Asset Liability Management: Reference Portfolio Design & Active Risk Limits

Stephen Gilmore Chief Investment Officer Michele Nix Chief Financial Officer Scott Terando Chief Actuary

Investment Committee June 16, 2025



2025 Asset Liability Management (ALM) Timeline

Stakeholder Engagement Throughout Cycle			
APRIL	JUNE	JULY	
Education Session: Experience Study Update	Education Session: Reference Portfolio Design and	Board Offsite Education Session	
Stakeholder Webinar April 4	Active Risk Limits	Stakeholder Webinar July 24	
SEPTEMBER	NOVEMBER	R DECEMBER	
First Reading on Recommen Proposed Reference Portfolio Risk Limits, Expected Rate of Experience Study, Actuar	nded: Board Vote on Recomm , Active Proposed Reference Por Return, Risk Limits, Expected Ra ial Experience Study, A	nended: Stakeholder Webinar tfolio, Active December 4 te of Return, ctuarial	
Assumptions, and Discount ALM Strategy Closed Ses	sion ALM Strategy Closed S	ALM EffectiveSessionDate July 1, 2026	



Today's Presentation

Reference Portfolio (RP) Design

Comparing Return Expectations

Setting Active Risk Limits Using the Current Portfolio

Adding Value With Active Risk



Asset Liability Management

Reference Portfolio Design

An Expression of the Board's Risk Tolerance

Purpose

Establishes the Board's Risk Tolerance for Broad Market Risk

Key Input to Set Forward Return Expectations

Primary Benchmark to Measure & Evaluate Management's Use of Complexity, Illiquidity, and Skill to Add Value

Characteristics

Accessible

Public Asset Classes That Stakeholders Can Recognize, and CalPERS Has Experience Managing

Investible

A Truly Viable Low-Cost Alternative for CalPERS \$500b+ Portfolio, Including Our Institutional Constraints

Operationally Simple

Indexed Strategies That Minimize Investment Complexity in Either Design or Implementation



Reference Portfolio Index Types

Accessible, Investible, and Operationally Simple

	<u>Proposed</u>	Reasons Why
Equities	Cap Weighted Global Equities	 Commonly Used Market Efficient Minimizes Turnover/Cost Continuity: Largest Current PERF Asset Class
Bonds	US Treasury Bonds (1+ year Maturity)	 Adds Term Premium & Diversifies From Equities US Debt Still the Go-To Risk-Free Cash Alternative Continuity: Similar Overall Interest Rate Exposure as Current PERF SAA

Specific Benchmarks will be Proposed by the Board's Consultant



Expected Returns Vary by Time Horizon & Methodology Comparing 1st Quarter 2025 Projected Return Ranges





Defining Active Risk in Total Portfolio Approach Diversifying From the Reference Portfolio

Every Non-Reference Portfolio Investment Decision is an Active Decision and Counts as Active Risk Taken

Brings Diversification Benefits That Can Add or Reduce Total Portfolio Risk

Management Will Use Active Risk to Add Value With Private Assets, Active Selection, & Other Sources of Complexity

Brings Clarity, Transparency, & Accountability in Measuring Management's Skill



Agenda Item 6b Attachment 1, page 8 of 17

Existing Total Discretion is Enough for TPA



Marginal Contributions to Active Risk

Different Active Positions Bring Distinct Contributions to Active Risk

Change in Position + 1% - 1%			Active Risk Contribution*
Equities	vs	Treasury	23 bps
Equities	VS	Cash	19 bps
Treasury	VS	Cash	10 bps
Core Infrastructure	VS	Equities / Treasury	10 bps
Investment Grade	VS	Treasury	6 bps
Private Equity Buyout	vs	Equities	6 bps

*Impact for Each Position is Independent From Others

CalPERS Hypothetical Sample to Demonstrate the Concept

Active Risk is Expected to Add Significant Value Management's Skill Can Add Value in Several Ways

Asset Mix		65/35	70/30	75/25	80/20	
Reference Portfolio Expected Return		6.1%	6.2%	6.3%	6.4%	
Active Value Complexity, Illiqui		25-80 bps across all Reference Portfolios				
Add	Selection, Timing, Other	ction, Timing, Other 10-40 bps across all Reference Portfol				
Total Portfolio		6.5% - 7.3%	6.6% - 7.4%	6.7% - 7.5%	6.8% - 7.6%	
Asset Mix		65/35	70/30	75/25	80/20	
Reference Portfolio Volatility		10.7%	11.5%	12.3%	13.2%	
Active Risk	250 – 350 bps across all Reference Portfolios					
Total Portfolio		10.5% - 11.6%	11.4% - 12.4%	12.1% - 13.1%	13.0% - 14%	



1st Quarter 2025 CMAs Survey Median. See Appendix for Footnote in Full.

Agenda Item 6b Attachment 1, page 11 of 17

Asset Liability Management

Private Markets Expected to Enhance Returns

Asset Mix	65/35	70/30	75/25	80/20
Projected Reference Portfolio Returns	6.1%	6.2%	6.3%	6.4%
Value-Add From Risk-Comparable Asset Selection	0.6%	0.7%	0.7%	0.6%
Projected Portfolio Total Returns	6.7%	6.8%	6.9%	7.0%
Total Portfolio Volatility	10.5%	11.4%	12.1%	13.0%
Expected Tail Risk (95%)	-18.1%	-20.3%	-22.5%	-24.7%



1st Quarter 2025 CMAs Survey Median. Private Market Allocation at 50%. See Appendix for Footnote in Full. 11

...But Requires a Prudent Approach to Liquidity Planning



Outer Limit:

0% Tolerance for Missing a Pension Payment or Other Contractual Obligation

Operating Range:

Comfort Zone Using Available Liquidity (Projected and Scenario Basis With Very Low Probability of Operating Outside the Range)

Portfolio Projection:

Projected Liquidity Usage of Current and Planned Strategies Under Multiple Scenarios (Needs to Stay Within Effective Range)



Agenda Item 6b Attachment 1, page 13 of 17

Asset Liability Management

Reporting Under TPA Reoriented to Positioning, Performance, and Risk Key Performance Metric

Total Returns

Actual Portfolio vs Reference Portfolio

Measuring Active Decisions & Management Skill Actual Strategy Performance in PERF vs Reference Portfolio Strategy Proxy Benchmark vs Industry Standard External Asset Class Benchmark

Risk Metrics & Scenario Analyses

- Total Risk
- Active Risk
- Equity Market
 Sensitivity

- Liquidity
- Operations
- Sustainability
- Counterparty Risk



Reporting Under TPA

Risk vs. Reference Portfolio – Estimating Today's Portfolio

Asset Class	PERF Weight	Active Risk vs Reference Portfolio Funding Source	% Contribution to Total Active Risk
Public Equities	39.0%	1.1%	9.9%
Income	29.7%	2.5%	23.5%
Private Equity	17.5%	5.3%	29.3%
Real Estate	9.7%	8.0%	21.9%
Infrastructure	3.8%	9.6%	7.7%
Private Debt	3.7%	10.1%	7.6%
Multi-Asset / Opportunistic	2.3%	2.4%	0.1%
Financing & Liquidity	-5.7%	0.0%	0.0%
Total	100.0%	2.3%	100.0%

CalPERS Estimated Sample to Demonstrate the Concept

2025 Asset Liability Management (ALM) Timeline

Stakeholder Engagement Throughout Cycle				
APRIL	JUNE	JULY		
Education Session: Experience Study Update	Education Session: Reference Portfolio Design and	Board Offsite Education Session		
Stakeholder Webinar April 4	Active Risk Limits	Stakeholder Webinar July 24		
ALM Strategy Closed Session				
SEPTEMBER	NOVEMBER	R DECEMBER		
First Reading on Recommer Proposed Reference Portfolio Risk Limits, Expected Rate of Experience Study, Actuar	Active Board Vote on Recomm Active Proposed Reference Por Return, Risk Limits, Expected Ra Experience Study, A	nended: Stakeholder Webinar tfolio, Active December 4 te of Return, ctuarial		
Assumptions, and Discount ALM Strategy Closed Sess	sion ALM Strategy Closed S	ALM EffectiveSessionDate July 1, 2026		



CalPERS

Agenda Item 6b Attachment 1, page 16 of 17

Appendix

Footnotes

Slide 6

Source: Various external providers and internal CalPERS calculations. Survey providers 20-year geometric returns as of 2025 Q1; equilibrium returns are ultra-long run.

<u>Slide 8</u>

Note: Forward risk estimates are dependent on modeling assumptions. Assume a +/- 50bps range of imprecision, other than for Actionable TE +/- 5bps. Source: Aladdin risk model, strategy expectations, staff estimates

<u>Slide 10</u>

CMAs as of 2025 Q1 Survey Median. Value Add return expectations are based on an expected utilization of active risk of 250-350bps on average over next 3-5 years under TPA and a .15 - .35 net Information Ratio range. Value Add returns are split 2/3rds from Complexity / Illiquidity and 1/3rd from Selection, aligned with beliefs on where the forward portfolio may be allocated to extract value add above the reference portfolio. Combined Total Portfolio Volatility assumes a .1 correlation between Active Risk and Reference Portfolio Volatility.

Slide 11

CMAs as of 2025 Q1 Survey Median. Private Market Allocation at 50%. Value-Add metric is the difference in return between the Reference Portfolios and the risk-similar SAA portfolio, calculated using the internal SAA process with comparable risk levels to the corresponding Reference Portfolios. Tail Risk 95% represents Conditional Value at Risk (95%), or the average loss in the worst 5% of simulated portfolio outcomes in rolling 3-years.

