

# CalPERS Chief Investment Officer Total Fund Update

## Appendix B: Portfolio Risk

Joe Dear, CIO

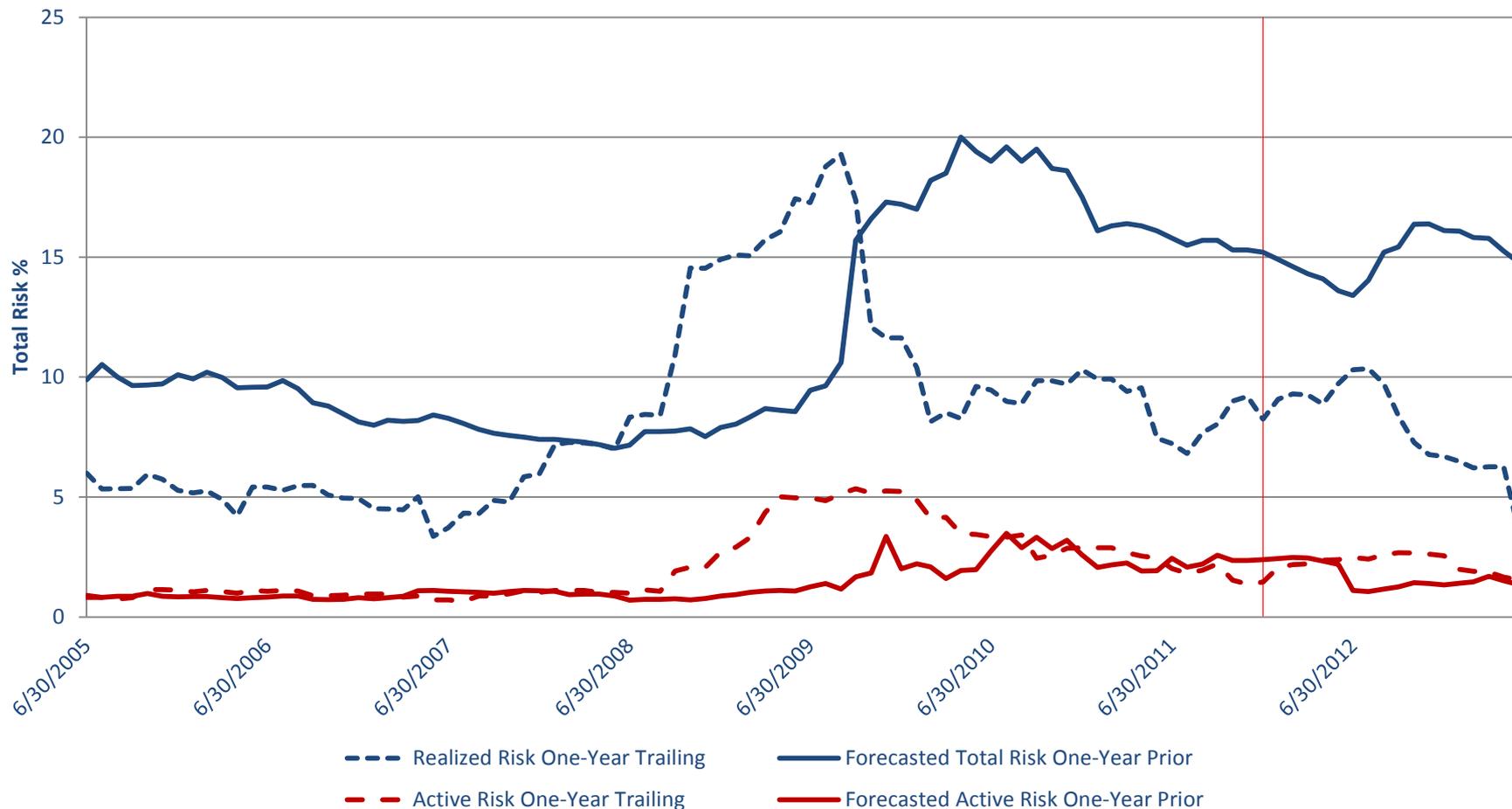
Investment Committee  
August 2013

# Topics

- Total Risk Time Series – Forecasted
- Active Risk Time Series – Forecasted
- CalPERS Leverage
- Derivative Counterparty Exposure Report
- Liquidity Analysis
- Scenario Analysis – Best and Worst
- Active Risk Summary Table
- Top Equity Issuer Value at Risk

# Forecasted Risk Time Series

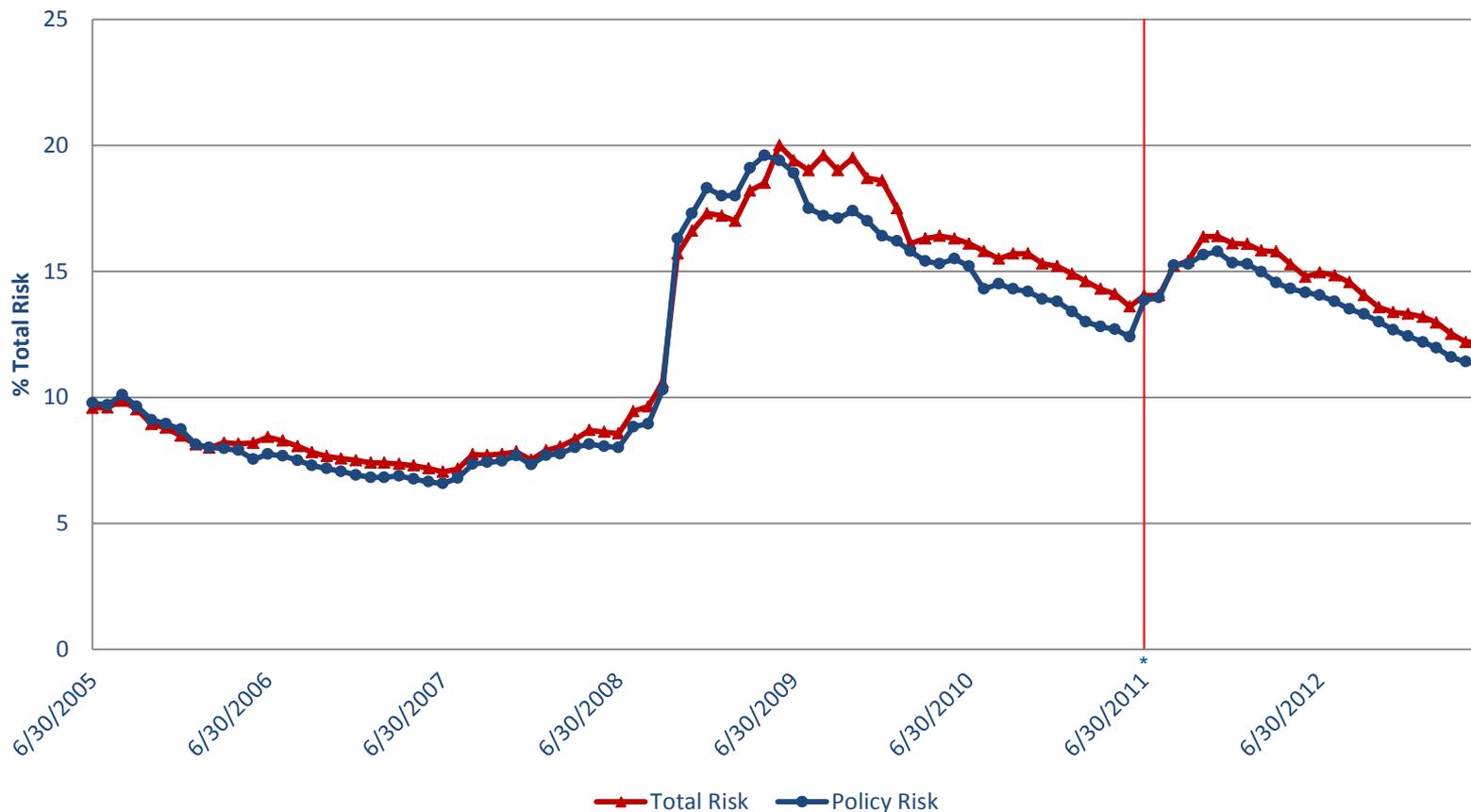
Total and Active Risk - Forecasted and Trailing One-Year Realized



Note: All risk statistics as of May 30, 2013

# Total Risk Time Series - Forecasted

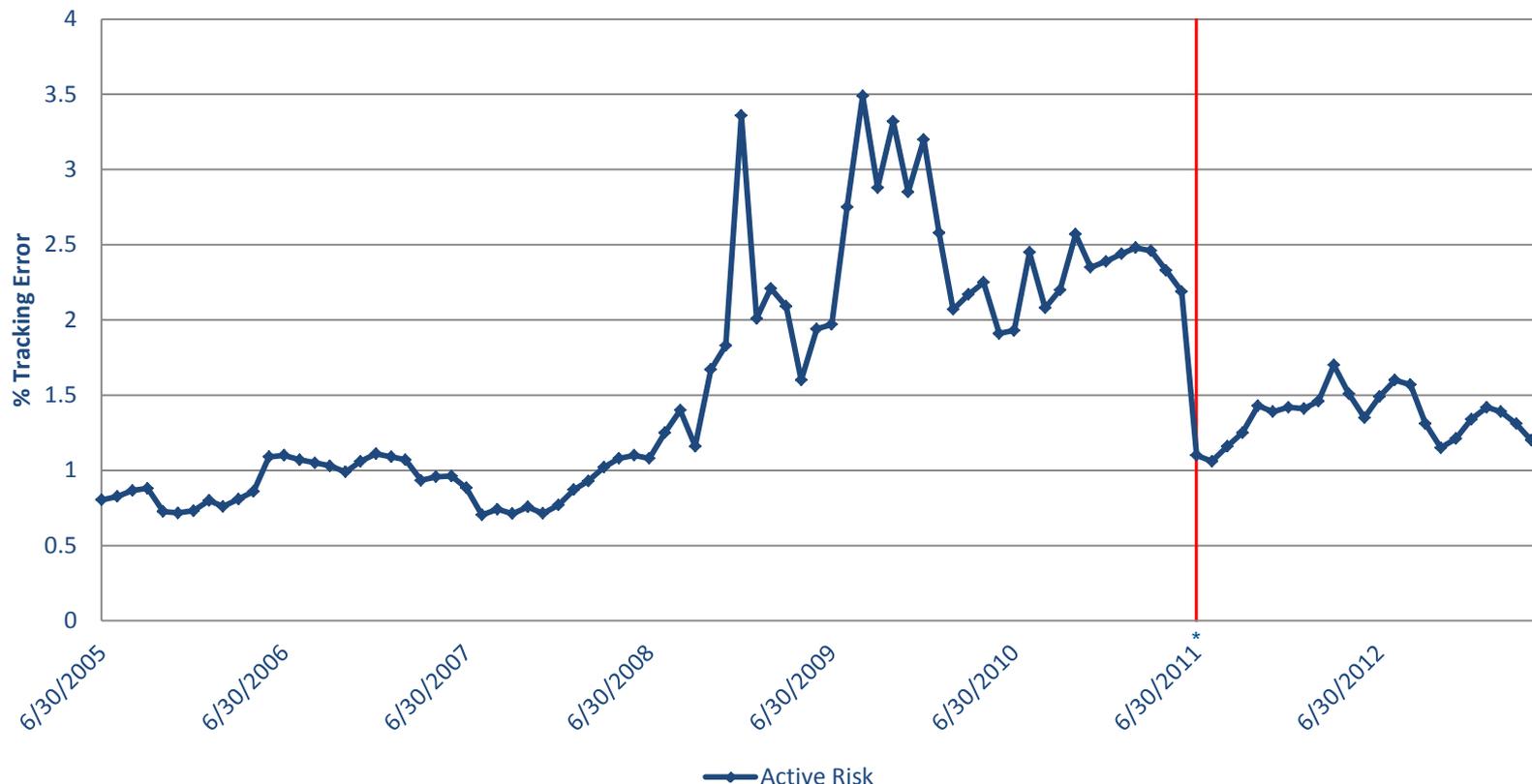
## History of One-Year Forecast Total Risk



\* The red line denotes the cutover to BarraOne and the new BIM 301 model for 6/30/12 month end. The BIM 301 model introduced several changes including a new Real Estate model, new currency model, and more frequent observations in building the covariance matrix.

# Active Risk Time Series - Forecasted

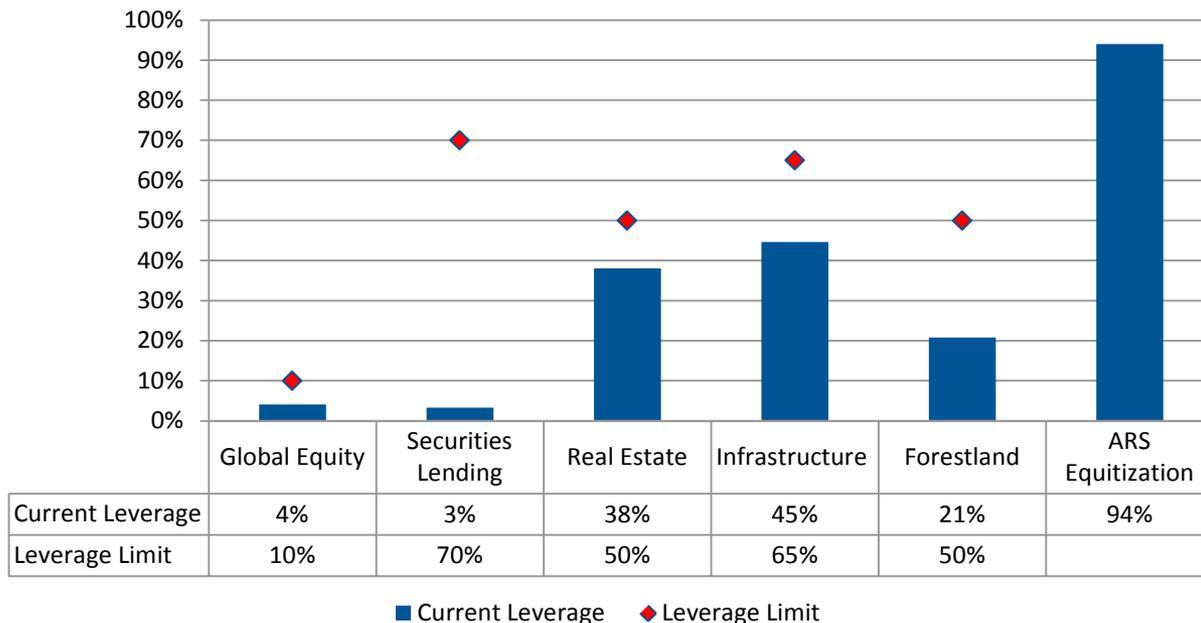
## History of One-Year Forecast Tracking Error



\* The red line denotes the cutover to BarraOne and the new BIM 301 model for 6/30/12 month end as well as the change to the new risk based asset allocation framework. Both asset class and policy benchmark changes for the new allocation framework were incorporated for the 6/30/12 reporting period resulting in a recasting of active risk vs. this new information set.

# CalPERS Leverage\*

As of March 31, 2013



\*Leverage Definitions

Global Equity, Real Estate, Infrastructure, Forestland:  $(\text{Market Exposure} / \text{Equity Capital}) - 1$

Securities Lending:  $\text{Reinvestment Pool with Maturity} > 90 \text{ Days} / \text{Total Reinvestment Pool}$

ARS:  $\text{Equity Beta Futures Overlay Notional Value} / \text{ARS Fair Market Value}$

# Derivative Counterparty Exposure Report

As of May 31, 2013

Counterparty	FORWARD	OPTION	SWAP	CalPERS Exposure	Counter Party Exposure	Total	Collateral Posted*	Net Exposure	CDS Spread	Credit Rating	Above Average	ISDA Compliance
Bank of America	21,320,544	(776,560)	(964,709)	30,015,079	(10,435,804)	19,579,275	(16,350,000)	3,229,275	36	A	Yes	Yes
BPS	208,350		(548,413)	5,096,532	(5,436,595)	(340,063)		(340,063)	40	A+	Yes	Yes
Barclays PLC	(8,834,864)		500	7,074,593	(15,908,957)	(8,834,364)		(8,834,364)	44	A	Yes	Yes
Commonwealth Bank of Australia	6,653,259			9,490,086	(2,836,827)	6,653,259	(14,750,000)	(8,096,741)	34		No	Yes
Citigroup	7,512,551	770,586	(684,605)	11,541,221	(3,942,689)	7,598,532	(1,900,000)	5,698,532	30	A	Yes	Yes
Credit Suisse	(318,803)			1,047,182	(1,365,985)	(318,803)		(318,803)	30	A	Yes	Yes
Credit Suisse International	(2,185,867)		(1,536,628)	1,466,841	(5,189,336)	(3,722,495)		(3,722,495)	29		No	Yes
Deutsche Bank	3,707,144	(2,903,480)	(1,768,002)	4,954,877	(5,919,215)	(964,338)		(964,338)	54	A+	Yes	Yes
Goldman Sachs & Co.			(68,271)		(68,271)	(68,271)		(68,271)	54	A	No	Yes
Goldman Sachs Intl.	5,230,381	(8,026,044)	(4,423,908)	26,188,188	(33,407,759)	(7,219,571)		(7,219,571)	35	A	No	Yes
HSBC	6,434,177			13,299,631	(6,865,454)	6,434,177		6,434,177	32	AA-	Yes	Yes
JPMorgan	7,371,831	(526,118)	(3,857,497)	24,956,418	(21,968,202)	2,988,216		2,988,216	71	A+	Yes	Yes
Morgan Stanley Capital Service	3,607,206		(7,194,510)	3,788,230	(7,375,534)	(3,587,304)		(3,587,304)	66	A	No	Yes
RBS	(11,258,730)		(50,278)	2,853,866	(14,162,874)	(11,309,008)		(11,309,008)	70	A	No	Yes
Standard Chartered Bank	8,536,504			9,024,689	(488,185)	8,536,504		8,536,504	55	AA-	No	Yes
Societe Generale	1,409,890			2,200,329	(790,439)	1,409,890		1,409,890	NA	A	No	Yes
Toronto Dominion	1,677,753			1,677,753		1,677,753		1,677,753	28	AA-	No	Yes
UBS	(10,109,593)		234,252	4,806,794	(14,682,135)	(9,875,341)		(9,875,341)	30	A	Yes	Yes
WestPac Bank	342,553			344,954	(2,401)	342,553		342,553	44	AA-	Yes	Yes
<b>Grand Total</b>	<b>41,304,286</b>	<b>(11,461,616)</b>	<b>(20,862,069)</b>	<b>159,827,263</b>	<b>(150,846,662)</b>	<b>8,980,601</b>	<b>(33,000,000)</b>	<b>(24,019,399)</b>				

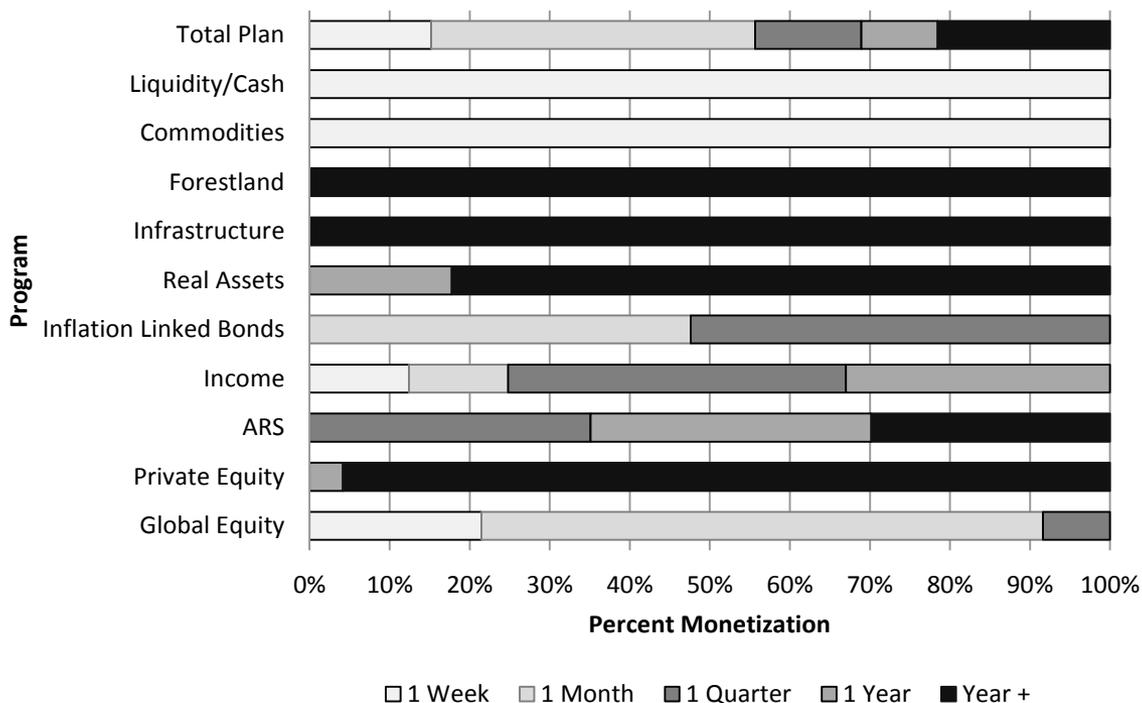
\*As of 5/31/13 the Counter Parties posted 33mm to CalPERS

Note: As of 5/31/13 Mortgage TBA Exposure was 60mm in negative mark to market value, i.e. counterparties had exposure to CalPERS

# Liquidity Analysis

As of June 30, 2013

## Liquidity Analysis: Total Plan



	1-Week	1-Month	1-Quarter	1-Year	Year +
Total Fund by Time Bucket	18%	41%	13%	8%	20%
Total Fund Cumulative	18%	59%	72%	80%	100%

# Active Risk Summary Table

Asset Class	Market Value (\$millions)	Total Risk (%)	%Contribution to Total Risk	Active Risk	Correlation	Value-at-Risk (\$millions)	Conditional Value-at-Risk (\$millions)*
Private Equity	31,392	16.97	16.29	6.06	.95	1,782	2,251
Public Equity	133,410	16.68	71.11	.32	.99	7,518	9,437
Income	43,937	5.91	.055	.66	.04	883	1,101
Commodities	2,971	21.38	.99	1.52	.49	205	264
Inflation-Linked Bonds	6,419	6.34	.45	.85	.32	137	170
Real Assets	25,152	13.47	8.94	5.38	.83	587	740
Liquidity	10,474	1.93	-.017	.38	-.29	67	85
Absolute Return	5,210	3.54	.49	3.66	.79	56	69
MAC Program	516	6.06	.061	6.06	.59	10	13
Beta Overlay**	1,352	59.78	2.57	43.33	.99	271	344
Currency Overlay***	149	-	-1.26	-	-.45	308	396
<b>CalPERS PERF</b>	<b>260,989</b>	<b>11.88</b>	<b>100</b>	<b>1.11</b>	<b>1.00</b>	<b>10,056</b>	<b>12,771</b>

\*10 day, 95% confidence Monte Carlo Value-at-Risk (VaR) simulation

\*\* Beta Overlay market value is collateral held in the portfolio

\*\*\* Currency Overlay market value is the net mark to market on the derivatives in the portfolio

Note: All risk statistics are as of June 30, 2013

# Top Equity\* Issuer Value-at-Risk (VaR)

Asset Name	Value-At-Risk(\$ mm)**	Market Value (\$mm)	Weight (%)
APPLE INC	116	1,229	0.47%
EXXON MOBIL CORP	86	1,257	0.48%
SAMSUNG ELECTRONICS	69	538	0.21%
MICROSOFT CORP	62	840	0.32%
HSBC BANK	61	643	0.25%
JPMORGAN CHASE & CO	59	689	0.26%
CITIGROUP INC	59	533	0.20%
GENERAL ELECTRIC CO	58	751	0.29%
CHEVRON CORP NEW	56	770	0.29%
WELLS FARGO & CO	54	689	0.26%
GOOGLE INC	53	695	0.27%
TOYOTA MOTOR	53	501	0.19%

\*Public Equity including listed equity held via Private Equity partnerships

\*\*10 day, 95% confidence Monte Carlo VaR simulation

Note: All risk statistics as of May 31, 2013