Asset Allocation Recommendation for the Dallas Police & Fire Pension System Portfolio

DALLAS POLICE & FIRE PENSION SYSTEM
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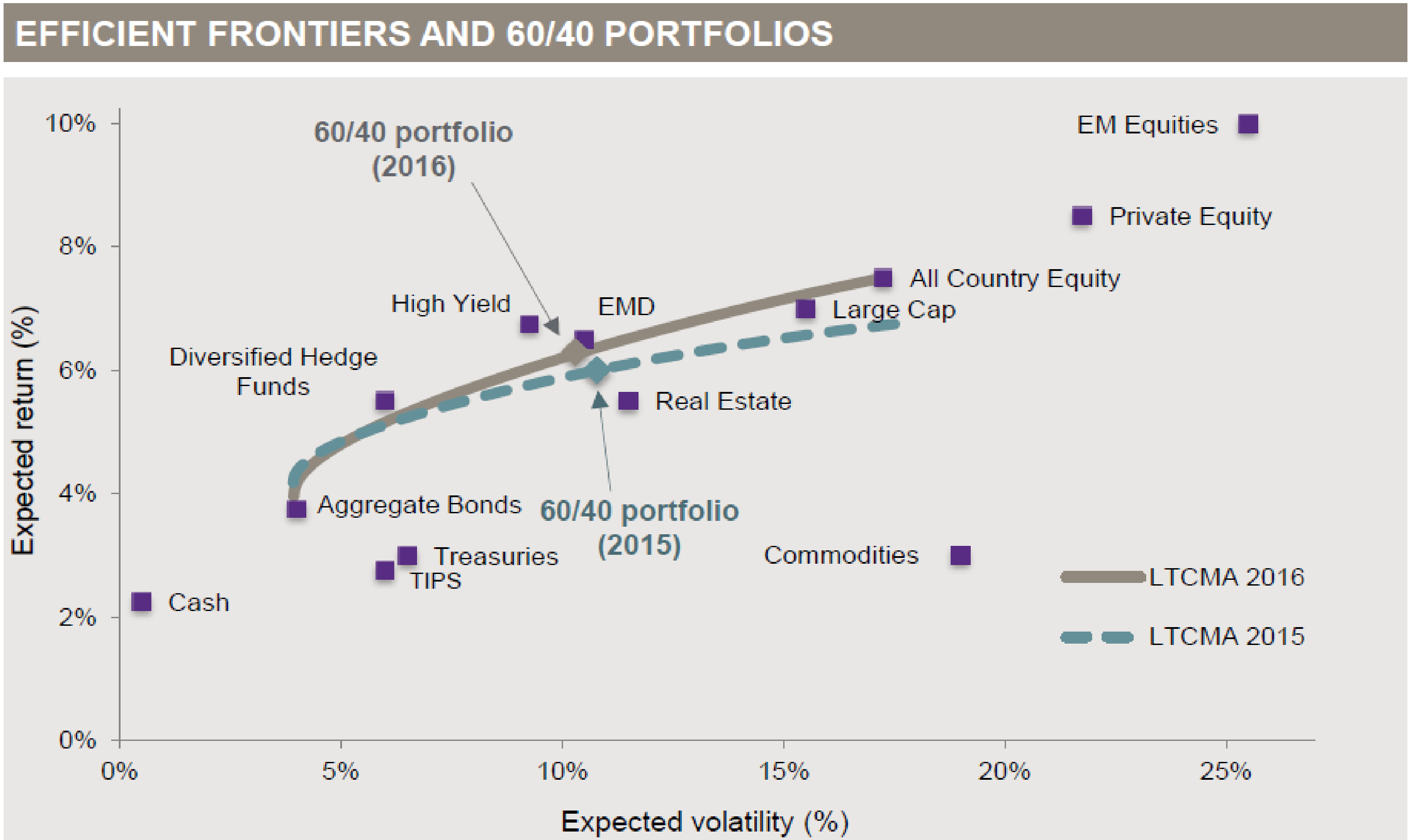
Current Market Environment

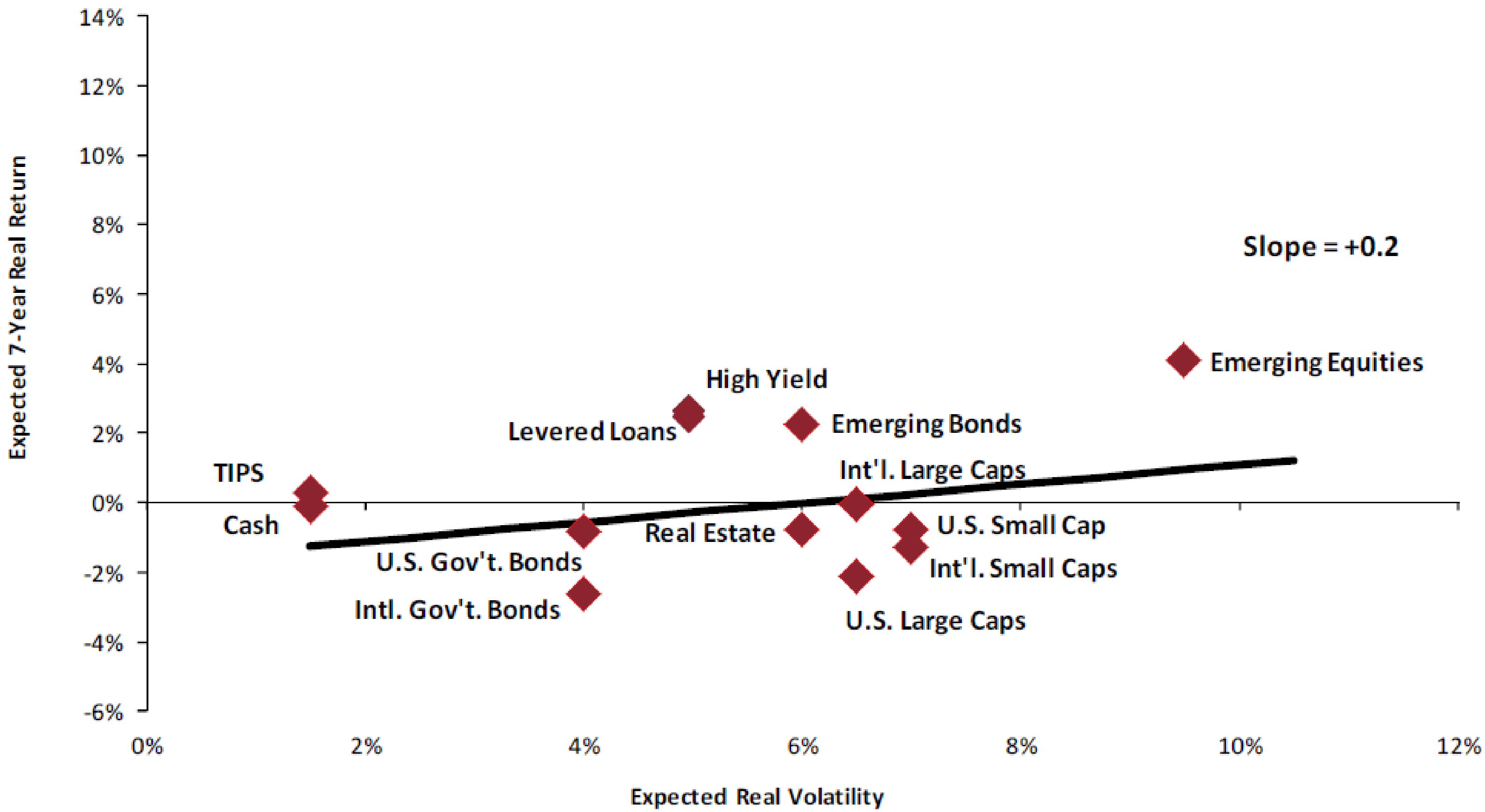
- Lower expected returns from equity and traditional fixed income over next 5-7 years
- Higher volatility expected in equity markets
- Global 60/40 plan has an expected long term nominal return of approximately 6%
- Attractive current yields and expected returns in High Yield Bonds, Senior Loans and other Credit Strategies
- Generally more attractive valuations in emerging market fixed income and equity than in developed markets

JPM's 10-15 Year Expected Asset Class Volatility/Nominal Return Trade-Off



J.P.Morgan
Asset Management

GMO's 7 Year Expected Asset Class Volatility/Real Return Trade-Off



GMO
North America | Europe | Asia-Pacific

Constraints Impacting DPFP

- Low funded status increases the negative impact of portfolio drawdown risk
  - Market off to a weak start in 2016 with more volatility anticipated
- As the portfolio is transitioned, it is unlikely to achieve the 7.25% annualized rate of return assumption over the next two years.
- Large DROP balances, pending debt maturities and annual pension payments in excess of contributions increase the need for liquidity
- Current contribution rates are insufficient to fund the plan over the next 30 years.

How to optimize the plan's return profile given these constraints

- Develop an asset allocation that is well diversified across return drivers with a goal to maximize returns while taking an appropriate levels of risk, given Plan constraints
- Opportunistically take advantage of high cash flow and under valued assets
- Add a 2% cash allocation to enhance Plan's ability to rebalance and meet cash-flow requirements
- Manage fee structures
- Avoid private strategies that do not significantly enhance overall return expectations for the plan

Proposed Changes to Policy Components

Asset Class	Proposed Asset Class	Current Target	Proposed Target	Current Benchmark	Proposed Sub-Asset Class	Proposed Benchmark	Proposed Source
Liquid Assets		**50%**	**65%**				
Global Public Equity	Equity	15%	25%	MSCI ACWI	Global Equity (20%)	MSCI ACWI	NDUEACWF Index
					Emerging Markets (5%)	MSCI EM EMEA	NDDUEMEA Index
Global Fixed Income	Fixed Income	15%	28%	Barclays Global Aggregate	Core Bonds (2%)	Barclays US Treasury 1-3yr TR	LT01TRUU Index
					Global Bonds (3%)	Barclays Global Aggregate	*Barclays*
					High Yield (5%)	Barclays Global HY	LF98TRUU Index
					Emerging Markets (6%)	50% Hard (3%)	JPEICORE Index
						50% Local (3%)	GBIEMCOR Index
					Bank Loans (6%)	S&P Leveraged Loan Index	SPBDLL Index
					Absolute Return & Structured Credit (6%)	HFRI RV: Fixed Income-Asset Backed (3%)	HFRIFIMB Index
						HFRI RV: Fixed Income Corporate (3%)	HFRIFIHY Index
GAA	Absolute Return	20%	10%	CPI + 5%	Risk Parity (5%)	60% MSCI ACWI & 40% Barclays Global Aggregate	NDUEACWF Index & Barclays
					GTAA (3%)		
					Absolute Return (2%)	HFRX Absolute Return Index	HFRXAR Index
Short Term Investments	Cash	0%	2%	n/a	Cash	90 Day US T-Bill	H15T3M Index
Real & Illiquid Assets		**50%**	**35%**				
Global Private Equity	Private Equity	15%	5%	S&P 500 + 2%	Private Equity	Russell 3000 + 3% *	RAY Index
n/a	Private Credit	n/a	5%	n/a	Private Credit	Barclays Global HY + 2% *	LF98TRUU Index
Global Real Estate	Real Estate	15%	12%	NCREIF Property Index	Real Estate	NCREIF Property Index	NPNCRE Index
Global Natural Resources	Natural Resources	10%	5%	Global Nat. Res. Benchmark	Natural Resources	S&P Global Natural Resources Index *	SPGNRUT Index
Global Infrastructure	Infrastructure	10%	5%	CPI + 5%	Infrastructure	S&P Global Infrastructure Index *	SPGTINTR Index
n/a	Liquid Real Assets	n/a	3%	n/a	Liquid Real Assets	CPI + 5%	CPI INDX Index
		100%	*100%*				

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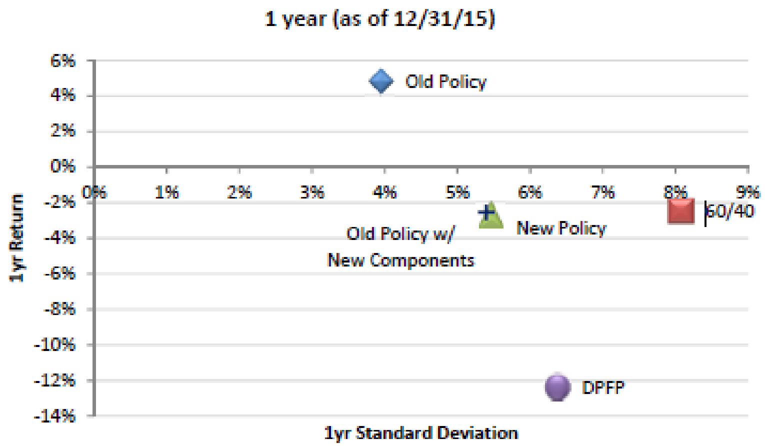
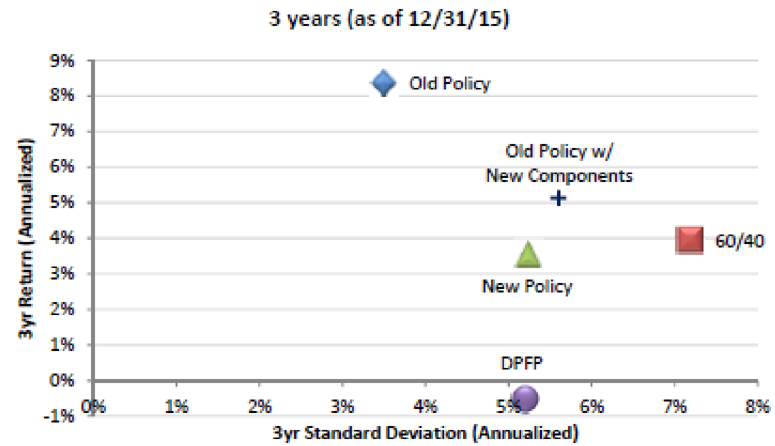
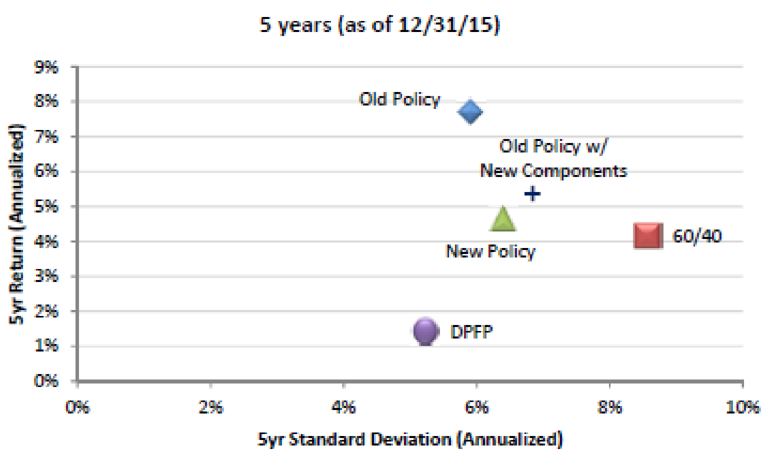
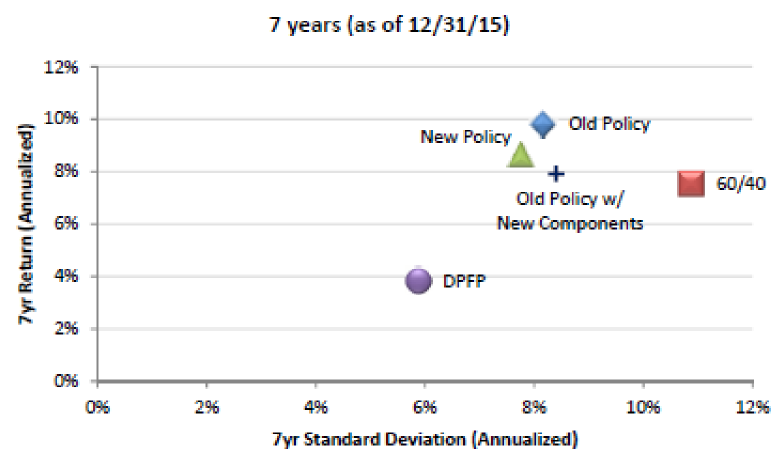
Historical Comparison: Proposed Policy vs. 60/40 & Current Policy









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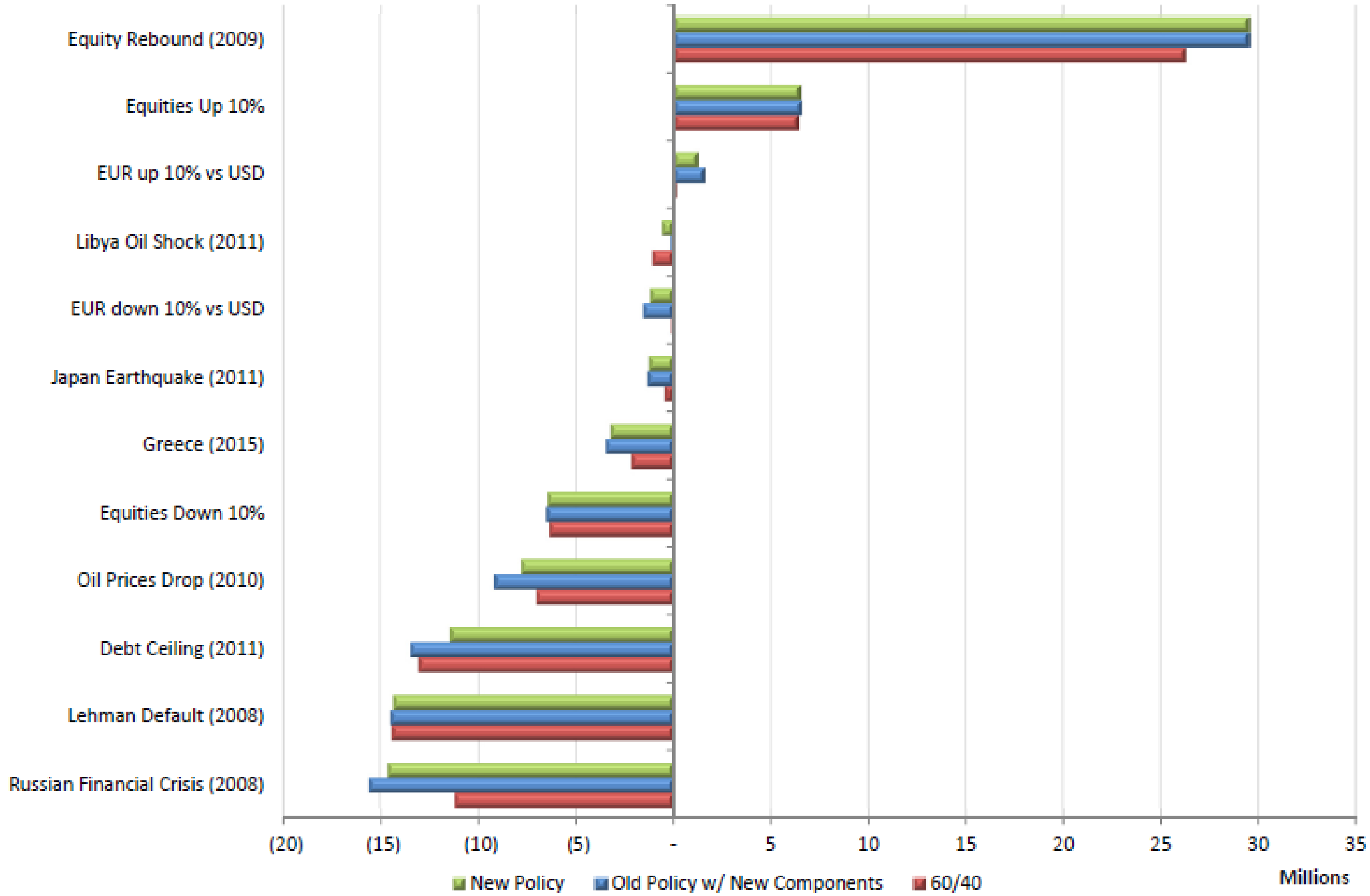
Stress Testing: Proposed Policy vs. 60/40 & Current Policy



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Stress Test Scenarios

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Scenario/Stress	Calculation Period	Description
Debt Ceiling Crisis & Downgrade (2011)	07/22/2011 - 08/08/2011	Debt ceiling crisis that led to USA credit downgrade. This stress scenario describes a 17-day period starting from 7/22/2011 when the market began to react to debt ceiling impasse. 8/8/2011 is the first business day after the downgrade announcement.
Equities Down 10%	Stress Test	Global market factors down 10%.
Equities Up 10%	Stress Test	Global market factors up 10%.
Equity Markets Rebound (2009)	03/04/2009 - 06/01/2009	Global equity markets rebound following 2008 drawdown.
EUR down 10% vs. USD	Stress Test	FX rate shift. EUR weakens 10% to USD.
EUR up 10% vs. USD	Stress Test	FX rate shift. EUR strengthens 10% to USD.
Greek Financial Crisis (2015)	06/22/2015 - 07/08/2015	Athens resistance via referendum and ultimately agreement to rush through long-resisted economic reforms, imposed by its creditors, in a bid to stay in the Eurozone
Lehman Default (2008)	09/15/2008 - 10/14/2008	Month immediately following default of Lehman Brothers in 2008.
Libya Oil Shock (2011)	02/14/2011 - 02/23/2011	Civil war in Libya breaks out on February 15th 2011, causing oil prices to surge.
Oil Prices Drop (2010)	05/03/2010 - 05/20/2010	The price of oil drops 20% due to concerns over how European countries would reduce budget deficits in the wake of the European economic crisis.
Russian Financial Crisis (2008)	08/07/2008 - 10/06/2008	War with Georgia and rapidly declining oil prices raise fears of an economic recession within the region.

Old Policy with New Components

Asset Class	Target	New Component
Global Public Equity	15%	MSCI ACWI
Global Fixed Income	15%	Barclays Global Aggregate
GAA	20%	16% 60/40 MSCI ACWI & Barclays Global Aggregate 4% HFRX Absolute Return
Private Equity	15%	Russell 3000 + 3% *
Global Real Estate	15%	NCREIF Property Index
Global Natural Resources	10%	S&P Global Natural Resources Index *
Global Infrastructure	10%	S&P Global Infrastructure Index *

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Proposed Target Allocations, Ranges & Pacing

Proposed Tactical Asset Allocation Targets & Ranges as Percent of NAV				12/31/2015 Exposure as Percent of NAV	12/31/16 Pacing Target Without PE Secondary Sale	12/31/17 Pacing Target Without PE Secondary Sale	12/31/18 Pacing Target Without PE Secondary Sale
Asset Class	**Policy Benchmark**	**Target**	**Range**				
Cash	90-day T Bills	**2.00%**	**0% – 5%**	**2.95%**	**2.00%**	**2.00%**	**2.00%**
Plan Level Leverage	(Libor + 300)	**0.00%**	**0% – 15%**	**-8.44%**	**0.00%**	**0.00%**	**0.00%**
Equity		**30.00%**	**20% – 35%**	**30.07%**	**27.50%**	**30.00%**	**30.00%**
Global Equity	MSCI AC World (gross)	20.00%	10% – 23%	16.27%	12.50%	13.00%	15.00%
EM Equity	MSCI EM Equity (gross)	5.00%	0% – 8%	0.00%	2.00%	3.00%	3.00%
Private Equity	R3000 +3% (Rolling 3 Mo.)	5.00%	4% – 15%	13.80%	13.00%	14.00%	12.00%
Fixed Income		**33.00%**	**15% – 38%**	**17.89%**	**23.50%**	**29.00%**	**33.00%**
Short-Term Core Bonds	Barclays UST 1-3 Year	2.00%	0% – 5%	0.00%	2.00%	2.00%	2.00%
Global Bonds	Barclays Global Aggregate	3.00%	0% – 6%	4.49%	3.00%	3.00%	3.00%
High Yield	Barclays Global HY	5.00%	2% – 8%	6.71%	5.00%	5.00%	5.00%
Bank Loans	S&P Leveraged Loan Index	6.00%	3% – 9%	1.80%	5.00%	6.00%	6.00%
Structured Credit & Absolute Return	HFRI RV: FI (50/50-ABS/Corp)	6.00%	0% – 9%	0.00%	3.00%	5.00%	6.00%
EMD (50/50)	50% JPM EMBI/50% JPM GBI-EM	6.00%	0% – 9%	2.04%	2.50%	4.50%	6.00%
Private Credit	Barclays Global HY + 2% (Rolling 3 Mo.)	5.00%	2% – 7%	2.85%	3.00%	3.50%	5.00%
Real Assets		**25.00%**	**20% – 45%**	**42.86%**	**38.00%**	**30.00%**	**25.00%**
Natural Resources	S&P Global Nat Res (Rolling 3 Mo.)	5.00%	3% – 10%	10.33%	8.75%	7.00%	5.00%
Infrastructure	S&P Global Infra (Rolling 3 Mo.)	5.00%	3% – 10%	7.27%	6.25%	6.00%	5.00%
Real Estate	NCREIF	12.00%	10% – 25%	25.26%	22.00%	16.00%	12.00%
Liquid Real Assets	CPI + 5.00%	3.00%	0% – 6%	0.00%	1.00%	1.00%	3.00%
Asset Allocation		**10.00%**	**5% – 15%**	**14.67%**	**9.00%**	**9.00%**	**10.00%**
Risk Parity	60% MSCI ACWI/40% Barclays Global Aggregate	5.00%	2% – 8%	8.95%	4.00%	4.00%	5.00%
GTAA	60% MSCI ACWI/40% Barclays Global Aggregate	3.00%	0% – 6%	4.53%	3.00%	3.00%	3.00%
Absolute Return	HFRX Abs Ret Index	2.00%	0% – 5%	1.19%	2.00%	2.00%	2.00%
TOTAL		100.00%		100.00%	100.00%	100.00%	100.00%

Rebalancing Overview

Staff would recommend implementing a rebalancing policy that works with the illiquidity constraints of the current portfolio, drives liquidity improvement and focuses on optimizing the diversification benefits of four broad asset categories; Equity, Fixed Income, Real Assets and Global Asset Allocation. A proposed rebalancing program may include the following ranges and transition periods:

- Target ranges of 5% around the four broad asset groups of Equity, Fixed Income, Real Assets, and Global Asset Allocation when possible; initially ranges around Fixed Income and Real Assets must be wider than 5% to accommodate the current allocation and limited liquidity of the portfolio;
- Target ranges of 3% around sub-asset groups and cash except where assets are starting outside of that range;
- Target allocations at the broad asset group will dominate sub-asset allocation rebalancing, in that overweight exposures to illiquid assets at a broad asset class level may restrict or drive the reduction of liquid exposure in that broad asset class;
- Staff would be responsible for monitoring and managing assets within target ranges and reporting to the board on a monthly basis regarding compliance;
- Transition to target ranges of 5% for all broad asset classes may be accomplished within 12-18 months;
- Transition to target ranges of 3% for the sub-asset class of Real Estate will likely take 3 years and Private Equity may take 5 years in the absence of a private equity secondary sale, all other sub-asset classes should be within 3% of target within 2 years.

Proposed Allocation Increases Credit Strategies

- Credit Market Challenges
  - Rising default environment
  - Less liquid than prior to 2008 due to banks reduced role as market makers
- Well Compensated for Credit Strategy Risks
  - High absolute and risk adjusted forward return expectations
  - Long term secular opportunity due to regulations and supply demand imbalance
  - Increased cash flow component of returns will help reduce monthly funding gap
  - Overall improved risk adjusted returns for plan

Proposed Allocation Reduces Private Equity & Increases Public Equity

- Allocation Implementation Challenges
  - PE allocation will take approximately 5 years to reach target if a secondary sale is not utilized
  - Equity allocation will be overweight private assets and underweight public assets until targets are reached
- Importance of Pacing Plan
  - Vintage year diversification
  - Disciplined focus on small commitments and best in class opportunities
  - Build and maintain top tier relationships

Proposed Allocation Reduces Real Assets and Global Asset Allocation

- Allocation Implementation Challenges
  - Real Estate, Infrastructure & Natural Resource allocations will take approximately 3 years to reach targets through measured and opportunistic asset sales
  - Plan will likely remain underweight liquid real assets until private real asset targets are reached
- Global Asset Allocation Exposure Reduced
  - Risk Parity exposure will be reduced from current exposure of approximately 9% to a 5% target allocation
  - GTAA exposure will be reduced from current exposure of approximately 4.5% to 3% target allocation
  - GAA target allocation shifted to liquid equity and fixed income targets