



Trust Level Review

As of September 30, 2023

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Section I. Highlights

Public Employees' Retirement Fund (PERF) Metrics

As of September 30, 2023

\$452.3bn Assets Under Management	6.3% 10-Yr Total Return	(2.5)% Fiscal Year-to-Date Total Return	\$1.8bn 5-Yr Cumulative Value Added	\$(1.7)bn Fiscal Year to-Date Value Added
13.5% Forecasted Volatility	16 bps Forecasted Actionable Tracking Error	31.8% Allocation to Private Assets	2.3x Tier 1 Liquidity Coverage	\$67.9bn Outstanding Committed Capital

Quarter-End Highlights

Capital Markets

- Global public equity markets retreated in Q3 2023 as investors assessed the likelihood of “higher for longer” interest rates, concerns about slowing global growth, and soaring oil prices
- Global Public Equity portfolio returned (3.13)% which outperformed the benchmark return of (3.27)%
- Global Fixed Income portfolio returned (4.6)% which was equal to the benchmark return

Private Markets

- All applicable Private Market asset classes have positive returns for the 5-, 10-, and 20-Year periods
- The repricing of Real Estate continued to weigh on Real Asset absolute returns whilst relative returns outperformed benchmark
- Private Equity 1-Year relative returns are a function of differences in public and private valuation approaches with a strong recovery in public equities following an earlier drawdown

Total Fund Risk

- Portfolio risk metrics remain within expected ranges
- Actionable tracking error (allocation and public market strategies) at 16 bps is within the 100 bps Policy limit
- Outstanding committed capital to private assets is provisioned for with excess liquidity in public assets
- The plan maintains adequate liquidity with 2.3x coverage in 30-day stress scenario

Investment Process

- The recruitment process for the Chief Investment Officer position has started
- Team members initiated five 2023-24 Strategic Initiatives, focused on Pension Resiliency, Sustainable Investing, Stakeholder Engagement, Operational Excellence, and People and Culture

Section II. Performance Tables

PERF Returns As of September 30, 2023

PERF returned (2.5)% fiscal year-to-date and 8.7% for the trailing 1-Yr

- Equity 1-Yr returns were strong at 18.7% while Income returns were lower at 1.4%
- 1-Yr Private return were mixed, with Real Assets delivering negative absolute return (7.1%) but strong relative outperformance, whilst Private Debt and Private Equity delivered positive absolute but negative relative returns. Overall PERF returns over longer periods have fallen below the current 6.8% discount rate

	End Value (bn)	20-Yr	10-Yr	5-Yr	1-Yr	FYTD	1-Qtr
Total PERF	\$ 452.3	6.7%	6.3%	5.1%	8.7%	(2.5)%	(2.5)%
<i>Benchmark</i>		7.2%	6.3%	5.0%	9.7%	(2.2)%	(2.2)%
<i>Excess</i>		(42) bps	(4) bps	7 bps	(105) bps	(36) bps	(36) bps
<i>Cumulative Value Added (bn)</i>	\$ (15.1)	\$ (15.1)	\$ (0.3)	\$ 1.8	\$ (4.5)	\$ (1.7)	\$ (1.7)
Public Equity	\$ 198.1	7.8%	7.6%	6.0%	18.7%	(3.1)%	(3.1)%
<i>Benchmark</i>		7.9%	7.6%	5.9%	18.6%	(3.3)%	(3.3)%
<i>Excess</i>		(13) bps	6 bps	11 bps	13 bps	14 bps	14 bps
<i>Cumulative Value Added (bn)</i>	\$ (0.5)	\$ (0.5)	\$ 1.1	\$ 1.2	\$ 0.2	\$ 0.3	\$ 0.3
Private Equity	\$ 63.5	12.2%	11.6%	11.3%	6.4%	2.2%	2.2%
<i>Benchmark</i>		13.1%	11.9%	9.8%	18.5%	6.6%	6.6%
<i>Excess</i>		(89) bps	(36) bps	149 bps	(1,211) bps	(438) bps	(438) bps
<i>Cumulative Value Added (bn)</i>	\$ (8.9)	\$ (8.9)	\$ (3.4)	\$ 0.1	\$ (7.2)	\$ (2.7)	\$ (2.7)
Income	\$ 121.1	4.2%	1.9%	0.2%	1.4%	(4.6)%	(4.6)%
<i>Benchmark</i>		3.6%	1.4%	(0.0)%	1.5%	(4.6)%	(4.6)%
<i>Excess</i>		60 bps	46 bps	20 bps	(6) bps	1 bps	1 bps
<i>Cumulative Value Added (bn)</i>	\$ 5.5	\$ 5.5	\$ 3.0	\$ 1.1	\$ (0.0)	\$ 0.0	\$ 0.0
Real Assets	\$ 69.3	5.5%	7.3%	5.5%	(7.3)%	(1.7)%	(1.7)%
<i>Benchmark</i>		8.2%	7.4%	5.5%	(10.7)%	(2.8)%	(2.8)%
<i>Excess</i>		(268) bps	(6) bps	(4) bps	334 bps	103 bps	103 bps
<i>Cumulative Value Added (bn)</i>	\$ (13.0)	\$ (13.0)	\$ (1.2)	\$ (1.0)	\$ 2.4	\$ 0.7	\$ 0.7
Private Debt	\$ 10.9	-	-	-	10.7%	3.9%	3.9%
<i>Benchmark</i>		-	-	-	13.1%	3.6%	3.6%
<i>Excess</i>		-	-	-	(249) bps	24 bps	24 bps
<i>Cumulative Value Added (bn)</i>	-	-	-	-	\$ (0.2)	\$ 0.0	\$ 0.0
Net Financing	\$ (24.8)	-	-	-	-	-	-
Other Trust Level	\$ 14.2	-	-	-	-	-	-

Exhibit 2.1

All performance reported net of investment expenses and annualized for periods greater than 1-Yr unless noted as cumulative.

Section II. Performance Tables

PERF Capital Market Returns As of September 30, 2023

All Capital Market segments except High Yield started the fiscal year with negative returns; all segments positive over 10-Yr period

- Rising rates continue to challenge Income segment returns

	End Value (bn)	20-Yr	10-Yr	5-Yr	1-Yr	FYTD	1-Qtr
Cap Weighted	\$ 144.2	8.0%	8.0%	6.8%	21.2%	(3.1)%	(3.1)%
Benchmark		8.1%	7.9%	6.7%	21.0%	(3.2)%	(3.2)%
Excess		(13) bps	7 bps	13 bps	18 bps	18 bps	18 bps
Cumulative Value Added (bn)	\$ (0.8)	\$ 0.9	\$ 0.9	\$ 0.2	\$ 0.3	\$ 0.3	\$ 0.3
Factor Weighted	\$ 53.9	-	-	4.3%	11.9%	(3.3)%	(3.3)%
Benchmark		-	-	4.3%	11.9%	(3.3)%	(3.3)%
Excess		-	-	2 bps	2 bps	3 bps	3 bps
Cumulative Value Added (bn)	-	-	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
Treasury	\$ 22.3	-	0.3%	(2.3)%	(6.7)%	(9.3)%	(9.3)%
Benchmark		-	0.3%	(2.2)%	(6.7)%	(9.3)%	(9.3)%
Excess		-	(0) bps	(8) bps	0 bps	0 bps	0 bps
Cumulative Value Added (bn)	-	\$ (0.2)	\$ (0.2)	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
MBS	\$ 23.1	3.3%	1.5%	(0.5)%	0.1%	(3.9)%	(3.9)%
Benchmark		2.7%	0.7%	(0.6)%	(0.0)%	(3.8)%	(3.8)%
Excess		61 bps	80 bps	15 bps	15 bps	(5) bps	(5) bps
Cumulative Value Added (bn)	\$ 1.1	\$ 0.9	\$ 0.2	\$ 0.0	\$ (0.0)	\$ (0.0)	\$ (0.0)
IG Corporates	\$ 29.7	5.0%	3.0%	0.4%	2.2%	(6.0)%	(6.0)%
Benchmark		4.4%	2.5%	0.2%	2.8%	(6.0)%	(6.0)%
Excess		56 bps	43 bps	28 bps	(68) bps	(4) bps	(4) bps
Cumulative Value Added (bn)	\$ 0.3	\$ 0.3	\$ 0.3	\$ (0.2)	\$ (0.0)	\$ (0.0)	\$ (0.0)
High Yield	\$ 21.2	-	-	2.7%	9.8%	0.1%	0.1%
Benchmark		-	-	2.6%	9.6%	0.1%	0.1%
Excess		-	-	9 bps	19 bps	0 bps	0 bps
Cumulative Value Added (bn)	-	-	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.0
EM Sovereign Bonds	\$ 23.3	-	-	-	-	(2.8)%	(2.8)%
Benchmark		-	-	-	-	(2.9)%	(2.9)%
Excess		-	-	-	-	8 bps	8 bps
Cumulative Value Added (bn)	-	-	-	-	-	\$ 0.0	\$ 0.0

Exhibit 2.2

All performance reported net of investment expenses and annualized for periods greater than 1-Yr unless noted as cumulative.

Section I. Performance Tables

PERF Private Market Returns As of September 30, 2023

All applicable Private Market asset classes have positive returns for the 5-, 10-, and 20-Year periods

- Private Equity excess performance can fluctuate rapidly over short periods with mark to market changes in its public benchmark
- Real Asset delivered strong relative performance mainly but not exclusively attributed to the outperformance of Infrastructure over Real Estate

	End Value (bn)	20-Yr	10-Yr	5-Yr	1-Yr	FYTD	1-Qtr
Private Equity	\$ 63.5	12.2%	11.6%	11.3%	6.4%	2.2%	2.2%
<i>Benchmark</i>		13.1%	11.9%	9.8%	18.5%	6.6%	6.6%
<i>Excess</i>		(89) bps	(36) bps	149 bps	(1,211) bps	(438) bps	(438) bps
<i>Cumulative Value Added (bn)</i>		\$ (8.9)	\$ (3.4)	\$ 0.1	\$ (7.2)	\$ (2.7)	\$ (2.7)
Private Debt	\$ 10.9	-	-	-	10.7%	3.9%	3.9%
<i>Benchmark</i>		-	-	-	13.1%	3.6%	3.6%
<i>Excess</i>		-	-	-	(249) bps	24 bps	24 bps
<i>Cumulative Value Added (bn)</i>		-	-	-	\$ (0.2)	\$ 0.0	\$ 0.0
Infrastructure	\$ 15.3	-	11.2%	7.9%	5.4%	2.7%	2.7%
<i>Benchmark</i>		-	5.5%	5.5%	(10.7)%	(2.8)%	(2.8)%
<i>Excess</i>		-	565 bps	240 bps	1,608 bps	549 bps	549 bps
<i>Cumulative Value Added (bn)</i>		-	\$ 2.4	\$ 1.3	\$ 2.3	\$ 0.8	\$ 0.8
Real Estate	\$ 53.7	5.2%	7.3%	5.0%	(10.5)%	(2.9)%	(2.9)%
<i>Benchmark</i>		8.6%	7.7%	5.5%	(10.7)%	(2.8)%	(2.8)%
<i>Excess</i>		(348) bps	(40) bps	(47) bps	21 bps	(16) bps	(16) bps
<i>Cumulative Value Added (bn)</i>		\$ (14.6)	\$ (2.6)	\$ (2.1)	\$ (0.0)	\$ (0.1)	\$ (0.1)
Forestland	\$ 0.3	-	0.0%	3.5%	10.6%	(1.2)%	(1.2)%
<i>Benchmark</i>		-	5.9%	5.5%	(10.7)%	(2.8)%	(2.8)%
<i>Excess</i>		-	(589) bps	(204) bps	2,127 bps	152 bps	152 bps
<i>Cumulative Value Added (bn)</i>		-	\$ (1.1)	\$ (0.2)	\$ 0.1	\$ 0.0	\$ 0.0

Exhibit 2.3

All performance reported net of investment expenses and annualized for periods greater than 1-Yr unless noted as cumulative.

Section I. Performance Tables

Affiliate Investment Program Returns As of September 30, 2023

Affiliate returns were in line with respective asset allocations

- Affiliate funds are passively managed strategies, except for Long-Term Care Fund, with realized returns and volatility in line with the assigned asset allocation and benchmarks
- Positive excess returns are largely due to structural tax advantages of public equity and real estate investment trusts (REITs) funds vs their respective benchmarks

Defined Benefit, Health, and OPEB Plans	End Value (mm)	20-Yr	10-Yr	5-Yr	1-Yr	FYTD	1-Qtr
Judges' Retirement Fund	\$ 49.1	1.5%	1.3%	1.9%	4.9%	1.4%	1.4%
<i>Benchmark</i>		1.4%	1.1%	1.7%	4.5%	1.3%	1.3%
<i>Excess</i>		14 bps	14 bps	15 bps	46 bps	7 bps	7 bps
Judges' Retirement System Fund II	\$ 2,235.3	6.2%	5.2%	4.0%	10.8%	(3.8)%	(3.8)%
<i>Benchmark</i>		6.1%	5.0%	3.7%	10.5%	(3.9)%	(3.9)%
<i>Excess</i>		13 bps	26 bps	28 bps	34 bps	5 bps	5 bps
Legislators' Retirement System Fund	\$ 89.6	5.0%	3.4%	2.1%	3.7%	(4.3)%	(4.3)%
<i>Benchmark</i>		4.9%	3.2%	2.0%	3.7%	(4.3)%	(4.3)%
<i>Excess</i>		13 bps	21 bps	12 bps	3 bps	(2) bps	(2) bps
Health Care Fund	\$ 198.5	2.9%	1.2%	0.1%	0.6%	(3.2)%	(3.2)%
<i>Benchmark</i>		2.8%	1.1%	0.1%	0.6%	(3.2)%	(3.2)%
<i>Excess</i>		10 bps	11 bps	(1) bps	(3) bps	1 bps	1 bps
Long-Term Care Fund	\$ 3,907.5	4.6%	2.7%	1.7%	3.2%	(4.0)%	(4.0)%
<i>Benchmark</i>		4.4%	2.6%	1.7%	3.4%	(3.7)%	(3.7)%
<i>Excess</i>		13 bps	9 bps	(1) bps	(20) bps	(25) bps	(25) bps
CERBT Strategy 1 Fund	\$ 14,813.8	-	5.3%	4.0%	10.3%	(3.9)%	(3.9)%
<i>Benchmark</i>		-	5.0%	3.8%	10.1%	(3.9)%	(3.9)%
<i>Excess</i>		-	32 bps	21 bps	23 bps	4 bps	4 bps
CERBT Strategy 2 Fund	\$ 1,765.2	-	4.2%	2.9%	6.9%	(4.4)%	(4.4)%
<i>Benchmark</i>		-	3.9%	2.8%	6.7%	(4.4)%	(4.4)%
<i>Excess</i>		-	26 bps	13 bps	12 bps	(0) bps	(0) bps
CERBT Strategy 3 Fund	\$ 752.7	-	3.3%	2.2%	4.5%	(4.6)%	(4.6)%
<i>Benchmark</i>		-	3.1%	2.1%	4.4%	(4.6)%	(4.6)%
<i>Excess</i>		-	25 bps	9 bps	5 bps	(1) bps	(1) bps
CEPPT Strategy 1 Fund	\$ 129.5	-	-	-	8.0%	(3.6)%	(3.6)%
<i>Benchmark</i>		-	-	-	7.8%	(3.6)%	(3.6)%
<i>Excess</i>		-	-	-	18 bps	4 bps	4 bps
CEPPT Strategy 2 Fund	\$ 45.5	-	-	-	4.7%	(3.4)%	(3.4)%
<i>Benchmark</i>		-	-	-	4.7%	(3.4)%	(3.4)%
<i>Excess</i>		-	-	-	(4) bps	4 bps	4 bps

Exhibit 2.4

All performance reported net of investment expenses and annualized for periods greater than 1-Yr.

Section I. Performance Tables

Affiliate Investment Program Returns (cont.) As of September 30, 2023

Target Date Fund returns were in line with respective asset allocations

- Target Date Funds closely tracked their respective benchmarks
- Positive excess returns are largely due to structural tax advantages of public equity and real asset investments vs their respective benchmarks

Supplemental Income Plans (457/SCP Plan)	End Value (mm)	20-Yr	10-Yr	5-Yr	1-Yr	FYTD	1-Qtr
Target Income Fund	\$ 175.7	-	3.0%	3.0%	7.4%	(2.8)%	(2.8)%
<i>Benchmark</i>		-	2.9%	2.8%	7.3%	(2.7)%	(2.7)%
<i>Excess</i>		-	13 bps	14 bps	16 bps	(2) bps	(2) bps
Target 2020 Fund	\$ 154.4	-	3.7%	3.8%	9.4%	(2.8)%	(2.8)%
<i>Benchmark</i>		-	3.6%	3.6%	9.2%	(2.8)%	(2.8)%
<i>Excess</i>		-	13 bps	17 bps	19 bps	(3) bps	(3) bps
Target 2025 Fund	\$ 210.6	-	4.5%	4.4%	11.9%	(3.0)%	(3.0)%
<i>Benchmark</i>		-	4.4%	4.3%	11.6%	(2.9)%	(2.9)%
<i>Excess</i>		-	15 bps	18 bps	23 bps	(4) bps	(4) bps
Target 2030 Fund	\$ 217.4	-	5.1%	5.0%	14.1%	(3.0)%	(3.0)%
<i>Benchmark</i>		-	5.0%	4.9%	13.8%	(3.0)%	(3.0)%
<i>Excess</i>		-	11 bps	13 bps	28 bps	(5) bps	(5) bps
Target 2035 Fund	\$ 150.1	-	5.8%	5.6%	16.9%	(3.2)%	(3.2)%
<i>Benchmark</i>		-	5.7%	5.5%	16.5%	(3.1)%	(3.1)%
<i>Excess</i>		-	12 bps	15 bps	33 bps	(6) bps	(6) bps
Target 2040 Fund	\$ 140.3	-	6.5%	6.2%	19.3%	(3.3)%	(3.3)%
<i>Benchmark</i>		-	6.4%	6.0%	18.9%	(3.2)%	(3.2)%
<i>Excess</i>		-	13 bps	15 bps	37 bps	(7) bps	(7) bps
Target 2045 Fund	\$ 83.9	-	6.8%	6.3%	19.7%	(3.3)%	(3.3)%
<i>Benchmark</i>		-	6.7%	6.1%	19.3%	(3.2)%	(3.2)%
<i>Excess</i>		-	13 bps	15 bps	38 bps	(7) bps	(7) bps
Target 2050 Fund	\$ 52.8	-	6.8%	6.3%	19.7%	(3.3)%	(3.3)%
<i>Benchmark</i>		-	6.7%	6.1%	19.3%	(3.2)%	(3.2)%
<i>Excess</i>		-	13 bps	15 bps	38 bps	(7) bps	(7) bps
Target 2055 Fund	\$ 20.4	-	6.7%	6.3%	19.7%	(3.3)%	(3.3)%
<i>Benchmark</i>		-	6.6%	6.1%	19.3%	(3.2)%	(3.2)%
<i>Excess</i>		-	7 bps	15 bps	39 bps	(7) bps	(7) bps
Target 2060 Fund	\$ 9.8	-	-	-	19.7%	(3.3)%	(3.3)%
<i>Benchmark</i>		-	-	-	19.3%	(3.2)%	(3.2)%
<i>Excess</i>		-	-	-	38 bps	(7) bps	(7) bps
Target 2065 Fund¹	\$ 1.8	-	-	-	-	-	(3.3)%
<i>Benchmark</i>		-	-	-	-	-	(3.2)%
<i>Excess</i>		-	-	-	-	-	(7) bps

Exhibit 2.5

All performance reported net of investment expenses and annualized for periods greater than 1-Yr.

Section II. Performance Tables

Affiliate Investment Program Returns (cont.) As of September 30, 2023

Core Fund returns were in line with benchmarks

- Core Funds closely track their respective benchmarks
- Positive excess returns are largely due to structural tax advantages of the Global All Cap ex-US public equity and Real Assets funds vs their respective benchmarks

Supplemental Income Plans (457/SCP Plan) (cont.)	End Value (mm)	20-Yr	10-Yr	5-Yr	1-Yr	FYTD	1-Qtr
SSgA STIF	\$ 120.4	-	1.3%	1.9%	4.9%	1.4%	1.4%
<i>Benchmark</i>		-	1.1%	1.7%	4.5%	1.3%	1.3%
<i>Excess</i>		-	17 bps	17 bps	48 bps	7 bps	7 bps
SIP US Short Term Bond Core	\$ 37.3	-	-	1.2%	2.8%	0.7%	0.7%
<i>Benchmark</i>		-	-	1.2%	2.8%	0.7%	0.7%
<i>Excess</i>		-	-	(4) bps	3 bps	(1) bps	(1) bps
SIP US Bond Core	\$ 51.0	-	-	0.1%	0.6%	(3.2)%	(3.2)%
<i>Benchmark</i>		-	-	0.1%	0.6%	(3.2)%	(3.2)%
<i>Excess</i>		-	-	2 bps	(3) bps	(0) bps	(0) bps
SIP Real Asset Core	\$ 18.2	-	-	5.8%	4.4%	(0.7)%	(0.7)%
<i>Benchmark</i>		-	-	5.7%	4.3%	(0.6)%	(0.6)%
<i>Excess</i>		-	-	7 bps	7 bps	(3) bps	(3) bps
SIP Russell All Cap Core	\$ 651.5	-	-	9.2%	20.5%	(3.2)%	(3.2)%
<i>Benchmark</i>		-	-	9.1%	20.5%	(3.3)%	(3.3)%
<i>Excess</i>		-	-	4 bps	6 bps	3 bps	3 bps
SIP Global All Cap EX-US	\$ 68.8	-	-	2.8%	21.1%	(3.7)%	(3.7)%
<i>Benchmark</i>		-	-	2.6%	20.2%	(3.5)%	(3.5)%
<i>Excess</i>		-	-	26 bps	91 bps	(22) bps	(22) bps

Exhibit 2.6

All performance reported net of investment expenses and annualized for periods greater than 1-Yr.

Section III. Markets and Economy

Macroeconomic Drivers and Outlook

Global growth expectations revised higher; soft-landing largely expected

Higher longer-term interest rates a driver of asset returns

- Over the past quarter, the United States and global economies experienced uneven disinflation amidst mixed economic activity. The global economic expansion continued, led by the US, which exhibited resilience
- Most notable for asset returns has been increased expectations for a soft-landing for the US economy and a delay in expectations for a deterioration in real GDP growth
- Central banks continued to express a firm commitment to tight monetary conditions to ensure inflation tracks back to target. Throughout the quarter, the forward path of interest rates, as priced in financial markets, slowly eroded the size of rate cuts priced in. Correspondingly, a falling probability of an imminent recession resulted in a re-pricing of future expected interest rates higher across all maturities, in particular at longer durations
- Higher interest rates on longer-dated US Treasuries has also been associated with a number of other factors; such as larger US Treasury Department issuance than expected, a ratings downgrade, position adjustments by investors, technical changes to the Bank of Japan's monetary policy impacting global yields, and upward revisions to US national accounts data boosting expectations for the pace of economic growth into the end of 2023
- Higher interest rates were a contributing factor behind weaker equity and income returns over the quarter, while the re-pricing of real estate continued to weigh on returns in this sector. Private debt, which benefits from higher interest rates, performed well over the quarter
- Looking ahead, official institutions continue to expect global economic activity to soften and note the balance of risks remain to the downside. Geopolitical risks remain prominent. The IMF projects the global economy will grow 3.0% in 2023 (compared to 2.9% in April), and 2.9% in 2024

US Treasury 10-year note

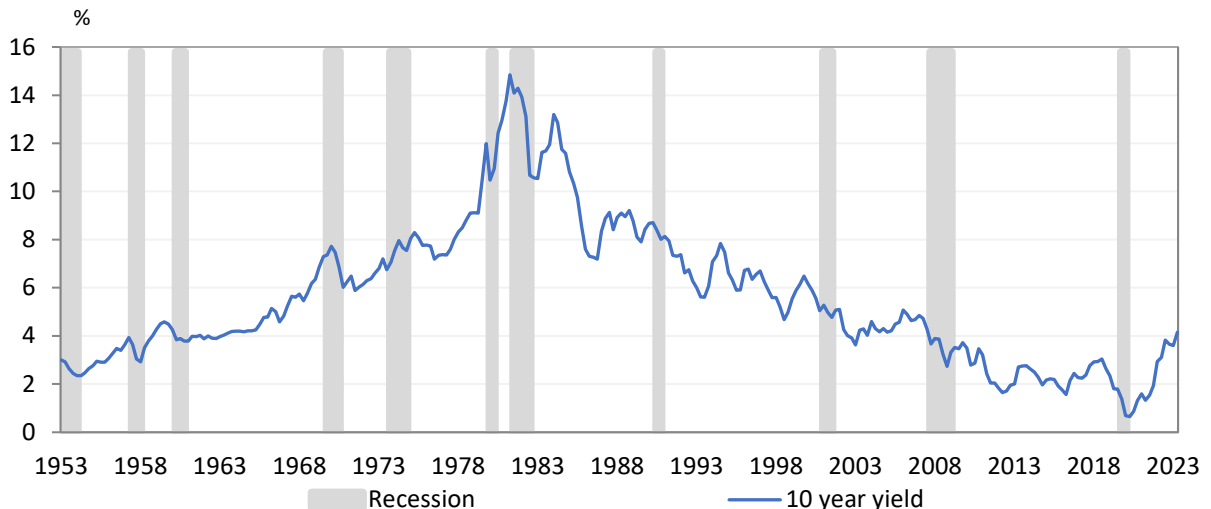


Exhibit 3.1

Source: Haver Analytics. Treasury note is constant maturity yield.

Section IV. PERF Allocation

Strategic Asset Allocation As of September 30, 2023

Allocation remains within policy bands

Interim Targets and Policy Bands

- The Board’s General Pension Consultant, in consultation with the Investment Committee and staff, establishes Interim Allocation Targets to reflect reasonable expected pacing to implement the long-term SAA
- Allocation remains in line with policy bands and on pace to longer-term allocation targets

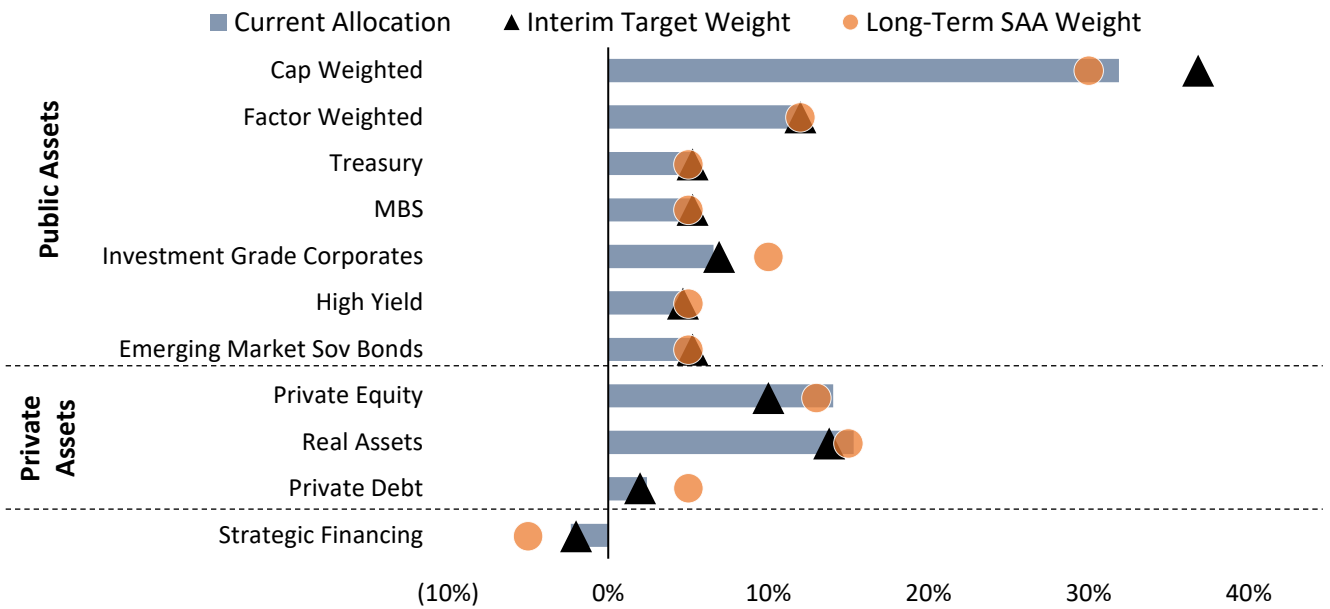


Exhibit 4.1

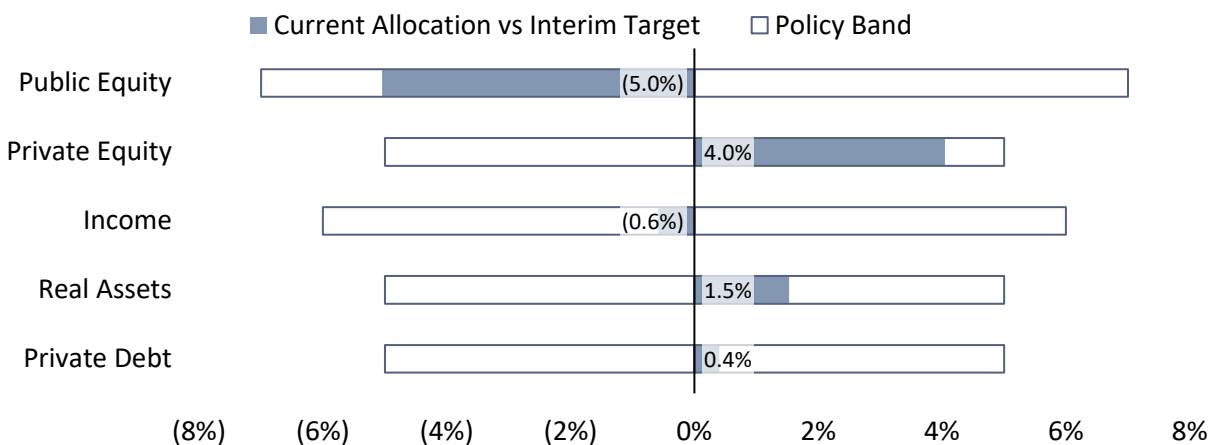


Exhibit 4.2

Section V. PERF Risk Detail

Volatility

Total portfolio volatility has been in line with expectations

Current Levels

- Total Fund Forecasted Volatility for PERF has been relatively stable for the last 12 months . Its fluctuations were driven by trading to implement the new Strategic Asset Allocation adopted in November 2021. The difference between Total Fund and Policy Benchmark volatility is primarily driven by the private equity portfolio versus its public market benchmark
- Actionable Tracking Error is well below the Policy Limit of 100 bps and indicative of opportunities to increase active management. This metric captures deviations from benchmarks for all public market programs, out of benchmark opportunistic investments, and asset allocation. There is no equivalent quantitative metric for private programs due to inherent limitations in modeling, measurement, and benchmarking

	Policy Limit	Current 9/30/2023	Last Qtr 6/30/2023	Last Year 9/30/2022
Total Fund Volatility (%)	-	13.5	13.7	13.7
Policy Benchmark Volatility (%)	-	12.3	12.5	12.5
Tracking Error (%)				
Actionable	< 1.00	0.16	0.14	0.11
Total Fund	-	1.81	1.84	1.62
Allocation	-	0.04	0.01	0.00

Exhibit 5.1

Section V. PERF Risk Detail

Risk Decomposition As of September 30, 2023

Growth oriented asset classes dominate overall risk

% Contribution to Total Portfolio Volatility

- Public and Private Equities contribute approximately 81% of Total Fund Volatility. The remaining asset classes are also either growth-oriented (e.g., Real Assets) or contain growth-oriented components (e.g., High Yield in fixed income)

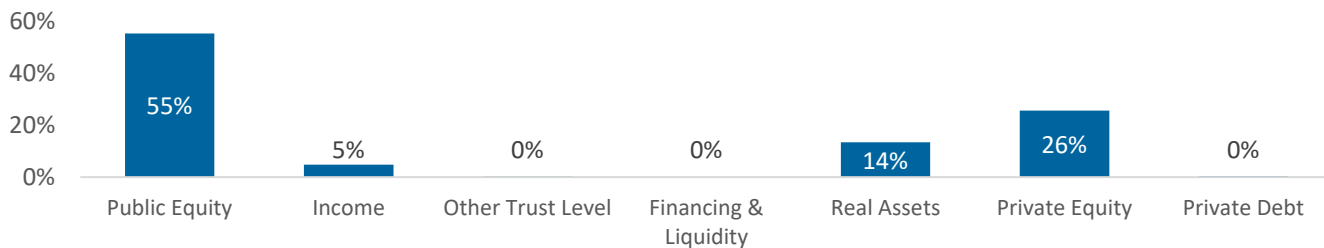


Exhibit 5.2

Asset Class	Market Value (\$ Millions)	Total Forecasted Volatility (%)	% Contribution to Total Volatility	5-Year Realized Volatility (%)
Public Asset Classes				
Public Equity	\$ 197,875	17.4	55.4	17.3
Cap Weighted	\$ 144,050	18.8	43.4	18.4
Factor Weighted	\$ 53,825	14.0	12.0	13.7
Income	\$ 120,692	6.5	4.8	9.5
IG Corp	\$ 29,685	9.6	1.4	12.0
EM Sov Debt	\$ 23,304	7.6	1.9	-
MBS	\$ 23,262	6.2	0.2	5.3
Treasury	\$ 23,261	10.7	-0.3	11.9
High Yield	\$ 21,180	6.4	1.6	9.3
Other Trust Level	\$ 15,619	2.7	0.3	-
LLER	\$ 12,516	2.8	0.3	3.1
Opportunistic	\$ 243	3.2	0.0	-
Total Fund Income	\$ 1,508	2.2	0.0	-
Other	\$ 1,353	4.1	0.0	-
Financing & Liquidity	\$ (26,334)	-	0.0	-
Liquidity	\$ 8,069	0.0	0.0	0.0
Trust Level Financing	\$ (34,402)	-	0.0	-
Private Asset Classes				
Real Assets	\$ 69,426	13.0	13.5	5.6
Private Equity	\$ 63,448	25.7	25.6	10.7
Private Debt	\$ 10,867	4.8	0.4	-
TOTAL PERF	\$ 451,594	13.5	100.0	9.6

Exhibit 5.3

¹ Data source: Blackrock's Aladdin; some differences with State Street primarily due to timing of recording some cash flows

Section V. PERF Risk Detail

Risk Decomposition (cont.) As of September 30, 2023

LLER is the largest contributor to actionable tracking error

% Contribution to Actionable Tracking Error

- Total Fund Actionable Tracking Error (TE) is modest at 16 bps vs. a policy limit of 100 bps
- The primary contributors to Actionable TE are the Low Liquidity Enhanced Return (LLER) program and external public equity managers

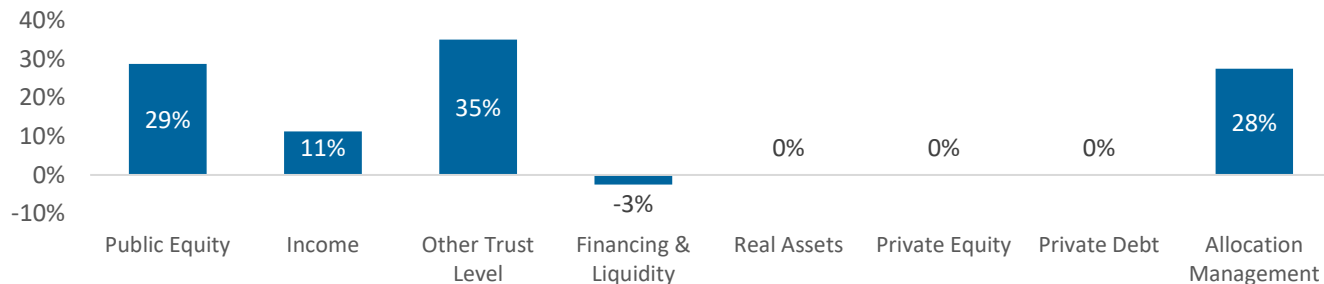


Exhibit 5.4

Asset Class	Tracking Error (bps)	% Contribution to Actionable TE	5-Year Realized TE (bps)
Public Equity	24	29	20
Cap Weighted	33	29	26
Factor Weighted	5	0	10
Income	20	11	28
IG Corp	42	4	44
EM Sov Debt	50	8	-
MBS	25	1	31
Treasury	24	1	86
High Yield	35	-3	30
Other Trust Level	266	35	-
LLER	284	33	300
Opportunistic	322	1	-
Total Fund Income	221	2	-
Other	410	-1	-
Financing & Liquidity	-	-3	-
Liquidity	16	0	-
Trust Level Financing	-	-3	-
Allocation Management	-	28	-
TOTAL PERF Actionable	16	100	20
Real Assets	458		271
Private Equity	963		1,400
Private Debt	162		-
TOTAL PERF	181		164

Exhibit 5.5

Appendix 1: PERF Benchmarks

<u>Asset Class</u>	<u>Policy Benchmark</u>
Public Equity – Cap Weighted	CalPERS Custom FTSE All World, All Cap Equity Benchmark
Public Equity – Factor Weighted	CalPERS Custom FTSE Factor Weighted Index
Private Equity	CalPERS Custom FTSE Global Benchmark +150 bps, Quarter Lag
Income - Treasury	Custom Bloomberg Government
Income - MBS	Custom Bloomberg Mortgage
Income - IG Corporates	Custom Bloomberg Corporate ex Sov
Income - High Yield	Custom Bloomberg High Yield
Income - EM Sovereign Bonds	Custom JP Morgan EMBIG Diversified
Real Assets	MSCI/PREA U.S. ACOE Quarterly Property Fund index (Unfrozen), Quarter Lag
Private Debt	S&P/ LSTA U.S. Leveraged Loan 100 Index +125 bps, Quarter Lag
Strategic Leverage	ICE BofA US 3-Month Treasury Bill Index +50 bps

Appendix 2: Definitions

<u>Term</u>	<u>Definition</u>
10 Year U.S. Treasury	The 10-Yr Treasury note (bond) is a debt obligation issued by the United States government with a maturity of 10 years upon initial issuance. A 10-Yr Treasury note pays interest at a fixed rate once every six months and pays the face value to the holder at maturity. The “10-Yr” is viewed as a sign of investor sentiment about the economy. A rising yield for the 10-Yr indicates falling demand for Treasury bonds, which means investors prefer higher-risk, higher-reward investments. A falling yield suggests the opposite.
Annual average percent change (aapc)	The change in a variable between one entire year and the prior entire year. This differs to an annual percent change, which looks at one point in time compared with the same point in time a year earlier.
Actionable Tracking Error	Investment Policy definition of the Total Fund tracking error that excludes the effect of active exposure from private asset classes arising from the modeling challenges and the non-investible nature of their benchmarks.
Active Leverage	The portion of Total Fund leverage that is controlled by staff and used to fund exposures incremental to the Strategic Asset Allocation.
Alpha	The measure of the return of an investment relative to an appropriate benchmark.
Basis Point (BP)	1 basis point is 1/100 of a percent or 0.01%.
Beta	A statistical measure of investment or portfolio return sensitivity to the market where the market is typically defined by a market index. A beta of 1.0 means the investment moves in synch with the market. A beta of 0.5 means the investment moves 50% as much as the market. A beta of 1.5 means the investment moves 150% as much as the market. For example, a portfolio with a beta of 0.8 is expected to have an 8% return when the market returns 10%.
Benchmark	A collection of assets to compare against the portfolio’s assets. These are typically market indices (e.g., SP500 or Bloomberg Barclays Global Aggregate). Benchmarks can be a useful tool to evaluate performance and risk.
Central Banks	The principal monetary authority of a nation, a central bank performs several key functions, including issuing currency and regulating the supply of credit in the economy. The Federal Reserve is the central bank of the United States.

<u>Term</u>	<u>Definition</u>
Consensus Economics	Consensus Economics is a global macroeconomic survey firm that polls more than 700 economists monthly for their forecasts for over 2,000 macroeconomic indicators in 115 countries. The company is headquartered in London, United Kingdom.
Consumer Prices Index (CPI)	An index which measures changes in the prices of a (weighted average) basket of goods and services. This basket is representative of aggregate U.S. consumer spending and is a common reference point for inflation.
Counterparty	The legal entity that holds the other side of a contract or financial transaction.
Economic Activity	Any action that involves producing, distributing, or consuming products or services is an economic activity. Used synonymously with real GDP growth.
Event Risk	Refers to any future potential occurrence that can cause losses for investors or other stakeholders in a company or investment.
Excess Return	The portfolio return minus the portfolio benchmark return. Time-weighted excess return is not affected by the amount of capital invested.
Federal Reserve Open Market Committee (FOMC)	A twelve-member committee made up of the seven members of the Board of Governors; the president of the Federal Reserve Bank of New York; and, on a rotating basis, the presidents of four other Reserve Banks. The FOMC meets eight times a year to set Federal Reserve guidelines regarding the purchase and sale of government securities in the open market and the policy (overnight) interest rate as a means of influencing the volume of bank credit and money in the economy.
Financial Market Pricing	Current price at which an asset or service can be bought or sold. The market price of an asset or service is determined by the forces of supply and demand and, when traded in real time on global financial markets, can be influenced by (unrealized) expectations around the future.
Future Commission Merchant (FCM)	Highly regulated entities that accept orders for exchange traded contracts in Central Counterparty Clearing House (CCPs). Collateral posted at the FCM is mostly used to meet the margin requirements at the CCPs. The collateral in the counterparty section has been provided to the FCM to post at the CCPs on behalf of CalPERS and bridging operational timing and processing gaps in collateral transfer.
High Yield (HY)	Compared to Investment Grade, these bonds have a lower credit rating meaning they have a relatively higher risk of default. Due to their higher probability of default, they pay a higher yield to compensate investors for the additional risk.

<u>Term</u>	<u>Definition</u>
Inflation	A rate of increase in the general price level of goods and services. The general term 'inflation' usually refers to the change in the CPI index over one year.
International Monetary Fund (IMF)	An international organization with 146 members, including the United States. The main functions of the IMF are to lend funds to member nations to finance temporary balance of payments problems, to facilitate the expansion and balanced growth of international trade, and to promote international monetary cooperation among nations. The IMF also creates special drawing rights (SDR's), which provide member nations with a source of additional reserves. Member nations are required to subscribe to a Fund quota, paid mainly in their own currency. The IMF grew out of the Bretton Woods Conference of 1944.
International Swaps and Derivatives Association (ISDA)	A trade organization of market participants that facilitates standardization of contractual agreements to trade over-the-counter derivative contracts. CalPERS enters into ISDA agreements to trade derivatives; for example, FX forwards, total return and interest rate swaps.
Investment Grade (IG)	Bonds with a higher credit rating meaning they have a relatively low risk of default.
Liquidity Coverage Ratio	Metric refers to the proportion of liquid assets to meet short term obligations under a stress scenario (within 30 days). The ratio divides Sources of Liquidity by Uses of Liquidity.
Liquidity (sources of)	Includes: Cash Equivalents, Pension Contributions & Other Inflows, Internal Funding and Liquidity on Demand.
Liquidity (uses of)	Includes: Pension Benefits, Private Asset Funding, Contingent uses and Maturing Derivatives/Repos & Others.
Macroeconomics	A branch of economics that studies how an overall economy (markets, businesses, consumers, and governments) behave. Macroeconomics examines economy-wide phenomena such as inflation, price levels, rate of economic growth, national income, gross domestic product (GDP), and changes in unemployment.
Master Repurchase Agreement (MRA)	The bilateral agreement that governs the collateralized loans of securities. CalPERS uses this contract to enter into forward purchase/repurchase of US Treasuries and Mortgage securities and to post/receive collateral in return (also known as Repo and Reverse Repo).

<u>Term</u>	<u>Definition</u>
Master Securities Forward Transaction Agreement (MFSTA)	The bilateral agreement that CalPERS uses to enter into forward purchase or sale of mortgage bonds and "TBA" instruments.
Net Asset Value (NAV)	The value of an investment fund's assets less its liabilities.
Net Return	Performance net of internal and external investment office management expenses. CalPERS' performance uses a daily Modified-Dietz methodology which is geometrically linked to produce time-weighted returns for longer periods.
	Daily Rate of Return Formula <ul style="list-style-type: none"> • 6/30/2016 & Prior: Dollar Value Added / (Beginning Market Value + Net Cash Flows) • 7/1/2016 to Present: Dollar Value Added / Beginning Market Value • Dollar Value Added = Gains/losses due to price appreciation and income
	Daily returns are geometrically linked to produce longer period returns.
Unfunded Commitments	A legally binding commitment to a private asset investment fund/vehicle for which the capital has not yet been drawn.
Oil (Brent)	A crude oil blend commonly referred to as Brent Blend, London Brent, or Brent petroleum. It is the main global benchmark for oil prices.
Oil (WTI)	West Texas Intermediate is also crude oil blend. It serves as the main US benchmark for oil prices.
Over the Counter (OTC)	A decentralized market where participants trade stocks, bonds, currencies, or derivatives without a centralized exchange or broker.
Public Employee's Retirement Fund (PERF)	An investment fund created under California state statute and exclusively controlled by the CalPERS Board. The fund is managed with the expressed purpose of paying retirement benefits to participating members.
Policy Rate	The policy interest rate is that at which the central bank will pay or charge commercial banks for their deposits or loans. This rate affects the interest rate that commercial banks apply with their customers, both borrowers and depositors, and more generally, impacts on the general price (rate) of credit in the economy.

<u>Term</u>	<u>Definition</u>
Portfolio Market Value	<p>The sum of the underlying investment values +/- any open receivables or payables (uninvested assets), consistent with the Net Asset Value or Total Net Assets reported in accounting.</p> <ul style="list-style-type: none"> • Public Asset Market Values are calculated as units held x price per unit + accrued income. • Private Asset Market Values represent an opinion of value as of a certain date as stated by either the investment advisor or independent appraiser. Market value differs from amount funded or net investment in that the value includes unrealized gains or losses during the holding period.
Real Gross Domestic Product (GDP)	<p>Measures the total economic output of a country over a specified period (often a year) adjusted for changes in price. The total economic output refers to the volume of all goods and services produced by an economy. It is often referred to as constant-price GDP or constant dollar GDP.</p>
SLA/Sec Lending	<p>Refers to the Securities Lending Agreement ("SLA") under which CalPERS lends securities and receives either cash or other securities as collateral.</p>
Supply-Chain	<p>A network of individuals and companies who are involved in creating a product and delivering it to the consumer. Links on the chain begin with the producers of the raw materials and end when the finished product is delivered to the end user.</p>
Supplemental Income Plans (SIP)	<p>Refers to the combined program for the Public Employees' Deferred Compensation Fund and the Supplemental Contributions Program.</p>
Tracking Error	<p>Standard deviation of the differential return between the portfolio and an equal investment in the benchmark.</p>
Uncertainty	<p>The range of possible values or paths. These are unknown.</p>
Value Added	<p>The incremental gain or loss in dollars resulting from portfolio implementation, active management, and imperfectly investible benchmarks. Over shorter time horizons, the benchmark component can create significant variability in outcomes. Unlike a time-weighted excess return which does not account for the size of the investment, value added will vary with the amount of capital invested. Also referred to as "Dollar Value Added".</p>
Volatility	<p>A measure of the distribution of portfolio returns (or a given security). It is typically defined as the statistical standard deviation of returns, annualized.</p>

<u>Term</u>	<u>Definition</u>
Wage Growth	Wages are the compensation paid to employees for the work or services they perform over a specified period. In the US it is often described as average hourly earnings. Wage growth typically refers to the annual change in wages.
Yield Curve	A yield curve is a line that plots yields (interest rates) of bonds having equal credit quality but differing maturity dates. The slope of the yield curve gives an idea of future interest rate changes and economic activity. There are three main yield curve shapes: normal (upward sloping curve), inverted (downward sloping curve), and flat.