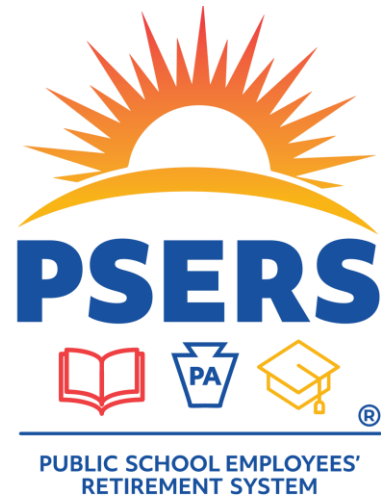




Private Markets Strategic Plan and Asset Class Review

A Collaboration Between PSERS IO & Aksia LLC



May 2024

Private Markets Team



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Head of Private Markets



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Portfolio Manager, Real Estate



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Int. Inv. Professional
Private Markets

Expected New Hire 2024
Int. Inv. Professional
Private Markets Port. Bus. Management

Expected New Hire 2024
Jr. Inv. Professional
Private Markets

9

team members

443

active investments

16

managers per team member

2

Positions being Hired

317

LPAC seats

\$2.8B

NAV per team member

Private Markets Strategic Plan Overview

The Private Markets Strategic Plan (the “Plan”) is a collaboration between PSERS’ Investment Office Professionals (“IOP”) and Aksia LLC (“Aksia”). This Plan applies to the investments within the Private Equity, Private Real Estate, Private Credit, Private Infrastructure, and Private Commodities portfolios (the “Portfolios”) within the Pennsylvania Public School Employees’ Retirement System (“PSERS”) Defined Benefit Fund (the “Fund”) and provides a roadmap for implementation of PSERS’ Private Markets Asset Class Policy.

Aksia, together with IOP, seek to provide guidelines for management of the Private Markets portfolios, while at the same time, allowing flexibility for PSERS’ IOP to adjust the portfolios as market conditions dictate. This approach is particularly important in Private Market asset classes, allowing for a breadth of diverse investment opportunities and structural approaches. The plan covers the following areas:

- Portfolio Background – Asset Class Roles
- Portfolio Performance
- Aksia Portfolio Observations and Recommendations
- Benchmark Review
- Manager Relationship Summary
- Pacing Plan and 2024 Allocation Summary
- Long Term Portfolio Construction Objectives
- 2024 Key Strategic Initiatives
- Shared Goals / Portfolio Goals

PSERS Strategic Asset Allocation

ASSET CLASS	TARGET ALLOCATION	Range	CURRENT EXPOSURE (ALL PRIVATE MARKETS)
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%	17.1%
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%	+/- 5%	7.5%
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%	2.8%
Real Estate	7.00%	+/- 2%	8.2%
Absolute Return	0.00%	0% - 5%	
Net Leverage	0.00%	10 to -10%	
Cash	4.50%		
Explicit Leverage	-4.50%		
		Total Private Markets (Target)	Total Private Markets (Actual)
	100.00%	30.00%	35.60%

The Role of Private Markets

PSERS' Private Markets allocation is intended to provide complementary exposures to the public markets while matching PSERS' long-term liabilities with long-term assets that are expected to receive a premium return in exchange for illiquidity.

Private Equity

- Growth, return seeking
- Outperformance of traditional public equity, absolute and risk-adjusted returns
- Diversification through access to investments not available on public markets
- Potential to add value through control and operational improvements

Private Credit

- Enhanced return vs. traditional Fixed Income
- Diversification and/or return seeking utilizing wide spectrum of strategies / geographies / collateral types
- Contractual cash flow / current income
- Downside protection through structural subordination

Infrastructure

- Tangible assets, store of value
- Cash flow/current income generating
- Diversification through differentiated return streams, lower volatility/correlation to traditional assets
- Inflation Protection

Real Estate

- Income generation and potential for value growth
- Inflationary hedge via rental growth and appraised values
- Lower correlation to traditional asset classes
- Liability matching against long term liabilities

Performance: Private Markets Horizon Returns

PSERS continues to outperform each benchmark on a since inception basis

TWRs	QTD	1Y	3Y	5Y	10Y	15Y	ITD
Private Equity	0.2%	6.5%	18.4%	14.6%	12.6%	11.1%	11.0%
Policy Benchmark	-0.2%	5.2%	15.6%	13.7%	13.2%	11.7%	7.8%
Private Credit	2.9%	10.0%	12.2%	7.6%	7.6%	8.6%	7.3%
Policy Benchmark	4.0%	15.3%	8.2%	6.8%	6.2%	8.5%	7.2%
Real Estate	-2.0%	-2.5%	14.0%	10.7%	11.4%	5.6%	8.7%
Policy Benchmark	-1.8%	-5.3%	9.5%	7.0%	8.9%	6.8%	8.4%
Infrastructure	6.4%	16.0%	19.4%	15.5%	14.8%	14.8%	14.8%
Policy Benchmark	-8.7%	0.4%	2.4%	3.0%	4.6%	4.6%	4.6%
Commodities	1.1%	5.3%	22.7%	13.0%	8.5%	8.5%	8.5%
Policy Benchmark	4.7%	-1.3%	16.2%	6.1%	-	-	4.9%

	Total Commitment (\$M)	Contributions	Distributions	NAV	Unfunded Commitment	Unfunded + NAV	Gain/Loss	Annualized Net IRR	TVPI
Private Equity	36,199	35,463	44,512	12,219	3,506	15,725	21,268	11.8%	1.6x
Private Credit	14,528	14,387	13,529	5,335	3,331	8,666	4,477	8.4%	1.3x
Real Estate	22,681	22,218	26,988	5,662	2,559	8,221	10,432	8.8%	1.5x
Infrastructure	3,481	1,718	414	1,866	1,908	3,774	562	15.2%	1.3x
Commodities	452	337	165	345	123	468	173	13.9%	1.5x
PSERS - Total Portfolio	77,340	74,119	85,694	25,428	11,428	36,856	37,003	10.1%	1.5x

As of September 30, 2023. Performance shown is net of fees and carry.
See appendix for benchmark definitions.

Performance: Public Market Equivalents

\$ in millions

10-Year Performance	Total Private Markets ¹	Private Equity	Private Credit	Real Estate	Infrastructure
Benchmark ²	60/40	PSERS Index	LLI + 200	FTSE NAREIT	FTSE Developed Core 50/50
NAV (\$B)	\$25.4	\$12.2	\$5.3	\$5.7	\$1.9
Direct Alpha (%)	3.5%	2.8%	1.4%	3.5%	13.5%
KS PME	1.12x	1.10x	1.04x	1.12x	1.30x
EVM (\$M)	\$9,469	\$4,505	\$559	\$1,378	\$544
EVM in NAV (\$M)	\$4,733	\$2,585	\$156	\$4,097	\$495
% EVM in NAV / Total	50.0%	57.4%	27.9%	297.3%	90.9%
NAV Sensitivities	Resulting EVM	Resulting EVM	Resulting EVM	Resulting EVM	Resulting EVM
1.25x	\$15,740	\$7,560	\$1,892	\$2,794	\$1,010
1.10x	\$11,978	\$5,727	\$1,092	\$1,944	\$730
1.00x	\$9,469	\$4,505	\$559	\$1,378	\$544
0.90x	\$6,961	\$3,283	\$25	\$812	\$357
0.75x	\$3,198	\$1,450	-\$775	-\$38	\$77

Terms:

Direct Alpha (% rate) – Annualized excess return / loss achieved by an investor compared to an investment in the equivalent public index (>0.0% = Good).

KS PME (multiple) – Ratio which represents how many dollars an investor has earned compared to an investment in the equivalent public index (>1.0x = Good).

Excess Value Method “EVM” (\$ value) – How many more / less dollars will an investor have compared to an investment in the equivalent public index, expressed in dollars (Positive \$ = Good).

As of September 30, 2023.

Notes: Performance figures are net of fees and carry. Data sourced from internal databases and excludes the impact of FX hedges.

¹Total Private Markets includes Private Commodities (\$0.4B NAV).

²See appendix for description of asset class benchmarks. For Total Private Markets, “60/40” refers to 60% S&P 500 (SPX) and 40% LBUSTRUU Index (BB Agg).

Private Markets: Aksia Capital Markets Assumptions

	Returns	Volatility
Private Credit	9.2%	9.5%
Private Equity	12.7%	18.3%
Infrastructure / Natural Resources	8.2%	12.5%
Real Estate	8.6%	13.1%

Source: Aksia (Forecasts as of March 2024)

Aksia forecast inputs include: (1) qualitative forecasts of Aksia Investment Committee members; (2) long-term historical proxy index data; and (3) CAPM assumed returns.

NO RELIANCE ON FORECASTS: Any projections, forecasts or market outlooks provided herein should not be relied upon as events which will occur and no assurances can be given that a particular strategy will perform in a manner consistent with its historical characteristics, or that forecasts, expected volatility or market impact projections will be accurate. Use of this reference material does not assure any level of performance or guarantee against loss of capital. Neither Aksia nor any of its representatives make any representation or warranty, express or implied, as to the accuracy or completeness of the information provided herein. Neither Aksia nor any of its representatives shall have any liability relating to or resulting from the use of this reference material or any errors therein.

2024 Pacing Study

Strategy	3/31/23 Actual	Target Allocation	2024 – 2032 Annual Pacing Range	2024 Tactical Target	Year to Approach Target ¹
Private Equity	17.6%	12%	\$800M – \$1.2B	\$550M	2027
Real Estate	8.1%	7%	\$800M – \$1.0B	\$800M	2024
Private Credit	7.4%	6%	\$550M – \$750M	\$650M	2025
Infrastructure	2.3%	5%	\$700M – \$900M	\$800M	2025

Aksia Comments:

- Pacing studies are updated at least annually. While guided by a modeled pacing range, deployment activity is ultimately driven by available opportunity and may deviate from prescribed ranges. Pacing studies have a certain degree of uncertainty and should be seen as a directional guide.
- As of 3/31/2023, Private Equity, Real Estate, and Private Credit were above their allocation targets, with Infrastructure below target.

IOP Comments:

- **Due to overallocation outside the +/- 2% rebalancing range, Private Equity's budget range for 2024 has been lowered to \$400 - \$700M.**

Source: Aksia

¹Represents year portfolio approaches within 100bps of target allocation under the Base Case scenario.

Aksia Commentary: PSERS Private Markets Team

Strengths

- Expertise and Experience
- Network and Relationships
- Well Respected Team
- Thorough Diligence Process
- Willingness to Evaluate Complex Opportunities
- Ability to Execute Co-Investments

Opportunities

- Reshape portfolio to meet long term sector exposure objectives
- Evaluate Approach to Venture Capital
- Develop Junior Resources
- Cross Asset Class Collaboration
- Portfolio Rationalization / Liquidity Solutions

Weaknesses

- Departures
- Team Depth
- Venture Capital

Threats

- Market Perception / Reputation Risk

Private Markets: Long-Term Objectives

North Star: “The long-term objective for the Portfolio(s) is to outperform its policy benchmark as set forth in the IPS, on a net-of-fees basis, over long-term time horizons through prudent investment commitment pacing, diversification, and External Manager selection.”

- 1) Source high conviction investment opportunities to implement Board-approved SAA, across overall private markets and by individual asset classes.
- 2) Refine long-term portfolio construction objectives.
- 3) Enhanced use of underlying holding level data.
- 4) Fee Arrangements - Continued emphasis on value (alpha) for money.
- 5) Business Management Efficiency / Team & Organization.
- 6) Enhanced Communications.

- **Private Markets Operating Model and Team Collaboration**

LT Objective #5 and #6

- **Aged NAV Considerations and Liquidity Solutions**

LT Objective #2 and #5

- **Expand Co-Investment Capabilities**

LT Objective #1, #2, and #5

- **Evolution of Excess Value Method (“EVM”) Analysis**

LT Objective #3 and #4

- **Dashboard and Watchlist Development**

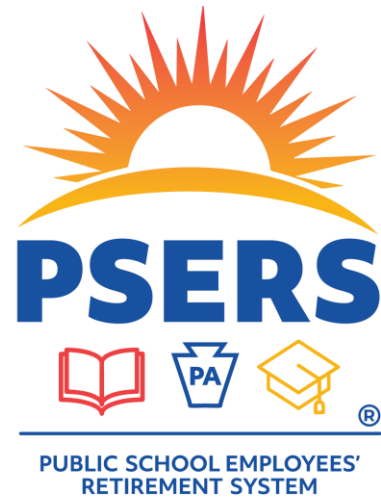
LT Objective #3 and #6

- **Due Diligence / Closing Checklist**

LT Objective #5

- **Aksia Reporting Enhancements**

LT Objective #3 and #6



Private Equity Asset Class Review

Private Equity Overview

Role of Private Equity

- Growth, return seeking
- Outperformance of traditional public equity, absolute and risk-adjusted returns
- Diversification through access to investments not available on public markets
- Potential to add value through control and operational improvements

Active GP Relationships	73
Funds/Co-Investments	239
Total Commitment Amount	\$36.2B
Contributions	\$35.5B
Distributions	\$44.5B
Net Asset Value	\$12.2B
Unfunded Commitment	\$3.5B
Target Allocation (% of PSERS Plan value)	12%, +/- 4%
Portfolio Allocation (% of PSERS Plan value)	17.8%

Portfolio Review: Performance

	TWR						KS-PME ²	Direct Alpha ²
	1QTR	1Y	3Y	5Y	10Y	ITD		
Buyout	-0.3%	7.1%	17.9%	13.5%	11.7%	14.3%	1.2x	4.1%
Growth Equity	0.7%	5.5%	22.8%	21.9%	20.3%	16.9%	1.4x	8.8%
Venture Capital	-0.4%	3.6%	12.9%	11.6%	8.5%	5.6%	0.9x	-2.4%
PE Co-Investment	2.4%	6.1%	19.4%	16.2%	20.1%	24.0%	1.4x	10.2%
Pennsylvania PE Co-Investment	2.6%	11.2%	21.4%	19.7%	22.1%	20.9%	1.5x	9.8%
Total Portfolio	0.2%	6.5%	18.4%	14.6%	12.6%	11.0%	1.1x	3.3%
Policy Benchmark ¹	-0.2%	5.2%	15.6%	13.7%	13.2%	7.8%	-	-
PSERS Custom Blended Public Benchmark ²	-4.0%	14.3%	7.8%	5.2%	7.9%	6.5%	-	-

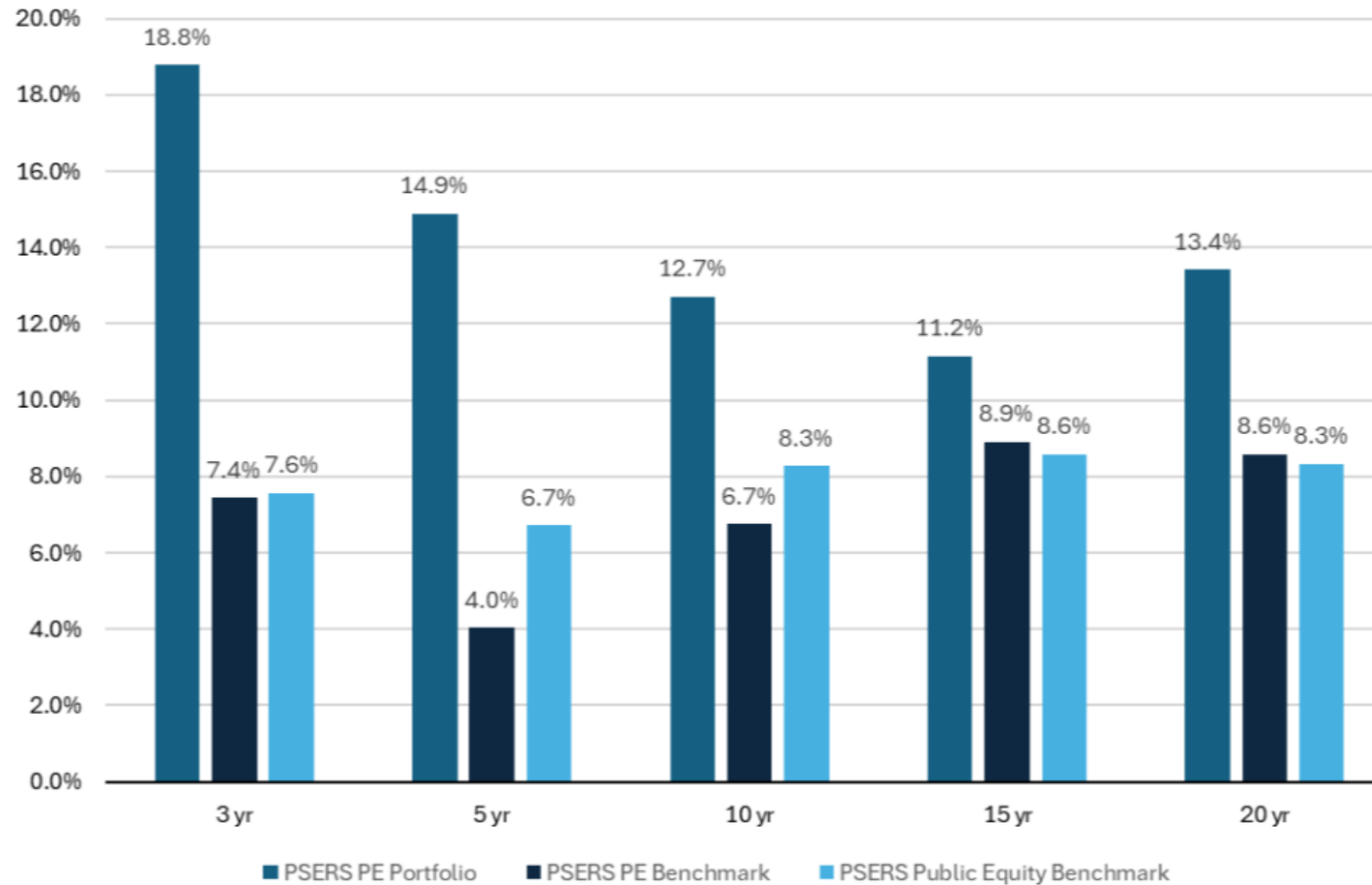
As of September 30, 2023.

Color-coding: **outperformance** or **underperformance** vs. Policy Benchmark. KS-PME and Direct Alpha are calculated compared to the PSERS Custom Blended Public Benchmark (defined below).

¹ See appendix for benchmark details

² KS-PME & Direct Alpha are calculated vs the Blended Public Benchmark, which represents a blend of inception to 12/31/98 is 70% Russell 3000 & 30% MSCI x US Net Total Return., 12/31/98 to 12/31/18 is 70% Russell 3000 & 30% MSCI ACWI x US , 1/1/19 to 9/30/22 is 65% MSCI USA Small Cap & 35% MSCI ACWI x US Small Cap. and 10/1/22 to present is 70% MSCI USA Small Cap TR Index & 30% MSCI ACWI ex USA Small Cap Net TR Index.

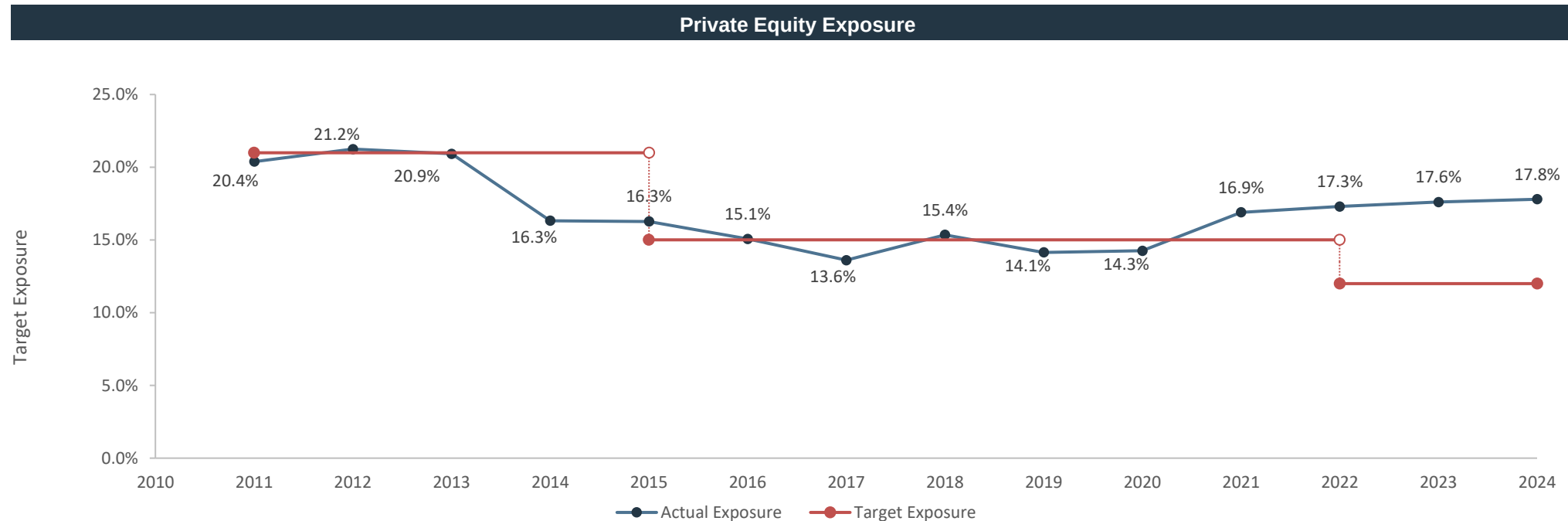
Benchmark Performance (TWR)



Data as of 9/30/2023. Source: Burgiss, Bloomberg

Benchmarks: **PSERS PE Benchmark** reflects current risk benchmark: 70% M1USSC Index / 30% M1WDUSC Index blend, **PSERS Public Equity Benchmark**: 60% SPRT Index / 40% MSCI ACWI xUS IMI Net

Private Equity Overallocation



- Starting at a 21% target allocation in 2011, the PE target was decreased to 15% in 2015 and again to 12% at year-end 2021.
- Allocation decreases, post-pandemic NAV increases, and slowed distributions during the recent rate-hike cycle have combined to result in a significant overweight to Private Equity (relative to current target).
- To address the current PE overweight (~17.8% NAV exposure) staff has taken the following steps:
 - 1) Slowed commitments since the 2021 allocation decrease, including adjusting the 2024 pacing range from \$800M - \$1B, down to \$400M - \$700M (see “2024 Pacing Study”), and;
 - 2) Evaluated liquidity solutions for a portion of the portfolio.

Portfolio Review: Aksia Commentary

- PSERS should utilize prudent pacing to bring down exposure in a responsible way while seeking to maintain consistent deployment and construct a diversified portfolio. The PE allocation is projected to be in line with its 12% target by 2027.
- Aksia and PSERS staff worked together to identify managers within the portfolio who were of higher and lower conviction.
- A meaningful amount of NAV remains in aged funds (\$515M) and “non-core” manager relationships (\$2.5B).
- Active portfolio management options, including potential secondary sales, should be considered.
- PSERS’ venture capital performance has been disappointing. If PSERS seeks to develop a VC portfolio with access to leading managers, the team will need to allocate resources toward building relationships with top-tier firms – a strategy that can be very time consuming and difficult to execute.
 - Alternatively, PSERS can outsource the responsibilities to a third party, which is expected to improve access, however, will include an additional layer of fees.
 - PSERS can also consider focusing on growth stage investments, which can provide some exposure to late-stage venture investments.

Portfolio Review: Aksia Commentary (cont.)

- PSERS has demonstrated the ability to source and execute high quality PE co-investments alongside leading managers. PSERS has completed 81 co-investments over the last 10 years, representing \$1.5 billion of invested capital and generated a 20% net IRR and 1.8x net MoC, as of September 30, 2023.
 - Aksia recommends allocating 10-15% of the annual PE allocation budget to buyout and growth equity co-investments, through increasing internal resources and considering outsourced solutions.
 - Aksia does not recommend pursuing venture capital co-investments, due to the relatively high-risk nature of the investments.
- PSERS' PE benchmark warrants revisiting and will be a priority for Aksia and IOP in 2024.

PE Market Commentary and Opportunity (Aksia)

- We believe private equity is facing more headwinds today than three, five, and ten years ago; but investors should remain active.
- We believe the worst of the distribution drought is over but have more measured expectations for distributions in 2024 relative to some managers who are forecasting significant exit activity during the year.
- The pendulum has swung back in favor of limited partners – investors should capitalize and push for better economics and governance terms.
- Considerations specific to private equity sectors are:

	Tailwinds	Mixed	Headwinds
Buyouts	➤ Increasing focus on operational improvement ➤ Potential stabilization or decline in interest rates ➤ Rising LP bargaining power ➤ Market opportunity for take-privates, carve-outs, and structured deals	➤ Narrowing bid-ask spread ➤ Increased competition ➤ Record PE dry powder ➤ Moderating inflation ➤ Growing GP-led market ➤ Broadening LP base ➤ Innovation in AI	➤ Higher interest rates ➤ Lower leverage levels ➤ LP overallocation to PE ➤ Rising geopolitical tensions ➤ Increasing regulatory oversight ➤ Challenging exit markets
Venture Capital & Growth	➤ Innovation in AI, potential platform shift ➤ Increased VC and GE secondary activity	➤ Narrowing bid-ask spread ➤ Record VC dry powder ➤ Precarious IPO market ➤ Increased focus on cash burn and sustainable growth	➤ Higher interest rates ➤ LP overallocation to PE ➤ Reduced end-market software demand ➤ Expectation of more down rounds coming

Portfolio Construction Themes

- **Renewed Focus on Buyout Strategies Positioned to Deliver Alpha into the Future**

- Rationale: Less binary than VC/growth; more consistent co-investment deal flow; deeper pool of competent managers with scale to absorb larger tickets sizes.

- **Consider Alternative PSERS' Approach to Accessing Venture Capital**

- Rationale: Specialized access required in manager selection; expensive; binary performance risk; conviction managers often have limited capacity for larger tickets making it difficult operationally for PSERS to deploy smaller ticket sizes.
 - Note – desires flexibility to allow for opportunistic VC investment to the extent PSERS has a successful existing relationship or other sourcing advantage.

- **Expanded Co-Investment Origination Capabilities**

- Rationale: Operationally capable, successful historical track record, GP self-selection, ~400 - 500bps uplift from fee savings, blending down overall Portfolio fees.

- **Resurrection of “Special Situations” Strategy Set within PE Portfolio**

- Rationale: Historically, included various “Special Situations” strategies within PE portfolio (i.e., Mezzanine / Distressed Debt) but began considering these strategies in Private Credit as that portfolio became more established. However, we have witnessed an emerging opportunity set centered around preferred equity structures often including contractual returns or minimum liquidation preferences, with the ability to participate in equity upside. Strategies in this bucket target mid-teens returns (equity cost-of-capital) with few creditor rights relative to debt strategies, making it more appropriate for the private equity allocation.

Aksia's Recommended Portfolio

Portfolio Diversification

- Industry/Sector
- Geography
- Deal Size
- Vintage Year
- Deal Type
- GP

Risk Exposures

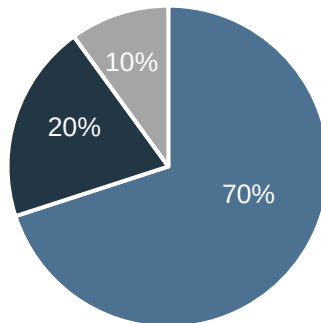
- Technology Risk
- Procyclical/Countercyclical
- Consumer Exposure
- Interest Rate Sensitivity

Thematic Positioning

- Sector views
- Market environment
- Investment life

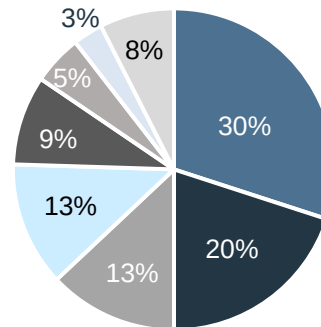
Target Allocations

Deal Type



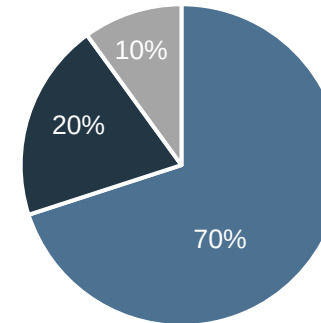
- Buyout
- Growth/Venture Capital
- Special Situations

Industry*



- IT
- Healthcare
- Consumer & Retail
- Financials
- TMT
- Energy
- Other

Geography



- North America
- Europe
- ROW

Portfolio Construction: Return Assumptions

PE Strategy	Projected Gross IRR	Projected Net IRR	Projected Gross TVPI	Projected Net TVPI
Buyout Funds	14% - 18%	10% - 13%	1.8x - 2.2x	1.4x - 1.8x
Venture Capital Funds	16% - 20%	12% - 15%	2.3x - 2.8x	1.8x - 2.1x
Growth Equity Funds	15% - 19%	11% - 14%	2.1x - 2.5x	1.6x - 2.0x
Co-Investments	14% - 18%	14% - 18%	1.8x - 2.2x	1.7x - 2.1x

Aksia Comments:

- The projections provided above are derived using 30 years of historical returns.
- Aksia believes it will be more difficult for the industry to generate the same historical returns and investors should expect a higher dispersion of fund returns going forward.

IOP Comments:

- Long-term, go-forward expected returns of the PSERS' recommended portfolio are 12.4% net IRR and 1.7x net TVPI.

Portfolio Construction: Targets by Strategy

Annual Commitment Framework – Strategy Recommendations:

(\$ in millions)

PE Sectors	Current PSERS Exposure (NAV + Unfunded)	PE Benchmark	Long-Term Target	Target Commitments (\$)	Target Commitments (#)
Buyouts	68%	63%	60 - 80%	\$350 - \$450	4 - 6
Growth / Venture Capital	23%	20%	15 - 25%	\$50 - \$150	1 - 3
Special Situations / Other	9%	17%	5 - 15%	\$0 - \$100	0 - 2
Total				\$400 - \$700	5 - 10

Aksia Comments:

- The strategy allocation framework provides discipline over the long-term to enhance diversification and create a portfolio that can withstand cycles while allowing for some tactical shifts based on nearer-term market conditions.
- A highly selective approach is warranted, with the ranges viewed as guidelines to be mindful of diversification; committing to various strategies simply to fill the sub-sector target allocation should be avoided.

IOP Comments:

- IO intends to target the higher end of the range for buyouts with managers who have demonstrated operational outperformance given the anticipated investment environment requiring greater value-add capabilities to generate alpha.
- Within the growth / venture capital strategy, IO intends to emphasize the growth-oriented strategies while tactically committing to venture capital strategies as the market opportunity presents. In the current environment, IO staff expect fewer commitments to these strategies.

Portfolio Construction: Targets by Geography

Annual Commitment Framework – Geographic Recommendations:

(\$ in millions)

Geography	PSERS Current Exposure (NAV + Unfunded)	PE Benchmark	Long-Term Target	Target Commitments (\$)	Target Commitments (#)
North America	67%	61%	60 - 80%	\$350 - \$450	4 - 7
International	33%	39%	20 - 40%	\$100 - \$200	1 - 3
Europe	19%	16%	15 - 25%	\$100 - \$125	1 - 2
ROW	15%	23%*	5 - 15%	\$0 - \$75	0 - 1
Total	100%			\$450 - \$700	5 - 10

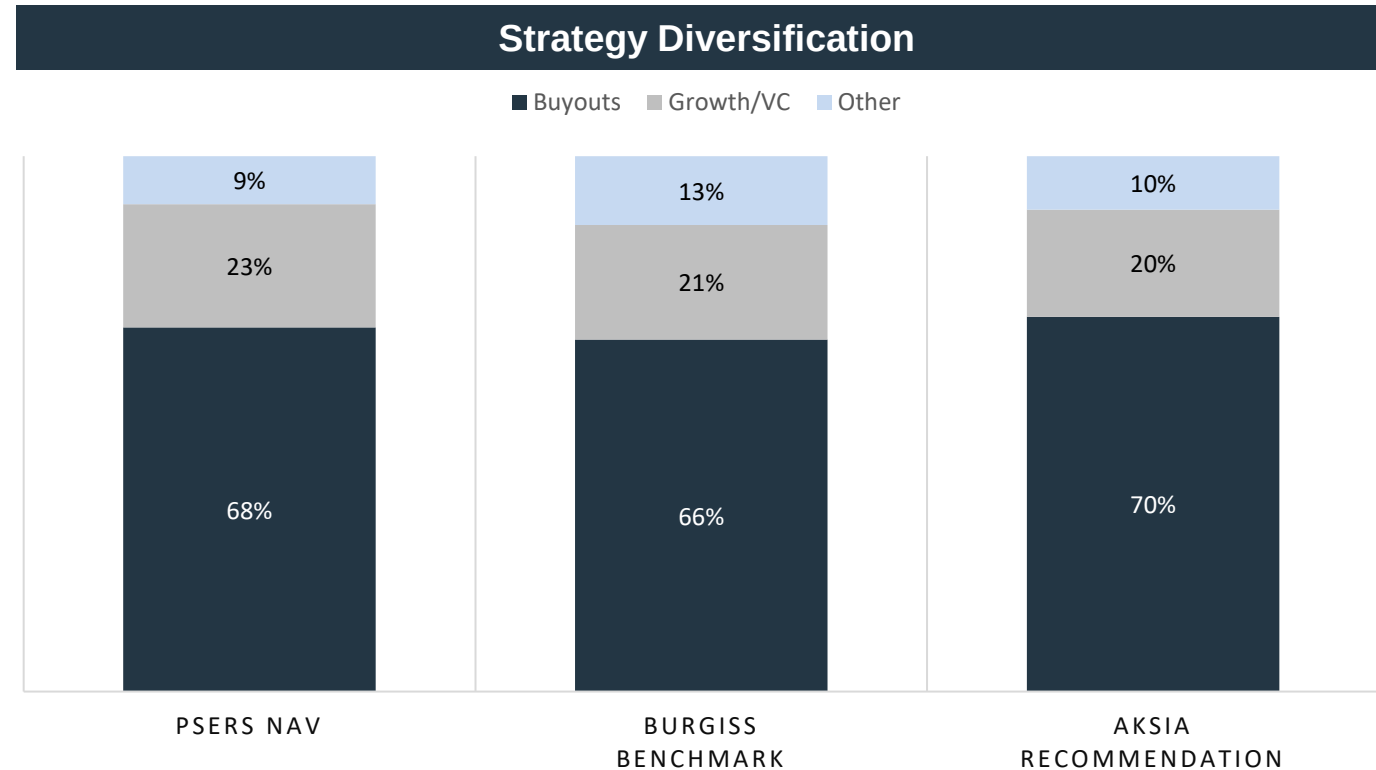
Aksia Comments:

- Similar to underlying sub-sectors, having a geographic allocation framework in place can provide discipline over the long-term while allowing for tactical shifts based on nearer-term market conditions.
- In the near-term, North America remains an attractive risk/return profile and should continue to represent the majority of the PE portfolio; If meaningful international opportunities arise, the plan's broad target range will allow for flexibility.
- Over the long term (5 -10 years), PSERS should maintain international exposure, including Asia and Europe as well as relevant emerging markets.

IOP Comments:

- PSERS IO staff agrees with Aksia's suggested geographic targets.
- In the near and medium-term, continued focus is expected to be placed on opportunities in North America and Western Europe and to a lesser extent, Rest of World.

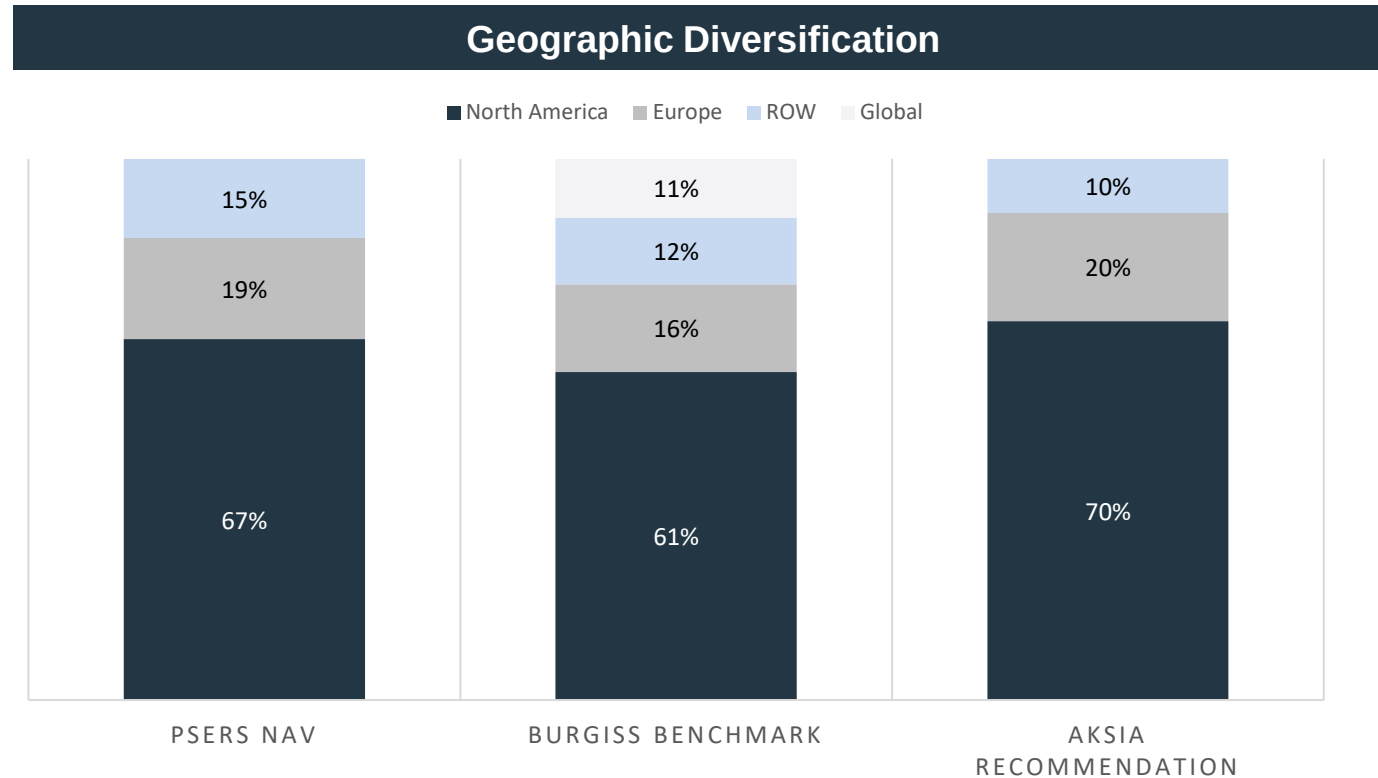
Relative Strategy Diversification



Aksia Comments:

- Buyout funds account for the majority of the PSERS portfolio and are roughly inline with benchmarks and Aksia's recommendation.
- VC funds and Other funds represent a significant portion of the benchmark universe.
- Growth funds appear to be under-represented in the Burgess benchmark.

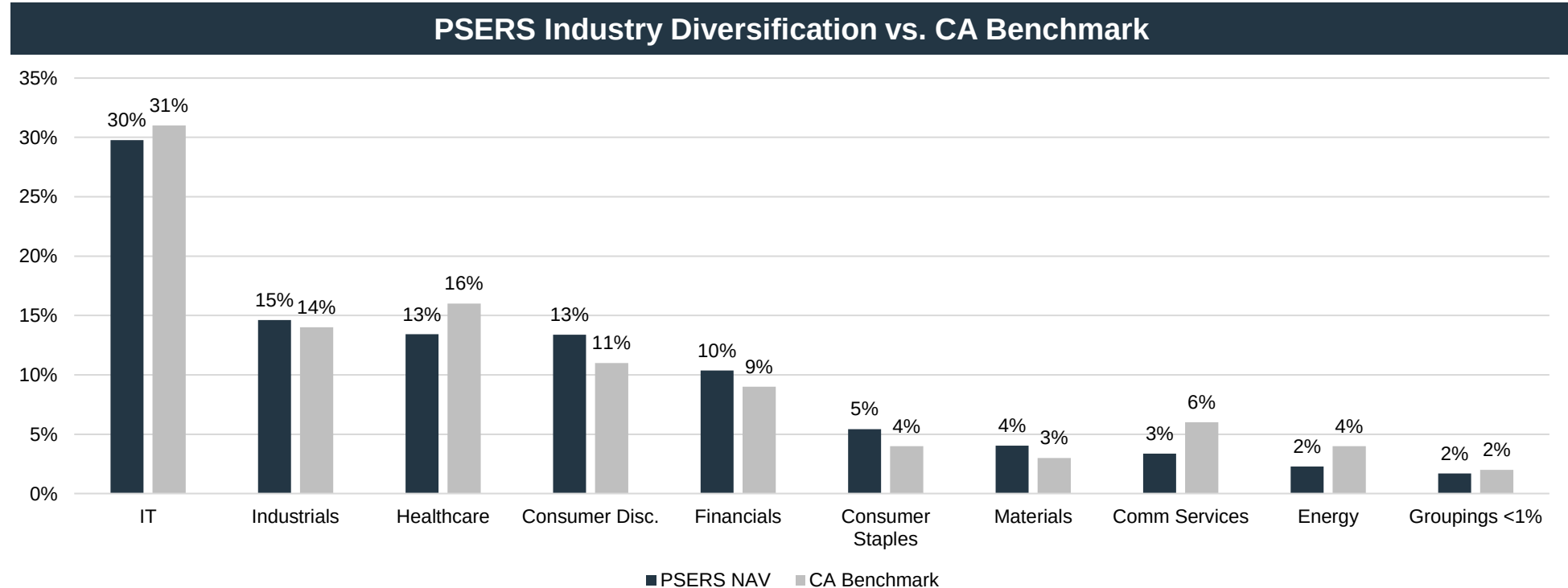
Relative Geographic Diversification



Aksia Comments:

- Current geographic diversification is consistent with the benchmark and Aksia's recommendation.
- North America will continue to represent the large majority of the PE portfolio, while international investments will be considered opportunistically.

Relative Industry Diversification



Aksia Comments:

- Underlying portfolio company diversification is largely consistent with industry benchmarks.
- The concentration in IT investments is driven by strong performance and a long-term trend toward many leading PE managers focusing on information technology investments.

Aksia's Recommended Deployment Framework

PSERS should develop a core portfolio of 25 to 30 managers utilizing the framework identified below:

PE Portfolio	Commitments Target	Core Managers
Buyouts	70%	15 - 25
VC/Growth	20%	4 - 6
Other (Secondary, SS, ect.)	10%	2 - 4
		25 - 30

Buyouts	Commitments Target	Core Managers
Large/Mega	40%	5 - 7
Small/Medium	60%	10 - 15

Structure	Commitments Target	Core Managers
Fund Commitments	80%	25 - 30
Co-Investments	20%	NA

Geography	Commitments Target	Core Managers
North America	70%	15 - 25
Europe	20%	4 - 6
ROW	10%	2 - 4
		25 - 30

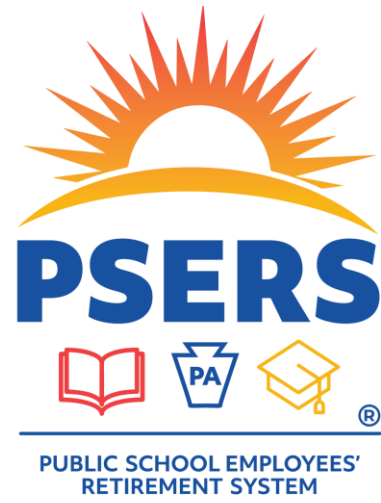
Annual Target			
Strategy	Commitment Sizing (\$M)	No. of Commitments	Total (\$M)
Large/Mega	\$100	1	\$100
Small/Medium	\$75	4	\$300
VC/Growth	\$50	2	\$100
Other	\$50	1	\$50
		8	\$550

3-Year Target			
Strategy	Commitment Sizing (\$M)	No. of Commitments	Total (\$M)
Large/Mega	\$100	6	\$600
Small/Medium	\$75	12	\$900
VC/Growth	\$50	5	\$250
Other	\$75	2	\$150
		25	\$1,900

Private Equity: Long-Term Objectives

North Star: “The long-term objective for the Portfolio(s) is to outperform its policy benchmark as set forth in the IPS, on a net-of-fees basis, over long-term time horizons through prudent investment commitment pacing, diversification, and External Manager selection.”

- 1) Source high conviction investment opportunities to implement Board-approved SAA, across overall private markets and by individual asset classes.
- 2) Refine long-term portfolio construction objectives.
- 3) Enhanced use of underlying holding level data.
- 4) Fee Arrangements - Continued emphasis on value (alpha) for money.
- 5) Business Management Efficiency / Team & Organization.
- 6) Enhanced Communications.



Appendix

Private Markets: Benchmark Overview

Portfolio	Current Policy Benchmark (per IPS)	Current Risk Benchmark (per IPS)	Policy Benchmark Description
Private Equity	Burgiss TR, one-quarter lagged	MSCI USA Small Cap TR Index (70%), MSCI ACWI ex USA Small Cap Net TR Index (30%)	Performance benchmark data for Private Equity calculated using the rolling 5-year (20 quarters) total returns obtained from Burgiss Private iQ relevant universe. The benchmark is updated retroactively for the past 20 quarters each quarter.
Private Real Estate	NFI and Burgiss TR, one-quarter lagged	FTSE NAREIT Composite TR Index (90%), FTSE EPRA/NAREIT Developed ex US TR Index (Hedged to USD) (10%)	The NCREIF Fund Index-Open End Diversified Core Equity (NFI-ODCE) is an index of 36 open-end commingled funds pursuing a core investment strategy. The NFI-ODCE Index is capitalization-weighted and measurement is time-weighted.
Private Credit	Morningstar LSTA Leveraged Loan TR Index + 200bps, one-quarter lagged	Morningstar LSTA Leveraged Loan TR Index	The Morningstar/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 of loans syndicated to US loan investors.
Private Infrastructure	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD), one-quarter lagged	FTSE Developed Core Infrastructure 50/50 Net TR Index (Hedged to USD)	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.
Private Commodities	N/A	N/A	N/A

Source: Investment Policy Statement of the Commonwealth of Pennsylvania Public School Employee's Retirement Board ([Link to IPS on PSERS' website](#)).

These are the current policy benchmarks, however, unless otherwise specified, historical time periods may reflect a blend of multiple benchmarks in accordance with the evolution of the strategic investment mandate.

Private Equity Market Map

BUYOUTS

Geographic Focus

Global Buyout
North American Buyouts
European Buyouts
Asian Buyouts
Emerging Markets Buyouts

Traditional Buyout
Buy & Build
Carve Outs
Recapitalizations
Expansion
Take Privates
Long Duration
PIPE
Turnarounds

Market Cap Focus

Lower Middle Market
Middle Market
Upper Middle Market
Large
Mega

Industry Scope

Industry Specialist
Generalist

VENTURE CAPITAL

Stage Focus

Early-Stage VC
Late-Stage VC
Multi Stage VC

Industry Scope

Industry Specialist
Generalist

Geographic Focus

North America
Asia & Pacific
Europe
Global/Other

GROWTH EQUITY

Geographic Focus

Global Growth Equity
North American Growth Equity
European Growth Equity
Asia Growth Equity
Emerging Mkts Growth Equity

MEZZANINE

Strategies

US Mezzanine
European Mezzanine
Structured Equity

DISTRESSED FOR CONTROL & SPECIAL SITUATIONS

Strategies

PE Special Situations
Distressed for Control
Corporate Distressed
Real Estate Distressed
Capital Solutions

GP STAKES

Strategies

Portfolio
Single GP

PRIVATE EQUITY SECONDARIES FUNDS

Strategies

PE Secondaries Fund
PE Secondary Port. Purchase

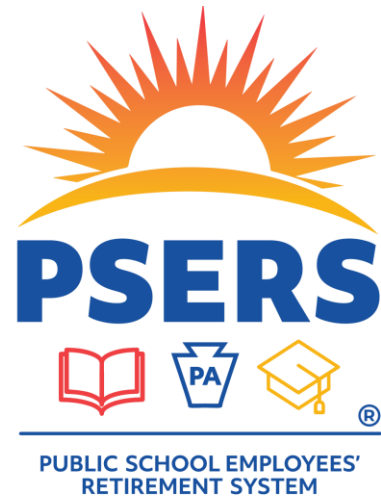
Geographic Focus

North America
Asia & Pacific
Europe
Global/Other

PRIVATE EQUITY FUND-OF-FUNDS

Portfolio Focus

Buyouts
Venture Capital
Diversified
Emerging Managers



Private Markets Strategic Plan and Asset Class Review

A Collaboration Between PSERS IO & Aksia LLC



May 2024