Benchmarks - Roles, Uses and Implications for CalPERS

CalPERS Board of Administration and Executive Offsite

January 20, 2015
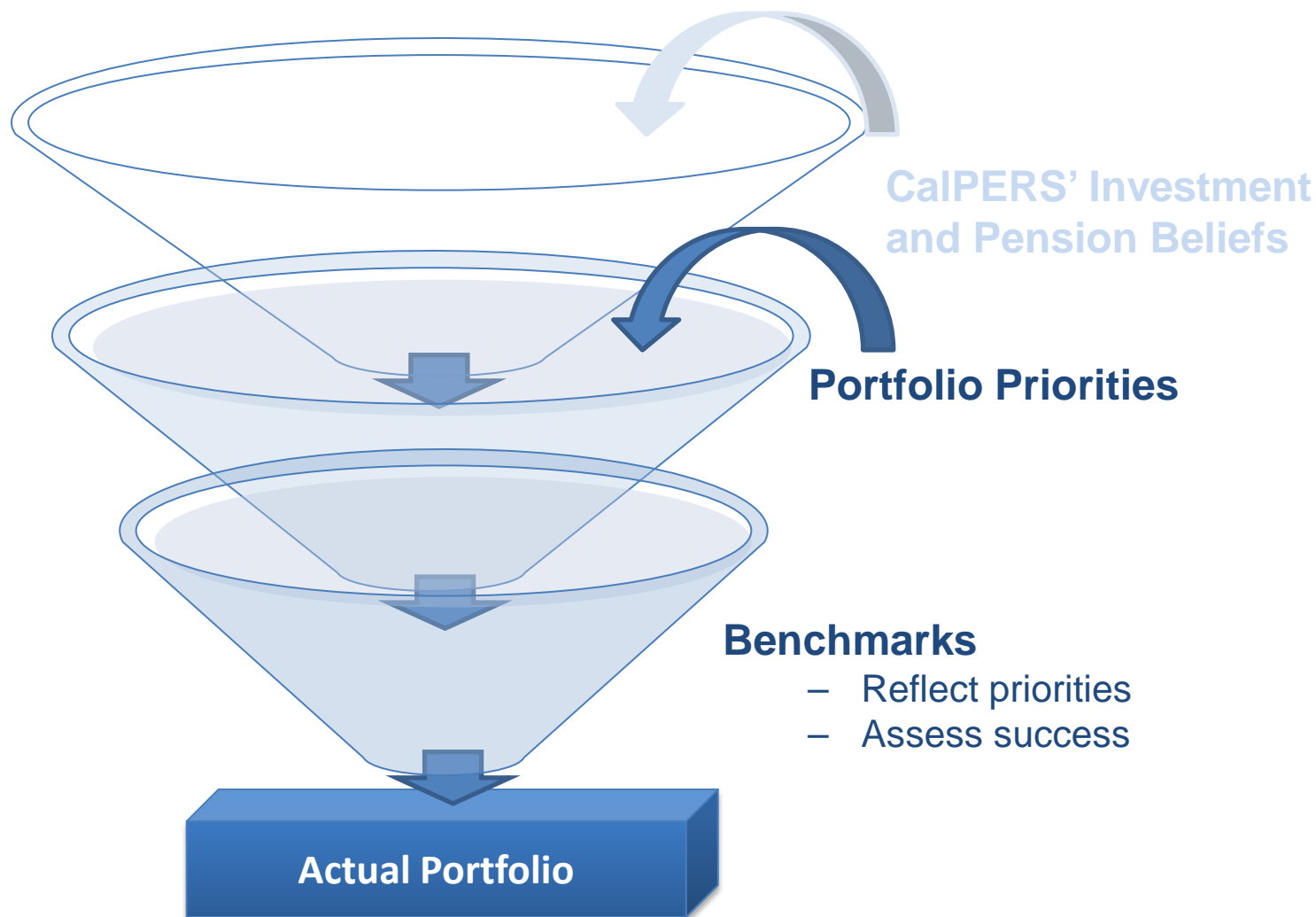
CalPERS | Investment Office
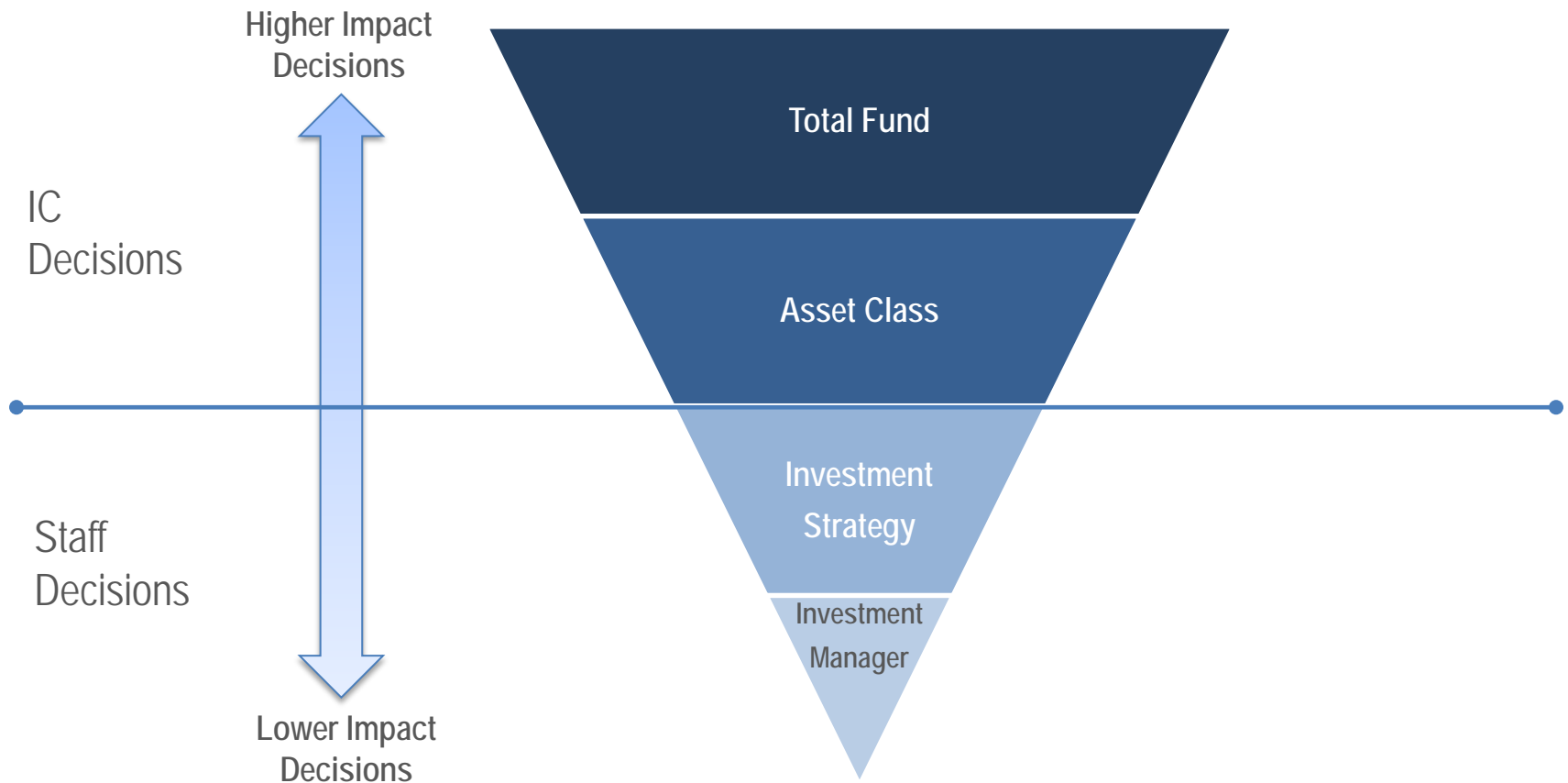Asset Allocation/Risk Management

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Benchmarks – Roles, Uses and Implications

i. Definition and Roles

ii. Construction

iii. Public and Private Asset Class Distinctions

iv. About CalPERS' Benchmarks

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Portfolio Construction | Reflects Our Priorities

CalPERS' Investment and Pension Beliefs

Portfolio Priorities

Benchmarks
- Reflect priorities
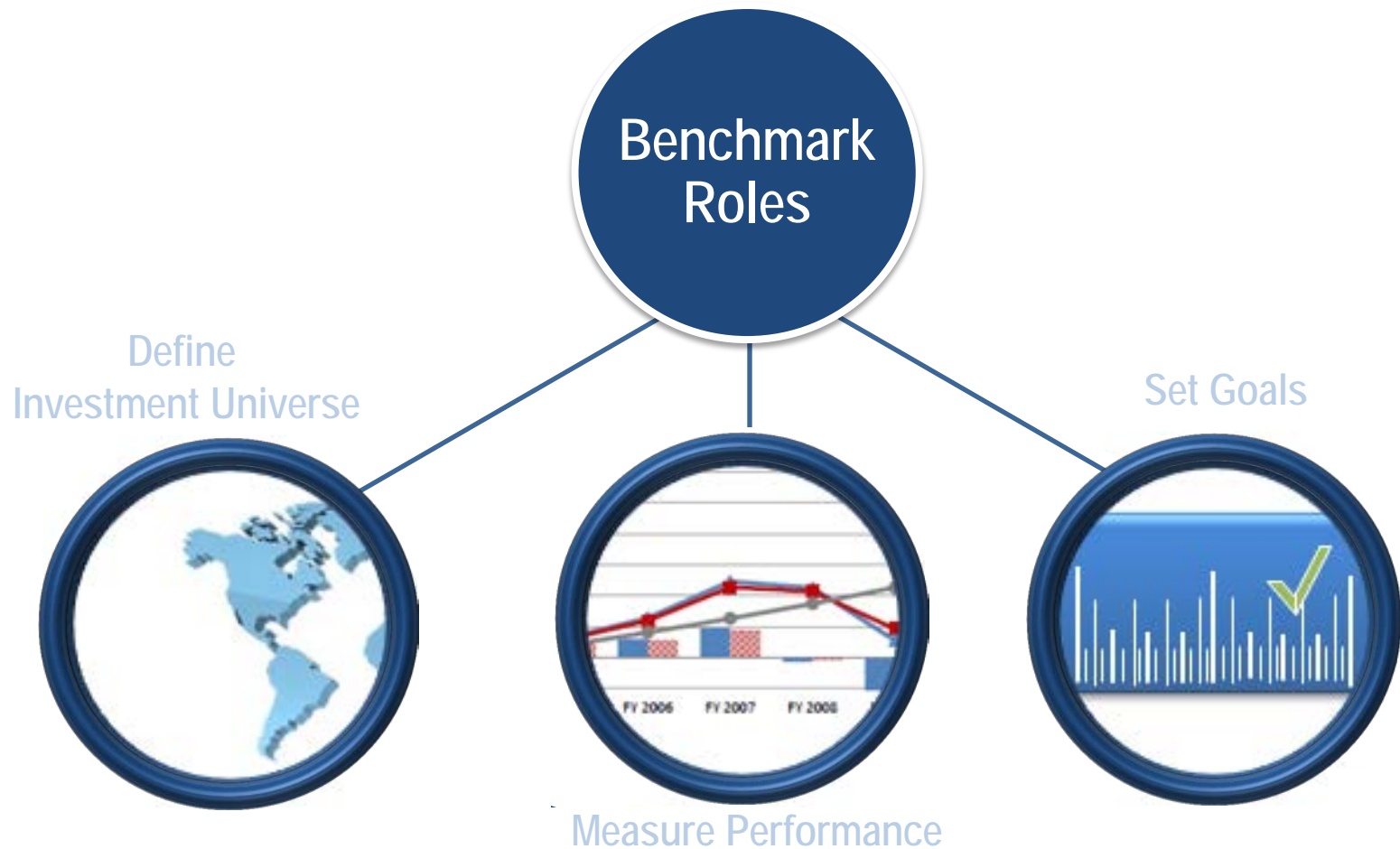- Assess success

Actual Portfolio

Benchmarks Reflect Governance Structure

A strong governance structure goes hand-in-hand with a robust investment decision-making process

Benchmarks Can Have Multiple Roles

Benchmark Roles

Define Investment Universe

Set Goals

Measure Performance

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Benchmark Types

Sample Benchmark Types	Description
Absolute Return	A single return objective is used as the benchmark (e.g., success equals achieving [X]% in returns)
Long-term Objective ([X]+%)	A benchmark in which a goal return amount is linked to another variable, such as CPI[1] + 4%
Peer Based	Benchmarks composed of like investors operating in similar opportunity sets
Public Market Benchmark	Benchmarks based on publicly available stocks or bonds
Private Asset Benchmark	Benchmarks based on pools of like-assets and like-investment strategies within private asset classes

[1] Consumer Price Index (CPI)

Benchmark Roles and Uses| Key Points

- CalPERS' policy benchmarks are critical to our governance and business processes

- Better definition of our goals leads to better benchmarks (by which to measure performance)

- We need a variety of benchmarks to address different purposes and measurement time frame is an important consideration

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Benchmark | Construction

How are benchmarks specified?

- Constituents (Which securities or markets)

- Weights (How much of each)

- Rules (Rebalancing, etc.)

Benchmark Construction | Weighting Schemes

Common Weighting Schemes

- Market-cap weighting

- Fundamental weighting

- Equal weighting

- Risk-based weighting

Benchmark Construction | Weighting Schemes

Observations on Alternative Weighting Schemes

- Market-cap weighted benchmarks are biased towards growth and momentum

- Alternative weighting schemes typically sell winners and buy losers *(captures mean reversion)*

- Transaction costs increase if we move away from a market-cap weighted benchmark

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Benchmark Construction | Key Points

What's the impact to CalPERS?

- Constituents – Scale, availability, representative

- Weights – Can adjust to meet our specific needs

- Rules – What's the implication for rebalancing, given our size?

Questions / Comments?

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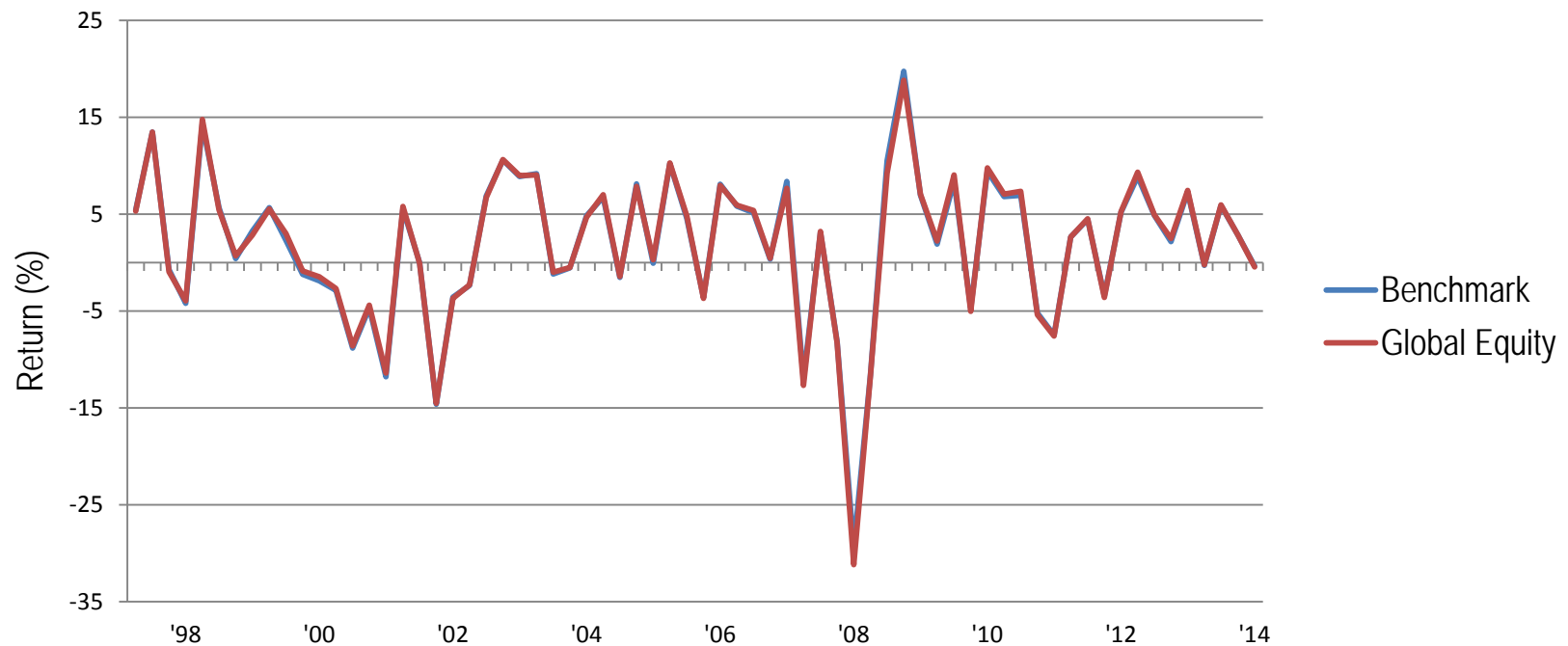Benchmarks – Roles, Uses and Implications

i. Definition
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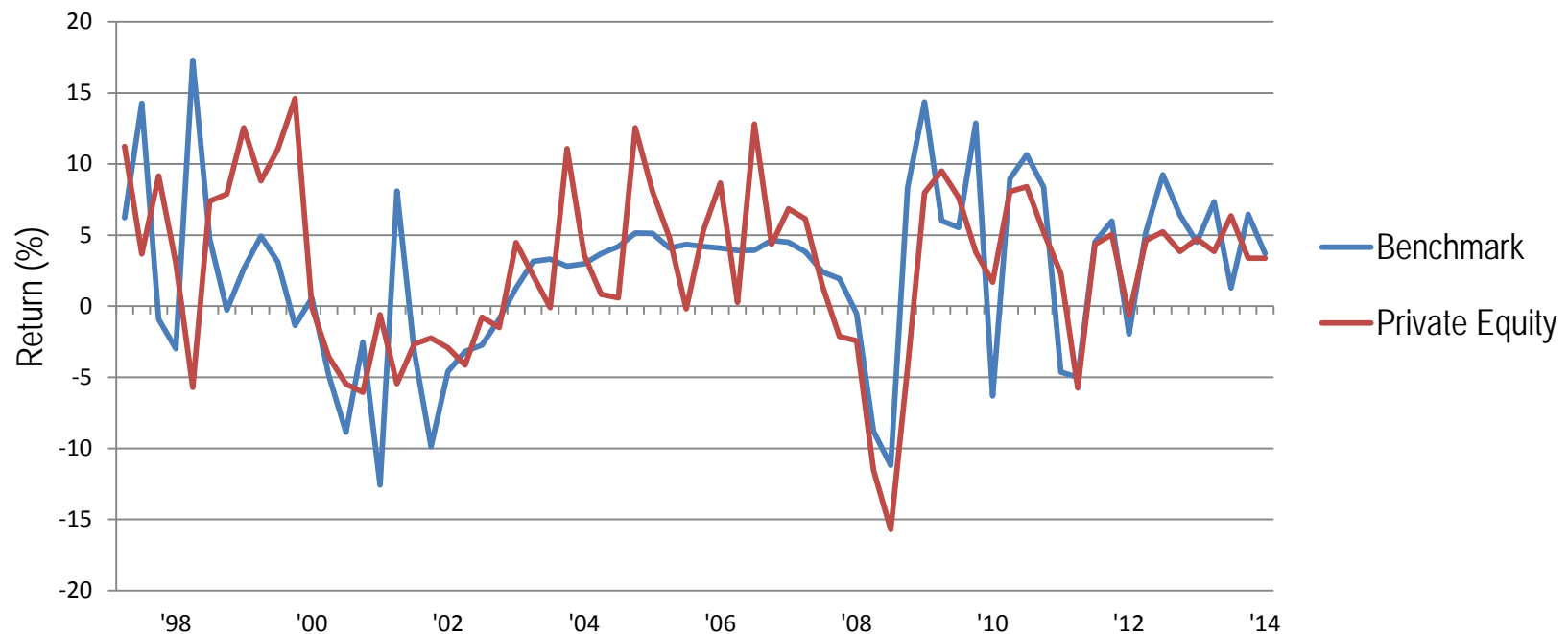# Public & Private Distinctions| Tracking Error Example: Low Tracking Error

CalPERS' Global Equity (GE) vs. GE Benchmark
Quarterly Return Comparison

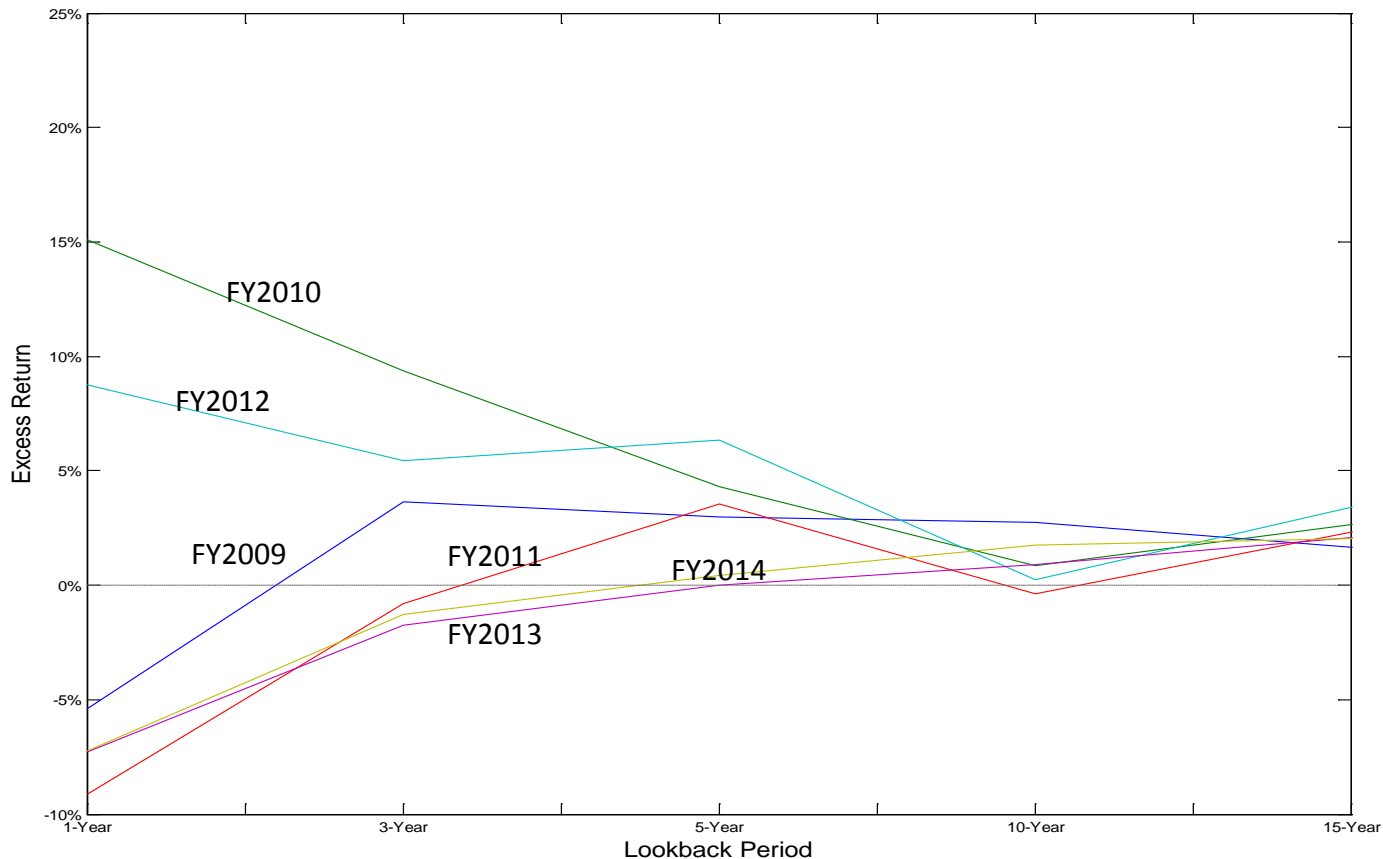# Public & Private Distinctions| Tracking Error Example: High Tracking Error

CalPERS' Private Equity (PE) vs. PE Benchmark
Quarterly Return Comparison

Public & Private Distinctions| PE Return – Benchmark Return

In the long-term, Private Equity portfolio performance appears to converge to long-term objective despite material differences in the short-term[1]

Public & Private Distinctions| Typical Asset Class Characteristics

Public Asset Classes *Target=74% PERF[1]*	Characteristic	Private Asset Classes *Target=26% of PERF[1]*
Observable by transactions	← Asset pricing is →	Reported by managers
Daily	← Valuations are updated →	Quarterly
High	← Investability is →	Low
High	← Transparency is →	Low
Broad (Global)	← Coverage is →	Comparatively Limited
High	← Maturity of Market →	Varies

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[1] Source: CalPERS Asset Allocation Strategy Policy, policy targets for the Public Employees' Retirement Fund (PERF), adopted May 29, 2014   18

Questions / Comments?

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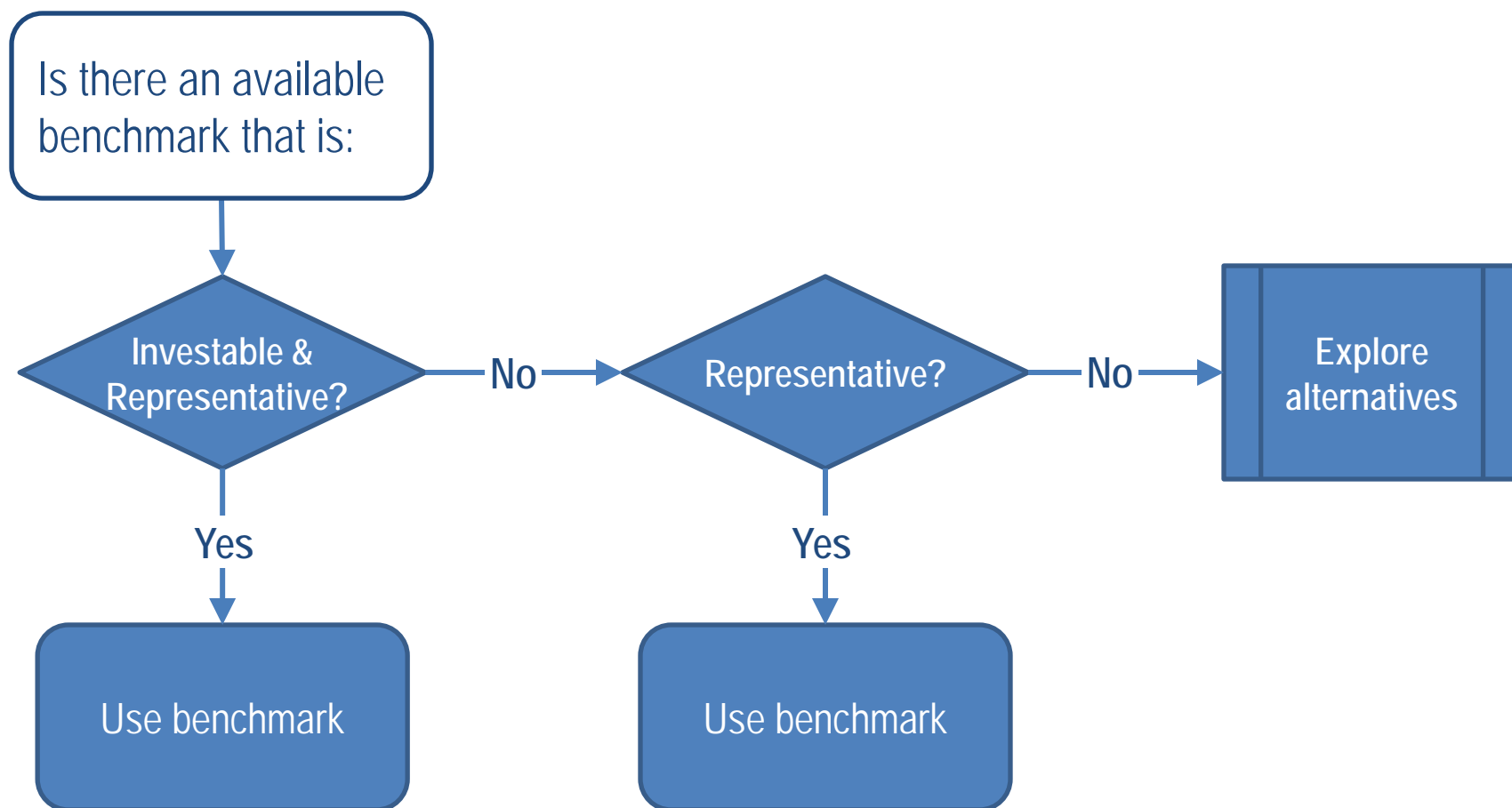
Policy Benchmarks - Attributes| Future

Public Asset Classes

- Measurable
- Unambiguous
- **Representative** (*of Portfolio Priorities and Opportunity Set*)
- Investable

Private Asset Classes

- Measurable
- Unambiguous
- **Representative** (*of Portfolio Priorities and Opportunity Set*)

Benchmarks | Selection Considerations for Short to Medium Term Performance Measurement

Benchmarks Policy| Attributes Review

	(Specified for:)	Investable (Public)	Measurable (Both)	Unambiguous (Public)	Predetermined (Private)	Representative (Private)
Public Assets	Global Equity	✔	✔	✔	✔	✔
	Fixed Income	✔	✔	✔	✔	✔
	Inflation Assets	✔	✔	✔	✔	✔
	Liquidity	✔	✔	✔	✔	✘
Private Assets	Private Equity	✘	✔	✔	✔	✘
	Real Estate	?	✔	✔	✔	?
	Infrastructure	✘	✔	✔	✔	✘
	Forestland	✘	✔	✔	✔	?

Benchmarks | 2013 ALM Asset Class Roles

Asset Class	Growth	Risk Protection	Inflation Protection	Liquidity	Cash Yield
Global Equity	High	Unassigned	Unassigned	High	Moderate
Private Equity	High	Unassigned	Unassigned	None	Low
Fixed Income	Low	High	Unassigned	High	High
Real Estate	High	High	Moderate	None	High
Infrastructure	Moderate	High	Moderate	None	High
Forestland	Moderate	Unassigned	High	None	Moderate
Inflation Assets	Moderate	Unassigned	High	High	Low
Liquidity	Unassigned	High	Unassigned	High	Unassigned

Legend:

- ● High contribution
- ◐ Moderate contribution
- ◔ Low contribution
- ○ None
- – Unassigned

Benchmarks| Fit with 2013 ALM Asset Class Roles

Findings: Most Roles Are Being Met Effectively

- Based on the asset class factor exposures and additional analyses, the 2013 roles are being met

- A few marginal discrepancies were identified, primarily with the Infrastructure benchmark
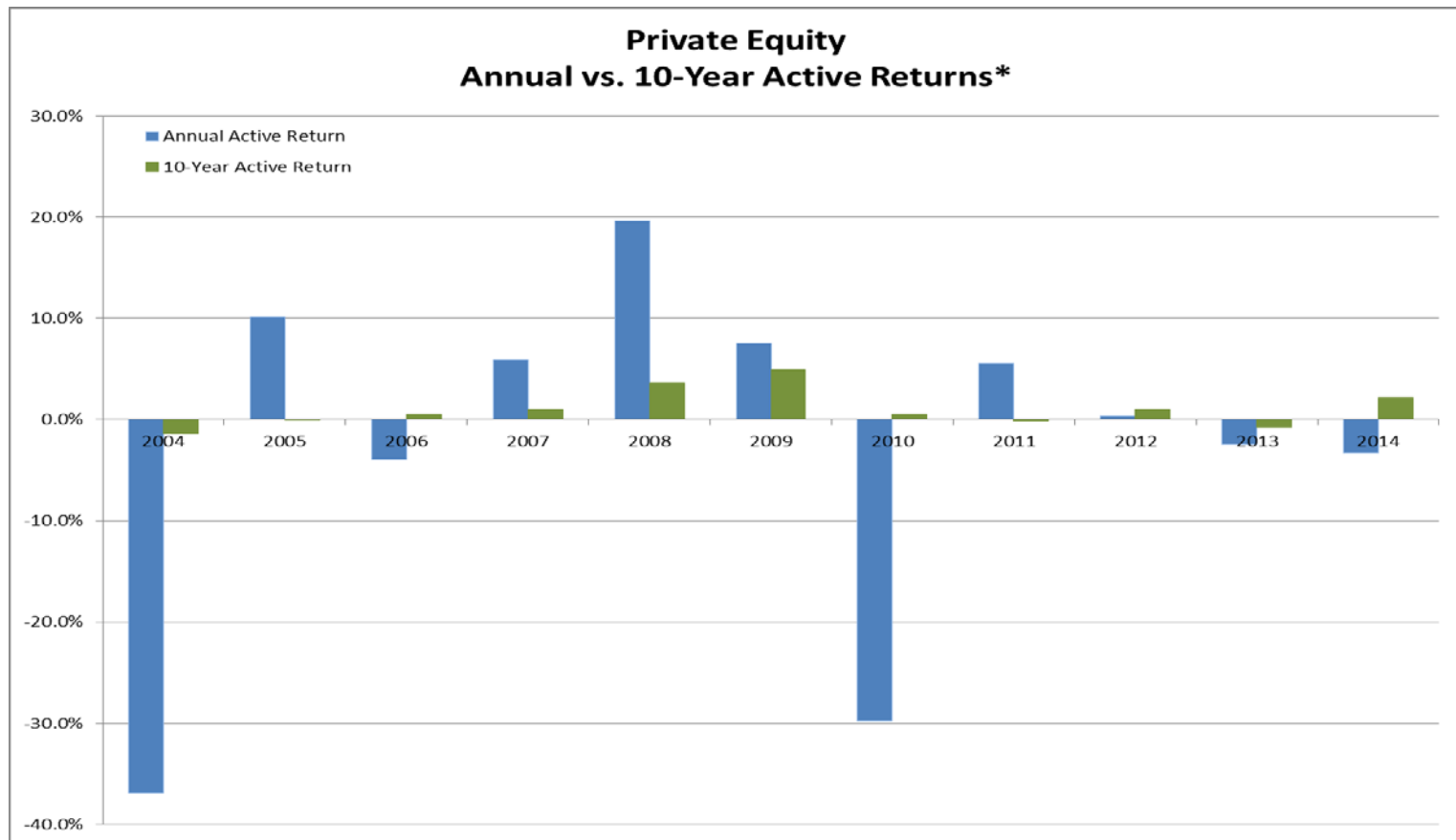
Benchmarks| Performance Measurement

Performance Horizon is Important

- It's reasonable to use representative public and private market benchmarks to measure short-term performance

- "Long-term Objective" type benchmarks should only be used to measure long-term performance

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Benchmarks| Performance Measurement Horizon Example

Measuring short-term performance against a long-term goal can be problematic

Private Equity
Annual vs. 10-Year Active Returns*

Legend:
- Annual Active Return
- 10-Year Active Return

*FYE June, current benchmark retroactively applied to entire period

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CalPERS' Benchmarks Review| Summary of Findings

CalPERS' Current Asset Class Policy Benchmarks

- Majority are effective and reflect the 2013 ALM roles

- Infrastructure and Private Equity benchmarks have room for improvement

- Consider changing Liquidity benchmark to short-term Treasuries only

Questions / Comments?

CalPERS' Benchmarks| Opportunities for 2017 ALM

- Benchmarks and Portfolio Priorities

- Where can changes have a material impact to the fund?

- Factor-based analysis

  — Portfolio Priorities, Factors, and Benchmarks

  — Further analysis of assets

  — Application to liabilities

Looking Ahead to 2017 ALM | Factor-Based Analysis

Factor-Based Analysis

- At the 2013 ALM workshop, we applied factor-based analysis to asset returns

- Analyzing asset returns' exposures to a set of key factors is similar to identifying the nutrition facts in a bowl of soup

Looking Ahead to 2017 ALM | Factor-Based Analysis

Factor Model Refinement

- In 2013 an initial factor decomposition model was created using five factors:
    1) Real Interest Rate
    2) Realized Inflation Rate
    3) Expected Inflation Rate
    4) Volatility
    5) Growth

- Portfolio priorities could be used to refine our processes and factors for the 2017 ALM work

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Looking Ahead to 2017 ALM |

Portfolio Priorities, Factors, and Benchmarks

- Our needs change as we mature as a fund

- Priorities will help us address our foreseeable needs

- Factors become a way to measure the attributes we are seeking

- Benchmarks can help focus the implementation

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Closing Questions

- Does the portfolio priorities concept make sense for CalPERS?

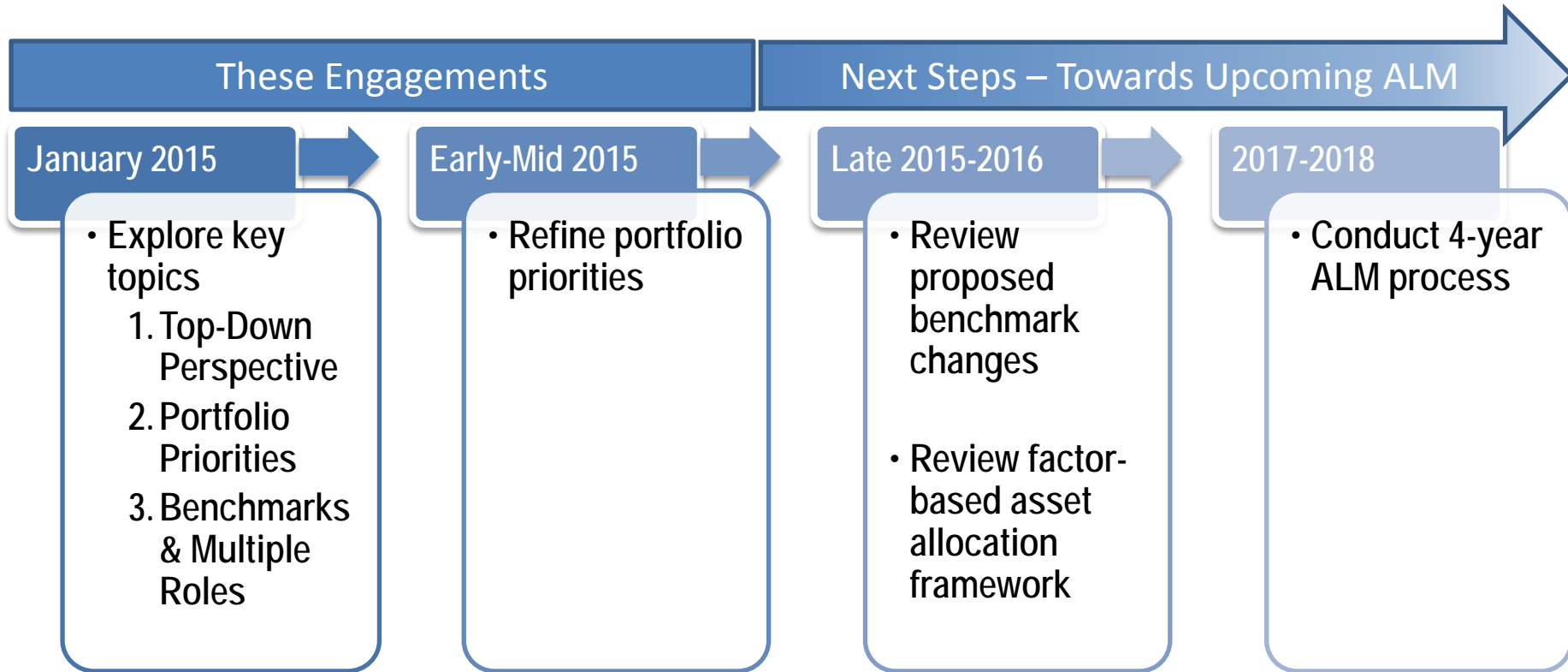- If so, is it worth the effort to develop portfolio priorities at this time?

Wrapping Up | Key Points
Our Progress from Today's Starting Point

1. Selection of policy benchmarks should be top-down, conditioned by CalPERS' Investment and Pension Beliefs and chosen portfolio priorities

2. Portfolio priorities will transmit Beliefs into portfolio construction

3. Benchmarks should be tailored to the purpose at hand

Timeline & Next Steps

These Engagements		Next Steps – Towards Upcoming ALM	
January 2015	**Early-Mid 2015**	**Late 2015-2016**	**2017-2018**
• Explore key topics 　1. Top-Down Perspective 　2. Portfolio Priorities 　3. Benchmarks & Multiple Roles	• Refine portfolio priorities	• Review proposed benchmark changes • Review factor-based asset allocation framework	• Conduct 4-year ALM process

Appendix

Public Assets Current Benchmarks

CalPERS' Current Benchmark	Type	Description
Global Equity CalPERS Custom FTSE All-World	Public Market Benchmark	• Global exposure • Capitalization-weighted
Global Fixed Income 90% Barclays Long Liabilities + 10% Barclays International Fixed Income Index GDP-weighted ex-US	Public Market Benchmark	• Global exposure • Government bonds, corporate bonds, asset-backed debt
Inflation Assets 75% Inflation-Linked Bond Custom Index + 25% S&P GSCI Total Return Index	Public Market Benchmark	• Global exposure • Inflation-linked bonds, commodities
Liquidity 75% Barclays Treasury 2-10 yr. + 25% 1 mo. T-bill	Public Market Benchmark	• U.S. exposure

Private Assets Current Benchmarks

CalPERS' Current Benchmark	Type	Description
Private Equity (67% FTSE US + 33% FTSE AW ex US) + 3% lagged one quarter	Long-term Objective	• Global exposure • Describes long-term return goal
Real Assets - Real Estate NCREIF ODCE	Private Asset Benchmark	• U.S. exposure • Cap-weighted open-end commingled funds pursuing a core investment strategy
Real Assets - Infrastructure CPI + 4% lagged one quarter	Long-term Objective	• Describes the long-term return goal
Real Assets - Forestland NCREIF Timberland	Private Asset Benchmark	• Large pool of individual timber properties acquired in the private market

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