**Commonwealth of Pennsylvania**
**Public School Employees' Retirement System**

DATE: September 18, 2013

SUBJECT: Proposed Revisions to Exhibits C & D of the Investment Policy Statement, Objectives, and Guidelines

TO: Members of the Finance Committee

FROM: James H. Grossman, Jr., CPA, CFA
Acting Chief Investment Officer

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At the October Finance Committee Meeting, we will request that the Committee adopt the proposed revisions to Exhibits C & D of the Investment Policy Statement Objectives and Guidelines ("IPS").

**Exhibit C**

Staff will recommend implementing a total fund-level currency hedge on foreign currency exposure to developed market currencies which include the Australian Dollar, Swiss Franc, Euro, British Pound, Hong Kong Dollar, and Japanese Yen. As of June 30, 2013, between public market equities and private markets, we had $10.65 billion, or 21.6% of the total fund, in foreign currency exposure with $7.63 billion in developed market foreign currency exposure. As I'll discuss during my market review segment, currency exposure generally adds uncompensated risk to a portfolio (i.e. risk with no return). We believe that this exposure should be partially hedged. Bridgewater recently published a research paper on this subject and noted the following:

- The currency exposure of many institutional portfolios is a largely random byproduct of decisions to invest in foreign markets;
- Foreign currency exposure generally has zero expected return;
- Zero expected return does not mean zero impact as foreign currencies can have significant volatility in any given period;
- Leaving currency exposure unhedged does not provide reliable diversification;
- Even a partial hedge can eliminate significant risk (hedging the first 50% reduces volatility by approximately 75%);
- The direct costs (i.e. transaction costs) of hedging are relatively small for developed market currencies.

Staff will recommend that the Board adopt an 8% foreign currency hedge overlay for the entire PSERS investment portfolio, which represents approximately 50% of PSERS developed market foreign currency exposure. At this time we are not recommending hedging the emerging market foreign currency exposure as the costs of such hedges are two to three times higher than the costs to hedge developed market foreign currency exposure. We will revisit the decision to not hedge emerging market foreign currency exposure should the costs of those hedges come down over time.

**Exhibit D**

Staff will recommend the following changes to the Public Market Investment Manager Target Ranges in concurrence with other recommendations being made at this meeting:

- Add a 0.0% - 1.0% range for the newly created portfolio class "Externally Managed Unsecured Consumer Credit Portfolios". We will recommend our first investment in this asset class (Tritium Fund, L.P.) at the October meeting;
- Clean up Absolute Return Portfolio target ranges by eliminating Active Currency which is no longer a strategy we employ; and,
- Add a limit of up to 100% for the Foreign Currency Hedge Overlay; we would employ an increased hedge ratio as we see opportunities.

If you have any questions regarding these recommended changes, please contact me at 717-720-4703.

## Exhibit C – Policy Index

Based on the Asset Allocation in **Exhibit B**, the Board adopts the following weighted policy benchmarks to measure the performance of the System beginning ~~July~~ October 1, 2013, subject to footnote 1:

| | |
|---|---|
| **Public Markets Global Equity Exposure** | |
| MSCI ACW IMI with USA (gross) Index | 19.00%[1] |
| **Global Fixed Income** | |
| Barclays Capital U.S. Aggregate Index | 5.00% |
| Barclays Capital Global Aggregate GDP-weighted Developed Market ex-U.S. (Unhedged) Index | 1.00% |
| Barclays Capital EM Local Currency – Government – MV Weighted (Unhedged) – 10% Country Cap Index | 2.00% |
| **U.S. Long Treasuries** | |
| Barclays Capital U.S. Treasury Long Index | 3.00% |
| **High Yield** | |
| Barclays Capital U.S. High Yield Index | 6.00% |
| **TIPS** | |
| Barclays Capital U.S. TIPS Index (Series-L) | 12.00% |
| **Cash** | |
| Merrill Lynch U.S. Treasury Bill 0 – 3 Months | 3.00% |
| **Private Real Estate** | |
| NTFI, allocation weighted, one-quarter lagged[2] | 13.00%[1] |
| **Private Markets** | |
| Thomson ONE Median, one-quarter lagged[3] | 21.00%[1] |
| **Absolute Return** | |
| 7.5% Annualized Return | 10.00% |
| **Risk Parity (12% Targeted Volatility)** | |
| Custom Benchmark[4] | 5.00% |
| **Master Limited Partnerships** | |
| S&P MLP Index | 3.00% |
| **Diversified Commodity Basket** | |
| DJ/UBS Commodity Index | 4.00% |
| **Gold** | |
| DJ/UBS Commodity Gold Subindex | 2.00% |
| Foreign Currency Hedge Overlay | |
| (MSCI EAFE Hedged Index (Price) – MSCI EAFE Index (Price)) 8.0% | |
| **Financing Cost of Leverage**[5] | |
| 3-Month LIBOR | (9.00%) |
| Total | 100.00% |

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[1] As the Private Real Estate and Private Markets allocations are funded (or distributions received) and/or the allocation increases/decreases due to the total market value of the Fund changing, the Public Markets Global Equity benchmark will be revised to reflect these changes. For example, if the allocation to Private Markets increases by 100 basis points due to a change in the market value of the total Fund in the fourth quarter, then starting with the first quarter the Policy Index will include this 100 basis points increase in the Private Markets benchmark and the Public Markets Global Equity exposure will also be reduced by 100 basis points. Adjustments to the Private Real Estate and Private Markets benchmarks will be completed in 50 basis point increments (adjustment will be made to the nearest 0.50%) on a quarterly basis.

[2] PSERS weights each of the net, value-weighted NTFI sub-indices (Open-End Diversified Core Equity (ODCE), Closed-End Value-Added, and All Opportunistic) against the actual net asset values of the System's private real estate investments quarterly to produce a customized, blended benchmark return. This provides a single Private Real Estate policy benchmark return for the System.

[3] The Thomson ONE Median returns will be calculated on a weighted vintage year basis that will account for the timing of commitments made by the System.

[4] Custom benchmark is structure as follows: MSCI ACWI ($Net) (35%); Barclays Capital U.S. Treasury Index (75%); Barclays Capital World Inflation Linked Bond Index Hedged (120%); DJ/UBS Commodity Index (Total Return) (15%); DJ/UBS Gold Index (5%); and 3-Month LIBOR (-150%).

[5] Financing represents the amount of leverage embedded in the asset allocation. Financing may be used on any of the public market equity, fixed income, risk parity, or commodity asset classes within the Board approved policy ranges.

**Exhibit D – Public Market Investment Manager Target Ranges**

All allocations to individual Investment Manager portfolios shall be subject to the limits established by the Board through the Asset Allocation in **Exhibit B**. IOS is permitted to manage the allocation of capital to each Investment Manager portfolio within the target ranges to public market Investment Manager portfolios of the total fund noted below. The CIO shall have discretion on the timing of reducing any Investment Manager portfolio exceeding the maximum ranges approved below. However, the CIO is not permitted to allocate additional capital to those portfolios currently above the target ranges.

| | Target Ranges as a Percentage of the Total Fund |
|---|---|
| **Public Markets U.S. Equity Portfolios** | |
| Internally Managed S&P 500 Index | 0.0% - 20.0% |
| Internally Managed S&P 400 Index | 0.0% - 2.5% |
| Internally Managed S&P 600 Index | 0.0% - 2.5% |
| U.S. Style-Oriented Small Cap Equity | 0.0% - 1.0% |
| U.S. Micro Cap Equity | 0.0% - 0.5% |
| Internally Managed Synthetic Beta Replication[2] | 0.0% - 5.0% |
| **Public Markets Non-U.S. Equity Portfolios** | |
| Internally Managed MSCI ACW Index ex. U.S. | 0.0% - 15.0% |
| Internally Managed MSCI World Small Cap Index ex. U.S. | 0.0% - 2.5% |
| Internally Managed MSCI Emerging Markets Index | 0.0% - 2.5% |
| Non-U.S. Equity | 0.0% - 2.5% |
| Non-U.S. Small Cap Equity | 0.0% - 1.0% |
| Emerging Markets Equity | 0.0% - 1.0% |
| Internally Managed Synthetic Beta Replication[2] | 0.0% - 5.0% |
| **Global Fixed Income and High Yield Portfolios** | |
| Internally Managed U.S. Core Fixed Income | 0.0% - 5.0% |
| U.S. Core Plus or Non-U.S. Developed Fixed Income | 0.0% - 2.0% |
| Emerging Market Fixed Income | 0.0% - 1.5% |
| U.S. High Yield Fixed Income | 0.0% - 2.0% |
| Multi-Sector Fixed Income | 0.0% - 3.0% |
| Internally Managed Synthetic Beta Replication[2] | 0.0% - 5.0% |
| **U.S. Long Treasury Portfolio** | |
| Internally Managed U.S. Long Treasuries | 0.0% - 1.0%[3] |
| **TIPS Portfolios[1]** | |
| Internally Managed U.S. TIPS | 0.0% - 5.0% |
| U.S. and Non-U.S. TIPS | 0.0% - 4.0% |
| Internally Managed Synthetic Beta Replication[2] | 0.0% - 2.0% |

[1] The total TIPS portfolios may be leveraged up to 3.3 times in aggregate.

[2] The maximum amount of internally managed synthetic beta replication will be 9% of the total fund (excludes beta synthetically replicated within the actively managed and indexed Separate Account portfolio).

[3] The U.S. Long Treasury Portfolio will be notionally funded subject to a maximum notional value of 6% of the total market value of the fund. The capital allocated to this portfolio will be for margin requirements and to settle margin variation.

| | Target Ranges as a percentage of the Total Fund |
|---|---|
| **~~Cash~~ Short Duration Fixed Income Portfolios** | |
| Internally Managed LIBOR-Plus Short-Term Investment Pool | 0.0% - 8.0% |
| Externally Managed LIBOR-Plus Short-Term Investment Pool | 0.0% - 5.0% |
| Externally Managed Short Duration Non-Agency RMBS Portfolios | 0.0% - 1.0% |
| Externally Managed Unsecured Consumer Credit Portfolios | 0.0% - 1.0% |
| Internally Managed Short-Term Investment Pool | No limit |
| **PTRES Portfolios** | |
| U.S., Non-U.S., and Global PTRES | 0.0% - 1.0% |
| Internally Managed Synthetic Beta Replication[2] | 0.0% - 2.0% |
| **Absolute Return Portfolios** | 0.0% - 2.0% |
| ~~Active Currency~~ | ~~0.0% - 0.5%~~[4] |
| ~~All Other Absolute Return Portfolios~~ | ~~0.0% - 2.0%~~ |
| **Risk Parity Portfolios** | |
| Externally Managed Risk Parity Portfolios | 0.0% - 2.5% |
| Internally Managed Optimal Liquid Beta Portfolio | 0.0% - 1.0% |
| **Master Limited Partnership Portfolios** | |
| Externally Managed Enhanced and Full Discretion | 0.0% - 1.5% |
| **Commodities Portfolios** | |
| Externally Managed Full Discretion and Enhanced Index Commodity | 0.0% - 2.0% |
| Internally Managed Enhanced Commodities Index Portfolio | 0.0% - 2.0% |
| Internally Managed Synthetic Beta Replication[2] | 0.0% - 2.0% |
| **PMEIM Program Portfolios** | 0.0% - 0.3% |
| Foreign Currency Hedge Overlay | Up to 100% of the Foreign Currency Exposure |

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Internally Managed Synthetic Beta Replication represents market exposures in the various asset classes achieved through Derivative exposures such as futures, options, swaps, etc. IOS will synthetically achieve beta exposures to either assist in a transition from one actively managed portfolio to another or to generate alpha. It excludes synthetic beta replication within the actively managed and indexed Separate Account portfolios.

[2] The maximum amount of internally managed synthetic beta replication will be 9% of the total fund (excludes beta synthetically replicated within the actively managed and indexed Separate Account portfolio).

[4] ~~Currency portfolios without capital requirements will be subject to a maximum of $250 million notional at 16.0% tracking error.~~