Commonwealth of Pennsylvania
Public School Employees' Retirement System

DATE: April 20, 2015

SUBJECT: Proposed Revisions to Investment Policy Statement, Objectives, and Guidelines

TO: Members of the Board

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

At the April Finance Committee meeting, we will recommend that the Committee adopt the following changes to Exhibits B, C, D, and E of the Investment Policy Statement, Objectives and Guidelines (IPS) in conjuction with staff and Aon Hewitt's recommendations for the asset allocation. Below are descriptions of the material changes being recommended.

Exhibit B – 10-Year Target Allocation

Added an Opportunity Allocation to the 10-year target allocation with a target weight of 0% with a policy range of 0% to 5% of the Fund. The Opportunity Allocation is reserved for attractive or innovative investment strategies that may not fit into the target allocation but offers a compelling return enhancement and/or diversification benefit (risk reduction) for the Fund. Funding for these investments may come from any other part of the asset allocation, including leverage.

Exhibit C – Current Target Allocation

With the recent private equity sale along with strong distributions from both private equity and private real estate, staff and Aon Hewitt's recommendation is to adopt the 10-year target allocation as the current target allocation effective October 1, 2015. Changes to the Current Target Allocation are as follows:

- Decrease Private Market Equity Exposure by 1.0% to 15.0%;
- Decrease Investment Grade Fixed Income Exposure (specifically U.S. Long Treasuries) by 0.5% to 8.5%;
- Increase Master Limited Partnerships/Infrastructure by 1.0% to 5.0%; the increase will be accomplished through investing in infrastructure other than MLPs;
- Increase Commodity Exposure by 2.0% to 8.0% with the allocation to broad commodities increasing from 4.0% to 5.0% and the allocation to gold increasing from 2.0% to 3.0%;

- Decrease Real Estate Exposure by 1.5% to 12.0%; the exposure to real estate is currently all in limited parterships. As the allocation falls over time, the reduction in private real estate exposure will be reallocated to public real estate exposure;
- Increase Risk Parity by 2.0% to 10.0%;
- Add an Opportunity Allocation with a current target of 0% but a policy range of 0.0% to 5.0% more fully described under Exihibt B above; and,
- Increase Leverage from 12.0% to 14.0% (leverage net of cash increases from 9.0% to 11.0%).

Exhibit D – Policy Index

Staff and Aon Hewitt recommend that the current policy indexes and policy weights being used be adjusted commensurate with the recommendations noted in Exhibit C above. However, there are two new policy benchmarks that need to be added as follows:

- Under Real Asset Exposure, Master Limited Partnerships/Infrastructure, we will be recommend a publicly-traded infrastructure benchmark. Staff and Aon Hewitt are currently evaluating three potential indexes and will have a recommendation at an upcoming Finance Committee meeting;
- Under Real Asset Exposure, Publicly-Traded Real Estate, we are recommending the Board adopt the FTSE EPRA/NAREIT Developed Index (FTSE Index). The FTSE Index is designed to track the performance of listed real estate companies and Real Estate Investment Trusts (REITs) in developed markets worldwide (the index does not include exposure to emerging markets). This was the index the Fund used prior to the liquidation of its Publicly-Traded Real Estate Securities (PTRES) Portfolio following the financial crisis. The current Policy Weight to this index is 0.0%, but will increase as the Private Real Estate allocation falls below 12.0%.

Exhibit E – Public Market Investment Manager Target Ranges

Eliminated ranges for U.S. Style-Oriented Small Cap Equity as staff does not anticipate hiring any active U.S. equity managers. We revised the target capital ranges to provide latitude to invest more assets internally. Finally, we added the potential to invest assets in an internally-managed real estate portfolio. Staff will be working on guidelines for such portfolio and provide them to the Board at a future meeting.

Blacklined and clean copies to each guideline have been included in the package for your review.

If you have any questions or comments, please contact me at 717-720-4703.

Exhibit B – 10-Year Target Allocation

The 10-year Target Allocation shown below represents the long-term strategic allocation that is intended to be achieved over that period. In addition to maintaining an attractive risk-adjusted return profile, it takes into consideration the liquidity needs of PSERS. The Current Target Allocation (Exhibit C) represents the target allocation against which the PSERS portfolio will be managed commencing October 1, 2014. In addition to maintaining an attractive risk-adjusted return profile, the 10-Year Target Allocation takes into consideration the current allocation to illiquid asset classes and recognizes that the allocation to these asset classes cannot be reduced prudently over the short term. For the purposes of performance reporting and measurement, the focus will be on the Current Target Allocation. Staff and the Investment Consultant will revisit the Current Target Allocation on an annual basis and provide the Board with recommended changes, as needed, based on changing liquidity circumstances and opportunities in the marketplace.

	10-Year Target Allocation	Policy Range Low	Policy Range High
Equity Exposure			
Publicly-traded Global Equity	22.50%		
Private Markets	15.00%		
Total Equity Exposure	**37.50%**	**27.50%**	**47.50%**
Fixed Income Exposure			
Investment Grade	8.50%		
Credit-Related	8.00%		
Inflation Protected	12.00%		
Total Fixed Income Exposure	**28.50%**	**18.50%**	**~~39~~38.50%**
Real Asset Exposure			
Master Limited Partnerships/Infrastructure	5.00%		
Commodities	8.00%		
Real Estate	12.00%		
Total Real Asset Exposure	**25.00%**	**15.00%**	**35.00%**
Risk Parity	**10.00%**	**5.00%**	**15.00%**
Absolute Return	**10.00%**	**6.00%**	**14.00%**
Opportunity Allocation[1]	0.00%	0.00%	5.00%
Net Leverage			
Cash	3.00%		
Leverage	(14.00%)		
Net Leverage	**(11.00%)**	**0.00%**	**(22.00%)**
TOTAL	**100.00%**		

The Policy Ranges for the Target Allocation represent rebalancing triggers and tactical allocation constraints around the target allocations.

For purposes of this analysis, cash and cash equivalents held in each Investment Manager's portfolio will be considered fully invested based on that advisor's objectives (i.e. cash in an equity Investment Manager's account will be considered as part of the Publicly-traded Global Equity in the table above). For classification purposes, cash equivalents include fixed income securities maturing in less than one year.

[1]The Opportunity Allocation is reserved for attractive or innovative strategies that may not fit into the Current or 10-Year Target Allocation but offer a compelling return enhancement and/or diversification benefit (risk reduction). Funding for these investments may come from any other part of the asset allocation, including leverage.

Exhibit C – Current Target Allocation

The current long-term, top-down Target Allocation of the Board, based on the market value of the System's assets as of ~~April~~ October 1, 2015, subject to the provisions discussed below:

	Cash Markets	Leverage	Current Target Allocation	Policy Range Low	Policy Range High
Equity Exposure					
Publicly-traded Global Equity	22.50%		22.50%		
Private Markets	~~16~~15.00%		~~16~~15.00%		
Total Equity Exposure	**~~38~~37.50%**	**0.00%**	**~~38~~37.50%**	**~~28~~27.50%**	**~~48~~47.50%**
Fixed Income Exposure					
Investment Grade	6.00%	~~3.00~~2.50%	~~9.00~~8.50%		
Credit-Related	8.00%		8.00%		
Inflation Protected	6.00%	6.00%	12.00%		
Total Fixed Income Exposure	**20.00%**	**~~9.00~~8.50%**	**~~29.00~~28.5%**	**~~19.~~18.5%**	**~~39.~~38.5%**
Real Asset Exposure					
Master Limited Partnerships/Infrastructure	~~4~~5.00%		~~4~~5.00%		
Commodities	4.00%	~~2~~4.00%	~~6~~8.00%		
Real Estate	~~13.5~~12. %		~~13.50~~12. %		
Total Real Asset Exposure	**21.00~~50~~%**	**~~2~~4.00%**	**~~23.50~~25.0%**	**~~13.5~~15.%**	**~~33.5~~35.%**
Risk Parity	**~~7.00~~8.50%**	**1.~~00~~50%**	**~~8~~10.00%**	**~~3~~5.00%**	**~~13~~15.0%**
Absolute Return	**10.00%**		**10.00%**	**6.00%**	**14.00%**
Opportunity Allocation[1]	0.00%		0.00%	0.00%	5.00%
Net Leverage					
Cash	3.00%		3.00%		
Financing Cost of Leverage		(~~12~~14.00%)	(~~12~~14.00%)		
Net Leverage	**3.00%**	**(~~12~~14.00%)**	**(~~9~~11.00%)**	**0.00%**	**(~~20~~22.%)**
TOTAL	**100.00%**	**0.00%**	**100.00%**		

Cash markets represent investments which are fully-funded by cash. Leverage represents economic exposures obtained generally through derivative exposure, other forms of financing, or leveraged funds. For example, exposure to Gold can be obtained with very little cash through the swap market.

The portfolio will be managed against the Current Target Allocation shown in the table above. The use of leverage within asset classes as shown reflects how leverage is currently deployed within the PSERS portfolio. It is not intended to be a target leverage allocation. Staff continually monitors the marketplace for opportunities to improve portfolio efficiency. Leverage may be deployed across any asset class in the portfolio where it is prudent to do so, based on efficient use of leverage within the constraints of the Policy Range and maximum net leverage permissible under this Policy.

The Policy Ranges for the Asset Allocation represent rebalancing triggers and tactical allocation constraints around the target allocations.

For purposes of this analysis, cash and cash equivalents held in each Investment Manager's portfolio will be considered fully invested based on that advisor's objectives (i.e. cash in an equity Investment Manager's account will be considered as part of the Publicly-traded Global Equity in the table above). For classification purposes, cash equivalents include fixed income securities maturing in less than one year.

[1]The Opportunity Allocation is reserved for attractive or innovative strategies that may not fit into the Current or 10-Year Target Allocation but offer a compelling return enhancement and/or diversification benefit (risk reduction). Funding for these investments may come from any other part of the asset allocation, including leverage.

Exhibit D – Policy Index

The Board adopts the following weighted policy benchmarks to measure the performance of the System beginning ~~April~~ October 1, 2015, subject to footnotes 1 & 4:

	Policy Weight	
Equity Exposure		
Publicly-traded Global Equity		
MSCI USA IMI Gross Index	8.80% [1]	
MSCI ACWI Ex USA IMI with Developed Market Currencies hedged to USD Net Index	13.20%	
MSCI Emerging Markets Equity Index	0.50%	
Private Markets		
Thomson ONE Median, one-quarter lagged[2]	~~16~~15.00% [1]	
Total Equity Exposure		~~38~~37.50%
Fixed Income Exposure		
Investment Grade		
Barclays Capital U.S. Aggregate Index	5.00%	
Barclays Capital Global Aggregated GDP-weighted Developed Market ex-U.S. (hedged) Index	1.00%	
Barclays Capital ~~Long~~ U.S. Aggregate Long Treasury Index	~~3.00~~2.50%	
Credit-Related		
Barclays Capital EM Local Currency - Government - MV Weighted (Unhedged) - 10% Country Cap Index	2.00%	
Barclays Capital U.S. High Yield Index	6.00%	
Inflation Protected		
Barclays Capital U.S. TIPS Index (Series-L)	12.00%	
Total Fixed Income Exposure		~~29.0~~28.50%
Real Asset Exposure		
Master Limited Partnerships/Infrastructure		
S&P MLP Index	4.00%	
INFRASTRUCTURE INDEX TO BE DETERMINED	1.00%	
Commodities		
Bloomberg Commodity Index	~~4~~5.00%	
Bloomberg Commodity Gold Subindex	~~2~~3.00%	
Private **Real Estate**		
NFI, allocation weighted, one quarter lagged[3]	~~13.50~~12.00% [~~1~~4]	
Publicly-traded Real Estate		
FTSE EPRA/NAREIT Developed Index	0.00% [4]	
Total Real Asset Exposure		~~23.5~~25.00%

Risk Parity		
Custom Benchmark[5]		**~~8~~10.00%**
Absolute Return		
3-Month LIBOR + 3.50%		**10.00%**
Net Leverage		
Cash		
Merrill Lynch U.S. Treasury Bill 0 - 3 Months	3.00%	
Financing Cost of ~~Leverage[5]~~Leverage[6]		
3-Month LIBOR	(~~12~~14.00%)	
Net Leverage		**(~~9~~11.00%)**
TOTAL		**100.00%**

[1] As the Private Markets ~~and Real Estate~~ allocation~~s~~ ~~are~~ is funded (or distributions received) and/or the allocation increases/decreases due to the total market value of the Fund changing, the Publicly-traded Global Equity policy weight (specifically, the combination of MSCI USA IMI Gross Index and MSCI ACWI Ex USA IMI with Developed Market Currencies hedged to USD Index policy weights) will be proportionately and conversely revised to reflect these changes using a 60-40 split between the ex. USA (60%) and USA (40%) indices. 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 weight will include this 100 basis points increase in the Private Markets benchmark and the Publicly-traded Global Equity policy weights will also be proportionately reduced by 100 basis points. Adjustments to the Private Markets ~~and Real Estate~~ policy weight~~s~~ will be completed in 50 basis point increments (adjustment will be made to the nearest 0.50%) on a quarterly basis.

[2] 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.

[3] PSERS weights each of the net, value-weighted NFI sub-indices (Open-End Diversified Core Equity (NFI-ODCE) and Closed-End Value-Added (NFI-CEVA)) against the actual net asset values of the System's private real estate investments quarterly to produce a customized, blended benchmark return. The NFI-CEVA index will also be used to benchmark the System's opportunistic real estate investments (change for opportunistic real estate investments effective for the March 31, 2014 quarter-end). This provides a single Real Estate policy benchmark return for the System.

[4] As the Private Real Estate allocation is funded (or distributions received) and/or the allocation increases/decreases due to the total market value of the Fund changing, the Publicly-traded Real Estate policy weight will be proportionately and conversely revised to reflect these changes. For example, if the allocation to Private Real Estate 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 weight will include this 100 basis points increase in the Private Real Estate benchmark and the Publicly-traded Real Estate policy weight will also be proportionately reduced by 100 basis points. Adjustments to the Private Real Estate policy weight will be completed in 50 basis point increments (adjustment will be made to the nearest 0.50%) on a quarterly basis.

[~~4~~5] Custom benchmark is structure as follows: MSCI ACWI ($Net) (50%); Barclays Capital U.S. Treasury Index (75%); Barclays Capital World Inflation Linked Bond Index Hedged (55%); Bloomberg Commodity Index (Total Return) (15%); Bloomberg Gold Subindex (5%); and 3-Month LIBOR (-100%).

[~~5~~6] Financing Cost of Leverage represents the amount of leverage embedded in the asset allocation. Financing may be deployed across any asset class in the portfolio where it is prudent to do so, based on efficient use of leverage within the constraints of the policy range and maximum net leverage permissible under this Policy.

Exhibit E – 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 Current Target Allocation in **Exhibit C**. 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 Capital Ranges as a Percentage of the Total Fund
Equity Portfolios:	
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%~~
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%
Fixed Income Portfolios:	
Investment Grade 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%
Internally Managed U.S. Long Treasuries[3]	0.0% - 1.0%
Internally Managed Synthetic Beta Replication[2]	0.0% - 5.0%
Credit-Related Portfolios	
Emerging Market Fixed Income	0.0% - 1.5%
U.S. High Yield Fixed Income	0.0% - 2.0%
Specialty Finance Debt Strategy	0.0% - 1.0%
Multi-Sector Fixed Income Portfolios	0.0% - 3.0%
Inflation Protected (TIPS) Portfolios[1]	
Internally Managed U.S. TIPS	0.0% - ~~5~~8.0%
U.S. and Non-U.S. TIPS	0.0% - ~~4~~6.0%
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 11% 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 Capital Ranges as a percentage of the Total Fund
Real Asset Portfolios:	
Master Limited Partnership Portfolios	
Externally Managed Enhanced and Full Discretion	0.0% - 2.0%
Internally Managed U.S. Master Limited Partnership Index	0.0% - 4.0%
Internally Managed Synthetic Beta Replication[2]	0.0% - 2.0%
Infrastructure Portfolios	
Externally Managed Enhanced and Full Discretion	0.0% - 2.0%
Internally Managed Enhanced Infrastructure Index Portfolio	0.0% - 2.0%
Internally Managed Synthetic Beta Replication[2]	0.0% - 2.0%
Commodities Portfolios	
Externally Managed Full Discretion and Enhanced Index Commodity	0.0% - 2.0%
Internally Managed Enhanced Commodities Index Portfolio	0.0% - 47.0%
Internally Managed Gold Index Portfolio	0.0% - 45.0%
Internally Managed Synthetic Beta Replication[2]	0.0% - 2.0%
PTRES Portfolios	
Externally Managed U.S., Non-U.S., and Global PTRES	0.0% - 1.0%
Internally Managed U.S., Non-U.S., and Global PTRES	0.0% - 5.0%
Internally Managed Synthetic Beta Replication[2]	0.0% - 2.0%
Risk Parity Portfolios:	
Externally Managed Risk Parity Portfolios	0.0% - 4.0%
Internally Managed Risk Parity Portfolio	0.0% - 5.0%
Absolute Return Portfolios:	0.0% - 2.0%
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%
Internally Managed Short-Term Investment Pool	No limit
Foreign Currency Hedge Overlay:	Up to 100% of the Foreign Currency Exposure[4]

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 11% of the total fund (excludes beta synthetically replicated within the actively managed and indexed Separate Account portfolio).

[4] The Total Fund (both public market and private market) foreign currency exposure may be hedged up to 100% back to the U.S. dollar.