



Investment Committee

Agenda Item 6a

June 10, 2024

Item Name: Asset Liability Management Mid-Cycle Review: Affiliate Funds

Program: Affiliate Investment Program

Item Type: Action

Recommendation

Adopt the Capital Market Assumptions for the Affiliate Funds.
Approve the recommended portfolios for each Affiliate Fund as the Policy Portfolio.
Approve the Health Care Fund liquidity benchmark, as recommended by Wilshire.

Executive Summary

This agenda item presents the results of the Asset Liability Management (ALM) Mid-Cycle Review for the Health Care Fund, Legislators' Retirement Fund, Judges' Retirement System Fund, Judges' Retirement System Fund II, California Employers' Retiree Benefit Trust Fund, and the California Employers' Pension Prefunding Trust Fund.

The Candidate Portfolios for each Affiliate trust have been designed with the same methods used for the Public Employees' Retirement Fund and in alignment with CalPERS objectives of minimizing potential losses, maximizing projected returns, maintaining sufficient liquidity, and minimizing costs. For each portfolio, both current and candidates, this item includes information about asset allocation, projected risk and projected return.

The Policy Portfolio recommendations are primarily to maintain the current portfolio. In some cases, a recommendation is made to make allocation changes that reduce risk.

Strategic Plan

This agenda item supports the CalPERS Strategic Plan goal to strengthen the long-term sustainability of the Affiliate Funds. Reviewing financial market conditions and investment strategies at the midpoint of the 4-year ALM cycle provides the opportunity to make adjustments to the Policy Portfolios with the objective of strengthening the sustainability of the funds.

Investment Beliefs

This agenda item supports the following CalPERS Investment Beliefs:

- Investment Belief 2: A long term investment horizon is a responsibility and an advantage;
- Investment Belief 6: Strategic asset allocation is the dominant determinant of portfolio risk and return; and
- Investment Belief 7: CalPERS will take risk only where we have a strong belief we will be rewarded for it

Background

Governed by CalPERS Asset Liability Management Policy, the ALM process occurs every four years with a mid-point review and is the primary process by which investment portfolio allocations evolve.

The Mid-Cycle Review of Current and Candidate Portfolios and the selection of the Policy Portfolio provides an opportunity to make portfolio allocation adjustments in response to financial market conditions, which may have changed from the last full ALM review.

This agenda item is intended to provide comprehensive information to support the Investment Committee in selecting the Policy Portfolios for adoption.

Analysis

Not applicable.

Budget and Fiscal Impacts

Not Applicable.

Benefits and Risks

The benefits of conducting an ALM Mid-Cycle Review and adopting allocation changes for the Policy Portfolios are:

1. Reviewing Current and Candidate Portfolios at the mid-point in the 4-year cycle provides an opportunity to review financial market conditions and determine if the portfolio allocation could be adjusted to improve the risk/return profile.
2. Selecting a Policy Portfolio that has been designed with updated market information may improve the portfolio return/risk profile.

The risks of conducting an ALM Mid-Cycle Review and adopting allocation changes for the Policy Portfolios are:

1. Reviewing Current and Candidate Portfolios and selecting a Policy Portfolio requires evaluating and balancing a variety of risks to different stakeholders.
2. Selecting a Policy Portfolio requires reliance on investment and actuarial assumptions, which are inherently uncertain.
3. Dramatic shifts or frequent allocation changes may undermine the long-term, strategic nature of the ALM's purpose.

Attachments

Attachment 1 – Asset Liability Management Mid-Cycle Review: Affiliate Funds

Attachment 2 – Wilshire Opinion Letter

James Sterling Gunn
Managing Investment Director
Trust Level Portfolio Management

Dan Bienvenue
Interim Chief Investment Officer

Asset Liability Management Mid-Cycle Review: Affiliate Funds

Christine Reese, Investment Director
Affiliate Investment Program

June 10, 2024

Summary

This presentation brings forward the results of the Asset Liability Management (ALM) Mid-Cycle Review for certain Affiliate Funds¹ (shown on page 3). The recommendations contained within are for the Capital Market Assumptions (CMAs), Policy Portfolios, and associated Benchmark updates. Most of the Policy Portfolio recommendations are to maintain the current portfolio. In some cases, a recommendation is made to make limited allocation changes that reduce risk. The following principles were followed for this review:

- CalPERS' objectives of minimizing potential losses, maximizing projected returns, maintaining sufficient liquidity, and minimizing costs have been integral in the review and recommendations for each fund.
- The Capital Market Assumptions for the Affiliate Funds are from the same survey as was used for the PERF ALM Mid-Cycle Review. As compared to the 2022 review, portfolio projected returns have increased and risk has decreased.
- The processes around portfolio construction, asset class assessment, constraint review, and portfolio testing used for the Affiliate Funds are the same as are used for the PERF.

Affiliate Trusts Included in Review

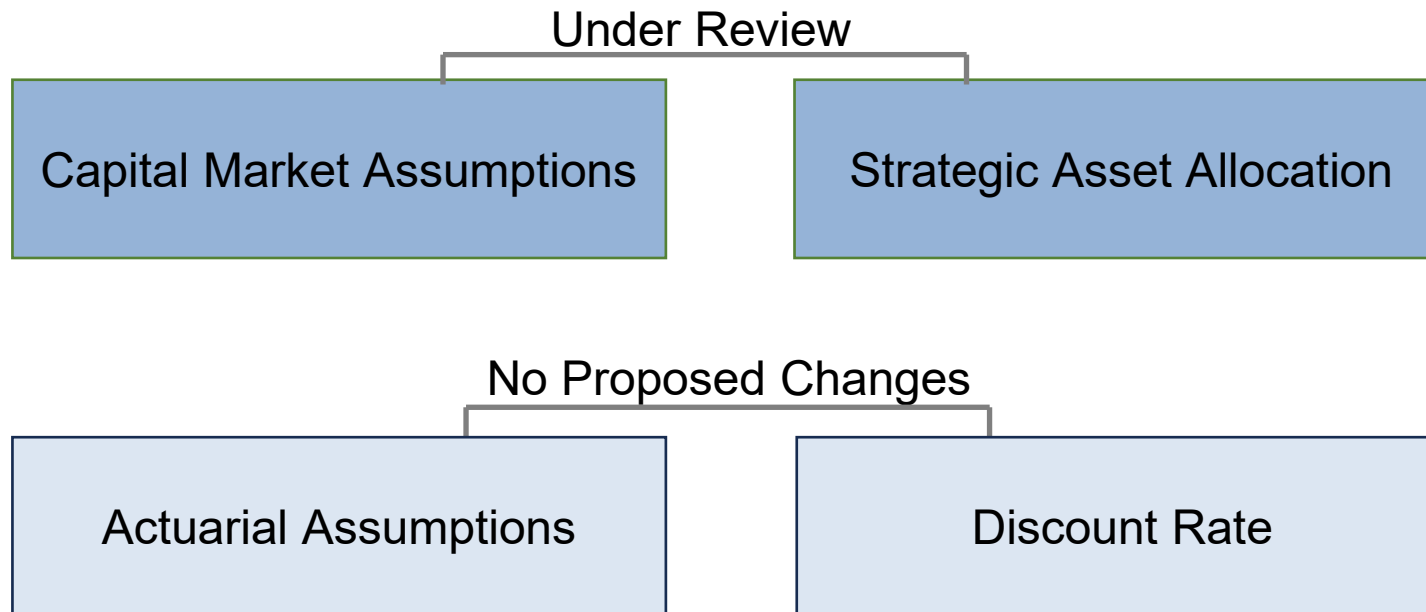
Plan / Fund	ID	Purpose	Established	Status	Participants ¹	Invested Assets ²
Public Employees' Health Care Fund	HCF	Provides reserves for CalPERS self-funded health plans.	1997	Open	State of California	\$73M
Legislators' Retirement System Fund	LRS	Provides pre-funded retirement and ancillary benefits for members of the Legislature elected prior to November 7, 1990, and Elected Constitutional and Legislative Statutory Officers elected prior to December 31, 2012.	1947	Closed 2013	186 members	\$95M
Judges' Retirement System Fund	JRS	Provides a reserve of 2-3 months of benefit payments to be used in the case of a State budget delay for the unfunded ('pay-as-you-go') retirement system for eligible judges elected before November 9, 1994.	1937	Closed 1994	1,689 members	\$51M
Judges' Retirement System II Fund	JRS II	Provides pre-funded retirement and ancillary benefits for eligible judges elected on or after November 9, 1994. Options include a defined benefit plan and a monetary credit plan.	1994	Open	2,198 members	\$2.6B
California Employers' Retiree Benefit Trust Fund	CERBT	Provides employers ability to voluntarily pre-fund non-pension, other post-employment benefits (OPEB). Employers can select from three strategies, depending on risk tolerance.	2007	Open	604 employers	\$20.5B
California Employers' Pension Prefunding Trust Fund	CEPPT	Provides employers ability to voluntarily pre-fund required pension contributions. Employers can select from two strategies, depending on risk tolerance.	2019	Open	94 employers	\$224M

¹ Participants as of 06/30/23 for LRS, JRS, JRS II and as of 12/31/23 for HCF, CERBT, & CEPPT.

² Invested assets as of 03/31/24 for all trusts.

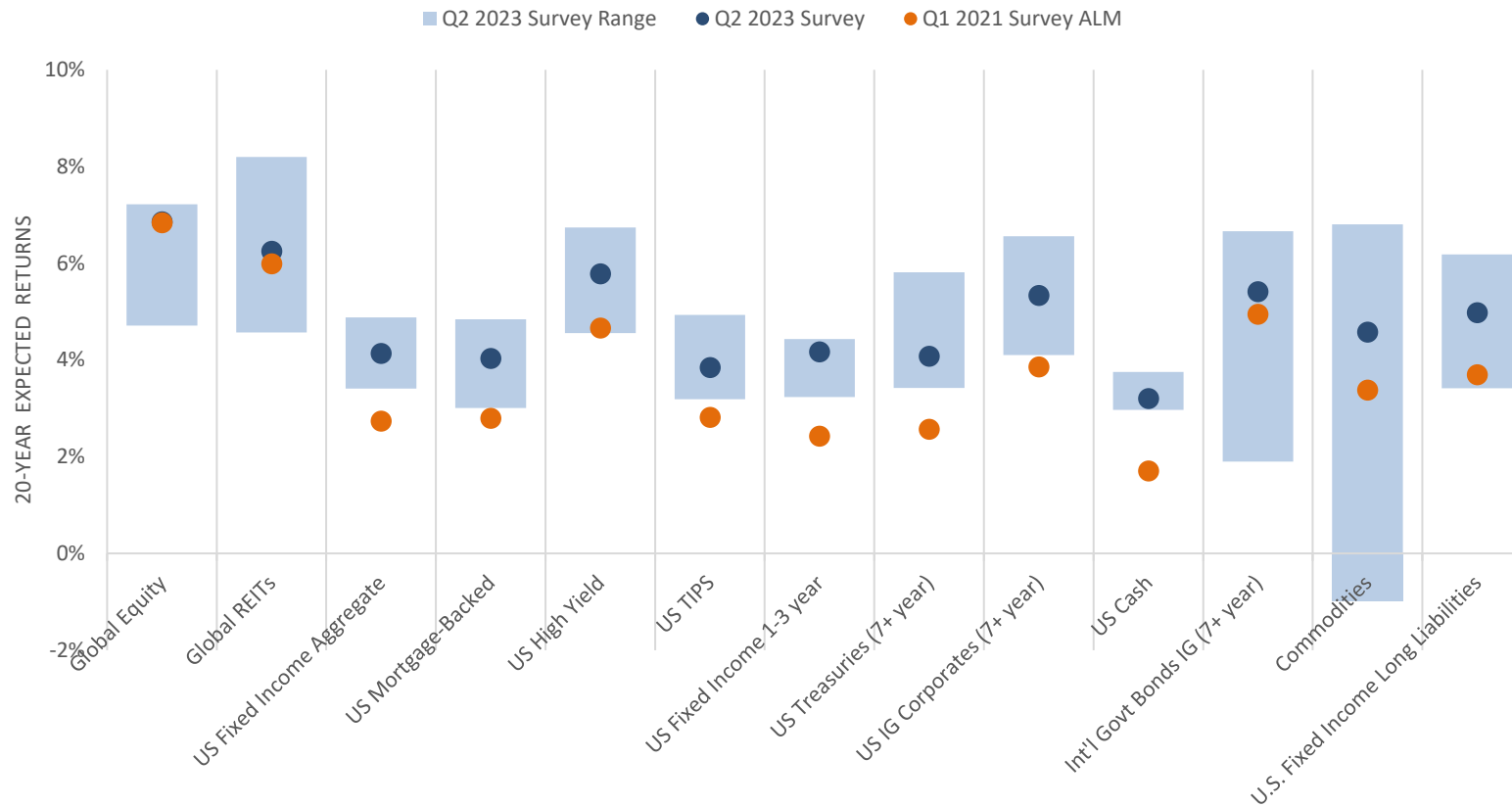
Mid-Cycle Review Objective

Provide the Board with an opportunity to evaluate if the current financial landscape still aligns with decisions made during the full Asset Liability Management (ALM) review that was conducted two years prior.



CMAs: Projected Returns – 20 Years

Compared to CMAs from 2 years ago, projected returns have risen significantly across fixed income asset classes, while projected returns for equities remain at similar levels.

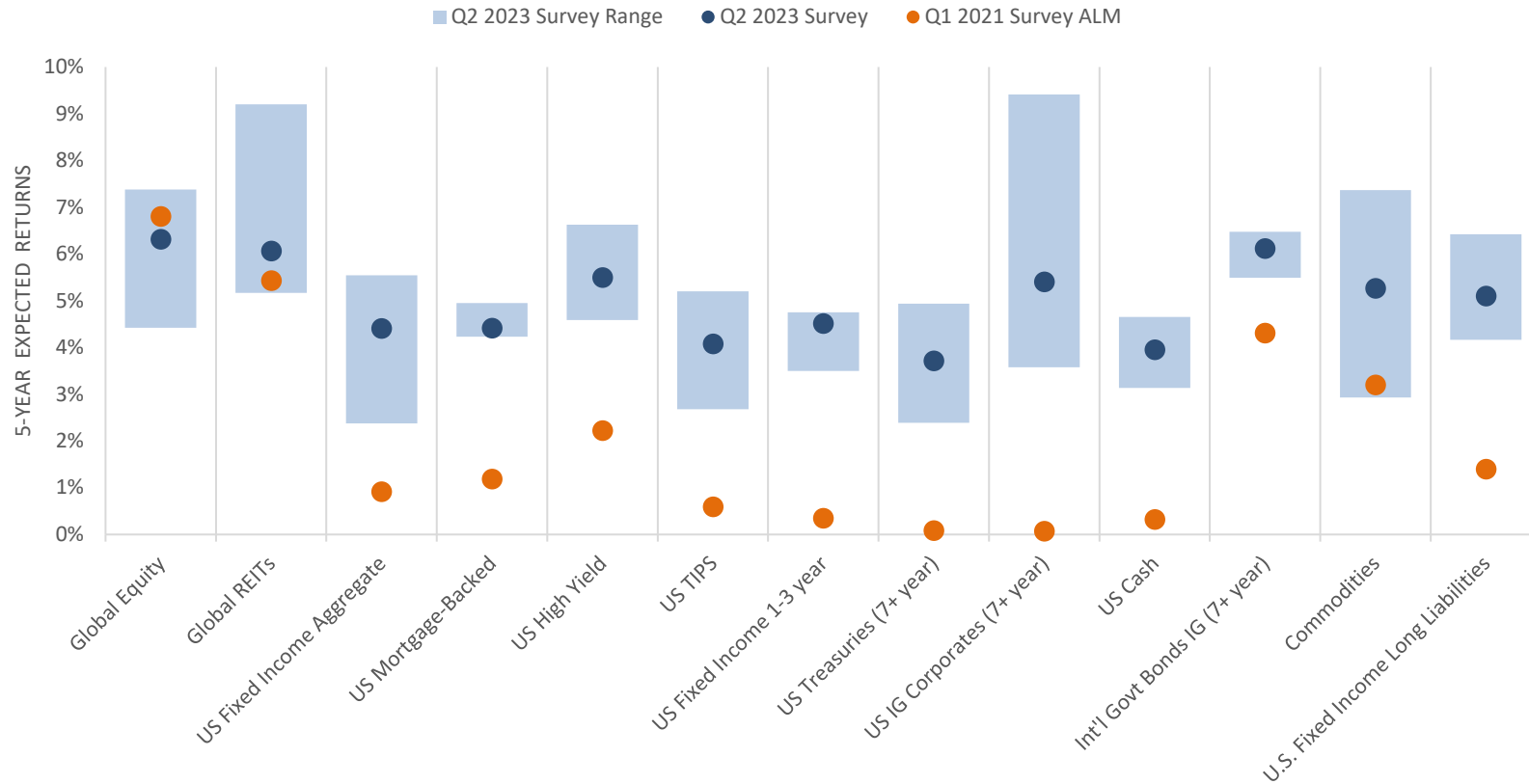


CMAs are based on our quarterly survey of 15 CMA providers, including institutional consultants and asset managers.

- Blue box is the range of responses for asset class returns (diversity of opinion).
- Blue dot is the median value of the responses for the asset class.
- Orange dot is the median value from the 2021 ALM analysis.

CMAs: Projected Returns – 5 Years

Compared to CMAs from 2 years ago, projected returns have risen significantly across fixed income asset classes, while projected returns for equities remain at similar levels.



CMAs are based on our quarterly survey of 15 CMA providers, including institutional consultants and asset managers.

- Blue box is the range of responses for asset class returns (diversity of opinion).
- Blue dot is the median value of the responses for the asset class.
- Orange dot is the median value from the 2021 ALM analysis.

Asset Classes - Constraints

Importance of Constraints:

- Constraints play a crucial role in portfolio design by helping to construct a balanced and diversified portfolio.
- Setting constraints assists in avoiding the risks associated with excessive concentration in a single asset class.
- Help in considering practical implementation limits, such as liquidity constraints.

Asset Class	LRS		JRSII, CERBT		CEPPT	
	Min	Max	Min	Max	Min	Max
Global Equity	0%	100%	0%	100%	0%	100%
Global REITs	8%	100%	8%	20%	8%	20%
U.S. Fixed Income Long Liabilities	0%	100%	0%	100%	0%	0%
U.S. Fixed Income Aggregate	0%	0%	0%	0%	0%	100%
U.S. TIPS	5%	100%	5%	15%	5%	20%
Commodities	3%	100%	3%	5%	0%	0%

Constraint changes for 2024: For JRSII, CERBT, and CEPPT, set maximum constraints for Global REITs, U.S. TIPS, and Commodities to avoid excessive concentration. LRS kept at existing constraints so as not to cap U.S. TIPS, which provide inflation protection for this conservative, low-risk fund.

Health Care Fund and Judges' Fund Candidate Portfolios

Health Care Fund Profile

- Reserve fund for self-funded health programs
- Fund assets are approximately \$73 million
- Very conservative investment strategy

Recommendation: Candidate A 100% Cash Equivalents

Projections	2022 Values (20-year) U.S. Bonds	Current Portfolio (5-year) U.S. Bonds	Candidate A (5-year) Cash Equivalents
Return ¹	2.7%	4.4%	3.9%
Drawdown	7.5%	4.8%	0.0%
Volatility	4.5%	3.8%	0.4%

Rationale for Recommendation

- The Current Portfolio of 100% bonds has higher projected² returns and risk than Candidate A, which is 100% short-term cash equivalent assets. With a 0.5% lower projected return and much lower risk, Candidate A is recommended to protect against principal loss and support the liquidity needs of the fund.

Judges' Fund Profile

- Closed defined benefit program and 'pay-as-you-go'
- Fund assets are approximately \$51 million
- Reserve fund for 2-3 months of benefit payments
- Highly liquid, short-term cash investment strategy

Recommendation: Current Portfolio 100% Cash Equivalents

Projected Return¹ : 3.2%
Drawdown Risk: 0.0%
Volatility: 0.8%

Rationale for Recommendation

- The Current Portfolio of 100% cash equivalents is recommended, as it provides principal protection for the assets and provides liquidity to pay benefits.

¹ Returns are geometric and net of expenses of 0.03% for HCF and 0.01% for JRS
² Projections for HCF have been shortened from 20 years to 5 years to focus on liquidity.

Legislators' Fund Candidate Portfolios

Fund Profile – Defined Benefit Plan

- Closed and cash flow negative (approximately -\$8m/year)
- Discount rate is 4.5%; funded ratio was 99.9% at 06/30/23
- Fund assets are approximately \$95 million
- Conservative investment strategy

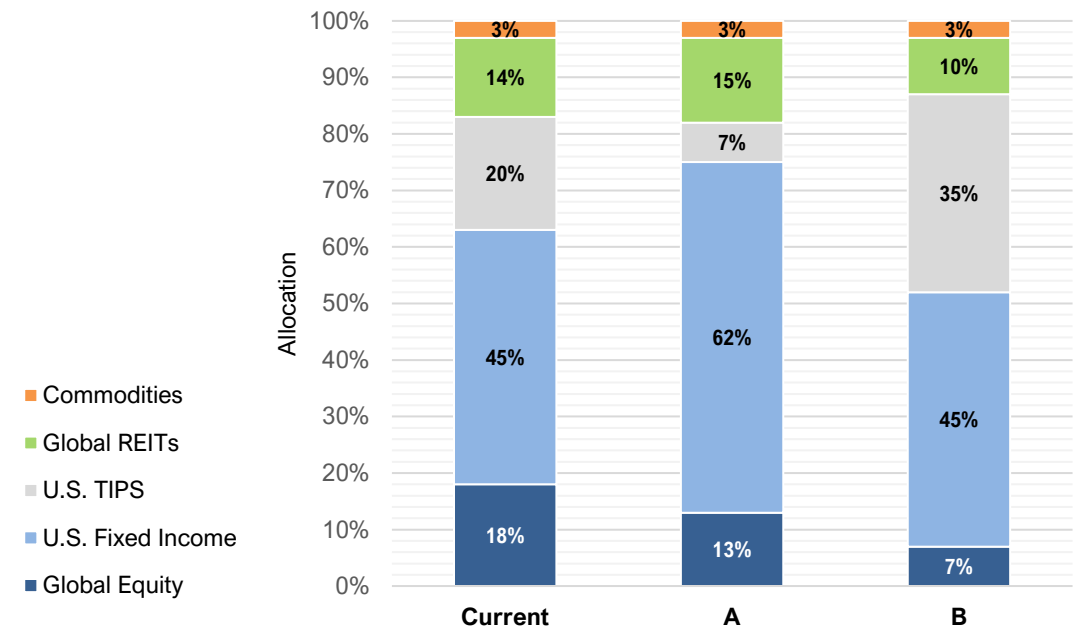
Recommendation: Candidate B

Projected Return : 4.8%
Drawdown Risk: 9.7%
Volatility: 6.3%

Rationale for Recommendation

- The Current Portfolio and Candidate A, which is optimized for the same level of risk as the Current Portfolio, both have return and risk that are much higher than needed to support the 4.5% discount rate. These portfolios are not recommended.
- Candidate B, optimized for lower risk and return than the Current Portfolio, reallocates some of the portfolio into lower risk, inflation-protected fixed income assets. Compared to the Current Portfolio, Candidate B projected return is 0.5% lower, but results in a larger reduction in risk – drawdown drops by 3.1% and volatility drops by 1.2%. Candidate B, which reduces risk and is supportive of the discount rate, is recommended.

Legislators' Fund
Current and Candidate Portfolios



20-year Projections	2022 Values	Current Portfolio	Candidate A	Candidate B
Return¹	4.5%	5.3%	5.4%	4.8%
Drawdown	14.1%	12.8%	12.8%	9.7%
Volatility	7.7%	7.5%	7.6%	6.3%

¹ Returns are geometric and net of expenses of 0.35%.

Judges' II Fund Candidate Portfolios

Fund Profile – Defined Benefit Plan

- Open and cash flow positive (approximately +\$45m/year)
- Discount rate is 6.0%; funded ratio was 98.8% at 06/30/23
- Fund assets are approximately \$2.6 billion
- Moderately aggressive investment strategy

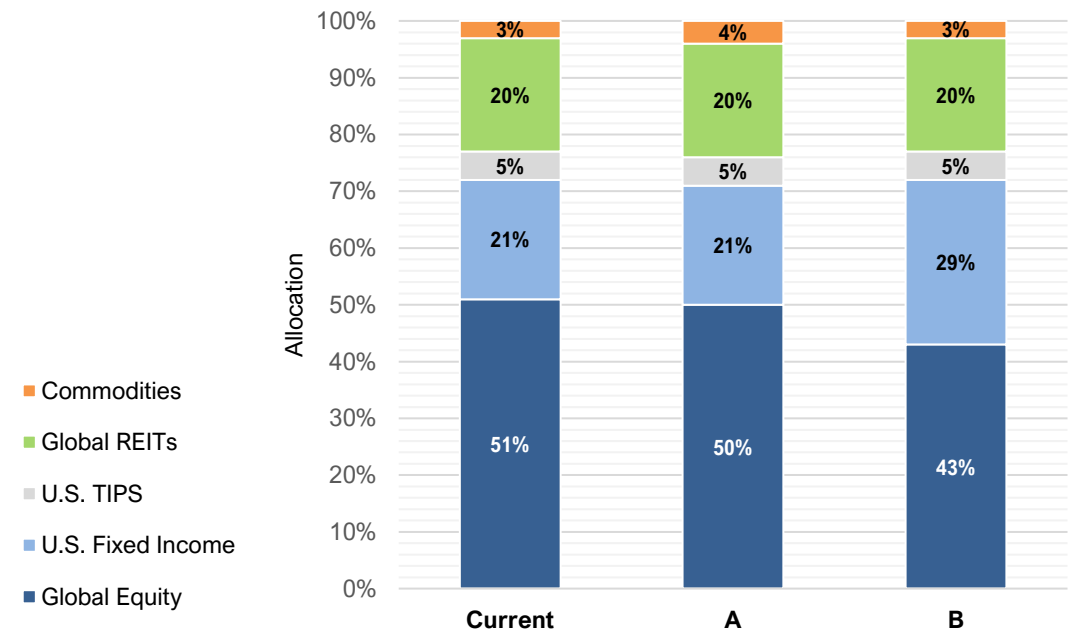
Recommendation: Candidate B

Projected Return : 6.3%
Drawdown Risk: 21.6%
Volatility: 10.7%

Rationale for Recommendation

- Candidate A, optimized for the same level of risk as the Current Portfolio, does not change projected return or risk, therefore it is not recommended versus the Current Portfolio.
- Candidate B, optimized for lower risk and return than the Current Portfolio, reallocates some of the portfolio into lower risk fixed income assets. Compared to the Current Portfolio, Candidate B projected return is 0.1% lower, but results in a larger reduction in risk – drawdown drops by 2.6% and volatility drops by 1.0%. Candidate B, which is supportive of the discount rate of 6.0% and improves risk while maintaining a projected return that is close to the Current Portfolio, is recommended.

JRS II Fund
Current and Candidate Portfolios



20-year Projections	2022 Values	Current Portfolio	Candidate A	Candidate B
Return¹	6.0%	6.4%	6.4%	6.3%
Drawdown	26.4%	24.2%	24.2%	21.6%
Volatility	12.4%	11.7%	11.7%	10.7%

¹ Returns are geometric and net of expenses of 0.15%.

CERBT Strategies Candidate Portfolios

Fund Profile – OPEB Pre-funding Plan

- OPEB – Other Post-Employment Benefits (e.g. retiree health care premiums)
- Voluntary program with variable contributions
- Employer participants can select a strategy that fits their risk appetite
- Total assets of approximately \$20.5 billion.

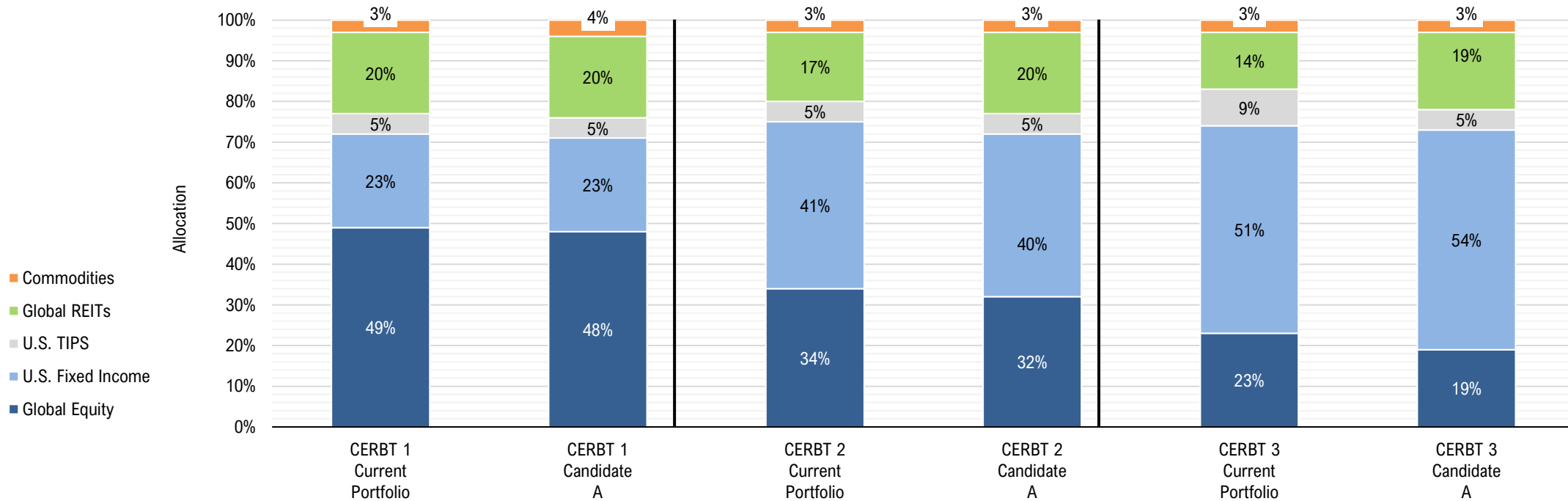
Recommendation: Current Portfolios

Strategy / Profile	Projected Return	Drawdown Risk	Volatility
CERBT Strategy 1: Moderately Aggressive	6.4%	23.5%	11.5%
CERBT Strategy 2: Moderate	6.1%	18.2%	9.5%
CERBT Strategy 3: Moderately Conservative	5.8%	14.6%	8.1%

Rationale for Recommendation

- Participants have a choice of portfolios with different projected return and risk profiles, so a specific reduced risk portfolio is not presented.
- Each Current Portfolio has a higher projected return and lower risk than in 2022, due to the increase in fixed income returns:
 - Projected returns increased by between .4% - .8%
 - Drawdown risk decreased by between 1.2% - 2.1%
 - Volatility decreased by between .3% - .6%

CERBT Strategies Candidate Portfolios



20-year Projections	CERBT 1			CERBT 2			CERBT 3		
	2022 Values	Current Portfolio	Candidate A	2022 Values	Current Portfolio	Candidate A	2022 Values	Current Portfolio	Candidate A
Return¹	6.0%	6.4%	6.4%	5.5%	6.1%	6.1%	5.0%	5.8%	5.8%
Drawdown	25.6%	23.5%	23.5%	19.8%	18.2%	18.2%	15.8%	14.6%	14.7%
Volatility	12.1%	11.5%	11.4%	9.9%	9.5%	9.5%	8.4%	8.1%	8.2%



¹ Returns are geometric and net of expenses of 0.10%.

CEPPT Strategies Candidate Portfolios

Fund Profile – Pension Pre-funding Plan

- Pension contribution pre-funding
- Voluntary program with variable contributions
- Employer participants can select a strategy that fits their risk appetite
- Total assets of approximately \$224 million.
- Shorter investment horizon, approximately 10-years¹
- Commodities excluded due to volatility; Fixed Income has shorter duration.

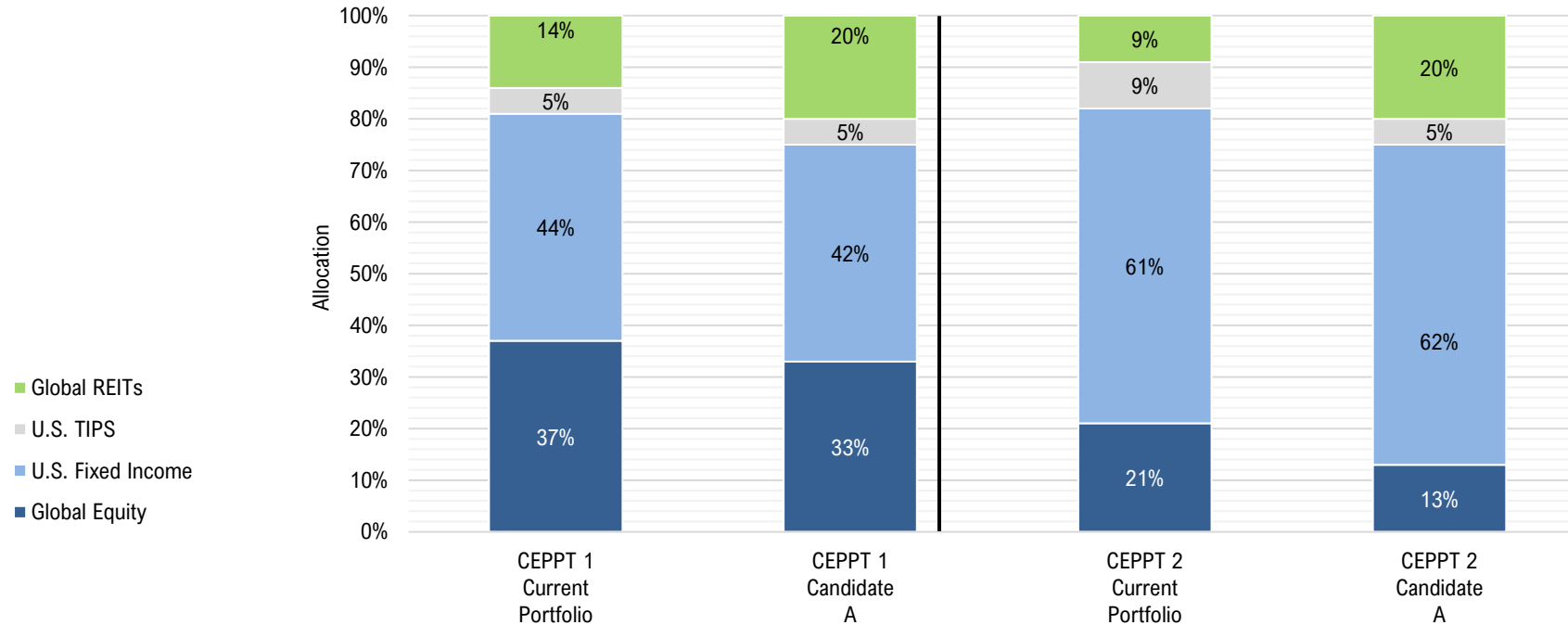
Recommendation: Current Portfolios

Strategy / Profile	Projected Return ²	Drawdown Risk	Volatility
CEPPT Strategy 1: Moderate	5.4%	16.3%	8.4%
CEPPT Strategy 2: Conservative	4.9%	9.6%	5.9%

Rationale for Recommendation

- Participants have a choice of portfolios with different projected return and risk profiles, so a specific reduced risk portfolio is not presented.
- Each Current Portfolio has a higher projected return and lower risk than in 2022, due to the increase in fixed income returns:
 - Projected returns increased by between 0.9% - 1.4%
 - Drawdown risk decreased by between 1.9% - 2.1%
 - Volatility decreased by between 0.2% - 0.4%

CEPPT Strategies Candidate Portfolios



10-year ¹ Projections	CEPPT 1			CEPPT 2		
	2022 Values	Current Portfolio	Candidate A	2022 Values	Current Portfolio	Candidate A
Return ²	4.5%	5.4%	5.4%	3.5%	4.9%	4.9%
Drawdown	18.2%	16.3%	16.3%	11.7%	9.6%	9.7%
Volatility	8.8%	8.4%	8.5%	6.1%	5.9%	6.1%



¹ Projected 10-year returns are calculated from the surveyed 5-year and 20-year CMAs and compared to the 10-year survey returns for reasonability. Projected volatility is the 10-year survey median.

² Returns are geometric and net of expenses of 0.25%.

Recommendation and Next Steps

Recommendation:

1. Adopt the Capital Market Assumptions (pages 17 & 18)
2. Approve the recommended portfolio for each Affiliate Fund as the Policy Portfolio (pages 19 & 20)
 - HCF: Candidate A (lower risk)
 - LRS & JRSII: Candidate B (lower risk)
 - JRS, CERBT & CEPPT: Current Portfolios
3. Approve the Health Care Fund liquidity benchmark, as recommended by Wilshire

Next Steps:

- Update Investment Policies to reflect approved allocations and associated benchmark changes
- Implement allocation and associated benchmark changes
- Present the ALM review for the Long-Term Care Fund to the Committee in September 2024

Appendix

Topic	Pages
CMAs: Projected Returns, Volatility, and Correlations	17-18
Portfolios: Current and Recommended	19-20

CMAs: Projected Returns and Volatility

Asset Class/Segment	Benchmark Index	5-Year Projected Return	20-Year Projected Return	20-Year Projected Volatility
Global Equity	MSCI ACWI IMI (Net)	6.3%	6.9%	16.8%
Global REITs	FTSE EPRA/NAREIT Developed Index	6.1%	6.3%	16.5%
U.S. Fixed Income Aggregate	Bloomberg U.S. Aggregate Bond Index	4.4%	4.1%	4.1%
U.S. Mortgage-Backed	Bloomberg AIP Long Liability MBS	4.4%	4.0%	4.7%
U.S. High Yield	Bloomberg AIP Long Liability HY Cash Pay	5.5%	5.8%	10.0%
U.S. TIPS	Bloomberg U.S. TIPS Index, Series L	4.1%	3.9%	5.8%
U.S. Fixed Income (1-3 year)	Bloomberg U.S. 1-3 Year Govt/Credit Index	4.5%	4.2%	3.0%
U.S. Treasuries (7+ year)	Bloomberg AIP LGOV7+	3.7%	4.1%	11.0%
U.S. IG Corporates (7+ year)	Bloomberg AIP Long Liability Corp ex Sov	5.4%	5.3%	9.5%
U.S. Cash	91-day Treasury Bill	4.0%	3.2%	.8%
Int'l Govt Bonds IG (7+ year)	Bloomberg AIP Long Liability Sovereign	6.1%	5.4%	10.4%
Commodities	S&P GSCI Total Return Daily	5.3%	4.6%	23.8%
U.S. Fixed Income Long Liabilities	Bloomberg U.S. Long Liability Index (custom)	5.1%	5.0%	8.0%

CMA: Asset Class Correlations

Asset Class/Segment Correlations	Global Equity	Global REITs	U.S. Fixed Income Aggregate	U.S. Mortgage-Backed	U.S. High Yield	U.S. TIPS	U.S. Fixed Income (1-3 year)	U.S. Treasuries (7+ year)	U.S. IG Corporates (7+ year)	U.S. Cash	Int'l Govt Bonds IG (7+ year)	Commodities
Global Equity	1.00	.54	.22	.13	.40	.16	.28	.14	.31	.17	.24	.47
Global REITs	.54	1.00	.18	.12	.31	.14	.25	.12	.24	.18	.19	.41
U.S. Fixed Income Aggregate	.22	.18	1.00	.72	.37	.63	.59	.96	.93	.32	.89	-.03
U.S. Mortgage-Backed	.13	.12	.72	1.00	.20	.47	.58	.61	.53	.36	.54	-.05
U.S. High Yield	.40	.31	.37	.20	1.00	.19	.46	.21	.57	.16	.37	.42
U.S. TIPS	.16	.14	.63	.47	.19	1.00	.53	.62	.55	.44	.56	.29
U.S. Fixed Income (1-3 year)	.28	.25	.59	.58	.46	.53	1.00	.49	.59	.79	.52	.04
U.S. Treasuries (7+ year)	.14	.12	.96	.61	.21	.62	.49	1.00	.85	.29	.86	-.19
U.S. IG Corporates (7+ year)	.31	.24	.93	.53	.57	.55	.59	.85	1.00	.26	.86	.15
U.S. Cash	.17	.18	.32	.36	.16	.44	.79	.29	.26	1.00	.26	-.04
Int'l Govt Bonds IG (7+ year)	.24	.19	.89	.54	.37	.56	.52	.86	.86	.26	1.00	.19
Commodities	.47	.41	-.03	-.05	.42	.29	.04	-.19	.15	-.04	.19	1.00

Portfolios - Current & Recommended: HCF, LRS, JRS, & JRS II

Trust Name	HCF			LRS			JRS	JRS II		
	Current	Recommended	Delta	Current	Recommended	Delta	Current & Recommended	Current	Recommended	Delta
Global Equity				18%	7%	-11%		51%	43%	-8%
Fixed Income ¹	100%		-100%	45%	45%	0%		21%	29%	8%
TIPS				20%	35%	15%		5%	5%	0%
Global REITs				14%	10%	-4%		20%	20%	0%
Commodities				3%	3%	0%		3%	3%	0%
Liquidity		100%	100%				100%			
Gross Projected Return	4.4%	3.9%	-0.5%	5.7%	5.2%	-0.5%	3.2%	6.6%	6.5%	-0.1%
Projected Drawdown	4.8%	0.0%	-4.8%	12.8%	9.7%	-3.1%	0.0%	24.2%	21.6%	-2.6%
Projected Volatility	3.8%	0.4%	-3.4%	7.5%	6.3%	-1.2%	0.8%	11.7%	10.7%	-1.0%
Expenses	0.03%	0.03%	-	.35%	0.35%	-	0.01%	0.15%	0.15%	-
Net Projected Return	4.4%	3.9%	-0.5%	5.3%	4.8%	-0.5%	3.2%	6.4%	6.3%	-0.1%

¹ The Fixed Income benchmark for HCF is U.S. Aggregate and for JRS II and LRS is the U.S. Long Liability.

Portfolios – Current & Recommended: CERBT & CEPPT

Trust Name	CERBT 1	CERBT 2	CERBT 3	CEPPT 1	CEPPT 2
Asset Class Allocation	Current & Recommended	Current & Recommended	Current & Recommended	Current & Recommended	Current & Recommended
Global Equity	49%	34%	23%	37%	21%
Fixed Income ¹	23%	41%	51%	44%	61%
TIPS	5%	5%	9%	5%	9%
Global REITs	20%	17%	14%	14%	9%
Commodities	3%	3%	3%		
Gross Projected Return	6.5%	6.2%	5.9%	5.7%	5.2%
Projected Drawdown	23.5%	18.2%	14.6%	16.3%	9.6%
Projected Volatility	11.5%	9.5%	8.1%	8.4%	5.9%
Expenses	0.10%	0.10%	0.10%	0.25%	0.25%
Net Projected Return	6.4%	6.1%	5.8%	5.4%	4.9%

¹ The Fixed Income benchmark for CERBT is the U.S. Long Liability and for the CEPPT it is the U.S. Aggregate.

May 15, 2024

Mr. David Miller
Chair of the Investment Committee
California Public Employees' Retirement System
400 P Street
Sacramento, CA 95814

Re: Agenda Item 6a: Asset Liability Management Mid-Cycle Review: Affiliate Funds

Dear Mr. Miller:

You requested Wilshire's opinion as it relates to Staff's recommendations related to the Affiliate Funds mid-cycle Asset-Liability Management (ALM) review. The funds included in this review (listed below) had approximately \$23.5B in assets as of March 31, 2024. The last asset allocation study for the Affiliate Funds was conducted in 2021-2022 and this review reflects adherence to the mid-point of the regular four-year asset allocation cycle. A recommendation for the Long-term Care Fund is scheduled to be presented during the September Investment Committee meeting.

- Health Care Fund (HCF): \$73M
- Legislators' Retirement System Fund (LRS): \$95M
- Judges' Retirement System Fund (JRS): \$51M
- Judges' Retirement System II Fund (JRSII): \$2.6B
- CA Employers' Retiree Benefit Trust Fund (CERBT): \$20.5B (3 strategies)
- CA Employers' Pension Prefunding Trust Fund (CEPPT): \$224M (2 strategies)

The Process

Wilshire believes that the methods, inputs, and data used to perform the asset allocation review are appropriate and reasonable. The capital market assumptions (CMAs) used in the process were consistent with and followed the same CMA survey methodology utilized in conducting the PERF's recent mid-cycle review (as approved during the March 2024 Investment Committee meeting). Where included in the asset class opportunity set, minimum constraints were established for Global REITs (8%), TIPS (5%), and Commodities (3%) to force a certain level of diversification into the candidate portfolios that might be underappreciated in a pure mathematically optimized framework. Additionally, modest maximum constraints were also imposed on TIPS (10%-20%) and Commodities (5%-10%). Wilshire is comfortable with these constraints given the instability of the underlying optimization assumptions, particularly as they relate to the inherent limitations of correlation estimates. This viewpoint is consistent with Investment Belief 9 (i.e., Risk to CalPERS is multi-faceted and not fully captured through measures such as volatility or tracking error).

In evaluating the candidate target policy portfolios, Staff followed the same quantitative approach of maximizing projected return at various levels of expected downside risk as was used in the PERF's recent mid-cycle ALM review. In addition, and where appropriate, CalPERS' actuarial team contributed to the process as Staff took into consideration demographic and fund characteristics in the recommendation process. These factors have important

implications for the ultimate risk profile of the candidate portfolios. The consideration of liability information in the analysis is consistent with Investment Belief 1 (i.e., liabilities must influence the asset structure).

Selection of Asset Allocation Target Portfolios

In total, there are nine allocation recommendations (one each for HCF, LRS, JRS & JRSII, three for the CERBT, and two for the CEPPT). Wilshire believes that Staff's recommended asset mixes are appropriately specified for each Fund and take into account relevant decision factors such as, for example, funding status and contribution rates where applicable. As can be seen on slides 5 and 6 of Staffs' presentation materials, many embedded asset classes have improved return/risk characteristics versus those used during the 2021-2022 ALM study. These improvements are most notable within fixed income segments and, in several cases, provide an opportunity to reduce some of the risk increases accepted in the 2021-2022 environment.

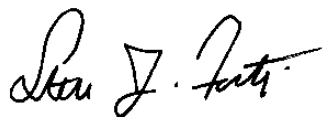
In response to these expectations, Staff's recommended portfolio allocations reflect comparable or lower levels of risk-taking than is expressed in current allocation mixes. Wilshire is comfortable with Staff's recommended allocation changes for the HCF, LRS and JRSII funds, which reflect a proposed reduction in expected risk. The modest reductions in expected return (versus maintaining current risk levels) appear to offer prudent trade-offs for the associated and notable reductions in drawdown and volatility risk. Using the JRSII fund as an example, the small -0.1% sacrifice in expected return comes with meaningful reductions in forecasted drawdown and volatility risk of -2.6% and -1.0%, respectively. The HCF and LRS funds reveal larger risk savings, though with slightly higher reductions in expected returns.

Specific to the risk reduction reflected within the Health Care Fund allocation, Staff has recommended shifting its defensive mix from 100% bonds to 100% cash equivalents. Consistent with the initiation of this explicit cash allocation is the need to assign an appropriate asset class benchmark, for which Wilshire recommends utilizing the ICE BofA US 3-Month Treasury Bill Index (i.e., the same cash benchmark as is used for the JRS fund).

Finally, Wilshire remains comfortable with Staff's recommendation to maintain current asset allocation targets for each of the JRS, the three CERBT, and two CEPPT funds. Maintaining a 100% cash equivalents allocation for the JRS fund is entirely consistent with the fund's short-term liquidity needs and low risk profile. In the case of the CERBT and CEPPT funds, their structural objectives of providing participants with the option to select targeted risk portfolios demands greater adherence to these targeted levels of risk and is, therefore, less sensitive to evolving capital market prospects. As such, Staff's recommendation to maintain current asset allocation targets seems appropriate and prudent.

We look forward to further discussing these recommendations with you in June; however, please do not hesitate to contact us should you require anything further or have any questions.

Best regards,



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