TUCSON SUPPLEMENTAL RETIREMENT SYSTEM
BOARD OF TRUSTEES
MEETING MINUTES

DATE:	**Thursday, February 25th, 2016**
TIME:	**8:30 a.m.**
PLACE:	**Finance Department Conference Room, 5th floor City Hall, 255 West Alameda Tucson, Arizona 85701**

Members Present:	Robert Fleming, Chairman Kevin Larson, City Manager Appointee Rebecca Hill, Interim HR Director Karen Tenace, Deputy Director of Finance Michael Coffey, Elected Representative Jorge Hernández, Elected Representative John O'Hare, Elected Retiree Representative
Staff Present:	Joyce Garland, Assistant City Manager Dave Deibel, Deputy City Attorney Silvia Navarro, Treasury Administrator Dawn Davis, Administrative Assistant
Guests Present:	Gordon Weightman, Callan Associates
Absent/Excused:	None

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

A. **Consent Agenda**
1. Approval of January 28, 2016 TSRS Board Meeting Minutes
2. Retirement ratifications for February 2016
3. January 2016 TSRS Budget Vs Actual Expenses

Chairman Fleming asked for a vote on the approval of the Consent Agenda. The Consent Agenda was approved by a vote of 6 – 0 (Chairman Fleming did not vote).

B. **Investment Activity Report**
1. TSRS Quarterly Performance Review for 12/31/2015 – Callan Associates

Gordon Weightman distributed the 2015, 4th quarter market update. The big news for the quarter was the Federal Reserve raised interest rates a quarter of a basis point. This was the first time they have taken action in the last 9 years, which is supposed to be a good sign for the economy; however the market reaction has been the opposite, with a selloff in risky assets and a flight to quality. The US economy grew 0.7%. This was encouraging because consumer spending is also up 3.1%, consumer spending drives two-thirds of the GDP. There was a strange point in the inventory cycle when shelves were stocked, as a result there was not a lot of manufacturing during the quarter. Net exports were down, with the strong Dollar US goods became more expensive resulting in more buying and less selling. Inflation was 0.7%, including food and energy, if energy is stripped out core inflation rose 2.1%. Inflation is a rate of change index so if oil prices stabilized inflation could go back to 2%. Unemployment was at 4.9% through 1/31/2016, but the workforce participation rate has been very low. In 2008 the price of oil was $135 per barrel; at the end of 2015 it was $38, this year it had gone as low as $27. Low oil prices are good for consumers because it puts more money in their pockets, however consumers are using it to pay down debt instead of spending it, as a result the money has not trickled down into growth in the economy yet. Average monthly job gains were healthy in 2015 at over 220K jobs per month. Wage growth was 2.4% in 2015, which is an increase over the prior 5 year period, and can lead to increased consumer spending.

Mr. Weightman summarized the table on page 4 of the market summary.

Asset Class Performance

Periodic Table of Investment Returns for Periods Ended December 31, 2015

Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
S&P:500 7.0%	S&P:500 1.4%	S&P:500 15.1%	S&P:500 12.6%	S&P:600 Small Cap 8.0%
MSCI:EAFE US$ 4.7%	Barclays:Aggregate Index 0.5%	S&P:600 Small Cap 13.6%	S&P:600 Small Cap 11.5%	S&P:500 7.3%
S&P:600 Small Cap 3.7%	3 Month T-Bill 0.1%	MSCI:EAFE US$ 5.0%	MSCI:EAFE US$ 3.6%	Barclays:Aggregate Index 4.5%
MSCI:Emer Markets 0.7%	MSCI:EAFE US$ (0.8%)	Barclays:Aggregate Index 1.4%	Barclays:Aggregate Index 3.2%	MSCI:Emer Markets 3.9%
3 Month T-Bill 0.0%	S&P:600 Small Cap (2.0%)	3 Month T-Bill 0.1%	3 Month T-Bill 0.1%	MSCI:EAFE US$ 3.0%
Barclays:Aggregate Index (0.6%)	MSCI:Emer Markets (14.6%)	MSCI:Emer Markets (6.4%)	MSCI:Emer Markets (4.5%)	3 Month T-Bill 1.2%

Through 2/24/2016 the S&P:500 was down 5.3%, the Russell 2000 was down 9.9%, EAFE was down 10.5%, Emerging Markets was down 7.1%, and Barclays Aggregate was up 2%.

John O'Hare said, based on Callan's asset expectation sheet for the next 10 years, it did not look like the Board would be meeting their 7.25% investment assumption over that period.

Mr. Weightman answered that was a separate agenda item and he would address it under that item. Then he went over the quarterly performance review. T. Rowe Price's large cap growth products have earned above and beyond the index after fees, the person responsible for that was Rob Sharps. The firm wants him to take more of a leadership role, so he will be transitioning off the large cap growth team of which he is currently the portfolio manager. By the end of 2016 Taymour Tamaddon will replace Rob Sharps on the large cap growth team. Callan did not think the Board needed to take any action but they needed to be aware of the change. Aberdeen CIO Anne Richards is leaving the firm to become CEO of M&G. She did not have any direct responsibility for the portfolio the Board is invested in, but she was setting the strategic mission as CIO. Callan has been meeting with Aberdeen quarterly and their process is tilted towards high quality stocks. Their investments in energy and material stocks, which they consider to be high quality, have undergone a blanket selloff in the market which has caused Aberdeen to continue to struggle. Despite their recent performance Callan still supports Aberdeen.

Kevin Larson asked if Aberdeen had moved away from the benchmark in terms of asset weighting.

Mr. Weightman answered yes a little bit. They have a growth philosophy, energy and materials is not heavily weighted within the growth indexes, energy and materials are much bigger on the value side.

Mr. O'Hare asked if there was a risk Aberdeen would stay in the 99^{th} percentile.

Mr. Weightman answered yes and explained it was difficult to find a manager who always performs at median or better. One quarter can make a large difference in the 3 and 5 year performances of a manager because as the new quarter is added an old one falls off. Callan still supports the process at Aberdeen. The decisions are still made by the people the Board hired, therefore the same team is still in place and sticking to the same philosophy that was successful for them for a very long time, just not the last 3.5 years. There is a risk that Aberdeen could continue to underperform the benchmark. The question was whether the Board wanted to go through the process of replacing them, and potentially hire another manager at the wrong time in their cycle when Aberdeen's performance could improve because they were currently at the bottom of their cycle. The Board has been invested 3.5 years and over that time Aberdeen has returned 0.77% vs. the benchmark return of 5.1%. Aberdeen's 10 year return was 4.4% vs. the benchmark return of 2.9%, so the 10 year return is right where they would expect.

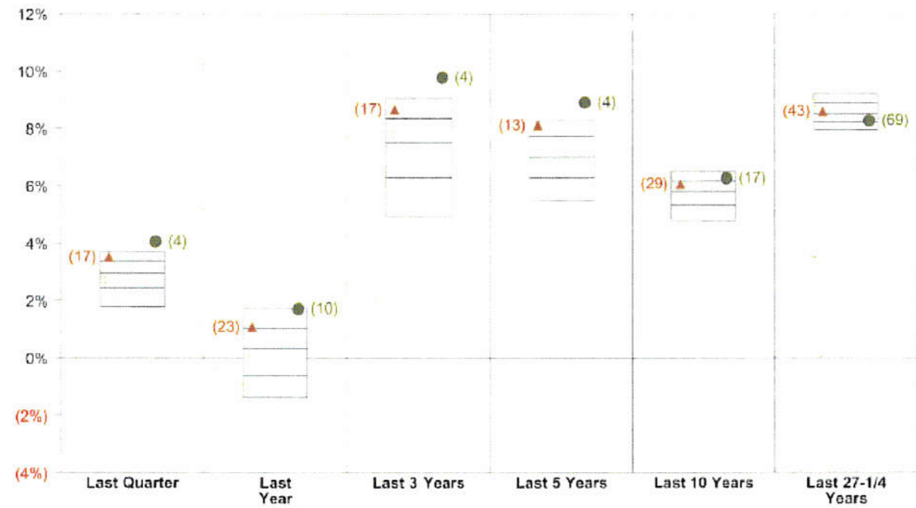
Chairman Fleming stated 92% of active managers outperformed the index over a 10 year period and Aberdeen was in the 43^{rd} percentile.

Mr. Weightman answered anything above median is pretty good. If it was thought the median active manager could outperform the benchmark, then anything around that or slightly higher would meet expectations. Callan had previously provided the Board with an evaluation of Aberdeen and would provide continuous updates.

Michael Coffey asked if Callan's recommendation remained unchanged.

Mr. Weightman answered that was correct, but that did not mean the Board had to take the recommendation. He advised too many clients had decided to fire a manager at the bottom of a performance cycle and when the manager goes back up in the cycle the client loses that gain, and there was loss in the transition costs to hire another manager, and then the new manager underperformed because they were hired at the top of their cycle. This was the case with Aberdeen because their 10 year performance before the Board hired them was terrific. Then he discussed the table on page 40 of the Quarterly Review.

Performance vs Public Fund Sponsor Database (Gross)



	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years	Last 27-1/4 Years
10th Percentile	3.70	1.73	9.07	8.28	6.52	9.21
25th Percentile	3.35	1.04	8.34	7.73	6.15	8.89
Median	2.96	0.33	7.50	6.99	5.78	8.51
75th Percentile	2.44	(0.61)	6.29	6.28	5.33	8.24
90th Percentile	1.78	(1.40)	4.92	5.46	4.77	7.95
Total Fund ●	4.05	1.71	9.77	8.90	6.26	8.27
Total Fund Benchmark ▲	3.52	1.08	8.66	8.10	6.06	8.60

The good news is the Board has been exceeding the benchmark return and ranking very well vs. peers. Over 5 years the Fund has returned 8.9%, which exceeded expected returns on an annualized basis. Over a long period of time, 27.25 years, the Fund returned 8.27%. As a long term investor with a plan managed in perpetuity 8% is achievable over a long period of time.

Mr. O'Hare asked if this was net of fees.

Mr. Weightman answered it was gross because all of the peer data is gross. Over the last 5 years the Board has been compensated for the active management fees. The Fund's over and under weights compared to the target benchmark will factor into those numbers as well. He then went over the Total Asset Class Performance. The Board's Domestic Equity was in the 3rd percentile, International equity was in the 84th percentile, Domestic Fixed Income was in the 61st percentile, and Real Estate was in the 7th percentile in calendar year 2015. He then went over the Investment Manager Returns in the following tables.

Returns for Periods Ended December 31, 2015

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Gross of Fees					
Domestic Equity	**6.60%**	**2.59%**	**16.27%**	**13.01%**	**7.19%**
Total Domestic Equity Target (1)	6.21%	0.47%	14.57%	12.11%	7.40%
Large Cap Equity	**7.25%**	**2.36%**	**16.28%**	**12.90%**	**6.67%**
S&P 500 Index	7.04%	1.38%	15.13%	12.57%	7.31%
Alliance S&P Index	7.03%	1.48%	15.13%	12.54%	7.37%
PIMCO StocksPLUS	7.17%	0.34%	15.79%	13.99%	-
S&P 500 Index	7.04%	1.38%	15.13%	12.57%	7.31%
BlackRock Russell 1000 Value Index	5.68%	(3.62%)	13.21%	11.39%	6.31%
Russell 1000 Value Index	5.64%	(3.83%)	13.08%	11.27%	6.16%
T. Rowe Price Large Cap Growth	8.99%	10.69%	20.74%	15.59%	9.99%
Russell 1000 Growth Index	7.32%	5.67%	16.83%	13.53%	8.53%
Small/Mid Cap Equity U.S. Equity	**4.42%**	**3.44%**	**16.25%**	**13.25%**	**9.10%**
Russell 2500 Index	3.28%	(2.90%)	12.46%	10.32%	7.56%
Champlain Mid Cap	5.78%	2.55%	16.00%	12.81%	10.55%
Russell MidCap Index	3.62%	(2.44%)	14.18%	11.44%	8.00%
Pyramis Small Cap	3.05%	4.27%	16.39%	13.59%	10.15%
Russell 2000 Index	3.59%	(4.41%)	11.65%	9.19%	6.80%
International Equity	**2.93%**	**(7.06%)**	**2.18%**	**1.73%**	**3.13%**
MSCI ACWI x US (Net)	3.24%	(5.66%)	1.50%	1.06%	2.92%
Causeway International Value Equity	3.90%	(2.09%)	5.95%	5.79%	5.28%
MSCI EAFE Index	4.71%	(0.81%)	5.01%	3.60%	3.03%
Aberdeen EAFE Plus	1.50%	(13.63%)	(2.59%)	0.63%	4.36%
MSCI ACWI x US (Net)	3.24%	(5.66%)	1.50%	1.06%	2.92%
Fixed Income	**0.12%**	**(0.00%)**	**1.61%**	**4.15%**	**5.39%**
Barclays Aggregate Index	(0.57%)	0.55%	1.44%	3.25%	4.51%
BlackRock U.S. Debt Fund	(0.58%)	0.63%	1.59%	3.37%	4.64%
Barclays Aggregate Index	(0.57%)	0.55%	1.44%	3.25%	4.51%
PIMCO Fixed Income	0.56%	(0.39%)	1.62%	4.80%	5.96%
Custom Index (2)	0.21%	0.37%	1.75%	4.40%	5.60%

Returns for Periods Ended December 31, 2015

	Last Quarter	Last Year	Last 3 Years	Last 5 Years	Last 10 Years
Gross of Fees					
Real Estate	**3.04%**	**15.38%**	**14.30%**	**14.12%**	**6.11%**
NFI-ODCE Value Weight Gr	3.34%	15.02%	13.81%	13.66%	6.53%
JP Morgan Strategic Property Fund	3.37%	15.24%	14.07%	14.00%	7.28%
NFI-ODCE Value Weight Gr	3.34%	15.02%	13.81%	13.66%	6.53%
JP Morgan Income and Growth Fund	2.20%	15.83%	15.89%	18.69%	4.85%
NFI-ODCE Value Weight Gr	3.34%	15.02%	13.81%	13.66%	6.53%
Infrastructure	**2.38%**	**3.49%**	**4.16%**	**5.95%**	**-**
CPI + 4%	0.21%	4.39%	4.72%	5.41%	5.84%
Macquarie European Infrastructure	(2.47%)	(3.09%)	1.45%	5.24%	-
SteelRiver Infrastructure	6.90%	10.17%	6.93%	6.57%	-
CPI + 4%	0.21%	4.39%	4.72%	5.41%	5.84%
Cash Composite	**0.01%**	**0.01%**	**0.01%**	**0.03%**	**1.39%**
Total Fund	**4.05%**	**1.71%**	**9.77%**	**8.90%**	**6.26%**
Total Fund Benchmark*	3.52%	1.08%	8.66%	8.10%	6.06%

Mr. Coffey asked for an explanation of the Custom Index and custom control.

Mr. Weightman answered the Custom Index was developed by the Board with their previous consultant to give PIMCO a mandate to manage a portfolio to 25% BC Mortgage Index, 25% Barclays Credit, 25% High Yield, and 25% JP Morgan EMBI Global. There are restrictions as to what they can and cannot invest in, which is laid out very well in the management agreement. Callan has been monitoring PIMCO because they take bigger macro type bets where they play with duration, which has hurt them recently. They will also go into and out of treasuries pretty frequently for risk control purposes; this has both helped and hurt them. Callan had more concerns about PIMCO than Aberdeen because in a fixed income portfolio there should be benchmark performance or slightly better, not negative relative returns. Real Estate has done well; these are not returns the Board should expect because typically private real estate has two-thirds of an income return and one-third from capital appreciation. In 2015 there was 60% capital appreciation and only 40% income, so the Board should not expect the returns listed in the table to continue. Macquarie's negative returns are due to currency, money-weighted rates of return would be more positive.

2. Asset Allocation Update – Callan Associates

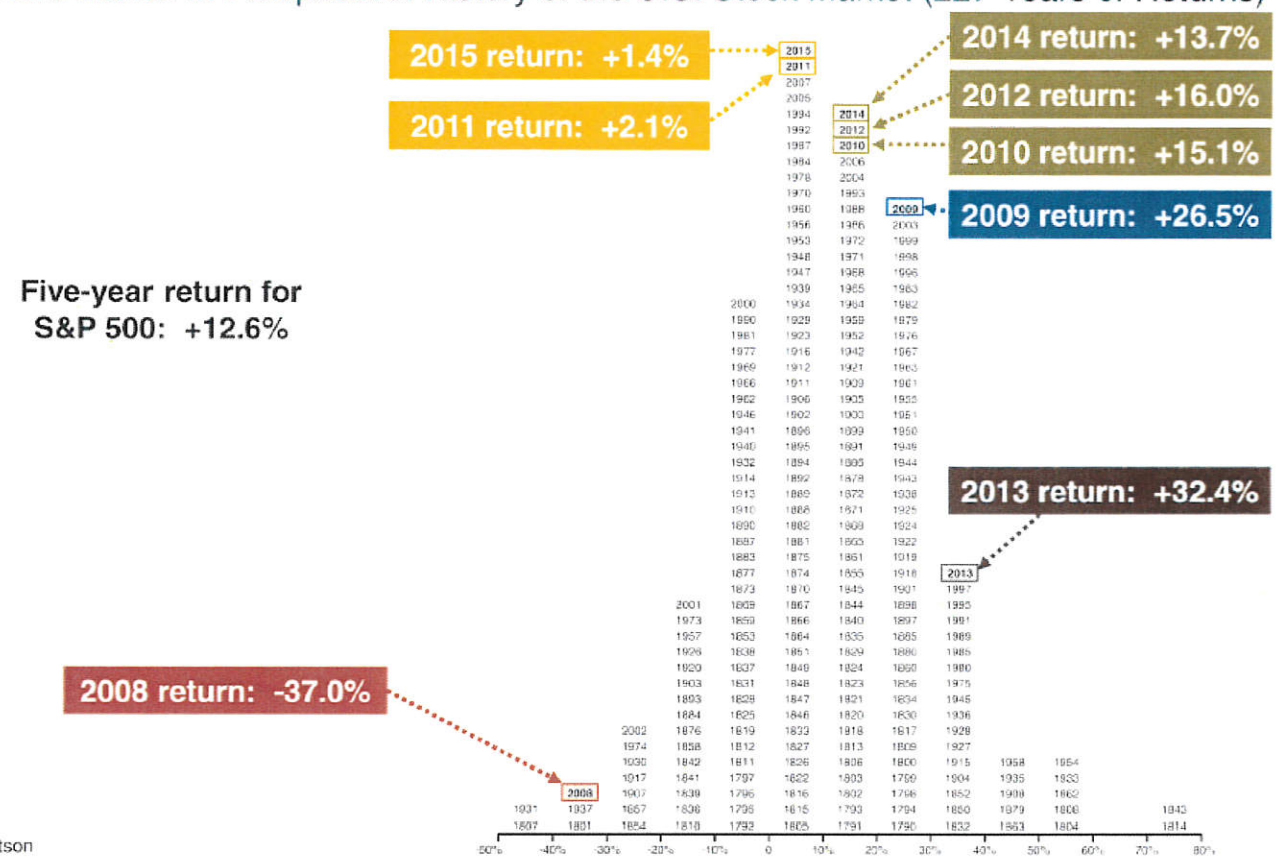
Gordon Weightman said every year Callan goes through a process where they look at developing expectations for returns, risk, and correlation among broad asset classes. This is done to help clients update and continuously enhance their strategic planning process. They want the numbers to be defensible; often it is the relationship between asset classes that is more important than what the actual numbers are. Callan wants to help their clients build balanced portfolios, so there has to be a balance between riskier assets like equity, and fixed income. They focus on broad asset classes because the correlation numbers, when viewing something like low volatility equity to the S&P 500 are very high and positive. In order to optimize within their model Callan needs a difference in correlation. Equities are fairly valued, maybe a little overpriced in the US. There is a big difference between the US and abroad; Europe, Japan, and China all have easing monetary policies and the US just went the opposite direction. China, now the 2nd largest economy in the world, is adjusting to slower growth, with attendant volatility. Interest rates started to rise, and the path of interest rates is very important for fixed income returns over the next 10 years. Low oil prices are good for the consumer, but a lot of capital expenditure has been cut by oil companies and they are defaulting on their debt. Over the very long term, around 30 years, there is a difference in what can be expected vs. what can be expected in the current environment over the next 5 to 10 years.

							Average Annual Returns for periods ended 12.31.2015		
	2010	2011	2012	2013	2014	2015	5 Years	10 Years	15 Years
Broad U.S. Stock Market									
Russell 3000	16.93	1.03	16.42	33.55	12.56	0.48	12.18	7.35	5.39
Large Cap U.S. Stocks									
S&P 500	15.06	2.11	16.00	32.39	13.69	1.40	12.57	7.31	5.00
Small Cap U.S. Stocks									
Russell 2000	26.85	-4.18	16.35	38.82	4.89	-4.41	9.19	6.80	7.28
Non-U.S. Stock Markets									
MSCI EAFE US$	7.75	-12.14	17.32	22.78	-4.90	-0.81	3.60	3.03	3.54
MSCI Emerging Markets	19.20	-18.17	18.63	-2.27	-1.82	-14.60	-4.47	3.95	8.87
Fixed Income									
Barclays Aggregate	6.54	7.84	4.21	-2.02	5.97	0.55	3.25	4.51	4.97
Barclays Glbl Agg ex USD	4.95	4.36	4.09	-3.08	-3.09	-6.02	-0.84	3.10	4.59
Barclays Long Gov/Credit	10.16	22.49	8.78	-8.83	19.31	-3.30	6.98	6.45	7.07
Real Estate									
NCREIF	13.11	14.26	10.54	10.98	11.82	13.52	12.22	7.77	8.97
Hedge Funds									
CS Hedge Fund Index	10.95	-2.52	7.67	9.73	4.13	-0.71	3.55	4.97	5.95
Private Equity									
Cambridge Private Equity*	19.46	11.00	13.33	22.13	12.75	7.10*	16.03*	12.65*	7.91*
Commodities									
Bloomberg Commodity	16.67	-13.37	-1.14	-9.58	-17.04	-24.70	-13.52	-7.49	-2.49
Cash Market									
90-Day T-Bill	0.13	0.10	0.11	0.07	0.03	0.05	0.07	1.24	1.61
Inflation									
CPI-U**	1.50	2.96	1.74	1.50	0.76	0.86	1.94	1.91	1.95

Mr. Weightman covered the numbers for 2015 and the average annual returns for 15 years in the table above.

Stock Market Returns by Calendar Year

2015 Performance in Perspective: History of the U.S. Stock Market (227 Years of Returns)



Source: Ibbotson

The histogram above puts 2008 into perspective as the 5th worst year ever encountered in the stock market. A lot of recent results have been positive. The treasury yield curve shows that yields are still low, but there has been more of a flattening of the yield curve than a rise since the Fed raised interest rates. He then went over the table on page 14 of the asset allocation review.

U.S. Economic Growth by Sector

Annual Percentage Change

	12/31/2006 Share of GDP	12/31/2014 Share of GDP	2007	2008	2009	2010	2011	2012	2013	2014	2015	Direction of Change
Real GDP	100.0%	100.0%	1.8	-0.3	-2.8	2.5	1.6	2.2	1.5	2.4	2.4	Stable above 2% (reaching for 3%?)
Consumption	67.2%	68.2%	2.2	-0.3	-1.6	1.9	2.3	1.5	1.7	2.7	3.1	Back above GDP growth
Residential Investment	5.5%	3.1%	-18.8	-24.0	-21.2	-2.5	0.5	13.5	9.5	1.8	8.6	Recovered in 2015
Bus Fixed Investment	12.6%	13.1%	5.9	-0.7	-15.6	2.5	7.7	9.0	3.0	6.2	3.4	Healthy growth slowed in 2015
Federal Government	7.3%	7.0%	1.7	6.8	5.7	4.3	-2.7	-1.9	-5.7	-2.4	-0.4	End of stimulus
State & Local Government	12.4%	11.0%	1.5	0.3	1.6	-2.7	-3.3	-1.9	-1.0	0.6	1.5	Modest gains as economy improves
Exports	10.3%	13.0%	9.3	5.7	-8.8	11.9	6.9	3.4	2.8	3.4	1.0	Weakened by strong $
Imports	15.7%	15.7%	2.5	-2.6	-13.7	12.7	5.5	2.2	1.1	3.8	5.0	Consumption improving plus strong $

Mr. Weightman discussed a projection chart of what the Fed voting members think will happen with the federal funds rate. In 2016, the Fed expects a rate increase of 1.25% which means 3 or 4 rate hikes in that year of about 25 basis points each. In 2017 another 4 rate increases are expected. In 2018 and in the longer term the expected increase will have reached 4.25% over the 5 year outlook. The consensus was that rates will be increasing, and the US is in a position where that could happen. The Fed was concerned about going back into another recession with a 0% interest rate, which gave them no course of action outside of quantitative easing to combat the recession, now they can bring the interest rate back down if needed.

Kevin Larson asked if the numbers were stale considering they were from December 2015.

Mr. Weightman answered this was correct but they were the most recent numbers available. The Fed is saying that in 5 years they want to raise the interest rate to 3.75% and this was how they anticipated getting there.

Mr. Weightman then went on to discuss equities. Historically the price to earnings metric has shown how expensive equities are vs. their long term average. US equity prices are slightly rich but pretty fairly valued, non-US equity valuations are consistent with history and close to fairly valued, and in emerging markets they are a little cheap. The price/earnings ratio for emerging market equities is below the long term average implying a buying opportunity. The Board had decided to increase international equity from 15% to 25%, include international small cap, and a market weight in emerging markets. Callan is expecting 3% returns from core fixed income over the next 10 years. Traditionally a good predictor for the 10 year returns from Barclays aggregate is the current 10 year treasury return. Currently the 10 year treasury return is at 1.7%. However with rising interest rates over the first 5 years of these projections, the next 5 years will benefit from those higher rates. Within US equity, Callan used a building block approach; 2.5% real GDP growth will translate into roughly 4.75% nominal earnings growth, by adding an inflation expectation, and 2.5% for dividend yield to achieve 7.35% from US equity and 7.55% from non-US equity. Both numbers are a 25 basis point decrease compared to 2015. They anticipate a 6% return from real estate. Traditionally for real estate they are looking between fixed income and equity with a matching standard deviation. All of the expected returns are listed in the table below.

2016 Capital Market Expectations—Return and Risk

Summary of Callan's Long-Term Capital Market Projections (2016 – 2025)

		PROJECTED RETURN			PROJECTED RISK			2015 - 2024		
Asset Class	Index	1-Year Arithmetic	10-Year Geometric*	Real	Standard Deviation	Sharpe Ratio	Projected Yield	10-Year Geometric*	Standard Deviation	Geometric* Delta
Equities										
Broad Domestic Equity	Russell 3000	8.85%	7.35%	5.10%	18.70%	0.353	2.40%	7.60%	19.00%	-0.25%
Large Cap	S&P 500	8.60%	7.25%	5.00%	17.75%	0.354	2.50%	7.50%	18.30%	-0.25%
Small/Mid Cap	Russell 2500	9.85%	7.55%	5.30%	22.75%	0.334	1.90%	7.85%	22.95%	-0.30%
Global ex-U.S. Equity	MSCI ACWI ex USA	9.55%	7.55%	5.30%	21.30%	0.343	2.70%	7.80%	21.45%	-0.25%
International Equity	MSCI World ex USA	9.00%	7.25%	5.00%	20.05%	0.337	3.00%	7.50%	20.20%	-0.25%
Emerging Markets Equity	MSCI Emerging Markets	11.15%	7.60%	5.35%	27.85%	0.320	1.70%	7.90%	27.95%	-0.30%
Fixed Income										
Short Duration	Barclays G/C 1-3	2.60%	2.60%	0.35%	2.25%	0.156	2.80%	2.40%	2.25%	0.20%
Domestic Fixed	Barclays Aggregate	3.05%	3.00%	0.75%	3.75%	0.213	4.60%	3.00%	3.75%	0.00%
Long Duration	Barclays Long G/C	4.30%	3.70%	1.65%	11.40%	0.197	5.30%	3.20%	11.40%	0.50%
TIPS	Barclays TIPS	3.10%	3.00%	0.75%	5.30%	0.160	4.20%	3.00%	5.30%	0.00%
High Yield	Barclays High Yield	5.40%	5.00%	2.75%	10.50%	0.300	8.00%	5.00%	11.10%	0.00%
Non-U.S. Fixed	Barclays Global Aggregate ex US	1.80%	1.40%	-0.85%	9.20%	-0.049	4.00%	2.30%	9.40%	-0.90%
Emerging Market Debt	EMBI Global Diversified	5.10%	4.70%	2.45%	10.00%	0.285	6.50%	4.70%	10.00%	0.00%
Other										
Real Estate	Callan Real Estate	7.20%	6.00%	3.75%	16.45%	0.301	5.00%	6.15%	16.50%	-0.15%
Private Equity	TR Post Venture Cap	13.15%	8.15%	5.90%	32.80%	0.322	0.00%	8.50%	33.05%	-0.35%
Hedge Funds	Callan Hedge FOF Database	5.55%	5.25%	3.00%	9.30%	0.355	2.25%	5.25%	9.30%	0.00%
Commodities	Bloomberg Commodity	4.40%	2.75%	0.50%	18.50%	0.116	2.25%	2.75%	18.50%	0.00%
Cash Equivalents	90-Day T-Bill	2.25%	2.25%	0.00%	0.90%	0.000	2.25%	2.25%	0.90%	0.00%
Inflation	CPI-U		2.25%		1.50%			2.25%	1.50%	0.00%

* Geometric returns are derived from arithmetic returns and the associated risk (standard deviation)

The point here is that to attain returns of 7.25% the Board would have to invest almost completely in equities, which is not something Callan would ever recommend.

Mr. Larson was surprised there was a lot more volatility in small cap and global non-US equity and investors were not getting paid for that risk when historically they would.

Mr. Weightman agreed that currently investors were not being compensated for risk. Part of these risk projections included adjustments. If they inputted higher returns to small and mid-cap in the model and did not increase the volatility, the model would always recommend small and mid-cap, which would give allocations of 60-70% of the US equity portfolio in small and mid-cap. So they use historical risk premiums to get more realistic allocations closer to a market weight.

Mr. Larson clarified the presumption was investors were getting paid for added risk or the allocation to those assets would be 0.

Mr. Weightman agreed and advised it could be seen in the Sharpe Ratio.

Michael Coffey asked what the Sharpe Ratio measured.

Mr. Weightman explained it was a metric that shows how investors have been compensated per unit of risk. The measurement should not be viewed as an absolute number, rather it should be considered in relation to the number for other asset classes. For example large cap equity at 0.354 is being compensated more for taking risk than small/mid cap at 0.334.

Mr. Larson asked if the Sharpe Ratio was derived using standard deviation.

Mr. Weighman answered in the affirmative, and then went on to discuss the table on page 29 of the asset allocation review.

Board Approved Asset Allocation and Alternative Efficient Mixes

	Board Approved Target	Mix 1	Mix 2	Mix 3
Large Cap	26	20	28	35
Small/Mid Cap	8	5	7	9
Global Ex-US Equity	25	19	27	34
Domestic Fixed	27	48	28	8
Real Estate	14	8	10	14
Totals	100	100	100	100
10 Yr. Geometric Mean Return	6.6%	5.8%	6.6%	7.2%
Projected Standard Deviation	13.1%	9.5%	13.1%	16.8%
10 Yr. Simulated Sharpe Ratio	0.3%	0.4%	0.3%	0.3%
Total Equity	59	44	62	78
Fixed Income	27	48	28	8
Private Real Estate	14	8	10	14
Total	100	100	100	100

- Real Estate includes Private Real Estate and Infrastructure allocations.

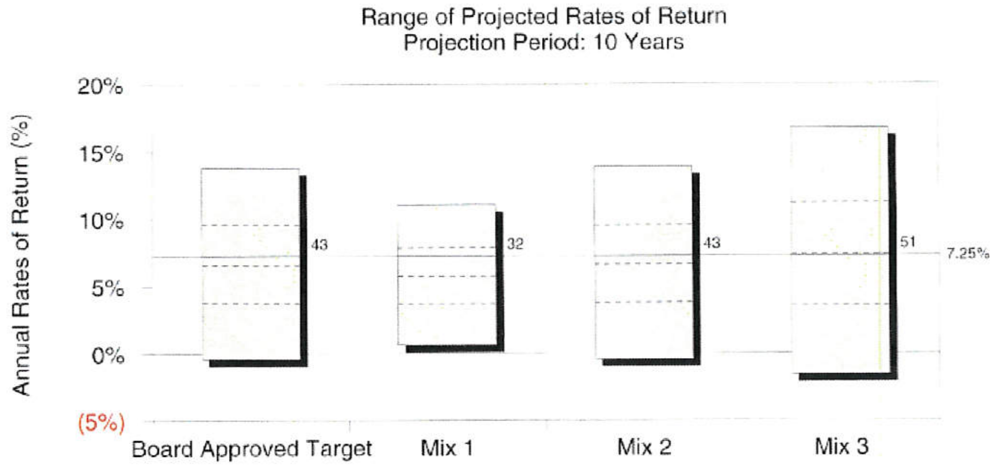
Mix 1 is more conservative than the Board's approved target, mix 2 has a very similar risk return profile to the return target, and mix 3 is more aggressive and gets the Board to the target 7.25% return.

Mr. Coffey asked why the Sharpe Ratio was the same for the more aggressive model as it is for the Board approved target.

Mr. Weightman answered the Board would be compensated in a very similar manner for the risk they would be taking. This was not a suggestion that the Board should make changes; it was more of a status update using median returns with a lot of volatility built into them. Page 31 of the asset allocation review gives the expected 10 year returns for the mixes and the range of expected outcomes.

Range of Projected Returns

10-Years



	Board Approved Target	Mix 1	Mix 2	Mix 3
5th Percentile	13.8%	11.1%	13.9%	16.7%
25th Percentile	9.6%	7.9%	9.5%	11.2%
Median	6.6%	5.7%	6.6%	7.3%
75th Percentile	3.8%	3.7%	3.8%	3.5%
95th Percentile	(0.4%)	0.7%	(0.5%)	(1.6%)
Prob > 7.25%	42.7%	32.1%	42.9%	51.0%

- The current target has a 43% probability of achieving a 7.25% return over 10-years.

This does not include active management; the numbers are all based on passive implementation.

Chairman Fleming asked why mix 2 was included since it was so similar to the Board's approved target.

Mr. Weightman explained that mix 2 was an efficient, and optimized mix, meaning for this level of risk it was the highest expected return, or said differently for this level of expected return it is the lowest level of expected risk. It should be used to determine whether the Board needs to change anything, and it shows the Board's approved target is very efficient.

Chairman Fleming asked where the Fund was compared to other funds.

Mr. Weightman answered everyone was in the same boat. Depending on the client type this exercise provides very similar results.

John O'Hare asked how it would affect the funded status if the Board were to be more realistic and change the target returns to 6%.

Mr. Weightman said it would bring the funded status down and the fund would need larger contributions.

Mr. O'Hare asked if the 7.25% was possible.

Mr. Weightman answered the 6.6% from the models was the median and only one possible case. As the median it holds the highest probability, but with active management the Board could reach 7.25%.

Mr. O'Hare stated historically the Board did not always make the best decisions when hiring active managers as evidenced by the period from 2000 to 2010 when the fund did not even meet the benchmarks.

Mr. Weightman answered there was no certainty here. What Callan does, and the only thing the Board can do as a group is to go through a process to examine this type of information and act on it as they feel was necessary. The whole point of this exercise was to show that it is a lower expected return environment with the same level of volatility that has been seen historically. Public funds used to have 8.5% returns. Now the histogram shows 7.5%, and time horizon is important. Callan believes the Board's asset allocation will get them to 7.25% over 30 years, but over 10 years it will be more difficult.

Karen Tenace said the current target asset allocation has a 43% probability of achieving a 7.25% return over 10 years according to the information in the asset allocation review, and asked if Mr. Weighman remembered what the probability was when the asset liability study was done.

Mr. Weightman answered it was very similar, and looked at a similar time horizon.

Ms. Tenace stated it was part of the Board's protocol to do an asset liability study every 5 years and make adjustments accordingly, and asked if 5 years was still the best practice given the current environment, to ensure contributions are at the appropriate levels.

Mr. Weightman said 5 years was still the right time period for asset liability studies. The Board might want to do something more frequently if there was a change to some of the variables like demographics of the plan, change in benefits, contribution rates, or changes in expectations.

Ms. Tenace said the other assumption they needed to look at was the built in salary increases, which was hovering at 3.5%, so the Board might want to consider an asset liability study after 3 or 4 years instead of 5.

Mr. O'Hare asked how the inflation rate fits into the expected return.

Mr. Weightman said the inflation expectation was 2.25%, so if 6.6% was expected on a nominal basis they would back out 2.25% from that to get the real return expectation. Historically inflation has been around 3.75%.

Mr. O'Hare said inflation could increase because of the debt.

Mr. Weightman answered it could with all the quantitative easing, but they have not seen it yet.

Mr. O'Hare said it depended on the growth of GDP compared to debt and that has not been improving.

Mr. Weightman agreed this was a risk.

Mr. O'Hare asked if the asset price expectations were generally accurate.

Mr. Weightman answered that when they look back over their expectations from the previous 30 years the numbers held up pretty well.

Mr. O'Hare asked if the Board could see those comparisons.

Mr. Weightman answered yes, Callan was asked for that frequently. The thing to keep in mind is much of it was to help clients build balanced portfolios. So, the expectations were geared towards that, and were more about the relationship between growth and fixed assets that was important. He had been advised by staff the Board was interested in seeing a monthly report from Callan with time-weighted rates of return. The Board currently receives Dollar-weighted rates of return that do not take cash flows into account when the returns were calculated. Callan could provide a monthly report giving asset balances and returns for the managers and their benchmarks.

John O'Hare asked if this could be done net of fees.

Mr. Weightman answered yes, but it gets tricky with separate accounts because the separate account managers take the fees directly from the funds so Callan would not see cash flows every month. They could provide reports for the calendar year, fiscal year, and rolling 12 months similar to what staff currently provides. He clarified that the reports could show returns net of fees but in some months the separate account managers will show the same return for gross and net because they take their fees directly out of the account once a quarter.

Chairman Fleming stated the Board was trying to get more useful versions of the reports currently provided by staff.

Mr. Weightman answered he could provide what the Board was asking for in the form of a 4 or 5 page report.

3. TSRS Portfolio Composition, Transactions and Performance Review for 01/31/16

Silvia Navarro stated the Board asked staff to work with Callan to determine what kind of reports could be provided on a monthly basis. They also asked staff to work with Board members to produce an executive summary be presented with the reports. She distributed a draft executive summary to the Board for feedback on the formatting and content. The monthly reports currently provided by staff will continue to be provided until the Board directed otherwise.

Michael Coffey asked for clarification on what the perceived problem was with the reports currently provided by staff as he could not remember.

Ms. Navarro answered the reports did not take cash transfers into account, so when money was withdrawn to fund retiree benefits it affected the reported return of the manager the money was taken from. The executive summary will take that into account.

Chairman Fleming clarified the executive summary would not contain the detail within the reports currently provided, and the reports from Callan would.

Gordon Weightman clarified the returns would not match because Callan would account for cash flow so the reported return would not be affected.

Kevin Larson thought the Board did not need the reports provided by staff if the reports from Callan have the information they want. Ultimately staff would only need to provide the executive summary which would highlight the important information for the month, including the cash flow and how it affects the Total Fund balance.

Mr. Weightman stated Callan gets information from the Board's custodian on the 15th of the month. The Board typically meets in the 4th week of every month and that should be enough time for Callan to prepare and provide the requested report.

The Board requested Monthly time-weighted return reports from Callan, staff's executive summary, and the usual investment reports be distributed at the meeting scheduled for 3/31/2016. They also requested an agenda item at the meeting scheduled on 3/31/2016 so they could discuss and approve the reports.

Calendar YTD – Ms. Navarro said the Total Fund balance as of 12/31/2016 was $710.1M, as of 1/31/2016 it was down to $676.3M. As of 1/31/16 the Total Fund returned -4.76%%, vs. the Custom Index return of -3.22%; Total Fixed returned 0.46% vs. Barclays Aggregate return of 1.38%; Total Equities returned -7.92 vs. the

Equity Composite return of -6.05%; Total Real Estate returned 0.87% and Total Infrastructure returned -0.25% vs. the CPI +4 index return of 0.50%.

Fiscal YTD – The Total Fund returned -7.78% vs. the Custom Plan Index return of -4.39%; Total Fixed returned -0.40% vs. the Barclays Aggregate return of 2.07%; Total Equities returned -13.67% vs. the Equity Composite return of -9.10%; Total Real Estate returned 6.39% vs. the NCREIF return of 7.14% (as of 12/31/15); and Total Infrastructure returned 6.64% vs. the CPI +4 return of 1.60%.

One Year TD – The Total Fund returned -4.15% vs. the Custom Plan Index return of -1.37%; Total Fixed returned -1.45% vs. the Barclays Aggregate return of -0.14%; Total Equities returned -9.01% vs. the Equity Composite return of -4.73%, Total Real Estate returned 14.09 vs. the NCREIF return of 15.01% (as of 12/31/15); and Total Infrastructure returned 10.06 vs. the CPI +4 return of 5.44%.

John O'Hare stated the Total Fund was almost 300 basis points behind the benchmark, and the Index Fund should be close to the benchmark.

Gordon Weightman answered that it was a cash flow issue as it was often a tool for making benefits payments because US equity has done so well in the market.

Mr. O'Hare asked whether the Callan reports will provide information with which the Board can accurately monitor manager performance.

Mr. Weightman confirmed this was true. Every month $5M is withdrawn to make benefit payments to retirees, so every year the numbers are affected by a cash flow of $60M.

Mr. O'Hare pointed out that Champlain's performance is greatly improved and expressed pleasure that they were doing what they promised.

C. **Administrative Discussions**

1. Update on Pension Administrator Recruitment

Karen Tenace stated Neil Galassi would start on 2/29/2016 and was coming from Heinfeld Meech & Co., P.C., CPA Firm. He has 16 years' experience in financial reporting, auditing, and budget. He had significant consulting engagements with the City of Tucson including the TSRS Plan. There are 2 priorities to be conveyed to him during his first week from which all his other duties will flow, one is working with the Board for long term financial sustainability of the plan, and second providing great customer service to plan members. Thanks to the Board members for participating in the hiring process with the last minute schedule changes. With the vacancy in the administrator position during a retirement incentive, under Silvia Navarro's leadership the team did a great job keeping the department running while waiting for a new plan administrator.

John O'Hare asked if it would be appropriate to ask for 2 of the 3 factors used in choosing Neil Galassi over the other applicants.

Ms. Tenace answered she did not participate directly in the interview process and was unable to answer that question.

Mr. O'Hare asked what salary was negotiated as it would be coming out of the fund.

Ms. Tenace answered he was brought in at midpoint which she believed to be around $87,500 which was an increase from his base salary in his previous position. He will be a good addition to the team.

Mr. O'Hare and expressed concern over the City's ability to keep Mr. Galassi in the long term.

Rebecca Hill answered she was very impressed by Mr. Galassi during his interview. He displayed excellent interpersonal skills and would work well with the Board. She thought he was looking forward to having a position that did not require him to travel so frequently. She also thought he was excited about becoming a part of this team.

Gordon Weightman said a transition for the plan had been postponed, transferring money from US equity to non-US equity. A timeline is in place, not with specific dates, but how long it takes to go through the process of the transition. Transition managers are standing by to provide the pre-transition analyses that will be used to choose which manager would go through this exercise. Now that a new pension administrator is starting they need to consider when would be a good time to start the transition.

2. Annual TSRS Budget Approval for FY 2017

Silvia Navarro provided the budget for FY17. Under additions, member contributions changed slightly based on the actuarial projected payroll, the projected payroll was multiplied by the blended rate for employees; and for the City contributions the projected payroll was multiplied by the City's contribution rate of 27.5%. Under deductions, Payments to Participants was rounded up to $70M based on $1.8M in payments to new retirees. Treasury services were decreased because the new pension administrator would be handling the investment functions previously handled by treasury employees, and Ms. Navarro's salary will no longer be attributed to TSRS. Everything else is the same as it was last year.

John O'Hare asked if any of the budget worksheets were available so the Board could see more detail regarding the Administrative Expenses.

Ms. Navarro answered those could be provided.

Mr. O'Hare stated he would like to see them before approving the budget.

Chairman Fleming asked if there was any urgency to this item.

Ms. Navaro answered no.

The Board requested more detailed information on the budget items. Chairman Fleming requested a future agenda item to approve the budget after the Board has received further information.

3. TSRS Comprehensive Annual Financial Report for the Plan Year Ended June 30, 2015

Ms. Navarro stated this was a discussion item as the CAFR was distributed to the Board at the meeting held on 1/28/2016.

John O'Hare said there was a lot of good information in the CAFR as well as some good historical information.

4. Report from Board Member on OPAL Conference Attended

John O'Hare said the OPAL conference was 3 days with around 300 attendees. The real value of attending was the ability to speak to people who could serve as good resources. Mr. O'Hare distributed a list of topics covered at the conference. Trustee education was a recurring theme and the need for trustees to be more active. It takes 3 to 5 years for a trustee to become comfortable with the position. One of the challenges previously discussed by the Board was how difficult it would be to reach the 7.25% expected return in the near future, and a number of trustees said they would have to go into alternative investments which would cover the risk, but they were complex.

Gordon Weightman answered they were complex, but the Board had to think about illiquid investments due to the liquidity of the plan. It was a very mature plan that pays out a lot in benefits, so would the Board really want to invest in assets where they would not get money back for 20 years.

Mr. O'Hare said they should look into some alternative investments which could be more marketable. Another challenge is pension reform. Many Boards are dealing with voters, many of whom do not have pensions. Some states are trying to figure out how to have pension mechanisms for the private sector. By 2020 approximately 25% of the population will be aged 65 or older. The average 50 year old individual saved $106K towards their retirement which would only last 5 or 6 years.

Mr. Weightman answered that seemed pretty optimistic to him, it should be higher but it is not.

Mr. O'Hare stated Arizona State University (ASU), the largest university in the country, was trying to remove itself from the Arizona State Retirement System.

Michael Coffey stated ASU was trying to start a defined contribution plan for its employees.

Mr. Weightman said whenever there is talk about eliminating or slowing down a defined benefit plan many people fail to realize there is still an ongoing expense until the last beneficiary is paid.

Mr. O'Hare distributed materials explaining the bankruptcy of the Detroit pension plan. The state of Michigan has a constitutional provision similar to Arizona's protecting public pension funds and the bankruptcy court ignored it. Mr. O'Hare then distributed a listed of contact information for people he met at the conference who would serve as good resources and were willing to do so for the TSRS Board.

D. **Articles for Board Member Education / Discussion**
   1. Blurring the Lines – Cash Balance Plans are DB plans with DC-like Characteristics

E. **Call to Audience** - none heard.

F. **Future Agenda Items**
   1. March 26, 2016 - Annual Manager Reviews – T Rowe Price and Pyramis
   2. March 26, 2016 – 50/50 Split Employee/Employer Contributions for New Hires

John O'Hare distributed a list of requested future agenda items.

Chairman Fleming asked staff to include the list under Future Agenda Items without assigned dates so that the board could decide what to do with them at the meeting scheduled for 3/31/2016.

   3. Review and Approval of New Portfolio Composition, Transaction, and Performance Reports
   4. TSRS FY17 Budget Approval
   5. Education Plan for New Staff and Trustees
   6. Duties and Selection of Advisory Board
   7. Hiring an Intern to Free Staff for Education
   8. TSRS Board Annual Evaluation of Staff and Consultants
   9. Formal Evaluation of Active Managers – 1.5% over benchmark over a given period
   10. RFQ for Actuarial Services
   11. Action Plan for Black Swan Events
   12. Would It Be Better to Index the Whole Fund

G. **Adjournment** – 10:31 AM

Approved:

3/31/16			3/31/2016
Robert Fleming Chairman of the Board	Date	Neil S. Galassi, CPA Pension Administrator	Date