Asset Liability Management Mid-Cycle Review: Long-Term Care Fund

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CalPERS

Long-Term Care Program Background

- Program established in 1995.
- Approximately 80,000 policyholders.
- Average age is 78.
- Suspended open enrollment in 2020 due to plan premium volatility and uncertainty in the long-term care market.

Challenges Facing the Long-Term Care Program

- Deviations in assumptions
  - Living longer, but with higher rates of disability
  - Policy retention
  - Increasing cost of care
- Aging policyholder population
- Investment market volatility

Actuarial Considerations

Topics

- Current estimated state of the program
- Probabilities of future premium increases
- Estimated future margin
- Funding risks for the future

Estimated Updated Information as of June 30, 2024

- Estimated Margin: -27%
- Estimated Funded Ratio: 88%
- Based on a 4.75% discount rate

Probability of Future Premium Increases

	Probability of Need for Rate Increase *within 5 years*
Without two 10% Rate Increases	63%
With two 10% Rate Increases	44%

Estimated Future Margin

	Estimated Margin in 5 Years
Without two 10% Rate Increases	-48%
With two 10% Rate Increases	-10%

Funding Risks for the Future

- Since the last rate increase…
  - Lower than expected investment income
  - New information suggests that future program costs will be higher than previously expected
- Program demographic is aging: claims exceed premiums
  - Diminishing ability to address shortfalls
  - Conservative approach to future assumptions is the best way to protect against unmanageable rate increases in the future

Strategic Asset Allocation

ALM Mid-Cycle Review Objective

The objective of the ALM Mid-Cycle Review is to provide the Board with an opportunity to evaluate if the current financial landscape still aligns with decisions made during the Asset Liability Management (ALM) review that was previously conducted and to make adjustments to the strategic asset allocation.

In the last few years since the prior ALM, market conditions have improved, particularly for fixed income, which is a significant allocation for the Long-Term Care (LTC) Fund. The increase in projected returns and decrease in projected risk creates an opportunity to evaluate reducing risk in the LTC Fund, similar to the strategic asset allocation risk reductions approved for the Judges' Retirement System II Fund and the Legislators' Retirement System Fund in June 2024.

To fully understand the impact of strategic asset allocation changes to the LTC Fund, this review considers both liabilities and assets, similar to the process for the full ALM review. Proposed rate increases of 10% in 2025 and 10% in 2026 have been incorporated in the analysis.

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.
- The Capital Market Assumptions for the Long-Term Care Fund are sourced from our external investment manager[1] and compared to our internal CMA survey for reasonability.
- The processes that the external manager utilizes for portfolio construction, asset class assessment, constraints, and portfolio testing are similar to the processes that are used for the PERF & Affiliate Funds.

[1] In the last ALM, CalPERS contracted with BlackRock through an RFP process to provide ALM & Investment Management services.

Investment Objective

The attributes of a plan influence the investment objective and strategic asset allocation. The Long-Term Care plan attributes align with the conservative investment objectives of providing a return that is supportive of the discount rate, while reducing risk to protect against large losses.

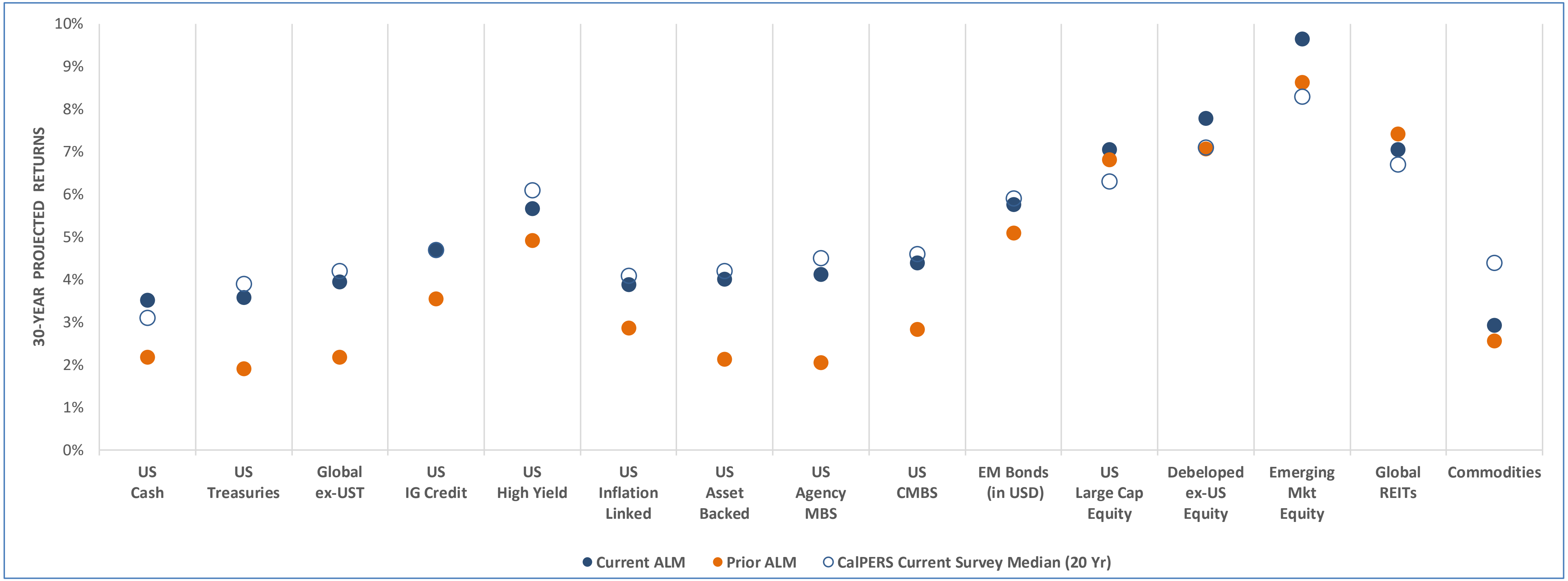
Plan Attribute	Description	Current Position	Investment Objective
Discount Rate	A lower discount rate aligns with lower investment risk.	Discount rate is 4.75%.	**Lower risk strategy that provides a return supportive of the discount rate**
Liability Time Horizon	Higher near-term liabilities reduce ability to recover from investment losses	Liability time horizon has shortened as participant pool ages. Average age is 78.	**Lower risk strategy to protect against large losses**
Cash Flows	Claims exceeding premiums reduces ability to recover from investment losses.	Claims paid are larger than premiums collected. Recent annual net outflow from the investment fund to pay claims is approximately $120M.	**Lower risk strategy to protect against large losses**
Funding Sources	Concentrated funding sources increase reliance on investment returns and reduce ability to recover from investment losses.	Contributions consist entirely of participant premiums, which are declining over time; no sponsor contributions or reinsurance. Funding becomes more reliant on investments over time.	**Lower risk strategy to protect against large losses**

Portfolio Construction & Evaluation Process

	Assets	Liabilities
Step 1	Determine Capital Market Assumptions (CMAs), asset classes, and constraints	Project Liabilities
Step 2	Build efficient portfolios using optimization models	
Step 3	Identify candidate portfolios	
Step 4	Simulate annual returns for each candidate portfolio (5,000 portfolio return simulations across 30 years)	Project actuarial data using simulations
Step 5	Recommend Policy Portfolio based on liability profile and risk considerations	
Step 6	Investment Committee approves Policy Portfolio based on discussions and staff recommendations	

CMAs: Projected Returns

Projected returns have risen for fixed income, modestly for equities, and have not substantially changed for REITs and commodities. Volatility, a measure of risk, has not changed significantly, creating an opportunity to reduce risk.



CalPERS' external manager provided the CMAs for this review and is a participant in CalPERS' CMA survey. The managers' CMAs are as of Q1 2024 and have been compared to the survey for reasonability. CMA data for projected returns, projected volatility, and asset class correlations can be found in the Appendix.

Asset Classes and Constraints

The same asset classes from the prior ALM were used in the portfolio optimization process.

Constraints support the construction of a balanced and diversified portfolio by reducing the risks associated with excessive concentration in a single asset class. The following adjustments were made to the constraints:

1. Global Equity and Fixed Income constraints were lifted, as they were not triggered in the portfolio optimization and are therefore not necessary.
2. Commodities minimum of 3% was lifted in favor of setting an 8% minimum on combined inflation assets (Commodities/TIPS/REITs).

	Prior ALM		Current ALM	
Asset Class	Min	Max	Min	Max
Global Equity	0%	30%	0%	100%
Global REITs	3%	100%	3%	100%
Fixed Income	60%	100%	0%	100%
Commodities	3%	100%	0%	100%

Shading indicates constraints that have changed from the prior ALM.

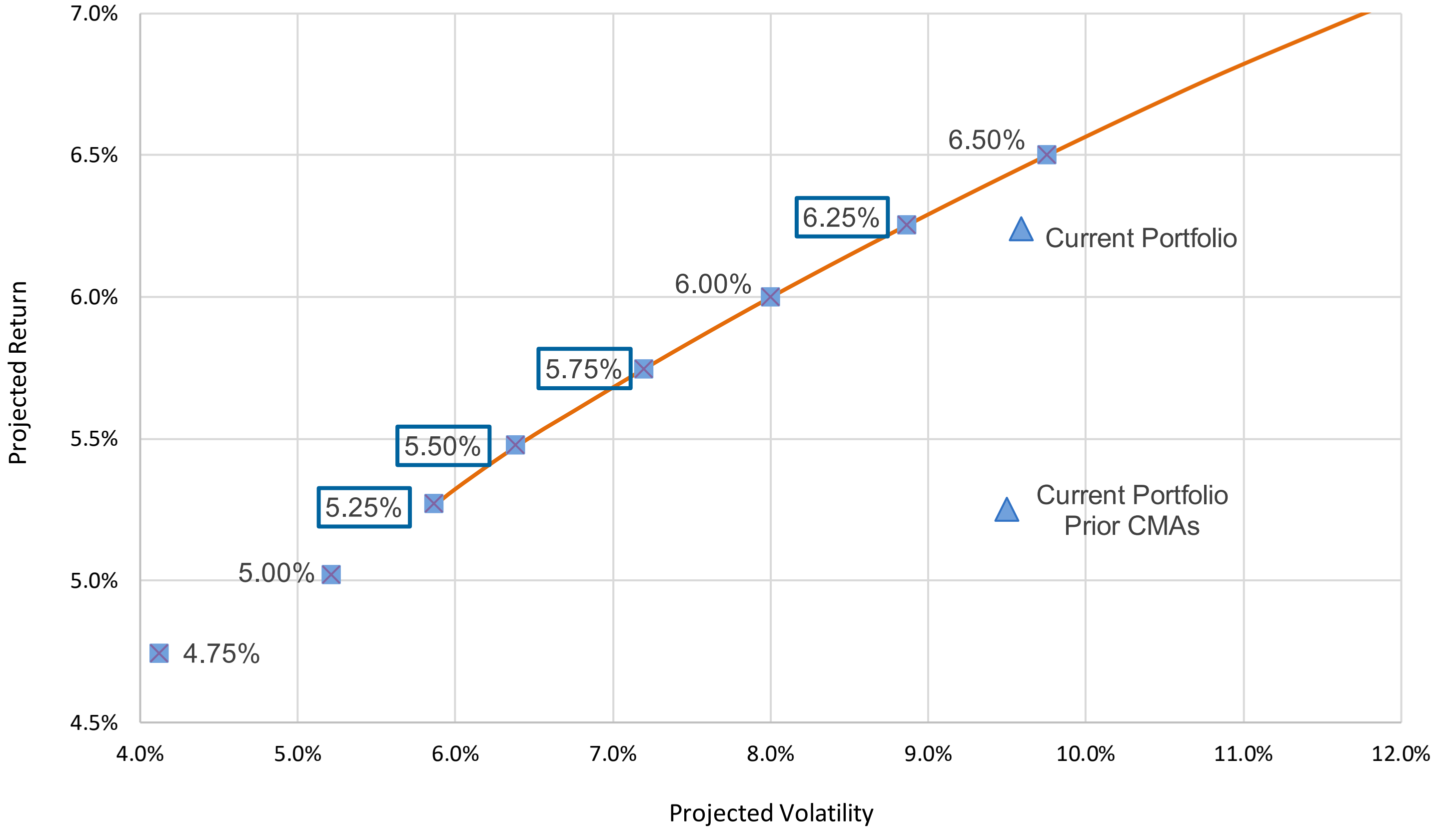
Portfolio Optimization and Efficient Frontier

Using the CMAs, asset classes, and constraints, eight optimized portfolios[1] with projected returns ranging from 4.75% to 6.50% were created as options for the selection of Candidate Portfolios.

The following 4 Candidate Portfolios were selected for further consideration:

Candidate	Rationale
A – 5.25%	Same return as prior ALM target return
B – 5.50%	Slightly higher risk/return vs. Candidate A
C – 5.75%	Slightly higher risk/return vs. Candidate B
D – 6.25%	Same return as current portfolio

Portfolios at the low and high ends of the risk/return spectrum were not selected as Candidates either due to projected returns being too low or risk being higher than the current portfolio.



[1] The 4.75% & 5.0% portfolios are not on the efficient frontier line due to slight modeling changes needed to produce these options. For the 5.25% and 5.50% portfolios, returns are rounded by 2 basis points or less for illustrative purposes.

Portfolio Review and Recommendation

Recommendation: Candidate B

Projected Return : 5.48%

Drawdown Risk: 11.2%

Volatility: 6.4%

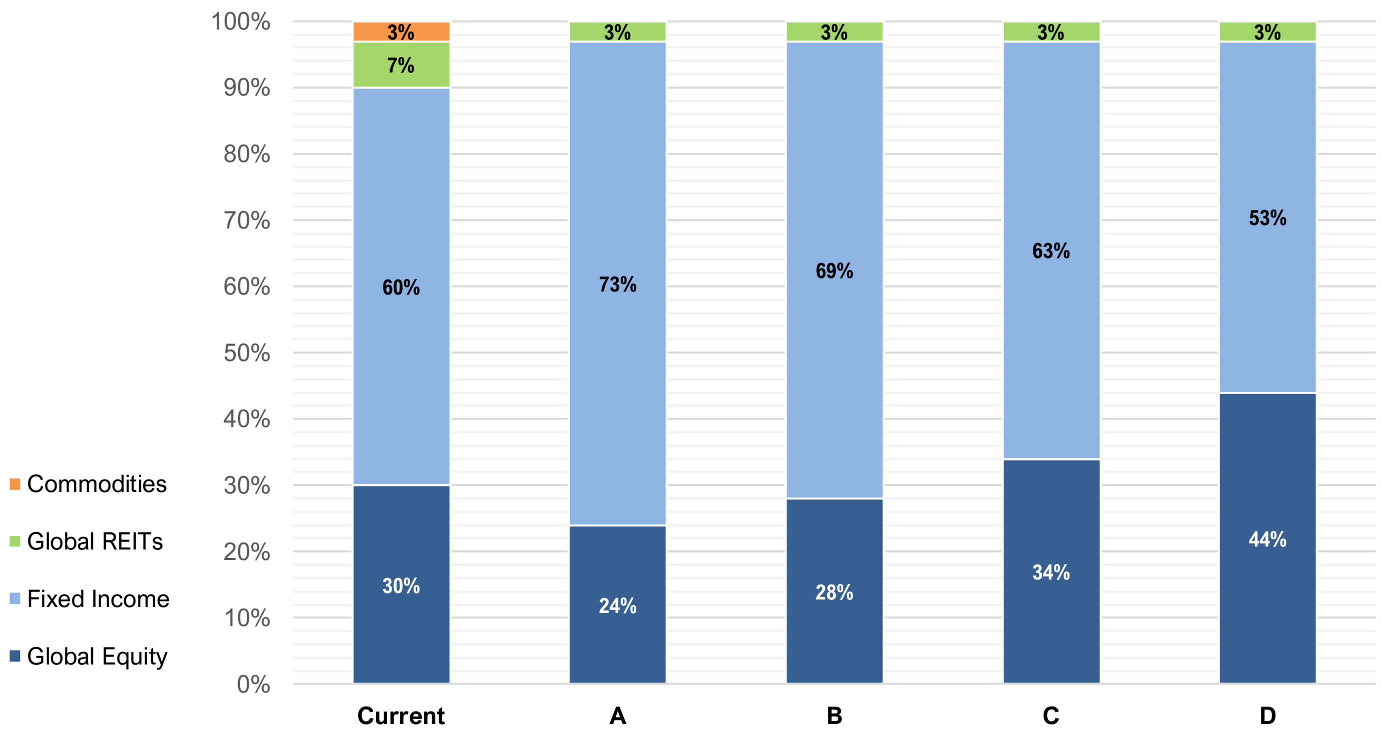
Rationale for Recommendation

The LTC Plan attributes align with a conservative strategic asset allocation that provides a return that is supportive of the discount rate, while reducing risk to protect against large losses.

Candidate B is the recommended Policy Portfolio, as it has the following attributes:

- The projected return is supportive of the discount rate and provides a modest buffer vs. Candidate A.
- The projected risk is low. Candidates C & D increase projected risk by 13% to 46%, whereas return is increased by 5% and 14%, respectively.
- The equity allocation is lower than the current portfolio. Candidates C & D increase the equity allocation, which increases risk.

Current & Candidate Portfolios

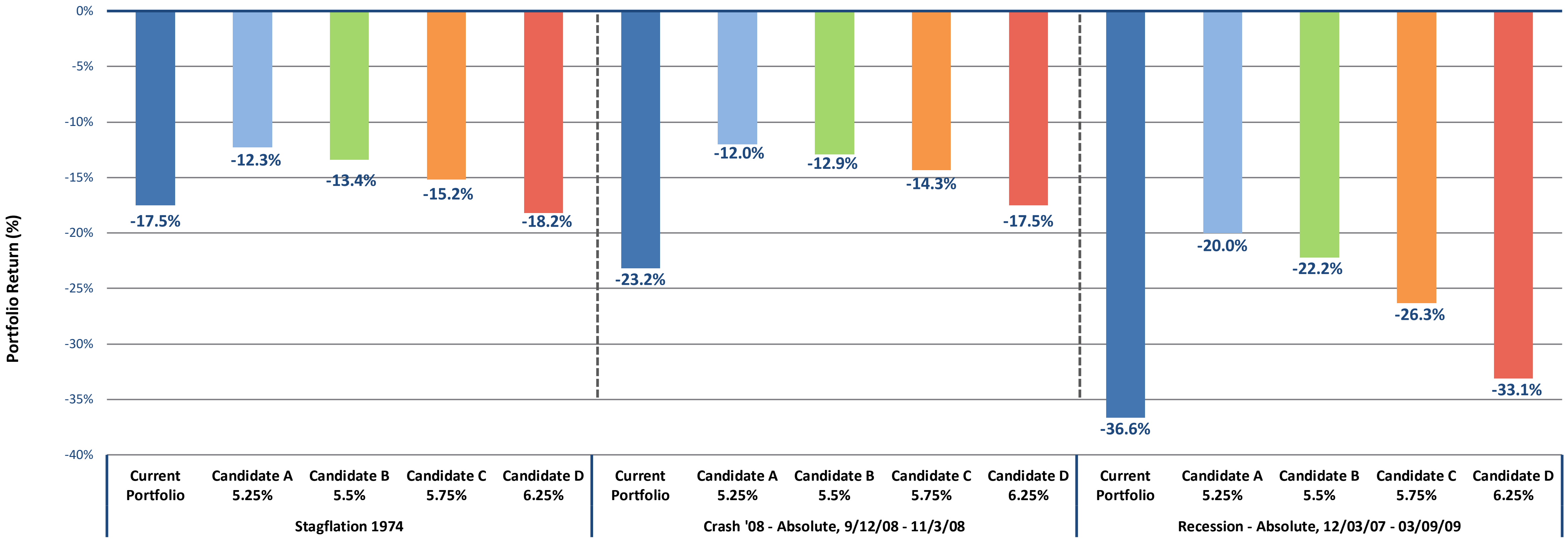


30-year Projections	Prior ALM Values	Current Portfolio	Candidate A	Candidate B	Candidate C	Candidate D
Return[1]	5.25%	6.24%	5.27%	5.48%	5.75%	6.25%
Drawdown	n/a	19.1%	10.2%	11.2%	12.8%	16.4%
Volatility	9.5%	9.6%	5.9%	6.4%	7.2%	8.9%

[1] Returns are geometric and gross.

Portfolio Stress/Scenario Tests

Candidate Portfolios A and B fare better in the stress tests, ranging from 12% - 22% loss. Candidates C and D lose between 14% - 33%, highlighting the possible downside risk of higher risk/return portfolios.



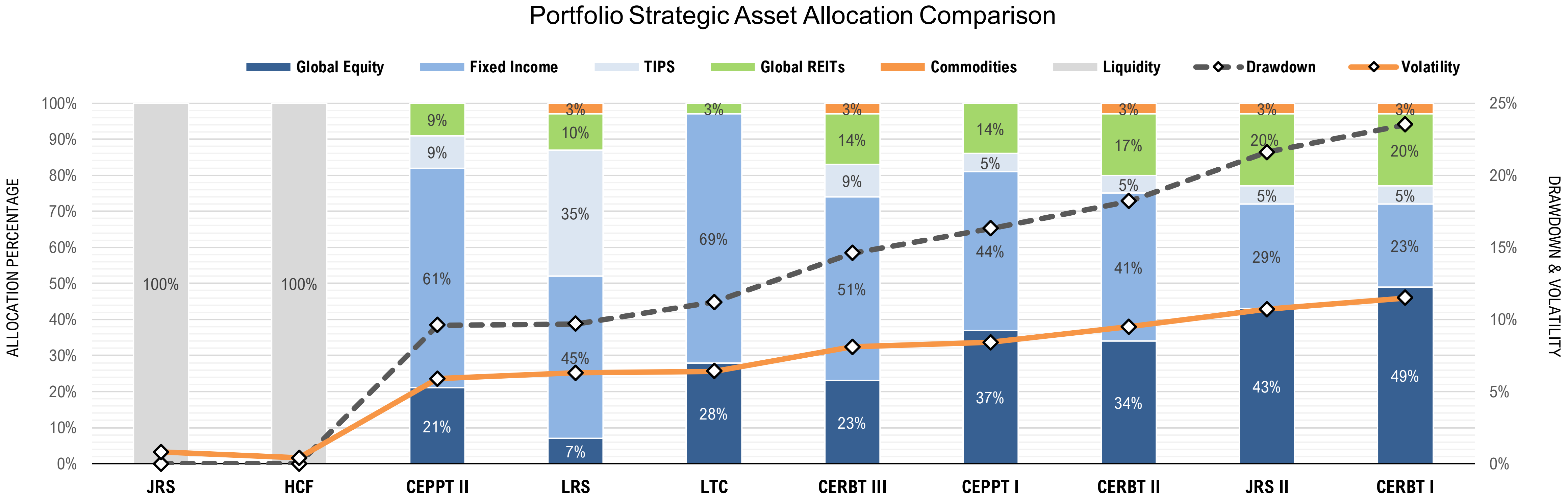
Portfolio Depletion Probability Analysis

Each portfolio was evaluated using 5,000 possible investment return paths over a 30-year time horizon. All candidate portfolios have between a 26%-31% chance of depletion starting in 14/15 years. The higher risk/return portfolios, while they have lower chance of depletion, the remaining liabilities are higher due to depletion starting sooner. This analysis assumes two 10% rate increases are implemented, with no further adjustments to the program or premiums.

Portfolio	Probability of Fund Depletion (without future course correction)	First Year Occurrence of Possible Depletion	Average Present Value of Liabilities at Depletion
Current Portfolio	31%	12	1,170M
Candidate A - 5.25%	31%	15	900M
Candidate B - 5.50%	29%	15	925M
Candidate C - 5.75%	28%	15	964M
Candidate D - 6.25%	26%	14	1,057M

Affiliate Fund Strategic Asset Allocation Risk Comparison

The chart below displays the Affiliate Funds' strategic asset allocations that were approved in June 2024, with the addition of the LTC recommended Candidate B. The level of projected risk[1] for the LTC is consistent with other Affiliate Funds that have conservative investment strategies.



[1] Drawdown and volatility are used as a general comparison to evaluate level of risk across the trusts. As CMAs for the trusts have been obtained from different time periods and sources, this data should be viewed as illustrative, rather than as an exact comparison.

Recommendation and Next Steps

Recommendation:

Approve Candidate B as the Policy Portfolio, which includes the following elements:

1. The Capital Market Assumptions provided by the external manager (pages 23 & 24)
2. The Policy Targets and Ranges for the recommended portfolio Candidate B (page 25)
3. The Benchmarks, as recommended by the external manager and confirmed by Wilshire (page 26)

Next Steps:

- Presentation of proposed rate increases in Pension & Health Benefits Committee on September 17, 2024
- Update Investment Policies to reflect approved allocations and associated benchmark changes
- Work with the investment manager to implement allocation and associated benchmark changes

Appendix

CMAs: Projected Returns and Volatility – Q1 2024

Asset Class/Segment	Benchmark Index	30-Year Projected Return	30-Year Projected Volatility
US Cash	Bloomberg T-bill 1-3 Month Index	3.5%	0.8%
US Treasuries	Bloomberg Government Index	3.6%	5.2%
Global ex-US Treasuries	Bloomberg Global Aggregate Treasury Index ex-US Hedged	3.9%	3.4%
US Investment Grade Credit	Bloomberg US Credit Index	4.7%	6.2%
US High Yield	Bloomberg US Corp High Yield 2% Issuer Capped Index	5.7%	7.4%
US Inflation Linked Government Bonds	Bloomberg US Treasury Inflation Index	3.9%	5.7%
US Asset Backed Securities	Bloomberg ABS Index	4.0%	3.3%
US Agency Mortgage-Backed Securities	Bloomberg MBS Index	4.1%	6.0%
US Commercial MBS	Bloomberg CMBS, Eligible for US Aggregate Index	4.4%	5.8%
EM Bonds (USD denominated)	JP Morgan EMBI Global Diversified Index	5.8%	9.7%
US Large Cap Equity	MSCI Developed – US Total Return Index Gross	7.0%	17.8%
Developed Ex-US Equity	MSCI World ex-US Hedged Index Net	7.8%	14.1%
Emerging Market Equity	MSCI Emerging Market Index Net	9.6%	20.4%
Global REITs (Real Estate Inv. Trusts)	FTSE EPRA/NAREIT Developed 100% Hedged to USD Net Index	7.0%	20.6%
Commodities	Bloomberg Commodity Index Total Return	2.9%	16.7%

CMAs: Asset Class Correlations – Q1 2024

	US Cash	US Treasuries	Global ex-US Treasuries	US IG Credit	US High Yield	US TIPS	US ABS	US MBS	US CMBS	EMD ($-denom.)	US Equity	Developed ex-US Equity	Emerging Equity	Global REITs	Commodities
US Cash	1.00	0.16	0.24	0.12	0.11	0.15	0.25	0.14	0.14	0.08	0.04	0.06	0.04	0.04	0.05
US Treasuries	0.16	1.00	0.72	0.72	-0.02	0.69	0.55	0.90	0.57	0.35	-0.18	-0.24	-0.12	-0.04	-0.14
Global ex-US Treasuries	0.24	0.72	1.00	0.62	0.14	0.53	0.38	0.67	0.44	0.38	-0.01	-0.05	0.01	0.16	-0.15
US IG Credit	0.12	0.72	0.62	1.00	0.54	0.75	0.66	0.77	0.68	0.69	0.28	0.23	0.35	0.42	0.14
US High Yield	0.11	-0.02	0.14	0.54	1.00	0.40	0.31	0.15	0.48	0.57	0.63	0.58	0.62	0.69	0.37
US TIPS	0.15	0.69	0.53	0.75	0.40	1.00	0.64	0.72	0.64	0.56	0.20	0.11	0.28	0.34	0.26
US ABS	0.25	0.55	0.38	0.66	0.31	0.64	1.00	0.59	0.56	0.45	0.04	0.00	0.15	0.15	0.15
US MBS	0.14	0.90	0.67	0.77	0.15	0.72	0.59	1.00	0.58	0.47	-0.05	-0.10	0.01	0.11	-0.06
US CMBS	0.14	0.57	0.44	0.68	0.48	0.64	0.56	0.58	1.00	0.43	0.13	0.04	0.19	0.26	0.05
EMD ($-denom.)	0.08	0.35	0.38	0.69	0.57	0.56	0.45	0.47	0.43	1.00	0.46	0.42	0.52	0.55	0.32
US Equity	0.04	-0.18	-0.01	0.28	0.63	0.20	0.04	-0.05	0.13	0.46	1.00	0.83	0.75	0.77	0.34
Developed ex-US Equity	0.06	-0.24	-0.05	0.23	0.58	0.11	0.00	-0.10	0.04	0.42	0.83	1.00	0.76	0.70	0.34
Emerging Equity	0.04	-0.12	0.01	0.35	0.62	0.28	0.15	0.01	0.19	0.52	0.75	0.76	1.00	0.68	0.46
Global REITs	0.04	-0.04	0.16	0.42	0.69	0.34	0.15	0.11	0.26	0.55	0.77	0.70	0.68	1.00	0.40
Commodities	0.05	-0.14	-0.15	0.14	0.37	0.26	0.15	-0.06	0.05	0.32	0.34	0.34	0.46	0.40	1.00

Strategic Asset Allocation Targets & Ranges

Asset Class	Current Policy Target	Current Policy Range	Proposed Policy Target	Proposed Policy Range[1]
Global Equity	30%	+/- 7%	28%	+/- 7%
Fixed Income	60%	+/- 7%	69%	+/- 7%
Global REITs	7%	+/- 3%	3%	+/- 2%
Commodities	3%	+/- 2%	0%	n/a
Liquidity	0%	+ 2%	0%	+ 2%

*Shading indicates targets and ranges that have changed from the prior ALM.

- Policy ranges are intended to allow for market drift between quarterly rebalances and to mitigate the need to rebalance the portfolio mid-quarter and away from the benchmark.
- The +2% liquidity range allows for operational cash flows.

[1] If the Policy Portfolio selected is different from the recommendation, the Proposed Policy Ranges still apply.

Custom Benchmark Composition

Asset Classes/Components	Benchmark	Candidate A	Candidate B Recommendation	Candidate C	Candidate D
Total Portfolio	**Custom Weighted Benchmark Based on Asset Class Weights**				
Fixed Income	**Custom Weighted Benchmark Based on Target Weights**	**73%**	**69%**	**63%**	**53%**
US Cash	Bloomberg T-bill 1-3 Month Index	0%	0%	0%	0%
US Treasuries	Bloomberg Government Index	23.7%	22.2%	19.8%	11.9%
Global ex-US Treasuries	Bloomberg Global Aggregate Treasury Index ex-US Hedged	11.8%	11.1%	9.9%	6.0%
US Investment Grade Credit	Bloomberg US Credit Index	10.0%	10.1%	10.0%	10.1%
US High Yield	Bloomberg US Corp High Yield 2% Issuer Capped Index	10.4%	8.9%	8.1%	7.2%
US Inflation Linked Government Bonds	Bloomberg US Treasury Inflation Index	5.0%	5.0%	5.0%	5.0%
US Asset Backed Securities	Bloomberg ABS Index	3.0%	3%	2.4%	2.8%
US Agency Mortgage-Backed Securities	Bloomberg MBS Index	3.4%	3.4%	2.2%	1.5%
US Commercial MBS	Bloomberg CMBS, Eligible for US Aggregate Index	2.5%	2.5%	2.5%	4.0%
EM Bonds (USD denominated)	JP Morgan EMBI Global Diversified Index	3.2%	2.8%	3.1%	4.5%
Global Equity	**Custom Weighted Benchmark Based on Target Weights**	**24%**	**28%**	**34%**	**44%**
US Large Cap Equity	MSCI Developed – US Total Return Index Gross	12.0%	14.0%	17.0%	22.0%
Developed Ex-US Equity	MSCI World ex-US Hedged Index Net	9.0%	8.0%	10.0%	10.0%
Emerging Market Equity	MSCI Emerging Market Index Net	3.0%	6.0%	7.0%	12.0%
Global REITs (Real Estate Inv. Trusts)	**FTSE EPRA/NAREIT Developed 100% Hedged to USD Net Index**	**3%**	**3%**	**3%**	**3%**

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Changes from Prior ALM

Asset Class Changes

Asset Class or Sub-Asset Class	Change	Rationale
Commodities	No Minimum Constraint Set	Portfolio construction process results in no allocation. No minimum constraint set (previously 3%), as 1) CMAs as provided by the manager are lower return/higher risk, 2) have an 8% allocation to other inflation related assets, and 3) higher cost asset class (22 basis points compared to 8 basis points for Fixed Income).
Fixed Income U.S. Investment Grade Credit – Long BBB	Removed Sub-Asset Class	Higher risk sub-asset class not needed, given current CMAs. Higher projected returns are achievable with less risky fixed income assets.
Fixed Income U.S. CMBS Sub	Removed Sub-Asset Class	Higher risk sub-asset class not needed, given current CMAs. Higher projected returns are achievable with less risky fixed income assets.

Benchmark Changes

Fixed Income Sub-Asset Class	Current	Proposed	Rationale
U.S. Treasuries	Bloomberg Long Government Index	Bloomberg Government Index	Moving from the long maturity benchmark to a broad benchmark is intended to reduce interest rate risk.
U.S. Investment Grade Credit	Bloomberg US Long Credit Index	Bloomberg US Credit Index	
U.S. Treasury Inflation Protected Securities	Bloomberg US Treasury Inflation 15Yr+ Index	Bloomberg US Treasury Inflation-Linked Bond Index	