Overview of the Asset Liability Management Mid-Cycle and Strategic Asset Allocation Reviews

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INVO
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Purpose of today’s presentation

- Provide the Board with advance notice that this November 2023 we will be reviewing CalPERS capital market assumptions and Policy Portfolio. At that time, we may ask the Board to make changes to the policy portfolio. Not anticipating a change in discount rate

- Review the framework we use to design the PERF portfolio

- Summarize key features of the current PERF Policy Portfolio

Key tenets of the framework

- Risk is multi-faceted, and each facet must be considered
  - Investment risk is the potential for portfolio losses, measured using drawdown.
  - Contribution risk is the potential for increased member and employer costs
  - Funding risk is the potential for the funding ratio to drop below 50%.

- The future is uncertain, so prepare don't predict

- Portfolio resilience means we have some understanding of the range of portfolio performance

ALM Process Timeline

2023

July*

- Educational session:
  - ALM process, framework, & mid-cycle review

November

- ALM mid-cycle review

2025

February

- Educational sessions:
  - ALM concepts and framework
  - ALM timeline

June

- Capital Market Assumptions
- Economic Assumptions

July*

- Educational sessions:
  - ALM process & framework
  - Investment funds risk assessment
  - Gauging the funds' ability to tolerate market risk

September

- Discussion of candidate portfolios with proposed discount rates

November

- Experience study results
- Discussion of candidate portfolios with discount rates
- Final approval of discount rate
- Final approval of strategic asset allocation

2026

July*

- Effective date for strategic asset allocation

** Board offsite*

ALM Framework

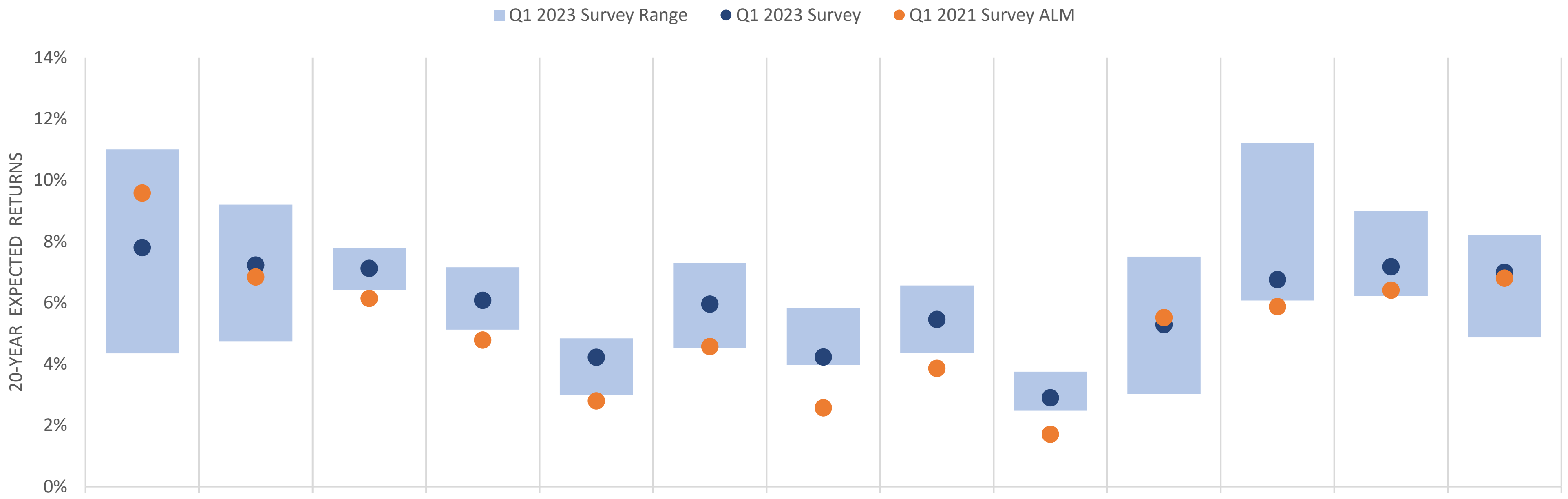
- Construct portfolios targeting a projected return while minimizing drawdown risk.

- CalPERS Actuarial division estimates the cost and funding risks associated with the portfolio

- Scenario analysis and stress tests are used to further explore the resilience of the portfolio

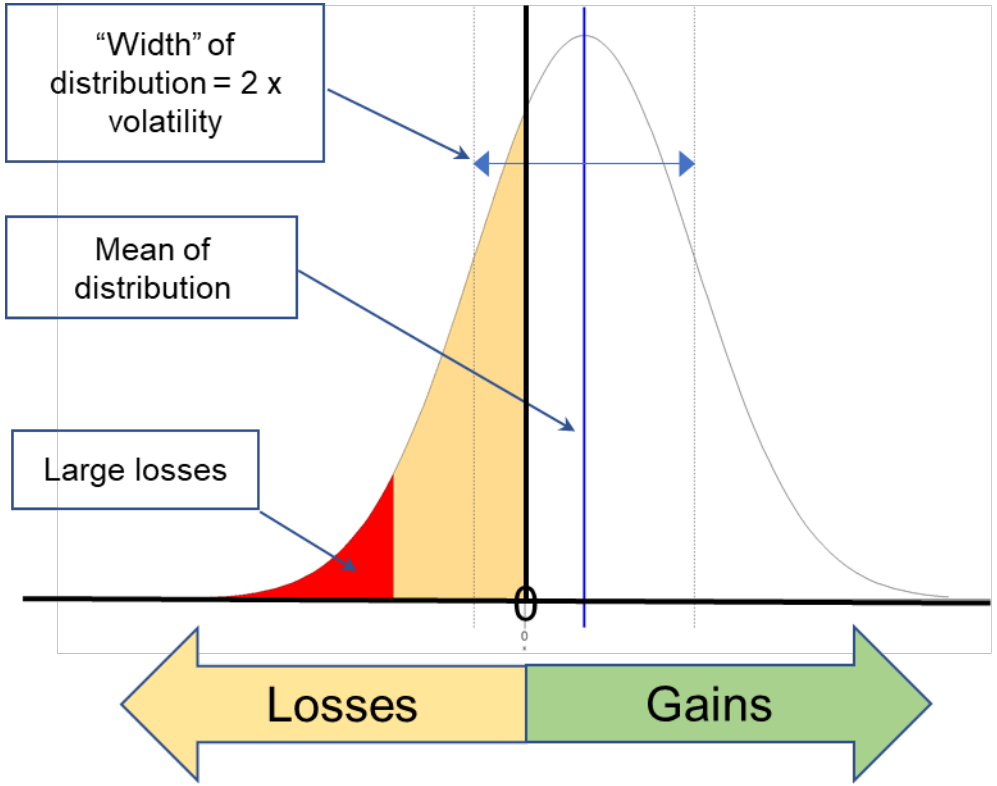
Uncertainty is reflected in diverse expert opinion, and how those opinions change over time (example: 20-year returns for 2021).

- Higher expected returns across all fixed income asset classes, mainly driven by Federal Reserve rate increases
- Decrease in PE Expected Returns due to increases in financing costs.



	PE	Eq.C	Eq.F	EM	MBS	HY	Tsy	IG	Liq	RE	PD	Infra	Policy.P
Q1 2023 Survey	7.8%	7.2%	7.1%	6.1%	4.2%	6.0%	4.2%	5.5%	2.9%	5.3%	6.8%	7.2%	7.0%
Q1 2021 Survey ALM	9.6%	6.8%	6.1%	4.8%	2.8%	4.6%	2.6%	3.9%	1.7%	5.5%	5.9%	6.4%	6.8%

Investment risk measure is drawdown, aligned with ‘risk of loss’



Minimize the risk of loss is one of our constitutional objectives. Drawdown is well aligned with measuring losses, unlike volatility which measures variability around the mean (width of the distribution). Looking at the diagram, we can see increasing (decreasing) volatility will increase (decrease) drawdown. Similarly, the mean determines the location of the distribution. And decreasing (increasing) the mean will increase (decrease) drawdown. Changing the portfolio asset mix changes the mean and the variance.

Framework: exploring the range of outcomes and portfolio resilience

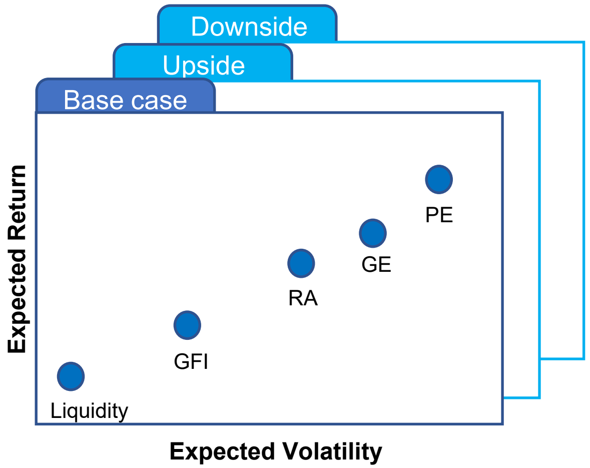
Each scenario has the information needed to construct an optimal portfolio, and to estimate discount rates, liabilities, and contributions.

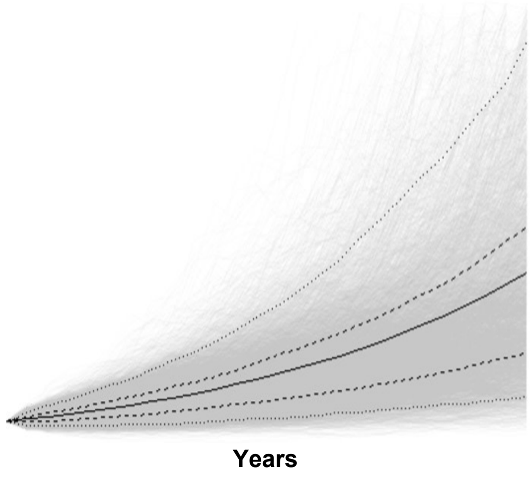
Economic Scenarios* → CMAs → Return Paths

	GDP	Inflation
Base case	1.8%	2.2%
Upside	2.2%	2.8%
Downside	1.5%	1.7%

For various existing and potential assets:

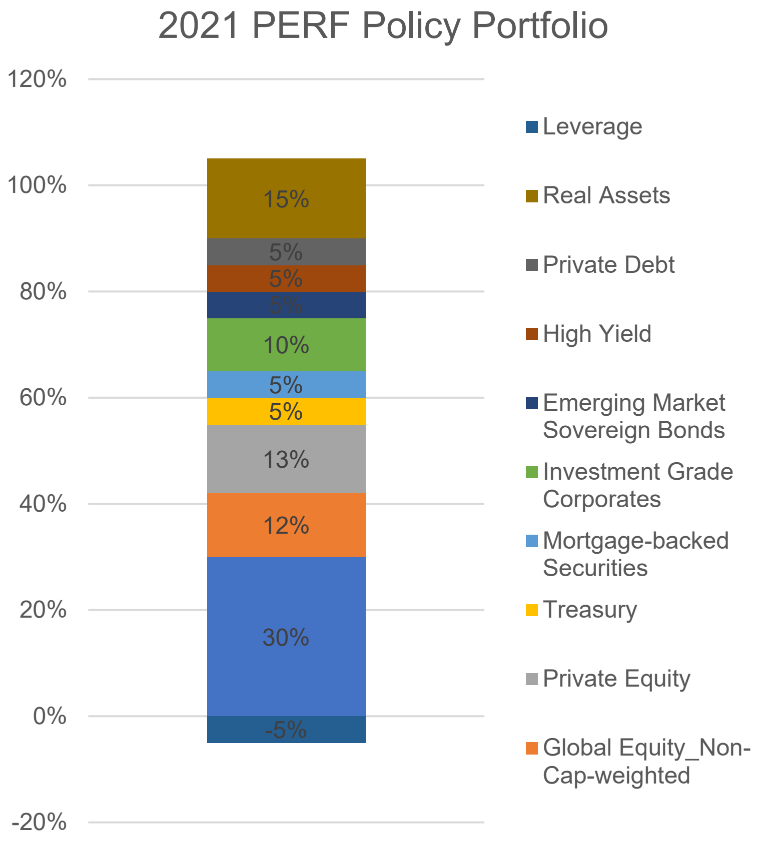
- Expected Return, Volatility and Correlation Matrix
- Mid-term and Long-term





Though each scenario has deterministic long term economic assumptions, the returns, contributions, and funds in the scenarios are stochastic. For each scenario, returns for all asset classes are described by a term structure (e.g. near term and long term) of expected returns, as well as other parameters representing the variability of returns (e.g. volatility, correlation, tail dependence). By using multiple scenarios, we get a sense of the sensitivity to assumptions of the portfolio allocation and risk analysis.

Current PERF Policy Portfolio



November, 2021

- Projected 20-year return of 6.8%, with drawdown risk of 23%.
- The projected return required taking significant growth risk. Growth risk accounts for roughly 85% of total portfolio risk.
- Strategic leverage used for the first time, with the purpose of improving diversification by reducing equity exposure and increasing exposures to fixed income.
- New sources of diversification include
  - First allocation to private debt, improving diversification
  - First allocation to EM sovereign debt
- ACTO presented cost and funding implications

July, 2023

- The current survey suggests projected 20-year policy portfolio return in the range of 6.2% to 7.9%, with a median around 7%.
- Currently ACTO indicates no material changes to their 2021 analysis, and they believe the current 6.8% target return remains appropriate.

What to expect in November

- Discussion of Capital Market Assumptions (CMAs)
- Risk and return assessment of current portfolio (including stress tests)
- Risk and return assessment of other candidate portfolios (including stress tests)