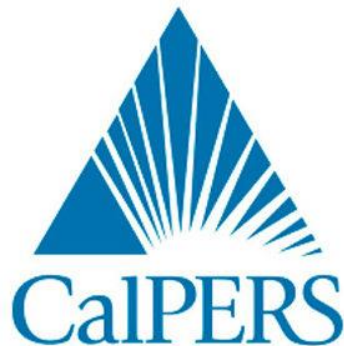




GLOBAL  
GOVERNANCE  
ADVISORS

# Investment Performance Metrics Assessment



California  
Public Employee  
Retirement  
System

June 1, 2022

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# Introduction

This assessment report is in response to the California Public Employees' Retirement System ("CalPERS") request for Global Governance Advisors ("GGA"), in its role as CalPERS' Board compensation consultant, to review and propose possible adjustments to the current investment performance metrics used within the incentive plans for Annual Incentive-eligible staff.

As outlined within this report, GGA's intention is to propose adjustments based on fairness to both the pension system and the incentive plan participants. In conducting this assessment, GGA utilized ten years of performance data, assessed the probabilities of success, and then utilized the same methodology to assess the assumed rates of success associated with GGA's recommended adjustments.

CalPERS' requested intent of this work was to assess the:

- Historical performance against its current investment performance hurdles, and
- Propose any adjustments based on objective assessments and GGA's knowledge and expertise in the design and maintenance of effective incentive programs within investment-based organizations – more specifically, public pension systems.

The remainder of this assessment report provides an overview of GGA's:

- Key observations on the current incentive design and performance hurdles,
- A full assessment of the performance hurdles based on historic performance achievements, and
- Key findings and proposed adjustments in the performance levels to help further strengthen the overall fairness between CalPERS and its investment staff.

# KEY INTENTION & INITIAL OBSERVATIONS

# Summary of Key Intention & Initial Observations

GGA reviewed the current Short-Term Incentive Plan investment performance targets as part of a larger review of the compensation levels and program within CalPERS. When assessing and setting performance hurdles, it is important to ensure that the performance levels/expectations are:

- Are set to maintain the organization's ongoing success and long-term sustainability, and
- Realistic and achievable for the incentive program participants.

In recognition of this, the following three key observations should be noted:

1. Threshold performance for Total Fund and four of the five asset classes are set at a negative basis point level. This establishes an opportunity for payouts to be awarded for performance that is below the relative benchmark, which is not common market practice.
2. The range between Threshold and Maximum performance are quite wide in many instances and therefore the upper levels of performance are almost improbable to achieve based on GGA's objective assessment.

This structure is not fair to the pension and its stakeholders because it may appear to set unreasonable expectations and could impact long-term forecasting by enabling or supporting an assumption that the maximum levels will be reached from time-to-time when in fact (as shown in this historic assessment), it is unlikely. Further, it may dis-incent participants from working toward achieving or obtaining a performance level that is objectively improbable to hit.

3. GGA recognizes that risk tolerances are different for each asset class and therefore more work needs to be done with CalPERS new CIO in order to ensure that any recommendations pertaining to asset class performance hurdles are properly aligned not only with standard attainability levels but also with appropriate risk tolerances for each asset type based on the investment strategy. As a result, GGA will bring forward its risk adjusted recommendations to this Committee later in the new fiscal year in preparation for adoption in the following 2023-24 fiscal year.



# PROPOSED ADJUSTMENT

# Proposed Adjustment



## General Design Recommendations

GGA’s experience is that simplicity helps improve plan communication, interpretation, and administration. As well, our experience is that individuals and teams need to be recognized, assessed, and rewarded fairly for individual performance and contributions. Therefore, GGA recommends CalPERS:

- Maintain a simple three step hurdle framework with a Threshold – Target – Maximum performance range whereby incentive payouts are interpolated between each hurdle.

As outlined earlier, incentive plans need to help maintain the organization’s ongoing success and long-term sustainability, while also being realistic and achievable for the incentive program participants. To help improve this for both parties, the following pages set out GGA’s proposed adjustments to the total fund performance hurdles:

### 1 Total Fund Performance

- The following is our recommended adjustment for total fund performance:

Past 2021-22 Metrics		➔	Proposed 2022-23 Metrics	
Performance (bps)	Payout Ratio		Performance (bps)	Payout Ratio
+35	1.50 (150%)		+10	1.50 (150%)
+30	1.41 (141%)		+5	1.00 (100%)
+20	1.25 (125%)		0	0.00 (0%)
+5	1.00 (100%)			
0	0.76 (76%)			
-15	0.05 (5%)			
< -15	0.00 (0%)			

# Proposed Adjustment

## Rationale for GGA's Recommendations

GGA recognizes that our proposed adjustments include higher threshold performance expectations for Total Fund performance. Again, our view is that below benchmark performance is not does not support CalPERS' long-term sustainability goals and is not aligned with typical market practice. However, GGA feels that the overall adjustments and design recommendations will properly incentivize to the incentive participants because:

- They narrow the overall range and therefore set more realistic maximum performance targets that could result in Above Target incentive payouts, and
- Market data shows that base salaries are generally at or slightly above market which should support retention during down years, however GGA's recommended adjustments in incentive levels should strongly incent investment staff to strive for, and achieve, above benchmark performance levels.



# INVESTMENT HURDLE ASSESSMENT

# Assessing Hurdle Probability

When evaluating and considering adjustments to any objective performance hurdle, the historic assessment of past performance will help in the determination and adoption of fair and equitable performance levels.

As a general practice and to the best of their abilities, pensions should always try to align performance levels with the following ideal probabilities:

**Threshold Performance**

- 80% Probability -

Successful 8/10 Years

**Target Performance**

- 60% Probability -

Successful 6/10 Years

**Maximum Performance**

- 20% Probability -

Successful 2/10 Years

The following pages in **Appendix A** outline GGA's objective historic probability assessment of the current performance hurdles as well as our recommended adjustments showing the corresponding assumed probabilities.



# 5-Year Average Performance Data Summary

The following table outlines the CalPERS rolling 5-year average performance based on the annual data outlined on page 14:

CaPERS Rolling 5-Year Performance History (bps) <sup>1</sup>					
Year	5-Year Total Fund vs. Benchmark	5-Year Global Equity vs. Benchmark	5-Year Private Equity vs. Benchmark	5-Year Global Fixed Income vs. Benchmark	5-Year Real Assets vs. Benchmark
2015-16	6.77	26.08	-101.75	54.62	6.63
2016-17	17.25	26.62	-236.70	94.65	-16.70
2017-18	-12.61	3.66	-238.00	72.27	-21.09
2018-19	-22.23	-9.73	-98.19	58.27	-109.61
2019-20	-13.35	-0.60	64.03	59.49	-112.92
2020-21	-13.63	-2.93	-332.62	72.39	15.96
Performance Quartiles (bps)					
75th Percentile	1.92	20.48	-99.08	72.36	0.79
50th Percentile	-12.98	1.53	-169.23	65.88	-18.90
25th Percentile	-13.56	-2.35	-237.67	58.57	-87.48
Average	-6.30	7.18	-157.20	68.61	-39.62
Standard Deviation	14.98	15.47	140.80	14.78	57.22

**Notes:**

(1) Performance percentage data was provided by Wilshire.



# 3-Year Average Performance Data Summary

The following table outlines the CalPERS rolling 3-year average performance based on the annual data outlined on page 14:

CaPERS Rolling 3-Year Performance History (bps) <sup>1</sup>					
Year	3-Year Total Fund vs. Benchmark	3-Year Global Equity vs. Benchmark	3-Year Private Equity vs. Benchmark	3-Year Global Fixed Income vs. Benchmark	3-Year Real Assets vs. Benchmark
2013-14	27.25	34.39	-180.20	61.21	153.41
2014-15	47.20	30.86	-265.47	120.52	130.11
2015-16	-14.03	25.95	-99.63	69.51	-89.12
2016-17	-20.82	3.12	-202.86	68.09	-128.01
2017-18	-20.58	-0.39	-212.59	49.89	-118.33
2018-19	-21.08	-25.30	-174.27	67.30	-40.32
2019-20	-3.81	-14.50	235.75	61.92	-30.25
2020-21	-15.74	14.96	-257.33	69.72	-27.36
Performance Quartiles (bps)					
75th Percentile	3.96	27.18	-155.61	69.56	12.01
50th Percentile	-14.88	9.04	-191.53	67.69	-35.28
25th Percentile	-20.64	-3.92	-223.78	61.74	-96.42
Average	-2.70	8.64	-144.57	71.02	-18.73
<b>Standard Deviation</b>	<b>25.83</b>	<b>21.70</b>	<b>162.21</b>	<b>21.05</b>	<b>106.42</b>

**Notes:**

(1) Performance percentage data was provided by Wilshire.



# 1-Year Performance Data Summary

The following table outlines the CalPERS performance data over a 10-year period:

CaPERS 1-Year Performance History (bps) <sup>1</sup>					
Year	Total Fund vs. Benchmark	Global Equity vs. Benchmark	Private Equity vs. Benchmark	Global Fixed Income vs. Benchmark	Real Assets vs. Benchmark
2011-12	-66.95	-20.57	34.35	-85.33	159.70
2012-13	142.87	73.11	-244.21	149.90	140.80
2013-14	5.84	50.64	-330.73	119.07	159.72
2014-15	-7.12	-31.16	-221.48	92.58	89.82
2015-16	-40.79	58.39	253.32	-3.12	-516.90
2016-17	-14.53	-17.87	-640.41	114.82	43.04
2017-18	-6.43	-41.68	-250.69	37.99	118.87
2018-19	-42.27	-16.34	368.29	49.08	-282.86
2019-20	37.28	14.53	589.66	98.69	73.24
2020-21	-42.22	46.69	-1729.94	61.38	127.53
Performance Quartiles (bps)					
75th Percentile	2.77	49.65	198.58	110.78	137.48
50th Percentile	-10.83	-0.91	-232.84	76.98	104.35
25th Percentile	-41.86	-19.89	-310.72	40.76	50.59
Average	-3.43	11.57	-217.18	63.51	11.30
<b>Standard Deviation</b>	<b>59.38</b>	<b>42.28</b>	<b>646.42</b>	<b>68.90</b>	<b>226.67</b>

**Notes:**

(1) Performance percentage data was provided by Wilshire.



# Hurdle Probability Assessment Summary

Based on the results of the assessment models outlined in **Appendix A**, the following table summarizes the performance probability / hit ratio over the past 10 years for Current Hurdles as well as GGA’s recommended Total Fund hurdles.

## Current Hurdles:

Historical Performance Hurdle Probability Summary												
Performance Objective	Current Hurdles (bps)			5-Year Probability of Attainment			3-Year Probability of Attainment			1-Year Probability of Attainment		
	Threshold	Target	Maximum	Threshold	Target	Maximum	Threshold	Target	Maximum	Threshold	Target	Maximum
Total Fund vs. Benchmark	-15.00	5.00	35.00	83%	33%	0%	50%	25%	13%	60%	30%	20%
Global Equity vs. Benchmark	-15.00	0.00	10.00	100%	50%	33%	88%	63%	50%	50%	50%	50%
Private Equity vs. Benchmark	-10.00	5.00	35.00	17%	17%	17%	13%	13%	13%	40%	40%	30%
Global Fixed Income vs. Benchmark	0.00	15.00	25.00	100%	100%	100%	100%	100%	100%	80%	80%	80%
Real Assets vs. Benchmark	-10.00	5.00	35.00	33%	33%	0%	25%	25%	25%	80%	80%	80%

## GGA Recommended Hurdles:

Adjusted Performance Hurdle Probability Recommendations												
Performance Objective	Recommended Hurdles (bps)			5-Year Probability of Attainment			3-Year Probability of Attainment			1-Year Probability of Attainment		
	Threshold	Target	Maximum	Threshold	Target	Maximum	Threshold	Target	Maximum	Threshold	Target	Maximum
Total Fund vs. Benchmark	0.00	5.00	10.00	33%	33%	17%	25%	25%	25%	30%	30%	20%

Recommendations for Total Fund performance areas include the upward adjustment of the threshold performance hurdle as well as the narrowing of the overall range which includes the lowering of the maximum performance hurdle.

**PLEASE NOTE:** GGA is scheduled to work with CalPERS’ new CIO to similarly assess and establish recommended adjustments to the Asset Class performance hurdles that are better aligned with standard attainability levels as well as with appropriate risk tolerances for each asset type during the next fiscal year.





# APPENDIX A: PROBABILITY ASSESSMENT DETAILS

# How To Interpret The Assessment Tables

## Throughout This Section You Will Find the Following Tables

Calculated percentile performance based on historic data provided.

Current / recommended performance hurdles being assessed.

Total Fund vs. Benchmark				
Year	1-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2011-12	-6.70	-15.00	5.00	35.00
2012-13	14.29	-15.00	5.00	35.00
2013-14	5.84	-15.00	5.00	35.00
2014-15	-0.71	-15.00	5.00	35.00
2015-16	-4.08	-15.00	5.00	35.00
2016-17	-1.45	-15.00	5.00	35.00
2017-18	-0.64	-15.00	5.00	35.00
2018-19	-4.23	-15.00	5.00	35.00
2019-20	37.28	-15.00	5.00	35.00
2020-21	-4.22	-15.00	5.00	35.00
<b>75th Percentile</b>	<b>4.22</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>-1.08</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>-4.19</b>	<b>100%</b>	<b>30%</b>	<b>10%</b>
Frequency of Historical Performance Compared to FY2021-22 Targets				
2021-22 Performance Targets (bps)		At or Above Maximum	>= 35	
Maximum	35.00	Between Target and Maximum	> 5 ; < 35	
Target	5.00	At Target	= 5	
Threshold	-15.00	Between Threshold and Target	> -15 ; < 5	
		At or Below Threshold	<= -15	

Conditional testing of the current / recommended performance hurdles. **GREEN** shading indicates a performance level was hit in a particular year whereas No shading indicates a performance level was not hit.

Calculated probability associated with each performance level.

Performance ranges at, and in between, each performance level.



# Probability Assessment Details: Total Fund

## 1-Year Total Fund vs. Benchmark

### Current Hurdles

Total Fund vs. Benchmark				
Year	1-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2011-12	-66.95	-15.00	5.00	35.00
2012-13	142.87	-15.00	5.00	35.00
2013-14	5.84	-15.00	5.00	35.00
2014-15	-7.12	-15.00	5.00	35.00
2015-16	-40.79	-15.00	5.00	35.00
2016-17	-14.53	-15.00	5.00	35.00
2017-18	-6.43	-15.00	5.00	35.00
2018-19	-42.27	-15.00	5.00	35.00
2019-20	37.28	-15.00	5.00	35.00
2020-21	-42.22	-15.00	5.00	35.00
<b>75th Percentile</b>	<b>2.77</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>-10.83</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>-41.86</b>	<b>60%</b>	<b>30%</b>	<b>20%</b>

2021-22 Performance Targets (bps)		Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	35.00	At or Above Maximum	>= 35
Target	5.00	Between Target and Maximum	> 5 ; < 35
Threshold	-15.00	At Target	= 5
		Between Threshold and Target	> -15 ; < 5
		At or Below Threshold	<= -15

### Recommended Hurdles

Total Fund vs. Benchmark				
Year	1-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2011-12	-66.95	0.00	5.00	10.00
2012-13	142.87	0.00	5.00	10.00
2013-14	5.84	0.00	5.00	10.00
2014-15	-7.12	0.00	5.00	10.00
2015-16	-40.79	0.00	5.00	10.00
2016-17	-14.53	0.00	5.00	10.00
2017-18	-6.43	0.00	5.00	10.00
2018-19	-42.27	0.00	5.00	10.00
2019-20	37.28	0.00	5.00	10.00
2020-21	-42.22	0.00	5.00	10.00
<b>75th Percentile</b>	<b>2.77</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>-10.83</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>-41.86</b>	<b>30%</b>	<b>30%</b>	<b>20%</b>

2021-22 Performance Targets (bps)		Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	10.00	At or Above Maximum	>= 10
Target	5.00	Between Target and Maximum	> 5 ; < 10
Threshold	0.00	At Target	= 5
		Between Threshold and Target	> 0 ; < 5
		At or Below Threshold	<= 0

GREEN shading indicates a performance level was hit in a particular year whereas NO shading indicates a performance level was not hit within the tables above.



# Probability Assessment Details: Total Fund

## 3-Year Total Fund vs. Benchmark

### Current Hurdles

3-Year Total Fund vs. Benchmark				
Year	3-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2013-14	27.25	-15.00	5.00	35.00
2014-15	47.20	-15.00	5.00	35.00
2015-16	-14.03	-15.00	5.00	35.00
2016-17	-20.82	-15.00	5.00	35.00
2017-18	-20.58	-15.00	5.00	35.00
2018-19	-21.08	-15.00	5.00	35.00
2019-20	-3.81	-15.00	5.00	35.00
2020-21	-15.74	-15.00	5.00	35.00
<b>75th Percentile</b>	<b>3.96</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>-14.88</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>-20.64</b>	<b>50%</b>	<b>25%</b>	<b>13%</b>
		<b>Frequency of Historical Performance Compared to FY2021-22 Targets</b>		
		At or Above Maximum	>= 35	
<b>2021-22 Performance Targets (bps)</b>		Between Target and Maximum	> 5 ; < 35	
Maximum	35.00	At Target	= 5	
Target	5.00	Between Threshold and Target	> -15 ; < 5	
Threshold	-15.00	At or Below Threshold	<= -15	

### Recommended Hurdles

3-Year Total Fund vs. Benchmark				
Year	3-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2013-14	27.25	0.00	5.00	10.00
2014-15	47.20	0.00	5.00	10.00
2015-16	-14.03	0.00	5.00	10.00
2016-17	-20.82	0.00	5.00	10.00
2017-18	-20.58	0.00	5.00	10.00
2018-19	-21.08	0.00	5.00	10.00
2019-20	-3.81	0.00	5.00	10.00
2020-21	-15.74	0.00	5.00	10.00
<b>75th Percentile</b>	<b>3.96</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>-14.88</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>-20.64</b>	<b>25%</b>	<b>25%</b>	<b>25%</b>
		<b>Frequency of Historical Performance Compared to FY2021-22 Targets</b>		
		At or Above Maximum	>= 10	
<b>2021-22 Performance Targets (bps)</b>		Between Target and Maximum	> 5 ; < 10	
Maximum	10.00	At Target	= 5	
Target	5.00	Between Threshold and Target	> 0 ; < 5	
Threshold	0.00	At or Below Threshold	<= 0	



# Probability Assessment Details: Total Fund

## 5-Year Total Fund vs. Benchmark

### Current Hurdles

5-Year Total Fund vs. Benchmark				
Year	5-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2015-16	6.77	-15.00	5.00	35.00
2016-17	17.25	-15.00	5.00	35.00
2017-18	-12.61	-15.00	5.00	35.00
2018-19	-22.23	-15.00	5.00	35.00
2019-20	-13.35	-15.00	5.00	35.00
2020-21	-13.63	-15.00	5.00	35.00
<b>75th Percentile</b>	<b>1.92</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>-12.98</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>-13.56</b>	<b>83%</b>	<b>33%</b>	<b>0%</b>
<b>Frequency of Historical Performance Compared to FY2021-22 Targets</b>				
		At or Above Maximum	>= 35	
<b>2021-22 Performance Targets (bps)</b>		Between Target and Maximum	> 5 ; < 35	
Maximum	35.00	At Target	= 5	
Target	5.00	Between Threshold and Target	> -15 ; < 5	
Threshold	-15.00	At or Below Threshold	<= -15	

### Recommended Hurdles

5-Year Total Fund vs. Benchmark				
Year	5-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2015-16	6.77	0.00	5.00	10.00
2016-17	17.25	0.00	5.00	10.00
2017-18	-12.61	0.00	5.00	10.00
2018-19	-22.23	0.00	5.00	10.00
2019-20	-13.35	0.00	5.00	10.00
2020-21	-13.63	0.00	5.00	10.00
<b>75th Percentile</b>	<b>1.92</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>-12.98</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>-13.56</b>	<b>33%</b>	<b>33%</b>	<b>17%</b>
<b>Frequency of Historical Performance Compared to FY2021-22 Targets</b>				
		At or Above Maximum	>= 10	
<b>2021-22 Performance Targets (bps)</b>		Between Target and Maximum	> 5 ; < 10	
Maximum	10.00	At Target	= 5	
Target	5.00	Between Threshold and Target	> 0 ; < 5	
Threshold	0.00	At or Below Threshold	<= 0	

### Hurdle Summary:

Reviewing the historical probability of attainment associated with the 1-year and rolling 3- and 5-year averages, the threshold hurdle was easily reached most years and GGA has always noted that negative performance hurdles are an anomaly within the pension and investment community and unfair to CalPERS. As well, the extremely low level of success associated with the maximum performance hurdle further indicates that this expectation may be too aspirational and unfair to all parties.



# Probability Assessment Details: Global Equity

## 1-Year Global Equity vs. Benchmark

### Current Hurdles

Global Equity vs. Benchmark				
Year	1-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2011-12	-20.57	-15.00	0.00	10.00
2012-13	73.11	-15.00	0.00	10.00
2013-14	50.64	-15.00	0.00	10.00
2014-15	-31.16	-15.00	0.00	10.00
2015-16	58.39	-15.00	0.00	10.00
2016-17	-17.87	-15.00	0.00	10.00
2017-18	-41.68	-15.00	0.00	10.00
2018-19	-16.34	-15.00	0.00	10.00
2019-20	14.53	-15.00	0.00	10.00
2020-21	46.69	-15.00	0.00	10.00
<b>75th Percentile</b>	<b>49.65</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>-0.91</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>-19.89</b>	<b>50%</b>	<b>50%</b>	<b>50%</b>

2021-22 Performance Targets (bps)			Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	10.00	At or Above Maximum	>= 10	
Target	0.00	Between Target and Maximum	> 0 ; < 10	
Threshold	-15.00	At Target	= 0	
		Between Threshold and Target	> -15 ; < 0	
		At or Below Threshold	<= -15	





# Probability Assessment Details: Global Equity

## 3-Year Global Equity vs. Benchmark

### Current Hurdles

3-Year Global Equity vs. Benchmark				
Year	3-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2013-14	34.39	-15.00	0.00	10.00
2014-15	30.86	-15.00	0.00	10.00
2015-16	25.95	-15.00	0.00	10.00
2016-17	3.12	-15.00	0.00	10.00
2017-18	-0.39	-15.00	0.00	10.00
2018-19	-25.30	-15.00	0.00	10.00
2019-20	-14.50	-15.00	0.00	10.00
2020-21	14.96	-15.00	0.00	10.00
<b>75th Percentile</b>	<b>27.18</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>9.04</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>-3.92</b>	88%	63%	50%

2021-22 Performance Targets (bps)			Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	10.00	At or Above Maximum	>= 10	
Target	0.00	Between Target and Maximum	> 0 ; < 10	
Threshold	-15.00	At Target	= 0	
		Between Threshold and Target	> -15 ; < 0	
		At or Below Threshold	<= -15	



# Probability Assessment Details: Global Equity

## 5-Year Global Equity vs. Benchmark

### Current Hurdles

5-Year Global Equity vs. Benchmark				
Year	5-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2015-16	26.08	-15.00	0.00	10.00
2016-17	26.62	-15.00	0.00	10.00
2017-18	3.66	-15.00	0.00	10.00
2018-19	-9.73	-15.00	0.00	10.00
2019-20	-0.60	-15.00	0.00	10.00
2020-21	-2.93	-15.00	0.00	10.00
<b>75th Percentile</b>	<b>20.48</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>1.53</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>-2.35</b>	<b>100%</b>	<b>50%</b>	<b>33%</b>

2021-22 Performance Targets (bps)			Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	10.00	At or Above Maximum	>= 10	
Target	0.00	Between Target and Maximum	> 0 ; < 10	
Threshold	-15.00	At Target	= 0	
		Between Threshold and Target	> -15 ; < 0	
		At or Below Threshold	<= -15	

### Hurdle Summary:

Reviewing the historical probability of attainment associated with the 1-year and rolling 3- and 5-year averages, the threshold hurdle was easily reached every year and GGA has always noted that negative performance hurdles are an anomaly within the pension and investment community and unfair to CalPERS and its investment professionals.



# Probability Assessment Details: Private Equity

## 1-Year Private Equity vs. Benchmark

### Current Hurdles

Private Equity vs. Benchmark				
Year	1-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2011-12	34.35	-10.00	5.00	35.00
2012-13	-244.21	-10.00	5.00	35.00
2013-14	-330.73	-10.00	5.00	35.00
2014-15	-221.48	-10.00	5.00	35.00
2015-16	253.32	-10.00	5.00	35.00
2016-17	-640.41	-10.00	5.00	35.00
2017-18	-250.69	-10.00	5.00	35.00
2018-19	368.29	-10.00	5.00	35.00
2019-20	589.66	-10.00	5.00	35.00
2020-21	-1729.94	-10.00	5.00	35.00
<b>75th Percentile</b>	<b>198.58</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>-232.84</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>-310.72</b>	40%	40%	30%

2021-22 Performance Targets (bps)			Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	35.00	At or Above Maximum	>= 35	
Target	5.00	Between Target and Maximum	> 5 ; < 35	
Threshold	-10.00	At Target	= 5	
		Between Threshold and Target	> -10 ; < 5	
		At or Below Threshold	<= -10	



# Probability Assessment Details: Private Equity

## 3-Year Private Equity vs. Benchmark

### Current Hurdles

3-Year Private Equity vs. Benchmark				
Year	3-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2013-14	-180.20	-10.00	5.00	35.00
2014-15	-265.47	-10.00	5.00	35.00
2015-16	-99.63	-10.00	5.00	35.00
2016-17	-202.86	-10.00	5.00	35.00
2017-18	-212.59	-10.00	5.00	35.00
2018-19	-174.27	-10.00	5.00	35.00
2019-20	235.75	-10.00	5.00	35.00
2020-21	-257.33	-10.00	5.00	35.00
<b>75th Percentile</b>	<b>-155.61</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>-191.53</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>-223.78</b>	13%	13%	13%

2021-22 Performance Targets (bps)			Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	35.00	At or Above Maximum	>= 35	
Target	5.00	Between Target and Maximum	> 5 ; < 35	
Threshold	-10.00	At Target	= 5	
		Between Threshold and Target	> -10 ; < 5	
		At or Below Threshold	<= -10	



# Probability Assessment Details: Private Equity

## 5-Year Private Equity vs. Benchmark

### Current Hurdles

5-Year Private Equity vs. Benchmark				
Year	5-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2015-16	-101.75	-10.00	5.00	35.00
2016-17	-236.70	-10.00	5.00	35.00
2017-18	-238.00	-10.00	5.00	35.00
2018-19	-98.19	-10.00	5.00	35.00
2019-20	64.03	-10.00	5.00	35.00
2020-21	-332.62	-10.00	5.00	35.00
<b>75th Percentile</b>	<b>-99.08</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>-169.23</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>-237.67</b>	<b>17%</b>	<b>17%</b>	<b>17%</b>

2021-22 Performance Targets (bps)			Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	35.00		At or Above Maximum	>= 35
Target	5.00		Between Target and Maximum	> 5 ; < 35
Threshold	-10.00		At Target	= 5
			Between Threshold and Target	> -10 ; < 5
			At or Below Threshold	<= -10

### Hurdle Summary:

Reviewing the historical probability of attainment associated with the 1-year and rolling 3- and 5-year averages, the threshold hurdle was not easily reached earlier years even though GGA has always noted that negative performance hurdles are an anomaly within the pension and investment community and unfair to CalPERS and its investment professionals.



# Probability Assessment Details: Global Fixed Income

## 1-Year Global Fixed Income vs. Benchmark

### Current Hurdles

Global Fixed Income vs. Benchmark				
Year	1-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2011-12	-85.33	0.00	15.00	25.00
2012-13	149.90	0.00	15.00	25.00
2013-14	119.07	0.00	15.00	25.00
2014-15	92.58	0.00	15.00	25.00
2015-16	-3.12	0.00	15.00	25.00
2016-17	114.82	0.00	15.00	25.00
2017-18	37.99	0.00	15.00	25.00
2018-19	49.08	0.00	15.00	25.00
2019-20	98.69	0.00	15.00	25.00
2020-21	61.38	0.00	15.00	25.00
<b>75th Percentile</b>	<b>110.78</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>76.98</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>40.76</b>	80%	80%	80%

2021-22 Performance Targets (bps)		Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	25.00	At or Above Maximum	>= 25
Target	15.00	Between Target and Maximum	> 15 ; < 25
Threshold	0.00	At Target	= 15
		Between Threshold and Target	> 0 ; < 15
		At or Below Threshold	<= 0





# Probability Assessment Details: Global Fixed Income

## 3-Year Global Fixed Income vs. Benchmark

### Current Hurdles

3-Year Global Fixed Income vs. Benchmark				
Year	3-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2013-14	61.21	0.00	15.00	25.00
2014-15	120.52	0.00	15.00	25.00
2015-16	69.51	0.00	15.00	25.00
2016-17	68.09	0.00	15.00	25.00
2017-18	49.89	0.00	15.00	25.00
2018-19	67.30	0.00	15.00	25.00
2019-20	61.92	0.00	15.00	25.00
2020-21	69.72	0.00	15.00	25.00
<b>75th Percentile</b>	<b>69.56</b>	<b>Historical Probability of Attainment</b>		
<b>50th Percentile</b>	<b>67.69</b>	<b>Threshold</b>	<b>Target</b>	<b>Maximum</b>
<b>25th Percentile</b>	<b>61.74</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

2021-22 Performance Targets (bps)		Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	25.00	At or Above Maximum	>= 25
Target	15.00	Between Target and Maximum	> 15 ; < 25
Threshold	0.00	At Target	= 15
		Between Threshold and Target	> 0 ; < 15
		At or Below Threshold	<= 0



# Probability Assessment Details: Global Fixed Income

## 5-Year Global Fixed Income vs. Benchmark

### Current Hurdles

5-Year Global Fixed Income vs. Benchmark				
Year	5-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2015-16	54.62	0.00	15.00	25.00
2016-17	94.65	0.00	15.00	25.00
2017-18	72.27	0.00	15.00	25.00
2018-19	58.27	0.00	15.00	25.00
2019-20	59.49	0.00	15.00	25.00
2020-21	72.39	0.00	15.00	25.00
<b>75th Percentile</b>	<b>72.36</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>65.88</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>58.57</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

2021-22 Performance Targets (bps)			Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	25.00	At or Above Maximum	>= 25	
Target	15.00	Between Target and Maximum	> 15 ; < 25	
Threshold	0.00	At Target	= 15	
		Between Threshold and Target	> 0 ; < 15	
		At or Below Threshold	<= 0	

### Hurdle Summary:

Reviewing the historical probability of attainment associated with the 1-year and rolling 3- and 5-year averages, the threshold target, and maximum hurdles were easily reached every year and therefore unfair to CalPERS as the performance expectations seem to be set at a lower level than historical performance would indicate they should be.



# Probability Assessment Details: Real Assets

## 1-Year Real Assets vs. Benchmark

### Current Hurdles

Real Assets vs. Benchmark				
Year	1-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2011-12	159.70	-10.00	5.00	35.00
2012-13	140.80	-10.00	5.00	35.00
2013-14	159.72	-10.00	5.00	35.00
2014-15	89.82	-10.00	5.00	35.00
2015-16	-516.90	-10.00	5.00	35.00
2016-17	43.04	-10.00	5.00	35.00
2017-18	118.87	-10.00	5.00	35.00
2018-19	-282.86	-10.00	5.00	35.00
2019-20	73.24	-10.00	5.00	35.00
2020-21	127.53	-10.00	5.00	35.00
<b>75th Percentile</b>	<b>137.48</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>104.35</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>50.59</b>	80%	80%	80%

2021-22 Performance Targets (bps)		Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	35.00	At or Above Maximum	>= 35
Target	5.00	Between Target and Maximum	> 5 ; < 35
Threshold	-10.00	At Target	= 5
		Between Threshold and Target	> -10 ; < 5
		At or Below Threshold	<= -10



# Probability Assessment Details: Real Assets

## 3-Year Real Assets vs. Benchmark

### Current Hurdles

3-Year Real Assets vs. Benchmark				
Year	3-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2013-14	153.41	-10.00	5.00	35.00
2014-15	130.11	-10.00	5.00	35.00
2015-16	-89.12	-10.00	5.00	35.00
2016-17	-128.01	-10.00	5.00	35.00
2017-18	-118.33	-10.00	5.00	35.00
2018-19	-40.32	-10.00	5.00	35.00
2019-20	-30.25	-10.00	5.00	35.00
2020-21	-27.36	-10.00	5.00	35.00
<b>75th Percentile</b>	<b>12.01</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>-35.28</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>-96.42</b>	25%	25%	25%

2021-22 Performance Targets (bps)		Frequency of Historical Performance Compared to FY2021-22 Targets	
Maximum	35.00	At or Above Maximum	>= 35
Target	5.00	Between Target and Maximum	> 5 ; < 35
Threshold	-10.00	At Target	= 5
		Between Threshold and Target	> -10 ; < 5
		At or Below Threshold	<= -10



# Probability Assessment Details: Real Assets

## 5-Year Real Assets vs. Benchmark

### Current Hurdles

5-Year Real Assets vs. Benchmark				
Year	5-Year Performance	2021-22 Incentive Performance Hurdles (bps)		
	CalPERS Actual (bps)	Threshold	Target	Maximum
2015-16	6.63	-10.00	5.00	35.00
2016-17	-16.70	-10.00	5.00	35.00
2017-18	-21.09	-10.00	5.00	35.00
2018-19	-109.61	-10.00	5.00	35.00
2019-20	-112.92	-10.00	5.00	35.00
2020-21	15.96	-10.00	5.00	35.00
<b>75th Percentile</b>	<b>0.79</b>	Historical Probability of Attainment		
<b>50th Percentile</b>	<b>-18.90</b>	Threshold	Target	Maximum
<b>25th Percentile</b>	<b>-87.48</b>	33%	33%	0%

2021-22 Performance Targets (bps)		
Maximum	35.00	
Target	5.00	
Threshold	-10.00	

Frequency of Historical Performance Compared to FY2021-22 Targets	
At or Above Maximum	>= 35
Between Target and Maximum	> 5 ; < 35
At Target	= 5
Between Threshold and Target	> -10 ; < 5
At or Below Threshold	<= -10

### Hurdle Summary:

Reviewing the historical probability of attainment associated with the 1-year and rolling 3- and 5-year averages, the threshold hurdle was easily reached most years and GGA has always noted that negative performance hurdles are an anomaly within the pension and investment community and unfair to CalPERS and its investment professionals.





GLOBAL  
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