Agenda Item 5a

September 16, 2013

ITEM NAME: Revision of the Total Fund Benchmarks Policy

PROGRAM: Total Fund

ITEM TYPE: Policy & Delegation – Action

RECOMMENDATION

Approve the revised California Public Employees' Retirement System (CalPERS) Total Fund Benchmarks Policy as shown in Attachment 1, the consultant opinion letter is provided as Attachment 2.

EXECUTIVE SUMMARY

The Total Fund Benchmarks Policy was presented to the Investment Committee (IC) for initial review on August 19, 2013.

No further changes were made to the Total Fund Benchmarks Policy based on the Investment Committee's feedback. Reflecting discussion at the IC, this agenda item has been revised to include the following changes:

- Additional guidance regarding consistency of treatment for programs initiated outside the Asset Liability Management (ALM) workshop
- Analysis regarding the effect of including absolute return components within the Total Fund Policy Benchmark has been included to demonstrate the impact on total and active risk (tracking error)

Staff seeks approval of the Total Fund Benchmarks Policy to:

- Update the methodology of calculating the Currency Overlay Program benchmark to align with current industry standards
- Realign the Total Fund Policy Benchmark with the strategic asset allocation by removing the Multi-Asset Class (MAC) Program benchmark scaling process
- Provide more clarity of the calculation of the Total Fund Policy Benchmark by including the interim asset allocation weights

STRATEGIC PLAN

This agenda item supports CalPERS Strategic Plan goal to improve long-term pension and health benefit sustainability. The adoption of the Total Fund Benchmarks Policy revision will ensure that CalPERS is able to effectively achieve the System's investment objectives through clear and current investment policy documentation. This revision shall ensure that the Total Fund Policy Benchmark remains aligned with the approved strategic asset allocation decisions resulting from the ALM workshop, thus maintaining the target risk and return expectations.

BACKGROUND

Currency Overlay Program Benchmark

The IC approved changes to the Currency Overlay Program on March 16, 2009. The change applied to the currency hedge program at the Total Fund level, changing the strategic hedge ratio from 25% of developed equity foreign currency exposure to 15% of total foreign currency exposure. The Currency Overlay Program benchmark was incorporated in the Total Fund Policy Benchmark by scaling the Total Fund Policy Benchmark to reflect the impact of the currency overlay.

MAC Program Benchmark

The MAC Program benchmark was incorporated into the Total Fund Policy Benchmark on December 10, 2012 by scaling the Total Fund Policy Benchmark to reflect the target weights of the Asset Classes and the target weight of the MAC Program.

Total Fund Policy Benchmarks – Interim Weights

The IC adopted new strategic asset allocation targets in December 2010 after the 2010 ALM workshop. The newly adopted Policy Targets shifted the System's investments from relatively liquid public fixed income instruments to less liquid real assets, thus a transition period was needed to reach the Policy Targets. Interim asset allocation targets were approved for the period from July 1, 2011 to December 31, 2012. In February 2013, the IC approved the extension of the interim asset allocation targets until June 30, 2014.

ANALYSIS

The analysis below is for the Total Fund Policy Benchmark return only and in no case would any of the changes have an impact to the Total Fund portfolio returns or ending market value.

Currency Overlay Program Benchmark

In March 2009, the IC approved changes to the Currency Overlay Program which effectively expanded the scope of the hedge to the majority of foreign asset exposures. At that time, the benchmark implementation resulted in the currency hedge component representing approximately 5% of the strategic allocation.

As part of the effort to enhance performance attribution calculations, the Currency Overlay Program benchmark methodology was reviewed against current industry standards utilized by international index providers to create passive currency overlay benchmarks. Staff recommends updating the Currency Overlay Program benchmark methodology to better align with industry standards and eliminate the scaling methodology that was used previously. The changes required to update the methodology are:

1. Eliminate any strategic allocation weight to the Currency Overlay Program
2. Incorporate all sources of volatility in currency pricing in the calculation of currency impacts.

Updating the calculation methodology has the potential to impact future Total Fund Policy Benchmark returns in either a positive or negative direction. The magnitude of the potential impact is illustrated by the change in benchmark volatility as measured by the standard deviation of returns. The existing methodology has an estimated annualized volatility of 11.47%. The updated methodology is estimated have an annualized volatility of 11.74%, an increase of 0.27%. This estimate implies that annual benchmark performance may be higher or lower by 0.27% approximately two thirds of the time. The actual returns generated by the Total Fund will not be impacted by an update to the benchmark calculation methodology.

MAC Program Benchmark

The MAC Program is not handled in a manner consistent with other Programs that have been created outside the periodic ALM process. Staff recommends that the Total Fund Policy Benchmark remain aligned with the strategic asset allocation output from the ALM process. There are currently three programs that have been created outside the ALM cycle:

	Program	Benchmark
1.	Absolute Return Strategies (ARS)	1-Year Treasury Bill plus 5%
2.	MAC	Absolute 7.5%
3.	Opportunistic	Undefined

To date, MAC is the only program that has been incorporated into the Total Fund Policy Benchmark. Staff recommends that the MAC Program be excluded from the Total Fund Policy Benchmark in order to realign the benchmark with the strategic asset allocation choices approved by the IC. Staff further recommends that any future Programs, such as MAC, ARS or Opportunistic, not be included in the Total Fund Policy Benchmark until such time as they receive an allocation through the ALM process. Such programs may appropriately be considered “tactical” prior to ALM adoption.

A common feature of the ARS and MAC Programs is the absolute return nature of the benchmarks assigned to them. Absolute return benchmarks are unique in their positive return and non-volatile characteristics. The only investible asset which consistently demonstrates absolute return attributes is cash. The impacts of including these types of benchmarks within the Total Fund Policy Benchmark calculation are:

1. Reduction in the total risk or volatility (standard deviation of return)
2. Increase in active risk (tracking error).

Tables 1 and 2 below, shows the increasing allocations to ARS Program and MAC Program benchmarks will serve to decrease volatility of the overall benchmark and increase tracking error due to the zero volatility nature of absolute return benchmarks.

Table 1: Total Fund Policy Benchmark versus Conceptual Adjusted Policy Benchmark

Program	Total Risk	Total Active Risk
Current Policy Benchmark vs Current Policy Benchmark	11.44	0.00
Current Policy Benchmark vs Policy Adjust 1 (2% ARS, 1% MAC)	11.38	0.11
Current Policy Benchmark vs Policy Adjust 2 (3% ARS, 2% MAC)	11.34	0.19

Table 2: Predicted Total and Active Risk of ARS and MAC Programs

Program	Total Risk	Total Active Risk
ARS	3.54	3.66
MAC	5.75	5.75

Inclusion of absolute return benchmarks within the Total Fund Policy Benchmark will consume a portion of the risk budget and could limit active risk from being taken in other asset classes. Absolute return benchmarks do not meet the desirable characteristics of a benchmark as established in the Total Fund Benchmark Policy as investable, measurable, and representative. Due to the low, or no, volatility nature of these benchmarks, the Programs will encounter significant active risk when compared against the stated benchmark.

The result of this approach will be to hold staff accountable for the opportunity cost of allocating capital to tactical positions or programs, just as staff would be accountable for over or under allocating to strategic asset classes. In other words, the Total Fund Policy Benchmark should represent the long-term strategic target established during the ALM process and approved by the IC. Any decisions to allocate capital differently than those strategic targets will represent active risk taken by staff.

No significant benchmark return impacts are anticipated from the proposed change due to the small size of the MAC Program.

Total Fund Policy Benchmark – Interim Weights

The interim asset allocation targets are currently used to calculate the Total Fund Policy Benchmark; however they are not included in the Policy. In order to provide more clarity, staff recommends adding the interim asset allocation targets to the Policy.

BUDGET AND FISCAL IMPACTS
Not Applicable

BENEFITS/RISKS
The recommended changes will provide the IC with a more accurate standard to use in assessing investment performance by:

1. Ensuring we continue to stay aligned with current industry best practices related to the Currency Overlay Program benchmark.
2. Incorporating the MAC Program as a non-policy “active” component will remove any misalignment with the approved strategic asset allocation and ensure staff accountability for the efficacy of the program.
3. Incorporating the interim asset allocation weights into the Policy will increase the transparency of the calculation of the Total Fund Policy Benchmark, and improve the usefulness of performance attribution.

ATTACHMENTS
Attachment 1 – Revised Total Fund Benchmarks Policy
Attachment 2 – Wilshire Associates Opinion Letter

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CALIFORNIA PUBLIC EMPLOYEES' RETIREMENT SYSTEM
STATEMENT OF INVESTMENT POLICY

FOR
BENCHMARKS

~~July 30, 2013~~September 16, 2013

This policy is effective immediately upon adoption and supersedes all previous Benchmarks policies.

I. PURPOSE

The California Public Employees' Retirement System ("CalPERS") Total Fund Statement of Investment Policy, adopted by the CalPERS Investment Committee ("Committee"), sets forth CalPERS overarching investment purposes and objectives with respect to all its investment programs.

This document sets forth the investment policy ("Policy") for the selection and modification of program benchmarks ("Program"). The design of this Policy ensures that investors, managers, consultants, and other participants selected by CalPERS take prudent and careful action when selecting program benchmarks and managing the benchmark modification process. Additionally, use of this Policy assures sufficient flexibility in managing investment risks and returns associated with managing Program benchmarks.

II. STRATEGIC OBJECTIVE

The Program shall be managed to accomplish the following:

A. Manage total portfolio risk and return characteristics; and,

B. Establish controls for the selection and modification of benchmarks.

III. RESPONSIBILITIES

A. The Committee is responsible for approving total fund policy benchmarks.

B. CalPERS Investment Staff ("Staff") is responsible for the following:

1. All aspects of portfolio management including monitoring, analyzing, and evaluating performance relative to the appropriate benchmark.

2. Modifying benchmarks as applicable.

3. Providing a report to the Chief Operating Investment Officer ("COIO"), annually, in July, listing all new benchmark, benchmark replacement and modification requests submitted during the previous fiscal year.

4. Reporting to the Committee quarterly, and more often if needed, any benchmark changes.

5. Monitoring the implementation of, and compliance with, the Policy. Staff shall report concerns, problems, material changes, and all violations of Guidelines and Policies at the next Committee meeting, or sooner if deemed necessary. These reports shall include explanations of any violations and appropriate recommendations for corrective action.

C. The General Pension Consultant ("Consultant") is responsible for:

1. Monitoring, evaluating, and reporting quarterly, to the Committee, on the performance of the Program relative to the Policy.

2. Reviewing and approving all requests for benchmark replacements and modifications.

IV. PERFORMANCE OBJECTIVE AND BENCHMARK

A. The performance objective is for the various asset classes and programs to meet or exceed their respective benchmarks.

B. The benchmark for individual programs or strategies is listed in one of the following attachments:

1. Attachment A: Total Fund Policy

2. Attachment B: Asset Allocation Policies

3. Attachment C: Growth Policies

4. Attachment D: Income Policies

5. Attachment E: Inflation Assets Policies

6. Attachment F: Real Assets Policies

7. Attachment G: Liquidity Policies

8. Attachment H: Multi Asset Class Partners Policies

9. Attachment I: Absolute Return Strategies Policies

10. Attachment J: Other (Non-PERF) Investment Portfolio Policies

Policies included in the following categories do not have referenced benchmarks; therefore, they are not listed in the attachments: Investment and Risk Management, Ethics, Operations, and Shareowner Activities.

C. Benchmark Definitions – Please see the applicable attachments for a definition of each program's component (i.e., industry, sector, country, etc.) benchmark.

V. INVESTMENT APPROACHES AND PARAMETERS

The purpose of a benchmark is to establish target investment exposures, facilitate the periodic reporting to the Committee, and to provide a relative measure to gauge success.

A. Desirable Benchmark Characteristics

The desirable characteristics of a suitable program benchmark are set forth below.

1. Public Market Securities / Programs

   a. Investable – The securities contained in the benchmark should represent tradable positions. Ideally, the benchmark should be constructed with low turnover to minimize transactions costs.

   b. Measurable – The pricing of the benchmark should be transparent, making it possible to track benchmark performance.

   c. Unambiguous – The names and weights of the securities in the benchmark should be clearly defined.

2. Private Market Programs

   a. Measurable – The pricing of the benchmark should be transparent, making it possible to track benchmark performance.

   b. Predetermined – The names and weights of the components of the benchmark should be clearly defined.

c. Representative – The components of the benchmark should be suitably representative of the investments and their associated risk and return levels.

B. Benchmark Modification Indicators:

The following factors may indicate that modification of a benchmark should be considered:

1. When a more cost efficient alternative is available that captures the risk return characteristics of the asset class or program.

2. When a component (i.e., industry, sector, country, etc.) of the benchmark is exposed to economic risks that are of such a degree that the future economic viability of that industry or sector is in doubt. Examples of such indicators:

   a. The industry, not an individual company, shares common exposure to product liability judgments, settlements, and ongoing litigation that have the potential to exceed the industry’s net worth.

   b. Significant threat of a specific component filing bankruptcy.

   c. Regulatory or legislative actions or both that have the potential to substantially impair specific component earnings.

   d. Policy actions in the institutional investor community that, in aggregate, have the potential to have a deleterious effect on specific component share prices.

3. In the event that these or other indicators are evidenced, Staff or a member of the Committee may bring the matter before the Committee for due diligence and consideration. This due diligence will include:

   a. Analysis by Staff, in consultation with third-party experts, that the indicators are evidenced and have the potential to adversely impact the benchmark performance.

   b. Analysis of the expected effect of the benchmark modification on the total portfolio risk/return characteristics.

   c. Analysis of the expected costs associated with implementation of the benchmark modification.

d. A timetable for review of the benchmark modification.

C. Benchmark Modification Process

1. Staff is responsible for completing the Benchmark Change Control Form, obtaining the appropriate Senior Investment Officer approval, and submitting the form to the Investment Servicing Division – Portfolio Analytics Unit (“ISD – PA”).

2. ISD – PA Staff is responsible for reviewing the proposed purpose of the benchmark replacement or benchmark component modification.

3. The Consultant is responsible for reviewing and approving the benchmark replacement or benchmark component modification.

4. The Chief Investment Officer (“CIO”) or the COIO must also approve the benchmark replacement or benchmark component modification.

5. Once the Consultant and the CIO or COIO has approved the benchmark modification, ISD – PA Staff will notify the Office of Enterprise Compliance, the Asset Allocation Unit and the Custodian.

VI. CALCULATIONS AND COMPUTATIONS

Investors, managers, consultants, and other participants selected by CalPERS shall make all calculations and computations on a market value basis as recorded by CalPERS Custodian.

VII. GLOSSARY OF TERMS

Key words used in the policy are defined in CalPERS Master Glossary of Terms.

Approved by the Policy Subcommittee: Adopted by the Investment Committee:	June 15, 2009 August 17, 2009
Revised by the Policy Subcommittee: Approved by the Investment Committee:	November 16, 2009 December 14, 2009
Revised by the Policy Subcommittee: Approved by the Investment Committee: Policy Effective:	April 11, 2011 May 16, 2011 July 1, 2011
Administrative Update to Attachment F – Real Asset Policies:	February 7, 2012
Administrative Update to Attachment B - Asset Allocation Policies Program Benchmark:	March 1, 2012
Administrative Update to change AIM to Private Equity (PE):	October 10, 2012
Administrative Update to add Multi Asset Class Partners Allocation and Program	December 10, 2012
Administrative Update to Attachment B – Asset Allocation Policies Program Benchmark:	February 22, 2013
Administrative Update for new Health Care Fund trust level policy benchmark	May 10, 2013
Approved by the Investment Committee: Administrative Change to implementation date:	June 17, 2013 July 30, 2013
Approved by the Investment Committee Policy Effective:	September 16, 2013 July 1, 2013

ATTACHMENT A

TOTAL FUND POLICY BENCHMARKS

~~July 30, 2013~~**September 16, 2013**

The total fund policy benchmark is the average return of the asset class benchmark indices weighted by asset class benchmark allocations plus the benchmark return of the total fund currency overlay program. ~~and the benchmark return of the Multi Asset Class Partners allocation..~~ The fund benchmark return is the return attributable to the target asset class allocations. Staff employs active strategies in an effort to achieve a fund portfolio return that exceeds the fund benchmark return.

Asset Class	Benchmark	Policy Weight	Interim Target Weight
Growth	78% * Public Equity benchmark + 22% * Private Equity benchmark.	63.0%	64.0%
Income	90% Barclays Long Liabilities + 10% Barclays International Fixed Income Index GDP weighted ex-US.	16.0%	17.0%
Inflation Assets	75% * ILB benchmark + 25% * Commodities benchmark.	4.0%	4.0%
Real Assets	77% * Real Estate benchmark + 15% * Infrastructure benchmark + 8% * Forestland benchmark.	13.0%	11.0%
Liquidity	75% * Barclays Treas 2-10 yr. + 25% * 1 mo. T-bill	4.0%	4.0%

Interim target weights were approved by the Investment Committee effective July 1, 2011. During the transition of implementing the approved strategic policy targets, interim weights will be used to calculate the total fund policy benchmark through June 30, 2014.

~~The total fund policy benchmark return will be scaled to reflect the target asset class allocations along with the addition of the Multi Asset Class Partners allocation as per the following weights:~~

~~Asset Class~~	~~Benchmark~~	~~Weight~~
~~Total Fund~~	~~See details above for composition~~	~~99.50%~~
~~Multi Asset Class Partners~~	~~Absolute 7.5%~~	~~0.50%~~

~~The allocation above will become effective on February 1, 2013.~~

ATTACHMENT B

ASSET ALLOCATION POLICIES
PROGRAM BENCHMARKS

July 30, 2013

Policy	Program	Benchmark
Asset Allocation Strategy		Policy Index.
California Employers' Retiree Benefit Trust (CERBT) Funds		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.
	Global Equity	MSCI ACWI IMI (Net)
	U.S. Fixed Income	Barclays Long Liability Index
	TIPS	Barclays Global Real: U.S. TIPs Index
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Liquid (Net)
Judges' Retirement System II		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.
	Global Equity	CalPERS Custom FTSE Global Composite
	U.S. Fixed Income	Barclays Long Liability Index
	TIPS	Barclays Global Real: U.S. TIPs Index
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Index
Legislators' Retirement System		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.
	Global Equity	CalPERS Custom FTSE Global Composite
	U.S. Fixed Income	Barclays Long Liability Index
	TIPS	Barclays Global Real: U.S. TIPs Index
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Index

Long-Term Care Fund		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.
	Global Equity	MSCI ACWI IMI (Net)
	U.S. Fixed Income	Barclays Long Liability Index
	TIPS	Barclays Global Real: U.S. TIPs Index
	Commodities	S&P GSCI Total Return Daily
	REITs	FTSE EPRA/NAREIT Developed Liquid (Net)
SIP CalPERS Risk-Based & Target Retirement Date Funds		The benchmark for each asset allocation fund is a weighted benchmark determined by weighting each asset class benchmark by its policy target.
	Global Equity	Individual Global Equity pool portfolio benchmarks.
	U.S. Fixed Income	Barclays Aggregate Index.
	TIPS	Barclays Global Real: U.S. TIPS Index.
	Commodities	Standard & Poor's GSCI Total Return Index.
	REITS	FTSE EPRA/NAREIT Developed.

ATTACHMENT C

GROWTH POLICIES
PROGRAM BENCHMARKS

October 10, 2012

Policy	Program	Benchmark
Growth	Total Growth	78% * Public Equity benchmark + 22% * Private Equity benchmark
Private Equity (PE)	Total Private Equity	(67% FTSE U.S. TMI + 33% FTSE AW ex U.S. TMI) +3% lagged one quarter.
Restricting Private Equity Investments in Public Sector Outsourcers		Not Applicable.
Public Equity	Total Public Equity	CalPERS Custom Global Equity.
Public Equity Sub Asset Class Allocation Ranges	Domestic Equity	CalPERS Custom Domestic All Cap.
	International Equity	CalPERS All-World Ex U.S. All Cap.
Public Equity Emerging Manager Fund of Funds		Custom weighted average benchmark.
Corporate Governance	Corporate Governance (Externally Managed) Funds	The benchmark shall be recommended by the fund manager with input from the due diligence consultant and input and approval from the Corporate Governance Senior Portfolio Manager and Portfolio Manager.
	Corporate Governance Co-Investment Strategy	The benchmark is the portfolio market value weighted total return for the benchmark for each external partner with whom an actual co-investment has been made.
Emerging Equity Markets Principles		Not Applicable.

Externally Managed Strategies	Domestic Active Equity	CalPERS Custom Domestic Large / Mid Cap.
	Domestic Enhanced Indexing Equity	CalPERS Custom Domestic Large / Mid Cap.
	Domestic Relaxed Long-Only Equity	CalPERS Custom Domestic Large / Mid Cap.
	International Active Equity	CalPERS Custom Developed International Large / Mid Cap.
	International Enhanced Indexing Equity	CalPERS Custom Developed International Large / Mid Cap.
Manager Development Program (MDP) I and II Policy and Manager Transition Policy		Custom weighted average benchmark.
Monitoring Externally Managed Portfolios		Specific performance objectives and benchmarks for each externally managed program are outlined in policy and External Manager guidelines.
Internally Managed Affiliate Equity Index Funds	Deferred Compensation Index (SIP Large Cap Equity Index)	Standard & Poor's 500.
	Pooled Index	Standard & Poor's 500Ex Tobacco.
	Deferred Compensation Small and Mid Cap Index (SIP Small and Mid Cap Equity Index)	Russell 2500 Index.
Internally Managed Public Enhanced Equity Strategies	Fundamental Factor Model – Domestic	CalPERS Custom Domestic Large / Mid Cap.
	Fundamental Factor Model – Developed Markets - International	CalPERS Custom Developed International Large / Mid Cap.
	Environmental Factor Model – HSBC	CalPERS /Custom Global Equity
	Fundamental Factor Model – Emerging Markets – International	CalPERS Custom Emerging Markets.
	Country-Tiered Emerging Markets	CalPERS Custom Emerging Markets
	Synthetic Enhanced Equity	Standard & Poor's 500 Index.

Internally Managed Public Equity Index Funds	Domestic Large / Mid Cap	CalPERS Custom Domestic Large / Mid Cap.
	Domestic Microcap	CalPERS Custom Domestic Microcap.
Internally Managed Public Equity Index Funds, cont.	International Large / Mid Cap	CalPERS Custom Developed International Large / Mid Cap.
	International Small/Microcap	CalPERS Custom Developed International Small Cap.
	Emerging Markets	CalPERS Custom Emerging Markets.
	Cash Equitization	CalPERS Custom Global Equity
	Dynamic Completion	CalPERS Custom DCF.

BENCHMARK DETAILS:

CalPERS Custom Global Equity
The CalPERS Custom Global Equity benchmark is a custom composite that comprises the CalPERS Custom Domestic All Cap and CalPERS Custom All-World ex US All Cap benchmarks on a capitalization weighted basis.

CalPERS Custom Domestic All Cap
The CalPERS Custom Domestic All Cap benchmark is a custom composite that comprises the CalPERS Custom Domestic Large / Mid Cap and CalPERS Custom Domestic Microcap benchmarks on a capitalization weighted basis.

CalPERS Custom All-World ex US All Cap
The CalPERS Custom All-World ex US Cap benchmark is a custom composite that comprises the CalPERS Custom Developed International Large / Mid Cap, CalPERS Custom Developed International Small Cap, CalPERS Custom emerging Markets Large/Mid Cap, and CalPERS Custom Emerging Markets Small Cap benchmarks on a capitalization weighted basis.

CalPERS Custom Developed International Large / Mid Cap
The CalPERS Custom Developed International Large / Mid Cap benchmark is a custom index constructed and maintained by FTSE. It is defined as the FTSE All World Developed benchmark excluding US domestic and tobacco (as defined by RiskMetrics) securities. It is based on market capitalization and is reconstituted quarterly.

CalPERS Custom Developed International Small Cap
The CalPERS Custom Developed International Small Cap benchmark is a custom index constructed and maintained by FTSE. It is defined as the FTSE GEIS (Global Equity Index Series) Developed Small Cap benchmark excluding US domestic and tobacco (as defined by RiskMetrics) securities. It is based on market capitalization and is reconstituted quarterly.

CalPERS Custom Domestic Large / Mid Cap
The CalPERS Custom Domestic Large / Mid Cap benchmark is a custom index constructed and maintained by FTSE. It is defined as the top 3000 securities in the FTSE US Total Market Index (TMI), excluding tobacco securities (as defined by RiskMetrics), based on market capitalization and is reconstituted quarterly.

CalPERS Custom Domestic Microcap
The CalPERS Custom Domestic Microcap benchmark is a custom index constructed and maintained by FTSE. It is defined as the FTSE US TMI, excluding tobacco securities (as defined by RiskMetrics), less the securities included in the CalPERS Custom Domestic Large / Mid Cap benchmark. It is based on market capitalization and is reconstituted quarterly.

CalPERS Custom DCF
The CalPERS Custom DCF (Dynamic Completion Fund) benchmark is a custom index constructed and maintained by Nuveen Investment Solutions (formerly Richards and Tierney). Its construction is a function of the style and market cap biases generated by the composite of the benchmarks for all Global Equity portfolios in the aggregate. This custom index complements the above-mentioned biases, completing the benchmark exposure to CalPERS strategic, custom, Global Equity benchmark, and is reconstituted as needed based on changes in the Global Equity program.

CalPERS Custom Emerging Markets Large / Mid Cap
The CalPERS Custom Emerging Markets Large / Mid Cap benchmark is a custom index constructed and maintained by FTSE. It is defined as the FTSE All World Emerging markets Large / Mid Cap benchmark excluding tobacco (as defined by RiskMetrics) securities, KLD-restricted securities, and Argentine securities. It is based on market capitalization and is reconstituted quarterly.

CalPERS Custom Emerging Markets Small Cap
The CalPERS Custom Emerging markets Small Cap benchmark is a custom index constructed and maintained by FTSE. It is defined as the FTSE All World Emerging markets small cap benchmark excluding tobacco (as defined by RiskMetrics) securities, KLD-restricted securities, and Argentine securities. It is based on market capitalization and is reconstituted quarterly.

Russell 2500
The Russell 2500 benchmark is a capitalization weighted benchmark designed to measure the performance of the US domestic small and mid cap equity market. It is composed of the largest 3000 securities, based on market capitalization, in the United States minus the largest 500 securities, and is reconstituted annually.

Standard & Poor's 500
The Standard & Poor's 500 benchmark is a capitalization weighted benchmark designed to measure the performance of the US domestic large cap equity market. It is composed of the largest 500 securities, based on market capitalization, in the United States and is reconstituted quarterly.

Standard & Poor's 500 Ex Tobacco
The Standard & Poor's 500 Ex Tobacco benchmark is a capitalization weighted benchmark designed to measure the performance of the US domestic large cap equity market. It is composed of the largest 500 securities, excluding tobacco securities (as defined by RiskMetrics), based on market capitalization, in the United States and is reconstituted quarterly.

ATTACHMENT D

INCOME POLICIES
PROGRAM BENCHMARKS

~~July 30, 2013~~September 16, 2013

Policy	Program	Benchmark
Currency Overlay	Currency Overlay Program	CalPERS Currency Overlay Benchmark ~~Sum of benchmark foreign currency exposures of portfolios with international benchmarks plus actual foreign currency exposures of portfolios with domestic-only benchmarks fully hedged.~~
	Tactical Management Program	CalPERS Currency Overlay Benchmark ~~Sum of benchmark foreign currency exposures of portfolios with international benchmarks plus actual foreign currency exposures of portfolios with domestic-only benchmarks fully hedged.~~
	Externally Managed Currency Overlay Program	CalPERS Currency Overlay Benchmark ~~Sum of benchmark foreign currency exposures of portfolios with international benchmarks plus actual foreign currency exposures of portfolios with domestic-only benchmarks fully hedged.~~
	Internally Managed Passive Currency Overlay Program	CalPERS Currency Overlay Benchmark ~~Sum of benchmark foreign currency exposures of portfolios with international benchmarks plus actual foreign currency exposures of portfolios with domestic-only benchmarks fully hedged.~~
	Internally Managed Active Currency Overlay Program	CalPERS Currency Overlay Benchmark ~~Sum of benchmark foreign currency exposures of portfolios with international benchmarks plus actual foreign currency exposures of portfolios with domestic-only benchmarks fully hedged.~~

Global Fixed Income Program	Dollar-Denominated Fixed Income Program	Barclays Long Liabilities Index.
Global Fixed Income Program, cont.	International Fixed Income Program	Barclays International Fixed Income Index GDP weighted ex-US.
	Foreign Debt Policy Program	Not Applicable.
Low Duration Fixed Income Program	Dollar-Denominated Fixed Income High Quality Libor (HQL) Program	Federal Funds based index.
	Dollar-Denominated Fixed Income Short Duration Program	Federal Funds based index.
	Internally Managed Dollar-Denominated Short-Term Program	Total rate of return of the State Street Bank Short-Term Investment Fund after investment management fees.
Treasury Inflation Protected Securities (TIPS)		Barclays Group Real: U.S. TIPS Index.

BENCHMARK DETAILS:

CalPERS Currency Overlay Benchmark

The CalPERS Currency Overlay Benchmark is a custom benchmark intended to measure the impact on performance of hedging currency exposure using a monthly Forward contract rollover. The benchmark is calculated based on the tradable currencies and exposures documented in the Currency Overlay Program Policy.

ATTACHMENT E

INFLATION ASSETS POLICIES
PROGRAM BENCHMARKS

July 30, 2013

Policy	Program	Benchmark
Inflation Assets	Overall Program	75% * ILB benchmark + 25% * Commodities benchmark.
	Commodities Program	Standard & Poor's GSCI Total Return Index.
	Inflation-Linked Bond Program	ILB Custom Index: Blend of 67% Barclays Global Inflation-Linked U.S. and 33% Barclays Universal Government Inflation Linked Bond Index ex-US.
	Foreign Debt Policy	Not Applicable.

ATTACHMENT F

REAL POLICIES
PROGRAM BENCHMARKS

October 10, 2012

Policy	Program	Benchmark
Real Assets	Total Real	77% Real Estate benchmark + 15% * Infrastructure benchmark + 8% * Forestland benchmark.
	Real Estate Program***	Exceed (net of fees) NCREIF ODCE lagged one quarter
	Infrastructure Program	Consumer Price Index +4%, lagged one quarter.
	Forestland Program	NCREIF Timberland lagged one quarter.

*** The interim Real Estate benchmark is a composite of the NCREIF ODCE and the previous global equity REIT index (FTSE EPRA NAREIT Global). Each quarter, the benchmark weight of the REIT index weight would equal the actual weight of the REIT portfolio at the end of the prior quarter. The portfolio REIT allocation is expected to decline to zero over the next one to three years. This transition plan is gradual and responsive to market conditions.

ATTACHMENT G

LIQUIDITY POLICIES
PROGRAM BENCHMARKS

July 1, 2011

Policy	Program	Benchmark
Liquidity Program	Total Liquidity Program	75% * Barclays Treas 2-10 yr. + 25% * 1 mo. T-bill

ATTACHMENT H

MULTI ASSET CLASS POLICIES
PROGRAM BENCHMARKS

December 10, 2012

Policy	Program	Benchmark
Multi Asset Class	Multi Asset Class Program	Absolute 7.5%

ATTACHMENT I

ABSOLUTE RETURN STRATEGIES POLICIES
PROGRAM BENCHMARKS

March 1, 2012

Policy	Program	Benchmark
Absolute Return Strategies	Absolute Return Strategies Program	1 yr Treasury Note + 5%

ATTACHMENT J

OTHER (NON-PERF) INVESTMENT PORTFOLIO POLICIES
PROGRAM BENCHMARKS

August 1, 2013

Policy	Program	Benchmark
Barclays Aggregate Program		Barclays Aggregate Index.
Supplemental Income Plans (SIP)		The performance of each individual investment fund within SIP will be evaluated against its appropriate asset class benchmark.

Wilshire

Michael C. Schlachter, CFA
Managing Director & Principal

September 5, 2013

Mr. Henry Jones
Chair, Investment Committee
California Public Employees' Retirement System
400 P Street, Suite 3492
Sacramento, CA 95814

Re: Changes to Total Fund Benchmark

Dear Mr. Jones,

You requested Wilshire's opinion with respect to the proposal by Staff to make three changes to the Total Fund benchmark.

Recommendation

Wilshire recommends approving the change to the calculation of the currency overlay benchmark as presented by Staff as well as the addition of the interim weights to the policy. Wilshire does not object to the proposed change in how the MAC program will be handled within the benchmark, with the below caveats.

Discussion

We have reviewed materials prepared by Staff regarding the calculation of the currency benchmark, held extensive discussions with Staff, and have reviewed research by third parties regarding the current state of the art for currency benchmarks. In our opinion, the changes presented by Staff are warranted and should be approved.

In regard to the interim weights, the phase-in of the change in the Real Estate allocation was originally proposed by Wilshire following the Asset Liability Modeling exercise three years ago, given the Real Estate environment and the inability of Staff to rapidly rebalance into the asset class, and therefore we do not object to the formal adoption of the interim weights that have resulted.

We have also had several discussions with Staff about the change to how the MAC program will be handled within the Total Fund benchmark. When MAC was created, Staff asked the Investment Committee to modify the Total Fund benchmark to reduce the impact that allocations to MAC will have on the tracking error of the total portfolio

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versus the benchmark. This proposed change reverses that prior request and, in our opinion and the original opinion of Staff, can lead to increases Total Fund tracking error if the MAC program is invested as was originally outlined to the Investment Committee.

We have reviewed the work by Staff that discusses their conclusion that including MAC in the Total Fund Benchmark will reduce tracking error, but we respectfully disagree with their conclusion. As outlined to the Investment Committee, the point of the MAC program is to return as close to 7.5% as possible with as little volatility as possible through a variety of non-traditional investment strategies. Were the MAC program invested in long-only mixes of equities and fixed income in roughly a 65%/35% mix, then we would agree with Staff's analysis. To date, however, the only manager funded is a multi-strategy hedge fund that seeks to achieve the 7.5% return with little similarity to a 65%/35% portfolio. Many of the other strategies reviewed and selected for future investment are similarly unencumbered by a 65%/35% constraint. In fact, the RFP selection process generally preferred managers who targeted 7.5% over those who sought to outperform the CalPERS Total Fund benchmark.

Under Staff's proposal for eliminating the separate benchmark for MAC, the importance of Staff's responsibility for deciding to allocate to and from the MAC program will increase. If MAC performs as expected and returns in the neighborhood of 7.5% while a strong stock or bond market leads CalPERS to return better than 7.5% for a given year, the Total Fund will underperform its benchmark even if everything else in the portfolio meets the respective benchmarks. Similarly, if the fund performs poorly, a 7.5% return from MAC would help the Total Fund outperform its benchmark. This will lead Staff to consider the allocation to MAC even more closely than it currently does and to take a tactical view since the magnitude of the allocation to MAC is likely to matter more than the MAC managers' performance in some periods. Simply put, the performance result of the decision to allocate or deallocate to MAC in a very strong or weak market could overwhelm the impacts of any manager skill (or lack thereof).

Generally speaking, we do not prefer changes to benchmarks that have the impact of increasing tracking error. While Staff's analysis shows that this proposal may decrease tracking error, we respectfully disagree with that conclusion and believe that tracking error will increase in volatile markets if MAC is invested in the way that was presented to the Investment Committee and generally achieves its return objectives.

However, given that MAC is a new program and Staff is still working their way through how they want to invest and monitor this program, we will not object to approving this agenda item if Staff and the Investment Committee are prepared to accept the consequences of what could be an increase in tracking error, the potential impacts on Total Fund performance relative to benchmark, and the impacts on incentive compensation that would result from this new driver of Total Fund outperformance or underperformance (a greater result from overall market performance than manager selection skill).

Should you require anything further or have any questions, please do not hesitate to contact us.

Best regards,