Trust Level Portfolio Management | Executive Summary

1. First Annual Program Review
   - Business model transparency
   - From Asset Allocation & Risk Management (AARM) to Trust Level Portfolio Management (TLPM)
   - Asset allocation is the dominant determinant of portfolio risk and return (Investment Belief 6)

2. TLPM Role Supports Investment Office (INVO) 2020 Vision
   - More formal trust level investment decision making
   - Supports independent risk analytics and oversight function led by Investment Risk & Performance (IRP)

3. Integrated Behavior (not siloed)
   - Strategic management and business planning to enable cross-Enterprise/INVO diversity of talent
## Performance | For Period Ending June 30, 2017

### Allocation Management Excess Returns Attribution (Annualized)

<table>
<thead>
<tr>
<th>Avg Weight Year</th>
<th>Contribution to Plan Excess (bps)</th>
<th>Volatility of Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FYTD</td>
<td>1 Year</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Excess Return (bps)</th>
<th>(15)</th>
<th>(15)</th>
<th>(22)</th>
<th>23</th>
<th>134</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Public Program Contribution</th>
<th>12</th>
<th>12</th>
<th>22</th>
<th>34</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUBLIC EQUITY</td>
<td>52.4%</td>
<td>(11)</td>
<td>(11)</td>
<td>(1)</td>
<td>10</td>
</tr>
<tr>
<td>INCOME</td>
<td>17.8%</td>
<td>22</td>
<td>22</td>
<td>13</td>
<td>16</td>
</tr>
<tr>
<td>INFLATION</td>
<td>5.1%</td>
<td>(5)</td>
<td>(5)</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>LIQUIDITY</td>
<td>3.2%</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>(1)</td>
</tr>
<tr>
<td>SECLENDING</td>
<td>0.0%</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>OTHER</td>
<td>2.1%</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Private Program Contribution</th>
<th>(39)</th>
<th>(39)</th>
<th>(30)</th>
<th>(25)</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIVATE EQUITY</td>
<td>10.4%</td>
<td>(44)</td>
<td>(44)</td>
<td>(16)</td>
<td>(21)</td>
</tr>
<tr>
<td>REAL ASSETS</td>
<td>10.2%</td>
<td>4</td>
<td>4</td>
<td>(14)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Allocation Management</th>
<th>3.4</th>
<th>3.4</th>
<th>(0.8)</th>
<th>6.0</th>
<th>13</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Public Proxy Performance</th>
<th>10</th>
<th>10</th>
<th>(10)</th>
<th>(10)</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIVATE EQUITY</td>
<td>0.8%</td>
<td>4</td>
<td>4</td>
<td>(0)</td>
<td>(6)</td>
</tr>
<tr>
<td>REAL ASSETS</td>
<td>1.5%</td>
<td>6</td>
<td>6</td>
<td>(10)</td>
<td>(5)</td>
</tr>
</tbody>
</table>

| Other/Residual                | (1)  | (1)  | (2)   | 18  | 15 |

---

CalPERS | Investment Office | Trust Level Portfolio Management
Business Update | Accomplishments & Initiatives

2016-2017 Major Accomplishments

• Established TLPM Business Model and Strengthened Team: Investment Director, Investment Manager, Associate Investment Managers, and Investment Officers
• Transitioned External Multi-Asset Class Partner Portfolio to TLPM
• Board Adopted Asset Liability Management (ALM) Policy
• Established Public/Private Asset Class Roles, Benchmarks, Segments
• Implemented “Pilot” Strategic Trust Level Portfolio Overlay

2017-2018 Major Initiatives

• Transition Counterparty Risk Oversight to IRP
• Develop Governance, Policy, and Operating Model for Total Fund Liquidity and Leverage Management
• Implement Board Adopted Strategic Asset Allocation Targets/Ranges
• Explore Total Fund Currency, and Inflation Strategies
• Refine Strategic Trust Level Portfolio Overlay
Appendix
## Review Outline

<table>
<thead>
<tr>
<th>Investment Beliefs Key</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Program Overview</td>
<td>8-12</td>
</tr>
<tr>
<td>Strategic Plan &amp; INVO 2020 Vision</td>
<td>9</td>
</tr>
<tr>
<td>Trust Level Portfolio Management</td>
<td>10</td>
</tr>
<tr>
<td>Portfolio Priorities</td>
<td>11</td>
</tr>
<tr>
<td>Governance</td>
<td>12</td>
</tr>
<tr>
<td>II. Investment Review</td>
<td>13-20</td>
</tr>
<tr>
<td>Strategic ALM 4-Year Cycle</td>
<td>14</td>
</tr>
<tr>
<td>Strategic Asset Allocation</td>
<td>15-16</td>
</tr>
<tr>
<td>Allocation Management</td>
<td>17</td>
</tr>
<tr>
<td>Dynamic Asset Allocation</td>
<td>18-20</td>
</tr>
<tr>
<td>III. Business Review</td>
<td>21-31</td>
</tr>
<tr>
<td>Business Philosophy</td>
<td>22</td>
</tr>
<tr>
<td>Staffing Overview</td>
<td>23-24</td>
</tr>
<tr>
<td>Functional Organization Chart</td>
<td>25-28</td>
</tr>
<tr>
<td>Policy &amp; Delegations Review</td>
<td>29-31</td>
</tr>
</tbody>
</table>

### Investment Beliefs Map

1. Liabilities
2. Long-Term Horizon
3. Stakeholders
4. Three Forms of Capital
5. Accountability
6. Strategic Allocation
7. Risk Reward
8. Costs Matter
9. Multi-faceted Risk
10. Resources/Process
## Investment Beliefs Key

<table>
<thead>
<tr>
<th>Short Name</th>
<th>Investment Belief</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Liabilities</td>
<td>Liabilities must influence the asset structure</td>
</tr>
<tr>
<td>2 Long-Term Horizon</td>
<td>A long time investment horizon is a responsibility and an advantage</td>
</tr>
<tr>
<td>3 Stakeholders</td>
<td>CalPERS investment decisions may reflect wider stakeholder views</td>
</tr>
<tr>
<td>4 Three Forms of Capital</td>
<td>Long-term value creation requires effective management of three forms of capital: financial, physical, and human</td>
</tr>
<tr>
<td>5 Accountability</td>
<td>CalPERS must articulate its investment goals and performance measure and ensure clear accountability for their execution</td>
</tr>
<tr>
<td>6 Strategic Allocation</td>
<td>Strategic asset allocation is the dominant determinant of portfolio risk and return</td>
</tr>
<tr>
<td>7 Risk Reward</td>
<td>CalPERS will take risk only where we have a strong belief we will be rewarded</td>
</tr>
<tr>
<td>8 Costs Matter</td>
<td>Costs matter and need to be effectively managed.</td>
</tr>
<tr>
<td>9 Multi-faceted Risk</td>
<td>Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error</td>
</tr>
<tr>
<td>10 Resources / Process</td>
<td>Strong processes and teamwork and deep resources are needed to achieve CalPERS' goals and objectives</td>
</tr>
</tbody>
</table>
I. Program Overview
Program Role | Execute CalPERS Strategic Plan & INVO 2020 Vision

**CalPERS 2017-22 Strategic Goal**
Strengthen the long-term sustainability of the pension fund

**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 | Trust Level Portfolio Management

INVO 2020 Vision Steps: (2016-17 Enhanced Governance and Organizational Structure)
More formal trust level investment decision making

INVO 2020 Vision

Trust Level Portfolio Management

- Strategic Asset-Liability Management
- Dynamic Asset Allocation
- Portfolio Strategy Research & Development

- Growth
- Income
- Real Assets
- Inflation
- Liquidity

Independent Investment Risk & Performance Oversight
- Investment Risk Analytics
- Investment Performance Analytics
Program Role | Implement Portfolio Priorities

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

1. Protect the Funded Ratio
   \((mitigate \text{ severe drawdowns})\)

2. Stabilize Employer Contribution Rates
   \((manage \text{ overall volatility})\)

3. Achieve Long-term Required Rate of Return
   \((over \text{ the long run, but not in every market environment})\)
Program Role | Convene, Collaborate, and Implement
Enable strong processes, teamwork and diverse resources.

CalPERS Board of Administration
Board Committees: Investment (IC), and Finance & Administration (FAC)

Asset Liability Management Advisory Committee (ALMAC)
Chair: Chief Financial Officer
Membership: Investment, Actuarial, Financial, Legal, Communications & Stakeholder Relations Offices
INVO Members: Chief Investment Officer, Chief Operating Investment Officer, TLPM Managing Investment Director

Investment Management Committee
Chair: Chief Investment Officer

Investment Strategy Group (ISG)
Chair: Managing Investment Director, TLPM

Four ISG Subcommittees
Portfolio Allocation: Provides organized approach to making asset class rebalance and dynamic position decisions
Risk & Attribution: Ensures that investment risks are intended, understood, and compensated
Investment Review: Non-core programs, business models, assets and investments
Governance & Sustainability: Integration of ESG risk considerations into the investment-decision making process
II. Investment Review
**Strategic Asset-Liability Management | 4-Year ALM Cycle Milestones**

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

### Five Milestones Describe 4-Year ALM Cycle

1. **Nov 2017**
   - Board: Conduct ALM Board Workshop to evaluate potential Policy portfolios that best balance the long-term investment objectives, risk tolerances, and liquidity constraints

2. **Feb 2018**
   - Board: Adopt Strategic Asset Allocation Policy Targets and Ranges

3. **July 2018**
   - TLPM: Implement Strategic Asset Allocation Policy Targets, and manage within Ranges

4. **June 2020**
   - Board: Conduct Mid-Cycle Capital Markets Review

5. **June 2022**
   - Board: Adopt Capital Market Assumptions
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 allocation
- Bloomberg for 10YR US Treasury Constant Maturity Rate (H15T10Y)
- Inflation asset class was not provided as a separate line item in the 2014 & 2015 CAFRs. Used the asset allocations from the INVO AA-Spreadsheet.
## Strategic Asset Allocation | Policy* Targets, Ranges, & Benchmarks

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Interim Target</th>
<th>Policy Range Relative to Target</th>
<th>Benchmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Growth</td>
<td>54% +/- 7%</td>
<td></td>
<td>85.2% Public Equity Benchmark 14.8% Private Equity Benchmark</td>
</tr>
<tr>
<td>Public Equity</td>
<td>46% +/- 7%</td>
<td></td>
<td>100% (FTSE All-World, All Cap)</td>
</tr>
<tr>
<td>Private Equity</td>
<td>8% +/- 4%</td>
<td></td>
<td>67% (FTSE U.S. Total Market Index) 33% (FTSE All-World ex U.S. TMI) +3%</td>
</tr>
<tr>
<td>Fixed Income</td>
<td>20% +/- 5%</td>
<td></td>
<td>90% (Bloomberg Barclays Long Liabilities) 10% (Bloomberg Barclays International Fixed Income GDP weighted ex-US)</td>
</tr>
<tr>
<td>Real Assets</td>
<td>13% +/- 5%</td>
<td></td>
<td>84.6% (Exceed NCREIF ODCE, net of fees) 7.7% (Consumer Price Index+4%, lagged one quarter) 7.7% (NCREIF Timberland)</td>
</tr>
<tr>
<td>Inflation</td>
<td>9% +/- 3%</td>
<td></td>
<td>75% (Inflation-Linked Bond Index) 25% (Standard &amp; Poor's GSCI Total Return Index)</td>
</tr>
<tr>
<td>Liquidity</td>
<td>4% +/-3%/-6%</td>
<td></td>
<td>100% (91-day Treasury Bill)</td>
</tr>
</tbody>
</table>

### Interim Strategic Asset Allocation

![Interim Strategic Asset Allocation Diagram]

<table>
<thead>
<tr>
<th>Program</th>
<th>Target Forecast Annual Tracking Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Allocation</td>
<td>75 basis points</td>
</tr>
<tr>
<td>Total Fund</td>
<td>150 basis points</td>
</tr>
</tbody>
</table>

*(As of June 30, 2017) [https://www.calpers.ca.gov/docs/total-fund-investment-policy.pdf](https://www.calpers.ca.gov/docs/total-fund-investment-policy.pdf)
### Allocation Management | For Period Ending June 30, 2017

#### Excess Returns Attribution (Annualized)

<table>
<thead>
<tr>
<th>Avg Weight Year</th>
<th>Total Excess Return (bps)</th>
<th>Public Program Contribution</th>
<th>Private Program Contribution</th>
<th>Allocation Management</th>
<th>Public Proxy Performance</th>
<th>Other/Residual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FYTD</td>
<td>1 Year</td>
<td>3 Year</td>
<td>5 Year</td>
<td>FYTD</td>
<td>1 Year</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Excess Return (bps)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FYTD</td>
<td>15</td>
<td>(15)</td>
<td>(22)</td>
<td>23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Public Program Contribution</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUBLIC EQUITY</td>
<td>52.4%</td>
<td>(11)</td>
<td>(11)</td>
<td>(1)</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>INCOME</td>
<td>17.8%</td>
<td>22</td>
<td>22</td>
<td>13</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>INFLATION</td>
<td>5.1%</td>
<td>(5)</td>
<td>(5)</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>LIQUIDITY</td>
<td>3.2%</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>(1)</td>
<td>2</td>
</tr>
<tr>
<td>SECLENDING</td>
<td>0.0%</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>OTHER</td>
<td>2.1%</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Private Program Contribution</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRIVATE EQUITY</td>
<td>10.4%</td>
<td>(44)</td>
<td>(44)</td>
<td>(16)</td>
<td>(21)</td>
<td>62</td>
</tr>
<tr>
<td>REAL ASSETS</td>
<td>10.2%</td>
<td>4</td>
<td>4</td>
<td>(14)</td>
<td>(5)</td>
<td>46</td>
</tr>
<tr>
<td><strong>Allocation Management</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>3.4</td>
<td>(0.8)</td>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Public Proxy Performance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRIVATE EQUITY</td>
<td>0.8%</td>
<td>4</td>
<td>4</td>
<td>(0)</td>
<td>(6)</td>
<td>20</td>
</tr>
<tr>
<td>REAL ASSETS</td>
<td>1.5%</td>
<td>6</td>
<td>6</td>
<td>(10)</td>
<td>(5)</td>
<td>13</td>
</tr>
<tr>
<td><strong>Other/Residual</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1)</td>
<td>(1)</td>
<td>(2)</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Trust Level Strategic Overlay Portfolio
Benchmarked to Total Fund Policy

Strategic Completion Overlay
**Funded**

Purpose:
1. Liquidity Management
2. Leverage Management
3. Strategic Exposure Management (Allocation Control, Rebalancing)

Dynamic Allocation Overlay
**Unfunded**
No Benchmark

Purpose:
1. Active Allocation Management

Opportunistic Strategies

<table>
<thead>
<tr>
<th>Growth</th>
<th>Income</th>
<th>Real Assets</th>
<th>Inflation</th>
<th>Liquidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target 54%</td>
<td>Target 20%</td>
<td>Target 13%</td>
<td>Target 9%</td>
<td>Target 4%</td>
</tr>
<tr>
<td>+/-7%</td>
<td>+/-5%</td>
<td>+/-5%</td>
<td>+/-3%</td>
<td>+/-3%/-6%</td>
</tr>
</tbody>
</table>

Costs Matter

Growth Target 54%
Range +/-7%

Income Target 20%
Range +/-5%

Real Assets Target 13%
Range +/-5%

Inflation Target 9%
Range +/-3%

Liquidity Target 4%
Range +3%/-6%
Dynamic Asset Allocation | Multi-Asset Class (MAC) Partner Strategies

1. Mitigate Severe Drawdowns (Protect the Funded Ratio)
   Left Tail Risk Mitigation Strategy

2. Manage Overall Volatility (Volatility Targeting)
   Volatility Targeting Strategy

3. Achieve Long-term Required Rate of Return (Dynamic Asset Allocation)
   Current Partners: AQR Capital Management; and, Standard Life Investments
Dynamic Asset Allocation | MAC Partner Knowledge Transfer

To Influence:

More formal strategic and dynamic asset allocation decision making
  • Multi-asset portfolio construction and systematic rebalancing
  • Risk assumptions and management methodologies

Staff intellectual rigor and experience (*strong processes and teamwork*)
  • Repeatable, predictable, and scalable portfolio construction strategies

Internally managed trust level (*costs matter*)
  • Overlay strategies
  • Ancillary strategies
III. Business Review
Business Philosophy: Trust Level Portfolio Management

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

Enabling:

**People**
- To meet beneficiary and employer needs through trust level investment decision making
  - Respected by Enterprise and Investment Office partners
  - Relevance and connection to strategic planning

**Operational Effectiveness**
- To support innovative thought leadership which advance disciplined asset allocation processes
  - Implement sustainable, risk-aware strategic and dynamic asset allocation strategies

**Performance**
- To deliver targeted, risk-adjusted investment returns over the long-term
  - Fiduciary duty is paramount
  - Asset allocation is the dominant determinant of portfolio risk and return
  - Broadly diversified to minimize the effect of short-term losses
  - Prudent risk taking is appropriate within the context of overall diversification
Staffing Overview

**Total Program Staffing Overview (22 FTE)**

- **Trust Level Portfolio Management Staff**
  - 1 Managing Investment Director (MID)
  - 1 Investment Director (ID)
  - 6 Investment Managers (IM)
  - 2 Associate Investment Managers (AIM)
  - 12 Investment Officers (5-IO3s, 3-IO2s, 4-IO1s)

**Position Updates**

- 1 New ID (Ron Lagnado)
- 1 New IM (Tom Sampson)
- 2 New AIMs (Ryan Ong, Arvind Rao)
- 2 New IOs (Alex Sakhnyuk, Michael LaRocca)
- 1 Exited IOI (Obtained IO2 with ICOR)
- 4 Admin/Ops Positions Transitioned to Total Fund Admin Support Unit

**Current Vacancies** (1 FTE)

**Recruitments**

- 1 Investment Officer (1-IOIII)  
  Target Start Date: TBD

---

**Resources/Process**
Functional Organizational Chart

Trust Level Portfolio Management | Strategic Asset-Liability Management (ALM)
Eric Baggesen, Managing Investment Director
Ron Lagnado, Investment Director

ALM Policy Implementation
- INVO Role: 4-Year Cycle (ALMAC)

Strategic Asset Allocation
- Implementation (PERF, Affiliates)
- Segments
- Capital Market Assumptions
- Specification of Risk Targets & Tolerances

Alternative Approaches
- Benchmark Selection & Development
- Portfolio Priority Linkage
- Asset & Liability Linkage

Leadership
Dianne Sandoval, Investment Manager
Alison Li, Investment Manager

Key Resources
Ryan Ong, Associate Investment Manager
Wilbur Chan, Investment Officer III
James Chang, Investment Officer III
Alex Sakhnyuk, Investment Officer I

Accountability
Costs Matter
Resources/Process
Functional Organizational Chart

Trust Level Portfolio Management | Dynamic Asset Allocation
Eric Baggesen, Managing Investment Director
Ron Lagnado, Investment Director

Leadership
Todd Eichman, Investment Manager
Tom Sampson, Investment Manager

Key Resources
Arvind Rao, Associate Investment Manager
Tamara Alexander, Investment Officer III
Alan Seater, Investment Officer III
Ryan Brewer, Investment Officer II
Tumelo Nyoni, Investment Officer I
Cathy Hua, Investment Officer I

Total Fund Portfolio Overlay
- Liquidity & Leverage
- Strategic Exposure (Allocation Control, Systematic Rebalancing)
- Synthetic Portfolio Replication
- Dynamic Portfolio Management: Active Allocation

Multi-Asset Class (MAC) Portfolio Strategies
- Internal MAC Strategies: Systematic, Ancillary Currency and Inflation
- External MAC Partner Portfolio: Left Tail Risk Mitigation, Volatility Targeting, Dynamic Asset Allocation
Functional Organizational Chart

Trust Level Portfolio Management | *Portfolio Strategy Research & Development*

Eric Baggesen, Managing Investment Director
Ron Lagnado, Investment Director

**Leadership**
Paul Zhang, Investment Manager

**Key Resources**
Richard Lu, Investment Officer II
Daniel Rodriguez, Investment Officer II

**Portfolio Strategy Research**
- Knowledge Transfer (MAC Partners)
- Macro Econ (Fiscal, Monetary), Capital Markets, Long-term Trends
- ESG Awareness

**Portfolio Strategy Development**
- Modeling: Liability, Regime, Valuation, Pacing, Risk Factor
Functional Organizational Chart

**Leadership**
Bill McGrew, Investment Manager

**Key Resources**
Michael LaRocca, Investment Officer I

**Trust Level Portfolio Management | Business Planning & Strategic Management**
Eric Baggesen, Managing Investment Director
Ron Lagnado, Investment Director

**CalPERS Strategic Plan**
- 5 Year Plan (2017-22) Strategic Initiatives

**INVO 2020 Vision Alignment**
- Business Effectiveness, Capital Allocation, Trust Level Investment Decision Making
- Roadmap Initiatives: Cross-Asset Class/Program

**Trust Level Portfolio Management Business Model**
- Workforce Planning
- Talent Management, Governance & Operations

**Strategic Partnerships**
- Academic, Asset Owner/Manager, Industry Forums
Policy Review | Investment Committee

The Total Fund Investment Policy*, adopted by CalPERS Investment Committee, includes Sections which provide the framework for TLPM's management of CalPERS assets. For FY16-17, TLPM has no material Policy changes or violations to report.

<table>
<thead>
<tr>
<th>Total Fund Investment Policy Section</th>
<th>Summary</th>
<th>Reporting Responsibility</th>
<th>Investment Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Fund</td>
<td>Focus on trust level investment decision making</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Investment Beliefs</td>
<td>Provides basis for strategic management</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Governance &amp; Sustainability Strategy</td>
<td>Support achievement of sustainable investment (ESG)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Strategic Asset Allocation (SAA)</td>
<td>Implement SAA targets and ranges based on ALM review</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Investment Risk Management</td>
<td>Manage total fund tracking error limits</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Global Derivatives &amp; Counterparty Risk</td>
<td>Strategic framework for managing use of derivatives</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Investment Leverage</td>
<td>Sets limits and standards for the use of leverage</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Divestment</td>
<td>Economic impact analysis on total fund of divestment activity</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Opportunistic Program</td>
<td>Report on program investments, returns, risks, and activity</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Terminated Agency Pool</td>
<td>Oversee reporting, rebalancing and restructuring activity</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

*https://www.calpers.ca.gov/docs/total-fund-investment-policy.pdf
Policy Review | Finance & Administration Committee

The Asset Liability Management* and Funding Risk Mitigation** Policies, adopted by CalPERS Finance & Administration Committee (FAC), fall within the purview of ALMAC and contribute to TLPM’s role in strategic asset-liability management.

<table>
<thead>
<tr>
<th>FAC Policy</th>
<th>Summary</th>
<th>Reporting Responsibility</th>
<th>Investment Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Liability Management</td>
<td>Seeks to fund System with an integrated view of pension assets and liabilities</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Funding Risk Mitigation</td>
<td>Seeks to reduce CalPERS funding risk over time</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

* https://www.calpers.ca.gov/docs/asset-liability-management-policy.pdf
** https://www.calpers.ca.gov/docs/funding-risk-mitigation-policy.pdf
Delegations Review | Managing Investment Director

The TLPM Managing Investment Director is delegated to act finally on investment and business authorities subject to Investment Committee Policies.

### Investment and Business Authorities (Summarized*)

<table>
<thead>
<tr>
<th>To Allocate Assets</th>
<th>• Manage asset allocation within strategic ranges.</th>
</tr>
</thead>
</table>
| To Make Investment Decisions | • Transact in public securities.  
• Make or dispose of investments in private investment vehicles.  
• Negotiate partnership agreement terms, including fees and compensation.  
• Undertake action pursuant to investor rights, partnership agreement amendments, consents, and waivers.  
• Increase or decrease funding of externally managed portfolios.  
• Select and terminate an external manager.  
• Negotiate contract terms, fees, and compensation.  
• Establish a spring-fed pool of external resources to meet program needs.  
• Conduct and monitor the performance of service providers. |
| Administrative Management | • Conduct and oversee activities required to carry out administrative and management functions. |
| To Represent CalPERS | • Testify on behalf of CalPERS before state and federal legislative committees.  
• Communicate the Board’s policies and positions before outside parties and organizations. |

*Delegation No. INV-17-03; Effective June 30, 2017*