

Trust Level Portfolio Management Annual Program Review

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Annual Program Review Outline

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Executive Summary | Trust Level Portfolio Management (TLPM)

1. Progressed Transition to Total Fund Behavior

- Enabled new Chief Investment Officer's vision: Portfolio, Processes, People, Performance
- Aligned business model with Total Fund Objectives
- Integrated and leveraged cross-Enterprise/INVO diversity of talent and skill

2. Completed Strategic Asset Allocation Transition

- Maintained disciplined, organized approach to Asset Liability Management (ALM) decision making
- Aligned activities with CalPERS 2017-2022 Strategic Plan to strengthen long-term sustainability of the Fund
- Maintained 7% discount rate while balancing market opportunity set and funded status
- Navigated successful transition to segments

3. Initiated Total Fund Investment Strategy Review

- Conducted comprehensive and disciplined active risk review
- Maintained 100% focus on Total Fund investment performance
- Aimed to appropriately budget risk dependent on conviction of skill or competitive advantage

Executive Summary | Accomplishments & Initiatives

2018-2019 Major Accomplishments

- Completed transition to Board-adopted (December, 2017) strategic asset allocation policy targets
- Advanced investment risk mitigation strategies to better protect Total Fund from a market drawdown
- Initiated Emerging Manager Program alignment and Total Fund accountability within TLPM
- Initiated transition to centralized support services model

2019-2020 Major Initiatives

- Complete Investment Strategy Review to improve Total Fund risk/return objectives
- Deliver ALM Mid-Cycle Capital Market Outlook and Strategic Asset Allocation Review to the Board
- Advance capital allocation framework through trust-level liquidity and leverage management
- Support Chief Investment Officer's vision to focus 100% of TLPM's time, energy, and commitment on investment performance, the investment activities that better enable the Total Fund to achieve risk-aware investment objectives, and a culture of accountability

I. Program Overview

I. Program Overview

II. Investment Review

III. Business Review

Program Role | Execute CalPERS Strategic Plan

CalPERS 2017-22 Strategic Goal

Strengthen the **long-term sustainability** of the pension fund, cultivate a **risk-intelligent** organization, and **reduce cost and complexity**.



Investment Office Mission (Generate Returns to Pay Benefits)

Manage portfolio in a cost effective, transparent, and risk-aware manner

Vision

- **Investment Beliefs** and **CalPERS Core Values**: principles underlying our investment decisions
- Operate with a focus on **repeatable, predictable, and scalable** portfolios and practices
- Seek **alignment of interests** with our primary stakeholders, our business partners, and ourselves
- Use clearly articulated **performance, risk, and cost metrics** to evaluate our value-add to the funds
- Investment and business activities are supported by a **solid platform of effective risk management and controls**

Program Role | Implement Portfolio Priorities

Specific to CalPERS, implementable, and will influence portfolio construction:

1. Protect the Funded Ratio
(mitigate severe drawdowns)
2. Stabilize Employer Contribution Rates
(manage overall volatility)
3. Achieve Long-term Required Rate of Return
(over the long run, but not in every market environment)

Investment Beliefs | Alignment and Integration

The Investment Beliefs are not a checklist to be applied by rote to every decision. They are a guide for making judgmental decisions that often require balancing multiple, inter-related decision factors.

Short Name	Investment Belief
1 Liabilities	Liabilities must influence the asset structure
2 Long-Term Horizon	A long time investment horizon is a responsibility and an advantage
3 Stakeholders	CalPERS investment decisions may reflect wider stakeholder views
4 Three Forms of Capital	Long-term value creation requires effective management of three forms of capital: financial, physical, and human
5 Accountability	CalPERS must articulate its investment goals and performance measure, and ensure clear accountability for their execution
6 Strategic Allocation	Strategic asset allocation is the dominant determinant of portfolio risk and return
7 Risk Reward	CalPERS will take risk only where we have a strong belief we will be rewarded
8 Costs Matter	Costs matter and need to be effectively managed
9 Multi-faceted Risk	Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error
10 Resources / Process	Strong processes and teamwork and deep resources are needed to achieve CalPERS goals and objectives

Governance & Sustainability | TLPM Integration

TLPM external investment manager expectations include:

1. Exercise best judgment to integrate environmental, social, and governance (ESG) considerations into their investment philosophy, strategies, and processes.
2. Conduct quarterly performance assessments to report on and describe any changes to how ESG considerations are integrated into the Firm's investment philosophy or strategy.

II. Investment Review

Program Overview

Investment Review

Business Review

Investment Objective

TLPM is managed in alignment with the CalPERS Total Fund Investment Policy investment objectives as follows:

1. A rate of total return sufficient to meet or exceed the actuarial expected rate of return within prudent levels of risk and liquidity;
2. Sufficient diversification to minimize the risk of significant loss in any single investment and preserve capital to the extent possible;
3. Adherence to the asset class policy ranges approved by the Committee, with any rebalancing being performed efficiently and prudently;
4. Adequate liquidity to meet cash needs; and
5. Positive returns through any active asset allocation decisions subject to policy ranges and risk limits.

Performance | Public Employees' Retirement Fund (PERF)

For Period Ending June 30, 2019

Asset Class	As of June 30, 2019			10-Yr			5-Yr			3-Yr			1-Yr		
	Ending Market Value (bil)	% of Total Fund Assets	Interim Policy Weight % ¹	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps	Net Return	BM Return	Excess Bps
Growth	\$ 212.4	57.4%	58.00%	11.6%	12.1%	(49)	7.1%	7.5%	(37)	12.3%	12.9%	(60)	6.3%	6.3%	6
Public Equity	\$ 185.9	50.2%	50.0%	11.1%	10.9%	20	6.7%	6.7%	(8)	12.3%	12.5%	(25)	6.1%	6.2%	(16)
Cap Weighted	\$ 131.4	35.5%	35.0%	11.0%	10.8%	20	6.5%	6.5%	(9)	11.9%	12.2%	(27)	5.1%	5.3%	(20)
Factor Weighted	\$ 54.6	14.7%	15.0%	-	-	-	-	-	-	-	-	-	13.4%	13.5%	(10)
Private Equity	\$ 26.5	7.1%	8.0%	14.0%	16.6%	(254)	9.6%	10.3%	(80)	12.5%	14.1%	(156)	7.7%	4.0%	368
Income	\$ 106.3	28.7%	28.0%	6.6%	5.2%	137	4.1%	3.5%	56	3.3%	2.7%	62	9.6%	9.3%	31
Long Spread	\$ 56.7	15.3%	10.0%	-	-	-	-	-	-	-	-	-	9.5%	9.0%	49
Long Treasury	\$ 37.8	10.2%	15.0%	-	-	-	-	-	-	-	-	-	10.5%	10.5%	(3)
High Yield	\$ 11.7	3.2%	3.0%	-	-	-	-	-	-	-	-	-	8.4%	8.0%	40
Real Assets	\$ 40.9	11.0%	13.0%	4.1%	8.4%	(430)	7.5%	8.6%	(111)	6.4%	6.8%	(42)	3.7%	6.5%	(283)
Inflation ²	\$ 0.0	0.0%	0.0%	NM											
Liquidity	\$ 3.7	1.0%	1.0%	1.1%	1.2%	(9)	1.3%	1.2%	10	1.7%	1.3%	37	2.6%	2.2%	45
Trust Level ³	\$ 7.0	1.9%	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Fund	\$ 370.3	100.0%	100.0%	9.1%	9.5%	(33)	5.8%	6.1%	(23)	8.8%	9.0%	(21)	6.7%	7.1%	(42)



Investment Office
Trust Level Portfolio Management

1. Interim policy weight reflects the weights in effect at the beginning of the first day of the subsequent month.
2. As of February 2019, the Inflation program has been liquidated and subsequently linked historical returns are no longer meaningful.
3. Trust Level includes Multi Asset Class, Completion Overlay, Risk Mitigation, Absolute Return Strategies, Plan Level Transition and other Total Fund level portfolios.

Performance | PERF Excess Return Drivers

For Period Ending June 30, 2019

5 Year (-23 bps annualized excess return)

- Negative contribution from private assets
- Negative contribution from underweights to private assets requiring proxying with publics
- + Positive contribution from public assets, predominantly Income

1 Year (-42 bps excess return)

- Negative contribution from Real Assets, Public Equity, Trust Level and from Allocation Management
- + Positive contribution from Private Equity & Income

Performance | Trust Level Program

For Period Ending June 30, 2019

Program	Ending Market Value (MM)	% of Program Assets	5 Yr		3 Yr		1 Yr		3 Mo.		1 Mo	
			Net Return	Excess bps								
Public Equity - Emerging Mgrs	3,479	49%			8.90	(175)	(2.81)	(236)	2.78	47	6.44	12
External MAC	2,619	37%	4.26	(122)	5.55	(279)	6.90	(28)	3.89	27	4.55	5
Completion Overlay (Pilot)	572	8%					7.35	17	3.53	(8)	4.54	4
Absolute Return Strategies	184	3%	(3.02)	(909)	(6.65)	(1,314)	(13.58)	(2,170)	(2.42)	(459)	0.34	(47)
Risk Mitigation	175	2%										
Volatility Premia	7	0%										
Other Plan Level	6	0%										
Total Fund Level	7,042	100%										

Strategic Asset-Liability Management | 4-Year ALM Cycle Milestones

ALMAC coordinates planning of the Board's Asset Liability Management (ALM) Policy's 4-Year cycle. TLPM implements the Investment Committee's mandate to conduct the strategic asset allocation (SAA) review, set the target rate of return, and select the asset allocation mix.

Five Milestones
Describe the
Board's role in:

Four-Year
Asset-Liability
Management
Cycle

June
2020

Mid Cycle Review: Capital Markets Outlook
Investment & SAA Review

June
2021

Review / Adopt Capital Market Assumptions Review

Nov
2021

Conduct ALM Workshop

Feb
2022

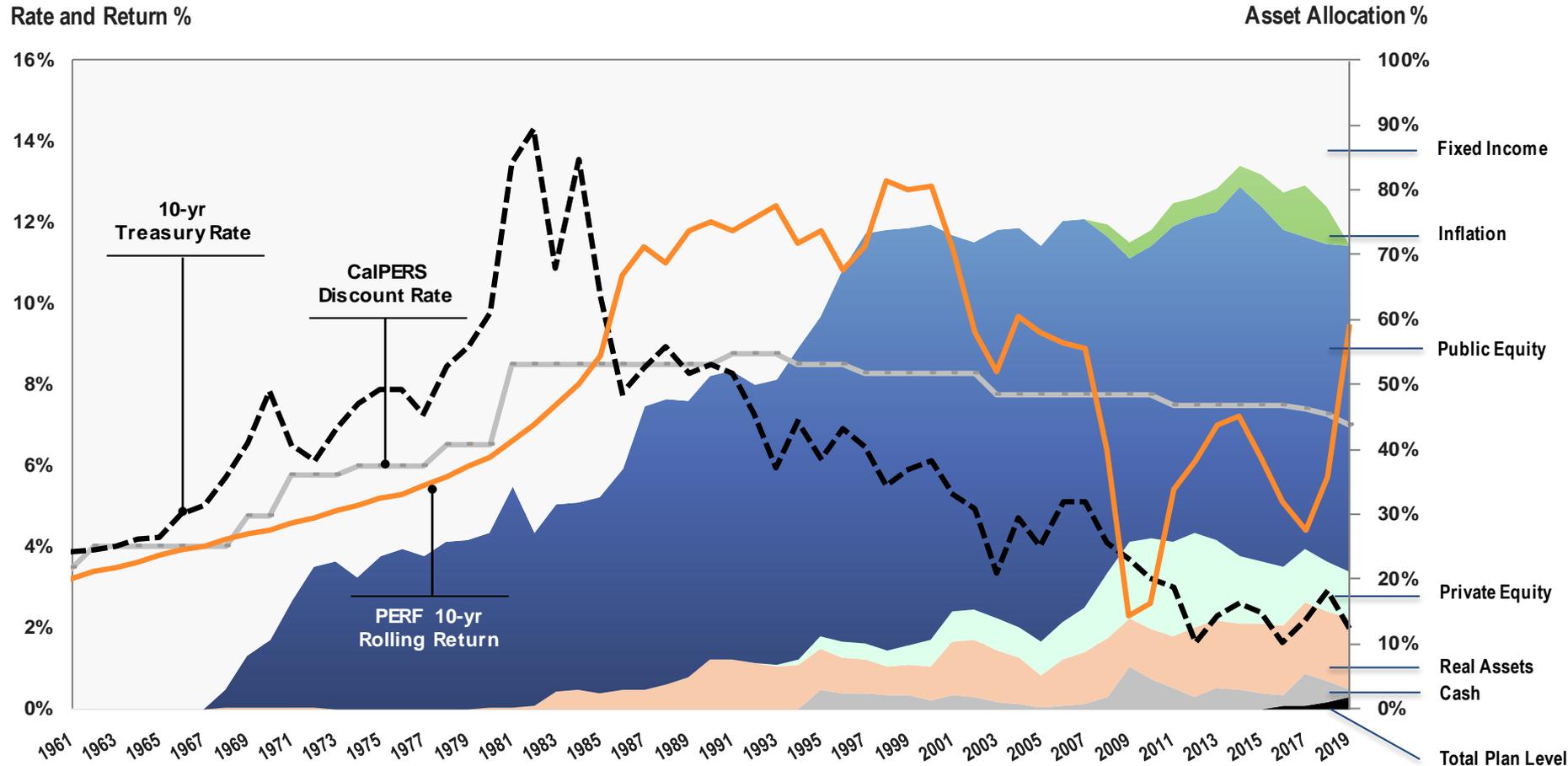
Adopts Strategic Asset Allocation

July
2022

Effective Date:
Board Adopted Strategic Asset Allocation Transition Plan & Implementation

Strategic Asset Allocation | CalPERS Historical Allocation

Discount Rate, 10yr Rolling Return, and 10yr US Treasury Yield



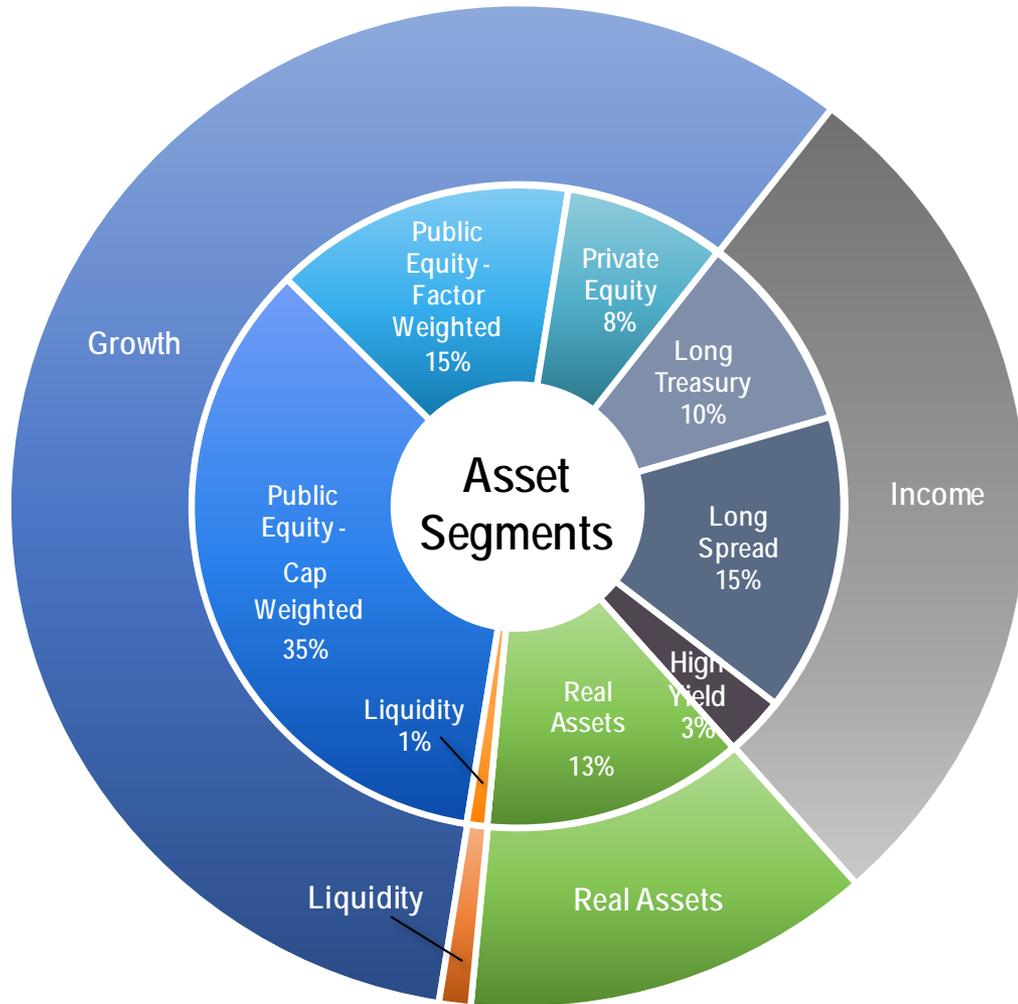
Data Source:

- CalPERS Comprehensive Annual Financial Reports (CAFR) for Discount rate, 10yr rolling returns and Asset Allocation, 1961 – 2018.
- June 30, 2019 Preliminary Asset Allocation, Rolling Return derived from internal calculations using position data from State Street.
- Treasury Yield is Bloomberg 10YR US Treasury Constant Maturity Rate (H15T10Y Index).
- Total Plan Level includes Multi-Asset Class, Absolute Return Strategies, transition, and plan level portfolios. These assets do not have targets because they are not components of the Total Fund Policy benchmark.



Investment Office
Trust Level Portfolio Management

Strategic Asset Allocation | Policy Targets and Ranges



<i>Asset Class / Segment</i>	<i>Policy Weight</i>	<i>Range</i>
Growth – Public Equity	50%	+/- 7%
<i>Public Equity - Cap Weighted</i>	35%	-
<i>Public Equity - Factor Weighted</i>	15%	-
Growth - Private Equity	8%	+/- 4%
Income	28%	+/- 6%
<i>Long Treasury</i>	10%	-
<i>Long Spread</i>	15%	-
<i>High Yield</i>	3%	-
Real Assets	13%	+/- 5%
Inflation	0%	+3% / 0%
Liquidity	1%	+3% / -6%

III. Business Review

Program Overview

Investment Review

Business Review

TLPM Business Philosophy

Committed to enhanced transparency, accountability, and the highest ethical standards

ENABLING



People

- To meet beneficiary and employer needs through trust-level investment decision making
- Earning the respect of Enterprise and Investment Office partners
 - Maintaining relevance and connection to strategic planning



Operational Effectiveness

- To support innovative thought leadership to advance disciplined asset allocation processes
- Implementing sustainable, risk-aware strategic and dynamic asset allocation strategies



Performance

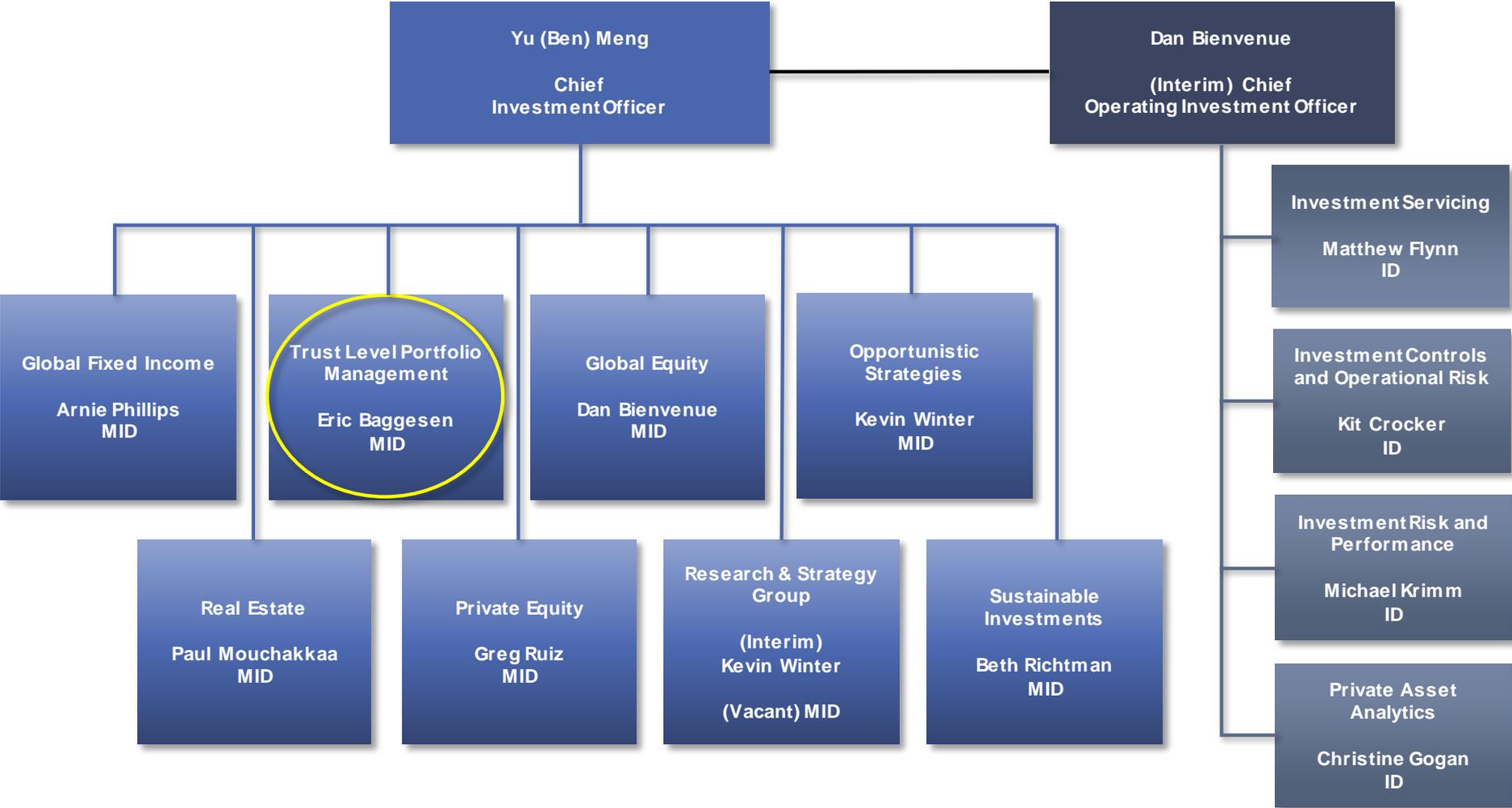
- To deliver targeted, risk-adjusted investment returns over the long-term
- Recognizing Asset allocation as the dominant determinant of portfolio risk and return
 - Maintaining broad diversification to minimize the effect of short-term losses



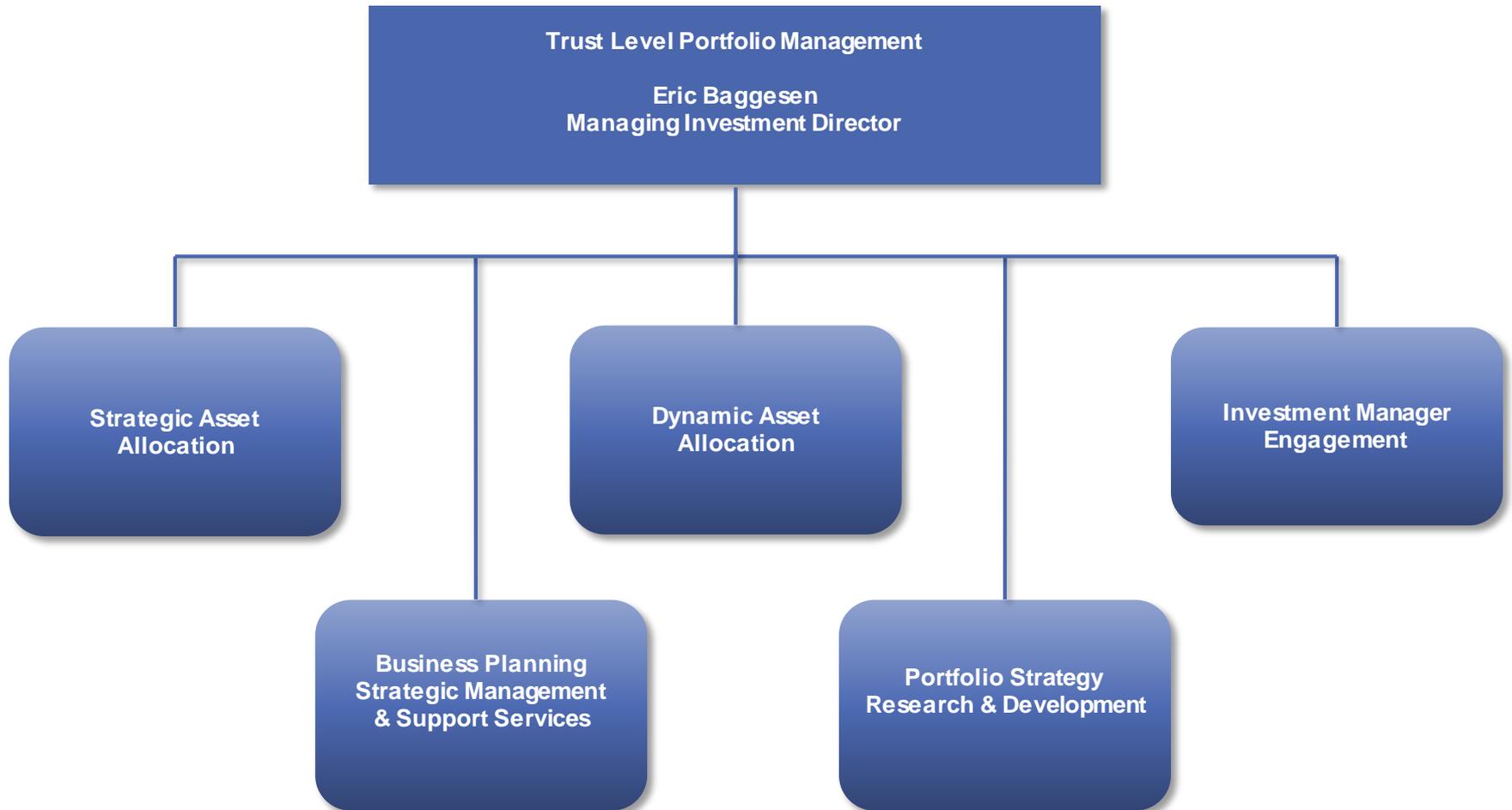
Collaboration

- To engage strong processes, teamwork and diverse resources
- Convening people and teams within the Investment Office and across the Enterprise
 - Leveraging the diversity of talent, education, experience, perspective, and skill at all levels

Investment Office Organization Chart



Functional Organization Chart



Staffing Overview

TOTAL PROGRAM
62 FTE

Trust Level Portfolio Management Staff

- 1 Managing Investment Director (MID)
- 2 Investment Directors (ID)
- 7 Investment Managers (IM)
- 3 Associate Investment Managers (AIM)
- 15 Investment Officers (5-IO3s, 5-IO2s, 5-IO1s)
- 34 Support Staff Classifications (6-SSMs, 9-AGPAs, 6-SSAs, 2 OTs, 11-SCs)

STRUCTURAL UPDATES

TLPM Organizational Updates

- Transitioned 2 GFI Staff to TLPM
- Transitioned IMEP from COIO Reporting Line to TLPM
- Centralized Support Service Teams within TLPM

CURRENT VACANCIES
6 FTE

Recruitments

- 2 Investment Officer Positions Target Start Date: By 9/30/19
- 4 Support Staff Positions Target Start Date: By 9/30/19

Business Overview | TLPM Functions

Trust Level Portfolio Management

Responsible for delivering targeted, risk-adjusted, total fund investment returns over the long-term, anchored by the belief that strategic asset allocation is the dominant determinant of portfolio risk and return.

Strategic Asset-Liability Management

Implement Public Employees' Retirement Fund (PERF) and Affiliate Funds' strategic Asset-Liability Management Policy in coordination with the System's Actuarial and Finance Offices, manage Strategic Asset Allocation exposures within ranges.

Dynamic Asset Allocation

Manage multi-asset class strategies which encompass investment risk mitigation, strategic exposures, liquidity and leverage management, replication, rebalancing, and strategic overlay capabilities.

Portfolio Research & Development

Ongoing examination of macro-economic factors, long-term trends in capital markets, enhancing CalPERS' ability to model valuation factors, liabilities, regime shifts, and sustainability (ESG) issues that may impact the Total Fund.

Investment Manager Engagement

Manage external investment manager selection and assessment process including CalPERS Emerging and Transition Manager Program

Total Fund Business & Analytical Services

Deliver high-quality business, analytical, and administrative customer service among INVO Asset Class/Programs and across the Enterprise

