PSERB Resolution 2024-26
Re: Investment Policy Statement
May 31, 2024

RESOLVED, that the Public School Employees' Retirement Board (the "Board") accepts the recommendation of the Investment Committee and adopts the changes to the following investment policies, attached:

Policies with changes only

- Investment Policy Statement
- Liquidity Policy
- Securities Lending Policy
- Tail Risk Mitigation Strategy Policy
- Qualified Independent Representative (QIR) Policy

Policies to be changed and consolidated

- Consolidation of the Cash Policy into the Public Markets Asset Class Policy
- Consolidation of the Derivatives Policy and the Leverage Policy into a single Derivatives and Leverage Policy

Investment Policy Statement

of

the Commonwealth of Pennsylvania
Public School Employees' Retirement Board

As adopted by

the Board of Trustees

on March 22, 2024

Revision History:

March 6, 2020
August 19, 2020
November 12, 2020
December 3, 2020
March 5, 2021
December 17, 2021
March 15, 2022
August 5, 2022
August 11, 2023
March 22, 2024

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I. Introduction

Established on July 18, 1917, with operations commencing in 1919, the Pennsylvania Public School Employees' Retirement System (PSERS or the System,) provides retirement benefits to public school employees of the Commonwealth of Pennsylvania.

The Board

The members of the PSERS Board of Trustees ("the Board") are vested with and exercise exclusive control and management of the System, including the investment of its assets. The Board appoints staff and retains outside managers, consultants and others as needed to assist it in performing its duties, in accordance with section III of this Policy in which the Board has defined the roles and responsibilities of such parties.

Mission

To be a partner with our members to fulfill the promise of a secure retirement.

Fiduciary Standard

Pursuant to the Board's enabling legislation, the members of the Board, employees of the Board, and their agents are fiduciaries to the System's members and beneficiaries and must invest and manage the fund for exclusive benefit of the System's members and beneficiaries. 24 Pa. C. S. §8521(e). As such, they must act consistent with the duty of prudence as well as the duty of loyalty.

In performance of their duties, the trustees shall exercise "that degree of judgment, skill and care under the circumstances then prevailing which persons of prudence, discretion and intelligence who are familiar with such matters exercise in the management of their own affairs not in regard to speculation, but in regard to the permanent disposition of the fund, considering the probable income to be derived therefrom as well as the probable safety of their capital." 24 Pa. C.S. §8521(a).

The System shall at all times be managed in accordance with all applicable state and federal laws, rules, and regulations, as well as this Investment Policy Statement and other applicable policies of the Board.

II. Purpose

The purpose of this Investment Policy Statement (the “Policy’) is to provide clear guidelines for the management of the assets within the PSERS Defined Benefit Fund (the “Fund”) by or on behalf of the Board. This Policy establishes policies and guidelines for the investment practices of the Board. The Board shall endeavor to review and revise the Policy annually and make changes as necessary. The Policy outlines objectives, goals, restrictions, and responsibilities to assure that:

1. The Board, Staff, Investment Consultants, Investment Managers, and the State Treasurer clearly understand the objectives and policies of the Board and the System;
2. The Investment Managers shall be given guidance and limitations on the investment of the System’s assets; and,
3. The Board has a meaningful basis for evaluating the investment performance of individual Investment Managers, as well as for evaluating overall success in meeting its objectives.

III. Roles and Responsibilities

The Board establishes roles and responsibilities for PSERS' investment program.

The Board (Board): Based on recommendations of its Investment Committee, the Board, as ultimate governing fiduciary, establishes investment policies and monitors compliance with its policies and progress made towards stated goals. The Board establishes this Policy, including the Asset Allocation, investment performance benchmarks and risk tolerances it contains. The Board also appoints the Chief Investment Officer (CIO), External Managers, and Investment Consultants. The Board monitors the performance of the implementation function it has assigned for effectiveness and compliance with its policies, may direct the CIO, Asset Allocation Committee (AAC), Allocation Implementation Committee (AIC), or the Investment Office Professionals (IOP) to bring matters before them to the Board for its consideration prior to implementation, and will require reporting of the entities identified in this section sufficient to facilitate its fiduciary requirements.

Chief Investment Officer (CIO): The CIO serves as the liaison to The Board and senior staff administrator on all investment matters. The CIO oversees the implementation of Board policies through the management of the IOP, the development and implementation of investment procedures, implementation of tactical allocations within ranges established by the Board, authorization of investment guidelines, execution of investment contracts and other documents, and negotiation of reasonable compensation for investment-related service providers. In overseeing PSERS' investments and the operations related thereto, the CIO must exercise his or her professional skill and prudence in compliance with statutory requirements, prudent investment principles, sound business practices, and all Board policies, including this Policy. The CIO may delegate power and authority to the IOP to effectuate the prudent investment, protection, and management of PSERS' investments. Subject to this policy and the direction of the Board, the CIO shall have responsibility for adhering to the standards set forth by the Board in the management and control of PSERS' investments. In exercising the CIO's duty to act prudently, the CIO may accept or reject the recommendations of the AIC that PSERS appoint or discharge External Managers, forward recommendations to the Board to appoint External Managers or take direct action to discharge them, including for example selling interests in the secondary markets, following prior notification to the Board. The CIO shall assign, modify, or discontinue the guidelines or strategies assigned to any Investment Manager, based on his or her prudent judgment and subject to contrary specific direction from the Board. The CIO shall make regular reports to the Board and provide full transparency to the Board with respect to investment activities. All IOP are accountable to the CIO. The CIO is responsible for all IOP actions relative to the management of PSERS' investments. In this regard, it is the responsibility of the CIO to be satisfied that all investment policies and directives of the Board are implemented.

Asset Allocation Committee (AAC): The AAC recommends to the CIO strategic asset allocation plans, new asset classes and benchmarks, and closely manages actual asset allocations. The AAC shall adopt procedures and maintain meeting minutes. The CIO shall choose the Committee Chair (or Co-Chairs), and the Committee Chair (or Co-Chairs) shall choose the members of the Committee with representation from Non-Traditional Investments, Traditional Investments, Operations, and Risk Management & Compliance. The CIO shall be an observer, not a voting member.

Allocation Implementation Committee (AIC): The AIC closely monitors the performance of Investment Managers and the due diligence and analysis it receives from Investment Consultants or other sources. The AIC recommends to the CIO that PSERS appoint or discharge External Managers and the assignment, modification, or discontinuance of guidelines or strategies assigned to any Investment Manager. The AIC shall adopt procedures and maintain meeting minutes. The CIO shall choose the Committee Chair (or Co-Chairs), and the Committee Chair (or Co-Chairs) shall choose the members of the Committee with representation from Non-Traditional Investments, Traditional Investments, Operations, and Risk Management & Compliance. The CIO shall be an observer, not a voting member.

Investment Office Professionals (IOP): The IOP assists the CIO, AAC, and AIC in execution of their duties and the management of the System's investment program on a day-to-day basis in accordance with Board policies. The IOP assists the CIO in the development, implementation, and monitoring of the asset allocation policy, the assessment of Investment Manager compliance with applicable policies, guidelines, and contracts, the monitoring of the performance of Other Entities Supporting the Investment Program, the making of direct investments subject to strict compliance with Board policies, the performance of risk management functions, the provision of recommendations relating to AIC Investment Manager selection and discharge, and the administration of ancillary investment programs such as Securities Lending and Proxy Voting. The IOP also assists the CIO by performing operational tasks supporting these investment functions, including custodian bank relationship management, investment office technology administration, trade settlement, portfolio manager support and portfolio accounting, as appropriate.

Investment Consultants: The Board shall select and retain third-party Investment Consultants to assist it, the CIO, and the IOP by providing analysis and due diligence, advice and recommendations, education, and commentary. Investment Consultants shall report on performance, compliance, and business matters as required by PSERS, and serve as fiduciaries. Other specific responsibilities shall be set forth in the Investment Consultants' respective contracts.

Investment Managers: Subject to strict compliance with PSERS' policies, guidelines, mandates, and standards of care assigned to them, and the terms of applicable contracts, Investment Managers are assigned authority to invest and manage the specific allocations assigned to them, and shall report on performance, compliance, and business matters as required by PSERS.

Other Entities Supporting the Investment Program: The State Treasurer is the legal custodian of not only the System's assets but also those of the entire Commonwealth. The State Treasurer has subcontracted the custodian function to the Custodian Bank for the Commonwealth, including the System. The Custodian Bank holds all cash and securities (except for those held in partnerships, commingled funds, mutual funds, etc.), and regularly accounts for these holdings to the System. Other offices within PSERS, including the Offices of Financial Management and Office of Chief Counsel, as well as the Internal Audit Office, shall also support PSERS' investment processes as assigned. IOP may select and retain other entities to provide investment-related services.

IV. Investment Objectives

The Investment Objectives are:

- to generate returns to support the System’s actuarial soundness so it may provide its members with benefits as required by law.
- to earn a long-term total return, net of fees and investment expenses and administrative expenses, that equals or exceeds the Actuarial Assumed Rate approved by the Board.
- to earn a long-term total return, net of fees and investment expenses, that equals or exceeds the Policy Index approved by the Board.
- to prudently manage investment risks that are related to the achievement of investment goals.

V. Investment Philosophy

The PSERS Board of Trustees believes PSERS' assets should be managed in accordance with PSERS' unique liability stream, funding sources, cash flows, and portfolio size, focusing on the prudent accumulation of wealth over the long term to meet the retirement benefit obligations established by the plan sponsor to its members.

PSERS' assets should be managed based on the following beliefs:

1. Uncertainty
   - The future is difficult to forecast with any accuracy or certainty, particularly changes in the economic and market environment.

2. Asset Allocation
   - The strategic asset allocation mix, more than implementation or any other factor or decision, largely determines the portfolio's overall risk and return.

3. Diversification
   - Diversification is the best approach to addressing future uncertainty and therefore meeting PSERS' long-term investment objectives.
   - Diversification should be across multiple dimensions:
     - By and within asset classes.
     - By geography.
     - By strategy (e.g., in Public Equity: growth and value, concentrated and diversified, quantitative and fundamental).
     - By vintage year for Private Investments (investment pacing in and out of investments helps mitigate the impact of market volatility).
   - Over any given period, any number of asset classes, geographies, strategies, and vintages will underperform others; that is to be expected and accepted.

4. Risk
   - For an underfunded plan or for a plan with negative cash flow (benefits paid exceed contributions received), the path of compounding of investment returns – from month to month, quarter to quarter, and year to year -- matters more than for a plan that is fully funded or has positive cash flow; for the former type of plan, peak-to-trough declines transform unrealized losses into permanent ones.
   - Drawdown risk should be mitigated, especially as the environment in which drawdowns occur is likely also the environment where the Plan Sponsor's willingness and ability to make contributions to the plan may be less than in normal times.
   - Liquidity should be managed to reasonably ensure that the fund can meet its obligations during periods of market dislocations.

5. Leverage
    - Leverage at the total fund level can be an effective tool to enhance diversification, since asset classes, over the long-term, have similar risk-adjusted returns, different correlations to each other, and different responses to changes in the economic and market environment.
    - Leverage can be a vital tool to increase or decrease total fund risk in a diversified manner.

6. Rebalancing
    - Disciplined rebalancing enhances long term returns as it is an inherently contrarian process.
    - Rebalancing restores strategic asset allocation as the primary driver of return and risk.

7. Portfolio Size
    - Managing a large pool of assets provides investors unique access to investment opportunities not available to smaller institutional investors or individual investors.
    - PSERS should use its size to its advantage to enhance its net-of-fees return and diversification opportunities.

8. Private Investments
    - Allocations to Private Equity, Private Credit, Private Real Estate, Private Infrastructure, and other illiquid asset classes may be justified by the illiquidity risk premium available to investors.
    - Allocations to these asset classes may also be justified by the diversification benefit they provide, through exposure to sectors, businesses, and mode of corporate governance not obtainable through public markets.

9. Active Management
    - Passive investing, rather than active management, is the default choice to be used for any asset class that is highly efficient or where skilled active managers are less likely to be identified.
    - Certain asset classes continue to exhibit information inefficiency, where skilled active management and well-resourced investors such as PSERS can potentially persistently outperform peers and the benchmark for that asset class.
    - There will be short-term periods when a skilled active manager may underperform peers and the benchmark; that is to be expected and accepted; therefore a long-term perspective will be employed.

10. Internal Management

- PSERS has developed skilled internal investment managers; as such internal investment management is preferred over external investment management in cases where internal management most likely can match or exceed the long term, net of fees, risk-adjusted returns provided by External Managers, provided the internal investment and operational resources are available to do so.

11. Investment Fees

- Investment management fees for external management are one of the few aspects of investment management that are certain and over which the investor has control.
- Investment management and performance fees should be managed to (i) maximize long term, net of fees, risk-adjusted returns, (ii) split the value added fairly between the Investment Manager and PSERS, and (iii) align the interests of Investment Manager with PSERS.

VI. Asset Allocation

A. Purpose

The asset allocation establishes a framework for PSERS that has a reasonable likelihood, in the judgment of the Board, of realizing PSERS' long-term investment objectives.

In establishing the asset allocation for the System, the Board considers capital market expectations for expected return, volatility, and asset class correlations as discussed below.

B. Capital Market Assumptions

Capital Market Assumptions (CMAs) are estimates of expected returns and risks for a given set of asset classes, and expectations of the relationship (correlations) between these asset classes over long periods of time. They are issued periodically by investment consultants, asset managers, and investment banks. Inflation, real short-term interest rates, and economic data frequently provide the foundation used by CMAs for expected returns across global asset classes. These are the primary building blocks for developing equity and fixed income returns expectations, which in turn are used in setting expectations for alternative asset class returns. PSERS collects and evaluates this information when considering its long-term actuarial rates of return assumptions and in setting its Asset Allocation. For Asset Allocation purposes, the Board will generally use CMAs prepared by the Board's general Investment Consultant.

C. Targets and Ranges

The Board sets target allocations ("Targets") to various asset classes that are designed to meet PSERS' long-term investment objectives and establishes a band of minimum and maximum allowable allocations, or ranges ("Ranges"), surrounding each Asset Class Target Allocation. The purpose of Ranges is to allow flexibility to adapt to changing market conditions and to cost-effectively balance the Board's Investment Policy with the investment strategies pursued over shorter time periods. The table below sets forth Targets and Ranges for each Asset Class and sub-asset class. Allocations are in the form of Economic Exposure, which includes Asset Allocation Leverage as defined in the Leverage Policy.

ASSET ALLOCATION
(Effective October 1, 2023)

ASSET CLASS	TARGET ALLOCATION	RANGE
Equity Exposure	**42.00%**	+/- 5%
Public Equity	**30.00%**	+/- 5%
U.S. Equity	18.00%	+/- 5%
Non-U.S. Equity	12.00%	+/- 5%
Private Equity	**12.00%**	+/- 4%
Fixed Income Exposure	**33.50%**	+/- 5%
Public Fixed Income	**27.50%**	+/- 5%
Investment Grade	14.00%	+/- 5%
Credit-Related	4.50%	+/- 3%
Inflation Protected	9.00%	+/- 5%
Private Fixed Income	**6.00%**	
Private Credit	6.00%	+/- 2%
Real Asset Exposure	**24.50%**	+/- 5%
Public Real Assets	**12.50%**	+/- 3%
Infrastructure	5.00%	+/- 3%
Commodities	5.00%	+/- 3%
Real Estate	2.50%	+/- 3%
Private Real Assets	**12.00%**	+/- 3%
Infrastructure	5.00%	+/- 3%
Real Estate	7.00%	+/- 2%
Absolute Return	**0.00%**	0% - 5%
Net Leverage	**0.00%**	10 to -10%
Cash	4.50%	
Explicit Leverage	-4.50%	
	100.00%	

In setting Ranges, the following principles are applied and will be updated upon the adoption of the next Asset Allocation:

- The Public Equity allocation has a symmetrical Range equivalent to 16% of its Target rounded to a whole percentage point. U.S. and Non-U.S. ranges were set at 100% of the band set for the Public Equity allocation.

- The Public Fixed Income allocation has a symmetrical Range equivalent to 18% of its Target rounded to the whole percentage point. The Investment Grade and Inflation-linked sub-asset classes Ranges were set at 100% of the band set for the Public Fixed Income Target allocations. The Credit-Related allocation was given a Range of +/- 3%.

- The Public Real Assets allocation has a symmetrical Range equivalent to 20% of its Target rounded to a whole percentage point. The Public Infrastructure, Public Commodities, and Public Real Estate sub-asset classes Ranges were set at 100% of the band set for the Public Real Assets Target allocations.

- The Private Equity, Private Credit, Private Real Assets and Private Real Estate asset classes, each with a significant illiquid component, have a symmetrical Range of 30% from its Target allocation, rounded to a whole percentage point. The Ranges for these asset classes are given wider symmetrical ranges to reflect the dominant influence of public market fluctuations on their proportion. Given the low allocation, the Private Infrastructure allocation has a symmetrical Range of 60% from its Target allocation, rounded to a whole percentage point.

- The Range for the Absolute Return asset class reflects a lower bound of zero and an upper bound of 5%, with no target to allow for the potential of being overweight, for various reasons, during the liquidation.

- The Net Leverage Range has a Range of 10%, which allows for removal of Leverage and accumulation of a position in Cash, to –-10%, which allows for additional Economic Exposure through usage of Asset Allocation Leverage (as defined in the Leverage Policy). 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 Range for Total Equity, Total Fixed Income, and Total Real Asset Exposures will be a symmetrical 5% for each broad asset class which includes exposure to public and private asset classes. These Ranges provide overall limits to these exposures while providing flexibility to accommodate wider market swings.

- For purposes of this analysis, and with the exception of Explicitly Levered Portfolios, as defined in the Leverage Policy, 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 Public Equity in the table above).

- The Target Allocation for Public and Private Equity, Infrastructure, and Real Estate, and for Private Credit and Public High Yield are adjusted in accordance with the applicable footnote in the Asset Class and Policy Benchmark section below.

ASSET ALLOCATION (Long-term)
(Effective TBD)

ASSET CLASS	TARGET ALLOCATION
Equity Exposure	**48.00%**
Public Equity	**36.00%**
U.S. Equity	21.00%
Non-U.S. Equity	15.00%
Private Equity	**12.00%**
Fixed Income Exposure	**34.00%**
Public Fixed Income	**28.00%**
Investment Grade	12.00%
Credit-Related	6.00%
Inflation Protected	10.00%
Private Fixed Income	**6.00%**
Private Credit	6.00%
Real Asset Exposure	**26.00%**
Public Real Assets	**14.00%**
Infrastructure	5.00%
Commodities	5.00%
Real Estate	4.00%
Private Real Assets	**11.00%**
Infrastructure	4.00%
Real Estate	7.00%
Absolute Return	**0.00%**
Net Leverage	**-8.00%**
Cash	3.00%
Explicit Leverage	-11.00%
	100.00%

D. Rebalancing

IOP will ensure conformance with the asset allocation set by the Board through monthly, or more frequent, review. In conducting rebalancing activities, the Board expects IOP to operate under the following principles:

- IOP must initiate rebalancing transactions to bring all percentages to values inside the Ranges or promptly seek Board approval to remain outside the Ranges.
- To implement the investment strategy, IOP will manage the asset allocation nearer to or away from the Targets, but within Policy Ranges. Quarterly performance reports to the Board will also reflect actual allocations and variances from Targets.
- The spirit of this Policy is to implement the investment strategy within the Targets and asset allocation Ranges at a reasonable cost, recognizing that overly precise management of asset exposures can result in transaction costs that are not economically justified.

E. Periodic Review

The Board establishes the Asset Allocation Targets and Ranges and reviews them annually. The Board will undertake a comprehensive strategic asset/liability review designed to assess the continuing appropriateness of this Policy at least every three years or when material changes to the liabilities take place (e.g., plan design changes, material changes in underlying assumptions, etc.). Such review will consider an asset-liability study of future benefit payments, liabilities, required funding, the appropriateness of the actuarial interest rate assumption and the prospective funded status of liabilities. It may also include a study of portfolio design for optimal diversification and comparisons with peer practices.

VII. Performance Objectives

The performance objectives are to: (1) exceed the return of the Policy Index, net of fees and investment expenses; and (2) exceed the actuarial rate (currently 7.00%), net of fees and investment expenses, over a reasonably longer time horizon. The Policy benchmark combines designated market indices for Asset Classes, weighted by asset allocation Targets. The table below contains the benchmark indices, and weights, for the respective asset classes.

During periods of transition resulting from a change in the Board-approved Targets, the interim target asset allocation and associated benchmarks used to calculate benchmark performance will be established on a quarterly basis in advance of the subsequent quarter. That target mix will be based on allocations made by the CIO and reported to the Board through quarterly performance reports.

Asset Class and Policy Benchmarks

Each Asset Class shall be measured relative to its designated benchmark index. It is expected that the active management of individual Asset Classes, if any, will provide an investment return in excess of the index, net of expenses.

The Board adopts the following Asset Class Performance Benchmarks and weighted policy benchmarks, cumulatively the Policy Index, for the Asset Allocation Target Allocation to measure the performance of the System subject to footnote 1:

POLICY BENCHMARK
(Effective October 1, 2023)

	Policy Weight	
Equity Exposure	**42.00%**	
Public Equity	**30.00%**	
S&P 1500 TR Index	18.00%	1
MSCI ACWI ex USA IMI Net TR Index (Developed Market Currencies 50% Hedged to USD)	12.00%	1
Private Equity	**12.00%**	
Burgiss TR, one-quarter lagged[2]	12.00%	1
Fixed Income Exposure	**33.50%**	
Public Fixed Income	**27.50%**	
Investment Grade		
Bloomberg US Aggregate Bond TR Index	6.00%	
Bloomberg U.S. Long Treasury TR Index	8.00%	

Credit-Related			
J.P. Morgan EMD Aggregate Total Return Index	1.00%		
Bloomberg US Corporate High Yield Bond Index	3.50%	1
Inflation Protected		
Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	9.00%	
Private Fixed Income	**6.00%**	
Credit-Related		
S&P LSTA Leveraged Loan TR Index + 200bps, one-quarter lagged	6.00%	1
Real Asset Exposure	**24.50%**	
Public Real Assets	**12.50%**	
Infrastructure		
FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%	1
Commodities		
Bloomberg Commodity TR Index	2.50%	
Bloomberg Gold TR Subindex	2.50%	
Real Estate		
FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	2.50%	1
Private Real Assets	**12.00%**	
Infrastructure		
FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.00%	1
Real Estate		
NFI and Burgiss TR, one-quarter lagged[3]	7.00%	1
Absolute Return	**0.00%**	
Net Leverage	**0.00%**	
Cash		
ICE BofAML 0-3 Month US Treasury Bill Index	4.50%	
Financing Cost of Leverage[4]		
3-Month Term SOFR	-4.50%	
TOTAL	100.00%	

Footnotes to New Asset Allocation Policy benchmark:

[1] Toggle Feature: As the following Private asset classes economic exposure increases/decreases (e.g. due to fundings/distributions and/or the allocation increases/decreases due to total economic exposure of the Fund changing), the corresponding Public asset class policy weight will be proportionately and conversely revised to reflect these changes. Adjustments to the policy weight will be completed in 50 basis point increments (adjustment will be made to the nearest 0.50%) on a quarterly basis. For example, if the economic exposure 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 be proportionately reduced by 100 basis points.

Private Asset Class	**Corresponding Public Asset Class**
Private Equity	Public Equity
Private Credit	U.S. Corporate High Yield Bond
Private Infrastructure	Public Infrastructure
Private Real Estate	Public Real Estate

[2] The benchmark returns are calculated using the rolling 5-year (20 quarters) total returns obtained from Burgiss Private IQ relevant universe (i.e. Generalist, Expansion Capital, Buyout, Debt, Infrastructure, Natural Resources, Secondary Fund of Funds, and North America-focused Venture Capital).

[3] PSERS weights each of the real estate investment strategies actual net asset values of the System's private real estate investments quarterly to produce a customized, blended benchmark return. The NFI-ODCE (NCREIF Open-end Diversified Core Equity) is used for the core strategy whereas returns for value-added and opportunistic strategies are calculated using the total returns obtained from Burgiss Private IQ. This provides a single blended Real Estate policy benchmark return for the System.

[4] 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.

POLICY BENCHMARK – Long-term (Effective TBD)

	Policy Weight	
Equity Exposure	**48.00%**	
Public Equity:	**36.00%**	
S&P 500 TR Index (75%), S&P MidCap 400 TR Index (12.5%), S&P Small Cap 600 TR Index (12.5%)	21.00%	1
MSCI ACWI ex USA IMI with Developed Market Currencies (50% Hedged to USD) Net TR Index	14.50%	1
MSCI Emerging Markets IMI Net TR Index	0.50%	
Private Equity:	**12.00%**	
Burgiss TR, one-quarter lagged[2]	12.00%	1
Fixed Income Exposure	**34.00%**	
Public Fixed Income:	**28.00%**	
Investment Grade		
Bloomberg US Aggregate Bond TR Index	4.00%	
Bloomberg GDP Global Aggregate Bond Developed Market ex US TR Index (Hedged to USD)	0.00%	
Bloomberg U.S. Long Treasury TR Index	8.00%	
Credit-Related		
J.P. Morgan EMD Aggregate Total Return Index	2.00%	
Bloomberg US Corporate High Yield Bond Index	4.00%	1
Inflation Protected		
Bloomberg US Government Inflation-Linked Bond All Maturities TR Index	10.00%	
Bloomberg World Government ex US Inflation-Linked Bond All Maturities TR Index (Hedged to USD)	0.00%	
Private Fixed Income:	**6.00%**	
Credit-Related		
S&P LSTA Leveraged Loan TR Index + 200bps	6.00%	1
Real Asset Exposure	**26.00%**	
Public Real Assets:	**14.00%**	
Infrastructure		
Alerian Midstream Energy TR Index	0.00%	
FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	5.00%	1
Commodities		
Bloomberg Commodity TR Index	2.50%	
Bloomberg Gold TR Subindex	2.50%	
Real Estate		
FTSE EPRA/NAREIT Developed, Net TR Index (Hedged to USD)	4.00%	1

Private Real Assets:		**12.00%**	
	Infrastructure		
	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	5.00%	1
	Real Estate		
	NFI and Burgiss TR, one-quarter lagged[3]	7.00%	1
Absolute Return		**0.00%**	
	HFRI Fund of Funds Conservative Index + 100bps	**0.00%**	
Net Leverage		**-8.00%**	
Cash			
	ICE BofAML 0-3 Month US Treasury Bill Index	3.00%	
Financing Cost of Leverage[4]			
	3-Month Term SOFR	-11.00%	
	TOTAL	**100.00%**	

VIII. Risk Management

The Board ensures adequate risk control through the following means:

A. Diversification

Investments shall be diversified to minimize the impact of the loss from individual investments. In addition to achieving diversification by asset class, careful attention shall be paid to diversification within each asset class and sub- allocation and across managers.

B. Liquidity

Liquidity is carefully managed through adherence to the Liquidity Policy.

C. Portfolio Guidelines

Public market separate account portfolios shall operate under written guidelines and governing documents approved by CIO and the Investment Manager that are designed to ensure the portfolio pursues its return objective within the acceptable risk parameters. Other portfolios shall operate pursuant to their governing documents.

D. Risk Parameters

The CIO, in conjunction with the general Investment Consultant, shall recommend active risk (risk of achieving performance different than the Policy benchmark) parameters to the Board. The Board shall approve active risk parameters as part of PSERS' annual asset allocation review. Risk management reports shall be provided periodically to the Board.

E. Risk Benchmarks

The benchmarks, including weightings and excluding additional performance goals (e.g. +100bps), adopted by the Board in the Asset Class and Policy Benchmarks section above are used as a framework for risk measurement. While Non-Traditional Asset Classes do not easily lend themselves to traditional quantitative measures of risk, such as standard deviation and benchmark tracking error, the use of the following benchmarks for these asset classes is adopted by the Board to provide additional insights into the risks within these asset classes.

Private Equity	MSCI USA Small Cap TR Index (70%), MSCI ACWI ex USA Small Cap Net TR Index (30%)
Private Credit	S&P LSTA Leveraged Loan TR Index
Private Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)
Private Real Estate	FTSE NAREIT Composite TR Index (90%), FTSE EPRA/NAREIT Developed ex US TR Index (Hedged to USD) (10%)

F. Stand-alone Policies

In addition to this Policy, the Board is responsible for reviewing and approving the following stand-alone policies. These Policies are organized into three categories: (1) Asset Class Policies, (2) Investment-~~wide~~ Wide Policies and (3) Proxy Voting Policy~~ies~~. Asset Class and Investment-~~wide~~ Wide Policies are investment-related Policies, while Proxy Voting Policy~~ies~~ relate to governance matters. Asset Class Policies include asset classes within the Asset Allocation, whereas Investment-~~wide~~ Wide Policies include information that typically applies to the Fund as a whole.

ASSET CLASS POLICIES	
Public Markets Asset Class Policy	Private Markets Asset Class Policy
Traditional Investments Due Diligence Policy	Non-Traditional Investments Due Diligence Policy
INVESTMENT-WIDE POLICIES	
Liquidity Policy	Placement Agent Policy
Derivatives and Leverage Policy	Qualified Independent Representative (QIR) Policy
~~Derivatives Policy~~	Securities Lending Policy
Currency Hedging Policy	External Investment Managers' Insurance Policy
~~Cash Policy~~	Tail Risk Mitigation Strategy Policy
PROXY VOTING ~~POLICIES~~POLICY	
~~U.S. Proxy Voting Policy~~Corporate Governance Focused Thematic Voting Policy	~~Non-U.S. Proxy Voting Policy~~

IX. Monitoring and Reporting

Through the mechanisms described in this section, the Board, via its Investment Committee, receives information necessary to fulfill its fiduciary responsibility of monitoring and overseeing the investment program. The Board's oversight of PSERS' investment program can be considered through a waterfall structure, from high level to the more detailed, and more frequent, degree. Updates and analysis reports are received as formal presentations to the Investment Committee or provided via the Board's intranet site (the Board's governance platform~~Diligent~~). The following reflects the frequency and detail of the information reported to the Board by IOP unless otherwise noted:

At least once every five years the Investment Committee reviews the performance of Investment Consultants through the contracting process.

At least once every three years, or more frequently as needed, the Investment Committee is provided the following information and analysis:

- The strategic Asset Allocation, including an asset/liability study and the recommended investment structure and Policy Benchmarks, presented by the general Investment Consultant.

On an annual basis the Investment Committee is provided the following information and analysis:

- Investment-related stress testing and liquidity analyses of the strategic Asset Allocation prepared and presented by the general Investment Consultant.
- A detailed review of each Asset Class.
- An annual Investment Expense Report.
- A detailed review of the Securities Lending Program.

Also, on an annual basis, the Corporate Governance Committee is provided analysis on proxy voting matters necessary to update PSERS' Proxy Policies.

Bi-annually

- Report comparing the asset allocation to peers

On a quarterly basis the Investment Committee is provided the following information and analysis:

- Fund and Policy Index performance.
- Current Asset Class tactical allocations.
- Assets managed internally vs. externally by Asset Class.
- A comprehensive performance report for the Asset Classes, including investment managers within each Asset Class, that contains the benchmarked performance as defined within the Performance Benchmark

section as prepared by the general Investment Consultant, via the Board's governance platform~~Diligent~~.

- A presentation of the general Investment Consultant's review of PSERS' total fund investment performance, via the Board's governance platform~~Diligent~~.
- And exposure reports and presentations for Private Equity, Private Real Estate, Private Infrastructure, Private Commodities and Private Credit by IOP and specialty Investment Consultants for the Non-Traditional Investments, via the Board's governance platform~~Diligent~~.
- Asset Allocation Leverage report
- Moneyline Report that presents the month-end Asset Allocation of the System as compared to the Asset Allocation plan targets approved by the Board.

On a monthly basis, the Board is provided via the Board's governance platform:~~Diligent~~:

- Cash Liquidity reports which include current and forecasted cash, the liquidity profile of the fund, subscription line exposure (updated quarterly), and unfunded commitments.
- Allocation Change Report that presents the allocation changes for the past month by asset class and investment manager.

In addition, the Investment Committee typically schedules several educational sessions each year to ensure it has a sound foundation upon which it carries out its duties.

On an on-going basis, the Investment Committee monitors IOP performance through the monitoring and oversight of the investment program as a whole.

X. Definitions

Acronyms: The following is a list of common abbreviations found throughout the IPS.

Acronym	Full Name
ACWI	All Country World Index
BofAML	Bank of America Merrill Lynch
DM	Developed Markets
EM	Emerging Markets
EMBI	Emerging Market Bond Index
EPRA	European Public Real Estate Association
ETF	Exchange Traded Fund
EUR	Euro
FOF	Fund of Fund
FTSE	Financial Times Stock Exchange
FX	Foreign Exchange
G10	Group of Ten
GBI-EM	Government Bond Index-Emerging Markets
GDP	Gross Domestic Product
HFRI	Hedge Fund Research Inc.
HY	High Yield
ICE	Intercontinental Exchange
IG	Investment Grade
ILB	Inflation-Linked Bond
IMI	Investable Market Index
ILPA	Institutional Limited Partners Association
IRR	Internal Rate of Return
JPM	J.P. Morgan
LSTA	Loan Syndications and Trading Association
MSCI	Morgan Stanley Capital International
NAREIT	National Association of Real Estate Investment Trusts
NCREIF	National Council of Real Estate Investment Fiduciaries
NFI-ODCE	NCREIF Fund Index-Open End Diversified Core Equity
OCC	Office of Chief Counsel
OFM	Office of Financial Management
PME	Public Market Equivalents
REIT	Real Estate Investment Trust
S&P	Standard & Poor's
SOFR	Secured Overnight Financing Rate
STRIPS	Separate Trading of Registered Interest and Principal of Securities
TIPS	Treasury Inflation Protected Securities
TR	Total Return

U.S.	United States
USD	US Dollar

Actuarial Assumed Rate: the investment return assumption adopted by the Board for actuarial purposes.

Applicable Investment Expenses: may include catch-up interest, management fees, organizational expenses, or other expenses payable directly by PSERS outside of its capital commitment not to exceed 15 percent of the amount approved for investment and authorized by IOS.

Asset Allocation: the decision of selecting appropriate weights between broad asset class categories (Private Markets, bonds, cash, commodities, stocks, etc.) in order to produce the desired Risk and return profile for a total fund portfolio. The Asset Allocation decision is the most important investment strategy issue for an investment program.

Benchmarks**:** Used by the Board to measure the investment performance (i.e. Policy Index) and risk (i.e. Risk Benchmarks) of each Asset Class. The following are indices used or referenced by the System, noting that any additional performance expectation (i.e. +100 basis points) is not depicted:

For publicly available indices a ticker is provided, and the descriptions are primarily taken from the provider factsheets or website.

EQUITY:

Burgiss Total Return (TR) Index (N/A): Performance benchmark data for Private Equity calculated using the rolling 5-year (20 quarters) total returns obtained from Burgiss Private iQ relevant universe (i.e. Generalist, Expansion Capital, Buyout, Debt, Infrastructure, Natural Resources, Secondary Fund of Funds (FOFs), and North America-focused Venture Capital). The benchmark is updated retroactively for the past 20 quarters each quarter. This methodology results in a restatement of the Total Fund Benchmark return from quarter to quarter.

Morgan Stanley Capital International (MSCI) All Country World Index (ACWI) ex USA Investable Market Index (IMI) (with Developed Market (DM) Currencies 50% Hedged to US Dollar) Net TR Index (unhedged: M1WDUIM; custom hedged: M1CXPPSB): The MSCI ACWI ex USA IMI captures large, mid- and small-cap representation across 22 of 23 DM countries, excluding the United States (US), and 25 Emerging Markets (EM) countries. With over 6,000 constituents, the index covers approximately 99% of the global equity opportunity set outside the US. This index hedges currency exposure back to the US Dollar (USD).

MSCI ACWI ex USA Small Cap Net TR Index (M1WDUSC): (Risk Benchmark) The MSCI ACWI ex USA Small Cap Index captures small-cap representation across 22 of 23 DM countries (excluding the US) and 25 EM countries. With over 4,000 constituents, the index covers approximately 14% of the global equity opportunity set outside the US.

MSCI USA Small Cap TR Index (M2USSC): (Risk Benchmark) The MSCI USA Small Cap Index is designed to measure the performance of the small-cap segment of the US equity market. With over 1,900 constituents, the index represents approximately 14% of the free float-adjusted market capitalization in the US.

Standard & Poor's (S&P) 1500 TR Index: *Combines three leading indices, the S&P Large Cap 500, the S&P Mid Cap 400, and the S&P Small Cap 600 to cover approximately 90% of the U.S. market capitalization.*

FIXED INCOME:

Bloomberg US Aggregate Bond TR Index (LBUSTRUU): The Bloomberg US Aggregate Bond Index is a broad-based flagship benchmark that measures the IG, USD-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, mortgage-backed securities (agency fixed-rate and hybrid adjustable-rate mortgage pass-throughs), asset-backed securities and commercial mortgage-backed securities (agency and non-agency).

Bloomberg US Corporate High Yield (HY) Bond TR Index (LF98TRUU): The Bloomberg US Corporate HY Bond Index measures the USD-denominated, HY, fixed-rate corporate bond market. Securities are classified as HY if the middle rating of Moody's, Fitch and S&P is Ba1/BB+/BB+ or below. Bonds from issuers with an EM country of risk, based on Bloomberg EM country definition, are excluded.

Bloomberg US Government Inflation-Linked Bond (ILB) All Maturities TR Index (BCIT1T): The Bloomberg US Government ILB Index measures the performance of the US Treasury Inflation Protected Securities (TIPS) market.

Bloomberg US Long Treasury TR Index (LUTLTRUU): The Bloomberg US Long Treasury Index measures the performance of USD-denominated, fixed-rate, nominal debt issued by the US Treasury with a maturity greater than 10 years. Separate Trading of Registered Interest and Principal of Securities (STRIPS) are excluded from the index because their inclusion would result in double-counting. The US Long Treasury Index is a component of the US Aggregate, US Universal, Global Aggregate and Global Treasury Indices.

JPM EMD Aggregate (JPM EM Equal Weigthed Total Return Index) (JEMBAGTR) – Equally weighted blend of the KPM EMBI Global Diversified, JPM GBI Global Diversified and JPM CEMBI Broad Diversified.

S&P / Loan Syndications and Trading Association (LSTA) Leveraged Loan TR Index (SPBDAL): The S&P/LSTA US Leveraged Loan Indices are rules-based, transparent indices designed to reflect US senior loan facilities in the leveraged loan market. They reflect the market-weighted performance of institutional leveraged loans in the US based upon real-time market weightings, spreads and interest payments. The index components are the institutional tranches (Term Loan A, Term Loan B and higher and Second Lien) of loans syndicated to US loan investors.

REAL ASSETS:

Bloomberg Commodity TR Index (BCOMTR): The Bloomberg Commodity TR Index reflects the return on fully collateralized rolling futures positions. BCOMTR is a highly liquid and diversified benchmark for commodity investments. The Index provides broad-based exposure to 23 exchange traded commodities across energy, industrial and precious metals, agriculture and livestock, and no single commodity or commodity sector dominates the Index.

Bloomberg Gold TR Subindex (BCOMGCTR): The Bloomberg Gold TR Subindex reflects the return on fully collateralized rolling gold futures positions.

Financial Times Stock Exchange (FTSE) Developed Core Infrastructure 50/50 Net Index (Hedged to USD) (FDCICUHN): The FTSE Developed Core Infrastructure 50/50 Index gives participants an industry-defined interpretation of infrastructure and adjusts the exposure to certain infrastructure sub-sectors. The constituent weights for this index are adjusted as part of the semi-annual review according to three broad industry sectors – 50% Utilities, 30% Transportation including capping of 7.5% for railroads/railways and a 20% mix of other sectors including pipelines, satellites and telecommunication towers. Company weights within each group are adjusted in proportion to their investable market capitalization. This index hedges currency exposure back to the USD.

FTSE European Public Real Estate Association (EPRA) / National Association of Real Estate Investment Trusts (NAREIT) Developed ex US TR Index (Hedged to USD) (REGXU): (Risk Benchmark) The FTSE EPRA/NAREIT Developed ex US Index is a subset of the FTSE EPRA/NAREIT Developed Index and is designed to track the performance of listed real estate companies and real estate investment trusts (REITs). By making the index constituents free-float adjusted, liquidity, size and revenue screened, the series is suitable for use as the basis for investment products, such as derivatives and exchange traded funds (ETFs). This index hedges currency exposure back to the USD.

FTSE EPRA/NAREIT Developed Net TR Index (Hedged to USD) (GPPPSH1): The FTSE EPRA/NAREIT Global Real Estate Index Series is designed to represent general trends in eligible real estate equities worldwide. Relevant activities are defined as the ownership, disposal and development of income-producing real estate. The FTSE EPRA/NAREIT Developed Index is designed to track the performance of listed real estate companies and REITs worldwide. By making the index constituents free-float adjusted, liquidity, size and revenue screened, the series is suitable for use as the basis for investment products, such as derivatives and ETFs. This index hedges currency exposure back to the USD.

FTSE NAREIT Composite TR Index (FNCOTR): (Risk Benchmark) The FTSE NAREIT Composite TR Index is a free-float adjusted, market capitalization-weighted index of US equity and mortgage REITs. Constituents of the Index include all tax-qualified REITs that also meet FTSE's minimum size and liquidity criteria.

National Council of Real Estate Investment Fiduciaries (NCREIF) Fund Index *and Burgiss TR Index (N/A):* Performance benchmark for Private Real Estate is calculated using the total returns obtained from Burgiss iQ relevant universe (i.e. value-added and opportunistic real estate). A rolling 5-year (20 quarters) lookback is being built out effective first quarter 2015. The NCREIF Fund Index-Open End Diversified Core Equity (NFI-ODCE) is an index of investment returns reporting on both a historical and current basis the results of 36 open-end commingled funds pursuing a core investment strategy. The NFI-ODCE Index is capitalization-weighted and measurement is time-weighted.

<u>CASH:</u>

ICE BofAML 0-3 Month US Treasury Bill Index (G0B1): ICE BofAML 0-3 Month US Treasury Bill Index is a subset of ICE BofAML US Treasury Bill Index including all securities with a remaining term to final maturity less than 3 months.

<u>FINANCING:</u>

Secured Overnight Financing Rate (SOFR) 3-Month (TSFR3M): A broad measure of the cost of borrowing cash overnight collateralized by Treasury securities. SOFR includes all trades in the Broad General Collateral Rate plus bilateral Treasury repurchase agreement (repo) transactions cleared through the Delivery-versus-Payment (DVP) service offered by the Fixed Income Clearing Corporation (FICC), which is filtered to remove a portion of transactions considered "specials." Each business day, the New York Fed publishes the SOFR on the New York Fed website at approximately 8:00 a.m. (New York Time).

Board: The Pennsylvania Public School Employees' Retirement Board.

CDO: A collateralized debt obligation (CDO) is a **structured financial product** that pools together cash flow-generating assets and repackages this asset pool into discrete tranches that can be sold to investors.

CLO: A **collateralized loan** obligation (**CLO**) is a single security backed by a pool of debt. Often these are corporate **loans**.

Custodian Bank: an institution that safekeeps cash, stocks, bonds, and other securities. The System's Custodian Bank has a contract with the State Treasurer, the legal custodian of the System.

EPRA: acronym for the European Public Real Estate Association. EPRA is a common interest group that promotes, develops, and represents the European public real estate sector.

Evergreen: A type of fund structure that has an indefinite life, where investors or limited partners are afforded the opportunity to exit the investment at predetermined periodic intervals or given a notice of predetermined length. (examples: 90 days' notice or once per year)

External Manager: a~~n individual or~~ firm ~~with whom the Board has a contract to manage an investment portfolio~~registered with the SEC as an Investment Advisor, or otherwise qualified if exempted from SEC registration that provides investment advisory services with respect to~~be for~~ the management of assets within a separate account, fund, or limited partnership.

Information Ratio: a measure of Risk-adjusted excess return used to evaluate active management strategies. The information ratio is calculated by dividing a portfolio's excess return by excess Risk. Keep – in the Traditional DD Policy

Internal Manager: an individual employed by the Board who manages an investment portfolio.

Investment Consultant: a third-party firm retained by the Board to provide advice on various investment issues ranging from general advice to advice on specialty asset classes. The System's Private Markets Investment Consultant is also referred to as specialty Investment Consultant.

Investment Guidelines: an outline of policy or conduct expected in the management of an investment portfolio.

Investment Office Directors: includes the Managing Director of Fixed Income, the Managing Director of Investment Operations and Risk, the Director of Private Equity, and the Director of Risk Parity, Currency Hedging, and Strategic Implementation.

Investment Manager: includes both Internal Managers and External Managers.

ISDA: International Swaps and Derivatives Association. ISDA is an association created by the private negotiated derivatives market that represents participating parties. This association helps to improve the private negotiated derivatives market by identifying and reducing Risks in the market.

Mark-to-Market: the valuation of a security or other instrument, transaction, or portfolio of the same to current market prices.

NPL: A non-performing loan (NPL) is a loan that is in default or close to being in default. Many loans become non-performing after being in default for 90 days, but this can depend on the contract terms.

Operational Risk: risks for improper monitoring of positions, bad pricing, inadequate software, system failures or human error.

OTC: acronym for over-the-counter. OTC securities, derivatives, and other financial instruments are traded in some context other than on a formal or centralized exchange such as the New York Stock Exchange, Chicago Mercantile Exchange, etc.

~~***Placement Agent:*** any third-party person or entity hired, engaged, or retained by or acting on behalf of an External Portfolio Manager or on behalf of another Placement Agent specifically as a finder, solicitor, marketer, consultant, broker, lobbyist, or other intermediary to raise money or investments from or to obtain access to the System, directly or indirectly. Regular, full-time employees of External Portfolio Managers shall not be considered Placement Agents within the meaning of this definition, unless a fee is charged to investors for the services of such employees.~~

Private Investments: investments in limited partnerships, limited liability companies.

Securities Lending Program: an investment program designed to generate incremental income from lending securities to qualified borrowers who provide collateral in exchange for the right to use the securities.

Separate Account: a privately managed account in which the System's investments are managed independent of other investors and in which assets are accounted for in a segregated investment account. Separate Accounts generally have investments generally held by the System's Custodian Bank or in a Fund-of One created by the Investment Manager.

Sharpe Ratio: a measure that indicates the average return minus the risk-free return divided by the standard deviation of return on an investment.

Staff: employees of the System.

State Treasurer: the Treasurer of the Commonwealth of Pennsylvania.

Tracking Error: is a statistical measure of the potential variability of a portfolio's return relative to that of the assigned benchmark. For purposes of Board Policies, it is defined as the realized annualized standard deviation of monthly returns relative to the Policy benchmark over the trailing 36 months. Tracking Error for an Explicitly Leveraged Portfolio, as defined within the Leverage Policy, is measured as if the portfolio was not levered.

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Liquidity Policy

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Revision History

Liquidity Policy Established	**March 6, 2020**
Policy Revised	**March 5, 2021**
Policy Revised	**May 24, 2023**

Policy Revised May 31, 2024

I. SCOPE

This Policy addresses liquidity management within the asset allocation of the Pennsylvania~~,~~ Public School Employees' Retirement System ("PSERS") Defined Benefit Fund ~~("The~~ (the "Fund").

II. PURPOSE

This Policy provides ~~the~~a broad strategic framework for managing the Fund's liquidity involving investment assets, investment-related liabilities and short-term obligations including benefit payments.

III. ROLES AND RESPONSIBILITIES

Roles and Responsibilities related to this Policy are identified within PSERS' Investment Policy Statement ("IPS").

IV. PHILOSOPHY

In general, liquidity refers to the capacity to use and, if necessary, generate cash. Since most obligations are satisfied with cash, rather than other assets~~, this capacity is of paramount importance to PSERS.~~.

For an asset or collection of assets, liquidity is a term used to characterize the capacity of the asset(s) to be efficiently converted into cash. "Efficiently" considers (1) the time involved in the conversion, (2) the impact to price ~~at which the~~as conversion occurs and (3) ~~the transaction~~any other transactions related costs. More liquid assets generally require less time to be converted into cash, can be converted ~~into cash at~~with little or ~~above "fair value",~~no pricing impact, and involve low transaction costs. Conversely, less liquid assets generally require more time to be converted into cash~~, may~~ and can require ~~discounting below "fair value" to be converted, and may involve high~~greater price concessions and higher transaction costs for the conversion to cash.

Liquidity is valued by the markets and~~, therefore, comes at a cost. Generally, the more~~ less liquid ~~an asset is, the lower the~~assets are expected ~~return from it. For example, physical cash itself provides no future expected return.~~

~~In its asset allocation~~to earn a premium. Therefore, PSERS seeks to balance the long-term usage of illiquid, or potentially illiquid assets, and leverage to ~~help manage risk while generating~~generate targeted returns with the ability to raise and hold cash ~~for short-term~~to pay pension and investment related obligations~~, which is always the first priority of the System~~. During periods of market dislocations in which asset liquidity becomes impaired, maintaining the long-term asset allocation is a secondary priority relative to the immediate cash flow needs for benefit payments.

The term liquidity may also be used more broadly, referring to the capacity to satisfy short-term obligations in which both asset liquidity and liabilities are considered. In this context, liquidity management refers to the process of balancing available assets relative to liabilities. It is a complex process that may be impacted by many variables, including conditions which affect asset liquidity as well as those conditions which affect liabilities. Investment-related liabilities include notional exceeding capital and unfunded commitments.

V. SOURCES OF LIQUIDITY RISK

Liquidity risk is the potential for loss resulting from the diminished capacity, or inability of the Fund to efficiently meet its benefit and investment-related payment obligations. Four broad areas of liquidity risk are considered below.

A. Employer/Employee Contribution Receipts

PSERS is funded by employee and employer contributions, which represent a significant source of liquidity. Employee contributions ~~have been received as projected over the history of PSERS. Employer contributions~~ are set by law and employer contributions are actuarially determined and can be projected for ~~a number of~~several years in the future. ~~However, employer contributions are subject to the Commonwealth of Pennsylvania's (Commonwealth) budgetary constraints and may not be fully paid in any given year. This represents a significant risk to the projected liquidity of the Fund.~~

~~In the past, PSERS has gone through a protracted period where the actuarially-required employer contributions were not made by the Commonwealth. Act 120 of 2010 implemented a funding plan to slowly raise employer contributions to the actuarily required amount. During fiscal year 2017, a major funding milestone was reached as employers funded 100% of the actuarially required contributions to PSERS for the first time in fifteen years.~~ Should the employer contributions be ~~legislatively~~ decreased in the future ~~below the actuarily required contributions, the resulting decrease will~~without a corresponding adjustment to the structural characteristics of the Fund such a change could increase liquidity risk for PSERS.

B. Benefit Payments

Many factors influence the liquidity risk associated with PSERS' benefit obligations. These include ~~the structural characteristics of the System, including~~ benefits offerings, contribution rates, and member demographics. PSERS is currently considered to be a mature plan, i.e., a plan with a lower ratio of active members to retirees, in which cash outflows (benefit payments) exceed cash inflows (contributions). Should the structural characteristics of the benefits change in the future without a corresponding adjustment to contributions, such a change could increase liquidity risk for PSERS.

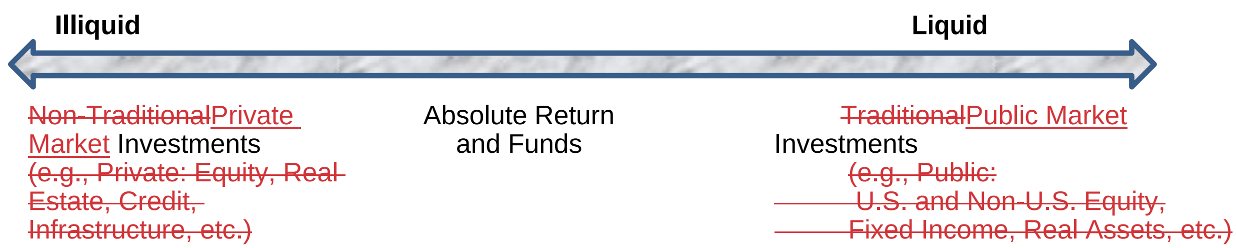
~~This Policy relates only to the ultimate, short-term cash flow requirements associated with the cash payment of the benefits and not to PSERS' structural benefit characteristics.~~

C. Assets

Asset liquidity is dependent upon several factors including:

- Market conditions (trading volumes, volatility, relative values of securities) at near normal levels;
- How quickly an asset can be bought and sold (this includes contractual provisions, such as gates, which may limit the ability to transact);
- Pricing efficiency; and
- Transaction costs.

Generally speaking, and with consideration of the variables above, the level of liquidity of the investments can be characterized, under normal market conditions, along a spectrum:



D. Investment-Related Liabilities and Cash Needs

Investment-related liabilities are those obligations resulting from investment activity and include:

- Derivatives related obligations including margin collateralization and other payment obligations;
- Transactional obligations; and
- Other contractual obligations.

Potential cash needs include the following:

- Asset allocation and Fund-level rebalancing activities;
- Internally managed portfolio fundings and transitions;
- Cash related to leveraged positions;
- Externally managed public and private markets portfolio capital commitments and transitions.

These liabilities and cash needs may also be impacted by market conditions and contractual provisions.

VI. RISK MANAGEMENT

~~In order to achieve its investment objectives, the Board has sought a balance of risk and return in its asset allocation. As part of that balance, the Board has elected to make allocations to Non-Traditional Investments and other illiquid asset classes and asset structures. This balance of risk and return is addressed by this policy which seeks to provide a roadmap of how PSERS considers both liquidity risk and returns, while recognizing that any allocation that seeks returns will appear sub-optimal in the midst of a crisis. Therefore, it is necessary to build the liquidity strategy in advance of the need for it.~~

A number of approaches are used to measure and manage the Fund's liquidity risks, including a combination of controls in policies, portfolio guidelines, account structures, procedures, and operative legal and governing documents. The Fund's resulting cash flows and liquidity characteristics are monitored and reported to the Board via the Investment Committee Dashboard ("IC Dashboard"), a monthly report provided via the Board's governance platform and presented regularly at Investment Committee meetings.

~~A.~~ Asset Allocation~~Assets~~
A.

The asset allocation is the primary determinant of the Fund's liquidity. The liquidity characteristics of different asset classes are along a spectrum, as summarized in the table in Section V.C., with additional detail provided below. Limitations on less liquid asset classes are driven by the top-down allocation and ranges which are included in the Asset Allocation within the IPS. Elements within the IC Dashboard related to the asset allocation include liquidity available by asset class at different time intervals (e.g., available liquidity within 30 days).

B. ~~PSERS maintains a dedicated allocation to~~ Cash~~, including low risk/high quality liquid securities,~~ Flow/Liquidity Monitoring

Liquidity reports are prepared, distributed, and monitored daily within the IO, with ~~Asset Allocation. This allocation is reviewed annually during~~ the Asset Allocation ~~analysis and is managed by IOP on a daily basis~~ Committee ("AAC") meeting at least monthly to formally review these reports. Elements within the IC Dashboard related to ~~provide for all near-term~~ cash ~~needs.~~flows/liquidity include the cash balance and known or anticipated cash flows (e.g., benefit payments, employer/employee contributions, and funding requests or distributions).

~~Public fixed income assets are held, in part, for liquidity management purposes and may be utilized to satisfy liquidity needs. Specifically, Treasury securities are held in the following allocations and may be accessed as needed:~~

- ~~US Long Treasury~~
- ~~US Inflation Protected~~
- ~~US Core Fixed~~

~~PSERS also has a Tail Risk Mitigation Strategy, as defined in the Tail Risk Mitigation Strategy Policy, that is designed to provide significant payoffs in the event of severe equity market drawdowns, thereby serving as a source of liquidity.~~

~~B. Investment-Related Liabilities~~

C. ~~The primary~~Stress and Liquidity Testing (IOP and General Investment Consultant ("GIC")

Separate from the stress test required by Section 8510, an investment-related ~~liabilities include:~~

~~1. Unfunded capital commitments~~stress test and ~~contingent capital commitments~~

~~Non-Traditional Investments (i.e., Private Equity, Private Credit, Private Real Estate, and Private Infrastructure) require the commitment of a pool of capital which is then drawn, or funded, over time as needed (i.e., as investments are made). This unused (and unfunded) portion of capital, referred to as unfunded committed capital, represents a form of liability. At the time the manager calls for capital, investors must~~liquidity analyses of the Strategic Asset Allocation ("SAA") shall be prepared and presented to ~~provide cash to satisfy~~ the ~~call.~~

~~Similarly, contingent capital commitments, whereby a commitment is approved for a fund to be drawn at a later date, typically to be a liquidity provider during a crisis, represents a form of liability.~~

~~The contingent liquidity requirements of Non-Traditional~~ Investment ~~commitments are closely monitored and managed accordingly via the annual pacing plan as prepared for each Non-Traditional Investments asset class~~Committee ("IC") by the GIC annually and by the IO periodically as applicable.

~~2. Derivatives~~

~~Usage of derivatives may result in additional liquidity needs, such as clearinghouse margining, collateralization with OTC derivative counterparties, and derivative settlements.~~

~~3. Investment Expenses~~

~~These include items paid from PSERS' assets such as external management fees and related expenses; internal management expenses; and consultant, custody, legal, and related fees and expenses.~~

~~C.~~D. Contingency Plan

During a liquidity event – the unlikely circumstance where market conditions are severe enough such that immediate liquidity needs are greater than the liquidity normally available from the Fund's asset allocation – the CIO may take certain contingency measures, as expressly described below, to either preserve or generate additional liquidity to satisfy the Fund's liquidity needs. Given the short time typically available for executing such measures, Board approval prior to execution may not be feasible; however, the full Board, the Board's General Investment Consultant, PSERS Executive Director, and PSERS Chief Counsel will be notified by the CIO as soon as practicable after executing such measures and no later than within 24 hours. The CIO will also provide a more formal report to the full board two weeks after such measures have taken effect, or by way of the next Board meeting (should such meeting occur sooner). Any such contingency measures will be considered temporary and may not extend longer than three months without receiving Board approval. The Board, at its sole discretion, may choose to limit or extend the duration of such measures to a period shorter or greater than three months.

The contingency measures may include the following actions:

- Temporary suspension of one or more approved Target Ranges included in the IPS, to allow actual allocations to move (by way of market changes or actions directed by the CIO) beyond the range(s) stipulated in the IPS.
- Liquidating specific securities from an account irrespective of benchmark. For example, selling U.S. Treasuries from a Core Fixed Income account benchmarked to the Bloomberg Barclays U.S. Aggregate resulting in a temporary, significant overweight to the remaining issues.
- Temporary suspension of certain derivatives used for asset allocation, currency hedging, or other strategy specific purposes, even where such action may bring actual allocations outside the Target Ranges stipulated within the IPS.

VII. MONITORING AND REPORTING

See Monitoring and Reporting section of the IPS.

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Securities Lending Policy

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Revision History

Securities Lending Policy Established	**March 6, 2020**
Policy Revised	**May 31, 2024**

I. SCOPE

The Board has approved a Securities Lending Program ("Program") for the Pennsylvania, Public School Employees' Retirement System ("PSERS") Defined Benefit Fund (the "Fund") that is designed to generate a consistent or growing stream of incremental income through prudent securities lending practices. The Program is intended to equip the Investment Office Professionals ("IOP") and the securities lending provider contracted by the Board ("Lending Agent") with sufficient flexibility in managing investment risks and returns associated with the operation and oversight of the Program. This policy applies to the (1) lending of securities owned by the Fund in separately managed account portfolios (the "Securities Lending" of the Program) and (2) reinvestment of the cash collateral posted as a result of Securities Lending (the "Reinvestment Side" of the Program).

II. ROLES AND RESPONSIBILITIES

The Board approves the engagement with one or more Lending Agents. Roles and Responsibilities related to the Program otherwise not identified herein are identified within PSERS' Investment Policy Statement ("IPS").

III. PROGRAM APPROACH

The Program actively lends securities and reinvests cash collateral proceeds with agreed upon terms and conditions to enhance the Fund's total earnings incrementally where market conditions permit reasonable profitability, doing so in a manner that does not interfere with the management of PSERS' portfolios and does not expose PSERS to meaningful additional risk.

Borrowers shall provide liquid collateral in exchange for the right to borrow securities consistent with the Program and established guidelines. The Lending Agent will invest cash collateral consistent with the Program and established guidelines.

IV. LENDABLE ASSETS

Publicly traded assets held in separate accounts in the Fund are eligible for Securities Lending activities. The Board or IOP may restrict lending for corporate governance, investment management, or other purposes.

V. RISK MANAGEMENT

The Program shall operate under written guidelines and governing documents approved by the CIO and the Lending Agent(s) that are designed to ensure the Program pursues its return objective within the acceptable risk parameters.

The Maximum Program Size will be recommended by the Allocation Implementation Committee ("AIC") and approved by the CIO. The size of the Program is determined as the total amount of cash collateral outstanding at any one time as a result of Securities Lending.

VI. MONITORING AND REPORTING

The IO will review the investments and operations of the Program on-going and monitor compliance with the contract no less than annually. The Investment Committee of the Board ("IC") will receive a report, no less than annually, regarding performance of the Program and any exceptions or adjustments to the Program.

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Tail Risk Mitigation Strategy Policy

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Revision History

Tail Risk Mitigation Strategy Established	**November 12, 2020**
Policy Revised	**March 5, 2021**
Policy Revised **Budget Increase from 12.5 bps to 25 bps is effective July 1, 2022**	**March 15, 2022**
Policy Revised	**May 31, 2024**

I. SCOPE

This Policy applies to investments in the Tail Risk Mitigation Strategy ("Strategy") within the Pennsylvania, Public School Employees' Retirement System ("PSERS") Defined Benefit Fund ~~("The~~ (the "Fund").

II. PURPOSE

This Policy provides the broad strategic framework for managing investments in the ~~Tail Risk Mitigation~~ Strategy.

III. ROLES AND RESPONSIBILITIES

Roles and Responsibilities related to this Policy are identified within PSERS' Investment Policy Statement ("IPS").

IV. INVESTMENT PHILOSOPHY

The Fund has significant broad-based equity risk exposure from the Target Asset Allocation depicted in the IPS. As a result of this exposure, the Fund is expected to suffer losses during severe equity drawdowns. This is known as left tail risk or simply tail risk. Left tail risk events are known to be larger and occur more frequently than predicted by a normal distribution.

Over long-term investment holding periods diversified portfolios generally provide better risk-adjusted returns than less diversified portfolios. A potential consequence of greater diversification is relying upon lower historical correlations among the underlying assets. During periods of severe equity market stress, the correlations of most assets tend to increase; therefore, increasing expected losses given the increase in forecast risk.

In the Investment Philosophy section of the IPS (section V.), belief statement 4. Risk states that (i) the path of compounding of returns over time matters, (ii) drawdown risk should be mitigated, and (iii) liquidity should be managed to reasonably ensure that the fund can meet its obligations during periods of market dislocations. The ~~Tail Risk Mitigation~~ Strategy is intended and expected to help with each of these belief statements by providing significant payoffs in such equity drawdowns. ~~Tail Risk Mitigation~~The Strategy supplements diversifying assets, such as Long Treasuries (Nominal Bonds), that generally provide a level of protection against equity market risk; however, ~~Tail Risk Mitigation~~the Strategy does so in a more explicit manner. The success of the Strategy necessitates that it be in place for the medium- to long-term.

As "insurance" against large equity drawdowns, there is an associated cost for this protection. It is the goal of the Investment Office ("IO") to minimize this cost through active management of the Strategy while providing the greatest payoff in the event of a severe equity market decline. It is the objective of the IO to manage the ~~Tail Risk Mitigation~~ Strategy actively, systematically, and transparently. Management fees, trading costs, and other expenses will be monitored and controlled.

V. ALLOCATION

PSERS will allocate a fixed annual budget ("Budget") each fiscal year ~~budget~~ to ~~potential~~make investments in the ~~Tail Risk Mitigation~~ Strategy not to exceed 25 basis points (0.25%) of Fund Net Asset Value ("NAV~~") (defined as~~ "). The NAV shall be the amount calculated by Office of Financial Manament ("OFM") for June 15 of the prior fiscal year (or the next succeeding business day if June 15 is not a business day) that is provided to the IO by OFM in a daily e-mail entitled "Daily Pension Fund NAV *Investment Portfolio* as of dd.mm.yy". The NAV provided by OFM will be revised to reflect the NAV reported as "Pension Total Investments ~~per~~" in the Statements of Fiduciary Net Position in the audited financial statements~~) on an annual basis, where the NAV is determined at the beginning of each fiscal year. This is considered the Fund's Tail Risk Mitigation Strategy budget ("Budget"), and it~~ as of June 30. The Budget is expected to be applied as evenly as market circumstances permit. In certain market environments, the desired level of protection may not be achievable given the fixed nature of the Budget; conversely it may not be necessary to spend the entire Budget to achieve the desired level of protection.

The desired level of protection is a function of the Target Asset Allocation and how those capital allocations result in Public Market Equity risk, which can be determined explicitly by the IO and/or by a third-party provider. Most asset classes have some exposure (positive or negative) to Public Market Equities. The aggregate (summation) of these allocation weights multiplied by their exposure to Public Market Equities results in the Plan's Public Market Equities risk exposure ("Public Market Equity Beta"). The goal of the ~~Tail Risk Mitigation~~ Strategy is to focus on the contribution of the Plan's Public Market allocations to Public Market Equity Beta.

In general terms, the Plan's estimated Public Market Equity Beta has been between 50% and 60%, which has been approximately evenly split between Public and Private Markets. This means that the Plan's estimated Public Market Equity Beta contributed by Public Markets allocations has been between 25% and 30% – this represents the proportion of the Plan that the Strategy seeks to protect, which is defined as the desired level of protection. Note, an estimated Public Market Equity Beta contributed by Public Markets allocations of between 25% and 30% means that for each +/-1% move in the Public Market Equity index, it is expected for the value of the Plan's assets to move by between +/-0.25% and +/-0.30%, all else equal. At the Budget amount defined in this Policy, it is expected that the program can generally hedge half of the Public Market Equity beta contributed by public markets.

The ~~Tail Risk Mitigation~~ Strategy is intended to be diversified between externally managed and internally managed ~~approaches~~mandates. The CIO ~~may exercise~~shall have full discretion in ~~building toward a target~~ determining the allocation ~~for both~~to internally and externally managed mandates ~~of 50% of the approved Strategy budget. If~~; provided that if the CIO would like to allocate in excess of 50% of the Strategy budget to ~~either internal or external~~internally managed mandates, it shall be voted by Resolution of the Board.

VI. PERMISSIBLE INSTRUMENTS

Externally managed ~~Tail Risk Mitigation~~ Strategy assets may be invested in options on a variety of traditional asset classes including, but not limited to, global equity, global fixed income, credit, and commodities. While the use of non-equity instruments or other instruments that are volatility based may increase basis risk (using historical relationships), they may be available at a lower cost than equity instruments and produce a similar amount of expected protection. Assets may also be invested in a variety of less traditional asset classes such as equity volatility and equity variance (the most well known of which is the VIX volatility index~~),~~ (the "VIX"), provided there is sufficient liquidity. Instruments used may be exchange-traded or over-the-counter and may be physical securities or derivatives (see Derivatives and Leverage Policy), although significant preference will be given to exchange-traded instruments.

The internally managed ~~Tail Risk Mitigation~~ Strategy budget will generally be used to purchase exchange-traded equity index put options and equity volatility index call options as means of protecting against severe equity market drawdowns. The use of options on other asset classes is expected to be minimal in volume and frequency, generally occurring only during periods of abnormally high market volatility. Instruments including, but not limited to, equity index futures and VIX futures can be used to synthetically close or hedge option positions. Additional constraints may be applied in investment manager portfolio guidelines or comparable governing documents.

VII. PERFORMANCE OBJECTIVES

The ~~Tail Risk Mitigation~~ Strategy is designed to provide a large payoff in the event of severe equity market drawdowns. As the timing and potential path of future market events are impossible to predict in advance, the IO will attempt to construct a strategy portfolio that will provide protection in a wide variety of adverse market environments.

In most years, it is expected that the ~~Tail Risk Mitigation~~ Strategy will not provide a payoff in excess of its annual budget. Importantly, the maximum loss in any year is the annual budget; losses will not exceed this budget.

There is a lack of consensus among market participants as to the most appropriate benchmark for ~~Tail Risk Mitigation Strategies~~tail risk mitigation strategies, since objectives can differ significantly among participants. For example, some participants may prefer to hedge a longer-term less severe market loss at a much greater cost of protection than that of a shorter-term more severe market loss at a lower cost of protection.

In very broad terms, the ~~benchmark~~payoff profile for ~~PSERS'~~the Strategy will have the general contours of a 25% out-of-the-money put option on the S&P 500 with a 3 month expiry, where this protection is periodically rolled and systematically monetized in whole or in part after or amidst a severe equity market drawdown.

~~Aggregate performance of the Strategy will also be evaluated relative to the CBOE EurekaHedge Tail Risk Hedge Fund Index until such time when a benchmark that is more representative of the internal strategy is identified and approved by the Board. Although this index does not necessarily reflect the method of implementing the internally managed Tail Risk Strategy, it provides a basis for comparing the performance of PSERS' Strategy to a universe of funds with similar performance objectives.~~

For performance reporting purposes, the Strategy will be reflected as an independent line item within the PSERS Total Fund Composite. For the avoidance of doubt, the performance of the Strategy will not be reflected within Equity Exposure. In addition, the loss rate on invested assets will also be monitored and reported[1].[1]

An Investment Manager within the Strategy may be assigned a specific benchmark, and the specific benchmark, if assigned, may vary from Investment Manager to Investment Manager.

VIII. RISK MANAGEMENT

Risk is managed through a combination of quantitative and qualitative constraints. The following sub-sections identify the key risks within the Tail Risk Mitigation Strategy:

A. Active Risk

~~Active risk or Tracking Error is a statistical measure of the potential variability of a portfolio's return relative to that of the assigned benchmark. As managers may not be assigned a specific benchmark, Active Risk is difficult to quantify for the Strategy. However, while difficult to measure Active Risk relative to a specific benchmark, mandates may vary considerably in strategy and implementation, with significant active decision-making being taken at the manager's discretion. Therefore, it is expected that performance among Tail Risk Mitigation mandates may vary significantly.~~
The Strategy represents insurance against severe market drawdowns, and given the infrequency of such drawdowns, the performance of the Strategy is expected to be negative across most market environments. The extent of negative returns is constrained by the annual premium budget as explained above. The extent of any positive returns is uncertain and may vary significantly depending on the nature of the drawdown.

[1] This is intended to capture the percentage of dollars lost (gained) as a percentage of invested dollars over the period. i.e. If $50 million is invested during the reporting period and monetizing positions yields a $5 million gain and $20 million in principal recovery, the loss rate would be 50%.

B. Liquidity Risk

Investment structure impacts liquidity. Therefore, consideration is given to separate accounts and internally managed accounts over commingled accounts, given their greater control and transparency. Instruments will be liquid in order to monetize (lock-in) any payoff arising as a result of a large equity market drawdown. Significant preference will be given to instruments that trade in deep and highly liquid markets in order to reduce the likelihood that deteriorating market liquidity during a period of market stress will negatively impact trade execution quality.

C. Currency Risk

It is expected that investments within the ~~Tail Risk Mitigation~~ Strategy will be primarily U.S. Dollar based and that currency risk will not be a significant factor.

D. Manager Risk

The maximum allocation to a single External Manager mandate shall be ~~limited to half of~~determined at the ~~Fund's Tail Risk Mitigation Strategy budget.~~CIO's discretion. There may be allocations to multiple External Managers throughout the life of this Strategy. The CIO shall have discretion on the timing of reducing any External Manager portfolio exceeding the limit in order to manage the economic impact of such a change. However, the CIO is not permitted to allocate additional exposure to those portfolios currently above the limit. Investments should have clearly articulated and viable exit strategies through which assets can be disposed of or liquidated upon termination of any External Manager.

E. Derivatives Risk

Derivatives usage and limitations as well as risk management are specified in manager guidelines and shall comply with the Derivatives and Leverage Policy.

F. Counterparty Risk

Counterparty risk will be as prescribed and evaluated in the Derivatives and Leverage Policy. In general, the Strategy will seek to limit counterparty risk through the use of exchange-traded options as its primary instruments. Non-exchange traded instruments may be used on a limited basis in accordance with the Derivatives and Leverage Policy.

G. Leverage Risk

Leverage usage and limitations as well as risk management are specified in manager guidelines and shall comply with the Derivatives and Leverage Policy.

H. Portfolio Risk

A key component of managing the Strategy is actively monetizing the gains and redeploying the gains in other asset classes while maintaining some level of protection. Monetizing gains enables rebalancing, but may reduce the size of the hedge in order to do so; not monetizing preserves the size of the hedge, but risks losing all unrealized gains if the market rebounds. Some proportion of realized gains may be reinvested into purchasing protection at the discretion of the IO to help mitigate the risk of a reduction in hedge size.

IX. MONITORING AND REPORTING

See Monitoring and Reporting section of the IPS.

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Qualified Independent Representative (QIR) Policy

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Revision History

Qualified Independent Representative Established	**March 6, 2020**
Policy Revised	**June 11, 2021**
Policy Revised	**March 15, 2022**

Policy Revised May 31, 2024

I. SCOPE

This Policy applies to selection of qualified independent representatives ("QIRs") of the Pennsylvania, Public School Employees' Retirement System ("PSERS") in connection with its Defined Benefit Fund ("The Fund").

II. PURPOSE

This document sets forth the policy of PSERS with respect to the selection of qualified independent representatives ("QIRs") (as defined in the rules of the Commodity Futures Trading Commission ("CFTC")) and their involvement in swaps entered into by PSERS ("this Policy"). This Policy with respect to QIRs enables PSERS to permit Swap Dealers ("SDs") and Major Swap Participants ("MSPs") to comply with the CFTC's external business conduct rules.

III. ROLES AND RESPONSIBILITIES

A. Investment Office Professionals

The Investment Office ~~M~~maintains a list of ~~I~~individuals and/or third-party ~~identified in Exhibit B are~~ responsible for execution of tasks identified in this Policy.

IV. OBJECTIVES

A. Background.

Based on PSERS' classification as a non-ERISA Special Entity under CFTC Rule 23.401(c)(2) or (4), each SD or MSP that wishes to enter into swap agreements with PSERS must, as a consequence of CFTC Rule 23.450, and as a precondition to proposing a particular transaction to PSERS, have a reasonable basis to believe that PSERS has a qualified independent representative that:

1. has sufficient knowledge to evaluate the transaction and its risks;
2. is not subject to a statutory disqualification;
3. is independent of the SD or MSP;
4. undertakes a duty to act in the best interests of PSERS;
5. makes appropriate and timely disclosures to PSERS;
6. evaluates, consistent with any guidelines provided by PSERS, the fair pricing and appropriateness of the transaction; and
7. is subject to restrictions on certain political contributions imposed by the CFTC, the Securities and Exchange Commission ("SEC"), or a self-regulatory organization subject to the jurisdiction of the CFTC or the SEC; provided however, that this criteria shall not apply if the representative is an employee of PSERS.[1/]

1/ The CFTC's rules contemplate that a QIR for PSERS may be a PSERS employee or a third party.

CFTC Rule 23.450 further provides a safe harbor pursuant to which a SD or MSP is deemed (without further duty of inquiry in the absence of contradictory facts) to have a reasonable basis to believe that PSERS has a QIR if the following conditions are met:

1. PSERS represents in writing to the SD or MSP that:
   i. it has complied in good faith with written policies and procedures reasonably designed to ensure that it has selected a QIR that satisfies the applicable requirements of the CFTC rules, and
   ii. that such policies and procedures provide for ongoing monitoring of the performance of such QIR consistent with the requirements of the CFTC rules.
2. The QIR represents in writing to PSERS and any relevant SD or MSP that it:
   i. has policies and procedures reasonably designed to ensure that it satisfies the QIR requirement
   ii. meets the independence test in CFTC Rule 23.450; and
   iii. is legally obligated to comply with the requirements for being a QIR by agreement, condition of employment, law, rule, regulation, or other enforceable duty.

B. QIR Qualifications.

No person may act as a QIR for PSERS unless such person meets the following qualifications:

1. Such person has sufficient knowledge to evaluate the risks, fair pricing and appropriateness of swaps consistent with PSERS' Investment Policy Statement;
   i. If such person is a legal entity:
   ii. it does not own 10% or more of the capital of any SD or MSP; and
2. no SD or MSP owns 10% or more of the capital of such person.

Such person is not directly or indirectly, through one or more persons, controlled by, in control of, or under common control with an SD or MSP.

Such person has not solicited or accepted orders (or supervised persons so engaged) on behalf of an SD or MSP within one year of its proposed designation as a QIR.

Such person was not referred, recommended or introduced to PSERS by a SD or MSP within one year of its proposed designation as a QIR.

Such person is not subject to a statutory disqualification.[2]

Such person discloses all material conflicts of interest that could reasonably affect its judgment or decision making for PSERS and complies with policies and procedures designed to mitigate such conflicts of interest.

The compensation of the QIR is not contingent on the execution by PSERS of a specific swap with a particular swap dealer.

If such person is not an employee of PSERS, he, she or it must be subject to restrictions on political contributions imposed by the CFTC, the SEC or a self-regulatory organization subject to the jurisdiction of the CFTC or the SEC.

C. QIR Policy.

~~The person(s) listed on Exhibit B are hereby designated as the QIR(s) for PSERS.~~ The Investment Office maintains a list of individuals and/or third-party designated as the QIR(s) for PSERS.

The QIR is hereby authorized as part of his or her employment duties to make, if true, the QIR representations necessary to enable a SD or MSP to have the benefit of the safe harbor in CFTC Rule 23.450.

With respect to any swap required to be approved by the QIR, the QIR must evaluate the risks, fair pricing and appropriateness of the swap, and ensure that the swap complies with all requirements set forth in the PSERS Derivatives Policy.

With respect to any Swap previously approved by a QIR, the relevant QIR must monitor the performance of the Swap.

The QIR must act in the best interests of PSERS, and must disclose all material conflicts of interest that could reasonably affect his or her judgment or decision making on behalf of PSERS in a timely manner.

The QIR must inform PSERS if it becomes subject to a statutory disqualification or otherwise ceases to have the qualifications to be a QIR set forth in this Policy.

PSERS will assess the QIR's compliance with this Policy on an ongoing basis.

See Exhibit A attached hereto.

EXHIBIT A

The following provisions of Section 8a(2) and (3) of the Commodity Exchange Act set forth the circumstances under which a person may be deemed to be subject to statutory disqualification by the CFTC

(2) upon notice, but without a hearing and pursuant to such rules, regulations, or orders as the Commission may adopt, to refuse to register, to register conditionally, or to suspend or place restrictions upon the registration of, any person and with such a hearing as may be appropriate to revoke the registration of any person—

(A) if a prior registration of such person in any capacity has been suspended (and the period of such suspension has not expired) or has been revoked;

(B) if registration of such person in any capacity has been refused under the provisions of paragraph (3) of this section within five years preceding the filing of the application for registration or at any time thereafter;

(C) if such person is permanently or temporarily enjoined by order, judgment, or decree of any court of competent jurisdiction (except that registration may not be revoked solely on the basis of such temporary order, judgment, or decree), including an order entered pursuant to an agreement of settlement to which the Commission or any Federal or State agency or other governmental body is a party, from

(i) acting as a futures commission merchant, introducing broker, floor broker, floor trader, commodity trading advisor, commodity pool operator, associated person of any registrant under this chapter, securities broker, securities dealer, municipal securities broker, municipal securities dealer, transfer agent, clearing agency, securities information processor, investment adviser, investment company, or affiliated person or employee of any of the foregoing or

(ii) engaging in or continuing any activity where such activity involves embezzlement, theft, extortion, fraud, fraudulent conversion, misappropriation of funds, securities or property, forgery, counterfeiting, false pretenses, bribery, gambling, or any transaction in or advice concerning contracts of sale of a commodity for future delivery, concerning matters subject to Commission regulation under section 4 or 19 of this Act, or concerning securities;

(D) if such person has been convicted within ten years preceding the filing of the application for registration or at any time thereafter of any felony that

(i) involves any transactions or advice concerning any contract of sale of a commodity for future delivery, or any activity subject to Commission regulation under section 4 or 19 of this Act, or concerning a security,

(ii) arises out of the conduct of the business of a futures commission merchant, introducing broker, floor broker, floor trader, commodity trading advisor, commodity pool operator, associated person of any registrant under this Act, securities broker, securities dealer, municipal securities broker, municipal securities dealer, transfer agent, clearing agency, securities information processor, investment adviser, investment company, or an affiliated person or employee of any of the foregoing,

(iii) involves embezzlement, theft, extortion, fraud, fraudulent conversion, misappropriation of funds, securities or property, forgery, counterfeiting, false pretenses, bribery, or gambling, or

(iv) involves the violation of section 152, 1001, 1341, 1342, 1343, 1503, 1623, 1961, 1962, 1963, or 2314, or chapter 25, 47, 95, or 96 of title 18, United States Code, or section 7201 or 7206 of the Internal Revenue Code;

(E) if such person, within ten years preceding the filing of the application or at any time thereafter, has been found in a proceeding brought by the Commission or any Federal or State agency or other governmental body, or by agreement of settlement to which the Commission or any Federal or State agency or other governmental body is a party,

(i) to have violated any provision of this chapter, the Securities Act of 1933 [15 U.S.C. 77a et seq.], the Securities Exchange Act of 1934 [15 U.S.C. 78a et seq.], the Public Utility Holding Company Act of 1935, the Trust Indenture Act of 1939 [15 U.S.C. 77aaa et seq.], the Investment Advisers Act of 1940 [15 U.S.C. 80b–1 et seq.], the Investment Company Act of 1940 [15 U.S.C. 80a–1 et seq.], the Securities Investors Protection Act of 1970 [15 U.S.C. 78aaa et seq.], the Foreign Corrupt Practices Act of 1977, chapter 96 of title 18, or any similar statute of a State or foreign jurisdiction, or any rule, regulation, or order under any such statutes, or the rules of the Municipal Securities Rulemaking Board where such violation involves embezzlement, theft, extortion, fraud, fraudulent conversion, misappropriation of funds, securities or property, forgery, counterfeiting, false pretenses, bribery, or gambling, or

(ii) to have willfully aided, abetted, counseled, commanded, induced, or procured such violation by any other person;

(F) if such person is subject to an outstanding order of the Commission denying privileges on any registered entity to such person, denying, suspending, or revoking such person's membership in any registered entity or registered futures association, or barring or suspending such person from being associated with a registrant under this chapter or with a member of a registered entity or with a member of a registered futures association;

(G) if, as to any of the matters set forth in this paragraph and paragraph (3), such person willfully made any materially false or misleading statement or omitted to state any material fact in such person's application or any update thereto; or

(H) if refusal, suspension, or revocation of the registration of any principal of such person would be warranted because of a statutory disqualification listed in this paragraph:

Provided, that such person may appeal from a decision to refuse registration, condition registration, suspend, revoke or to place restrictions upon registration made pursuant to the provisions of this paragraph in the manner provided in sections 9 and 15 of this title; and

Provided, further, that for the purposes of paragraphs (2) and (3) of this section, "principal" shall mean, if the person is a partnership, any general partner or, if the person is a corporation, any officer, director, or beneficial owner of at least 10 per centum of the voting shares of the corporation, and any other person that the Commission by rule, regulation, or order determines has the power, directly or indirectly, through agreement or otherwise, to exercise a controlling influence over the activities of such person which are subject to regulation by the Commission;

(3) to refuse to register or to register conditionally any person, if it is found, after opportunity for hearing, that –

(A) such person has been found by the Commission or by any court of competent jurisdiction to have violated, or has consented to findings of a violation of, any provision of this chapter, or any rule, regulation, or order thereunder (other than a violation set forth in paragraph (2) of this section), or to have willfully aided, abetted, counseled, commanded, induced, or procured the violation by any other person of any such provision;

(B) such person has been found by any court of competent jurisdiction or by any Federal or State agency or other governmental body, or by agreement of settlement to which any Federal or State agency or other governmental body is a party,

(i) to have violated any provision of the Securities Act of 1933 [15 U.S.C. 77a et seq.], the Securities Exchange Act of 1934 [15 U.S.C. 78a et seq.], the Public Utility Holding Company Act of 1935, the Trust Indenture Act of 1939 [15 U.S.C. 77aaa et seq.], the Investment Advisers Act of 1940 [15 U.S.C. 80b-1 et seq.], the Investment Company Act of 1940 [15 U.S.C. 80a-1 et seq.], the Securities Investors Protection Act of 1970 [15 U.S.C. 78aaa et seq.], the Foreign Corrupt Practices Act of 1977, or any similar statute of a State or foreign jurisdiction, or any rule, regulation, or order under any such statutes, or the rules of the Municipal Securities Rulemaking Board or

(ii) to have willfully aided, abetted, counseled, commanded, induced, or procured such violation by any other person;

(C) such person failed reasonably to supervise another person, who is subject to such person's supervision, with a view to preventing violations of this chapter, or of any of the statutes set forth in subparagraph (B) of this paragraph, or of any of the rules, regulations, or orders thereunder, and the person subject to supervision committed such a violation: Provided, That no person shall be deemed to have failed reasonably to supervise another person, within the meaning of this subparagraph if:

> **(i)** there have been established procedures, and a system for applying such procedures, which would reasonably be expected to prevent and detect, insofar as practicable, any such violation by such other person and
>
> **(ii)** such person has reasonably discharged the duties and obligations incumbent upon that person, as supervisor, by reason of such procedures and system, without reasonable cause to believe that such procedures and system were not being complied with;

(D) such person pleaded guilty to or was convicted of a felony other than a felony of the type specified in paragraph (2)(D) of this section, or was convicted of a felony of the type specified in paragraph (2)(D) of this section more than ten years preceding the filing of the application;

(E) such person pleaded guilty to or was convicted of any misdemeanor which:

> **(i)** involves any transaction or advice concerning any contract of sale of a commodity for future delivery or any activity subject to Commission regulation under section 6c or 23 of this title or concerning a security,
>
> **(ii)** arises out of the conduct of the business of a futures commission merchant, introducing broker, floor broker, floor trader, commodity trading advisor, commodity pool operator, associated person of any registrant under this chapter, securities broker, securities dealer, municipal securities broker, municipal securities dealer, transfer agent, clearing agency, securities information processor, investment adviser, investment company, or an affiliated person or employee of any of the foregoing,
>
> **(iii)** involves embezzlement, theft, extortion, fraud, fraudulent conversion, misappropriation of funds, securities or property, forgery, counterfeiting, false pretenses, bribery, or gambling,
>
> **(iv)** involves the violation of section 152, 1341, 1342, or 1343 or chapter 25, 47, 95, or 96 of title 18, or section 7203, 7204, 7205, or 7207 of title 26;

(F) such person was debarred by any agency of the United States from contracting with the United States;

(G) such person willfully made any materially false or misleading statement or willfully omitted to state any material fact in such person's application or any update thereto, in any report required to be filed with the Commission by this chapter or the regulations thereunder, in any proceeding before the Commission or in any registration disqualification proceeding;

(H) such person has pleaded *nolo contendere* to criminal charges of felonious conduct, or has been convicted in a State court, in a United States military court, or in a foreign court of conduct which would constitute a felony under Federal law if the offense had been committed under Federal jurisdiction;

(I) in the case of an applicant for registration in any capacity for which there are minimum financial requirements prescribed under this chapter or under the rules or regulations of the Commission, such person has not established that such person meets such minimum financial requirements;

(J) such person is subject to an outstanding order denying, suspending, or expelling such person from membership in a registered entity, a registered futures association, any other self-regulatory organization, or any foreign regulatory body that the Commission recognizes as having a comparable regulatory program or barring or suspending such person from being associated with any member or members of such registered entity, association, self-regulatory organization, or foreign regulatory body;

(K) such person has been found by any court of competent jurisdiction or by any Federal or State agency or other governmental body, or by agreement of settlement to which any Federal or State agency or other governmental body is a party,

> **(i)** to have violated any statute or any rule, regulation, or order thereunder which involves embezzlement, theft, extortion, fraud, fraudulent conversion, misappropriation of funds, securities or property, forgery, counterfeiting, false pretenses, bribery, or gambling or
>
> **(ii)** to have willfully aided, abetted, counseled, commanded, induced or procured such violation by any other person;

(L) such person has associated with such person any other person and knows, or in the exercise of reasonable care should know, of facts regarding such other person that are set forth as statutory disqualifications in paragraph (2) of this section, unless such person has notified the Commission of such facts and the Commission has determined that such other person should be registered or temporarily licensed;

(M) there is other good cause; or

(N) any principal, as defined in paragraph (2) of this section, of such person has been or could be refused registration:

Provided, that pending final determination under this paragraph, registration shall not be granted: Provided further, That such person may appeal from a decision to refuse registration or to condition registration made pursuant to this paragraph in the manner provided in sections 9 and 15 of this title.

~~EXHIBIT B~~

~~Thomas A. Bauer~~
~~Robert Devine~~
~~Christopher Jones~~
~~Susan Oh~~
~~Christopher Baker~~
~~Jeffrey Burton~~
~~Mike Kondas~~

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Public Markets Asset Class Policy

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Revision History

Public Markets Asset Class Policy	**March 22, 2024**

This Policy represents the combination of the following six policies which were last approved by the Board on the dates below:
- Public Equity (March 5, 2021)
- Public Fixed Income (March 5, 2021)
- Public Commodities (March 5, 2021)
- Public Infrastructure (March 5, 2021)
- Public Real Estate (March 5, 2021)
- Absolute Return (March 15, 2022)

Public Markets Asset Class Policy	**May ~~XX,~~31, 2024**

This Policy revision integrates the Cash Policy (March 6, 2020).

I. SCOPE

The Public Markets Asset Class Policy ("Policy") applies to investments within the Public Equity, Public Fixed Income, Public Commodities, Public Real Estate, Public Infrastructure, ~~and~~ Absolute Return, and Cash asset classes (the "Portfolios") within the Pennsylvania, Public School Employees' Retirement System ("PSERS") Defined Benefit Fund (the "Fund").

II. PURPOSE

This Policy provides a broad strategic investment framework for managing investments within the Portfolios.

III. ROLES AND RESPONSIBILITIES

Roles and Responsibilities related to this Policy are identified within PSERS' Investment Policy Statement ("IPS").

IV. INVESTMENT PHILOSOPHY

PSERS seeks to diversify its assets by providing exposure to investments in public markets as part of the overall investable universe. Additionally, when compared to other investable opportunities, investments in public markets have relatively low investment management fees and are generally more liquid, with relatively low transaction costs and market impact from entering and exiting investments. This liquidity allows for increased flexibility to (i) rebalance portfolios, (ii) address market conditions and market dislocations, and (iii) implement the strategic objectives of the Fund.

Portfolios target attractive risk-adjusted returns relative to their benchmarks, net of fees, over a full market cycle. The benchmark for each Portfolio is identified within the IPS.

To maintain diversification within each Portfolio and/or across the Portfolios as a whole, PSERS pursues a global investment strategy that may incorporate various strategies, styles, regions, sectors, market capitalization segments, underlying asset types, and internal and external management.

Investments in each Portfolio may be implemented through closed-end funds, partnerships, limited liability companies, open-end funds, and separate accounts, and co-investments.

Each asset class in Public Markets plays a strategic role within the Fund as follows:

Public Equity investments are expected to provide a return premium over inflation, thereby preserving and enhancing the real value of the Fund, and by performing well when economic growth is stronger than expected or inflation is lower than expected.

Public Fixed Income has a number of sub- asset classes. Investment grade bonds are anticipated to serve as a hedge against lower inflation and weak economic growth, produce current income in the form of periodic interest payments, and provide liquidity to meet the Fund's obligations. Inflation-protected bonds serve as a hedge against higher inflation and weaker economic growth and provide liquidity. Credit-related securities such as emerging market debt and high yield bonds generate higher current income relative to investment grade debt and tend to do well when economic growth is stronger than expected.

Public Commodities typically provide a hedge against unanticipated inflation and diversification benefits. Commodity investments consist of energy, precious metals, industrial metals, and agricultural products. The prices of commodities are determined primarily by near-term events in global supply and demand conditions and are positively related with both the level of inflation and changes in the rate of inflation.

Public Real Estate generally provides steady returns and cash yields, inflation protection, defensive growth, capital preservation, liquidity and diversification benefits.

Public Infrastructure generally provides steady returns and cash yields, defensive growth, inflation protection, capital preservation, liquidity and diversification benefits. Public Infrastructure investments target stable, defensive investments with steady cash flows primarily within the energy, power, water, and transportation sectors.

Cash as an asset class, which excludes cash collateral managed per the Securities Lending Policy, provides liquidity to the Fund for the timely payment of benefits, commitments, and other obligations in addition to being a source of liquidity for asset allocation changes as a result of market dislocations. The majority of the assets are highly liquid, short duration, fixed income instruments managed consistent with rules governing money market funds (SEC Rule 2a7). A small portion of these fixed income assets fall outside of these parameters to provide enhanced risk adjusted returns and diversification to the overall Fund. These assets are referred to as Enhanced Cash.

V. ASSET ALLOCATION

The IPS details allocation targets and permissible ranges around targets for investments in the following Public Markets asset classes and sub-asset classes, along with defining (via benchmarks) each asset class:

Public Equity
- U.S. Equity
- Non-U.S. Equity

Public Fixed Income

- Investment Grade
- Credit-Related
- Inflation-Protected

Public Real Assets

- Public Infrastructure
- Public Commodities
- Public Real Estate

Net Leverage

- Cash

Absolute Return includes strategies that do not otherwise correspond to the other allocations described above.

Allocations may include strategies ranging from fully broadly diversified, passive to concentrated, actively managed strategies, implemented internally and externally. Active management seeks to produce risk-adjusted returns in excess of the benchmark, net of expenses. Passive management aims to replicate an index at minimal cost and minimal tracking error.

VI. PERMISSIBLE INSTRUMENTS

Investments in Public Markets assets shall be in financial instruments that provide the desired asset class returns with a similar risk profile. Instruments used may be exchange-traded or non-exchange-traded and may be physical securities or derivatives (see Derivatives and Leverage Policy).

Additional constraints may be applied in the investment manager portfolio guidelines.

VII. PERFORMANCE OBJECTIVES

Each asset class and sub-asset class is designed to match or outperform its respective benchmark over the long term, while operating within the risk parameters set forth in this Policy.

The performance benchmark for each asset class or sub-asset class is shown in the IPS. A manager may be assigned a benchmark that is different than the asset class or sub-asset class benchmark shown in the IPS if the manager's mandate is to one or more specific regions, sectors, market capitalization segments, and/or other benchmark component.

VIII. RISK MANAGEMENT

The primary approach to managing risk is to monitor key quantitative and qualitative risk factors relative to risk benchmarks while continuing to pursue the objective of the respective strategy, asset class, or sub-asset class. The following sections identify certain significant risks of investments in Public Markets and their methods of control.

A. Active Risk

Active Risk or tracking error is a statistical measure of the potential variability of a portfolio's return relative to that of the assigned benchmark. For purposes of this Policy, tracking error is defined as ex-post tracking error calculated as the annualized standard deviation of monthly returns relative to the benchmark over the last 36 months.

The following table provides the expected ranges for tracking error.

Note that tracking error, by design and computation, cannot encompass 100% of the expected outcomes for an asset class, sub-asset class, or specific investment manager mandate. Instances of realized tracking error in excess of these ranges shall not be considered a policy violation, but rather an indication of market events to be communicated to the Investment Committee through the established reporting channels.

Asset or Sub-Asset Class	**Tracking Error Range Expectation (bps)**	**Single Active External Manager Allocation Limit (% of Fund NAV**)**

Public Equity		
US Equity	0-150	3.0%
Non-US Equity	0-400	2.0%
Global Equity*	0-250	3.0%
Public Fixed Income		
Investment Grade		
U.S. Core Fixed	0-300	3.0%
U.S. Long Treasury	0-50	3.0%
Credit Related		
Emerging Markets Debt	0-800	2.0%
High Yield Bonds	0-700	2.0%
Inflation Protected		
U.S. Inflation Protected	0-250	3.0%
Public Commodities		
Diversified Commodities	0-400	2.0%
Gold	0-50	NA
Public Real Estate	0-250	2.0%
Public Infrastructure	0-250	2.0%
Absolute Return	NA	1.5%
Cash and Enhanced Cash Composite	~~0-75~~	NA
Cash	0-75	
Enhanced Cash	0-150	

* The Global Equity tracking error range expectation is only applicable if the IPS benchmark for Public Equity changes from the combination of US Equity and Non-US Equity to Global Equity. If this occurs, then the US Equity and Non-US Equity tracking error range expectations are not applicable.
**Fund NAV is the Total Fund Net Asset Value, as sourced from the most recent finalized Total Fund Report.

B. Liquidity Risk

Liquidity limits shall be defined in manager guidelines where applicable and are to be consistent with the Liquidity Policy.

Enhanced Cash shall not exceed the lower of ~~30%~~ ~~or~~ $1.0 billion or the amount equal to 30% of the combined Cash and Enhanced Cash Composite.

C. Single Security, Sector / Industry, and Country Risk

Single security, sector / industry, and country concentration limits shall be defined in the manager guidelines where applicable.

D. Currency Risk

Some asset classes and sub-asset classes hold non-US dollar denominated instruments which involves risk related to foreign currency exposure. Managers of these strategies generally do not hedge currency risk. Currency risk will be managed by PSERS in accordance with the Currency Hedging Policy.

E. Manager Risk

The allocation to a single active External Manager mandate, within each asset class, is limited on an ongoing basis to a percentage of the Fund's NAV as shown in the table above in Section VIII. A.

The allocation to a single External Manager of a passive exposure, including the directed beta overlay program, is not subject to the concentration limits above but shall be limited by Board Resolution.

The CIO shall have discretion on the timing and reduction of any External Manager exposure exceeding the limit and will communicate any such over-allocation to the Board. Lastly, the CIO is not permitted to allocate additional exposure to portfolios with allocations above the limit.

F. Derivatives Risk

Derivatives usage and limitations as well as risk management are specified in manager guidelines and shall comply with the Derivatives and Leverage Policy.

G. Counterparty Risk

Counterparty risk will be as prescribed and evaluated in the Derivatives and Leverage Policy.

H. Leverage Risk

Leverage usage and limitations as well as risk management controls are specified in manager guidelines and shall comply with the Derivatives and Leverage Policy.

I. Proxy Voting

Proxy votes are considered assets of PSERS. All proxies received shall be voted in accordance with the Proxy Voting ~~Policies~~Policy.

J. Interest Rate Risk

Interest rate risk shall be addressed and monitored in the manager guidelines where applicable.

K. Credit Risk

Credit risk shall be addressed and monitored in the manager guidelines where applicable.

L. Delivery Risk

In investing in Public Commodities, there is the risk of a commodity asset being subject to delivery to the Fund upon the expiration of commodities futures contracts, resulting in the need for storage/warehousing of the asset. All Public Commodity investments will be managed and monitored so as to not result in delivery of the physical commodity.

IX. MONITORING AND REPORTING

See Monitoring and Reporting section of the IPS.

COMMONWEALTH OF PENNSYLVANIA
PUBLIC SCHOOL EMPLOYEES' RETIREMENT SYSTEM

Derivatives and Leverage Policy

TABLE OF CONTENTS

Revision History

Derivatives Policy Established	**March 6, 2020**
Leverage Policy Established	**March 6, 2020**
Policy Revised	**March 5, 2021**
Policies Revised and Combined	**May 31, 2024**

I. SCOPE

This Policy applies to the use of derivatives and leverage within the Pennsylvania, Public School Employees' Retirement System ("PSERS") Defined Benefit Fund (the "Fund").

II. PURPOSE

This Policy provides the broad strategic framework for managing the Fund's use of derivatives and leverage. Derivatives and leverage shall only be used to manage asset and risk exposures consistent with PSERS' Investment Policy Statement ("IPS"), inclusive of this Policy and other approved Investment Policies.

III. ROLES AND RESPONSIBILITIES

Roles and Responsibilities related to this Policy are identified within the IPS.

IV. PHILOSOPHY

Derivatives are financial instruments the value of which is derived, in whole or part, from the value of any one or more underlying securities or assets, or index of securities or assets (such as bonds, stocks, financial commodities, and currencies).

Leverage is a condition in which the economic or market exposure of an investment exceeds the total capital deployed. The use of leverage on a single asset or asset class will amplify profits or losses on a given amount of capital, thereby increasing the volatility of returns, although leverage as part of a portfolio construct does not necessarily create additional market risk or variation in market returns.

Derivatives and leverage can be effective tools to manage asset exposures and risks in a prudent, timely, efficient, and cost-effective manner. For example, they can be used to improve portfolio diversification and reduce portfolio concentration, for implementation efficiency (i.e., speed of trade execution and lower cost), to achieve exposures that are better achieved than with physical securities, to hedge currency, to manage interest rate risk, to rebalance, and for other similar purposes.

The use of derivatives and leverage for speculative purposes is not allowed. Derivatives and leverage are considered speculative if their use is inconsistent with the IPS and its supporting Policies, portfolio guidelines, or any other governing documents.

V. PERMITTED DERIVATIVES INSTRUMENTS

PSERS may invest in the following derivative instruments, subject to specific guidelines assigned to each separately managed portfolio: futures contracts; options; options on futures contracts; forward contracts; swap agreements, including swap contracts with embedded options; and any instrument or contract intended to manage transaction or currency exchange risk in purchasing, selling or holding investments.

Derivatives are grouped into two categories defined by PSERS as follows:

- Category A derivatives are cleared instruments. An example of a Category A derivative is a futures contract on the S&P 500. Common characteristics of Category A derivatives are that they are generally standardized instruments which are exchange-traded, cleared through a clearinghouse, and subject to regulation.

- Category B derivatives are non-cleared instruments. These are often also known as OTC (over the counter) derivatives. An example of a Category B derivative is a total return swap on an equity index. These types of derivatives are customized, rather than standardized, for the parties engaged in a transaction not cleared through a clearinghouse.

VI. PERMITTED TYPES OF LEVERAGE

There are two permitted types of leverage:

- Asset Allocation Leverage, also known as Explicit Leverage, is economic exposure in excess of capital for asset allocation purposes. Asset Allocation Leverage may be deployed within any Public Markets asset class and only in separate accounts. In the Asset Allocation section of the IPS, Asset Allocation Leverage is known as Explicit Leverage. Net Leverage is defined as the sum of the allocation to Cash and the allocation to Explicit Leverage (where the allocation to Explicit Leverage is expressed as a negative number). Net Leverage is bounded by a Policy Range as stipulated in the IPS.

- Strategy Leverage is defined as economic exposure in excess of capital for purposes of achieving the target return-risk characteristics of a specific fund, portfolio, or strategy. Strategy Leverage can be taken in separate accounts and fund structures as limited by each separate account portfolio's guidelines or governing fund documentation.

Illustrative Example of Asset Allocation Leverage (Explicit Leverage)

- $72 billion in the Fund
- $6 billion in exposure from total return swaps across a variety of asset classes such as Gold, Commodities, TIPS, REITs, and Public Infrastructure
- $1.5 billion of that $6 billion in exposure is backed by assets

- $5 billion of Cash that is not encumbered but available for investments and benefit payments
- Asset Allocation Leverage is the remaining $4.5 billion of that $6 billion in exposure
- Net Leverage is $0.5 billion, which equals the $5 billion of Cash less $4.5 billion of Asset Allocation Leverage

Illustrative Example of Strategy Leverage

- $1.2 billion in an actively managed, internally managed Core Fixed Income portfolio
- Portfolio in aggregate has longer interest rate duration than the benchmark
- To bring the duration of the portfolio in line with that of the benchmark, the portfolio manager enters into an interest rate hedge with $200 million in notional exposure
- Economic exposure is $1.4 billion
- Strategy Leverage is $200 million

The Investment Office is authorized to use the following as permitted by applicable law in order to create Asset Allocation Leverage or Strategy Leverage:

- Derivatives strategies in accordance with the risk parameters established by the asset allocation ranges of the IPS and applicable legal restrictions
- Short sales via derivatives
- Currency hedging in accordance with the IPS and the Currency Hedging Policy
- Embedded leverage within a non-recourse fund structure
- Collateralized fundings including securities lending activities, pledges, repurchase and reverse repurchase agreements and other external funding mechanisms.

Borrowings by the Fund through the incurrence or issuing of debt under a line of credit, pension obligation bond, or other similar facility, shall not be permitted without the prior approval of the Investment Committee.

VII. RISK MANAGEMENT

The primary approach to managing risks associated with derivatives and leverage is to establish and monitor both qualitative and quantitative constraints and through usage of standardized processes. Risks include:

A. Market Risk

Market risk may result when market conditions develop differently than expected, when there are mismatches between actual market exposure and the market exposure obtained from the derivative, and when market or economic exposure is greater than capital invested. These risks are primarily mitigated through tracking error constraints, gross notional exposure limits, or other limits and constraints, as defined in the IPS, applicable portfolio guidelines, or other account level governing documents.

B. Counterparty Risk

Counterparty risk is the risk that the other party in an investment, credit, or trading transaction may not fulfill its part of the transaction and may default on its contractual obligations. Derivative counterparty risk resides primarily in Category B derivatives (i.e., OTC derivatives) and is managed as follows:

- Counterparty (or its parent guarantor if the counterparty itself is an unrated subsidiary) must be rated at least BBB- or Baa3 by at least two of the nationally recognized statistical rating agencies (Moody's, Standard & Poor's, and Fitch).
- Posting of adequate collateral by counterparties in accordance with the terms and conditions of their respective agreements.
- Setting exposure limits to any individual counterparty and/or setting minimum counterparty diversification requirements, as stipulated in the applicable portfolio guidelines.
- Applicable swap transactions must be approved by a "Qualified Independent Representative" ("QIR") duly authorized by PSERS, as documented in the QIR Policy.
- In order to ensure that PSERS is not the "reporting party", under parts 43, 45, and 46, of the Commodity Futures Trading Commission ("CFTC") regulations, swaps, forward foreign exchange transactions, and foreign exchange swaps may only be transacted with parties that are fully Registered Swap Dealers or Provisionally Registered Swap Dealers with the CFTC.

C. Operational Risk

Operational risk is the risk of inadequate or failed processes or systems. Operational risks are mitigated through the usage of procedures, IOP oversight and effective usage of technology resources.

D. Liability/Recourse Risk

If the capital or funding requirements associated with transacting derivatives results in leverage, this may create liability/recourse to the Fund.

There are three permitted types of liability/recourse involving leverage:

1. Non-recourse leverage in fund structures – This is Strategy Leverage taken in limited liability structures, where the terms of such structures shall limit the total potential loss to the amount invested or committed to by PSERS. These structures shall not have recourse to the Fund for losses beyond this. Operating documents, including partnership agreements, subscription agreements, and similar documents, govern the maximum and types of permissible leverage.
2. Non-recourse leverage in separate accounts - This is Strategy Leverage taken in separate account structures, where the terms of such structures shall limit the total potential loss to the amount invested or committed to by PSERS. These structures shall not have recourse to the Fund for losses beyond this. Investment management agreements and account guidelines govern the maximum and types of permissible usage of derivatives and leverage.
3. Recourse leverage in separate accounts - This is leverage taken in separate account structures, where the terms of such structures allow the total potential loss to be greater than the amount invested or committed to by PSERS. Investment management agreements and account guidelines govern the maximum and types of permissible leverage.

E. Legal and Regulatory Risk

The use of derivatives exposes PSERS to legal and regulatory risks. Legal risk is the risk of inadequate or deficient legal documentation. Regulatory risk is the risk of changing or more burdensome regulatory requirements than those in place at the time the derivatives position was established. Appropriate legal and regulatory documentation is required to mitigate these risks.

The use of leverage relies on the execution of various forms of operative documents, including but not limited to trading agreements (e.g., ISDA swap agreements), partnership agreements, and investment management agreements. PSERS Office of Chief Counsel reviews contracts and operative documents, as described above, to limit the risks of inadequate documentation.

F. Collateral Risk

Securities used as collateral in derivatives transactions – whether posted by the counterparty to PSERS or by PSERS to the counterparty -- may not perform as expected. To mitigate this risk, cash and cash equivalents are preferred as collateral. Other securities (such as investment grade bonds) may be acceptable with an appropriate haircut reflective of their credit risk and interest rate duration.

In addition, the (1) reinvestment or (2) re-use (re-hypothecation) of collateral proceeds (both cash and securities) may produce leverage resulting from the added economic exposure of the reinvestment or re-hypothecation activity.

Re-investment of collateral received as part of the Securities Lending program is permitted, subject to the any policy related to Securities Lending.

G. Liquidity Risk

Liquidity risk may result from the usage of derivatives, depending on the type of derivative and its characteristics. For example, if PSERS liquidity is being otherwise drawn down by market conditions and if the mark-to-market or settlement of derivatives requires PSERS to post liquid collateral (for the mark-to-market) or provide cash (for settlement), then PSERS' liquidity draw down may be greater.

Liquidity risk associated with margin or collateralization requirements or instrument illiquidity may increase with the use of leverage. For Asset Allocation Leverage this is managed through notional targets in line with the IPS Target, the aggregate Explicit Leverage limitations within the Asset Allocation section of the IPS, and portfolio guideline constraints.

The management of liquidity risk is described within the Liquidity Policy.

H. Settlement Risk

Settlement risk is the risk of loss if a derivatives counterparty defaults and PSERS has fulfilled its trade obligations while the counterparty has not delivered the corresponding cash or security. Settlement risk is negligible for exchanged-traded derivatives since PSERS is contractually bound to a regulated exchange, not an individual counterparty, once the trade has been accepted by both trading parties. Settlement risk is mitigated for Category B derivatives (i.e., OTC derivatives) by requiring the counterparty to post collateral for amounts owed to PSERS on a timely basis as described within the relevant derivatives trading agreements.

VIII. MONITORING AND REPORTING

An annual report on derivatives held in separate accounts containing the following information shall be provided to the Investment Committee:

- List of the separate accounts and asset classes in which derivatives reside.
- Indication whether each account allows recourse beyond the amounts invested

in the account

- Type and purposes for which the derivatives are used (hedging, gaining asset class exposure, etc.)
- Exposure type and amounts (including notional amounts and mark-to-market balances)
- Primary counterparties and relevant initial margin and variation margin balances for Category B derivatives (i.e., OTC derivatives)
- Summary of applicable guideline provisions in place around their use.

For non-recourse leverage in limited liability fund structures, no information is required for the above mentioned reporting.