.** There will be only one equal employer / employee contribution rate in the new tier

Equal cost sharing is a critical issue and the source of much debate. It is recommended that the costs of the new tier be shared equally by the employee and employer, since both parties would have the same position (neutral position) regarding decisions. Whether its investment strategies, actuarial assumption, or benefit increases, both sides experience the same financial impacts of decisions when costs are shared equally; however, under the current system, the employee contribution is capped at 11.65% and the employee is insulated from bearing any additional costs. When the system achieves its expected financial goals, that responsibility is borne entirely by the employer.

Under this element, there would be only one employer / employee contribution rate; not 256.

- **Funding New Benefits or Benefit Increases.** Funded as a tier component and only if the tier is determined to be fully funded before and after the change

- **Pension Increases.** To maintain purchasing power

If you rely on all of your actuarial assumptions, benefit increases can only be paid for with contribution increases - there is no other source. Benefits should never be enhanced because the plan is well funded. Funding new benefits is a plan element that ties together several other Yardstick elements. Specifically, it emphasizes the importance of the recommended cost sharing element. If benefit increases are made, both parties should pay equally, but that is not the case under the current system. Presently, if benefit increases are made, the employer pays the full cost because the employee contribution is capped.

Additionally, the Task Force believes the new tier should include cost-of-living-adjustments (COLAs) to maintain the purchasing power of a retiree's pension. The financial impact of COLAs should be included in the normal cost, not isolated in a separate fund and funded from investment performance. As discussed earlier, the current system's separate fund and dividend structure has had an adverse financial impact on the system's financial condition.

- **In-Lieu of Social Security Program.** Mandatory participation in an employer-matched Defined Contribution plan for those members not in Social Security to replicate a Social Security like benefit

Retirement is often described as a three-legged stool, with one leg as the public pension, the second leg as personal savings, and the third leg as Social Security. Not all members of PSPRS participate in Social Security, which creates different retirement realities for each member. Many cities in Arizona employ a sworn police force that participates in Social Security; however, the same cannot be said about sworn fire fighters, who are typically exempt from participation.

Mandatory participation in Social Security would be a challenging feat. If PSPRS were to mandate that all members participate in Social Security, it would require a 100% vote by the current membership. Although this route would be ideal by offering another leg of the stool to members, it would be challenging to achieve.

The Deferred Retirement Option Plan (DROP) was conceived as a necessary mechanism to deal with the “baby boomer retirement tsunami” and has been subsequently defended as a necessary mechanism to allow retirees to pay for health insurance benefits between retirement and Medicare eligibility. The Task Force believes the metrics used to determine retirement eligibility should be adhered to and not extended via DROP. Given the demanding physical and mental elements of public safety jobs, the benefit should be funded based on the eligibility criteria, not automatically extended. We see DROP as a costly method to extend retirement and a significant cost to employers during that period; therefore, it is recommended that the Deferred Retirement Option Plan not be included in any future system design.

Nonetheless, the issue of accumulating resources to pay for healthcare from retirement to Medicare eligibility, as well as other reasons for portable retirement savings, is valid. To address this, the Task Force developed the idea of creating a Social Security-like replacement program for those not eligible for Social Security. Essentially, the replacement program would function as a defined contribution plan where both the employer and employee contribute equally.

5. GOVERNANCE STRUCTURE

- **System Design.** Structure that requires sustainable outcomes
- **Funding Policy.** Identifies financial objectives to ensure equity and sustainability

- **Investment Policy.** Identifies beliefs and objectives regarding asset allocation
- **Board of Trustees.** Independent, qualified professionals with fiduciary responsibility of ensuring compliance with Plan Elements
- **Administration.** Consolidated and one independent disability committee of qualified experts

Successful reform is not possible in Arizona unless the current governance structure is addressed. For example, since Arizona has such a unique system with 256 financially distinct plans, not addressing its shortcomings will dilute plan design and financial reform outcomes. The importance of change in this area cannot be underestimated.

The very structure of PSPRS itself contributes to the problems of fiscal sustainability. It is highly inefficient to maintain 256 separate entities, creating an administrative cost burden and in most cases, a lack of expertise and oversight. Creating one system will result in one pension funding policy, one investment policy, one set of financial information, one funded status, one actuarial report, one disability board, and one set of performance measures. This will eliminate the role of the employer, making management the responsibility of the PSPRS Board and administration. Currently, that responsibility is shared and has not proven successful.

There is a woeful lack of clear understanding on the part of participating employers on the fundamental actuarial and accounting aspects of the current system that directly contribute to calculating the employer contribution and the plan's unfunded liability.

The system should develop ongoing training and communication avenues to educate member employer elected officials and administrators on how contribution rates are determined and most specifically, the impact of individual unfunded liabilities, and potential ways to address that liability. New GASB rules related to reporting pension liability in 2015 should foster a new awareness on the part of system employers.

Further vigilance in establishing initial eligibility under the disability provisions of the system as well as the ongoing affirmation of such disability may be compromised by the lack of expertise in a given local board. Thus, it is our position that the necessary changes be made in law and policy to provide for a centralized processing and adjudication of all disability claims (both service-related and ordinary). The new system being created would not maintain local boards, instead it would utilize the system's administration to manage new hires, transfers, withdrawals, disability claims, and so forth.

The system's Board should be comprised of independent, qualified professionals who are not impacted in any way by the policies and decisions made by the Board or by the administrative

staff. Creating these requirements ensures impartial decision-making and the discharge of the Board's fiduciary duty.

Finally, consolidating PSPRS and Arizona State Retirement System (ASRS, Arizona's other public pension system) administration is anticipated to result in a cost savings to taxpayers. At its core, both PSPRS and ASRS perform the same functions of administering pensions and investment monies. In fact, ASRS already manages the retiree healthcare plan used by PSPRS. In regards to the size of the investment portfolio, number of members, and other aspects, PSPRS is about ten percent the size of ASRS.

Under such a scenario, there would be two divisions of the State's public pension system: one for public safety and one for non-public safety (ASRS). There are nuances that result from these two different plans, but at the macro level, they both perform the same functions, and if consolidated, would likely result in decreased costs.

The Yardstick: Its Effects

Now that we have explained the Yardstick, this section identifies the effects of the Yardstick. The effects are discussed from two perspectives: (i) employees/retirees and (ii) employers/taxpayers.

Employees/Retirees

The Yardstick identifies best practices that are fiscally sustainable as well as new resources that can be redirected by the employer to the current system, in order to reduce or eliminate its unfunded liability. How this can be accomplished is discussed later.

Also, since it identifies the option of a third leg of the retirement stool, while maintaining a defined benefit plan, it can still attract quality employees.

Employers/Taxpayers

The Yardstick identifies best practices that are less expensive to employers and taxpayers as well as being more transparent. The best practices can be less expensive and identify ways that current plans can be more affordable for the following reasons:

1. **Lowers the Cost for New Employees.** The unfunded liability is a significant cost component of the current plan. As an example, the current employer contribution rate for the City of Phoenix's police plan is 50%, or \$50K for a police officer earning \$100K. Of this \$50K, \$13K represents normal cost and \$37K relates to the unfunded liability. This cost of \$37K is eliminated in the new system because it does not have an unfunded liability.

2. **Allows an Employer to Reallocate Savings to Reduce or Eliminate Costs of the Current System.** Savings from the employees enrolled in the new plan can be redirected to pay down the liability of the current plan because the cost for new employees is less expensive. Again, using the City of Phoenix example above, \$37K could be used per new employee to reduce costs of the current system.
3. **Equalizes Contributions for Employees and Employers.** The current employee contribution is capped at 11.65%, so anytime the system needs to increase contributions, they are made by the employer. In the new system, costs that would otherwise be fully paid by employer are now split equally.
4. **Reduces Employer Contribution Volatility.** Pooling the assets and liabilities absorbs entity specific shocks.
5. **Creates Affordable Retiree Pension Increases.** Creates a COLA and eliminates the dividend model, which does not allow earnings from a good year to offset earnings from a bad year.
6. **Reduces Administrative Costs.** Operating one plan (not 256) in conjunction with ASRS will cost less money at the statewide level as well as for the individual employers (i.e. disability boards eliminated). Changing the governance to be more strategic will ensure the success of other reform efforts. Creating a pension funding policy that targets 100% funded status can be effectively achieved under one system; with 256, it is difficult. Having only one plan will be easier to evaluate, communicate, and administer.

Conclusions

As we begin to project the future of the Arizona Public Safety Personnel Retirement System (PSPRS), in its current form, it will not be able to provide the security and support needed by its 32,000 active members and retirees. Maintaining 256 employer (individual) plans has resulted in a fragmented and inconsistent approach to retirement planning. Many factors have led to the dire conditions of this system, from poor investment returns to the structure of permanent benefits and the overall governance of the system; PSPRS is suffering death by a thousand cuts. The growing unfunded liability and anticipated demand on the system has spurred multiple attempts at reform, with negligible success. To date, judicial rulings on previous attempts to modify the system, the Fields Case and Hall Case (still-pending), have failed to reduce employer liability, forcing the retroactive payment of benefits to the tune of \$375 million. As of June 30, 2014, the total underfunded liability was \$6.2 billion, with 216 of the 256 plans being funded at less than 100%.

Meager investment returns and the Deferred Retirement Option Plan (DROP) strained the system when the market failed to yield its projected returns. Permanent Benefit Increases (PBI) only compounded the negative impact to employers by increasing future liabilities on investment earnings exceeding 9%, which offered no insulation when the market suffered shocks and underperformed. The dismal financial conditions of PSPRS have heightened the call for action, spurring the creation of the Task Force by the League of Arizona Cities and Towns' Executive Committee. The fifteen-member Task Force assessed the current system and identified a tool to evaluate various reform proposals, provided throughout this document.

During the comprehensive review of PSPRS, the Task Force developed a specific reform assessment tool: The Yardstick. The Yardstick identifies the goals, characteristics, and elements of a viable and sustainable, well-designed public safety pension system. As the name suggests, the Yardstick functions as an evaluation tool for the current system and any potential reform proposals for PSPRS. This report was intended to provide clarity around the approach of the Task Force, the elements of the Yardstick, and how creating an approach consistent with the Yardstick will create a more sustainable system that attracts talented employees at a more affordable rate.

The conclusions of this report are as follows:

1. The current system is unsustainable and comprehensive reform is necessary.
2. Achieving successful reform is a shared responsibility of system members, elected officials, employers, taxpayers.
3. The Yardstick reflects characteristics of a well-designed public safety pension plan.
4. The Yardstick is a tool to evaluate reform (not a specific proposal) and to aid in communicating the reform elements important to employers.

References

Almedia, Beth and Ilana Boivie. "The Staying Power of Pensions in the Public Sector." *CPER Journal* 9 May 2009.

American Academy of Actuaries. "Issue Brief: The 80% Pension Funding Standard Myth." July 2012.

Arizona Public Safety Retirement System. "Arizona Public Safety Personnel Retirement System Consolidated Report: June 30, 2014."

Arizona Public Safety Retirement System. "The Past, Present, and Future of PSPRS." 12 February 2015.

Arizona State Retirement System. "Schedule of Employer Allocations; Schedule of Pension Amounts by Employer." 30 June 2015.

Bajtelsmit, Vickie; Anna Rappaport, and LeAndra Foster. "Measures of Retirement Benefit Adequacy: Which, Why, for Whom, and How Much?" January 2013.

Bartel, John E. "City of Berkeley Miscellaneous and Safety Plans, CalPERS Actuarial Issues-6/30/2010 Valuation, Preliminary Results." 14 February 2012.

Bender, Keith A. and John S. Heywood. "Out of Balance? Comparing Public and Private Sector Compensation over 20 Years." April 2010.

Biggs, Andrew. "Public Employee Pensions: Do Long Time Horizons Allow for Low, Stable Contributions?" November 2013.

Bohn, Henning. "Should Public Retirement Plans Be Fully Funded?" September 2010.

Brown, Robert L. and Craig McInnes. "Shifting Public Sector DB Plans to DC." 9 October 2014.

California Actuarial Advisory Panel at <http://www.sco.ca.gov/caap.html>

California Policy Center. "A Method to Estimate the Pension Contribution and Pension Liability for Your City or County." 24 July 2013.

Center for Retirement Research at Boston College at: <http://crr.bc.edu>

Center for State and Local Government Excellence for examples of changes to state and local government pension plans at: <http://slge.org>

Christensen, Lance and Adrian Moore. "Pension Reform Handbook: A Starter Guide for Reformers." July 2014.

City of Berkeley, California. "Staff Report: Projections of Future Liabilities." 19 February 2013.

City of Costa Mesa, California. "Staff Report: Pension Cost Reductions Recommendations-First Steps." 4 February 2014.

City of Irvine, California. "Staff Report: Proposed Plan for Addressing the City's Unfunded Pension Liability." 25 June 2013.

City of Laguna Hills, California. "Staff Report: Lump Sum Payoff of CalPERS Employer Side Fund." 11 June 2013.

City of Newport Beach, California. "Staff Report: CalPERS Pension Plan Update and Payment Alternative Recommendation" 25 November 2014.

Conference of Consulting Actuaries at: <http://www.ccactuaries.org/index.cfm>

Defined Contribution and Retirement Study Committee. "Senate Bill 1609 Defined Contribution and Retirement Study Committee Final Report." 21 December 2012.

Desai, Roopali; Kimberly Demarchi; and Thomas Hoecker. "PSPRS Pension Reform Legal Analysis." 18 April 2015.

Elder, Erick M. and Gary A. Wagner. "Can Public Pensions Fulfill Their Promises?" April 2015.

FitchRatings. "U.S. State Courts Set Pension Reforms on Varied Paths." 30 June 2015.

Florida Public Pension Trustees Association. "Understanding Public Pension Plan's Unfunded Liability." February 2011.

Fornia, Flick; Diane Oakley, Scott Shapio, and Alex Brown. "Successful Pension Reform." 3 June 2015.

Fornia, William B. "A Better Bang for NYC's Buck, An Efficiency Comparison of Defined Benefit and Defined Contribution Retirement Savings Plans." October 2011.

Fry, Hannah. "Newport votes to pay off pension liability faster." 26 November 2014 <http://www.dailypilot.com>

Funsotn, Rick; Uri Monson, and Susan Mangiero. "Pension Risk Management." 1 June 2015.
Gabriel Roeder Smith & Company. "Arizona Public Safety Personnel Retirement System-Projection Study." 7 October 2013.

GASB Statements No. 67 and 68 at: www.GASB.org

Gilbert, Thomas and Christopher Hrdlicka. "Fairness and Risk-Sharing Across Generations." 14 June 2013.

Glazier, Kyle. "SEC Charges Kansas for Faulty Pension Disclosure." *The Bond Buyer* 11 August 2014.

Government Finance Officers Association 'Best Practices' at www.gfoa.org

Hume, Lynn. "Pension Liabilities Are Key Source of Credit Pressure to States." *The Bond Buyer* 25 March 2015.

Jones, Norman L.; Brian B. Murphy, and Paul Zorn. "Actuarial Methods and Public Pension Funding Objectives: An Empirical Examination." 2010.

Journal of Accountancy. "GASB Pension Changes." January 2015.

Lieberman, Marc R. and Mark Lundin. "From Sow's Ear to Silk Purse: Transformation of the Arizona Public Safety Personnel Retirement System. *Benefits Magazine* June 2014: 2-7.

Legislative Research Commission, Kentucky Public Pensions. "Report of the 2012 Task Force on Kentucky Public Pensions." 2013.

Little Hoover Commission. "Public Pensions for Retirement Security." February 2011.

Matson, Paul and Susanne Dobel. "A Comparative Analysis of Defined Benefit and Defined Contribution Retirement Plans." 22 September 2006.

McGee, Josh B. PhD. "Equivalent Costs for Equivalent Benefits: Primary DC Plans in the Public Sector." October 2013.

McGee, Josh B. PhD. "The Transition Cost Mirage-False Arguments Distract from Real Pension Reform Debates." March 2013.

McCaulay, Philip Martin. "Public Pension Plan Funding Policy." 2010.

Moody's Investors Services. "Adjusted Pension Liability Medians for US States." 27 June 2013.

Moody's Investors Services. "The US Public Pension Landscape: Patterns of Funding, Correlation and Risk." 9 September 2013.

Moody's Investors Services. "US Public Pensions: Court Decisions Define Important Pension Risk Differences Across States." 15 July 2015.

Moody's Investors Services. "US State and Local Governments Face Risks with Pension Funding Bonds." 11 December 2012.

Morningstar. "The State of State Pension Plans 2013, A Deep Dive Into Shortfalls and Surpluses." 16 September 2013.

Munnell, Alicia H.; Jean-Pierre Aubry, and Laura Quinby. "Public Pension Funding in Practice." October 2010.

Munnell, Alicia H.; Jean-Pierre Aubry, and Madeline Medenica. "The Funding of State and Local Pensions: 2012-2016." July 2013.

Munnell, Alicia H.; Jean-Pierre Aubry, and Mark Cafarelli. "An Update of Pension Obligation Bonds." July 2014.

National Association of Government Defined Contribution Administrators, Inc. "Best Practices Guide to Administering Your Governmental Defined Contribution Plan" September 2013.

The National Association of State Retirement Administrators for examples of state funding policies at: www.NASRA.org

National Conference on Public Employee Retirement Systems and Cobalt Community Research. "2013 NCPERS Public Retirement System Study." October 2013.

National Conference on Public Employee Retirement Systems and Cobalt Community Research. "The Evolution of Public Pension Plans: Past, Present and Future." March 2008.

National Conference on Public Employee Retirement Systems and Cobalt Community Research. "The Top 10 Advantages of Maintaining Defined Benefit Pension Plans." October 2013.

National Governors Association et al. "Pension Funding: A Guide for Elected Officials." 2013.

The PEW Charitable Trusts. "Kentucky's Successful Public Pension Reform." 27 September 2013.

The PFM Group. "Addressing the National Pension Crisis" It's Not a Math Problem." 2013.

The PFM Group. "New Retirement Plan Options for Tennessee's Political Subdivisions" January 2012.

Randazzo, Anthony. "Lessons and Myths of West Virginia's Pension Reform." 6 May 2014.

Reason Foundation. "Presentation: PSPRS Reform Comparative Analysis." 16 July 2015.

Rhee, Nari Ph.D. "Pensionomics 2014." July 2014.

Ropcke, RW. "Comment: Fairness and Sharing Risk across Generations." 1 November 2013.

Segal. "City of Phoenix, Pension Reform Task Force, Recommendations to the City Council." 6 December 2011.

Segal. "Public Sector Letter: Planning a Successful Pension Funding Policy." November 2011.

Society of Actuaries. "Report of the Blue Ribbon Panel on Public Pension Funding." 2014.

Standard & Poor's Ratings Services. "A Bumpy Road Lies Ahead for U.S. Public Pension Funded Levels." 16 July 2013.

Standard & Poor's Ratings Services. "Diverging Trends Underlie Stable Overall U.S. OPEB Liability." 17 November 2014.

TIAA-CREF Institute. "2014 Retirement Confidence Survey of the State and Local Government Workforce." August 2014.

Urban Institute. "Assessing Pension Benefits Paid under Pennsylvania's State Employees' Retirement System." September 2014.

Urban Institute. "How Long Must State and Local Employees Work to Accumulate Pension Benefits" April 2014.

Urban Institute. "How Will State and County Government Employees Fare Under Kentucky's New Cash Balance Pension Plan?" April 2014.

Urban Institute. "When Do State and Local Pension Plans Encourage Workers to Retire?" April 2014.

Wells, Dave; and Stephen Herzenberg. "Arizona's Pensions: On Track to Financial Sustainability with Retirement Security." 17 January 2014.

Appendix A: Presentations Made to the Task Force

August 15, 2014 Presentations:

1. PSPRS. League of Arizona Cities and Towns' PSPRS Pension Task Force.
2. PSPRS. Investment Update Arizona PSPRS Trust.

September 12, 2014 Presentations:

1. Gabriel Roeder Smith & Company. Arizona PSPRS Pension Task Force "Actuary 101"
2. Arizona State Retirement System. A Requested Presentation on Pension Plan Concepts, Data, and Information.

October 3, 2014 Presentations:

1. National Institute on Retirement Security. Critical Issues for Key Public Pension Stakeholders.
2. Laura and John Arnold Foundation. Protecting Workers and Taxpayers: Responsible Public Pension Reform.
3. Kutak Rock LLP. Pension Task Force: Options for Governments to Obtain Relief from Pension Liabilities Post *Fields*

October 10, 2014 Presentations:

1. National Conference on Public Employee Retirement Systems. Presentation to the Arizona's Public Safety Pension Task Force.
2. NEPC, LLC. Pension Investment Strategies (In a Low Return World).
3. Grand Canyon Institute. PSPRS: On Track to Financial Sustainability with Retirement Security with One Exception.
4. National Conference of State Legislatures. State Retirement Reform Legislation.

October 24, 2014 Presentations:

1. National Association of State Retirement Administrators. Overview of Public Pension Issues and Plan Designs.
2. The PFM Group. Arizona Public Safety Pension Task Force Presentation.
3. Professional Fire Fighters of Arizona. Fixing the PSPRS Pension Fund.
4. Gabriel Roeder Smith & Company. Arizona PSPRS Pension Task Force.

Appendix B: Employer Recommended Practices



AZ PSPRS Pension Task Force



2015 EMPLOYER WORKSHOPS

You are one of 256 individual employers participating in the Arizona Public Safety Personnel Retirement System (PSPRS). While there are many plan aspects that are universal, your employer contribution rate is unique to you...and so is your funded status and unfunded liability. New GASB rules will bring sharp focus on your unfunded liability in 2015 and we need to prepare our organizations and our elected officials for this revelation.

It has been said that Arizona's public pension programs are "unsustainable". A ballot measure

Constants for Every AZ PSPRS Plan:

- Employee contribution percentage
- Benefit formula
- Plan economic assumptions:
 - Net investment return
 - Price/Wage growth rate
 - Population growth rate
 - Retirement/turnover/mortality/disability rates

was considered by Phoenix voters in 2014 (but failed) which would have replaced their defined benefit plan with a defined contribution retirement plan for all non-public safety employees. In response to these items and similar issues being debated around the country, the League of Arizona Cities and Towns, in partnership with the Arizona City/County Management Association and the Govern-

Variables for Each AZ PSPRS Plan:

- Number/age/service of active employees
- Number/age of retired/disabled employees
- Number/age of employees in DROP
- Interest earned on Plan balance

ment Finance Officer's Association of Arizona, assembled a Task Force to take a comprehensive look at PSPRS, identify areas of improvement and develop reform recommendations. A group of 15 representatives from Arizona's cities, towns and counties, reflecting the diversity of PSPRS plan members, began meeting in July, 2014. The Task Force's final report will identify three essential elements of a well-designed pension program and is intended to be the "yardstick" against which reform proposals can be evaluated. The three elements are: 1) adequate and affordable, 2) financially solvent, and 3) transparent and accountable. The Employer Workshops are an important part of the Task Force's work in developing this yardstick.



Have you ever read your annual PSPRS Actuarial Valuation Report? If you've never studied your report, it contains all of the calculations used in arriving at your contribution rate and unfunded liability. The report shows your normal cost calculation and provides your *minimum* contribution requirement...which is the number we typically use in our budgets. And, in all fairness, that's what is required of us. If you are one of the 84 employers who currently have a funded percentage of 80% or more (considered by many to be the measure of a "healthy plan"), congratulations. But don't get too comfortable. Your employee demographics will change for a variety of reasons and, therefore, your funded status will likely decrease.

It cannot be emphasized enough, you are managing a pension plan and have a fiduciary responsibility to ensure your plan has sufficient financial resources to provide the benefits earned by the retirees. Understanding your financial condition is complicated and requires that you ask the right questions and get the right answers.

February, 2015

Appendix B: Employer Recommended Practices

Every employer should be asking these questions:

1. What is the financial condition of *my* plan?
2. How can I improve the financial condition of *my* plan *now*?

The Task Force has developed Employer Recommended Practices to help address these questions. These are steps employers can take now to improve their financial condition by increasing your assets and decreasing your liabilities.

Employer Recommended Practices

1. Budget contributions for DROP members.

·DROP has a cost even though employer contributions are not required. Keep the amount in your budget to avoid the increase when the replacement employee is hired.

2. Prepay your budgeted contribution.

·The sooner you pay PSPRS, the more interest your account earns. Full payment July 1 is best and a model exists to calculate the additional interest you can earn. The actuary amount is only an estimate of the minimum requirement...every little extra bit helps.

3. Do not defer the impact of the Fields case.

·The option to defer this cost increase is available over a 3-year period. However, doing so will cost more in the long-term. A model is available to calculate the cost of deferral.

4. Review Local Board practices.

·These practices serve to improve the management of your plan in areas such as member eligibility, pre-existing conditions, and disability claims.

5. Prepare a comprehensive study.

·Your annual valuation report is only a “picture”; you need to see the “movie” of your 22-year financial projection of your plan.

·A study helps you understand the financial realities (i.e. cost of DROP) and shows where you are in the pension lifecycle. A study will identify how specific factors (active/retiree ratio, turnover rates, etc.) will impact your future.

6. Pay off unfunded liability (debt) earlier.

·The reduction of the liability is “smoothed” over 22 years. It may have a large impact on your annual contribution amount. Treat and manage as debt.

7. Create a pension funding policy.

·A comprehensive document intended to ensure financial resources will exist to fund your plan. It provides guidance related to your plan’s major elements such as contribution amounts and funded status.

Please visit www.azleague.org for additional resources.

Appendix C: PSPRS Consolidated Report

ARIZONA PUBLIC SAFETY PERSONNEL RETIREMENT SYSTEM CONSOLIDATED REPORT JUNE 30, 2014

http://www.psprs.com/Admin_Investments_and_Finance/2014_actuarial_reports_by_system/2014-06-30_PSPRS_Annual_Valuation.pdf